



**Off-Base Drinking Water Sample Results,
Combined Level 2 and Level 4 Laboratory Report,
Electronic Data Deliverable, Data Validation Report,
and the Sample Location Figure, SDG 320-37675-1**

*Naval Air Warfare Center Warminster
Warminster, Pennsylvania*

August 2019

N62269_001197
WARMINSTER_NAWC
SSIC 5000-33c

LABORATORY DATA PACKAGE, 320-37675-1, NAS WILLOW GROVE NAWC
WARMINSTER PA
04/18/2018
TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-37675-1

Job Description: Warminster: PFAS, NAS JRB Willow Grove

For:
Tetra Tech, Inc.
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Approved for release.
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4/18/2018 10:16 AM

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Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Qualifiers

LCMS

| Qualifier | Qualifier Description |
|-----------|---|
| U | Undetected at the Limit of Detection. |
| J | Estimated: The analyte was positively identified; the quantitation is an estimation |
| M | Manual integrated compound. |

Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|----------------|---|
| α | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| 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) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| 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) |

Job Narrative
320-37675-1

Receipt

The samples were received on 3/30/2018 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.4° C and 2.4° C.

LCMS

Method(s) 537: The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

Method(s) 537: The following samples were re-extracted outside of holding time to confirm the original results as detections were seen in the FRB sample but not the parent samples. NAWC-032819-RW-117 (320-37675-16) and NAWC-032819-FRB-117 (320-37675-17) . The results confirmed and the original results are reported.

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

Organic Prep

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-216791.

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Client Sample ID: WGNA-032918-DUP-31

Lab Sample ID: 320-37675-1

| Analyte | Result | Qualifier | LOQ | DL | Unit | Dil Fac | D | Method | Prep Type |
|-------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanoic acid (PFOA) | 5.4 | J | 20 | 2.8 | ng/L | 1 | | 537 | Total/NA |

Client Sample ID: NAWC-032819-RW-286

Lab Sample ID: 320-37675-2

| Analyte | Result | Qualifier | LOQ | DL | Unit | Dil Fac | D | Method | Prep Type |
|--------------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanesulfonic acid (PFOS) | 17 | J M | 39 | 6.7 | ng/L | 1 | | 537 | Total/NA |
| Perfluorooctanoic acid (PFOA) | 18 | J | 20 | 2.8 | ng/L | 1 | | 537 | Total/NA |
| Perfluorohexanesulfonic acid (PFHxS) | 5.8 | J | 30 | 5.4 | ng/L | 1 | | 537 | Total/NA |
| Perfluoroheptanoic acid (PFHpA) | 4.7 | J | 9.9 | 1.9 | ng/L | 1 | | 537 | Total/NA |

Client Sample ID: NAWC-032819-FRB-286

Lab Sample ID: 320-37675-3

No Detections.

Client Sample ID: WGNA-032819-RW-0518

Lab Sample ID: 320-37675-4

| Analyte | Result | Qualifier | LOQ | DL | Unit | Dil Fac | D | Method | Prep Type |
|--------------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanesulfonic acid (PFOS) | 22 | J M | 40 | 6.7 | ng/L | 1 | | 537 | Total/NA |
| Perfluorooctanoic acid (PFOA) | 23 | | 20 | 2.8 | ng/L | 1 | | 537 | Total/NA |
| Perfluorohexanesulfonic acid (PFHxS) | 8.9 | J | 30 | 5.4 | ng/L | 1 | | 537 | Total/NA |
| Perfluoroheptanoic acid (PFHpA) | 5.7 | J | 9.9 | 1.9 | ng/L | 1 | | 537 | Total/NA |
| Perfluorobutanesulfonic acid (PFBS) | 19 | J | 89 | 16 | ng/L | 1 | | 537 | Total/NA |

Client Sample ID: WGNA-032819-FRB-0518

Lab Sample ID: 320-37675-5

No Detections.

Client Sample ID: NAWC-032819-RW-010

Lab Sample ID: 320-37675-6

| Analyte | Result | Qualifier | LOQ | DL | Unit | Dil Fac | D | Method | Prep Type |
|--------------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanesulfonic acid (PFOS) | 27 | J M | 40 | 6.8 | ng/L | 1 | | 537 | Total/NA |
| Perfluorooctanoic acid (PFOA) | 20 | | 20 | 2.8 | ng/L | 1 | | 537 | Total/NA |
| Perfluorohexanesulfonic acid (PFHxS) | 17 | J | 30 | 5.5 | ng/L | 1 | | 537 | Total/NA |
| Perfluoroheptanoic acid (PFHpA) | 5.8 | J | 10 | 1.9 | ng/L | 1 | | 537 | Total/NA |

Client Sample ID: NAWC-032819-FRB-010

Lab Sample ID: 320-37675-7

No Detections.

Client Sample ID: NAWC-032819-RW-127

Lab Sample ID: 320-37675-8

No Detections.

Client Sample ID: NAWC-032819-FRB-127

Lab Sample ID: 320-37675-9

No Detections.

Client Sample ID: NAWC-032819-RW-195

Lab Sample ID: 320-37675-10

| Analyte | Result | Qualifier | LOQ | DL | Unit | Dil Fac | D | Method | Prep Type |
|-------------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanesulfonic acid (PFOS) | 14 | J M | 40 | 6.8 | ng/L | 1 | | 537 | Total/NA |
| Perfluorooctanoic acid (PFOA) | 12 | J | 20 | 2.8 | ng/L | 1 | | 537 | Total/NA |

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-RW-195 (Continued)

Lab Sample ID: 320-37675-10

| Analyte | Result | Qualifier | LOQ | DL | Unit | Dil Fac | D | Method | Prep Type |
|---------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluoroheptanoic acid (PFHpA) | 4.2 | J | 10 | 1.9 | ng/L | 1 | | 537 | Total/NA |

Client Sample ID: NAWC-032819-FRB-195

Lab Sample ID: 320-37675-11

No Detections.

Client Sample ID: NAWC-032819-RW-048

Lab Sample ID: 320-37675-12

| Analyte | Result | Qualifier | LOQ | DL | Unit | Dil Fac | D | Method | Prep Type |
|-------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanoic acid (PFOA) | 4.8 | J | 20 | 2.9 | ng/L | 1 | | 537 | Total/NA |

Client Sample ID: NAWC-032819-FRB-048

Lab Sample ID: 320-37675-13

No Detections.

Client Sample ID: NAWC-032819-RW-139

Lab Sample ID: 320-37675-14

| Analyte | Result | Qualifier | LOQ | DL | Unit | Dil Fac | D | Method | Prep Type |
|---------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanoic acid (PFOA) | 9.5 | J | 20 | 2.8 | ng/L | 1 | | 537 | Total/NA |
| Perfluoroheptanoic acid (PFHpA) | 4.0 | J M | 10 | 1.9 | ng/L | 1 | | 537 | Total/NA |

Client Sample ID: NAWC-032819-FRB-139

Lab Sample ID: 320-37675-15

No Detections.

Client Sample ID: NAWC-032819-RW-117

Lab Sample ID: 320-37675-16

No Detections.

Client Sample ID: NAWC-032819-FRB-117

Lab Sample ID: 320-37675-17

| Analyte | Result | Qualifier | LOQ | DL | Unit | Dil Fac | D | Method | Prep Type |
|--------------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanesulfonic acid (PFOS) | 28 | J M | 39 | 6.6 | ng/L | 1 | | 537 | Total/NA |
| Perfluorooctanoic acid (PFOA) | 20 | | 19 | 2.7 | ng/L | 1 | | 537 | Total/NA |
| Perfluorohexanesulfonic acid (PFHxS) | 15 | J | 29 | 5.3 | ng/L | 1 | | 537 | Total/NA |
| Perfluoroheptanoic acid (PFHpA) | 4.9 | J | 9.7 | 1.8 | ng/L | 1 | | 537 | Total/NA |

Client Sample ID: NAWC-032819-RW-181

Lab Sample ID: 320-37675-18

| Analyte | Result | Qualifier | LOQ | DL | Unit | Dil Fac | D | Method | Prep Type |
|-------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanoic acid (PFOA) | 5.2 | J | 20 | 2.8 | ng/L | 1 | | 537 | Total/NA |

Client Sample ID: NAWC-032819-FRB-181

Lab Sample ID: 320-37675-19

No Detections.

Client Sample ID: NAWC-032819-RW-138

Lab Sample ID: 320-37675-20

| Analyte | Result | Qualifier | LOQ | DL | Unit | Dil Fac | D | Method | Prep Type |
|-------------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanesulfonic acid (PFOS) | 8.0 | J M | 41 | 7.0 | ng/L | 1 | | 537 | Total/NA |
| Perfluorooctanoic acid (PFOA) | 30 | | 21 | 2.9 | ng/L | 1 | | 537 | Total/NA |
| Perfluoroheptanoic acid (PFHpA) | 7.4 | J | 10 | 2.0 | ng/L | 1 | | 537 | Total/NA |

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-FRB-138

Lab Sample ID: 320-37675-21

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Client Sample ID: WGNA-032918-DUP-31

Lab Sample ID: 320-37675-1

Date Collected: 03/29/18 07:00

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|------------------|------------------|---------------|-----|------|---|-----------------|-----------------|----------------|
| Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 6.7 | ng/L | | 04/07/18 08:11 | 04/13/18 00:51 | 1 |
| Perfluorooctanoic acid (PFOA) | 5.4 | J | 20 | 2.8 | ng/L | | 04/07/18 08:11 | 04/13/18 00:51 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U | 24 | 7.9 | ng/L | | 04/07/18 08:11 | 04/13/18 00:51 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 5.5 | ng/L | | 04/07/18 08:11 | 04/13/18 00:51 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 9.9 | 1.9 | ng/L | | 04/07/18 08:11 | 04/13/18 00:51 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 36 | U | 89 | 16 | ng/L | | 04/07/18 08:11 | 04/13/18 00:51 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 13C2 PFHxA | 95 | | 70 - 130 | | | | 04/07/18 08:11 | 04/13/18 00:51 | 1 |
| 13C2 PFDA | 93 | | 70 - 130 | | | | 04/07/18 08:11 | 04/13/18 00:51 | 1 |

Client Sample ID: NAWC-032819-RW-286

Lab Sample ID: 320-37675-2

Date Collected: 03/29/18 08:10

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|------------------|------------------|---------------|-----|------|---|-----------------|-----------------|----------------|
| Perfluorooctanesulfonic acid (PFOS) | 17 | J M | 39 | 6.7 | ng/L | | 04/07/18 08:11 | 04/13/18 00:55 | 1 |
| Perfluorooctanoic acid (PFOA) | 18 | J | 20 | 2.8 | ng/L | | 04/07/18 08:11 | 04/13/18 00:55 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U M | 24 | 7.9 | ng/L | | 04/07/18 08:11 | 04/13/18 00:55 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 5.8 | J | 30 | 5.4 | ng/L | | 04/07/18 08:11 | 04/13/18 00:55 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 4.7 | J | 9.9 | 1.9 | ng/L | | 04/07/18 08:11 | 04/13/18 00:55 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 36 | U | 89 | 16 | ng/L | | 04/07/18 08:11 | 04/13/18 00:55 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 13C2 PFHxA | 98 | | 70 - 130 | | | | 04/07/18 08:11 | 04/13/18 00:55 | 1 |
| 13C2 PFDA | 101 | | 70 - 130 | | | | 04/07/18 08:11 | 04/13/18 00:55 | 1 |

Client Sample ID: NAWC-032819-FRB-286

Lab Sample ID: 320-37675-3

Date Collected: 03/29/18 08:05

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|------------------|------------------|---------------|-----|------|---|-----------------|-----------------|----------------|
| Perfluorooctanesulfonic acid (PFOS) | 16 | U | 41 | 6.9 | ng/L | | 04/07/18 08:11 | 04/13/18 01:00 | 1 |
| Perfluorooctanoic acid (PFOA) | 8.1 | U | 20 | 2.8 | ng/L | | 04/07/18 08:11 | 04/13/18 01:00 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U | 24 | 8.1 | ng/L | | 04/07/18 08:11 | 04/13/18 01:00 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 5.6 | ng/L | | 04/07/18 08:11 | 04/13/18 01:00 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 4.1 | U | 10 | 1.9 | ng/L | | 04/07/18 08:11 | 04/13/18 01:00 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 36 | U | 91 | 16 | ng/L | | 04/07/18 08:11 | 04/13/18 01:00 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 13C2 PFHxA | 101 | | 70 - 130 | | | | 04/07/18 08:11 | 04/13/18 01:00 | 1 |
| 13C2 PFDA | 95 | | 70 - 130 | | | | 04/07/18 08:11 | 04/13/18 01:00 | 1 |

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Client Sample ID: WGNA-032819-RW-0518

Lab Sample ID: 320-37675-4

Date Collected: 03/29/18 08:40

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|------------------|------------------|---------------|-----|------|---|-----------------|-----------------|----------------|
| Perfluorooctanesulfonic acid (PFOS) | 22 | J M | 40 | 6.7 | ng/L | | 04/07/18 08:11 | 04/13/18 01:05 | 1 |
| Perfluorooctanoic acid (PFOA) | 23 | | 20 | 2.8 | ng/L | | 04/07/18 08:11 | 04/13/18 01:05 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U M | 24 | 7.9 | ng/L | | 04/07/18 08:11 | 04/13/18 01:05 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 8.9 | J | 30 | 5.4 | ng/L | | 04/07/18 08:11 | 04/13/18 01:05 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 5.7 | J | 9.9 | 1.9 | ng/L | | 04/07/18 08:11 | 04/13/18 01:05 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 19 | J | 89 | 16 | ng/L | | 04/07/18 08:11 | 04/13/18 01:05 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 13C2 PFHxA | 106 | | 70 - 130 | | | | 04/07/18 08:11 | 04/13/18 01:05 | 1 |
| 13C2 PFDA | 104 | | 70 - 130 | | | | 04/07/18 08:11 | 04/13/18 01:05 | 1 |

Client Sample ID: WGNA-032819-FRB-0518

Lab Sample ID: 320-37675-5

Date Collected: 03/29/18 08:35

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|------------------|------------------|---------------|-----|------|---|-----------------|-----------------|----------------|
| Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 6.7 | ng/L | | 04/07/18 08:11 | 04/13/18 01:09 | 1 |
| Perfluorooctanoic acid (PFOA) | 7.9 | U | 20 | 2.8 | ng/L | | 04/07/18 08:11 | 04/13/18 01:09 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U | 24 | 7.9 | ng/L | | 04/07/18 08:11 | 04/13/18 01:09 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 5.4 | ng/L | | 04/07/18 08:11 | 04/13/18 01:09 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.9 | 1.9 | ng/L | | 04/07/18 08:11 | 04/13/18 01:09 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 36 | U | 89 | 16 | ng/L | | 04/07/18 08:11 | 04/13/18 01:09 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 13C2 PFHxA | 100 | | 70 - 130 | | | | 04/07/18 08:11 | 04/13/18 01:09 | 1 |
| 13C2 PFDA | 98 | | 70 - 130 | | | | 04/07/18 08:11 | 04/13/18 01:09 | 1 |

Client Sample ID: NAWC-032819-RW-010

Lab Sample ID: 320-37675-6

Date Collected: 03/29/18 09:10

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|------------------|------------------|---------------|-----|------|---|-----------------|-----------------|----------------|
| Perfluorooctanesulfonic acid (PFOS) | 27 | J M | 40 | 6.8 | ng/L | | 04/07/18 08:11 | 04/13/18 01:14 | 1 |
| Perfluorooctanoic acid (PFOA) | 20 | | 20 | 2.8 | ng/L | | 04/07/18 08:11 | 04/13/18 01:14 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U M | 24 | 8.0 | ng/L | | 04/07/18 08:11 | 04/13/18 01:14 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 17 | J | 30 | 5.5 | ng/L | | 04/07/18 08:11 | 04/13/18 01:14 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 5.8 | J | 10 | 1.9 | ng/L | | 04/07/18 08:11 | 04/13/18 01:14 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 36 | U | 91 | 16 | ng/L | | 04/07/18 08:11 | 04/13/18 01:14 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 13C2 PFHxA | 91 | | 70 - 130 | | | | 04/07/18 08:11 | 04/13/18 01:14 | 1 |
| 13C2 PFDA | 88 | | 70 - 130 | | | | 04/07/18 08:11 | 04/13/18 01:14 | 1 |

TestAmerica Sacramento

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-FRB-010

Lab Sample ID: 320-37675-7

Date Collected: 03/29/18 09:05

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 6.7 | ng/L | | 04/07/18 08:11 | 04/13/18 01:19 | 1 |
| Perfluorooctanoic acid (PFOA) | 7.8 | U | 20 | 2.7 | ng/L | | 04/07/18 08:11 | 04/13/18 01:19 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U | 23 | 7.8 | ng/L | | 04/07/18 08:11 | 04/13/18 01:19 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 29 | 5.4 | ng/L | | 04/07/18 08:11 | 04/13/18 01:19 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.8 | 1.9 | ng/L | | 04/07/18 08:11 | 04/13/18 01:19 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 35 | U | 88 | 16 | ng/L | | 04/07/18 08:11 | 04/13/18 01:19 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 101 | | 70 - 130 | 04/07/18 08:11 | 04/13/18 01:19 | 1 |
| 13C2 PFDA | 101 | | 70 - 130 | 04/07/18 08:11 | 04/13/18 01:19 | 1 |

Client Sample ID: NAWC-032819-RW-127

Lab Sample ID: 320-37675-8

Date Collected: 03/29/18 09:40

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 6.7 | ng/L | | 04/07/18 08:11 | 04/13/18 01:33 | 1 |
| Perfluorooctanoic acid (PFOA) | 7.8 | U | 20 | 2.7 | ng/L | | 04/07/18 08:11 | 04/13/18 01:33 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U | 24 | 7.8 | ng/L | | 04/07/18 08:11 | 04/13/18 01:33 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 29 | 5.4 | ng/L | | 04/07/18 08:11 | 04/13/18 01:33 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.8 | 1.9 | ng/L | | 04/07/18 08:11 | 04/13/18 01:33 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 35 | U | 88 | 16 | ng/L | | 04/07/18 08:11 | 04/13/18 01:33 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 93 | | 70 - 130 | 04/07/18 08:11 | 04/13/18 01:33 | 1 |
| 13C2 PFDA | 96 | | 70 - 130 | 04/07/18 08:11 | 04/13/18 01:33 | 1 |

Client Sample ID: NAWC-032819-FRB-127

Lab Sample ID: 320-37675-9

Date Collected: 03/29/18 09:35

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 6.8 | ng/L | | 04/07/18 08:11 | 04/13/18 01:37 | 1 |
| Perfluorooctanoic acid (PFOA) | 8.0 | U | 20 | 2.8 | ng/L | | 04/07/18 08:11 | 04/13/18 01:37 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U | 24 | 8.0 | ng/L | | 04/07/18 08:11 | 04/13/18 01:37 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 5.5 | ng/L | | 04/07/18 08:11 | 04/13/18 01:37 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 1.9 | ng/L | | 04/07/18 08:11 | 04/13/18 01:37 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 16 | ng/L | | 04/07/18 08:11 | 04/13/18 01:37 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 95 | | 70 - 130 | 04/07/18 08:11 | 04/13/18 01:37 | 1 |
| 13C2 PFDA | 100 | | 70 - 130 | 04/07/18 08:11 | 04/13/18 01:37 | 1 |

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-RW-195

Lab Sample ID: 320-37675-10

Date Collected: 03/29/18 10:10

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS) | 14 | J M | 40 | 6.8 | ng/L | | 04/07/18 08:11 | 04/13/18 01:42 | 1 |
| Perfluorooctanoic acid (PFOA) | 12 | J | 20 | 2.8 | ng/L | | 04/07/18 08:11 | 04/13/18 01:42 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U M | 24 | 8.0 | ng/L | | 04/07/18 08:11 | 04/13/18 01:42 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 5.5 | ng/L | | 04/07/18 08:11 | 04/13/18 01:42 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 4.2 | J | 10 | 1.9 | ng/L | | 04/07/18 08:11 | 04/13/18 01:42 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 16 | ng/L | | 04/07/18 08:11 | 04/13/18 01:42 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 97 | | 70 - 130 | 04/07/18 08:11 | 04/13/18 01:42 | 1 |
| 13C2 PFDA | 91 | | 70 - 130 | 04/07/18 08:11 | 04/13/18 01:42 | 1 |

Client Sample ID: NAWC-032819-FRB-195

Lab Sample ID: 320-37675-11

Date Collected: 03/29/18 10:05

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 6.6 | ng/L | | 04/07/18 08:11 | 04/13/18 01:47 | 1 |
| Perfluorooctanoic acid (PFOA) | 7.8 | U | 20 | 2.7 | ng/L | | 04/07/18 08:11 | 04/13/18 01:47 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U | 23 | 7.8 | ng/L | | 04/07/18 08:11 | 04/13/18 01:47 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 29 | 5.4 | ng/L | | 04/07/18 08:11 | 04/13/18 01:47 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.8 | 1.9 | ng/L | | 04/07/18 08:11 | 04/13/18 01:47 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 35 | U | 88 | 16 | ng/L | | 04/07/18 08:11 | 04/13/18 01:47 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 97 | | 70 - 130 | 04/07/18 08:11 | 04/13/18 01:47 | 1 |
| 13C2 PFDA | 94 | | 70 - 130 | 04/07/18 08:11 | 04/13/18 01:47 | 1 |

Client Sample ID: NAWC-032819-RW-048

Lab Sample ID: 320-37675-12

Date Collected: 03/29/18 10:40

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS) | 16 | U M | 41 | 6.9 | ng/L | | 04/07/18 08:19 | 04/13/18 02:10 | 1 |
| Perfluorooctanoic acid (PFOA) | 4.8 | J | 20 | 2.9 | ng/L | | 04/07/18 08:19 | 04/13/18 02:10 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U | 24 | 8.2 | ng/L | | 04/07/18 08:19 | 04/13/18 02:10 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U M | 31 | 5.6 | ng/L | | 04/07/18 08:19 | 04/13/18 02:10 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 4.1 | U | 10 | 1.9 | ng/L | | 04/07/18 08:19 | 04/13/18 02:10 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 37 | U M | 92 | 16 | ng/L | | 04/07/18 08:19 | 04/13/18 02:10 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 91 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 02:10 | 1 |
| 13C2 PFDA | 96 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 02:10 | 1 |

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-FRB-048

Lab Sample ID: 320-37675-13

Date Collected: 03/29/18 10:35

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 6.8 | ng/L | | 04/07/18 08:19 | 04/13/18 02:15 | 1 |
| Perfluorooctanoic acid (PFOA) | 8.0 | U | 20 | 2.8 | ng/L | | 04/07/18 08:19 | 04/13/18 02:15 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U | 24 | 8.0 | ng/L | | 04/07/18 08:19 | 04/13/18 02:15 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 5.5 | ng/L | | 04/07/18 08:19 | 04/13/18 02:15 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 1.9 | ng/L | | 04/07/18 08:19 | 04/13/18 02:15 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 16 | ng/L | | 04/07/18 08:19 | 04/13/18 02:15 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 94 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 02:15 | 1 |
| 13C2 PFDA | 94 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 02:15 | 1 |

Client Sample ID: NAWC-032819-RW-139

Lab Sample ID: 320-37675-14

Date Collected: 03/29/18 11:10

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|------------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS) | 16 | U M | 40 | 6.8 | ng/L | | 04/07/18 08:19 | 04/13/18 02:29 | 1 |
| Perfluorooctanoic acid (PFOA) | 9.5 | J | 20 | 2.8 | ng/L | | 04/07/18 08:19 | 04/13/18 02:29 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U M | 24 | 8.0 | ng/L | | 04/07/18 08:19 | 04/13/18 02:29 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U M | 30 | 5.5 | ng/L | | 04/07/18 08:19 | 04/13/18 02:29 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 4.0 | J M | 10 | 1.9 | ng/L | | 04/07/18 08:19 | 04/13/18 02:29 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 16 | ng/L | | 04/07/18 08:19 | 04/13/18 02:29 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 87 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 02:29 | 1 |
| 13C2 PFDA | 100 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 02:29 | 1 |

Client Sample ID: NAWC-032819-FRB-139

Lab Sample ID: 320-37675-15

Date Collected: 03/29/18 11:05

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 6.7 | ng/L | | 04/07/18 08:19 | 04/13/18 02:43 | 1 |
| Perfluorooctanoic acid (PFOA) | 7.9 | U | 20 | 2.7 | ng/L | | 04/07/18 08:19 | 04/13/18 02:43 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U | 24 | 7.9 | ng/L | | 04/07/18 08:19 | 04/13/18 02:43 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 29 | 5.4 | ng/L | | 04/07/18 08:19 | 04/13/18 02:43 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.8 | 1.9 | ng/L | | 04/07/18 08:19 | 04/13/18 02:43 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 35 | U | 88 | 16 | ng/L | | 04/07/18 08:19 | 04/13/18 02:43 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 98 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 02:43 | 1 |
| 13C2 PFDA | 98 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 02:43 | 1 |

Client Sample Results

Client: Tetra Tech, Inc.
 Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-RW-117

Lab Sample ID: 320-37675-16

Date Collected: 03/29/18 11:40

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 6.6 | ng/L | | 04/07/18 08:19 | 04/13/18 02:47 | 1 |
| Perfluorooctanoic acid (PFOA) | 7.8 | U | 19 | 2.7 | ng/L | | 04/07/18 08:19 | 04/13/18 02:47 | 1 |
| Perfluorononanoic acid (PFNA) | 19 | U | 23 | 7.8 | ng/L | | 04/07/18 08:19 | 04/13/18 02:47 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 29 | 5.4 | ng/L | | 04/07/18 08:19 | 04/13/18 02:47 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.7 | 1.9 | ng/L | | 04/07/18 08:19 | 04/13/18 02:47 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 35 | U | 88 | 16 | ng/L | | 04/07/18 08:19 | 04/13/18 02:47 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 97 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 02:47 | 1 |
| 13C2 PFDA | 98 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 02:47 | 1 |

Client Sample ID: NAWC-032819-FRB-117

Lab Sample ID: 320-37675-17

Date Collected: 03/29/18 11:35

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS) | 28 | J M | 39 | 6.6 | ng/L | | 04/07/18 08:19 | 04/13/18 02:52 | 1 |
| Perfluorooctanoic acid (PFOA) | 20 | | 19 | 2.7 | ng/L | | 04/07/18 08:19 | 04/13/18 02:52 | 1 |
| Perfluorononanoic acid (PFNA) | 19 | U | 23 | 7.7 | ng/L | | 04/07/18 08:19 | 04/13/18 02:52 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 15 | J | 29 | 5.3 | ng/L | | 04/07/18 08:19 | 04/13/18 02:52 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 4.9 | J | 9.7 | 1.8 | ng/L | | 04/07/18 08:19 | 04/13/18 02:52 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 35 | U | 87 | 16 | ng/L | | 04/07/18 08:19 | 04/13/18 02:52 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 96 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 02:52 | 1 |
| 13C2 PFDA | 88 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 02:52 | 1 |

Client Sample ID: NAWC-032819-RW-181

Lab Sample ID: 320-37675-18

Date Collected: 03/29/18 12:10

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 6.8 | ng/L | | 04/07/18 08:19 | 04/13/18 02:57 | 1 |
| Perfluorooctanoic acid (PFOA) | 5.2 | J | 20 | 2.8 | ng/L | | 04/07/18 08:19 | 04/13/18 02:57 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U | 24 | 8.0 | ng/L | | 04/07/18 08:19 | 04/13/18 02:57 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 5.5 | ng/L | | 04/07/18 08:19 | 04/13/18 02:57 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 1.9 | ng/L | | 04/07/18 08:19 | 04/13/18 02:57 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 16 | ng/L | | 04/07/18 08:19 | 04/13/18 02:57 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 94 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 02:57 | 1 |
| 13C2 PFDA | 86 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 02:57 | 1 |

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-FRB-181

Lab Sample ID: 320-37675-19

Date Collected: 03/29/18 12:05

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 6.8 | ng/L | | 04/07/18 08:19 | 04/13/18 03:01 | 1 |
| Perfluorooctanoic acid (PFOA) | 8.0 | U | 20 | 2.8 | ng/L | | 04/07/18 08:19 | 04/13/18 03:01 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U | 24 | 8.0 | ng/L | | 04/07/18 08:19 | 04/13/18 03:01 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 5.5 | ng/L | | 04/07/18 08:19 | 04/13/18 03:01 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 1.9 | ng/L | | 04/07/18 08:19 | 04/13/18 03:01 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 16 | ng/L | | 04/07/18 08:19 | 04/13/18 03:01 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 100 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 03:01 | 1 |
| 13C2 PFDA | 104 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 03:01 | 1 |

Client Sample ID: NAWC-032819-RW-138

Lab Sample ID: 320-37675-20

Date Collected: 03/29/18 13:10

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|------------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS) | 8.0 | J M | 41 | 7.0 | ng/L | | 04/07/18 08:19 | 04/13/18 03:06 | 1 |
| Perfluorooctanoic acid (PFOA) | 30 | | 21 | 2.9 | ng/L | | 04/07/18 08:19 | 04/13/18 03:06 | 1 |
| Perfluorononanoic acid (PFNA) | 21 | U M | 25 | 8.3 | ng/L | | 04/07/18 08:19 | 04/13/18 03:06 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U M | 31 | 5.7 | ng/L | | 04/07/18 08:19 | 04/13/18 03:06 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 7.4 | J | 10 | 2.0 | ng/L | | 04/07/18 08:19 | 04/13/18 03:06 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 37 | U | 93 | 17 | ng/L | | 04/07/18 08:19 | 04/13/18 03:06 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 98 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 03:06 | 1 |
| 13C2 PFDA | 99 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 03:06 | 1 |

Client Sample ID: NAWC-032819-FRB-138

Lab Sample ID: 320-37675-21

Date Collected: 03/29/18 13:05

Matrix: Water

Date Received: 03/30/18 09:00

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

| Analyte | Result | Qualifier | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 6.7 | ng/L | | 04/07/18 08:19 | 04/13/18 03:11 | 1 |
| Perfluorooctanoic acid (PFOA) | 7.9 | U | 20 | 2.8 | ng/L | | 04/07/18 08:19 | 04/13/18 03:11 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U | 24 | 7.9 | ng/L | | 04/07/18 08:19 | 04/13/18 03:11 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 5.4 | ng/L | | 04/07/18 08:19 | 04/13/18 03:11 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.9 | 1.9 | ng/L | | 04/07/18 08:19 | 04/13/18 03:11 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 36 | U | 89 | 16 | ng/L | | 04/07/18 08:19 | 04/13/18 03:11 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 96 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 03:11 | 1 |
| 13C2 PFDA | 91 | | 70 - 130 | 04/07/18 08:19 | 04/13/18 03:11 | 1 |

Default Detection Limits

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

Prep: 537

| Analyte | LOQ | DL | Units | Method |
|--------------------------------------|-----|-----|-------|--------|
| Perfluorobutanesulfonic acid (PFBS) | 90 | 16 | ng/L | 537 |
| Perfluoroheptanoic acid (PFHpA) | 10 | 1.9 | ng/L | 537 |
| Perfluorohexanesulfonic acid (PFHxS) | 30 | 5.5 | ng/L | 537 |
| Perfluorononanoic acid (PFNA) | 24 | 8.0 | ng/L | 537 |
| Perfluorooctanesulfonic acid (PFOS) | 40 | 6.8 | ng/L | 537 |
| Perfluorooctanoic acid (PFOA) | 20 | 2.8 | ng/L | 537 |

Surrogate Summary

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Water

Prep Type: Total/NA

| Lab Sample ID | Client Sample ID | Percent Surrogate Recovery (Acceptance Limits) | |
|---------------------|------------------------|--|------------------|
| | | PFHxA (70-130) | PFDA (70-130) |
| 320-37675-1 | WGNA-032918-DUP-31 | 95 | 93 |
| 320-37675-2 | NAWC-032819-RW-286 | 98 | 101 |
| 320-37675-3 | NAWC-032819-FRB-286 | 101 | 95 |
| 320-37675-4 | WGNA-032819-RW-0518 | 106 | 104 |
| 320-37675-5 | WGNA-032819-FRB-0518 | 100 | 98 |
| 320-37675-6 | NAWC-032819-RW-010 | 91 | 88 |
| 320-37675-7 | NAWC-032819-FRB-010 | 101 | 101 |
| 320-37675-8 | NAWC-032819-RW-127 | 93 | 96 |
| 320-37675-9 | NAWC-032819-FRB-127 | 95 | 100 |
| 320-37675-10 | NAWC-032819-RW-195 | 97 | 91 |
| 320-37675-11 | NAWC-032819-FRB-195 | 97 | 94 |
| 320-37675-12 | NAWC-032819-RW-048 | 91 | 96 |
| 320-37675-13 | NAWC-032819-FRB-048 | 94 | 94 |
| 320-37675-14 | NAWC-032819-RW-139 | 87 | 100 |
| 320-37675-14 LMS | NAWC-032819-RW-139 | 101 | 97 |
| 320-37675-14 LMSD | NAWC-032819-RW-139 | 93 | 98 |
| 320-37675-15 | NAWC-032819-FRB-139 | 98 | 98 |
| 320-37675-16 | NAWC-032819-RW-117 | 97 | 98 |
| 320-37675-17 | NAWC-032819-FRB-117 | 96 | 88 |
| 320-37675-18 | NAWC-032819-RW-181 | 94 | 86 |
| 320-37675-19 | NAWC-032819-FRB-181 | 100 | 104 |
| 320-37675-20 | NAWC-032819-RW-138 | 98 | 99 |
| 320-37675-21 | NAWC-032819-FRB-138 | 96 | 91 |
| LCS 320-216791/2-A | Lab Control Sample | 95 | 93 |
| LCSD 320-216791/3-A | Lab Control Sample Dup | 87 | 101 |
| LLCS 320-216792/2-A | Lab Control Sample | 99 | 92 |
| MB 320-216791/1-A | Method Blank | 83 | 94 |
| MB 320-216792/1-A | Method Blank | 91 | 90 |

Surrogate Legend

PFHxA = 13C2 PFHxA

PFDA = 13C2 PFDA

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Method: 537 - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MB 320-216791/1-A
Matrix: Water
Analysis Batch: 217814

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 216791

| Analyte | MB | MB | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| | Result | Qualifier | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 6.8 | ng/L | | 04/07/18 08:11 | 04/13/18 00:37 | 1 |
| Perfluorooctanoic acid (PFOA) | 8.0 | U | 20 | 2.8 | ng/L | | 04/07/18 08:11 | 04/13/18 00:37 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U | 24 | 8.0 | ng/L | | 04/07/18 08:11 | 04/13/18 00:37 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 5.5 | ng/L | | 04/07/18 08:11 | 04/13/18 00:37 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 1.9 | ng/L | | 04/07/18 08:11 | 04/13/18 00:37 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 16 | ng/L | | 04/07/18 08:11 | 04/13/18 00:37 | 1 |

| Surrogate | MB | MB | Limits | Prepared | Analyzed | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| | %Recovery | Qualifier | | | | |
| 13C2 PFHxA | 83 | | 70 - 130 | 04/07/18 08:11 | 04/13/18 00:37 | 1 |
| 13C2 PFDA | 94 | | 70 - 130 | 04/07/18 08:11 | 04/13/18 00:37 | 1 |

Lab Sample ID: LCS 320-216791/2-A
Matrix: Water
Analysis Batch: 217814

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 216791
%Rec. Limits

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|--------------------------------------|-------------|------------|---------------|------|---|------|--------------|
| | | | | | | | |
| Perfluorooctanoic acid (PFOA) | 66.0 | 67.8 | | ng/L | | 103 | 70 - 130 |
| Perfluorononanoic acid (PFNA) | 66.0 | 62.6 | | ng/L | | 95 | 70 - 130 |
| Perfluorohexanesulfonic acid (PFHxS) | 100 | 105 | | ng/L | | 105 | 70 - 130 |
| Perfluoroheptanoic acid (PFHpA) | 32.0 | 32.0 | | ng/L | | 100 | 70 - 130 |
| Perfluorobutanesulfonic acid (PFBS) | 300 | 303 | | ng/L | | 101 | 70 - 130 |

| Surrogate | LCS | LCS | Limits |
|------------|-----------|-----------|----------|
| | %Recovery | Qualifier | |
| 13C2 PFHxA | 95 | | 70 - 130 |
| 13C2 PFDA | 93 | | 70 - 130 |

Lab Sample ID: LCSD 320-216791/3-A
Matrix: Water
Analysis Batch: 217814

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 216791
%Rec. RPD Limit

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|--------------------------------------|-------------|-------------|----------------|------|---|------|--------------|-----|-----------|
| | | | | | | | | | |
| Perfluorooctanoic acid (PFOA) | 66.0 | 65.5 | | ng/L | | 99 | 70 - 130 | 3 | 30 |
| Perfluorononanoic acid (PFNA) | 66.0 | 62.7 | | ng/L | | 95 | 70 - 130 | 0 | 30 |
| Perfluorohexanesulfonic acid (PFHxS) | 100 | 102 | | ng/L | | 102 | 70 - 130 | 3 | 30 |
| Perfluoroheptanoic acid (PFHpA) | 32.0 | 31.0 | | ng/L | | 97 | 70 - 130 | 3 | 30 |
| Perfluorobutanesulfonic acid (PFBS) | 300 | 266 | | ng/L | | 89 | 70 - 130 | 13 | 30 |

| Surrogate | LCSD | LCSD | Limits |
|------------|-----------|-----------|----------|
| | %Recovery | Qualifier | |
| 13C2 PFHxA | 87 | | 70 - 130 |
| 13C2 PFDA | 101 | | 70 - 130 |

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Method: 537 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: MB 320-216792/1-A
Matrix: Water
Analysis Batch: 217818

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 216792

| Analyte | MB | MB | LOQ | DL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| | Result | Qualifier | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 6.8 | ng/L | | 04/07/18 08:19 | 04/13/18 02:01 | 1 |
| Perfluorooctanoic acid (PFOA) | 8.0 | U | 20 | 2.8 | ng/L | | 04/07/18 08:19 | 04/13/18 02:01 | 1 |
| Perfluorononanoic acid (PFNA) | 20 | U | 24 | 8.0 | ng/L | | 04/07/18 08:19 | 04/13/18 02:01 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 5.5 | ng/L | | 04/07/18 08:19 | 04/13/18 02:01 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 1.9 | ng/L | | 04/07/18 08:19 | 04/13/18 02:01 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 16 | ng/L | | 04/07/18 08:19 | 04/13/18 02:01 | 1 |
| Surrogate | MB | MB | Limits | | | D | Prepared | Analyzed | Dil Fac |
| | %Recovery | Qualifier | | | | | | | |
| 13C2 PFHxA | 91 | | 70 - 130 | | | | 04/07/18 08:19 | 04/13/18 02:01 | 1 |
| 13C2 PFDA | 90 | | 70 - 130 | | | | 04/07/18 08:19 | 04/13/18 02:01 | 1 |

Lab Sample ID: LLCS 320-216792/2-A
Matrix: Water
Analysis Batch: 217818

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 216792

| Analyte | Spike Added | LLCS | LLCS | Unit | D | %Rec | Limits | |
|--------------------------------------|-------------|-----------|-----------|------|---|------|----------|--------|
| | | Result | Qualifier | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 40.2 | 38.9 | J M | ng/L | | 97 | 50 - 150 | |
| Perfluorooctanoic acid (PFOA) | 20.0 | 19.1 | J | ng/L | | 95 | 50 - 150 | |
| Perfluorononanoic acid (PFNA) | 20.0 | 17.5 | J | ng/L | | 88 | 50 - 150 | |
| Perfluorohexanesulfonic acid (PFHxS) | 30.3 | 31.7 | | ng/L | | 105 | 50 - 150 | |
| Perfluoroheptanoic acid (PFHpA) | 10.0 | 9.59 | J | ng/L | | 96 | 50 - 150 | |
| Perfluorobutanesulfonic acid (PFBS) | 90.2 | 97.1 | | ng/L | | 108 | 50 - 150 | |
| Surrogate | LLCS | LLCS | Limits | | | D | %Rec | Limits |
| | %Recovery | Qualifier | | | | | | |
| 13C2 PFHxA | 99 | | 70 - 130 | | | | | |
| 13C2 PFDA | 92 | | 70 - 130 | | | | | |

Lab Sample ID: 320-37675-14 LMS
Matrix: Water
Analysis Batch: 217820

Client Sample ID: NAWC-032819-RW-139
Prep Type: Total/NA
Prep Batch: 216792

| Analyte | Sample | Sample | Spike Added | LMS | LMS | Unit | D | %Rec | Limits |
|--------------------------------------|-----------|-----------|-------------|--------|-----------|------|------|--------|----------|
| | Result | Qualifier | | Result | Qualifier | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 16 | U M | 39.3 | 42.7 | M | ng/L | | 109 | 50 - 150 |
| Perfluorooctanoic acid (PFOA) | 9.5 | J | 19.6 | 28.1 | | ng/L | | 95 | 50 - 150 |
| Perfluorononanoic acid (PFNA) | 20 | U M | 19.6 | 19.0 | J | ng/L | | 97 | 50 - 150 |
| Perfluorohexanesulfonic acid (PFHxS) | 12 | U M | 29.7 | 31.3 | | ng/L | | 106 | 50 - 150 |
| Perfluoroheptanoic acid (PFHpA) | 4.0 | J M | 9.78 | 13.4 | | ng/L | | 96 | 50 - 150 |
| Perfluorobutanesulfonic acid (PFBS) | 36 | U | 88.2 | 104 | | ng/L | | 118 | 50 - 150 |
| Surrogate | LMS | LMS | Limits | | | D | %Rec | Limits | |
| | %Recovery | Qualifier | | | | | | | |
| 13C2 PFHxA | 101 | | 70 - 130 | | | | | | |
| 13C2 PFDA | 97 | | 70 - 130 | | | | | | |

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

LCMS

Prep Batch: 216791

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 320-37675-1 | WGNA-032918-DUP-31 | Total/NA | Water | 537 | |
| 320-37675-2 | NAWC-032819-RW-286 | Total/NA | Water | 537 | |
| 320-37675-3 | NAWC-032819-FRB-286 | Total/NA | Water | 537 | |
| 320-37675-4 | WGNA-032819-RW-0518 | Total/NA | Water | 537 | |
| 320-37675-5 | WGNA-032819-FRB-0518 | Total/NA | Water | 537 | |
| 320-37675-6 | NAWC-032819-RW-010 | Total/NA | Water | 537 | |
| 320-37675-7 | NAWC-032819-FRB-010 | Total/NA | Water | 537 | |
| 320-37675-8 | NAWC-032819-RW-127 | Total/NA | Water | 537 | |
| 320-37675-9 | NAWC-032819-FRB-127 | Total/NA | Water | 537 | |
| 320-37675-10 | NAWC-032819-RW-195 | Total/NA | Water | 537 | |
| 320-37675-11 | NAWC-032819-FRB-195 | Total/NA | Water | 537 | |
| MB 320-216791/1-A | Method Blank | Total/NA | Water | 537 | |
| LCS 320-216791/2-A | Lab Control Sample | Total/NA | Water | 537 | |
| LCSD 320-216791/3-A | Lab Control Sample Dup | Total/NA | Water | 537 | |

Prep Batch: 216792

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|---------------------|-----------|--------|--------|------------|
| 320-37675-12 | NAWC-032819-RW-048 | Total/NA | Water | 537 | |
| 320-37675-13 | NAWC-032819-FRB-048 | Total/NA | Water | 537 | |
| 320-37675-14 | NAWC-032819-RW-139 | Total/NA | Water | 537 | |
| 320-37675-15 | NAWC-032819-FRB-139 | Total/NA | Water | 537 | |
| 320-37675-16 | NAWC-032819-RW-117 | Total/NA | Water | 537 | |
| 320-37675-17 | NAWC-032819-FRB-117 | Total/NA | Water | 537 | |
| 320-37675-18 | NAWC-032819-RW-181 | Total/NA | Water | 537 | |
| 320-37675-19 | NAWC-032819-FRB-181 | Total/NA | Water | 537 | |
| 320-37675-20 | NAWC-032819-RW-138 | Total/NA | Water | 537 | |
| 320-37675-21 | NAWC-032819-FRB-138 | Total/NA | Water | 537 | |
| MB 320-216792/1-A | Method Blank | Total/NA | Water | 537 | |
| LLCS 320-216792/2-A | Lab Control Sample | Total/NA | Water | 537 | |
| 320-37675-14 LMS | NAWC-032819-RW-139 | Total/NA | Water | 537 | |
| 320-37675-14 LMSD | NAWC-032819-RW-139 | Total/NA | Water | 537 | |

Analysis Batch: 217814

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 320-37675-1 | WGNA-032918-DUP-31 | Total/NA | Water | 537 | 216791 |
| 320-37675-2 | NAWC-032819-RW-286 | Total/NA | Water | 537 | 216791 |
| 320-37675-3 | NAWC-032819-FRB-286 | Total/NA | Water | 537 | 216791 |
| 320-37675-4 | WGNA-032819-RW-0518 | Total/NA | Water | 537 | 216791 |
| 320-37675-5 | WGNA-032819-FRB-0518 | Total/NA | Water | 537 | 216791 |
| 320-37675-6 | NAWC-032819-RW-010 | Total/NA | Water | 537 | 216791 |
| 320-37675-7 | NAWC-032819-FRB-010 | Total/NA | Water | 537 | 216791 |
| MB 320-216791/1-A | Method Blank | Total/NA | Water | 537 | 216791 |
| LCS 320-216791/2-A | Lab Control Sample | Total/NA | Water | 537 | 216791 |
| LCSD 320-216791/3-A | Lab Control Sample Dup | Total/NA | Water | 537 | 216791 |

Analysis Batch: 217816

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------|---------------------|-----------|--------|--------|------------|
| 320-37675-8 | NAWC-032819-RW-127 | Total/NA | Water | 537 | 216791 |
| 320-37675-9 | NAWC-032819-FRB-127 | Total/NA | Water | 537 | 216791 |
| 320-37675-10 | NAWC-032819-RW-195 | Total/NA | Water | 537 | 216791 |
| 320-37675-11 | NAWC-032819-FRB-195 | Total/NA | Water | 537 | 216791 |

TestAmerica Sacramento

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Analysis Batch: 217818

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|---------------------|-----------|--------|--------|------------|
| 320-37675-12 | NAWC-032819-RW-048 | Total/NA | Water | 537 | 216792 |
| 320-37675-13 | NAWC-032819-FRB-048 | Total/NA | Water | 537 | 216792 |
| MB 320-216792/1-A | Method Blank | Total/NA | Water | 537 | 216792 |
| LLCS 320-216792/2-A | Lab Control Sample | Total/NA | Water | 537 | 216792 |

Analysis Batch: 217820

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|-------------------|---------------------|-----------|--------|--------|------------|
| 320-37675-14 | NAWC-032819-RW-139 | Total/NA | Water | 537 | 216792 |
| 320-37675-15 | NAWC-032819-FRB-139 | Total/NA | Water | 537 | 216792 |
| 320-37675-16 | NAWC-032819-RW-117 | Total/NA | Water | 537 | 216792 |
| 320-37675-17 | NAWC-032819-FRB-117 | Total/NA | Water | 537 | 216792 |
| 320-37675-18 | NAWC-032819-RW-181 | Total/NA | Water | 537 | 216792 |
| 320-37675-19 | NAWC-032819-FRB-181 | Total/NA | Water | 537 | 216792 |
| 320-37675-20 | NAWC-032819-RW-138 | Total/NA | Water | 537 | 216792 |
| 320-37675-21 | NAWC-032819-FRB-138 | Total/NA | Water | 537 | 216792 |
| 320-37675-14 LMS | NAWC-032819-RW-139 | Total/NA | Water | 537 | 216792 |
| 320-37675-14 LMSD | NAWC-032819-RW-139 | Total/NA | Water | 537 | 216792 |

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Client Sample ID: WGNA-032918-DUP-31

Date Collected: 03/29/18 07:00

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-1

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216791 | 04/07/18 08:11 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217814 | 04/13/18 00:51 | JRB | TAL SAC |

Client Sample ID: NAWC-032819-RW-286

Date Collected: 03/29/18 08:10

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-2

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216791 | 04/07/18 08:11 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217814 | 04/13/18 00:55 | JRB | TAL SAC |

Client Sample ID: NAWC-032819-FRB-286

Date Collected: 03/29/18 08:05

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-3

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216791 | 04/07/18 08:11 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217814 | 04/13/18 01:00 | JRB | TAL SAC |

Client Sample ID: WGNA-032819-RW-0518

Date Collected: 03/29/18 08:40

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-4

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216791 | 04/07/18 08:11 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217814 | 04/13/18 01:05 | JRB | TAL SAC |

Client Sample ID: WGNA-032819-FRB-0518

Date Collected: 03/29/18 08:35

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-5

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216791 | 04/07/18 08:11 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217814 | 04/13/18 01:09 | JRB | TAL SAC |

Client Sample ID: NAWC-032819-RW-010

Date Collected: 03/29/18 09:10

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-6

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216791 | 04/07/18 08:11 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217814 | 04/13/18 01:14 | JRB | TAL SAC |

TestAmerica Sacramento

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-FRB-010

Lab Sample ID: 320-37675-7

Date Collected: 03/29/18 09:05

Matrix: Water

Date Received: 03/30/18 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216791 | 04/07/18 08:11 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217814 | 04/13/18 01:19 | JRB | TAL SAC |

Client Sample ID: NAWC-032819-RW-127

Lab Sample ID: 320-37675-8

Date Collected: 03/29/18 09:40

Matrix: Water

Date Received: 03/30/18 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216791 | 04/07/18 08:11 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217816 | 04/13/18 01:33 | JRB | TAL SAC |

Client Sample ID: NAWC-032819-FRB-127

Lab Sample ID: 320-37675-9

Date Collected: 03/29/18 09:35

Matrix: Water

Date Received: 03/30/18 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216791 | 04/07/18 08:11 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217816 | 04/13/18 01:37 | JRB | TAL SAC |

Client Sample ID: NAWC-032819-RW-195

Lab Sample ID: 320-37675-10

Date Collected: 03/29/18 10:10

Matrix: Water

Date Received: 03/30/18 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216791 | 04/07/18 08:11 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217816 | 04/13/18 01:42 | JRB | TAL SAC |

Client Sample ID: NAWC-032819-FRB-195

Lab Sample ID: 320-37675-11

Date Collected: 03/29/18 10:05

Matrix: Water

Date Received: 03/30/18 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216791 | 04/07/18 08:11 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217816 | 04/13/18 01:47 | JRB | TAL SAC |

Client Sample ID: NAWC-032819-RW-048

Lab Sample ID: 320-37675-12

Date Collected: 03/29/18 10:40

Matrix: Water

Date Received: 03/30/18 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216792 | 04/07/18 08:19 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217818 | 04/13/18 02:10 | JRB | TAL SAC |

TestAmerica Sacramento

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-FRB-048

Lab Sample ID: 320-37675-13

Date Collected: 03/29/18 10:35

Matrix: Water

Date Received: 03/30/18 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216792 | 04/07/18 08:19 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217818 | 04/13/18 02:15 | JRB | TAL SAC |

Client Sample ID: NAWC-032819-RW-139

Lab Sample ID: 320-37675-14

Date Collected: 03/29/18 11:10

Matrix: Water

Date Received: 03/30/18 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216792 | 04/07/18 08:19 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217820 | 04/13/18 02:29 | JRB | TAL SAC |

Client Sample ID: NAWC-032819-FRB-139

Lab Sample ID: 320-37675-15

Date Collected: 03/29/18 11:05

Matrix: Water

Date Received: 03/30/18 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216792 | 04/07/18 08:19 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217820 | 04/13/18 02:43 | JRB | TAL SAC |

Client Sample ID: NAWC-032819-RW-117

Lab Sample ID: 320-37675-16

Date Collected: 03/29/18 11:40

Matrix: Water

Date Received: 03/30/18 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216792 | 04/07/18 08:19 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217820 | 04/13/18 02:47 | JRB | TAL SAC |

Client Sample ID: NAWC-032819-FRB-117

Lab Sample ID: 320-37675-17

Date Collected: 03/29/18 11:35

Matrix: Water

Date Received: 03/30/18 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216792 | 04/07/18 08:19 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217820 | 04/13/18 02:52 | JRB | TAL SAC |

Client Sample ID: NAWC-032819-RW-181

Lab Sample ID: 320-37675-18

Date Collected: 03/29/18 12:10

Matrix: Water

Date Received: 03/30/18 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216792 | 04/07/18 08:19 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217820 | 04/13/18 02:57 | JRB | TAL SAC |

TestAmerica Sacramento

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-FRB-181

Lab Sample ID: 320-37675-19

Date Collected: 03/29/18 12:05

Matrix: Water

Date Received: 03/30/18 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216792 | 04/07/18 08:19 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217820 | 04/13/18 03:01 | JRB | TAL SAC |

Client Sample ID: NAWC-032819-RW-138

Lab Sample ID: 320-37675-20

Date Collected: 03/29/18 13:10

Matrix: Water

Date Received: 03/30/18 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216792 | 04/07/18 08:19 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217820 | 04/13/18 03:06 | JRB | TAL SAC |

Client Sample ID: NAWC-032819-FRB-138

Lab Sample ID: 320-37675-21

Date Collected: 03/29/18 13:05

Matrix: Water

Date Received: 03/30/18 09:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 537 | | | 216792 | 04/07/18 08:19 | SK | TAL SAC |
| Total/NA | Analysis | 537 | | 1 | 217820 | 04/13/18 03:11 | JRB | TAL SAC |

Laboratory References:

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

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
 Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

Laboratory: TestAmerica Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|--------------------|---------------|------------|-----------------------|-----------------|
| Alaska (UST) | State Program | 10 | 17-020 | 01-20-21 |
| Arizona | State Program | 9 | AZ0708 | 08-11-18 |
| Arkansas DEQ | State Program | 6 | 88-0691 | 06-17-18 |
| California | State Program | 9 | 2897 | 01-31-19 |
| Colorado | State Program | 8 | CA00044 | 08-31-18 |
| Connecticut | State Program | 1 | PH-0691 | 06-30-19 |
| Florida | NELAP | 4 | E87570 | 06-30-18 |
| Georgia | State Program | 4 | N/A | 01-28-19 |
| Hawaii | State Program | 9 | N/A | 01-29-19 |
| Illinois | NELAP | 5 | 200060 | 03-17-19 |
| Kansas | NELAP | 7 | E-10375 | 10-31-18 |
| L-A-B | DoD ELAP | | L2468 | 01-20-21 |
| Louisiana | NELAP | 6 | 30612 | 06-30-18 |
| Maine | State Program | 1 | CA0004 | 04-14-18 * |
| Michigan | State Program | 5 | 9947 | 01-31-20 |
| Nevada | State Program | 9 | CA00044 | 07-31-18 |
| New Hampshire | NELAP | 1 | 2997 | 04-18-18 * |
| New Jersey | NELAP | 2 | CA005 | 06-30-18 |
| New York | NELAP | 2 | 11666 | 03-31-19 |
| Oregon | NELAP | 10 | 4040 | 01-29-19 |
| Pennsylvania | NELAP | 3 | 68-01272 | 03-31-19 |
| Texas | NELAP | 6 | T104704399 | 05-31-18 |
| US Fish & Wildlife | Federal | | LE148388-0 | 07-31-18 |
| USDA | Federal | | P330-11-00436 | 01-17-21 |
| USEPA UCMR | Federal | 1 | CA00044 | 11-06-18 |
| Utah | NELAP | 8 | CA00044 | 02-28-19 |
| Virginia | NELAP | 3 | 460278 | 03-14-19 |
| Washington | State Program | 10 | C581 | 05-05-18 |
| West Virginia (DW) | State Program | 3 | 9930C | 12-31-18 |
| Wyoming | State Program | 8 | 8TMS-L | 01-28-19 |

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-37675-1

| Method | Method Description | Protocol | Laboratory |
|---------------|--|-----------------|-------------------|
| 537 | Extraction of Perfluorinated Alkyl Acids | EPA | TAL SAC |
| 537 | Perfluorinated Alkyl Acids (LC/MS) | EPA | TAL SAC |

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-37675-1

Project/Site: Warminster: PFAS, NAS JRB Willow Grove

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---------------|----------------------|--------|----------------|----------------|
| 320-37675-1 | WGNA-032918-DUP-31 | Water | 03/29/18 07:00 | 03/30/18 09:00 |
| 320-37675-2 | NAWC-032819-RW-286 | Water | 03/29/18 08:10 | 03/30/18 09:00 |
| 320-37675-3 | NAWC-032819-FRB-286 | Water | 03/29/18 08:05 | 03/30/18 09:00 |
| 320-37675-4 | WGNA-032819-RW-0518 | Water | 03/29/18 08:40 | 03/30/18 09:00 |
| 320-37675-5 | WGNA-032819-FRB-0518 | Water | 03/29/18 08:35 | 03/30/18 09:00 |
| 320-37675-6 | NAWC-032819-RW-010 | Water | 03/29/18 09:10 | 03/30/18 09:00 |
| 320-37675-7 | NAWC-032819-FRB-010 | Water | 03/29/18 09:05 | 03/30/18 09:00 |
| 320-37675-8 | NAWC-032819-RW-127 | Water | 03/29/18 09:40 | 03/30/18 09:00 |
| 320-37675-9 | NAWC-032819-FRB-127 | Water | 03/29/18 09:35 | 03/30/18 09:00 |
| 320-37675-10 | NAWC-032819-RW-195 | Water | 03/29/18 10:10 | 03/30/18 09:00 |
| 320-37675-11 | NAWC-032819-FRB-195 | Water | 03/29/18 10:05 | 03/30/18 09:00 |
| 320-37675-12 | NAWC-032819-RW-048 | Water | 03/29/18 10:40 | 03/30/18 09:00 |
| 320-37675-13 | NAWC-032819-FRB-048 | Water | 03/29/18 10:35 | 03/30/18 09:00 |
| 320-37675-14 | NAWC-032819-RW-139 | Water | 03/29/18 11:10 | 03/30/18 09:00 |
| 320-37675-15 | NAWC-032819-FRB-139 | Water | 03/29/18 11:05 | 03/30/18 09:00 |
| 320-37675-16 | NAWC-032819-RW-117 | Water | 03/29/18 11:40 | 03/30/18 09:00 |
| 320-37675-17 | NAWC-032819-FRB-117 | Water | 03/29/18 11:35 | 03/30/18 09:00 |
| 320-37675-18 | NAWC-032819-RW-181 | Water | 03/29/18 12:10 | 03/30/18 09:00 |
| 320-37675-19 | NAWC-032819-FRB-181 | Water | 03/29/18 12:05 | 03/30/18 09:00 |
| 320-37675-20 | NAWC-032819-RW-138 | Water | 03/29/18 13:10 | 03/30/18 09:00 |
| 320-37675-21 | NAWC-032819-FRB-138 | Water | 03/29/18 13:05 | 03/30/18 09:00 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217453

Lab Sample ID: IC 320-217453/3 Client Sample ID: _____

Date Analyzed: 04/11/18 11:45 Lab File ID: 2018.04.11_537ICALB_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|--------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.10 | Peak assignment corrected | westendor fc | 04/11/18 12:31 |

Lab Sample ID: IC 320-217453/4 Client Sample ID: _____

Date Analyzed: 04/11/18 11:50 Lab File ID: 2018.04.11_537ICALB_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|--------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.10 | Peak assignment corrected | westendor fc | 04/11/18 12:31 |

Lab Sample ID: IC 320-217453/5 Client Sample ID: _____

Date Analyzed: 04/11/18 11:55 Lab File ID: 2018.04.11_537ICALB_006.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|--------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.11 | Peak assignment corrected | westendor fc | 04/11/18 12:31 |

Lab Sample ID: IC 320-217453/6 ICISAV Client Sample ID: _____

Date Analyzed: 04/11/18 11:59 Lab File ID: 2018.04.11_537ICALB_007.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|--------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.10 | Peak assignment corrected | westendor fc | 04/11/18 12:31 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217453

Lab Sample ID: IC 320-217453/7 Client Sample ID: _____

Date Analyzed: 04/11/18 12:04 Lab File ID: 2018.04.11_537ICALB_008.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|--------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.10 | Peak assignment corrected | westendor fc | 04/11/18 12:31 |

Lab Sample ID: IC 320-217453/8 Client Sample ID: _____

Date Analyzed: 04/11/18 12:09 Lab File ID: 2018.04.11_537ICALB_009.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|--------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.09 | Peak assignment corrected | westendor fc | 04/11/18 12:31 |

Lab Sample ID: CCVL 320-217453/10 Client Sample ID: _____

Date Analyzed: 04/11/18 12:18 Lab File ID: 2018.04.11_537ICALB_011.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|--------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.10 | Peak assignment corrected | westendor fc | 04/11/18 12:32 |

Lab Sample ID: ICV 320-217453/12 Client Sample ID: _____

Date Analyzed: 04/11/18 12:27 Lab File ID: 2018.04.11_537ICALB_013.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|--------------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.10 | Peak assignment corrected | westendor fc | 04/11/18 12:35 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217726

Lab Sample ID: CCVL 320-217726/1 Client Sample ID: _____

Date Analyzed: 04/12/18 14:48 Lab File ID: 2018.04.12_537A_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|---------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.12 | Peak assignment corrected | roycea | 04/12/18 16:14 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217814

Lab Sample ID: CCV 320-217814/1 CCVIS Client Sample ID: _____

Date Analyzed: 04/13/18 00:27 Lab File ID: 2018.04.12_537AA_029.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|---------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.12 | Peak assignment corrected | roycea | 04/13/18 09:24 |

Lab Sample ID: LCS 320-216791/2-A Client Sample ID: _____

Date Analyzed: 04/13/18 00:41 Lab File ID: 2018.04.12_537AA_032.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|---------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.11 | Peak assignment corrected | roycea | 04/13/18 09:25 |

Lab Sample ID: LCSD 320-216791/3-A Client Sample ID: _____

Date Analyzed: 04/13/18 00:46 Lab File ID: 2018.04.12_537AA_033.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|---------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.11 | Peak assignment corrected | roycea | 04/13/18 09:25 |

Lab Sample ID: 320-37675-2 Client Sample ID: NAWC-032819-RW-286

Date Analyzed: 04/13/18 00:55 Lab File ID: 2018.04.12_537AA_035.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|----------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorononanoic acid (PFNA) | 2.12 | Missed Peak | barnettj | 04/13/18 09:55 |
| Perfluorooctanesulfonic acid (PFOS) | 2.12 | Peak assignment corrected | barnettj | 04/13/18 09:55 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217814

Lab Sample ID: 320-37675-4 Client Sample ID: WGNA-032819-RW-0518

Date Analyzed: 04/13/18 01:05 Lab File ID: 2018.04.12_537AA_037.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|----------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.11 | Peak assignment corrected | barnettj | 04/13/18 09:56 |
| Perfluorononanoic acid (PFNA) | 2.12 | Missed Peak | barnettj | 04/13/18 09:56 |

Lab Sample ID: 320-37675-6 Client Sample ID: NAWC-032819-RW-010

Date Analyzed: 04/13/18 01:14 Lab File ID: 2018.04.12_537AA_039.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|----------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.11 | Peak assignment corrected | barnettj | 04/13/18 09:57 |
| Perfluorononanoic acid (PFNA) | 2.12 | Missed Peak | barnettj | 04/13/18 09:57 |

Lab Sample ID: CCV 320-217814/13 CCVIS Client Sample ID: _____

Date Analyzed: 04/13/18 01:23 Lab File ID: 2018.04.12_537AA_041.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|---------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.11 | Peak assignment corrected | roycea | 04/13/18 09:26 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217816

Lab Sample ID: CCV 320-217816/13 CCVIS Client Sample ID: _____

Date Analyzed: 04/13/18 01:23 Lab File ID: 2018.04.12_537AA_041.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|---------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.11 | Peak assignment corrected | roycea | 04/13/18 09:26 |

Lab Sample ID: 320-37675-10 Client Sample ID: NAWC-032819-RW-195

Date Analyzed: 04/13/18 01:42 Lab File ID: 2018.04.12_537AA_045.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|----------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.10 | Peak assignment corrected | barnettj | 04/13/18 09:58 |
| Perfluorononanoic acid (PFNA) | 2.11 | Missed Peak | barnettj | 04/13/18 09:59 |

Lab Sample ID: CCV 320-217816/19 CCVIS Client Sample ID: _____

Date Analyzed: 04/13/18 01:51 Lab File ID: 2018.04.12_537AA_047.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|---------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.11 | Peak assignment corrected | roycea | 04/13/18 09:27 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217818

Lab Sample ID: CCV 320-217818/19 CCVIS Client Sample ID: _____

Date Analyzed: 04/13/18 01:51 Lab File ID: 2018.04.12_537AA_047.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|---------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.11 | Peak assignment corrected | roycea | 04/13/18 09:27 |

Lab Sample ID: LLCS 320-216792/2-A Client Sample ID: _____

Date Analyzed: 04/13/18 02:05 Lab File ID: 2018.04.12_537AA_050.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|----------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.10 | Peak assignment corrected | barnettj | 04/13/18 10:06 |

Lab Sample ID: 320-37675-12 Client Sample ID: NAWC-032819-RW-048

Date Analyzed: 04/13/18 02:10 Lab File ID: 2018.04.12_537AA_051.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|--------------------------------------|----------------|---------------------------|----------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorobutanesulfonic acid (PFBS) | 1.38 | Peak assignment corrected | barnettj | 04/13/18 10:06 |
| Perfluorohexanesulfonic acid (PFHxS) | 1.68 | Missed Peak | barnettj | 04/13/18 10:07 |
| Perfluorooctanesulfonic acid (PFOS) | 2.03 | Missed Peak | barnettj | 04/13/18 10:07 |

Lab Sample ID: CCV 320-217818/25 CCVIS Client Sample ID: _____

Date Analyzed: 04/13/18 02:19 Lab File ID: 2018.04.12_537AA_053.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|---------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.11 | Peak assignment corrected | roycea | 04/13/18 09:28 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217820

Lab Sample ID: CCV 320-217820/25 CCVIS Client Sample ID: _____

Date Analyzed: 04/13/18 02:19 Lab File ID: 2018.04.12_537AA_053.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|---------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.11 | Peak assignment corrected | roycea | 04/13/18 09:28 |

Lab Sample ID: 320-37675-14 Client Sample ID: NAWC-032819-RW-139

Date Analyzed: 04/13/18 02:29 Lab File ID: 2018.04.12_537AA_055.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|--------------------------------------|----------------|--------------------|----------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluoroheptanoic acid (PFHpA) | 1.68 | Missed Peak | barnettj | 04/13/18 10:08 |
| Perfluorohexanesulfonic acid (PFHxS) | 1.68 | Missed Peak | barnettj | 04/13/18 10:08 |
| Perfluorooctanesulfonic acid (PFOS) | 2.10 | Missed Peak | barnettj | 04/13/18 10:08 |
| Perfluorononanoic acid (PFNA) | 2.11 | Missed Peak | barnettj | 04/13/18 10:09 |

Lab Sample ID: 320-37675-14 LMS Client Sample ID: NAWC-032819-RW-139 LMS

Date Analyzed: 04/13/18 02:33 Lab File ID: 2018.04.12_537AA_056.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|----------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.10 | Peak assignment corrected | barnettj | 04/13/18 10:09 |

Lab Sample ID: 320-37675-14 LMSD Client Sample ID: NAWC-032819-RW-139 LMSD

Date Analyzed: 04/13/18 02:38 Lab File ID: 2018.04.12_537AA_057.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|----------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.10 | Peak assignment corrected | barnettj | 04/13/18 10:09 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217820

Lab Sample ID: 320-37675-17 Client Sample ID: NAWC-032819-FRB-117

Date Analyzed: 04/13/18 02:52 Lab File ID: 2018.04.12_537AA_060.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|----------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.10 | Peak assignment corrected | barnettj | 04/13/18 10:10 |

Lab Sample ID: 320-37675-20 Client Sample ID: NAWC-032819-RW-138

Date Analyzed: 04/13/18 03:06 Lab File ID: 2018.04.12_537AA_063.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|--------------------------------------|----------------|--------------------|----------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorohexanesulfonic acid (PFHxS) | 1.68 | Missed Peak | barnettj | 04/13/18 10:10 |
| Perfluorooctanesulfonic acid (PFOS) | 2.10 | Missed Peak | barnettj | 04/13/18 10:11 |
| Perfluorononanoic acid (PFNA) | 2.12 | Missed Peak | barnettj | 04/13/18 10:11 |

Lab Sample ID: CCV 320-217820/37 CCVIS Client Sample ID: _____

Date Analyzed: 04/13/18 03:15 Lab File ID: 2018.04.12_537AA_065.d GC Column: GeminiC18 3x1 ID: 3(mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|-------------------------------------|----------------|---------------------------|----------|----------------|
| | | REASON | ANALYST | DATE |
| Perfluorooctanesulfonic acid (PFOS) | 2.09 | Peak assignment corrected | barnettj | 04/13/18 09:58 |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37675-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|------------------------|----------|---|----------------------|----------------------|---------------------|--------------|--------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| LC537-ICV_00030 | 07/30/18 | 02/15/18 | MeOH/H2O, Lot 067374 | 10 mL | LC537-IS_00059 | 1000 uL | 13C2-PFOA | 10 ng/mL |
| .LC537-IS_00059 | 07/30/18 | 01/30/18 | Methanol, Lot 090285 | 30000 uL | LCM2PFOA_00007 | 60 uL | 13C2-PFOA | 28.68 ng/mL |
| ..LCM2PFOA_00007 | 02/12/21 | Wellington Laboratories, Lot M2PFOA0216 | | | LCMPFOS_00021 | 180 uL | 13C4 PFOS | 0.1 ug/mL |
| ..LCMPFOS_00021 | 12/12/21 | Wellington Laboratories, Lot MPFOS1216 | | | (Purchased Reagent) | | 13C2-PFOA | 0.2868 ug/mL |
| LC537-ICV_00030 | 07/30/18 | 02/15/18 | MeOH/H2O, Lot 067374 | 10 mL | LC537-SU_00059 | 1000 uL | 13C2-PFOA | 50 ug/mL |
| .LC537-SU_00059 | 07/30/18 | 01/30/18 | Methanol, Lot 104453 | 30000 uL | LC537ICIM2_00001 | 400 uL | 13C2 PFDA | 47.8 ug/mL |
| ..LCMPFDA_00012 | 09/30/21 | Wellington Laboratories, Lot MPFDA0916 | | | | | 13C2 PFDA | 10 ng/mL |
| ..LCMPFHxA_00015 | 11/22/21 | Wellington Laboratories, Lot MPFHxA1116 | | | | | 13C2 PFHxA | 10 ng/mL |
| .LC537ICIM2_00001 | 08/15/18 | 02/15/18 | Methanol, Lot 090285 | 10 mL | LC537ICIM_00020 | 0.5 mL | Perfluorobutanesulfonic acid (PFBS) | 100.092 ng/mL |
| ..LC537ICIM_00020 | 08/15/18 | 02/15/18 | Methanol, Lot 090285 | 25 mL | LC537-PFBS2_00009 | 0.625 mL | Perfluoroheptanoic acid (PFHpA) | 10 ng/mL |
| ...LC537-PFBS2_00009 | 08/15/18 | 02/15/18 | Methanol, Lot 090285 | 17.1 mL | LC537-PFHxA2_00012 | 0.0625 mL | Perfluoroheptanoic acid (PFHpA) | 10 ng/mL |
|LC537_PFBS2_00002 | 09/08/22 | Santa Cruz Biotechnology, Lot F0917 | | | LC537-PFHxS2_00009 | 0.126 mL | Perfluorohexanesulfonic acid (PFHxS) | 20.1619 ng/mL |
| | | | | | LC537-PFNA2_00010 | 0.126 mL | Perfluorononanoic acid (PFNA) | 20.1641 ng/mL |
| | | | | | LC537-PFOA2_00011 | 0.126 mL | Perfluorooctanoic acid (PFOA) | 20.167 ng/mL |
| | | | | | LC537-PFOS2_00011 | 0.126 mL | Perfluorooctanesulfonic acid (PFOS) | 20.1702 ng/mL |
| | | | | | LC537_PFBS2_00002 | 0.0343 g | Perfluorobutanesulfonic acid (PFBS) | 20.1702 ng/mL |
| | | | | | (Purchased Reagent) | | Perfluorobutanesulfonic acid (PFBS) | 2001.84 ug/mL |
| | | | | | | | Perfluorobutanesulfonic acid (PFBS) | 0.998 g/g |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37675-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|------------------------|----------|---|----------------------|----------------------|---------------------|--------------|--------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| ...LC537-PFHpA2_00012 | 08/15/18 | 02/15/18 | Methanol, Lot 09092 | 23.95 mL | LC537_PFHpA2_00002 | 0.0479 g | Perfluoroheptanoic acid (PFHpA) | 2000 ug/mL |
|LC537_PFHpA2_00002 | 06/13/22 | Afla Aesar, Lot 10200390 | | | (Purchased Reagent) | | Perfluoroheptanoic acid (PFHpA) | 1 g/g |
| ...LC537-PFHxS2_00009 | 08/15/18 | 02/15/18 | Methanol, Lot 090285 | 25.87 mL | LC537_PFHxS2_00002 | 0.0569 g | Perfluorohexanesulfonic acid (PFHxS) | 2000.19 ug/mL |
|LC537_PFHxS2_00002 | 06/08/22 | Santa Cruz Biotechnology, Lot G2516 | | | (Purchased Reagent) | | Perfluorohexanesulfonic acid (PFHxS) | 0.9094 g/g |
| ...LC537-PFNA2_00010 | 08/15/18 | 02/15/18 | Methanol, Lot 090285 | 16.58 mL | LC537 PFNA2_00002 | 0.0333 g | Perfluorononanoic acid (PFNA) | 2000.41 ug/mL |
|LC537 PFNA2_00002 | 06/14/22 | Aldrich, Lot MKCC0699 | | | (Purchased Reagent) | | Perfluorononanoic acid (PFNA) | 0.996 g/g |
| ...LC537-PFOA2_00011 | 08/15/18 | 02/15/18 | Methanol, Lot 090285 | 22.96 mL | LC537 PFOA2_00002 | 0.0464 g | Perfluorooctanoic acid (PFOA) | 2000.7 ug/mL |
|LC537 PFOA2_00002 | 06/09/22 | Afla Aesar, Lot 10199078 | | | (Purchased Reagent) | | Perfluorooctanoic acid (PFOA) | 0.99 g/g |
| ...LC537-PFOS2_00011 | 08/15/18 | 02/15/18 | Methanol, Lot 090285 | 14.71 mL | LC537_PFOS2_00002 | 0.0378 g | Perfluorooctanesulfonic acid (PFOS) | 2001.01 ug/mL |
|LC537_PFOS2_00002 | 06/14/22 | Sigma, Lot BCBQ0108V | | | (Purchased Reagent) | | Perfluorooctanesulfonic acid (PFOS) | 0.7787 g/g |
| LC537-IS_00067 | 10/10/18 | 04/10/18 | Methanol, Lot 090285 | 30000 uL | LCM2PFOA_00010 | 60 uL | 13C2-PFOA | 0.1 ug/mL |
| | | | | | LCMPFOS_00024 | 180 uL | 13C4 PFOS | 0.2868 ug/mL |
| .LCM2PFOA_00010 | 02/12/21 | Wellington Laboratories, Lot M2PFOA0216 | | | (Purchased Reagent) | | 13C2-PFOA | 50 ug/mL |
| .LCMPFOS_00024 | 05/19/22 | Wellington Laboratories, Lot MPFOS517 | | | (Purchased Reagent) | | 13C4 PFOS | 47.8 ug/mL |
| LC537-L1_00022 | 09/30/18 | 04/02/18 | MeOH/H2O, Lot 090285 | 5 mL | LC537-IS_00065 | 500 uL | 13C2-PFOA | 10 ng/mL |
| | | | | | LC537-MSP_00033 | 60 uL | 13C4 PFOS | 28.68 ng/mL |
| | | | | | | | Perfluorobutanesulfonic acid (PFBS) | |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 0.96 ng/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 3.003 ng/mL |
| | | | | | | | Perfluorononanoic acid (PFNA) | 1.98 ng/mL |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 1.98 ng/mL |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 3.95328 ng/mL |
| | | | | | LC537-SU_00064 | 500 uL | 13C2 PFDA | 10 ng/mL |
| | | | | | | | 13C2 PFHxA | 10 ng/mL |
| .LC537-IS_00065 | 10/02/18 | 04/02/18 | Methanol, Lot 090285 | 30000 uL | LCM2PFOA_00010 | 60 uL | 13C2-PFOA | 0.1 ug/mL |
| | | | | | LCMPFOS_00024 | 180 uL | 13C4 PFOS | 0.2868 ug/mL |
| ..LCM2PFOA_00010 | 02/12/21 | Wellington Laboratories, Lot M2PFOA0216 | | | (Purchased Reagent) | | 13C2-PFOA | 50 ug/mL |
| ..LCMPFOS_00024 | 05/19/22 | Wellington Laboratories, Lot MPFOS517 | | | (Purchased Reagent) | | 13C4 PFOS | 47.8 ug/mL |
| .LC537-MSP_00033 | 09/30/18 | 03/30/18 | Methanol, Lot 104453 | 30 mL | LCPFBSA_00002 | 509 uL | Perfluorobutanesulfonic acid (PFBS) | 749.927 ng/mL |
| | | | | | LCPFHpA_00009 | 48 uL | Perfluoroheptanoic acid (PFHpA) | 80 ng/mL |
| | | | | | LCPFHxS-br_00005 | 165 uL | Perfluorohexanesulfonic acid (PFHxS) | 250.25 ng/mL |
| | | | | | LCPFNA_00009 | 99 uL | Perfluorononanoic acid (PFNA) | 165 ng/mL |
| | | | | | LCPFOA_00010 | 99 uL | Perfluorooctanoic acid (PFOA) | 165 ng/mL |
| | | | | | LCPFOS-br_00005 | 213 uL | Perfluorooctanesulfonic acid (PFOS) | 329.44 ng/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37675-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|---|----------------------|----------------------|---------------------|--------------|--------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| ..LCPFBSA_00002 | 12/02/21 | Wellington Laboratories, Lot LPFBS1116 | | | (Purchased Reagent) | | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL |
| ..LCPFHpA_00009 | 12/02/21 | Wellington Laboratories, Lot PFHpA1216 | | | (Purchased Reagent) | | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL |
| ..LCPFHxS-br_00005 | 01/04/22 | Wellington Laboratories, Lot brPFHxSK0117 | | | (Purchased Reagent) | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL |
| ..LCPFNA_00009 | 07/20/22 | Wellington Laboratories, Lot PFNA0717 | | | (Purchased Reagent) | | Perfluorononanoic acid (PFNA) | 50 ug/mL |
| ..LCPFOA_00010 | 09/27/22 | Wellington Laboratories, Lot PFOA0917 | | | (Purchased Reagent) | | Perfluorooctanoic acid (PFOA) | 50 ug/mL |
| ..LCPFOS-br_00005 | 01/12/22 | Wellington Laboratories, Lot brPFOSK0117 | | | (Purchased Reagent) | | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL |
| .LC537-SU_00064 | 10/02/18 | 04/02/18 | Methanol, Lot 104453 | 30000 uL | LCMPFDA_00012 | 60 uL | 13C2 PFDA | 0.1 ug/mL |
| ..LCMPFDA_00012 | 09/30/21 | Wellington Laboratories, Lot MPFDA0916 | | | LCMPFHxA_00015 | 60 uL | 13C2 PFHxA | 0.1 ug/mL |
| ..LCMPFHxA_00015 | 11/22/21 | Wellington Laboratories, Lot MPFHxA1116 | | | (Purchased Reagent) | | 13C2 PFDA | 50 ug/mL |
| | | | | | (Purchased Reagent) | | 13C2 PFHxA | 50 ug/mL |
| LC537-L2_00022 | 09/30/18 | 04/02/18 | MeOH/H2O, Lot 090285 | 20 mL | LC537-HSP_00028 | 320 uL | Perfluorobutanesulfonic acid (PFBS) | 20.0138 ng/mL |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 2.16 ng/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 6.72187 ng/mL |
| | | | | | | | Perfluorononanoic acid (PFNA) | 4.4 ng/mL |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 4.4 ng/mL |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 8.78507 ng/mL |
| | | | | | LC537-IS_00065 | 2 mL | 13C2-PFOA | 10 ng/mL |
| | | | | | | | 13C4 PFOS | 28.68 ng/mL |
| | | | | | LC537-SU_00064 | 2 mL | 13C2 PFDA | 10 ng/mL |
| | | | | | | | 13C2 PFHxA | 10 ng/mL |
| .LC537-HSP_00028 | 09/30/18 | 03/30/18 | Methanol, Lot 104453 | 30 mL | LCPFBSA_00002 | 849 uL | Perfluorobutanesulfonic acid (PFBS) | 1250.86 ng/mL |
| | | | | | LCPFHpA_00009 | 81 uL | Perfluoroheptanoic acid (PFHpA) | 135 ng/mL |
| | | | | | LCPFHxS-br_00005 | 277 uL | Perfluorohexanesulfonic acid (PFHxS) | 420.117 ng/mL |
| | | | | | LCPFNA_00009 | 165 uL | Perfluorononanoic acid (PFNA) | 275 ng/mL |
| | | | | | LCPFOA_00010 | 165 uL | Perfluorooctanoic acid (PFOA) | 275 ng/mL |
| | | | | | LCPFOS-br_00005 | 355 uL | Perfluorooctanesulfonic acid (PFOS) | 549.067 ng/mL |
| ..LCPFBSA_00002 | 12/02/21 | Wellington Laboratories, Lot LPFBS1116 | | | (Purchased Reagent) | | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL |
| ..LCPFHpA_00009 | 12/02/21 | Wellington Laboratories, Lot PFHpA1216 | | | (Purchased Reagent) | | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL |
| ..LCPFHxS-br_00005 | 01/04/22 | Wellington Laboratories, Lot brPFHxSK0117 | | | (Purchased Reagent) | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL |
| ..LCPFNA_00009 | 07/20/22 | Wellington Laboratories, Lot PFNA0717 | | | (Purchased Reagent) | | Perfluorononanoic acid (PFNA) | 50 ug/mL |
| ..LCPFOA_00010 | 09/27/22 | Wellington Laboratories, Lot PFOA0917 | | | (Purchased Reagent) | | Perfluorooctanoic acid (PFOA) | 50 ug/mL |
| ..LCPFOS-br_00005 | 01/12/22 | Wellington Laboratories, Lot brPFOSK0117 | | | (Purchased Reagent) | | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL |
| .LC537-IS_00065 | 10/02/18 | 04/02/18 | Methanol, Lot 090285 | 30000 uL | LCM2PFOA_00010 | 60 uL | 13C2-PFOA | 0.1 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37675-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration | | |
|-----------------------|----------|-----------|---|----------------------|---------------------|--------------|--------------------------------------|---------------|--------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | | | |
| ..LCM2PFOA_00010 | 02/12/21 | | Wellington Laboratories, Lot M2PFOA0216 | | LCMPFOS_00024 | 180 uL | 13C4 PFOS | 0.2868 ug/mL | | |
| ..LCMPFOS_00024 | 05/19/22 | | Wellington Laboratories, Lot MPFOS517 | | (Purchased Reagent) | | 13C2-PFOA | 50 ug/mL | | |
| ..LC537-SU_00064 | 10/02/18 | 04/02/18 | Methanol, Lot 104453 | 30000 uL | LCMPFDA_00012 | 60 uL | 13C2 PFDA | 0.1 ug/mL | | |
| ..LCMPFDA_00012 | 09/30/21 | | Wellington Laboratories, Lot MPFDA0916 | | LCMPFHxA_00015 | 60 uL | 13C2 PFHxA | 0.1 ug/mL | | |
| ..LCMPFHxA_00015 | 11/22/21 | | Wellington Laboratories, Lot MPFHxA1116 | | (Purchased Reagent) | | 13C2 PFDA | 50 ug/mL | | |
| ..LCMPFHxA_00015 | 11/22/21 | | Wellington Laboratories, Lot MPFHxA1116 | | (Purchased Reagent) | | 13C2 PFHxA | 50 ug/mL | | |
| LC537-L3_00025 | 09/30/18 | 04/02/18 | MeOH/H2O, Lot 090285 | 20 mL | LC537-HSP_00028 | 720 uL | Perfluorobutanesulfonic acid (PFBS) | 45.031 ng/mL | | |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 4.86 ng/mL | | |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 15.1242 ng/mL | | |
| | | | | | | | Perfluorononanoic acid (PFNA) | 9.9 ng/mL | | |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 9.9 ng/mL | | |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 19.7664 ng/mL | | |
| | | | | | LC537-IS_00065 | 2 mL | 13C2-PFOA | 10 ng/mL | | |
| LC537-SU_00064 | 2 mL | 13C4 PFOS | 28.68 ng/mL | | | | | | | |
| .LC537-HSP_00028 | 09/30/18 | 03/30/18 | Methanol, Lot 104453 | 30 mL | LCPFBSA_00002 | 849 uL | Perfluorobutanesulfonic acid (PFBS) | 1250.86 ng/mL | | |
| | | | | | | | LCPFHpA_00009 | 81 uL | Perfluoroheptanoic acid (PFHpA) | 135 ng/mL |
| | | | | | | | LCPFHxS-br_00005 | 277 uL | Perfluorohexanesulfonic acid (PFHxS) | 420.117 ng/mL |
| | | | | | | | LCPFNA_00009 | 165 uL | Perfluorononanoic acid (PFNA) | 275 ng/mL |
| | | | | | | | LCPFOA_00010 | 165 uL | Perfluorooctanoic acid (PFOA) | 275 ng/mL |
| | | | | | | | LCPFOS-br_00005 | 355 uL | Perfluorooctanesulfonic acid (PFOS) | 549.067 ng/mL |
| ..LCPFBSA_00002 | 12/02/21 | | Wellington Laboratories, Lot LPFBS1116 | | (Purchased Reagent) | | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL | | |
| ..LCPFHpA_00009 | 12/02/21 | | Wellington Laboratories, Lot PFHpA1216 | | (Purchased Reagent) | | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL | | |
| ..LCPFHxS-br_00005 | 01/04/22 | | Wellington Laboratories, Lot brPFHxSK0117 | | (Purchased Reagent) | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL | | |
| ..LCPFNA_00009 | 07/20/22 | | Wellington Laboratories, Lot PFNA0717 | | (Purchased Reagent) | | Perfluorononanoic acid (PFNA) | 50 ug/mL | | |
| ..LCPFOA_00010 | 09/27/22 | | Wellington Laboratories, Lot PFOA0917 | | (Purchased Reagent) | | Perfluorooctanoic acid (PFOA) | 50 ug/mL | | |
| ..LCPFOS-br_00005 | 01/12/22 | | Wellington Laboratories, Lot brPFOSK0117 | | (Purchased Reagent) | | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL | | |
| ..LC537-IS_00065 | 10/02/18 | 04/02/18 | Methanol, Lot 090285 | 30000 uL | LCM2PFOA_00010 | 60 uL | 13C2-PFOA | 0.1 ug/mL | | |
| ..LCM2PFOA_00010 | 02/12/21 | | Wellington Laboratories, Lot M2PFOA0216 | | LCMPFOS_00024 | 180 uL | 13C4 PFOS | 0.2868 ug/mL | | |
| ..LCMPFOS_00024 | 05/19/22 | | Wellington Laboratories, Lot MPFOS517 | | (Purchased Reagent) | | 13C2-PFOA | 50 ug/mL | | |
| ..LC537-SU_00064 | 10/02/18 | 04/02/18 | Methanol, Lot 104453 | 30000 uL | (Purchased Reagent) | | 13C4 PFOS | 47.8 ug/mL | | |
| ..LCMPFDA_00012 | 09/30/21 | | Wellington Laboratories, Lot MPFDA0916 | | LCMPFDA_00012 | 60 uL | 13C2 PFDA | 0.1 ug/mL | | |
| ..LCMPFHxA_00015 | 11/22/21 | | Wellington Laboratories, Lot MPFHxA1116 | | LCMPFHxA_00015 | 60 uL | 13C2 PFHxA | 0.1 ug/mL | | |
| ..LCMPFHxA_00015 | 11/22/21 | | Wellington Laboratories, Lot MPFHxA1116 | | (Purchased Reagent) | | 13C2 PFDA | 50 ug/mL | | |
| ..LCMPFHxA_00015 | 11/22/21 | | Wellington Laboratories, Lot MPFHxA1116 | | (Purchased Reagent) | | 13C2 PFHxA | 50 ug/mL | | |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37675-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration | | |
|--------------------|----------|---|----------------------|----------------------|---------------------|--------------|--------------------------------------|---------------|--------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | | | |
| LC537-L4_00022 | 09/30/18 | 04/02/18 | MeOH/H2O, Lot 090285 | 5 mL | LC537-HSP_00028 | 360 uL | Perfluorobutanesulfonic acid (PFBS) | 90.0619 ng/mL | | |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 9.72 ng/mL | | |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 30.2484 ng/mL | | |
| | | | | | | | Perfluorononanoic acid (PFNA) | 19.8 ng/mL | | |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 19.8 ng/mL | | |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 39.5328 ng/mL | | |
| LC537-IS_00065 | | | | | LC537-IS_00065 | 500 uL | 13C2-PFOA | 10 ng/mL | | |
| | | | | | | | 13C4 PFOS | 28.68 ng/mL | | |
| | | | | | | | 13C2 PFDA | 10 ng/mL | | |
| LC537-SU_00064 | | | | | LC537-SU_00064 | 500 uL | 13C2 PFHxA | 10 ng/mL | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| .LC537-HSP_00028 | 09/30/18 | 03/30/18 | Methanol, Lot 104453 | 30 mL | LCPFBSA_00002 | 849 uL | Perfluorobutanesulfonic acid (PFBS) | 1250.86 ng/mL | | |
| | | | | | | | LCPFHpA_00009 | 81 uL | Perfluoroheptanoic acid (PFHpA) | 135 ng/mL |
| | | | | | | | LCPFHxS-br_00005 | 277 uL | Perfluorohexanesulfonic acid (PFHxS) | 420.117 ng/mL |
| | | | | | | | LCPFNA_00009 | 165 uL | Perfluorononanoic acid (PFNA) | 275 ng/mL |
| | | | | | | | LCPFOA_00010 | 165 uL | Perfluorooctanoic acid (PFOA) | 275 ng/mL |
| | | | | | | | LCPFOS-br_00005 | 355 uL | Perfluorooctanesulfonic acid (PFOS) | 549.067 ng/mL |
| ..LCPFBSA_00002 | 12/02/21 | Wellington Laboratories, Lot LPFBS1116 | | | (Purchased Reagent) | | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL | | |
| ..LCPFHpA_00009 | 12/02/21 | Wellington Laboratories, Lot PFHpA1216 | | | (Purchased Reagent) | | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL | | |
| ..LCPFHxS-br_00005 | 01/04/22 | Wellington Laboratories, Lot brPFHxSK0117 | | | (Purchased Reagent) | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL | | |
| ..LCPFNA_00009 | 07/20/22 | Wellington Laboratories, Lot PFNA0717 | | | (Purchased Reagent) | | Perfluorononanoic acid (PFNA) | 50 ug/mL | | |
| ..LCPFOA_00010 | 09/27/22 | Wellington Laboratories, Lot PFOA0917 | | | (Purchased Reagent) | | Perfluorooctanoic acid (PFOA) | 50 ug/mL | | |
| ..LCPFOS-br_00005 | 01/12/22 | Wellington Laboratories, Lot brPFOSK0117 | | | (Purchased Reagent) | | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL | | |
| .LC537-IS_00065 | 10/02/18 | 04/02/18 | Methanol, Lot 090285 | 30000 uL | LCM2PFOA_00010 | 60 uL | 13C2-PFOA | 0.1 ug/mL | | |
| | | | | | | | LCMPFOS_00024 | 180 uL | 13C4 PFOS | 0.2868 ug/mL |
| ..LCM2PFOA_00010 | 02/12/21 | Wellington Laboratories, Lot M2PFOA0216 | | | (Purchased Reagent) | | 13C2-PFOA | 50 ug/mL | | |
| ..LCMPFOS_00024 | 05/19/22 | Wellington Laboratories, Lot MPFOS517 | | | (Purchased Reagent) | | 13C4 PFOS | 47.8 ug/mL | | |
| .LC537-SU_00064 | 10/02/18 | 04/02/18 | Methanol, Lot 104453 | 30000 uL | LCMPFDA_00012 | 60 uL | 13C2 PFDA | 0.1 ug/mL | | |
| | | | | | | | LCMPFHxA_00015 | 60 uL | 13C2 PFHxA | 0.1 ug/mL |
| ..LCMPFDA_00012 | 09/30/21 | Wellington Laboratories, Lot MPFDA0916 | | | (Purchased Reagent) | | 13C2 PFDA | 50 ug/mL | | |
| ..LCMPFHxA_00015 | 11/22/21 | Wellington Laboratories, Lot MPFHxA1116 | | | (Purchased Reagent) | | 13C2 PFHxA | 50 ug/mL | | |
| LC537-L5_00026 | 09/30/18 | 04/02/18 | MeOH/H2O, Lot 090285 | 20 mL | LC537-HSP_00028 | 2160 uL | Perfluorobutanesulfonic acid (PFBS) | 135.093 ng/mL | | |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 14.58 ng/mL | | |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 45.3726 ng/mL | | |
| | | | | | | | Perfluorononanoic acid (PFNA) | 29.7 ng/mL | | |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37675-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|---|----------------------|----------------------|---------------------|--------------|--------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 29.7 ng/mL |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 59.2992 ng/mL |
| | | | | | LC537-IS_00065 | 2 mL | 13C2-PFOA | 10 ng/mL |
| | | | | | | | 13C4 PFOS | 28.68 ng/mL |
| | | | | | LC537-SU_00064 | 2 mL | 13C2 PFDA | 10 ng/mL |
| | | | | | | | 13C2 PFHxA | 10 ng/mL |
| .LC537-HSP_00028 | 09/30/18 | 03/30/18 | Methanol, Lot 104453 | 30 mL | LCPFBSA_00002 | 849 uL | Perfluorobutanesulfonic acid (PFBS) | 1250.86 ng/mL |
| | | | | | LCPFHpA_00009 | 81 uL | Perfluoroheptanoic acid (PFHpA) | 135 ng/mL |
| | | | | | LCPFHxS-br_00005 | 277 uL | Perfluorohexanesulfonic acid (PFHxS) | 420.117 ng/mL |
| | | | | | LCPFNA_00009 | 165 uL | Perfluorononanoic acid (PFNA) | 275 ng/mL |
| | | | | | LCPFOA_00010 | 165 uL | Perfluorooctanoic acid (PFOA) | 275 ng/mL |
| | | | | | LCPFOS-br_00005 | 355 uL | Perfluorooctanesulfonic acid (PFOS) | 549.067 ng/mL |
| ..LCPFBSA_00002 | 12/02/21 | Wellington Laboratories, Lot LPFBS1116 | | | (Purchased Reagent) | | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL |
| ..LCPFHpA_00009 | 12/02/21 | Wellington Laboratories, Lot PFHpA1216 | | | (Purchased Reagent) | | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL |
| ..LCPFHxS-br_00005 | 01/04/22 | Wellington Laboratories, Lot brPFHxSK0117 | | | (Purchased Reagent) | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL |
| ..LCPFNA_00009 | 07/20/22 | Wellington Laboratories, Lot PFNA0717 | | | (Purchased Reagent) | | Perfluorononanoic acid (PFNA) | 50 ug/mL |
| ..LCPFOA_00010 | 09/27/22 | Wellington Laboratories, Lot PFOA0917 | | | (Purchased Reagent) | | Perfluorooctanoic acid (PFOA) | 50 ug/mL |
| ..LCPFOS-br_00005 | 01/12/22 | Wellington Laboratories, Lot brPFOSK0117 | | | (Purchased Reagent) | | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL |
| .LC537-IS_00065 | 10/02/18 | 04/02/18 | Methanol, Lot 090285 | 30000 uL | LCM2PFOA_00010 | 60 uL | 13C2-PFOA | 0.1 ug/mL |
| | | | | | LCMPFOS_00024 | 180 uL | 13C4 PFOS | 0.2868 ug/mL |
| ..LCM2PFOA_00010 | 02/12/21 | Wellington Laboratories, Lot M2PFOA0216 | | | (Purchased Reagent) | | 13C2-PFOA | 50 ug/mL |
| ..LCMPFOS_00024 | 05/19/22 | Wellington Laboratories, Lot MPFOS517 | | | (Purchased Reagent) | | 13C4 PFOS | 47.8 ug/mL |
| .LC537-SU_00064 | 10/02/18 | 04/02/18 | Methanol, Lot 104453 | 30000 uL | LCMPFDA_00012 | 60 uL | 13C2 PFDA | 0.1 ug/mL |
| | | | | | LCMPFHxA_00015 | 60 uL | 13C2 PFHxA | 0.1 ug/mL |
| ..LCMPFDA_00012 | 09/30/21 | Wellington Laboratories, Lot MPFDA0916 | | | (Purchased Reagent) | | 13C2 PFDA | 50 ug/mL |
| ..LCMPFHxA_00015 | 11/22/21 | Wellington Laboratories, Lot MPFHxA1116 | | | (Purchased Reagent) | | 13C2 PFHxA | 50 ug/mL |
| LC537-L6_00022 | 09/30/18 | 04/02/18 | MeOH/H2O, Lot 090285 | 5 mL | LC537-HSP_00028 | 720 uL | Perfluorobutanesulfonic acid (PFBS) | 180.124 ng/mL |
| | | | | | | | Perfluoroheptanoic acid (PFHpA) | 19.44 ng/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 60.4968 ng/mL |
| | | | | | | | Perfluorononanoic acid (PFNA) | 39.6 ng/mL |
| | | | | | | | Perfluorooctanoic acid (PFOA) | 39.6 ng/mL |
| | | | | | | | Perfluorooctanesulfonic acid (PFOS) | 79.0656 ng/mL |
| | | | | | LC537-IS_00065 | 500 uL | 13C2-PFOA | 10 ng/mL |
| | | | | | | | 13C4 PFOS | 28.68 ng/mL |
| | | | | | LC537-SU_00064 | 500 uL | 13C2 PFDA | 10 ng/mL |
| | | | | | | | 13C2 PFHxA | 10 ng/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37675-1

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|------------------------|----------|---|----------------------|----------------------|------------------|--------------------------------------|--------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| .LC537-HSP_00028 | 09/30/18 | 03/30/18 | Methanol, Lot 104453 | 30 mL | LCPFBSA_00002 | 849 uL | Perfluorobutanesulfonic acid (PFBS) | 1250.86 ng/mL |
| | | | | | LCPFHpA_00009 | 81 uL | Perfluoroheptanoic acid (PFHpA) | 135 ng/mL |
| | | | | | LCPFHxS-br_00005 | 277 uL | Perfluorohexanesulfonic acid (PFHxS) | 420.117 ng/mL |
| | | | | | LCPFNA_00009 | 165 uL | Perfluorononanoic acid (PFNA) | 275 ng/mL |
| | | | | | LCPFOA_00010 | 165 uL | Perfluorooctanoic acid (PFOA) | 275 ng/mL |
| | | | | | LCPFOS-br_00005 | 355 uL | Perfluorooctanesulfonic acid (PFOS) | 549.067 ng/mL |
| ..LCPFBSA_00002 | 12/02/21 | Wellington Laboratories, Lot LPFBS1116 | | (Purchased Reagent) | | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL | |
| ..LCPFHpA_00009 | 12/02/21 | Wellington Laboratories, Lot PFHpA1216 | | (Purchased Reagent) | | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL | |
| ..LCPFHxS-br_00005 | 01/04/22 | Wellington Laboratories, Lot brPFHxSK0117 | | (Purchased Reagent) | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL | |
| ..LCPFNA_00009 | 07/20/22 | Wellington Laboratories, Lot PFNA0717 | | (Purchased Reagent) | | Perfluorononanoic acid (PFNA) | 50 ug/mL | |
| ..LCPFOA_00010 | 09/27/22 | Wellington Laboratories, Lot PFOA0917 | | (Purchased Reagent) | | Perfluorooctanoic acid (PFOA) | 50 ug/mL | |
| ..LCPFOS-br_00005 | 01/12/22 | Wellington Laboratories, Lot brPFOSK0117 | | (Purchased Reagent) | | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL | |
| .LC537-IS_00065 | 10/02/18 | 04/02/18 | Methanol, Lot 090285 | 30000 uL | LCM2PFOA_00010 | 60 uL | 13C2-PFOA | 0.1 ug/mL |
| | | | | | LCMPFOS_00024 | 180 uL | 13C4 PFOS | 0.2868 ug/mL |
| ..LCM2PFOA_00010 | 02/12/21 | Wellington Laboratories, Lot M2PFOA0216 | | (Purchased Reagent) | | 13C2-PFOA | 50 ug/mL | |
| ..LCMPFOS_00024 | 05/19/22 | Wellington Laboratories, Lot MPFOS517 | | (Purchased Reagent) | | 13C4 PFOS | 47.8 ug/mL | |
| .LC537-SU_00064 | 10/02/18 | 04/02/18 | Methanol, Lot 104453 | 30000 uL | LCMPFDA_00012 | 60 uL | 13C2 PFDA | 0.1 ug/mL |
| | | | | | LCMPFHxA_00015 | 60 uL | 13C2 PFHxA | 0.1 ug/mL |
| ..LCMPFDA_00012 | 09/30/21 | Wellington Laboratories, Lot MPFDA0916 | | (Purchased Reagent) | | 13C2 PFDA | 50 ug/mL | |
| ..LCMPFHxA_00015 | 11/22/21 | Wellington Laboratories, Lot MPFHxA1116 | | (Purchased Reagent) | | 13C2 PFHxA | 50 ug/mL | |
| LC537-LSP_00032 | 09/30/18 | 03/30/18 | Methanol, Lot 104453 | 30 mL | LCPFBSA_00002 | 153 uL | Perfluorobutanesulfonic acid (PFBS) | 225.42 ng/mL |
| | | | | | LCPFHpA_00009 | 15 uL | Perfluoroheptanoic acid (PFHpA) | 25 ng/mL |
| | | | | | LCPFHxS-br_00005 | 50 uL | Perfluorohexane Sulfonate | 75.8333 ng/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 75.8333 ng/mL |
| | | | | | LCPFNA_00009 | 30 uL | Perfluorononanoic acid (PFNA) | 50 ng/mL |
| | | | | | LCPFOA_00010 | 30 uL | Perfluorooctanoic acid (PFOA) | 50 ng/mL |
| LCPFOS-br_00005 | 65 uL | Perfluorooctanesulfonic acid (PFOS) | 100.533 ng/mL | | | | | |
| .LCPFBSA_00002 | 12/02/21 | Wellington Laboratories, Lot LPFBS1116 | | (Purchased Reagent) | | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL | |
| .LCPFHpA_00009 | 12/02/21 | Wellington Laboratories, Lot PFHpA1216 | | (Purchased Reagent) | | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL | |
| .LCPFHxS-br_00005 | 01/04/22 | Wellington Laboratories, Lot brPFHxSK0117 | | (Purchased Reagent) | | Perfluorohexane Sulfonate | 45.5 ug/mL | |
| | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL | |
| .LCPFNA_00009 | 07/20/22 | Wellington Laboratories, Lot PFNA0717 | | (Purchased Reagent) | | Perfluorononanoic acid (PFNA) | 50 ug/mL | |
| .LCPFOA_00010 | 09/27/22 | Wellington Laboratories, Lot PFOA0917 | | (Purchased Reagent) | | Perfluorooctanoic acid (PFOA) | 50 ug/mL | |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37675-1

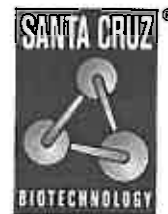
SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|------------------------|----------|-------------------------------------|---|----------------------|------------------|---------------------|--------------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| .LCPFOS-br_00005 | 01/12/22 | | Wellington Laboratories, Lot brPFOSK0117 | | | (Purchased Reagent) | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL |
| LC537-MSP_00033 | 09/30/18 | 03/30/18 | Methanol, Lot 104453 | 30 mL | LCPFBSA_00002 | 509 uL | Perfluorobutanesulfonic acid (PFBS) | 749.927 ng/mL |
| | | | | | LCPFHpA_00009 | 48 uL | Perfluoroheptanoic acid (PFHpA) | 80 ng/mL |
| | | | | | LCPFHxS-br_00005 | 165 uL | Perfluorohexane Sulfonate | 250.25 ng/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 250.25 ng/mL |
| | | | | | LCPFNA_00009 | 99 uL | Perfluorononanoic acid (PFNA) | 165 ng/mL |
| | | | | | LCPFOA_00010 | 99 uL | Perfluorooctanoic acid (PFOA) | 165 ng/mL |
| LCPFOS-br_00005 | 213 uL | Perfluorooctanesulfonic acid (PFOS) | 329.44 ng/mL | | | | | |
| .LCPFBSA_00002 | 12/02/21 | | Wellington Laboratories, Lot LPFBS1116 | | | (Purchased Reagent) | Perfluorobutanesulfonic acid (PFBS) | 44.2 ug/mL |
| .LCPFHpA_00009 | 12/02/21 | | Wellington Laboratories, Lot PFHpA1216 | | | (Purchased Reagent) | Perfluoroheptanoic acid (PFHpA) | 50 ug/mL |
| .LCPFHxS-br_00005 | 01/04/22 | | Wellington Laboratories, Lot brPFHxSK0117 | | | (Purchased Reagent) | Perfluorohexane Sulfonate | 45.5 ug/mL |
| | | | | | | | Perfluorohexanesulfonic acid (PFHxS) | 45.5 ug/mL |
| .LCPFNA_00009 | 07/20/22 | | Wellington Laboratories, Lot PFNA0717 | | | (Purchased Reagent) | Perfluorononanoic acid (PFNA) | 50 ug/mL |
| .LCPFOA_00010 | 09/27/22 | | Wellington Laboratories, Lot PFOA0917 | | | (Purchased Reagent) | Perfluorooctanoic acid (PFOA) | 50 ug/mL |
| .LCPFOS-br_00005 | 01/12/22 | | Wellington Laboratories, Lot brPFOSK0117 | | | (Purchased Reagent) | Perfluorooctanesulfonic acid (PFOS) | 46.4 ug/mL |
| LC537-SU_00064 | 10/02/18 | 04/02/18 | Methanol, Lot 104453 | 30000 uL | LCMPFDA_00012 | 60 uL | 13C2 PFDA | 0.1 ug/mL |
| | | | | | LCMPFHxA_00015 | 60 uL | 13C2 PFHxA | 0.1 ug/mL |
| .LCMPFDA_00012 | 09/30/21 | | Wellington Laboratories, Lot MPFDA0916 | | | (Purchased Reagent) | 13C2 PFDA | 50 ug/mL |
| .LCMPFHxA_00015 | 11/22/21 | | Wellington Laboratories, Lot MPFHxA1116 | | | (Purchased Reagent) | 13C2 PFHxA | 50 ug/mL |

Reagent

LC537_PFB2_00002

P: 6.8.17 SW



CERTIFICATE OF ANALYSIS

The Power to Question

Catalog Number: sc-236187
Lot Number: F0917
Product Name: Nonafluorobutane-1-sulfonic acid
CAS Number: 375-73-5
Molecular Formula: $C_4HF_9O_3S$
Molecular Weight: 300.10

| Test | Specification | Result |
|-------------------------------------|-----------------------|----------|
| Appearance | Colorless liquid | Complies |
| Identification (19F-NMR) | Conforms to structure | Complies |
| Purity (Sodium Hydroxide Titration) | $\geq 97\%$ | 101.3% |
| Infrared Spectrum | Conforms to structure | Complies |

Reagent

LC537_PFHpA2_00002

Certificate of analysis

R:6.13.17 SW

Product No.: A12092
Product: Perfluoroheptanoic acid, 98+%
Lot No.: 10200390

PFHpA

Appearance: White fused solid
Water Content (Karl-Fischer): 0.30%
Melting Point: 32.0-34.3°C
Assay (Aqueous acid-base titration): 99.7%
Identification (FTIR): Conforms

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Reagent

LC537_PFHxS2_00002

n: 6-E-17SKV

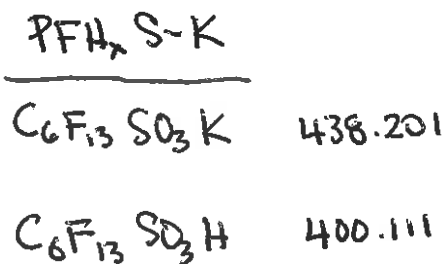


The Future is Custom

CERTIFICATE OF ANALYSIS

Catalog Number: sc-237289
 Lot Number: G2516
 Product Name: Tridecafluorohexane-1-sulfonic acid potassium salt
 CAS Number: 3871-99-6
 Molecular Formula: $C_6F_{13}KO_3S$
 Molecular Weight: 438.20

| Test | Specification | Result |
|------------------------------------|---|--------------|
| Appearance | White to faint beige powder or crystals | White powder |
| Identification (Infrared Spectrum) | Consistent with structure | Complies |
| Purity (Titration, Ion Exchange) | ≥ 98.0% | 100.4% |



MW correction = $\frac{400.11}{438.201} = 0.91307$ PFH₂S
 cas# 355-46-4

Purity $\frac{1}{2}$ MW correction = 90.9%

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Reagent

LC537_PFN2_00002

P: 6.14.17 SKW

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:
Perfluorononanoic acid - 97%

Product Number: 394459
Batch Number: MKCC0699
Brand: ALDRICH
CAS Number: 375-95-1
MDL Number: MFCD00039605
Formula: C₉HF₁₇O₂
Formula Weight: 464.08 g/mol
Quality Release Date: 07 DEC 2016



| Test | Specification | Result |
|--------------------|--|----------|
| Appearance (Color) | White to Off-White | White |
| Appearance (Form) | Powder or Crystals or Crystalline Chunk(s) or Granule or Flakes or Solid | Powder |
| Infrared Spectrum | Conforms to Structure | Conforms |
| GC (area %) | > 96.5 % | 98.2 % |

Michael Grady, Manager
Quality Control
Milwaukee, WI US

PFNA

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Reagent

LC537_PFOA2_00002

Certificate of analysis

P: 6/9/17 SW

Product No.: L08862
Product: Perfluorooctanoic acid, 95%
Lot No.: 10199078

PFOA

Appearance: White powder
Water Content (Karl-Fischer): 1.30%
Melting Point: 47.6-54.0°C
Assay (Aqueous acid-base titration): 98.4%
Assay (GC Silyl Deriv): 97.2%

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Reagent

LC537_PFOs2_00002

N: 6.14.17 SKV

Certificate of Analysis

Product Name: HEPTADEC AFLUORO OCTANESULFONIC ACID TETRAETHYLAMMONIUM SALT
 98 %
Product Number: 365289
Batch Number: BCBQ0108V
Brand: Aldrich
CAS Number: 56773-42-3
Formula: $CF_3(CF_2)_6CF_2SO_3N(C_2H_5)_4$
Formula Weight: 629.37
Quality Release Date: 11 JUN 2015

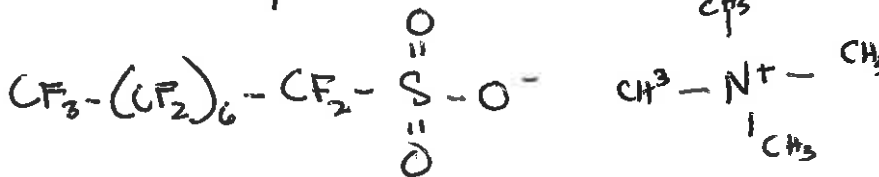
| TEST | SPECIFICATION | RESULT |
|--------------------|--------------------------------|-----------|
| APPEARANCE (COLOR) | WHITE TO OFF WHITE | OFF-WHITE |
| APPEARANCE (FORM) | POWDER OR POWDER WITH CHUNK(S) | POWDER |
| CARBON CONTENT | 29.77 % - 31.29 % | 29.97 % |
| INFRARED SPECTRUM | CONFORMS TO STRUCTURE | CONFORMS |

Claudia Geitner

Dr. Claudia Geitner
 Manager Quality Control
 Buchs, Switzerland

MW correction: $\frac{500.125}{629.37} = 0.7946$

Purity & MW correction = 77.87%



| | | |
|------------|------------------------|--------------|
| | $C_{17}F_{17}SO_3 + H$ | $C_8H_{20}N$ |
| C = 12.011 | 96.088 | 96.088 |
| F = 18.998 | 322.966 | — |
| S = 32.066 | 32.066 | — |
| O = 16.999 | 47.997 | — |
| H = 1.008 | 1.008 | 20.160 |
| N = 14.007 | — | 14.007 |
| | <hr/> | <hr/> |
| | 500.125 | 130.255 |

Reagent

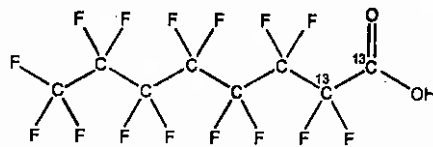
LCM2PFOA_00007



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFOA **LOT NUMBER:** M2PFOA0216
COMPOUND: Perfluoro-n-[1,2-¹³C₂]octanoic acid
STRUCTURE: **CAS #:** Not available



| | | | |
|----------------------------------|---|--------------------------|--|
| MOLECULAR FORMULA: | ¹³ C ₂ ¹² C ₆ HF ₁₆ O ₂ | MOLECULAR WEIGHT: | 416.05 |
| CONCENTRATION: | 50 ± 2.5 µg/ml | SOLVENT(S): | Methanol Water (<1%) |
| CHEMICAL PURITY: | >98% | ISOTOPIC PURITY: | ≥99% ¹³ C (1,2- ¹³ C ₂) |
| LAST TESTED: (mm/dd/yyyy) | 02/12/2016 | | |
| EXPIRY DATE: (mm/dd/yyyy) | 02/12/2021 | | |
| RECOMMENDED STORAGE: | Store ampoule in a cool, dark place | | |

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 02/24/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

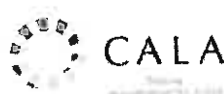
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

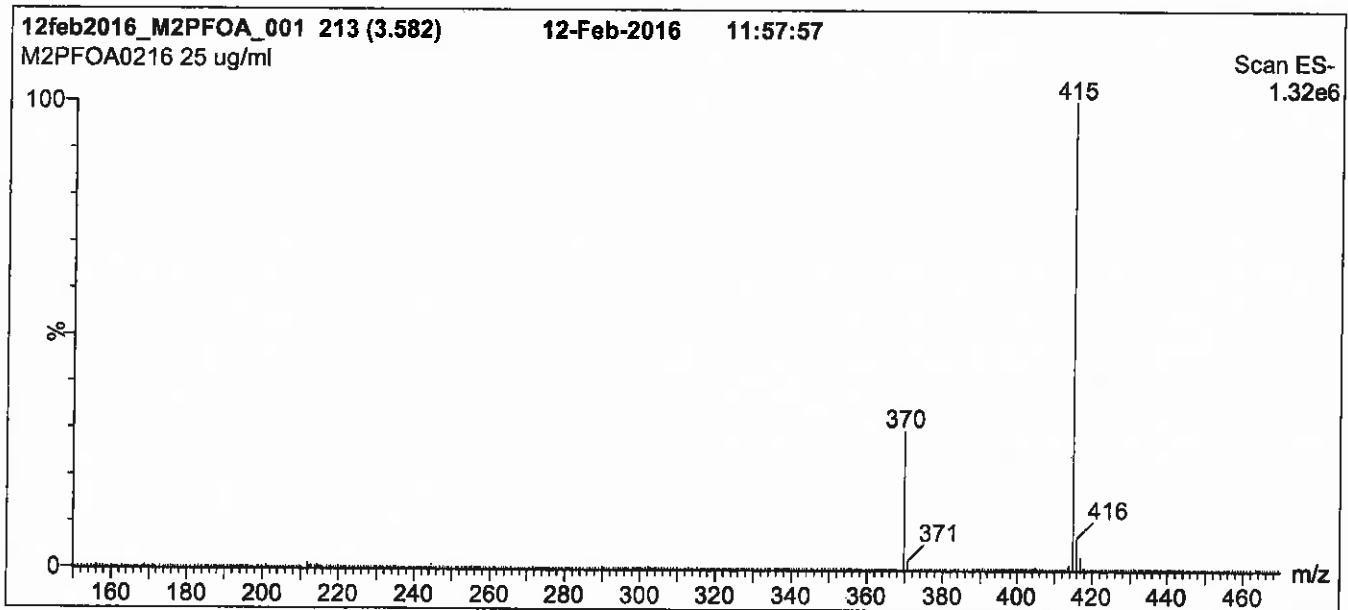
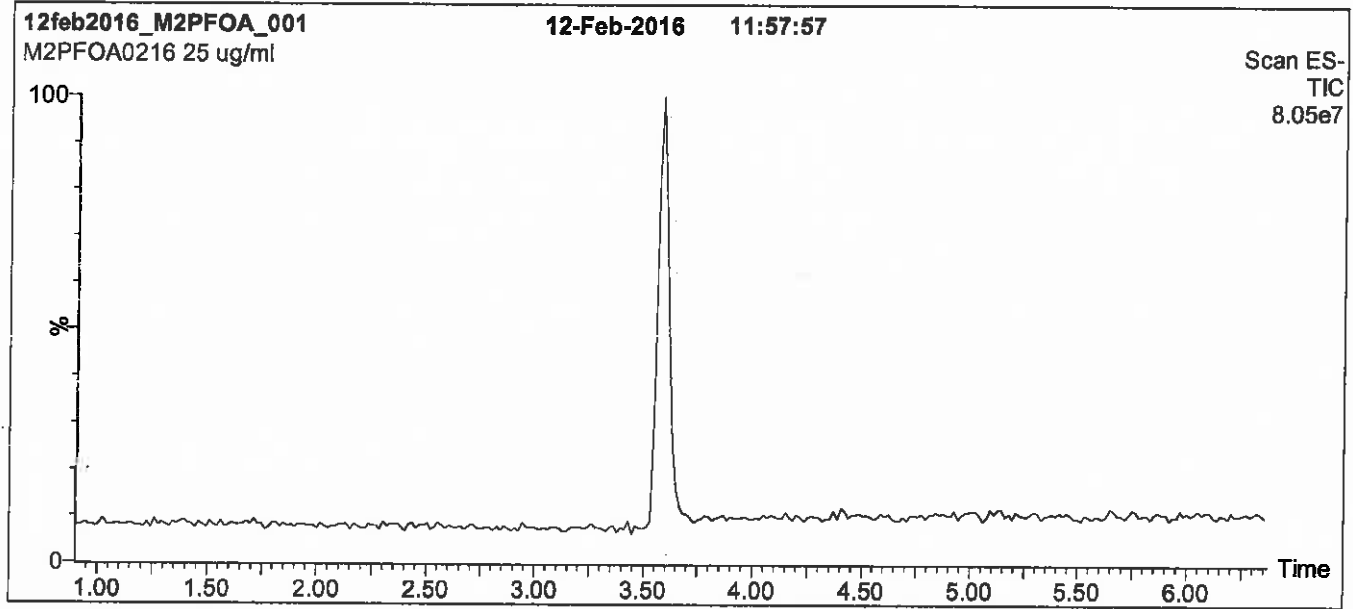
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: M2PFOA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

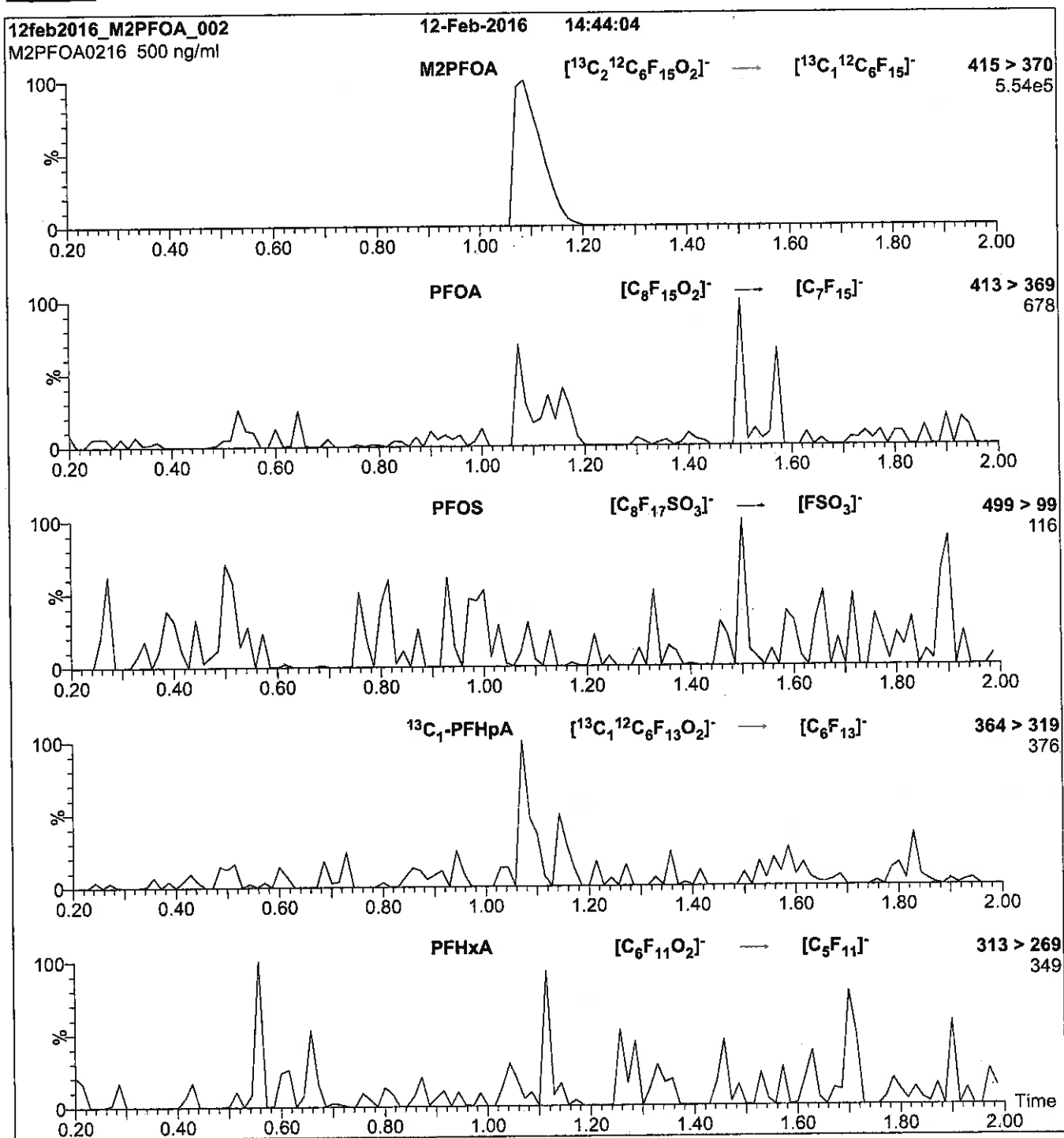
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2PFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2PFOA)

Mobile phase: Isocratic 80% MeOH / 20% H₂O

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 10

Reagent

LCM2PFOA_00010

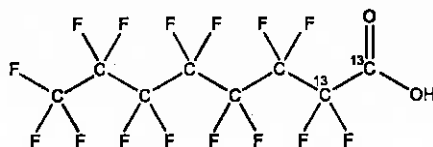


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFOA **LOT NUMBER:** M2PFOA0216
COMPOUND: Perfluoro-n-[1,2-¹³C₂]octanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $^{13}\text{C}_2^{12}\text{C}_6\text{HF}_{16}\text{O}_2$ **MOLECULAR WEIGHT:** 416.05
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** $\geq 99\%^{13}\text{C}$
LAST TESTED: (mm/dd/yyyy) 02/12/2016 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 02/12/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
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FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 02/24/2016
 (mm/dd/yyyy)

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EXPIRY DATE / PERIOD OF VALIDITY:

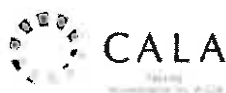
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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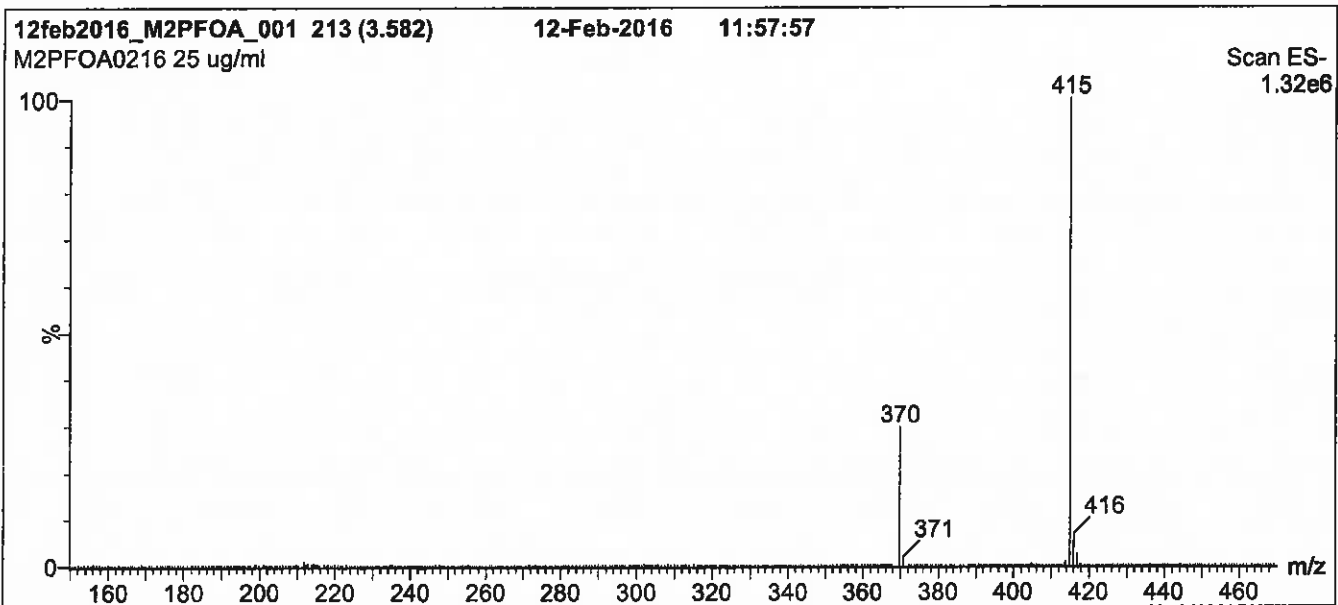
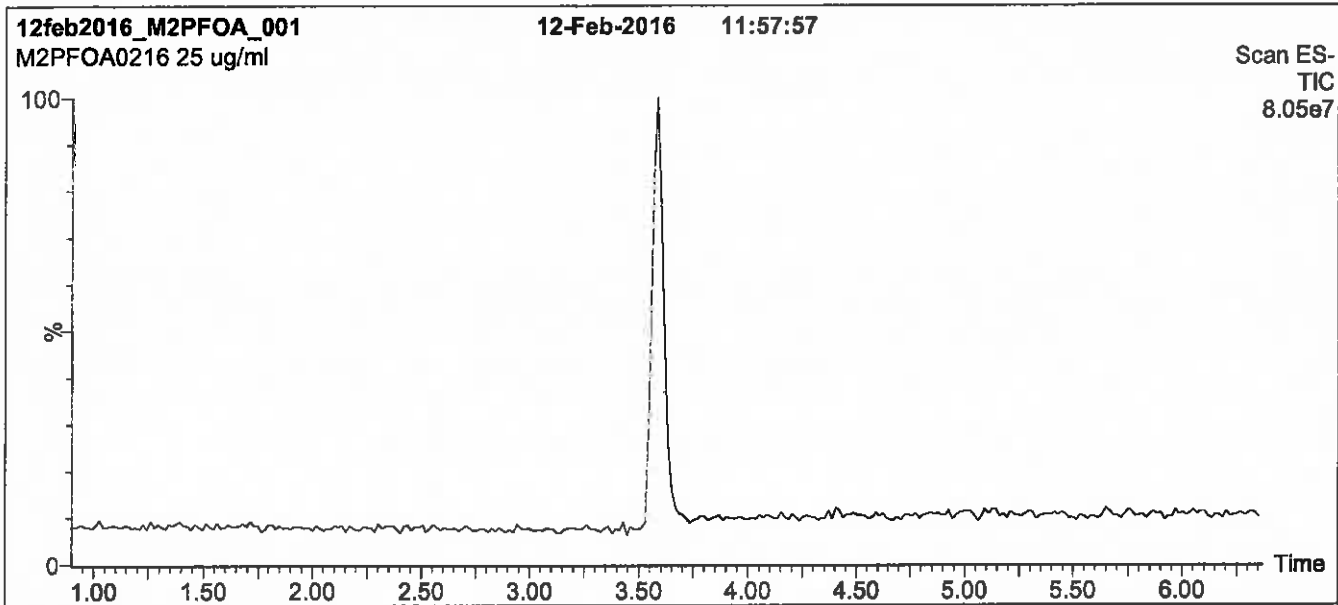
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: M2PFOA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7.5 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

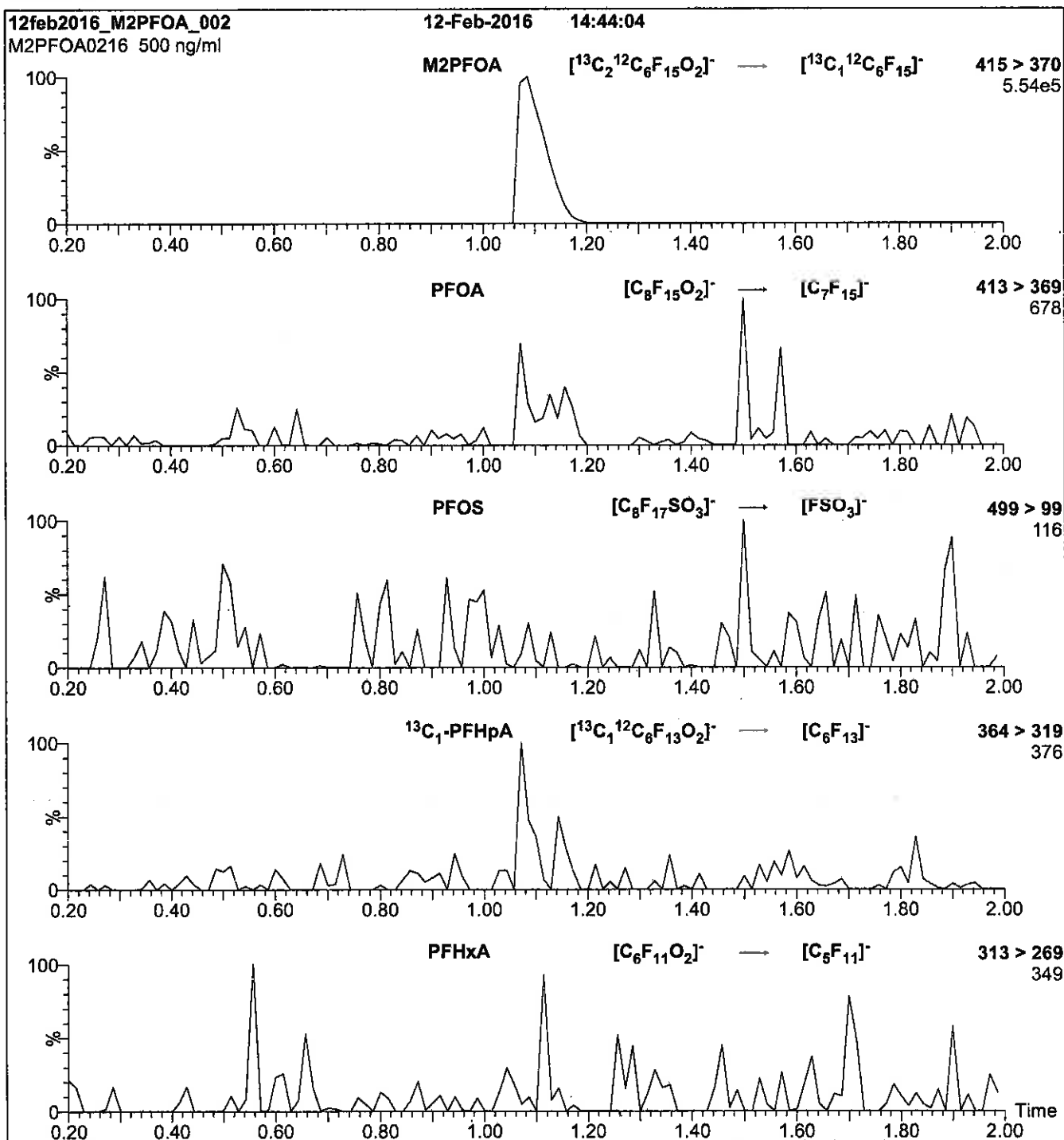
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 100
 Desolvation Gas Flow (l/hr) = 750

Figure 2: M2PFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2PFOA)

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 10

Reagent

LCMPFDA_00012

R: SBC 12/21/16



814255

ID: LCMFDA_00012

Exp: 09/30/21 Prpd: SBC

13C2-Perfluorodecanoic a



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

MPFDA

LOT NUMBER:

MPFDA0916

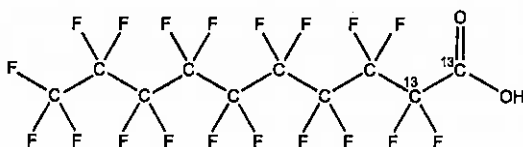
COMPOUND:

Perfluoro-n-[1,2-¹³C₂]decanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₈HF₁₉O₂

MOLECULAR WEIGHT:

516.07

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

(1,2-¹³C₂)

LAST TESTED: (mm/dd/yyyy)

09/30/2016

EXPIRY DATE: (mm/dd/yyyy)

09/30/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of ¹³C₁-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chrftim

Date: 10/07/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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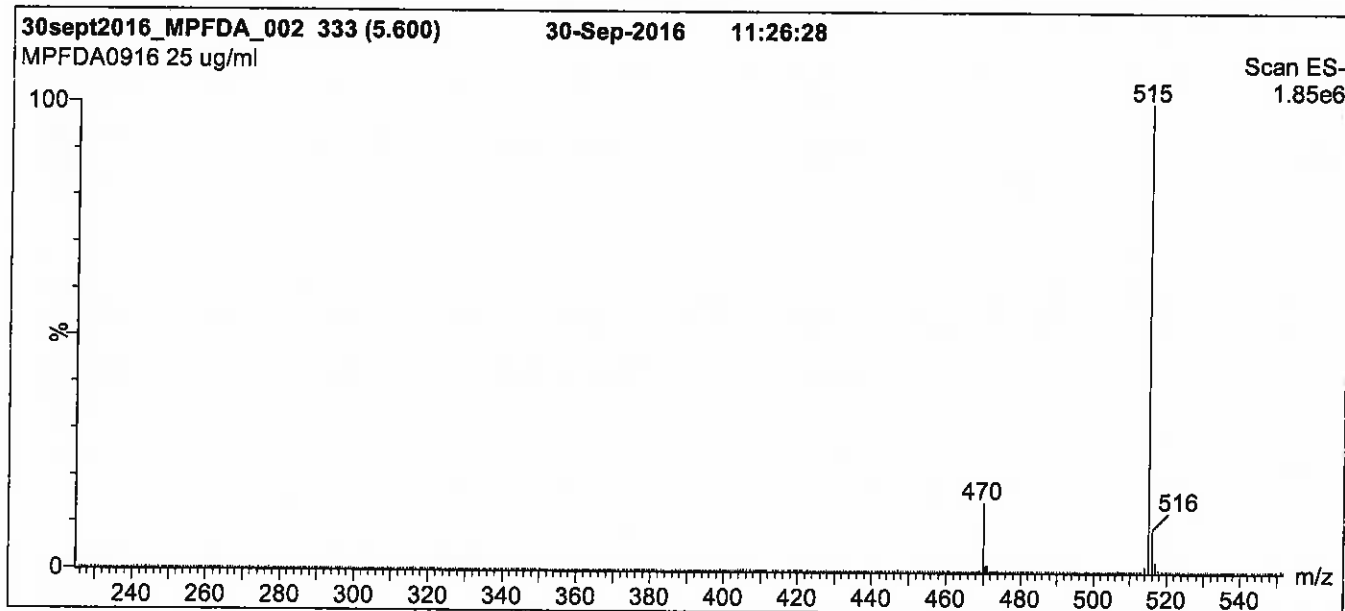
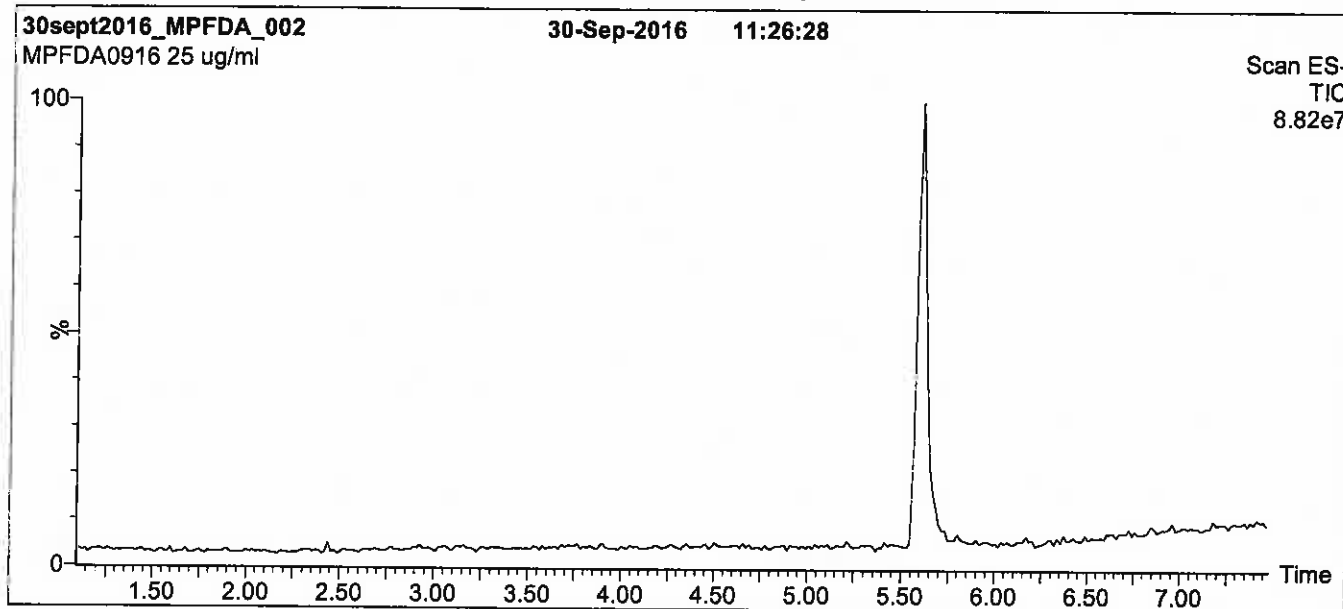
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Figure 1: MPFDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

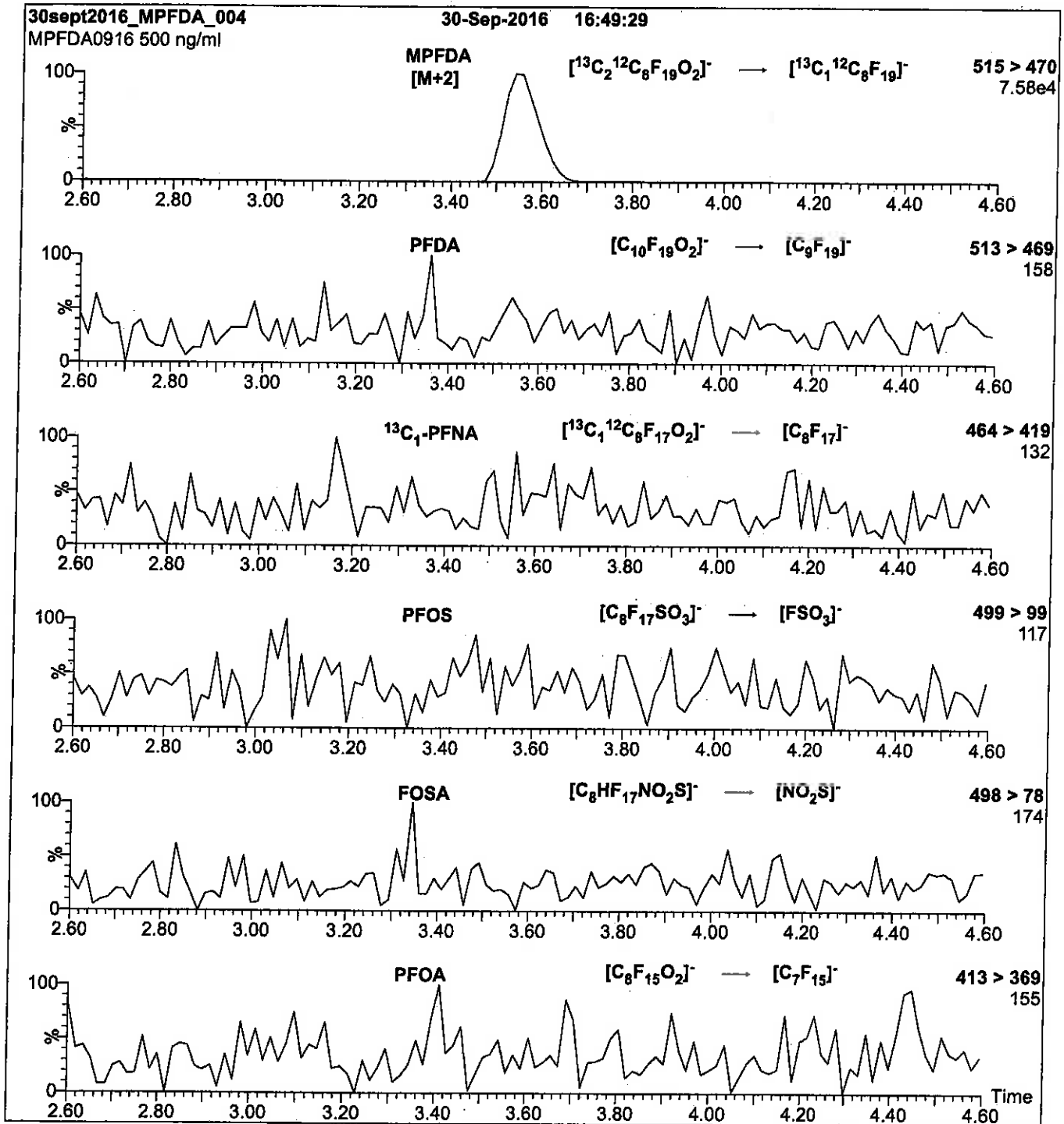
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml MPFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 13

Reagent

LCMPFHxA_00015

r: 5/17/17 SKJ

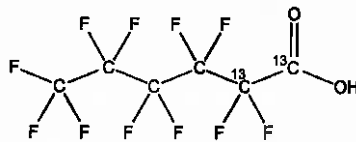


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxA **LOT NUMBER:** MPFHxA1116
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₄HF₁₁O₂ **MOLECULAR WEIGHT:** 316.04
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99%¹³C
(1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 11/22/2016
EXPIRY DATE: (mm/dd/yyyy) 11/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

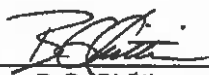
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of perfluoro-n-hexanoic acid and ~ 0.3% of perfluoro-n-octanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 12/13/2016
B.G. Chittim (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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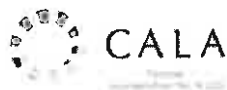
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

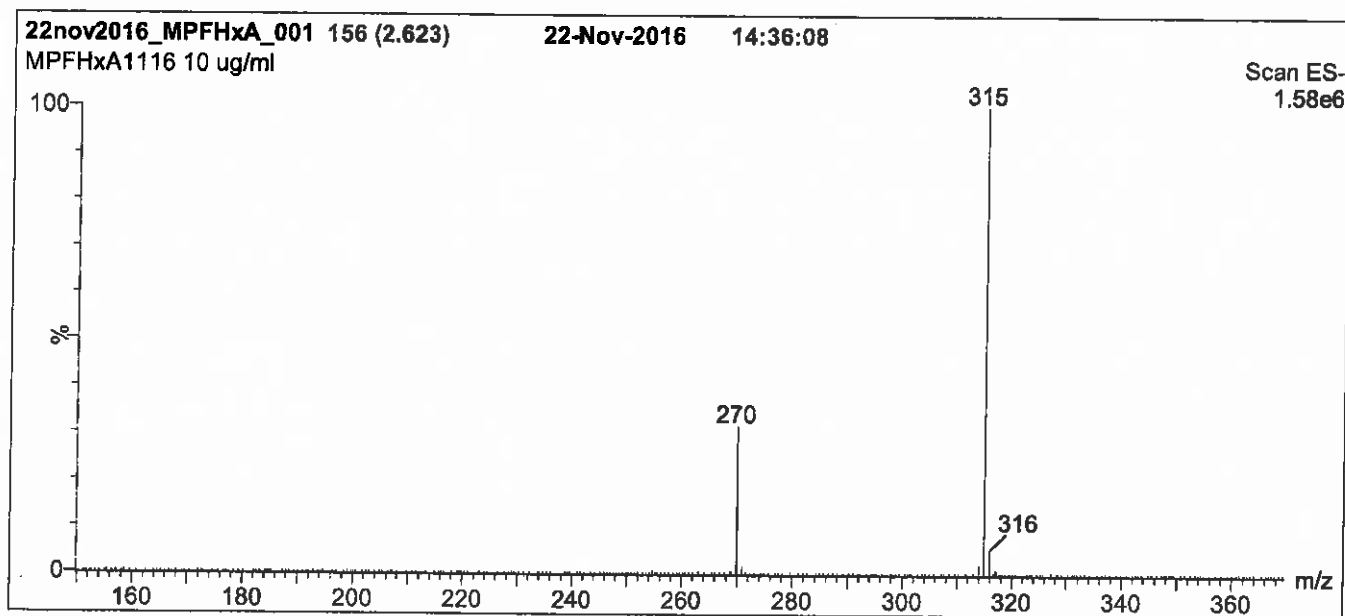
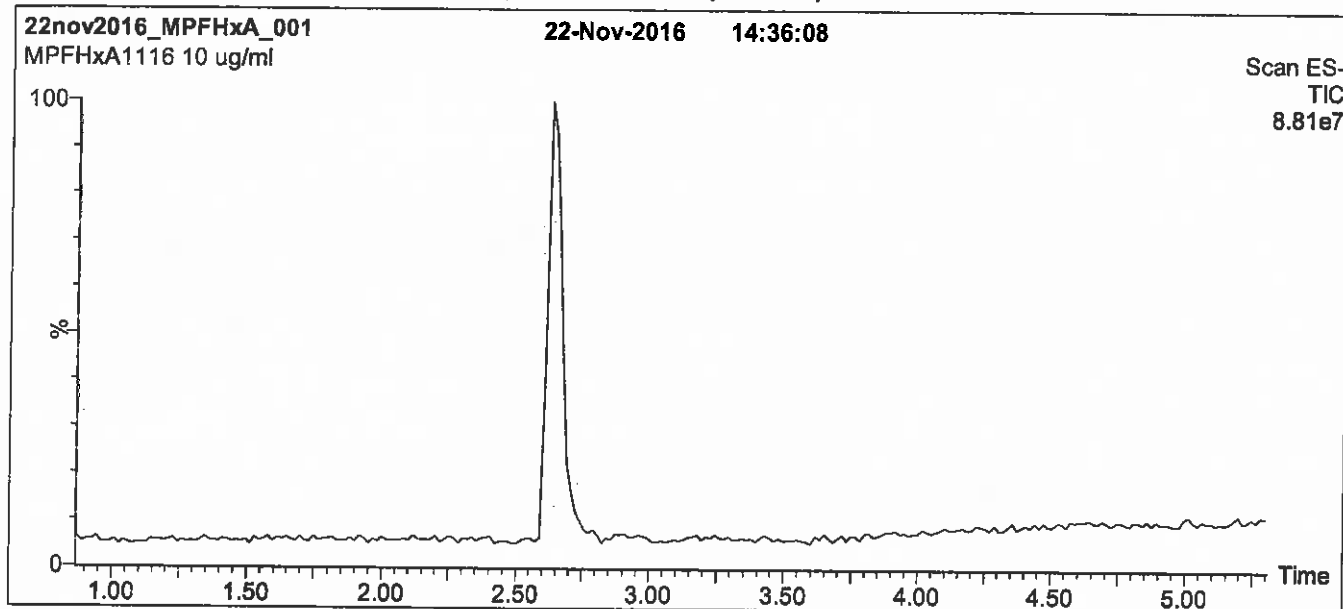
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: MPFHxA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions over 0.5 min.
Time: 10 min

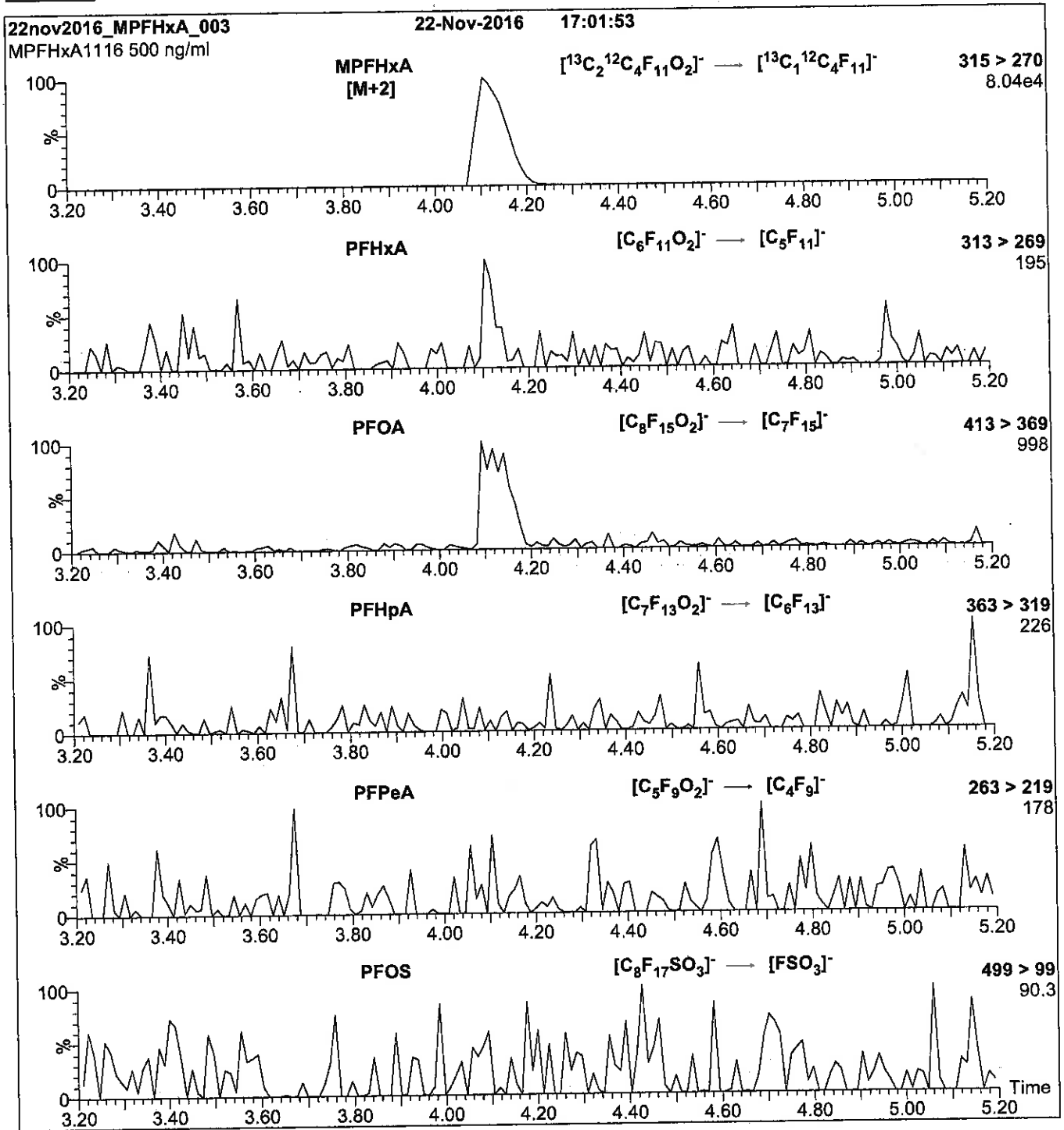
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFHxA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml MPFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
 Collision Energy (eV) = 10

Reagent

LCMPFOS_00021

r: 5/6/17 skv

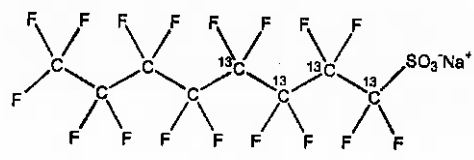


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS1216
COMPOUND: Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate

STRUCTURE: **CAS #:** Not available



| | | | |
|----------------------------------|--|--------------------------|--|
| MOLECULAR FORMULA: | ¹³ C ₄ ¹² C ₄ F ₁₇ SO ₃ Na | MOLECULAR WEIGHT: | 526.08 |
| CONCENTRATION: | 50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion) | SOLVENT(S): | Methanol |
| CHEMICAL PURITY: | >98% | ISOTOPIC PURITY: | ≥99% ¹³ C (1,2,3,4- ¹³ C ₄) |
| LAST TESTED: (mm/dd/yyyy) | 12/12/2016 | | |
| EXPIRY DATE: (mm/dd/yyyy) | 12/12/2021 | | |
| RECOMMENDED STORAGE: | Store ampoule in a cool, dark place | | |


DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.8% Sodium perfluoro-1-[1,2,3-¹³C₃]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 12/14/2016
 B.G. Chrifim (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

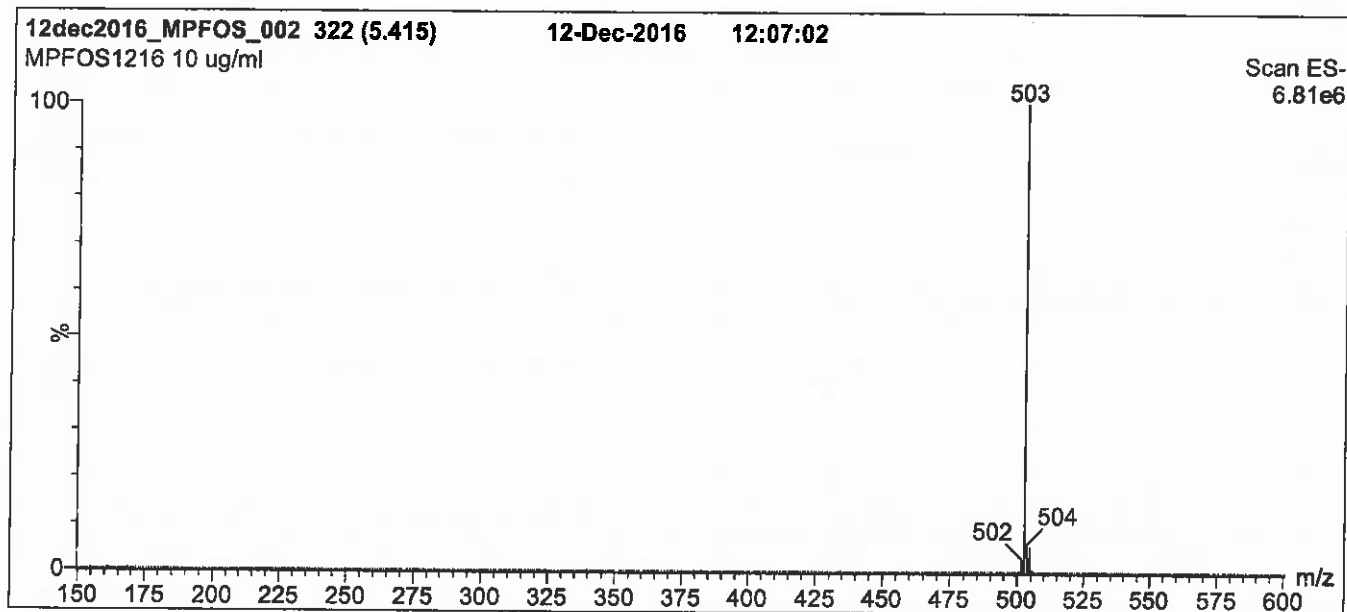
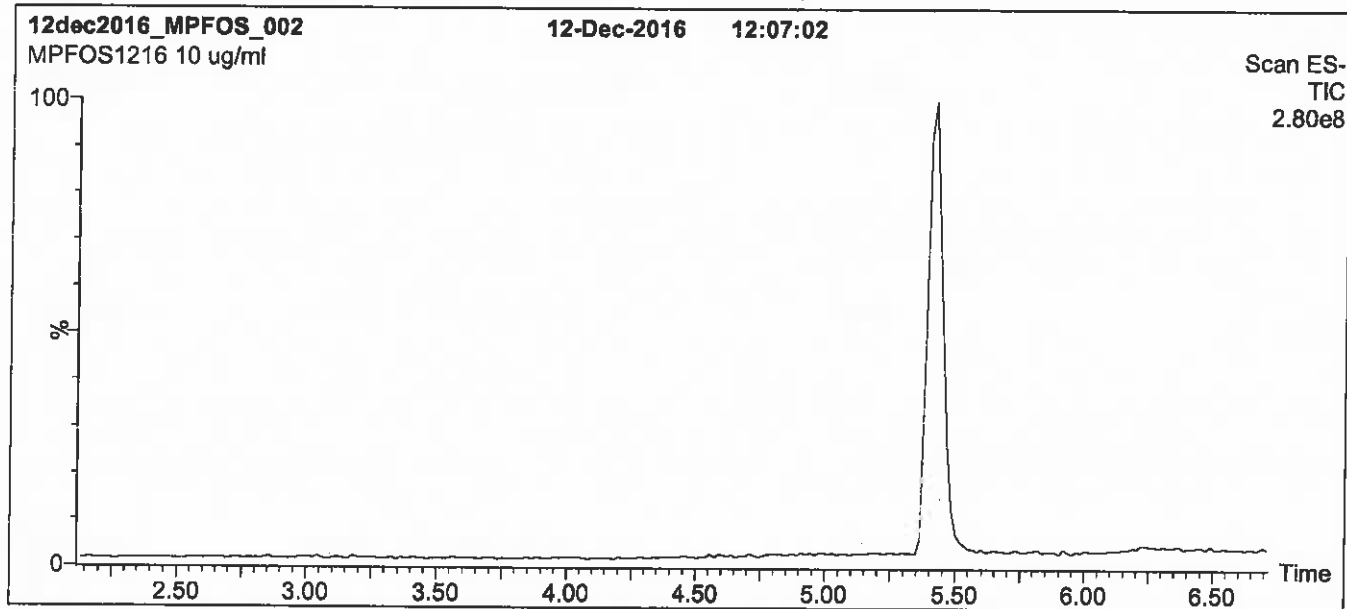
QUALITY MANAGEMENT:

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Figure 1: MPFOS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 85% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

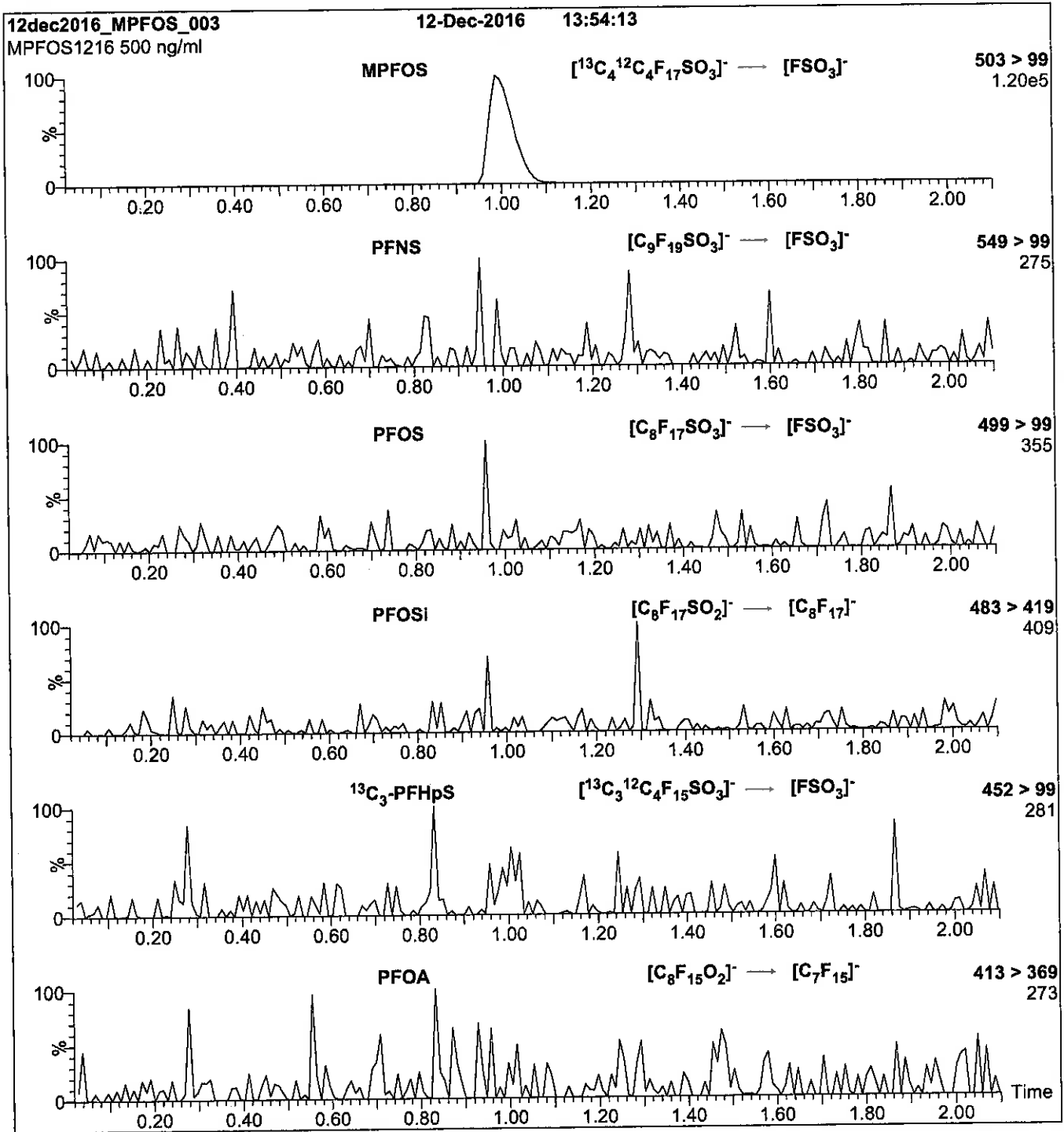
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFOS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μl (500 ng/ml MPFOS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
 (both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.35e-3
 Collision Energy (eV) = 40

Reagent

LCMPFOS_00024

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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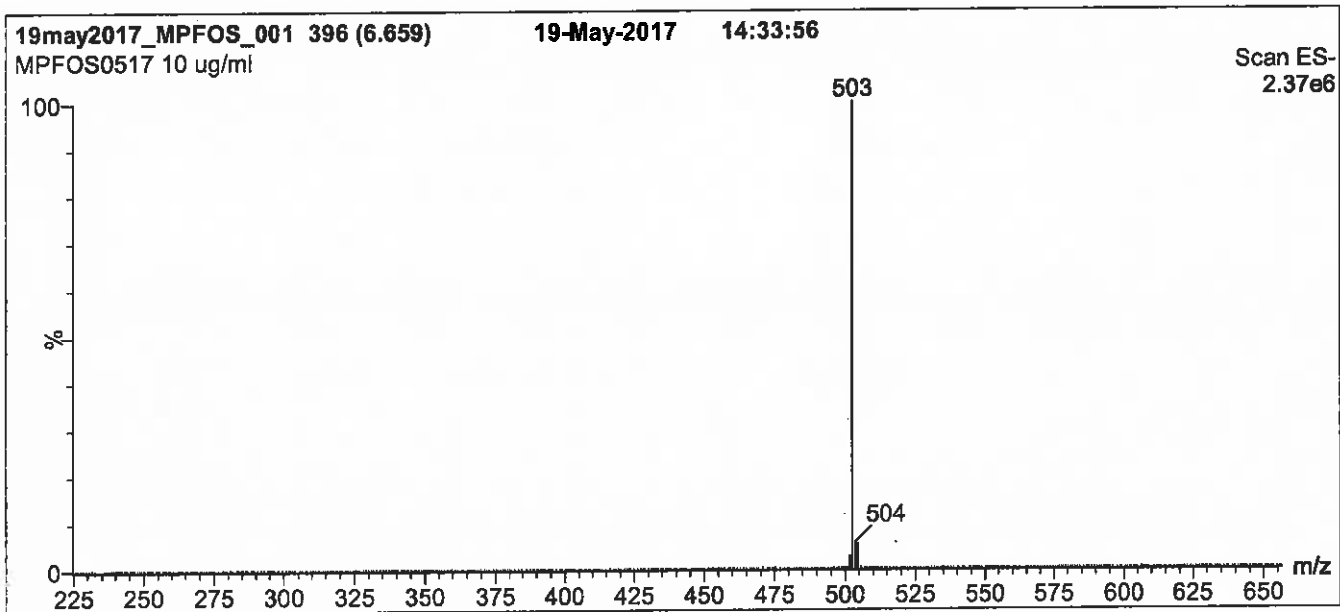
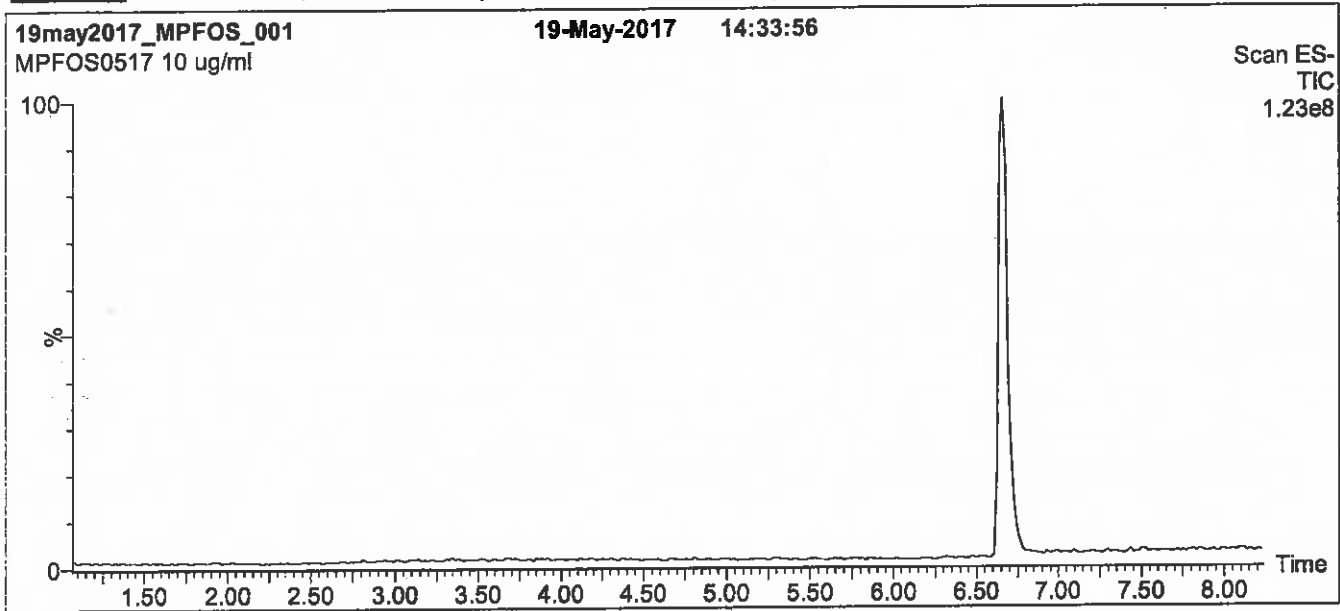
QUALITY MANAGEMENT:

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Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 8 min and hold for 1 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

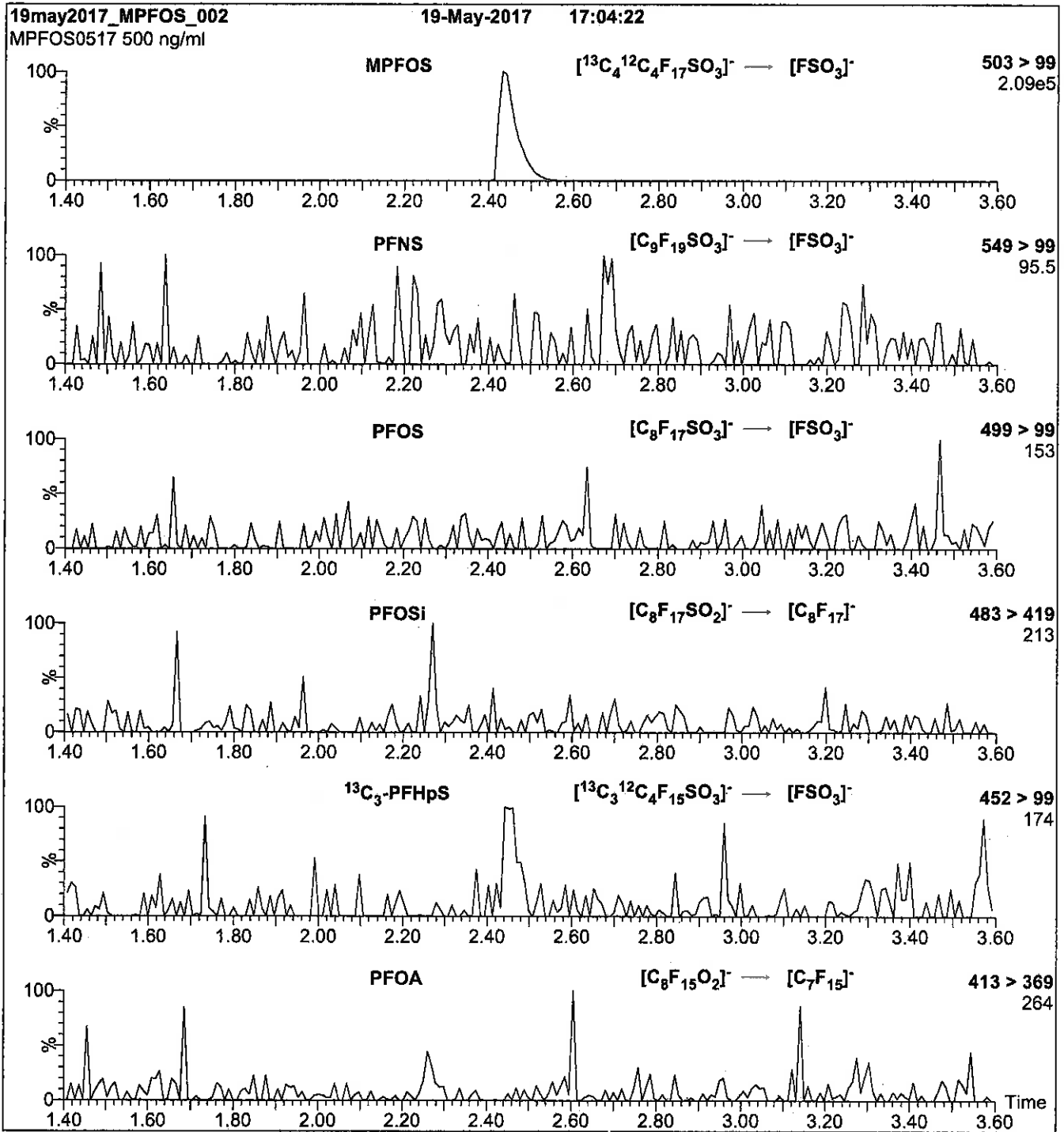
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 60.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFOS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFOS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 40

Reagent

LCPFBSA_00002

INTENDED USE:

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HAZARDS:

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where x is expressed as a relative standard uncertainty of the individual parameter.

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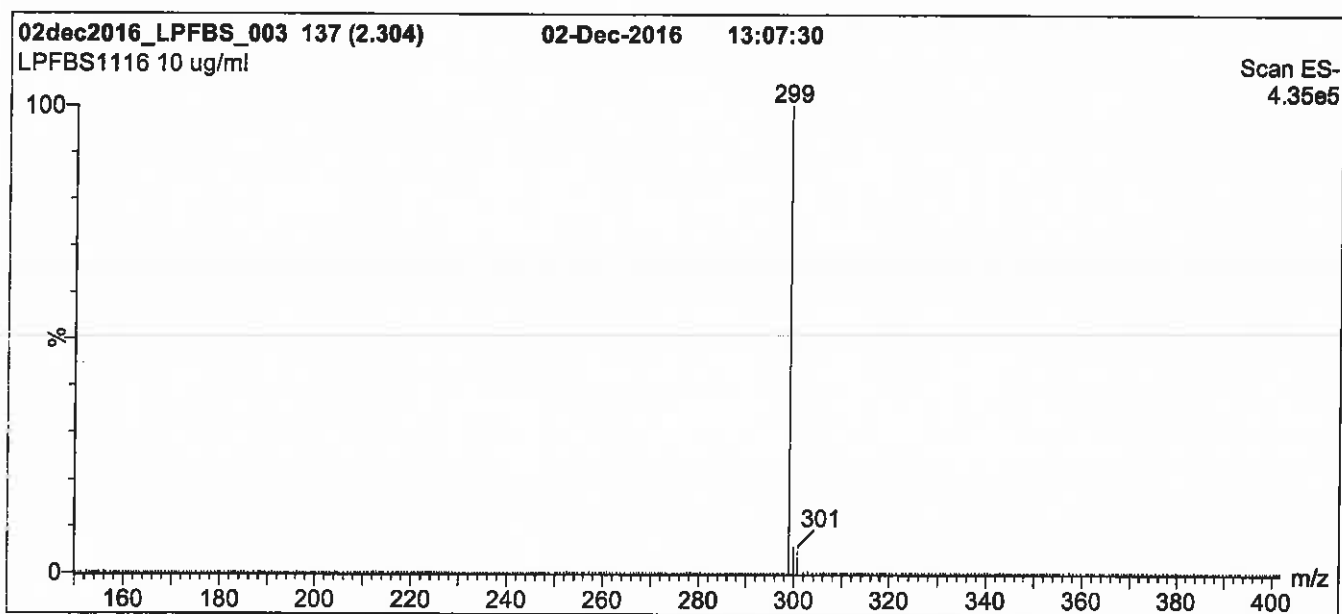
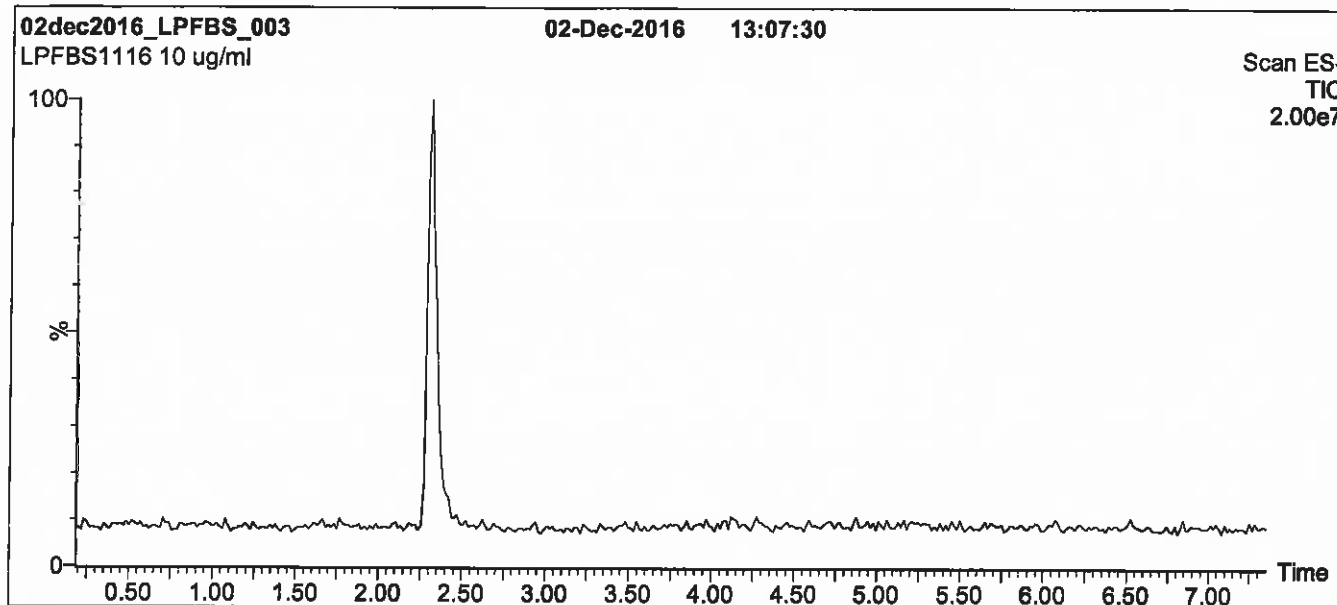
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Figure 1: L-PFBS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈,
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 40% (80:20 MeOH:ACN) / 60% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 2 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

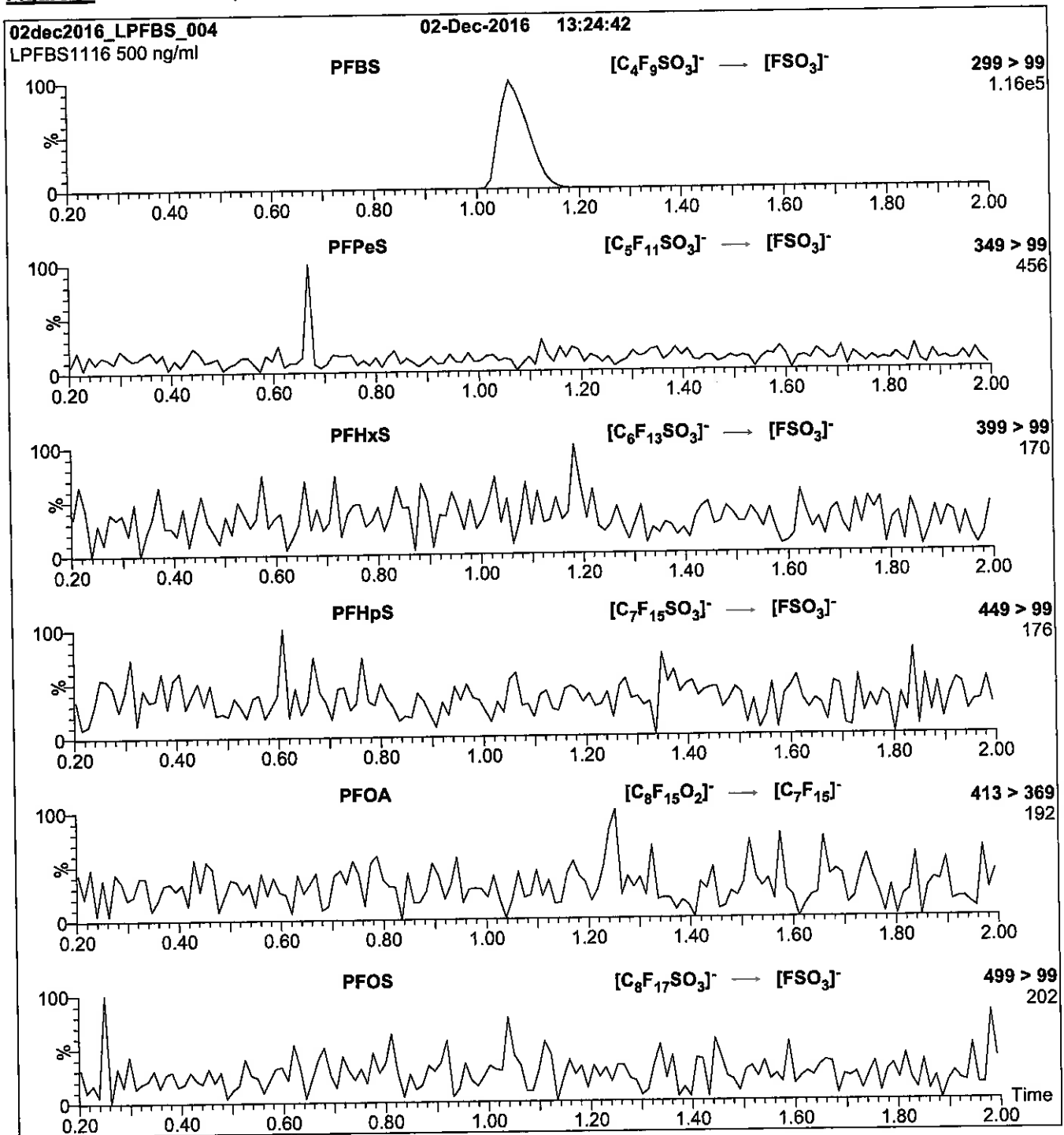
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 40.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFBS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml L-PFBS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
 Collision Energy (eV) = 25

Reagent

LCPFHpA_00009

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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EXPIRY DATE / PERIOD OF VALIDITY:

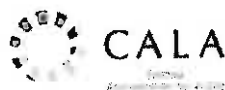
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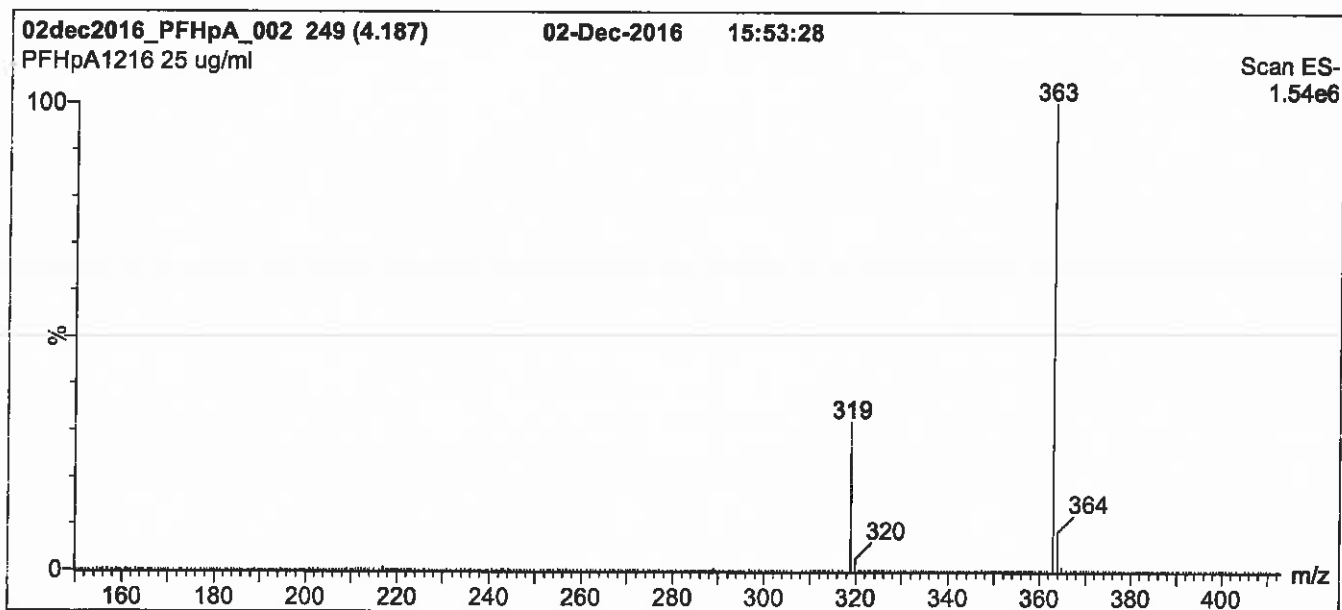
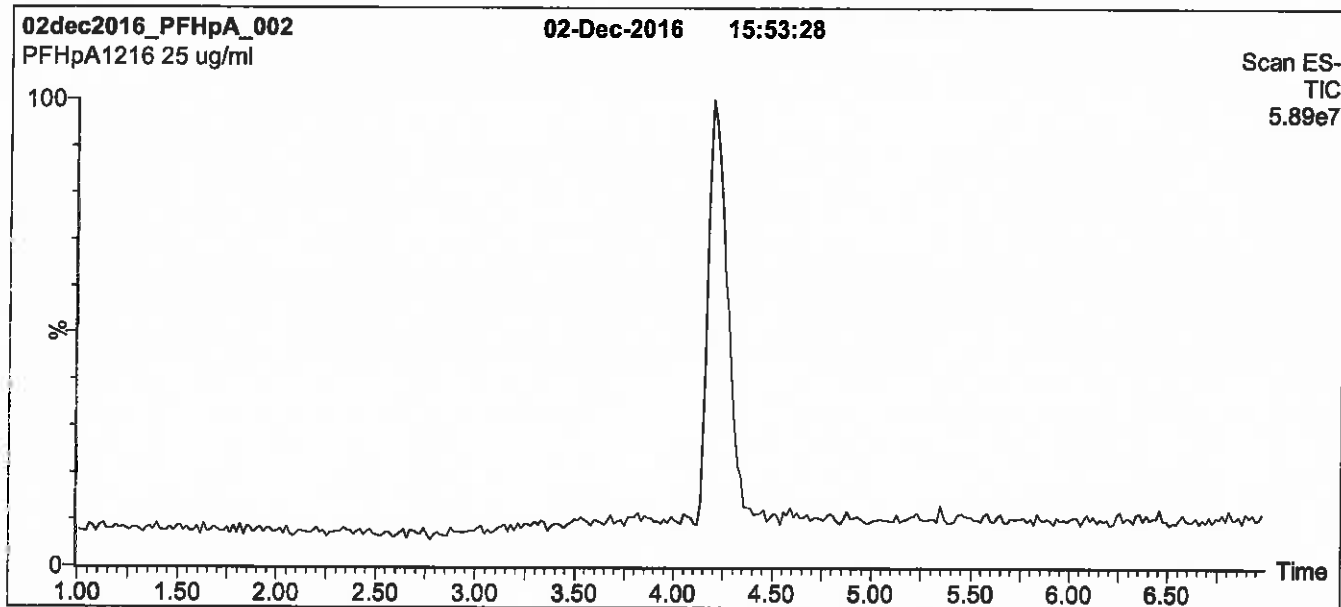
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Figure 1: PFHpA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7.5 min and hold for
 1.5 min before returning to initial conditions in 0.5 min.
 Time: 10 min

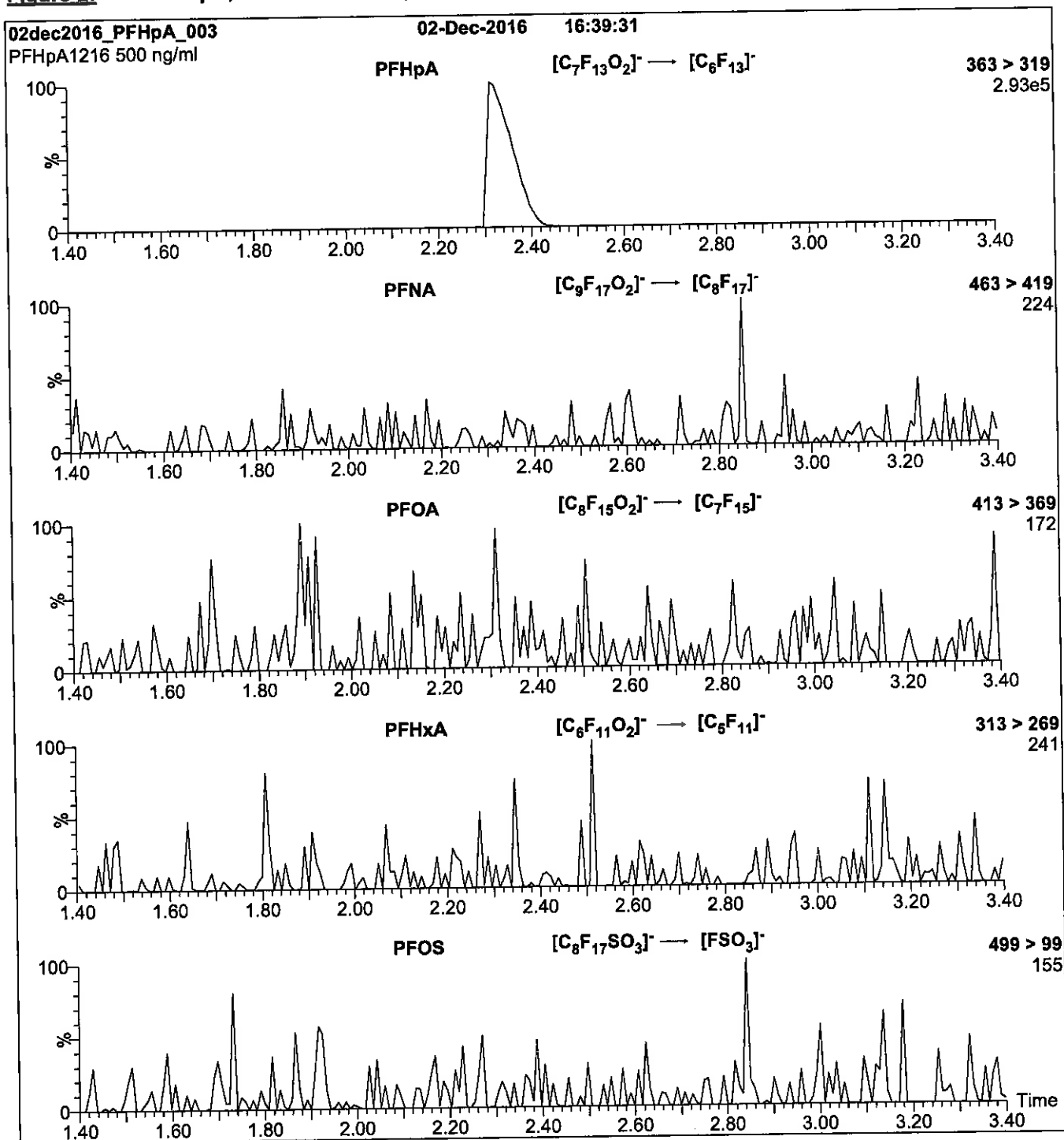
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: PFHpA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml PFHpA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
 Collision Energy (eV) = 11

Reagent

LCPFHxS-br_00005

P: 10/2017 SKW



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE: br-PFHxSK
LOT NUMBER: brPFHxSK0117
CONCENTRATION: 50.0 ± 2.5 µg/ml (total potassium salt)
45.5 ± 2.3 µg/ml (total PFHxS anion)
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 01/03/2017
LAST TESTED: (mm/dd/yyyy) 01/04/2017
EXPIRY DATE: (mm/dd/yyyy) 01/04/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorohexanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.5% of perfluoro-1-pentanesulfonate and ~ 0.2% of perfluoro-1-octanesulfonate.
- CAS#: 3871-99-6 (for linear isomer; potassium salt).

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Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: br-PFHxSK; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

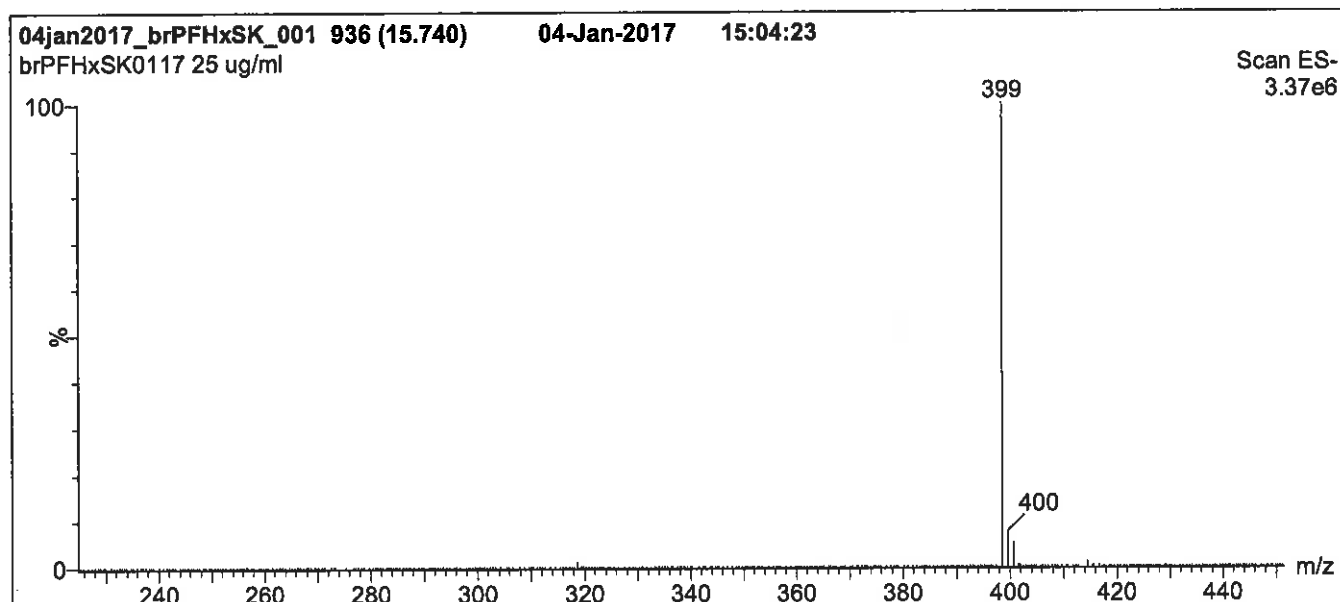
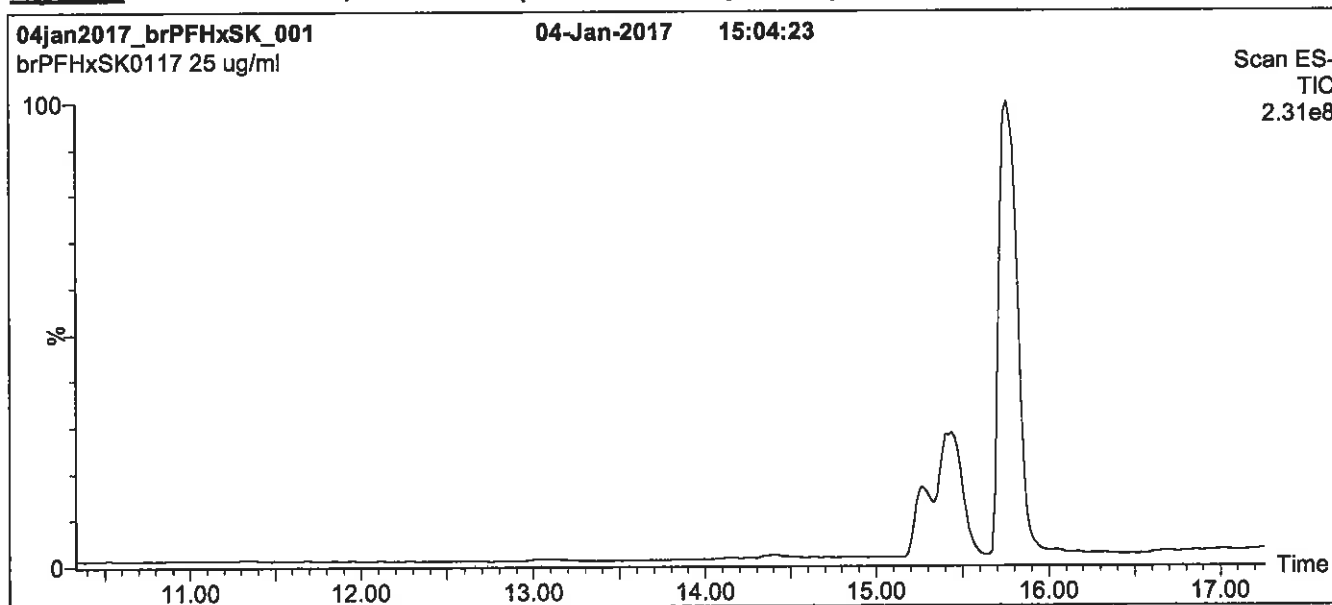
| Isomer | Name | Structure | Percent Composition by ¹⁹ F-NMR |
|--------|---|--|--|
| 1 | Potassium perfluoro-1-hexanesulfonate | CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ | 81.1 |
| 2 | Potassium 1-trifluoromethylperfluoropentanesulfonate** | $\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}(\text{SO}_3^-\text{K}^+) \\ \\ \text{CF}_3 \end{array}$ | 2.9 |
| 3 | Potassium 2-trifluoromethylperfluoropentanesulfonate | $\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}(\text{CF}_3)\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$ | 1.4 |
| 4 | Potassium 3-trifluoromethylperfluoropentanesulfonate | $\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$ | 5.0 |
| 5 | Potassium 4-trifluoromethylperfluoropentanesulfonate | $\begin{array}{c} \text{CF}_3\text{CF}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$ | 8.9 |
| 6 | Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate | $\begin{array}{c} \text{CF}_3 \\ \\ \text{CF}_3\text{C}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$ | 0.2 |
| 7 | Other Unidentified Isomers | | 0.5 |

* Percent of total perfluorohexanesulfonate isomers only.
 ** Systematic Name: Potassium perfluorohexane-2-sulfonate.

Certified By: 
 B.G. Chittim

Date: 01/20/2017
(mm/dd/yyyy)

Figure 1: br-PFHxSK; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

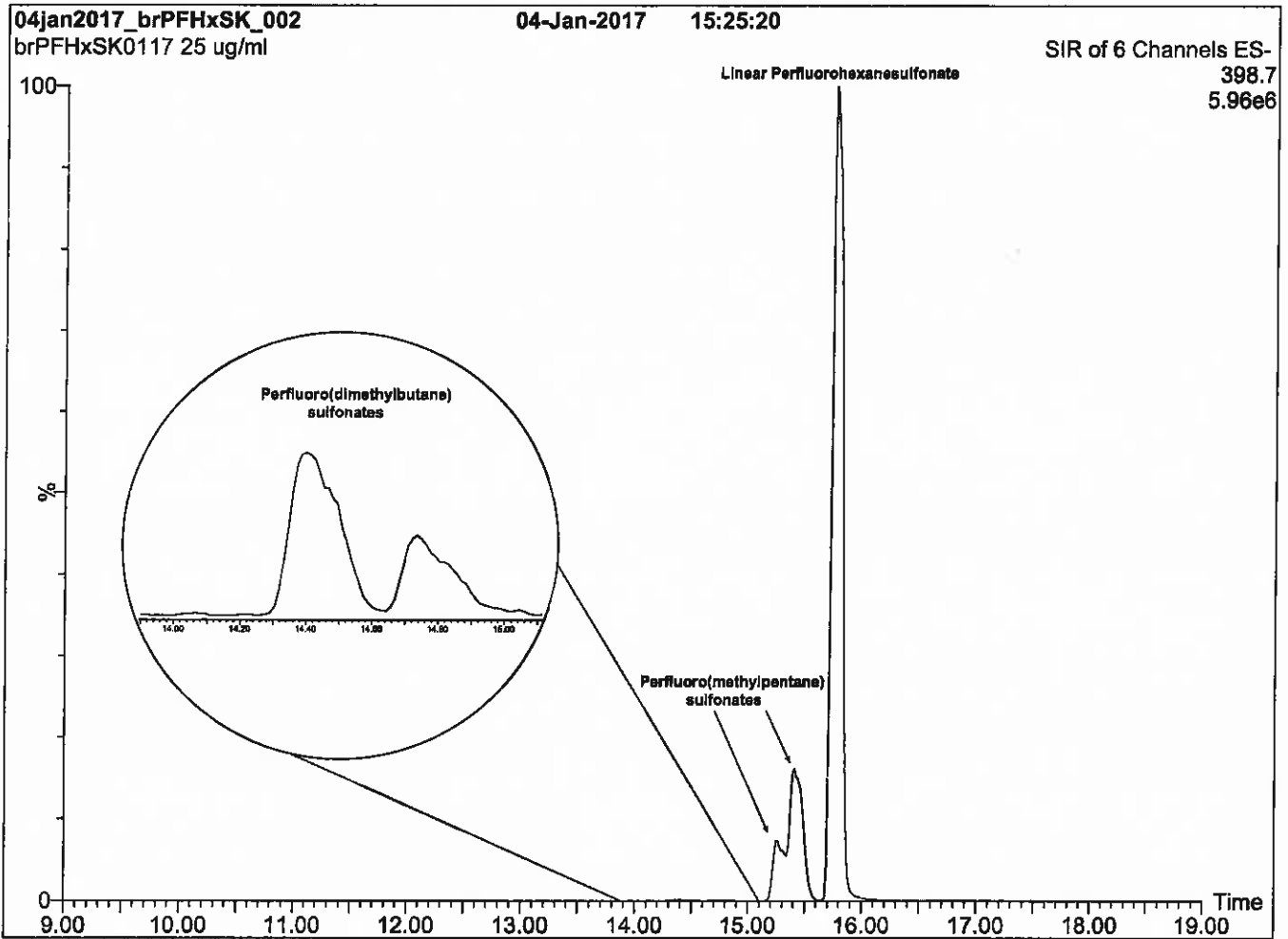
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: br-PFHxSK; LC/MS Data (SIR)



Conditions for Figure 2:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

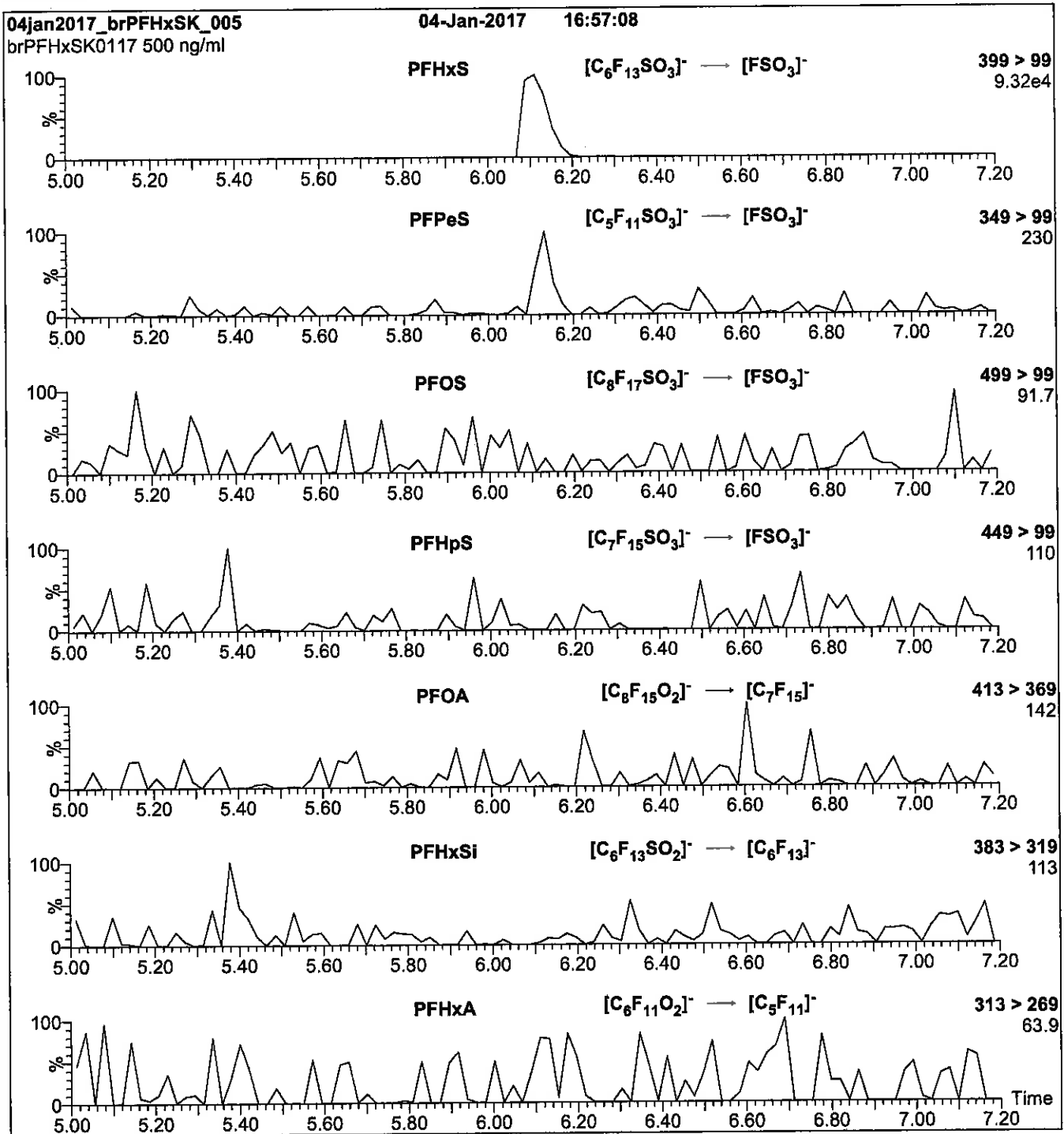
Flow: 300 μ l/min

MS Parameters

Experiment: SIR (6 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (15-62)
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 3: br-PFHxSK; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 3:

Injection: Direct loop injection
10 μ l (500 ng/ml br-PFHxSK)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 30

Reagent

LCPFNA_00009

INTENDED USE:

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HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

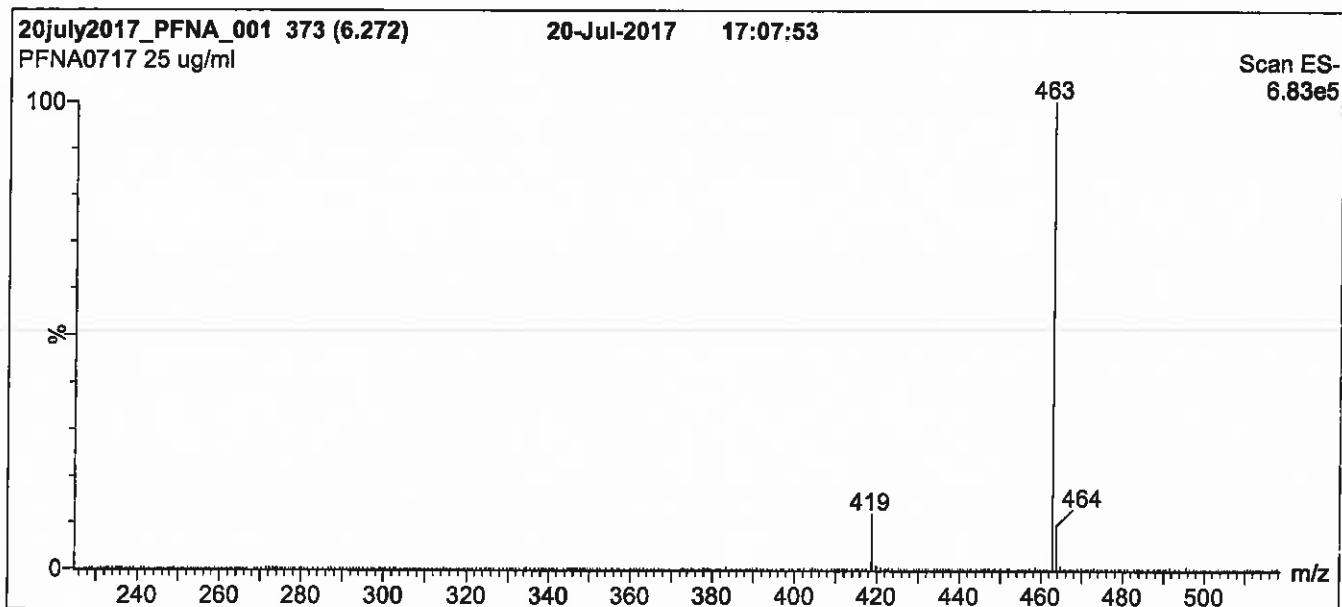
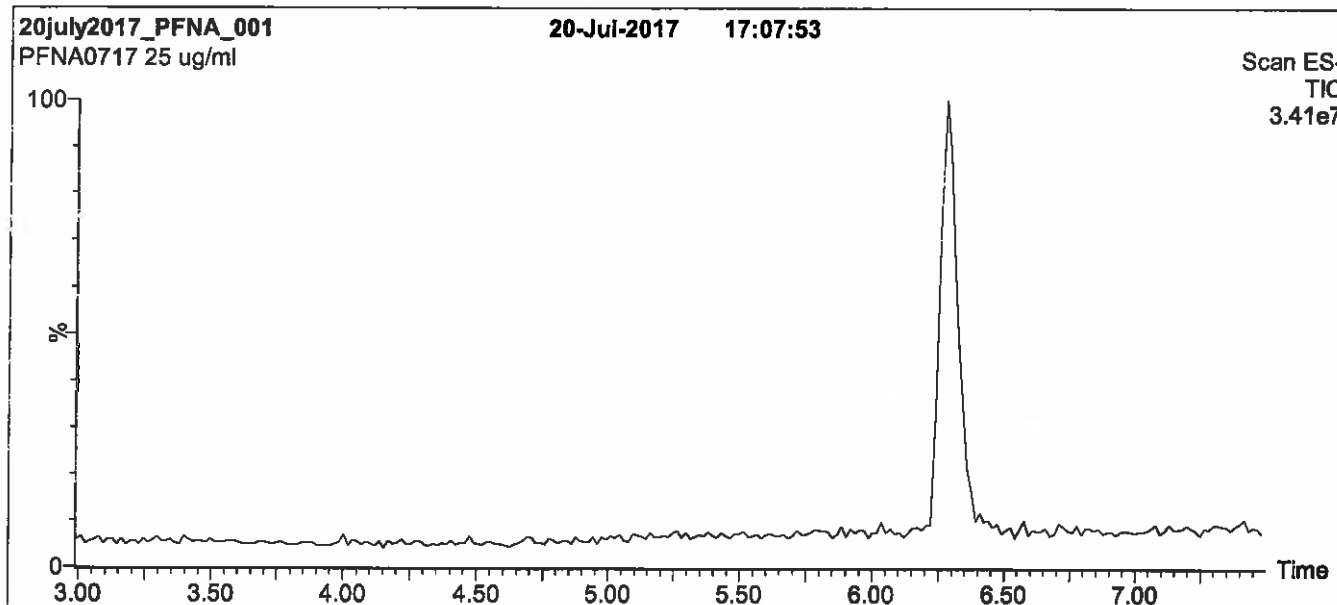
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: PFNA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Hold for 1 min. Ramp to 90% organic over 7 min and hold
for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

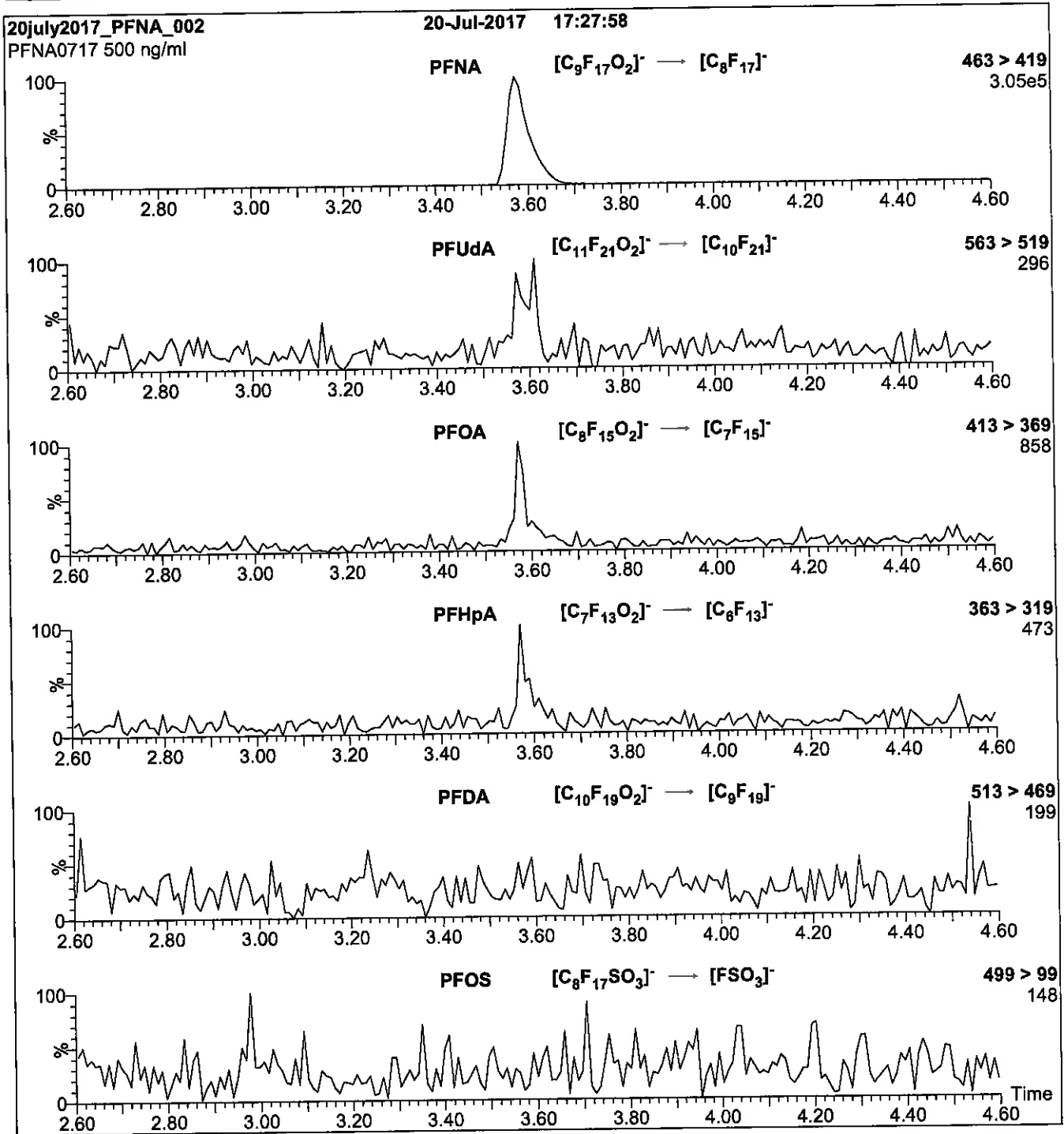
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFNA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml PFNA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
 Collision Energy (eV) = 11

Reagent

LCPFOA_00010

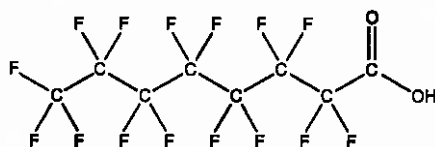
P: 10/2017 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFOA
COMPOUND: Perfluoro-n-octanoic acid
LOT NUMBER: PFOA0917
STRUCTURE:
CAS #: 335-67-1



MOLECULAR FORMULA: $C_8HF_{15}O_2$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 414.07
SOLVENT(S): Methanol
Water (<1%)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager
Date: 09/28/2017
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

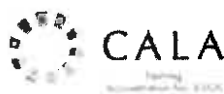
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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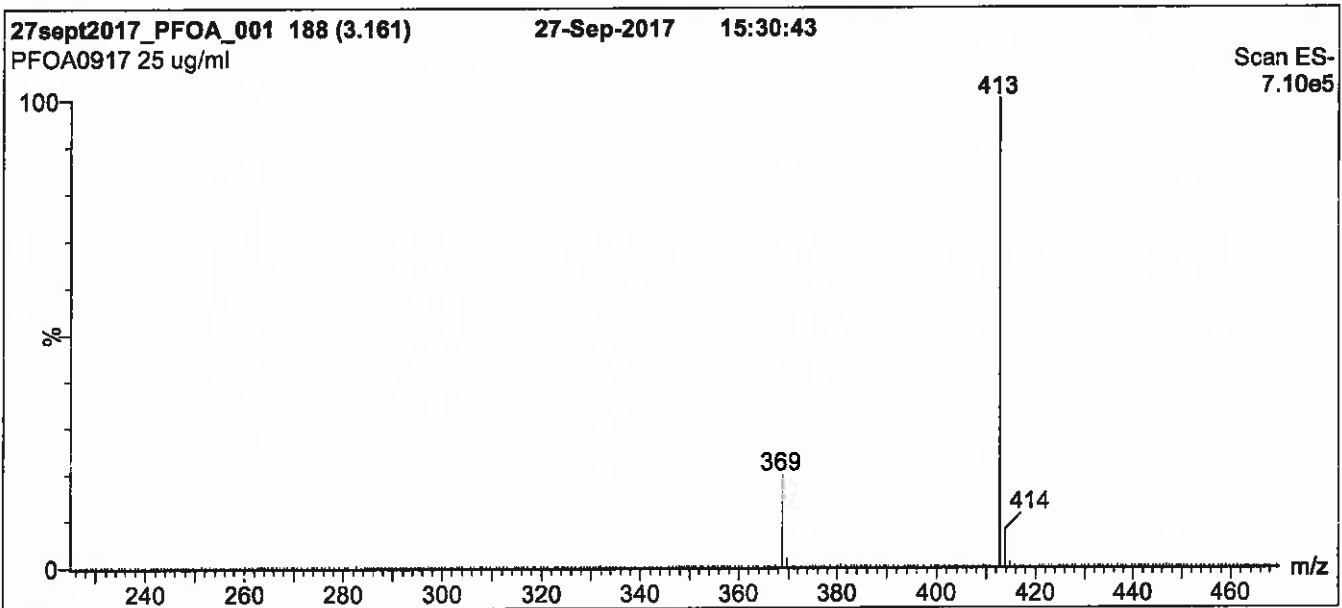
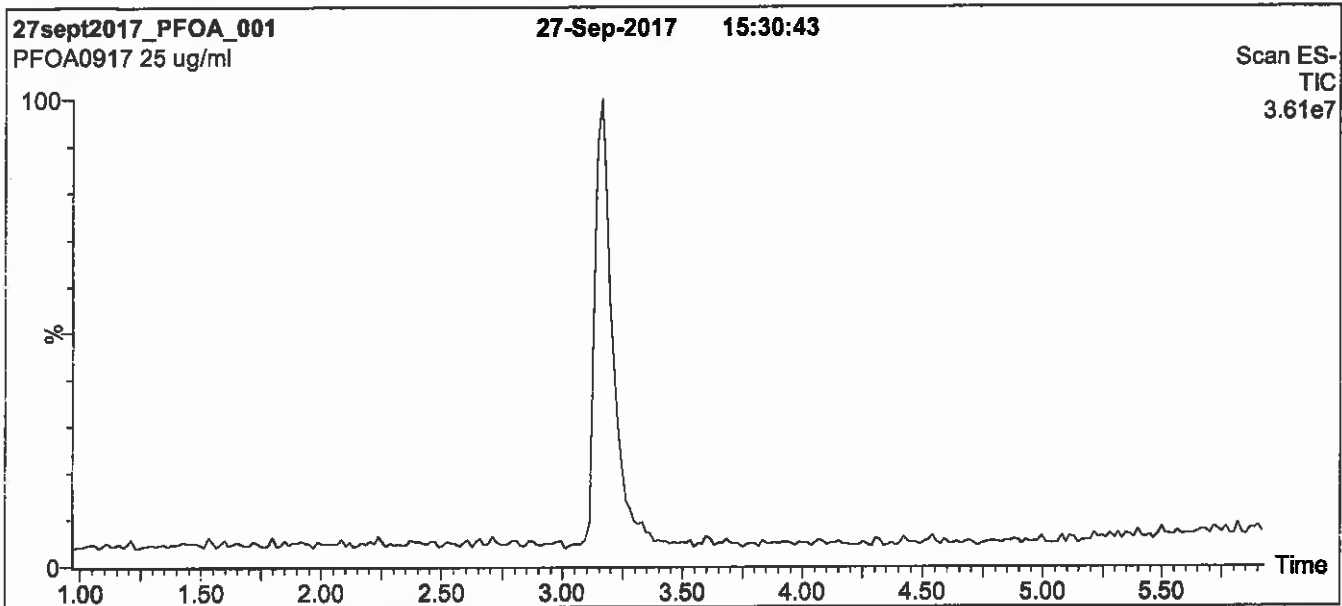
QUALITY MANAGEMENT:

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Figure 1: PFOA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

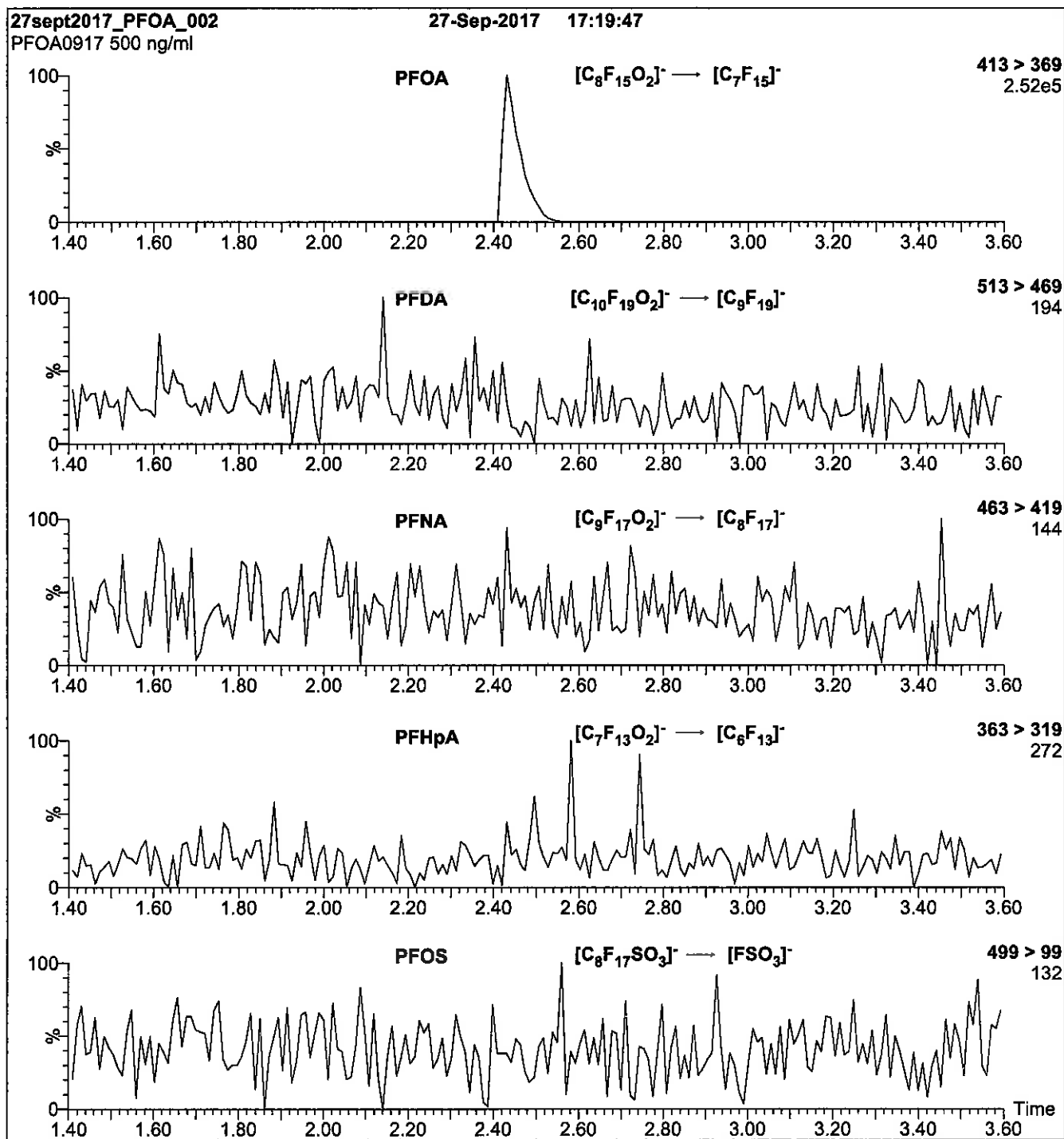
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFOA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 11

Reagent

LCPFOS-br_00005

P: 10/2017 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE: br-PFOSK
LOT NUMBER: brPFOSK0117
CONCENTRATION: 50 ± 2.5 µg/ml (total potassium salt)
46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 01/09/2017
LAST TESTED: (mm/dd/yyyy) 01/12/2017
EXPIRY DATE: (mm/dd/yyyy) 01/12/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

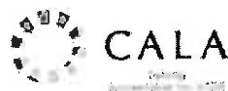
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: br-PFOSK; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

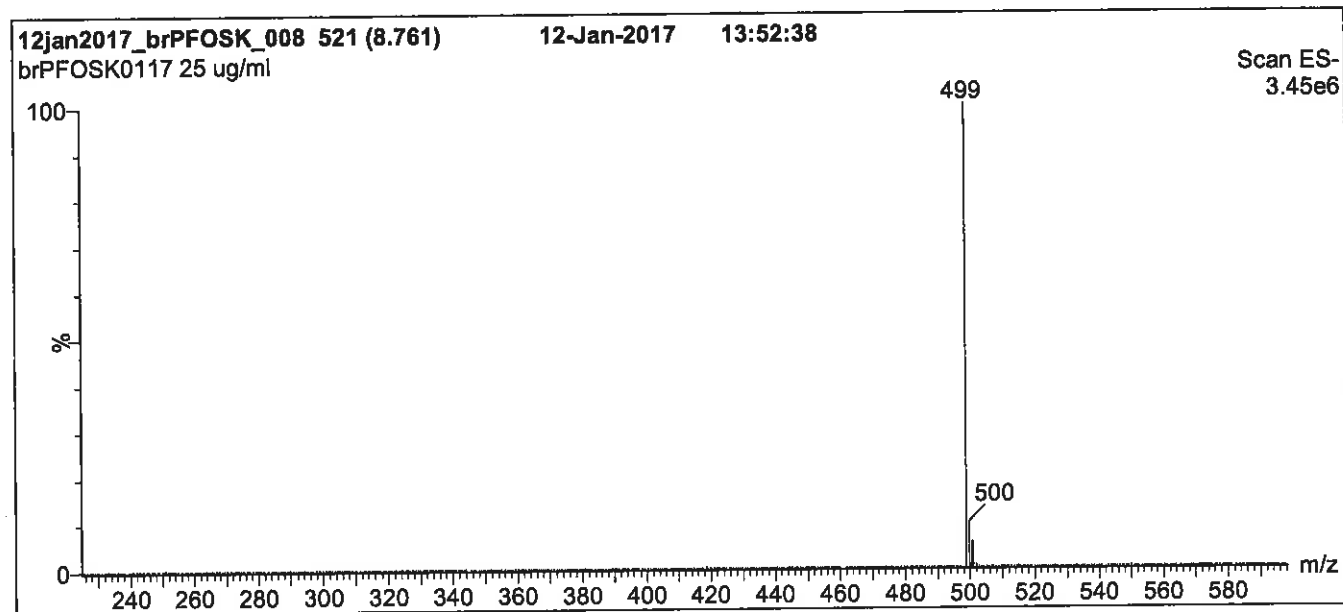
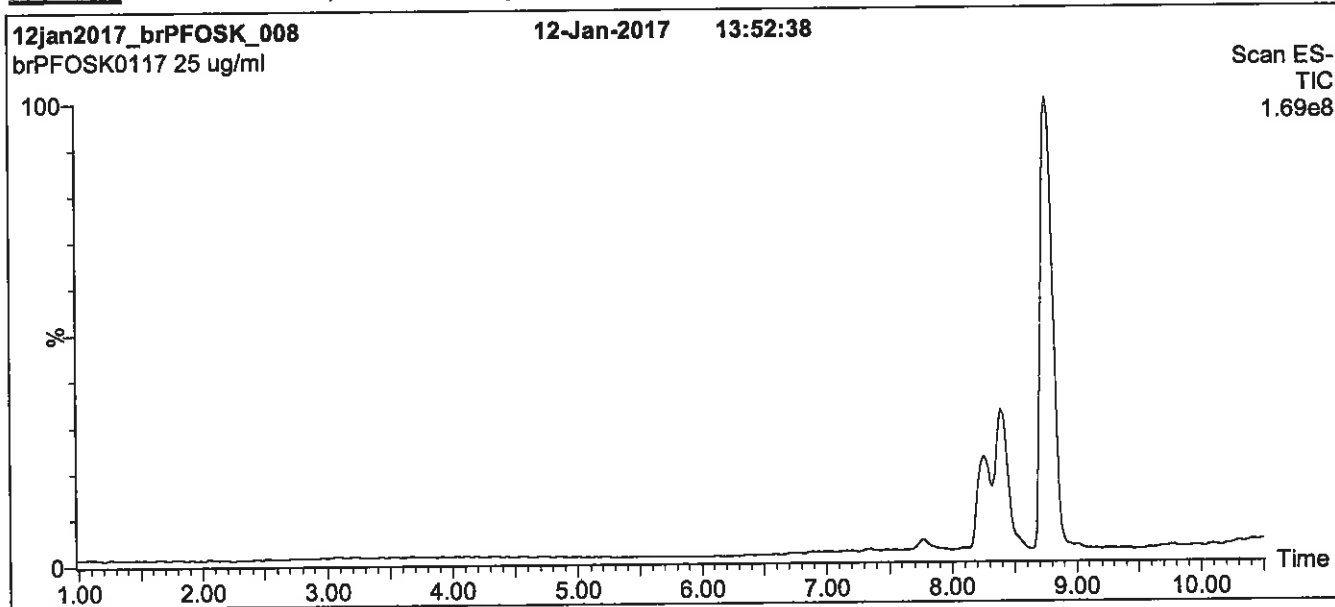
| Isomer | Name | Structure | Percent Composition by ¹⁹ F-NMR |
|--------|---|---|--|
| 1 | Potassium perfluoro-1-octanesulfonate | CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ | 78.8 |
| 2 | Potassium 1-trifluoromethylperfluoroheptanesulfonate** | CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ | 1.2 |
| 3 | Potassium 2-trifluoromethylperfluoroheptanesulfonate | CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ | 0.6 |
| 4 | Potassium 3-trifluoromethylperfluoroheptanesulfonate | CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ | 1.9 |
| 5 | Potassium 4-trifluoromethylperfluoroheptanesulfonate | CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ | 2.2 |
| 6 | Potassium 5-trifluoromethylperfluoroheptanesulfonate | CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ | 4.5 |
| 7 | Potassium 6-trifluoromethylperfluoroheptanesulfonate | CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ | 10.0 |
| 8 | Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate | CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ CF ₃ | 0.2 |
| 9 | Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate | CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ CF ₃ | 0.03 |
| 10 | Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate | CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ CF ₃ | 0.4 |
| 11 | Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate | CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ CF ₃ | 0.07 |

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.
 ** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: 
 B.G. Chittim

Date: 01/20/2017
 (mm/dd/yyyy)

Figure 1: br-PFOSK; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 45% (80:20 MeOH:ACN) / 55% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 12 min and hold for 2 min.
 Return to initial conditions over 0.5 min.
 Time: 16 min

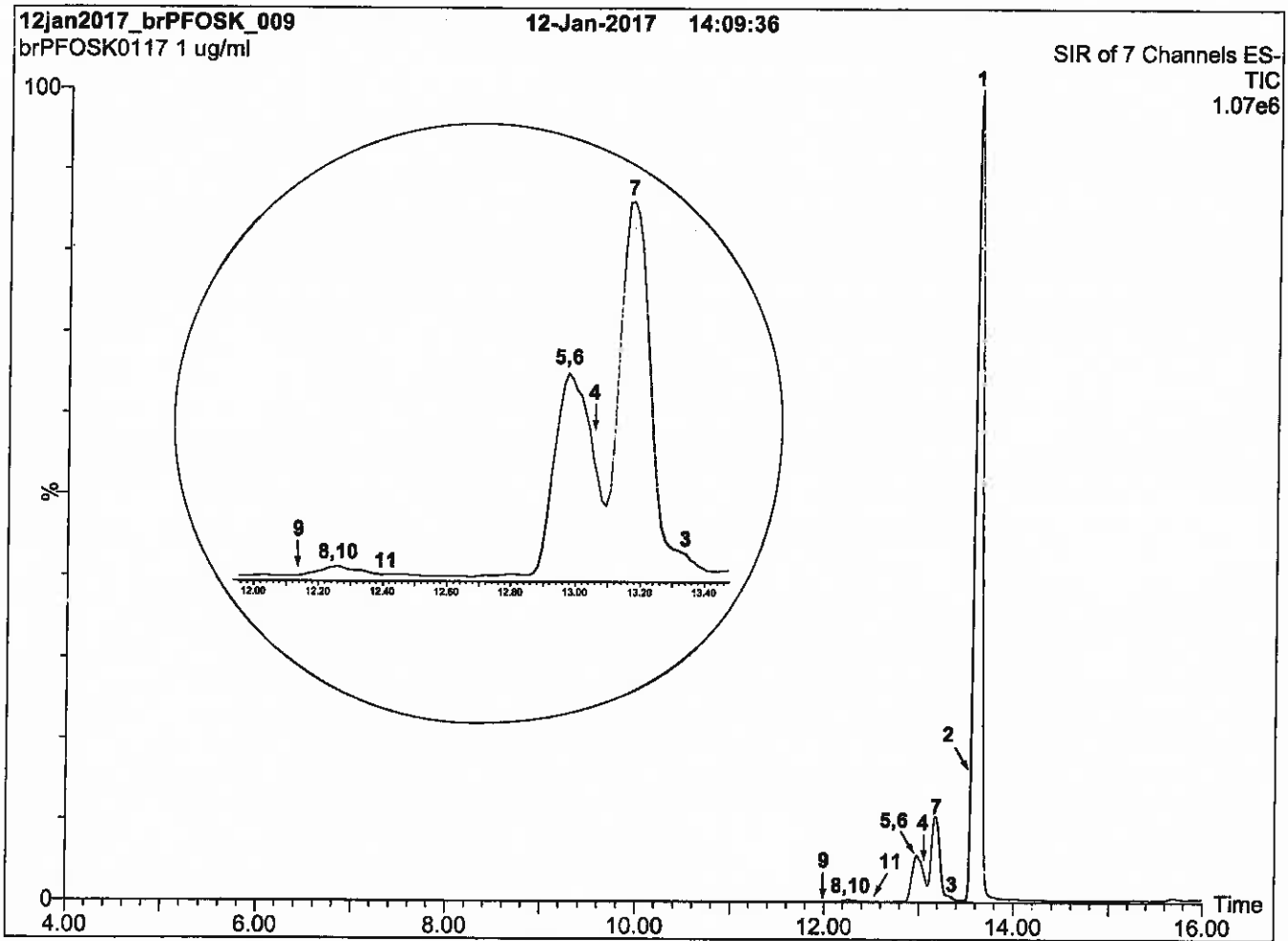
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 60.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: br-PFOSK; LC/MS Data (SIR)



Conditions for Figure 2:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

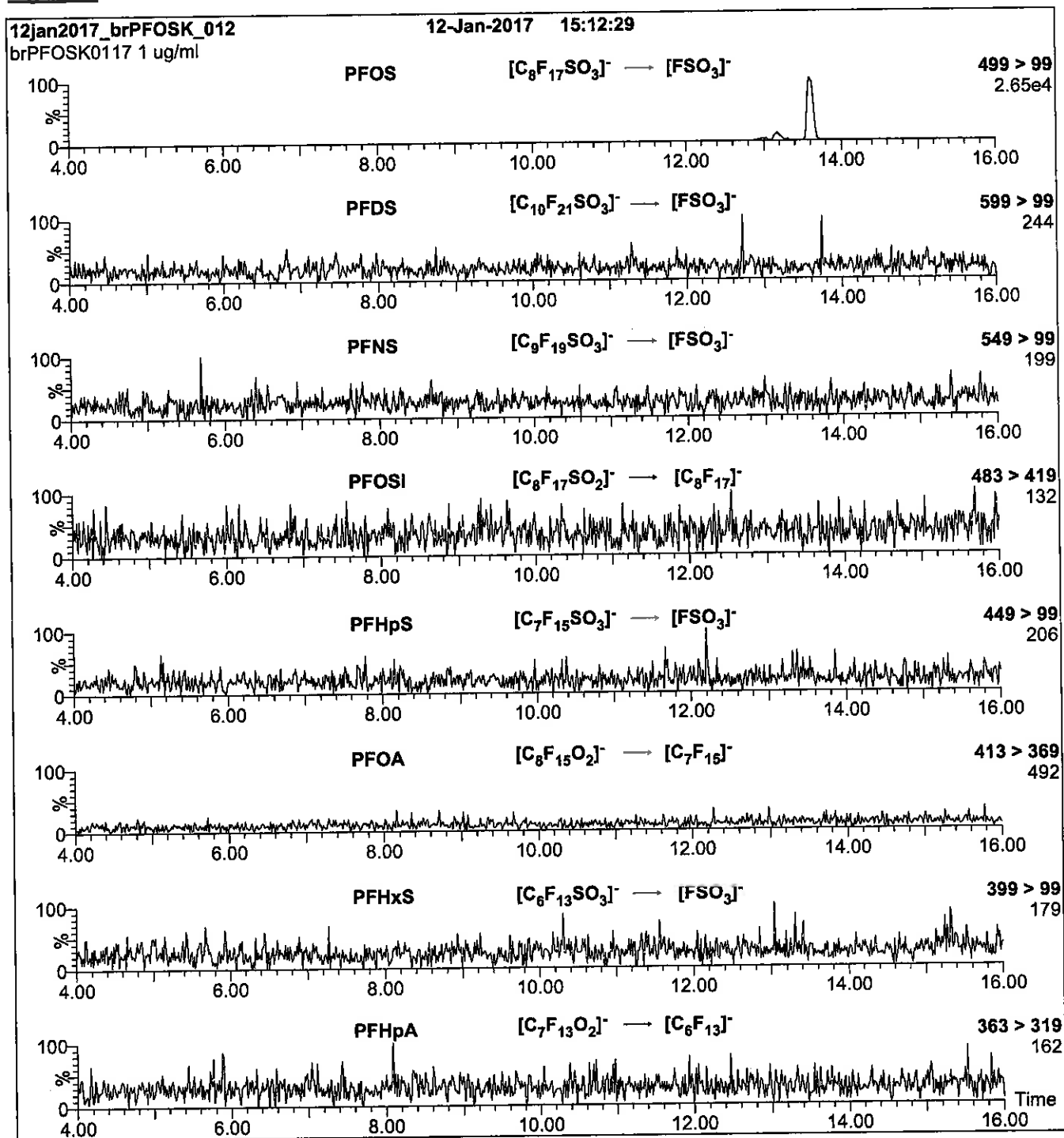
Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP₁₈ (1.7 μ m, 2.1 x 100 mm)
Injection: 1.0 μ g/ml of br-PFOSK
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H₂O (both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min
Flow: 300 μ l/min

MS Conditions:

SIR (ES)
Source = 110 °C
Desolvation = 325 °C
Cone Voltage = 60V

Figure 3: br-PFOSK; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 11-50 (variable)

Method 537 DOD

Perfluorinated Alkyl Acids (LC/MS)
by Method 537 DOD

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-37675-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

| Client Sample ID | Lab Sample ID | PFHxA # | PFDA # |
|------------------------|------------------------|---------|--------|
| WGNA-032918-DUP-31 | 320-37675-1 | 95 | 93 |
| NAWC-032819-RW-286 | 320-37675-2 | 98 | 101 |
| NAWC-032819-FRB-286 | 320-37675-3 | 101 | 95 |
| WGNA-032819-RW-0518 | 320-37675-4 | 106 | 104 |
| WGNA-032819-FRB-0518 | 320-37675-5 | 100 | 98 |
| NAWC-032819-RW-010 | 320-37675-6 | 91 | 88 |
| NAWC-032819-FRB-010 | 320-37675-7 | 101 | 101 |
| NAWC-032819-RW-127 | 320-37675-8 | 93 | 96 |
| NAWC-032819-FRB-127 | 320-37675-9 | 95 | 100 |
| NAWC-032819-RW-195 | 320-37675-10 | 97 | 91 |
| NAWC-032819-FRB-195 | 320-37675-11 | 97 | 94 |
| NAWC-032819-RW-048 | 320-37675-12 | 91 | 96 |
| NAWC-032819-FRB-048 | 320-37675-13 | 94 | 94 |
| NAWC-032819-RW-139 | 320-37675-14 | 87 | 100 |
| NAWC-032819-FRB-139 | 320-37675-15 | 98 | 98 |
| NAWC-032819-RW-117 | 320-37675-16 | 97 | 98 |
| NAWC-032819-FRB-117 | 320-37675-17 | 96 | 88 |
| NAWC-032819-RW-181 | 320-37675-18 | 94 | 86 |
| NAWC-032819-FRB-181 | 320-37675-19 | 100 | 104 |
| NAWC-032819-RW-138 | 320-37675-20 | 98 | 99 |
| NAWC-032819-FRB-138 | 320-37675-21 | 96 | 91 |
| | MB 320-216791/1-A | 83 | 94 |
| | MB 320-216792/1-A | 91 | 90 |
| | LCS 320-216791/2-A | 95 | 93 |
| | LCSD 320-216791/3-A | 87 | 101 |
| | LLCS 320-216792/2-A | 99 | 92 |
| NAWC-032819-RW-139 LMS | 320-37675-14 LMS | 101 | 97 |

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

| Client Sample ID | Lab Sample ID | PFHxA # | PFDA # |
|----------------------------|----------------------|---------|--------|
| NAWC-032819-RW-139 LMSD | 320-37675-14 LMSD | 93 | 98 |

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_032.d
 Lab ID: LCS 320-216791/2-A Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCS CONCENTRATION (ng/L) | LCS % REC | QC LIMITS REC | # |
|---|--------------------------|--------------------------------|-----------------|---------------------|---|
| Perfluorooctanesulfonic acid (PFOS) | 132 | 132 | 100 | 70-130 | M |
| Perfluorooctanoic acid (PFOA) | 66.0 | 67.8 | 103 | 70-130 | |
| Perfluorononanoic acid (PFNA) | 66.0 | 62.6 | 95 | 70-130 | |
| Perfluorohexanesulfonic acid (PFHxS) | 100 | 105 | 105 | 70-130 | |
| Perfluoroheptanoic acid (PFHpA) | 32.0 | 32.0 | 100 | 70-130 | |
| Perfluorobutanesulfonic acid (PFBS) | 300 | 303 | 101 | 70-130 | |

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_033.d

Lab ID: LCSD 320-216791/3-A Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCSD CONCENTRATION (ng/L) | LCSD % REC | % RPD | QC LIMITS | | # |
|--------------------------------------|--------------------------|---------------------------------|------------------|----------|-----------|--------|---|
| | | | | | RPD | REC | |
| Perfluorooctanesulfonic acid (PFOS) | 132 | 126 | 96 | 4 | 30 | 70-130 | M |
| Perfluorooctanoic acid (PFOA) | 66.0 | 65.5 | 99 | 3 | 30 | 70-130 | |
| Perfluorononanoic acid (PFNA) | 66.0 | 62.7 | 95 | 0 | 30 | 70-130 | |
| Perfluorohexanesulfonic acid (PFHxS) | 100 | 102 | 102 | 3 | 30 | 70-130 | |
| Perfluoroheptanoic acid (PFHpA) | 32.0 | 31.0 | 97 | 3 | 30 | 70-130 | |
| Perfluorobutanesulfonic acid (PFBS) | 300 | 266 | 89 | 13 | 30 | 70-130 | |

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_050.d

Lab ID: LLCS 320-216792/2-A Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LLCS CONCENTRATION (ng/L) | LLCS % REC | QC LIMITS REC | # |
|---|--------------------------|---------------------------------|------------------|---------------------|---|
| Perfluorooctanesulfonic acid (PFOS) | 40.2 | 38.9 J | 97 | 50-150 | M |
| Perfluorooctanoic acid (PFOA) | 20.0 | 19.1 J | 95 | 50-150 | |
| Perfluorononanoic acid (PFNA) | 20.0 | 17.5 J | 88 | 50-150 | |
| Perfluorohexanesulfonic acid (PFHxS) | 30.3 | 31.7 | 105 | 50-150 | |
| Perfluoroheptanoic acid (PFHpA) | 10.0 | 9.59 J | 96 | 50-150 | |
| Perfluorobutanesulfonic acid (PFBS) | 90.2 | 97.1 | 108 | 50-150 | |

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_056.d
 Lab ID: 320-37675-14 LMS Client ID: NAWC-032819-RW-139 LMS

| COMPOUND | SPIKE ADDED (ng/L) | SAMPLE CONCENTRATION (ng/L) | LMS CONCENTRATION (ng/L) | LMS % REC | QC LIMITS REC | # |
|--------------------------------------|--------------------------|-----------------------------------|--------------------------------|-----------------|---------------------|---|
| Perfluorooctanesulfonic acid (PFOS) | 39.3 | 16 U | 42.7 | 109 | 50-150 | M |
| Perfluorooctanoic acid (PFOA) | 19.6 | 9.5 J | 28.1 | 95 | 50-150 | |
| Perfluorononanoic acid (PFNA) | 19.6 | 20 U | 19.0 J | 97 | 50-150 | |
| Perfluorohexanesulfonic acid (PFHxS) | 29.7 | 12 U | 31.3 | 106 | 50-150 | |
| Perfluoroheptanoic acid (PFHpA) | 9.78 | 4.0 J | 13.4 | 96 | 50-150 | |
| Perfluorobutanesulfonic acid (PFBS) | 88.2 | 36 U | 104 | 118 | 50-150 | |

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_057.d

Lab ID: 320-37675-14 LMSD Client ID: NAWC-032819-RW-139 LMSD

| COMPOUND | SPIKE ADDED (ng/L) | LMSD CONCENTRATION (ng/L) | LMSD % REC | % RPD | QC LIMITS | | # |
|---|--------------------------|---------------------------------|------------------|----------|-----------|--------|---|
| | | | | | RPD | REC | |
| Perfluorooctanesulfonic acid (PFOS) | 39.8 | 41.2 | 104 | 3 | 50 | 50-150 | M |
| Perfluorooctanoic acid (PFOA) | 19.8 | 27.4 | 91 | 3 | 50 | 50-150 | |
| Perfluorononanoic acid (PFNA) | 19.8 | 18.5 J | 94 | 3 | 50 | 50-150 | |
| Perfluorohexanesulfonic acid (PFHxS) | 30.0 | 29.4 J | 98 | 6 | 50 | 50-150 | |
| Perfluoroheptanoic acid (PFHpA) | 9.89 | 13.0 | 91 | 3 | 50 | 50-150 | |
| Perfluorobutanesulfonic acid (PFBS) | 89.1 | 94.4 | 106 | 9 | 50 | 50-150 | |

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab File ID: 2018.04.12_537AA_031.d Lab Sample ID: MB 320-216791/1-A
 Matrix: Water Date Extracted: 04/07/2018 08:11
 Instrument ID: A8_N Date Analyzed: 04/13/2018 00:37
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|----------------------|---------------------|------------------------|------------------|
| | LCS 320-216791/2-A | 2018.04.12_537AA_032.d | 04/13/2018 00:41 |
| | LCSD 320-216791/3-A | 2018.04.12_537AA_033.d | 04/13/2018 00:46 |
| WGNA-032918-DUP-31 | 320-37675-1 | 2018.04.12_537AA_034.d | 04/13/2018 00:51 |
| NAWC-032819-RW-286 | 320-37675-2 | 2018.04.12_537AA_035.d | 04/13/2018 00:55 |
| NAWC-032819-FRB-286 | 320-37675-3 | 2018.04.12_537AA_036.d | 04/13/2018 01:00 |
| WGNA-032819-RW-0518 | 320-37675-4 | 2018.04.12_537AA_037.d | 04/13/2018 01:05 |
| WGNA-032819-FRB-0518 | 320-37675-5 | 2018.04.12_537AA_038.d | 04/13/2018 01:09 |
| NAWC-032819-RW-010 | 320-37675-6 | 2018.04.12_537AA_039.d | 04/13/2018 01:14 |
| NAWC-032819-FRB-010 | 320-37675-7 | 2018.04.12_537AA_040.d | 04/13/2018 01:19 |
| NAWC-032819-RW-127 | 320-37675-8 | 2018.04.12_537AA_043.d | 04/13/2018 01:33 |
| NAWC-032819-FRB-127 | 320-37675-9 | 2018.04.12_537AA_044.d | 04/13/2018 01:37 |
| NAWC-032819-RW-195 | 320-37675-10 | 2018.04.12_537AA_045.d | 04/13/2018 01:42 |
| NAWC-032819-FRB-195 | 320-37675-11 | 2018.04.12_537AA_046.d | 04/13/2018 01:47 |

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab File ID: 2018.04.12_537AA_049.d Lab Sample ID: MB 320-216792/1-A
 Matrix: Water Date Extracted: 04/07/2018 08:19
 Instrument ID: A8_N Date Analyzed: 04/13/2018 02:01
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|-------------------------|---------------------|------------------------|------------------|
| | LLCS 320-216792/2-A | 2018.04.12_537AA 050.d | 04/13/2018 02:05 |
| NAWC-032819-RW-048 | 320-37675-12 | 2018.04.12_537AA 051.d | 04/13/2018 02:10 |
| NAWC-032819-FRB-048 | 320-37675-13 | 2018.04.12_537AA 052.d | 04/13/2018 02:15 |
| NAWC-032819-RW-139 | 320-37675-14 | 2018.04.12_537AA 055.d | 04/13/2018 02:29 |
| NAWC-032819-RW-139 LMS | 320-37675-14 LMS | 2018.04.12_537AA 056.d | 04/13/2018 02:33 |
| NAWC-032819-RW-139 LMSD | 320-37675-14 LMSD | 2018.04.12_537AA 057.d | 04/13/2018 02:38 |
| NAWC-032819-FRB-139 | 320-37675-15 | 2018.04.12_537AA 058.d | 04/13/2018 02:43 |
| NAWC-032819-RW-117 | 320-37675-16 | 2018.04.12_537AA 059.d | 04/13/2018 02:47 |
| NAWC-032819-FRB-117 | 320-37675-17 | 2018.04.12_537AA 060.d | 04/13/2018 02:52 |
| NAWC-032819-RW-181 | 320-37675-18 | 2018.04.12_537AA 061.d | 04/13/2018 02:57 |
| NAWC-032819-FRB-181 | 320-37675-19 | 2018.04.12_537AA 062.d | 04/13/2018 03:01 |
| NAWC-032819-RW-138 | 320-37675-20 | 2018.04.12_537AA 063.d | 04/13/2018 03:06 |
| NAWC-032819-FRB-138 | 320-37675-21 | 2018.04.12_537AA 064.d | 04/13/2018 03:11 |

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 04/11/2018 12:09
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|---|----------------------|---------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| INITIAL CALIBRATION MEAN AREA AND MEAN RT | 970041 | 1.86 | 2344935 | 2.10 | | |
| UPPER LIMIT | 1455062 | 2.36 | 3517403 | 2.60 | | |
| LOWER LIMIT | 485021 | 1.36 | 1172468 | 1.60 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| CCVL 320-217453/10 | | 964533 | 1.87 | 2387973 | 2.10 | |
| ICV 320-217453/12 | | 1123391 | 1.86 | 2710764 | 2.10 | |
| CCVL 320-217726/1 | | 1007212 | 1.89 | 2413051 | 2.12 | |
| CCV 320-217814/1 CCVIS | | 945293 | 1.89 | 2202701 | 2.12 | |
| MB 320-216791/1-A | | 949828 | 1.88 | 2322770 | 2.12 | |
| LCS 320-216791/2-A | | 993342 | 1.87 | 2367322 | 2.11 | |
| LCSD 320-216791/3-A | | 1202728 | 1.87 | 2870335 | 2.11 | |
| 320-37675-1 | WGNA-032918-DUP-31 | 935283 | 1.87 | 2285394 | 2.11 | |
| 320-37675-2 | NAWC-032819-RW-286 | 1004022 | 1.87 | 2445606 | 2.11 | |
| 320-37675-3 | NAWC-032819-FRB-286 | 931391 | 1.87 | 2287824 | 2.11 | |
| 320-37675-4 | WGNA-032819-RW-0518 | 939190 | 1.87 | 2335776 | 2.11 | |
| 320-37675-5 | WGNA-032819-FRB-0518 | 954713 | 1.87 | 2370457 | 2.11 | |
| 320-37675-6 | NAWC-032819-RW-010 | 1003975 | 1.87 | 2389703 | 2.11 | |
| 320-37675-7 | NAWC-032819-FRB-010 | 998861 | 1.87 | 2402516 | 2.11 | |
| CCV 320-217814/13 CCVIS | | 947894 | 1.87 | 2307891 | 2.10 | |
| CCV 320-217816/13 CCVIS | | 947894 | 1.87 | 2307891 | 2.10 | |
| 320-37675-8 | NAWC-032819-RW-127 | 915274 | 1.87 | 2281073 | 2.11 | |
| 320-37675-9 | NAWC-032819-FRB-127 | 893479 | 1.87 | 2204862 | 2.11 | |
| 320-37675-10 | NAWC-032819-RW-195 | 926217 | 1.87 | 2305396 | 2.10 | |
| 320-37675-11 | NAWC-032819-FRB-195 | 921584 | 1.87 | 2286972 | 2.10 | |
| CCV 320-217816/19 CCVIS | | 899573 | 1.87 | 2148163 | 2.10 | |
| CCV 320-217818/19 CCVIS | | 899573 | 1.87 | 2148163 | 2.10 | |
| MB 320-216792/1-A | | 927774 | 1.87 | 2237326 | 2.10 | |
| LLCS 320-216792/2-A | | 932269 | 1.87 | 2141422 | 2.10 | |
| 320-37675-12 | NAWC-032819-RW-048 | 933636 | 1.87 | 2208683 | 2.10 | |
| 320-37675-13 | NAWC-032819-FRB-048 | 921490 | 1.87 | 2241801 | 2.11 | |
| CCV 320-217818/25 CCVIS | | 921520 | 1.87 | 2115143 | 2.10 | |

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 04/11/2018 12:09
 Calibration ID: 38530

| | 13PFOA | | PFOS | | | |
|---|----------------------------|--------|---------|------|--------|------|
| | AREA # | RT # | AREA # | RT # | AREA # | RT # |
| INITIAL CALIBRATION MEAN AREA AND MEAN RT | 970041 | 1.86 | 2344935 | 2.10 | | |
| UPPER LIMIT | 1455062 | 2.36 | 3517403 | 2.60 | | |
| LOWER LIMIT | 485021 | 1.36 | 1172468 | 1.60 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| CCV 320-217820/25 CCVIS | 921520 | 1.87 | 2115143 | 2.10 | | |
| 320-37675-14 | NAWC-032819-RW-139 | 941432 | 2279160 | 2.10 | | |
| 320-37675-14 LMS | NAWC-032819-RW-139 LMS | 907706 | 2270226 | 2.10 | | |
| 320-37675-14 LMSD | NAWC-032819-RW-139 LMSD | 932927 | 2349968 | 2.10 | | |
| 320-37675-15 | NAWC-032819-FRB-139 | 938492 | 2282460 | 2.10 | | |
| 320-37675-16 | NAWC-032819-RW-117 | 946733 | 2304139 | 2.10 | | |
| 320-37675-17 | NAWC-032819-FRB-117 | 951026 | 2287790 | 2.10 | | |
| 320-37675-18 | NAWC-032819-RW-181 | 960037 | 2317950 | 2.09 | | |
| 320-37675-19 | NAWC-032819-FRB-181 | 957412 | 2371551 | 2.10 | | |
| 320-37675-20 | NAWC-032819-RW-138 | 941041 | 2361059 | 2.10 | | |
| 320-37675-21 | NAWC-032819-FRB-138 | 924480 | 2293177 | 2.10 | | |
| CCV 320-217820/37 CCVIS | 934501 | 1.86 | 2203770 | 2.09 | | |

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217814/1 Date Analyzed: 04/13/2018 00:27
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_02 Heated Purge: (Y/N) N
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|---------------------|----------------------|---------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| 12/24 HOUR STD | 945293 | 1.89 | 2202701 | 2.12 | | |
| UPPER LIMIT | 1323410 | 2.39 | 3083781 | 2.62 | | |
| LOWER LIMIT | 661705 | 1.39 | 1541891 | 1.62 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| MB 320-216791/1-A | | 949828 | 1.88 | 2322770 | 2.12 | |
| LCS 320-216791/2-A | | 993342 | 1.87 | 2367322 | 2.11 | |
| LCSD 320-216791/3-A | | 1202728 | 1.87 | 2870335 | 2.11 | |
| 320-37675-1 | WGNA-032918-DUP-31 | 935283 | 1.87 | 2285394 | 2.11 | |
| 320-37675-2 | NAWC-032819-RW-286 | 1004022 | 1.87 | 2445606 | 2.11 | |
| 320-37675-3 | NAWC-032819-FRB-286 | 931391 | 1.87 | 2287824 | 2.11 | |
| 320-37675-4 | WGNA-032819-RW-0518 | 939190 | 1.87 | 2335776 | 2.11 | |
| 320-37675-5 | WGNA-032819-FRB-0518 | 954713 | 1.87 | 2370457 | 2.11 | |
| 320-37675-6 | NAWC-032819-RW-010 | 1003975 | 1.87 | 2389703 | 2.11 | |
| 320-37675-7 | NAWC-032819-FRB-010 | 998861 | 1.87 | 2402516 | 2.11 | |

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217814/13 Date Analyzed: 04/13/2018 01:23
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_04 Heated Purge: (Y/N) N
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|---------------------|----------------------|---------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| 12/24 HOUR STD | 947894 | 1.87 | 2307891 | 2.10 | | |
| UPPER LIMIT | 1327052 | 2.37 | 3231047 | 2.60 | | |
| LOWER LIMIT | 663526 | 1.37 | 1615524 | 1.60 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| MB 320-216791/1-A | | 949828 | 1.88 | 2322770 | 2.12 | |
| LCS 320-216791/2-A | | 993342 | 1.87 | 2367322 | 2.11 | |
| LCSD 320-216791/3-A | | 1202728 | 1.87 | 2870335 | 2.11 | |
| 320-37675-1 | WGNA-032918-DUP-31 | 935283 | 1.87 | 2285394 | 2.11 | |
| 320-37675-2 | NAWC-032819-RW-286 | 1004022 | 1.87 | 2445606 | 2.11 | |
| 320-37675-3 | NAWC-032819-FRB-286 | 931391 | 1.87 | 2287824 | 2.11 | |
| 320-37675-4 | WGNA-032819-RW-0518 | 939190 | 1.87 | 2335776 | 2.11 | |
| 320-37675-5 | WGNA-032819-FRB-0518 | 954713 | 1.87 | 2370457 | 2.11 | |
| 320-37675-6 | NAWC-032819-RW-010 | 1003975 | 1.87 | 2389703 | 2.11 | |
| 320-37675-7 | NAWC-032819-FRB-010 | 998861 | 1.87 | 2402516 | 2.11 | |

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217816/13 Date Analyzed: 04/13/2018 01:23
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_04 Heated Purge: (Y/N) N
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|----------------|---------------------|--------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| 12/24 HOUR STD | 947894 | 1.87 | 2307891 | 2.10 | | |
| UPPER LIMIT | 1327052 | 2.37 | 3231047 | 2.60 | | |
| LOWER LIMIT | 663526 | 1.37 | 1615524 | 1.60 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| 320-37675-8 | NAWC-032819-RW-127 | 915274 | 1.87 | 2281073 | 2.11 | |
| 320-37675-9 | NAWC-032819-FRB-127 | 893479 | 1.87 | 2204862 | 2.11 | |
| 320-37675-10 | NAWC-032819-RW-195 | 926217 | 1.87 | 2305396 | 2.10 | |
| 320-37675-11 | NAWC-032819-FRB-195 | 921584 | 1.87 | 2286972 | 2.10 | |

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217816/19 Date Analyzed: 04/13/2018 01:51
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_04 Heated Purge: (Y/N) N
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|----------------|---------------------|--------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| 12/24 HOUR STD | 899573 | 1.87 | 2148163 | 2.10 | | |
| UPPER LIMIT | 1259402 | 2.37 | 3007428 | 2.60 | | |
| LOWER LIMIT | 629701 | 1.37 | 1503714 | 1.60 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| 320-37675-8 | NAWC-032819-RW-127 | 915274 | 1.87 | 2281073 | 2.11 | |
| 320-37675-9 | NAWC-032819-FRB-127 | 893479 | 1.87 | 2204862 | 2.11 | |
| 320-37675-10 | NAWC-032819-RW-195 | 926217 | 1.87 | 2305396 | 2.10 | |
| 320-37675-11 | NAWC-032819-FRB-195 | 921584 | 1.87 | 2286972 | 2.10 | |

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217818/19 Date Analyzed: 04/13/2018 01:51
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_04 Heated Purge: (Y/N) N
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|---------------------|---------------------|--------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| 12/24 HOUR STD | 899573 | 1.87 | 2148163 | 2.10 | | |
| UPPER LIMIT | 1259402 | 2.37 | 3007428 | 2.60 | | |
| LOWER LIMIT | 629701 | 1.37 | 1503714 | 1.60 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| MB 320-216792/1-A | | 927774 | 1.87 | 2237326 | 2.10 | |
| LLCS 320-216792/2-A | | 932269 | 1.87 | 2141422 | 2.10 | |
| 320-37675-12 | NAWC-032819-RW-048 | 933636 | 1.87 | 2208683 | 2.10 | |
| 320-37675-13 | NAWC-032819-FRB-048 | 921490 | 1.87 | 2241801 | 2.11 | |

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217818/25 Date Analyzed: 04/13/2018 02:19
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_05 Heated Purge: (Y/N) N
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|---------------------|---------------------|--------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| 12/24 HOUR STD | 921520 | 1.87 | 2115143 | 2.10 | | |
| UPPER LIMIT | 1290128 | 2.37 | 2961200 | 2.60 | | |
| LOWER LIMIT | 645064 | 1.37 | 1480600 | 1.60 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| MB 320-216792/1-A | | 927774 | 1.87 | 2237326 | 2.10 | |
| LLCS 320-216792/2-A | | 932269 | 1.87 | 2141422 | 2.10 | |
| 320-37675-12 | NAWC-032819-RW-048 | 933636 | 1.87 | 2208683 | 2.10 | |
| 320-37675-13 | NAWC-032819-FRB-048 | 921490 | 1.87 | 2241801 | 2.11 | |

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217820/25 Date Analyzed: 04/13/2018 02:19
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_05 Heated Purge: (Y/N) N
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|-------------------|----------------------------|--------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| 12/24 HOUR STD | 921520 | 1.87 | 2115143 | 2.10 | | |
| UPPER LIMIT | 1290128 | 2.37 | 2961200 | 2.60 | | |
| LOWER LIMIT | 645064 | 1.37 | 1480600 | 1.60 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| 320-37675-14 | NAWC-032819-RW-139 | 941432 | 1.87 | 2279160 | 2.10 | |
| 320-37675-14 LMS | NAWC-032819-RW-139 LMS | 907706 | 1.87 | 2270226 | 2.10 | |
| 320-37675-14 LMSD | NAWC-032819-RW-139 LMSD | 932927 | 1.87 | 2349968 | 2.10 | |
| 320-37675-15 | NAWC-032819-FRB-139 | 938492 | 1.87 | 2282460 | 2.10 | |
| 320-37675-16 | NAWC-032819-RW-117 | 946733 | 1.87 | 2304139 | 2.10 | |
| 320-37675-17 | NAWC-032819-FRB-117 | 951026 | 1.87 | 2287790 | 2.10 | |
| 320-37675-18 | NAWC-032819-RW-181 | 960037 | 1.86 | 2317950 | 2.09 | |
| 320-37675-19 | NAWC-032819-FRB-181 | 957412 | 1.87 | 2371551 | 2.10 | |
| 320-37675-20 | NAWC-032819-RW-138 | 941041 | 1.87 | 2361059 | 2.10 | |
| 320-37675-21 | NAWC-032819-FRB-138 | 924480 | 1.87 | 2293177 | 2.10 | |

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217820/37 Date Analyzed: 04/13/2018 03:15
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_06 Heated Purge: (Y/N) N
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|-------------------|----------------------------|--------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| 12/24 HOUR STD | 934501 | 1.86 | 2203770 | 2.09 | | |
| UPPER LIMIT | 1308301 | 2.36 | 3085278 | 2.59 | | |
| LOWER LIMIT | 654151 | 1.36 | 1542639 | 1.59 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| 320-37675-14 | NAWC-032819-RW-139 | 941432 | 1.87 | 2279160 | 2.10 | |
| 320-37675-14 LMS | NAWC-032819-RW-139 LMS | 907706 | 1.87 | 2270226 | 2.10 | |
| 320-37675-14 LMSD | NAWC-032819-RW-139 LMSD | 932927 | 1.87 | 2349968 | 2.10 | |
| 320-37675-15 | NAWC-032819-FRB-139 | 938492 | 1.87 | 2282460 | 2.10 | |
| 320-37675-16 | NAWC-032819-RW-117 | 946733 | 1.87 | 2304139 | 2.10 | |
| 320-37675-17 | NAWC-032819-FRB-117 | 951026 | 1.87 | 2287790 | 2.10 | |
| 320-37675-18 | NAWC-032819-RW-181 | 960037 | 1.86 | 2317950 | 2.09 | |
| 320-37675-19 | NAWC-032819-FRB-181 | 957412 | 1.87 | 2371551 | 2.10 | |
| 320-37675-20 | NAWC-032819-RW-138 | 941041 | 1.87 | 2361059 | 2.10 | |
| 320-37675-21 | NAWC-032819-FRB-138 | 924480 | 1.87 | 2293177 | 2.10 | |

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: WGNA-032918-DUP-31 Lab Sample ID: 320-37675-1
 Matrix: Water Lab File ID: 2018.04.12_537AA_034.d
 Analysis Method: 537 Date Collected: 03/29/2018 07:00
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 252 (mL) Date Analyzed: 04/13/2018 00:51
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 5.4 | J | 20 | 7.9 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 7.9 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 9.9 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 89 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 95 | | 70-130 |
| STL00996 | 13C2 PFDA | 93 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_034.d
 Lims ID: 320-37675-A-1-A
 Client ID: WGNA-032918-DUP-31
 Sample Type: Client
 Inject. Date: 13-Apr-2018 00:51:05 ALS Bottle#: 24 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

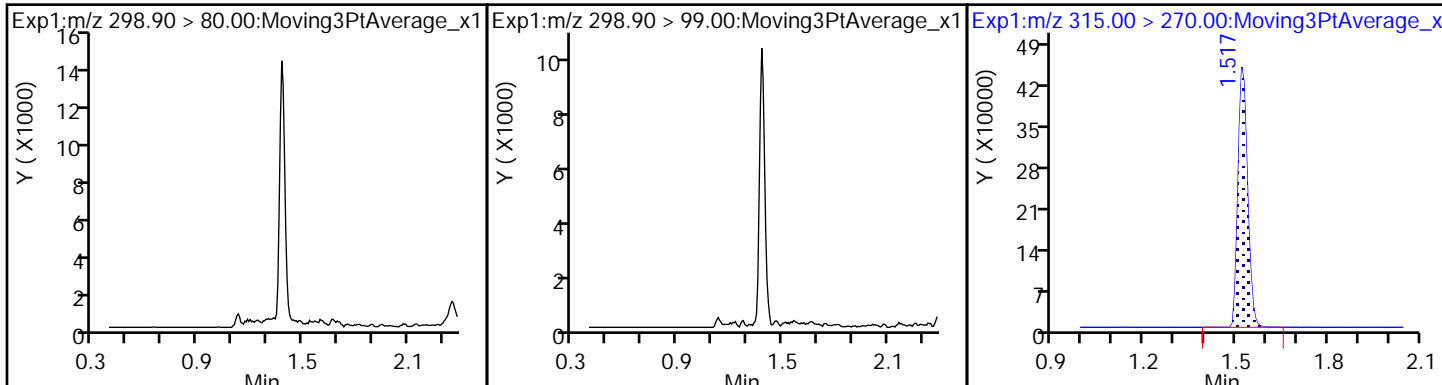
First Level Reviewer: barnettj Date: 13-Apr-2018 09:54:56

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|--------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| \$ 2 13C2 PFHxA | 315.00 > 270.00 | 1.517 | 1.525 | -0.008 | 1.000 | 948631 | 9.54 | 8669 | |
| * 6 13C2-PFOA | 415.00 > 370.00 | 1.874 | 1.889 | -0.015 | | 935283 | 10.0 | 5574 | |
| 5 Perfluorooctanoic acid | 413.00 > 369.00 | 1.874 | 1.889 | -0.015 | 1.000 | 135824 | 1.37 | 17.0 | |
| | 413.00 > 169.00 | 1.874 | 1.889 | -0.015 | 1.000 | 86375 | 1.57(0.00-0.00) | 82.4 | |
| * 7 13C4 PFOS | 503.00 > 80.00 | 2.109 | 2.124 | -0.015 | | 2285394 | 28.7 | 3725 | |
| \$ 10 13C2 PFDA | 515.00 > 470.00 | 2.261 | 2.269 | -0.007 | 1.000 | 740696 | 9.31 | 6265 | |

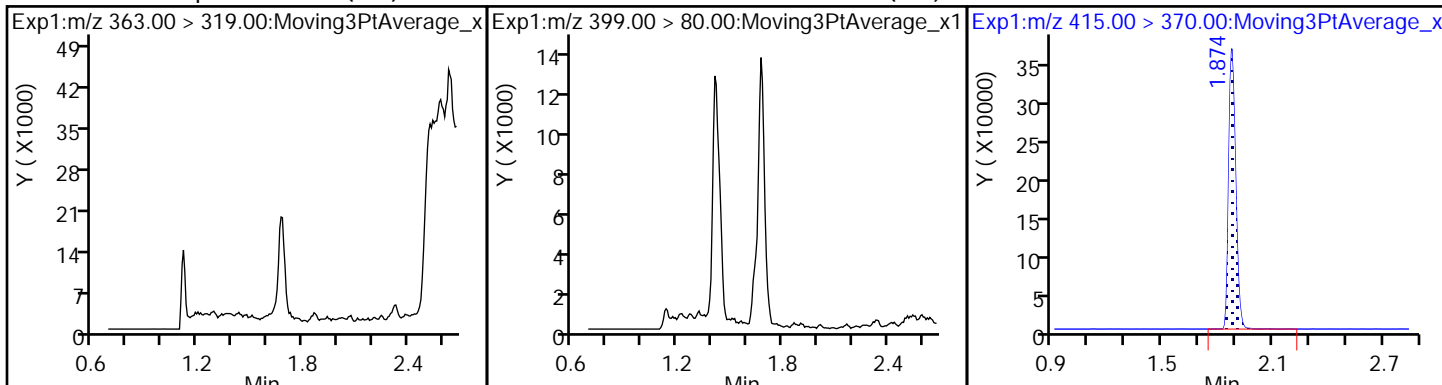
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_034.d
Injection Date: 13-Apr-2018 00:51:05 Instrument ID: A8_N
Lims ID: 320-37675-A-1-A Lab Sample ID: 320-37675-1
Client ID: WGNA-032918-DUP-31
Operator ID: SACINSTLCMS01 ALS Bottle#: 24 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

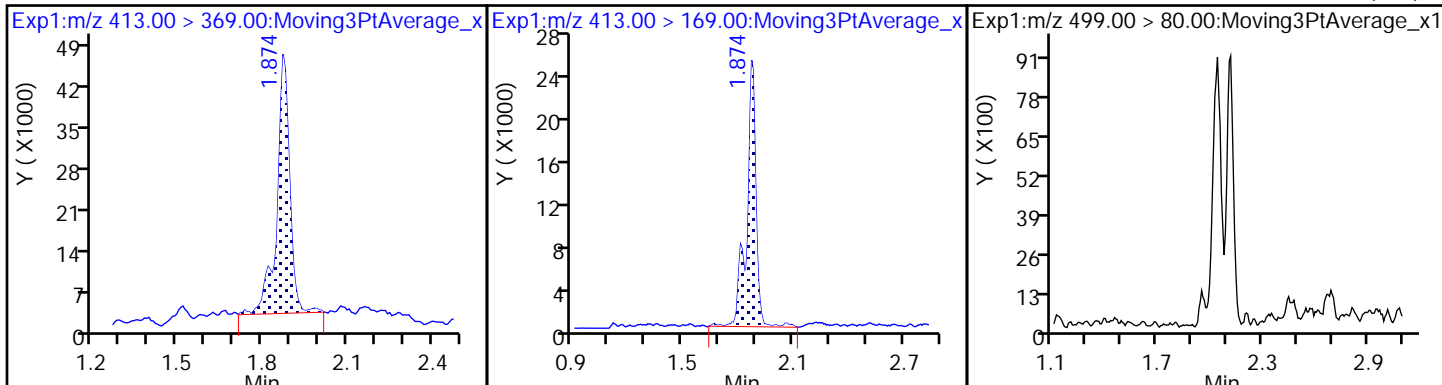
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



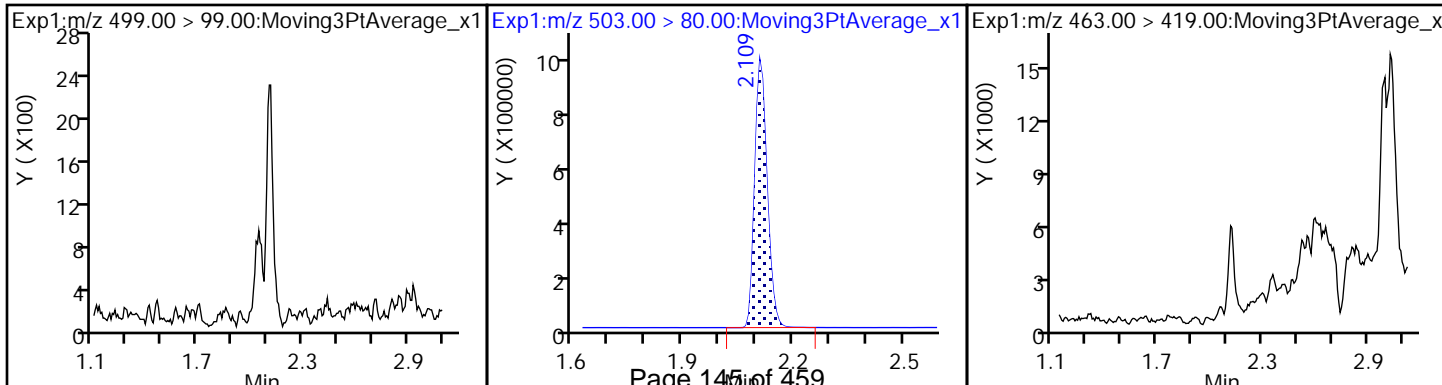
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



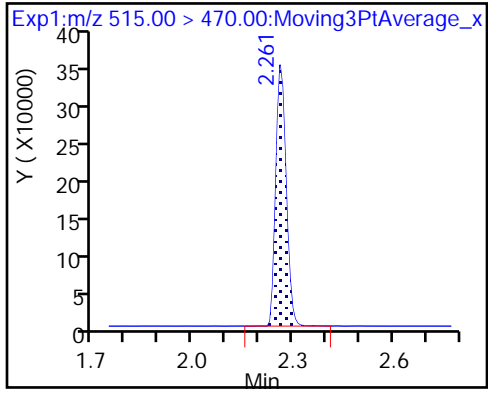
5 Perfluorooctanoic acid 5 Perfluorooctanoic acid 8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_034.d
 Lims ID: 320-37675-A-1-A
 Client ID: WGNA-032918-DUP-31
 Sample Type: Client
 Inject. Date: 13-Apr-2018 00:51:05 ALS Bottle#: 24 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 09:54:56

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.54 | 95.40 |
| \$ 10 13C2 PFDA | 10.0 | 9.31 | 93.12 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-286 Lab Sample ID: 320-37675-2
 Matrix: Water Lab File ID: 2018.04.12_537AA_035.d
 Analysis Method: 537 Date Collected: 03/29/2018 08:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 253.3(mL) Date Analyzed: 04/13/2018 00:55
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 17 | J M | 39 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 18 | J | 20 | 7.9 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U M | 24 | 20 | 7.9 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 5.8 | J | 30 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.7 | J | 9.9 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 89 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 98 | | 70-130 |
| STL00996 | 13C2 PFDA | 101 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_035.d
 Lims ID: 320-37675-A-2-A
 Client ID: NAWC-032819-RW-286
 Sample Type: Client
 Inject. Date: 13-Apr-2018 00:55:45 ALS Bottle#: 25 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 09:55:49

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|-------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.388 | -0.007 | 1.000 | 189196 | 2.11 | | 241 | |
| 298.90 > 99.00 | 1.381 | 1.388 | -0.007 | 1.000 | 144591 | | 1.31(0.00-0.00) | 329 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.525 | -0.008 | 1.000 | 1043543 | 9.78 | | 10901 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.684 | -0.007 | 1.000 | 128925 | 1.20 | | 4.3 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.677 | 1.684 | -0.007 | 1.000 | 207120 | 1.48 | | 129 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.874 | 1.889 | -0.015 | | 1004022 | 10.0 | | 7191 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.874 | 1.889 | -0.015 | 1.000 | 483550 | 4.53 | | 59.4 | |
| 413.00 > 169.00 | 1.874 | 1.889 | -0.015 | 1.000 | 281406 | | 1.72(0.00-0.00) | 256 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.117 | 2.094 | 0.023 | 1.000 | 383256 | 4.22 | | 176 | a |
| 499.00 > 99.00 | 2.109 | 2.094 | 0.015 | 0.996 | 66259 | | 5.78(0.00-0.00) | 100 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.109 | 2.124 | -0.015 | | 2445606 | 28.7 | | 3181 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.117 | 2.132 | -0.015 | 1.000 | 37592 | 0.4445 | | 5.5 | M |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.261 | 2.269 | -0.007 | 1.000 | 863929 | 10.1 | | 8185 | |

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

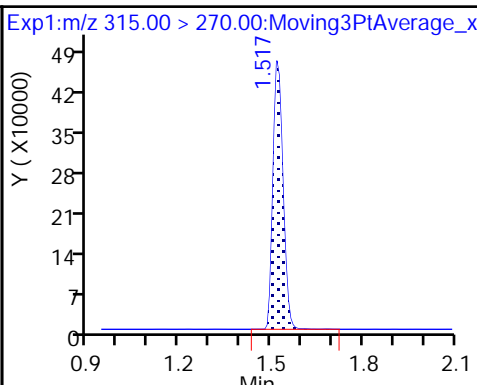
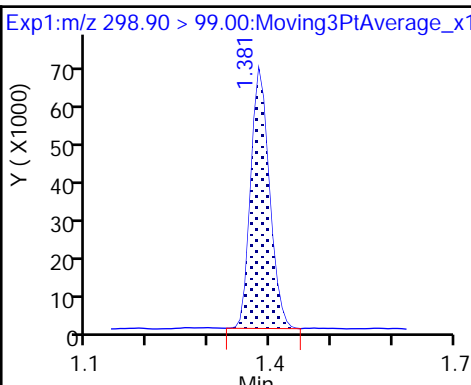
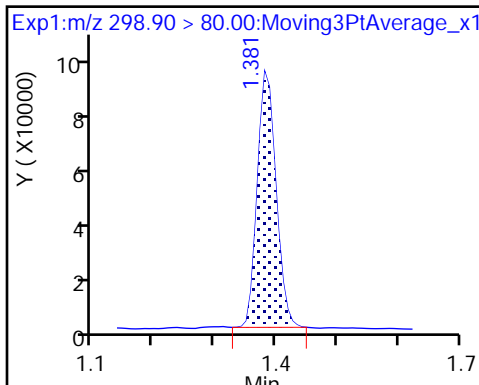
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_035.d
Injection Date: 13-Apr-2018 00:55:45 Instrument ID: A8_N
Lims ID: 320-37675-A-2-A Lab Sample ID: 320-37675-2
Client ID: NAWC-032819-RW-286
Operator ID: SACINSTLCMS01 ALS Bottle#: 25 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

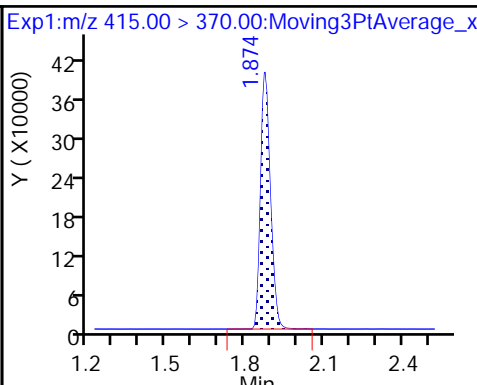
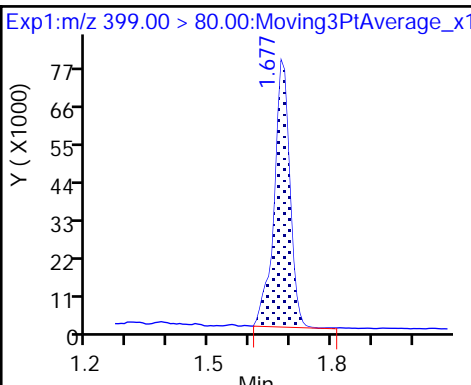
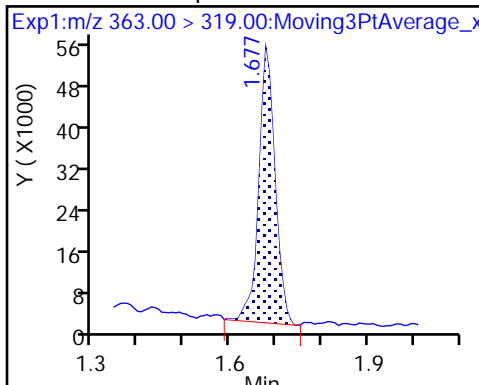
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

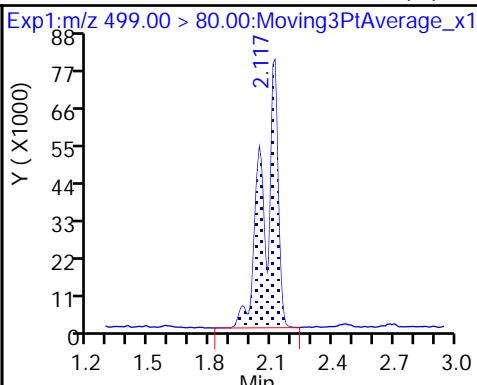
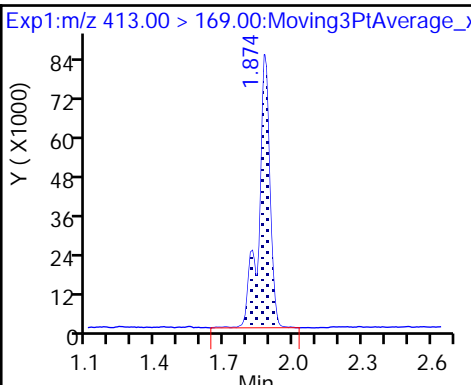
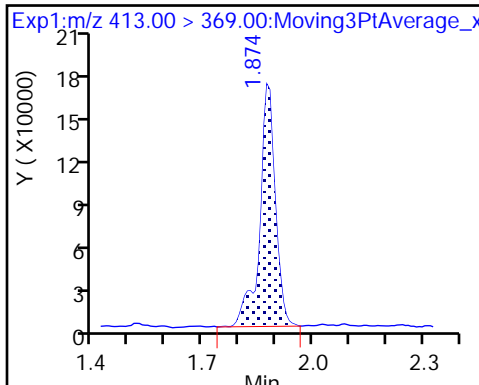
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

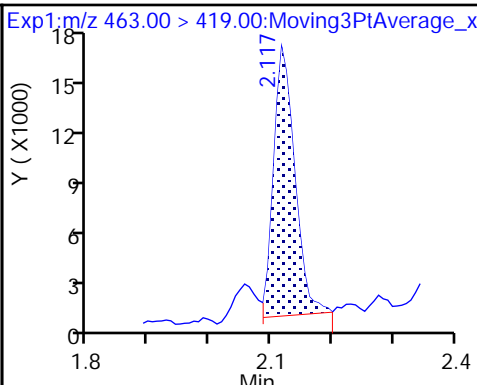
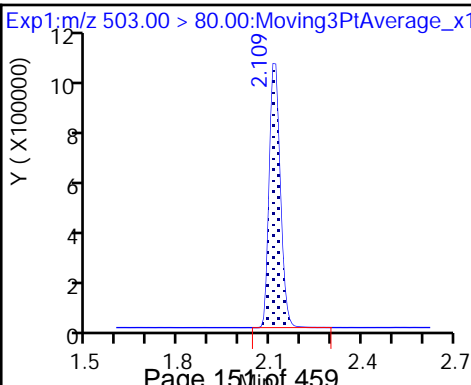
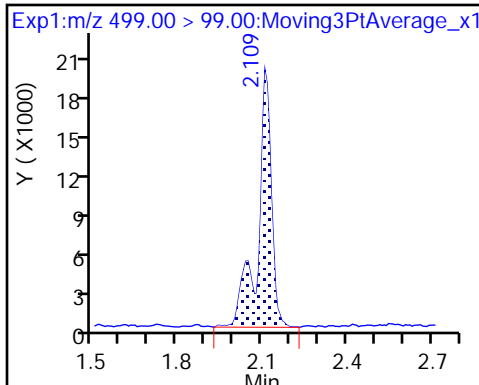
8 Perfluorooctane sulfonic acid (M)



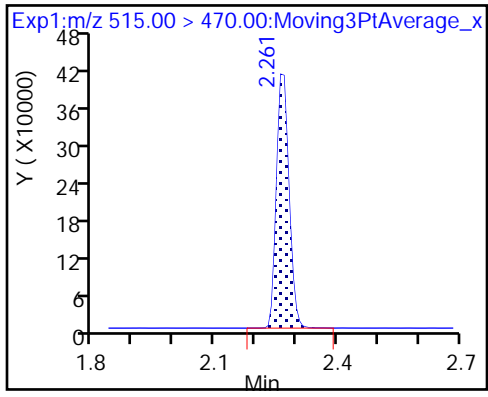
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_035.d
 Lims ID: 320-37675-A-2-A
 Client ID: NAWC-032819-RW-286
 Sample Type: Client
 Inject. Date: 13-Apr-2018 00:55:45 ALS Bottle#: 25 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 09:55:49

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.78 | 97.76 |
| \$ 10 13C2 PFDA | 10.0 | 10.1 | 101.18 |

TestAmerica Sacramento

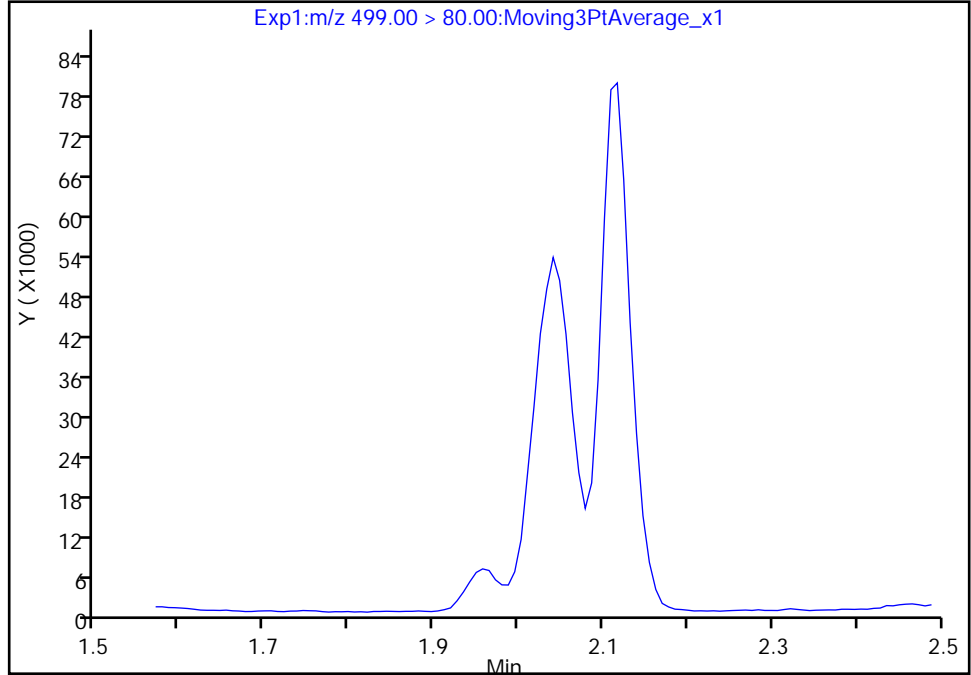
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_035.d
Injection Date: 13-Apr-2018 00:55:45 Instrument ID: A8_N
Lims ID: 320-37675-A-2-A Lab Sample ID: 320-37675-2
Client ID: NAWC-032819-RW-286
Operator ID: SACINSTLCMS01 ALS Bottle#: 25 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

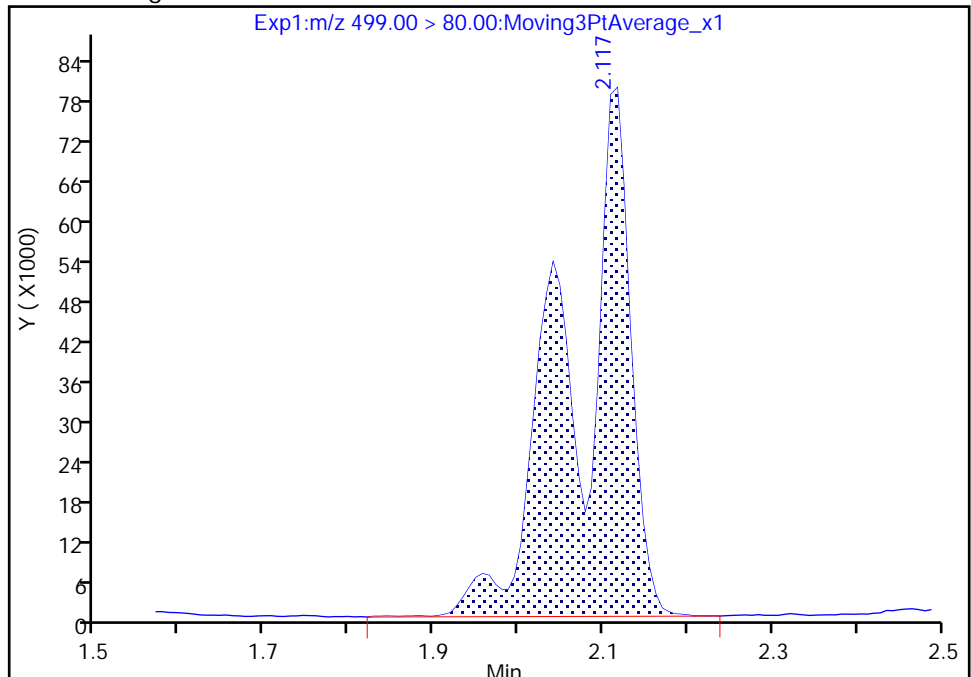
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.12
Area: 383256
Amount: 4.215943
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 13-Apr-2018 09:55:04
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

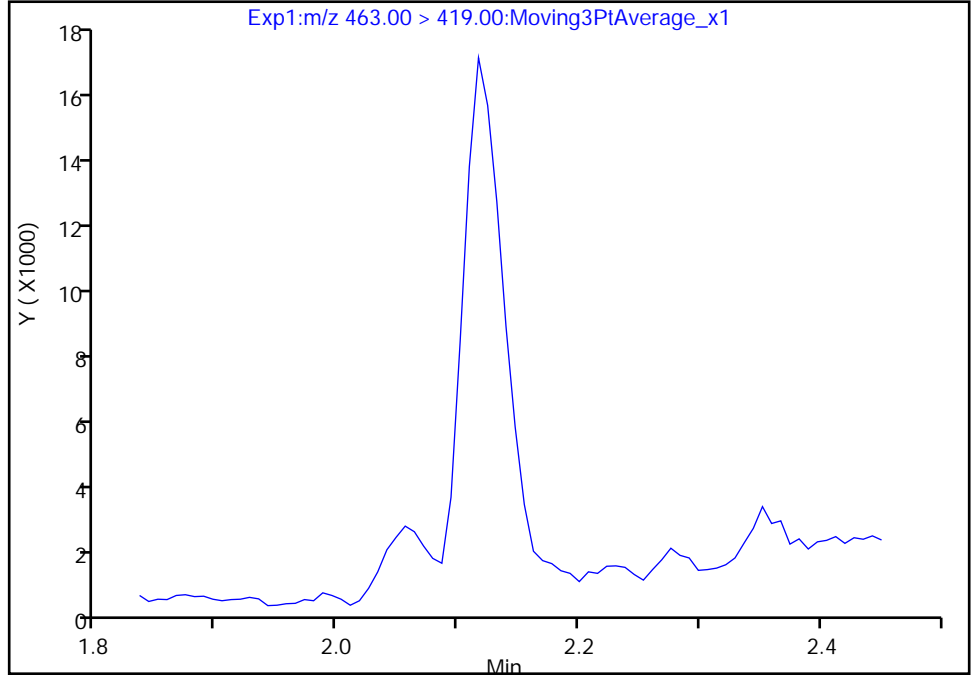
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_035.d
Injection Date: 13-Apr-2018 00:55:45 Instrument ID: A8_N
Lims ID: 320-37675-A-2-A Lab Sample ID: 320-37675-2
Client ID: NAWC-032819-RW-286
Operator ID: SACINSTLCMS01 ALS Bottle#: 25 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

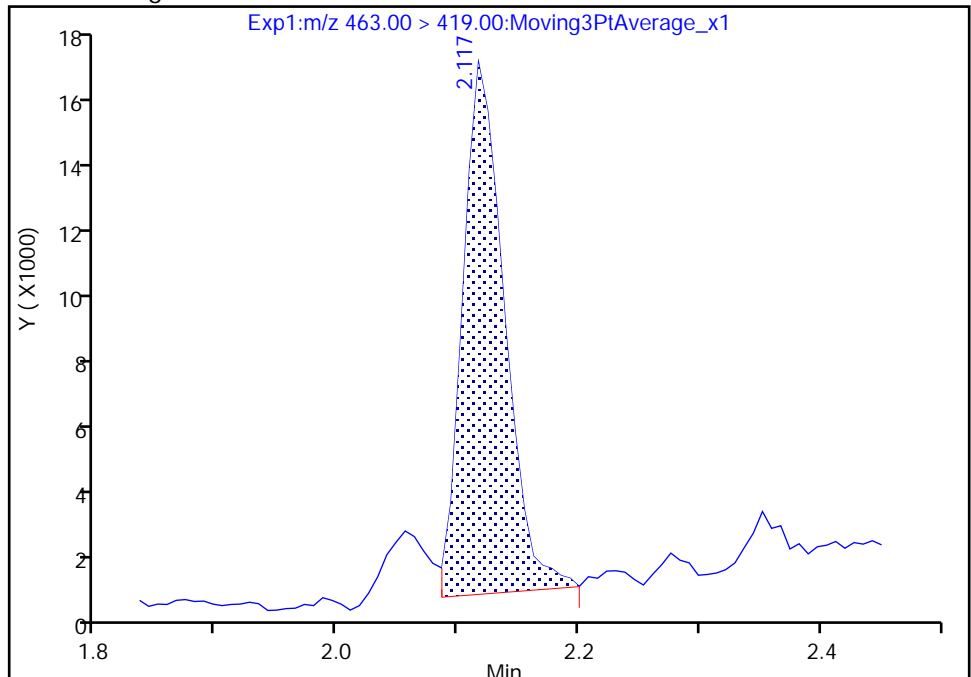
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 37592
Amount: 0.444466
Amount Units: ng/ml



Reviewer: barnettj, 13-Apr-2018 09:55:36
Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-FRB-286 Lab Sample ID: 320-37675-3
 Matrix: Water Lab File ID: 2018.04.12_537AA_036.d
 Analysis Method: 537 Date Collected: 03/29/2018 08:05
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 246.7(mL) Date Analyzed: 04/13/2018 01:00
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 41 | 16 | 6.9 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 8.1 | U | 20 | 8.1 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 8.1 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.6 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.1 | U | 10 | 4.1 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 91 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 101 | | 70-130 |
| STL00996 | 13C2 PFDA | 95 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_036.d
 Lims ID: 320-37675-A-3-A
 Client ID: NAWC-032819-FRB-286
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:00:24 ALS Bottle#: 26 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

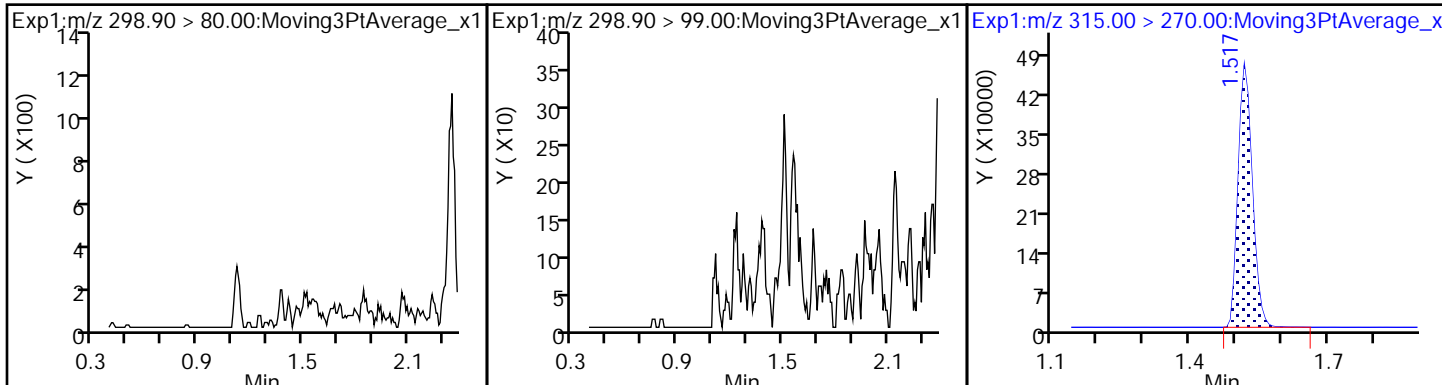
Column 1 : Det: EXP1
 Process Host: XAWRK028

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|-----------------|-----------------|--------|--------|--------|----------|--------------|---------------|-------|-------|
| \$ 2 13C2 PFHxA | 315.00 > 270.00 | 1.517 | 1.525 | -0.008 | 1.000 | 1000132 | 10.1 | 11122 | |
| * 6 13C2-PFOA | 415.00 > 370.00 | 1.874 | 1.889 | -0.015 | | 931391 | 10.0 | 5504 | |
| * 7 13C4 PFOS | 503.00 > 80.00 | 2.109 | 2.124 | -0.015 | | 2287824 | 28.7 | 4254 | |
| \$ 10 13C2 PFDA | 515.00 > 470.00 | 2.261 | 2.269 | -0.007 | 1.000 | 753731 | 9.52 | 6898 | |

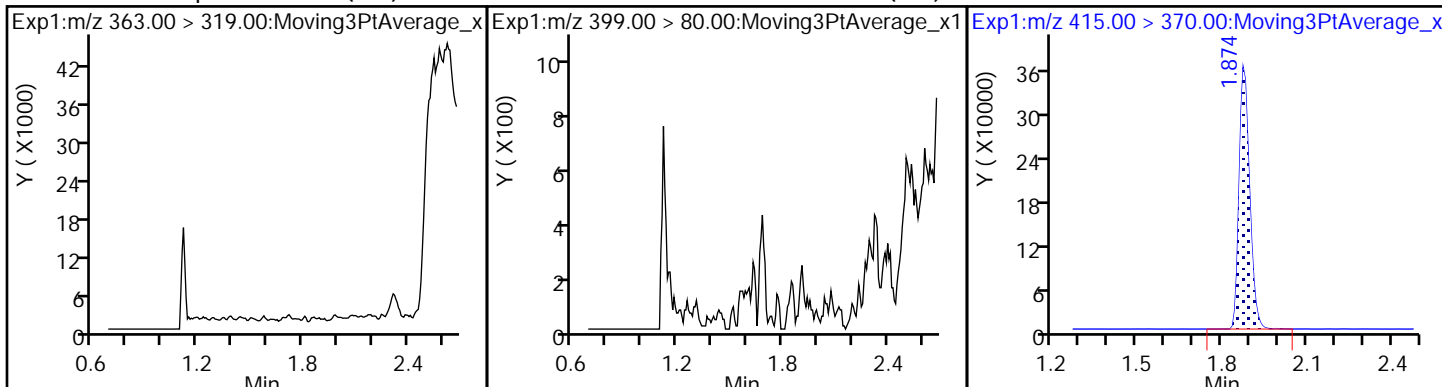
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_036.d
Injection Date: 13-Apr-2018 01:00:24 Instrument ID: A8_N
Lims ID: 320-37675-A-3-A Lab Sample ID: 320-37675-3
Client ID: NAWC-032819-FRB-286
Operator ID: SACINSTLCMS01 ALS Bottle#: 26 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

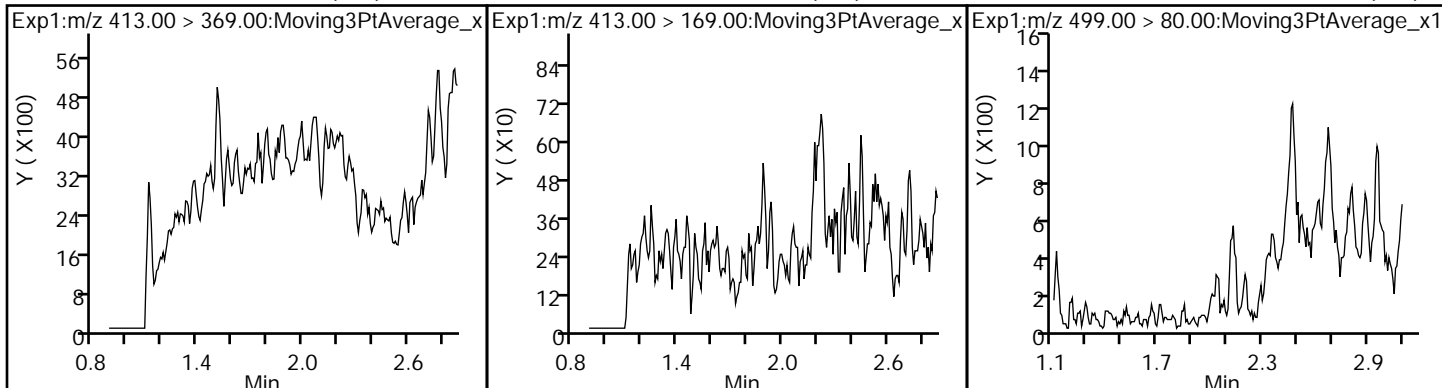
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



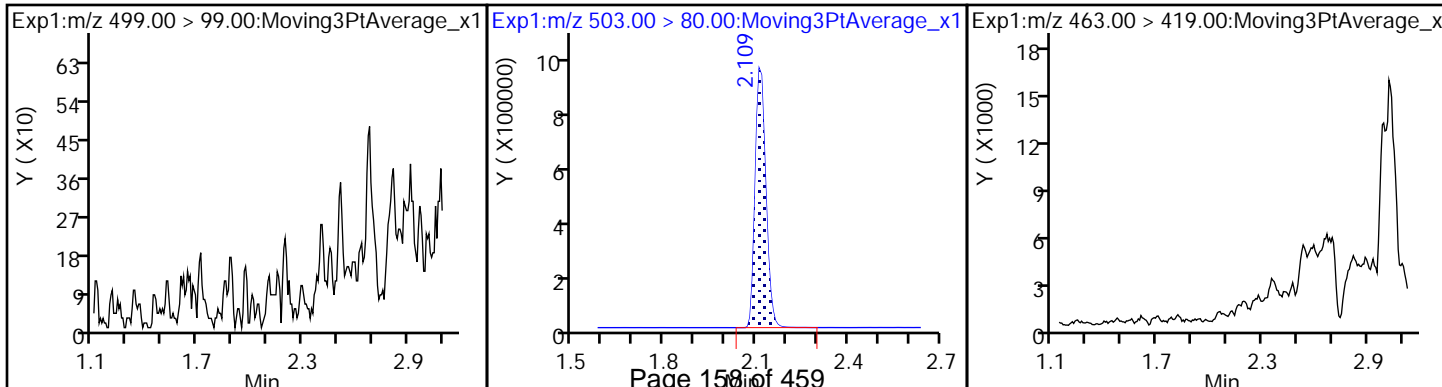
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



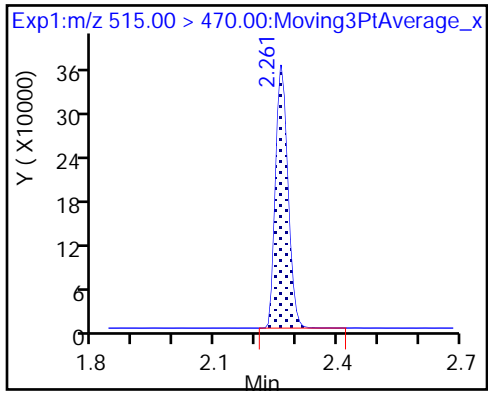
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_036.d
 Lims ID: 320-37675-A-3-A
 Client ID: NAWC-032819-FRB-286
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:00:24 ALS Bottle#: 26 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK028

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 10.1 | 101.00 |
| \$ 10 13C2 PFDA | 10.0 | 9.52 | 95.15 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: WGNA-032819-RW-0518 Lab Sample ID: 320-37675-4
 Matrix: Water Lab File ID: 2018.04.12_537AA_037.d
 Analysis Method: 537 Date Collected: 03/29/2018 08:40
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 252.4 (mL) Date Analyzed: 04/13/2018 01:05
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 22 | J M | 40 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 23 | | 20 | 7.9 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U M | 24 | 20 | 7.9 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 8.9 | J | 30 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 5.7 | J | 9.9 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 19 | J | 89 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 106 | | 70-130 |
| STL00996 | 13C2 PFDA | 104 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_037.d
 Lims ID: 320-37675-A-4-A
 Client ID: WGNA-032819-RW-0518
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:05:04 ALS Bottle#: 27 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-4-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 09:56:47

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|-------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.388 | -0.007 | 1.000 | 408935 | 4.77 | | 416 | |
| 298.90 > 99.00 | 1.381 | 1.388 | -0.007 | 1.000 | 300983 | | 1.36(0.00-0.00) | 724 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.525 | -0.008 | 1.000 | 1061004 | 10.6 | | 10484 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.684 | -0.007 | 1.000 | 146206 | 1.45 | | 4.5 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.677 | 1.684 | -0.007 | 1.000 | 300117 | 2.24 | | 170 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.874 | 1.889 | -0.015 | | 939190 | 10.0 | | 5877 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.874 | 1.889 | -0.015 | 1.000 | 590711 | 5.92 | | 70.2 | |
| 413.00 > 169.00 | 1.874 | 1.889 | -0.015 | 1.000 | 344393 | | 1.72(0.00-0.00) | 308 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.109 | 2.094 | 0.015 | 1.000 | 477998 | 5.51 | | 219 | a |
| 499.00 > 99.00 | 2.109 | 2.094 | 0.015 | 1.000 | 84638 | | 5.65(0.00-0.00) | 155 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.109 | 2.124 | -0.015 | | 2335776 | 28.7 | | 2457 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.117 | 2.132 | -0.015 | 1.000 | 42023 | 0.5312 | | 6.2 | M |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.261 | 2.269 | -0.007 | 1.000 | 831388 | 10.4 | | 8152 | |

QC Flag Legend

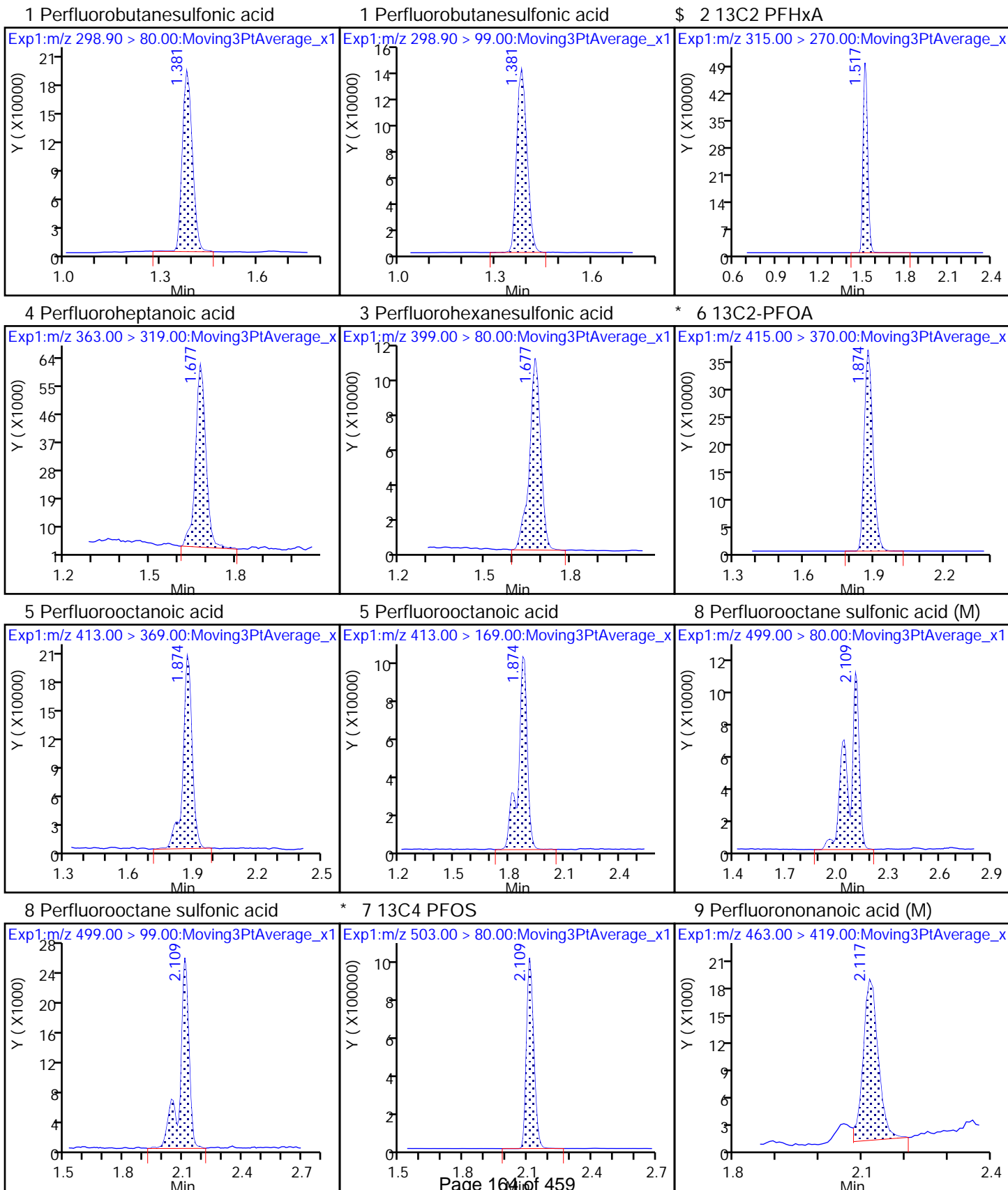
Review Flags

M - Manually Integrated

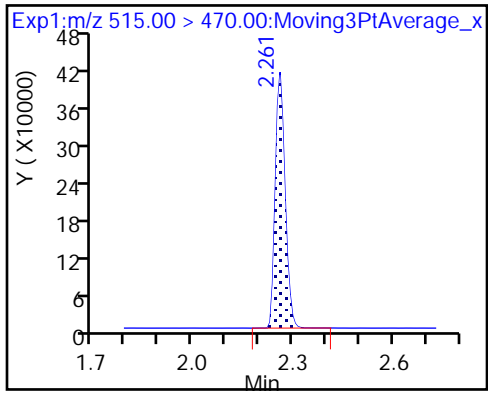
a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_037.d
Injection Date: 13-Apr-2018 01:05:04 Instrument ID: A8_N
Lims ID: 320-37675-A-4-A Lab Sample ID: 320-37675-4
Client ID: WGNA-032819-RW-0518
Operator ID: SACINSTLCMS01 ALS Bottle#: 27 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_037.d
 Lims ID: 320-37675-A-4-A
 Client ID: WGNA-032819-RW-0518
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:05:04 ALS Bottle#: 27 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-4-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 09:56:47

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 10.6 | 106.26 |
| \$ 10 13C2 PFDA | 10.0 | 10.4 | 104.09 |

TestAmerica Sacramento

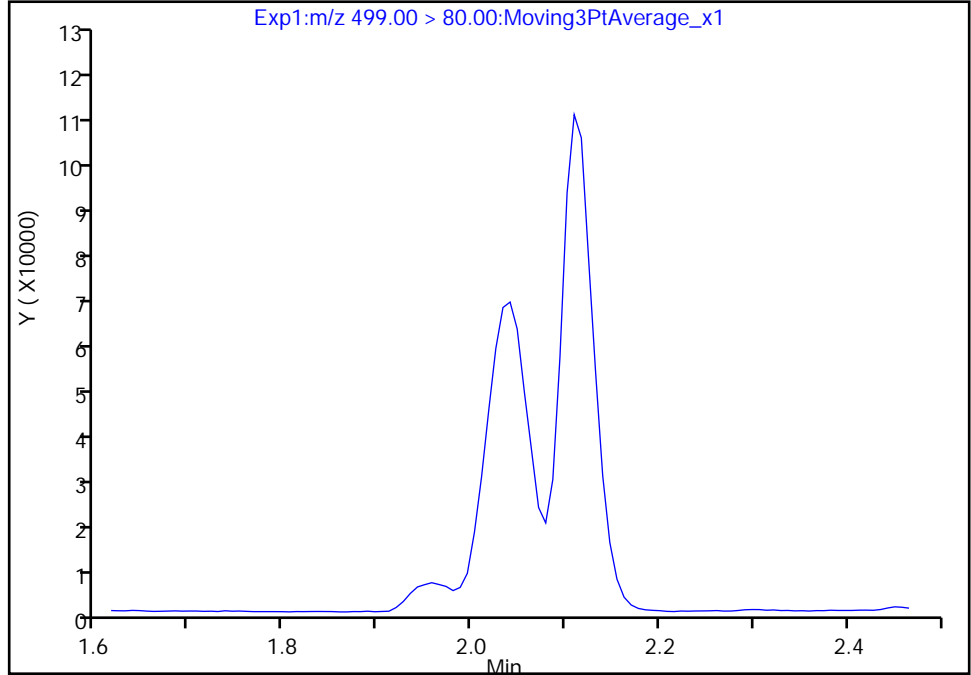
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_037.d
Injection Date: 13-Apr-2018 01:05:04 Instrument ID: A8_N
Lims ID: 320-37675-A-4-A Lab Sample ID: 320-37675-4
Client ID: WGNA-032819-RW-0518
Operator ID: SACINSTLCMS01 ALS Bottle#: 27 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

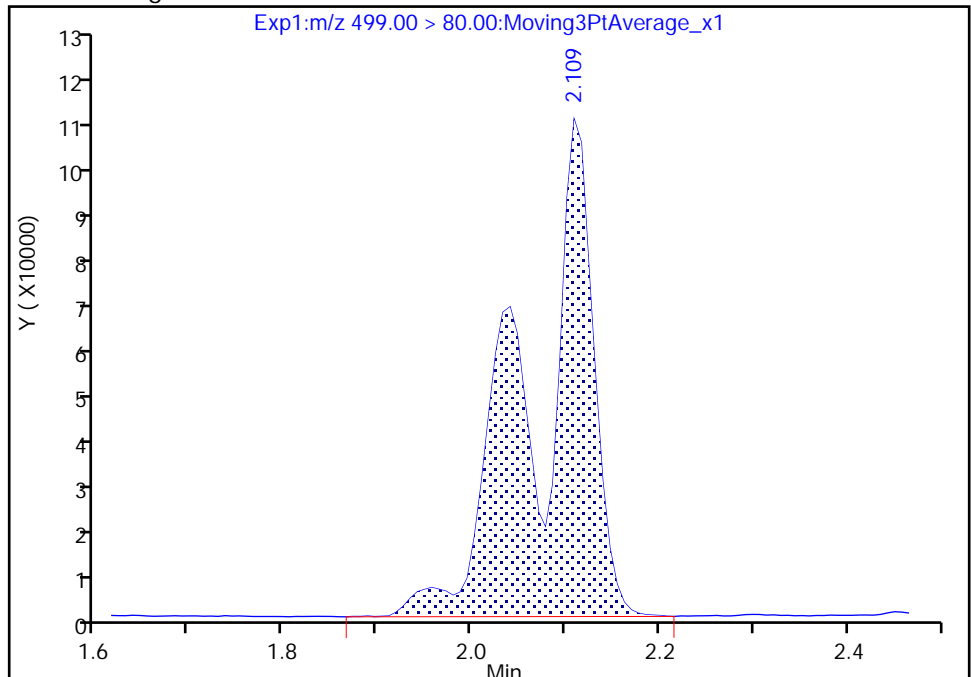
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.11
Area: 477998
Amount: 5.505378
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 13-Apr-2018 09:56:01
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

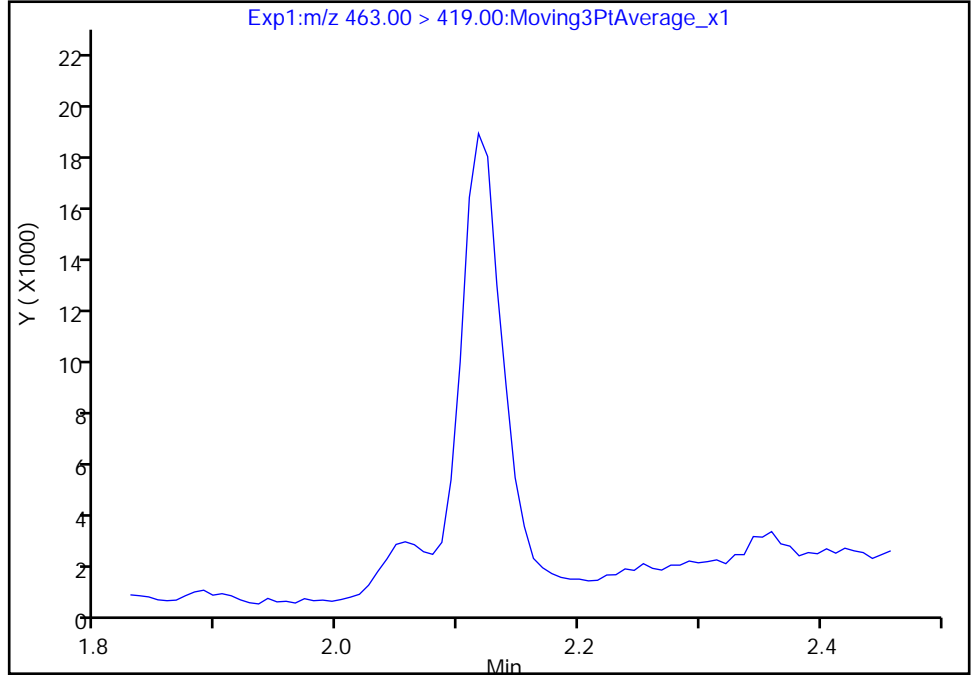
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Injection Date: 13-Apr-2018 01:05:04 Instrument ID: A8_N
Lims ID: 320-37675-A-4-A Lab Sample ID: 320-37675-4
Client ID: WGNA-032819-RW-0518
Operator ID: SACINSTLCMS01 ALS Bottle#: 27 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

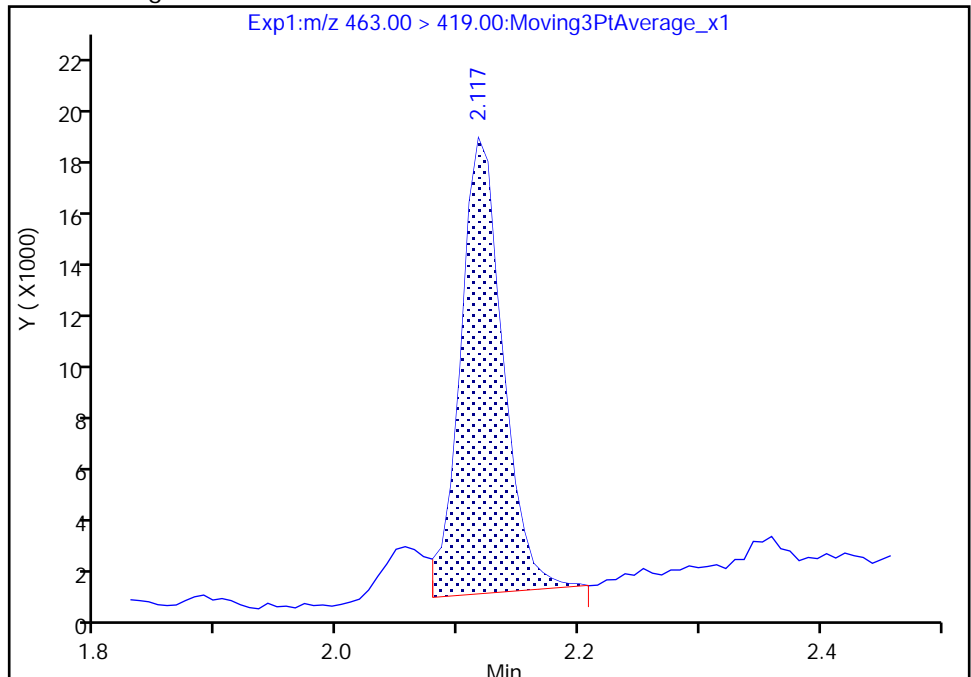
Signal: 1

Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results



RT: 2.12
Area: 42023
Amount: 0.531153
Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 09:56:29
Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: WGNA-032819-FRB-0518 Lab Sample ID: 320-37675-5
 Matrix: Water Lab File ID: 2018.04.12_537AA_038.d
 Analysis Method: 537 Date Collected: 03/29/2018 08:35
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 253.5 (mL) Date Analyzed: 04/13/2018 01:09
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 7.9 | U | 20 | 7.9 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 7.9 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.9 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 89 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 100 | | 70-130 |
| STL00996 | 13C2 PFDA | 98 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_038.d
 Lims ID: 320-37675-A-5-A
 Client ID: WGNA-032819-FRB-0518
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:09:44 ALS Bottle#: 28 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-5-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

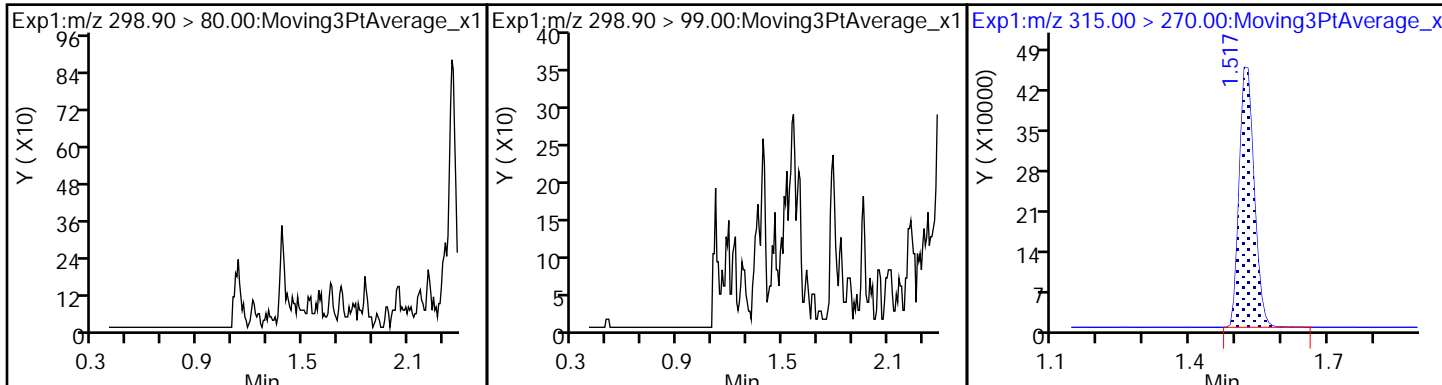
Column 1 : Det: EXP1
 Process Host: XAWRK028

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|-----------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-------|
| \$ 2 13C2 PFHxA | 315.00 > 270.00 | 1.517 | 1.525 | -0.008 | 1.000 | 1013651 | 9.99 | 9454 | |
| * 6 13C2-PFOA | 415.00 > 370.00 | 1.874 | 1.889 | -0.015 | | 954713 | 10.0 | 5193 | |
| * 7 13C4 PFOS | 503.00 > 80.00 | 2.109 | 2.124 | -0.015 | | 2370457 | 28.7 | 4313 | |
| \$ 10 13C2 PFDA | 515.00 > 470.00 | 2.261 | 2.269 | -0.007 | 1.000 | 797269 | 9.82 | 6792 | |

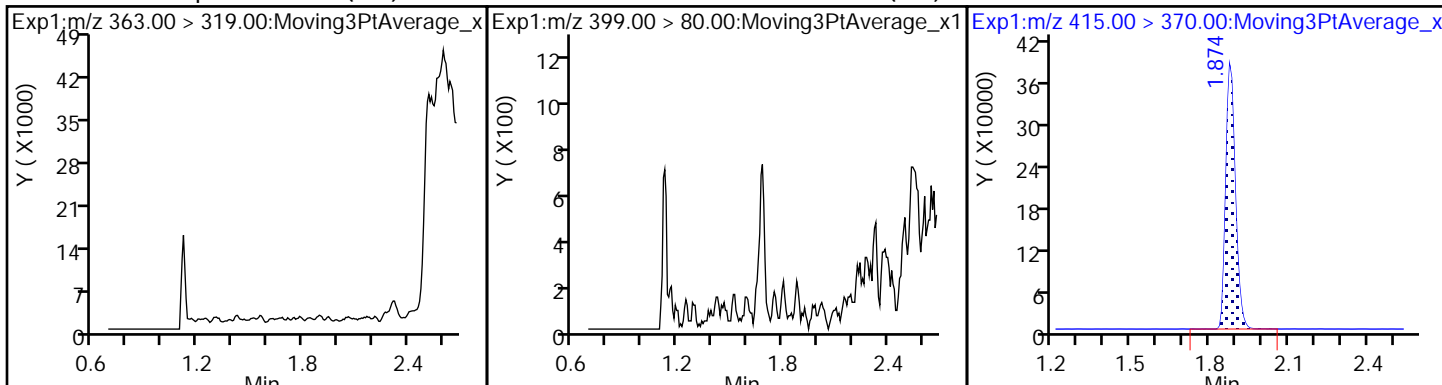
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_038.d
Injection Date: 13-Apr-2018 01:09:44 Instrument ID: A8_N
Lims ID: 320-37675-A-5-A Lab Sample ID: 320-37675-5
Client ID: WGNA-032819-FRB-0518
Operator ID: SACINSTLCMS01 ALS Bottle#: 28 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

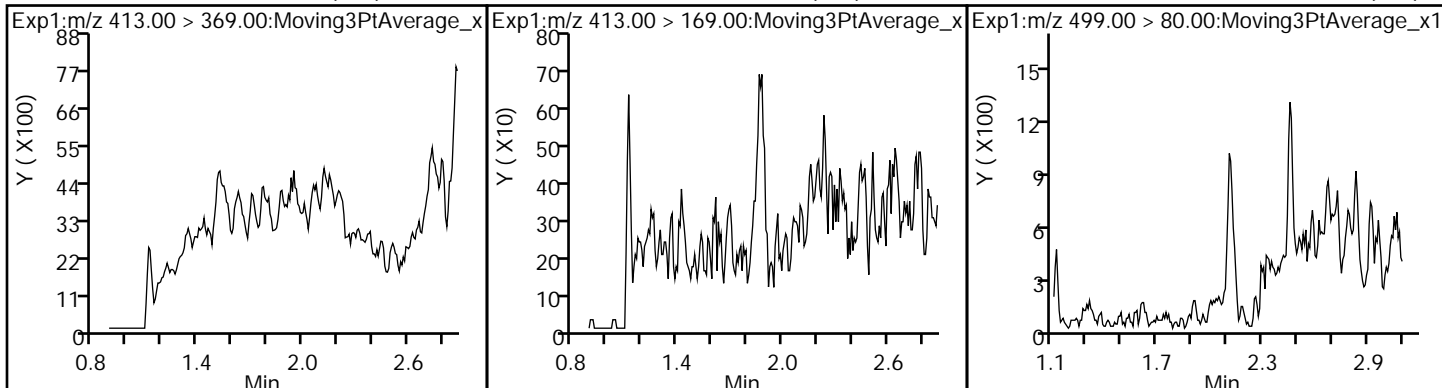
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



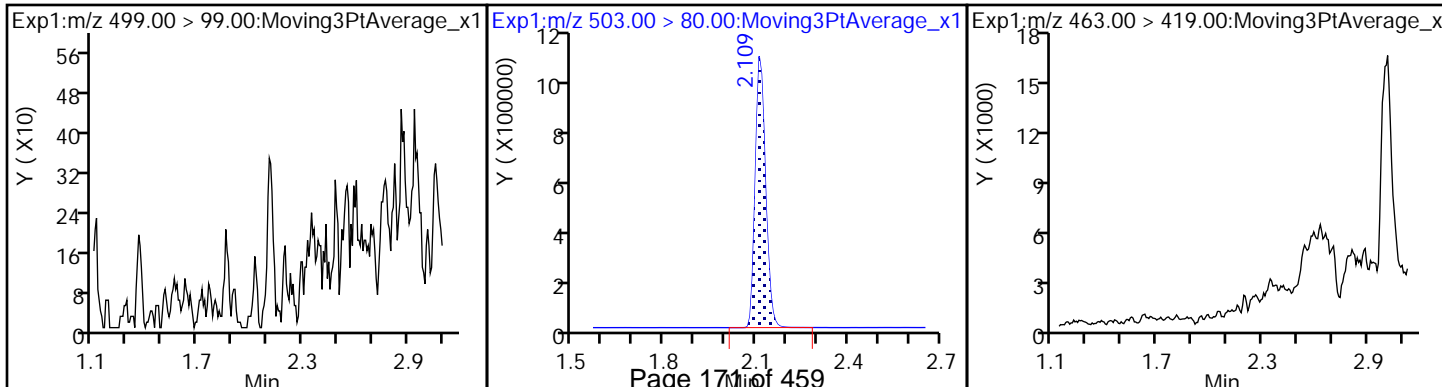
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



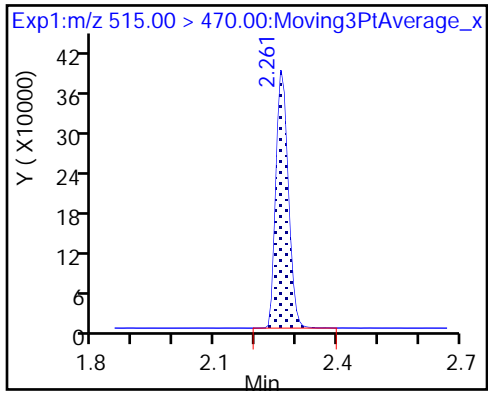
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_038.d
 Lims ID: 320-37675-A-5-A
 Client ID: WGNA-032819-FRB-0518
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:09:44 ALS Bottle#: 28 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-5-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.99 | 99.86 |
| \$ 10 13C2 PFDA | 10.0 | 9.82 | 98.19 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-010 Lab Sample ID: 320-37675-6
 Matrix: Water Lab File ID: 2018.04.12_537AA_039.d
 Analysis Method: 537 Date Collected: 03/29/2018 09:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 248.5 (mL) Date Analyzed: 04/13/2018 01:14
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 27 | J M | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 20 | | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U M | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 17 | J | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 5.8 | J | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 91 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 91 | | 70-130 |
| STL00996 | 13C2 PFDA | 88 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_039.d
 Lims ID: 320-37675-A-6-A
 Client ID: NAWC-032819-RW-010
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:14:26 ALS Bottle#: 29 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-6-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 09:57:45

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.388 | -0.007 | 1.000 | 69821 | 0.7966 | | 63.4 | |
| 298.90 > 99.00 | 1.381 | 1.388 | -0.007 | 1.000 | 54680 | | 1.28(0.00-0.00) | 142 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.525 | -0.008 | 1.000 | 967455 | 9.06 | | 9326 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.684 | -0.007 | 1.000 | 156507 | 1.45 | | 5.2 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.677 | 1.684 | -0.007 | 1.000 | 566337 | 4.14 | | 348 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.874 | 1.889 | -0.015 | | 1003975 | 10.0 | | 5702 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.874 | 1.889 | -0.015 | 1.000 | 539691 | 5.06 | | 67.6 | |
| 413.00 > 169.00 | 1.874 | 1.889 | -0.015 | 1.000 | 318826 | | 1.69(0.00-0.00) | 303 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.109 | 2.094 | 0.015 | 1.000 | 587135 | 6.61 | | 288 | a |
| 499.00 > 99.00 | 2.109 | 2.094 | 0.015 | 1.000 | 129247 | | 4.54(0.00-0.00) | 248 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.109 | 2.124 | -0.015 | | 2389703 | 28.7 | | 2677 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.117 | 2.132 | -0.015 | 1.000 | 55221 | 0.6529 | | 9.0 | M |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.261 | 2.269 | -0.007 | 1.000 | 747897 | 8.76 | | 8492 | |

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

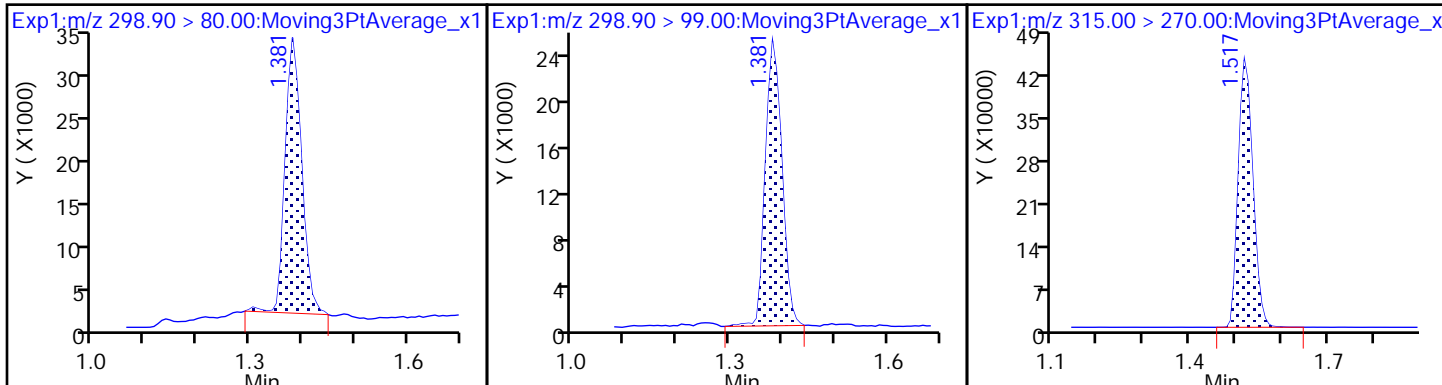
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_039.d
Injection Date: 13-Apr-2018 01:14:26 Instrument ID: A8_N
Lims ID: 320-37675-A-6-A Lab Sample ID: 320-37675-6
Client ID: NAWC-032819-RW-010
Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

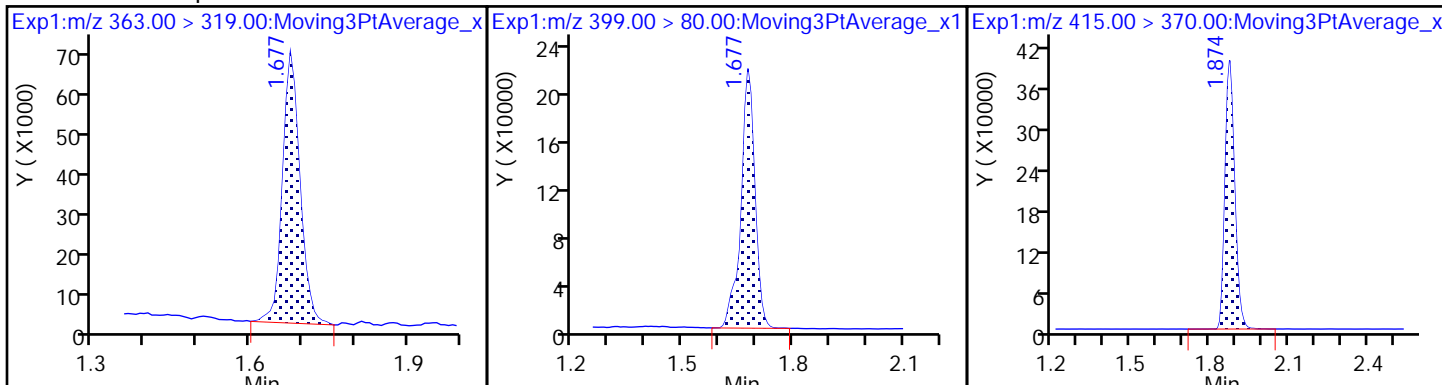
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

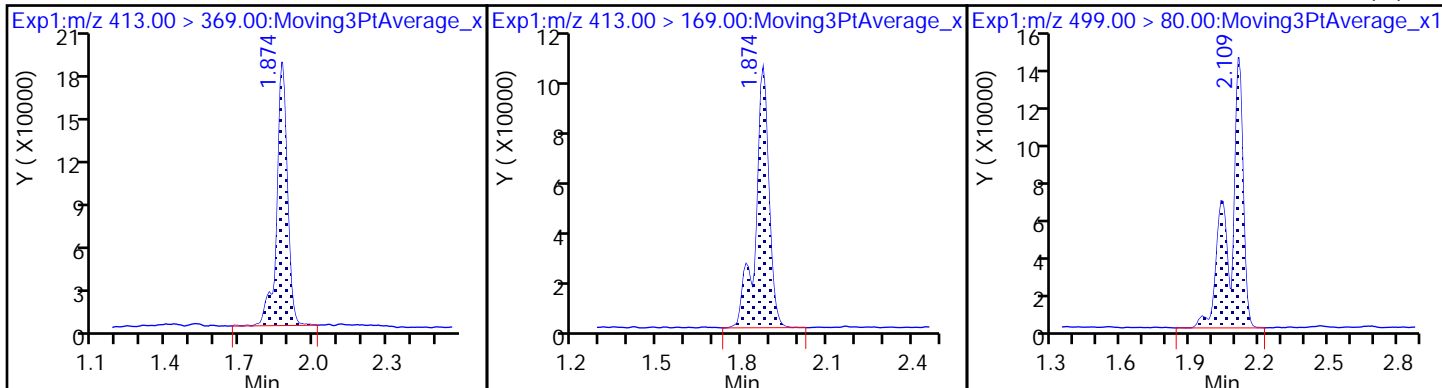
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

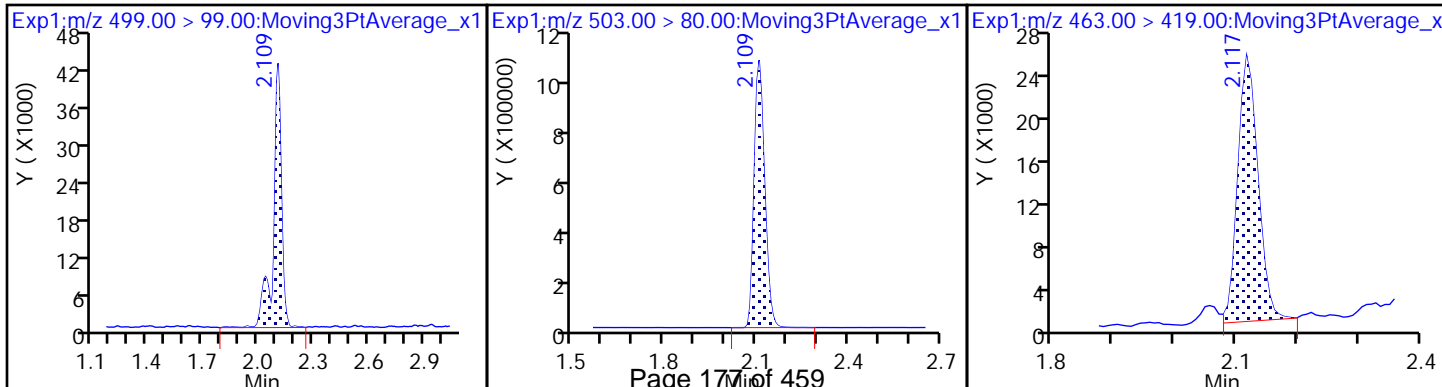
8 Perfluorooctane sulfonic acid (M)



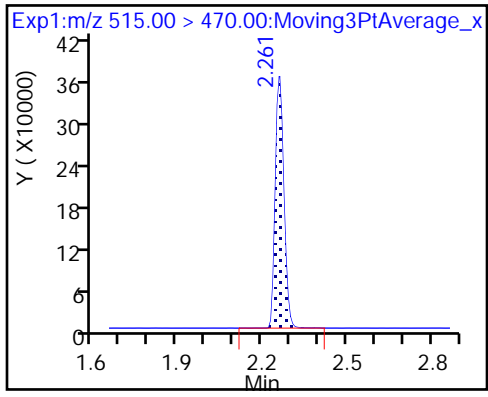
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_039.d
 Lims ID: 320-37675-A-6-A
 Client ID: NAWC-032819-RW-010
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:14:26 ALS Bottle#: 29 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-6-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 09:57:45

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.06 | 90.64 |
| \$ 10 13C2 PFDA | 10.0 | 8.76 | 87.59 |

TestAmerica Sacramento

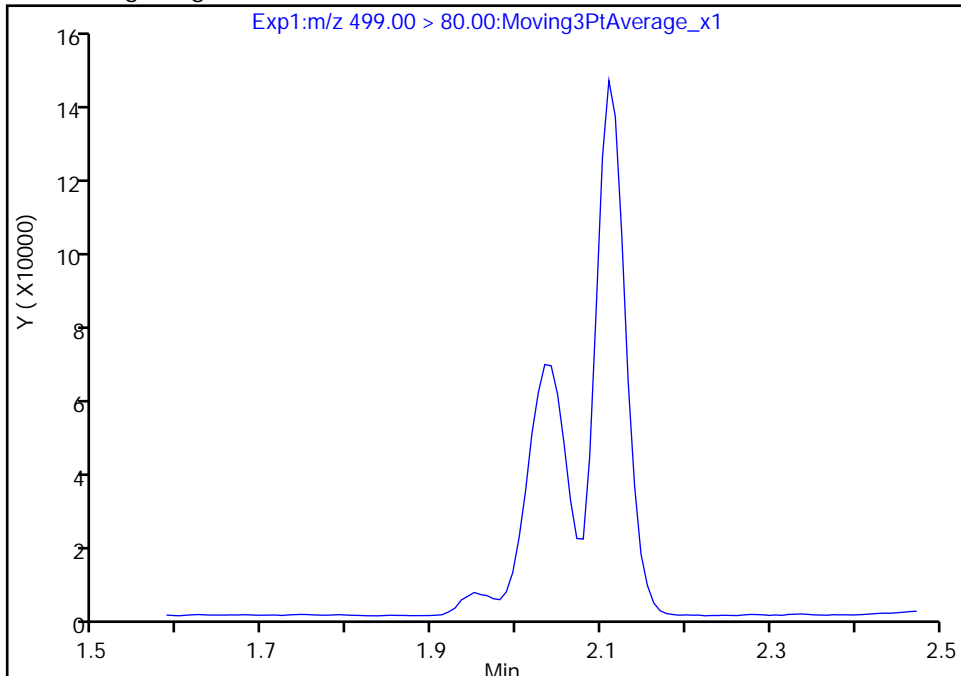
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_039.d
Injection Date: 13-Apr-2018 01:14:26 Instrument ID: A8_N
Lims ID: 320-37675-A-6-A Lab Sample ID: 320-37675-6
Client ID: NAWC-032819-RW-010
Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

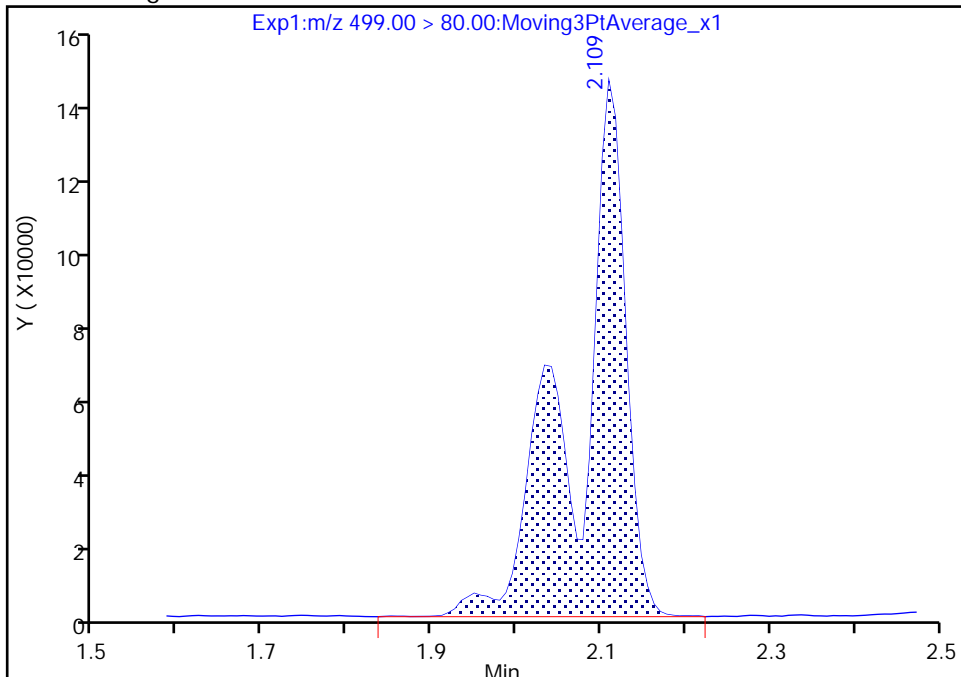
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 587135
Amount: 6.609769
Amount Units: ng/ml



Reviewer: barnettj, 13-Apr-2018 09:57:03
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

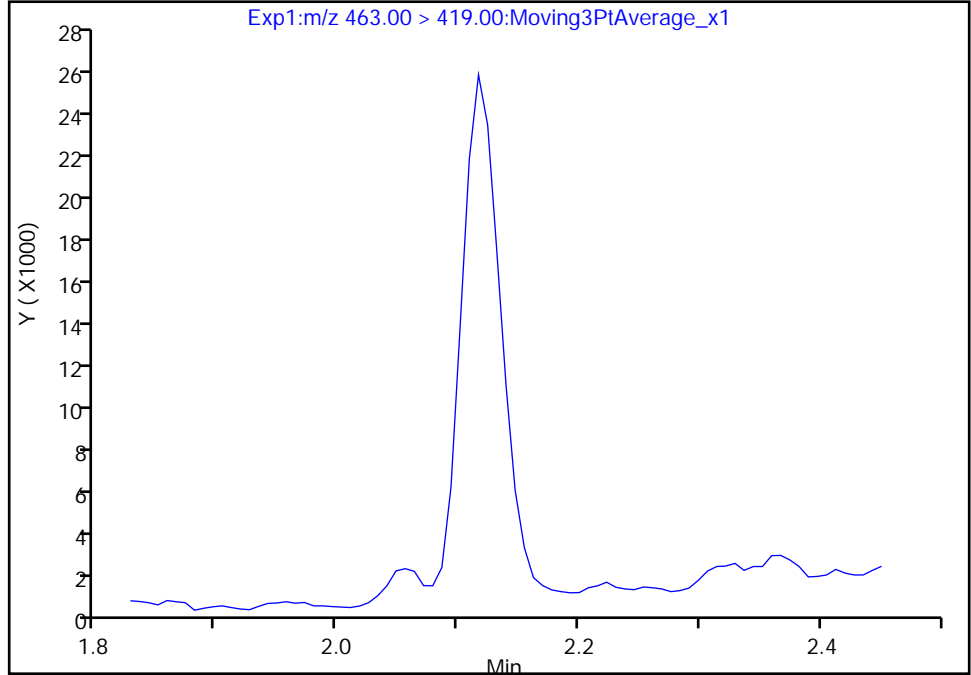
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_039.d
Injection Date: 13-Apr-2018 01:14:26 Instrument ID: A8_N
Lims ID: 320-37675-A-6-A Lab Sample ID: 320-37675-6
Client ID: NAWC-032819-RW-010
Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

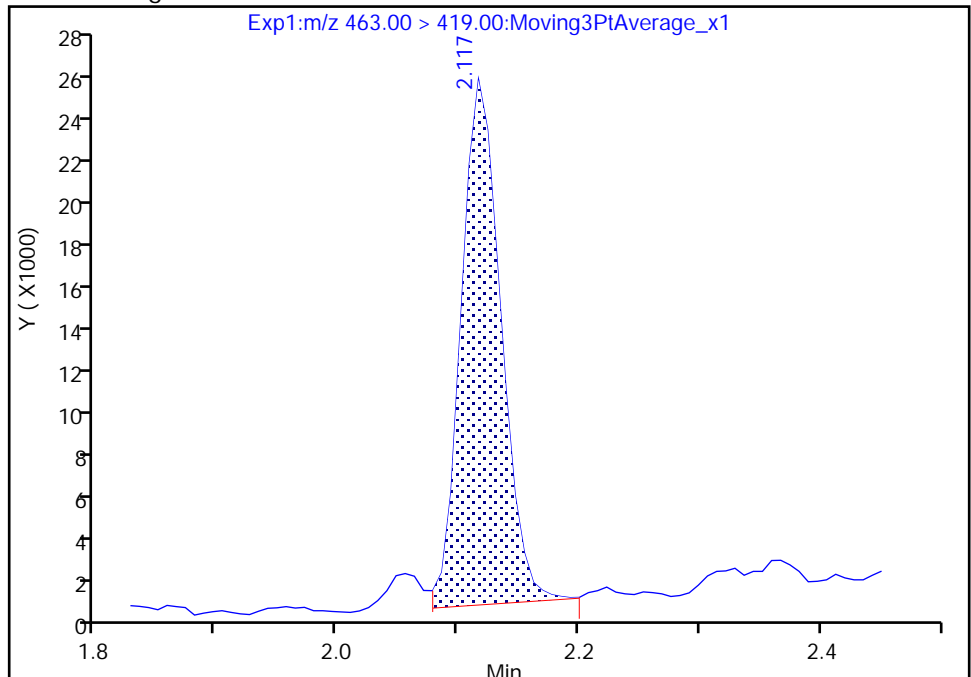
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 55221
Amount: 0.652931
Amount Units: ng/ml



Reviewer: barnettj, 13-Apr-2018 09:57:22
Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-FRB-010 Lab Sample ID: 320-37675-7
 Matrix: Water Lab File ID: 2018.04.12_537AA_040.d
 Analysis Method: 537 Date Collected: 03/29/2018 09:05
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 255.5 (mL) Date Analyzed: 04/13/2018 01:19
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 7.8 | U | 20 | 7.8 | 2.7 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 23 | 20 | 7.8 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 29 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.8 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 35 | U | 88 | 35 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 101 | | 70-130 |
| STL00996 | 13C2 PFDA | 101 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_040.d
 Lims ID: 320-37675-A-7-A
 Client ID: NAWC-032819-FRB-010
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:19:06 ALS Bottle#: 30 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-7-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

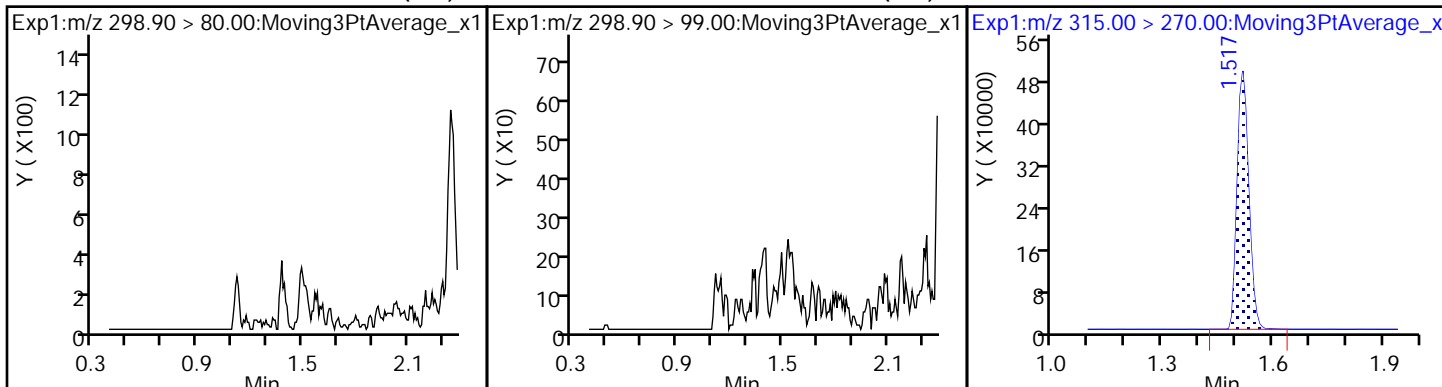
First Level Reviewer: barnettj Date: 13-Apr-2018 09:58:17

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|-----------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-------|
| \$ 2 13C2 PFHxA | 315.00 > 270.00 | 1.517 | 1.525 | -0.008 | 1.000 | 1068255 | 10.1 | 9628 | |
| * 6 13C2-PFOA | 415.00 > 370.00 | 1.874 | 1.889 | -0.015 | | 998861 | 10.0 | 5790 | |
| * 7 13C4 PFOS | 503.00 > 80.00 | 2.109 | 2.124 | -0.015 | | 2402516 | 28.7 | 4313 | |
| \$ 10 13C2 PFDA | 515.00 > 470.00 | 2.261 | 2.269 | -0.007 | 1.000 | 861966 | 10.1 | 8384 | |

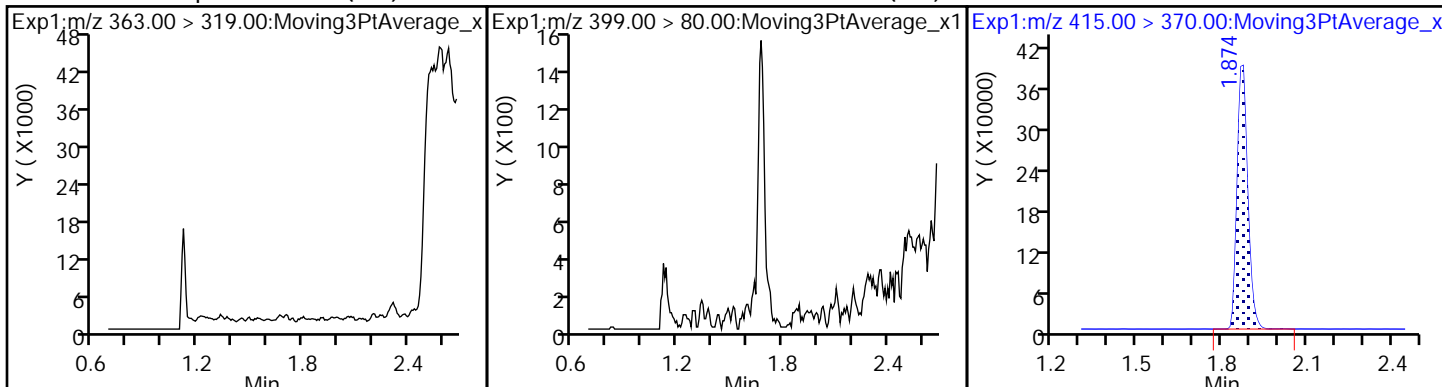
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_040.d
Injection Date: 13-Apr-2018 01:19:06 Instrument ID: A8_N
Lims ID: 320-37675-A-7-A Lab Sample ID: 320-37675-7
Client ID: NAWC-032819-FRB-010
Operator ID: SACINSTLCMS01 ALS Bottle#: 30 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

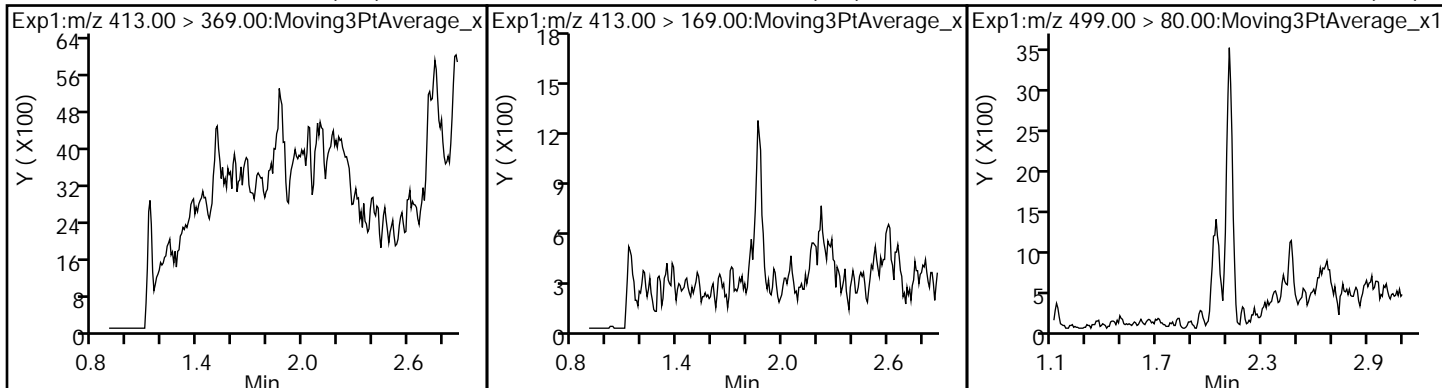
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



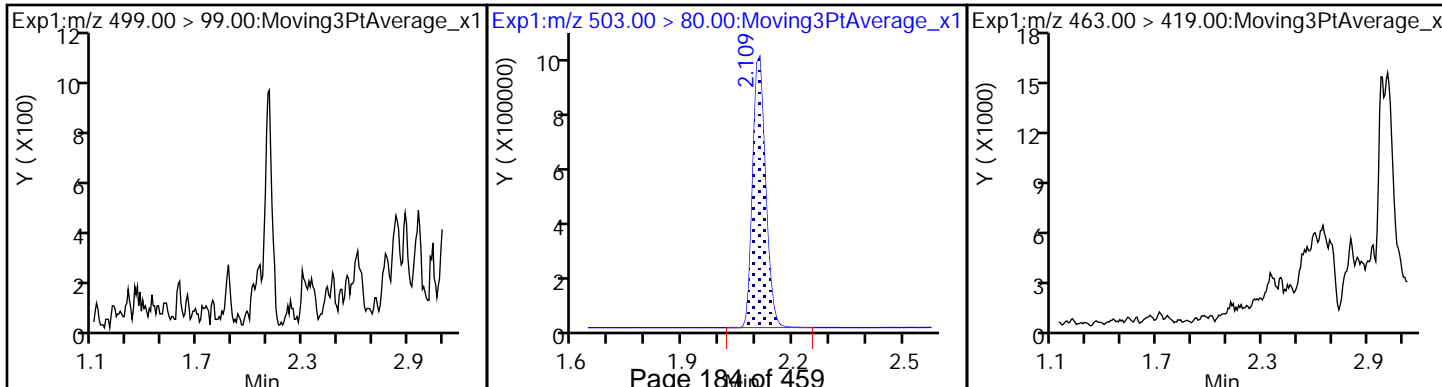
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



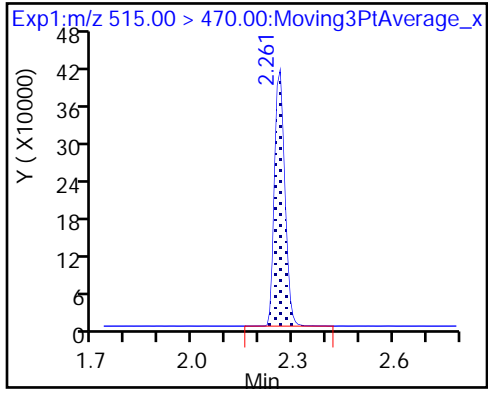
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_040.d
 Lims ID: 320-37675-A-7-A
 Client ID: NAWC-032819-FRB-010
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:19:06 ALS Bottle#: 30 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-7-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 09:58:17

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 10.1 | 100.59 |
| \$ 10 13C2 PFDA | 10.0 | 10.1 | 101.47 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-127 Lab Sample ID: 320-37675-8
 Matrix: Water Lab File ID: 2018.04.12_537AA_043.d
 Analysis Method: 537 Date Collected: 03/29/2018 09:40
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 254.8 (mL) Date Analyzed: 04/13/2018 01:33
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217816 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 7.8 | U | 20 | 7.8 | 2.7 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 7.8 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 29 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.8 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 35 | U | 88 | 35 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 93 | | 70-130 |
| STL00996 | 13C2 PFDA | 96 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_043.d
 Lims ID: 320-37675-A-8-A
 Client ID: NAWC-032819-RW-127
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:33:06 ALS Bottle#: 31 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-8-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:45 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

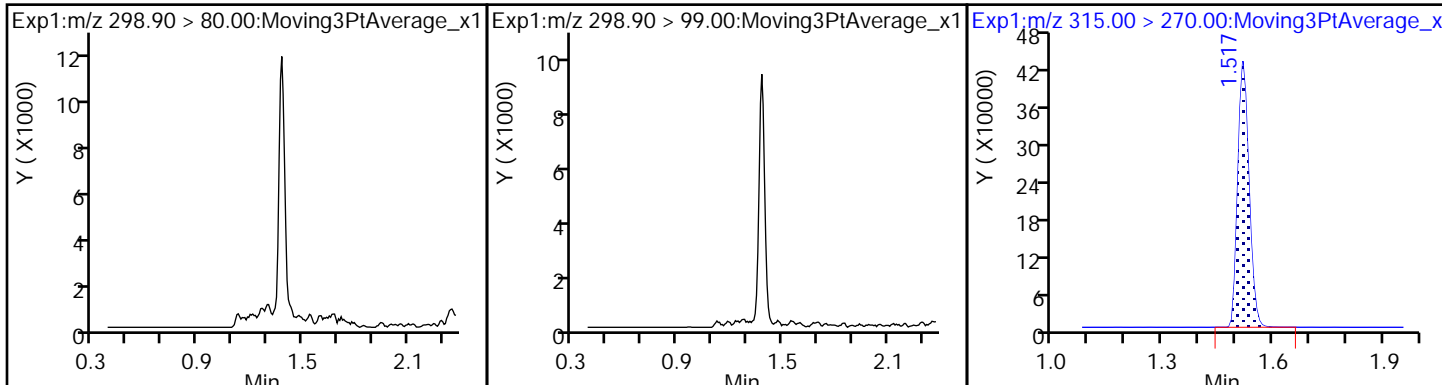
Column 1 : Det: EXP1
 Process Host: XAWRK028

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|-----------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-------|
| \$ 2 13C2 PFHxA | 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 900550 | 9.25 | 9958 | |
| * 6 13C2-PFOA | 415.00 > 370.00 | 1.874 | 1.866 | 0.008 | | 915274 | 10.0 | 5704 | |
| * 7 13C4 PFOS | 503.00 > 80.00 | 2.109 | 2.102 | 0.007 | | 2281073 | 28.7 | 3780 | |
| \$ 10 13C2 PFDA | 515.00 > 470.00 | 2.261 | 2.253 | 0.008 | 1.000 | 744792 | 9.57 | 6593 | |

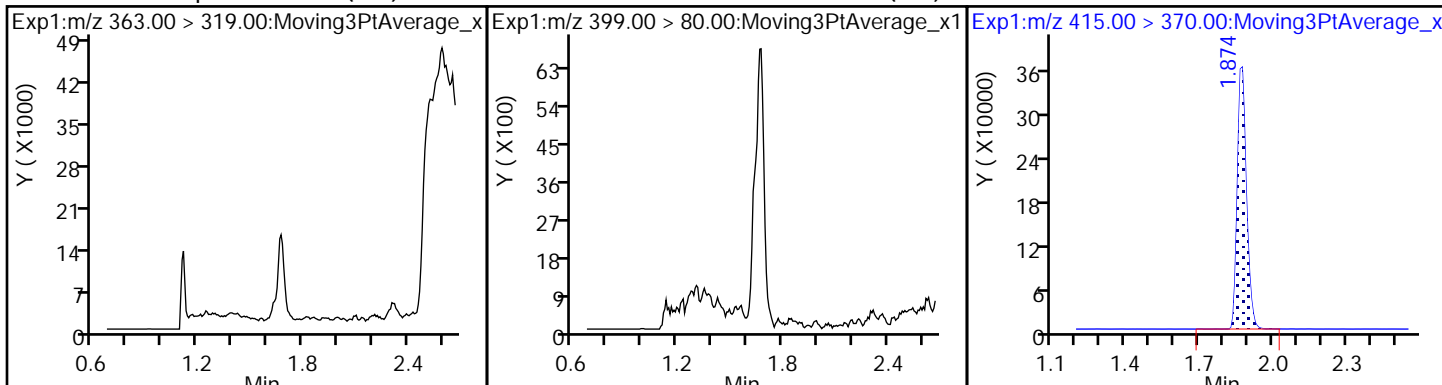
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_043.d
Injection Date: 13-Apr-2018 01:33:06 Instrument ID: A8_N
Lims ID: 320-37675-A-8-A Lab Sample ID: 320-37675-8
Client ID: NAWC-032819-RW-127
Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

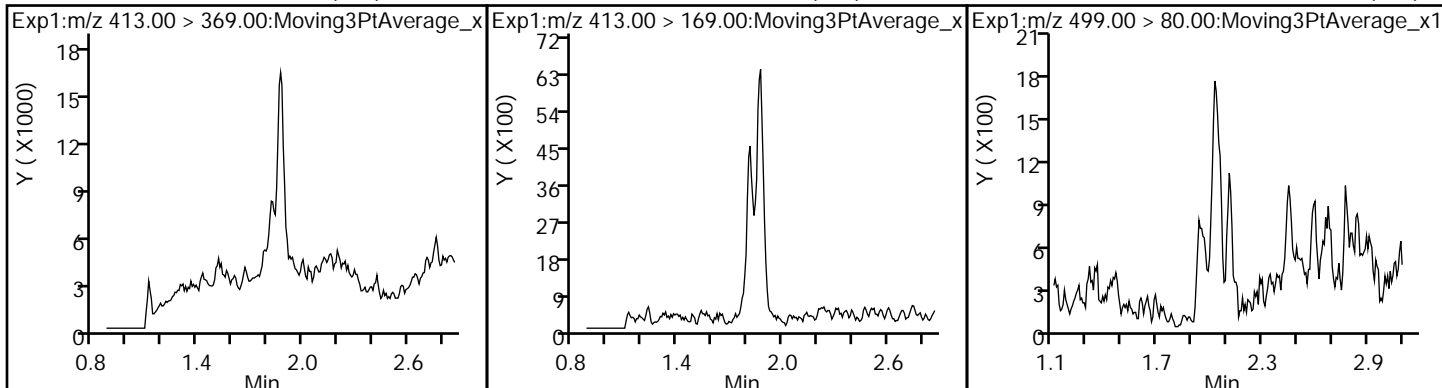
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



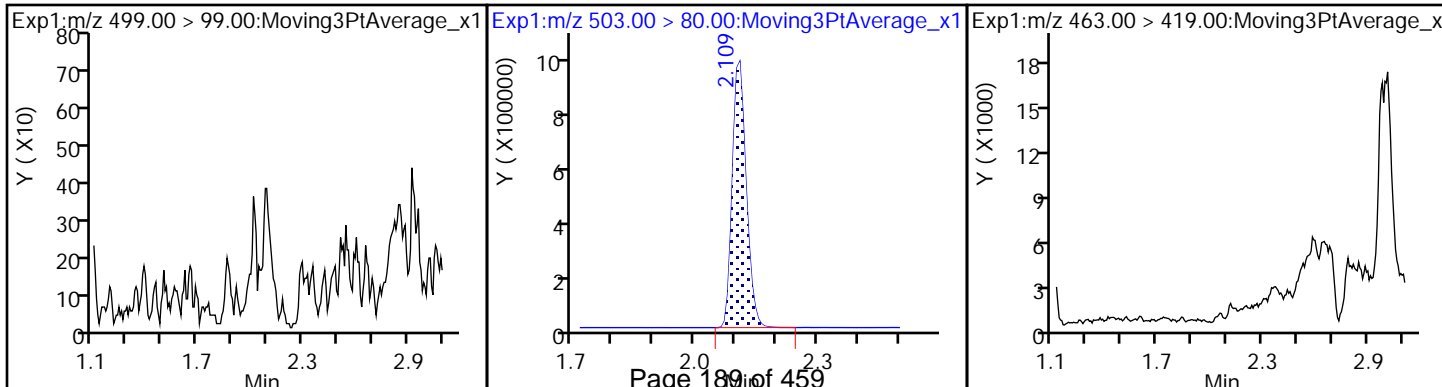
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



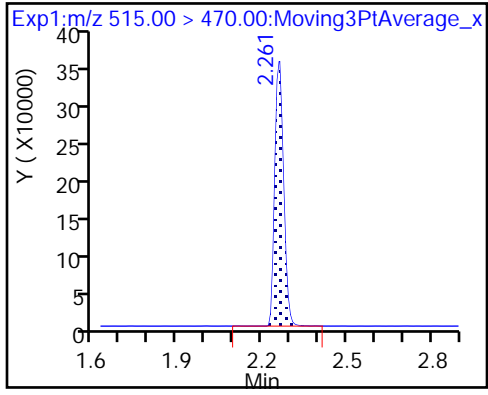
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_043.d
 Lims ID: 320-37675-A-8-A
 Client ID: NAWC-032819-RW-127
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:33:06 ALS Bottle#: 31 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-8-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:45 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.25 | 92.55 |
| \$ 10 13C2 PFDA | 10.0 | 9.57 | 95.68 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-FRB-127 Lab Sample ID: 320-37675-9
 Matrix: Water Lab File ID: 2018.04.12_537AA_044.d
 Analysis Method: 537 Date Collected: 03/29/2018 09:35
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 249.3(mL) Date Analyzed: 04/13/2018 01:37
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217816 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 8.0 | U | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 95 | | 70-130 |
| STL00996 | 13C2 PFDA | 100 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_044.d
 Lims ID: 320-37675-A-9-A
 Client ID: NAWC-032819-FRB-127
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:37:46 ALS Bottle#: 32 Worklist Smp#: 16
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-9-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:45 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

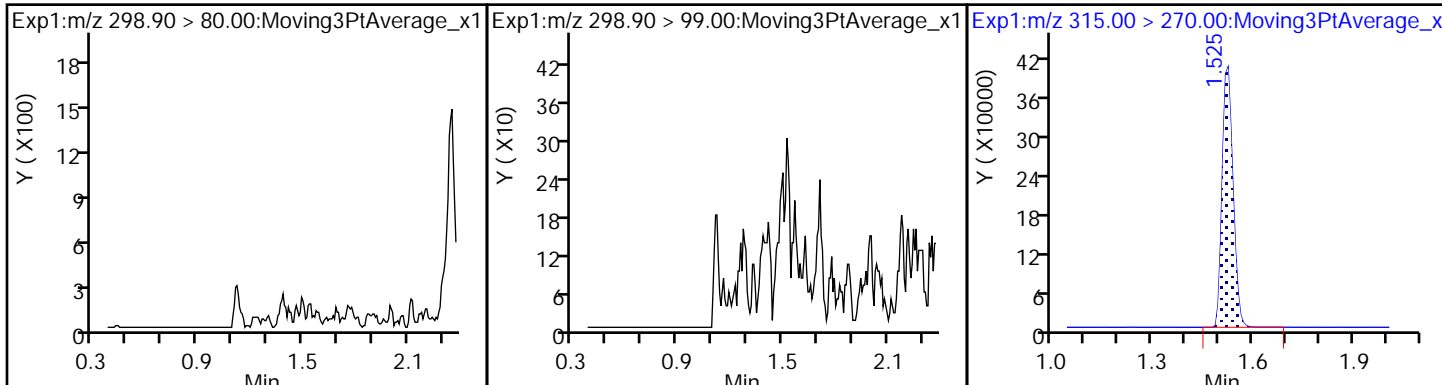
Column 1 : Det: EXP1
 Process Host: XAWRK028

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|-----------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-------|
| \$ 2 13C2 PFHxA | 315.00 > 270.00 | 1.525 | 1.517 | 0.008 | 1.000 | 904644 | 9.52 | 8615 | |
| * 6 13C2-PFOA | 415.00 > 370.00 | 1.874 | 1.866 | 0.008 | | 893479 | 10.0 | 5474 | |
| * 7 13C4 PFOS | 503.00 > 80.00 | 2.109 | 2.102 | 0.007 | | 2204862 | 28.7 | 4115 | |
| \$ 10 13C2 PFDA | 515.00 > 470.00 | 2.261 | 2.253 | 0.008 | 1.000 | 757401 | 9.97 | 7370 | |

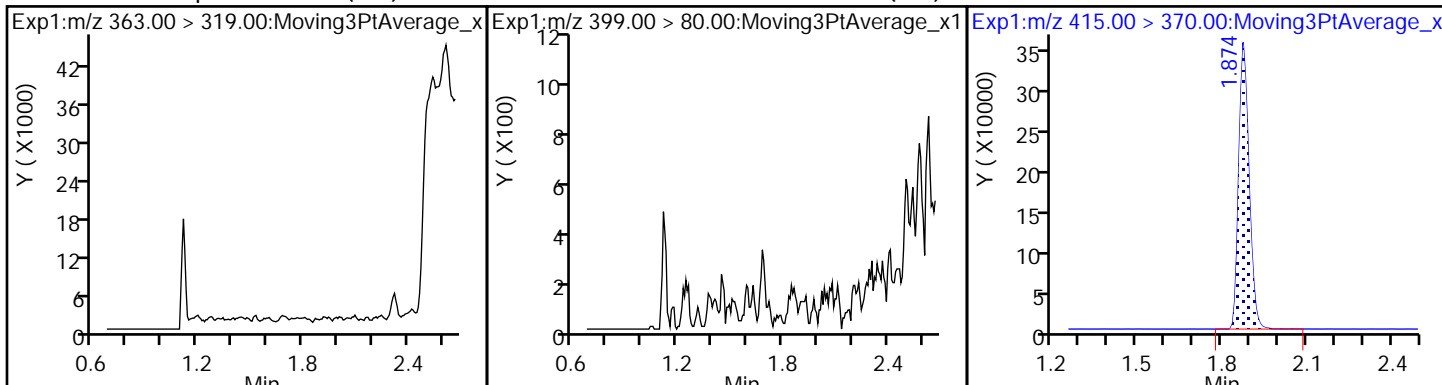
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_044.d
Injection Date: 13-Apr-2018 01:37:46 Instrument ID: A8_N
Lims ID: 320-37675-A-9-A Lab Sample ID: 320-37675-9
Client ID: NAWC-032819-FRB-127
Operator ID: SACINSTLCMS01 ALS Bottle#: 32 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

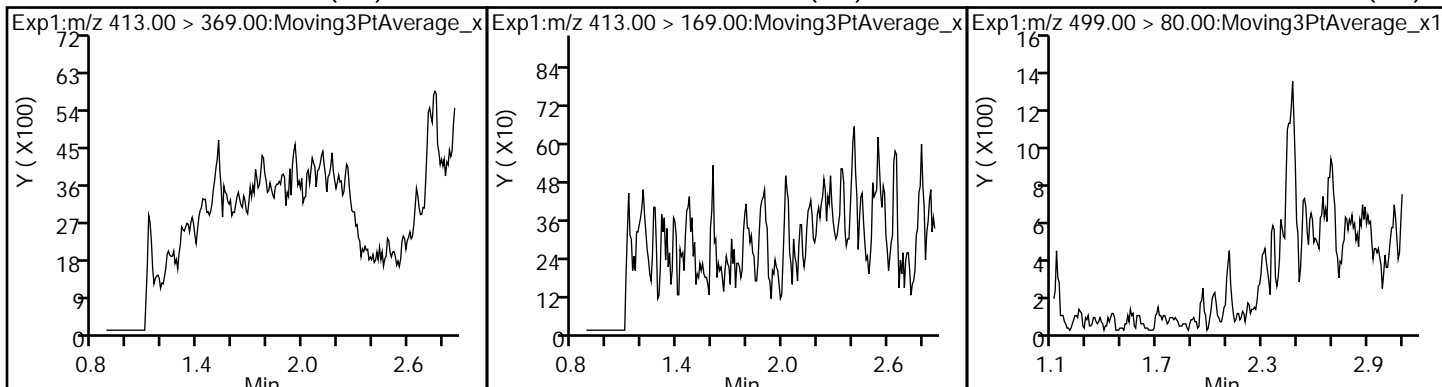
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



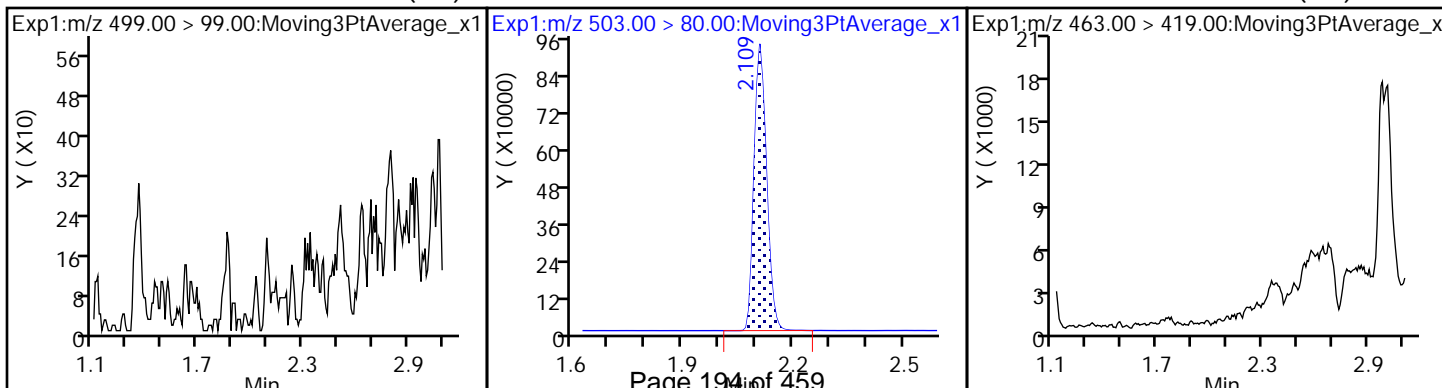
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



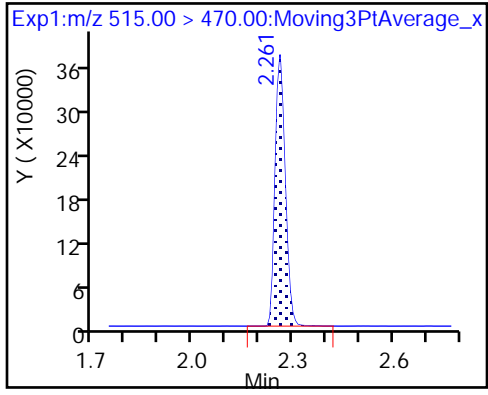
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_044.d
 Lims ID: 320-37675-A-9-A
 Client ID: NAWC-032819-FRB-127
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:37:46 ALS Bottle#: 32 Worklist Smp#: 16
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-9-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:45 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK028

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.52 | 95.23 |
| \$ 10 13C2 PFDA | 10.0 | 9.97 | 99.67 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-195 Lab Sample ID: 320-37675-10
 Matrix: Water Lab File ID: 2018.04.12_537AA_045.d
 Analysis Method: 537 Date Collected: 03/29/2018 10:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 251.1(mL) Date Analyzed: 04/13/2018 01:42
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217816 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 14 | J M | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 12 | J | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U M | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.2 | J | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 97 | | 70-130 |
| STL00996 | 13C2 PFDA | 91 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_045.d
 Lims ID: 320-37675-A-10-A
 Client ID: NAWC-032819-RW-195
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:42:27 ALS Bottle#: 33 Worklist Smp#: 17
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-10-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:45 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 09:59:35

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.373 | 1.381 | -0.008 | 1.000 | 129980 | 1.54 | | 142 | |
| 298.90 > 99.00 | 1.373 | 1.381 | -0.008 | 1.000 | 95198 | | 1.37(0.00-0.00) | 209 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 956507 | 9.71 | | 8873 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.677 | 0.0 | 1.000 | 104758 | 1.05 | | 3.2 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.669 | 1.677 | -0.008 | 1.000 | 104972 | 0.7952 | | 56.1 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.866 | 0.0 | | 926217 | 10.0 | | 5456 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.866 | 1.874 | -0.008 | 1.000 | 284635 | 2.89 | | 33.6 | |
| 413.00 > 169.00 | 1.866 | 1.874 | -0.008 | 1.000 | 163553 | | 1.74(0.00-0.00) | 173 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.102 | 2.094 | 0.008 | 1.000 | 301462 | 3.52 | | 140 | a |
| 499.00 > 99.00 | 2.102 | 2.094 | 0.008 | 1.000 | 55684 | | 5.41(0.00-0.00) | 97.6 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2305396 | 28.7 | | 2698 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.109 | 2.117 | -0.008 | 1.000 | 38796 | 0.4972 | | 5.9 | M |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.253 | 2.253 | 0.0 | 1.000 | 713984 | 9.06 | | 7554 | |

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

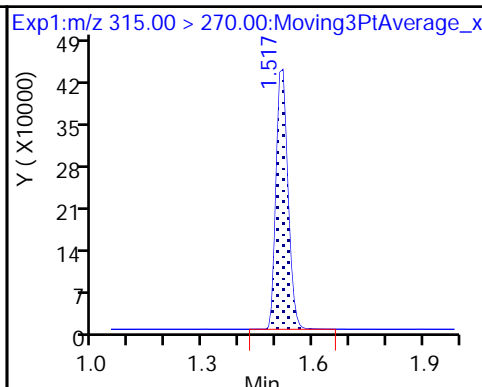
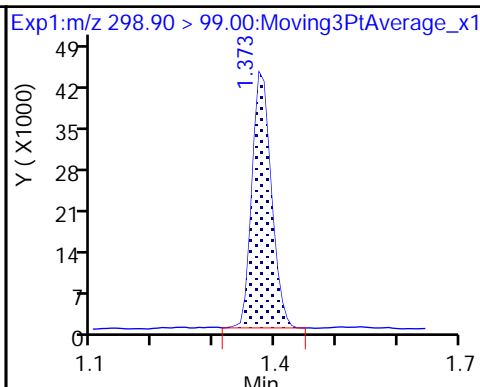
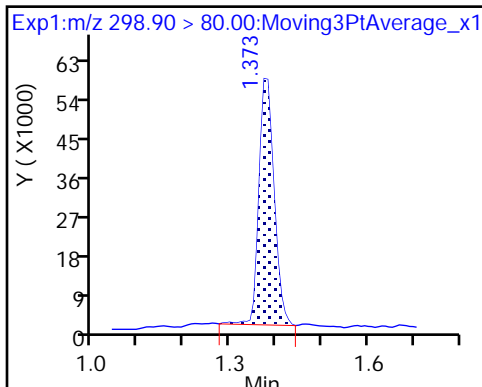
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_045.d
Injection Date: 13-Apr-2018 01:42:27 Instrument ID: A8_N
Lims ID: 320-37675-A-10-A Lab Sample ID: 320-37675-10
Client ID: NAWC-032819-RW-195
Operator ID: SACINSTLCMS01 ALS Bottle#: 33 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

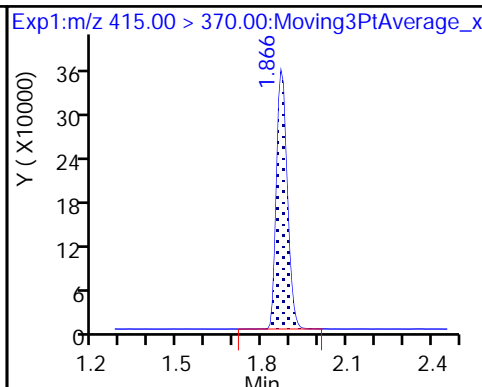
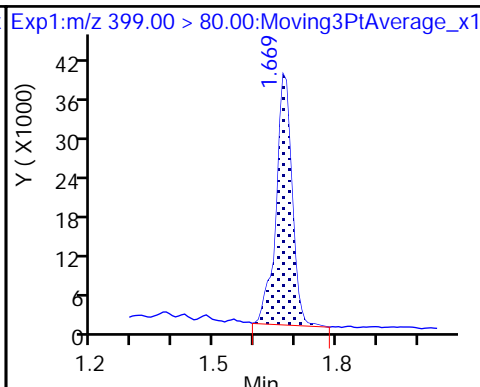
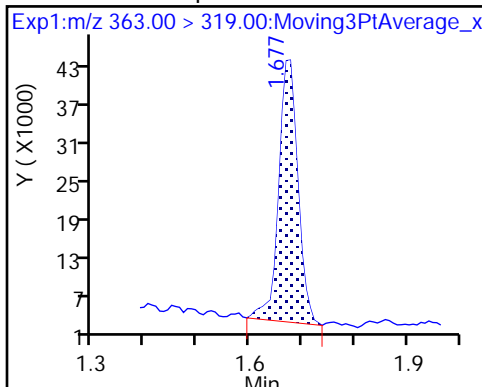
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

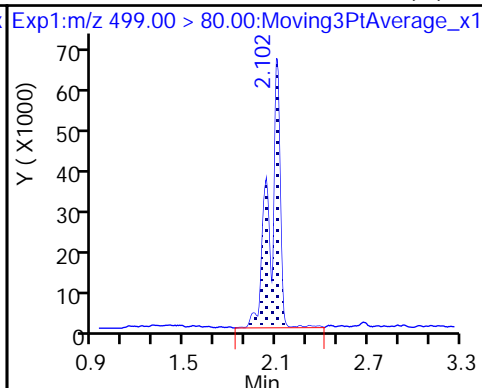
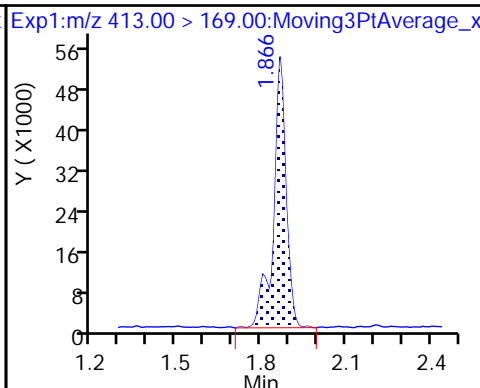
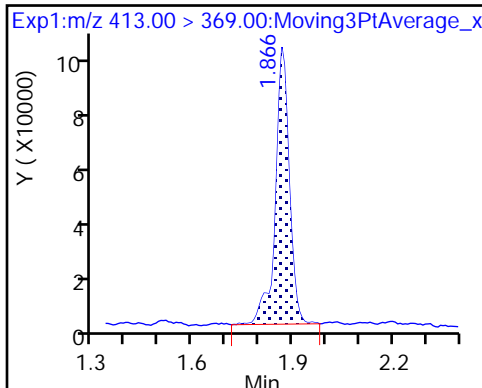
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

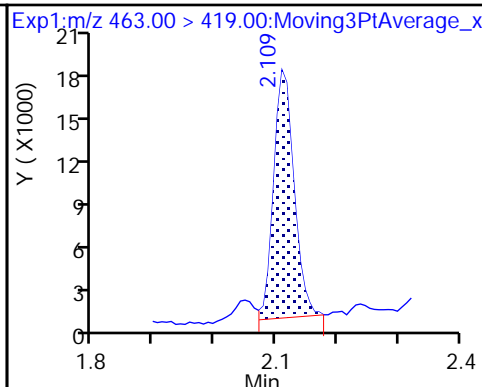
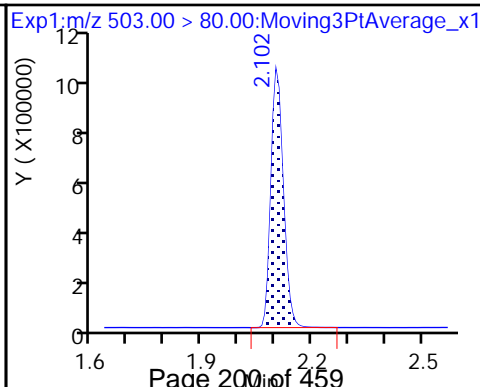
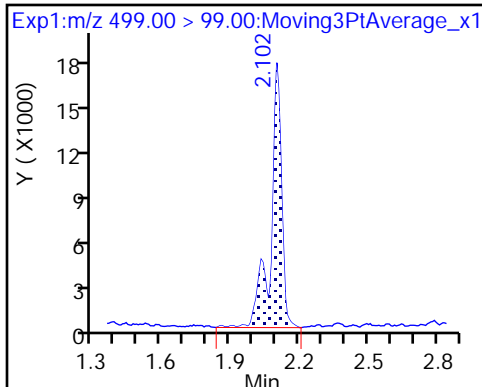
8 Perfluorooctane sulfonic acid (M)



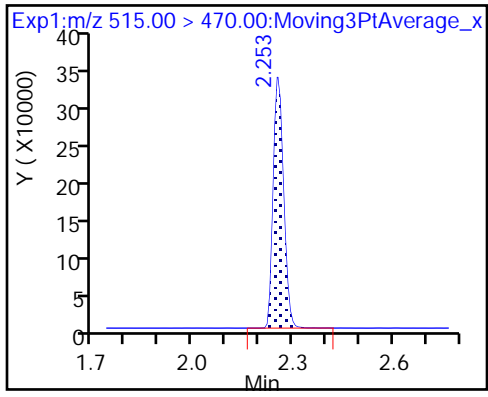
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_045.d
 Lims ID: 320-37675-A-10-A
 Client ID: NAWC-032819-RW-195
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:42:27 ALS Bottle#: 33 Worklist Smp#: 17
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-10-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:45 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 09:59:35

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.71 | 97.13 |
| \$ 10 13C2 PFDA | 10.0 | 9.06 | 90.64 |

TestAmerica Sacramento

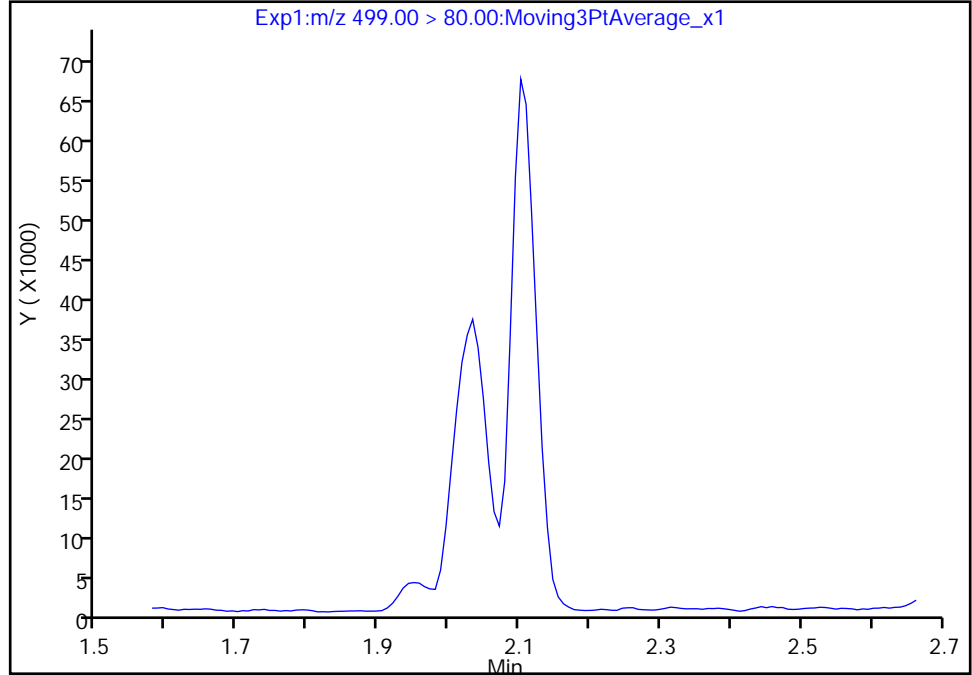
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_045.d
Injection Date: 13-Apr-2018 01:42:27 Instrument ID: A8_N
Lims ID: 320-37675-A-10-A Lab Sample ID: 320-37675-10
Client ID: NAWC-032819-RW-195
Operator ID: SACINSTLCMS01 ALS Bottle#: 33 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

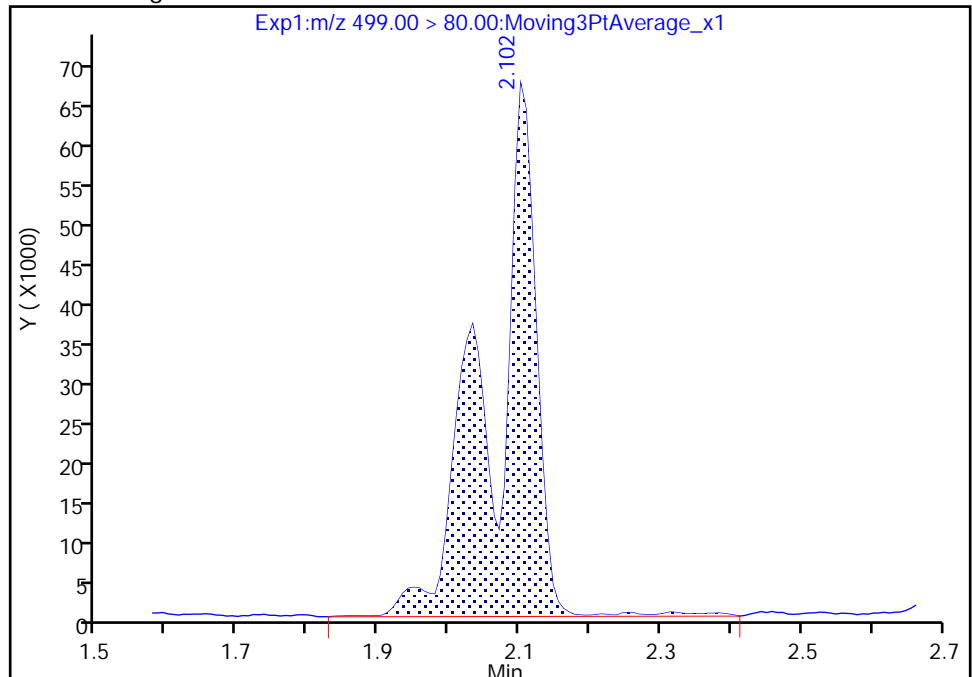
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 301462
Amount: 3.517866
Amount Units: ng/ml



Reviewer: barnettj, 13-Apr-2018 09:58:59
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

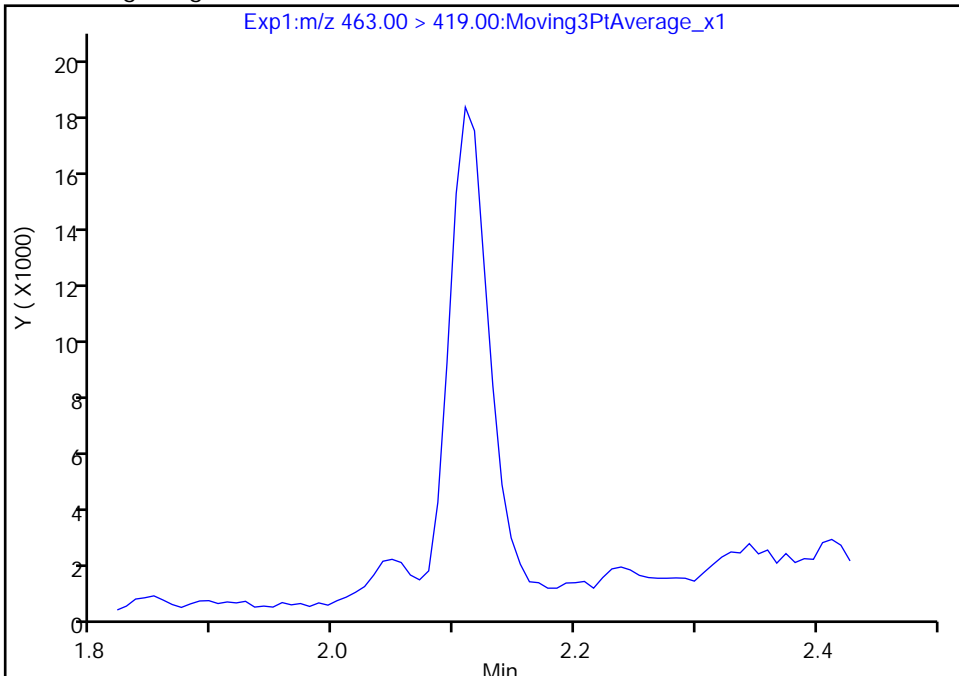
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_045.d
Injection Date: 13-Apr-2018 01:42:27 Instrument ID: A8_N
Lims ID: 320-37675-A-10-A Lab Sample ID: 320-37675-10
Client ID: NAWC-032819-RW-195
Operator ID: SACINSTLCMS01 ALS Bottle#: 33 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

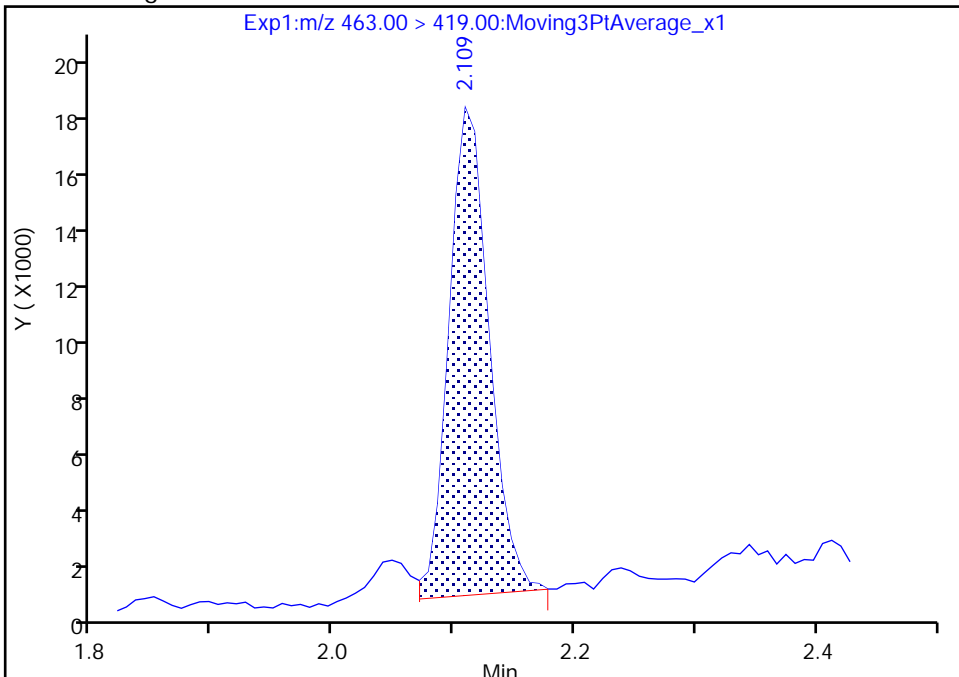
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 38796
Amount: 0.497233
Amount Units: ng/ml



Reviewer: barnettj, 13-Apr-2018 09:59:14
Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-FRB-195 Lab Sample ID: 320-37675-11
 Matrix: Water Lab File ID: 2018.04.12_537AA_046.d
 Analysis Method: 537 Date Collected: 03/29/2018 10:05
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 255.8(mL) Date Analyzed: 04/13/2018 01:47
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217816 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 16 | 6.6 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 7.8 | U | 20 | 7.8 | 2.7 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 23 | 20 | 7.8 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 29 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.8 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 35 | U | 88 | 35 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 97 | | 70-130 |
| STL00996 | 13C2 PFDA | 94 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_046.d
 Lims ID: 320-37675-A-11-A
 Client ID: NAWC-032819-FRB-195
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:47:07 ALS Bottle#: 34 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-11-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:45 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

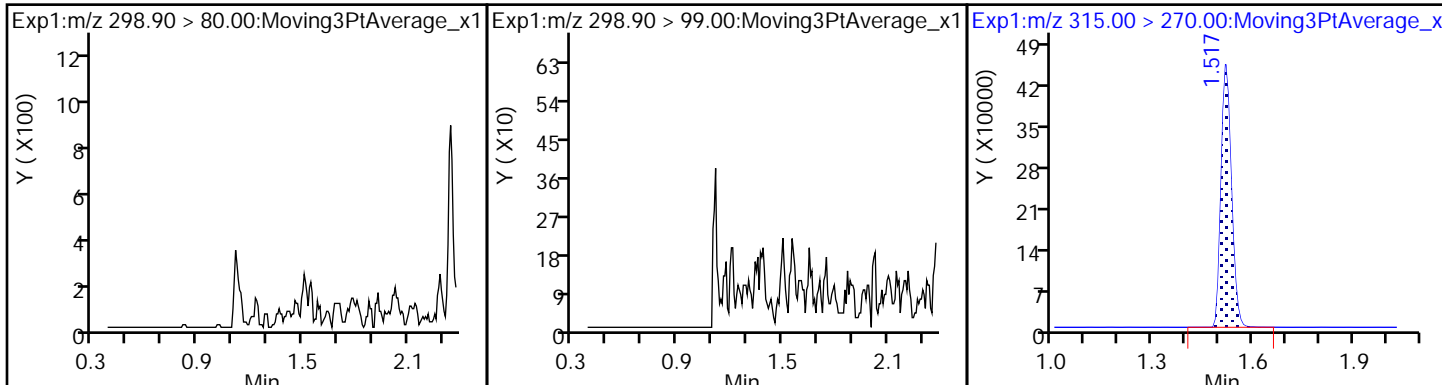
Column 1 : Det: EXP1
 Process Host: XAWRK028

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|-----------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-------|
| \$ 2 13C2 PFHxA | 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 951860 | 9.71 | 9179 | |
| * 6 13C2-PFOA | 415.00 > 370.00 | 1.866 | 1.866 | 0.0 | | 921584 | 10.0 | 5359 | |
| * 7 13C4 PFOS | 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2286972 | 28.7 | 3919 | |
| \$ 10 13C2 PFDA | 515.00 > 470.00 | 2.253 | 2.253 | 0.0 | 1.000 | 740633 | 9.45 | 6163 | |

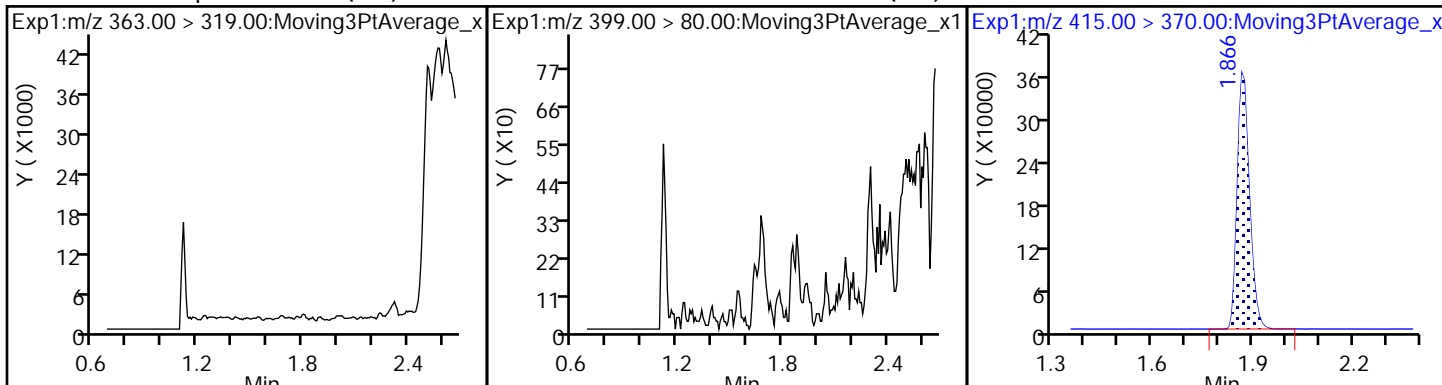
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_046.d
Injection Date: 13-Apr-2018 01:47:07 Instrument ID: A8_N
Lims ID: 320-37675-A-11-A Lab Sample ID: 320-37675-11
Client ID: NAWC-032819-FRB-195
Operator ID: SACINSTLCMS01 ALS Bottle#: 34 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

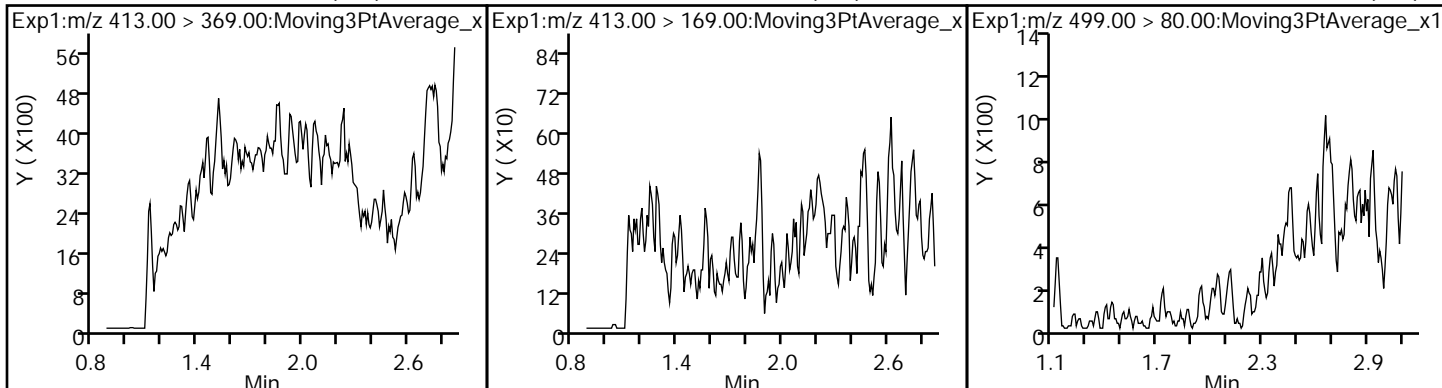
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



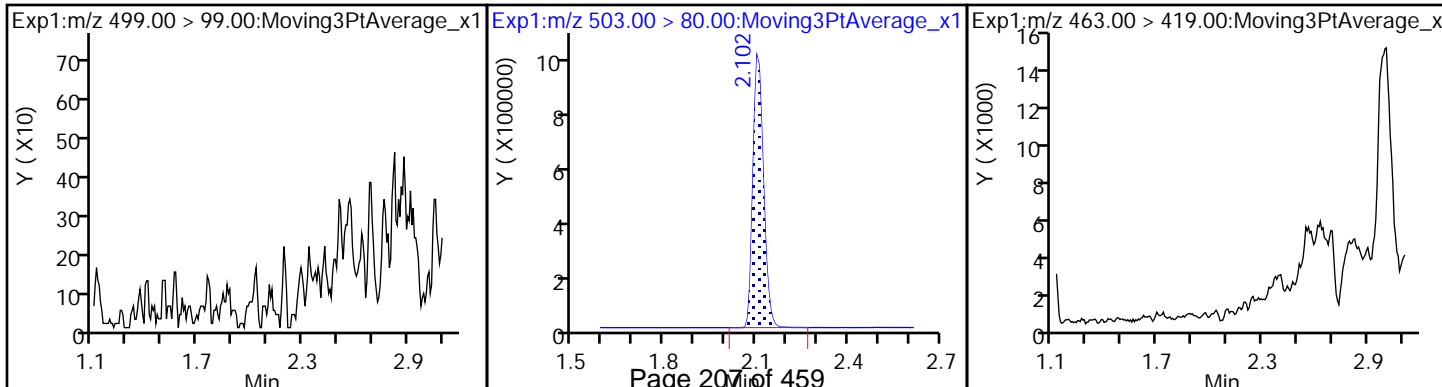
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



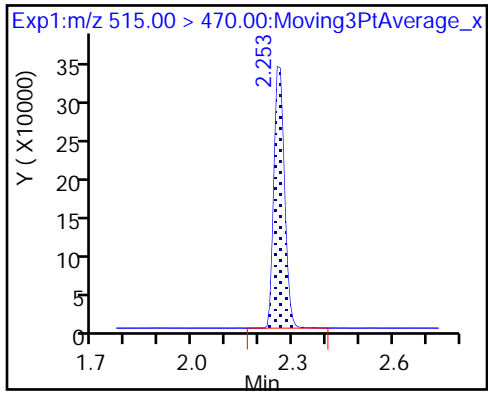
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_046.d
 Lims ID: 320-37675-A-11-A
 Client ID: NAWC-032819-FRB-195
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:47:07 ALS Bottle#: 34 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-11-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:45 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.71 | 97.15 |
| \$ 10 13C2 PFDA | 10.0 | 9.45 | 94.50 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-048 Lab Sample ID: 320-37675-12
 Matrix: Water Lab File ID: 2018.04.12_537AA_051.d
 Analysis Method: 537 Date Collected: 03/29/2018 10:40
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 245 (mL) Date Analyzed: 04/13/2018 02:10
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217818 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U M | 41 | 16 | 6.9 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 4.8 | J | 20 | 8.2 | 2.9 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 8.2 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U M | 31 | 12 | 5.6 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.1 | U | 10 | 4.1 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 37 | U M | 92 | 37 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 91 | | 70-130 |
| STL00996 | 13C2 PFDA | 96 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_051.d
 Lims ID: 320-37675-A-12-A
 Client ID: NAWC-032819-RW-048
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:10:28 ALS Bottle#: 37 Worklist Smp#: 23
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-12-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:11:31 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 10:07:51

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | M |
| 298.90 > 80.00 | 1.381 | 1.381 | 0.0 | 1.000 | 48084 | 0.5936 | | 72.2 | |
| 298.90 > 99.00 | 1.381 | 1.381 | 0.0 | 1.000 | 35430 | | 1.36(0.00-0.00) | 77.3 | M |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 899979 | 9.07 | | 9279 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | M |
| 399.00 > 80.00 | 1.677 | 1.677 | 0.0 | 1.000 | 70867 | 0.5603 | | 49.5 | M |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.874 | 1.866 | 0.008 | | 933636 | 10.0 | | 4884 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.874 | 1.874 | 0.0 | 1.000 | 116919 | 1.18 | | 13.0 | |
| 413.00 > 169.00 | 1.866 | 1.874 | -0.008 | 0.996 | 71368 | | 1.64(0.00-0.00) | 65.8 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | a |
| 499.00 > 80.00 | 2.033 | 2.094 | -0.061 | 1.000 | 105408 | 1.28 | | 47.4 | a |
| 499.00 > 99.00 | 2.102 | 2.094 | 0.008 | 1.034 | 13481 | | 7.82(0.00-0.00) | 13.3 | |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2208683 | 28.7 | | 2766 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.261 | 2.261 | 0.0 | 1.000 | 758504 | 9.55 | | 6857 | |

QC Flag Legend

Review Flags

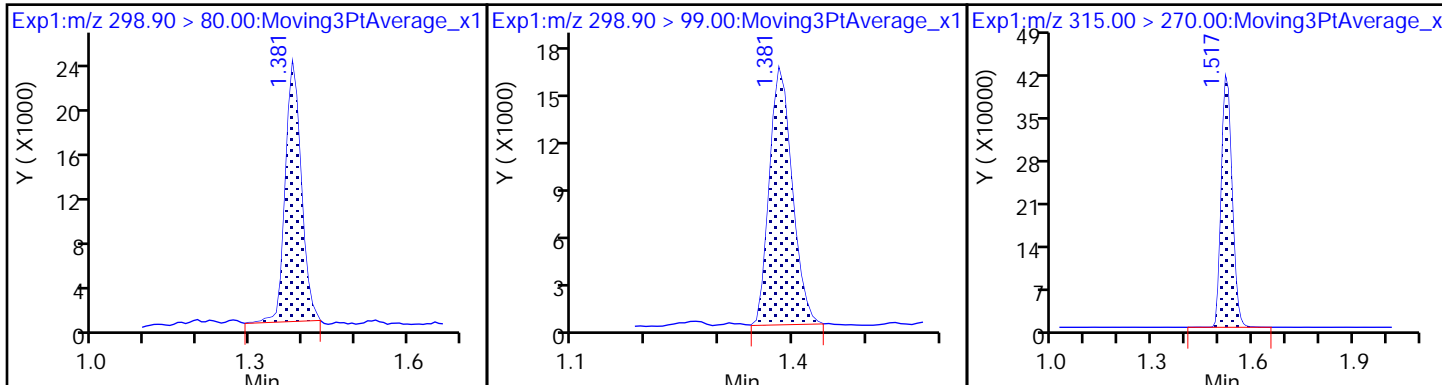
M - Manually Integrated

a - User Assigned ID

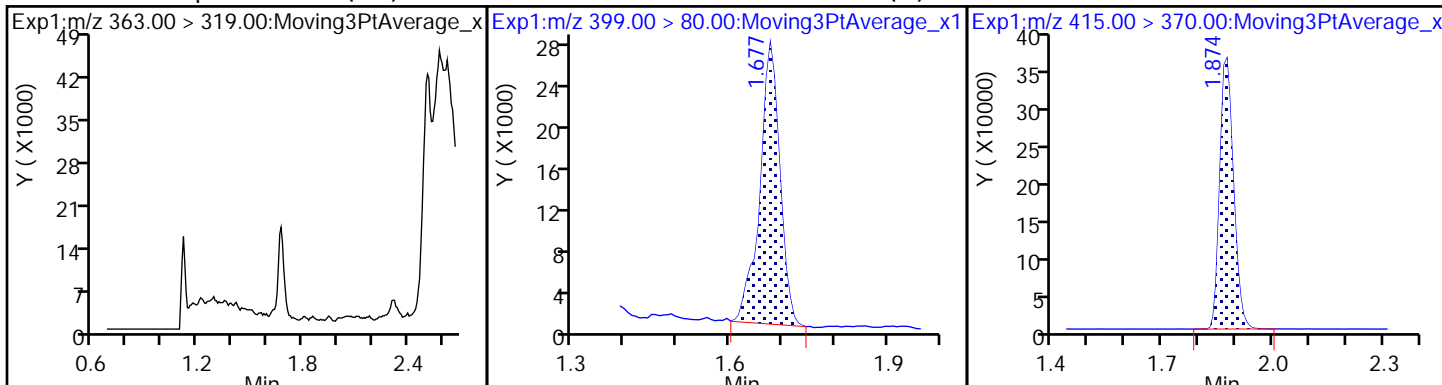
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_051.d
Injection Date: 13-Apr-2018 02:10:28 Instrument ID: A8_N
Lims ID: 320-37675-A-12-A Lab Sample ID: 320-37675-12
Client ID: NAWC-032819-RW-048
Operator ID: SACINSTLCMS01 ALS Bottle#: 37 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

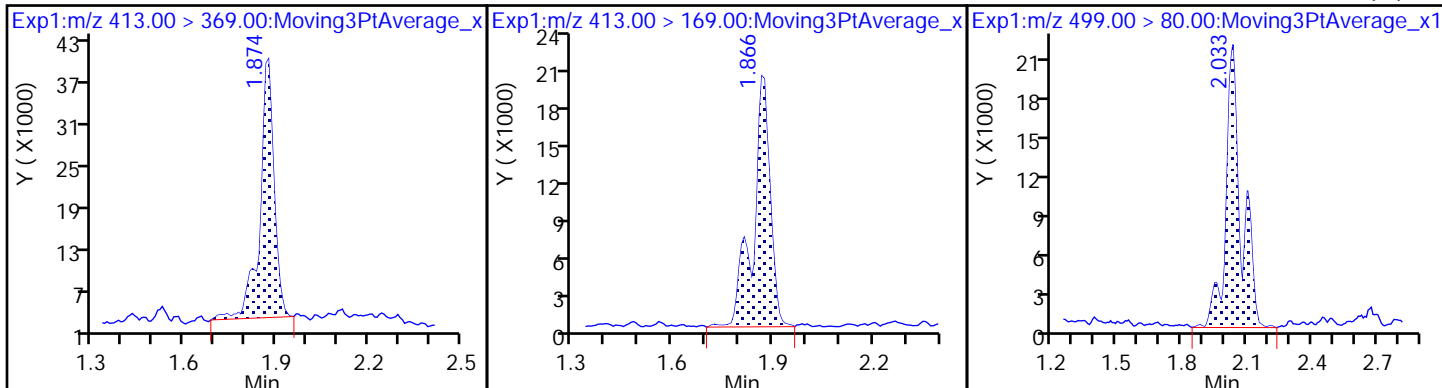
1 Perfluorobutanesulfonic acid (M) 1 Perfluorobutanesulfonic acid (M) \$ 2 13C2 PFHxA



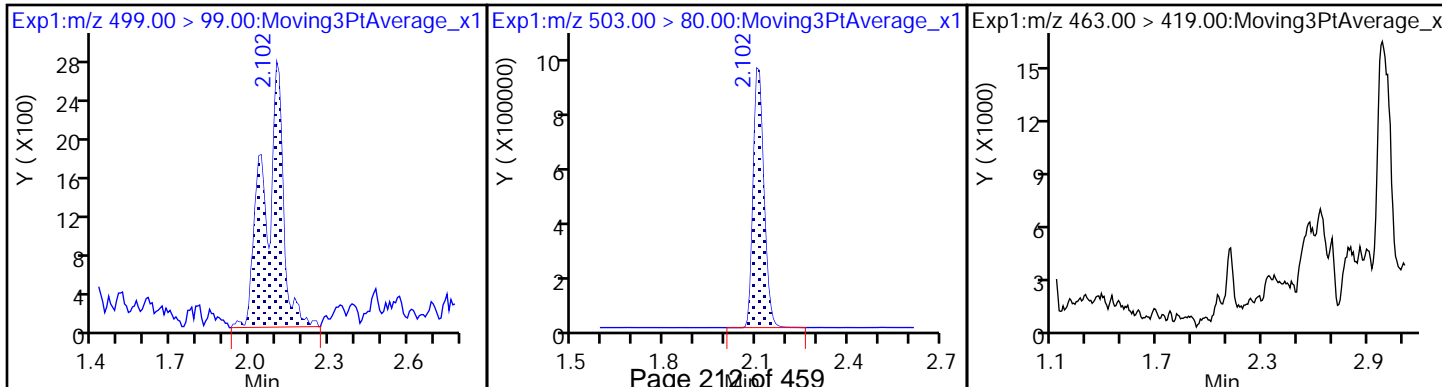
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (M) * 6 13C2-PFOA



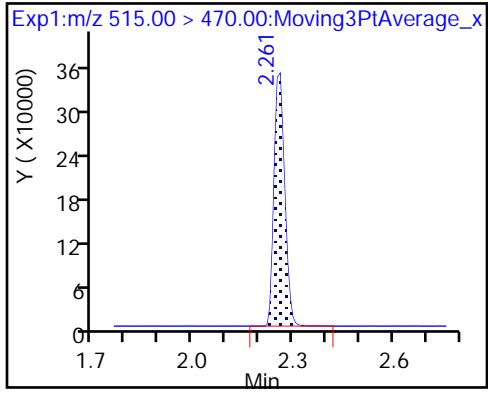
5 Perfluorooctanoic acid 5 Perfluorooctanoic acid 8 Perfluorooctane sulfonic acid (M)



8 Perfluorooctane sulfonic acid * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_051.d
 Lims ID: 320-37675-A-12-A
 Client ID: NAWC-032819-RW-048
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:10:28 ALS Bottle#: 37 Worklist Smp#: 23
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-12-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:11:31 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 10:07:51

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.07 | 90.67 |
| \$ 10 13C2 PFDA | 10.0 | 9.55 | 95.53 |

TestAmerica Sacramento

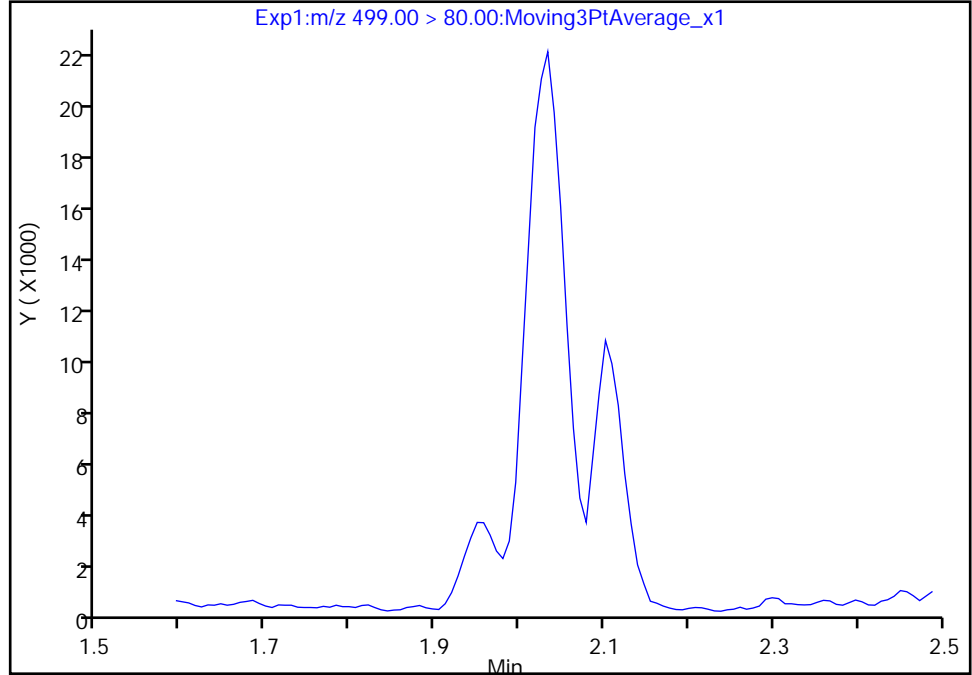
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_051.d
Injection Date: 13-Apr-2018 02:10:28 Instrument ID: A8_N
Lims ID: 320-37675-A-12-A Lab Sample ID: 320-37675-12
Client ID: NAWC-032819-RW-048
Operator ID: SACINSTLCMS01 ALS Bottle#: 37 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

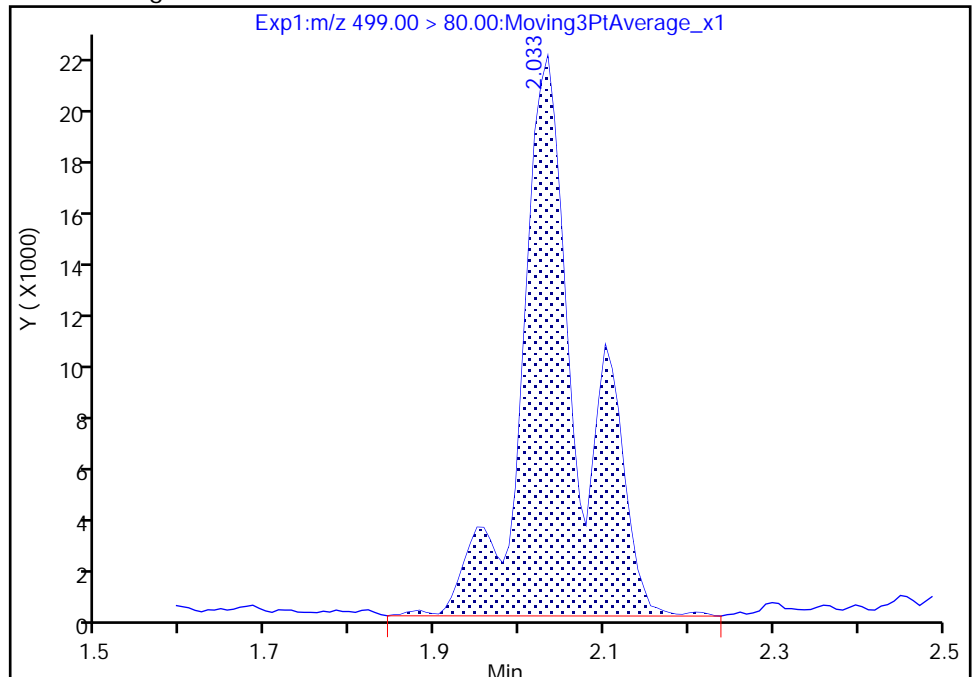
Signal: 1

Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.03
Area: 105408
Amount: 1.283904
Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 10:07:32
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

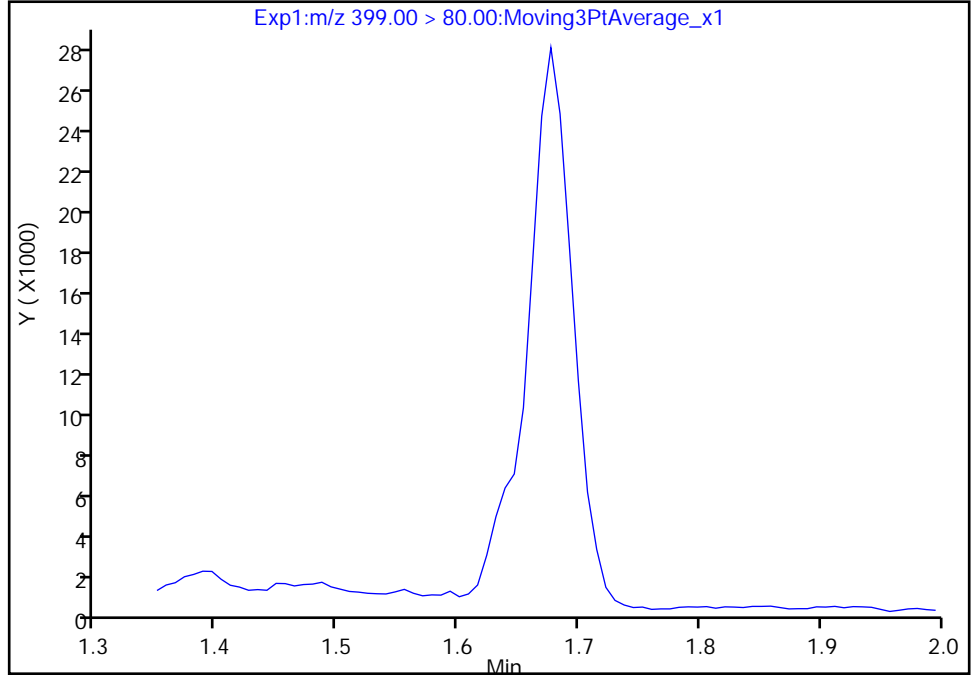
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_051.d
Injection Date: 13-Apr-2018 02:10:28 Instrument ID: A8_N
Lims ID: 320-37675-A-12-A Lab Sample ID: 320-37675-12
Client ID: NAWC-032819-RW-048
Operator ID: SACINSTLCMS01 ALS Bottle#: 37 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

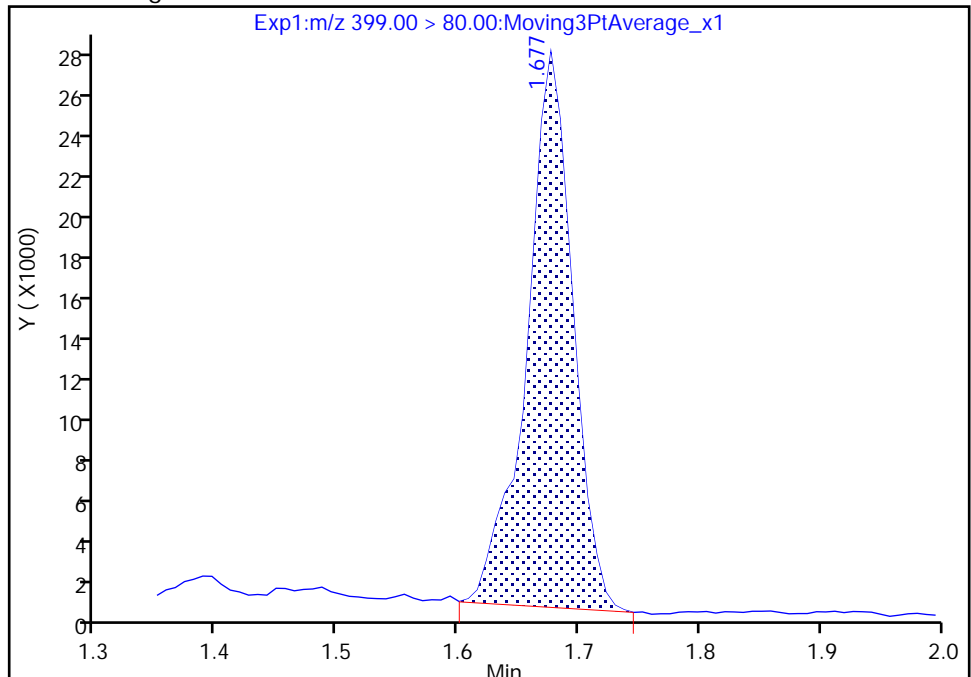
Not Detected
Expected RT: 1.68

Processing Integration Results



Manual Integration Results

RT: 1.68
Area: 70867
Amount: 0.560345
Amount Units: ng/ml



Reviewer: barnettj, 13-Apr-2018 10:07:21
Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

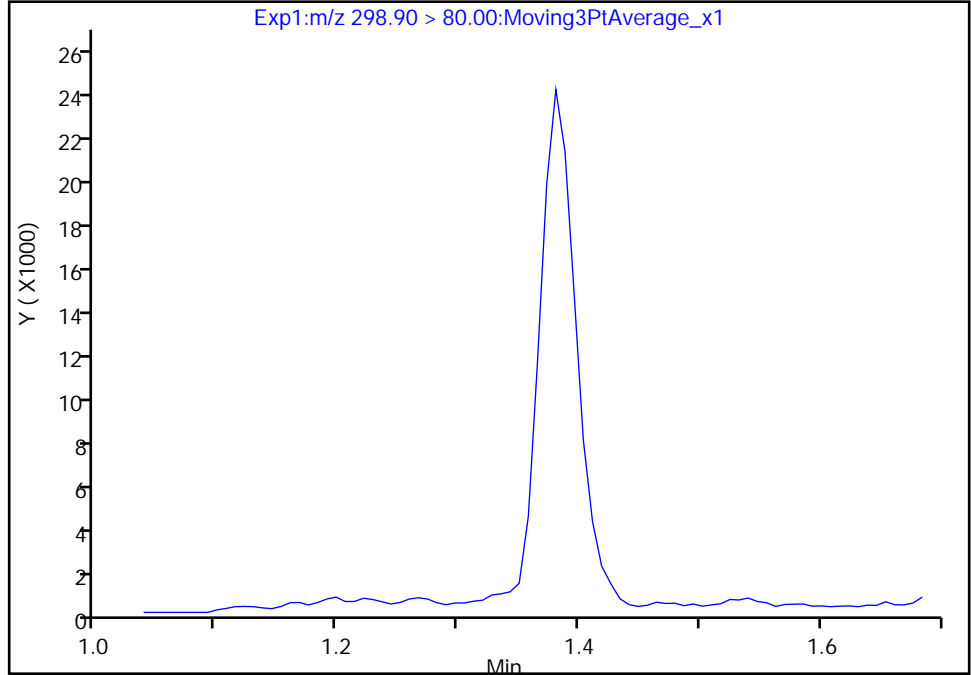
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_051.d
Injection Date: 13-Apr-2018 02:10:28 Instrument ID: A8_N
Lims ID: 320-37675-A-12-A Lab Sample ID: 320-37675-12
Client ID: NAWC-032819-RW-048
Operator ID: SACINSTLCMS01 ALS Bottle#: 37 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

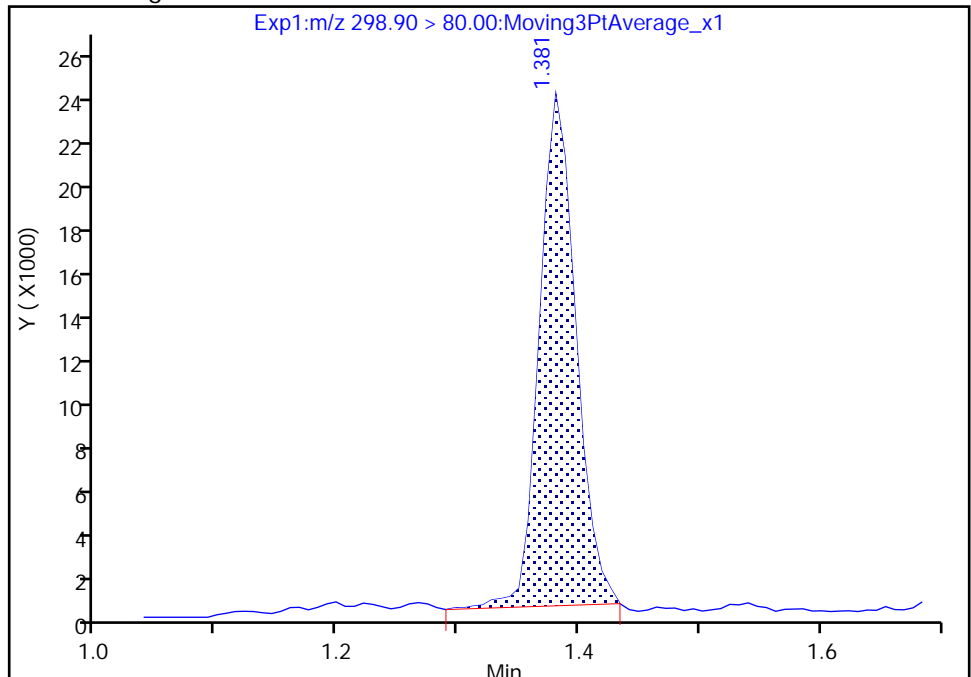
Not Detected
Expected RT: 1.38

Processing Integration Results



Manual Integration Results

RT: 1.38
Area: 48084
Amount: 0.593553
Amount Units: ng/ml



Reviewer: barnettj, 13-Apr-2018 10:06:54
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

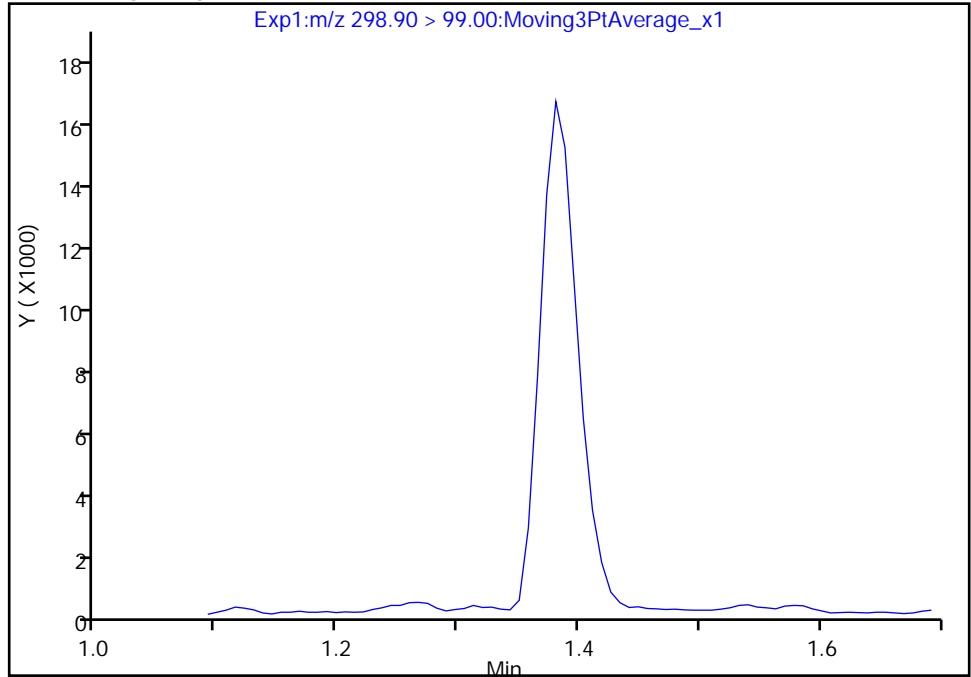
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_051.d
Injection Date: 13-Apr-2018 02:10:28 Instrument ID: A8_N
Lims ID: 320-37675-A-12-A Lab Sample ID: 320-37675-12
Client ID: NAWC-032819-RW-048
Operator ID: SACINSTLCMS01 ALS Bottle#: 37 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

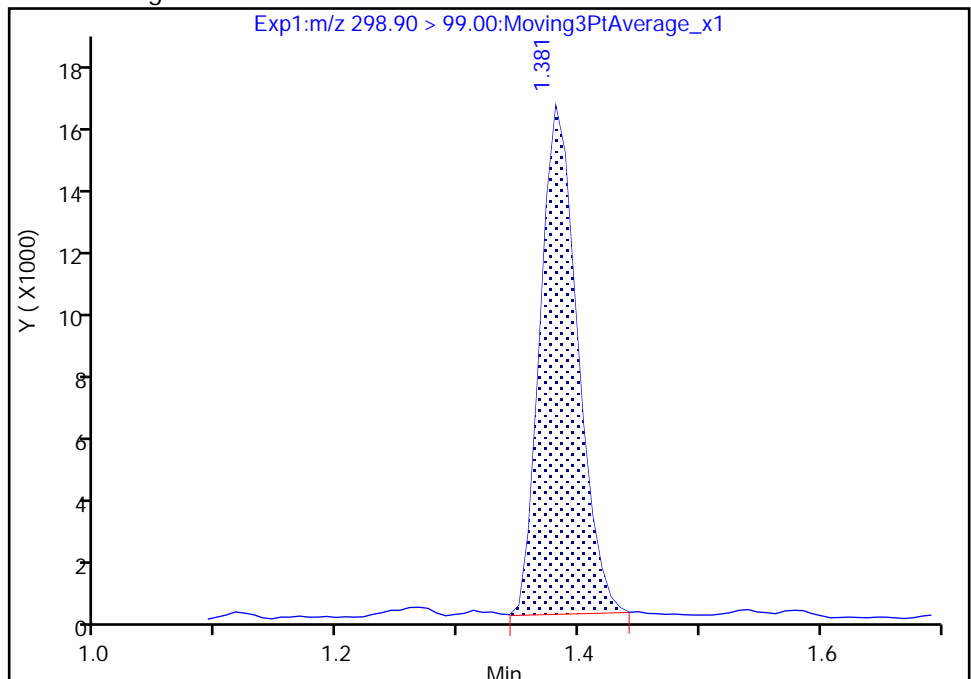
Not Detected
Expected RT: 1.38

Processing Integration Results



Manual Integration Results

RT: 1.38
Area: 35430
Amount: 0.593553
Amount Units: ng/ml



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-FRB-048 Lab Sample ID: 320-37675-13
 Matrix: Water Lab File ID: 2018.04.12_537AA_052.d
 Analysis Method: 537 Date Collected: 03/29/2018 10:35
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 248.7(mL) Date Analyzed: 04/13/2018 02:15
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217818 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 8.0 | U | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 94 | | 70-130 |
| STL00996 | 13C2 PFDA | 94 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_052.d
 Lims ID: 320-37675-A-13-A
 Client ID: NAWC-032819-FRB-048
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:15:10 ALS Bottle#: 38 Worklist Smp#: 24
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-13-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:11:31 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

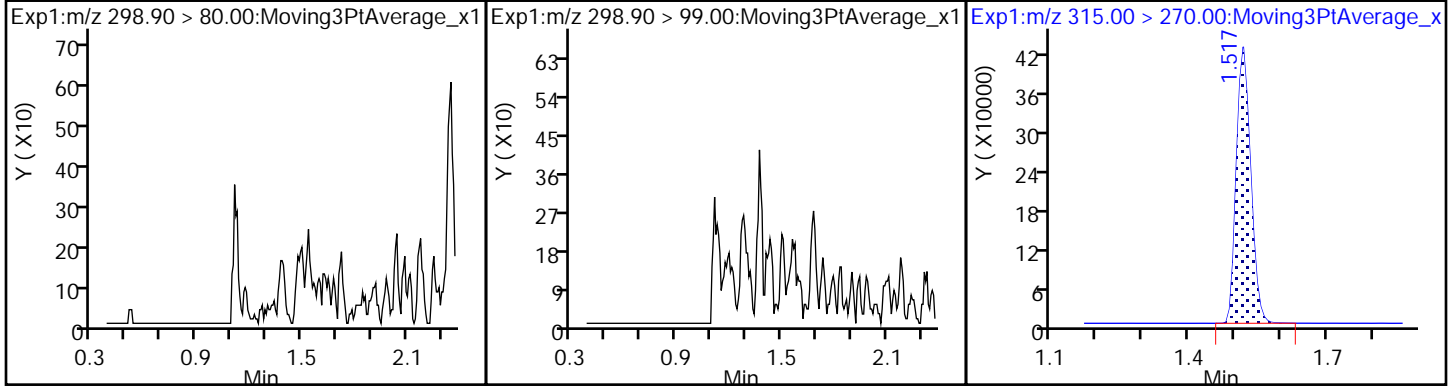
Column 1 : Det: EXP1
 Process Host: XAWRK028

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|-----------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-------|
| \$ 2 13C2 PFHxA | 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 920667 | 9.40 | 8909 | |
| * 6 13C2-PFOA | 415.00 > 370.00 | 1.866 | 1.866 | 0.0 | | 921490 | 10.0 | 4856 | |
| * 7 13C4 PFOS | 503.00 > 80.00 | 2.109 | 2.102 | 0.007 | | 2241801 | 28.7 | 4219 | |
| \$ 10 13C2 PFDA | 515.00 > 470.00 | 2.261 | 2.261 | 0.0 | 1.000 | 739809 | 9.44 | 7313 | |

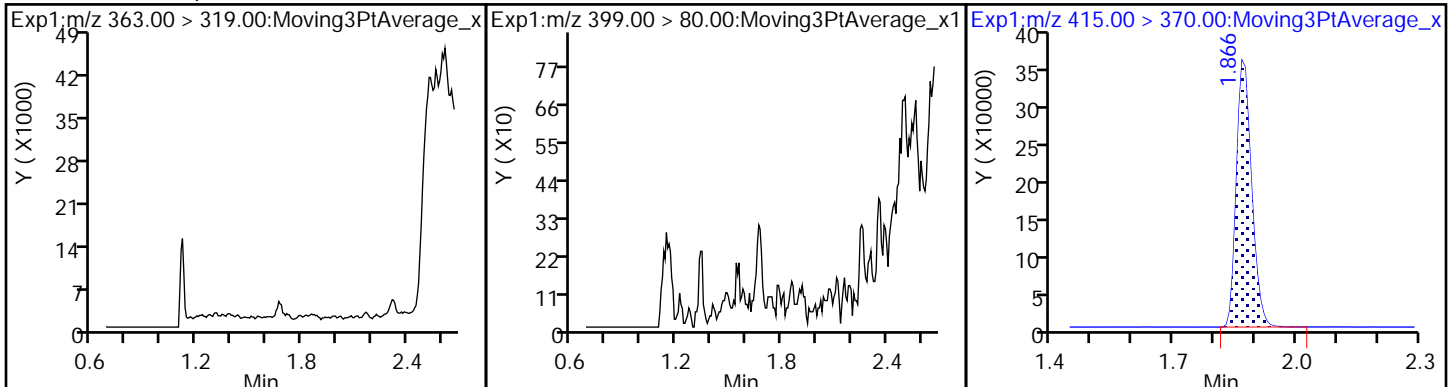
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_052.d
Injection Date: 13-Apr-2018 02:15:10 Instrument ID: A8_N
Lims ID: 320-37675-A-13-A Lab Sample ID: 320-37675-13
Client ID: NAWC-032819-FRB-048
Operator ID: SACINSTLCMS01 ALS Bottle#: 38 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

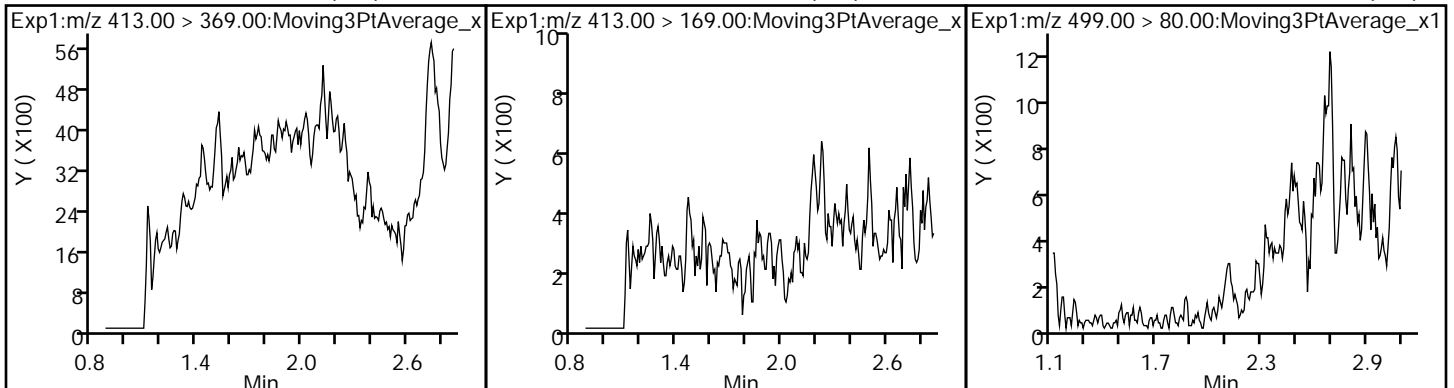
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



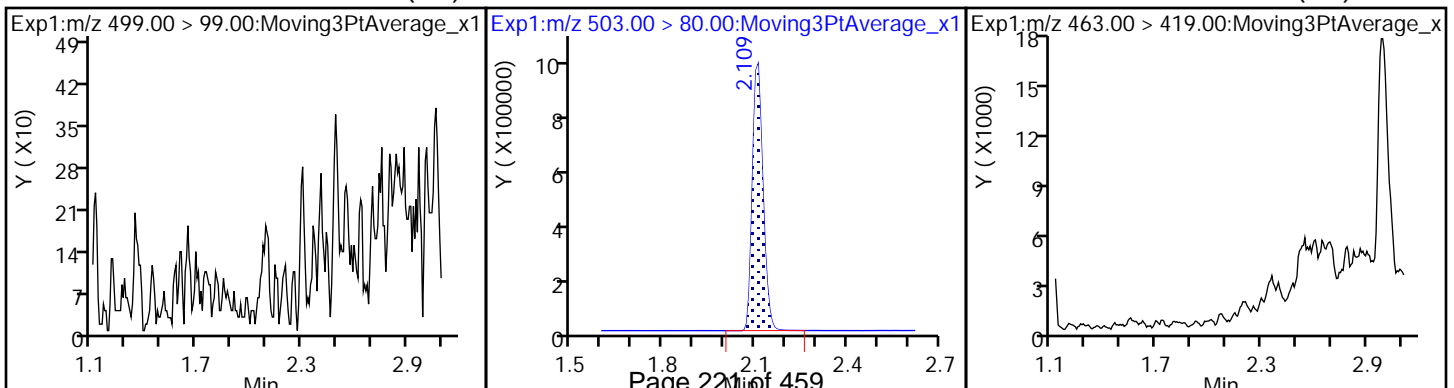
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



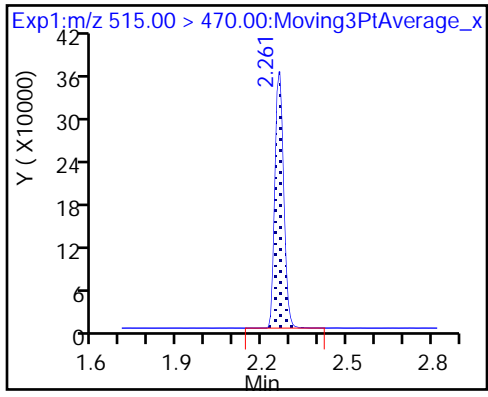
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_052.d
 Lims ID: 320-37675-A-13-A
 Client ID: NAWC-032819-FRB-048
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:15:10 ALS Bottle#: 38 Worklist Smp#: 24
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-13-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:11:31 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.40 | 93.97 |
| \$ 10 13C2 PFDA | 10.0 | 9.44 | 94.40 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-139 Lab Sample ID: 320-37675-14
 Matrix: Water Lab File ID: 2018.04.12_537AA_055.d
 Analysis Method: 537 Date Collected: 03/29/2018 11:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 249.4 (mL) Date Analyzed: 04/13/2018 02:29
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U M | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 9.5 | J | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U M | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U M | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.0 | J M | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 87 | | 70-130 |
| STL00996 | 13C2 PFDA | 100 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_055.d
 Lims ID: 320-37675-A-14-A
 Client ID: NAWC-032819-RW-139
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:29:11 ALS Bottle#: 39 Worklist Smp#: 27
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-14-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 10:09:08

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.381 | 0.0 | 1.000 | 180650 | 2.16 | | 227 | |
| 298.90 > 99.00 | 1.381 | 1.381 | 0.0 | 1.000 | 128712 | | 1.40(0.00-0.00) | 338 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 872819 | 8.72 | | 9199 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.677 | 0.0 | 1.000 | 99978 | 0.9891 | | 3.6 | M |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.677 | 1.677 | 0.0 | 1.000 | 64507 | 0.4943 | | 47.0 | M |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.874 | -0.008 | | 941432 | 10.0 | | 5524 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.874 | 1.874 | 0.0 | 1.000 | 236534 | 2.37 | | 30.8 | |
| 413.00 > 169.00 | 1.874 | 1.874 | 0.0 | 1.000 | 140905 | | 1.68(0.00-0.00) | 147 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.102 | 2.094 | 0.008 | 1.000 | 136404 | 1.61 | | 67.2 | a |
| 499.00 > 99.00 | 2.102 | 2.094 | 0.008 | 1.000 | 22417 | | 6.08(0.00-0.00) | 40.7 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2279160 | 28.7 | | 2900 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.109 | 2.117 | -0.008 | 1.000 | 26692 | 0.3366 | | 4.0 | M |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.253 | 2.253 | 0.0 | 1.000 | 801587 | 10.0 | | 7349 | |

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

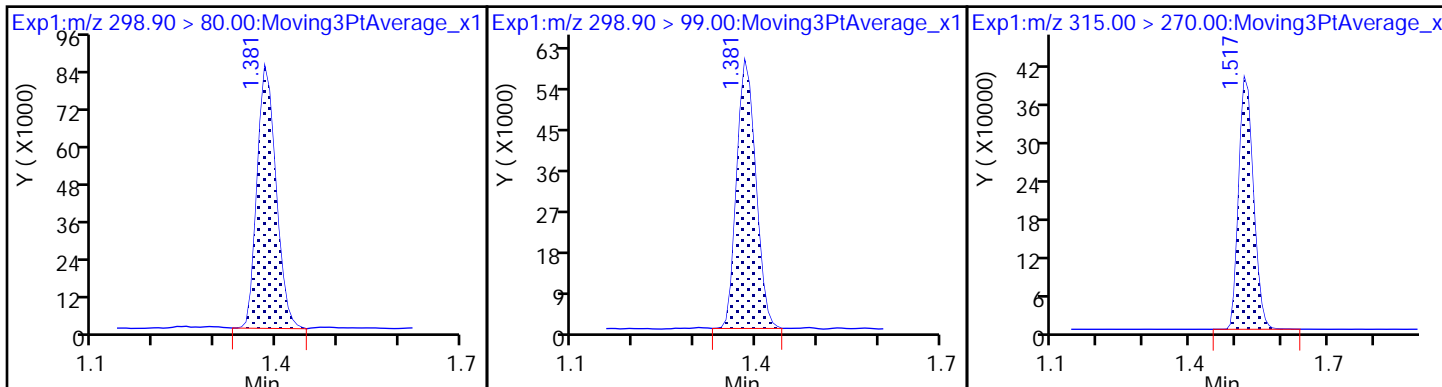
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_055.d
Injection Date: 13-Apr-2018 02:29:11 Instrument ID: A8_N
Lims ID: 320-37675-A-14-A Lab Sample ID: 320-37675-14
Client ID: NAWC-032819-RW-139
Operator ID: SACINSTLCMS01 ALS Bottle#: 39 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

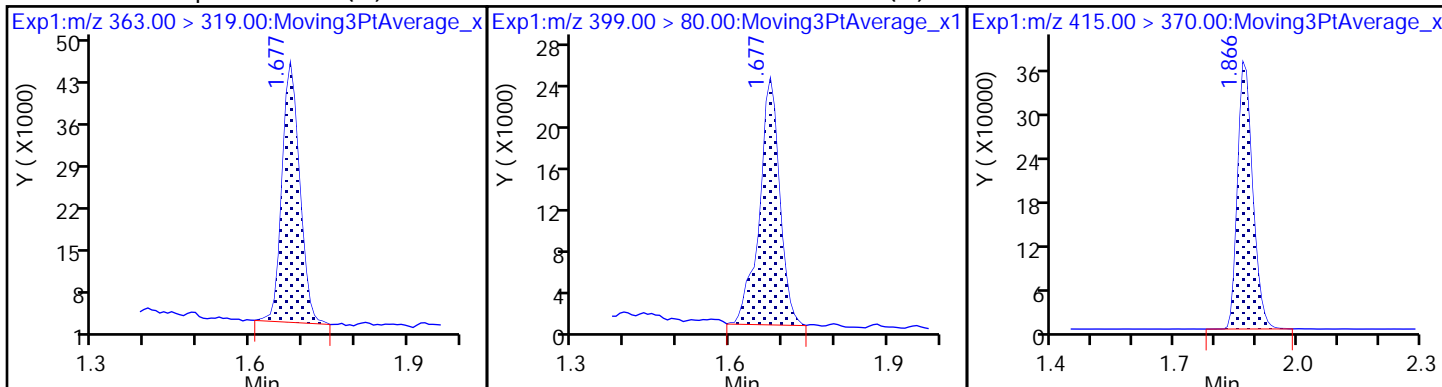
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (M)

3 Perfluorohexanesulfonic acid (M)

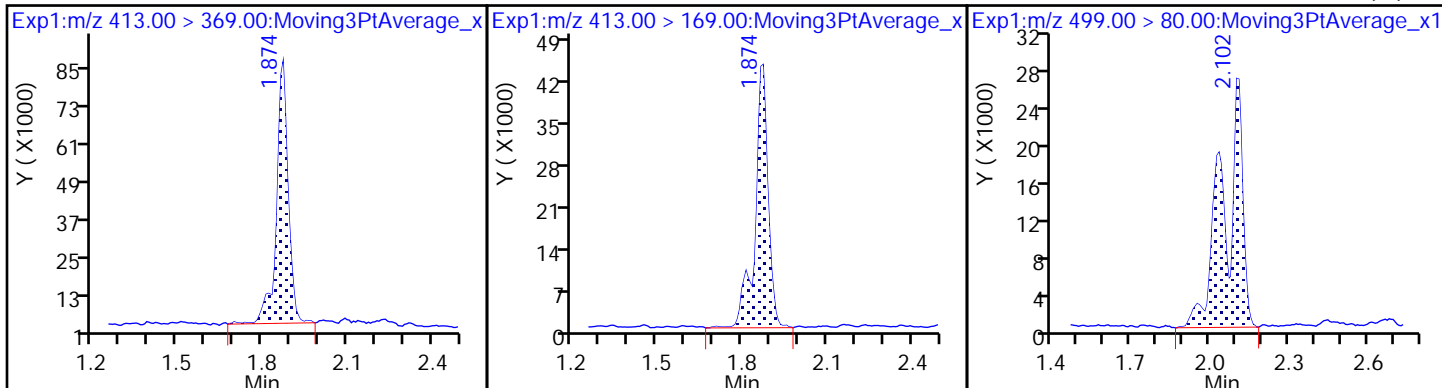
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

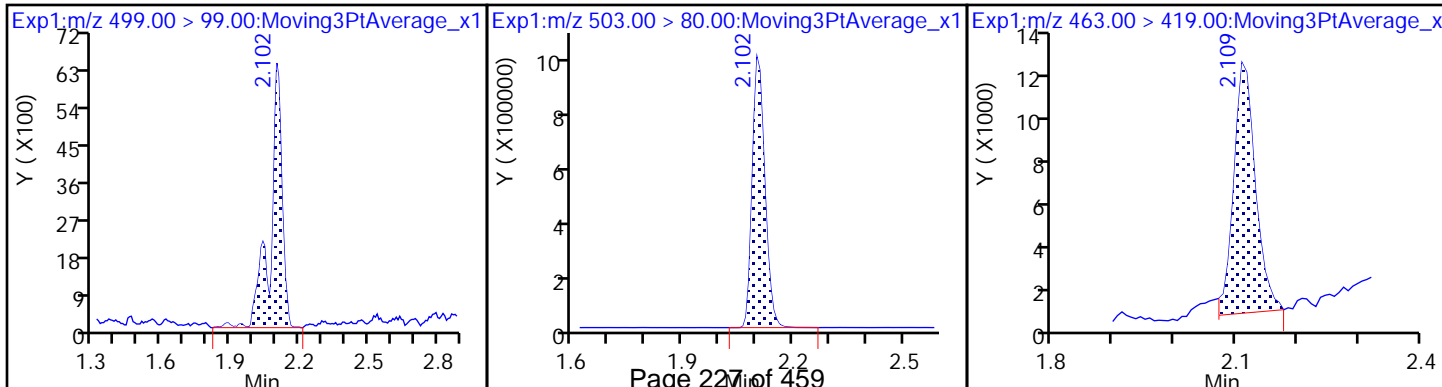
8 Perfluorooctane sulfonic acid (M)



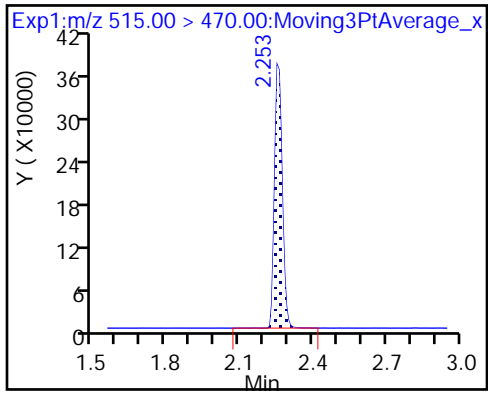
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_055.d
 Lims ID: 320-37675-A-14-A
 Client ID: NAWC-032819-RW-139
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:29:11 ALS Bottle#: 39 Worklist Smp#: 27
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-14-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 10:09:08

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 8.72 | 87.20 |
| \$ 10 13C2 PFDA | 10.0 | 10.0 | 100.12 |

TestAmerica Sacramento

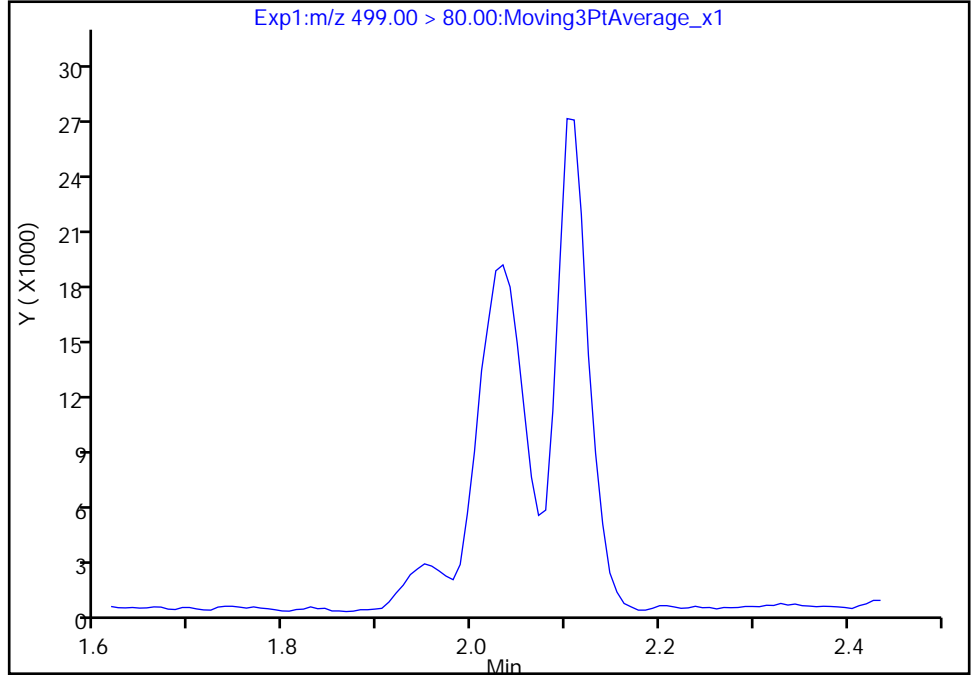
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_055.d
Injection Date: 13-Apr-2018 02:29:11 Instrument ID: A8_N
Lims ID: 320-37675-A-14-A Lab Sample ID: 320-37675-14
Client ID: NAWC-032819-RW-139
Operator ID: SACINSTLCMS01 ALS Bottle#: 39 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

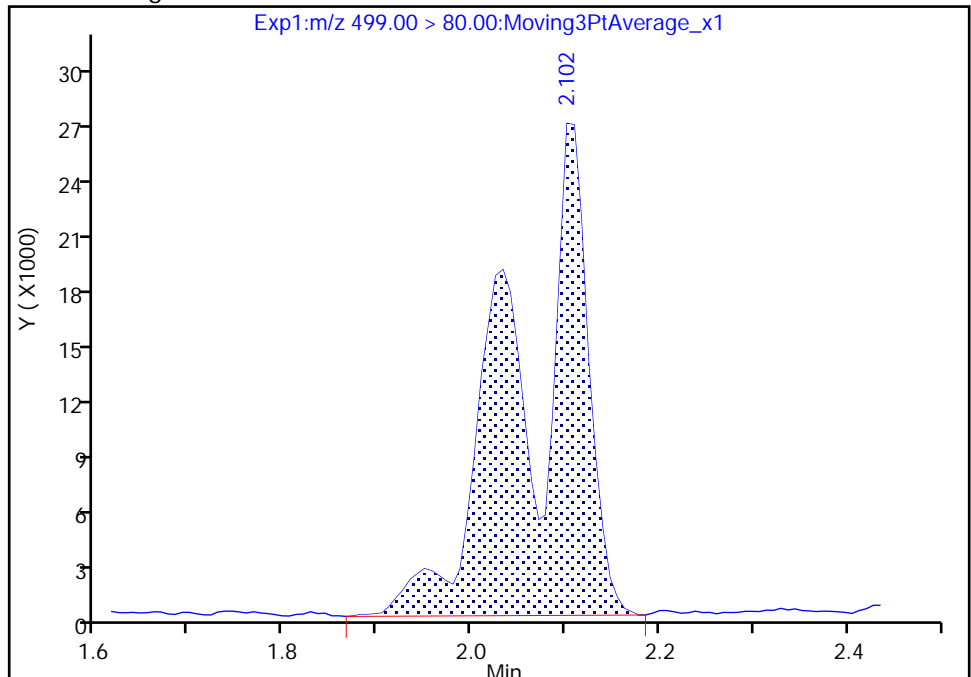
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 136404
Amount: 1.610069
Amount Units: ng/ml



TestAmerica Sacramento

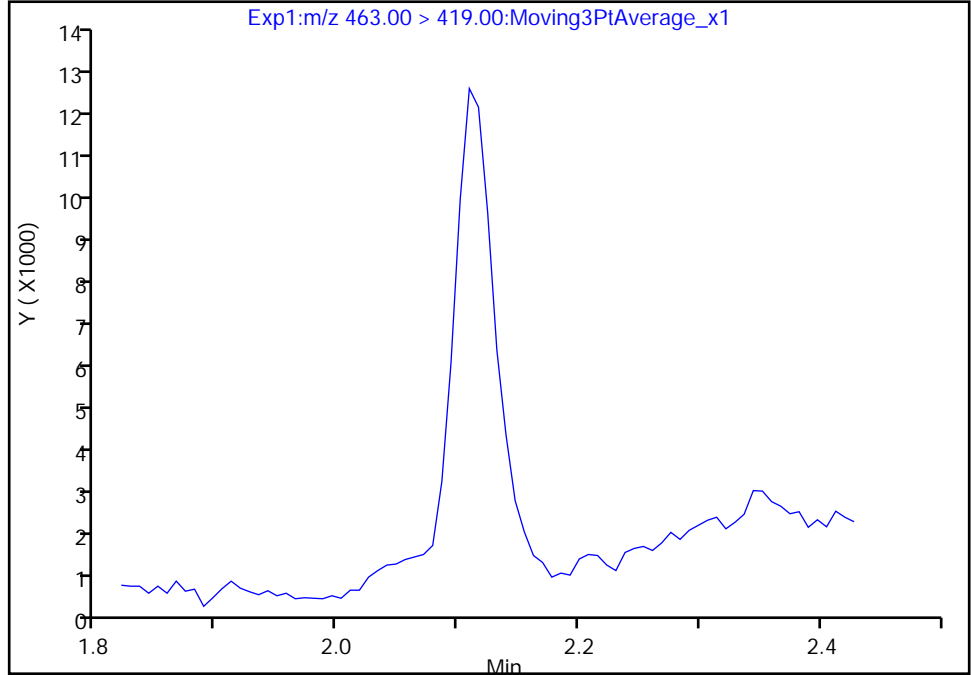
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_055.d
Injection Date: 13-Apr-2018 02:29:11 Instrument ID: A8_N
Lims ID: 320-37675-A-14-A Lab Sample ID: 320-37675-14
Client ID: NAWC-032819-RW-139
Operator ID: SACINSTLCMS01 ALS Bottle#: 39 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

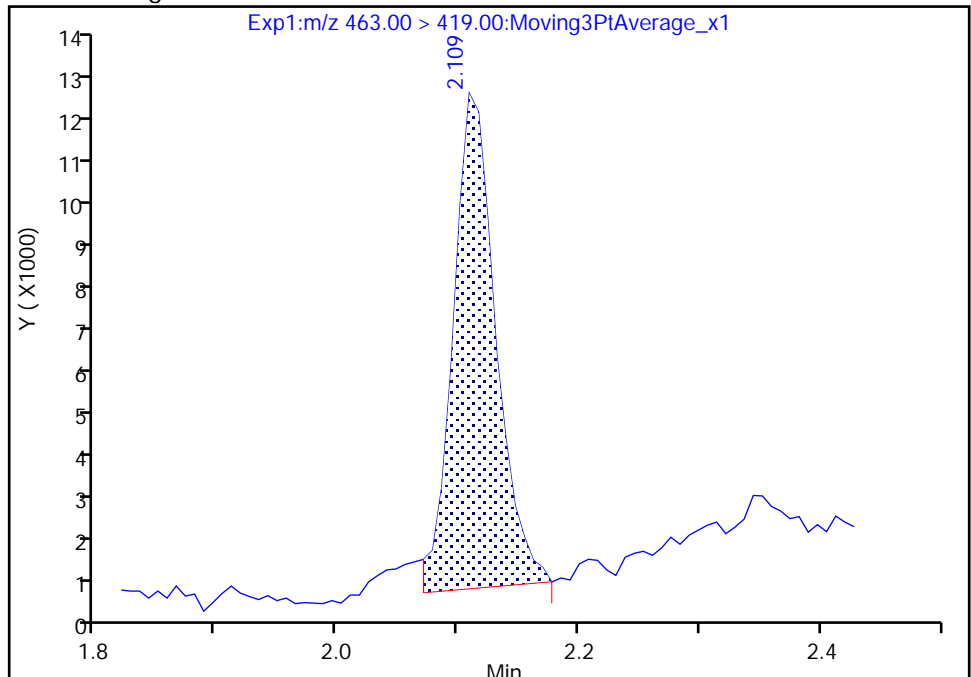
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 26692
Amount: 0.336572
Amount Units: ng/ml



Reviewer: barnettj, 13-Apr-2018 10:09:01
Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

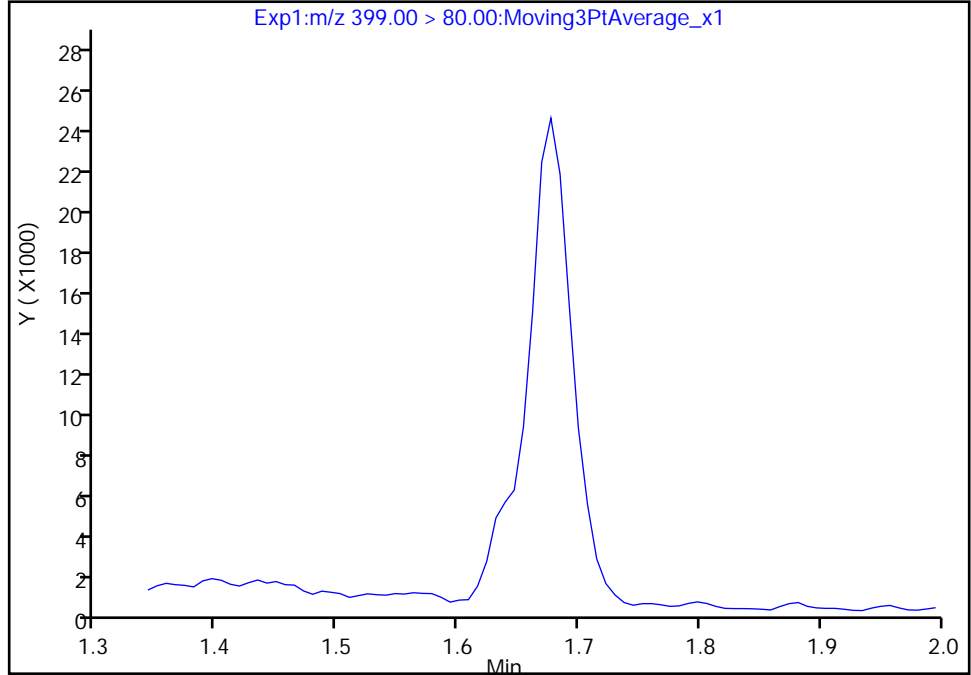
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_055.d
Injection Date: 13-Apr-2018 02:29:11 Instrument ID: A8_N
Lims ID: 320-37675-A-14-A Lab Sample ID: 320-37675-14
Client ID: NAWC-032819-RW-139
Operator ID: SACINSTLCMS01 ALS Bottle#: 39 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

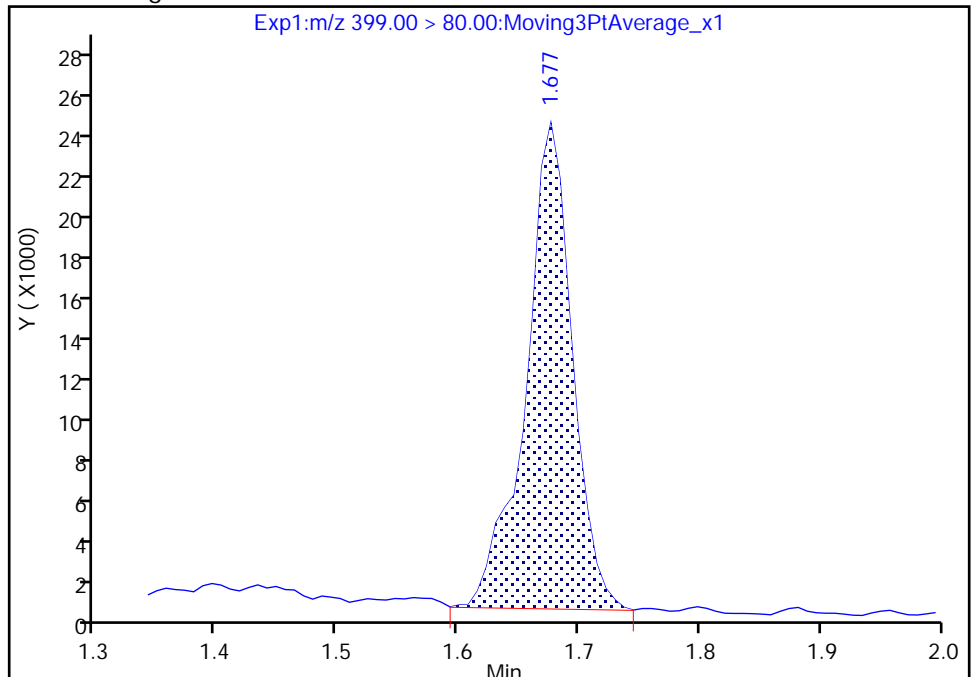
Not Detected
Expected RT: 1.68

Processing Integration Results



Manual Integration Results

RT: 1.68
Area: 64507
Amount: 0.494285
Amount Units: ng/ml



Reviewer: barnettj, 13-Apr-2018 10:08:27
Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

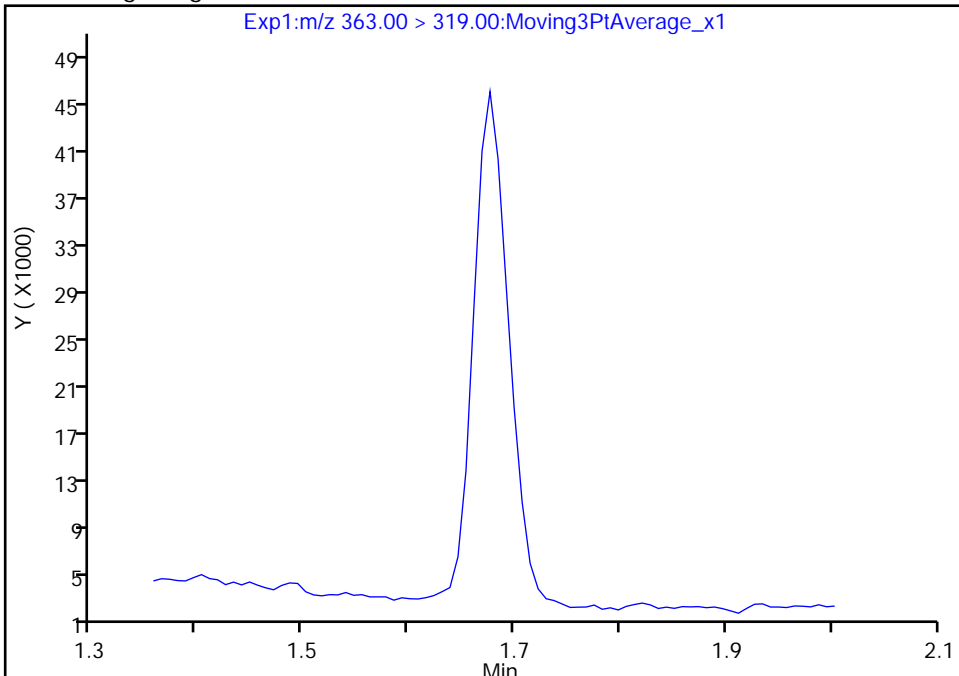
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_055.d
Injection Date: 13-Apr-2018 02:29:11 Instrument ID: A8_N
Lims ID: 320-37675-A-14-A Lab Sample ID: 320-37675-14
Client ID: NAWC-032819-RW-139
Operator ID: SACINSTLCMS01 ALS Bottle#: 39 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

4 Perfluoroheptanoic acid, CAS: 375-85-9

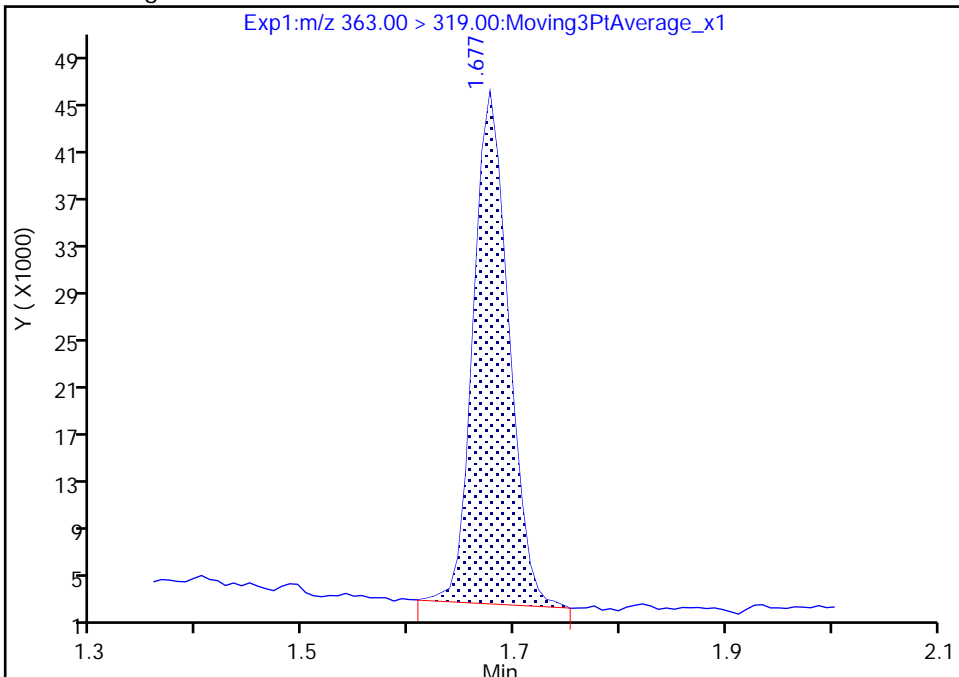
Signal: 1

Not Detected
Expected RT: 1.68

Processing Integration Results



Manual Integration Results



RT: 1.68
Area: 99978
Amount: 0.989094
Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 10:08:36
Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-FRB-139 Lab Sample ID: 320-37675-15
 Matrix: Water Lab File ID: 2018.04.12_537AA_058.d
 Analysis Method: 537 Date Collected: 03/29/2018 11:05
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 254.6(mL) Date Analyzed: 04/13/2018 02:43
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 7.9 | U | 20 | 7.9 | 2.7 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 7.9 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 29 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.8 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 35 | U | 88 | 35 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 98 | | 70-130 |
| STL00996 | 13C2 PFDA | 98 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_058.d
 Lims ID: 320-37675-A-15-A
 Client ID: NAWC-032819-FRB-139
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:43:10 ALS Bottle#: 42 Worklist Smp#: 30
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-15-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

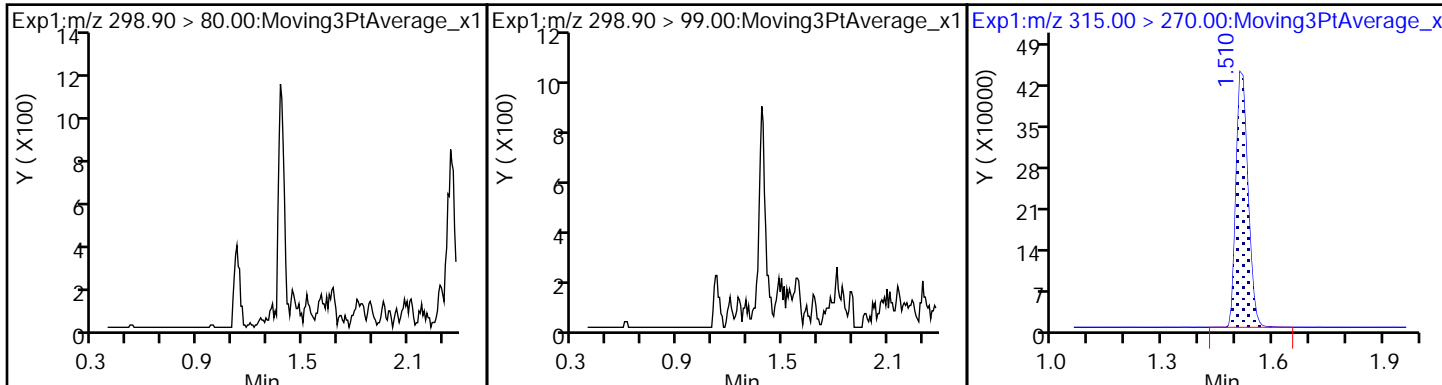
Column 1 : Det: EXP1
 Process Host: XAWRK028

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|-----------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-------|
| \$ 2 13C2 PFHxA | 315.00 > 270.00 | 1.510 | 1.517 | -0.007 | 1.000 | 973930 | 9.76 | 9496 | |
| * 6 13C2-PFOA | 415.00 > 370.00 | 1.866 | 1.874 | -0.008 | | 938492 | 10.0 | 5450 | |
| * 7 13C4 PFOS | 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2282460 | 28.7 | 4020 | |
| \$ 10 13C2 PFDA | 515.00 > 470.00 | 2.253 | 2.253 | 0.0 | 1.000 | 779811 | 9.77 | 7037 | |

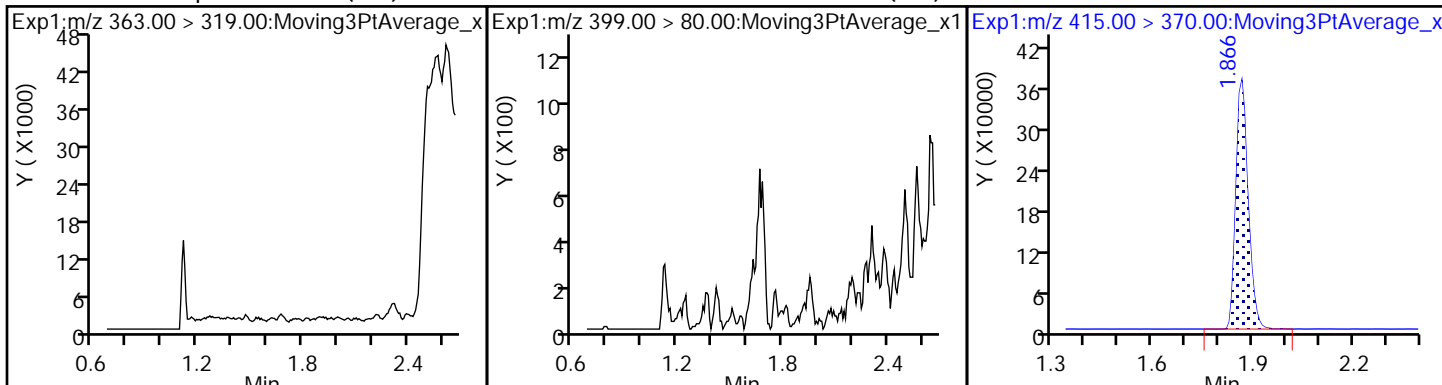
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_058.d
Injection Date: 13-Apr-2018 02:43:10 Instrument ID: A8_N
Lims ID: 320-37675-A-15-A Lab Sample ID: 320-37675-15
Client ID: NAWC-032819-FRB-139
Operator ID: SACINSTLCMS01 ALS Bottle#: 42 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

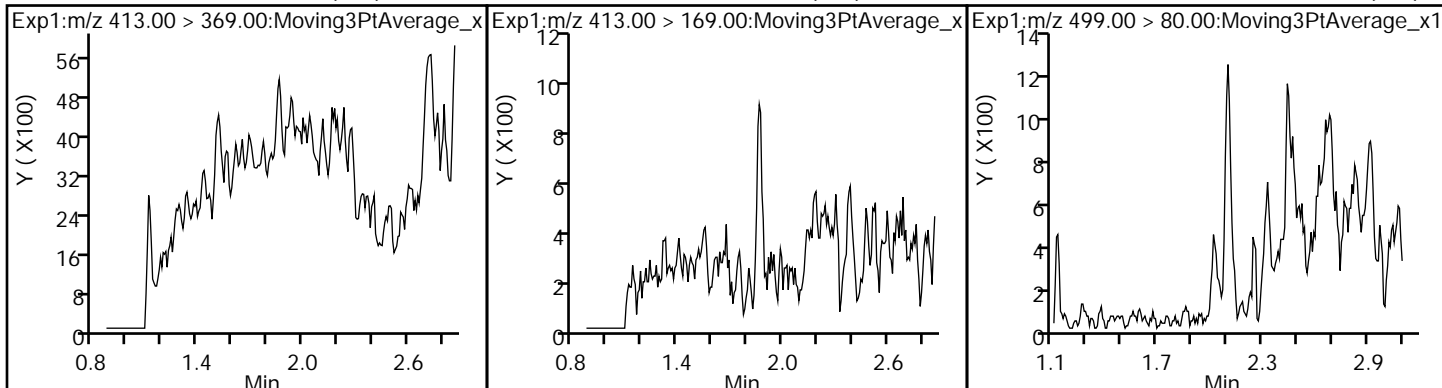
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



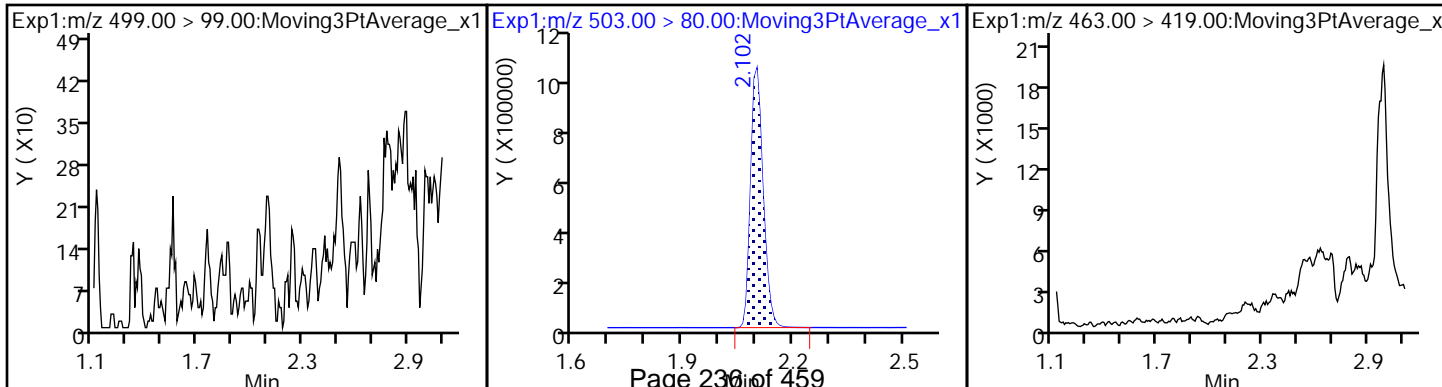
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



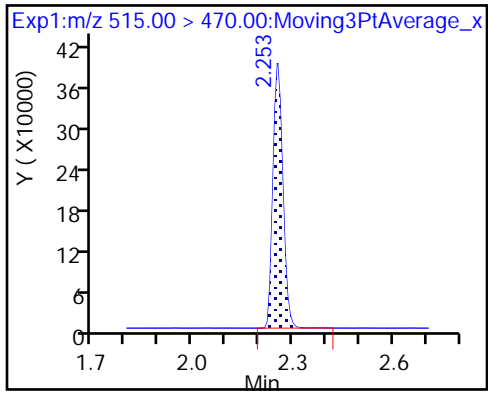
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_058.d
 Lims ID: 320-37675-A-15-A
 Client ID: NAWC-032819-FRB-139
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:43:10 ALS Bottle#: 42 Worklist Smp#: 30
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-15-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.76 | 97.61 |
| \$ 10 13C2 PFDA | 10.0 | 9.77 | 97.70 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-117 Lab Sample ID: 320-37675-16
 Matrix: Water Lab File ID: 2018.04.12_537AA_059.d
 Analysis Method: 537 Date Collected: 03/29/2018 11:40
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 256.5 (mL) Date Analyzed: 04/13/2018 02:47
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 16 | 6.6 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 7.8 | U | 19 | 7.8 | 2.7 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 19 | U | 23 | 19 | 7.8 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 29 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.7 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 35 | U | 88 | 35 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 97 | | 70-130 |
| STL00996 | 13C2 PFDA | 98 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_059.d
 Lims ID: 320-37675-A-16-A
 Client ID: NAWC-032819-RW-117
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:47:51 ALS Bottle#: 43 Worklist Smp#: 31
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-16-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

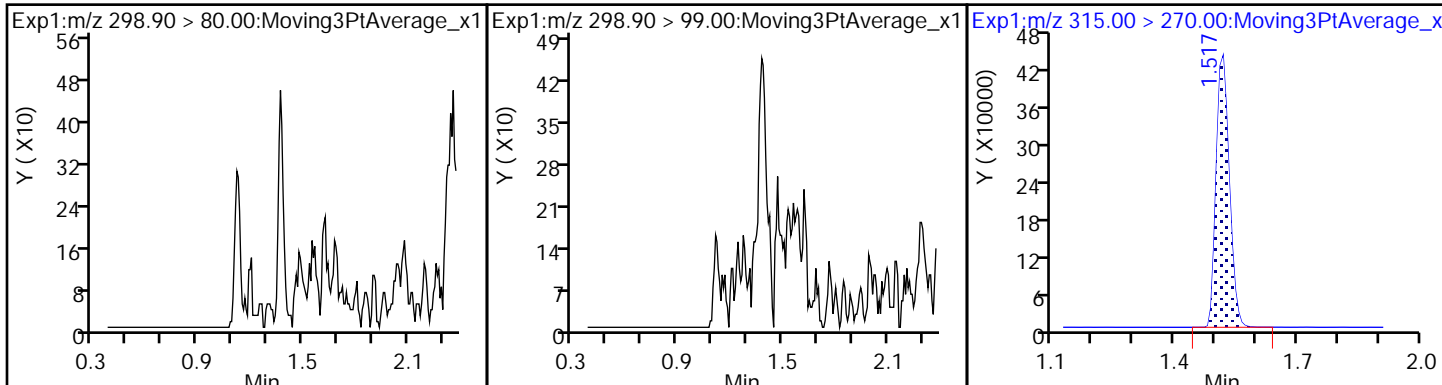
Column 1 : Det: EXP1
 Process Host: XAWRK028

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|-----------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-------|
| \$ 2 13C2 PFHxA | 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 979617 | 9.73 | 8989 | |
| * 6 13C2-PFOA | 415.00 > 370.00 | 1.866 | 1.874 | -0.008 | | 946733 | 10.0 | 6037 | |
| * 7 13C4 PFOS | 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2304139 | 28.7 | 4042 | |
| \$ 10 13C2 PFDA | 515.00 > 470.00 | 2.253 | 2.253 | 0.0 | 1.000 | 786541 | 9.77 | 6995 | |

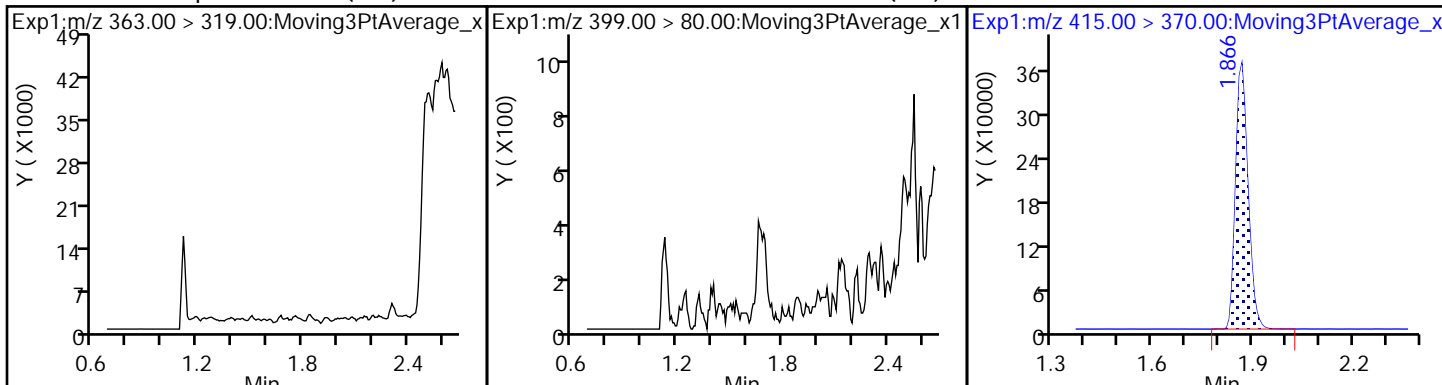
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_059.d
Injection Date: 13-Apr-2018 02:47:51 Instrument ID: A8_N
Lims ID: 320-37675-A-16-A Lab Sample ID: 320-37675-16
Client ID: NAWC-032819-RW-117
Operator ID: SACINSTLCMS01 ALS Bottle#: 43 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

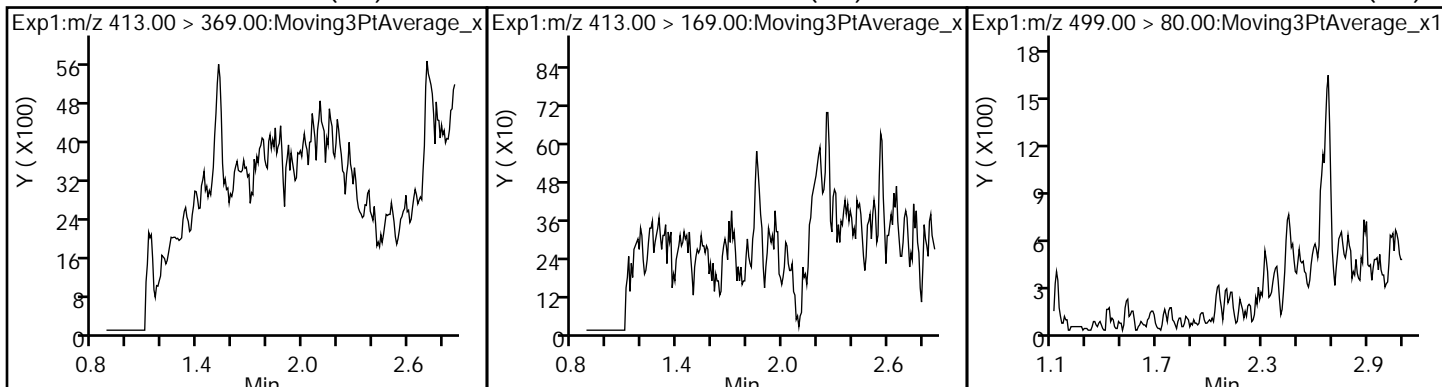
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



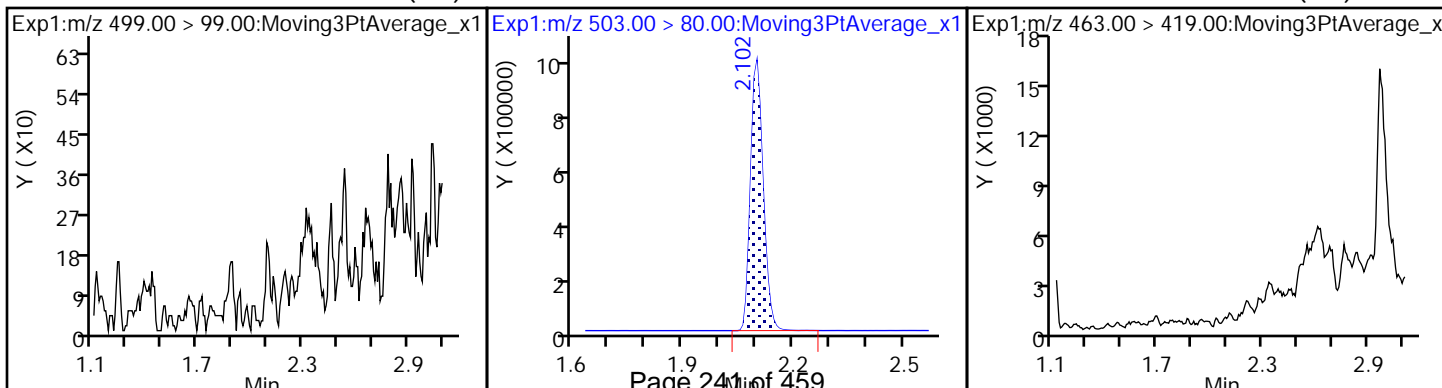
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



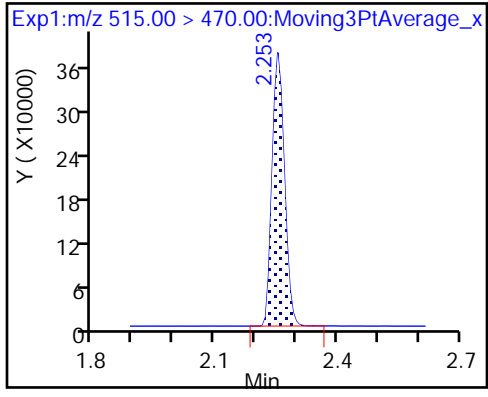
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_059.d
 Lims ID: 320-37675-A-16-A
 Client ID: NAWC-032819-RW-117
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:47:51 ALS Bottle#: 43 Worklist Smp#: 31
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-16-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK028

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.73 | 97.33 |
| \$ 10 13C2 PFDA | 10.0 | 9.77 | 97.69 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-FRB-117 Lab Sample ID: 320-37675-17
 Matrix: Water Lab File ID: 2018.04.12_537AA_060.d
 Analysis Method: 537 Date Collected: 03/29/2018 11:35
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 258.6(mL) Date Analyzed: 04/13/2018 02:52
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 28 | J M | 39 | 15 | 6.6 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 20 | | 19 | 7.7 | 2.7 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 19 | U | 23 | 19 | 7.7 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 15 | J | 29 | 12 | 5.3 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.9 | J | 9.7 | 3.9 | 1.8 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 35 | U | 87 | 35 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 96 | | 70-130 |
| STL00996 | 13C2 PFDA | 88 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_060.d
 Lims ID: 320-37675-A-17-A
 Client ID: NAWC-032819-FRB-117
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:52:31 ALS Bottle#: 44 Worklist Smp#: 32
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-17-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 10:10:23

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.381 | 0.0 | 1.000 | 68167 | 0.8124 | | 57.6 | |
| 298.90 > 99.00 | 1.381 | 1.381 | 0.0 | 1.000 | 52110 | | 1.31(0.00-0.00) | 139 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 969569 | 9.59 | | 9724 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.669 | 1.677 | -0.008 | 1.000 | 129997 | 1.27 | | 4.1 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.669 | 1.677 | -0.008 | 1.000 | 514571 | 3.93 | | 277 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.874 | -0.008 | | 951026 | 10.0 | | 5932 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.866 | 1.874 | -0.008 | 1.000 | 535233 | 5.30 | | 68.2 | |
| 413.00 > 169.00 | 1.866 | 1.874 | -0.008 | 1.000 | 318903 | | 1.68(0.00-0.00) | 341 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.102 | 2.094 | 0.008 | 1.000 | 609625 | 7.17 | | 282 | a |
| 499.00 > 99.00 | 2.102 | 2.094 | 0.008 | 1.000 | 121299 | | 5.03(0.00-0.00) | 225 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2287790 | 28.7 | | 2612 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.109 | 2.117 | -0.008 | 1.000 | 54576 | 0.6812 | | 7.6 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.253 | 2.253 | 0.0 | 1.000 | 713896 | 8.83 | | 8155 | |

QC Flag Legend

Review Flags

a - User Assigned ID

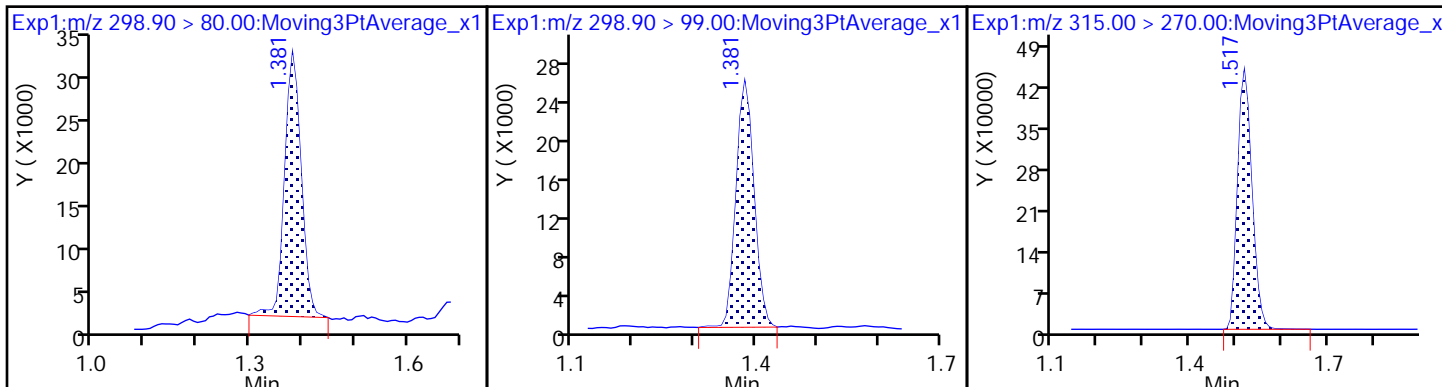
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_060.d
Injection Date: 13-Apr-2018 02:52:31 Instrument ID: A8_N
Lims ID: 320-37675-A-17-A Lab Sample ID: 320-37675-17
Client ID: NAWC-032819-FRB-117
Operator ID: SACINSTLCMS01 ALS Bottle#: 44 Worklist Smp#: 32
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

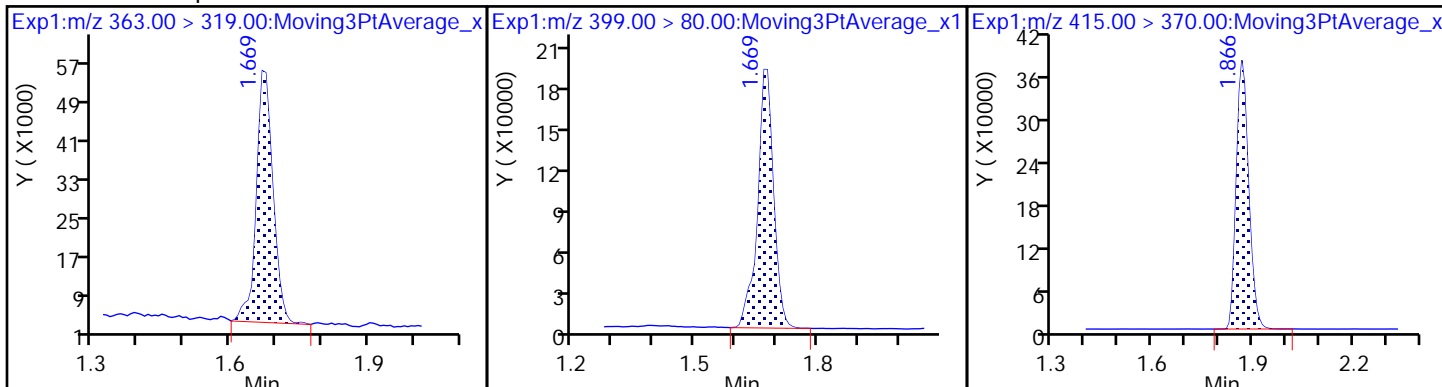
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

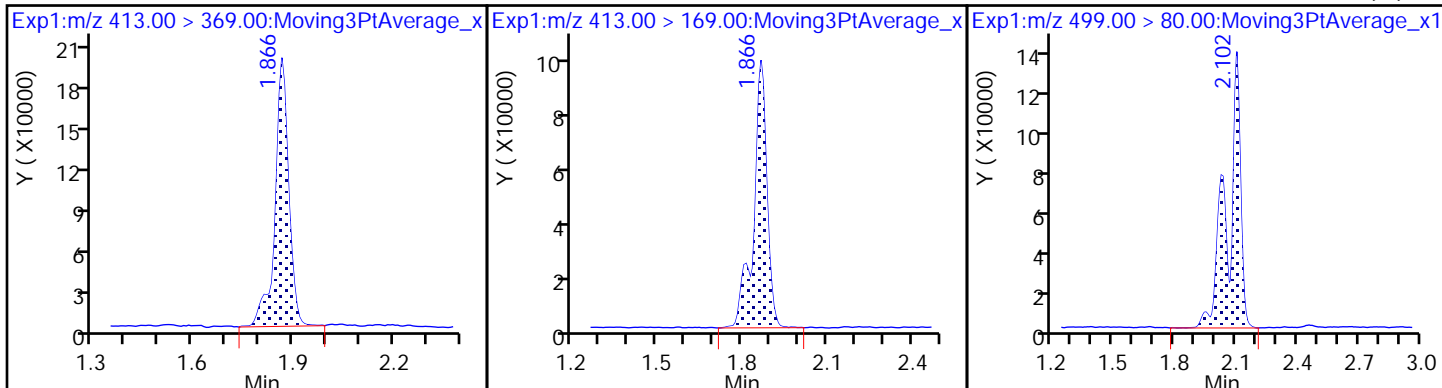
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

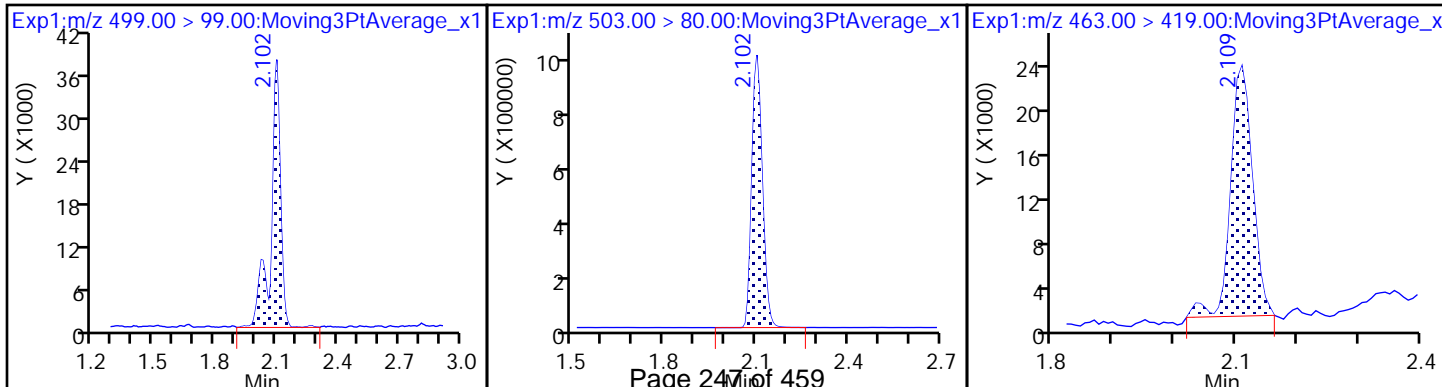
8 Perfluorooctane sulfonic acid (M)



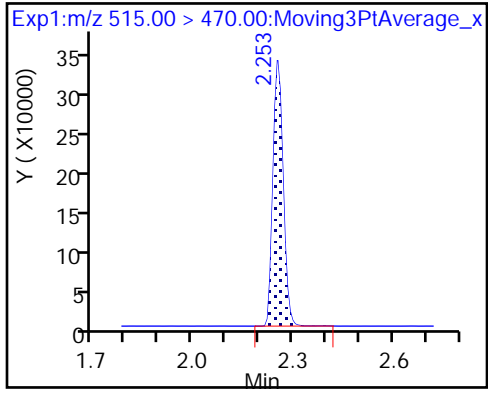
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_060.d
 Lims ID: 320-37675-A-17-A
 Client ID: NAWC-032819-FRB-117
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:52:31 ALS Bottle#: 44 Worklist Smp#: 32
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-17-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 10:10:23

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.59 | 95.89 |
| \$ 10 13C2 PFDA | 10.0 | 8.83 | 88.26 |

TestAmerica Sacramento

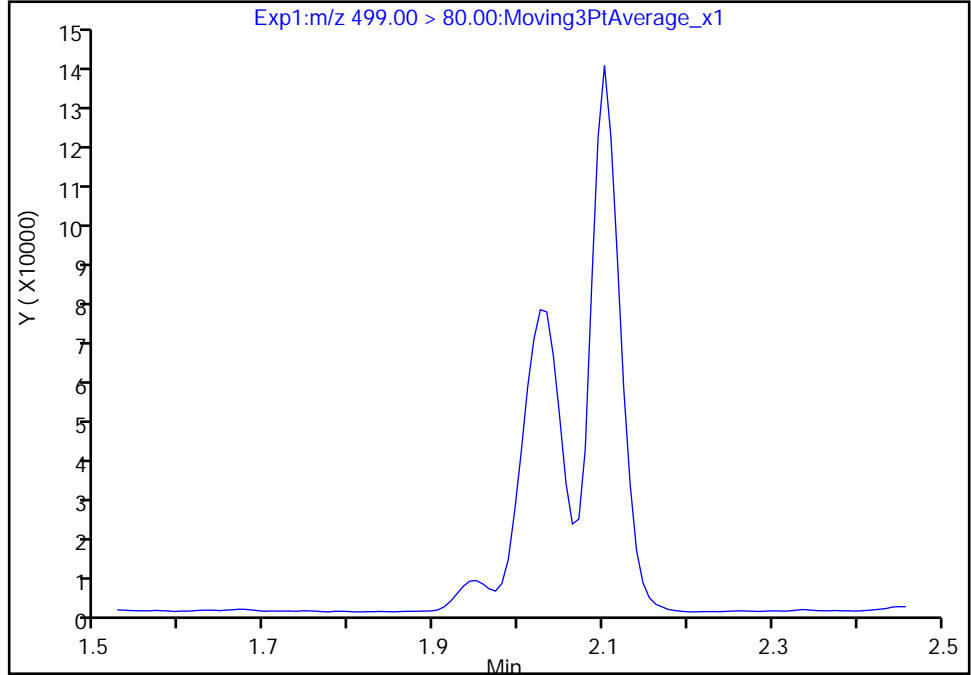
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_060.d
Injection Date: 13-Apr-2018 02:52:31 Instrument ID: A8_N
Lims ID: 320-37675-A-17-A Lab Sample ID: 320-37675-17
Client ID: NAWC-032819-FRB-117
Operator ID: SACINSTLCMS01 ALS Bottle#: 44 Worklist Smp#: 32
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

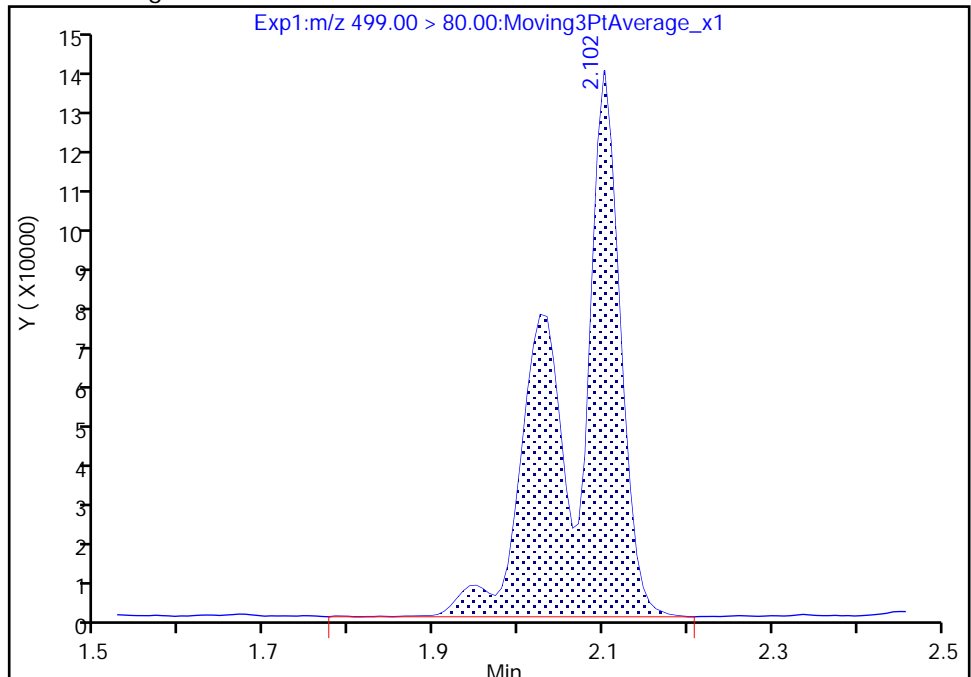
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.10
Area: 609625
Amount: 7.168675
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 13-Apr-2018 10:10:08
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-181 Lab Sample ID: 320-37675-18
 Matrix: Water Lab File ID: 2018.04.12_537AA_061.d
 Analysis Method: 537 Date Collected: 03/29/2018 12:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 248.9(mL) Date Analyzed: 04/13/2018 02:57
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 5.2 | J | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 94 | | 70-130 |
| STL00996 | 13C2 PFDA | 86 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_061.d
 Lims ID: 320-37675-A-18-A
 Client ID: NAWC-032819-RW-181
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:57:11 ALS Bottle#: 45 Worklist Smp#: 33
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-18-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

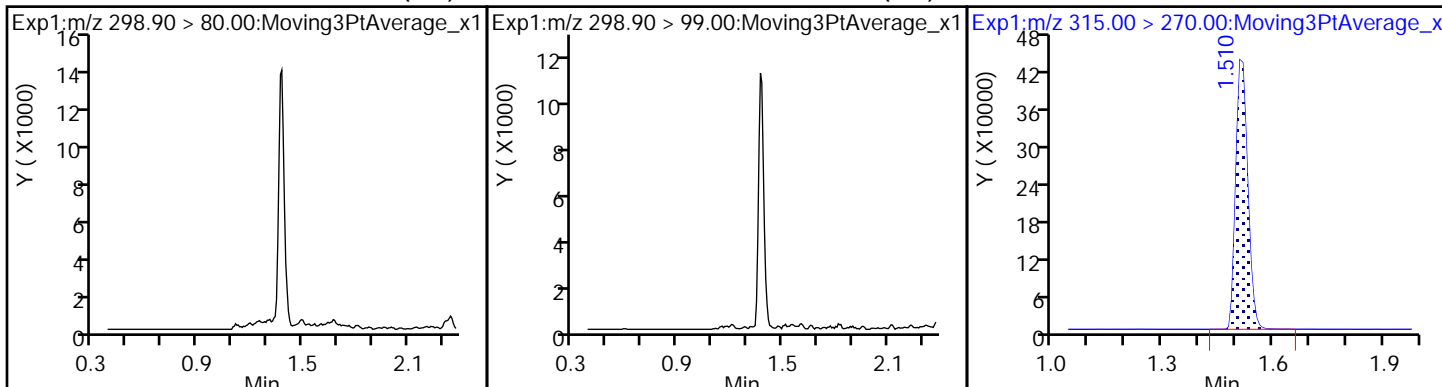
Column 1 : Det: EXP1
 Process Host: XAWRK028

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|--------------------------|-----------------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| \$ 2 13C2 PFHxA | 315.00 > 270.00 | 1.510 | 1.517 | -0.007 | 1.000 | 962161 | 9.43 | 8268 | |
| * 6 13C2-PFOA | 415.00 > 370.00 | 1.859 | 1.874 | -0.015 | | 960037 | 10.0 | 5554 | |
| 5 Perfluorooctanoic acid | 413.00 > 369.00 | 1.866 | 1.874 | -0.008 | 1.000 | 131160 | 1.29 | 14.9 | |
| | 413.00 > 169.00 | 1.859 | 1.874 | -0.015 | 0.996 | 79672 | 1.65(0.00-0.00) | 74.6 | |
| * 7 13C4 PFOS | 503.00 > 80.00 | 2.094 | 2.102 | -0.008 | | 2317950 | 28.7 | 3225 | |
| \$ 10 13C2 PFDA | 515.00 > 470.00 | 2.253 | 2.253 | 0.0 | 1.000 | 698122 | 8.55 | 7391 | |

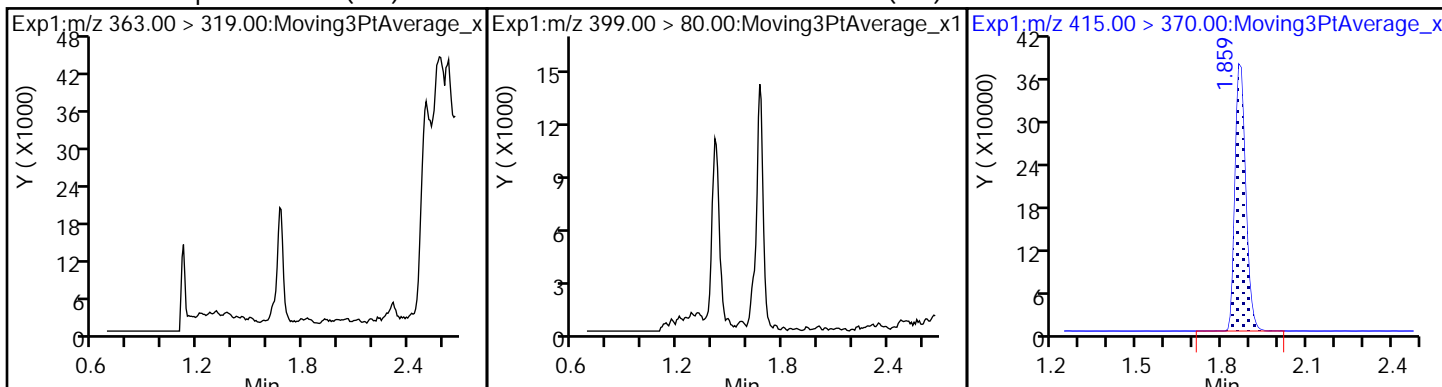
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_061.d
Injection Date: 13-Apr-2018 02:57:11 Instrument ID: A8_N
Lims ID: 320-37675-A-18-A Lab Sample ID: 320-37675-18
Client ID: NAWC-032819-RW-181
Operator ID: SACINSTLCMS01 ALS Bottle#: 45 Worklist Smp#: 33
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

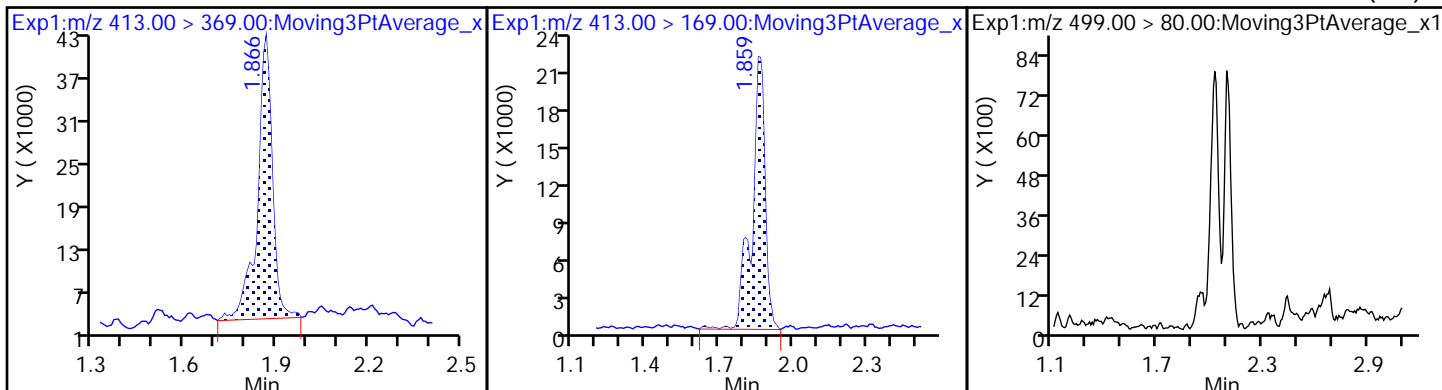
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



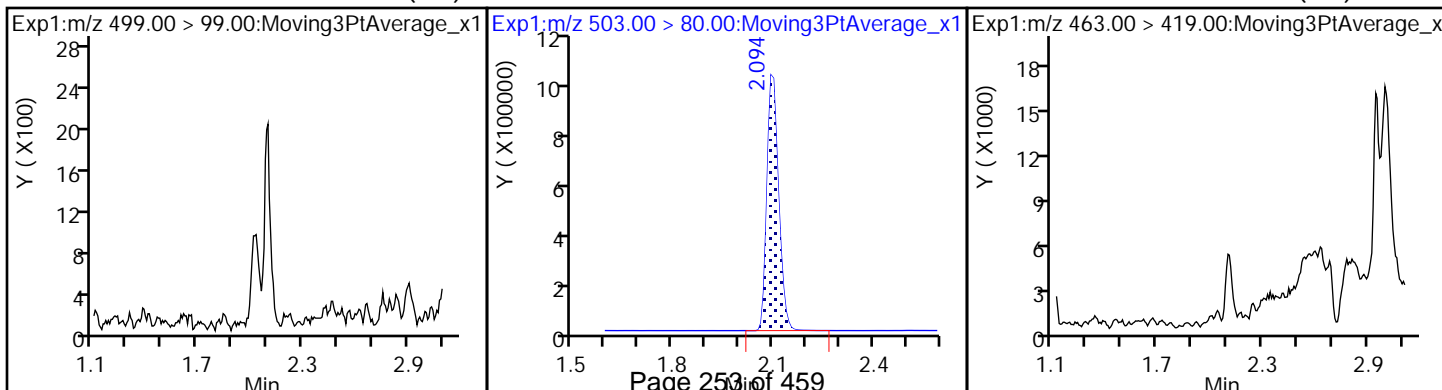
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



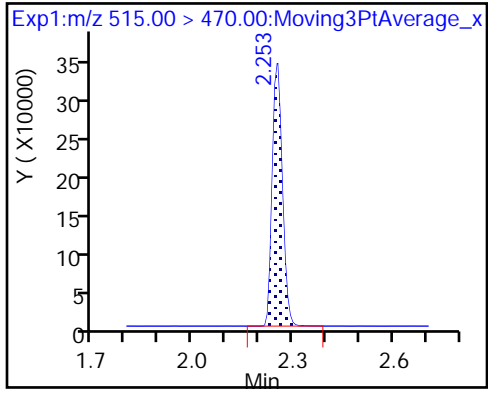
5 Perfluorooctanoic acid 5 Perfluorooctanoic acid 8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_061.d
 Lims ID: 320-37675-A-18-A
 Client ID: NAWC-032819-RW-181
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:57:11 ALS Bottle#: 45 Worklist Smp#: 33
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-18-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK028

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.43 | 94.27 |
| \$ 10 13C2 PFDA | 10.0 | 8.55 | 85.50 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-FRB-181 Lab Sample ID: 320-37675-19
 Matrix: Water Lab File ID: 2018.04.12_537AA_062.d
 Analysis Method: 537 Date Collected: 03/29/2018 12:05
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 250.6(mL) Date Analyzed: 04/13/2018 03:01
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 8.0 | U | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 100 | | 70-130 |
| STL00996 | 13C2 PFDA | 104 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_062.d
 Lims ID: 320-37675-A-19-A
 Client ID: NAWC-032819-FRB-181
 Sample Type: Client
 Inject. Date: 13-Apr-2018 03:01:50 ALS Bottle#: 46 Worklist Smp#: 34
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-19-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

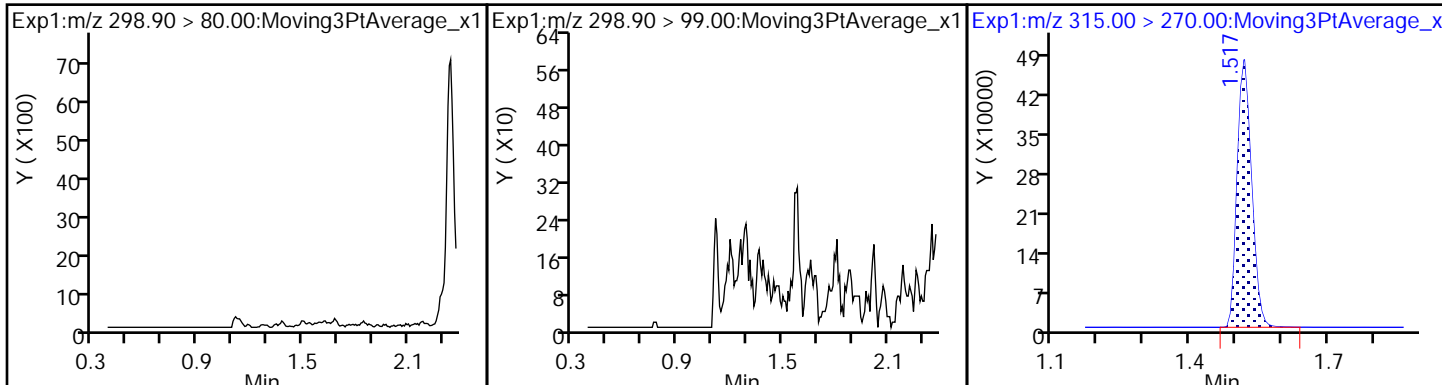
Column 1 : Det: EXP1
 Process Host: XAWRK028

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|-----------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-------|
| \$ 2 13C2 PFHxA | 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 1021144 | 10.0 | 9508 | |
| * 6 13C2-PFOA | 415.00 > 370.00 | 1.866 | 1.874 | -0.008 | | 957412 | 10.0 | 5479 | |
| * 7 13C4 PFOS | 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2371551 | 28.7 | 4189 | |
| \$ 10 13C2 PFDA | 515.00 > 470.00 | 2.253 | 2.253 | 0.0 | 1.000 | 849318 | 10.4 | 8487 | |

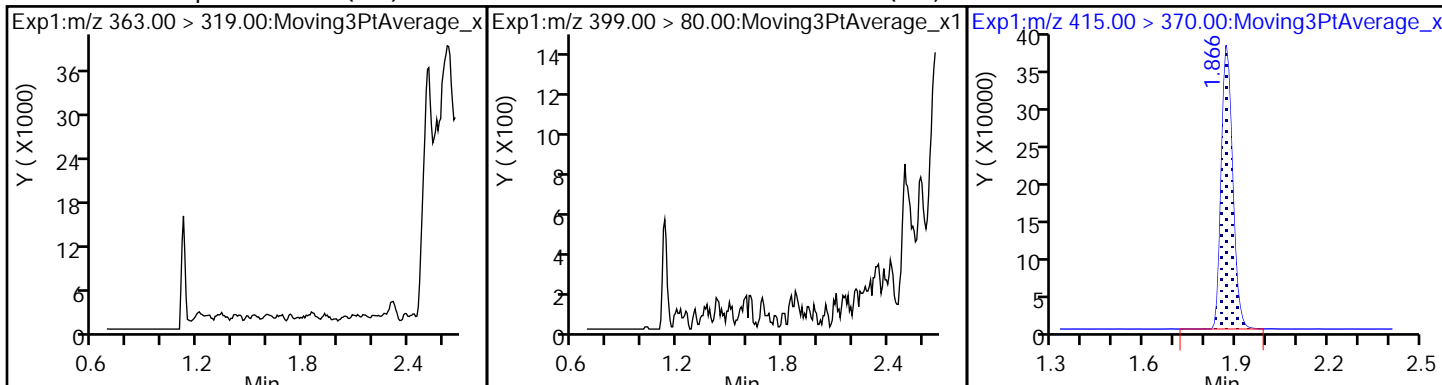
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_062.d
Injection Date: 13-Apr-2018 03:01:50 Instrument ID: A8_N
Lims ID: 320-37675-A-19-A Lab Sample ID: 320-37675-19
Client ID: NAWC-032819-FRB-181
Operator ID: SACINSTLCMS01 ALS Bottle#: 46 Worklist Smp#: 34
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

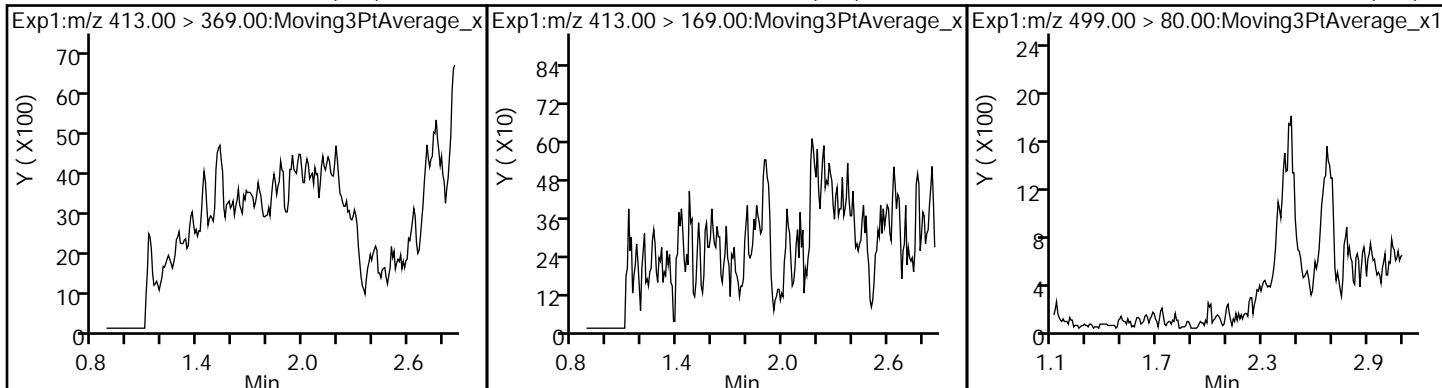
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



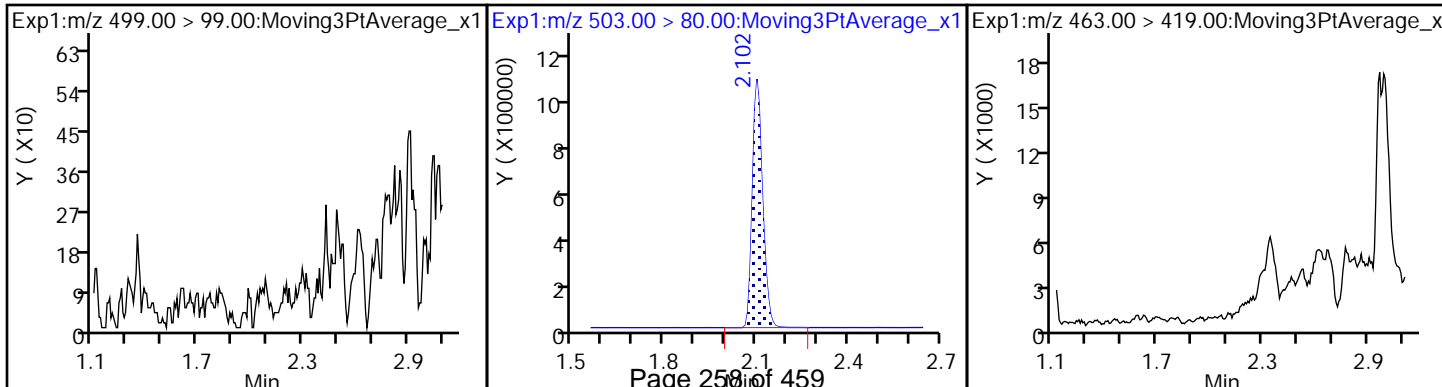
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



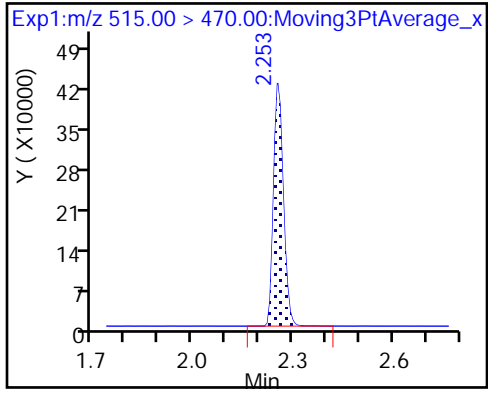
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_062.d
 Lims ID: 320-37675-A-19-A
 Client ID: NAWC-032819-FRB-181
 Sample Type: Client
 Inject. Date: 13-Apr-2018 03:01:50 ALS Bottle#: 46 Worklist Smp#: 34
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-19-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK028

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 10.0 | 100.32 |
| \$ 10 13C2 PFDA | 10.0 | 10.4 | 104.31 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-138 Lab Sample ID: 320-37675-20
 Matrix: Water Lab File ID: 2018.04.12_537AA_063.d
 Analysis Method: 537 Date Collected: 03/29/2018 13:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 242 (mL) Date Analyzed: 04/13/2018 03:06
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 8.0 | J M | 41 | 17 | 7.0 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 30 | | 21 | 8.3 | 2.9 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 21 | U M | 25 | 21 | 8.3 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U M | 31 | 12 | 5.7 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 7.4 | J | 10 | 4.1 | 2.0 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 37 | U | 93 | 37 | 17 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 98 | | 70-130 |
| STL00996 | 13C2 PFDA | 99 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_063.d
 Lims ID: 320-37675-A-20-A
 Client ID: NAWC-032819-RW-138
 Sample Type: Client
 Inject. Date: 13-Apr-2018 03:06:31 ALS Bottle#: 47 Worklist Smp#: 35
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-20-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 10:11:31

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.381 | 0.0 | 1.000 | 64088 | 0.7401 | | 72.0 | |
| 298.90 > 99.00 | 1.381 | 1.381 | 0.0 | 1.000 | 47558 | | 1.35(0.00-0.00) | 106 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 980671 | 9.80 | | 8988 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.677 | 0.0 | 1.000 | 181149 | 1.79 | | 6.7 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.677 | 1.677 | 0.0 | 1.000 | 82557 | 0.6106 | | 54.8 | M |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.874 | -0.008 | | 941041 | 10.0 | | 5687 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.866 | 1.874 | -0.008 | 1.000 | 728230 | 7.28 | | 81.2 | |
| 413.00 > 169.00 | 1.866 | 1.874 | -0.008 | 1.000 | 417504 | | 1.74(0.00-0.00) | 491 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.102 | 2.094 | 0.008 | 1.000 | 169725 | 1.93 | | 79.2 | a |
| 499.00 > 99.00 | 2.102 | 2.094 | 0.008 | 1.000 | 27388 | | 6.20(0.00-0.00) | 45.0 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2361059 | 28.7 | | 2774 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.117 | 2.117 | 0.0 | 1.000 | 34810 | 0.4391 | | 4.5 | M |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.261 | 2.253 | 0.008 | 1.000 | 789573 | 9.87 | | 7977 | |

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

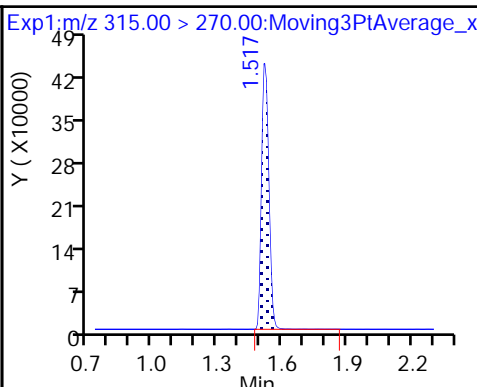
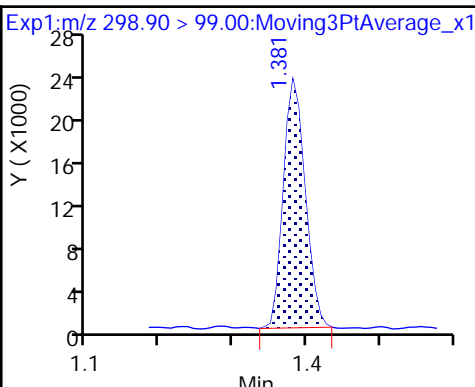
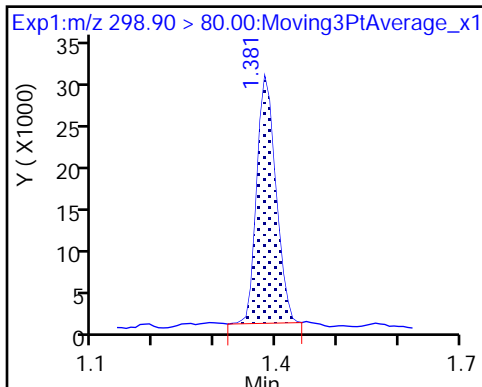
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_063.d
Injection Date: 13-Apr-2018 03:06:31 Instrument ID: A8_N
Lims ID: 320-37675-A-20-A Lab Sample ID: 320-37675-20
Client ID: NAWC-032819-RW-138
Operator ID: SACINSTLCMS01 ALS Bottle#: 47 Worklist Smp#: 35
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

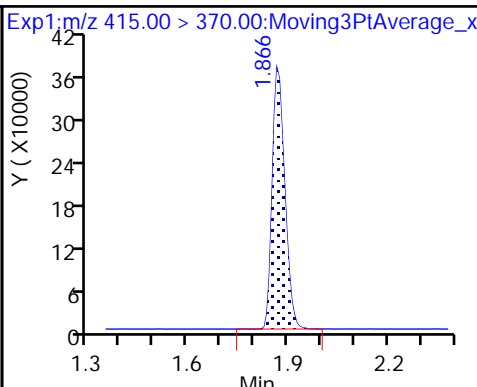
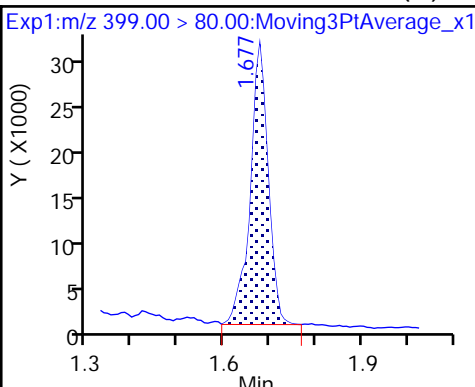
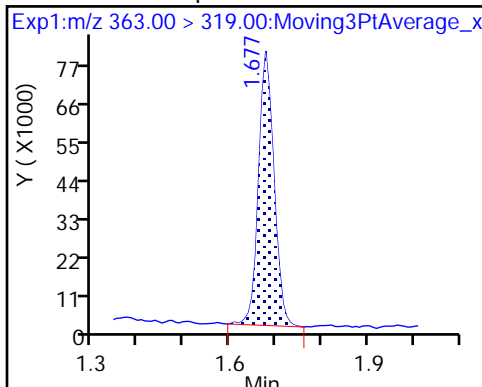
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid (M)

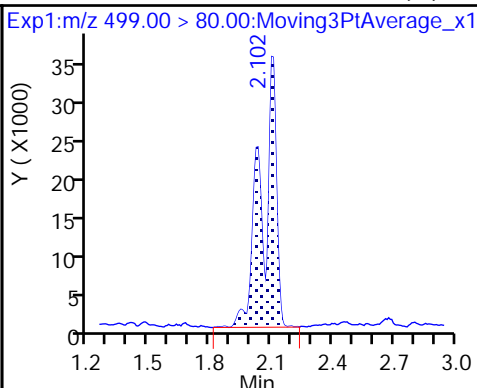
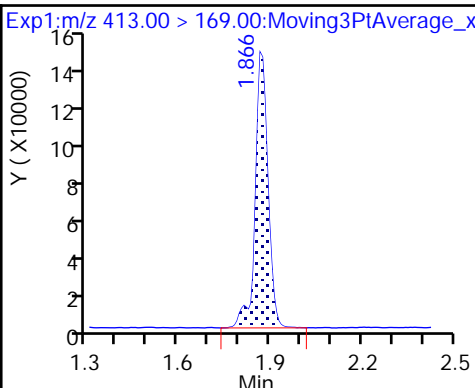
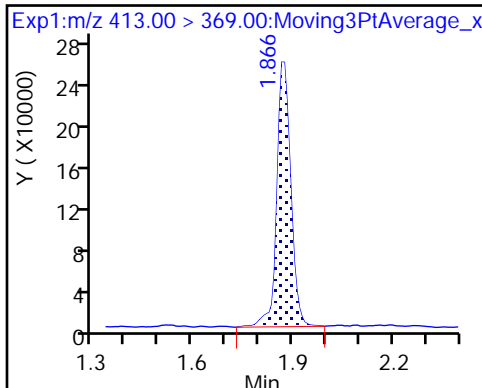
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

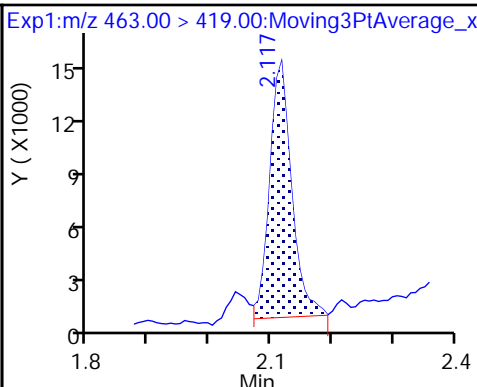
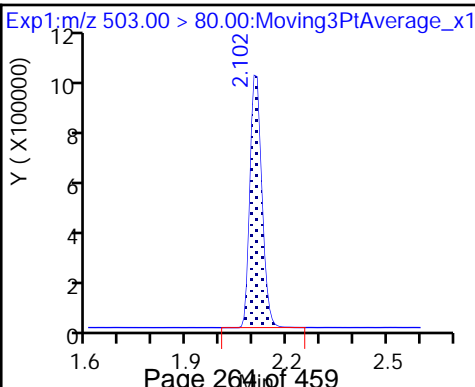
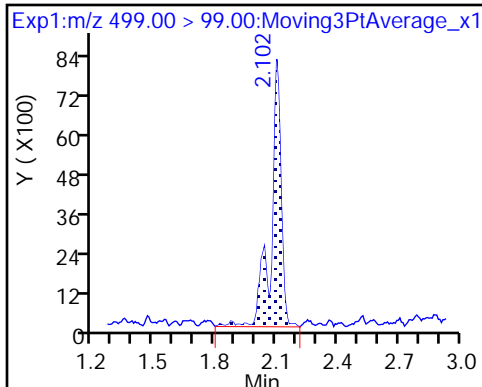
8 Perfluorooctane sulfonic acid (M)



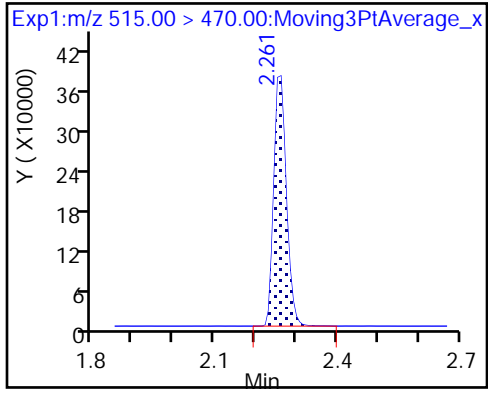
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_063.d
 Lims ID: 320-37675-A-20-A
 Client ID: NAWC-032819-RW-138
 Sample Type: Client
 Inject. Date: 13-Apr-2018 03:06:31 ALS Bottle#: 47 Worklist Smp#: 35
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-20-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 10:11:31

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.80 | 98.02 |
| \$ 10 13C2 PFDA | 10.0 | 9.87 | 98.66 |

TestAmerica Sacramento

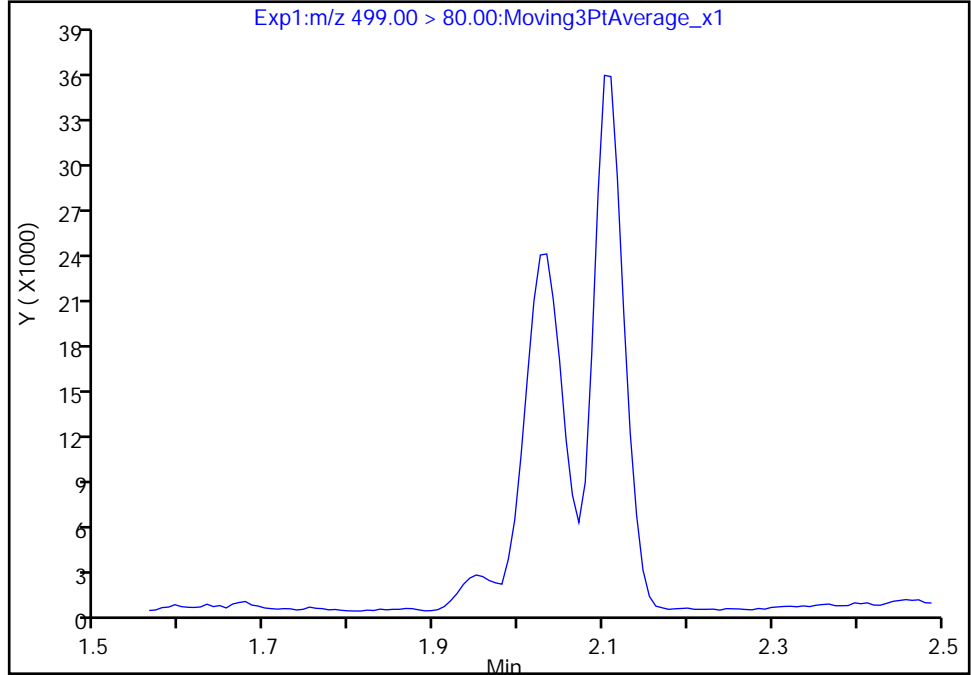
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_063.d
Injection Date: 13-Apr-2018 03:06:31 Instrument ID: A8_N
Lims ID: 320-37675-A-20-A Lab Sample ID: 320-37675-20
Client ID: NAWC-032819-RW-138
Operator ID: SACINSTLCMS01 ALS Bottle#: 47 Worklist Smp#: 35
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

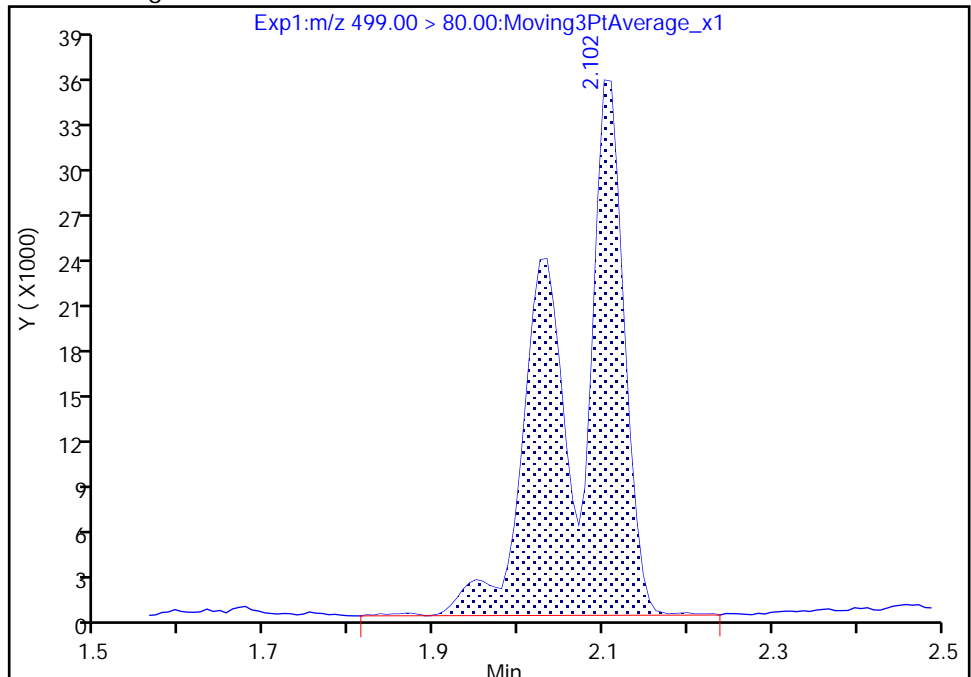
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 169725
Amount: 1.933888
Amount Units: ng/ml



Reviewer: barnettj, 13-Apr-2018 10:11:01
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

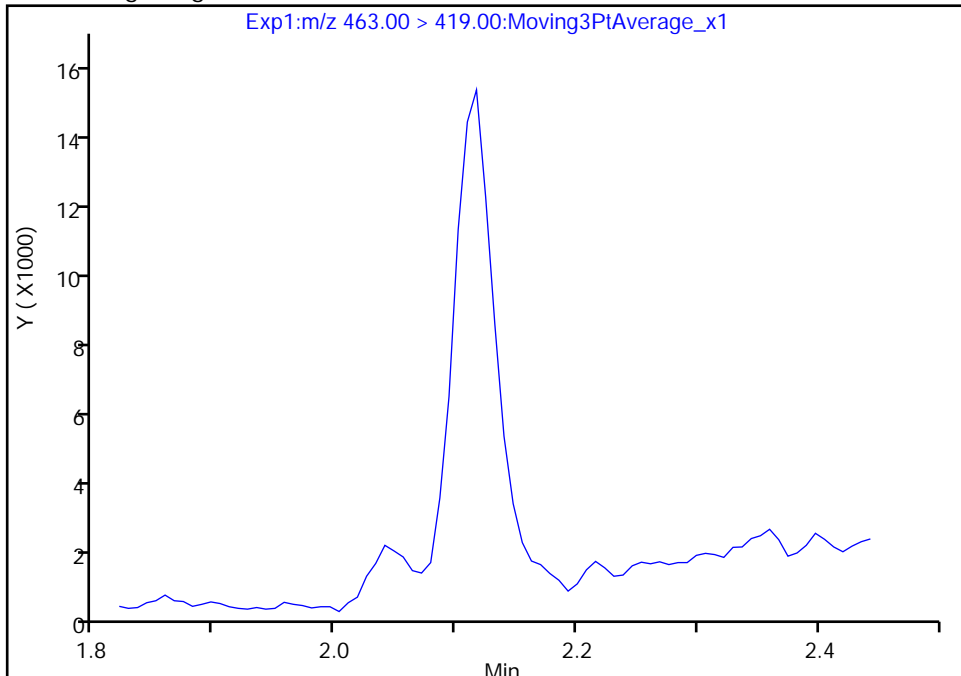
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_063.d
Injection Date: 13-Apr-2018 03:06:31 Instrument ID: A8_N
Lims ID: 320-37675-A-20-A Lab Sample ID: 320-37675-20
Client ID: NAWC-032819-RW-138
Operator ID: SACINSTLCMS01 ALS Bottle#: 47 Worklist Smp#: 35
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

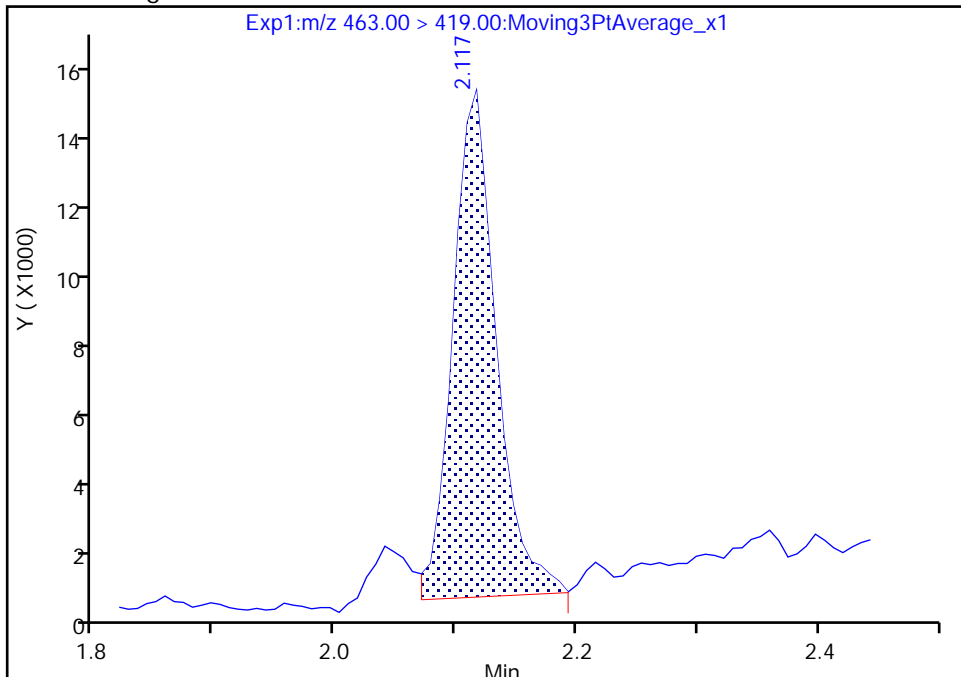
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 34810
Amount: 0.439118
Amount Units: ng/ml



Reviewer: barnettj, 13-Apr-2018 10:11:14
Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

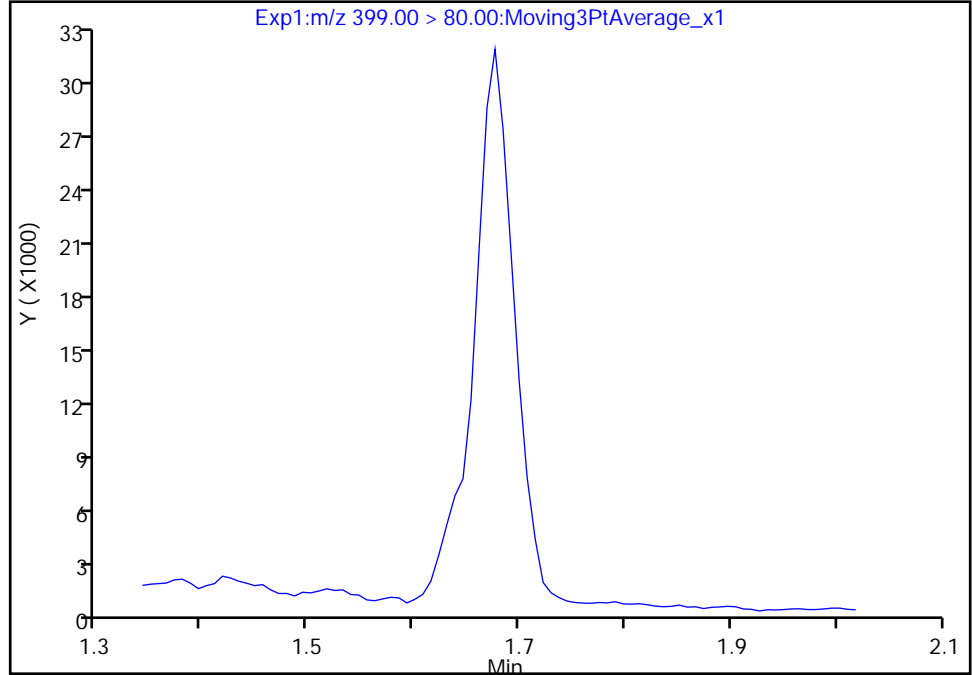
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Injection Date: 13-Apr-2018 03:06:31 Instrument ID: A8_N
Lims ID: 320-37675-A-20-A Lab Sample ID: 320-37675-20
Client ID: NAWC-032819-RW-138
Operator ID: SACINSTLCMS01 ALS Bottle#: 47 Worklist Smp#: 35
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

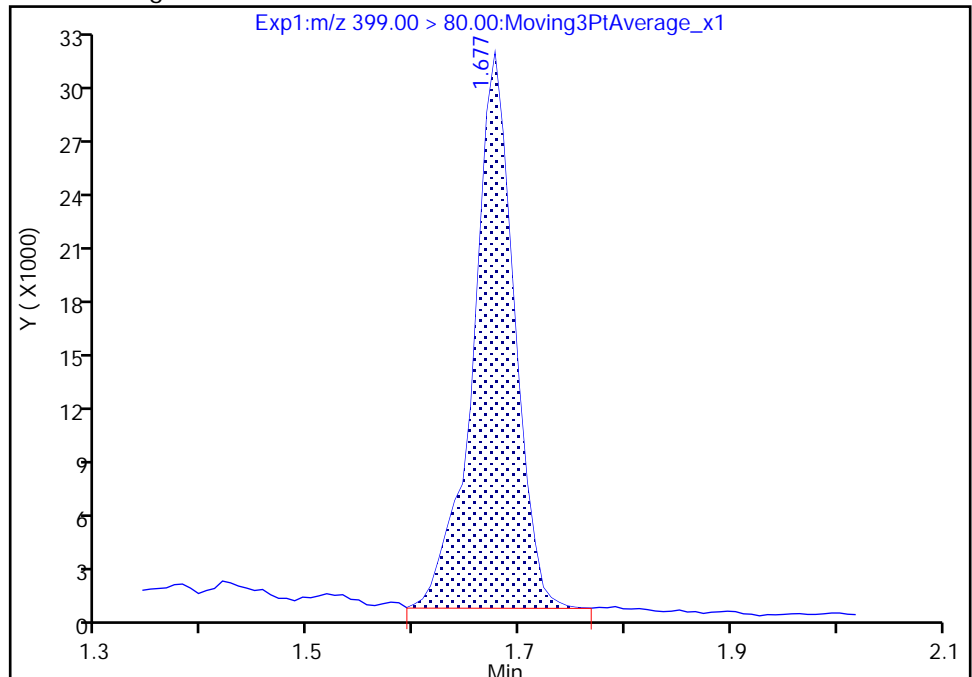
Signal: 1

Not Detected
Expected RT: 1.68

Processing Integration Results



Manual Integration Results



RT: 1.68
Area: 82557
Amount: 0.610650
Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 10:10:51
Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-FRB-138 Lab Sample ID: 320-37675-21
 Matrix: Water Lab File ID: 2018.04.12_537AA_064.d
 Analysis Method: 537 Date Collected: 03/29/2018 13:05
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 253.2 (mL) Date Analyzed: 04/13/2018 03:11
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 7.9 | U | 20 | 7.9 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 7.9 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.9 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 89 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 96 | | 70-130 |
| STL00996 | 13C2 PFDA | 91 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_064.d
 Lims ID: 320-37675-A-21-A
 Client ID: NAWC-032819-FRB-138
 Sample Type: Client
 Inject. Date: 13-Apr-2018 03:11:13 ALS Bottle#: 48 Worklist Smp#: 36
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-21-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

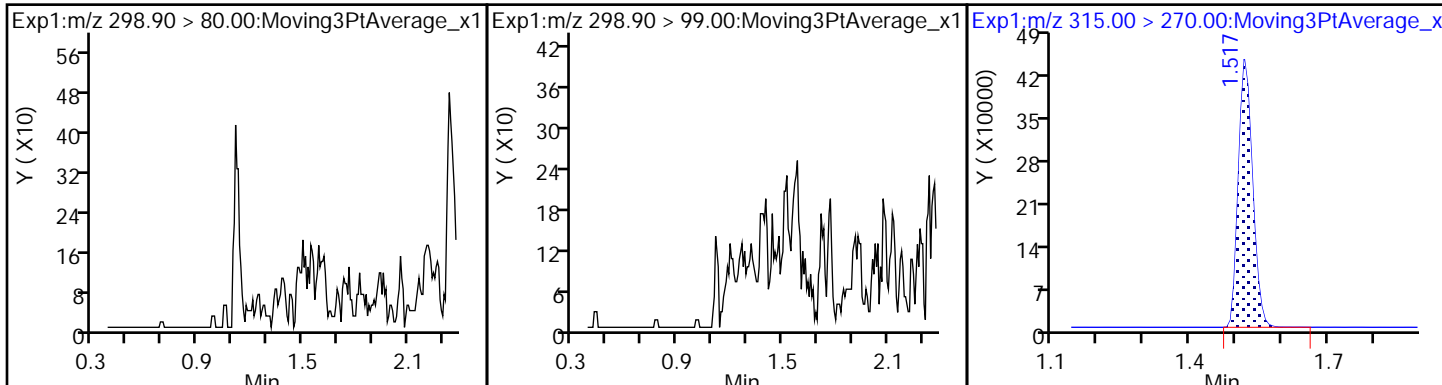
Column 1 : Det: EXP1
 Process Host: XAWRK028

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|-----------------|-----------------|--------|--------|--------|----------|--------------|---------------|-------|-------|
| \$ 2 13C2 PFHxA | 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 940922 | 9.57 | 10025 | |
| * 6 13C2-PFOA | 415.00 > 370.00 | 1.866 | 1.874 | -0.008 | | 924480 | 10.0 | 5769 | |
| * 7 13C4 PFOS | 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2293177 | 28.7 | 4338 | |
| \$ 10 13C2 PFDA | 515.00 > 470.00 | 2.253 | 2.253 | 0.0 | 1.000 | 717455 | 9.13 | 7103 | |

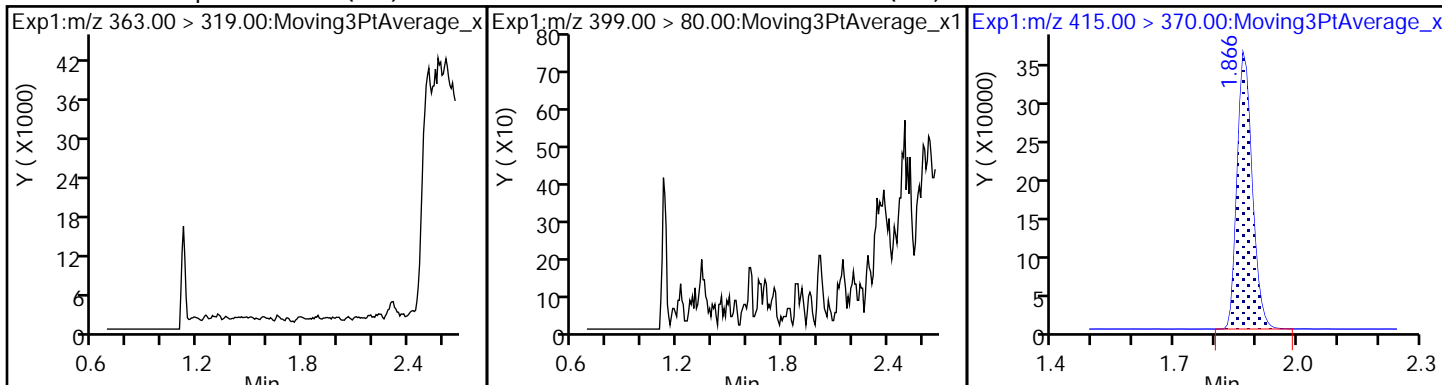
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_064.d
Injection Date: 13-Apr-2018 03:11:13 Instrument ID: A8_N
Lims ID: 320-37675-A-21-A Lab Sample ID: 320-37675-21
Client ID: NAWC-032819-FRB-138
Operator ID: SACINSTLCMS01 ALS Bottle#: 48 Worklist Smp#: 36
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

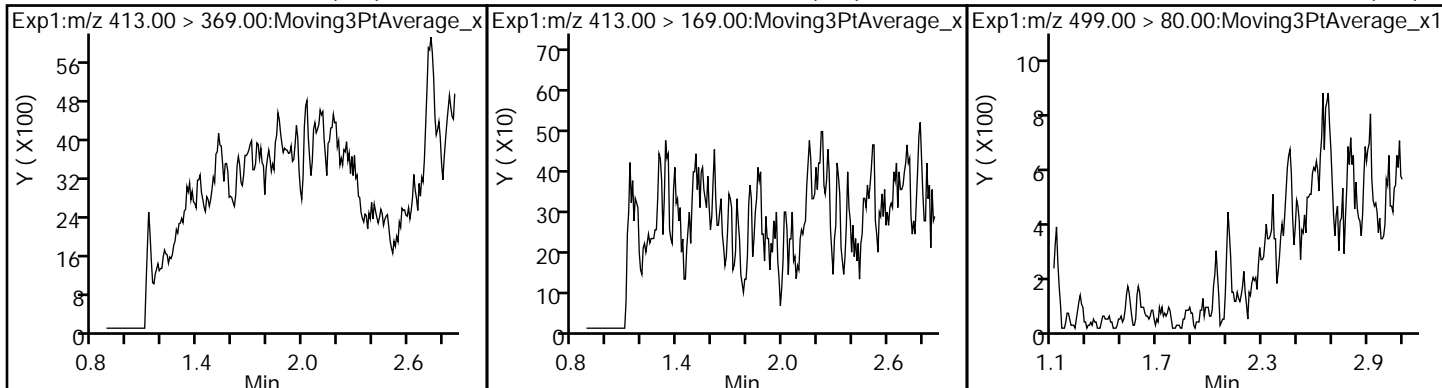
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



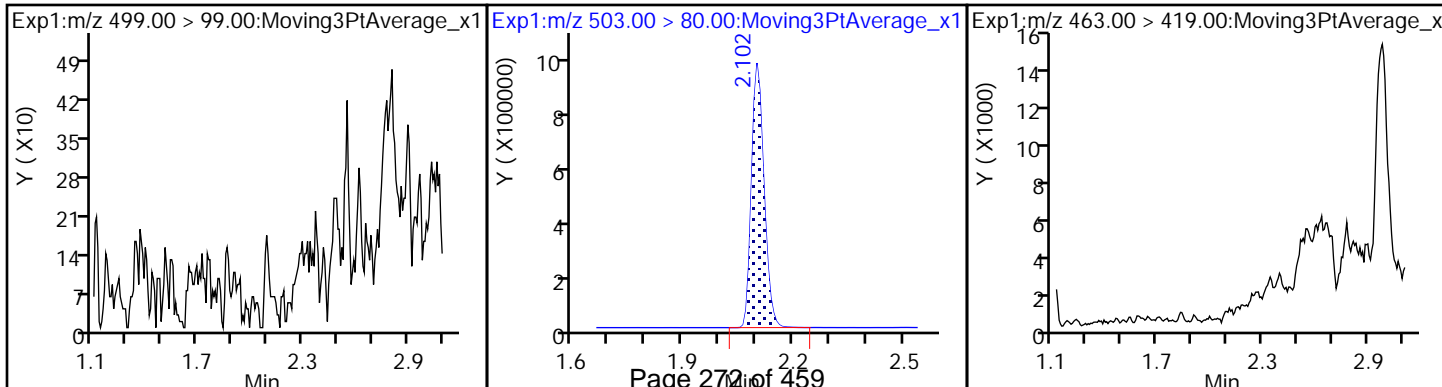
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



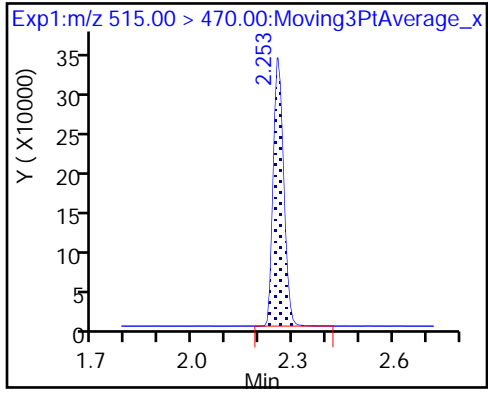
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_064.d
 Lims ID: 320-37675-A-21-A
 Client ID: NAWC-032819-FRB-138
 Sample Type: Client
 Inject. Date: 13-Apr-2018 03:11:13 ALS Bottle#: 48 Worklist Smp#: 36
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-21-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK028

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.57 | 95.73 |
| \$ 10 13C2 PFDA | 10.0 | 9.13 | 91.25 |

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1 Analy Batch No.: 217453

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 04/11/2018 11:45 Calibration End Date: 04/11/2018 12:09 Calibration ID: 38530

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|---------------------------|
| Level 1 | IC 320-217453/3 | 2018.04.11_537ICALB_004.d |
| Level 2 | IC 320-217453/4 | 2018.04.11_537ICALB_005.d |
| Level 3 | IC 320-217453/5 | 2018.04.11_537ICALB_006.d |
| Level 4 | IC 320-217453/6 | 2018.04.11_537ICALB_007.d |
| Level 5 | IC 320-217453/7 | 2018.04.11_537ICALB_008.d |
| Level 6 | IC 320-217453/8 | 2018.04.11_537ICALB_009.d |

| ANALYTE | RRF | | | | | CURVE TYPE | COEFFICIENT | | | # | MIN RRF | %RSD | # | MAX %RSD | R^2 OR COD | # | MIN R^2 OR COD |
|--------------------------------------|------------------|--------|--------|--------|--------|------------|-------------|--------|----|---|---------|------|------|----------|------------|---|----------------|
| | LVL 1 LVL 6 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | | B | M1 | M2 | | | | | | | | |
| Perfluorobutanesulfonic acid (PFBS) | 1.1422 0.9535 | 1.0952 | 1.0744 | 1.0454 | 1.0008 | Ave | | 1.0519 | | | 6.4 | | 30.0 | | | | |
| Perfluoroheptanoic acid (PFHpA) | 1.0850 1.0447 | 1.0991 | 1.0649 | 1.0783 | 1.0702 | Ave | | 1.0737 | | | 1.7 | | 30.0 | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | 1.6457 1.6837 | 1.5988 | 1.6030 | 1.6384 | 1.6838 | Ave | | 1.6422 | | | 2.3 | | 30.0 | | | | |
| Perfluorooctanoic acid (PFOA) | 1.0599 1.0325 | 1.0296 | 1.0703 | 1.0516 | 1.1300 | Ave | | 1.0623 | | | 3.5 | | 30.0 | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 1.0432 1.0989 | 1.0519 | 1.0326 | 1.0935 | 1.0764 | Ave | | 1.0661 | | | 2.6 | | 30.0 | | | | |
| Perfluorononanoic acid (PFNA) | 0.8261 0.8363 | 0.8133 | 0.8488 | 0.8818 | 0.8480 | Ave | | 0.8424 | | | 2.8 | | 30.0 | | | | |
| 13C2 PFHxA | 1.0447 1.0648 | 1.0532 | 1.0875 | 1.0687 | 1.0602 | Ave | | 1.0632 | | | 1.4 | | 30.0 | | | | |
| 13C2 PFDA | 0.8513 0.8262 | 0.8714 | 0.8533 | 0.8487 | 0.8519 | Ave | | 0.8505 | | | 1.7 | | 30.0 | | | | |

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1 Analy Batch No.: 217453

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 04/11/2018 11:45 Calibration End Date: 04/11/2018 12:09 Calibration ID: 38530

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|---------------------------|
| Level 1 | IC 320-217453/3 | 2018.04.11_537ICALB_004.d |
| Level 2 | IC 320-217453/4 | 2018.04.11_537ICALB_005.d |
| Level 3 | IC 320-217453/5 | 2018.04.11_537ICALB_006.d |
| Level 4 | IC 320-217453/6 | 2018.04.11_537ICALB_007.d |
| Level 5 | IC 320-217453/7 | 2018.04.11_537ICALB_008.d |
| Level 6 | IC 320-217453/8 | 2018.04.11_537ICALB_009.d |

| ANALYTE | IS REF | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|--------------------------------------|------------|------------|--------------------|---------|---------|---------|----------|-----------------------|-------|-------|-------|-------|
| | | | LVL 1 LVL 6 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 1 LVL 6 | LVL 2 | LVL 3 | LVL 4 | LVL 5 |
| Perfluorobutanesulfonic acid (PFBS) | PFOS | Ave | 870696 13871852 | 1696932 | 4015148 | 8010147 | 10764182 | 9.00 180 | 20.0 | 45.0 | 90.1 | 135 |
| Perfluoroheptanoic acid (PFHpA) | 13PF OA | Ave | 108741 1996261 | 218860 | 489075 | 1044752 | 1450463 | 0.960 19.4 | 2.16 | 4.86 | 9.72 | 14.6 |
| Perfluorohexanesulfonic acid (PFHxS) | PFOS | Ave | 418640 8226588 | 831963 | 2012030 | 4216387 | 6082352 | 3.00 60.5 | 6.72 | 15.1 | 30.2 | 45.4 |
| Perfluorooctanoic acid (PFOA) | 13PF OA | Ave | 219100 4019004 | 417632 | 1001316 | 2075568 | 3119787 | 1.98 39.6 | 4.40 | 9.90 | 19.8 | 29.7 |
| Perfluorooctanesulfonic acid (PFOS) | PFOS | Ave | 349354 7016962 | 715378 | 1693810 | 3678059 | 5081660 | 3.95 79.1 | 8.79 | 19.8 | 39.5 | 59.3 |
| Perfluorononanoic acid (PFNA) | 13PF OA | Ave | 170770 3255374 | 329904 | 794076 | 1740422 | 2341235 | 1.98 39.6 | 4.40 | 9.90 | 19.8 | 29.7 |
| 13C2 PFHxA | 13PF OA | Ave | 1090690 1046576 | 970942 | 1027706 | 1065262 | 985534 | 10.0 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| 13C2 PFDA | 13PF OA | Ave | 888742 812112 | 803402 | 806360 | 845990 | 791901 | 10.0 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |

Curve Type Legend:

Ave = Average ISTD

FORM VI
 LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
 READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1 Analy Batch No.: 217453

SDG No.: _____

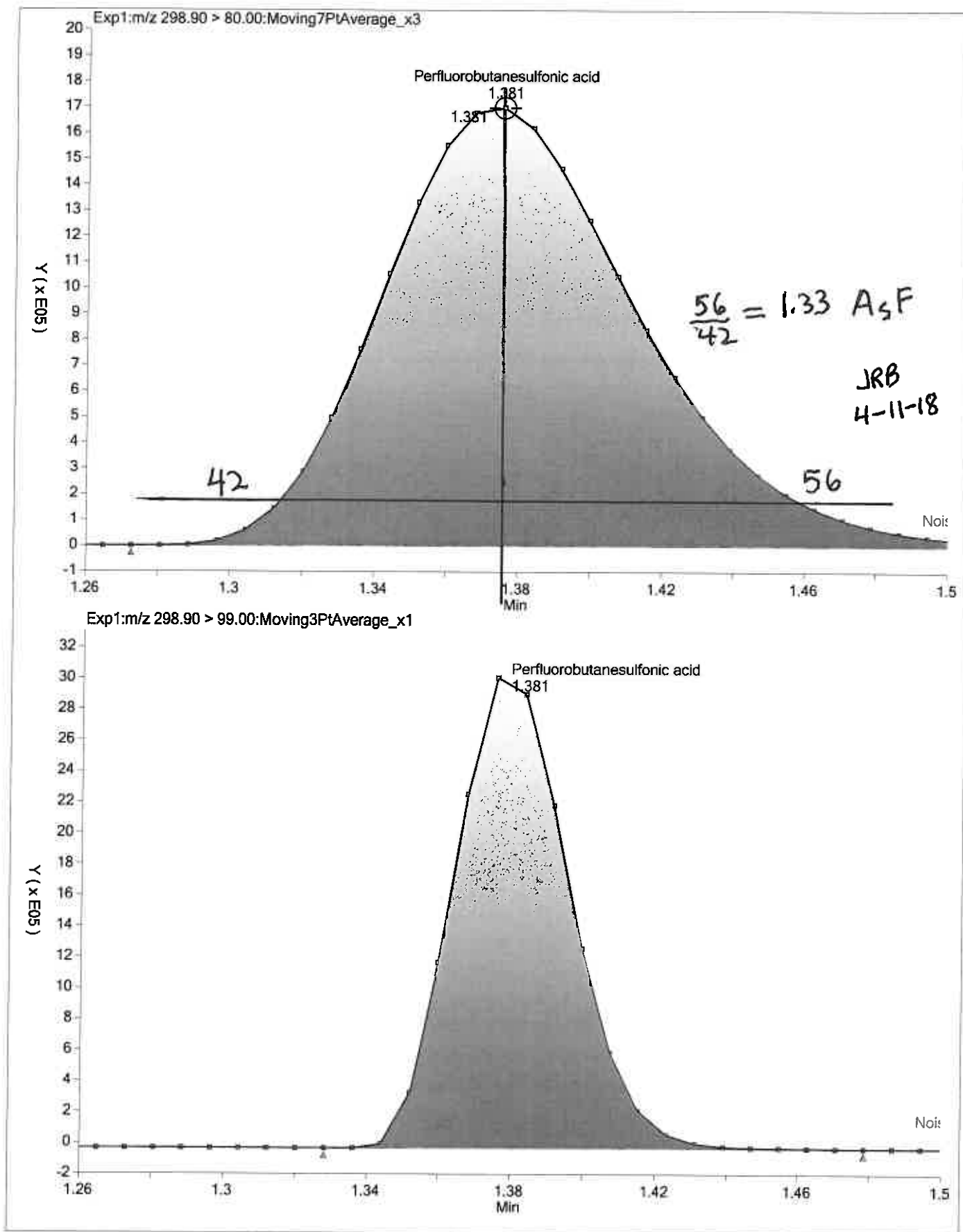
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

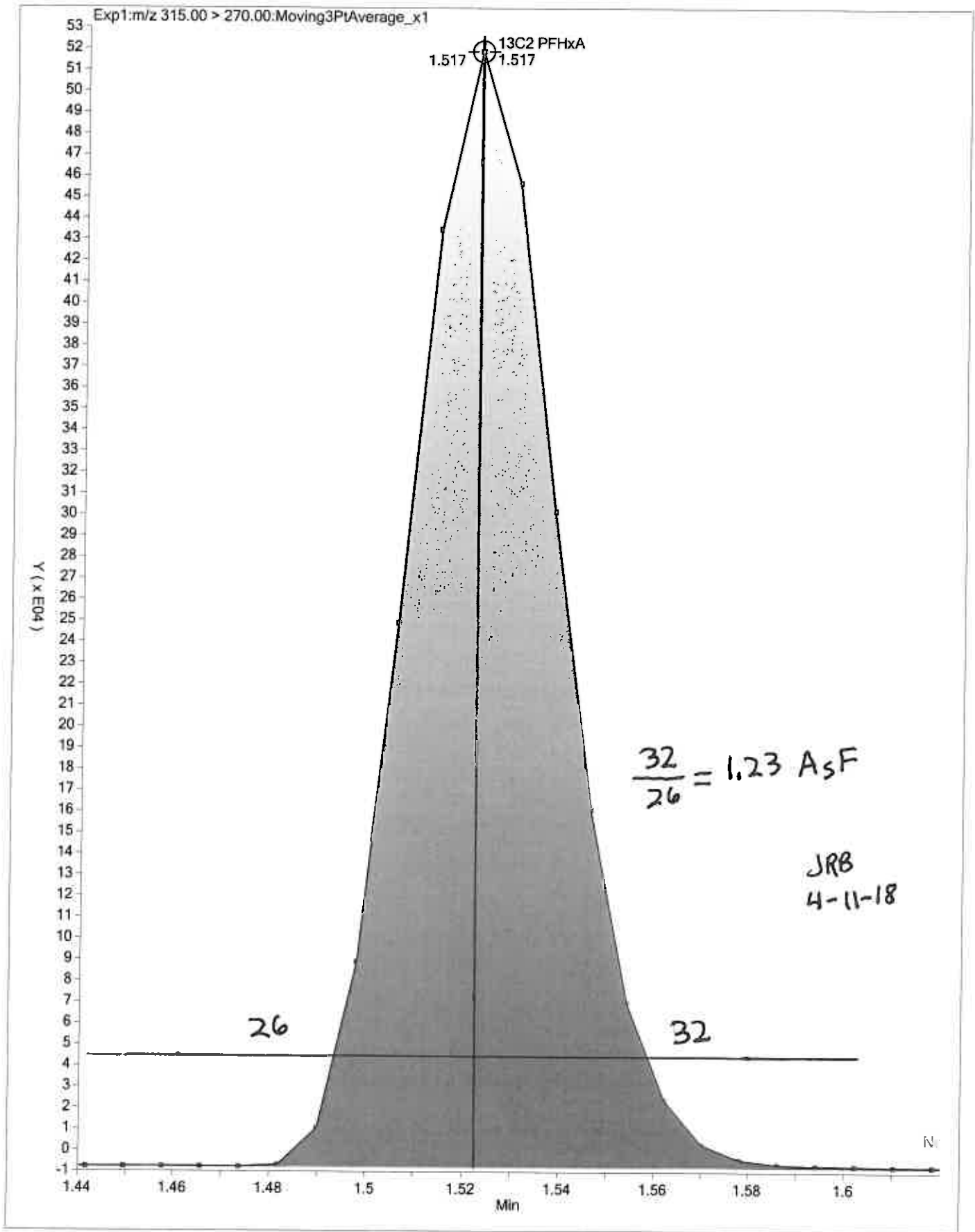
Calibration Start Date: 04/11/2018 11:45 Calibration End Date: 04/11/2018 12:09 Calibration ID: 38530

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|---------------------------|
| Level 1 | IC 320-217453/3 | 2018.04.11_537ICALB_004.d |
| Level 2 | IC 320-217453/4 | 2018.04.11_537ICALB_005.d |
| Level 3 | IC 320-217453/5 | 2018.04.11_537ICALB_006.d |
| Level 4 | IC 320-217453/6 | 2018.04.11_537ICALB_007.d |
| Level 5 | IC 320-217453/7 | 2018.04.11_537ICALB_008.d |
| Level 6 | IC 320-217453/8 | 2018.04.11_537ICALB_009.d |

| ANALYTE | PERCENT ERROR | | | | | | PERCENT ERROR LIMIT | | | | | |
|--------------------------------------|---------------|---------|---------|---------|---------|---------|---------------------|-------|-------|-------|-------|-------|
| | LVL 1 # | LVL 2 # | LVL 3 # | LVL 4 # | LVL 5 # | LVL 6 # | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 6 |
| Perfluorobutanesulfonic acid (PFBS) | 8.6 | 4.1 | 2.1 | -0.6 | -4.9 | -9.4 | 50 | 30 | 30 | 30 | 30 | 30 |
| Perfluoroheptanoic acid (PFHpA) | 1.0 | 2.4 | -0.8 | 0.4 | -0.3 | -2.7 | 50 | 30 | 30 | 30 | 30 | 30 |
| Perfluorohexanesulfonic acid (PFHxS) | 0.2 | -2.6 | -2.4 | -0.2 | 2.5 | 2.5 | 50 | 30 | 30 | 30 | 30 | 30 |
| Perfluorooctanoic acid (PFOA) | -0.2 | -3.1 | 0.7 | -1.0 | 6.4 | -2.8 | 50 | 30 | 30 | 30 | 30 | 30 |
| Perfluorooctanesulfonic acid (PFOS) | -2.1 | -1.3 | -3.1 | 2.6 | 1.0 | 3.1 | 50 | 30 | 30 | 30 | 30 | 30 |
| Perfluorononanoic acid (PFNA) | -1.9 | -3.5 | 0.8 | 4.7 | 0.7 | -0.7 | 50 | 30 | 30 | 30 | 30 | 30 |
| 13C2 PFHxA | -1.7 | -0.9 | 2.3 | 0.5 | -0.3 | 0.1 | 30 | 30 | 30 | 30 | 30 | 30 |
| 13C2 PFDA | 0.1 | 2.5 | 0.3 | -0.2 | 0.2 | -2.9 | 30 | 30 | 30 | 30 | 30 | 30 |





TestAmerica Laboratories
Istd/Surrogate Recovery Report

Worklist Name: 11APR2018A_537B_ICAL Worklist Num: 56557
 Instrument: A8_N Method: 537_A8_N
 Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b
 Limit Group: LC 537 ICAL
 Analysis Type: SemiVOA
 Inj Volume: 2.00 Inj Vol Units: ul

Lims Batch: 217453
 CCV IS Mode: Select Ical Level, Cal Level: 3
 Non-Cal IS Mode: Last Ccal Sample

\$ 2 13C2 PFHxA
 \$ 10 13C2 PFDA

| Lab ID | Inj Date | \$ 2 | \$ 10 | * 6 13C2-PFOA | * 7 13C4 PFOS |
|-----------|----------------------|----------------|----------------|-----------------|-----------------|
| | IS Std | | | 1027183 1.87 | 2580682 2.11 |
| # 1 RB | 11-Apr-2018 11:36:27 | | | 957389 93.2 | 2343443 90.8 |
| # 2 RB | 11-Apr-2018 11:41:06 | | | 937814 91.3 | 2225117 86.2 |
| | IS Std | | | | |
| # 3 IC L1 | 11-Apr-2018 11:45:47 | 1.52 98.26 | 2.26 100.10 | 1044020> 100.0* | 2429483> 100.0* |
| # 4 IC L2 | 11-Apr-2018 11:50:27 | 1.51 99.06 | 2.26 102.50 | 921915> 88.3* | 2220259> 91.4* |
| # 5 IC L3 | 11-Apr-2018 11:55:08 | 1.52 102.30 | 2.26 100.30 | 945031> 90.5* | 2380125> 98.0* |
| # 6 IC L4 | 11-Apr-2018 11:59:48 | 1.52 100.50 | 2.26 99.79 | 996809> 95.5* | 2440107> 100.4* |
| # 7 IC L5 | 11-Apr-2018 12:04:29 | 1.52 99.72 | 2.26 100.20 | 929546> 89.0* | 2283311> 94.0* |
| # 8 IC L6 | 11-Apr-2018 12:09:09 | 1.51 100.10 | 2.25 97.15 | 982926> 94.1* | 2316327> 95.3* |
| | IS Std | | | 945031 1.87 | 2380125 2.11 |
| # 9 RB | 11-Apr-2018 12:13:50 | | | 919421 97.3 | 2344246 98.5 |
| | IS Std | | | 996809 1.87 | 2440107 2.10 |
| #10 CCVL | 11-Apr-2018 12:18:29 | 1.52 97.44 | 2.26 103.40 | 964533 96.8 | 2387973 97.9 |
| | IS Std | | | 964533 1.87 | 2387973 2.10 |
| #11 ICB | 11-Apr-2018 12:23:10 | | | 943600 97.8 | 2246875 94.1 |
| | IS Std | | | 996809 1.87 | 2440107 2.10 |
| #12 ICV | 11-Apr-2018 12:27:50 | 1.51 92.99 | 2.25 91.91 | 1123391 112.7 | 2710764 111.1 |

13C2-PFOA

$$RPD = \frac{1044020 - 921915}{\frac{1044020 + 921915}{2}} \times 100 = 12.4$$

13C4-PFOS

$$RPD = \frac{2440107 - 2220259}{\frac{2440107 + 2220259}{2}} \times 100 = 9.43$$

JRB
4-11-18

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_004.d
 Lims ID: IC L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 11-Apr-2018 11:45:47 ALS Bottle#: 1 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L1_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 11-Apr-2018 12:35:27 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK015

First Level Reviewer: westendorfc Date: 11-Apr-2018 12:31:32

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|-------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.382 | -0.001 | 1.000 | 870696 | 9.77 | | 690 | |
| 298.90 > 99.00 | 1.381 | 1.382 | -0.001 | 1.000 | 638403 | | 1.36(0.00-0.00) | 875 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.515 | 0.002 | 1.000 | 1090690 | 9.83 | | 11391 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.669 | 1.669 | 0.0 | 1.000 | 418640 | 3.01 | | 133 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.669 | 1.669 | 0.0 | 1.000 | 108741 | 0.9701 | | 13.9 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.865 | 0.001 | | 1044020 | 10.0 | | 6295 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.866 | 1.866 | 0.0 | 1.000 | 219100 | 1.98 | | 35.1 | |
| 413.00 > 169.00 | 1.866 | 1.866 | 0.0 | 1.000 | 116014 | | 1.89(0.00-0.00) | 128 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.102 | 2.094 | 0.008 | 1.000 | 349354 | 3.87 | | 105 | a |
| 499.00 > 99.00 | 2.102 | 2.094 | 0.008 | 1.000 | 79188 | | 4.41(0.00-0.00) | 237 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2429483 | 28.7 | | 1437 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.109 | 2.109 | 0.0 | 1.000 | 170770 | 1.94 | | 31.2 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.261 | 2.260 | 0.001 | 1.000 | 888742 | 10.0 | | 8004 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L1_00022

Amount Added: 1.00

Units: mL

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_004.d

Injection Date: 11-Apr-2018 11:45:47

Instrument ID: A8_N

Lims ID: IC L1

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 1

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

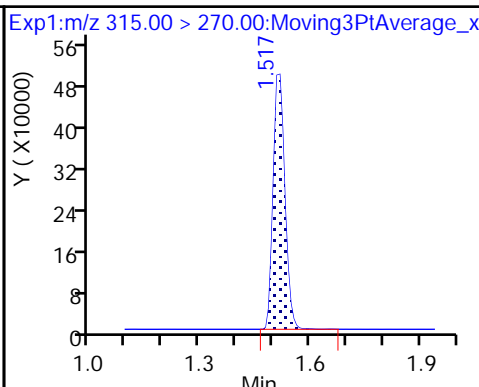
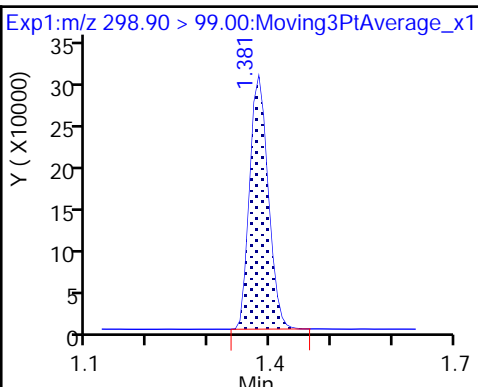
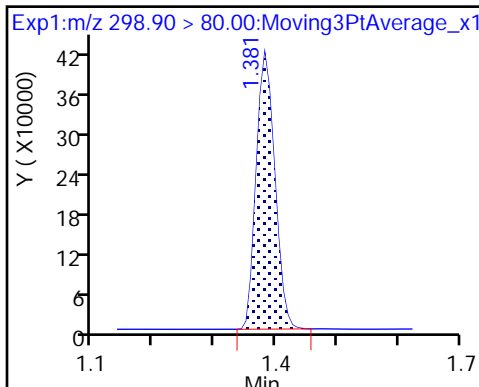
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

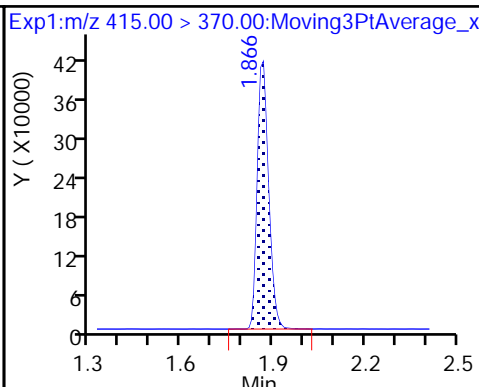
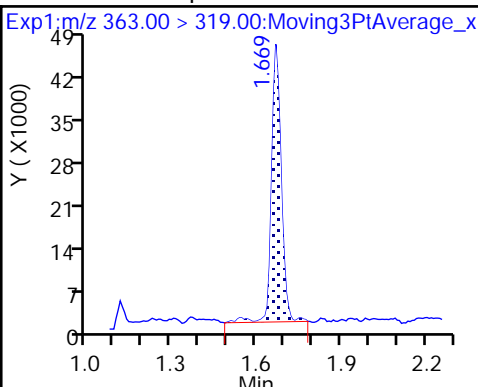
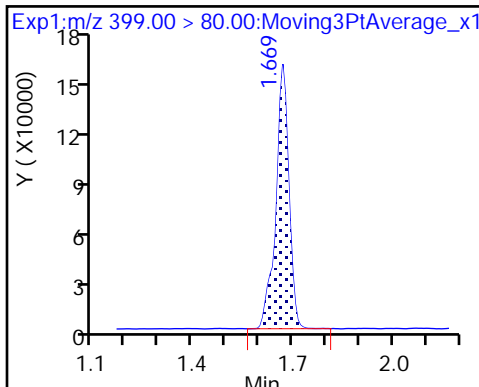
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

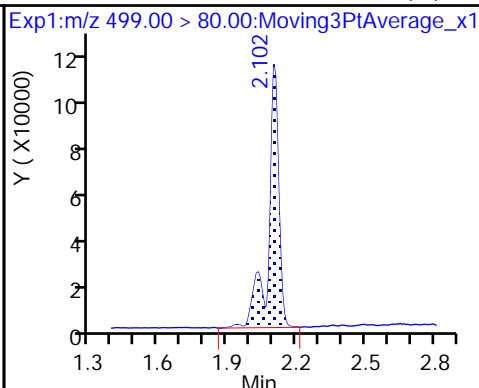
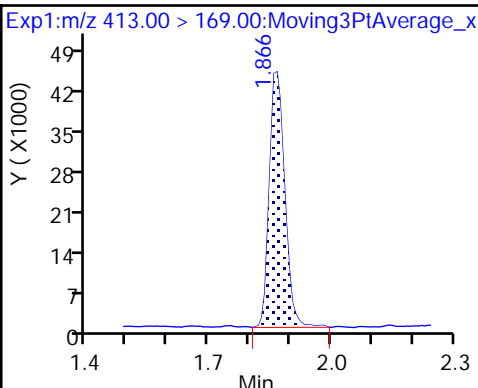
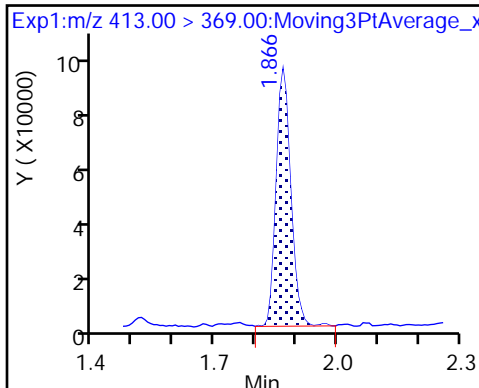
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

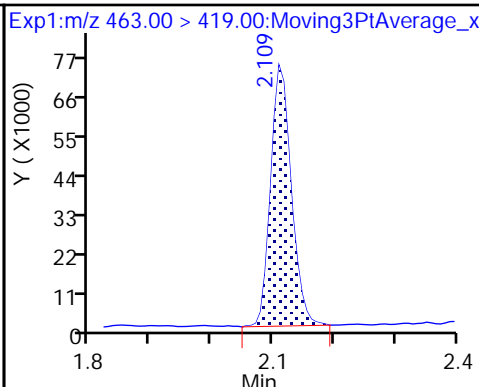
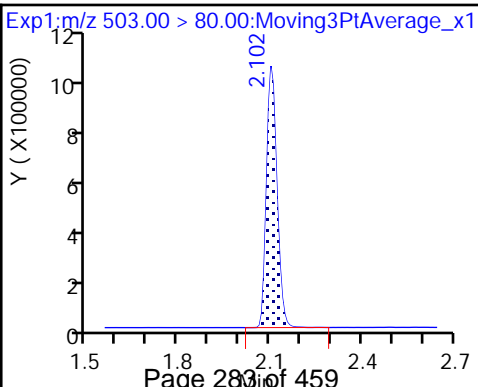
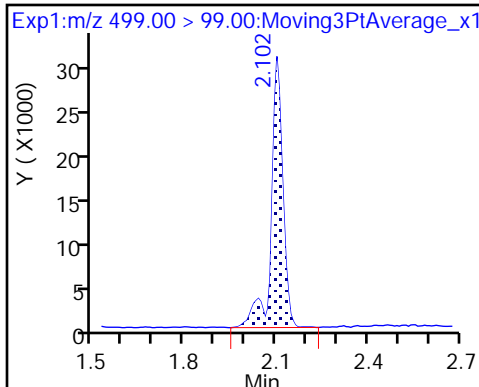
8 Perfluorooctane sulfonic acid (M)



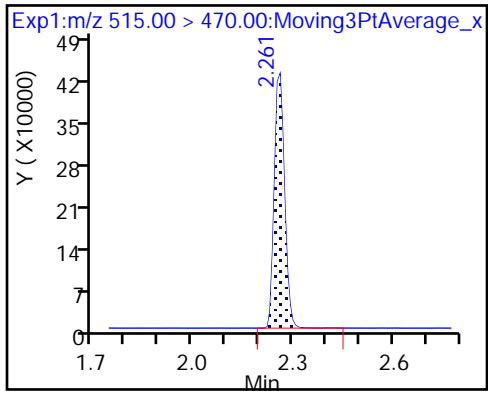
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

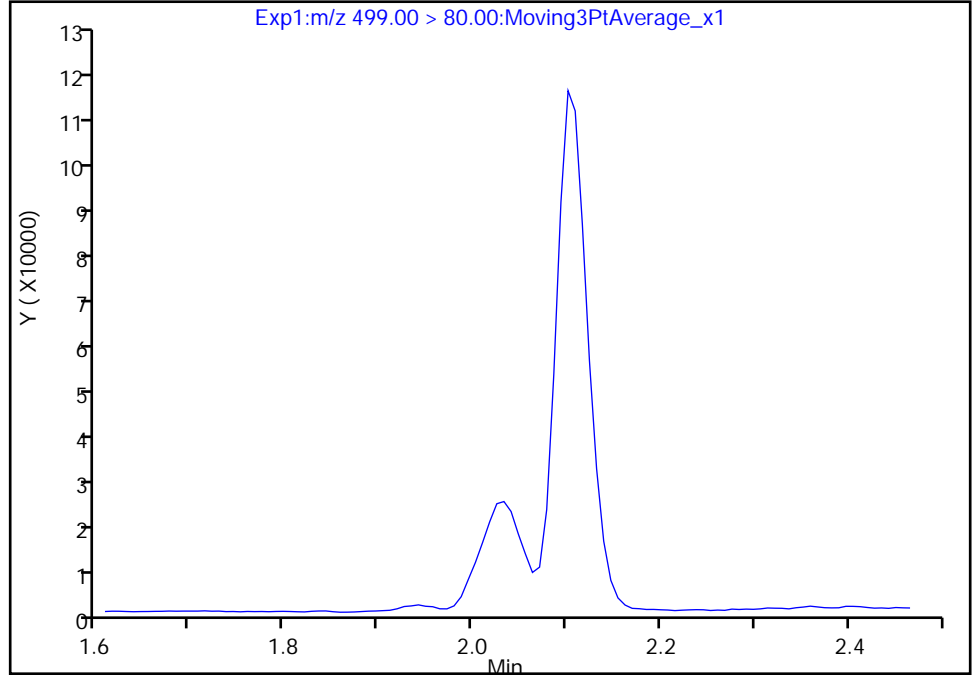
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_004.d
Injection Date: 11-Apr-2018 11:45:47 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

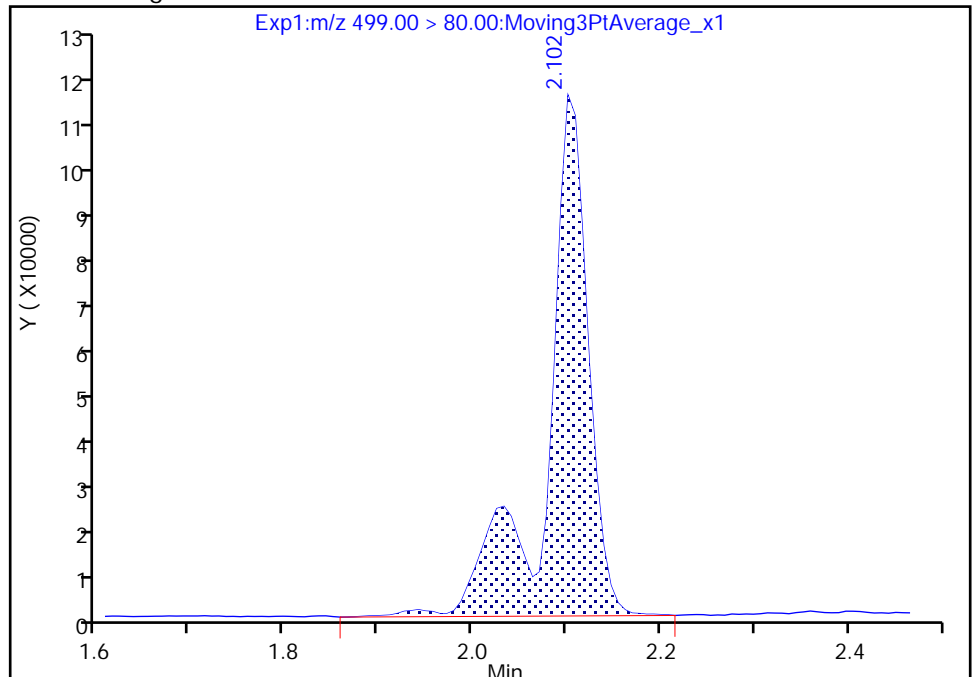
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.10
Area: 349354
Amount: 3.868513
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_005.d
 Lims ID: IC L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 11-Apr-2018 11:50:27 ALS Bottle#: 2 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L2_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 11-Apr-2018 12:35:28 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK015

First Level Reviewer: westendorfc Date: 11-Apr-2018 12:31:37

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.382 | -0.001 | 1.000 | 1696932 | 20.8 | | 1370 | |
| 298.90 > 99.00 | 1.381 | 1.382 | -0.001 | 1.000 | 1238814 | | 1.37(0.00-0.00) | 1448 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.510 | 1.515 | -0.005 | 1.000 | 970942 | 9.91 | | 9056 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.669 | 1.669 | 0.0 | 1.000 | 218860 | 2.21 | | 24.5 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.669 | 1.669 | 0.0 | 1.000 | 831963 | 6.54 | | 251 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.865 | 0.001 | | 921915 | 10.0 | | 5396 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.866 | 1.866 | 0.0 | 1.000 | 417632 | 4.26 | | 64.6 | |
| 413.00 > 169.00 | 1.866 | 1.866 | 0.0 | 1.000 | 226435 | | 1.84(0.00-0.00) | 235 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.102 | 2.094 | 0.008 | 1.000 | 715378 | 8.67 | | 193 | a |
| 499.00 > 99.00 | 2.102 | 2.094 | 0.008 | 1.000 | 153149 | | 4.67(0.00-0.00) | 389 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2220259 | 28.7 | | 1258 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.109 | 2.109 | 0.0 | 1.000 | 329904 | 4.25 | | 54.3 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.261 | 2.260 | 0.001 | 1.000 | 803402 | 10.2 | | 7224 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L2_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_005.d

Injection Date: 11-Apr-2018 11:50:27

Instrument ID: A8_N

Lims ID: IC L2

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

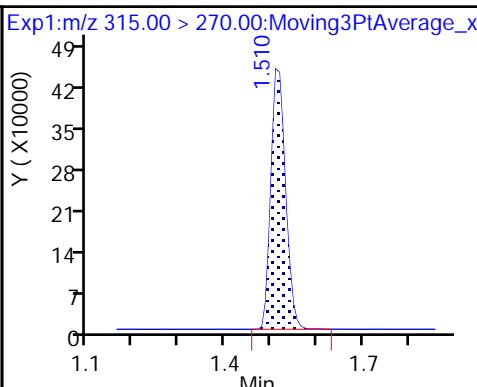
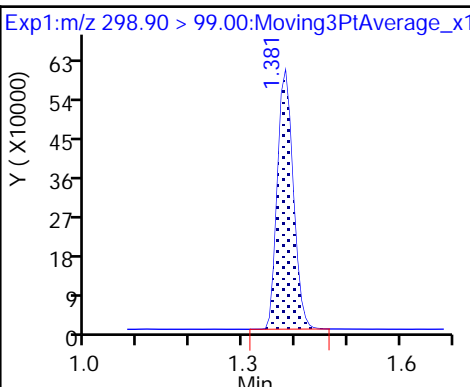
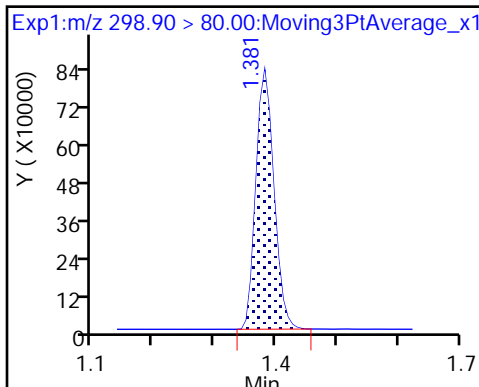
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

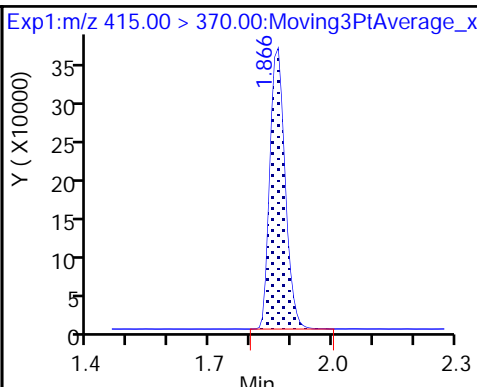
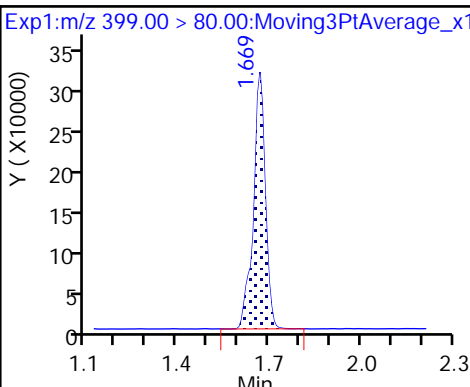
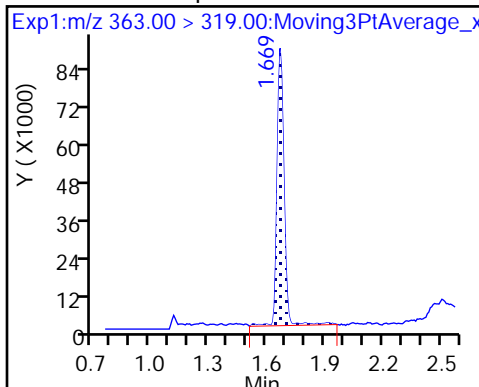
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

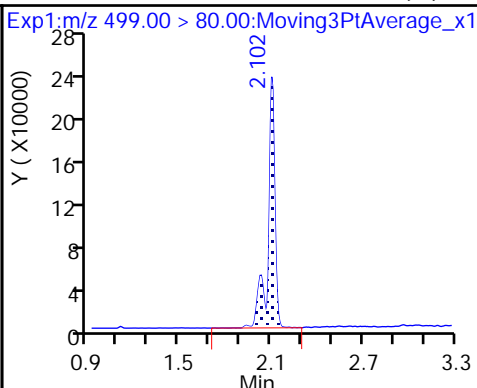
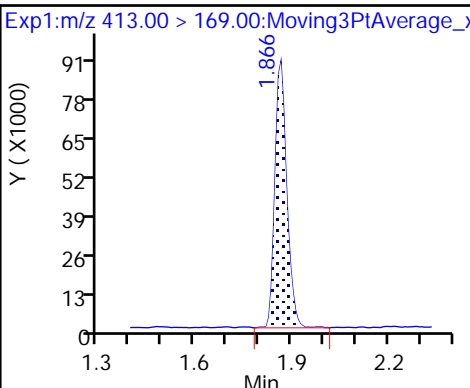
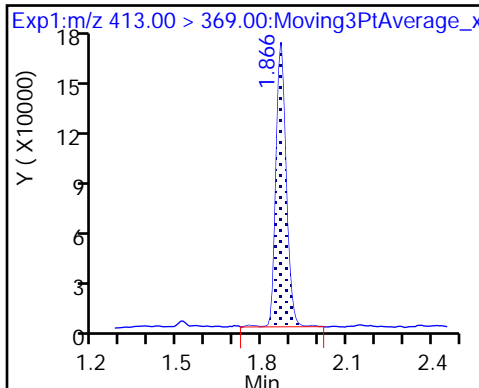
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

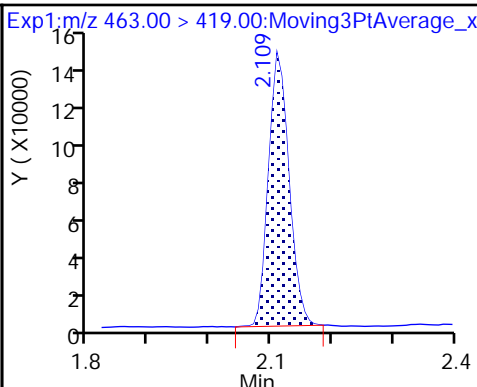
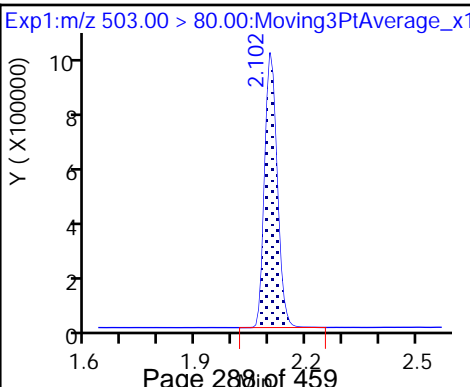
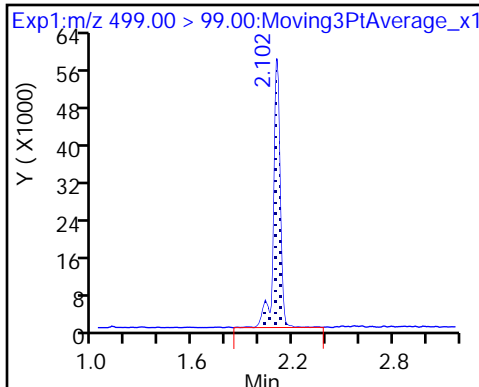
8 Perfluorooctane sulfonic acid (M)



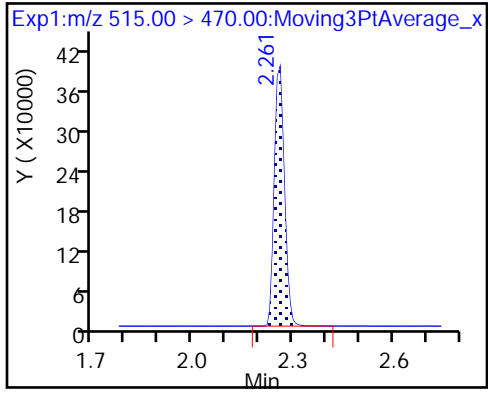
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

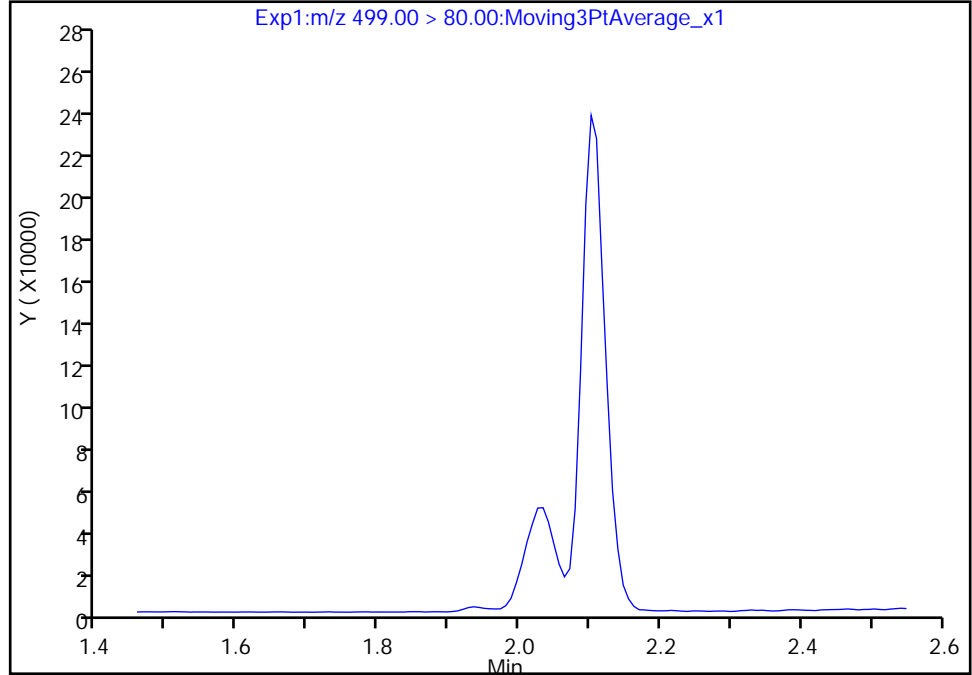
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_005.d
Injection Date: 11-Apr-2018 11:50:27 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

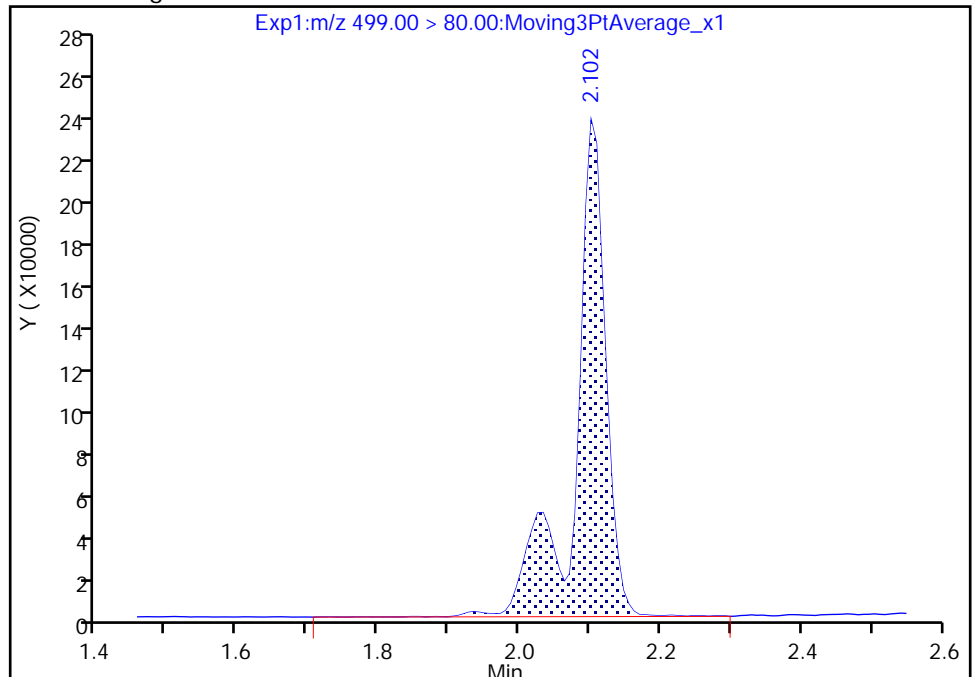
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 715378
Amount: 8.668106
Amount Units: ng/ml



Reviewer: westendorfc, 11-Apr-2018 12:31:35
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_006.d
 Lims ID: IC L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 11-Apr-2018 11:55:08 ALS Bottle#: 3 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L3_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 11-Apr-2018 12:35:29 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK015

First Level Reviewer: westendorfc Date: 11-Apr-2018 12:31:41

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.388 | 1.382 | 0.006 | 1.000 | 4015148 | 46.0 | | 3087 | |
| 298.90 > 99.00 | 1.388 | 1.382 | 0.006 | 1.000 | 3101910 | | 1.29(0.00-0.00) | 3481 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.515 | 0.002 | 1.000 | 1027706 | 10.2 | | 8913 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.677 | 1.669 | 0.008 | 1.000 | 2012030 | 14.8 | | 618 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.669 | 0.008 | 1.000 | 489075 | 4.82 | | 58.8 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.865 | 0.001 | | 945031 | 10.0 | | 5639 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.874 | 1.866 | 0.008 | 1.000 | 1001316 | 9.97 | | 149 | |
| 413.00 > 169.00 | 1.866 | 1.866 | 0.0 | 0.996 | 522184 | | 1.92(0.00-0.00) | 570 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.109 | 2.094 | 0.015 | 1.000 | 1693810 | 19.1 | | 469 | a |
| 499.00 > 99.00 | 2.109 | 2.094 | 0.015 | 1.000 | 359496 | | 4.71(0.00-0.00) | 862 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.109 | 2.102 | 0.007 | | 2380125 | 28.7 | | 1348 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.117 | 2.109 | 0.008 | 1.000 | 794076 | 9.97 | | 123 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.261 | 2.260 | 0.001 | 1.000 | 806360 | 10.0 | | 7204 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L3_00025

Amount Added: 1.00

Units: mL

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_006.d

Injection Date: 11-Apr-2018 11:55:08

Instrument ID: A8_N

Lims ID: IC L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

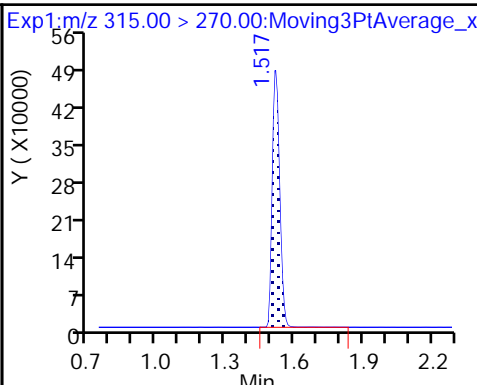
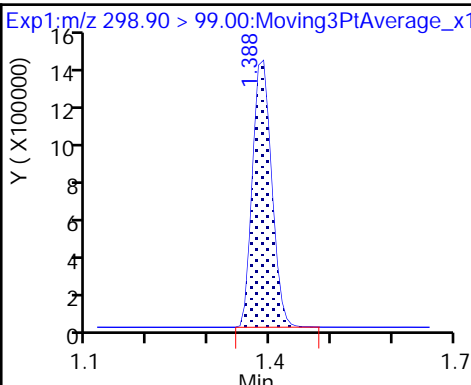
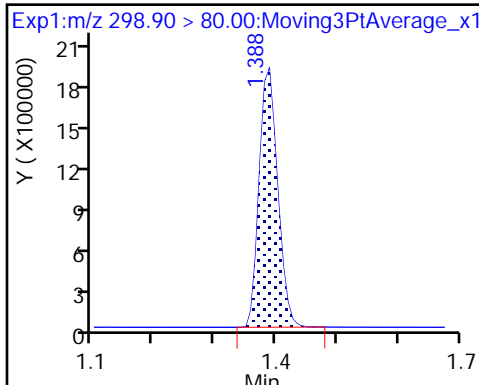
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

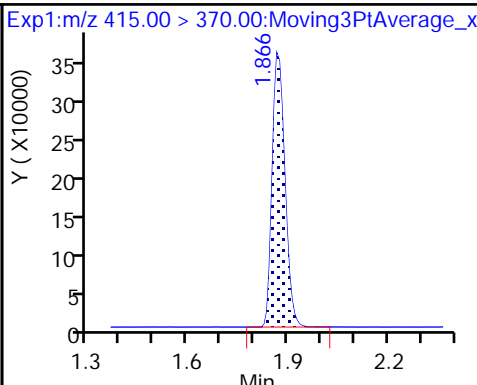
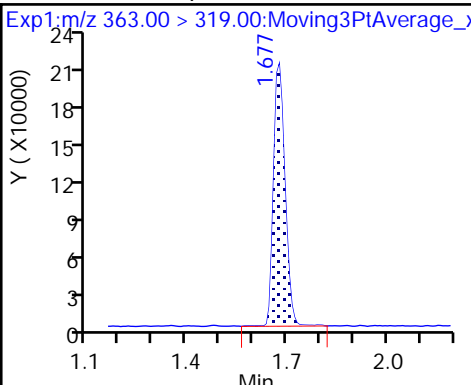
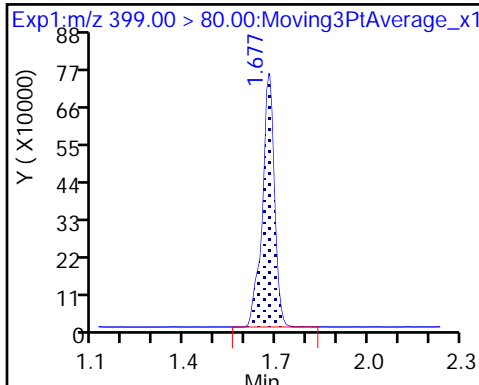
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

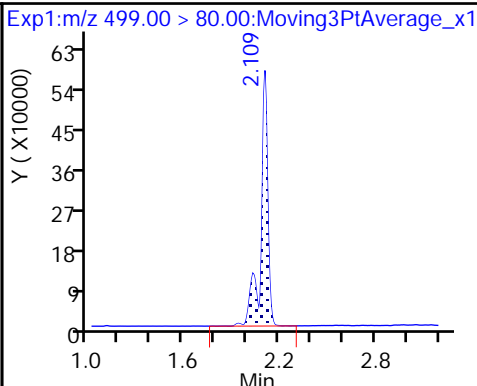
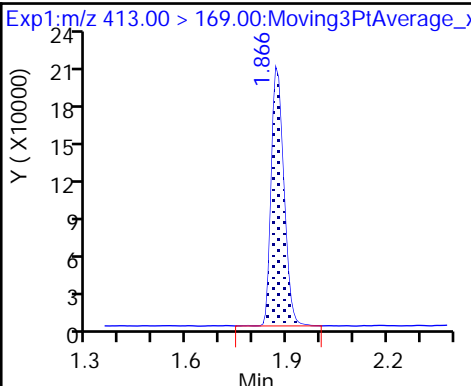
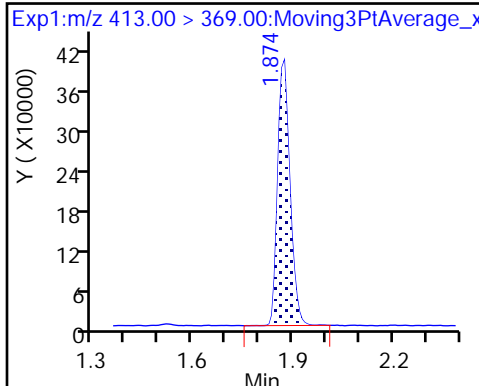
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

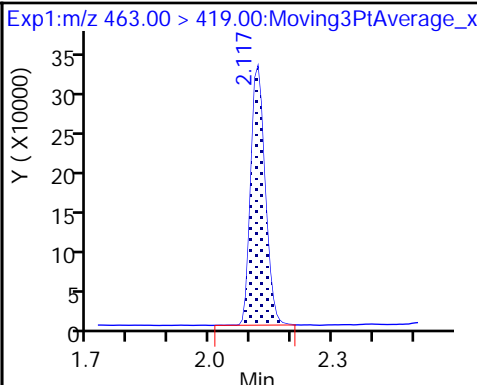
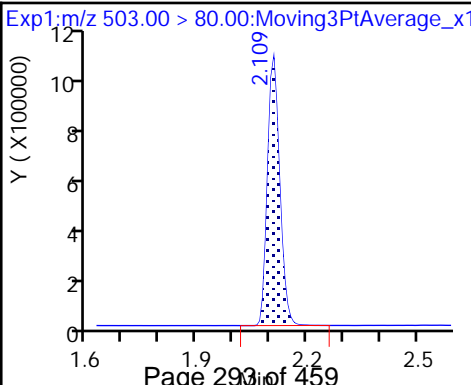
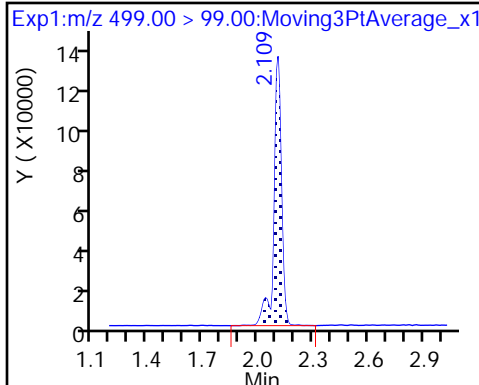
8 Perfluorooctane sulfonic acid (M)



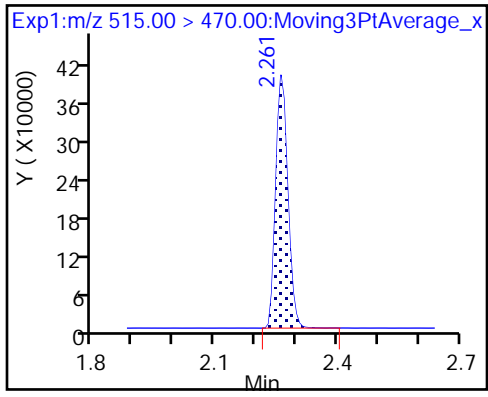
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

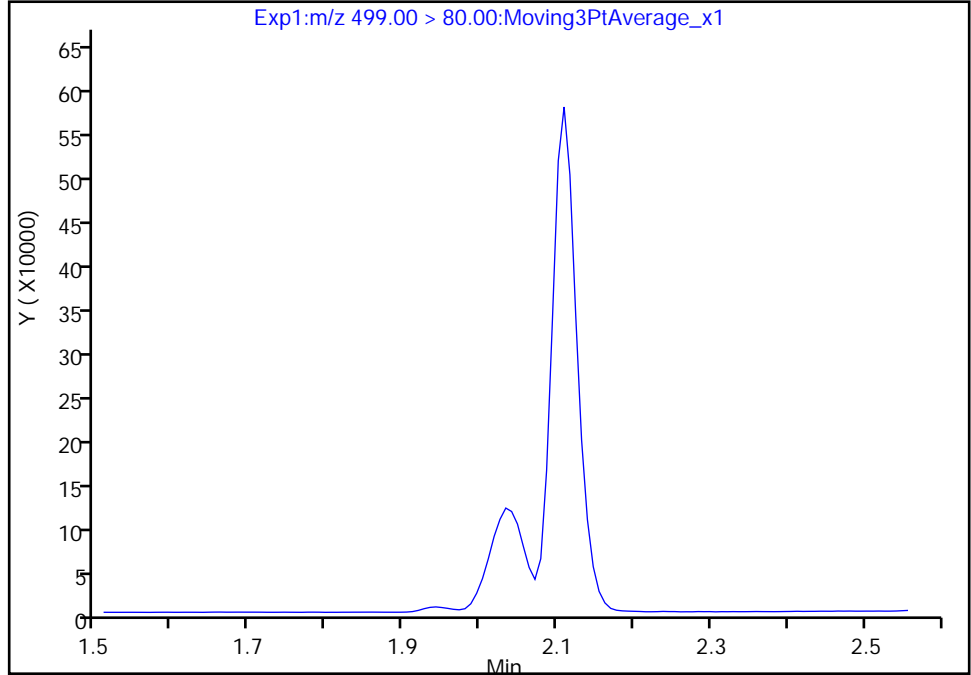
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_006.d
Injection Date: 11-Apr-2018 11:55:08 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

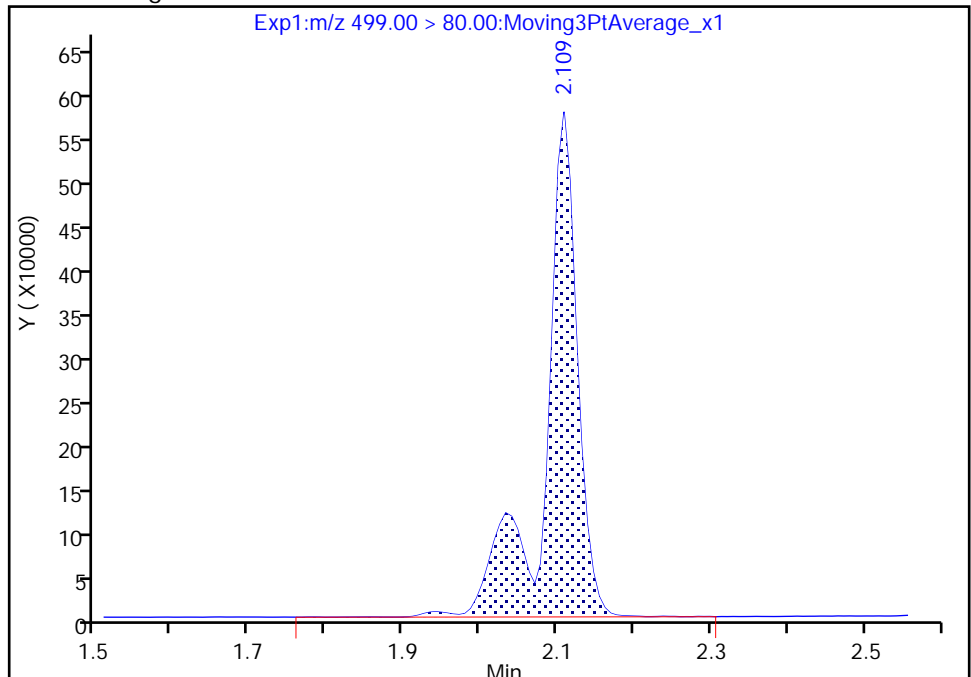
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.11
Area: 1693810
Amount: 19.145080
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 11-Apr-2018 12:31:39
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_007.d
 Lims ID: IC L4
 Client ID:
 Sample Type: ICISAV Calib Level: 4
 Inject. Date: 11-Apr-2018 11:59:48 ALS Bottle#: 4 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L4_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 11-Apr-2018 12:35:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK015

First Level Reviewer: westendorfc Date: 11-Apr-2018 12:31:47

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.382 | -0.001 | 1.000 | 8010147 | 89.5 | | 5376 | |
| 298.90 > 99.00 | 1.381 | 1.382 | -0.001 | 1.000 | 6369602 | | 1.26(0.00-0.00) | 6440 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.515 | 0.002 | 1.000 | 1065262 | 10.1 | | 8514 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.669 | 1.669 | 0.0 | 1.000 | 1044752 | 9.76 | | 122 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.669 | 1.669 | 0.0 | 1.000 | 4216387 | 30.2 | | 1268 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.865 | 0.001 | | 996809 | 10.0 | | 6544 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.866 | 1.866 | 0.0 | 1.000 | 2075568 | 19.6 | | 309 | |
| 413.00 > 169.00 | 1.866 | 1.866 | 0.0 | 1.000 | 1142250 | | 1.82(0.00-0.00) | 1229 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.102 | 2.094 | 0.008 | 1.000 | 3678059 | 40.6 | | 1000 | a |
| 499.00 > 99.00 | 2.102 | 2.094 | 0.008 | 1.000 | 748966 | | 4.91(0.00-0.00) | 1731 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2440107 | 28.7 | | 1331 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.109 | 2.109 | 0.0 | 1.000 | 1740422 | 20.7 | | 274 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.261 | 2.260 | 0.001 | 1.000 | 845990 | 9.98 | | 7531 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L4_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_007.d

Injection Date: 11-Apr-2018 11:59:48

Instrument ID: A8_N

Lims ID: IC L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 4

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

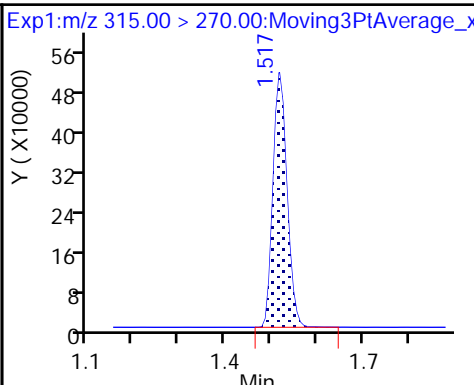
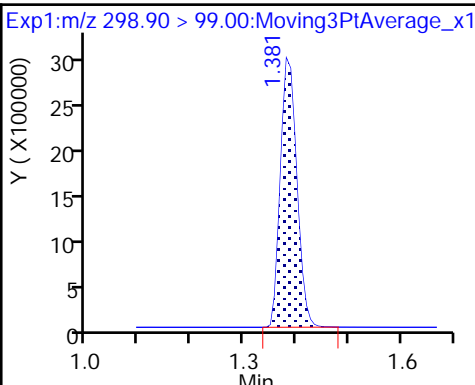
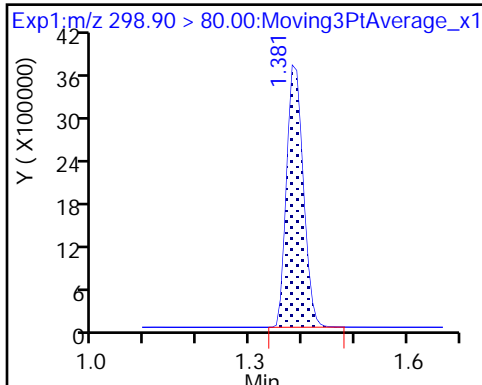
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

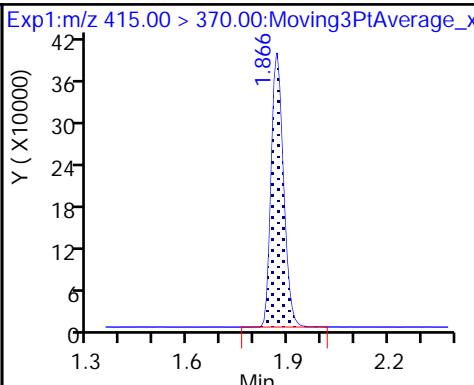
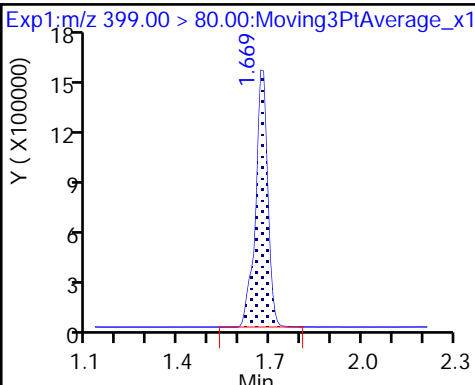
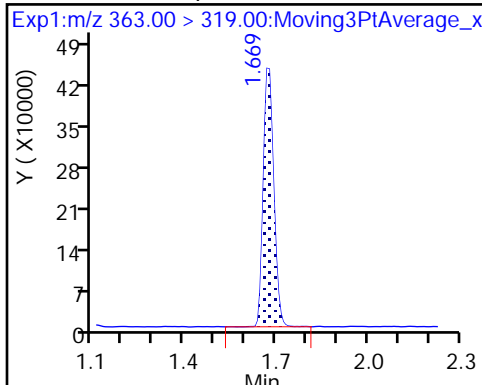
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

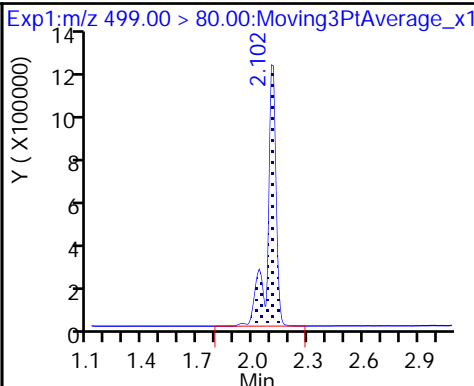
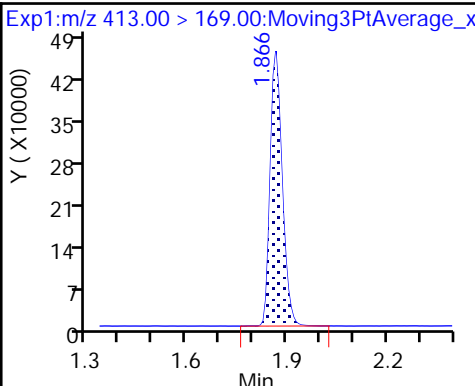
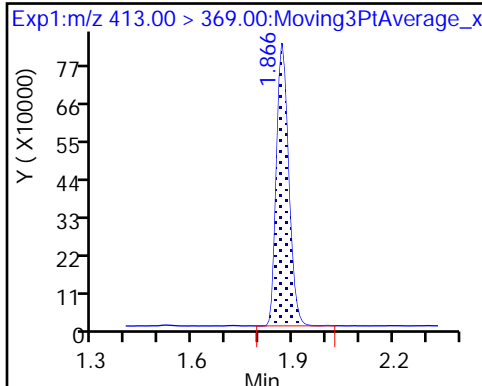
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

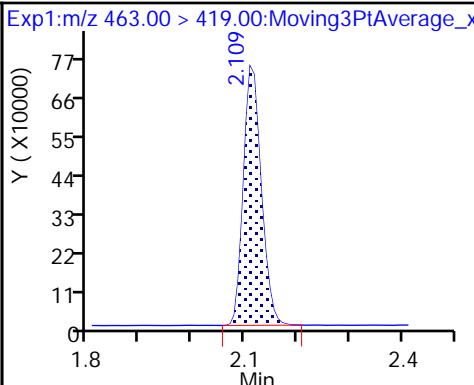
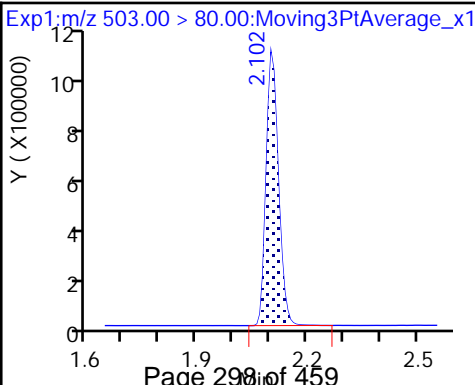
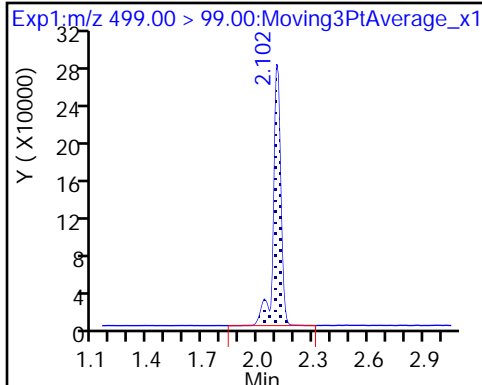
8 Perfluorooctane sulfonic acid (M)



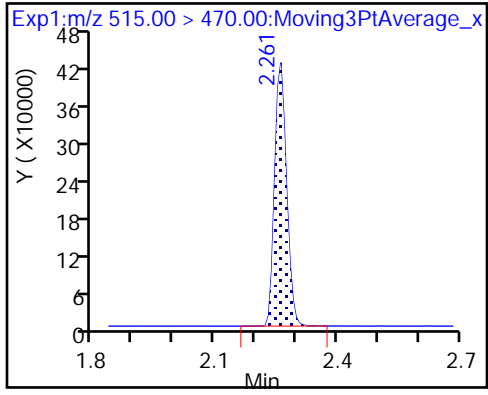
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

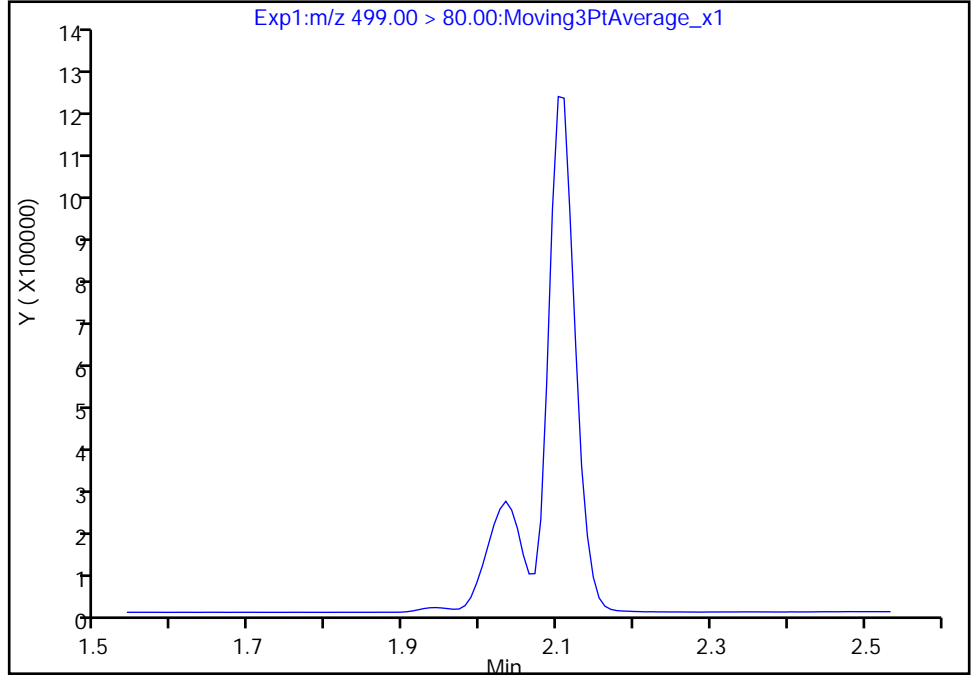
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_007.d
Injection Date: 11-Apr-2018 11:59:48 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

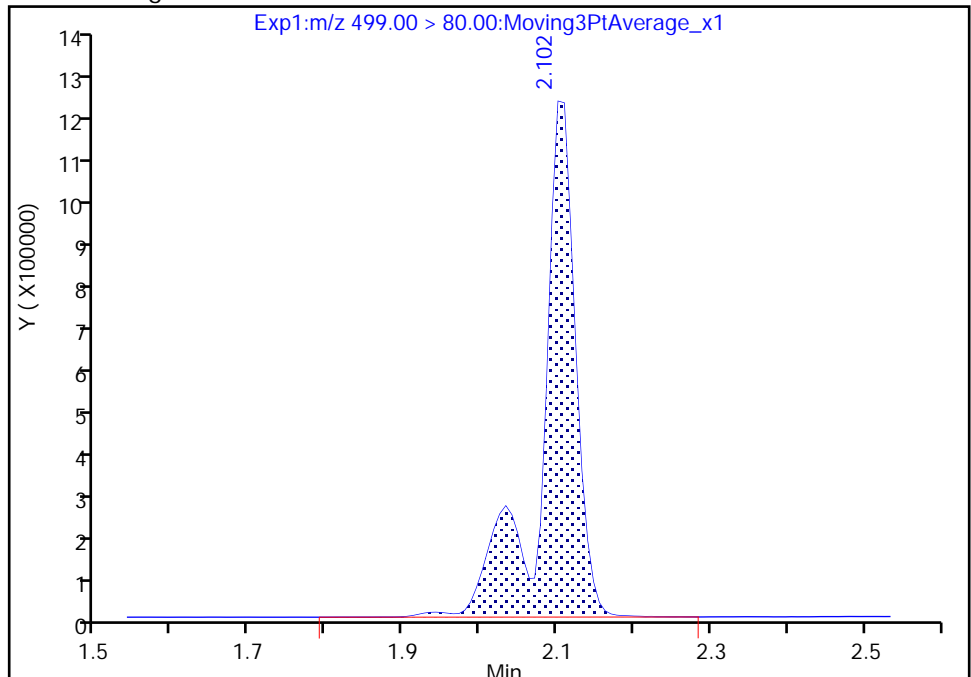
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.10
Area: 3678059
Amount: 40.551047
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 11-Apr-2018 12:31:45
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_008.d
 Lims ID: IC L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 11-Apr-2018 12:04:29 ALS Bottle#: 5 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L5_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 11-Apr-2018 12:35:32 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK015

First Level Reviewer: westendorfc Date: 11-Apr-2018 12:31:52

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.382 | -0.001 | 1.000 | 10764182 | 128.5 | | 6999 | |
| 298.90 > 99.00 | 1.381 | 1.382 | -0.001 | 1.000 | 8269613 | | 1.30(0.00-0.00) | 7836 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.515 | 0.002 | 1.000 | 985534 | 9.97 | | 7814 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.669 | 1.669 | 0.0 | 1.000 | 6082352 | 46.5 | | 1721 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.669 | 1.669 | 0.0 | 1.000 | 1450463 | 14.5 | | 171 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.865 | 0.001 | | 929546 | 10.0 | | 5174 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.866 | 1.866 | 0.0 | 1.000 | 3119787 | 31.6 | | 475 | |
| 413.00 > 169.00 | 1.866 | 1.866 | 0.0 | 1.000 | 1555272 | | 2.01(0.00-0.00) | 1662 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.102 | 2.094 | 0.008 | 1.000 | 5081660 | 59.9 | | 1317 | a |
| 499.00 > 99.00 | 2.102 | 2.094 | 0.008 | 1.000 | 1106855 | | 4.59(0.00-0.00) | 2490 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2283311 | 28.7 | | 1206 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.109 | 2.109 | 0.0 | 1.000 | 2341235 | 29.9 | | 363 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.261 | 2.260 | 0.001 | 1.000 | 791901 | 10.0 | | 6104 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00026

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_008.d

Injection Date: 11-Apr-2018 12:04:29

Instrument ID: A8_N

Lims ID: IC L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

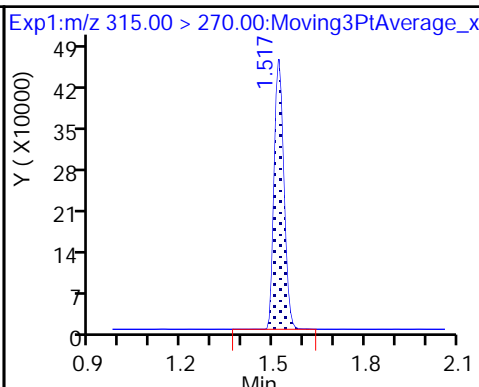
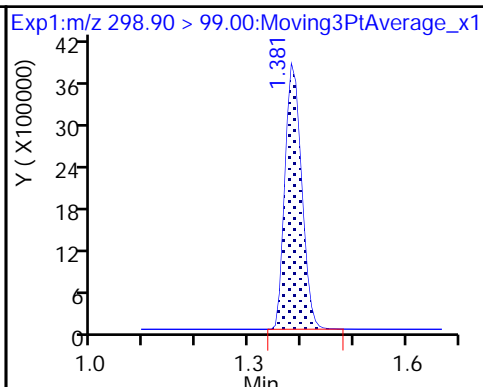
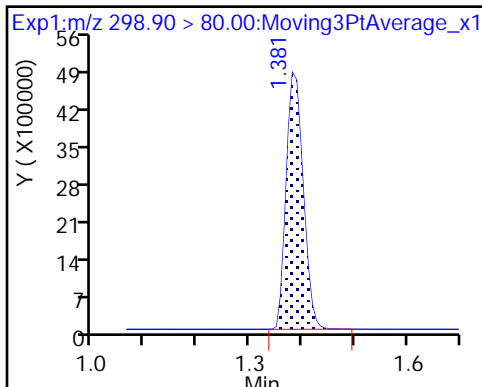
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

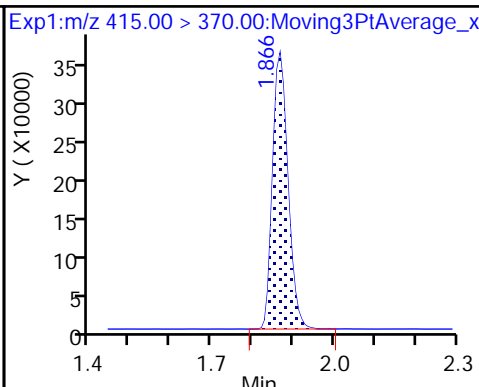
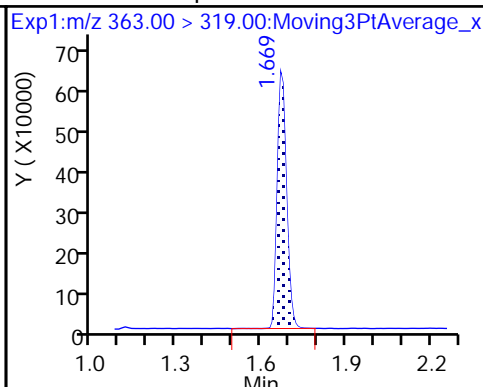
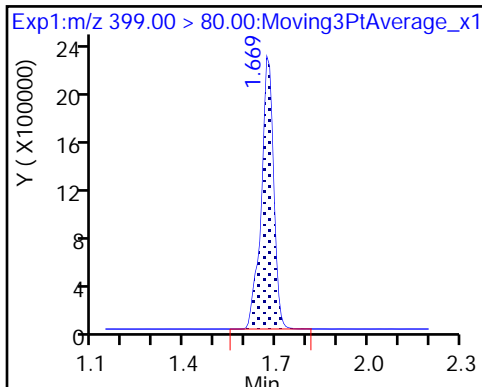
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

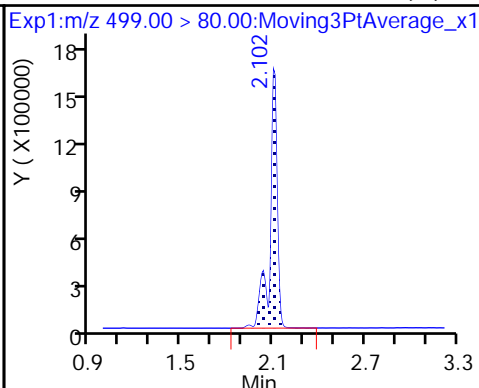
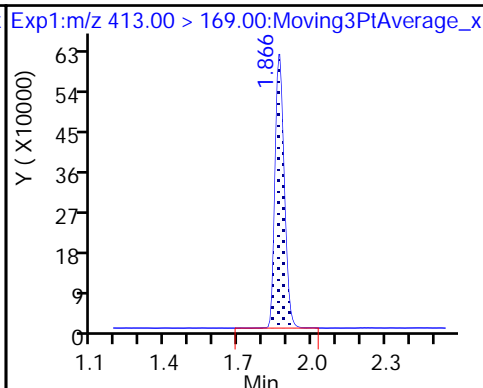
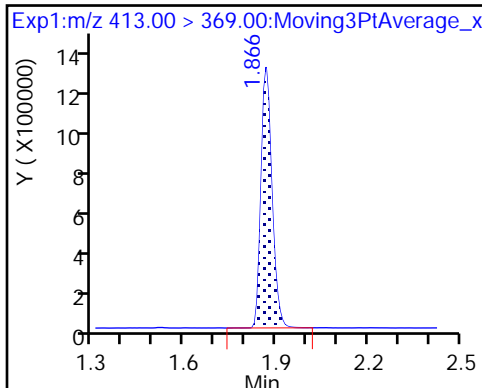
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

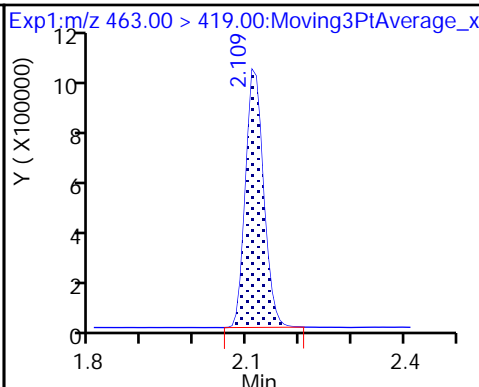
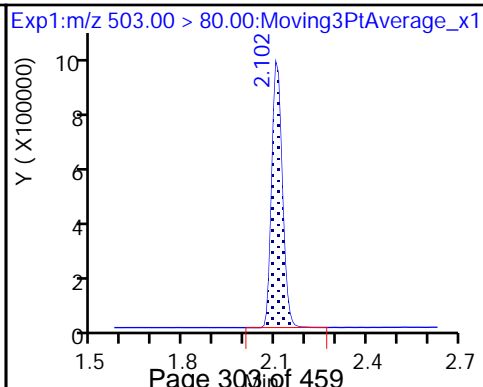
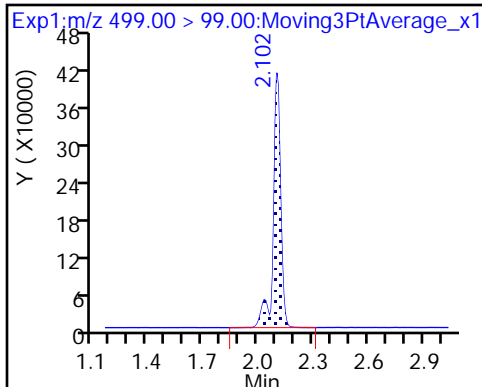
8 Perfluorooctane sulfonic acid (M)



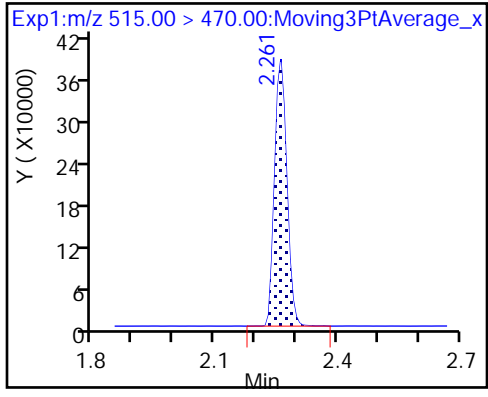
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

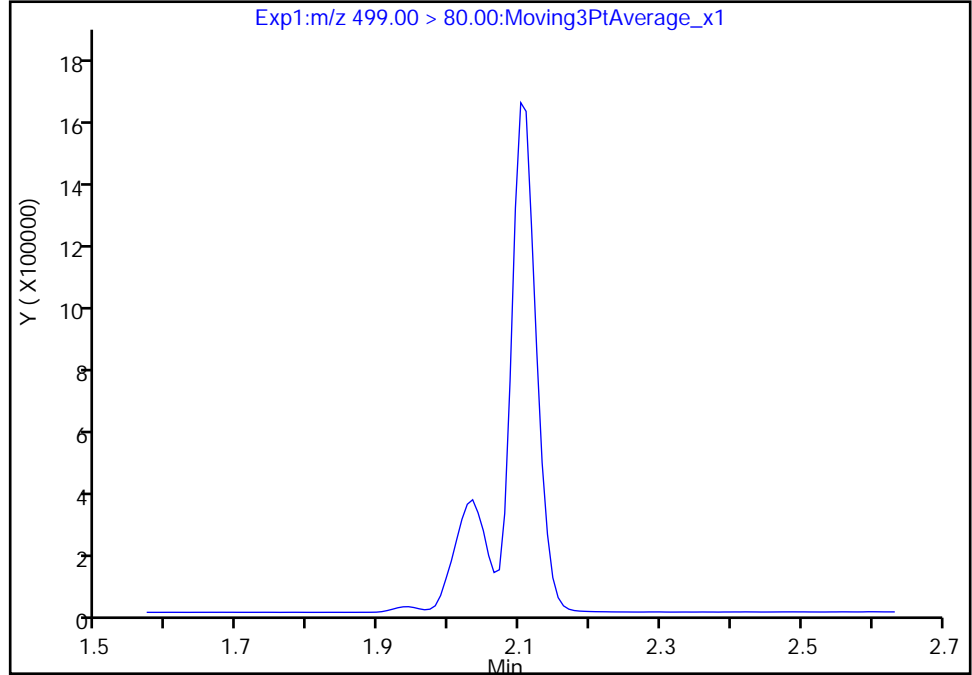
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_008.d
Injection Date: 11-Apr-2018 12:04:29 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

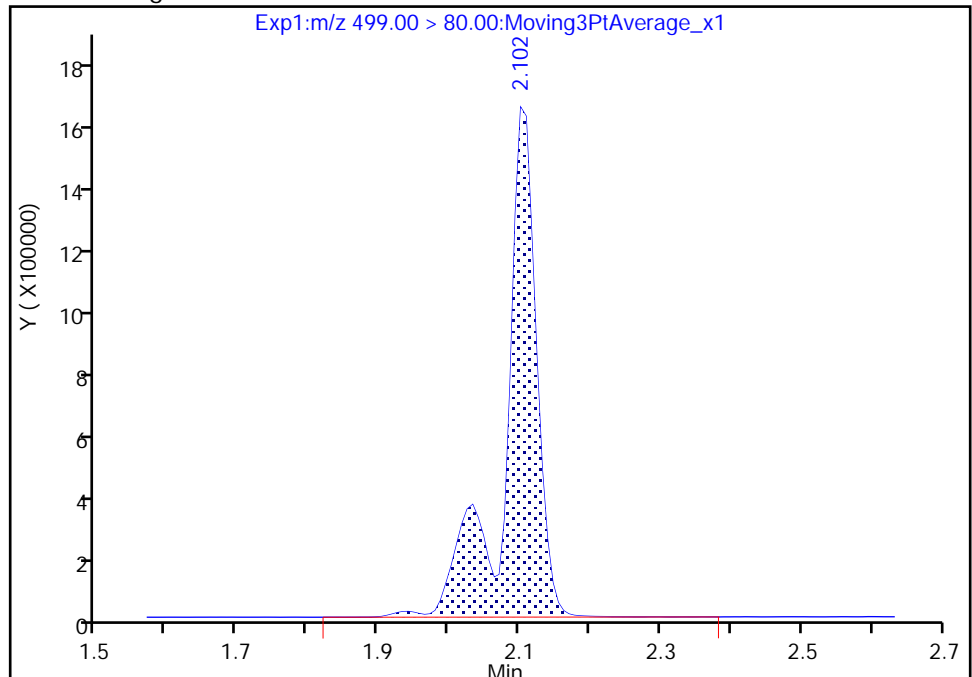
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 5081660
Amount: 59.873244
Amount Units: ng/ml



Reviewer: westendorfc, 11-Apr-2018 12:31:49
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Lims ID: IC L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 11-Apr-2018 12:09:09 ALS Bottle#: 6 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L6_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 11-Apr-2018 12:35:33 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK015

First Level Reviewer: westendorfc Date: 11-Apr-2018 12:31:59

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.382 | -0.001 | 1.000 | 13871852 | 163.3 | | 8258 | |
| 298.90 > 99.00 | 1.381 | 1.382 | -0.001 | 1.000 | 10985181 | | 1.26(0.00-0.00) | 9440 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.510 | 1.515 | -0.005 | 1.000 | 1046576 | 10.0 | | 9565 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.662 | 1.669 | -0.007 | 1.000 | 1996261 | 18.9 | | 234 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.662 | 1.669 | -0.007 | 1.000 | 8226588 | 62.0 | | 2319 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.859 | 1.865 | -0.006 | | 982926 | 10.0 | | 5616 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.859 | 1.866 | -0.007 | 1.000 | 4019004 | 38.5 | | 570 | |
| 413.00 > 169.00 | 1.859 | 1.866 | -0.007 | 1.000 | 2217251 | | 1.81(0.00-0.00) | 2465 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.094 | 2.094 | 0.0 | 1.000 | 7016962 | 81.5 | | 1855 | a |
| 499.00 > 99.00 | 2.094 | 2.094 | 0.0 | 1.000 | 1468337 | | 4.78(0.00-0.00) | 3642 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.094 | 2.102 | -0.008 | | 2316327 | 28.7 | | 1268 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.102 | 2.109 | -0.007 | 1.000 | 3255374 | 39.3 | | 485 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.253 | 2.260 | -0.007 | 1.000 | 812112 | 9.71 | | 7134 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L6_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Injection Date: 11-Apr-2018 12:09:09

Instrument ID: A8_N

Lims ID: IC L6

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 6

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

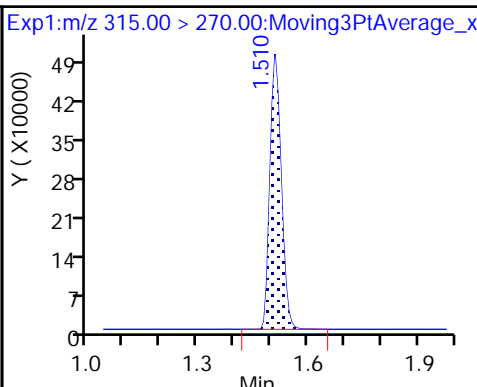
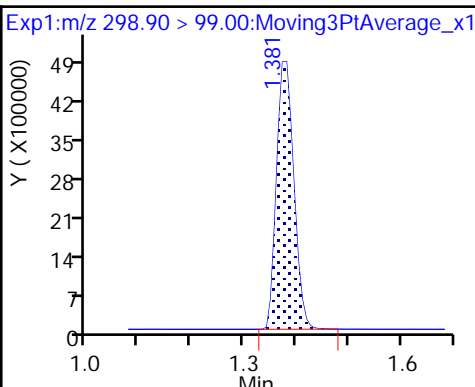
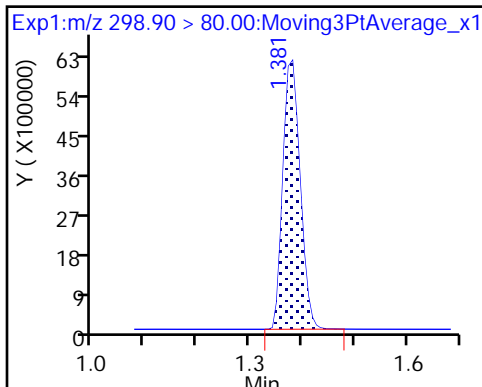
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

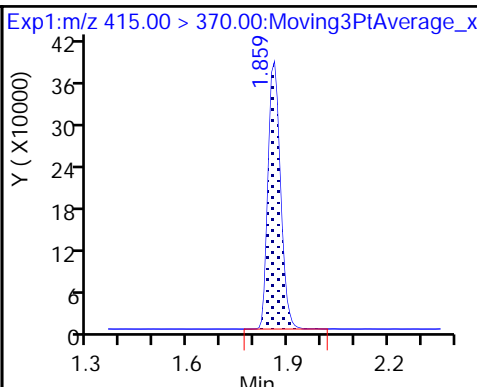
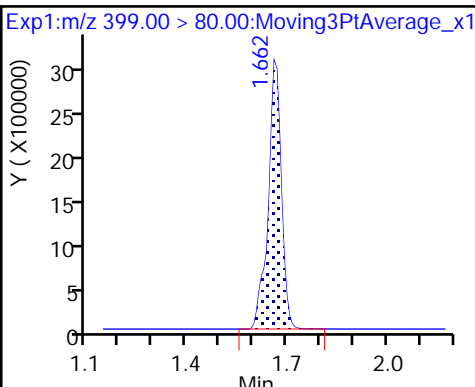
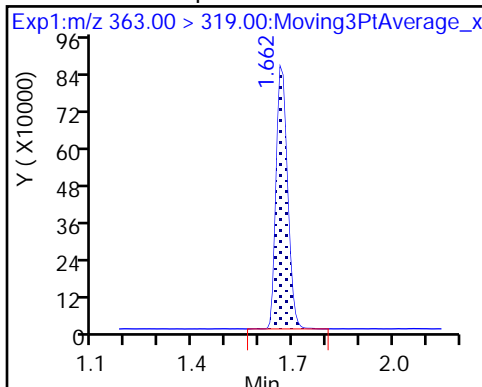
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

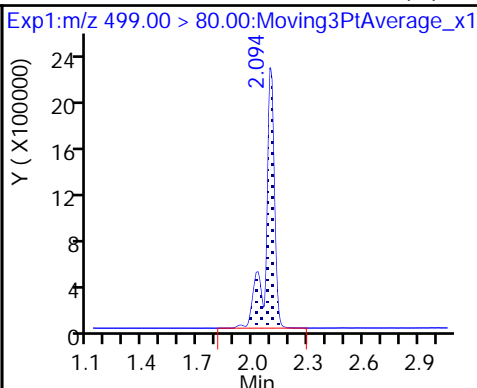
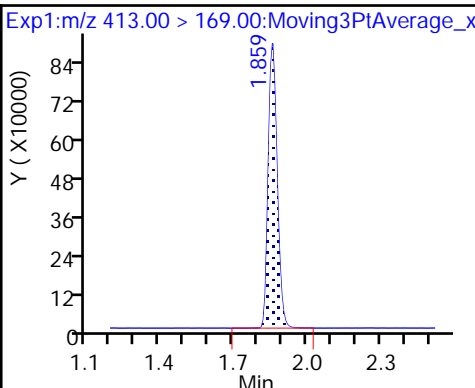
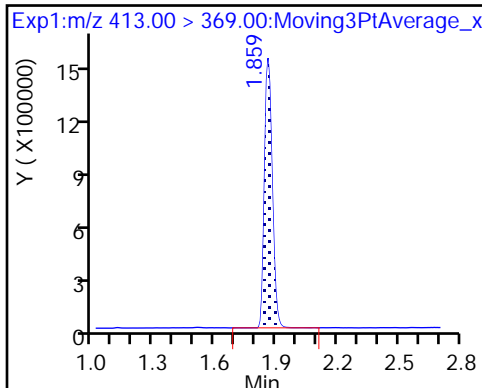
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

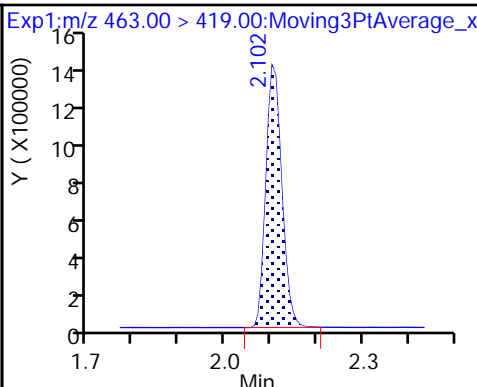
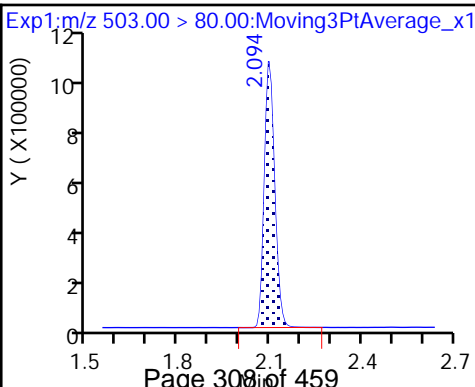
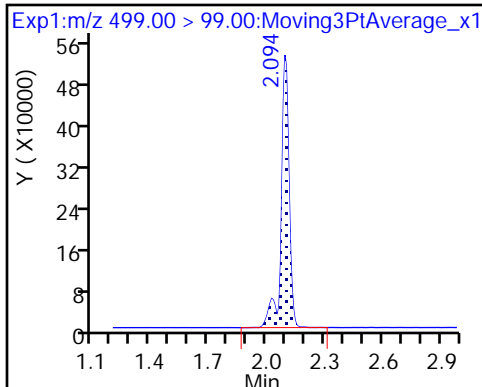
8 Perfluorooctane sulfonic acid (M)



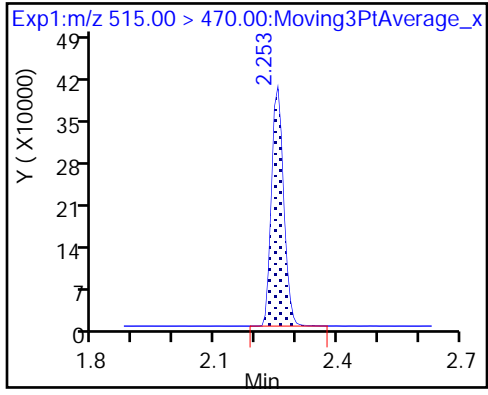
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

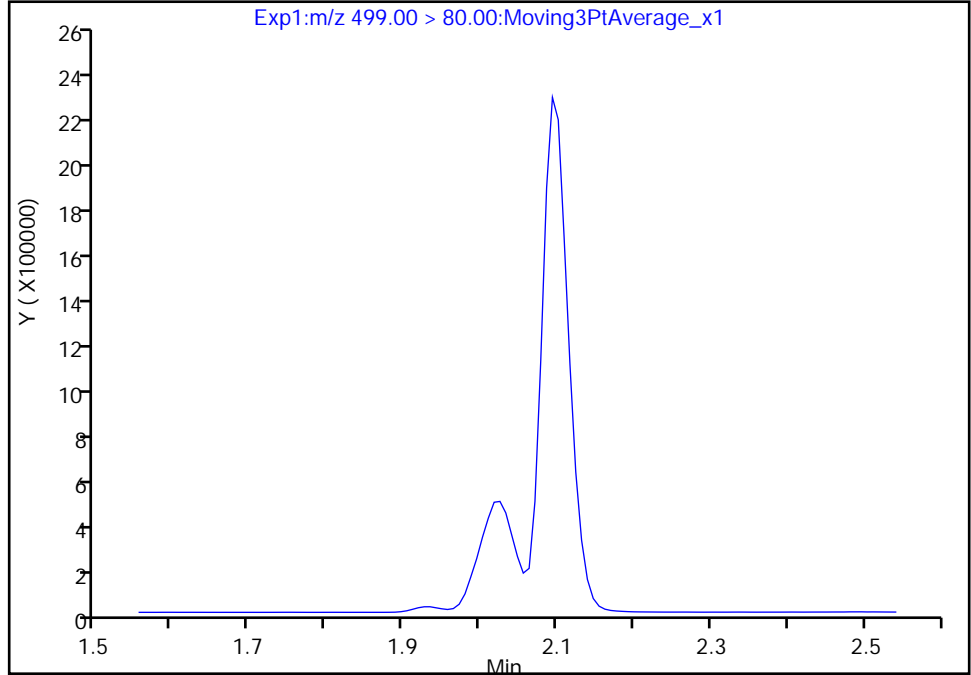
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
Injection Date: 11-Apr-2018 12:09:09 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

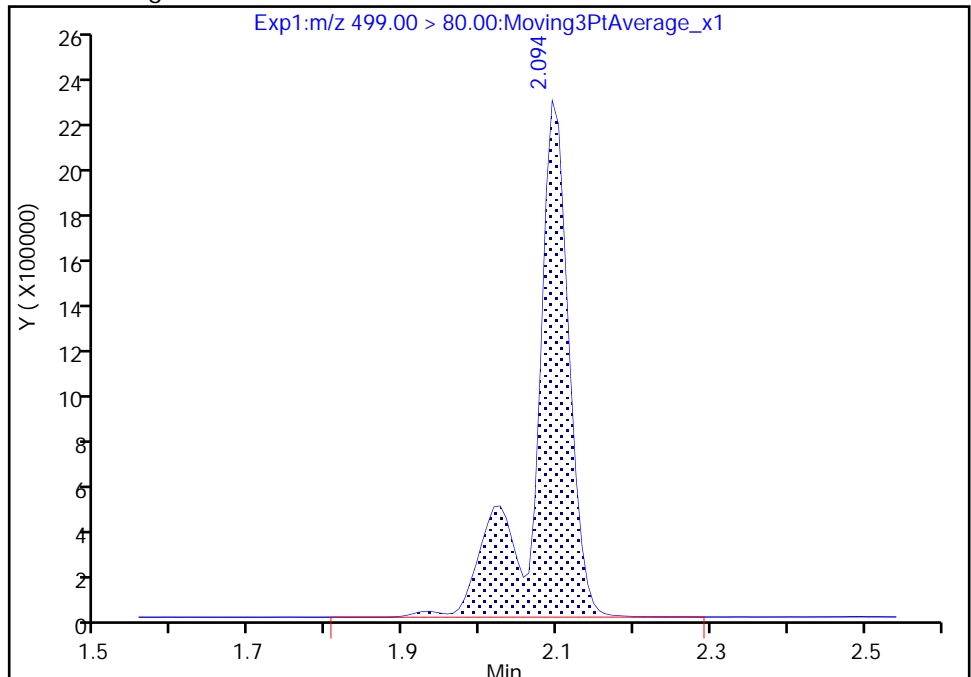
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 7016962
Amount: 81.496978
Amount Units: ng/ml



Reviewer: westendorfc, 11-Apr-2018 12:31:55
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

Calibration

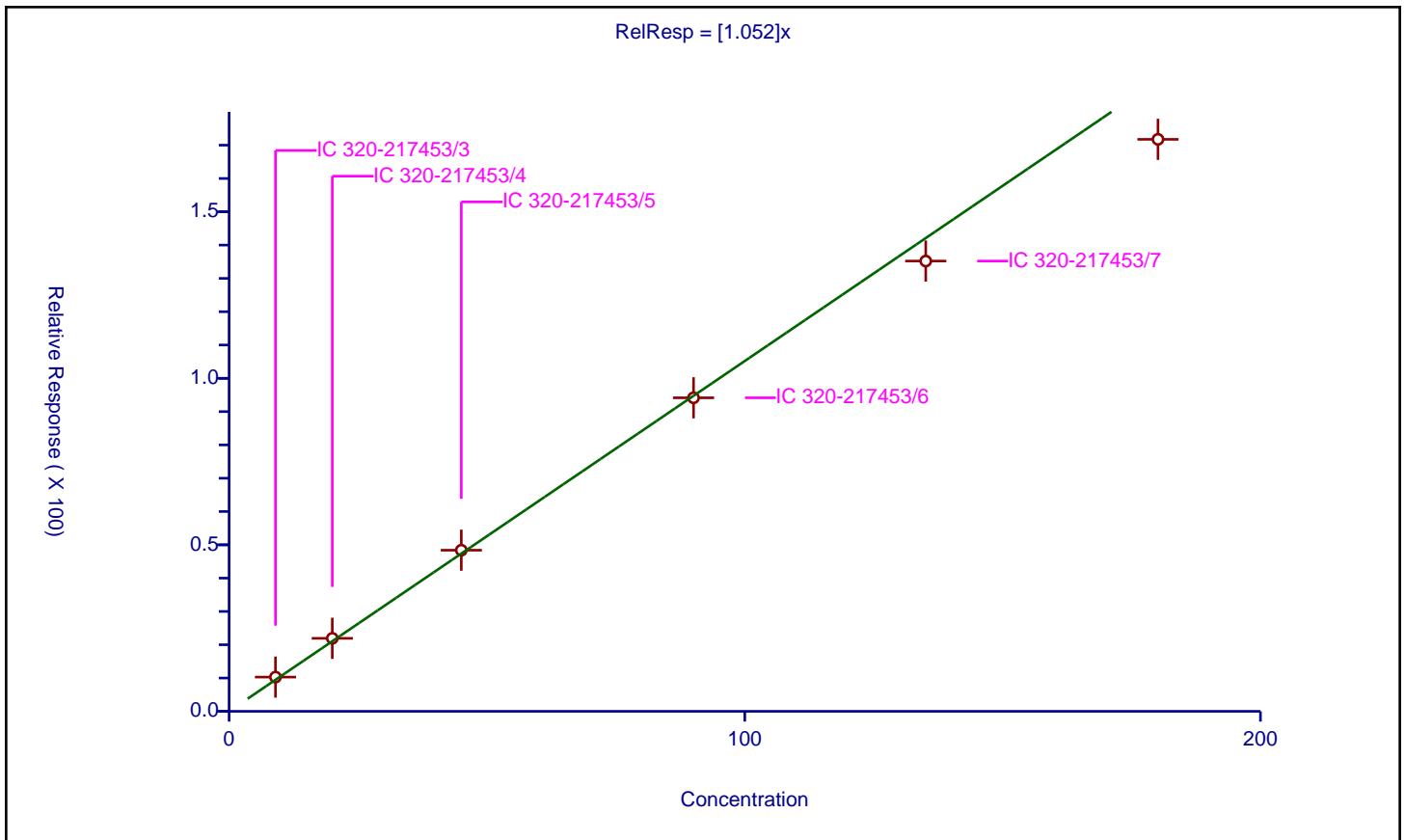
/ Perfluorobutanesulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base:
 RF Rounding: 0

| Curve Coefficients | |
|--------------------|-------|
| Intercept: | 0 |
| Slope: | 1.052 |

| Error Coefficients | |
|--|---------|
| Standard Error: | 8860000 |
| Relative Standard Error: | 6.4 |
| Correlation Coefficient: | 0.995 |
| Coefficient of Determination (Adjusted): | 0.993 |

| ID | Level | Concentration | Rel. Resp. | IS Amount | IS Response | RRF | Used |
|----|-----------------|---------------|------------|-----------|-------------|----------|------|
| 1 | IC 320-217453/3 | 8.99912 | 10.27855 | 28.68 | 2429483.0 | 1.142173 | Y |
| 2 | IC 320-217453/4 | 20.01376 | 21.91997 | 28.68 | 2220259.0 | 1.095245 | Y |
| 3 | IC 320-217453/5 | 45.03096 | 48.381679 | 28.68 | 2380125.0 | 1.074409 | Y |
| 4 | IC 320-217453/6 | 90.06192 | 94.147927 | 28.68 | 2440107.0 | 1.045369 | Y |
| 5 | IC 320-217453/7 | 135.09288 | 135.205734 | 28.68 | 2283311.0 | 1.000835 | Y |
| 6 | IC 320-217453/8 | 180.12384 | 171.756715 | 28.68 | 2316327.0 | 0.953548 | Y |



Calibration

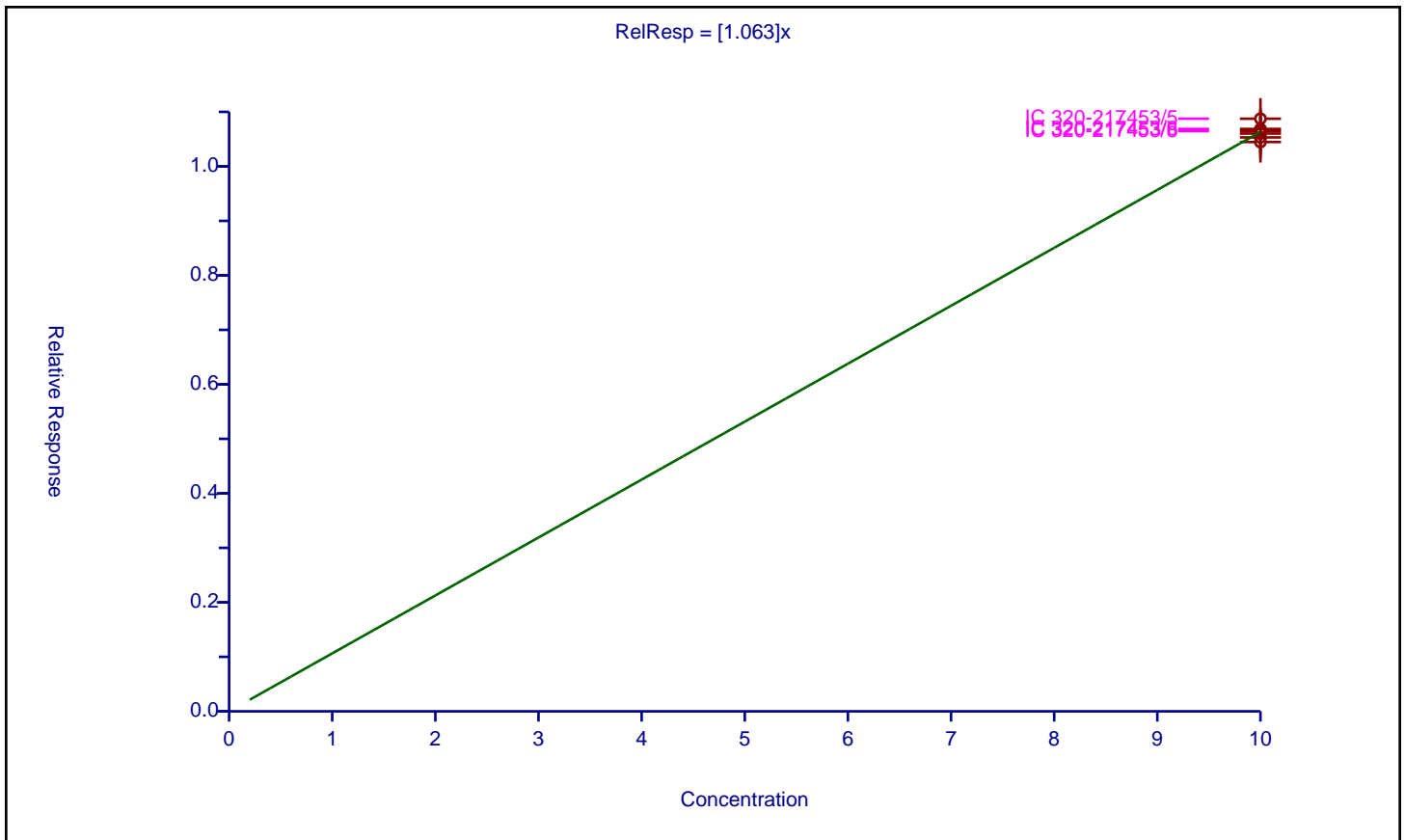
/ 13C2 PFHxA

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base:
 RF Rounding: 0

| Curve Coefficients | |
|--------------------|-------|
| Intercept: | 0 |
| Slope: | 1.063 |

| Error Coefficients | |
|--|---------|
| Standard Error: | 1130000 |
| Relative Standard Error: | 1.4 |
| Correlation Coefficient: | NA |
| Coefficient of Determination (Adjusted): | 0 |

| ID | Level | Concentration | Rel. Resp. | IS Amount | IS Response | RRF | Used |
|----|-----------------|---------------|------------|-----------|-------------|----------|------|
| 1 | IC 320-217453/3 | 10.0 | 10.447022 | 10.0 | 1044020.0 | 1.044702 | Y |
| 2 | IC 320-217453/4 | 10.0 | 10.531795 | 10.0 | 921915.0 | 1.05318 | Y |
| 3 | IC 320-217453/5 | 10.0 | 10.874839 | 10.0 | 945031.0 | 1.087484 | Y |
| 4 | IC 320-217453/6 | 10.0 | 10.686721 | 10.0 | 996809.0 | 1.068672 | Y |
| 5 | IC 320-217453/7 | 10.0 | 10.602316 | 10.0 | 929546.0 | 1.060232 | Y |
| 6 | IC 320-217453/8 | 10.0 | 10.647556 | 10.0 | 982926.0 | 1.064756 | Y |



Calibration

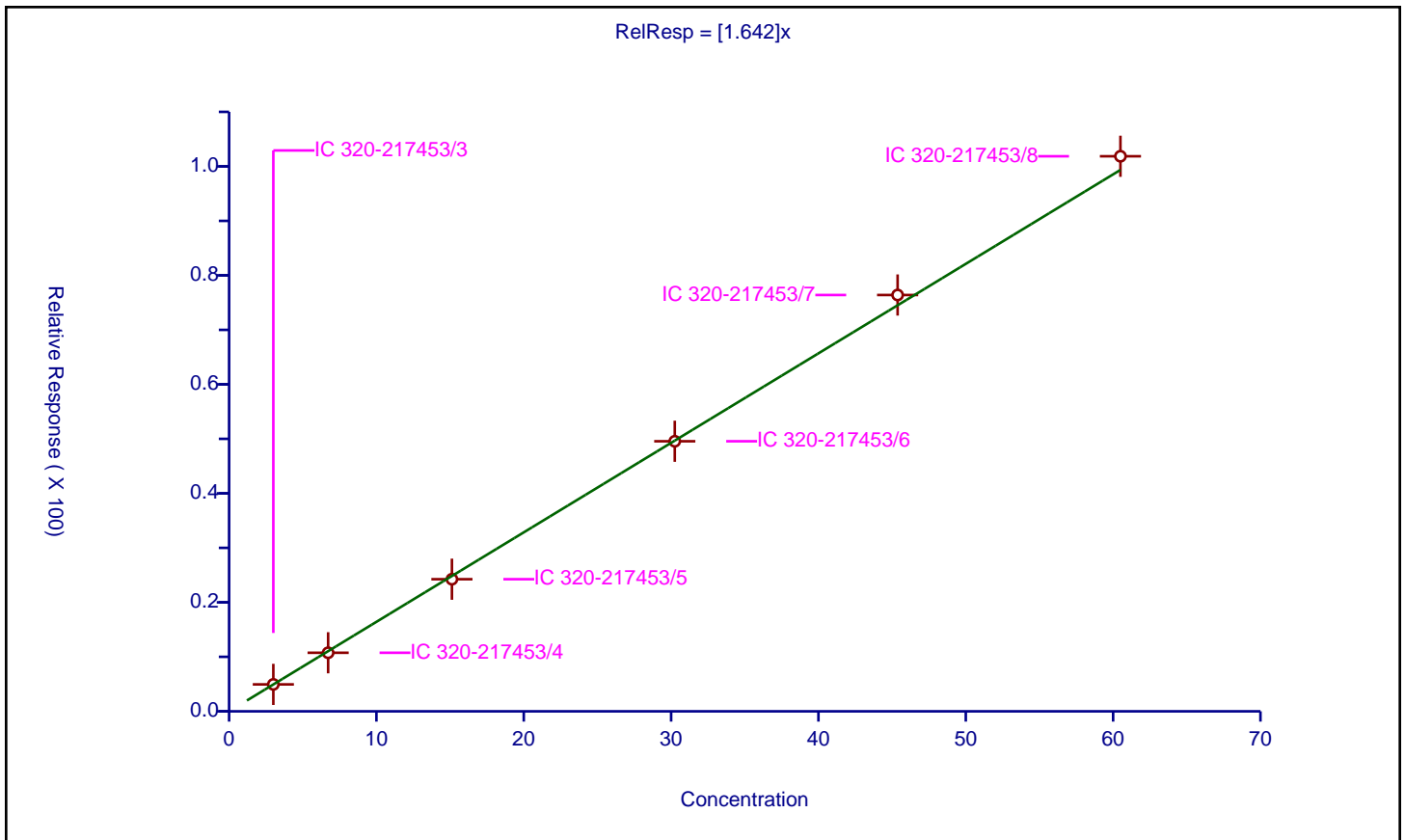
/ Perfluorohexanesulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base:
 RF Rounding: 0

| Curve Coefficients | |
|--------------------|-------|
| Intercept: | 0 |
| Slope: | 1.642 |

| Error Coefficients | |
|--|---------|
| Standard Error: | 5050000 |
| Relative Standard Error: | 2.3 |
| Correlation Coefficient: | 0.999 |
| Coefficient of Determination (Adjusted): | 0.999 |

| ID | Level | Concentration | Rel. Resp. | IS Amount | IS Response | RRF | Used |
|----|-----------------|---------------|------------|-----------|-------------|----------|------|
| 1 | IC 320-217453/3 | 3.003 | 4.942037 | 28.68 | 2429483.0 | 1.6457 | Y |
| 2 | IC 320-217453/4 | 6.721867 | 10.746809 | 28.68 | 2220259.0 | 1.598783 | Y |
| 3 | IC 320-217453/5 | 15.1242 | 24.244534 | 28.68 | 2380125.0 | 1.603029 | Y |
| 4 | IC 320-217453/6 | 30.2484 | 49.557654 | 28.68 | 2440107.0 | 1.638356 | Y |
| 5 | IC 320-217453/7 | 45.3726 | 76.39864 | 28.68 | 2283311.0 | 1.683806 | Y |
| 6 | IC 320-217453/8 | 60.4968 | 101.85891 | 28.68 | 2316327.0 | 1.683707 | Y |



Calibration

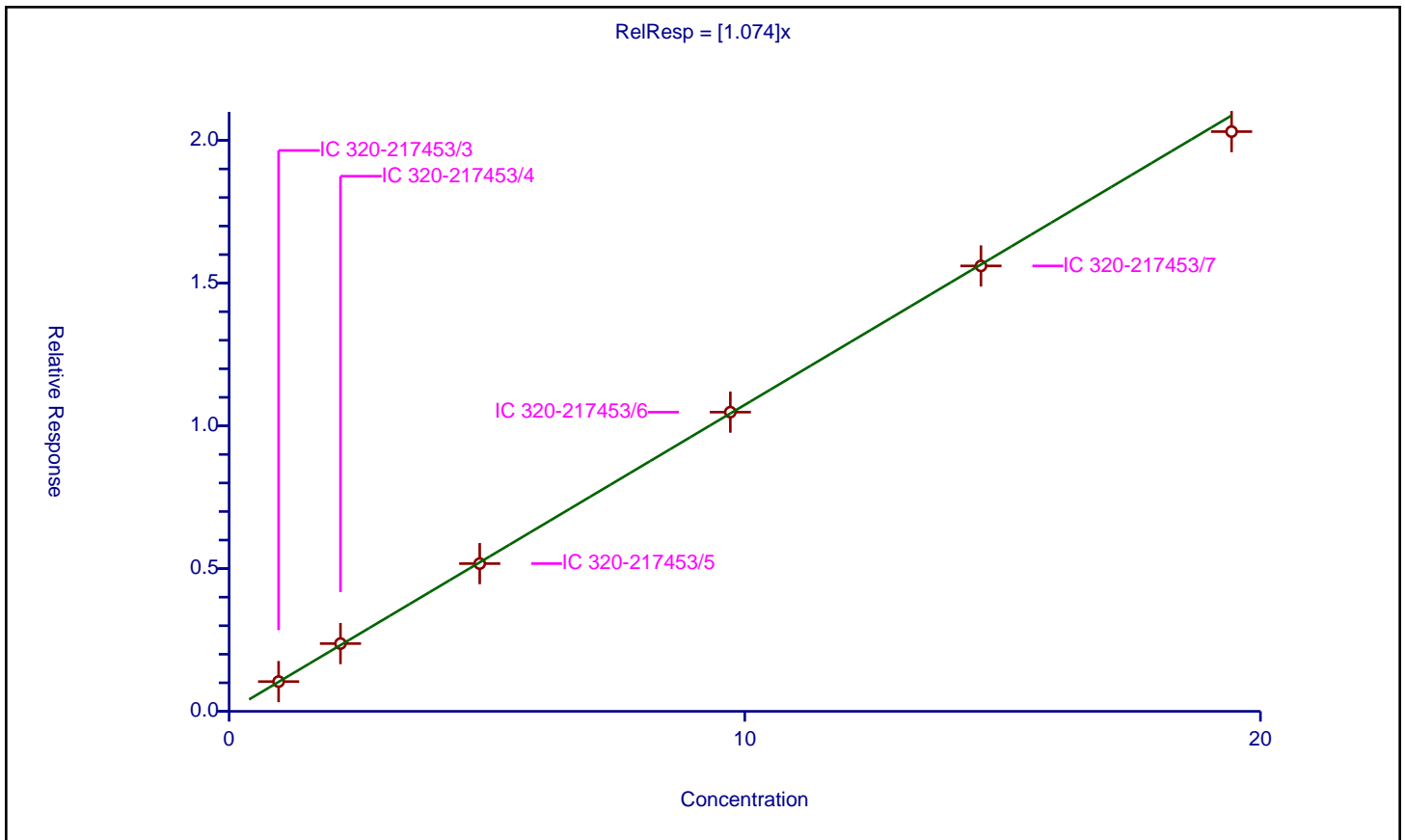
/ Perfluoroheptanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base:
 RF Rounding: 0

| Curve Coefficients | |
|--------------------|-------|
| Intercept: | 0 |
| Slope: | 1.074 |

| Error Coefficients | |
|--|---------|
| Standard Error: | 1220000 |
| Relative Standard Error: | 1.7 |
| Correlation Coefficient: | 0.998 |
| Coefficient of Determination (Adjusted): | 1.000 |

| ID | Level | Concentration | Rel. Resp. | IS Amount | IS Response | RRF | Used |
|----|-----------------|---------------|------------|-----------|-------------|----------|------|
| 1 | IC 320-217453/3 | 0.96 | 1.041561 | 10.0 | 1044020.0 | 1.084959 | Y |
| 2 | IC 320-217453/4 | 2.16 | 2.373972 | 10.0 | 921915.0 | 1.099061 | Y |
| 3 | IC 320-217453/5 | 4.86 | 5.175227 | 10.0 | 945031.0 | 1.064862 | Y |
| 4 | IC 320-217453/6 | 9.72 | 10.480965 | 10.0 | 996809.0 | 1.078289 | Y |
| 5 | IC 320-217453/7 | 14.58 | 15.603994 | 10.0 | 929546.0 | 1.070233 | Y |
| 6 | IC 320-217453/8 | 19.44 | 20.309372 | 10.0 | 982926.0 | 1.044721 | Y |



Calibration

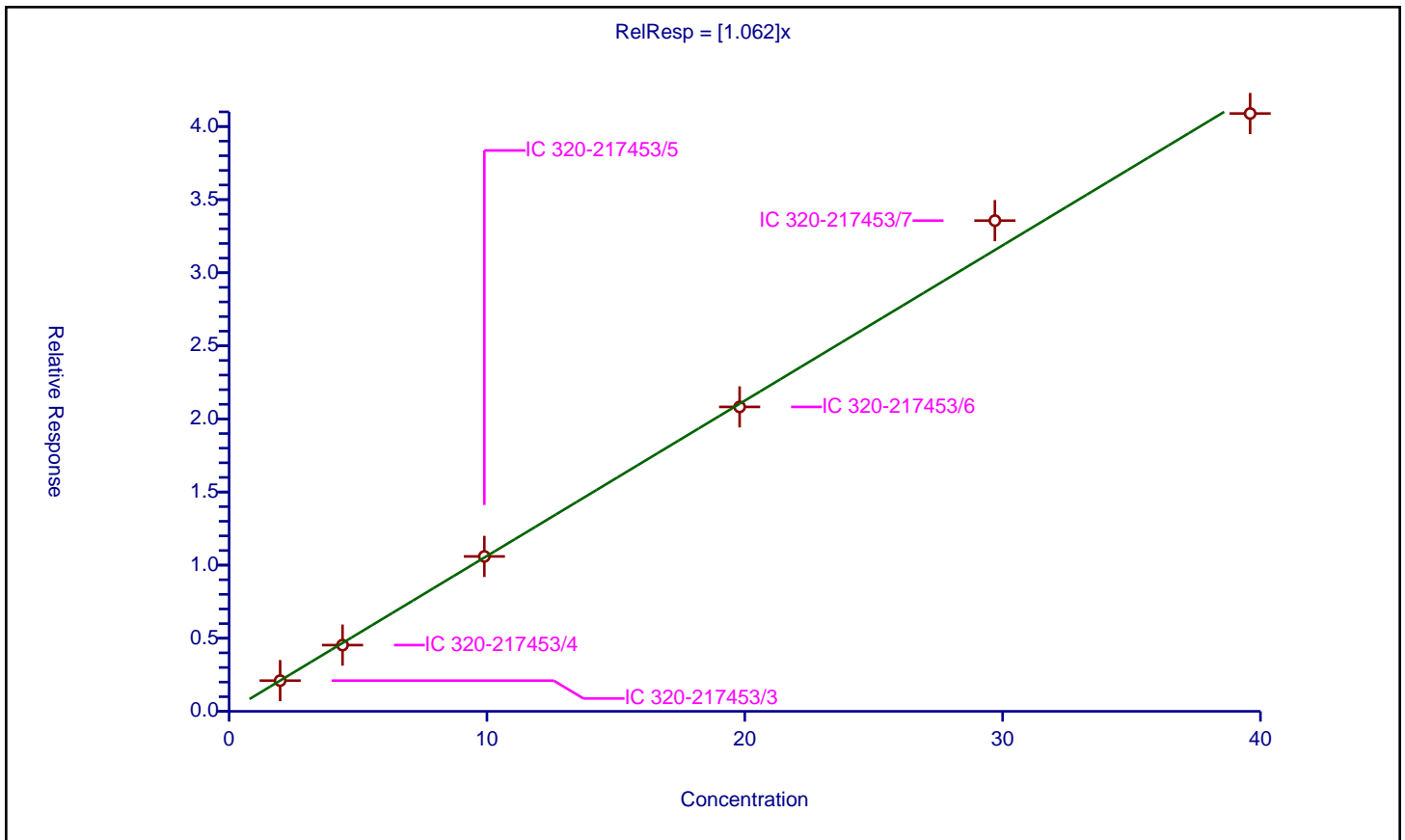
/ Perfluorooctanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base:
 RF Rounding: 0

| Curve Coefficients | |
|--------------------|-------|
| Intercept: | 0 |
| Slope: | 1.062 |

| Error Coefficients | |
|--|---------|
| Standard Error: | 2510000 |
| Relative Standard Error: | 3.5 |
| Correlation Coefficient: | 0.999 |
| Coefficient of Determination (Adjusted): | 0.998 |

| ID | Level | Concentration | Rel. Resp. | IS Amount | IS Response | RRF | Used |
|----|-----------------|---------------|------------|-----------|-------------|----------|------|
| 1 | IC 320-217453/3 | 1.98 | 2.098619 | 10.0 | 1044020.0 | 1.059908 | Y |
| 2 | IC 320-217453/4 | 4.4 | 4.530049 | 10.0 | 921915.0 | 1.029557 | Y |
| 3 | IC 320-217453/5 | 9.9 | 10.595589 | 10.0 | 945031.0 | 1.070262 | Y |
| 4 | IC 320-217453/6 | 19.8 | 20.822123 | 10.0 | 996809.0 | 1.051622 | Y |
| 5 | IC 320-217453/7 | 29.7 | 33.562481 | 10.0 | 929546.0 | 1.13005 | Y |
| 6 | IC 320-217453/8 | 39.6 | 40.888165 | 10.0 | 982926.0 | 1.032529 | Y |



Calibration

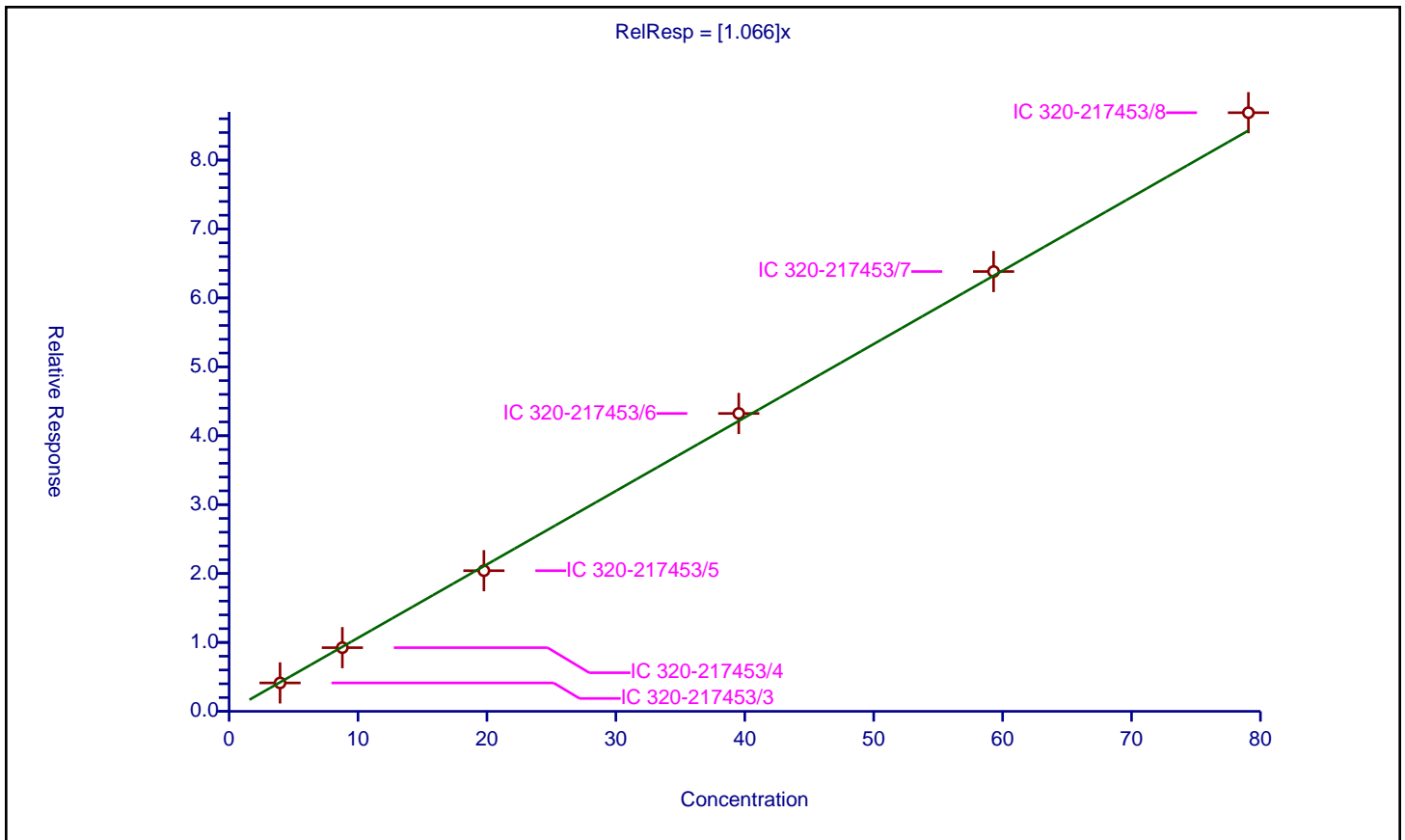
/ Perfluorooctane sulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base:
 RF Rounding: 0

| Curve Coefficients | |
|--------------------|-------|
| Intercept: | 0 |
| Slope: | 1.066 |

| Error Coefficients | |
|--|---------|
| Standard Error: | 4290000 |
| Relative Standard Error: | 2.6 |
| Correlation Coefficient: | 0.998 |
| Coefficient of Determination (Adjusted): | 0.999 |

| ID | Level | Concentration | Rel. Resp. | IS Amount | IS Response | RRF | Used |
|----|-----------------|---------------|------------|-----------|-------------|----------|------|
| 1 | IC 320-217453/3 | 3.95328 | 4.124117 | 28.68 | 2429483.0 | 1.043214 | Y |
| 2 | IC 320-217453/4 | 8.785067 | 9.240832 | 28.68 | 2220259.0 | 1.05188 | Y |
| 3 | IC 320-217453/5 | 19.7664 | 20.41005 | 28.68 | 2380125.0 | 1.032563 | Y |
| 4 | IC 320-217453/6 | 39.5328 | 43.230372 | 28.68 | 2440107.0 | 1.093532 | Y |
| 5 | IC 320-217453/7 | 59.2992 | 63.829241 | 28.68 | 2283311.0 | 1.076393 | Y |
| 6 | IC 320-217453/8 | 79.0656 | 86.881718 | 28.68 | 2316327.0 | 1.098856 | Y |



Calibration

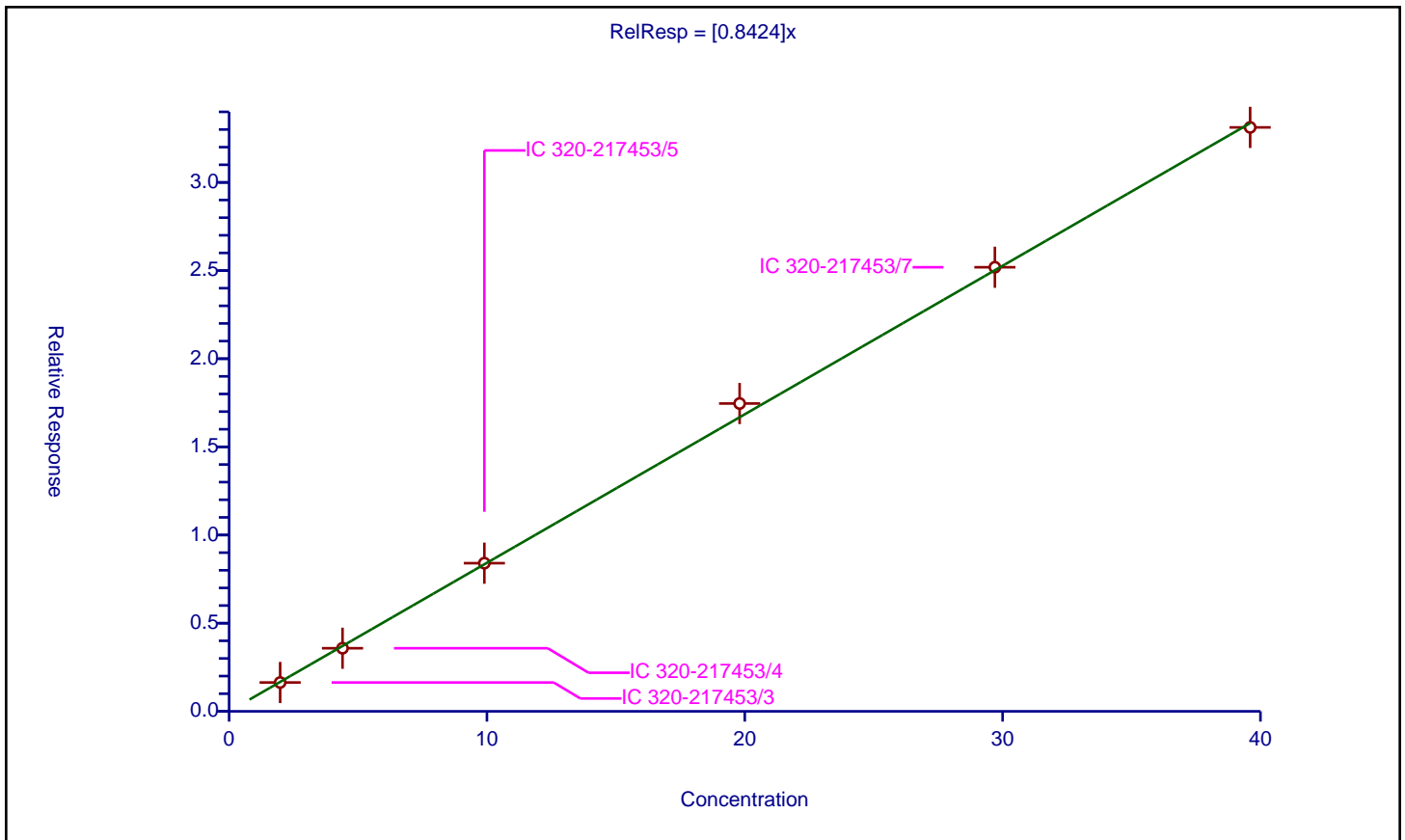
/ Perfluorononanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base:
 RF Rounding: 0

| Curve Coefficients | |
|--------------------|--------|
| Intercept: | 0 |
| Slope: | 0.8424 |

| Error Coefficients | |
|--|---------|
| Standard Error: | 1990000 |
| Relative Standard Error: | 2.8 |
| Correlation Coefficient: | 0.997 |
| Coefficient of Determination (Adjusted): | 0.999 |

| ID | Level | Concentration | Rel. Resp. | IS Amount | IS Response | RRF | Used |
|----|-----------------|---------------|------------|-----------|-------------|----------|------|
| 1 | IC 320-217453/3 | 1.98 | 1.635697 | 10.0 | 1044020.0 | 0.826109 | Y |
| 2 | IC 320-217453/4 | 4.4 | 3.578464 | 10.0 | 921915.0 | 0.813287 | Y |
| 3 | IC 320-217453/5 | 9.9 | 8.402645 | 10.0 | 945031.0 | 0.848752 | Y |
| 4 | IC 320-217453/6 | 19.8 | 17.459935 | 10.0 | 996809.0 | 0.881815 | Y |
| 5 | IC 320-217453/7 | 29.7 | 25.186865 | 10.0 | 929546.0 | 0.848043 | Y |
| 6 | IC 320-217453/8 | 39.6 | 33.119218 | 10.0 | 982926.0 | 0.836344 | Y |



Calibration

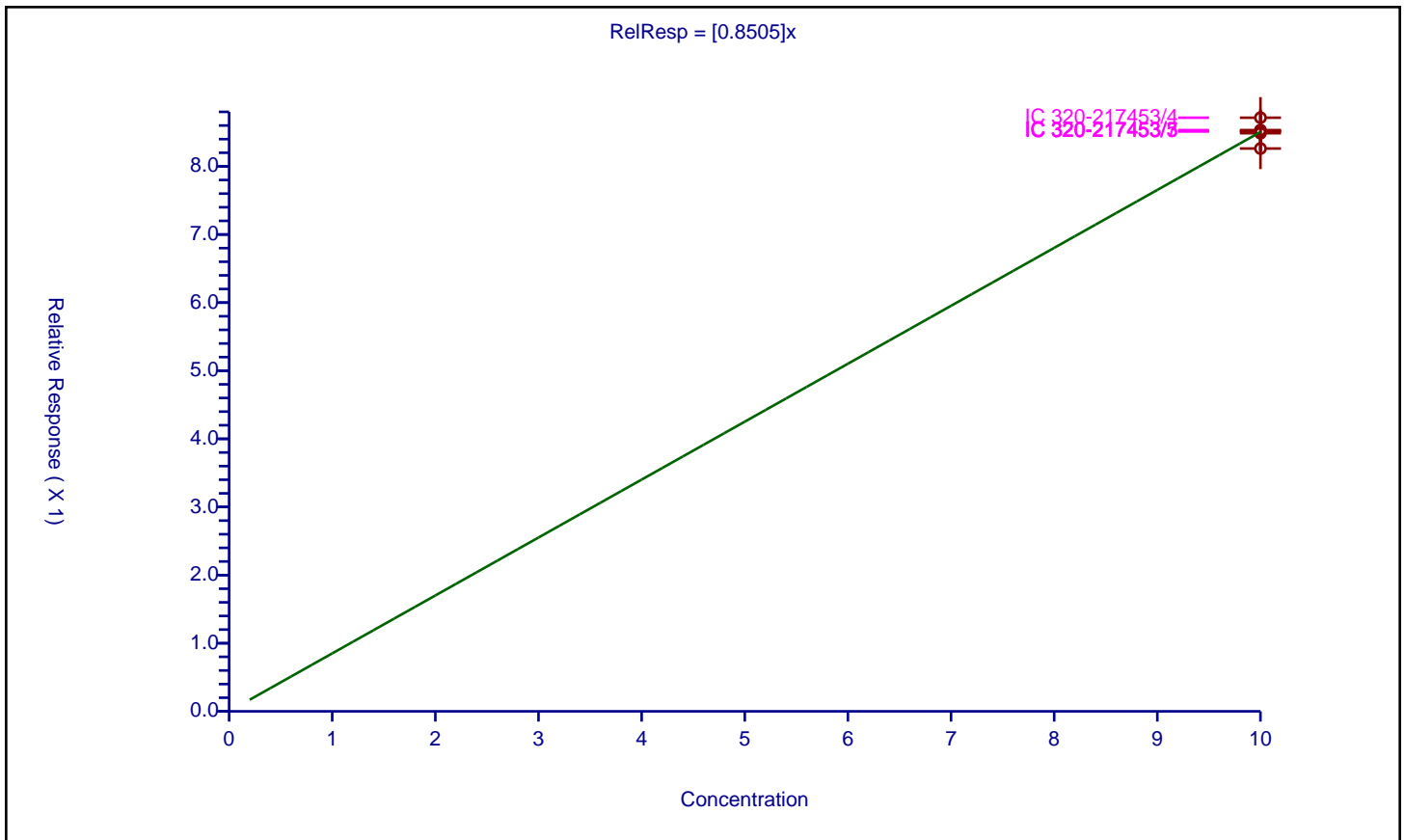
/ 13C2 PFDA

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: ISTD
Response Base:
RF Rounding: 0

| Curve Coefficients | |
|--------------------|--------|
| Intercept: | 0 |
| Slope: | 0.8505 |

| Error Coefficients | |
|--|--------|
| Standard Error: | 904000 |
| Relative Standard Error: | 1.7 |
| Correlation Coefficient: | NA |
| Coefficient of Determination (Adjusted): | 0 |

| ID | Level | Concentration | Rel. Resp. | IS Amount | IS Response | RRF | Used |
|----|-----------------|---------------|------------|-----------|-------------|----------|------|
| 1 | IC 320-217453/3 | 10.0 | 8.512691 | 10.0 | 1044020.0 | 0.851269 | Y |
| 2 | IC 320-217453/4 | 10.0 | 8.714491 | 10.0 | 921915.0 | 0.871449 | Y |
| 3 | IC 320-217453/5 | 10.0 | 8.53263 | 10.0 | 945031.0 | 0.853263 | Y |
| 4 | IC 320-217453/6 | 10.0 | 8.486982 | 10.0 | 996809.0 | 0.848698 | Y |
| 5 | IC 320-217453/7 | 10.0 | 8.519223 | 10.0 | 929546.0 | 0.851922 | Y |
| 6 | IC 320-217453/8 | 10.0 | 8.262189 | 10.0 | 982926.0 | 0.826219 | Y |



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-217453/10 Calibration Date: 04/11/2018 12:18
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.11_537ICALB_011.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 1.078 | | 20.5 | 20.0 | 2.5 | 50.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 1.079 | | 2.17 | 2.16 | 0.5 | 50.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.583 | | 6.48 | 6.72 | -3.6 | 50.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 1.067 | | 4.42 | 4.40 | 0.4 | 50.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 1.026 | | 8.45 | 8.79 | -3.8 | 50.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.8056 | | 4.21 | 4.40 | -4.4 | 50.0 |
| 13C2 PFHxA | Ave | 1.063 | 1.036 | | 9.74 | 10.0 | -2.6 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.8798 | | 10.3 | 10.0 | 3.4 | 30.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_011.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 11-Apr-2018 12:18:29 ALS Bottle#: 2 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 11-Apr-2018 12:35:34 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK015

First Level Reviewer: westendorfc Date: 11-Apr-2018 12:32:05

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.382 | -0.001 | 1.000 | 1796973 | 20.5 | | 1419 | |
| 298.90 > 99.00 | 1.381 | 1.382 | -0.001 | 1.000 | 1315166 | | 1.37(0.00-0.00) | 1507 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.515 | 0.002 | 1.000 | 999202 | 9.74 | | 8081 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.669 | 1.669 | 0.0 | 1.000 | 886015 | 6.48 | | 254 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.669 | 1.669 | 0.0 | 1.000 | 224797 | 2.17 | | 28.4 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.865 | 0.001 | | 964533 | 10.0 | | 6486 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.866 | 1.866 | 0.0 | 1.000 | 452711 | 4.42 | | 66.1 | |
| 413.00 > 169.00 | 1.859 | 1.866 | -0.007 | 0.996 | 238029 | | 1.90(0.00-0.00) | 253 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.102 | 2.094 | 0.008 | 1.000 | 750245 | 8.45 | | 211 | a |
| 499.00 > 99.00 | 2.102 | 2.094 | 0.008 | 1.000 | 160618 | | 4.67(0.00-0.00) | 405 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2387973 | 28.7 | | 1256 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.109 | 2.109 | 0.0 | 1.000 | 341890 | 4.21 | | 51.1 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.261 | 2.260 | 0.001 | 1.000 | 848574 | 10.3 | | 7810 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L2_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_011.d

Injection Date: 11-Apr-2018 12:18:29

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

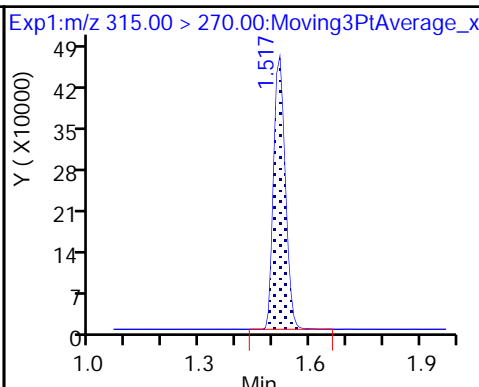
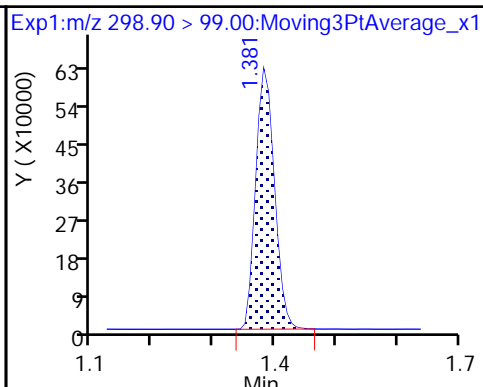
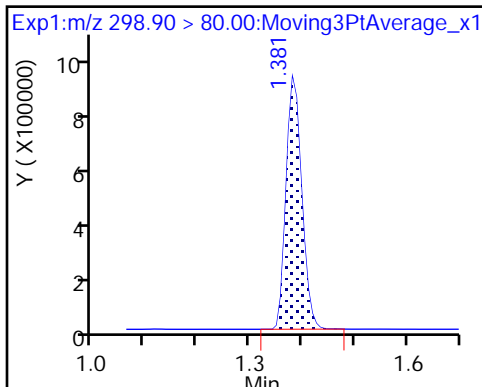
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

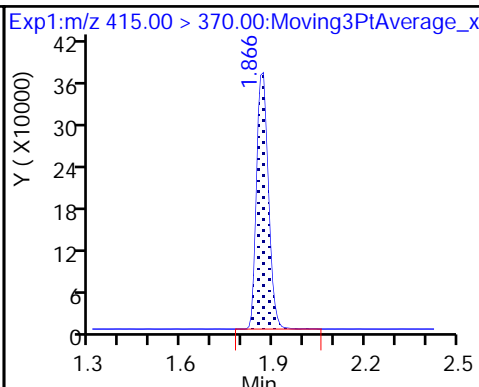
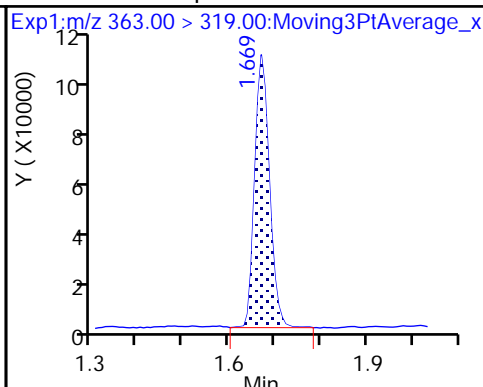
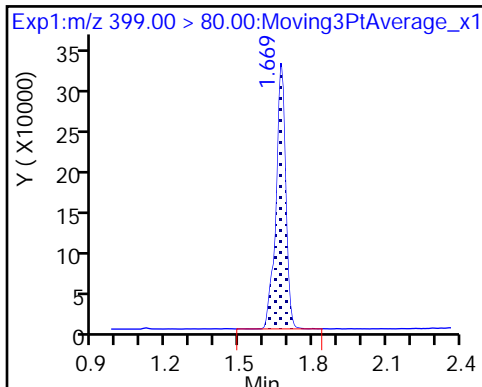
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

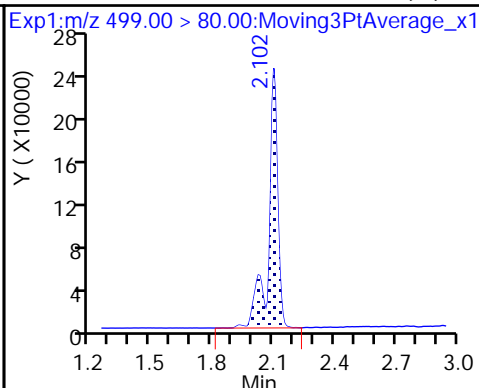
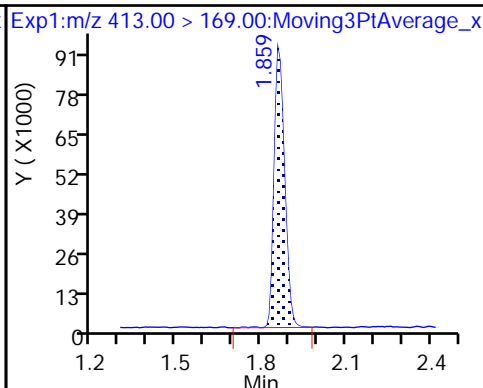
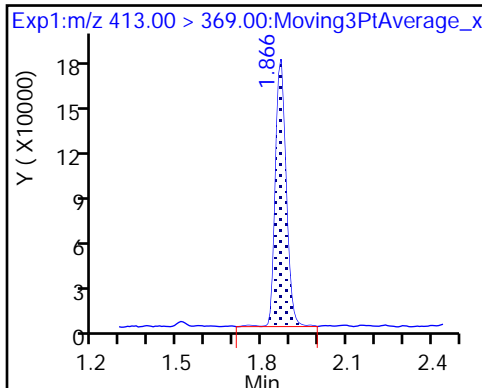
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

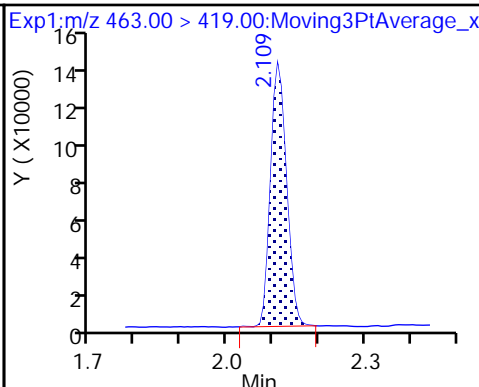
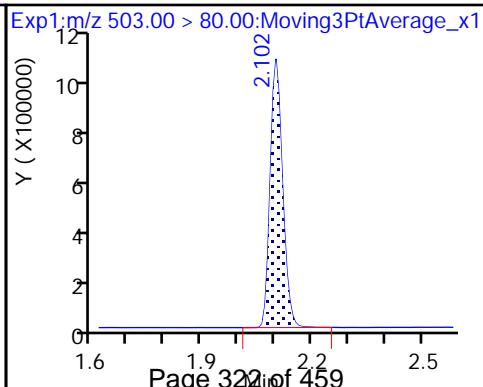
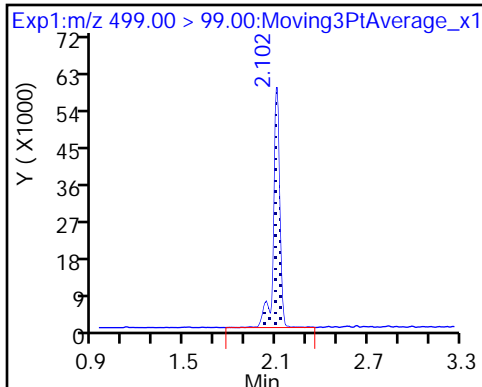
8 Perfluorooctane sulfonic acid (M)



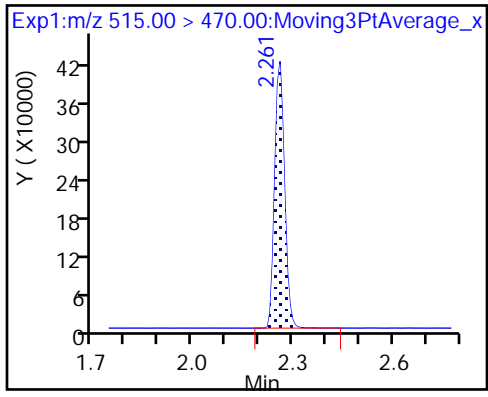
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

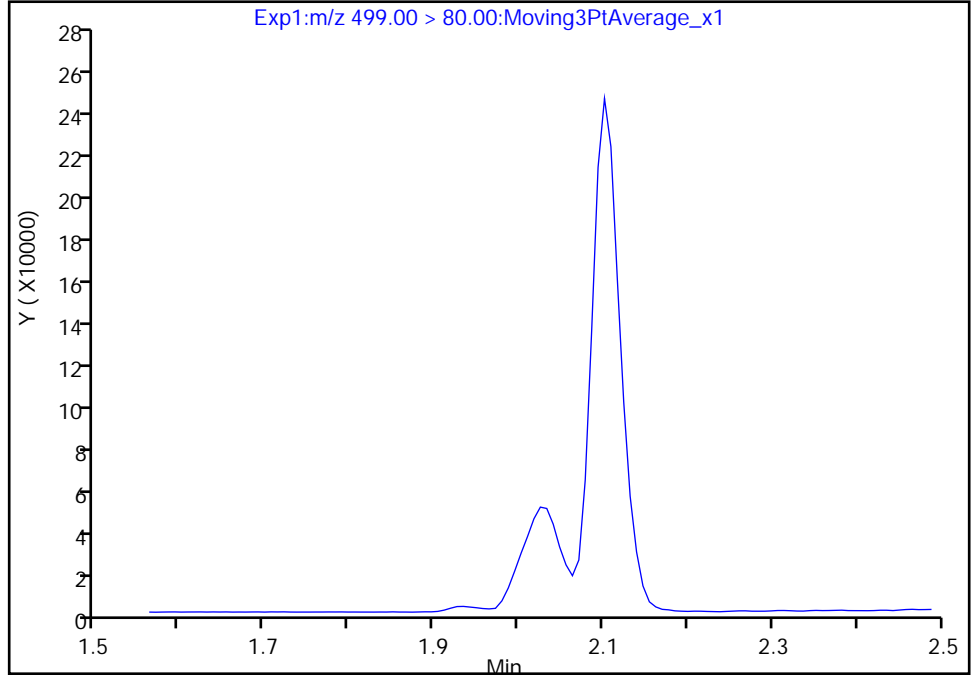
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_011.d
Injection Date: 11-Apr-2018 12:18:29 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

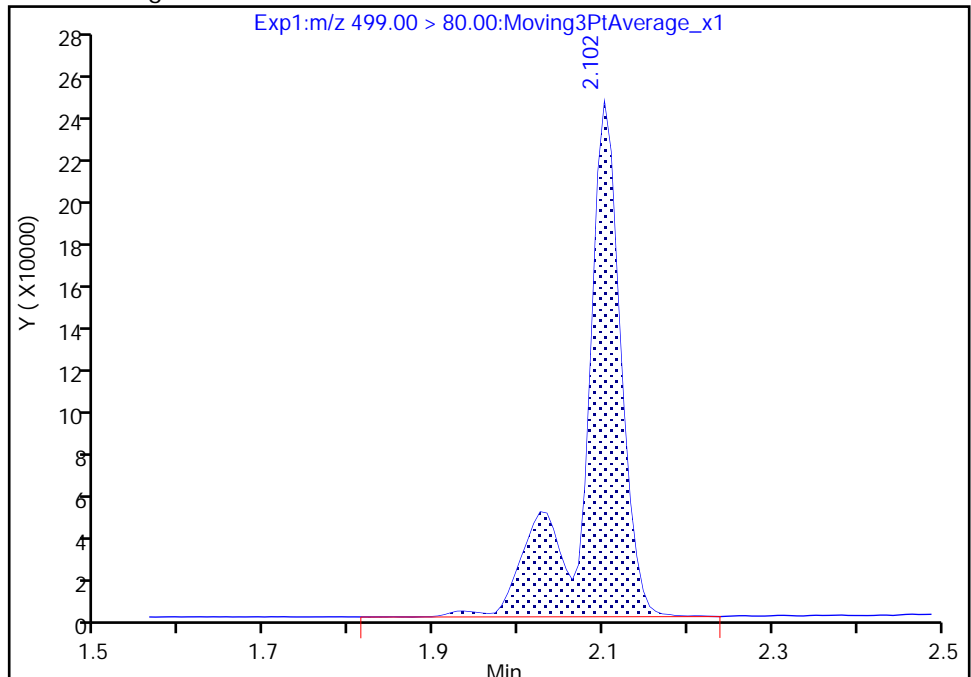
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 750245
Amount: 8.452126
Amount Units: ng/ml



Reviewer: westendorfc, 11-Apr-2018 12:32:02
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: ICV 320-217453/12 Calibration Date: 04/11/2018 12:27
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.11_537ICALB_013.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 0.9079 | | 86.4 | 100 | -13.7 | 30.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 0.9453 | | 8.80 | 10.0 | -12.0 | 30.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.546 | | 19.0 | 20.2 | -5.8 | 30.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 0.8947 | | 17.0 | 20.2 | -15.8 | 30.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 0.9451 | | 17.9 | 20.2 | -11.3 | 30.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.7643 | | 18.3 | 20.2 | -9.3 | 30.0 |
| 13C2 PFHxA | Ave | 1.063 | 0.9887 | | 9.30 | 10.0 | -7.0 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.7817 | | 9.19 | 10.0 | -8.1 | 30.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_013.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 11-Apr-2018 12:27:50 ALS Bottle#: 7 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: ICV
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 11-Apr-2018 12:35:36 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK015

First Level Reviewer: westendorfc Date: 11-Apr-2018 12:35:17

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|-------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.382 | -0.001 | 1.000 | 8588615 | 86.4 | | 6016 | |
| 298.90 > 99.00 | 1.381 | 1.382 | -0.001 | 1.000 | 6638954 | | 1.29(0.00-0.00) | 7031 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.510 | 1.515 | -0.005 | 1.000 | 1110636 | 9.30 | | 10046 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.669 | 1.669 | 0.0 | 1.000 | 2946450 | 19.0 | | 915 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.669 | 1.669 | 0.0 | 1.000 | 1061944 | 8.80 | | 129 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.859 | 1.865 | -0.006 | | 1123391 | 10.0 | | 7104 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.859 | 1.866 | -0.007 | 1.000 | 2026973 | 17.0 | | 297 | |
| 413.00 > 169.00 | 1.859 | 1.866 | -0.007 | 1.000 | 1039561 | | 1.95(0.00-0.00) | 1075 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.102 | 2.094 | 0.008 | 1.000 | 1801850 | 17.9 | | 451 | a |
| 499.00 > 99.00 | 2.102 | 2.094 | 0.008 | 1.000 | 352970 | | 5.10(0.00-0.00) | 761 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2710764 | 28.7 | | 1406 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.109 | 2.109 | 0.0 | 1.000 | 1731220 | 18.3 | | 262 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.253 | 2.260 | -0.007 | 1.000 | 878101 | 9.19 | | 8492 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-ICV_00030

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_013.d

Injection Date: 11-Apr-2018 12:27:50

Instrument ID: A8_N

Lims ID: ICV

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 7

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

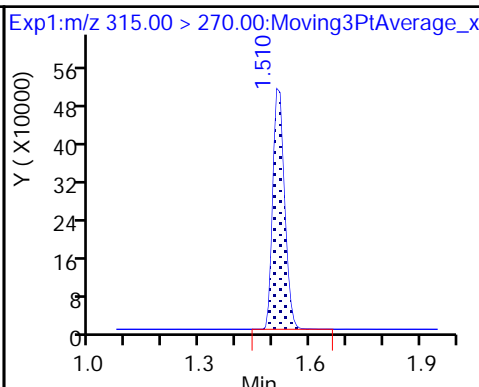
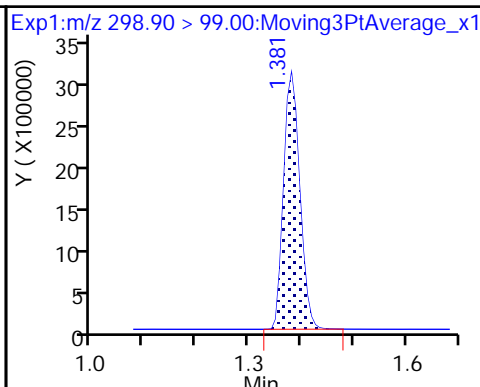
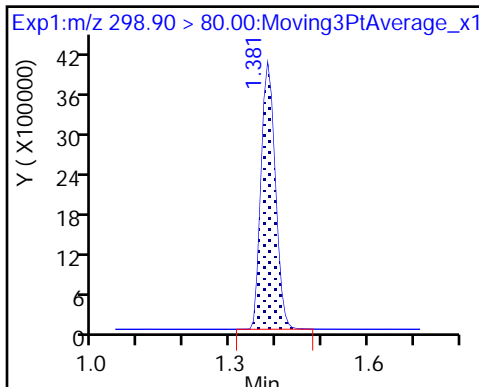
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

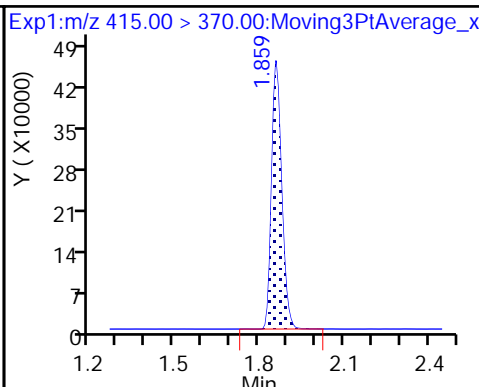
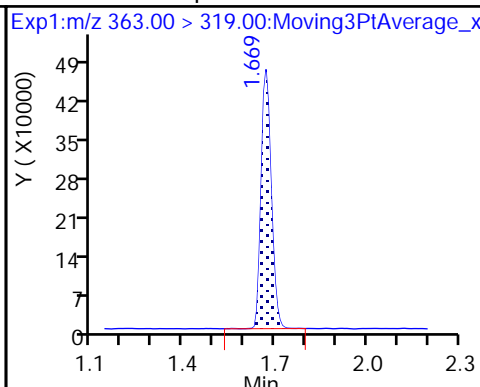
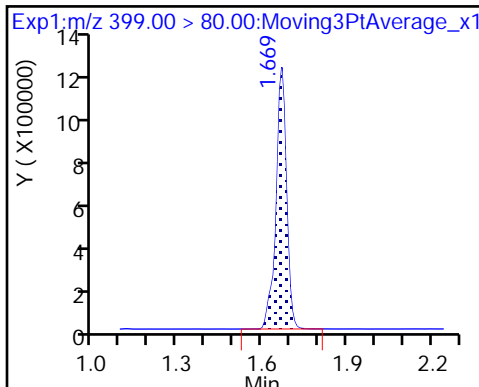
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

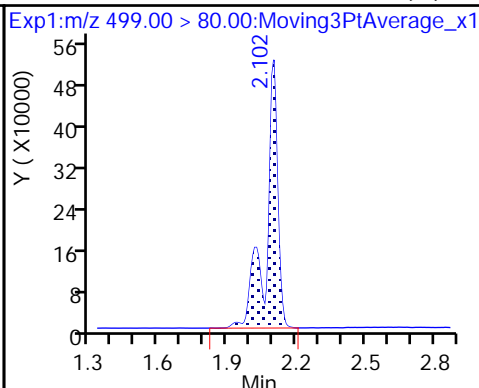
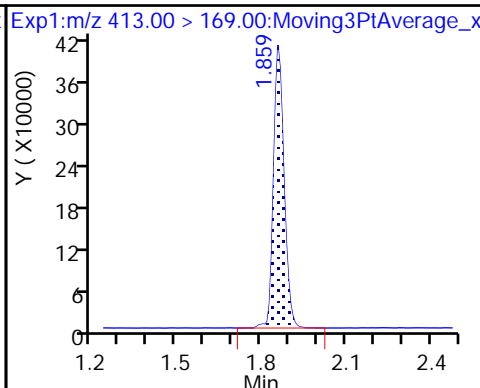
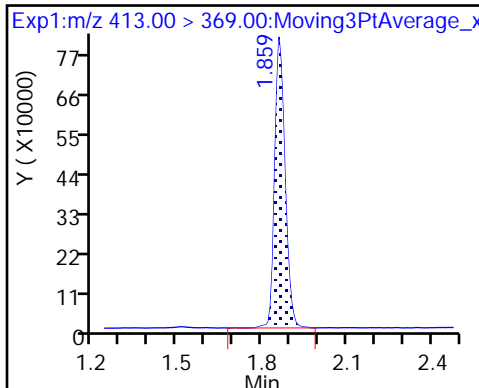
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

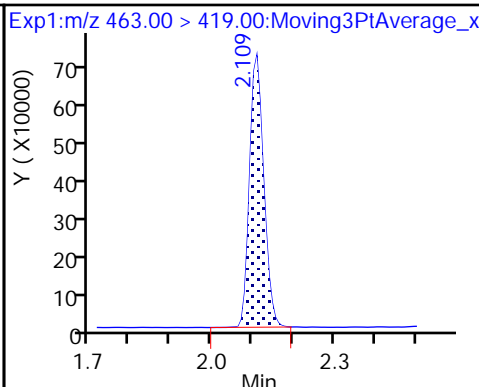
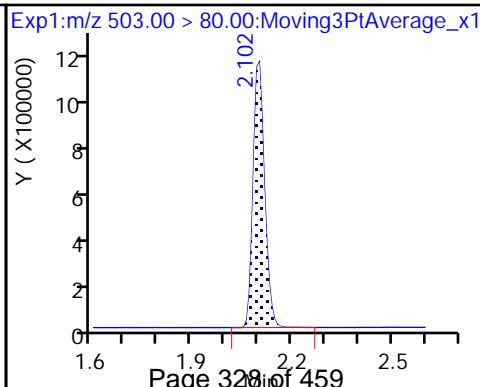
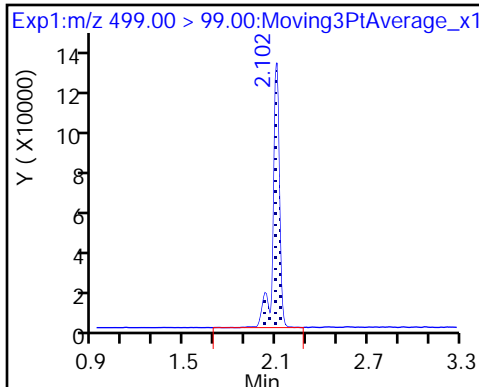
8 Perfluorooctane sulfonic acid (M)



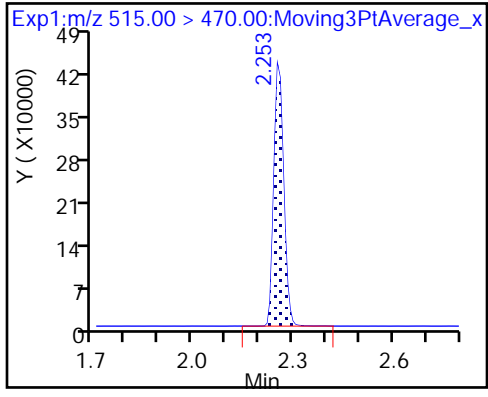
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

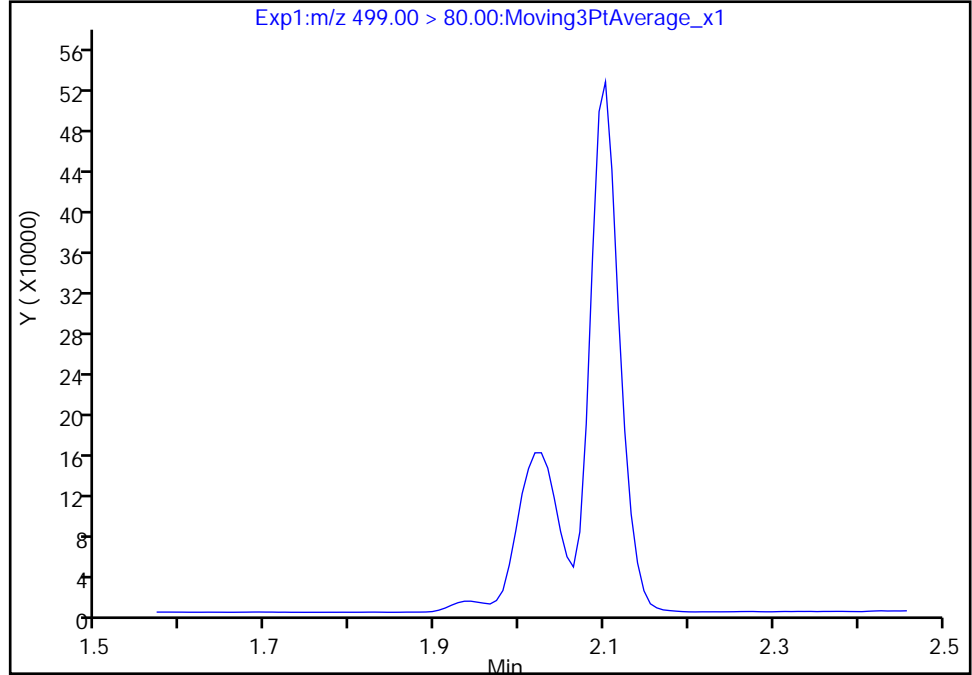
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_013.d
Injection Date: 11-Apr-2018 12:27:50 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

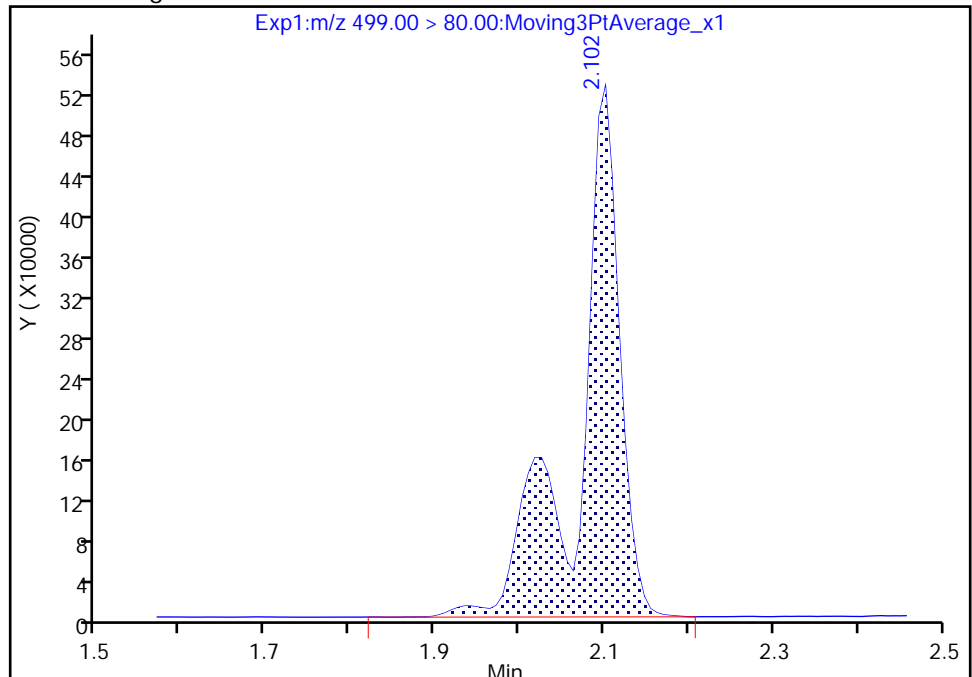
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 1801850
Amount: 17.882127
Amount Units: ng/ml



Reviewer: westendorfc, 11-Apr-2018 12:35:10
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-217726/1 Calibration Date: 04/12/2018 14:48
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.12_537A_004.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 1.091 | | 20.8 | 20.0 | 3.8 | 50.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.529 | | 6.26 | 6.72 | -6.9 | 50.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 1.003 | | 2.02 | 2.16 | -6.6 | 50.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 1.016 | | 4.21 | 4.40 | -4.3 | 50.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 1.003 | | 8.27 | 8.79 | -5.9 | 50.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.7699 | | 4.02 | 4.40 | -8.6 | 50.0 |
| 13C2 PFHxA | Ave | 1.063 | 1.016 | | 9.56 | 10.0 | -4.4 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.8461 | | 9.95 | 10.0 | -0.5 | 30.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180412-56633.b\2018.04.12_537A_004.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 12-Apr-2018 14:48:43 ALS Bottle#: 2 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180412-56633.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 09:53:46 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK035

First Level Reviewer: roycea Date: 12-Apr-2018 16:14:56

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|-------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.388 | 1.381 | 0.007 | 1.000 | 1837840 | 20.8 | | 3464 | |
| 298.90 > 99.00 | 1.388 | 1.381 | 0.007 | 1.000 | 1310486 | | 1.40(0.00-0.00) | 4235 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.525 | 1.517 | 0.008 | 1.000 | 1023623 | 9.56 | | 12163 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.692 | 1.684 | 0.008 | 1.000 | 218253 | 2.02 | | 7.1 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.684 | 1.684 | 0.0 | 1.000 | 864967 | 6.26 | | 1089 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.889 | 1.882 | 0.007 | | 1007212 | 10.0 | | 5703 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.889 | 1.882 | 0.007 | 1.000 | 450438 | 4.21 | | 71.0 | |
| 413.00 > 169.00 | 1.889 | 1.882 | 0.007 | 1.000 | 244835 | | 1.84(0.00-0.00) | 348 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.124 | 2.117 | 0.007 | 1.000 | 741540 | 8.27 | | 742 | a |
| 499.00 > 99.00 | 2.117 | 2.117 | 0.0 | 0.996 | 161762 | | 4.58(0.00-0.00) | 401 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.124 | 2.117 | 0.007 | | 2413051 | 28.7 | | 5093 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.132 | 2.124 | 0.008 | 1.000 | 341211 | 4.02 | | 68.4 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.269 | 2.261 | 0.007 | 1.000 | 852202 | 9.95 | | 7432 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L2_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180412-56633.b\2018.04.12_537A_004.d

Injection Date: 12-Apr-2018 14:48:43

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

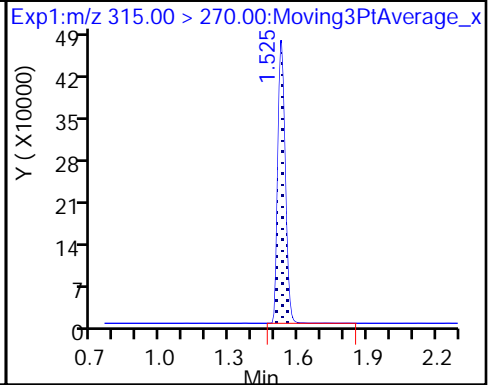
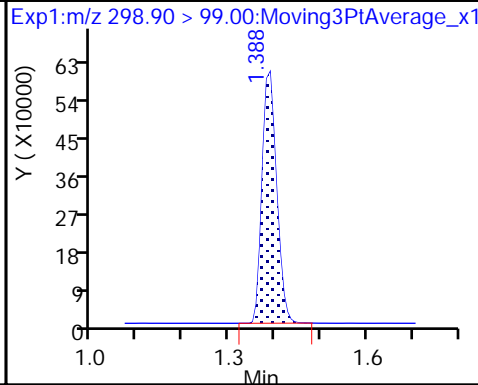
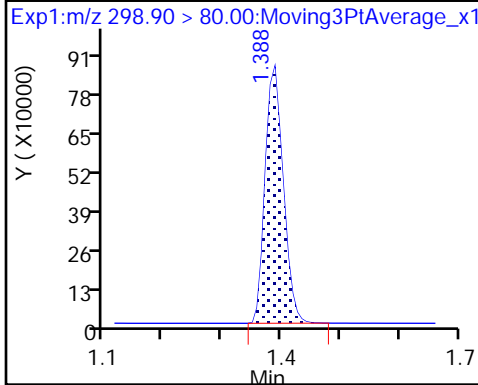
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

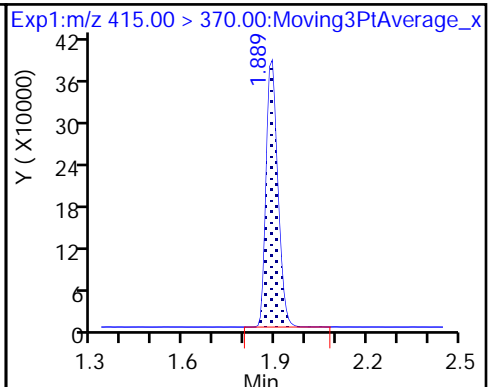
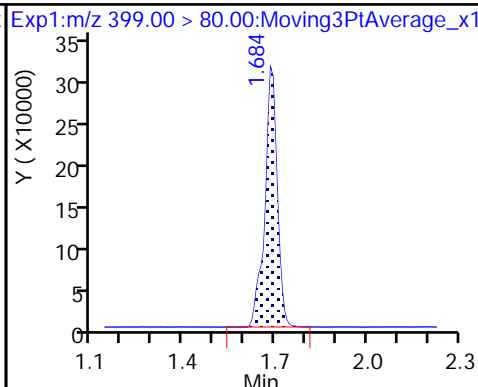
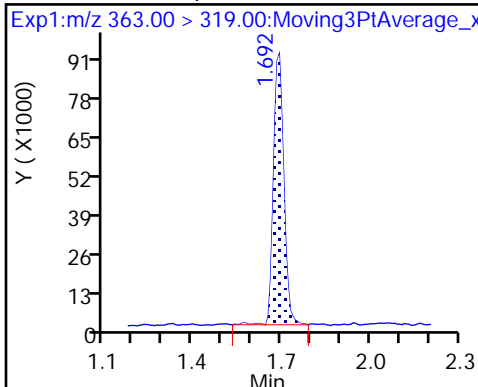
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

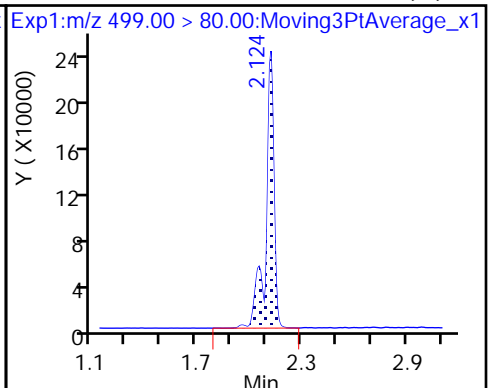
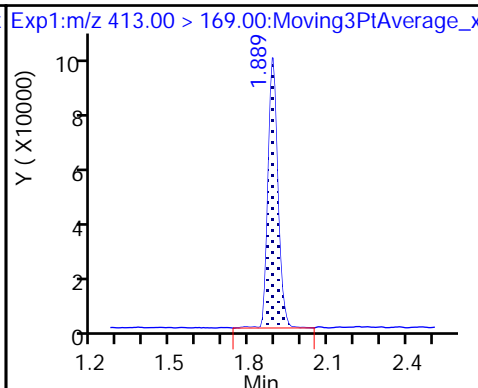
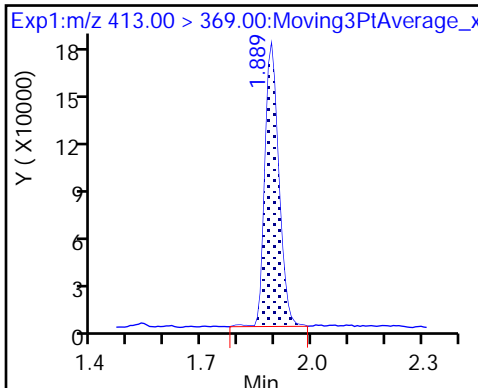
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

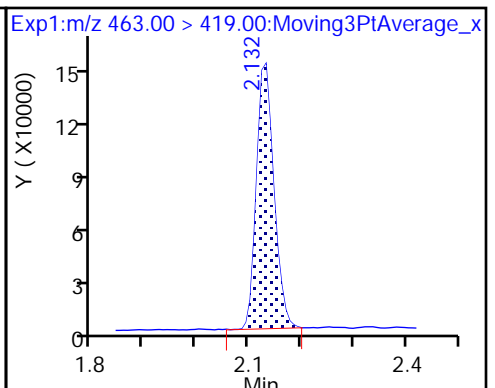
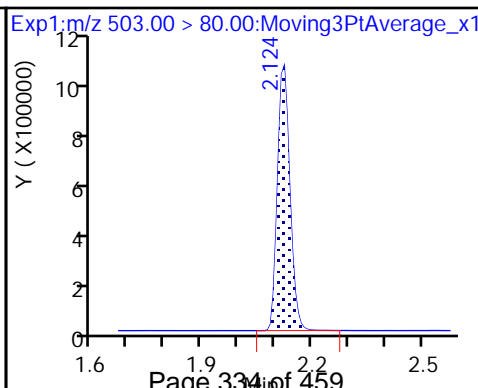
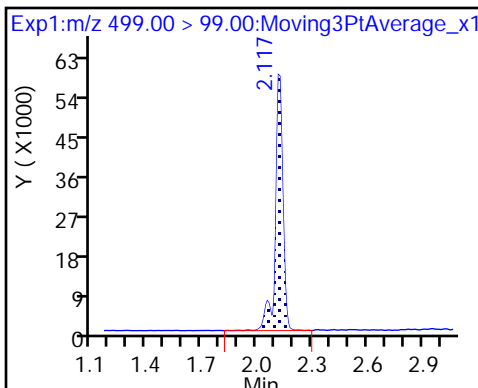
8 Perfluorooctane sulfonic acid (M)



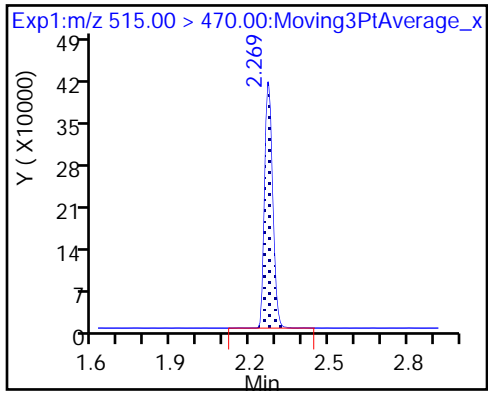
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

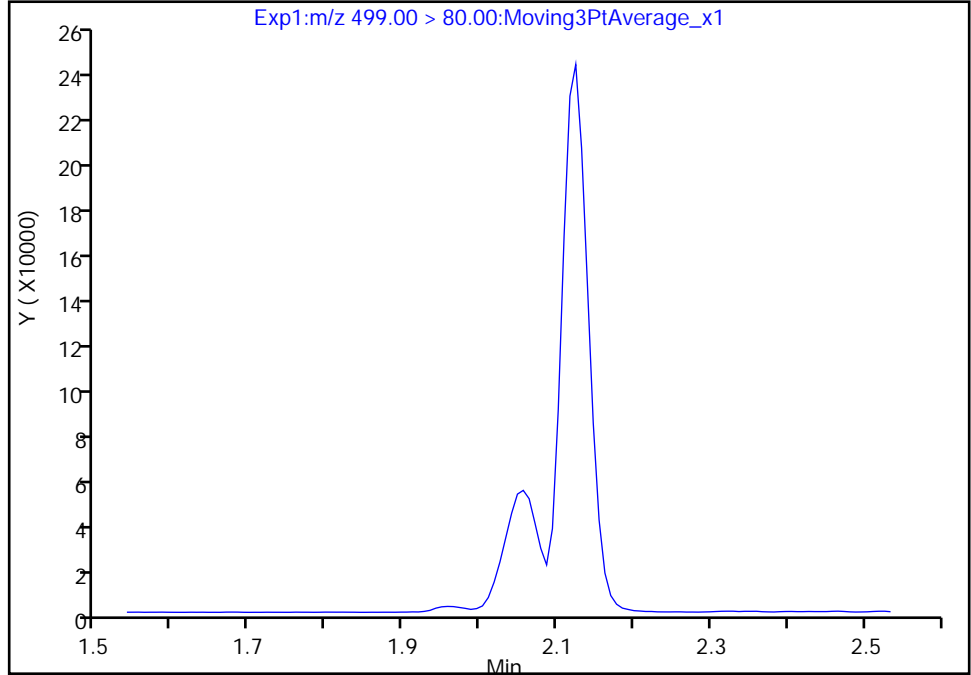
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180412-56633.b\2018.04.12_537A_004.d
Injection Date: 12-Apr-2018 14:48:43 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

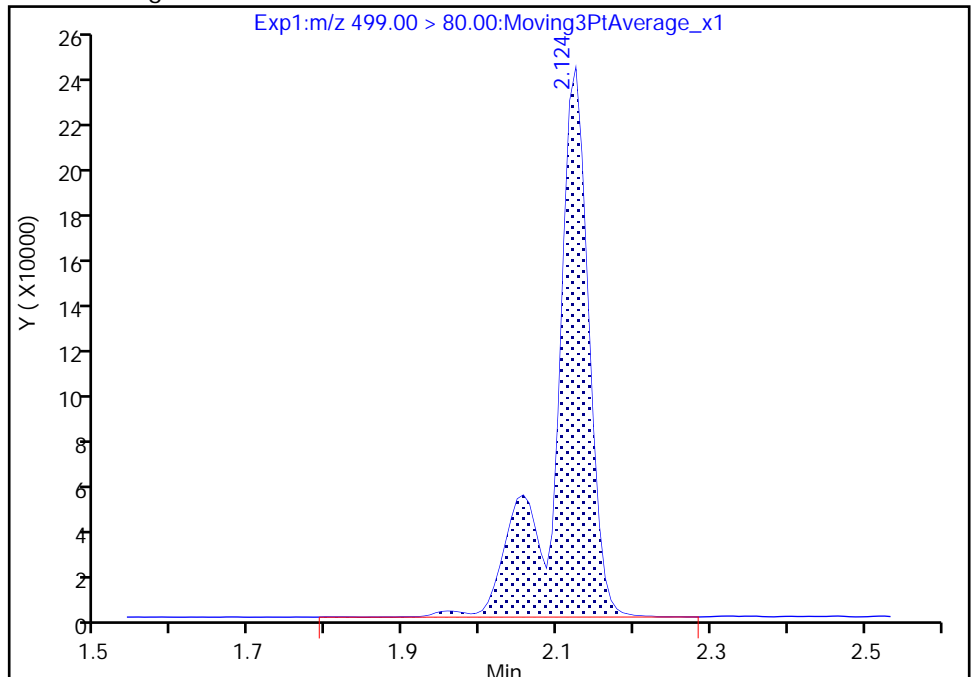
Not Detected
Expected RT: 2.12

Processing Integration Results



RT: 2.12
Area: 741540
Amount: 8.267236
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 12-Apr-2018 16:14:40
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217814/1 Calibration Date: 04/13/2018 00:27
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.12_537AA_029.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 1.051 | | 135 | 135 | -0.0 | 30.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 1.071 | | 14.5 | 14.6 | -0.2 | 30.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.648 | | 45.5 | 45.4 | 0.4 | 30.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 1.050 | | 29.3 | 29.7 | -1.2 | 30.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 1.056 | | 58.8 | 59.3 | -0.9 | 30.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.8015 | | 28.3 | 29.7 | -4.9 | 30.0 |
| 13C2 PFHxA | Ave | 1.063 | 1.028 | | 9.67 | 10.0 | -3.3 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.8168 | | 9.60 | 10.0 | -4.0 | 30.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_029.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 13-Apr-2018 00:27:43 ALS Bottle#: 5 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: roycea Date: 13-Apr-2018 09:24:38

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|-------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.388 | 1.388 | 0.0 | 1.000 | 10905659 | 135.0 | | 15411 | |
| 298.90 > 99.00 | 1.388 | 1.388 | 0.0 | 1.000 | 8307914 | | 1.31(0.00-0.00) | 18792 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.525 | 1.525 | 0.0 | 1.000 | 971790 | 9.67 | | 9306 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.684 | 1.684 | 0.0 | 1.000 | 1476425 | 14.5 | | 50.0 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.684 | 1.684 | 0.0 | 1.000 | 5743759 | 45.5 | | 7247 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.889 | 1.889 | 0.0 | | 945293 | 10.0 | | 5193 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.889 | 1.889 | 0.0 | 1.000 | 2946866 | 29.3 | | 427 | |
| 413.00 > 169.00 | 1.882 | 1.889 | -0.007 | 0.996 | 1562520 | | 1.89(0.00-0.00) | 1919 | |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.124 | 2.124 | 0.0 | | 2202701 | 28.7 | | 4287 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.124 | 2.094 | 0.030 | 1.000 | 4811356 | 58.8 | | 4815 | a |
| 499.00 > 99.00 | 2.124 | 2.094 | 0.030 | 1.000 | 1051447 | | 4.58(0.00-0.00) | 2651 | a |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.132 | 2.132 | 0.0 | 1.000 | 2250277 | 28.3 | | 446 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.269 | 2.269 | 0.0 | 1.000 | 772098 | 9.60 | | 6378 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00026

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_029.d

Injection Date: 13-Apr-2018 00:27:43

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

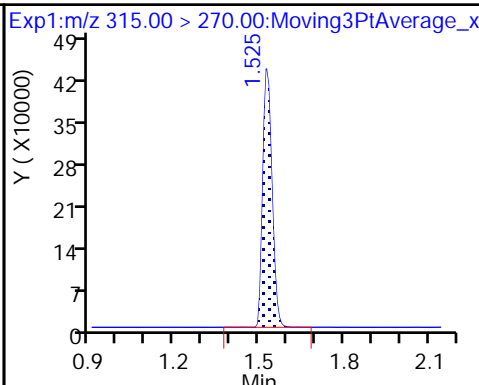
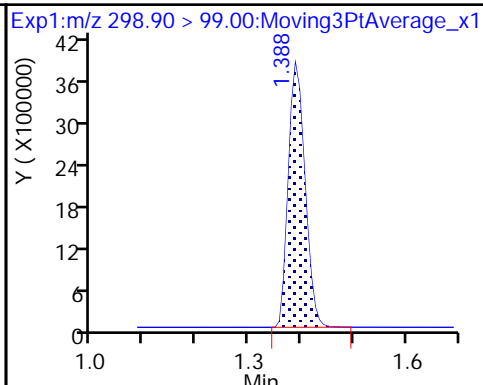
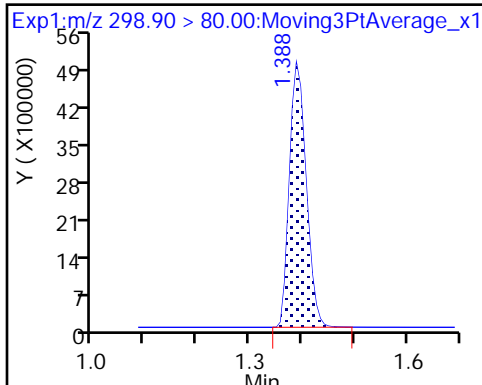
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

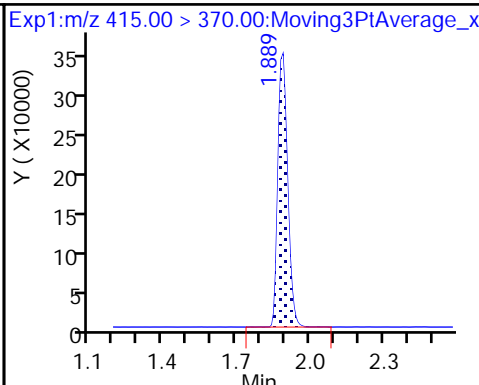
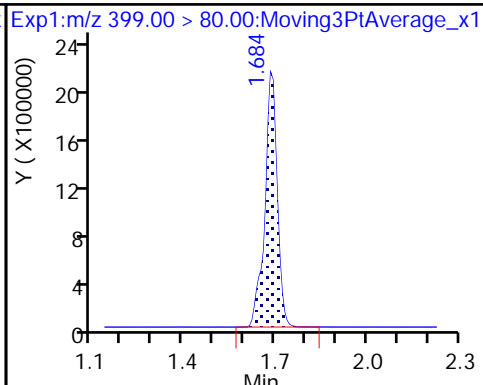
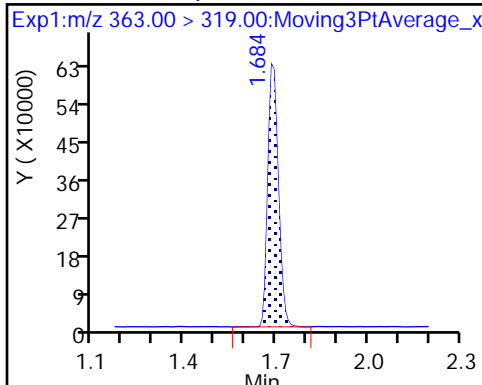
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

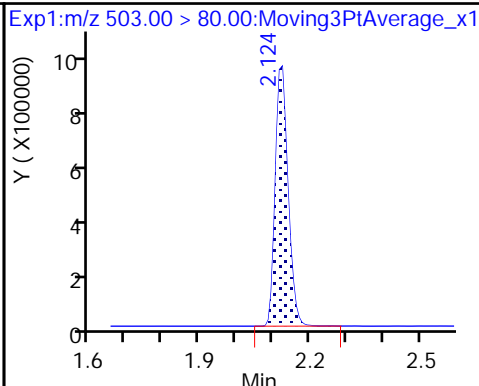
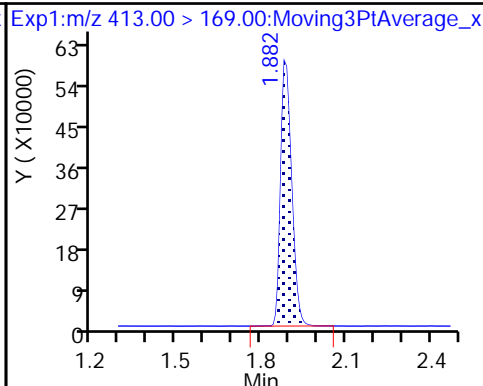
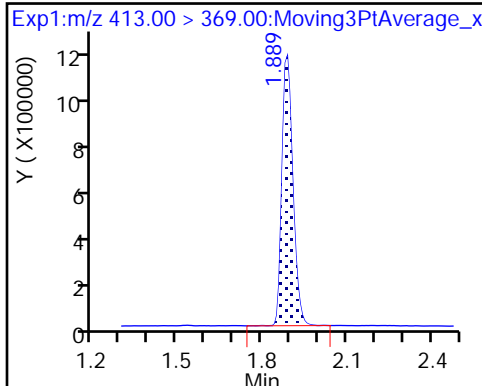
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

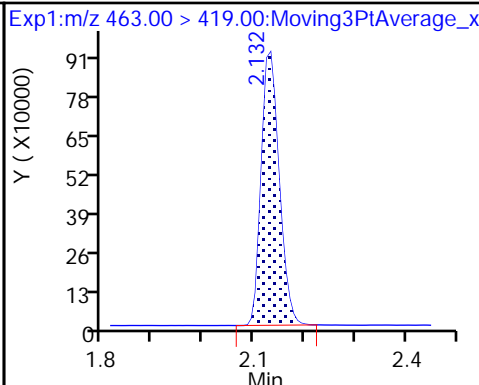
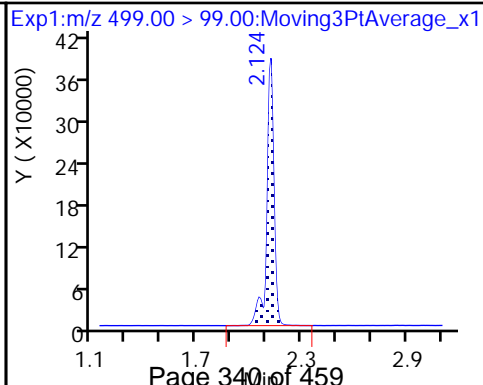
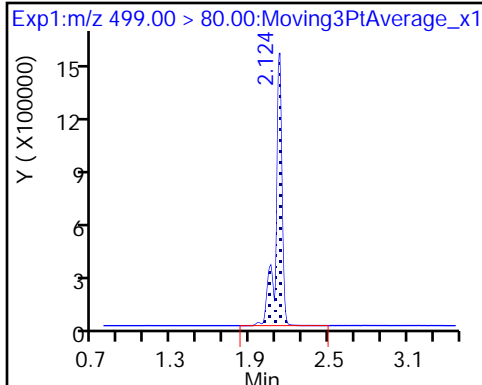
* 7 13C4 PFOS



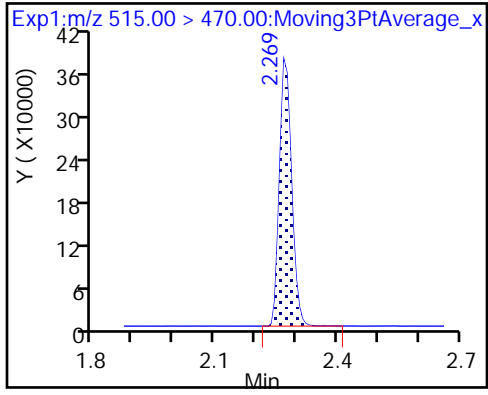
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

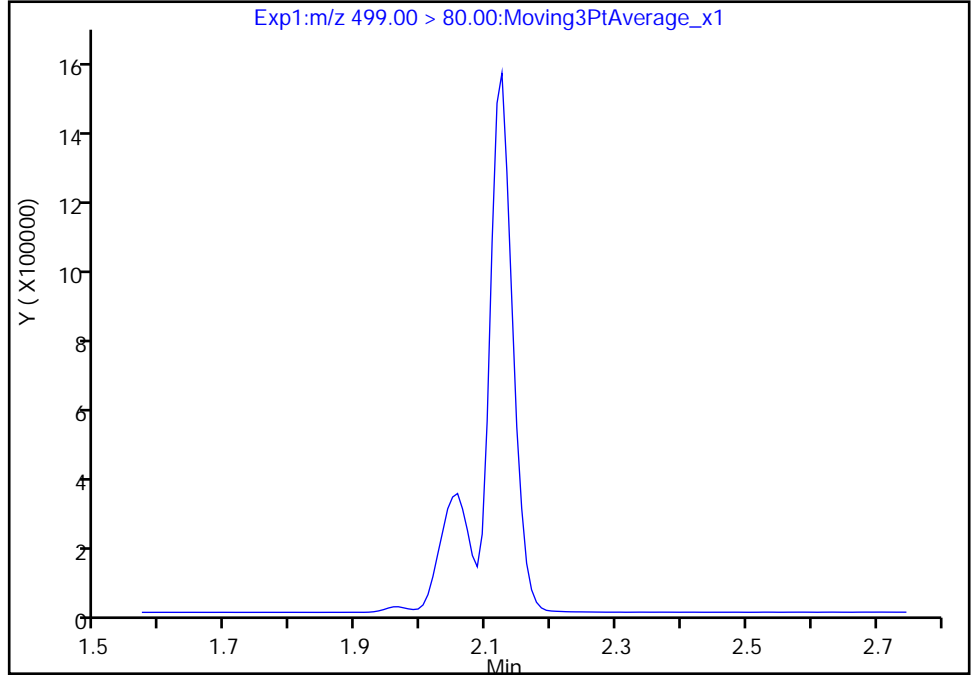
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Injection Date: 13-Apr-2018 00:27:43 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

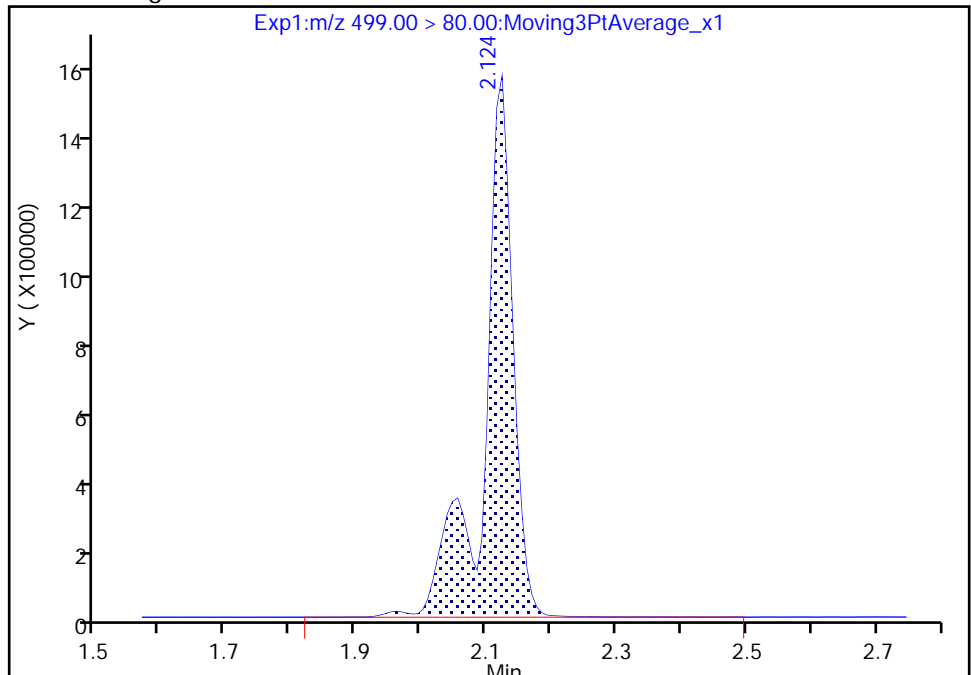
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 4811356
Amount: 58.763032
Amount Units: ng/ml



Reviewer: roycea, 13-Apr-2018 09:24:27
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217814/13 Calibration Date: 04/13/2018 01:23
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.12_537AA_041.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 1.132 | | 48.5 | 45.0 | 7.7 | 30.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 1.050 | | 4.75 | 4.86 | -2.2 | 30.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.680 | | 15.5 | 15.1 | 2.3 | 30.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 1.051 | | 9.79 | 9.90 | -1.1 | 30.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 1.068 | | 19.8 | 19.8 | 0.2 | 30.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.8010 | | 9.41 | 9.90 | -4.9 | 30.0 |
| 13C2 PFHxA | Ave | 1.063 | 1.074 | | 10.1 | 10.0 | 1.0 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.7979 | | 9.38 | 10.0 | -6.2 | 30.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217816/13 Calibration Date: 04/13/2018 01:23
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.12_537AA_041.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 1.132 | | 48.5 | 45.0 | 7.7 | 30.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 1.050 | | 4.75 | 4.86 | -2.2 | 30.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.680 | | 15.5 | 15.1 | 2.3 | 30.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 1.051 | | 9.79 | 9.90 | -1.1 | 30.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 1.068 | | 19.8 | 19.8 | 0.2 | 30.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.8010 | | 9.41 | 9.90 | -4.9 | 30.0 |
| 13C2 PFHxA | Ave | 1.063 | 1.074 | | 10.1 | 10.0 | 1.0 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.7979 | | 9.38 | 10.0 | -6.2 | 30.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_041.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 13-Apr-2018 01:23:46 ALS Bottle#: 3 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:45 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: roycea Date: 13-Apr-2018 09:26:48

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.381 | 0.0 | 1.000 | 4103656 | 48.5 | | 7432 | |
| 298.90 > 99.00 | 1.381 | 1.381 | 0.0 | 1.000 | 3051003 | | 1.35(0.00-0.00) | 7799 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 1017954 | 10.1 | | 9358 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.677 | 0.0 | 1.000 | 483499 | 4.75 | | 15.3 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.677 | 1.677 | 0.0 | 1.000 | 2044336 | 15.5 | | 2721 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.866 | 0.0 | | 947894 | 10.0 | | 5083 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.874 | 1.874 | 0.0 | 1.000 | 986250 | 9.79 | | 133 | |
| 413.00 > 169.00 | 1.866 | 1.874 | -0.008 | 0.996 | 541222 | | 1.82(0.00-0.00) | 662 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.109 | 2.094 | 0.015 | 1.000 | 1698814 | 19.8 | | 1697 | a |
| 499.00 > 99.00 | 2.109 | 2.094 | 0.015 | 1.000 | 365884 | | 4.64(0.00-0.00) | 864 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2307891 | 28.7 | | 4429 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.117 | 2.117 | 0.0 | 1.000 | 751681 | 9.41 | | 146 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.253 | 2.253 | 0.0 | 1.000 | 756312 | 9.38 | | 6836 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L3_00025

Amount Added: 1.00

Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_041.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 13-Apr-2018 01:23:46 ALS Bottle#: 3 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:45 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: roycea Date: 13-Apr-2018 09:26:48

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.381 | 0.0 | 1.000 | 4103656 | 48.5 | | 7432 | |
| 298.90 > 99.00 | 1.381 | 1.381 | 0.0 | 1.000 | 3051003 | | 1.35(0.00-0.00) | 7799 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 1017954 | 10.1 | | 9358 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.677 | 0.0 | 1.000 | 483499 | 4.75 | | 15.3 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.677 | 1.677 | 0.0 | 1.000 | 2044336 | 15.5 | | 2721 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.866 | 0.0 | | 947894 | 10.0 | | 5083 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.874 | 1.874 | 0.0 | 1.000 | 986250 | 9.79 | | 133 | |
| 413.00 > 169.00 | 1.866 | 1.874 | -0.008 | 0.996 | 541222 | | 1.82(0.00-0.00) | 662 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.109 | 2.094 | 0.015 | 1.000 | 1698814 | 19.8 | | 1697 | a |
| 499.00 > 99.00 | 2.109 | 2.094 | 0.015 | 1.000 | 365884 | | 4.64(0.00-0.00) | 864 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2307891 | 28.7 | | 4429 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.117 | 2.117 | 0.0 | 1.000 | 751681 | 9.41 | | 146 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.253 | 2.253 | 0.0 | 1.000 | 756312 | 9.38 | | 6836 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L3_00025

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_041.d

Injection Date: 13-Apr-2018 01:23:46

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

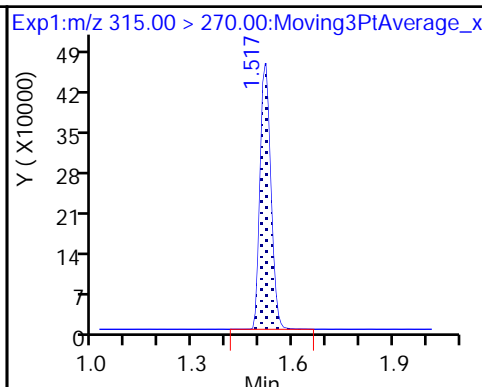
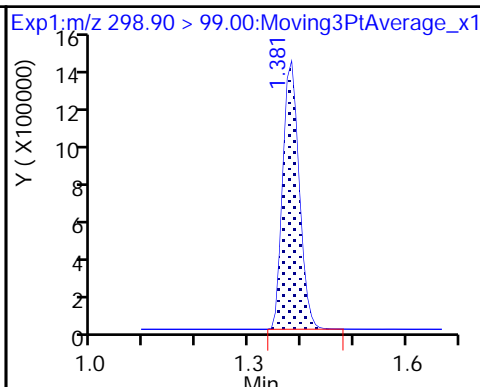
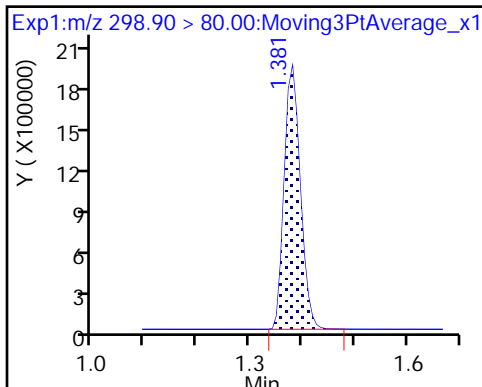
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

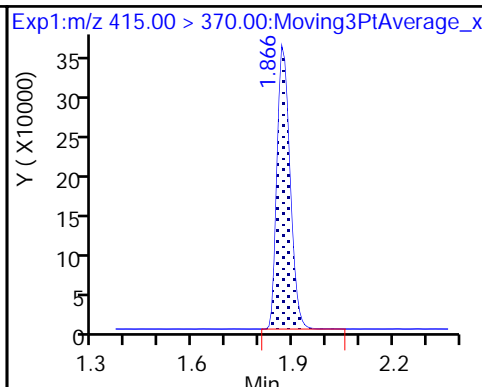
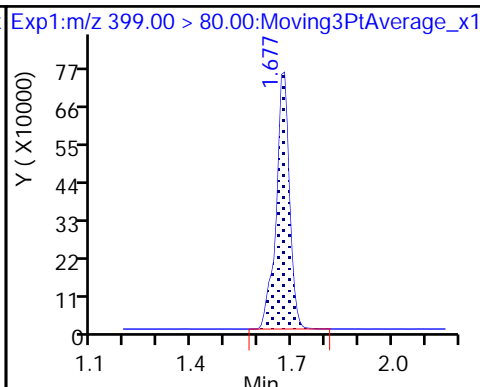
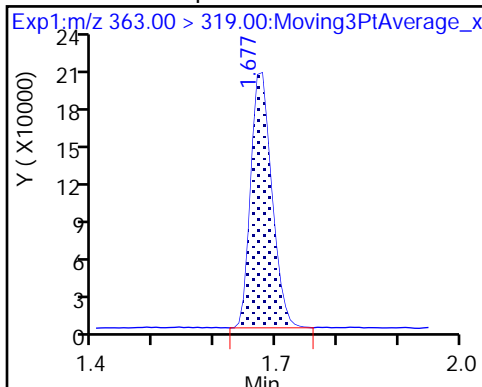
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

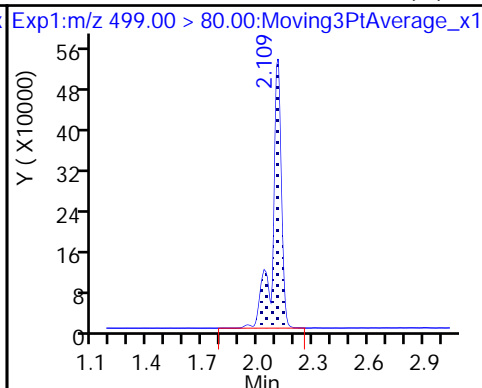
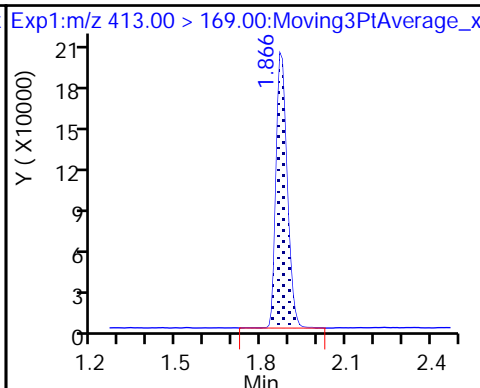
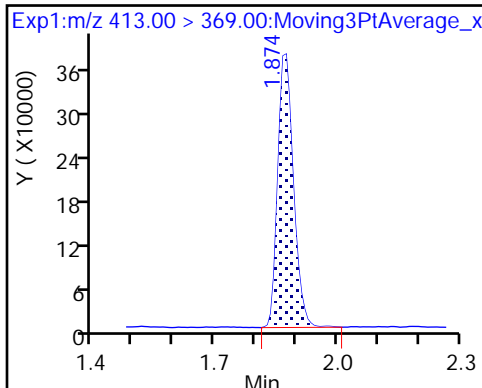
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

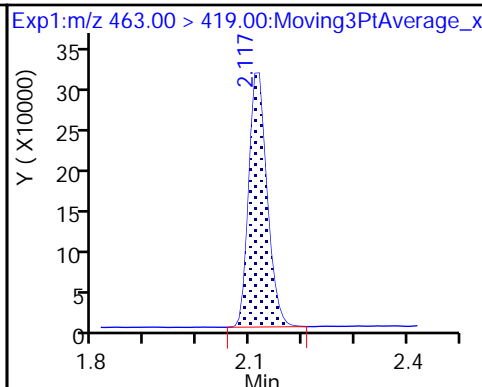
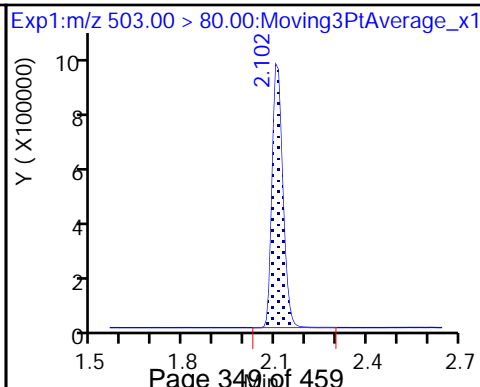
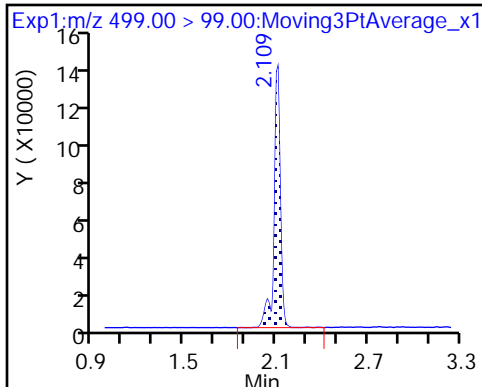
8 Perfluorooctane sulfonic acid (M)



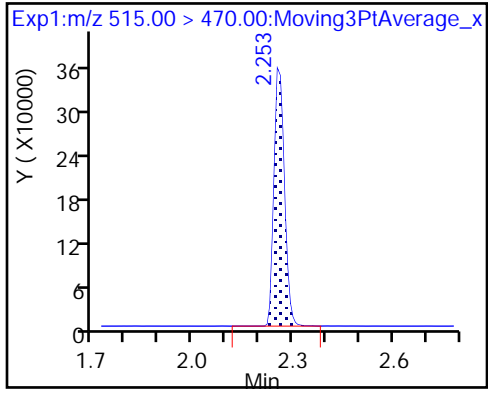
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_041.d

Injection Date: 13-Apr-2018 01:23:46

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

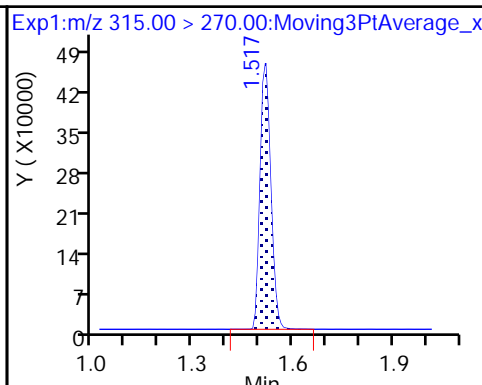
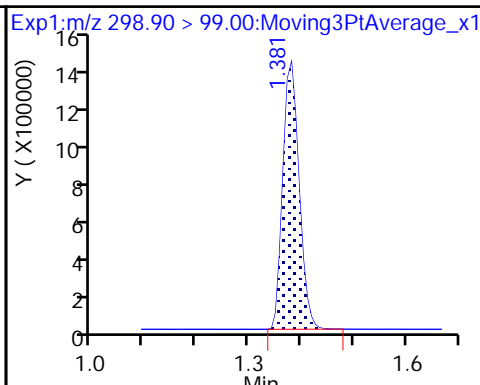
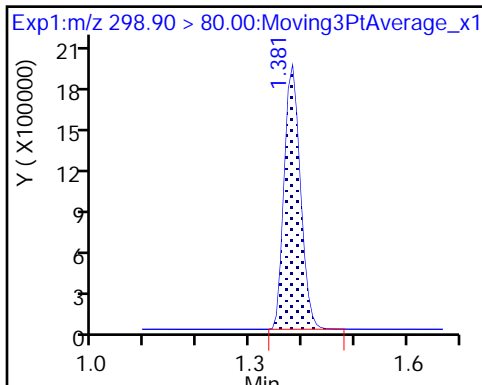
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

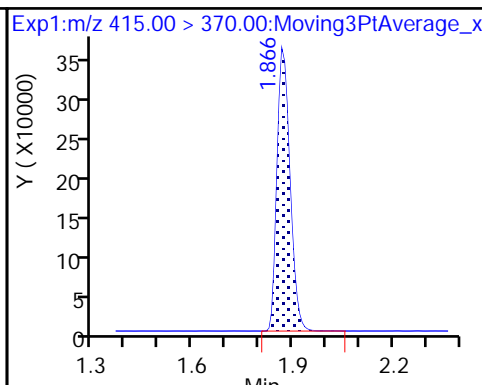
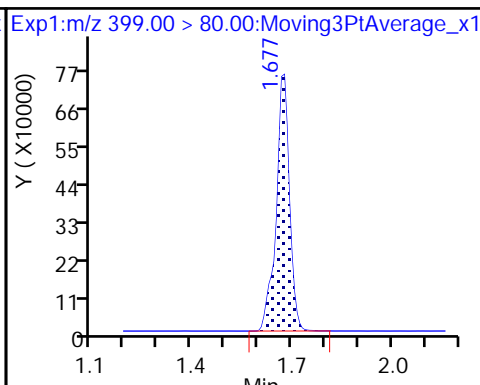
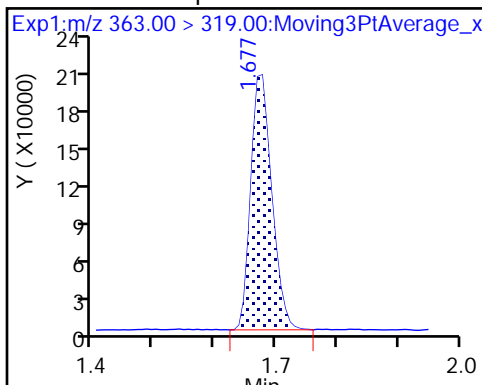
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

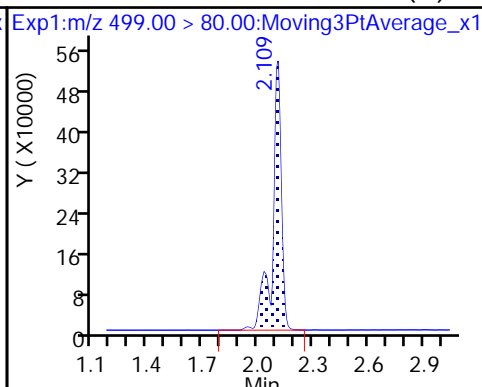
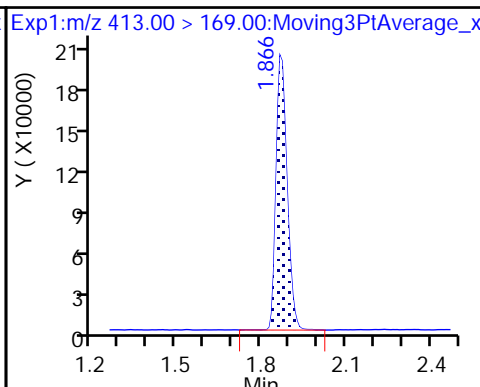
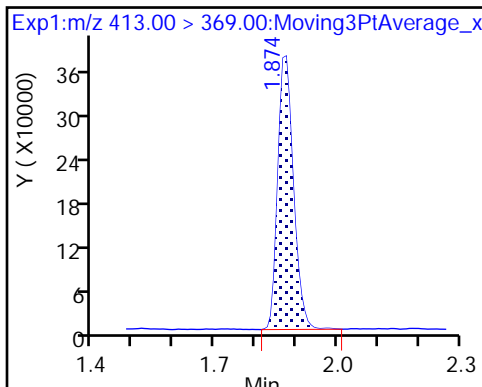
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

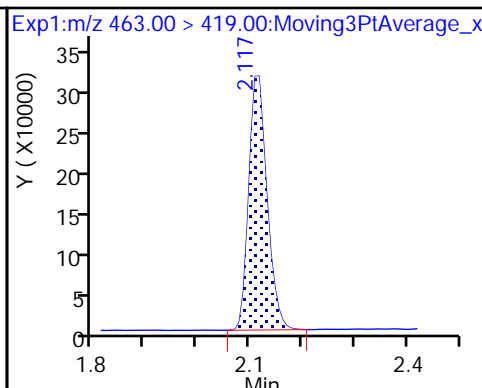
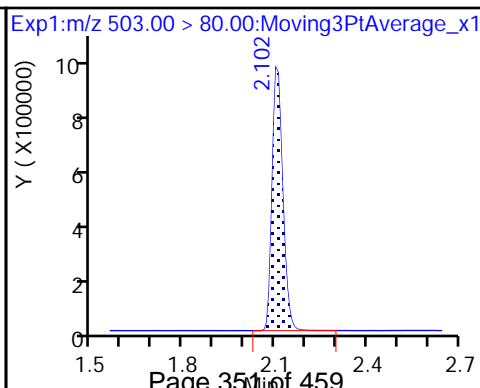
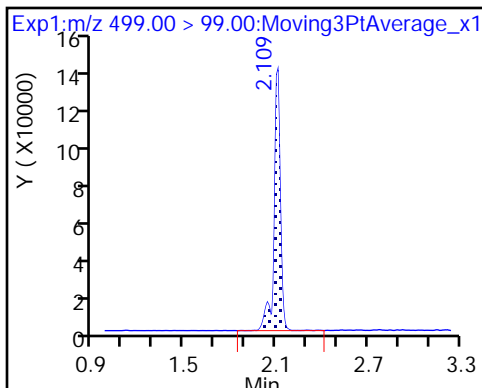
8 Perfluorooctane sulfonic acid (M)



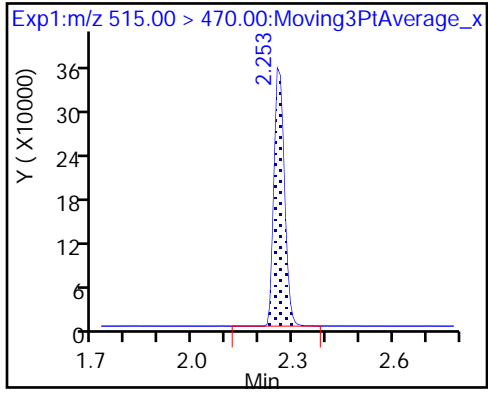
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

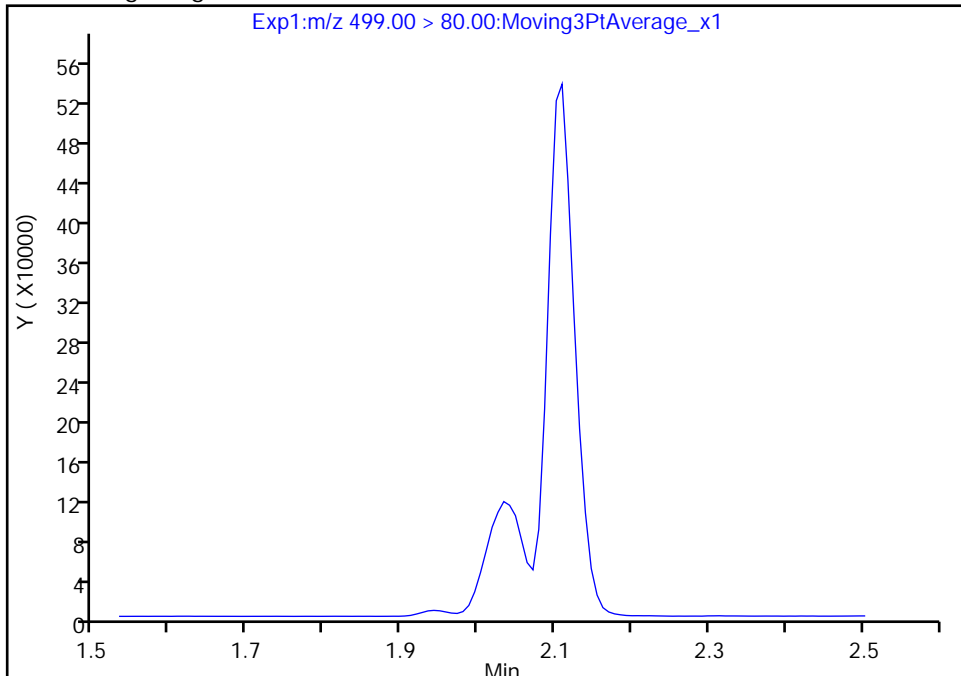
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_041.d
Injection Date: 13-Apr-2018 01:23:46 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

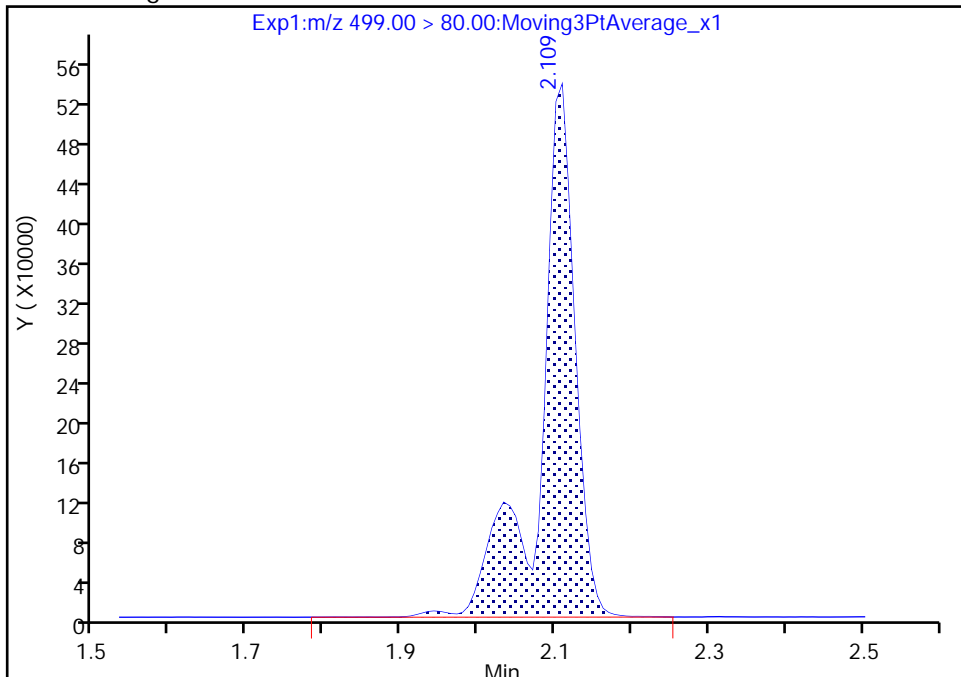
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.11
Area: 1698814
Amount: 19.802626
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 13-Apr-2018 09:26:39
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

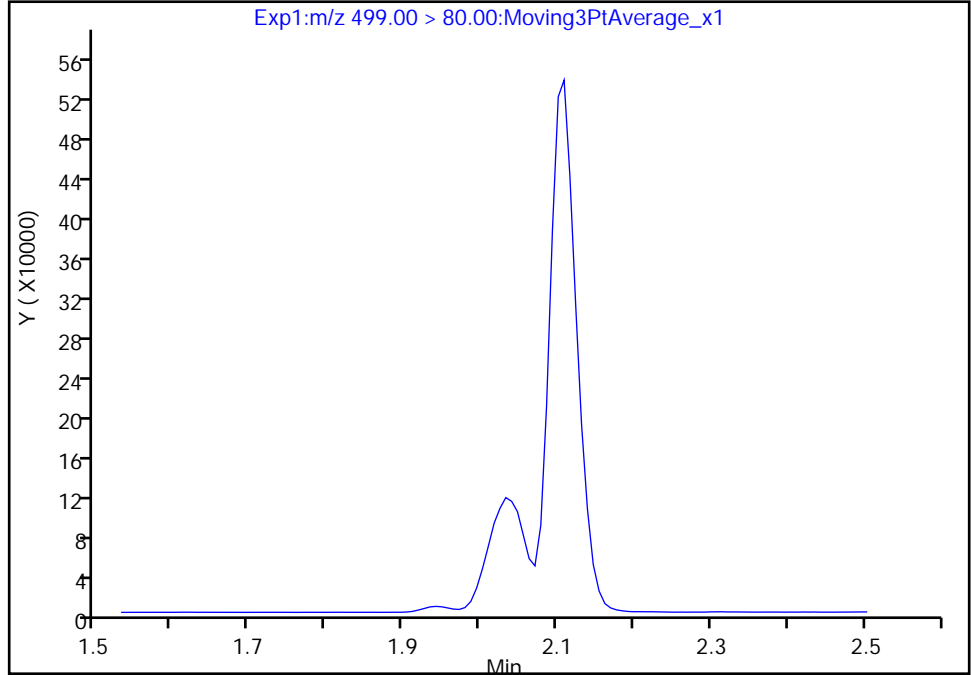
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_041.d
Injection Date: 13-Apr-2018 01:23:46 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

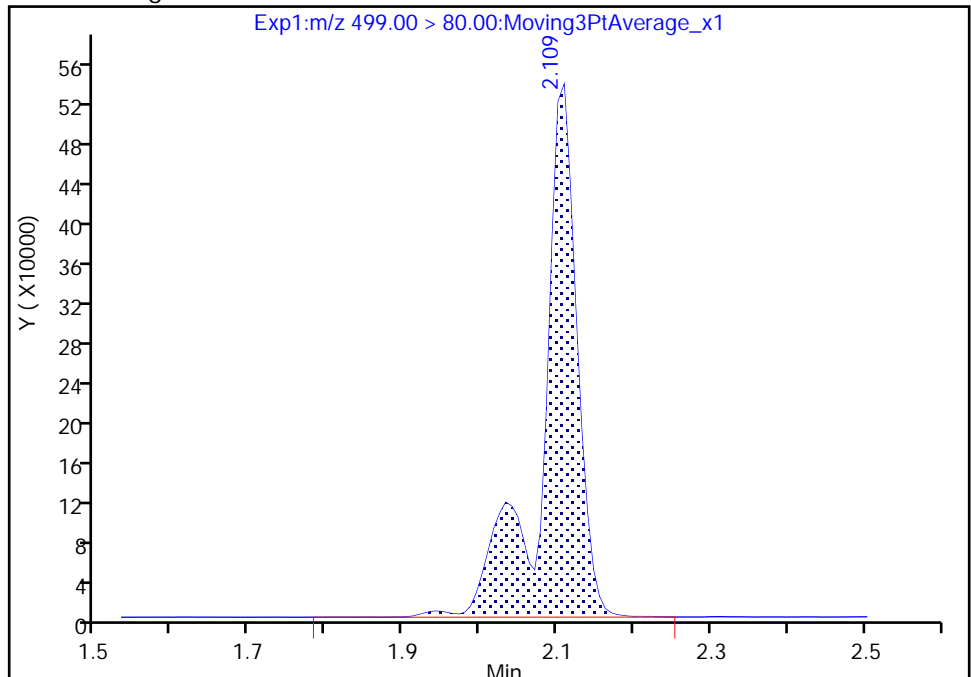
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.11
Area: 1698814
Amount: 19.802626
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 13-Apr-2018 09:26:39
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217816/19 Calibration Date: 04/13/2018 01:51
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.12_537AA_047.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 1.083 | | 139 | 135 | 2.9 | 30.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 1.081 | | 14.7 | 14.6 | 0.7 | 30.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.709 | | 47.2 | 45.4 | 4.0 | 30.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 1.082 | | 30.2 | 29.7 | 1.8 | 30.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.8552 | | 30.2 | 29.7 | 1.5 | 30.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 1.096 | | 61.0 | 59.3 | 2.8 | 30.0 |
| 13C2 PFHxA | Ave | 1.063 | 1.086 | | 10.2 | 10.0 | 2.1 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.8255 | | 9.71 | 10.0 | -2.9 | 30.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217818/19 Calibration Date: 04/13/2018 01:51
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.12_537AA_047.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 1.083 | | 139 | 135 | 2.9 | 30.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 1.081 | | 14.7 | 14.6 | 0.7 | 30.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.709 | | 47.2 | 45.4 | 4.0 | 30.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 1.082 | | 30.2 | 29.7 | 1.8 | 30.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.8552 | | 30.2 | 29.7 | 1.5 | 30.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 1.096 | | 61.0 | 59.3 | 2.8 | 30.0 |
| 13C2 PFHxA | Ave | 1.063 | 1.086 | | 10.2 | 10.0 | 2.1 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.8255 | | 9.71 | 10.0 | -2.9 | 30.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_047.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 13-Apr-2018 01:51:47 ALS Bottle#: 5 Worklist Smp#: 19
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:54 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: roycea Date: 13-Apr-2018 09:27:42

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|-------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.381 | 0.0 | 1.000 | 10956527 | 139.1 | | 14938 | |
| 298.90 > 99.00 | 1.381 | 1.381 | 0.0 | 1.000 | 8167747 | | 1.34(0.00-0.00) | 17705 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 976923 | 10.2 | | 9615 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.677 | 0.0 | 1.000 | 1418352 | 14.7 | | 45.4 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.677 | 1.677 | 0.0 | 1.000 | 5807005 | 47.2 | | 7192 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.866 | 0.0 | | 899573 | 10.0 | | 4819 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.874 | 1.874 | 0.0 | 1.000 | 2889639 | 30.2 | | 429 | |
| 413.00 > 169.00 | 1.874 | 1.874 | 0.0 | 1.000 | 1514485 | | 1.91(0.00-0.00) | 2064 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.109 | 2.094 | 0.015 | 1.000 | 4867344 | 61.0 | | 4584 | a |
| 499.00 > 99.00 | 2.102 | 2.094 | 0.008 | 0.996 | 1087695 | | 4.47(0.00-0.00) | 2665 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2148163 | 28.7 | | 3805 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.109 | 2.109 | 0.0 | 1.000 | 2284885 | 30.2 | | 428 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.261 | 2.261 | 0.0 | 1.000 | 742566 | 9.71 | | 7084 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00026

Amount Added: 1.00

Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_047.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 13-Apr-2018 01:51:47 ALS Bottle#: 5 Worklist Smp#: 19
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:54 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: roycea Date: 13-Apr-2018 09:27:42

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|-------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.381 | 0.0 | 1.000 | 10956527 | 139.1 | | 14938 | |
| 298.90 > 99.00 | 1.381 | 1.381 | 0.0 | 1.000 | 8167747 | | 1.34(0.00-0.00) | 17705 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 976923 | 10.2 | | 9615 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.677 | 0.0 | 1.000 | 1418352 | 14.7 | | 45.4 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.677 | 1.677 | 0.0 | 1.000 | 5807005 | 47.2 | | 7192 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.866 | 0.0 | | 899573 | 10.0 | | 4819 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.874 | 1.874 | 0.0 | 1.000 | 2889639 | 30.2 | | 429 | |
| 413.00 > 169.00 | 1.874 | 1.874 | 0.0 | 1.000 | 1514485 | | 1.91(0.00-0.00) | 2064 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.109 | 2.094 | 0.015 | 1.000 | 4867344 | 61.0 | | 4584 | a |
| 499.00 > 99.00 | 2.102 | 2.094 | 0.008 | 0.996 | 1087695 | | 4.47(0.00-0.00) | 2665 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2148163 | 28.7 | | 3805 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.109 | 2.109 | 0.0 | 1.000 | 2284885 | 30.2 | | 428 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.261 | 2.261 | 0.0 | 1.000 | 742566 | 9.71 | | 7084 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00026

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_047.d

Injection Date: 13-Apr-2018 01:51:47

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 19

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

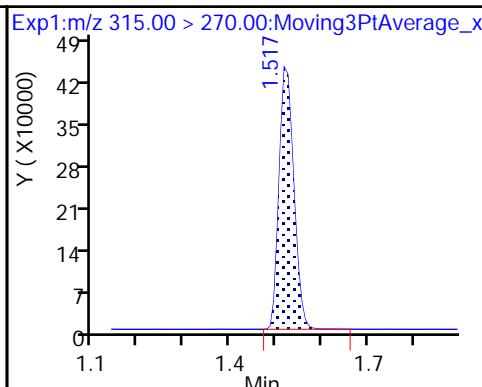
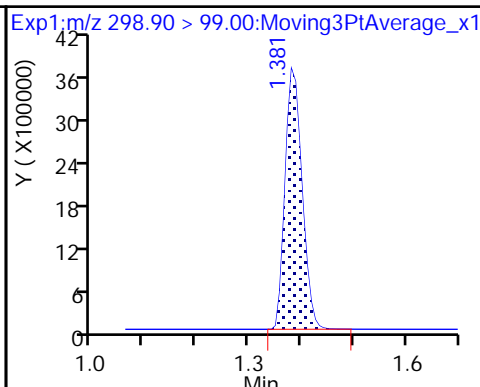
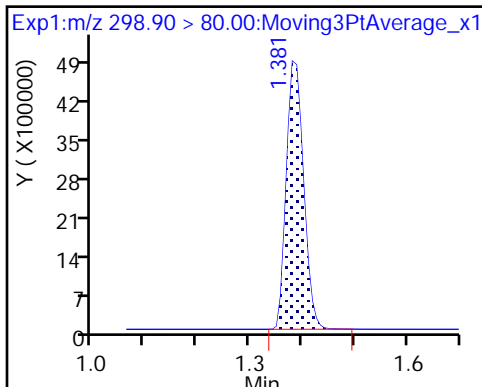
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

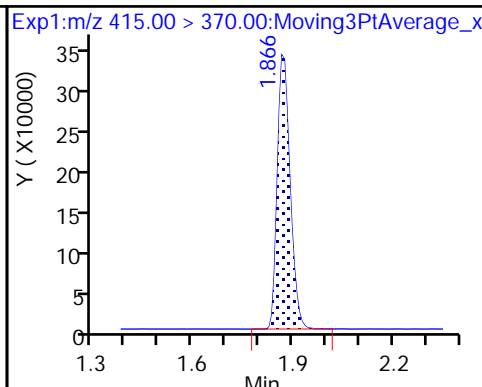
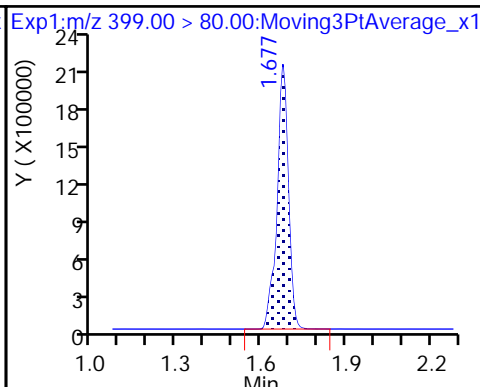
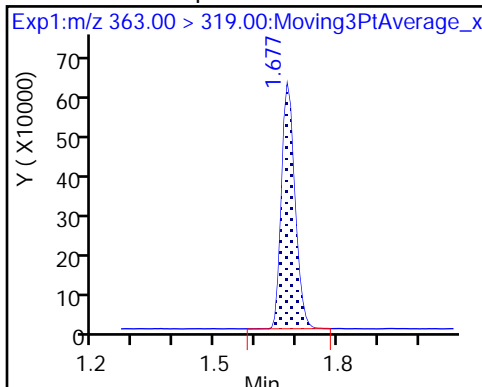
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

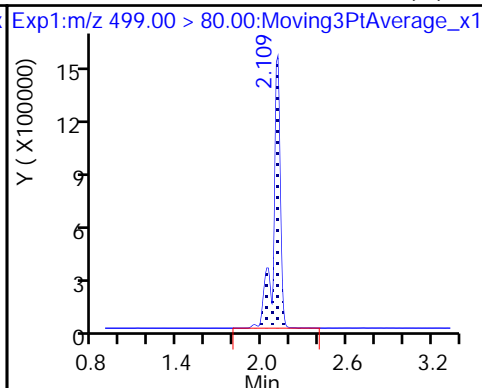
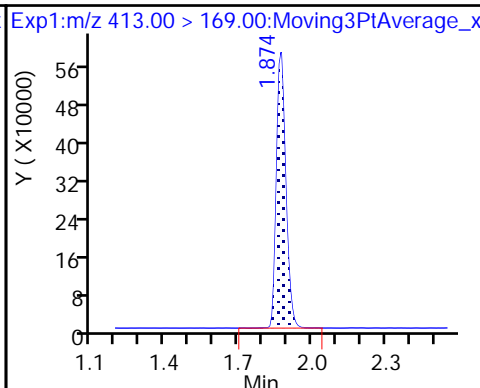
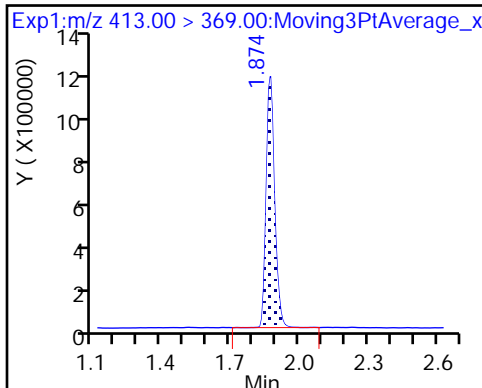
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

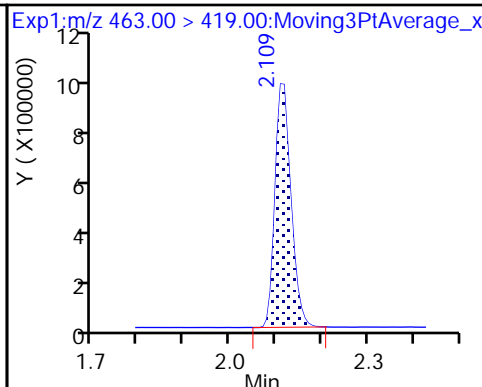
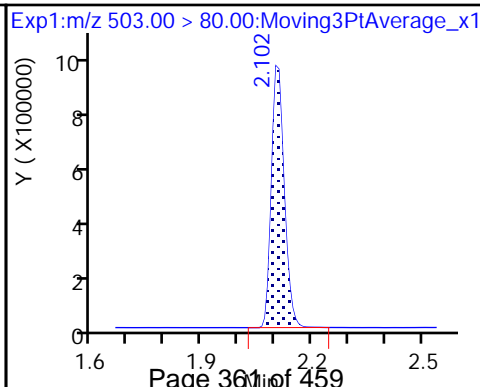
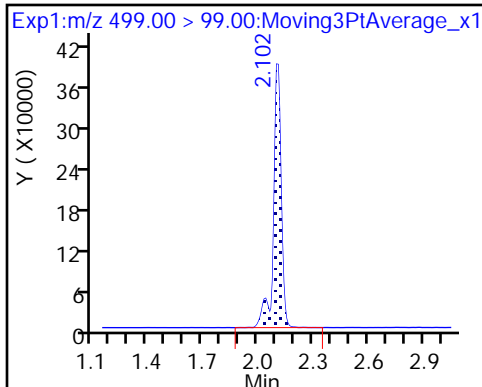
8 Perfluorooctane sulfonic acid (M)



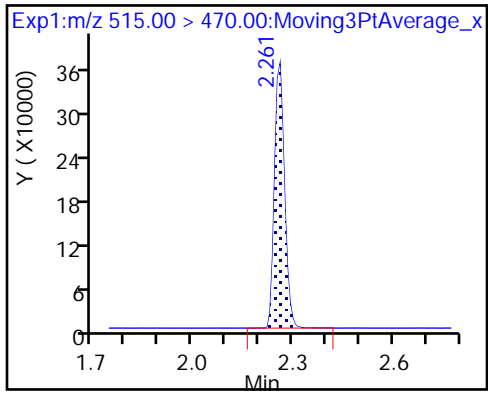
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_047.d

Injection Date: 13-Apr-2018 01:51:47

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 19

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

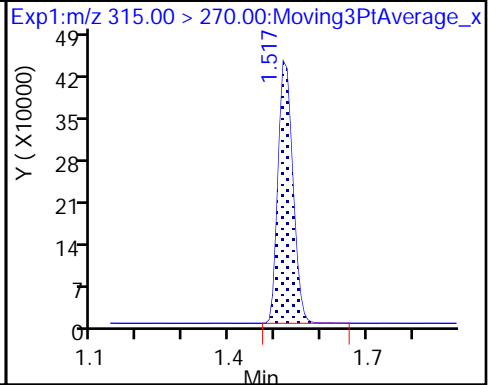
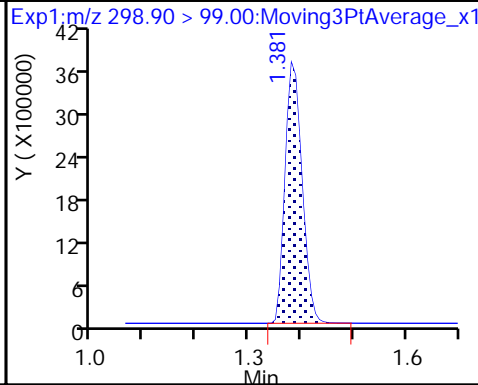
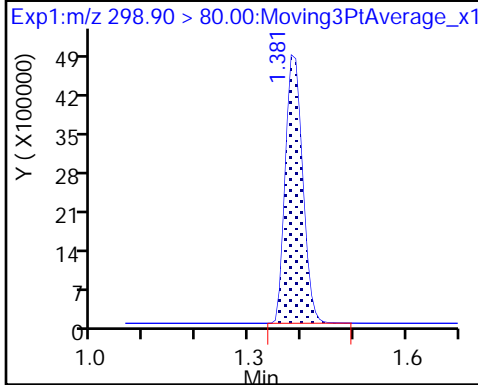
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

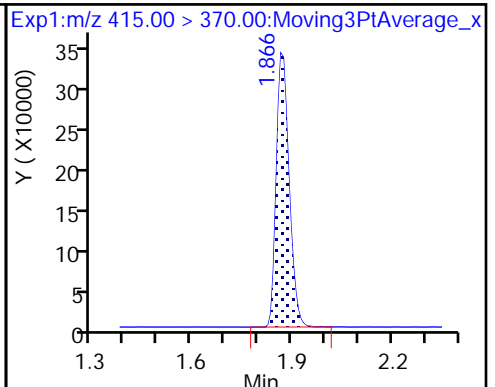
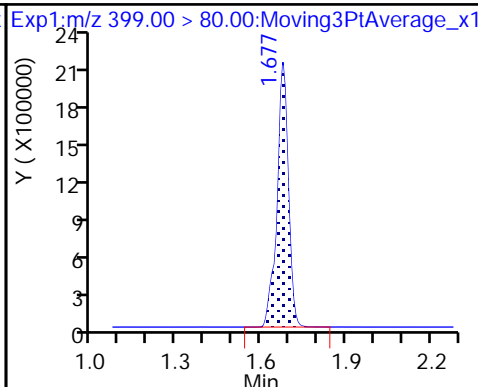
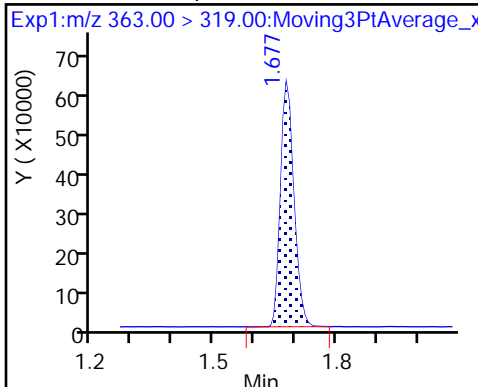
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

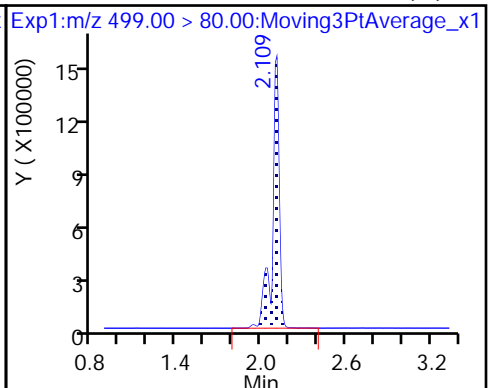
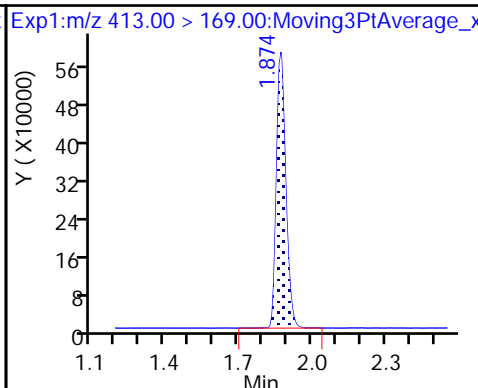
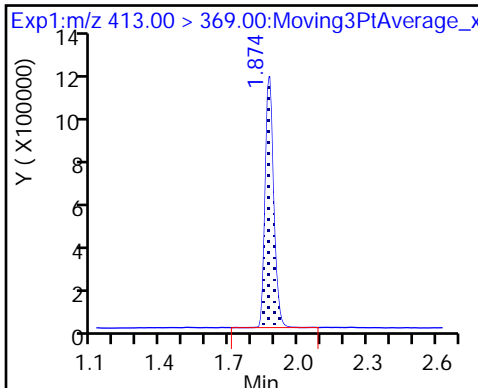
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

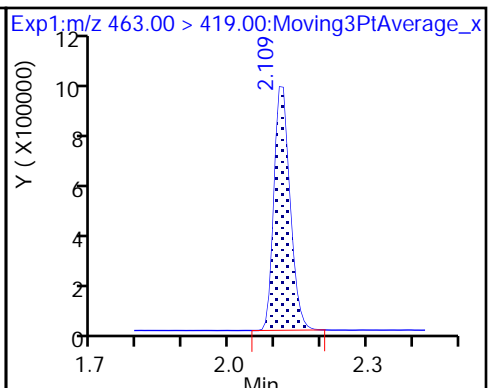
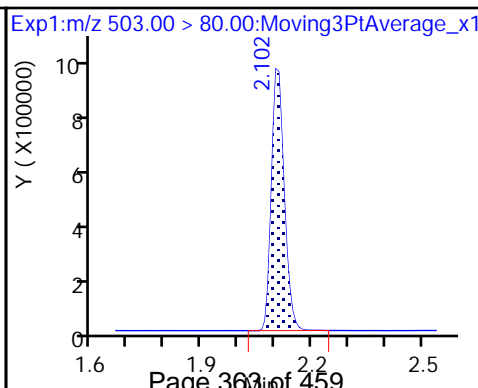
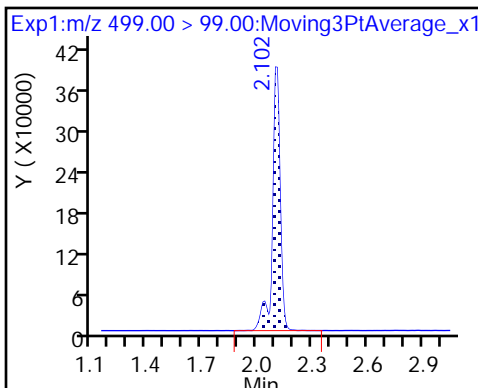
8 Perfluorooctane sulfonic acid (M)



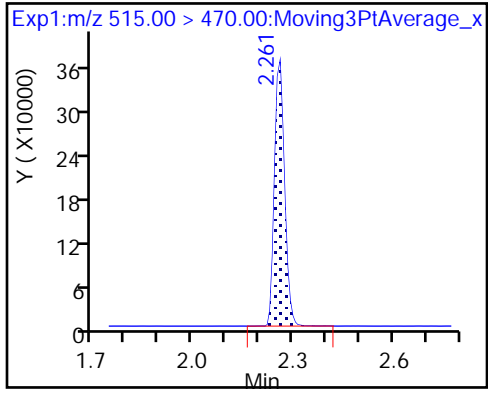
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

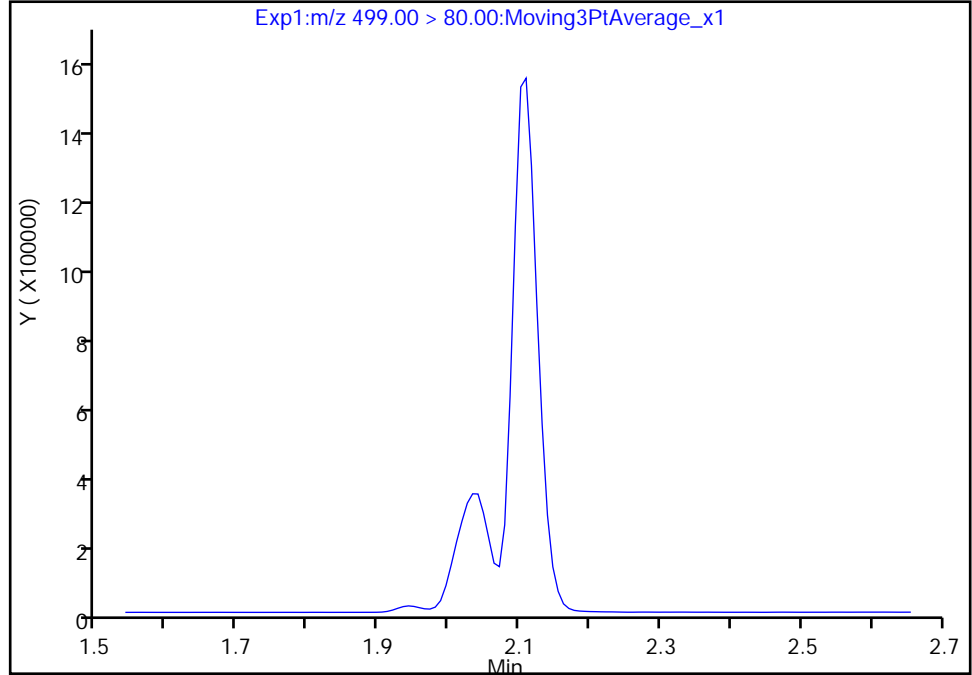
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_047.d
Injection Date: 13-Apr-2018 01:51:47 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

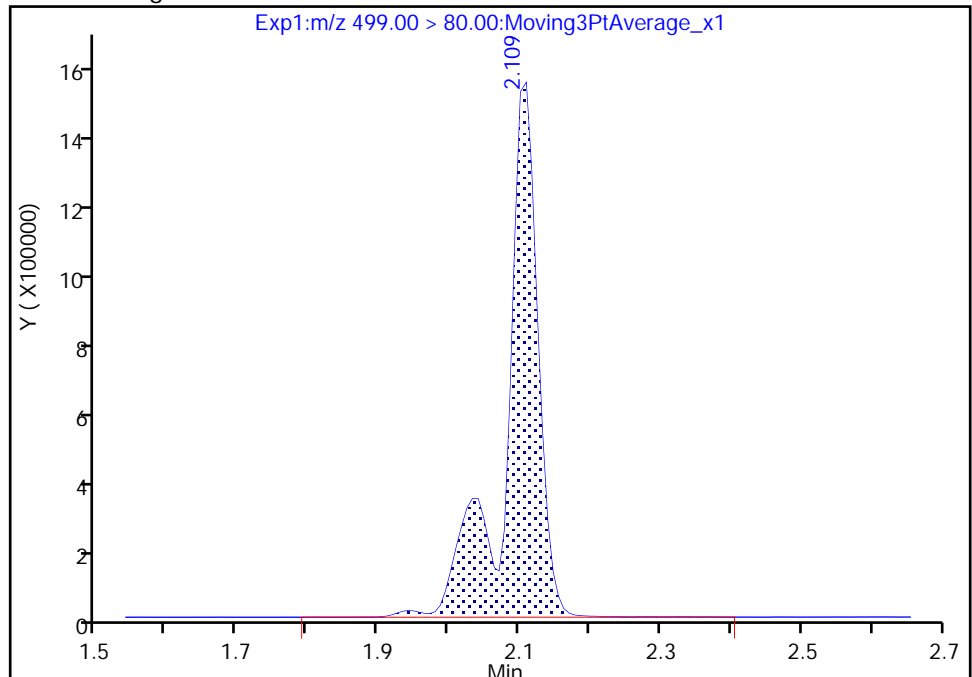
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.11
Area: 4867344
Amount: 60.956084
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 13-Apr-2018 09:27:32
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

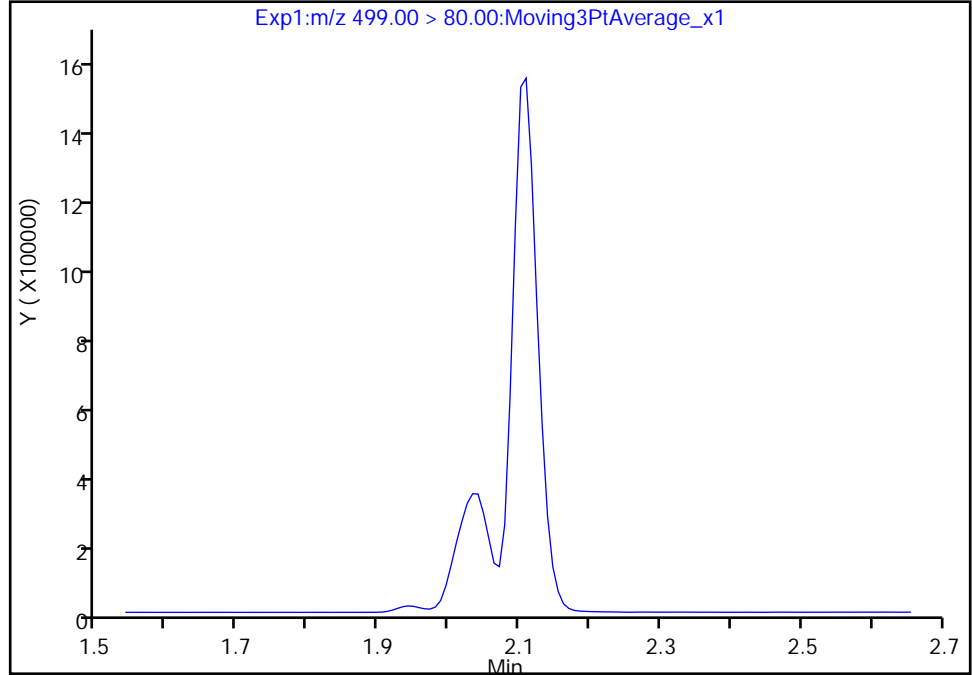
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Injection Date: 13-Apr-2018 01:51:47 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

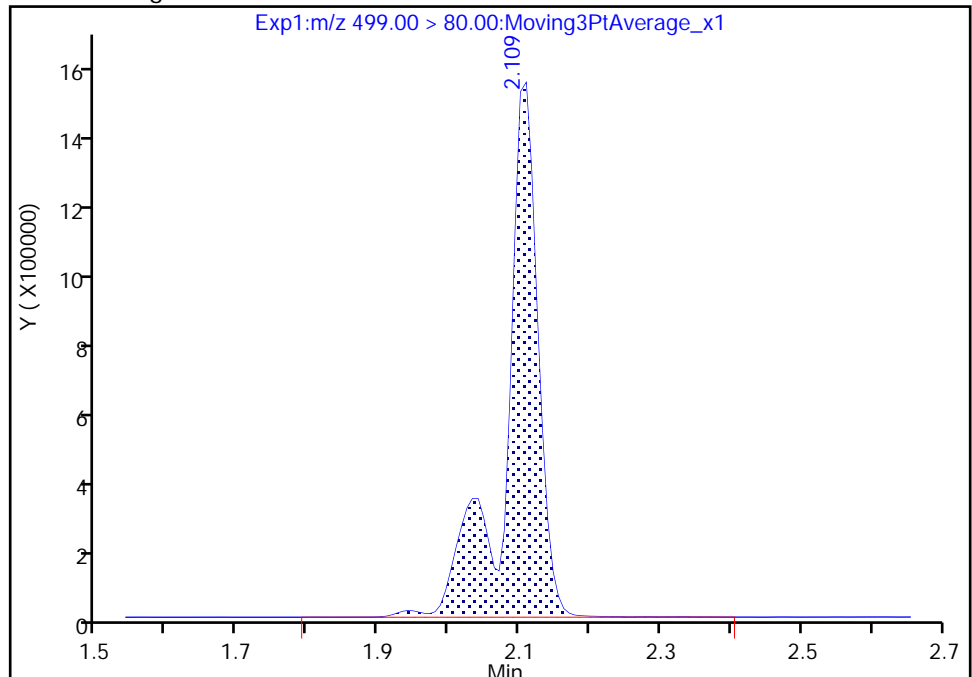
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 4867344
Amount: 60.956084
Amount Units: ng/ml



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217818/25 Calibration Date: 04/13/2018 02:19
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.12_537AA_053.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 1.098 | | 141 | 135 | 4.4 | 30.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 1.071 | | 14.5 | 14.6 | -0.3 | 30.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.747 | | 48.3 | 45.4 | 6.4 | 30.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 1.078 | | 30.1 | 29.7 | 1.4 | 30.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 1.088 | | 60.5 | 59.3 | 2.1 | 30.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.8382 | | 29.6 | 29.7 | -0.5 | 30.0 |
| 13C2 PFHxA | Ave | 1.063 | 1.058 | | 9.96 | 10.0 | -0.4 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.8187 | | 9.63 | 10.0 | -3.7 | 30.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217820/25 Calibration Date: 04/13/2018 02:19
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.12_537AA_053.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 1.098 | | 141 | 135 | 4.4 | 30.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 1.071 | | 14.5 | 14.6 | -0.3 | 30.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.747 | | 48.3 | 45.4 | 6.4 | 30.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 1.078 | | 30.1 | 29.7 | 1.4 | 30.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 1.088 | | 60.5 | 59.3 | 2.1 | 30.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.8382 | | 29.6 | 29.7 | -0.5 | 30.0 |
| 13C2 PFHxA | Ave | 1.063 | 1.058 | | 9.96 | 10.0 | -0.4 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.8187 | | 9.63 | 10.0 | -3.7 | 30.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_053.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 13-Apr-2018 02:19:51 ALS Bottle#: 5 Worklist Smp#: 25
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: roycea Date: 13-Apr-2018 09:28:38

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|-------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.381 | 0.0 | 1.000 | 10936921 | 141.0 | | 15864 | |
| 298.90 > 99.00 | 1.381 | 1.381 | 0.0 | 1.000 | 8183283 | | 1.34(0.00-0.00) | 17488 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 975404 | 9.96 | | 9606 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.677 | 0.0 | 1.000 | 1438614 | 14.5 | | 44.6 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.677 | 1.677 | 0.0 | 1.000 | 5846210 | 48.3 | | 7187 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.874 | 1.874 | 0.0 | | 921520 | 10.0 | | 4572 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.874 | 1.874 | 0.0 | 1.000 | 2949357 | 30.1 | | 402 | |
| 413.00 > 169.00 | 1.874 | 1.874 | 0.0 | 1.000 | 1574077 | | 1.87(0.00-0.00) | 2047 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.109 | 2.094 | 0.015 | 1.000 | 4759332 | 60.5 | | 4467 | a |
| 499.00 > 99.00 | 2.109 | 2.094 | 0.015 | 1.000 | 1037680 | | 4.59(0.00-0.00) | 2406 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2115143 | 28.7 | | 3828 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.117 | 2.117 | 0.0 | 1.000 | 2294050 | 29.6 | | 423 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.253 | 2.253 | 0.0 | 1.000 | 754465 | 9.63 | | 6341 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00026

Amount Added: 1.00

Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_053.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 13-Apr-2018 02:19:51 ALS Bottle#: 5 Worklist Smp#: 25
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: roycea Date: 13-Apr-2018 09:28:38

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|-------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.381 | 0.0 | 1.000 | 10936921 | 141.0 | | 15864 | |
| 298.90 > 99.00 | 1.381 | 1.381 | 0.0 | 1.000 | 8183283 | | 1.34(0.00-0.00) | 17488 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 975404 | 9.96 | | 9606 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.677 | 0.0 | 1.000 | 1438614 | 14.5 | | 44.6 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.677 | 1.677 | 0.0 | 1.000 | 5846210 | 48.3 | | 7187 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.874 | 1.874 | 0.0 | | 921520 | 10.0 | | 4572 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.874 | 1.874 | 0.0 | 1.000 | 2949357 | 30.1 | | 402 | |
| 413.00 > 169.00 | 1.874 | 1.874 | 0.0 | 1.000 | 1574077 | | 1.87(0.00-0.00) | 2047 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.109 | 2.094 | 0.015 | 1.000 | 4759332 | 60.5 | | 4467 | a |
| 499.00 > 99.00 | 2.109 | 2.094 | 0.015 | 1.000 | 1037680 | | 4.59(0.00-0.00) | 2406 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2115143 | 28.7 | | 3828 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.117 | 2.117 | 0.0 | 1.000 | 2294050 | 29.6 | | 423 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.253 | 2.253 | 0.0 | 1.000 | 754465 | 9.63 | | 6341 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00026

Amount Added: 1.00

Units: mL

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_053.d

Injection Date: 13-Apr-2018 02:19:51

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 25

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

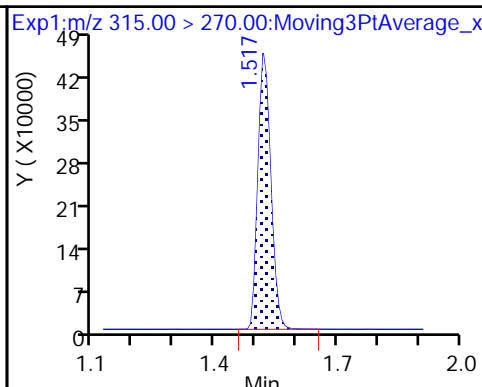
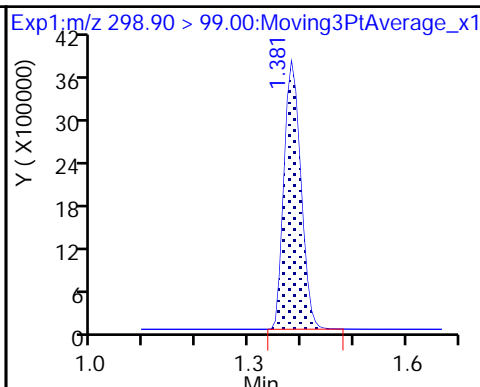
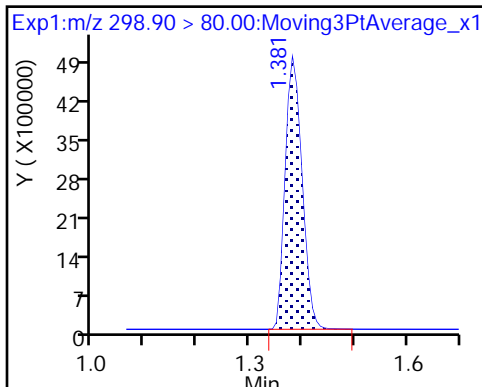
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

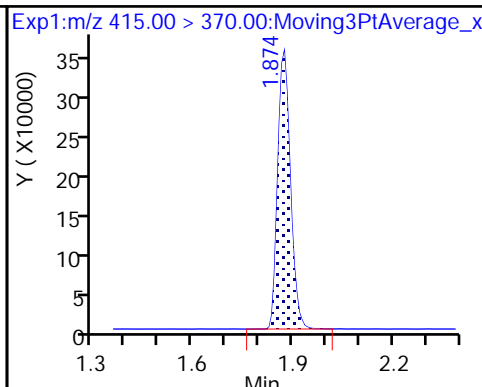
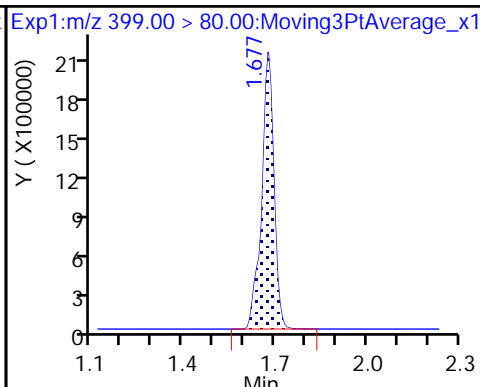
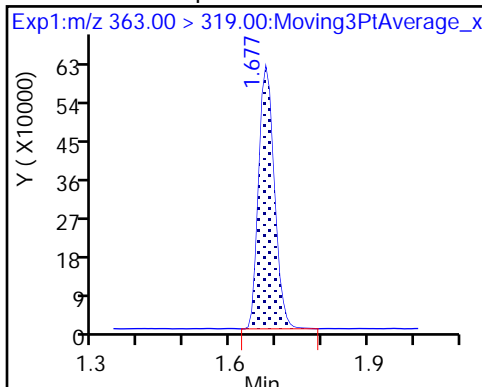
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

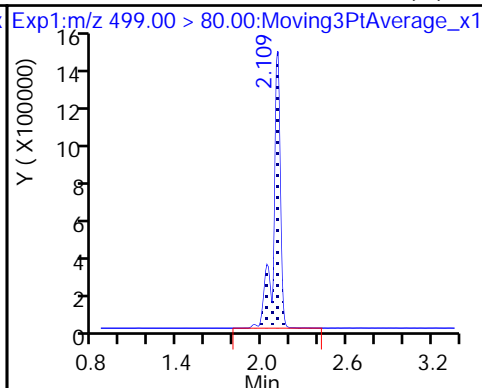
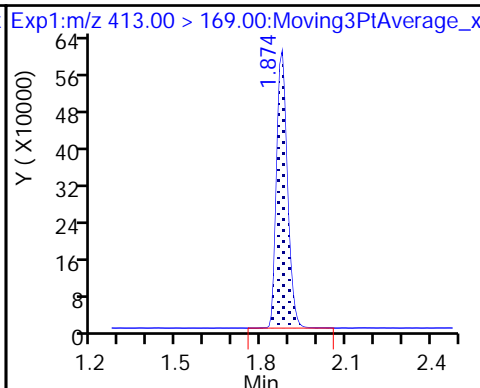
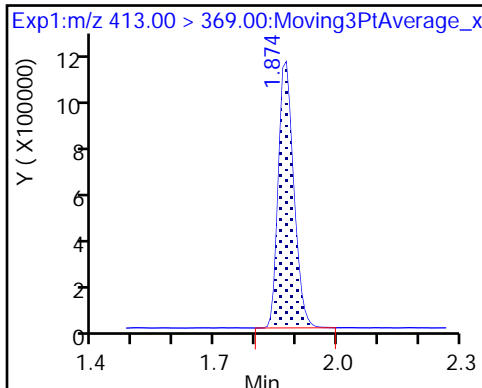
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

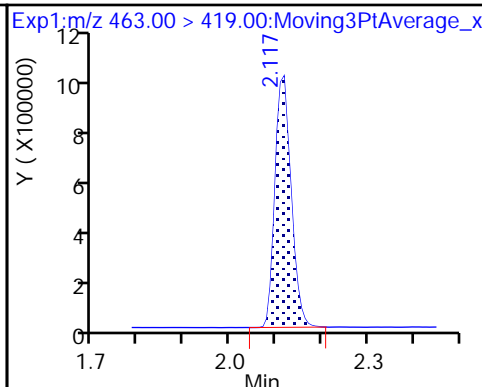
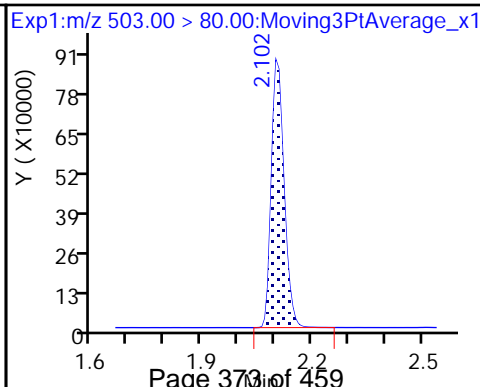
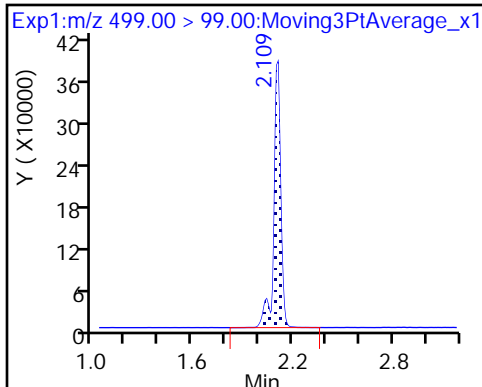
8 Perfluorooctane sulfonic acid (M)



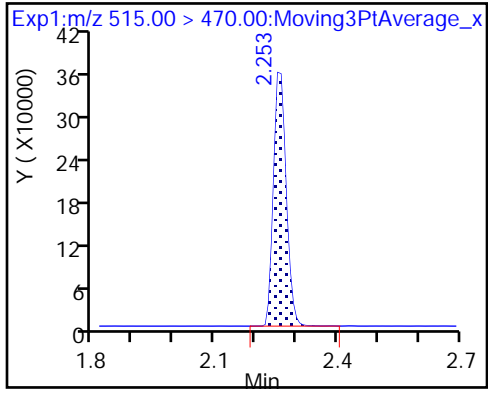
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_053.d

Injection Date: 13-Apr-2018 02:19:51

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 25

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

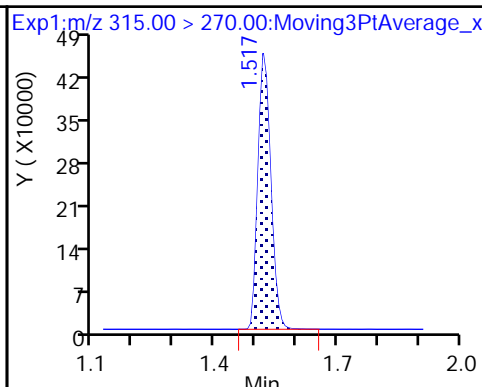
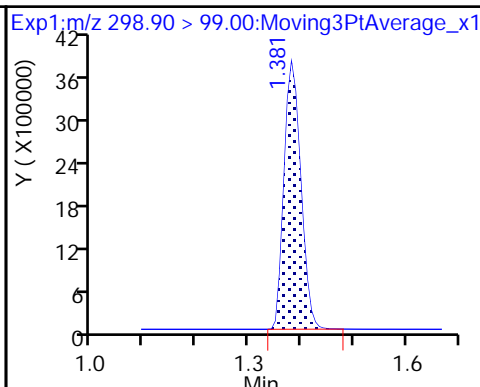
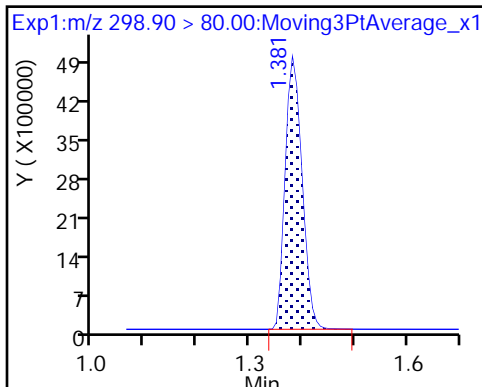
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

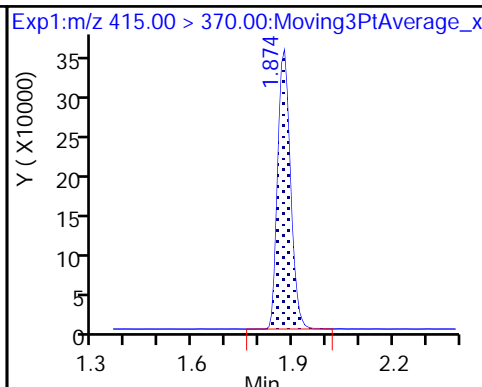
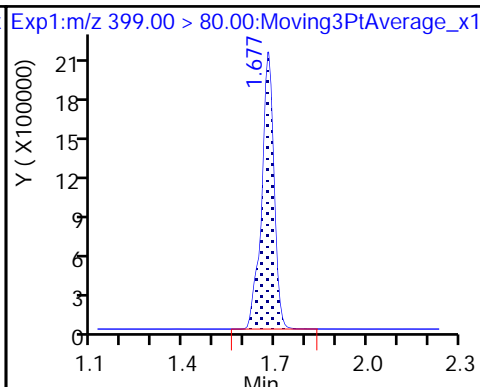
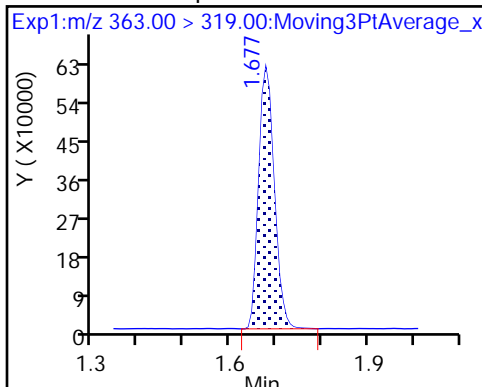
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

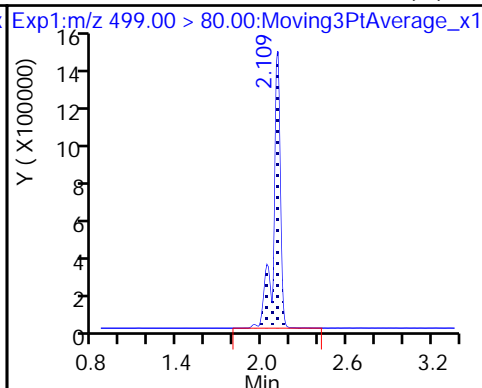
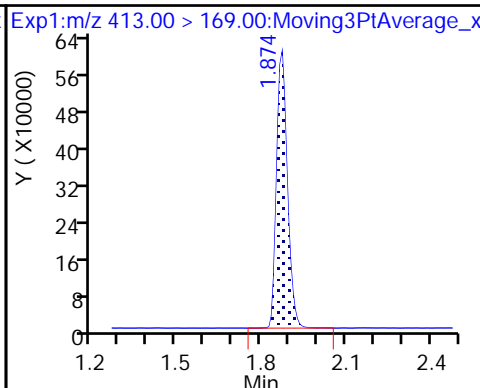
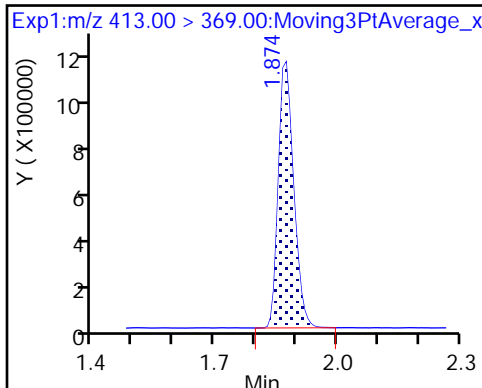
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

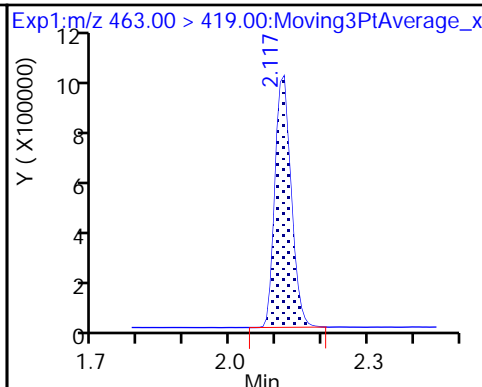
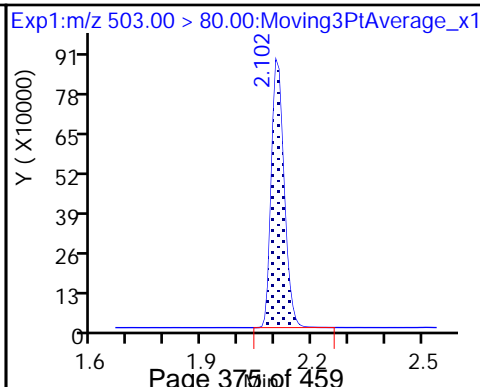
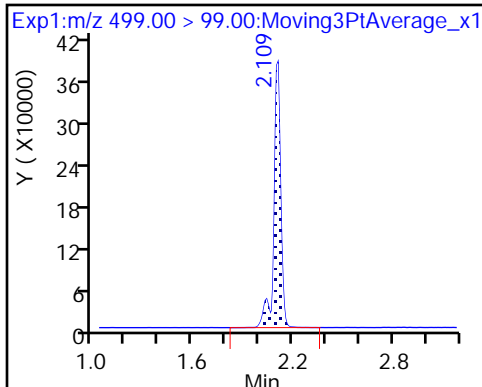
8 Perfluorooctane sulfonic acid (M)



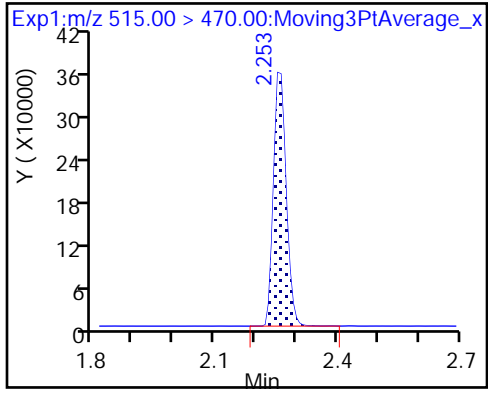
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

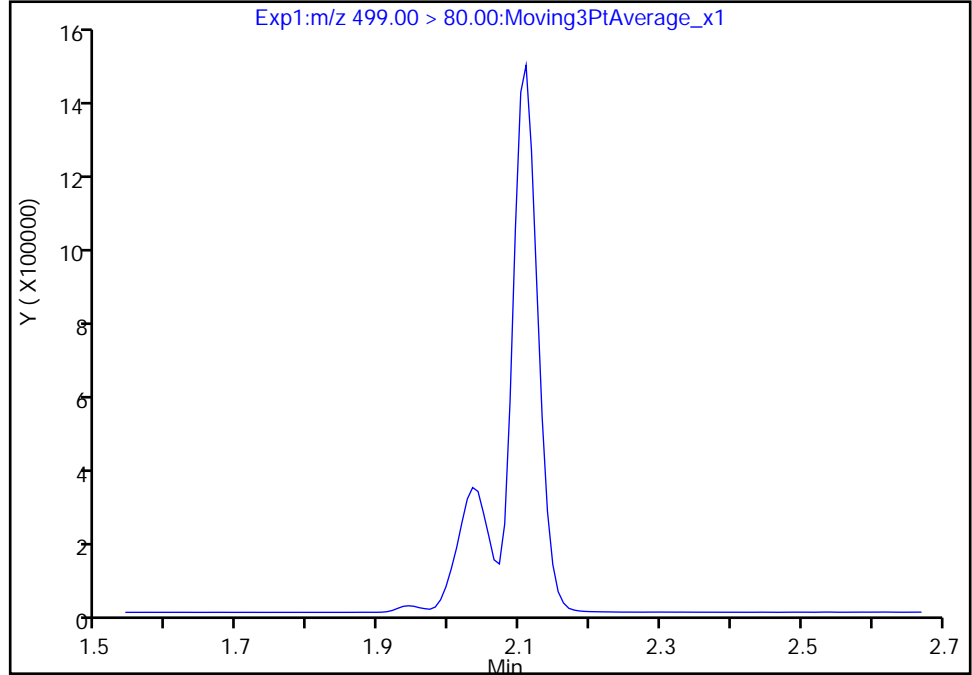
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_053.d
Injection Date: 13-Apr-2018 02:19:51 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

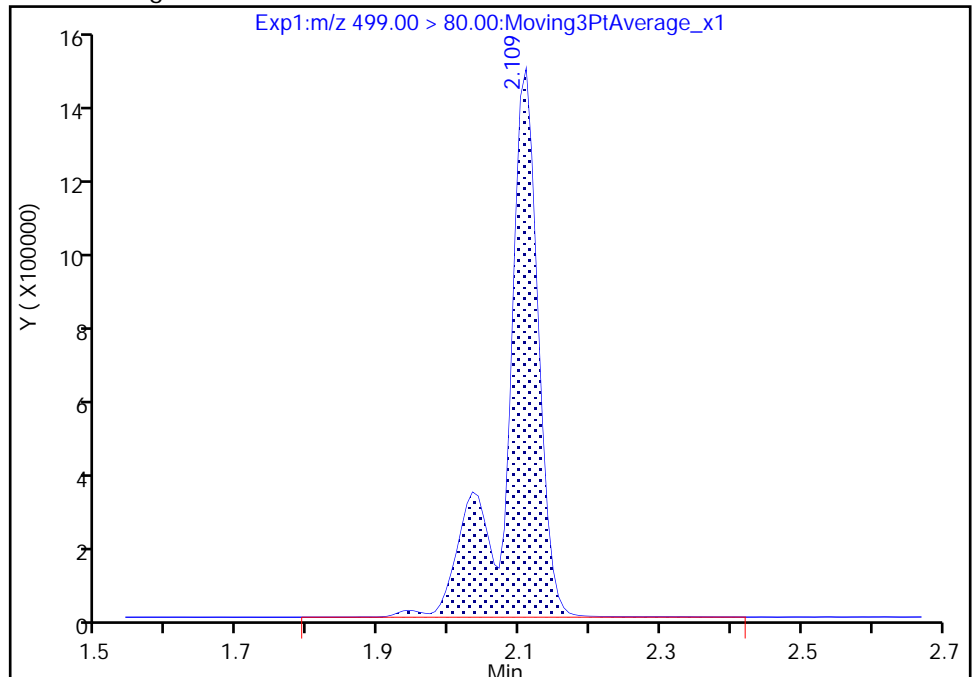
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 4759332
Amount: 60.533881
Amount Units: ng/ml



Reviewer: roycea, 13-Apr-2018 09:28:34
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

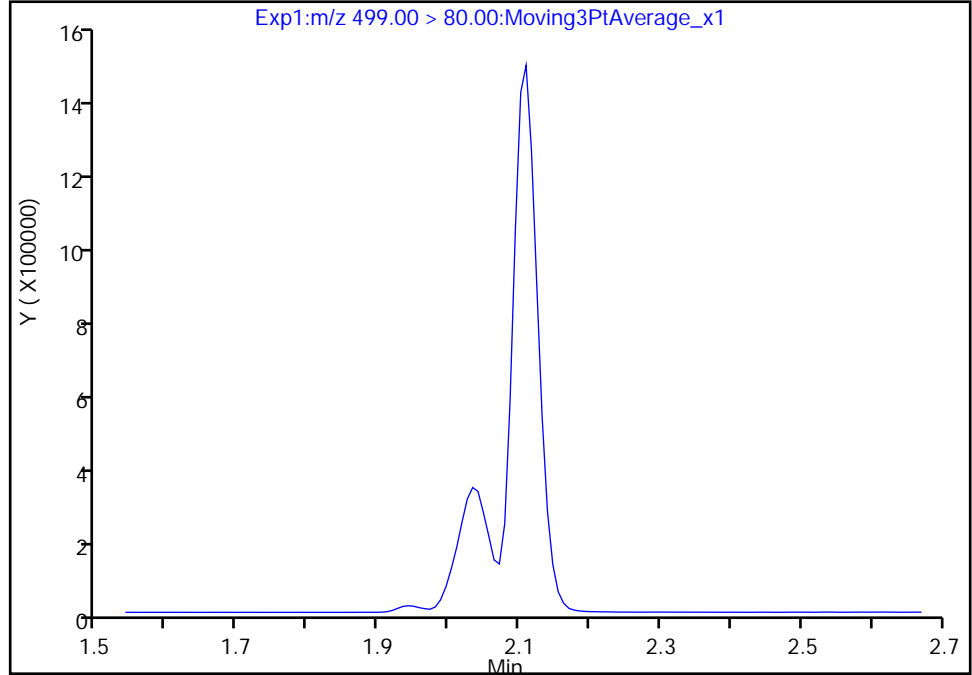
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_053.d
Injection Date: 13-Apr-2018 02:19:51 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

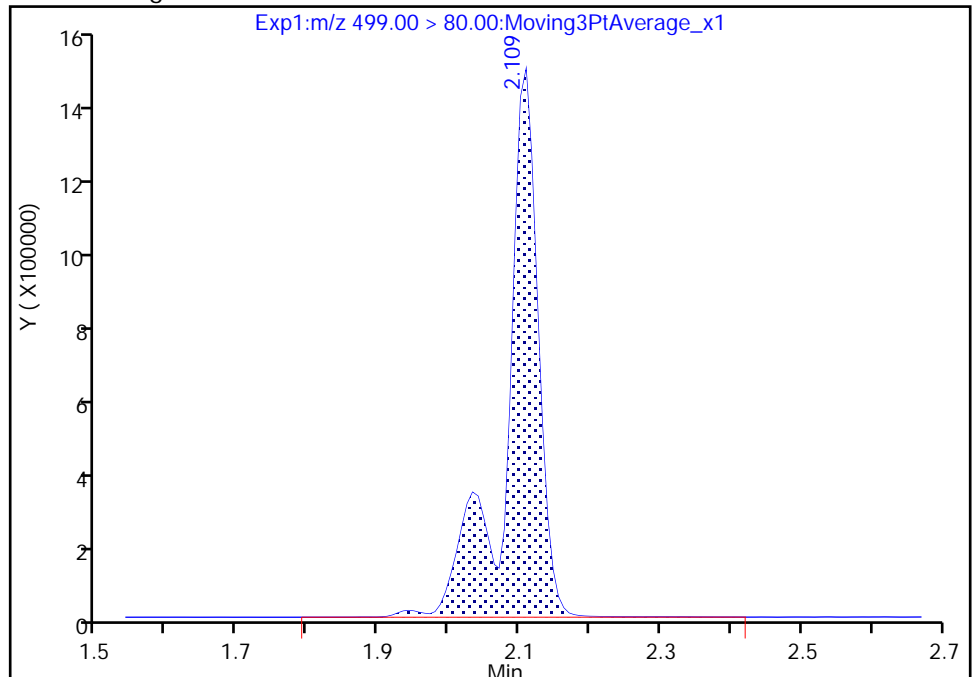
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 4759332
Amount: 60.533881
Amount Units: ng/ml



Reviewer: roycea, 13-Apr-2018 09:28:34
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217820/37 Calibration Date: 04/13/2018 03:15
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.12_537AA_065.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 1.204 | | 51.5 | 45.0 | 14.5 | 30.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 1.056 | | 4.78 | 4.86 | -1.7 | 30.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.705 | | 15.7 | 15.1 | 3.8 | 30.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 1.007 | | 9.39 | 9.90 | -5.2 | 30.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 1.068 | | 19.8 | 19.8 | 0.2 | 30.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.8345 | | 9.81 | 9.90 | -0.9 | 30.0 |
| 13C2 PFHxA | Ave | 1.063 | 1.043 | | 9.81 | 10.0 | -1.9 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.8029 | | 9.44 | 10.0 | -5.6 | 30.0 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_065.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 13-Apr-2018 03:15:54 ALS Bottle#: 3 Worklist Smp#: 37
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:13:08 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 10:13:01

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.373 | 1.373 | 0.0 | 1.000 | 4166338 | 51.5 | | 7023 | |
| 298.90 > 99.00 | 1.373 | 1.373 | 0.0 | 1.000 | 2972954 | | 1.40(0.00-0.00) | 7818 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.510 | 1.510 | 0.0 | 1.000 | 974305 | 9.81 | | 9981 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.669 | 1.669 | 0.0 | 1.000 | 479494 | 4.78 | | 14.2 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.669 | 1.669 | 0.0 | 1.000 | 1981800 | 15.7 | | 2669 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.859 | 1.859 | 0.0 | | 934501 | 10.0 | | 5019 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.866 | 1.866 | 0.0 | 1.000 | 931947 | 9.39 | | 124 | |
| 413.00 > 169.00 | 1.866 | 1.866 | 0.0 | 1.000 | 513337 | | 1.82(0.00-0.00) | 649 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.094 | 2.094 | 0.0 | 1.000 | 1622036 | 19.8 | | 1593 | a |
| 499.00 > 99.00 | 2.094 | 2.094 | 0.0 | 1.000 | 349111 | | 4.65(0.00-0.00) | 817 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.094 | 2.094 | 0.0 | | 2203770 | 28.7 | | 3564 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.102 | 2.102 | 0.0 | 1.000 | 772077 | 9.81 | | 145 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.253 | 2.253 | 0.0 | 1.000 | 750274 | 9.44 | | 6751 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L3_00025

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_065.d

Injection Date: 13-Apr-2018 03:15:54

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 37

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

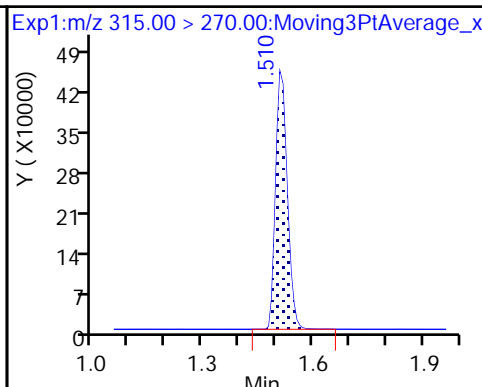
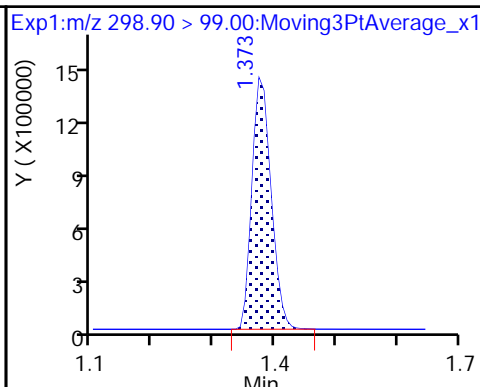
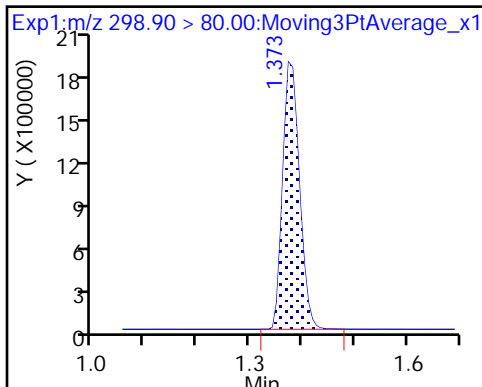
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

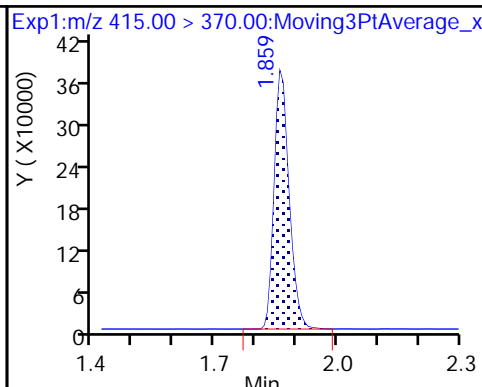
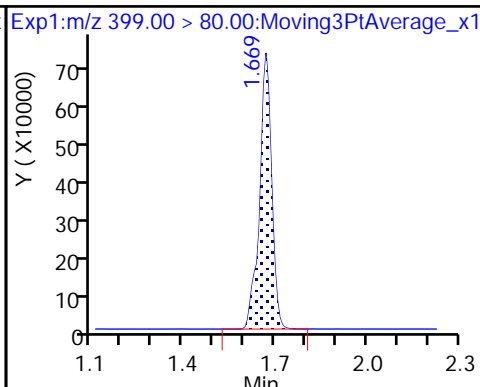
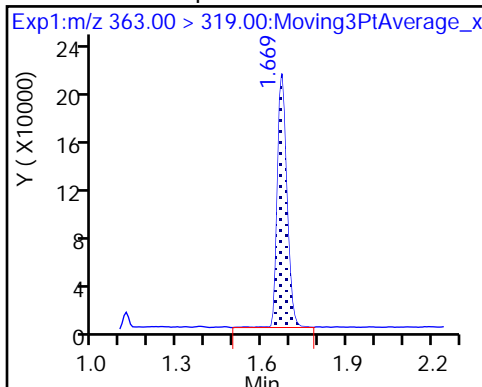
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

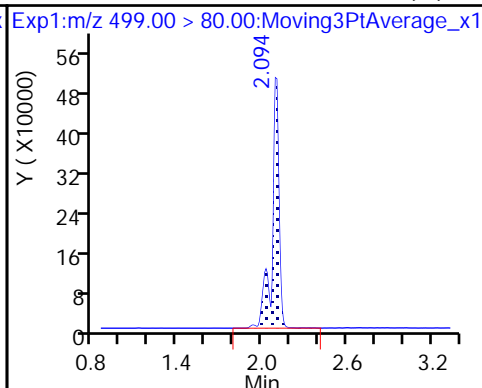
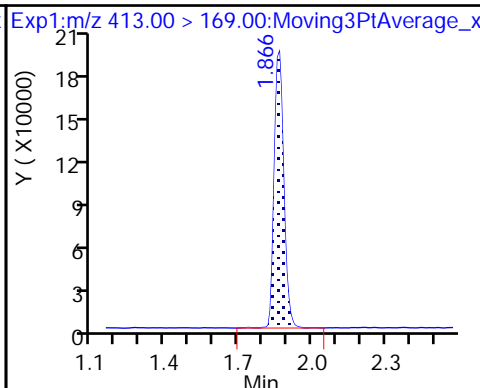
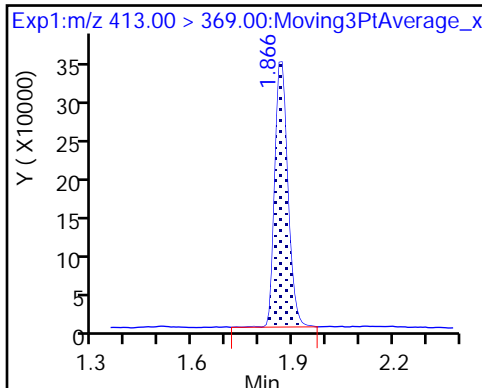
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

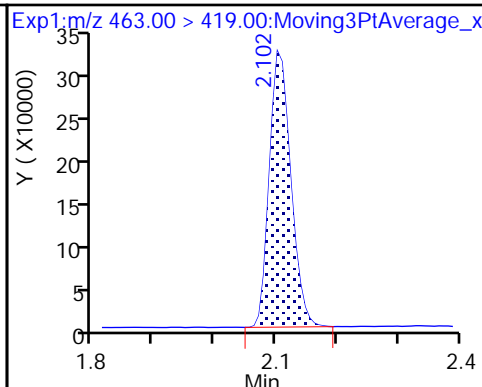
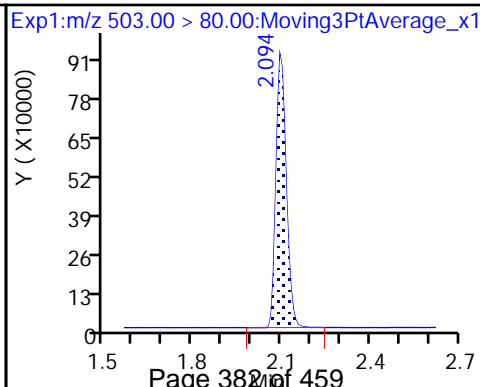
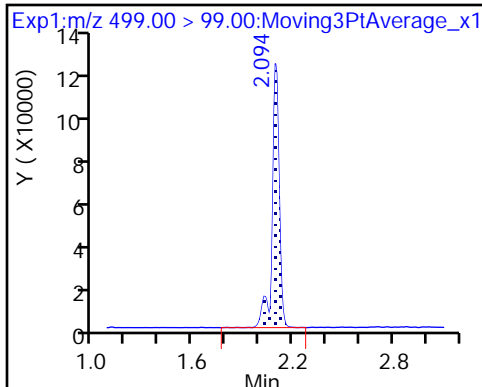
8 Perfluorooctane sulfonic acid (M)



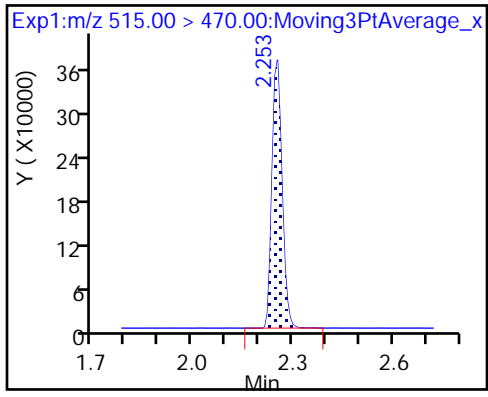
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

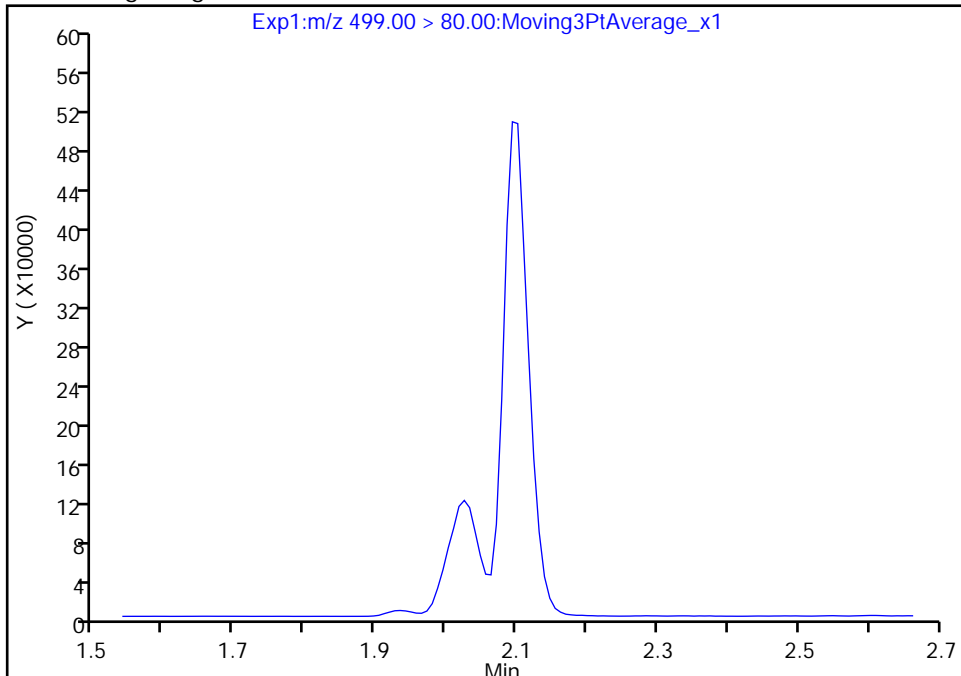
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_065.d
Injection Date: 13-Apr-2018 03:15:54 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 37
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

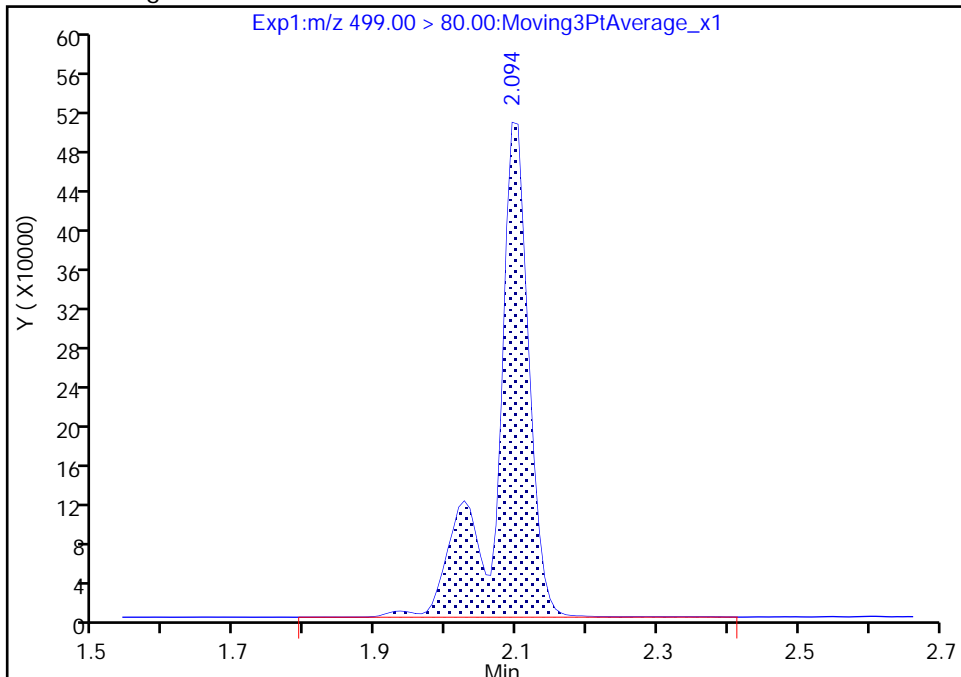
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 1622036
Amount: 19.800970
Amount Units: ng/ml



Reviewer: barnettj, 13-Apr-2018 09:58:24
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-216791/1-A
 Matrix: Water Lab File ID: 2018.04.12_537AA_031.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 00:37
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 8.0 | U | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 83 | | 70-130 |
| STL00996 | 13C2 PFDA | 94 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_031.d
 Lims ID: MB 320-216791/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 13-Apr-2018 00:37:03 ALS Bottle#: 21 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-216791/1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK028

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|-----------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-------|
| \$ 2 13C2 PFHxA | 315.00 > 270.00 | 1.525 | 1.525 | 0.0 | 1.000 | 835435 | 8.27 | 9256 | |
| * 6 13C2-PFOA | 415.00 > 370.00 | 1.882 | 1.889 | -0.007 | | 949828 | 10.0 | 5734 | |
| * 7 13C4 PFOS | 503.00 > 80.00 | 2.117 | 2.124 | -0.007 | | 2322770 | 28.7 | 4591 | |
| \$ 10 13C2 PFDA | 515.00 > 470.00 | 2.269 | 2.269 | 0.0 | 1.000 | 755733 | 9.36 | 7713 | |

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_031.d

Injection Date: 13-Apr-2018 00:37:03

Instrument ID: A8_N

Lims ID: MB 320-216791/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 21

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

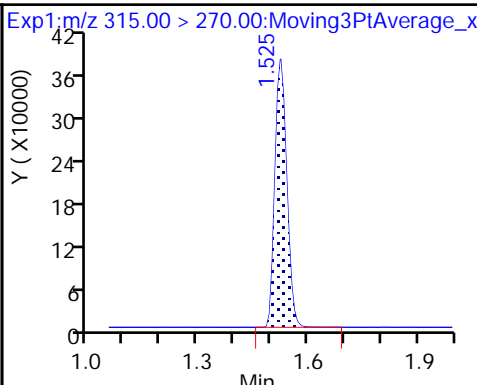
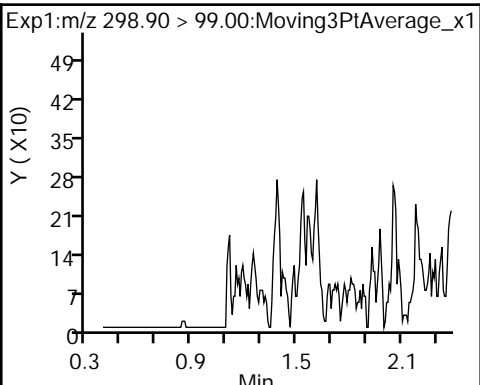
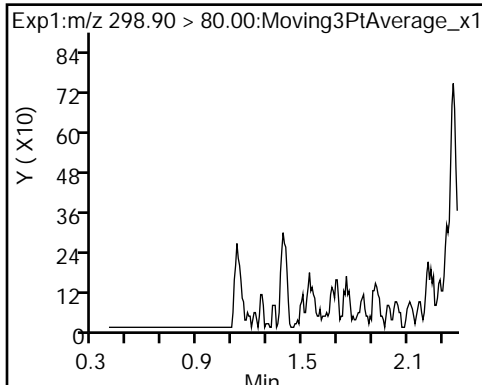
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

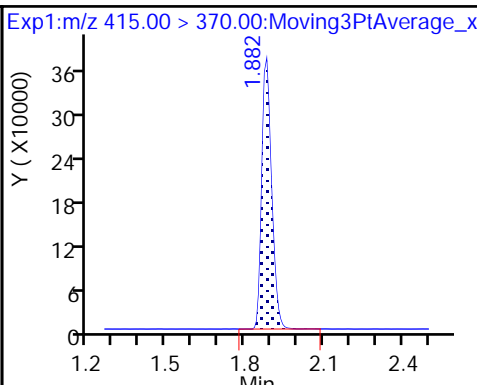
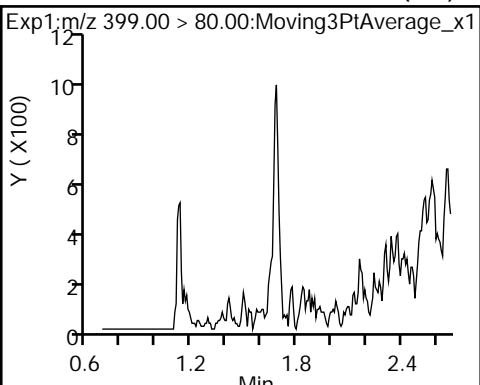
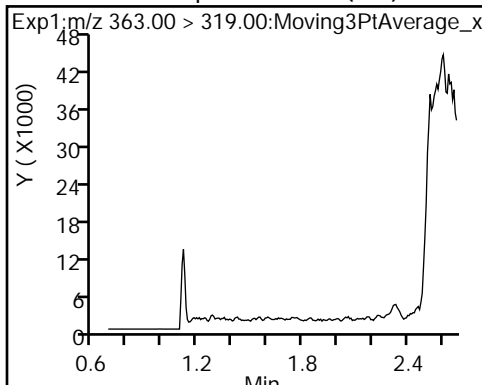
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

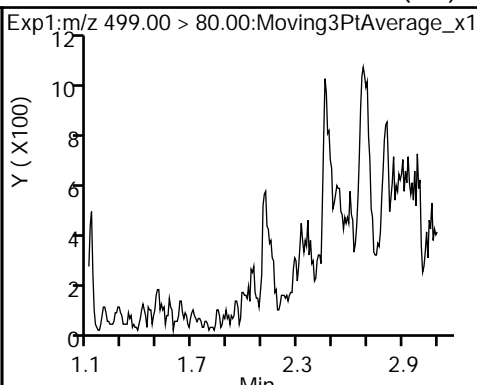
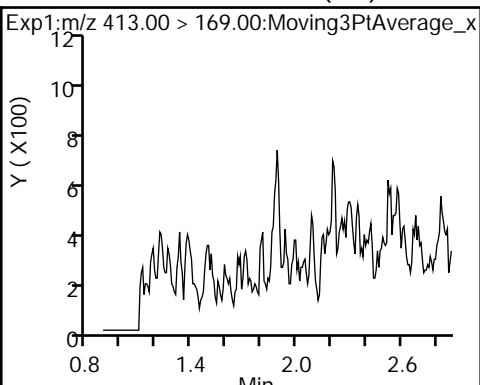
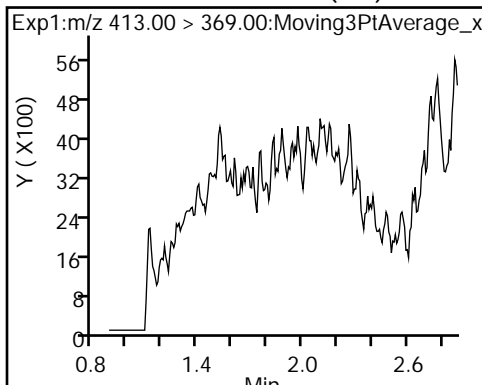
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

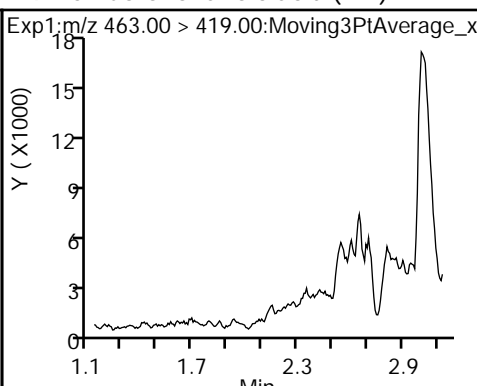
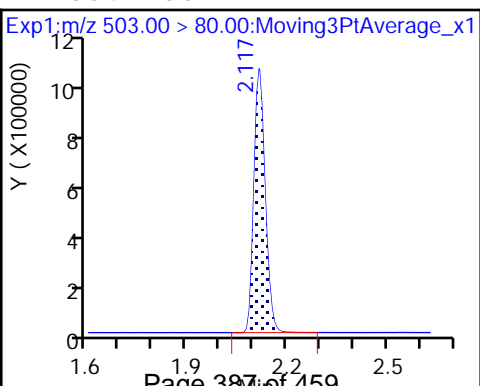
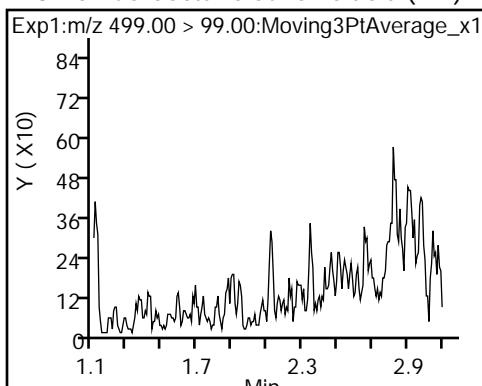
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

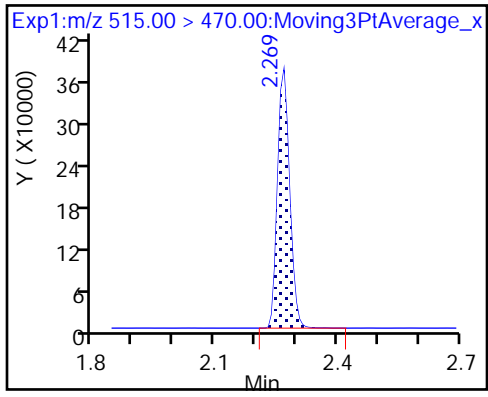


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_031.d
 Lims ID: MB 320-216791/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 13-Apr-2018 00:37:03 ALS Bottle#: 21 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-216791/1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 8.27 | 82.73 |
| \$ 10 13C2 PFDA | 10.0 | 9.36 | 93.55 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-216792/1-A
 Matrix: Water Lab File ID: 2018.04.12_537AA_049.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 02:01
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217818 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 8.0 | U | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 91 | | 70-130 |
| STL00996 | 13C2 PFDA | 90 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_049.d
 Lims ID: MB 320-216792/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 13-Apr-2018 02:01:08 ALS Bottle#: 35 Worklist Smp#: 21
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-216792/1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:11:31 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK028

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|-----------------|-----------------|--------|--------|--------|----------|--------------|---------------|------|-------|
| \$ 2 13C2 PFHxA | 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 895245 | 9.08 | 9781 | |
| * 6 13C2-PFOA | 415.00 > 370.00 | 1.866 | 1.866 | 0.0 | | 927774 | 10.0 | 5463 | |
| * 7 13C4 PFOS | 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2237326 | 28.7 | 3982 | |
| \$ 10 13C2 PFDA | 515.00 > 470.00 | 2.253 | 2.261 | -0.008 | 1.000 | 708293 | 8.98 | 6408 | |

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_049.d

Injection Date: 13-Apr-2018 02:01:08

Instrument ID: A8_N

Lims ID: MB 320-216792/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 35

Worklist Smp#: 21

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

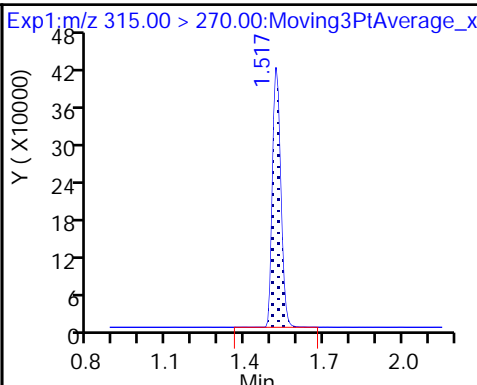
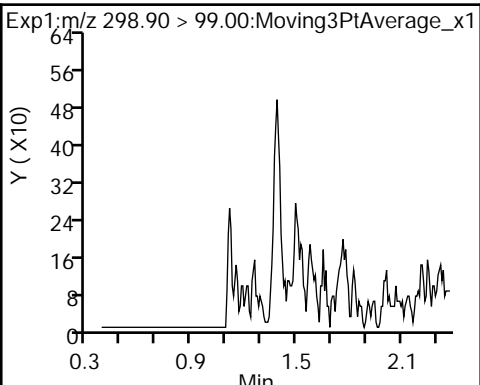
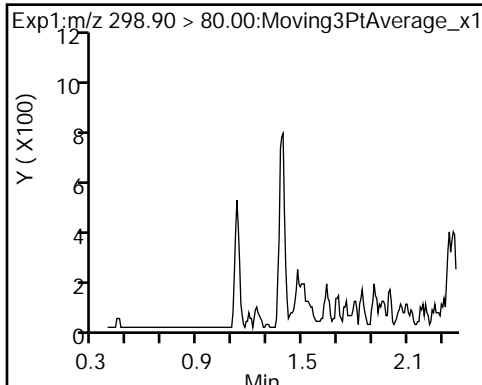
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

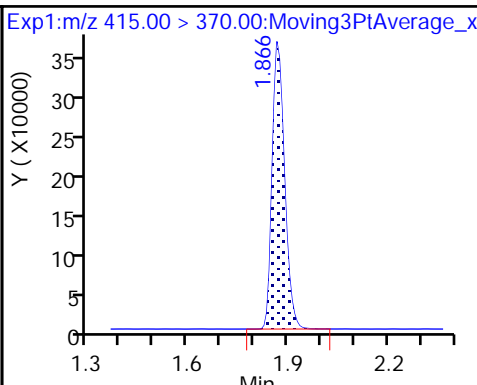
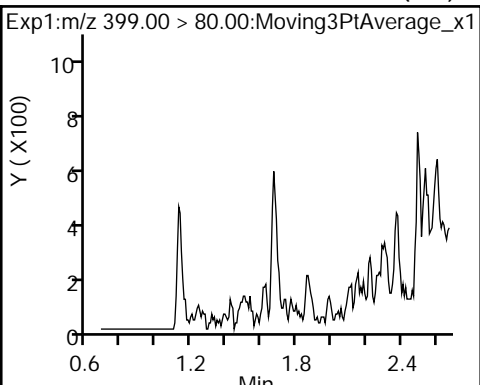
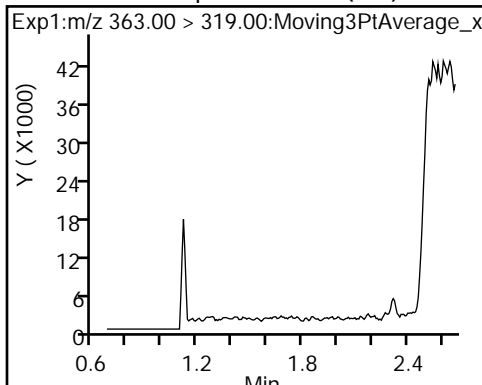
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

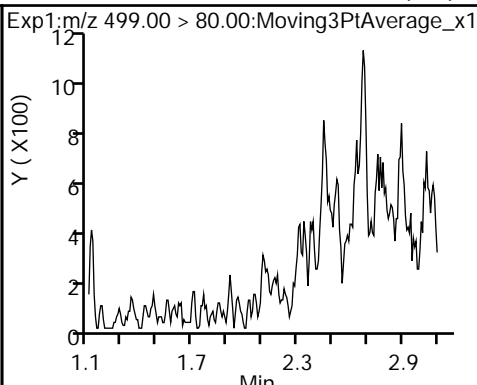
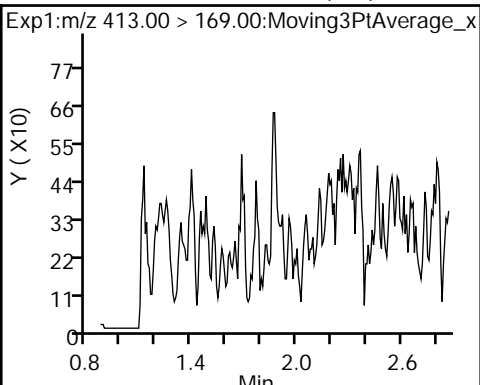
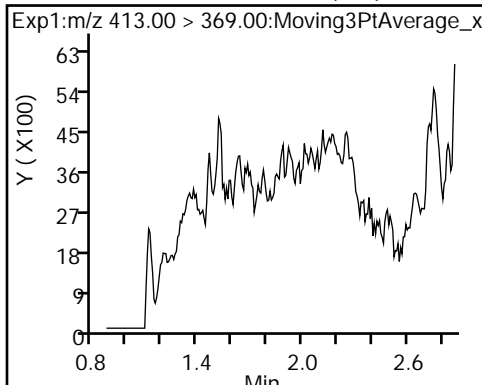
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

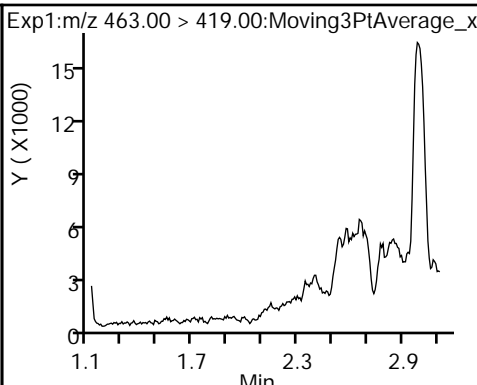
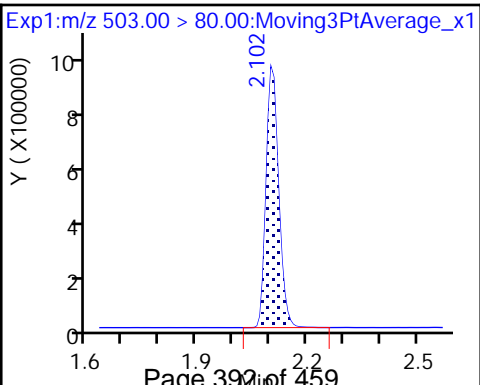
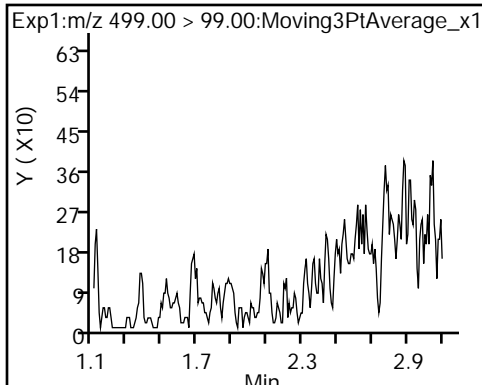
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

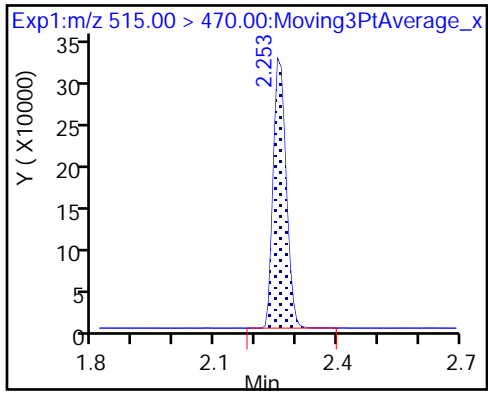


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_049.d
 Lims ID: MB 320-216792/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 13-Apr-2018 02:01:08 ALS Bottle#: 35 Worklist Smp#: 21
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-216792/1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:11:31 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.08 | 90.76 |
| \$ 10 13C2 PFDA | 10.0 | 8.98 | 89.77 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-216791/2-A
 Matrix: Water Lab File ID: 2018.04.12_537AA_032.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 00:41
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 132 | M | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 67.8 | | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 62.6 | | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 105 | | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 32.0 | | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 303 | | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 95 | | 70-130 |
| STL00996 | 13C2 PFDA | 93 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_032.d
 Lims ID: LCS 320-216791/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 13-Apr-2018 00:41:45 ALS Bottle#: 22 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-216791/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: roycea Date: 13-Apr-2018 09:25:11

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|-------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.388 | -0.007 | 1.000 | 6576564 | 75.7 | | 10071 | |
| 298.90 > 99.00 | 1.381 | 1.388 | -0.007 | 1.000 | 4927734 | | 1.33(0.00-0.00) | 10491 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.525 | -0.008 | 1.000 | 1006889 | 9.53 | | 9400 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.684 | -0.007 | 1.000 | 853699 | 8.00 | | 30.5 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.677 | 1.684 | -0.007 | 1.000 | 3562570 | 26.3 | | 4991 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.874 | 1.889 | -0.015 | | 993342 | 10.0 | | 5431 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.874 | 1.889 | -0.015 | 1.000 | 1788752 | 17.0 | | 261 | |
| 413.00 > 169.00 | 1.874 | 1.889 | -0.015 | 1.000 | 972580 | | 1.84(0.00-0.00) | 1250 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.109 | 2.094 | 0.015 | 1.000 | 2901417 | 33.0 | | 2908 | a |
| 499.00 > 99.00 | 2.109 | 2.094 | 0.015 | 1.000 | 631804 | | 4.59(0.00-0.00) | 1620 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.109 | 2.124 | -0.015 | | 2367322 | 28.7 | | 4643 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.117 | 2.132 | -0.015 | 1.000 | 1308823 | 15.6 | | 232 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.261 | 2.269 | -0.007 | 1.000 | 789843 | 9.35 | | 7864 | |

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_032.d

Injection Date: 13-Apr-2018 00:41:45

Instrument ID: A8_N

Lims ID: LCS 320-216791/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 22

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

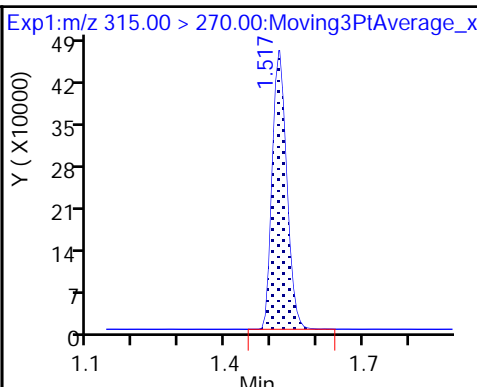
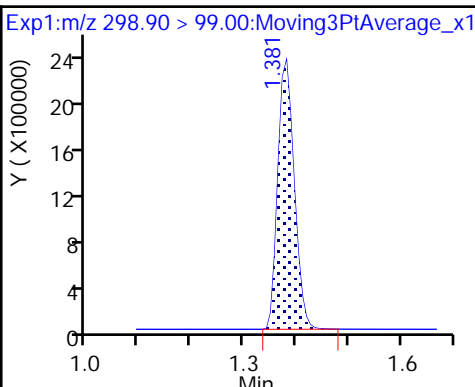
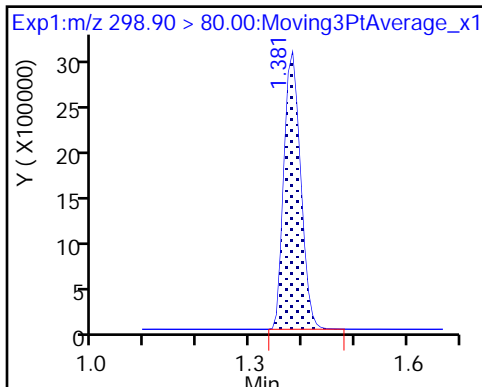
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

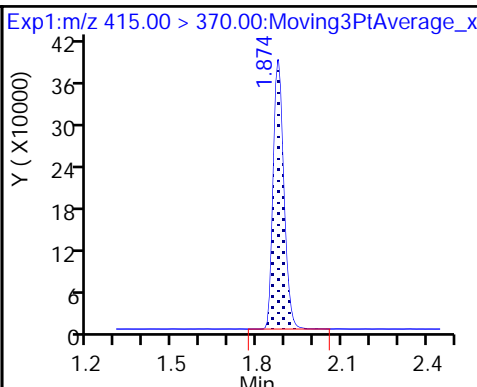
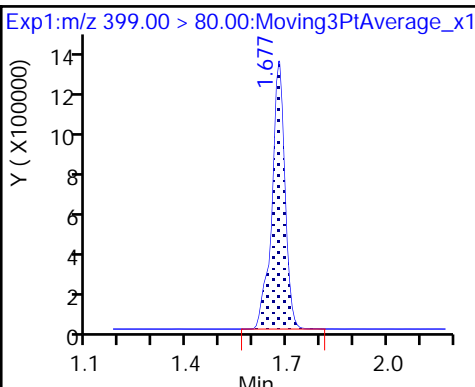
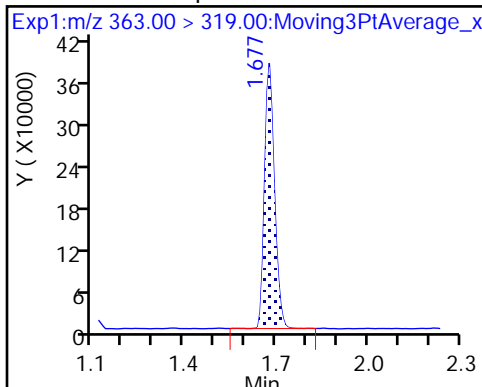
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

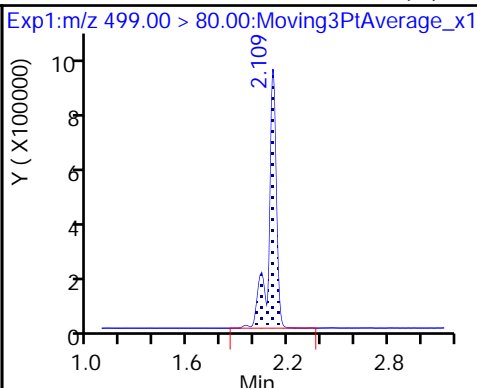
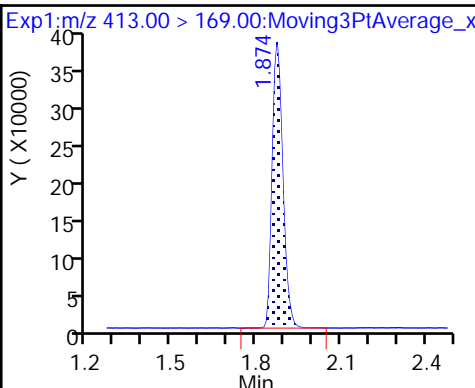
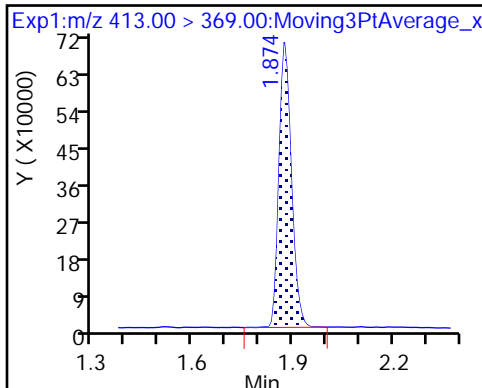
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

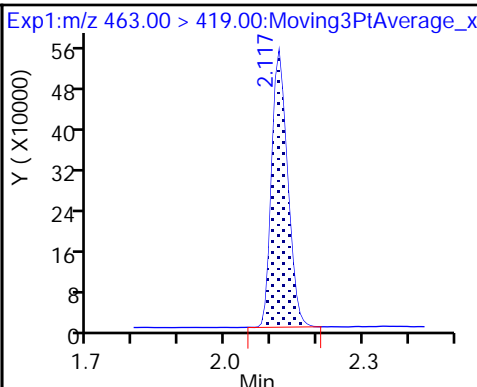
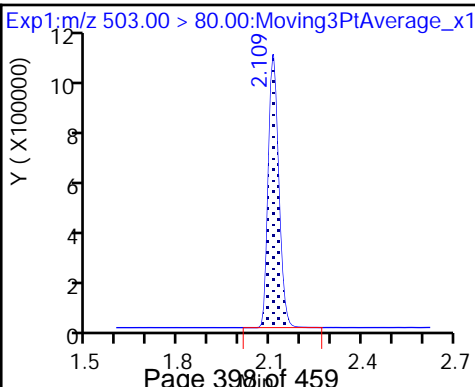
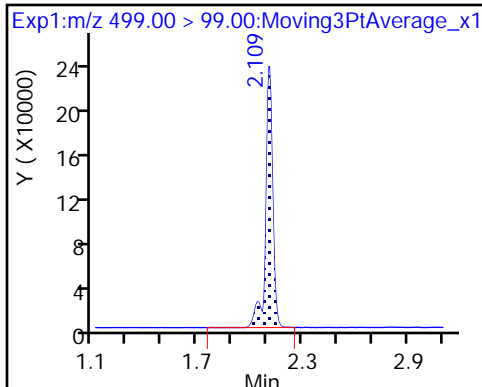
8 Perfluorooctane sulfonic acid (M)



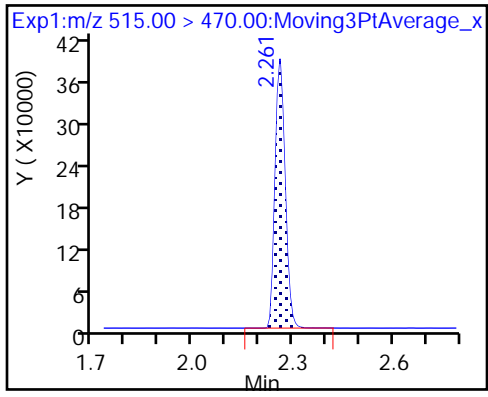
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_032.d
 Lims ID: LCS 320-216791/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 13-Apr-2018 00:41:45 ALS Bottle#: 22 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-216791/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: roycea Date: 13-Apr-2018 09:25:11

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.53 | 95.34 |
| \$ 10 13C2 PFDA | 10.0 | 9.35 | 93.49 |

TestAmerica Sacramento

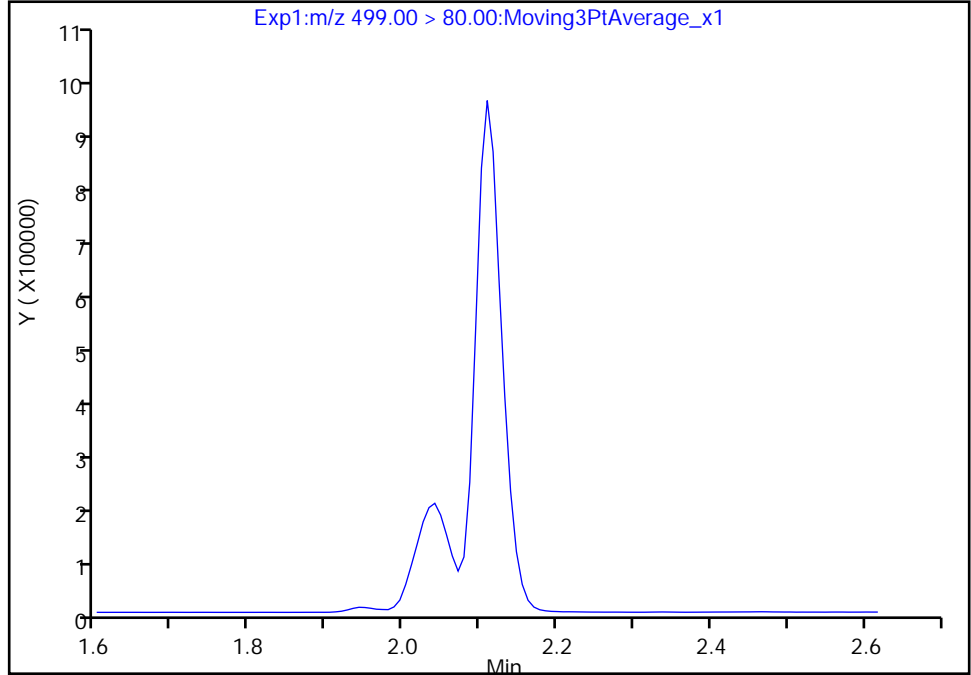
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_032.d
Injection Date: 13-Apr-2018 00:41:45 Instrument ID: A8_N
Lims ID: LCS 320-216791/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 22 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

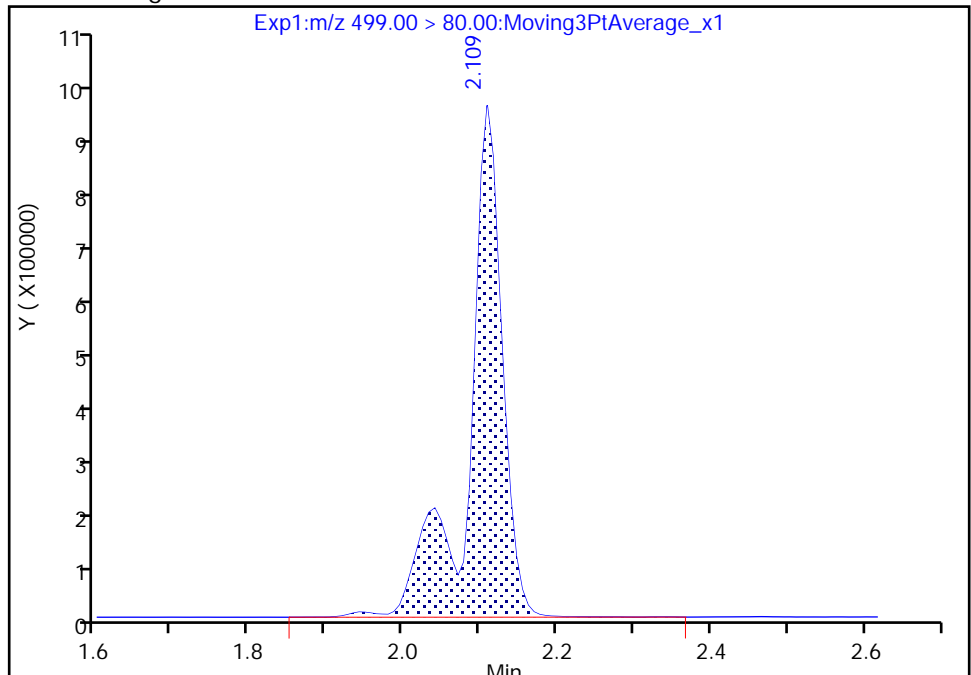
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 2901417
Amount: 32.971983
Amount Units: ng/ml



Reviewer: roycea, 13-Apr-2018 09:25:00
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-216791/3-A
 Matrix: Water Lab File ID: 2018.04.12_537AA_033.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 00:46
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 126 | M | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 65.5 | | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 62.7 | | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 102 | | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 31.0 | | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 266 | | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 87 | | 70-130 |
| STL00996 | 13C2 PFDA | 101 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_033.d
 Lims ID: LCSD 320-216791/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 13-Apr-2018 00:46:25 ALS Bottle#: 23 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-216791/3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: roycea Date: 13-Apr-2018 09:25:25

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|-------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.388 | -0.007 | 1.000 | 7007922 | 66.6 | | 9915 | |
| 298.90 > 99.00 | 1.381 | 1.388 | -0.007 | 1.000 | 5149999 | | 1.36(0.00-0.00) | 9442 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.525 | -0.008 | 1.000 | 1106293 | 8.65 | | 10515 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.684 | -0.007 | 1.000 | 1002202 | 7.76 | | 38.6 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.677 | 1.684 | -0.007 | 1.000 | 4194932 | 25.5 | | 5333 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.874 | 1.889 | -0.015 | | 1202728 | 10.0 | | 6204 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.874 | 1.889 | -0.015 | 1.000 | 2092357 | 16.4 | | 310 | |
| 413.00 > 169.00 | 1.874 | 1.889 | -0.015 | 1.000 | 1140620 | | 1.83(0.00-0.00) | 1377 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.109 | 2.094 | 0.015 | 1.000 | 3372791 | 31.6 | | 3119 | a |
| 499.00 > 99.00 | 2.109 | 2.094 | 0.015 | 1.000 | 733408 | | 4.60(0.00-0.00) | 2009 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.109 | 2.124 | -0.015 | | 2870335 | 28.7 | | 5607 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.117 | 2.132 | -0.015 | 1.000 | 1587382 | 15.7 | | 268 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.261 | 2.269 | -0.007 | 1.000 | 1036314 | 10.1 | | 10315 | |

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_033.d

Injection Date: 13-Apr-2018 00:46:25

Instrument ID: A8_N

Lims ID: LCSD 320-216791/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 23

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

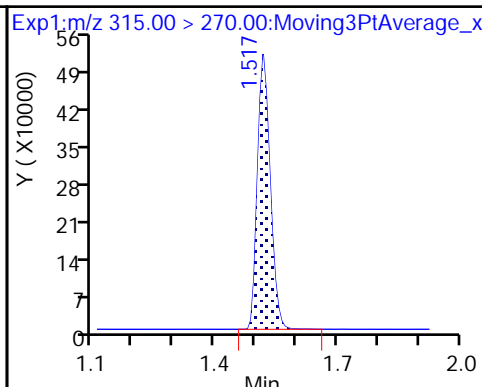
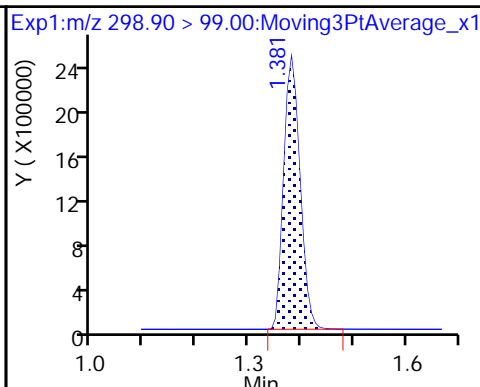
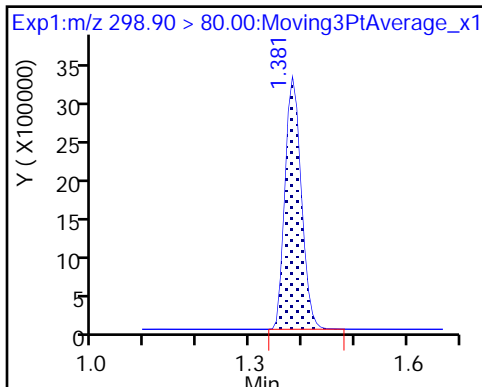
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

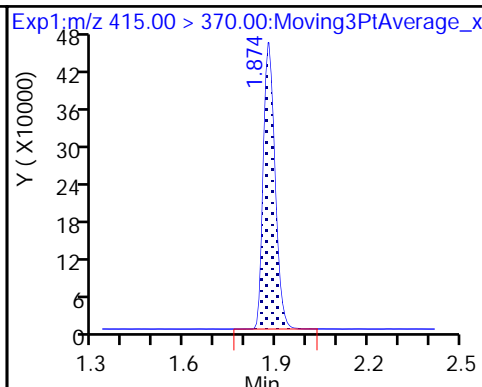
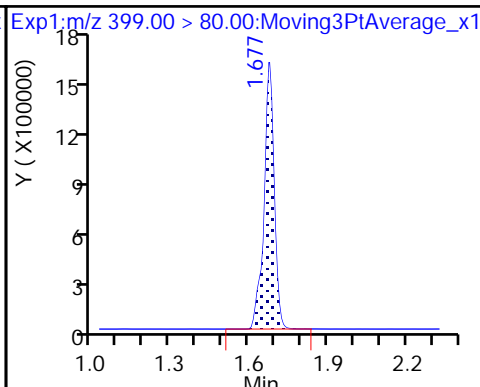
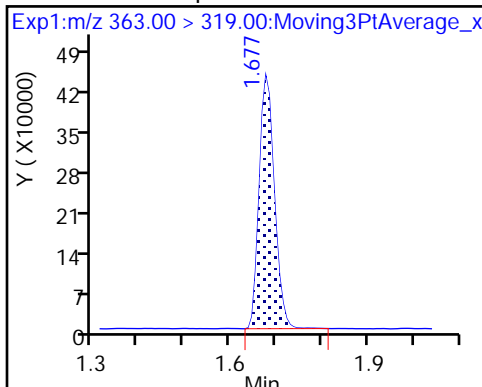
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

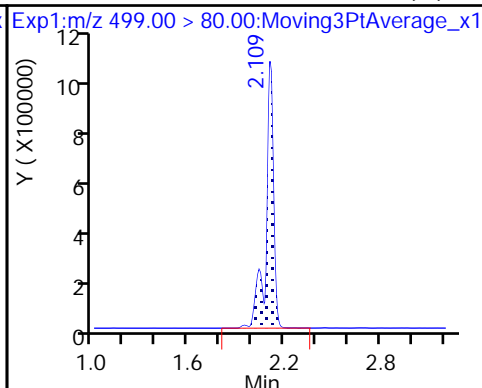
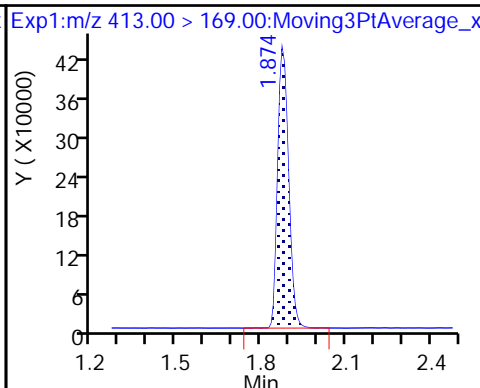
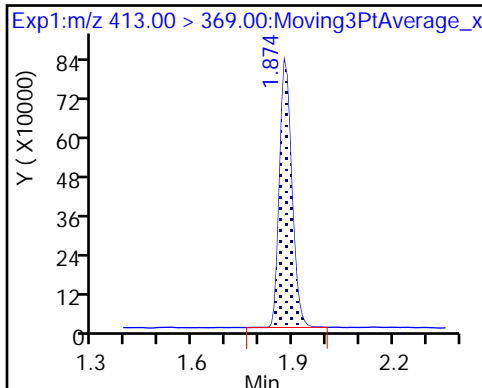
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

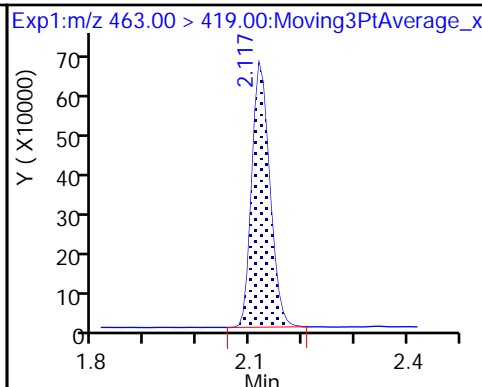
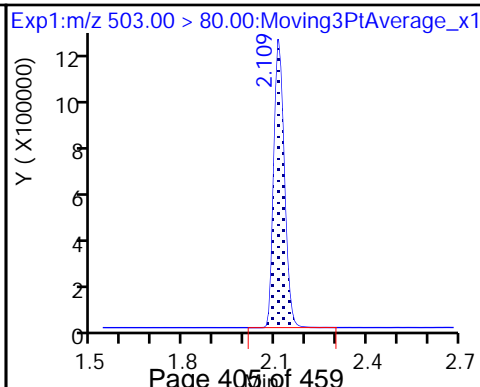
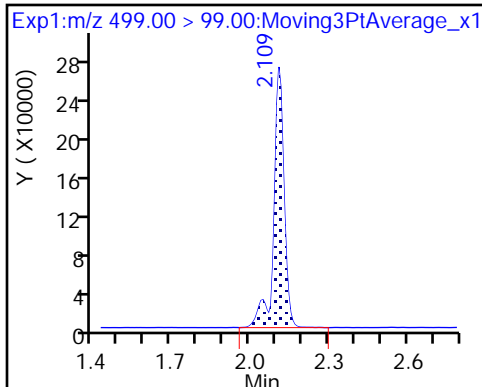
8 Perfluorooctane sulfonic acid (M)



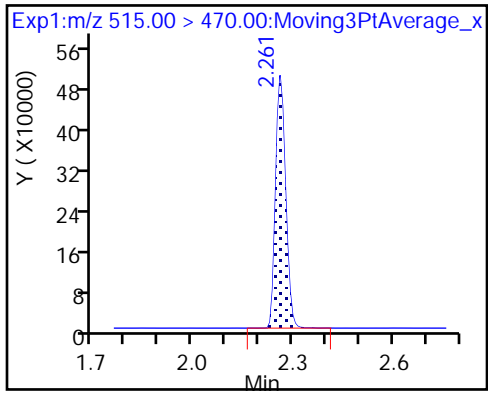
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_033.d
 Lims ID: LCSD 320-216791/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 13-Apr-2018 00:46:25 ALS Bottle#: 23 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-216791/3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: roycea Date: 13-Apr-2018 09:25:25

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 8.65 | 86.52 |
| \$ 10 13C2 PFDA | 10.0 | 10.1 | 101.31 |

TestAmerica Sacramento

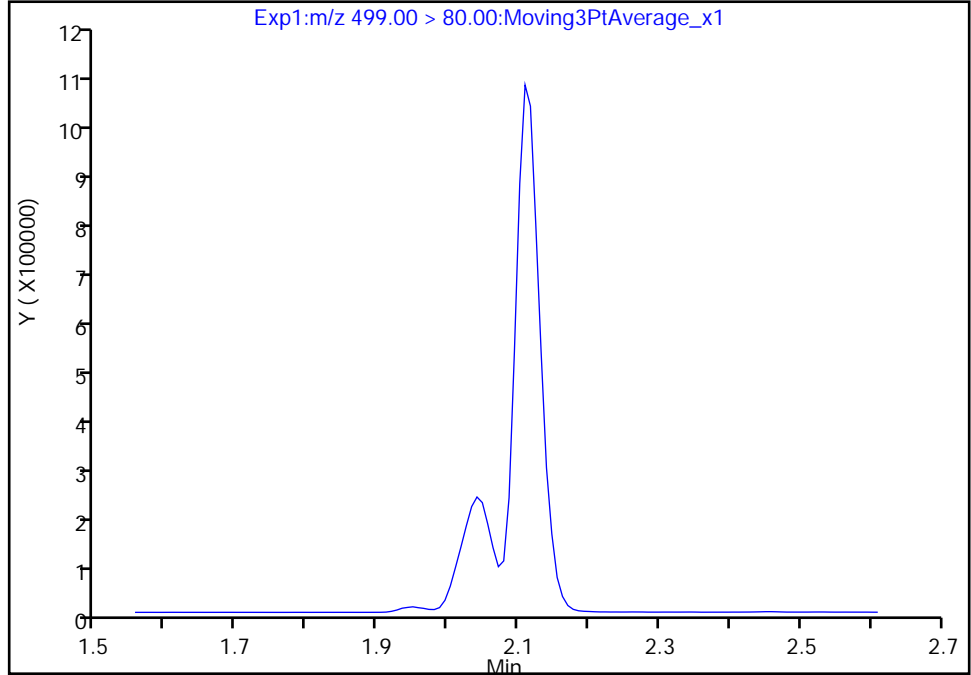
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_033.d
Injection Date: 13-Apr-2018 00:46:25 Instrument ID: A8_N
Lims ID: LCSD 320-216791/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

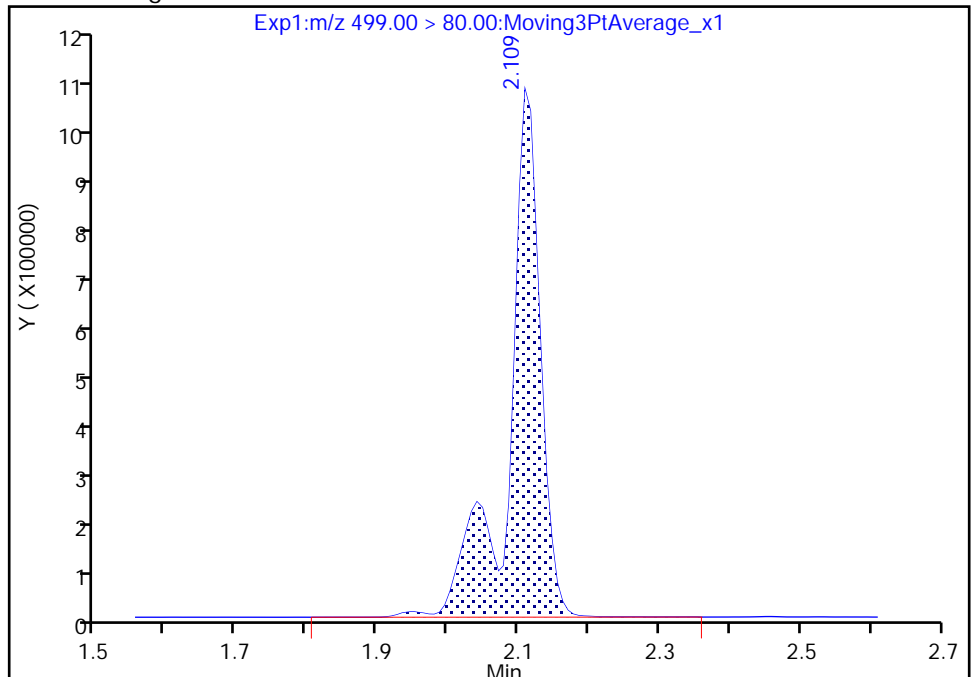
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 3372791
Amount: 31.611790
Amount Units: ng/ml



Reviewer: roycea, 13-Apr-2018 09:25:14
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LLCS 320-216792/2-A
 Matrix: Water Lab File ID: 2018.04.12_537AA_050.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 02:05
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217818 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 38.9 | J M | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 19.1 | J | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 17.5 | J | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 31.7 | | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 9.59 | J | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 97.1 | | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 99 | | 70-130 |
| STL00996 | 13C2 PFDA | 92 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_050.d
 Lims ID: LLCS 320-216792/2-A
 Client ID:
 Sample Type: LLCS
 Inject. Date: 13-Apr-2018 02:05:48 ALS Bottle#: 36 Worklist Smp#: 22
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: llcs 320-216792/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:11:31 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 10:06:41

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.381 | 0.0 | 1.000 | 1906504 | 24.3 | | 3195 | |
| 298.90 > 99.00 | 1.381 | 1.381 | 0.0 | 1.000 | 1421810 | | 1.34(0.00-0.00) | 3535 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 976850 | 9.86 | | 9870 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.677 | 0.0 | 1.000 | 240012 | 2.40 | | 7.8 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.677 | 1.677 | 0.0 | 1.000 | 972462 | 7.93 | | 1287 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.866 | 0.0 | | 932269 | 10.0 | | 5052 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.866 | 1.874 | -0.008 | 1.000 | 472779 | 4.77 | | 64.7 | |
| 413.00 > 169.00 | 1.866 | 1.874 | -0.008 | 1.000 | 251553 | | 1.88(0.00-0.00) | 348 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.102 | 2.094 | 0.008 | 1.000 | 773510 | 9.72 | | 712 | a |
| 499.00 > 99.00 | 2.102 | 2.094 | 0.008 | 1.000 | 173183 | | 4.47(0.00-0.00) | 399 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2141422 | 28.7 | | 4117 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.109 | 2.109 | 0.0 | 1.000 | 343805 | 4.38 | | 55.1 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.253 | 2.261 | -0.008 | 1.000 | 730589 | 9.21 | | 7842 | |

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_050.d

Injection Date: 13-Apr-2018 02:05:48

Instrument ID: A8_N

Lims ID: LLCS 320-216792/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 36

Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

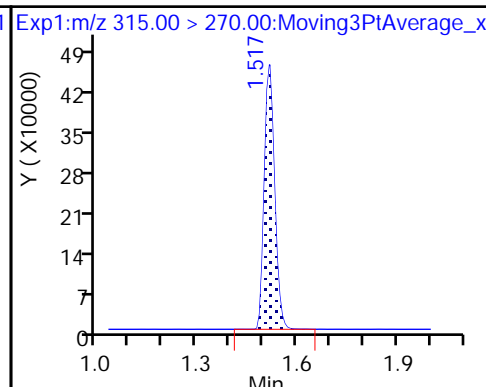
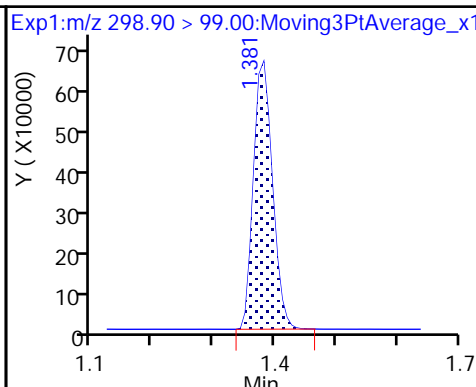
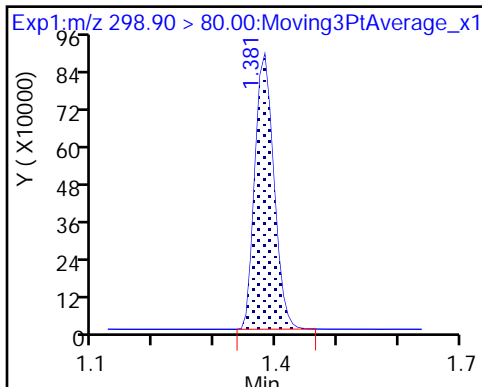
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

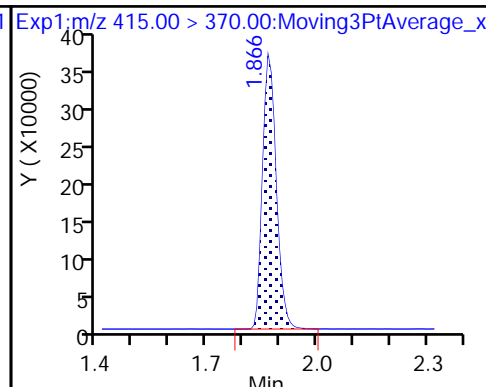
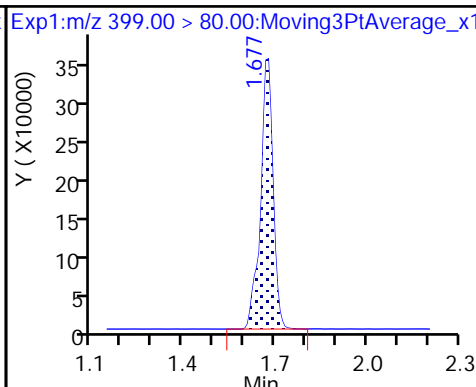
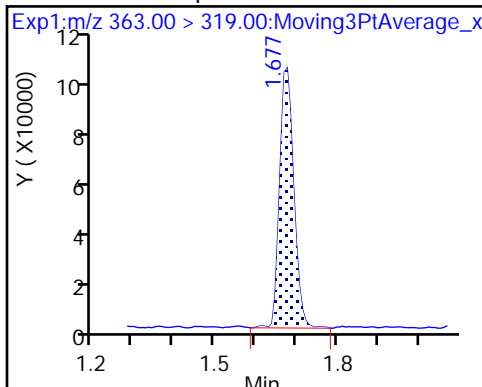
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

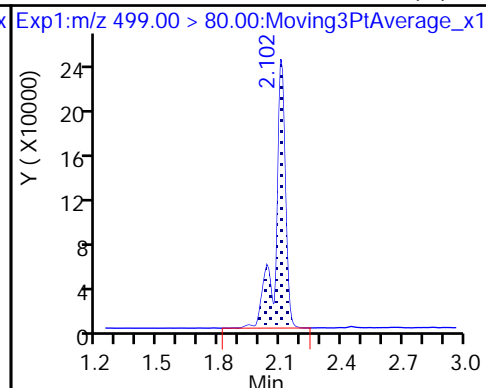
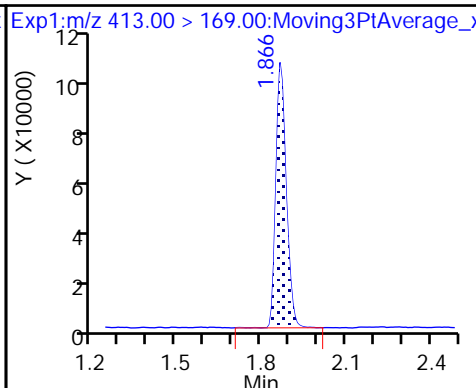
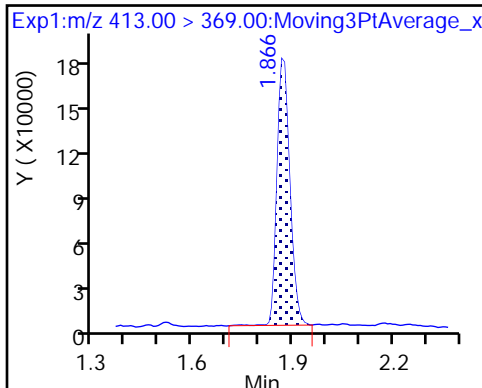
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

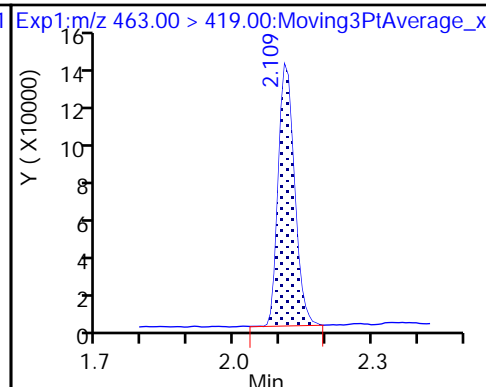
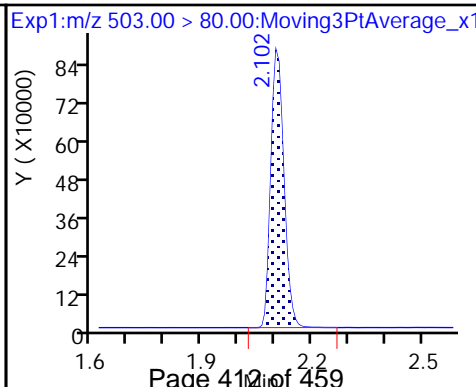
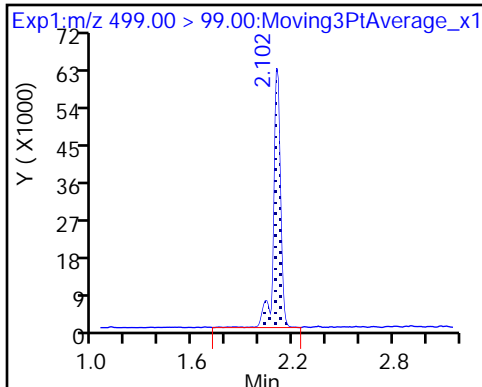
8 Perfluorooctane sulfonic acid (M)



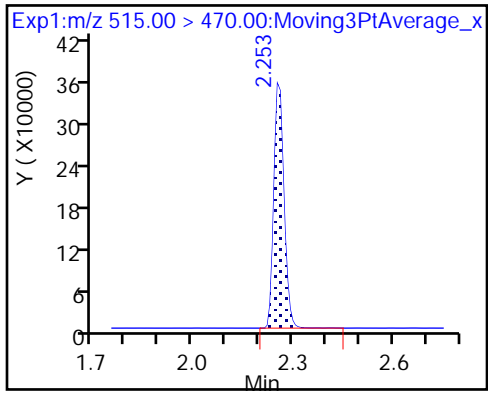
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_050.d
 Lims ID: LLCS 320-216792/2-A
 Client ID:
 Sample Type: LLCS
 Inject. Date: 13-Apr-2018 02:05:48 ALS Bottle#: 36 Worklist Smp#: 22
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: llcs 320-216792/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:11:31 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 10:06:41

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.86 | 98.56 |
| \$ 10 13C2 PFDA | 10.0 | 9.21 | 92.15 |

TestAmerica Sacramento

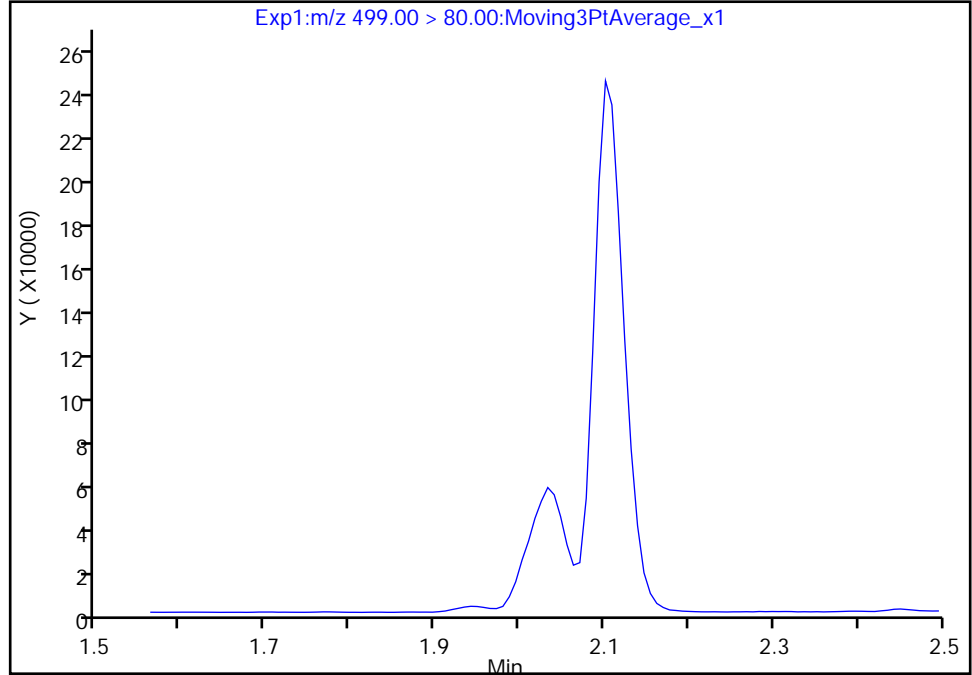
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_050.d
Injection Date: 13-Apr-2018 02:05:48 Instrument ID: A8_N
Lims ID: LLCS 320-216792/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 36 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

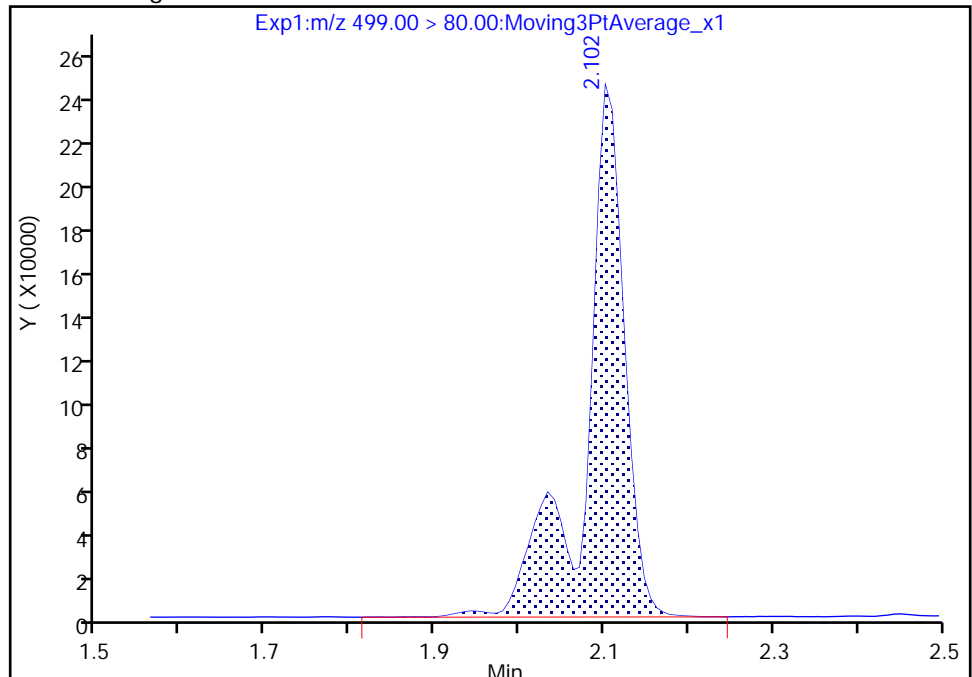
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 773510
Amount: 9.717531
Amount Units: ng/ml



Reviewer: barnettj, 13-Apr-2018 10:06:19
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-139 LMS Lab Sample ID: 320-37675-14 LMS
 Matrix: Water Lab File ID: 2018.04.12_537AA_056.d
 Analysis Method: 537 Date Collected: 03/29/2018 11:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 255.7(mL) Date Analyzed: 04/13/2018 02:33
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 42.7 | M | 39 | 16 | 6.6 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 28.1 | | 20 | 7.8 | 2.7 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 19.0 | J | 23 | 20 | 7.8 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 31.3 | | 29 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 13.4 | | 9.8 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 104 | | 88 | 35 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 101 | | 70-130 |
| STL00996 | 13C2 PFDA | 97 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_056.d
 Lims ID: 320-37675-A-14-D LMS
 Client ID:
 Sample Type: LMS
 Inject. Date: 13-Apr-2018 02:33:50 ALS Bottle#: 40 Worklist Smp#: 28
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-14-d lms
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 10:09:32

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.373 | 1.381 | -0.008 | 1.000 | 2208015 | 26.5 | | 2566 | |
| 298.90 > 99.00 | 1.373 | 1.381 | -0.008 | 1.000 | 1582441 | | 1.40(0.00-0.00) | 3617 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.510 | 1.517 | -0.007 | 1.000 | 970699 | 10.1 | | 7943 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.669 | 1.677 | -0.008 | 1.000 | 333931 | 3.43 | | 11.2 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.669 | 1.677 | -0.008 | 1.000 | 1041389 | 8.01 | | 724 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.874 | -0.008 | | 907706 | 10.0 | | 5629 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.866 | 1.874 | -0.008 | 1.000 | 693078 | 7.19 | | 96.6 | |
| 413.00 > 169.00 | 1.866 | 1.874 | -0.008 | 1.000 | 390341 | | 1.78(0.00-0.00) | 480 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.102 | 2.094 | 0.008 | 1.000 | 921209 | 10.9 | | 613 | a |
| 499.00 > 99.00 | 2.102 | 2.094 | 0.008 | 1.000 | 193729 | | 4.76(0.00-0.00) | 413 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2270226 | 28.7 | | 2902 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.109 | 2.117 | -0.008 | 1.000 | 371252 | 4.86 | | 54.8 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.253 | 2.253 | 0.0 | 1.000 | 749276 | 9.71 | | 7662 | |

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_056.d

Injection Date: 13-Apr-2018 02:33:50

Instrument ID: A8_N

Lims ID: 320-37675-A-14-D LMS

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 40

Worklist Smp#: 28

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

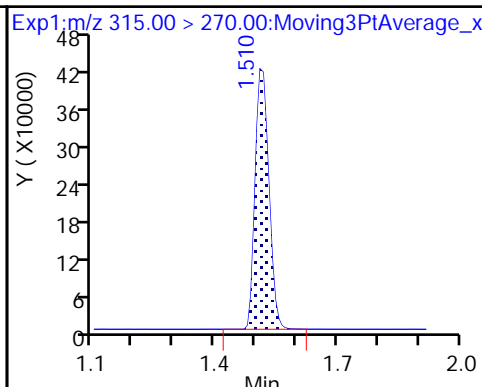
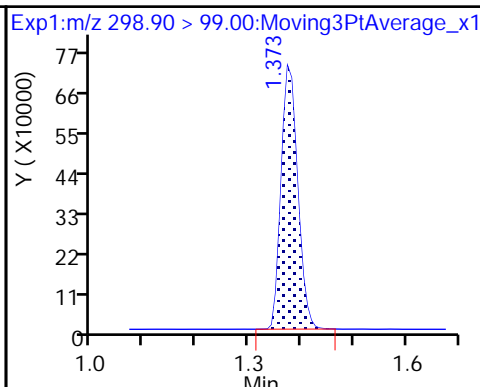
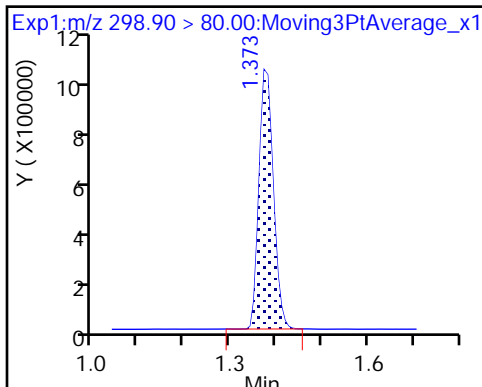
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

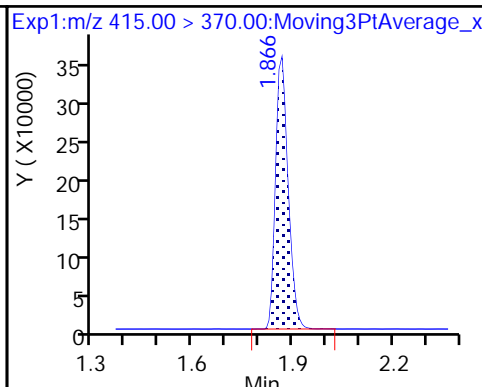
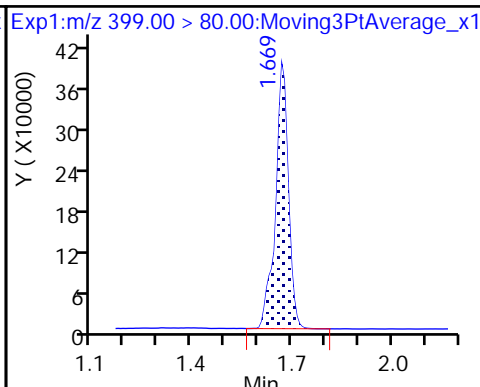
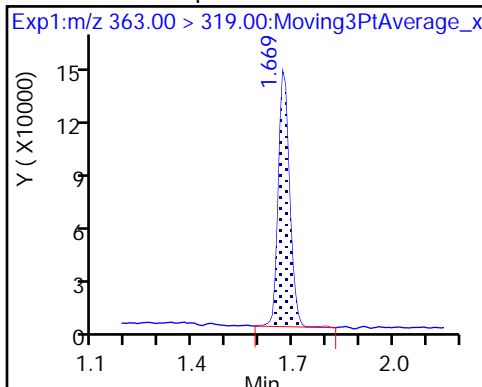
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

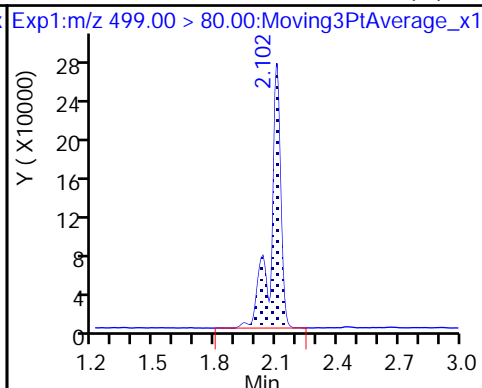
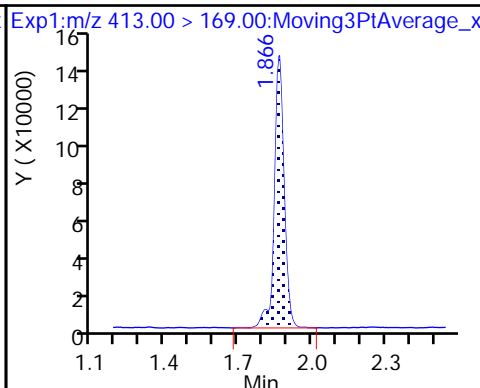
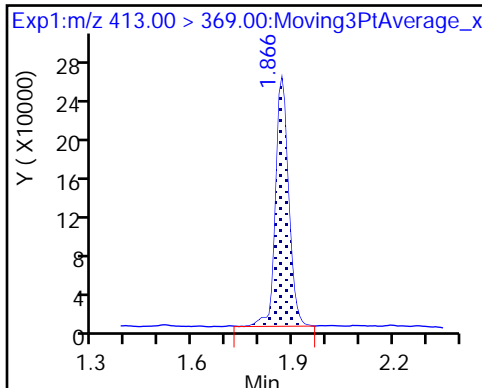
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

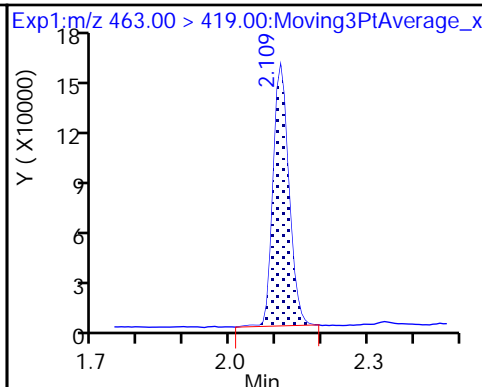
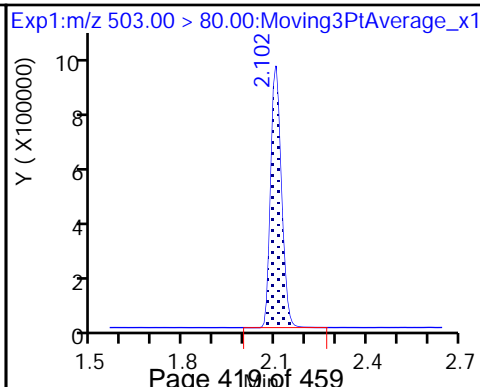
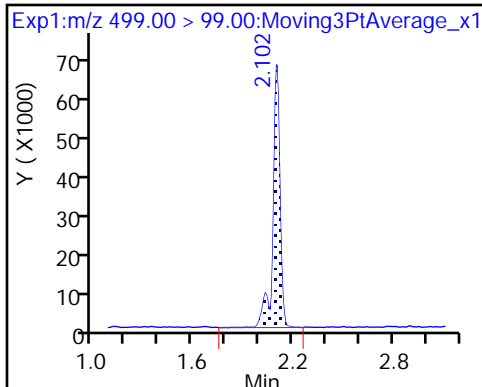
8 Perfluorooctane sulfonic acid (M)



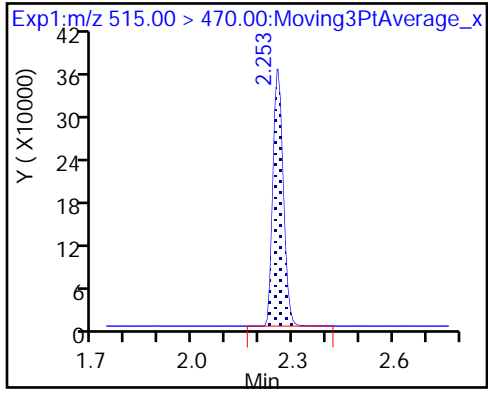
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_056.d
 Lims ID: 320-37675-A-14-D LMS
 Client ID:
 Sample Type: LMS
 Inject. Date: 13-Apr-2018 02:33:50 ALS Bottle#: 40 Worklist Smp#: 28
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-14-d lms
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 10:09:32

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 10.1 | 100.59 |
| \$ 10 13C2 PFDA | 10.0 | 9.71 | 97.06 |

TestAmerica Sacramento

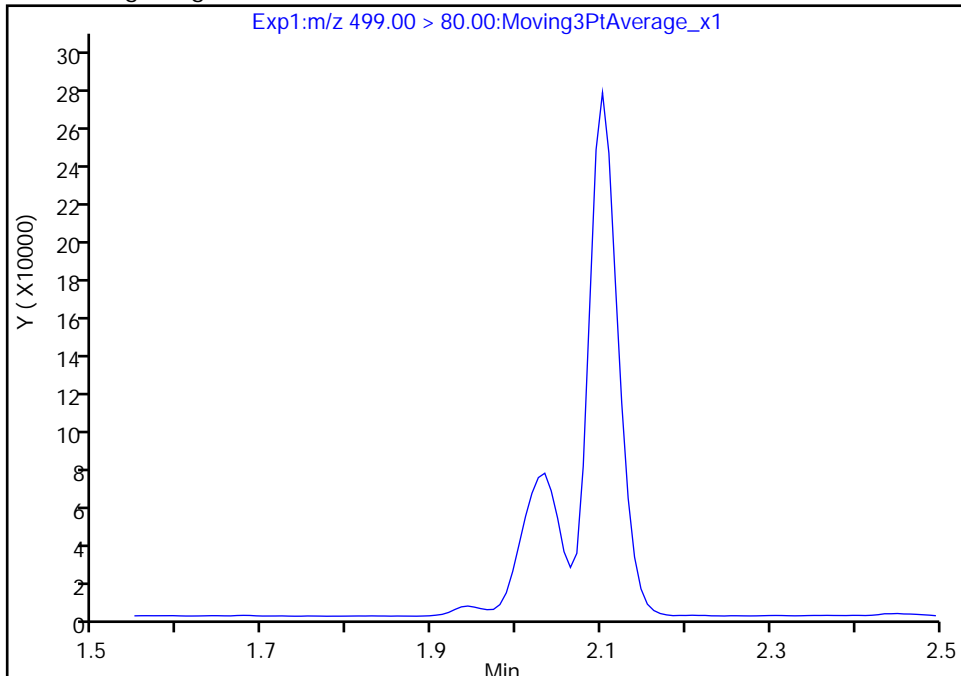
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_056.d
Injection Date: 13-Apr-2018 02:33:50 Instrument ID: A8_N
Lims ID: 320-37675-A-14-D LMS
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 40 Worklist Smp#: 28
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

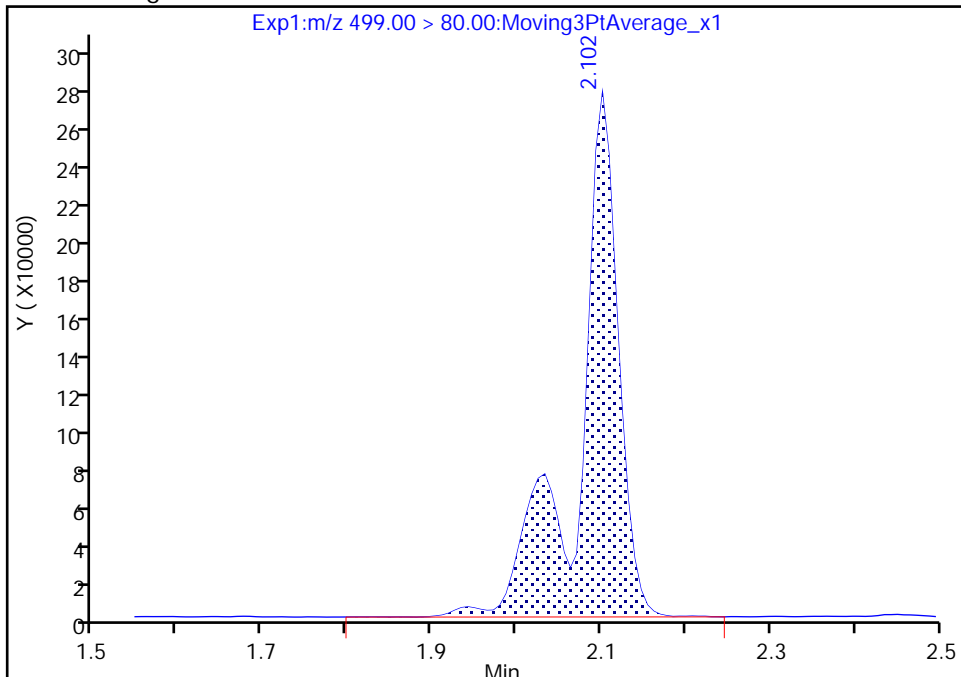
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.10
Area: 921209
Amount: 10.916447
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 13-Apr-2018 10:09:16
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-139 LMSD Lab Sample ID: 320-37675-14 LMSD
 Matrix: Water Lab File ID: 2018.04.12_537AA_057.d
 Analysis Method: 537 Date Collected: 03/29/2018 11:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 252.9(mL) Date Analyzed: 04/13/2018 02:38
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 41.2 | M | 40 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 27.4 | | 20 | 7.9 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 18.5 | J | 24 | 20 | 7.9 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 29.4 | J | 30 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 13.0 | | 9.9 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 94.4 | | 89 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 93 | | 70-130 |
| STL00996 | 13C2 PFDA | 98 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_057.d
 Lims ID: 320-37675-A-14-E LMSD
 Client ID:
 Sample Type: LMSD
 Inject. Date: 13-Apr-2018 02:38:31 ALS Bottle#: 41 Worklist Smp#: 29
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-14-e lmsd
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 10:09:51

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.381 | 0.0 | 1.000 | 2058053 | 23.9 | | 2571 | |
| 298.90 > 99.00 | 1.381 | 1.381 | 0.0 | 1.000 | 1491322 | | 1.38(0.00-0.00) | 3417 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 924558 | 9.32 | | 8588 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.677 | 0.0 | 1.000 | 328764 | 3.28 | | 10.5 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.669 | 1.677 | -0.008 | 1.000 | 1000073 | 7.43 | | 679 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.874 | -0.008 | | 932927 | 10.0 | | 5823 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.866 | 1.874 | -0.008 | 1.000 | 687080 | 6.93 | | 93.6 | |
| 413.00 > 169.00 | 1.866 | 1.874 | -0.008 | 1.000 | 390685 | | 1.76(0.00-0.00) | 496 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.102 | 2.094 | 0.008 | 1.000 | 911154 | 10.4 | | 614 | a |
| 499.00 > 99.00 | 2.102 | 2.094 | 0.008 | 1.000 | 196577 | | 4.64(0.00-0.00) | 399 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2349968 | 28.7 | | 2962 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.109 | 2.117 | -0.008 | 1.000 | 367519 | 4.68 | | 50.2 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.253 | 2.253 | 0.0 | 1.000 | 779270 | 9.82 | | 7955 | |

QC Flag Legend

Review Flags

a - User Assigned ID

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_057.d

Injection Date: 13-Apr-2018 02:38:31

Instrument ID: A8_N

Lims ID: 320-37675-A-14-E LMSD

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 41

Worklist Smp#: 29

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

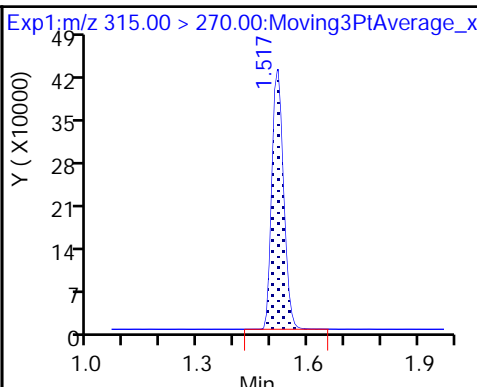
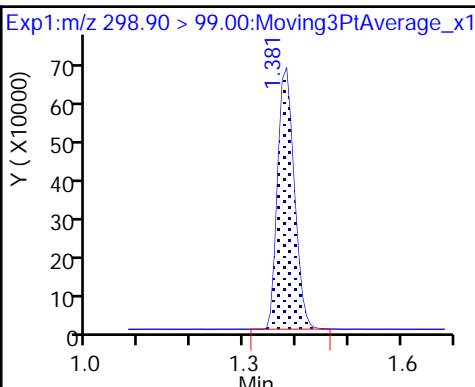
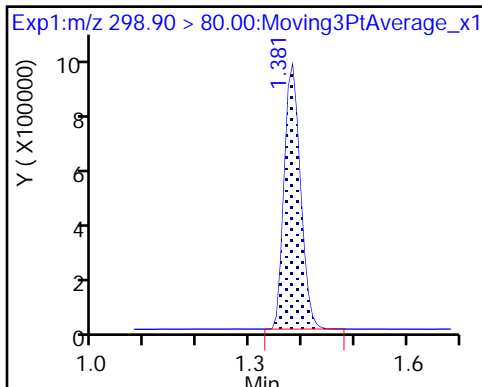
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

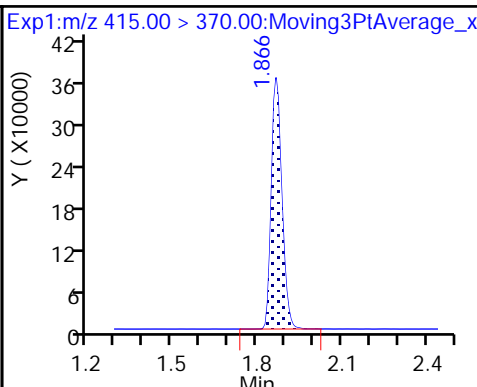
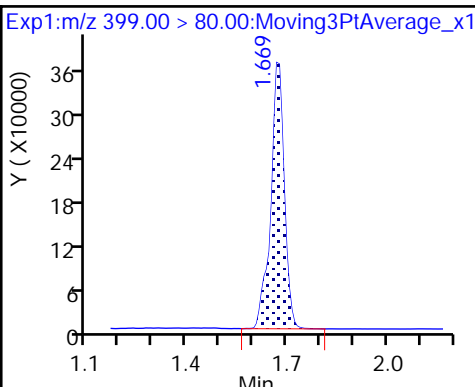
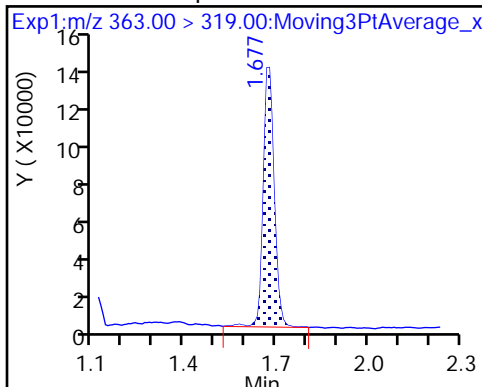
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

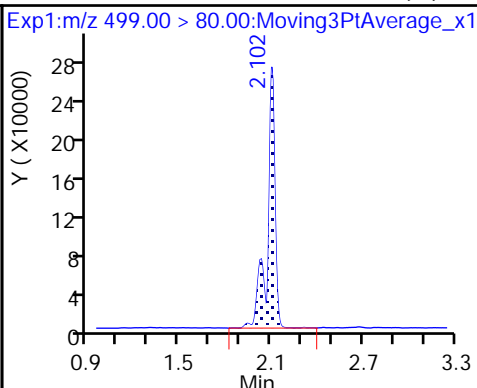
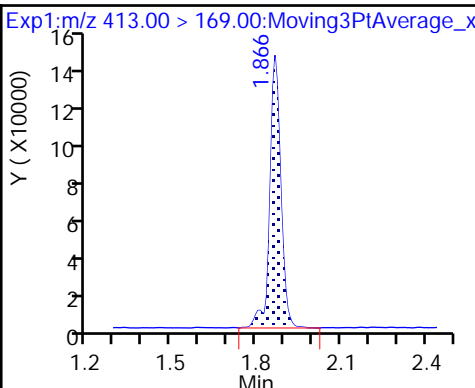
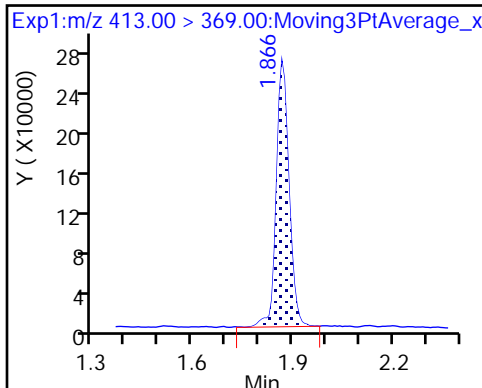
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

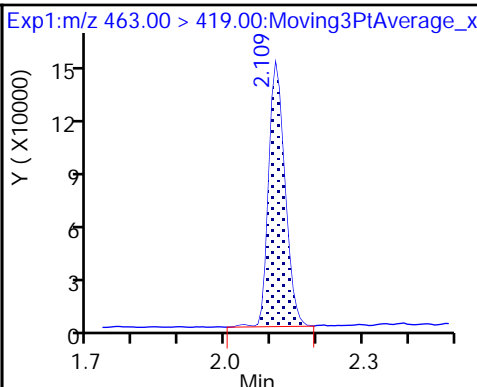
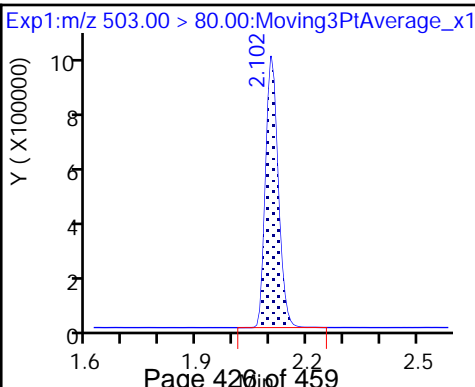
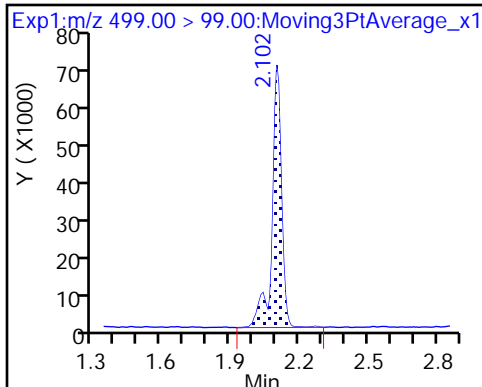
8 Perfluorooctane sulfonic acid (M)



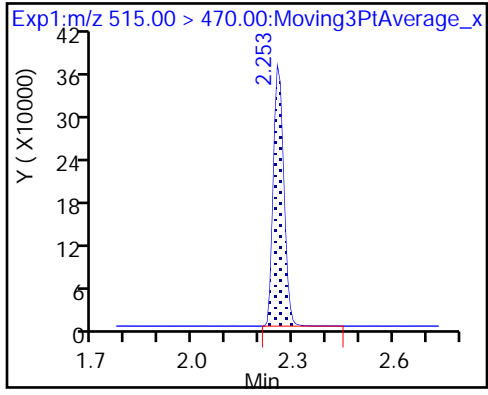
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_057.d
 Lims ID: 320-37675-A-14-E LMSD
 Client ID:
 Sample Type: LMSD
 Inject. Date: 13-Apr-2018 02:38:31 ALS Bottle#: 41 Worklist Smp#: 29
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-14-e lmsd
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 10:09:51

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.32 | 93.21 |
| \$ 10 13C2 PFDA | 10.0 | 9.82 | 98.22 |

TestAmerica Sacramento

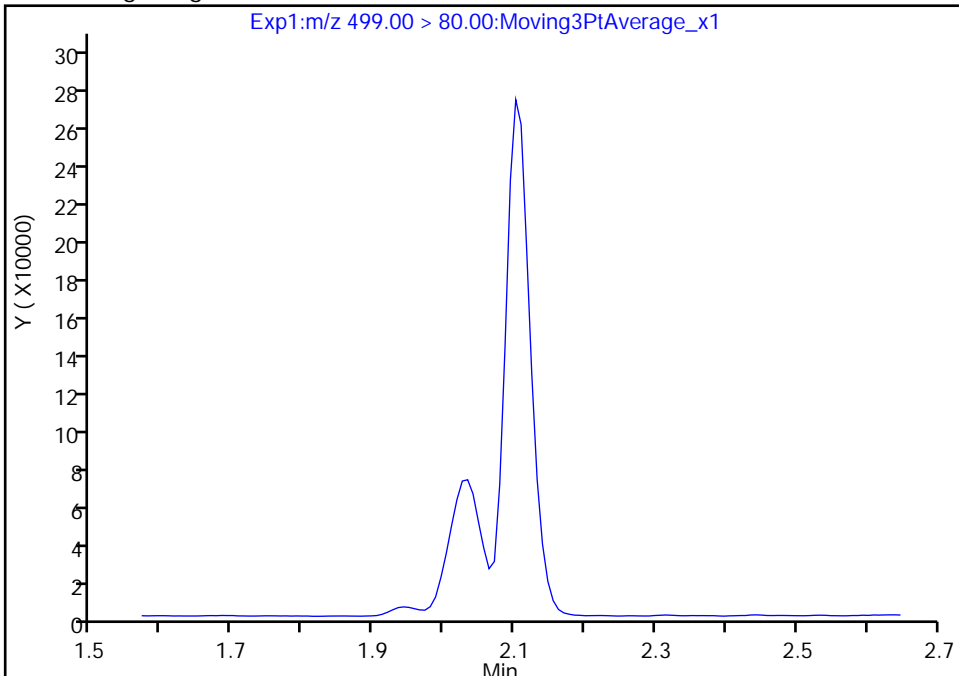
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_057.d
Injection Date: 13-Apr-2018 02:38:31 Instrument ID: A8_N
Lims ID: 320-37675-A-14-E LMSD
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 41 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

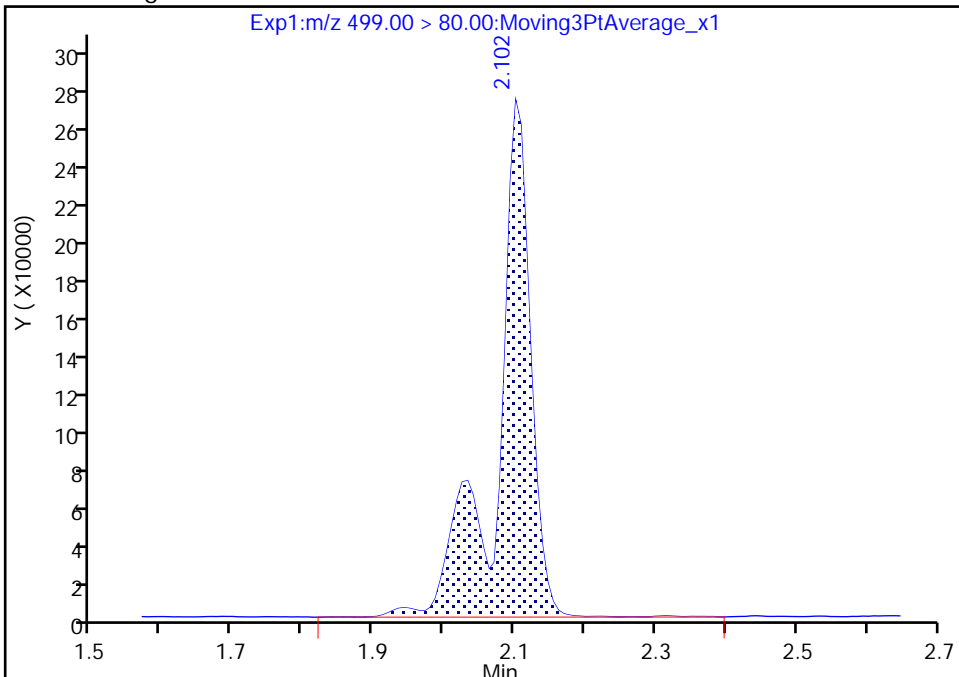
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 911154
Amount: 10.430907
Amount Units: ng/ml



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Start Date: 04/11/2018 11:45

Analysis Batch Number: 217453 End Date: 04/11/2018 12:27

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|---------------------------|------------------|------------------|-----------------|-------------------------------|-----------------------|
| IC 320-217453/3 | | 04/11/2018 11:45 | 1 | 2018.04.11_537I CALB 004.d | GeminiC18 3x100 3(mm) |
| IC 320-217453/4 | | 04/11/2018 11:50 | 1 | 2018.04.11_537I CALB 005.d | GeminiC18 3x100 3(mm) |
| IC 320-217453/5 | | 04/11/2018 11:55 | 1 | 2018.04.11_537I CALB 006.d | GeminiC18 3x100 3(mm) |
| IC 320-217453/6 ICISAV | | 04/11/2018 11:59 | 1 | 2018.04.11_537I CALB 007.d | GeminiC18 3x100 3(mm) |
| IC 320-217453/7 | | 04/11/2018 12:04 | 1 | 2018.04.11_537I CALB 008.d | GeminiC18 3x100 3(mm) |
| IC 320-217453/8 | | 04/11/2018 12:09 | 1 | 2018.04.11_537I CALB 009.d | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/11/2018 12:13 | 1 | | GeminiC18 3x100 3(mm) |
| CCVL 320-217453/10 | | 04/11/2018 12:18 | 1 | 2018.04.11_537I CALB 011.d | GeminiC18 3x100 3(mm) |
| ICB 320-217453/11 | | 04/11/2018 12:23 | 1 | | GeminiC18 3x100 3(mm) |
| ICV 320-217453/12 | | 04/11/2018 12:27 | 1 | 2018.04.11_537I CALB 013.d | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Start Date: 04/12/2018 14:48

Analysis Batch Number: 217726 End Date: 04/12/2018 15:49

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|----------------------------|------------------|------------------|-----------------|--------------------------|-----------------------|
| CCVL 320-217726/1 | | 04/12/2018 14:48 | 1 | 2018.04.12_537A 004.d | GeminiC18 3x100 3(mm) |
| CCV 320-217726/2 CCVIS | | 04/12/2018 14:53 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:02 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:07 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:12 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:16 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:21 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:26 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:30 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:35 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:40 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:44 | 1 | | GeminiC18 3x100 3(mm) |
| CCV 320-217726/14 CCVIS | | 04/12/2018 15:49 | 1 | | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Start Date: 04/13/2018 00:27

Analysis Batch Number: 217814 End Date: 04/13/2018 01:23

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|----------------------------|------------------|------------------|-----------------|----------------------------|-----------------------|
| CCV 320-217814/1 CCVIS | | 04/13/2018 00:27 | 1 | 2018.04.12_537A A 029.d | GeminiC18 3x100 3(mm) |
| MB 320-216791/1-A | | 04/13/2018 00:37 | 1 | 2018.04.12_537A A 031.d | GeminiC18 3x100 3(mm) |
| LCS 320-216791/2-A | | 04/13/2018 00:41 | 1 | 2018.04.12_537A A 032.d | GeminiC18 3x100 3(mm) |
| LCSD 320-216791/3-A | | 04/13/2018 00:46 | 1 | 2018.04.12_537A A 033.d | GeminiC18 3x100 3(mm) |
| 320-37675-1 | | 04/13/2018 00:51 | 1 | 2018.04.12_537A A 034.d | GeminiC18 3x100 3(mm) |
| 320-37675-2 | | 04/13/2018 00:55 | 1 | 2018.04.12_537A A 035.d | GeminiC18 3x100 3(mm) |
| 320-37675-3 | | 04/13/2018 01:00 | 1 | 2018.04.12_537A A 036.d | GeminiC18 3x100 3(mm) |
| 320-37675-4 | | 04/13/2018 01:05 | 1 | 2018.04.12_537A A 037.d | GeminiC18 3x100 3(mm) |
| 320-37675-5 | | 04/13/2018 01:09 | 1 | 2018.04.12_537A A 038.d | GeminiC18 3x100 3(mm) |
| 320-37675-6 | | 04/13/2018 01:14 | 1 | 2018.04.12_537A A 039.d | GeminiC18 3x100 3(mm) |
| 320-37675-7 | | 04/13/2018 01:19 | 1 | 2018.04.12_537A A 040.d | GeminiC18 3x100 3(mm) |
| CCV 320-217814/13 CCVIS | | 04/13/2018 01:23 | 1 | 2018.04.12_537A A 041.d | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Start Date: 04/13/2018 01:23

Analysis Batch Number: 217816 End Date: 04/13/2018 01:51

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|----------------------------|------------------|------------------|-----------------|----------------------------|-----------------------|
| CCV 320-217816/13 CCVIS | | 04/13/2018 01:23 | 1 | 2018.04.12_537A A 041.d | GeminiC18 3x100 3(mm) |
| 320-37675-8 | | 04/13/2018 01:33 | 1 | 2018.04.12_537A A 043.d | GeminiC18 3x100 3(mm) |
| 320-37675-9 | | 04/13/2018 01:37 | 1 | 2018.04.12_537A A 044.d | GeminiC18 3x100 3(mm) |
| 320-37675-10 | | 04/13/2018 01:42 | 1 | 2018.04.12_537A A 045.d | GeminiC18 3x100 3(mm) |
| 320-37675-11 | | 04/13/2018 01:47 | 1 | 2018.04.12_537A A 046.d | GeminiC18 3x100 3(mm) |
| CCV 320-217816/19 CCVIS | | 04/13/2018 01:51 | 1 | 2018.04.12_537A A 047.d | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Start Date: 04/13/2018 01:51

Analysis Batch Number: 217818 End Date: 04/13/2018 02:19

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|----------------------------|------------------|------------------|-----------------|----------------------------|-----------------------|
| CCV 320-217818/19 CCVIS | | 04/13/2018 01:51 | 1 | 2018.04.12_537A A 047.d | GeminiC18 3x100 3(mm) |
| MB 320-216792/1-A | | 04/13/2018 02:01 | 1 | 2018.04.12_537A A 049.d | GeminiC18 3x100 3(mm) |
| LLCS 320-216792/2-A | | 04/13/2018 02:05 | 1 | 2018.04.12_537A A 050.d | GeminiC18 3x100 3(mm) |
| 320-37675-12 | | 04/13/2018 02:10 | 1 | 2018.04.12_537A A 051.d | GeminiC18 3x100 3(mm) |
| 320-37675-13 | | 04/13/2018 02:15 | 1 | 2018.04.12_537A A 052.d | GeminiC18 3x100 3(mm) |
| CCV 320-217818/25 CCVIS | | 04/13/2018 02:19 | 1 | 2018.04.12_537A A 053.d | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Start Date: 04/13/2018 02:19

Analysis Batch Number: 217820 End Date: 04/13/2018 03:15

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|----------------------------|------------------|------------------|-----------------|----------------------------|-----------------------|
| CCV 320-217820/25 CCVIS | | 04/13/2018 02:19 | 1 | 2018.04.12_537A A 053.d | GeminiC18 3x100 3(mm) |
| 320-37675-14 | | 04/13/2018 02:29 | 1 | 2018.04.12_537A A 055.d | GeminiC18 3x100 3(mm) |
| 320-37675-14 LMS | | 04/13/2018 02:33 | 1 | 2018.04.12_537A A 056.d | GeminiC18 3x100 3(mm) |
| 320-37675-14 LMSD | | 04/13/2018 02:38 | 1 | 2018.04.12_537A A 057.d | GeminiC18 3x100 3(mm) |
| 320-37675-15 | | 04/13/2018 02:43 | 1 | 2018.04.12_537A A 058.d | GeminiC18 3x100 3(mm) |
| 320-37675-16 | | 04/13/2018 02:47 | 1 | 2018.04.12_537A A 059.d | GeminiC18 3x100 3(mm) |
| 320-37675-17 | | 04/13/2018 02:52 | 1 | 2018.04.12_537A A 060.d | GeminiC18 3x100 3(mm) |
| 320-37675-18 | | 04/13/2018 02:57 | 1 | 2018.04.12_537A A 061.d | GeminiC18 3x100 3(mm) |
| 320-37675-19 | | 04/13/2018 03:01 | 1 | 2018.04.12_537A A 062.d | GeminiC18 3x100 3(mm) |
| 320-37675-20 | | 04/13/2018 03:06 | 1 | 2018.04.12_537A A 063.d | GeminiC18 3x100 3(mm) |
| 320-37675-21 | | 04/13/2018 03:11 | 1 | 2018.04.12_537A A 064.d | GeminiC18 3x100 3(mm) |
| CCV 320-217820/37 CCVIS | | 04/13/2018 03:15 | 1 | 2018.04.12_537A A 065.d | GeminiC18 3x100 3(mm) |

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216791 Batch Start Date: 04/07/18 08:11 Batch Analyst: Kouchari, Shamiran

Batch Method: 537 Batch End Date: 04/11/18 17:25

| Lab Sample ID | Client Sample ID | Method Chain | Basis | GrossWeight | TareWeight | InitialAmount | FinalAmount | ReceivedpH | LC537-IS 00067 |
|-------------------|----------------------|--------------|-------|-------------|------------|---------------|-------------|------------|----------------|
| MB 320-216791/1 | | 537, 537 | | | | 250 mL | 1.00 mL | 7 SU | 100 uL |
| LCS 320-216791/2 | | 537, 537 | | | | 250 mL | 1.00 mL | 7 SU | 100 uL |
| LCSD 320-216791/3 | | 537, 537 | | | | 250 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-1 | WGNA-032918-DUP-31 | 537, 537 | T | 280.59 g | 28.55 g | 252 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-2 | NAWC-032819-RW-286 | 537, 537 | T | 281.11 g | 27.82 g | 253.3 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-3 | NAWC-032819-FRB-286 | 537, 537 | T | 274.84 g | 28.16 g | 246.7 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-4 | WGNA-032819-RW-0518 | 537, 537 | T | 282.88 g | 30.48 g | 252.4 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-5 | WGNA-032819-FRB-0518 | 537, 537 | T | 281.85 g | 28.39 g | 253.5 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-6 | NAWC-032819-RW-010 | 537, 537 | T | 277.26 g | 28.73 g | 248.5 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-7 | NAWC-032819-FRB-010 | 537, 537 | T | 283.60 g | 28.07 g | 255.5 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-8 | NAWC-032819-RW-127 | 537, 537 | T | 285.35 g | 30.57 g | 254.8 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-9 | NAWC-032819-FRB-127 | 537, 537 | T | 278.07 g | 28.78 g | 249.3 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-10 | NAWC-032819-RW-195 | 537, 537 | T | 279.50 g | 28.42 g | 251.1 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-11 | NAWC-032819-FRB-195 | 537, 537 | T | 283.84 g | 28.05 g | 255.8 mL | 1.00 mL | 7 SU | 100 uL |

| Lab Sample ID | Client Sample ID | Method Chain | Basis | LC537-MSP 00033 | LC537-SU 00064 | AnalysisComment | | | |
|-------------------|---------------------|--------------|-------|-----------------|----------------|-----------------|--|--|--|
| MB 320-216791/1 | | 537, 537 | | | 100 uL | Chlorine, ND | | | |
| LCS 320-216791/2 | | 537, 537 | | 100 uL | 100 uL | Chlorine, ND | | | |
| LCSD 320-216791/3 | | 537, 537 | | 100 uL | 100 uL | Chlorine, ND | | | |
| 320-37675-A-1 | WGNA-032918-DUP-31 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-2 | NAWC-032819-RW-286 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-3 | NAWC-032819-FRB-286 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216791 Batch Start Date: 04/07/18 08:11 Batch Analyst: Kouchari, Shamiran

Batch Method: 537 Batch End Date: 04/11/18 17:25

| Lab Sample ID | Client Sample ID | Method Chain | Basis | LC537-MSP 00033 | LC537-SU 00064 | AnalysisComment | | | |
|----------------|----------------------|--------------|-------|-----------------|----------------|-----------------|--|--|--|
| 320-37675-A-4 | WGNA-032819-RW-0518 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-5 | WGNA-032819-FRB-0518 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-6 | NAWC-032819-RW-010 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-7 | NAWC-032819-FRB-010 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-8 | NAWC-032819-RW-127 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-9 | NAWC-032819-FRB-127 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-10 | NAWC-032819-RW-195 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-11 | NAWC-032819-FRB-195 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216791 Batch Start Date: 04/07/18 08:11 Batch Analyst: Kouchari, Shamiran

Batch Method: 537 Batch End Date: 04/11/18 17:25

| Batch Notes | |
|--------------------------------------|--|
| Analyst ID - Aliquot Step | VPM |
| Batch Comment | Client labels match TA label, 04/07/18 SKD |
| Analyst ID - Concentration | KMK/SKD |
| Analyst ID - Final Volume Step | VPM |
| Internal Standard ID# | 1208799 |
| Manifold ID | 3, 4 |
| Methanol ID | 1204219 |
| pH Indicator ID | 3817 |
| Pipette ID | 043082F |
| Analyst ID - IS Reagent Drop | VPM |
| Analyst ID - IS Reagent Drop Witness | JER |
| Analyst ID - SU Reagent Drop | SKD |
| Analyst ID - SU Reagent Drop Witness | HJA |
| Analyst ID - TA Reagent Drop | SKD |
| Analyst ID - TA Reagent Drop Witness | HJA |
| SPE Cartridge Lot ID | 6369499-12 |
| Trizma ID | SLBR5241V |
| Reagent Water ID | 04/05/18 |

| Basis | Basis Description |
|-------|-------------------|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216792 Batch Start Date: 04/07/18 08:19 Batch Analyst: Kouchari, Shamiran

Batch Method: 537 Batch End Date: 04/11/18 17:15

| Lab Sample ID | Client Sample ID | Method Chain | Basis | GrossWeight | TareWeight | InitialAmount | FinalAmount | ReceivedpH | LC537-IS 00067 |
|------------------------|---------------------|--------------|-------|-------------|------------|---------------|-------------|------------|----------------|
| MB 320-216792/1 | | 537, 537 | | | | 250 mL | 1.00 mL | 7 SU | 100 uL |
| LLCS 320-216792/2 | | 537, 537 | | | | 250 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-12 | NAWC-032819-RW-048 | 537, 537 | T | 272.73 g | 27.71 g | 245 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-13 | NAWC-032819-FRB-048 | 537, 537 | T | 277.24 g | 28.50 g | 248.7 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-14 | NAWC-032819-RW-139 | 537, 537 | T | 277.94 g | 28.59 g | 249.4 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-14 LMS | NAWC-032819-RW-139 | 537, 537 | T | 284.31 g | 28.57 g | 255.7 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-14 LMSD | NAWC-032819-RW-139 | 537, 537 | T | 281.86 g | 28.92 g | 252.9 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-15 | NAWC-032819-FRB-139 | 537, 537 | T | 283.20 g | 28.57 g | 254.6 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-16 | NAWC-032819-RW-117 | 537, 537 | T | 286.53 g | 30.07 g | 256.5 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-17 | NAWC-032819-FRB-117 | 537, 537 | T | 286.61 g | 28.04 g | 258.6 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-18 | NAWC-032819-RW-181 | 537, 537 | T | 277.66 g | 28.73 g | 248.9 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-19 | NAWC-032819-FRB-181 | 537, 537 | T | 279.16 g | 28.59 g | 250.6 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-20 | NAWC-032819-RW-138 | 537, 537 | T | 270.92 g | 28.89 g | 242 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-21 | NAWC-032819-FRB-138 | 537, 537 | T | 281.13 g | 27.98 g | 253.2 mL | 1.00 mL | 7 SU | 100 uL |

| Lab Sample ID | Client Sample ID | Method Chain | Basis | LC537-LSP 00032 | LC537-SU 00064 | AnalysisComment | | | |
|-----------------------|---------------------|--------------|-------|-----------------|----------------|-----------------|--|--|--|
| MB 320-216792/1 | | 537, 537 | | | 100 uL | Chlorine, ND | | | |
| LLCS 320-216792/2 | | 537, 537 | | 100 uL | 100 uL | Chlorine, ND | | | |
| 320-37675-A-12 | NAWC-032819-RW-048 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-13 | NAWC-032819-FRB-048 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-14 | NAWC-032819-RW-139 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-14 LMS | NAWC-032819-RW-139 | 537, 537 | T | 100 uL | 100 uL | Chlorine, ND | | | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216792 Batch Start Date: 04/07/18 08:19 Batch Analyst: Kouchari, Shamiran

Batch Method: 537 Batch End Date: 04/11/18 17:15

| Lab Sample ID | Client Sample ID | Method Chain | Basis | LC537-LSP 00032 | LC537-SU 00064 | AnalysisComment | | | |
|------------------------|-------------------------|--------------|-------|-----------------|----------------|-----------------|--|--|--|
| 320-37675-A-14 LMSD | NAWC-032819-RW-1 39 | 537, 537 | T | 100 uL | 100 uL | Chlorine, ND | | | |
| 320-37675-A-15 | NAWC-032819-FRB- 139 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-16 | NAWC-032819-RW-1 17 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-17 | NAWC-032819-FRB- 117 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-18 | NAWC-032819-RW-1 81 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-19 | NAWC-032819-FRB- 181 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-20 | NAWC-032819-RW-1 38 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-21 | NAWC-032819-FRB- 138 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216792 Batch Start Date: 04/07/18 08:19 Batch Analyst: Kouchari, Shamiran

Batch Method: 537 Batch End Date: 04/11/18 17:15

| Batch Notes | |
|--------------------------------------|--|
| Analyst ID - Aliquot Step | VPM |
| Batch Comment | Client labels match TA label, 04/07/18 SKD |
| Analyst ID - Concentration | SKD/KMK |
| Analyst ID - Final Volume Step | VPM |
| Internal Standard ID# | 1208799 |
| Manifold ID | 4, 2 |
| Methanol ID | 1204219 |
| pH Indicator ID | 3817 |
| Pipette ID | 043082F |
| Analyst ID - IS Reagent Drop | VPM |
| Analyst ID - IS Reagent Drop Witness | JER |
| Analyst ID - SU Reagent Drop | SKD |
| Analyst ID - SU Reagent Drop Witness | HJA |
| Analyst ID - TA Reagent Drop | SKD |
| Analyst ID - TA Reagent Drop Witness | HJA |
| SPE Cartridge Lot ID | 6369499-12 |
| Trizma ID | SLBR5241V |
| Reagent Water ID | 04/05/18 |

| Basis | Basis Description |
|-------|-------------------|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

A8

Job No: 37675 Instrument ID & Date: 4-13-18 ICAL Batch: 217453
 Extraction Batch: 216791 Worklist #: 56657 TALS Batch: 217814, 217816, 217818,
216792 217820

| Review Items | --- Level 1 --- | | | Level 2 |
|--|-----------------|----|-----|---------|
| | Yes | No | N/A | |
| Initial Calibration | | | | |
| 1. Is ICAL verified and locked in Chrom & TALS? | ✓ | | | ✓ |
| 2. Is ICV properly linked in TALS? | ✓ | | | ✓ |
| Continuing Calibration | | | | |
| 1. Low-range CCV injected at start of analytical run? CCV injected after every 10 samples and at the end of the analytical run and alternated between Low-range, Mid-range and High-range? | ✓ | | | ✓ |
| 2. If sequence was not after an ICAL was a low and mid range CCV injected at the start of the analytical run? | ✓ | | | ✓ |
| 3. Native compounds and surrogates in control? Low-range within ±50% of true value Mid and High-range within ±30% of true value | ✓ | | | ✓ |
| 4. Internal Standard areas in control? Areas ≥ 50% of average area of the ICAL and 70-140% of the most recent CCV. | ✓ | | | ✓ |
| Client Samples & QC Sample Results | | | | |
| 1. Were preparation and analysis done within holding times? | ✓ | | | ✓ |
| 2. Are Chromatograms reviewed and spectra verified? | ✓ | | | ✓ |
| 3. Are positive results within calibration range? | ✓ | | | ✓ |
| 4. Dilutions due to target cpds? _____ Dilutions due to non-targets? _____ | | | ✓ | ✓ |
| 5. All target compounds in MB < 1/3 RL ? (Requires NCM if "no.") | ✓ | | | ✓ |
| 6. Are target constituents in LCS/LCSD within method control limits? | ✓ | | | ✓ |
| 7. Internal Standard areas in control for all samples and QC reported? ±50% from the average area of the ICAL and 70-140% of the most recent CCV | ✓ | | | ✓ |
| 8. Do results (e.g., dilutions/trip blanks) make sense? | ✓ | | | ✓ |
| 9. Are MS/MSD recoveries and RPDs within method control limits? | ✓ | | | ✓ |
| 10. Are all QC samples properly linked in TALS? | ✓ | | | ✓ |
| 11. All manual integrations appropriate and completely documented? | ✓ | | | ✓ |
| 12. Are nonconformances documented as NCMs? <u>122866</u> | | | ✓ | ✓ |
| 13. Are all Chrom graphics uploaded? | ✓ | | | ✓ |

1st Level Reviewer / Date: JRB 4-13-18 2nd Level Reviewer / Date: mxw 4/18/2018

NCM # and Comments: Samples 16 and 17 scheduled for RX due to possible sample switch.

A8

Instrument ID & Date: 4/11/18 Worklist#: 56557

ICAL Batch: 217453, 217454 Calibration ID number: 38530, 38531

| Review Items | -- Level 1 -- | | | Level 2 |
|--|---------------|----|-----|---------|
| | Yes | No | N/A | |
| Initial Calibration | | | | |
| 1. Mass calibration, as needed, verified by full scan of PFC stock standard. All PFC ions used for quantitation are within 0.3 m/z of true mass? | ✓ | | | ✓ |
| 2. Responses increase with increasing concentration? | ✓ | | | ✓ |
| 3. Fit used (circle): <u>Average</u> Linear (1/x ²)Linear Quadratic (6 points minimum) | | | | |
| 4. Meets fit criteria? Intercept ≤ ½ RL RSD ≤ 30% for Average R ² ≥ 0.990 for Linear R ² ≥ 0.990 for Quadratic NOTE: "Force through Zero" must be used and weighted if needed | ✓ | | | ✓ |
| 5. If quadratic fit used the curve does not "bend over". | | | ✓ | |
| 6. Feed calibration points into the calculated curve. Are points ≤MRL within ±50% of true value? Are points >MRL within ±30% of true value? | ✓ | | | ✓ |
| 7. Any carryover from the high calibration point must be ≤ 1/3 RL | ✓ | | | ✓ |
| 8. Asymmetry check meets criteria for the first two eluting peaks? (0.8 - 1.5). | ✓ | | | ✓ |
| 9. Is the asymmetry check scanned and linked in TALS to the calibration point? | ✓ | | | ✓ |
| 10. Is ICV (2 nd source) ± 30% of true value? | ✓ | | | ✓ |
| 11. Is ICV (2 nd source) internal standards ±50% of average area of the ICAL? | ✓ | | | ✓ |
| 12. ICAL locked in Chrom and uploaded to TALS? | ✓ | | | ✓ |
| 13. ICAL locked in TALS and scanned? | ✓ | | | ✓ |

1st Level Reviewer / Date: JRB 4-11-18

2nd Level Reviewer / Date: CBW 4-11-18

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 12APR2018_537B

Worklist Number: 56657

Instrument Name: A8_N

Chrom Method: 537_A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b

QC Batching: Enabled

Limit Group Batching: Enabled

| QC Batch: 1 | LC 537 ICAL Raw Batch: 217814 |
|-------------------------|----------------------------------|
| # 1 CCV L5 | # 1 CCV L5 |
| # 2 RB | # 2 RB |
| # 3 MB 320-216791/1-A | # 3 MB 320-216791/1-A |
| # 4 LCS 320-216791/2-A | # 4 LCS 320-216791/2-A |
| # 5 LCSD 320-216791/3-A | # 5 LCSD 320-216791/3-A |
| # 6 320-37675-A-1-A | # 6 320-37675-A-1-A |
| # 7 320-37675-A-2-A | # 7 320-37675-A-2-A |
| # 8 320-37675-A-3-A | # 8 320-37675-A-3-A |
| # 9 320-37675-A-4-A | # 9 320-37675-A-4-A |
| #10 320-37675-A-5-A | #10 320-37675-A-5-A |
| #11 320-37675-A-6-A | #11 320-37675-A-6-A |
| #12 320-37675-A-7-A | #12 320-37675-A-7-A |
| #13 CCV L3 | #13 CCV L3 |

| QC Batch: 2 | LC 537 ICAL Raw Batch: 217816 |
|----------------------|----------------------------------|
| #13 CCV L3 | #13 CCV L3 |
| #14 RB | #14 RB |
| #15 320-37675-A-8-A | #15 320-37675-A-8-A |
| #16 320-37675-A-9-A | #16 320-37675-A-9-A |
| #17 320-37675-A-10-A | #17 320-37675-A-10-A |
| #18 320-37675-A-11-A | #18 320-37675-A-11-A |
| #19 CCV L5 | #19 CCV L5 |

| QC Batch: 3 | LC 537 ICAL Raw Batch: 217818 |
|-------------------------|----------------------------------|
| #19 CCV L5 | #19 CCV L5 |
| #20 RB | #20 RB |
| #21 MB 320-216792/1-A | #21 MB 320-216792/1-A |
| #22 LLCS 320-216792/2-A | #22 LLCS 320-216792/2-A |
| #23 320-37675-A-12-A | #23 320-37675-A-12-A |
| #24 320-37675-A-13-A | #24 320-37675-A-13-A |
| #25 CCV L5 | #25 CCV L5 |

| QC Batch: 4 | LC 537 ICAL Raw Batch: 217820 |
|---------------------------|----------------------------------|
| #25 CCV L5 | #25 CCV L5 |
| #26 RB | #26 RB |
| #27 320-37675-A-14-A | #27 320-37675-A-14-A |
| #28 320-37675-A-14-D LMS | #28 320-37675-A-14-D LMS |
| #29 320-37675-A-14-E LMSD | #29 320-37675-A-14-E LMSD |
| #30 320-37675-A-15-A | #30 320-37675-A-15-A |
| #31 320-37675-A-16-A | #31 320-37675-A-16-A |
| #32 320-37675-A-17-A | #32 320-37675-A-17-A |
| #33 320-37675-A-18-A | #33 320-37675-A-18-A |
| #34 320-37675-A-19-A | #34 320-37675-A-19-A |
| #35 320-37675-A-20-A | #35 320-37675-A-20-A |
| #36 320-37675-A-21-A | #36 320-37675-A-21-A |
| #37 CCV L3 | #37 CCV L3 |
| #38 RB | #38 RB |

CCVL in AB 217726

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 12APR2018_537B

Worklist Num: 56657

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b

Analysis Type: SemiVOA

Creator: Hannigan, Alyssa B

Inj Volume: 2.00

Inj Vol Units: ul

| Lab ID | Worklist ID | Sample Type | Inj Date/Time | File Name | Vial | Dil Factor | Client ID | Fract |
|---------------------|-----------------|-------------|----------------------|------------------------|------|------------|----------------------|-------|
| CCV L5 | 320-0056657-001 | CCVIS | 13-Apr-2018 00:27:43 | 2018.04.12_537AA_029.d | 5 | 1.0 | | sv |
| RB | 320-0056657-002 | RB | 13-Apr-2018 00:32:24 | 2018.04.12_537AA_030.d | 8 | 1.0 | | sv |
| MB 320-216791/1-A | 320-0056657-003 | MB | 13-Apr-2018 00:37:03 | 2018.04.12_537AA_031.d | 21 | 1.0 | | sv |
| LCS 320-216791/2-A | 320-0056657-004 | LCS | 13-Apr-2018 00:41:45 | 2018.04.12_537AA_032.d | 22 | 1.0 | | sv |
| LCSD 320-216791/3-A | 320-0056657-005 | LCSD | 13-Apr-2018 00:46:25 | 2018.04.12_537AA_033.d | 23 | 1.0 | | sv |
| 320-37675-A-1-A | 320-0056657-006 | Client | 13-Apr-2018 00:51:05 | 2018.04.12_537AA_034.d | 24 | 1.0 | WGNA-032918-DUP-31 | sv |
| 320-37675-A-2-A | 320-0056657-007 | Client | 13-Apr-2018 00:55:45 | 2018.04.12_537AA_035.d | 25 | 1.0 | NAWC-032819-RW-286 | sv |
| 320-37675-A-3-A | 320-0056657-008 | Client | 13-Apr-2018 01:00:24 | 2018.04.12_537AA_036.d | 26 | 1.0 | NAWC-032819-FRB-286 | sv |
| 320-37675-A-4-A | 320-0056657-009 | Client | 13-Apr-2018 01:05:04 | 2018.04.12_537AA_037.d | 27 | 1.0 | WGNA-032819-RW-0518 | sv |
| 320-37675-A-5-A | 320-0056657-010 | Client | 13-Apr-2018 01:09:44 | 2018.04.12_537AA_038.d | 28 | 1.0 | WGNA-032819-FRB-0518 | sv |
| 320-37675-A-6-A | 320-0056657-011 | Client | 13-Apr-2018 01:14:26 | 2018.04.12_537AA_039.d | 29 | 1.0 | NAWC-032819-RW-010 | sv |
| 320-37675-A-7-A | 320-0056657-012 | Client | 13-Apr-2018 01:19:06 | 2018.04.12_537AA_040.d | 30 | 1.0 | NAWC-032819-FRB-010 | sv |
| CCV L3 | 320-0056657-013 | CCVIS | 13-Apr-2018 01:23:46 | 2018.04.12_537AA_041.d | 3 | 1.0 | | sv |
| RB | 320-0056657-014 | RB | 13-Apr-2018 01:28:27 | 2018.04.12_537AA_042.d | 8 | 1.0 | | sv |
| 320-37675-A-8-A | 320-0056657-015 | Client | 13-Apr-2018 01:33:06 | 2018.04.12_537AA_043.d | 31 | 1.0 | NAWC-032819-RW-127 | sv |
| 320-37675-A-9-A | 320-0056657-016 | Client | 13-Apr-2018 01:37:46 | 2018.04.12_537AA_044.d | 32 | 1.0 | NAWC-032819-FRB-127 | sv |
| 320-37675-A-10-A | 320-0056657-017 | Client | 13-Apr-2018 01:42:27 | 2018.04.12_537AA_045.d | 33 | 1.0 | NAWC-032819-RW-195 | sv |
| 320-37675-A-11-A | 320-0056657-018 | Client | 13-Apr-2018 01:47:07 | 2018.04.12_537AA_046.d | 34 | 1.0 | NAWC-032819-FRB-195 | sv |
| CCV L5 | 320-0056657-019 | CCVIS | 13-Apr-2018 01:51:47 | 2018.04.12_537AA_047.d | 5 | 1.0 | | sv |
| RB | 320-0056657-020 | RB | 13-Apr-2018 01:56:27 | 2018.04.12_537AA_048.d | 8 | 1.0 | | sv |
| MB 320-216792/1-A | 320-0056657-021 | MB | 13-Apr-2018 02:01:08 | 2018.04.12_537AA_049.d | 35 | 1.0 | | sv |
| LLCS 320-216792/2-A | 320-0056657-022 | LLCS | 13-Apr-2018 02:05:48 | 2018.04.12_537AA_050.d | 36 | 1.0 | | sv |
| 320-37675-A-12-A | 320-0056657-023 | Client | 13-Apr-2018 02:10:28 | 2018.04.12_537AA_051.d | 37 | 1.0 | NAWC-032819-RW-048 | sv |
| 320-37675-A-13-A | 320-0056657-024 | Client | 13-Apr-2018 02:15:10 | 2018.04.12_537AA_052.d | 38 | 1.0 | NAWC-032819-FRB-048 | sv |
| CCV L5 | 320-0056657-025 | CCVIS | 13-Apr-2018 02:19:51 | 2018.04.12_537AA_053.d | 5 | 1.0 | | sv |

| Lab ID | Worklist ID | Sample Type | Inj Date/Time | File Name | Vial | Dil Factor | Client ID | Fract |
|-----------------------|-----------------|-------------|----------------------|------------------------|------|------------|---------------------|-------|
| RB | 320-0056657-026 | RB | 13-Apr-2018 02:24:32 | 2018.04.12_537AA_054.d | 8 | 1.0 | | sv |
| 320-37675-A-14-A | 320-0056657-027 | Client | 13-Apr-2018 02:29:11 | 2018.04.12_537AA_055.d | 39 | 1.0 | NAWC-032819-RW-139 | sv |
| 320-37675-A-14-D LMS | 320-0056657-028 | LMS | 13-Apr-2018 02:33:50 | 2018.04.12_537AA_056.d | 40 | 1.0 | | sv |
| 320-37675-A-14-E LMSD | 320-0056657-029 | LMSD | 13-Apr-2018 02:38:31 | 2018.04.12_537AA_057.d | 41 | 1.0 | | sv |
| 320-37675-A-15-A | 320-0056657-030 | Client | 13-Apr-2018 02:43:10 | 2018.04.12_537AA_058.d | 42 | 1.0 | NAWC-032819-FRB-139 | sv |
| 320-37675-A-16-A | 320-0056657-031 | Client | 13-Apr-2018 02:47:51 | 2018.04.12_537AA_059.d | 43 | 1.0 | NAWC-032819-RW-117 | sv |
| 320-37675-A-17-A | 320-0056657-032 | Client | 13-Apr-2018 02:52:31 | 2018.04.12_537AA_060.d | 44 | 1.0 | NAWC-032819-FRB-117 | sv |
| 320-37675-A-18-A | 320-0056657-033 | Client | 13-Apr-2018 02:57:11 | 2018.04.12_537AA_061.d | 45 | 1.0 | NAWC-032819-RW-181 | sv |
| 320-37675-A-19-A | 320-0056657-034 | Client | 13-Apr-2018 03:01:50 | 2018.04.12_537AA_062.d | 46 | 1.0 | NAWC-032819-FRB-181 | sv |
| 320-37675-A-20-A | 320-0056657-035 | Client | 13-Apr-2018 03:06:31 | 2018.04.12_537AA_063.d | 47 | 1.0 | NAWC-032819-RW-138 | sv |
| 320-37675-A-21-A | 320-0056657-036 | Client | 13-Apr-2018 03:11:13 | 2018.04.12_537AA_064.d | 48 | 1.0 | NAWC-032819-FRB-138 | sv |
| CCV L3 | 320-0056657-037 | CCVIS | 13-Apr-2018 03:15:54 | 2018.04.12_537AA_065.d | 3 | 1.0 | | sv |
| RB | 320-0056657-038 | RB | 13-Apr-2018 03:20:33 | 2018.04.12_537AA_066.d | 8 | 1.0 | | sv |

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 12APR2018_537A

Worklist Num: 56633

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180412-56633.b

Analysis Type: SemiVOA

Creator: Royce, Amani A

Inj Volume: 2.00

Inj Vol Units: ul

| Lab ID | Worklist ID | Sample Type | Inj Date/Time | File Name | Vial | Dil Factor | Client ID | Fract |
|---------------------|-----------------|-------------|----------------------|-----------------------|------|------------|------------------------|-------|
| CCVL | 320-0056633-001 | CCVL | 12-Apr-2018 14:48:43 | 2018.04.12_537A_004.d | 2 | 1.0 | | sv |
| CCV L5 | 320-0056633-002 | CCVIS | 12-Apr-2018 14:53:23 | 2018.04.12_537A_005.d | 5 | 1.0 | | sv |
| RB | 320-0056633-003 | RB | 12-Apr-2018 14:58:03 | 2018.04.12_537A_006.d | 8 | 1.0 | | sv |
| MB 320-216980/1-A | 320-0056633-004 | MB | 12-Apr-2018 15:02:44 | 2018.04.12_537A_007.d | 1 | 1.0 | | sv |
| LCS 320-216980/2-A | 320-0056633-005 | LCS | 12-Apr-2018 15:07:24 | 2018.04.12_537A_008.d | 2 | 1.0 | | sv |
| 320-37934-A-1-A | 320-0056633-006 | Client | 12-Apr-2018 15:12:04 | 2018.04.12_537A_009.d | 3 | 1.0 | DUP-046 | sv |
| 320-37934-A-2-A | 320-0056633-007 | Client | 12-Apr-2018 15:16:45 | 2018.04.12_537A_010.d | 4 | 1.0 | WS-054 | sv |
| 320-37934-A-3-A | 320-0056633-008 | Client | 12-Apr-2018 15:21:26 | 2018.04.12_537A_011.d | 5 | 1.0 | WS-115 | sv |
| 320-37934-A-4-A | 320-0056633-009 | Client | 12-Apr-2018 15:26:06 | 2018.04.12_537A_012.d | 6 | 1.0 | WS-011 | sv |
| 320-37934-A-5-A | 320-0056633-010 | Client | 12-Apr-2018 15:30:47 | 2018.04.12_537A_013.d | 7 | 1.0 | WS-015 | sv |
| 320-37934-A-5-B MS | 320-0056633-011 | MS | 12-Apr-2018 15:35:28 | 2018.04.12_537A_014.d | 8 | 1.0 | WS-015 | sv |
| 320-37934-A-5-C MSD | 320-0056633-012 | MSD | 12-Apr-2018 15:40:08 | 2018.04.12_537A_015.d | 9 | 1.0 | WS-015 | sv |
| 320-37934-A-6-A | 320-0056633-013 | Client | 12-Apr-2018 15:44:48 | 2018.04.12_537A_016.d | 10 | 1.0 | WS-032 | sv |
| CCV L3 | 320-0056633-014 | CCVIS | 12-Apr-2018 15:49:29 | 2018.04.12_537A_017.d | 3 | 1.0 | | sv |
| RB | 320-0056633-015 | RB | 12-Apr-2018 15:54:09 | 2018.04.12_537A_018.d | 8 | 1.0 | | sv |
| 320-37934-A-7-A | 320-0056633-016 | Client | 12-Apr-2018 15:58:48 | 2018.04.12_537A_019.d | 11 | 1.0 | WS-057 | sv |
| 320-37934-A-8-A | 320-0056633-017 | Client | 12-Apr-2018 16:03:29 | 2018.04.12_537A_020.d | 12 | 1.0 | FIELD BLANK-04-04-2018 | sv |
| 320-37934-A-9-A | 320-0056633-018 | Client | 12-Apr-2018 16:08:10 | 2018.04.12_537A_021.d | 13 | 1.0 | WS-110A | sv |
| 320-37934-A-10-A | 320-0056633-019 | Client | 12-Apr-2018 16:12:51 | 2018.04.12_537A_022.d | 14 | 1.0 | WS-034 | sv |
| 320-37934-A-11-A | 320-0056633-020 | Client | 12-Apr-2018 16:17:32 | 2018.04.12_537A_023.d | 15 | 1.0 | WS-108 | sv |
| 320-37934-A-12-A | 320-0056633-021 | Client | 12-Apr-2018 16:22:14 | 2018.04.12_537A_024.d | 16 | 1.0 | WS-009 | sv |
| 320-37936-A-1-A | 320-0056633-022 | Client | 12-Apr-2018 16:26:56 | 2018.04.12_537A_025.d | 17 | 1.0 | WS-137 | sv |
| 320-37937-A-1-A | 320-0056633-023 | Client | 12-Apr-2018 16:31:36 | 2018.04.12_537A_026.d | 18 | 1.0 | POET-6-MID | sv |
| 320-37937-A-2-A | 320-0056633-024 | Client | 12-Apr-2018 16:36:16 | 2018.04.12_537A_027.d | 19 | 1.0 | WS-096 | sv |
| 320-37937-A-3-A | 320-0056633-025 | Client | 12-Apr-2018 16:40:57 | 2018.04.12_537A_028.d | 20 | 1.0 | DUP-047 | sv |

| Lab ID | Worklist ID | Sample Type | Inj Date/Time | File Name | Vial | Dil Factor | Client ID | Fract |
|--------|-----------------|-------------|----------------------|-----------------------|------|------------|-----------|-------|
| CCV L5 | 320-0056633-026 | CCVIS | 12-Apr-2018 16:45:38 | 2018.04.12_537A_029.d | 5 | 1.0 | | sv |
| RB | 320-0056633-027 | RB | 12-Apr-2018 16:50:17 | 2018.04.12_537A_030.d | 8 | 1.0 | | sv |

54 As 4/12/18

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Batch Number: 320-216791 ✓

Batch End: 4/11/2018 5:25:00PM

Method Code: 320-537_Prep-320

Extraction of Perfluorinated Alkyl Acids

| Input Sample Lab ID (Analytical Method) | SDG (Job #) | GrossWt TareWt | InitAmt FinAmt | Rcvd | PHs | | Due Date | Analytical TAT | Div Rank | Comments | Output Sample Lab ID |
|--|----------------------|---------------------|---------------------|------|------|------|----------|-------------------|-------------|--------------|----------------------|
| | | | | | Adj1 | Adj2 | | | | | |
| 1 MB-320-216791/1 N/A | N/A | | 250 mL 1.00 mL | 7 | | | N/A | N/A | N/A | Chlorine, ND | MB-320-216791/1-A |
| 2 LCS-320-216791/2 N/A | N/A | | 250 mL 1.00 mL | 7 | | | N/A | N/A | N/A | Chlorine, ND | LCS-320-216791/2-A |
| 3 LCS-320-216791/3 N/A | N/A | | 250 mL 1.00 mL | 7 | | | N/A | N/A | N/A | Chlorine, ND | LCS-320-216791/3-A |
| 4 320-37675-A-1 (537_DOD5) | N/A (320-37675-1) | 280.59 g 28.55 g | 252 mL 1.00 mL | 7 | | | 4/3/18 | 16_Days | 4 | Chlorine, ND | 320-37675-A-1-A |
| 5 320-37675-A-2 (537_DOD5) | N/A (320-37675-1) | 281.11 g 27.82 g | 253.3 mL 1.00 mL | 7 | | | 4/3/18 | 16_Days | 4 | Chlorine, ND | 320-37675-A-2-A |
| 6 320-37675-A-3 (537_DOD5) | N/A (320-37675-1) | 274.84 g 28.16 g | 246.7 mL 1.00 mL | 7 | | | 4/3/18 | 16_Days | 4 | Chlorine, ND | 320-37675-A-3-A |
| 7 320-37675-A-4 (537_DOD5) | N/A (320-37675-1) | 282.88 g 30.48 g | 252.4 mL 1.00 mL | 7 | | | 4/3/18 | 16_Days | 4 | Chlorine, ND | 320-37675-A-4-A |
| 8 320-37675-A-5 (537_DOD5) | N/A (320-37675-1) | 281.85 g 28.39 g | 253.5 mL 1.00 mL | 7 | | | 4/3/18 | 16_Days | 4 | Chlorine, ND | 320-37675-A-5-A |
| 9 320-37675-A-6 (537_DOD5) | N/A (320-37675-1) | 277.26 g 28.73 g | 248.5 mL 1.00 mL | 7 | | | 4/3/18 | 16_Days | 4 | Chlorine, ND | 320-37675-A-6-A |
| 10 320-37675-A-7 (537_DOD5) | N/A (320-37675-1) | 283.60 g 28.07 g | 255.5 mL 1.00 mL | 7 | | | 4/3/18 | 16_Days | 4 | Chlorine, ND | 320-37675-A-7-A |

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)





Batch Number: 320-216791

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Method Code: 320-537_Prep-320

Batch End: 4/11/2018 5:25:00PM

| | | | | | | | | | | | |
|----|------------------------------|----------------------|---------------------|---------------------|---|--|--------|---------|---|--------------|---|
| 11 | 320-37675-A-8 (537_DOD5) | N/A (320-37675-1) | 285.35 g 30.57 g | 254.8 mL 1.00 mL | 7 | | 4/3/18 | 16_Days | 4 | Chlorine, ND |  |
| 12 | 320-37675-A-9 (537_DOD5) | N/A (320-37675-1) | 278.07 g 28.78 g | 249.3 mL 1.00 mL | 7 | | 4/3/18 | 16_Days | 4 | Chlorine, ND |  |
| 13 | 320-37675-A-10 (537_DOD5) | N/A (320-37675-1) | 279.50 g 28.42 g | 251.1 mL 1.00 mL | 7 | | 4/3/18 | 16_Days | 4 | Chlorine, ND |  |
| 14 | 320-37675-A-11 (537_DOD5) | N/A (320-37675-1) | 283.84 g 28.05 g | 255.8 mL 1.00 mL | 7 | | 4/3/18 | 16_Days | 4 | Chlorine, ND |  |

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Method Code: 320-537_Prep-320

Batch End: 4/11/2018 5:25:00PM

Batch Notes

Manifold ID 3, 4

pH Indicator ID 3817

Trizma ID SLBR5241V

SPE Cartridge Lot ID 6369499-12

Methanol ID 1204219

Reagent Water ID 04/05/18

Internal Standard ID# 1208799

Pipette ID 043082F

Analyst ID - TA Reagent Drop SKD

Analyst ID - TA Reagent Drop HJA

Witness

Analyst ID - SU Reagent Drop SKD

Analyst ID - SU Reagent Drop HJA

Witness

Analyst ID - IS Reagent Drop VPM

Analyst ID - IS Reagent Drop JER

Witness

Analyst ID - Concentration KMK/SKD

Analyst ID - Aliquot Step VPM

Analyst ID - Final Volume Step VPM

Batch Comment Client labels match TA label, 04/07/18 SKD

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Method Code: 320-537_Prep-320

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Batch End:

Batch Notes

Manifold ID 3, 4

pH Indicator ID 3817

Trizma ID SLBR5241V

SPE Cartridge Lot ID 6369499-12

Methanol ID 1204219

Reagent Water ID 04/05/18

Internal Standard ID# 1208299

Pipette ID O43082F

Analyst ID - TA Reagent Drop SKD

Analyst ID - TA Reagent Drop Witness HJA

Analyst ID - SU Reagent Drop SKD

Analyst ID - SU Reagent Drop Witness HAJ

Analyst ID - IS Reagent Drop UPM

Analyst ID - IS Reagent Drop Witness JER

Analyst ID - Concentration KMK/SKD

Analyst ID - Aliquot Step UPM

Analyst ID - Final Volume Step UPM

Batch Comment Client labels match TA label, 04/07/18 SKD

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Method Code: 320-537_Prep-320

Batch Open: 4/7/2018 8:11:00AM

Batch End:

| Comments |
|----------|
|----------|

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Method Code: 320-537_Prep-320

Batch End:

Reagent Additions Worksheet

| Lab ID | Reagent Code | Amount Added | Final Amount | By | Witness |
|-------------------|-----------------|--------------|--------------|------------|------------|
| MB 320-216791/1 | LC537-SU_00064 | 100 uL | 1.00 mL | SKD 4/7/18 | HSD 4-7-18 |
| LCS 320-216791/2 | LC537-MSP_00033 | 100 uL | 1.00 mL | | |
| LCS 320-216791/2 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| LCSD 320-216791/3 | LC537-MSP_00033 | 100 uL | 1.00 mL | | |
| LCSD 320-216791/3 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-1 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-2 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-3 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-4 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-5 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-6 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-7 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-8 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-9 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-10 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-11 | LC537-SU_00064 | 100 uL | 1.00 mL | | |

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Method Code: 320-537_Prep-320

Batch End:

| Reagent | Other Reagents: | Amount/Units | Lot#: |
|---------|-----------------|--------------|-------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Preparation Batch Number(s) 216791 Test 537-prep

Earliest Holding Time 4/12/18

| Batch Information | 1 st Level Reviewer | 2 nd Level Reviewer |
|---|--------------------------------|--------------------------------|
| Date and time accurate and entered into TALS correctly | ✓ | ✓ |
| All necessary batch information complete and entered into TALS correctly | ✓ | ✓ |
| BD, FV, and AL initials are transcribed into the batch comment | ✓ | ✓ |
| Sample List Tab | 1 st Level Reviewer | 2 nd Level Reviewer |
| Samples identified to the correct method | ✓ | ✓ |
| Holding time violation NCM filed | NA | NA |
| MS/MSD or MS/DU NCM filed | ✓ | ✓ |
| NCM for any anomalies filed | NA | NA |
| All NCMs include method code, matrix, and prep batch | ✓ | ✓ |
| Method/sample/login/QAS checked and correct | ✓ | ✓ |
| Batch contains no more than 20 live samples | ✓ | ✓ |
| Worksheet Tab | 1 st Level Reviewer | 2 nd Level Reviewer |
| All samples properly preserved | ✓ | ✓ |
| Weights in anticipated range and not targeted | ✓ | ✓ |
| All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check) | ✓ | ✓ |
| The pH is transcribed properly in TALS | ✓ | ✓ |
| All additional information is transcribed into TALS and is correct and raw data is attached | ✓ | ✓ |
| Comments/Observations are transcribed correctly in TALS | ✓ | ✓ |
| Reagents Tab | 1 st Level Reviewer | 2 nd Level Reviewer |
| All necessary reagents not expired and checked into TALS | ✓ | ✓ |
| All spike amounts correct and added to necessary samples and QC | ✓ | ✓ |
| Internal Standard is added to the reagents | ✓ | ✓ |
| All units are correctly transcribed into TALS | ✓ | ✓ |

1st Level Reviewer: VPM

Date: 4/11/18

2nd Level Reviewer: [Signature]

Date: 4/11/18

Comments: _____

Shipping and Receiving Documents



320-37675 Chain of Custody

Chain of Custody Record

TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Client Contact, Regulatory Program, Analysis Turnaround Time, Project Manager, Site Contact, Lab Contact, Date, Carrier, FedEx, COC No., Sampler, Walk-in Client, Lab Sampling, Job / SDG No., Sample Specific Notes

Table with columns: Sample Identification, Sample Date, Sample Time, Sample Type, Matrix, # of Cont., Perform MS/MSD (Y/N), Filtered Sample (Y/N), EPA 537 UCF 33, Sample Specific Notes

Preservation Used, Possible Hazard Identification, Fed Ex Tracking, Custody Seals Intact, Company, Date/Time, Received by, Received in Laboratory by

Form No. CA-C-WI-002, Rev. 4.11, dated 1/24/2017

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-37675-1

Login Number: 37675

List Source: TestAmerica Sacramento

List Number: 1

Creator: Her, David A

| Question | Answer | Comment |
|--|---------------|----------------|
| Radioactivity wasn't checked or is \leq background as measured by a survey meter. | True | |
| The cooler's custody seal, if present, is intact. | True | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | N/A | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4"). | N/A | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

"WGNA-032918-DUP-31","537","RES","320-37675-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.7","DL","","TRG","","","40","LOQ","YES","-99","","252","1.00","16",""
"WGNA-032918-DUP-31","537","RES","320-37675-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","5.4","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","252","1.00","7.9",""
"WGNA-032918-DUP-31","537","RES","320-37675-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","252","1.00","12",""
"WGNA-032918-DUP-31","537","RES","320-37675-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","89","LOQ","YES","-99","","252","1.00","36",""
"WGNA-032918-DUP-31","537","RES","320-37675-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","9.9","LOQ","YES","-99","","252","1.00","4.0",""
"WGNA-032918-DUP-31","537","RES","320-37675-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES","-99","","252","1.00","20",""
"WGNA-032918-DUP-31","537","RES","320-37675-1","TALSAC","STL00993","13C2
PFHxA","38","ng/L","","-99","DL","","SURR","95","","-99","LOQ","YES","39.7","","252","1.00","0",""
"WGNA-032918-DUP-31","537","RES","320-37675-1","TALSAC","STL00996","13C2
PFDA","37","ng/L","","-99","DL","","SURR","93","","-99","LOQ","YES","39.7","","252","1.00","0",""
"NAWC-032819-RW-195","537","RES","320-37675-10","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","14","ng/L","J M","6.8","DL","","TRG","","","40","LOQ","YES","-99","","251.1","1.00","16",""
"NAWC-032819-RW-195","537","RES","320-37675-10","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","12","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","251.1","1.00","8.0",""
"NAWC-032819-RW-195","537","RES","320-37675-10","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","251.1","1.00","12",""
"NAWC-032819-RW-195","537","RES","320-37675-10","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","251.1","1.00","36",""
"NAWC-032819-RW-195","537","RES","320-37675-10","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.2","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES","-99","","251.1","1.00","4.0",""
"NAWC-032819-RW-195","537","RES","320-37675-10","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U M","8.0","DL","","TRG","","","24","LOQ","YES","-99","","251.1","1.00","20",""
"NAWC-032819-RW-195","537","RES","320-37675-10","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","-99","DL","","SURR","97","","-99","LOQ","YES","39.8","","251.1","1.00","0",""
"NAWC-032819-RW-195","537","RES","320-37675-10","TALSAC","STL00996","13C2
PFDA","36","ng/L","","-99","DL","","SURR","91","","-99","LOQ","YES","39.8","","251.1","1.00","0",""
"NAWC-032819-FRB-195","537","RES","320-37675-11","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.6","DL","","TRG","","","39","LOQ","YES","-99","","255.8","1.00","16",""
"NAWC-032819-FRB-195","537","RES","320-37675-11","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.8","ng/L","U","2.7","DL","","TRG","","","20","LOQ","YES","-99","","255.8","1.00","7.8",""
"NAWC-032819-FRB-195","537","RES","320-37675-11","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","29","LOQ","YES","-99","","255.8","1.00","12",""
"NAWC-032819-FRB-195","537","RES","320-37675-11","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","255.8","1.00","35",""
"NAWC-032819-FRB-195","537","RES","320-37675-11","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.9","ng/L","U","1.9","DL","","TRG","","","9.8","LOQ","YES","-99","","255.8","1.00","3.9",""
"NAWC-032819-FRB-195","537","RES","320-37675-11","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES","-99","","255.8","1.00","20",""
"NAWC-032819-FRB-195","537","RES","320-37675-11","TALSAC","STL00993","13C2
PFHxA","38","ng/L","","-99","DL","","SURR","97","","-99","LOQ","YES","39.1","","255.8","1.00","0",""
"NAWC-032819-FRB-195","537","RES","320-37675-11","TALSAC","STL00996","13C2
PFDA","37","ng/L","","-99","DL","","SURR","94","","-99","LOQ","YES","39.1","","255.8","1.00","0",""
"NAWC-032819-RW-048","537","RES","320-37675-12","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U M","6.9","DL","","TRG","","","41","LOQ","YES","-99","","245","1.00","16",""
"NAWC-032819-RW-048","537","RES","320-37675-12","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","4.8","ng/L","J","2.9","DL","","TRG","","","20","LOQ","YES","-99","","245","1.00","8.2",""
"NAWC-032819-RW-048","537","RES","320-37675-12","TALSAC","355-46-4","Perfluorohexanesulfonic acid

(PFHxS),"12","ng/L","U M","5.6","DL","","TRG","","","31","LOQ","YES","-99","","245","1.00","12",""
"NAWC-032819-RW-048","537","RES","320-37675-12","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","37","ng/L","U M","16","DL","","TRG","","","92","LOQ","YES","-99","","245","1.00","37",""
"NAWC-032819-RW-048","537","RES","320-37675-12","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.1","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","245","1.00","4.1",""
"NAWC-032819-RW-048","537","RES","320-37675-12","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.2","DL","","TRG","","","24","LOQ","YES","-99","","245","1.00","20",""
"NAWC-032819-RW-048","537","RES","320-37675-12","TALSAC","STL00993","13C2
PFHxA","37","ng/L","","-99","DL","","SURR","91","","-99","LOQ","YES","40.8","","245","1.00","0",""
"NAWC-032819-RW-048","537","RES","320-37675-12","TALSAC","STL00996","13C2
PFDA","39","ng/L","","-99","DL","","SURR","96","","-99","LOQ","YES","40.8","","245","1.00","0",""
"NAWC-032819-FRB-048","537","RES","320-37675-13","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","248.7","1.00","16",""
"NAWC-032819-FRB-048","537","RES","320-37675-13","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","248.7","1.00","8.0",""
"NAWC-032819-FRB-048","537","RES","320-37675-13","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","248.7","1.00","12",""
"NAWC-032819-FRB-048","537","RES","320-37675-13","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","248.7","1.00","36",""
"NAWC-032819-FRB-048","537","RES","320-37675-13","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","248.7","1.00","4.0",""
"NAWC-032819-FRB-048","537","RES","320-37675-13","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","248.7","1.00","20",""
"NAWC-032819-FRB-048","537","RES","320-37675-13","TALSAC","STL00993","13C2
PFHxA","38","ng/L","","-99","DL","","SURR","94","","-99","LOQ","YES","40.2","","248.7","1.00","0",""
"NAWC-032819-FRB-048","537","RES","320-37675-13","TALSAC","STL00996","13C2
PFDA","38","ng/L","","-99","DL","","SURR","94","","-99","LOQ","YES","40.2","","248.7","1.00","0",""
"NAWC-032819-RW-139","537","RES","320-37675-14","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U M","6.8","DL","","TRG","","","40","LOQ","YES","-99","","249.4","1.00","16",""
"NAWC-032819-RW-139","537","RES","320-37675-14","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","9.5","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","249.4","1.00","8.0",""
"NAWC-032819-RW-139","537","RES","320-37675-14","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U M","5.5","DL","","TRG","","","30","LOQ","YES","-99","","249.4","1.00","12",""
"NAWC-032819-RW-139","537","RES","320-37675-14","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","249.4","1.00","36",""
"NAWC-032819-RW-139","537","RES","320-37675-14","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","J M","1.9","DL","","TRG","","","10","LOQ","YES","-99","","249.4","1.00","4.0",""
"NAWC-032819-RW-139","537","RES","320-37675-14","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U M","8.0","DL","","TRG","","","24","LOQ","YES","-99","","249.4","1.00","20",""
"NAWC-032819-RW-139","537","RES","320-37675-14","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","87","","-99","LOQ","YES","40.1","","249.4","1.00","0",""
"NAWC-032819-RW-139","537","RES","320-37675-14","TALSAC","STL00996","13C2
PFDA","40","ng/L","","-99","DL","","SURR","100","","-99","LOQ","YES","40.1","","249.4","1.00","0",""
"NAWC-032819-RW-139MS","537","RES","320-37675-14MS","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","42.7","ng/L","M","6.6","DL","","SPK","109","","39","LOQ","YES","39.3","NAWC-032819-RW-
139","255.7","1.00","16",""
"NAWC-032819-RW-139MS","537","RES","320-37675-14MS","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","28.1","ng/L","","2.7","DL","","SPK","95","","20","LOQ","YES","19.6","NAWC-032819-RW-
139","255.7","1.00","7.8",""
"NAWC-032819-RW-139MS","537","RES","320-37675-14MS","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","31.3","ng/L","","5.4","DL","","SPK","106","","29","LOQ","YES","29.7","NAWC-032819-RW-
139","255.7","1.00","12",""
"NAWC-032819-RW-139MS","537","RES","320-37675-14MS","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","104","ng/L","","16","DL","","SPK","118","","88","LOQ","YES","88.2","NAWC-032819-RW-

139","255.7","1.00","35",""
"NAWC-032819-RW-139MS","537","RES","320-37675-14MS","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","13.4","ng/L","",1.9,"DL","",,"SPK","96","",9.8,"LOQ","YES","9.78","NAWC-032819-RW-139","255.7","1.00","3.9",""
"NAWC-032819-RW-139MS","537","RES","320-37675-14MS","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19.0","ng/L","J","7.8","DL","",,"SPK","97","",23,"LOQ","YES","19.6","NAWC-032819-RW-139","255.7","1.00","20",""
"NAWC-032819-RW-139MS","537","RES","320-37675-14MS","TALSAC","STL00993","13C2 PFHxA","39.3","ng/L","",-99,"DL","",,"SURR","101","",-99,"LOQ","YES","39.1","NAWC-032819-RW-139","255.7","1.00","0",""
"NAWC-032819-RW-139MS","537","RES","320-37675-14MS","TALSAC","STL00996","13C2 PFDA","38.0","ng/L","",-99,"DL","",,"SURR","97","",-99,"LOQ","YES","39.1","NAWC-032819-RW-139","255.7","1.00","0",""
"NAWC-032819-RW-139MSD","537","RES","320-37675-14MSD","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","41.2","ng/L","M","6.7","DL","",,"SPK","104","3","40","LOQ","YES","39.8","NAWC-032819-RW-139","252.9","1.00","16",""
"NAWC-032819-RW-139MSD","537","RES","320-37675-14MSD","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","27.4","ng/L","",2.8,"DL","",,"SPK","91","3","20","LOQ","YES","19.8","NAWC-032819-RW-139","252.9","1.00","7.9",""
"NAWC-032819-RW-139MSD","537","RES","320-37675-14MSD","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","29.4","ng/L","J","5.4","DL","",,"SPK","98","6","30","LOQ","YES","30.0","NAWC-032819-RW-139","252.9","1.00","12",""
"NAWC-032819-RW-139MSD","537","RES","320-37675-14MSD","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","94.4","ng/L","",16,"DL","",,"SPK","106","9","89","LOQ","YES","89.1","NAWC-032819-RW-139","252.9","1.00","36",""
"NAWC-032819-RW-139MSD","537","RES","320-37675-14MSD","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","13.0","ng/L","",1.9,"DL","",,"SPK","91","3","9.9","LOQ","YES","9.89","NAWC-032819-RW-139","252.9","1.00","4.0",""
"NAWC-032819-RW-139MSD","537","RES","320-37675-14MSD","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","18.5","ng/L","J","7.9","DL","",,"SPK","94","3","24","LOQ","YES","19.8","NAWC-032819-RW-139","252.9","1.00","20",""
"NAWC-032819-RW-139MSD","537","RES","320-37675-14MSD","TALSAC","STL00993","13C2 PFHxA","36.9","ng/L","",-99,"DL","",,"SURR","93","",-99,"LOQ","YES","39.5","NAWC-032819-RW-139","252.9","1.00","0",""
"NAWC-032819-RW-139MSD","537","RES","320-37675-14MSD","TALSAC","STL00996","13C2 PFDA","38.8","ng/L","",-99,"DL","",,"SURR","98","",-99,"LOQ","YES","39.5","NAWC-032819-RW-139","252.9","1.00","0",""
"NAWC-032819-FRB-139","537","RES","320-37675-15","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.7","DL","",,"TRG","",,"",39,"LOQ","YES","-99","",254.6","1.00","16",""
"NAWC-032819-FRB-139","537","RES","320-37675-15","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.9","ng/L","U","2.7","DL","",,"TRG","",,"",20,"LOQ","YES","-99","",254.6","1.00","7.9",""
"NAWC-032819-FRB-139","537","RES","320-37675-15","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.4","DL","",,"TRG","",,"",29,"LOQ","YES","-99","",254.6","1.00","12",""
"NAWC-032819-FRB-139","537","RES","320-37675-15","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U","16","DL","",,"TRG","",,"",88,"LOQ","YES","-99","",254.6","1.00","35",""
"NAWC-032819-FRB-139","537","RES","320-37675-15","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.9","ng/L","U","1.9","DL","",,"TRG","",,"",9.8,"LOQ","YES","-99","",254.6","1.00","3.9",""
"NAWC-032819-FRB-139","537","RES","320-37675-15","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","7.9","DL","",,"TRG","",,"",24,"LOQ","YES","-99","",254.6","1.00","20",""
"NAWC-032819-FRB-139","537","RES","320-37675-15","TALSAC","STL00993","13C2 PFHxA","38","ng/L","",-99,"DL","",,"SURR","98","",-99,"LOQ","YES","39.3","",254.6","1.00","0",""
"NAWC-032819-FRB-139","537","RES","320-37675-15","TALSAC","STL00996","13C2 PFDA","38","ng/L","",-99,"DL","",,"SURR","98","",-99,"LOQ","YES","39.3","",254.6","1.00","0",""
"NAWC-032819-RW-117","537","RES","320-37675-16","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS),"16","ng/L","U","6.6","DL","","TRG","","","39","LOQ","YES","-99","","256.5","1.00","16",""
"NAWC-032819-RW-117","537","RES","320-37675-16","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"7.8","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES","-99","","256.5","1.00","7.8",""
"NAWC-032819-RW-117","537","RES","320-37675-16","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"12","ng/L","U","5.4","DL","","TRG","","","29","LOQ","YES","-99","","256.5","1.00","12",""
"NAWC-032819-RW-117","537","RES","320-37675-16","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","256.5","1.00","35",""
"NAWC-032819-RW-117","537","RES","320-37675-16","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"3.9","ng/L","U","1.9","DL","","TRG","","","9.7","LOQ","YES","-99","","256.5","1.00","3.9",""
"NAWC-032819-RW-117","537","RES","320-37675-16","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"19","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES","-99","","256.5","1.00","19",""
"NAWC-032819-RW-117","537","RES","320-37675-16","TALSAC","STL00993","13C2
PFHxA","38","ng/L","","-99","DL","","SURR","97","","-99","LOQ","YES","39.0","","256.5","1.00","0",""
"NAWC-032819-RW-117","537","RES","320-37675-16","TALSAC","STL00996","13C2
PFDA","38","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","39.0","","256.5","1.00","0",""
"NAWC-032819-FRB-117","537","RES","320-37675-17","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"28","ng/L","J M","6.6","DL","","TRG","","","39","LOQ","YES","-99","","258.6","1.00","15",""
"NAWC-032819-FRB-117","537","RES","320-37675-17","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"20","ng/L","","2.7","DL","","TRG","","","19","LOQ","YES","-99","","258.6","1.00","7.7",""
"NAWC-032819-FRB-117","537","RES","320-37675-17","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"15","ng/L","J","5.3","DL","","TRG","","","29","LOQ","YES","-99","","258.6","1.00","12",""
"NAWC-032819-FRB-117","537","RES","320-37675-17","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"35","ng/L","U","16","DL","","TRG","","","87","LOQ","YES","-99","","258.6","1.00","35",""
"NAWC-032819-FRB-117","537","RES","320-37675-17","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"4.9","ng/L","J","1.8","DL","","TRG","","","9.7","LOQ","YES","-99","","258.6","1.00","3.9",""
"NAWC-032819-FRB-117","537","RES","320-37675-17","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES","-99","","258.6","1.00","19",""
"NAWC-032819-FRB-117","537","RES","320-37675-17","TALSAC","STL00993","13C2
PFHxA","37","ng/L","","-99","DL","","SURR","96","","-99","LOQ","YES","38.7","","258.6","1.00","0",""
"NAWC-032819-FRB-117","537","RES","320-37675-17","TALSAC","STL00996","13C2
PFDA","34","ng/L","","-99","DL","","SURR","88","","-99","LOQ","YES","38.7","","258.6","1.00","0",""
"NAWC-032819-RW-181","537","RES","320-37675-18","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","248.9","1.00","16",""
"NAWC-032819-RW-181","537","RES","320-37675-18","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"5.2","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","248.9","1.00","8.0",""
"NAWC-032819-RW-181","537","RES","320-37675-18","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","248.9","1.00","12",""
"NAWC-032819-RW-181","537","RES","320-37675-18","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","248.9","1.00","36",""
"NAWC-032819-RW-181","537","RES","320-37675-18","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","248.9","1.00","4.0",""
"NAWC-032819-RW-181","537","RES","320-37675-18","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","248.9","1.00","20",""
"NAWC-032819-RW-181","537","RES","320-37675-18","TALSAC","STL00993","13C2
PFHxA","38","ng/L","","-99","DL","","SURR","94","","-99","LOQ","YES","40.2","","248.9","1.00","0",""
"NAWC-032819-RW-181","537","RES","320-37675-18","TALSAC","STL00996","13C2
PFDA","34","ng/L","","-99","DL","","SURR","86","","-99","LOQ","YES","40.2","","248.9","1.00","0",""
"NAWC-032819-FRB-181","537","RES","320-37675-19","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","250.6","1.00","16",""
"NAWC-032819-FRB-181","537","RES","320-37675-19","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","250.6","1.00","8.0",""
"NAWC-032819-FRB-181","537","RES","320-37675-19","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","250.6","1.00","12",""
"NAWC-032819-FRB-181","537","RES","320-37675-19","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "250.6", "1.00", "36", ""
"NAWC-032819-FRB-181", "537", "RES", "320-37675-19", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "4.0", "ng/L", "U", "1.9", "DL", "", "TRG", "", "", "10", "LOQ", "YES", "-99", "", "250.6", "1.00", "4.0", ""
"NAWC-032819-FRB-181", "537", "RES", "320-37675-19", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "20", "ng/L", "U", "8.0", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "250.6", "1.00", "20", ""
"NAWC-032819-FRB-181", "537", "RES", "320-37675-19", "TALSAC", "STL00993", "13C2
PFHxA", "40", "ng/L", "", "-99", "DL", "", "SURR", "100", "", "-99", "LOQ", "YES", "39.9", "", "250.6", "1.00", "0", ""
"NAWC-032819-FRB-181", "537", "RES", "320-37675-19", "TALSAC", "STL00996", "13C2
PFDA", "42", "ng/L", "", "-99", "DL", "", "SURR", "104", "", "-99", "LOQ", "YES", "39.9", "", "250.6", "1.00", "0", ""
"NAWC-032819-RW-286", "537", "RES", "320-37675-2", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "17", "ng/L", "J M", "6.7", "DL", "", "TRG", "", "", "39", "LOQ", "YES", "-99", "", "253.3", "1.00", "16", ""
"NAWC-032819-RW-286", "537", "RES", "320-37675-2", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "18", "ng/L", "J", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "253.3", "1.00", "7.9", ""
"NAWC-032819-RW-286", "537", "RES", "320-37675-2", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "5.8", "ng/L", "J", "5.4", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "253.3", "1.00", "12", ""
"NAWC-032819-RW-286", "537", "RES", "320-37675-2", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "89", "LOQ", "YES", "-99", "", "253.3", "1.00", "36", ""
"NAWC-032819-RW-286", "537", "RES", "320-37675-2", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "4.7", "ng/L", "J", "1.9", "DL", "", "TRG", "", "", "9.9", "LOQ", "YES", "-99", "", "253.3", "1.00", "3.9", ""
"NAWC-032819-RW-286", "537", "RES", "320-37675-2", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "20", "ng/L", "U M", "7.9", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "253.3", "1.00", "20", ""
"NAWC-032819-RW-286", "537", "RES", "320-37675-2", "TALSAC", "STL00993", "13C2
PFHxA", "39", "ng/L", "", "-99", "DL", "", "SURR", "98", "", "-99", "LOQ", "YES", "39.5", "", "253.3", "1.00", "0", ""
"NAWC-032819-RW-286", "537", "RES", "320-37675-2", "TALSAC", "STL00996", "13C2
PFDA", "40", "ng/L", "", "-99", "DL", "", "SURR", "101", "", "-99", "LOQ", "YES", "39.5", "", "253.3", "1.00", "0", ""
"NAWC-032819-RW-138", "537", "RES", "320-37675-20", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "8.0", "ng/L", "J M", "7.0", "DL", "", "TRG", "", "", "41", "LOQ", "YES", "-99", "", "242", "1.00", "17", ""
"NAWC-032819-RW-138", "537", "RES", "320-37675-20", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "30", "ng/L", "", "2.9", "DL", "", "TRG", "", "", "21", "LOQ", "YES", "-99", "", "242", "1.00", "8.3", ""
"NAWC-032819-RW-138", "537", "RES", "320-37675-20", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "12", "ng/L", "U M", "5.7", "DL", "", "TRG", "", "", "31", "LOQ", "YES", "-99", "", "242", "1.00", "12", ""
"NAWC-032819-RW-138", "537", "RES", "320-37675-20", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "37", "ng/L", "U", "17", "DL", "", "TRG", "", "", "93", "LOQ", "YES", "-99", "", "242", "1.00", "37", ""
"NAWC-032819-RW-138", "537", "RES", "320-37675-20", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "7.4", "ng/L", "J", "2.0", "DL", "", "TRG", "", "", "10", "LOQ", "YES", "-99", "", "242", "1.00", "4.1", ""
"NAWC-032819-RW-138", "537", "RES", "320-37675-20", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "21", "ng/L", "U M", "8.3", "DL", "", "TRG", "", "", "25", "LOQ", "YES", "-99", "", "242", "1.00", "21", ""
"NAWC-032819-RW-138", "537", "RES", "320-37675-20", "TALSAC", "STL00993", "13C2
PFHxA", "41", "ng/L", "", "-99", "DL", "", "SURR", "98", "", "-99", "LOQ", "YES", "41.3", "", "242", "1.00", "0", ""
"NAWC-032819-RW-138", "537", "RES", "320-37675-20", "TALSAC", "STL00996", "13C2
PFDA", "41", "ng/L", "", "-99", "DL", "", "SURR", "99", "", "-99", "LOQ", "YES", "41.3", "", "242", "1.00", "0", ""
"NAWC-032819-FRB-138", "537", "RES", "320-37675-21", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "16", "ng/L", "U", "6.7", "DL", "", "TRG", "", "", "39", "LOQ", "YES", "-99", "", "253.2", "1.00", "16", ""
"NAWC-032819-FRB-138", "537", "RES", "320-37675-21", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "7.9", "ng/L", "U", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "253.2", "1.00", "7.9", ""
"NAWC-032819-FRB-138", "537", "RES", "320-37675-21", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "12", "ng/L", "U", "5.4", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "253.2", "1.00", "12", ""
"NAWC-032819-FRB-138", "537", "RES", "320-37675-21", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "89", "LOQ", "YES", "-99", "", "253.2", "1.00", "36", ""
"NAWC-032819-FRB-138", "537", "RES", "320-37675-21", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "3.9", "ng/L", "U", "1.9", "DL", "", "TRG", "", "", "9.9", "LOQ", "YES", "-99", "", "253.2", "1.00", "3.9", ""
"NAWC-032819-FRB-138", "537", "RES", "320-37675-21", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "20", "ng/L", "U", "7.9", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "253.2", "1.00", "20", ""
"NAWC-032819-FRB-138", "537", "RES", "320-37675-21", "TALSAC", "STL00993", "13C2

PFHxA,"38","ng/L","",-99,"DL","","SURR","96","",-99,"LOQ","YES","39.5","","253.2","1.00","0",""
"NAWC-032819-FRB-138","537","RES","320-37675-21","TALSAC","STL00996","13C2
PFDA,"36","ng/L","",-99,"DL","","SURR","91","",-99,"LOQ","YES","39.5","","253.2","1.00","0",""
"NAWC-032819-FRB-286","537","RES","320-37675-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.9","DL","","TRG","","","41","LOQ","YES","-99","","246.7","1.00","16",""
"NAWC-032819-FRB-286","537","RES","320-37675-3","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.1","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","246.7","1.00","8.1",""
"NAWC-032819-FRB-286","537","RES","320-37675-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.6","DL","","TRG","","","30","LOQ","YES","-99","","246.7","1.00","12",""
"NAWC-032819-FRB-286","537","RES","320-37675-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","91","LOQ","YES","-99","","246.7","1.00","36",""
"NAWC-032819-FRB-286","537","RES","320-37675-3","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.1","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","246.7","1.00","4.1",""
"NAWC-032819-FRB-286","537","RES","320-37675-3","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.1","DL","","TRG","","","24","LOQ","YES","-99","","246.7","1.00","20",""
"NAWC-032819-FRB-286","537","RES","320-37675-3","TALSAC","STL00993","13C2
PFHxA,"41","ng/L","",-99,"DL","","SURR","101","",-99,"LOQ","YES","40.5","","246.7","1.00","0",""
"NAWC-032819-FRB-286","537","RES","320-37675-3","TALSAC","STL00996","13C2
PFDA,"39","ng/L","",-99,"DL","","SURR","95","",-99,"LOQ","YES","40.5","","246.7","1.00","0",""
"WGNA-032819-RW-0518","537","RES","320-37675-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","22","ng/L","J M","6.7","DL","","TRG","","","40","LOQ","YES","-99","","252.4","1.00","16",""
"WGNA-032819-RW-0518","537","RES","320-37675-4","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","23","ng/L","","2.8","DL","","TRG","","","20","LOQ","YES","-99","","252.4","1.00","7.9",""
"WGNA-032819-RW-0518","537","RES","320-37675-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","8.9","ng/L","J","5.4","DL","","TRG","","","30","LOQ","YES","-99","","252.4","1.00","12",""
"WGNA-032819-RW-0518","537","RES","320-37675-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","19","ng/L","J","16","DL","","TRG","","","89","LOQ","YES","-99","","252.4","1.00","36",""
"WGNA-032819-RW-0518","537","RES","320-37675-4","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","5.7","ng/L","J","1.9","DL","","TRG","","","9.9","LOQ","YES","-99","","252.4","1.00","4.0",""
"WGNA-032819-RW-0518","537","RES","320-37675-4","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U M","7.9","DL","","TRG","","","24","LOQ","YES","-99","","252.4","1.00","20",""
"WGNA-032819-RW-0518","537","RES","320-37675-4","TALSAC","STL00993","13C2
PFHxA,"42","ng/L","",-99,"DL","","SURR","106","",-99,"LOQ","YES","39.6","","252.4","1.00","0",""
"WGNA-032819-RW-0518","537","RES","320-37675-4","TALSAC","STL00996","13C2
PFDA,"41","ng/L","",-99,"DL","","SURR","104","",-99,"LOQ","YES","39.6","","252.4","1.00","0",""
"WGNA-032819-FRB-0518","537","RES","320-37675-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.7","DL","","TRG","","","39","LOQ","YES","-99","","253.5","1.00","16",""
"WGNA-032819-FRB-0518","537","RES","320-37675-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.9","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","253.5","1.00","7.9",""
"WGNA-032819-FRB-0518","537","RES","320-37675-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","30","LOQ","YES","-99","","253.5","1.00","12",""
"WGNA-032819-FRB-0518","537","RES","320-37675-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","89","LOQ","YES","-99","","253.5","1.00","36",""
"WGNA-032819-FRB-0518","537","RES","320-37675-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.9","ng/L","U","1.9","DL","","TRG","","","9.9","LOQ","YES","-99","","253.5","1.00","3.9",""
"WGNA-032819-FRB-0518","537","RES","320-37675-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES","-99","","253.5","1.00","20",""
"WGNA-032819-FRB-0518","537","RES","320-37675-5","TALSAC","STL00993","13C2
PFHxA,"39","ng/L","",-99,"DL","","SURR","100","",-99,"LOQ","YES","39.4","","253.5","1.00","0",""
"WGNA-032819-FRB-0518","537","RES","320-37675-5","TALSAC","STL00996","13C2
PFDA,"39","ng/L","",-99,"DL","","SURR","98","",-99,"LOQ","YES","39.4","","253.5","1.00","0",""
"NAWC-032819-RW-010","537","RES","320-37675-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","27","ng/L","J M","6.8","DL","","TRG","","","40","LOQ","YES","-99","","248.5","1.00","16",""
"NAWC-032819-RW-010","537","RES","320-37675-6","TALSAC","335-67-1","Perfluorooctanoic acid

(PFOA)", "20", "ng/L", "", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "248.5", "1.00", "8.0", ""
"NAWC-032819-RW-010", "537", "RES", "320-37675-6", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "17", "ng/L", "J", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "248.5", "1.00", "12", ""
"NAWC-032819-RW-010", "537", "RES", "320-37675-6", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "91", "LOQ", "YES", "-99", "", "248.5", "1.00", "36", ""
"NAWC-032819-RW-010", "537", "RES", "320-37675-6", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "5.8", "ng/L", "J", "1.9", "DL", "", "TRG", "", "", "10", "LOQ", "YES", "-99", "", "248.5", "1.00", "4.0", ""
"NAWC-032819-RW-010", "537", "RES", "320-37675-6", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "20", "ng/L", "U M", "8.0", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "248.5", "1.00", "20", ""
"NAWC-032819-RW-010", "537", "RES", "320-37675-6", "TALSAC", "STL00993", "13C2
PFHxA", "36", "ng/L", "", "-99", "DL", "", "SURR", "91", "", "-99", "LOQ", "YES", "40.2", "", "248.5", "1.00", "0", ""
"NAWC-032819-RW-010", "537", "RES", "320-37675-6", "TALSAC", "STL00996", "13C2
PFDA", "35", "ng/L", "", "-99", "DL", "", "SURR", "88", "", "-99", "LOQ", "YES", "40.2", "", "248.5", "1.00", "0", ""
"NAWC-032819-FRB-010", "537", "RES", "320-37675-7", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "16", "ng/L", "U", "6.7", "DL", "", "TRG", "", "", "39", "LOQ", "YES", "-99", "", "255.5", "1.00", "16", ""
"NAWC-032819-FRB-010", "537", "RES", "320-37675-7", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "7.8", "ng/L", "U", "2.7", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "255.5", "1.00", "7.8", ""
"NAWC-032819-FRB-010", "537", "RES", "320-37675-7", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "12", "ng/L", "U", "5.4", "DL", "", "TRG", "", "", "29", "LOQ", "YES", "-99", "", "255.5", "1.00", "12", ""
"NAWC-032819-FRB-010", "537", "RES", "320-37675-7", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "35", "ng/L", "U", "16", "DL", "", "TRG", "", "", "88", "LOQ", "YES", "-99", "", "255.5", "1.00", "35", ""
"NAWC-032819-FRB-010", "537", "RES", "320-37675-7", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "3.9", "ng/L", "U", "1.9", "DL", "", "TRG", "", "", "9.8", "LOQ", "YES", "-99", "", "255.5", "1.00", "3.9", ""
"NAWC-032819-FRB-010", "537", "RES", "320-37675-7", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "20", "ng/L", "U", "7.8", "DL", "", "TRG", "", "", "23", "LOQ", "YES", "-99", "", "255.5", "1.00", "20", ""
"NAWC-032819-FRB-010", "537", "RES", "320-37675-7", "TALSAC", "STL00993", "13C2
PFHxA", "39", "ng/L", "", "-99", "DL", "", "SURR", "101", "", "-99", "LOQ", "YES", "39.1", "", "255.5", "1.00", "0", ""
"NAWC-032819-FRB-010", "537", "RES", "320-37675-7", "TALSAC", "STL00996", "13C2
PFDA", "40", "ng/L", "", "-99", "DL", "", "SURR", "101", "", "-99", "LOQ", "YES", "39.1", "", "255.5", "1.00", "0", ""
"NAWC-032819-RW-127", "537", "RES", "320-37675-8", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "16", "ng/L", "U", "6.7", "DL", "", "TRG", "", "", "39", "LOQ", "YES", "-99", "", "254.8", "1.00", "16", ""
"NAWC-032819-RW-127", "537", "RES", "320-37675-8", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "7.8", "ng/L", "U", "2.7", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "254.8", "1.00", "7.8", ""
"NAWC-032819-RW-127", "537", "RES", "320-37675-8", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "12", "ng/L", "U", "5.4", "DL", "", "TRG", "", "", "29", "LOQ", "YES", "-99", "", "254.8", "1.00", "12", ""
"NAWC-032819-RW-127", "537", "RES", "320-37675-8", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "35", "ng/L", "U", "16", "DL", "", "TRG", "", "", "88", "LOQ", "YES", "-99", "", "254.8", "1.00", "35", ""
"NAWC-032819-RW-127", "537", "RES", "320-37675-8", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "3.9", "ng/L", "U", "1.9", "DL", "", "TRG", "", "", "9.8", "LOQ", "YES", "-99", "", "254.8", "1.00", "3.9", ""
"NAWC-032819-RW-127", "537", "RES", "320-37675-8", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "20", "ng/L", "U", "7.8", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "254.8", "1.00", "20", ""
"NAWC-032819-RW-127", "537", "RES", "320-37675-8", "TALSAC", "STL00993", "13C2
PFHxA", "36", "ng/L", "", "-99", "DL", "", "SURR", "93", "", "-99", "LOQ", "YES", "39.2", "", "254.8", "1.00", "0", ""
"NAWC-032819-RW-127", "537", "RES", "320-37675-8", "TALSAC", "STL00996", "13C2
PFDA", "38", "ng/L", "", "-99", "DL", "", "SURR", "96", "", "-99", "LOQ", "YES", "39.2", "", "254.8", "1.00", "0", ""
"NAWC-032819-FRB-127", "537", "RES", "320-37675-9", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "16", "ng/L", "U", "6.8", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "249.3", "1.00", "16", ""
"NAWC-032819-FRB-127", "537", "RES", "320-37675-9", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "8.0", "ng/L", "U", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "249.3", "1.00", "8.0", ""
"NAWC-032819-FRB-127", "537", "RES", "320-37675-9", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "12", "ng/L", "U", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "249.3", "1.00", "12", ""
"NAWC-032819-FRB-127", "537", "RES", "320-37675-9", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "249.3", "1.00", "36", ""
"NAWC-032819-FRB-127", "537", "RES", "320-37675-9", "TALSAC", "375-85-9", "Perfluoroheptanoic acid

(PFHpA),"4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","249.3","1.00","4.0","","NAWC-032819-FRB-127","537","RES","320-37675-9","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","249.3","1.00","20","","NAWC-032819-FRB-127","537","RES","320-37675-9","TALSAC","STL00993","13C2 PFHxA","38","ng/L","","-99","DL","","SURR","95","","-99","LOQ","YES","40.1","","249.3","1.00","0","","NAWC-032819-FRB-127","537","RES","320-37675-9","TALSAC","STL00996","13C2 PFDA","40","ng/L","","-99","DL","","SURR","100","","-99","LOQ","YES","40.1","","249.3","1.00","0","","LCS 320-216791/2-A","537","RES","LCS 320-216791/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","132","ng/L","M","6.8","DL","","SPK","100","","40","LOQ","YES","132","","250","1.00","16","","LCS 320-216791/2-A","537","RES","LCS 320-216791/2-A","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","67.8","ng/L","","2.8","DL","","SPK","103","","20","LOQ","YES","66.0","","250","1.00","8.0","","LCS 320-216791/2-A","537","RES","LCS 320-216791/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","105","ng/L","","5.5","DL","","SPK","105","","30","LOQ","YES","100","","250","1.00","12","","LCS 320-216791/2-A","537","RES","LCS 320-216791/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","303","ng/L","","16","DL","","SPK","101","","90","LOQ","YES","300","","250","1.00","36","","LCS 320-216791/2-A","537","RES","LCS 320-216791/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","32.0","ng/L","","1.9","DL","","SPK","100","","10","LOQ","YES","32.0","","250","1.00","4.0","","LCS 320-216791/2-A","537","RES","LCS 320-216791/2-A","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","62.6","ng/L","","8.0","DL","","SPK","95","","24","LOQ","YES","66.0","","250","1.00","20","","LCS 320-216791/2-A","537","RES","LCS 320-216791/2-A","TALSAC","STL00993","13C2 PFHxA","38.1","ng/L","","-99","DL","","SURR","95","","-99","LOQ","YES","40.0","","250","1.00","0","","LCS 320-216791/2-A","537","RES","LCS 320-216791/2-A","TALSAC","STL00996","13C2 PFDA","37.4","ng/L","","-99","DL","","SURR","93","","-99","LOQ","YES","40.0","","250","1.00","0","","LCSD 320-216791/3-A","537","RES","LCSD 320-216791/3-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","126","ng/L","M","6.8","DL","","SPK","96","4","40","LOQ","YES","132","LCS 320-216791/2-A","250","1.00","16","","LCSD 320-216791/3-A","537","RES","LCSD 320-216791/3-A","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","65.5","ng/L","","2.8","DL","","SPK","99","3","20","LOQ","YES","66.0","LCS 320-216791/2-A","250","1.00","8.0","","LCSD 320-216791/3-A","537","RES","LCSD 320-216791/3-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","102","ng/L","","5.5","DL","","SPK","102","3","30","LOQ","YES","100","LCS 320-216791/2-A","250","1.00","12","","LCSD 320-216791/3-A","537","RES","LCSD 320-216791/3-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","266","ng/L","","16","DL","","SPK","89","13","90","LOQ","YES","300","LCS 320-216791/2-A","250","1.00","36","","LCSD 320-216791/3-A","537","RES","LCSD 320-216791/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","31.0","ng/L","","1.9","DL","","SPK","97","3","10","LOQ","YES","32.0","LCS 320-216791/2-A","250","1.00","4.0","","LCSD 320-216791/3-A","537","RES","LCSD 320-216791/3-A","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","62.7","ng/L","","8.0","DL","","SPK","95","0","24","LOQ","YES","66.0","LCS 320-216791/2-A","250","1.00","20","","LCSD 320-216791/3-A","537","RES","LCSD 320-216791/3-A","TALSAC","STL00993","13C2 PFHxA","34.6","ng/L","","-99","DL","","SURR","87","","-99","LOQ","YES","40.0","LCS 320-216791/2-A","250","1.00","0","","LCSD 320-216791/3-A","537","RES","LCSD 320-216791/3-A","TALSAC","STL00996","13C2 PFDA","40.5","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","40.0","LCS 320-216791/2-A","250","1.00","0","","LLCS 320-216792/2-A","537","RES","LLCS 320-216792/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","38.9","ng/L","J M","6.8","DL","","SPK","97","","40","LOQ","YES","40.2","","250","1.00","16","","LLCS 320-216792/2-A","537","RES","LLCS 320-216792/2-A","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","19.1","ng/L","J","2.8","DL","","SPK","95","","20","LOQ","YES","20.0","","250","1.00","8.0","","LLCS 320-216792/2-A","537","RES","LLCS 320-216792/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","31.7","ng/L","","5.5","DL","","SPK","105","","30","LOQ","YES","30.3","","250","1.00","12","","LLCS 320-216792/2-A","537","RES","LLCS 320-216792/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)", "97.1", "ng/L", "", "16", "DL", "", "SPK", "108", "", "90", "LOQ", "YES", "90.2", "", "250", "1.00", "36", ""
"LLCS 320-216792/2-A", "537", "RES", "LLCS 320-216792/2-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "9.59", "ng/L", "J", "1.9", "DL", "", "SPK", "96", "", "10", "LOQ", "YES", "10.0", "", "250", "1.00", "4.0", ""
"LLCS 320-216792/2-A", "537", "RES", "LLCS 320-216792/2-A", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "17.5", "ng/L", "J", "8.0", "DL", "", "SPK", "88", "", "24", "LOQ", "YES", "20.0", "", "250", "1.00", "20", ""
"LLCS 320-216792/2-A", "537", "RES", "LLCS 320-216792/2-A", "TALSAC", "STL00993", "13C2
PFHxA", "39.4", "ng/L", "", "-99", "DL", "", "SURR", "99", "", "-99", "LOQ", "YES", "40.0", "", "250", "1.00", "0", ""
"LLCS 320-216792/2-A", "537", "RES", "LLCS 320-216792/2-A", "TALSAC", "STL00996", "13C2
PFDA", "36.9", "ng/L", "", "-99", "DL", "", "SURR", "92", "", "-99", "LOQ", "YES", "40.0", "", "250", "1.00", "0", ""
"MB 320-216791/1-A", "537", "RES", "MB 320-216791/1-A", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "16", "ng/L", "U", "6.8", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "250", "1.00", "16", ""
"MB 320-216791/1-A", "537", "RES", "MB 320-216791/1-A", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "8.0", "ng/L", "U", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "250", "1.00", "8.0", ""
"MB 320-216791/1-A", "537", "RES", "MB 320-216791/1-A", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "12", "ng/L", "U", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "250", "1.00", "12", ""
"MB 320-216791/1-A", "537", "RES", "MB 320-216791/1-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "250", "1.00", "36", ""
"MB 320-216791/1-A", "537", "RES", "MB 320-216791/1-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "4.0", "ng/L", "U", "1.9", "DL", "", "TRG", "", "", "10", "LOQ", "YES", "-99", "", "250", "1.00", "4.0", ""
"MB 320-216791/1-A", "537", "RES", "MB 320-216791/1-A", "TALSAC", "375-95-1", "Perfluorononanoic acid
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(PFOS)", "16", "ng/L", "U", "6.8", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "250", "1.00", "16", ""
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(PFHxS)", "12", "ng/L", "U", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "250", "1.00", "12", ""
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(PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "250", "1.00", "36", ""
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01:42", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-216791", "320-216791", "NA", "320-
217816", "320-37675-1", "03/30/2018 09:00", "04/18/2018 10:16", ""
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11", "FB", "", "2.4", "537", "METHOD", "RES", "04/07/2018 08:11", "04/13/2018
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217816", "320-37675-1", "03/30/2018 09:00", "04/18/2018 10:16", ""
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12","NM","","2.4","537","METHOD","RES","04/07/2018 08:19","04/13/2018
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217818","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
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13","FB","","2.4","537","METHOD","RES","04/07/2018 08:19","04/13/2018
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217818","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
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14","NM","","2.4","537","METHOD","RES","04/07/2018 08:19","04/13/2018
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217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
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217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
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217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
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217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
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16","NM","","2.4","537","METHOD","RES","04/07/2018 08:19","04/13/2018
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217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
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217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
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18","NM","","2.4","537","METHOD","RES","04/07/2018 08:19","04/13/2018
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217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
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217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
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217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
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217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
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217814","320-37675-1","04/07/2018 08:11","04/18/2018 10:16",""
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02:01","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216792","320-216792","NA","320-
217818","320-37675-1","04/07/2018 08:19","04/18/2018 10:16",""

TO: A. FREBOWITZ
SDG: 320-37675-1

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Notes

The laboratory inadvertently transposed the date in the sample IDs. The samples were collected on March 29, 2018 and the sample IDs should read "-032918", but the laboratory listed them as "-032819". The sample IDs were edited for this report to match the chain-of-custody document.

Samples with detections and their associated FRBs are summarized below. No detected results were present in the FRBs.

| <u>Sample</u> | <u>Associated FRB</u> |
|----------------------|------------------------------|
| NAWC-032918-RW-286 | NAWC-032918-FRB-286 |
| NAWC-032918-RW-048 | NAWC-032918-FRB-048 |
| NAWC-032918-RW-138 | NAWC-032918-FRB-138 |
| NAWC-032918-RW-010 | NAWC-032918-FRB-010 |
| NAWC-032918-RW-139 | NAWC-032918-FRB-139 |
| WGNA-032918-RW-0518 | WGNA-032918-FRB-0518 |
| NAWC-032918-RW-127 | NAWC-032918-FRB-127 |
| NAWC-032918-RW-117 | NAWC-032918-FRB-117 |
| NAWC-032918-RW-195 | NAWC-032918-FRB-195 |
| NAWC-032918-RW-181 | NAWC-032918-FRB-181 |

Positive detections were reported for FRB sample NAWC-032918-FRB-117. Samples NAWC-032918-RW-117 and NAWC-032918-FRB-117 were re-extracted outside of holding time to confirm the original results as detections were seen in the FRB sample but not the parent sample. The results were confirmed and the original results are reported. A review of the historical data for RW-117 showed historical detections were similar to the detections in the FRB from this location. This indicates that the samples were inadvertently switched by the field personnel prior to shipment to the laboratory.

Non-detected results were reported to the Limit of Detection (LOD).

The buffering agent Trizma was added to all drinking water samples.

TO: A. FREBOWITZ
SDG: 320-37675-1

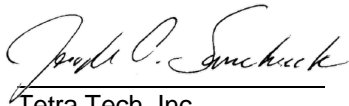
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Executive Summary

Laboratory Performance: No issues.

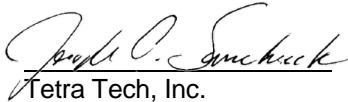
Other Factors Affecting Data Quality: Results below the RL were estimated.

The data for these analyses were reviewed with reference to the Environmental Protection Agency document EPA/600/R-08/092, Method 537, "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)", (September 2009) and the US EPA National Functional Guidelines for Organic Data Review (January 2017) as applicable. The text of this report has been formulated to address only those areas affecting data quality.



Tetra Tech, Inc.
Megan Ritchie
Chemist/Data Validator

for



Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:

- Appendix A – Qualified Analytical Results
- Appendix B – Results as Reported by the Laboratory
- Appendix C – Support Documentation

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

| | |
|-----------|--|
| U | The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method. |
| J | The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit). |
| J+ | The result is an estimated quantity, but the result may be biased high. |
| J- | The result is an estimated quantity, but the result may be biased low. |
| UJ | The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise. |
| R | The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample. |
| UR | The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample. |

Qualifier Codes:

- A = Lab Blank Contamination
- B = Field Blank Contamination
- C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
- C01 = GC/MS Tuning Noncompliance
- D = MS/MSD Recovery Noncompliance
- E = LCS/LCSD Recovery Noncompliance
- F = Lab Duplicate Imprecision
- G = Field Duplicate Imprecision
- H = Holding Time Exceedance
- I = ICP Serial Dilution Noncompliance
- J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
- K = ICP Interference - includes ICS % R Noncompliance
- L = Instrument Calibration Range Exceedance
- M = Sample Preservation Noncompliance
- N = Internal Standard Noncompliance
- N01 = Internal Standard Recovery Noncompliance Dioxins
- N02 = Recovery Standard Noncompliance Dioxins
- N03 = Clean-up Standard Noncompliance Dioxins
- O = Poor Instrument Performance (i.e., base-time drifting)
- P = Uncertainty near detection limit ($< 2 \times$ IDL for inorganics and $<$ CRQL for organics)
- Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
- U = RPD between columns/detectors $>40\%$ for positive results determined via GC/HPLC
- V = Non-linear calibrations; correlation coefficient $r < 0.995$
- W = EMPC result
- X = Signal to noise response drop
- Y = Percent solids $<30\%$
- Z = Uncertainty at 2 standard deviations is greater than sample activity
- Z1 = Tentatively Identified Compound considered presumptively present
- Z2 = Tentatively Identified Compound column bleed
- Z3 = Tentatively Identified Compound aldol condensate
- Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
- Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

Appendix A

Qualified Analytical Results

| | | | | | | | | | | | | | |
|---|------------|---------------------|------|--------|---------------------|------|--------|---------------------|------|--------|---------------------|------|--|
| PROJ_NO: 08005-WE04 SDG: 320-37675-1 FRACTION: PFAS MEDIA: WATER | NSAMPLE | NAWC-032918-FRB-010 | | | NAWC-032918-FRB-048 | | | NAWC-032918-FRB-117 | | | NAWC-032918-FRB-127 | | |
| | LAB_ID | 320-37675-7 | | | 320-37675-13 | | | 320-37675-16 | | | 320-37675-9 | | |
| | SAMP_DATE | 3/29/2018 | | | 3/29/2018 | | | 3/29/2018 | | | 3/29/2018 | | |
| | QC_TYPE | FB | | | FB | | | FB | | | FB | | |
| | UNITS | NG/L | | | NG/L | | | NG/L | | | NG/L | | |
| | PCT_SOLIDS | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| | DUP_OF | | | | | | | | | | | | |
| PARAMETER | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD | |
| PENTADECAFLUOROOCTANOIC ACID (PFOA) | 7.8 | U | | 8 | U | | 7.8 | U | | 8 | U | | |
| PERFLUOROBUTANESULFONIC ACID (PFBS) | 35 | U | | 36 | U | | 35 | U | | 36 | U | | |
| PERFLUOROHEPTANOIC ACID (PFHPA) | 3.9 | U | | 4 | U | | 3.9 | U | | 4 | U | | |
| PERFLUOROHEXANESULFONIC ACID (PFHXS) | 12 | U | | 12 | U | | 12 | U | | 12 | U | | |
| PERFLUORONONANOIC ACID (PFNA) | 20 | U | | 20 | U | | 19 | U | | 20 | U | | |
| PERFLUOROOCTANESULFONIC ACID (PFOS) | 16 | U | | 16 | U | | 16 | U | | 16 | U | | |

| | | | | | | | | | | | | | |
|---|------------|---------------------|------|--------|---------------------|------|--------|---------------------|------|--------|---------------------|------|--|
| PROJ_NO: 08005-WE04 SDG: 320-37675-1 FRACTION: PFAS MEDIA: WATER | NSAMPLE | NAWC-032918-FRB-138 | | | NAWC-032918-FRB-139 | | | NAWC-032918-FRB-181 | | | NAWC-032918-FRB-195 | | |
| | LAB_ID | 320-37675-21 | | | 320-37675-15 | | | 320-37675-19 | | | 320-37675-11 | | |
| | SAMP_DATE | 3/29/2018 | | | 3/29/2018 | | | 3/29/2018 | | | 3/29/2018 | | |
| | QC_TYPE | FB | | | FB | | | FB | | | FB | | |
| | UNITS | NG/L | | | NG/L | | | NG/L | | | NG/L | | |
| | PCT_SOLIDS | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| | DUP_OF | | | | | | | | | | | | |
| PARAMETER | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD | |
| PENTADECAFLUOROOCTANOIC ACID (PFOA) | 7.9 | U | | 7.9 | U | | 8 | U | | 7.8 | U | | |
| PERFLUOROBUTANESULFONIC ACID (PFBS) | 36 | U | | 35 | U | | 36 | U | | 35 | U | | |
| PERFLUOROHEPTANOIC ACID (PFHPA) | 3.9 | U | | 3.9 | U | | 4 | U | | 3.9 | U | | |
| PERFLUOROHEXANESULFONIC ACID (PFHXS) | 12 | U | | 12 | U | | 12 | U | | 12 | U | | |
| PERFLUORONONANOIC ACID (PFNA) | 20 | U | | 20 | U | | 20 | U | | 20 | U | | |
| PERFLUOROOCTANESULFONIC ACID (PFOS) | 16 | U | | 16 | U | | 16 | U | | 16 | U | | |

| | | | | | | | | | | | | | |
|---|------------|---------------------|------|--------|--------------------|------|--------|--------------------|------|--------|--------------------|------|--|
| PROJ_NO: 08005-WE04 SDG: 320-37675-1 FRACTION: PFAS MEDIA: WATER | NSAMPLE | NAWC-032918-FRB-286 | | | NAWC-032918-RW-010 | | | NAWC-032918-RW-048 | | | NAWC-032918-RW-117 | | |
| | LAB_ID | 320-37675-3 | | | 320-37675-6 | | | 320-37675-12 | | | 320-37675-17 | | |
| | SAMP_DATE | 3/29/2018 | | | 3/29/2018 | | | 3/29/2018 | | | 3/29/2018 | | |
| | QC_TYPE | FB | | | NM | | | NM | | | NM | | |
| | UNITS | NG/L | | | NG/L | | | NG/L | | | NG/L | | |
| | PCT_SOLIDS | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| | DUP_OF | | | | | | | | | | | | |
| PARAMETER | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD | |
| PENTADECAFLUOROOCTANOIC ACID (PFOA) | 8.1 | U | | 20 | | | 4.8 | J | P | 20 | | | |
| PERFLUOROBUTANESULFONIC ACID (PFBS) | 36 | U | | 36 | U | | 37 | U | | 35 | U | | |
| PERFLUOROHEPTANOIC ACID (PFHPA) | 4.1 | U | | 5.8 | J | P | 4.1 | U | | 4.9 | J | P | |
| PERFLUOROHEXANESULFONIC ACID (PFHXS) | 12 | U | | 17 | J | P | 12 | U | | 15 | J | P | |
| PERFLUORONONANOIC ACID (PFNA) | 20 | U | | 20 | U | | 20 | U | | 19 | U | | |
| PERFLUOROOCTANESULFONIC ACID (PFOS) | 16 | U | | 27 | J | P | 16 | U | | 28 | J | P | |

| | | | | | | | | | | | | | |
|---|------------|--------------------|------|--------|--------------------|------|--------|--------------------|------|--------|--------------------|------|--|
| PROJ_NO: 08005-WE04 SDG: 320-37675-1 FRACTION: PFAS MEDIA: WATER | NSAMPLE | NAWC-032918-RW-127 | | | NAWC-032918-RW-138 | | | NAWC-032918-RW-139 | | | NAWC-032918-RW-181 | | |
| | LAB_ID | 320-37675-8 | | | 320-37675-20 | | | 320-37675-14 | | | 320-37675-18 | | |
| | SAMP_DATE | 3/29/2018 | | | 3/29/2018 | | | 3/29/2018 | | | 3/29/2018 | | |
| | QC_TYPE | NM | | | NM | | | NM | | | NM | | |
| | UNITS | NG/L | | | NG/L | | | NG/L | | | NG/L | | |
| | PCT_SOLIDS | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| | DUP_OF | | | | | | | | | | | | |
| PARAMETER | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD | |
| PENTADECAFLUOROOCTANOIC ACID (PFOA) | 7.8 | U | | 30 | | | 9.5 | J | P | 5.2 | J | P | |
| PERFLUOROBUTANESULFONIC ACID (PFBS) | 35 | U | | 37 | U | | 36 | U | | 36 | U | | |
| PERFLUOROHEPTANOIC ACID (PFHPA) | 3.9 | U | | 7.4 | J | P | 4 | J | P | 4 | U | | |
| PERFLUOROHEXANESULFONIC ACID (PFHXS) | 12 | U | | 12 | U | | 12 | U | | 12 | U | | |
| PERFLUORONONANOIC ACID (PFNA) | 20 | U | | 21 | U | | 20 | U | | 20 | U | | |
| PERFLUOROOCTANESULFONIC ACID (PFOS) | 16 | U | | 8 | J | P | 16 | U | | 16 | U | | |

| | | | | | | | | | | | | | |
|---|------------|--------------------|------|--------|--------------------|------|--------|--------------------|------|--------|----------------------|------|--|
| PROJ_NO: 08005-WE04 SDG: 320-37675-1 FRACTION: PFAS MEDIA: WATER | NSAMPLE | NAWC-032918-RW-195 | | | NAWC-032918-RW-286 | | | WGNA-032918-DUP-31 | | | WGNA-032918-FRB-0518 | | |
| | LAB_ID | 320-37675-10 | | | 320-37675-2 | | | 320-37675-1 | | | 320-37675-5 | | |
| | SAMP_DATE | 3/29/2018 | | | 3/29/2018 | | | 3/29/2018 | | | 3/29/2018 | | |
| | QC_TYPE | NM | | | NM | | | FD | | | FB | | |
| | UNITS | NG/L | | | NG/L | | | NG/L | | | NG/L | | |
| | PCT_SOLIDS | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| | DUP_OF | | | | | | | NAWC-032819-RW-181 | | | | | |
| PARAMETER | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD | |
| PENTADECAFLUOROOCTANOIC ACID (PFOA) | 12 | J | P | 18 | J | P | 5.4 | J | P | 7.9 | U | | |
| PERFLUOROBUTANESULFONIC ACID (PFBS) | 36 | U | | 36 | U | | 36 | U | | 36 | U | | |
| PERFLUOROHEPTANOIC ACID (PFHPA) | 4.2 | J | P | 4.7 | J | P | 4 | U | | 3.9 | U | | |
| PERFLUOROHEXANESULFONIC ACID (PFHXS) | 12 | U | | 5.8 | J | P | 12 | U | | 12 | U | | |
| PERFLUORONONANOIC ACID (PFNA) | 20 | U | | 20 | U | | 20 | U | | 20 | U | | |
| PERFLUOROOCTANESULFONIC ACID (PFOS) | 14 | J | P | 17 | J | P | 16 | U | | 16 | U | | |

| | | | | |
|---|------------|---------------------|------|--|
| PROJ_NO: 08005-WE04 SDG: 320-37675-1 FRACTION: PFAS MEDIA: WATER | NSAMPLE | WGNA-032918-RW-0518 | | |
| | LAB_ID | 320-37675-4 | | |
| | SAMP_DATE | 3/29/2018 | | |
| | QC_TYPE | NM | | |
| | UNITS | NG/L | | |
| | PCT_SOLIDS | 0.0 | | |
| | DUP_OF | | | |
| PARAMETER | RESULT | VQL | QLCD | |
| PENTADECAFLUOROOCTANOIC ACID (PFOA) | 23 | | | |
| PERFLUOROBUTANESULFONIC ACID (PFBS) | 19 | J | P | |
| PERFLUOROHEPTANOIC ACID (PFHPA) | 5.7 | J | P | |
| PERFLUOROHEXANESULFONIC ACID (PFHXS) | 8.9 | J | P | |
| PERFLUORONONANOIC ACID (PFNA) | 20 | U | | |
| PERFLUOROOCETANESULFONIC ACID (PFOS) | 22 | J | P | |

Appendix B

Results as Reported by the Laboratory

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: WGNA-032918-DUP-31 Lab Sample ID: 320-37675-1
 Matrix: Water Lab File ID: 2018.04.12_537AA_034.d
 Analysis Method: 537 Date Collected: 03/29/2018 07:00
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 252 (mL) Date Analyzed: 04/13/2018 00:51
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 5.4 | J | 20 | 7.9 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 7.9 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 9.9 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 89 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 95 | | 70-130 |
| STL00996 | 13C2 PFDA | 93 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: -032818-
 Client Sample ID: NAWC-032819-RW-286 Lab Sample ID: 320-37675-2
 Matrix: Water Lab File ID: 2018.04.12_537AA_035.d
 Analysis Method: 537 Date Collected: 03/29/2018 08:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 253.3(mL) Date Analyzed: 04/13/2018 00:55
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 17 | J M | 39 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 18 | J | 20 | 7.9 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U M | 24 | 20 | 7.9 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 5.8 | J | 30 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.7 | J | 9.9 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 89 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 98 | | 70-130 |
| STL00996 | 13C2 PFDA | 101 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-~~032918-~~032819-FRB-286 Lab Sample ID: 320-37675-3
 Matrix: Water Lab File ID: 2018.04.12_537AA_036.d
 Analysis Method: 537 Date Collected: 03/29/2018 08:05
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 246.7(mL) Date Analyzed: 04/13/2018 01:00
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 41 | 16 | 6.9 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 8.1 | U | 20 | 8.1 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 8.1 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.6 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.1 | U | 10 | 4.1 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 91 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 101 | | 70-130 |
| STL00996 | 13C2 PFDA | 95 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: WGNA-~~032918~~-032819-RW-0518 Lab Sample ID: 320-37675-4
 Matrix: Water Lab File ID: 2018.04.12_537AA_037.d
 Analysis Method: 537 Date Collected: 03/29/2018 08:40
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 252.4 (mL) Date Analyzed: 04/13/2018 01:05
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 22 | J M | 40 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 23 | | 20 | 7.9 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U M | 24 | 20 | 7.9 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 8.9 | J | 30 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 5.7 | J | 9.9 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 19 | J | 89 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 106 | | 70-130 |
| STL00996 | 13C2 PFDA | 104 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: WGNA-~~032918~~-032819-FRB-0518 Lab Sample ID: 320-37675-5
 Matrix: Water Lab File ID: 2018.04.12_537AA_038.d
 Analysis Method: 537 Date Collected: 03/29/2018 08:35
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 253.5 (mL) Date Analyzed: 04/13/2018 01:09
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 7.9 | U | 20 | 7.9 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 7.9 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.9 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 89 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 100 | | 70-130 |
| STL00996 | 13C2 PFDA | 98 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-~~032918~~-032819-RW-010 Lab Sample ID: 320-37675-6
 Matrix: Water Lab File ID: 2018.04.12_537AA_039.d
 Analysis Method: 537 Date Collected: 03/29/2018 09:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 248.5 (mL) Date Analyzed: 04/13/2018 01:14
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 27 | J M | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 20 | | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U M | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 17 | J | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 5.8 | J | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 91 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 91 | | 70-130 |
| STL00996 | 13C2 PFDA | 88 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-~~032918~~-032819-FRB-010 Lab Sample ID: 320-37675-7
 Matrix: Water Lab File ID: 2018.04.12_537AA_040.d
 Analysis Method: 537 Date Collected: 03/29/2018 09:05
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 255.5 (mL) Date Analyzed: 04/13/2018 01:19
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 7.8 | U | 20 | 7.8 | 2.7 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 23 | 20 | 7.8 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 29 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.8 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 35 | U | 88 | 35 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 101 | | 70-130 |
| STL00996 | 13C2 PFDA | 101 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-~~032918~~-032819-RW-127 Lab Sample ID: 320-37675-8
 Matrix: Water Lab File ID: 2018.04.12_537AA_043.d
 Analysis Method: 537 Date Collected: 03/29/2018 09:40
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 254.8 (mL) Date Analyzed: 04/13/2018 01:33
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217816 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 7.8 | U | 20 | 7.8 | 2.7 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 7.8 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 29 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.8 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 35 | U | 88 | 35 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 93 | | 70-130 |
| STL00996 | 13C2 PFDA | 96 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-~~032918~~-032819-FRB-127 Lab Sample ID: 320-37675-9
 Matrix: Water Lab File ID: 2018.04.12_537AA_044.d
 Analysis Method: 537 Date Collected: 03/29/2018 09:35
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 249.3(mL) Date Analyzed: 04/13/2018 01:37
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217816 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 8.0 | U | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 95 | | 70-130 |
| STL00996 | 13C2 PFDA | 100 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-~~032918~~-032819-RW-195 Lab Sample ID: 320-37675-10
 Matrix: Water Lab File ID: 2018.04.12_537AA_045.d
 Analysis Method: 537 Date Collected: 03/29/2018 10:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 251.1(mL) Date Analyzed: 04/13/2018 01:42
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217816 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 14 | J M | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 12 | J | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U M | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.2 | J | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 97 | | 70-130 |
| STL00996 | 13C2 PFDA | 91 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-~~032918~~-032819-FRB-195 Lab Sample ID: 320-37675-11
 Matrix: Water Lab File ID: 2018.04.12_537AA_046.d
 Analysis Method: 537 Date Collected: 03/29/2018 10:05
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 255.8(mL) Date Analyzed: 04/13/2018 01:47
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217816 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 16 | 6.6 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 7.8 | U | 20 | 7.8 | 2.7 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 23 | 20 | 7.8 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 29 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.8 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 35 | U | 88 | 35 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 97 | | 70-130 |
| STL00996 | 13C2 PFDA | 94 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-~~032918~~-032819-RW-048 Lab Sample ID: 320-37675-12
 Matrix: Water Lab File ID: 2018.04.12_537AA_051.d
 Analysis Method: 537 Date Collected: 03/29/2018 10:40
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 245 (mL) Date Analyzed: 04/13/2018 02:10
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217818 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U M | 41 | 16 | 6.9 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 4.8 | J | 20 | 8.2 | 2.9 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 8.2 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U M | 31 | 12 | 5.6 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.1 | U | 10 | 4.1 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 37 | U M | 92 | 37 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 91 | | 70-130 |
| STL00996 | 13C2 PFDA | 96 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-~~032918~~-032819-FRB-048 Lab Sample ID: 320-37675-13
 Matrix: Water Lab File ID: 2018.04.12_537AA_052.d
 Analysis Method: 537 Date Collected: 03/29/2018 10:35
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 248.7(mL) Date Analyzed: 04/13/2018 02:15
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217818 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 8.0 | U | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 94 | | 70-130 |
| STL00996 | 13C2 PFDA | 94 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-~~032918~~-032819-RW-139 Lab Sample ID: 320-37675-14
 Matrix: Water Lab File ID: 2018.04.12_537AA_055.d
 Analysis Method: 537 Date Collected: 03/29/2018 11:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 249.4 (mL) Date Analyzed: 04/13/2018 02:29
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U M | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 9.5 | J | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U M | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U M | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.0 | J M | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 87 | | 70-130 |
| STL00996 | 13C2 PFDA | 100 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-~~032918~~-032819-FRB-139 Lab Sample ID: 320-37675-15
 Matrix: Water Lab File ID: 2018.04.12_537AA_058.d
 Analysis Method: 537 Date Collected: 03/29/2018 11:05
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 254.6(mL) Date Analyzed: 04/13/2018 02:43
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 7.9 | U | 20 | 7.9 | 2.7 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 7.9 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 29 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.8 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 35 | U | 88 | 35 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 98 | | 70-130 |
| STL00996 | 13C2 PFDA | 98 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-117 NAWC-032918-FRB-117 Lab Sample ID: 320-37675-16
 Matrix: Water Lab File ID: 2018.04.12_537AA_059.d
 Analysis Method: 537 Date Collected: 03/29/2018 11:40
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 256.5 (mL) Date Analyzed: 04/13/2018 02:47
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 16 | 6.6 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 7.8 | U | 19 | 7.8 | 2.7 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 19 | U | 23 | 19 | 7.8 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 29 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.7 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 35 | U | 88 | 35 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 97 | | 70-130 |
| STL00996 | 13C2 PFDA | 98 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-FRB-117 Lab Sample ID: 320-37675-17
 Matrix: Water Lab File ID: 2018.04.12_537AA_060.d
 Analysis Method: 537 Date Collected: 03/29/2018 11:35
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 258.6(mL) Date Analyzed: 04/13/2018 02:52
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 28 | J M | 39 | 15 | 6.6 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 20 | | 19 | 7.7 | 2.7 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 19 | U | 23 | 19 | 7.7 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 15 | J | 29 | 12 | 5.3 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.9 | J | 9.7 | 3.9 | 1.8 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 35 | U | 87 | 35 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 96 | | 70-130 |
| STL00996 | 13C2 PFDA | 88 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-~~032918~~-032819-RW-181 Lab Sample ID: 320-37675-18
 Matrix: Water Lab File ID: 2018.04.12_537AA_061.d
 Analysis Method: 537 Date Collected: 03/29/2018 12:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 248.9(mL) Date Analyzed: 04/13/2018 02:57
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 5.2 | J | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 94 | | 70-130 |
| STL00996 | 13C2 PFDA | 86 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-~~032918~~-032819-FRB-181 Lab Sample ID: 320-37675-19
 Matrix: Water Lab File ID: 2018.04.12_537AA_062.d
 Analysis Method: 537 Date Collected: 03/29/2018 12:05
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 250.6(mL) Date Analyzed: 04/13/2018 03:01
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 8.0 | U | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 100 | | 70-130 |
| STL00996 | 13C2 PFDA | 104 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-~~032918~~-032819-RW-138 Lab Sample ID: 320-37675-20
 Matrix: Water Lab File ID: 2018.04.12_537AA_063.d
 Analysis Method: 537 Date Collected: 03/29/2018 13:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 242 (mL) Date Analyzed: 04/13/2018 03:06
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 8.0 | J M | 41 | 17 | 7.0 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 30 | | 21 | 8.3 | 2.9 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 21 | U M | 25 | 21 | 8.3 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U M | 31 | 12 | 5.7 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 7.4 | J | 10 | 4.1 | 2.0 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 37 | U | 93 | 37 | 17 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 98 | | 70-130 |
| STL00996 | 13C2 PFDA | 99 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-~~032918~~-032819-FRB-138 Lab Sample ID: 320-37675-21
 Matrix: Water Lab File ID: 2018.04.12_537AA_064.d
 Analysis Method: 537 Date Collected: 03/29/2018 13:05
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 253.2 (mL) Date Analyzed: 04/13/2018 03:11
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 39 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 7.9 | U | 20 | 7.9 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 7.9 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 3.9 | U | 9.9 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 89 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 96 | | 70-130 |
| STL00996 | 13C2 PFDA | 91 | | 70-130 |

Appendix C

Support Documentation

TestAmerica Sacramento
 880 Riverside Parkway
 West Sacramento, CA 95605-1500
 phone 916.373.5600 fax 303.467.7248

Chain of Custody Record



320-37675 Chain of Custody

Regulatory Program: DW NPDES RCRA Other:

| | | | | | | | | | | |
|--|-----------|--|--------------------|-------------------------------------|---------------|---------------------------------|---|-----------------------------|----------------------------------|-------------------------------|
| Client Contact | | Project Manager: Andy Frebowitz | | Site Contact: Mary Kay Bond | | Date: 3/29/2018 | | COC No: | | |
| TetraTech | | Tel/Fax: 610.382.1170 | | Lab Contact: Dave Alltucker | | Carrier: FedEx | | 1 of 1 COCs | | |
| 234 Mall Boulevard Suite 260 | | Analysis Turnaround Time | | | | | | | | |
| King of Prussia, PA 19406 | | <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS | | | | | | | | |
| 610-382-1174 | | TAT if different from Below 21 | | | | | | | | |
| 610-491-9688 | | <input type="checkbox"/> 2 weeks | | | | | | | | |
| Project Name: WE04 | | <input type="checkbox"/> 1 week | | | | | | | | |
| Site: WE04 | | <input type="checkbox"/> 2 days | | | | | | | | |
| P O # 1132358 (through EarthToxics) | | <input type="checkbox"/> 1 day | | | | | | | | |
| Sample Identification | | Sample Date | Sample Time | Sample Type (C=Comp, G=Grab) | Matrix | # of Cont. | Filtered Sample (Y/N) | Perform MS/MSD (Y/N) | EPA 837 UCL ³³ | Sample Specific Notes: |
| WGNA-032918-DUP-31 | 3/29/2018 | 7:00 | G | DW | 2 | N | N | Y | | Duplicate |
| NAWC-032918-RW-286 | 3/29/2018 | 8:10 | G | DW | 2 | N | N | Y | | |
| NAWC-032918-FRB-286 | 3/29/2018 | 8:05 | G | DW | 2 | N | N | Y | | Field Reagent Blank |
| WGNA-032918-RW-0518 | 3/29/2018 | 8:40 | G | DW | 2 | N | N | Y | | |
| WGNA-032918-FRB-0518 | 3/29/2018 | 8:35 | G | DW | 2 | N | N | Y | | Field Reagent Blank |
| NAWC-032918-RW-010 | 3/29/2018 | 9:10 | G | DW | 2 | N | N | Y | | |
| NAWC-032918-FRB-010 | 3/29/2018 | 9:05 | G | DW | 2 | N | N | Y | | Field Reagent Blank |
| NAWC-032918-RW-127 | 3/29/2018 | 9:40 | G | DW | 2 | N | N | Y | | |
| NAWC-032918-FRB-127 | 3/29/2018 | 9:35 | G | DW | 2 | N | N | Y | | Field Reagent Blank |
| NAWC-032918-RW-195 | 3/29/2018 | 10:10 | G | DW | 2 | N | N | Y | | |
| NAWC-032918-FRB-195 | 3/29/2018 | 10:05 | G | DW | 2 | N | N | Y | | Field Reagent Blank |
| NAWC-032918-RW-048 | 3/29/2018 | 10:40 | G | DW | 2 | N | N | Y | | |
| NAWC-032918-FRB-048 | 3/29/2018 | 10:35 | G | DW | 2 | N | N | Y | | Field Reagent Blank |
| NAWC-032918-RW-139 | 3/29/2018 | 11:10 | G | DW | 6 | N | Y | Y | | MS/MSD |
| NAWC-032918-FRB-139 | 3/29/2018 | 11:05 | G | DW | 2 | N | N | Y | | Field Reagent Blank |
| NAWC-032918-RW-117 | 3/29/2018 | 11:40 | G | DW | 2 | N | N | Y | | |
| NAWC-032918-FRB-117 | 3/29/2018 | 11:35 | G | DW | 2 | N | N | Y | | Field Reagent Blank |
| NAWC-032918-RW-181 | 3/29/2018 | 12:10 | G | DW | 2 | N | N | Y | | |
| NAWC-032918-FRB-181 | 3/29/2018 | 12:05 | G | DW | 2 | N | N | Y | | Field Reagent Blank |
| NAWC-032918-RW-138 | 3/29/2018 | 13:10 | G | DW | 2 | N | N | Y | | |
| NAWC-032918-FRB-138 | 3/29/2018 | 13:05 | G | DW | 2 | N | N | Y | | Field Reagent Blank |
| Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma | | | | | | | 6 | | | |
| Possible Hazard Identification: | | | | | | | Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) | | | |
| Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the | | | | | | | <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months | | | |
| <input checked="" type="checkbox"/> Non-hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Corrosive <input type="checkbox"/> Unknown | | | | | | | | | | |
| Fed Ex Tracking: 7718 7216 8252 | | | | | | | | | | |
| Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No | | Custody Seal No.: | | Cooler Temp. (°C): Obs'd: 2.4°C | | Corr'd: 2.4°C | | Therm ID No. AKZ 300 | | |
| Relinquished by: <i>Mary Kay Bond</i> | | Company: Tetra Tech | | Date/Time: 3/29/2018 16:00 | | Received by: <i>[Signature]</i> | | Company: <i>SA-SAC</i> | | |
| Relinquished by: | | Company: | | Date/Time: | | Received by: | | Date/Time: 3/30/18 0900 | | |
| Relinquished by: | | Company: | | Date/Time: | | Received in Laboratory by: | | Date/Time: | | |

Job Narrative
320-37675-1

Receipt

The samples were received on 3/30/2018 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.4° C and 2.4° C.

LCMS

Method(s) 537: The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

Method(s) 537: The following samples were re-extracted outside of holding time to confirm the original results as detections were seen in the FRB sample but not the parent samples. NAWC-032819-RW-117 (320-37675-16) and NAWC-032819-FRB-117 (320-37675-17) . The results confirmed and the original results are reported.

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

Organic Prep

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-216791.

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-FRB-117 Lab Sample ID: 320-37675-17
 Matrix: Water Lab File ID: 2018.04.12_537AA_060.d
 Analysis Method: 537 Date Collected: 03/29/2018 11:35
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 258.6 (mL) Date Analyzed: 04/13/2018 02:52
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 28 | J M | 39 | 15 | 6.6 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 20 | | 19 | 7.7 | 2.7 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 19 | U | 23 | 19 | 7.7 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 15 | J | 29 | 12 | 5.3 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.9 | J | 9.7 | 3.9 | 1.8 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 35 | U | 87 | 35 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 96 | | 70-130 |
| STL00996 | 13C2 PFDA | 88 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_060.d
 Lims ID: 320-37675-A-17-A
 Client ID: NAWC-032819-FRB-117
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:52:31 ALS Bottle#: 44 Worklist Smp#: 32
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-17-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 10:10:23

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.381 | 0.0 | 1.000 | 68167 | 0.8124 | | 57.6 | |
| 298.90 > 99.00 | 1.381 | 1.381 | 0.0 | 1.000 | 52110 | | 1.31(0.00-0.00) | 139 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.517 | 0.0 | 1.000 | 969569 | 9.59 | | 9724 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.669 | 1.677 | -0.008 | 1.000 | 129997 | 1.27 | | 4.1 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.669 | 1.677 | -0.008 | 1.000 | 514571 | 3.93 | | 277 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.866 | 1.874 | -0.008 | | 951026 | 10.0 | | 5932 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.866 | 1.874 | -0.008 | 1.000 | 535233 | 5.30 | | 68.2 | |
| 413.00 > 169.00 | 1.866 | 1.874 | -0.008 | 1.000 | 318903 | | 1.68(0.00-0.00) | 341 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.102 | 2.094 | 0.008 | 1.000 | 609625 | 7.17 | | 282 | a |
| 499.00 > 99.00 | 2.102 | 2.094 | 0.008 | 1.000 | 121299 | | 5.03(0.00-0.00) | 225 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.102 | 2.102 | 0.0 | | 2287790 | 28.7 | | 2612 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.109 | 2.117 | -0.008 | 1.000 | 54576 | 0.6812 | | 7.6 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.253 | 2.253 | 0.0 | 1.000 | 713896 | 8.83 | | 8155 | |

QC Flag Legend

Review Flags

a - User Assigned ID

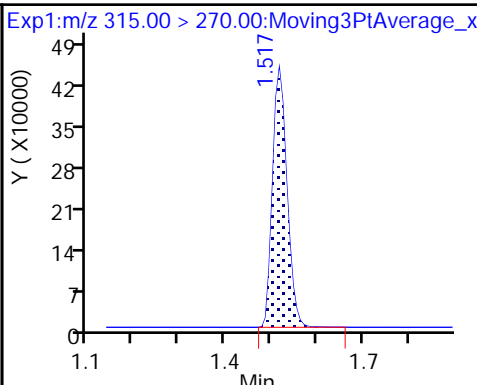
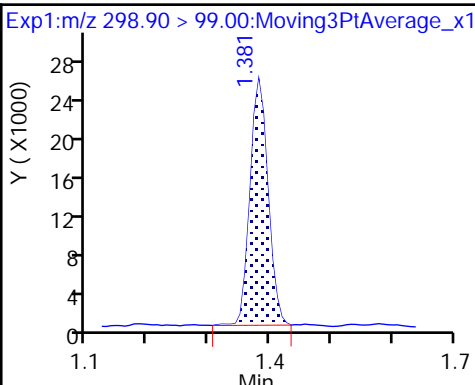
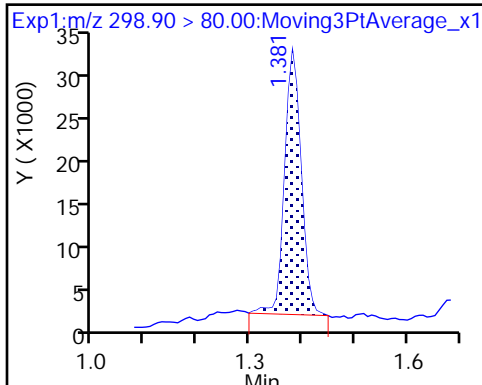
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_060.d
Injection Date: 13-Apr-2018 02:52:31 Instrument ID: A8_N
Lims ID: 320-37675-A-17-A Lab Sample ID: 320-37675-17
Client ID: NAWC-032819-FRB-117
Operator ID: SACINSTLCMS01 ALS Bottle#: 44 Worklist Smp#: 32
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

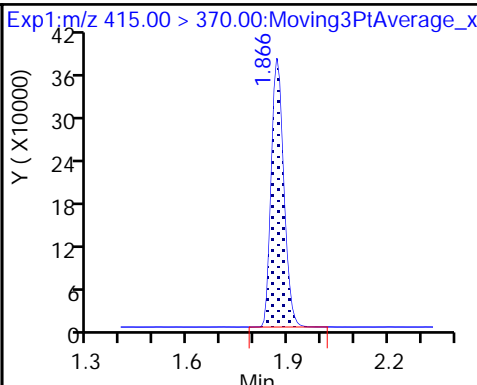
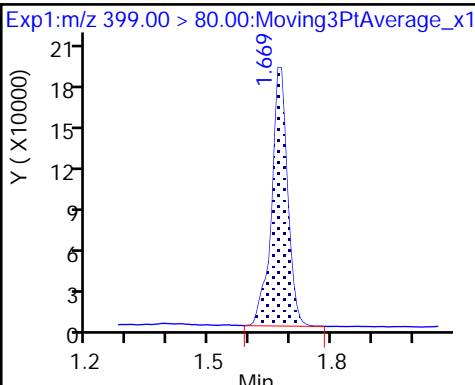
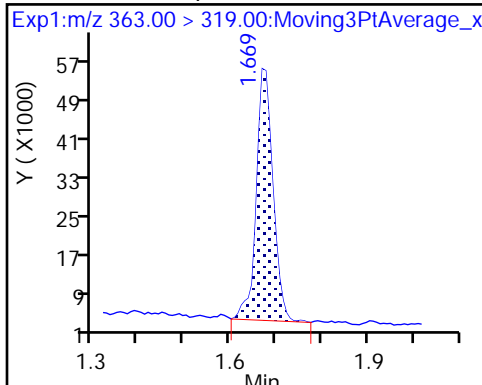
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

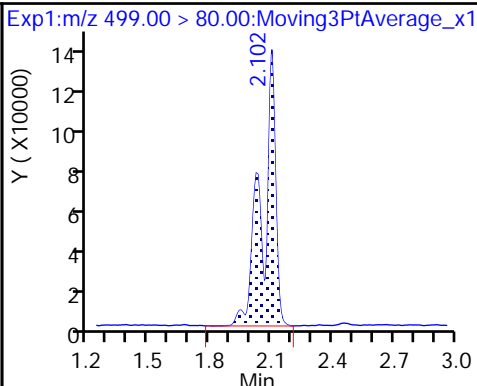
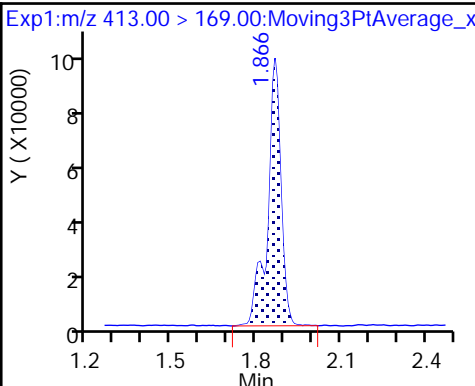
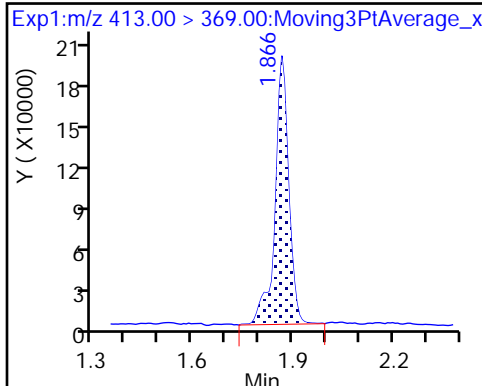
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

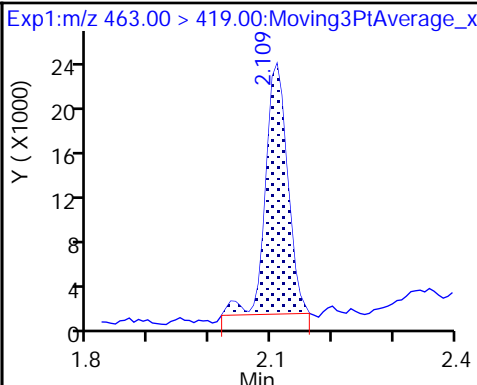
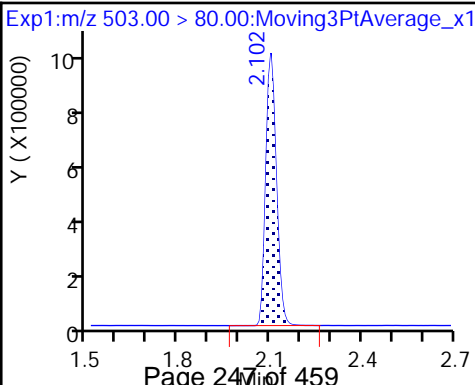
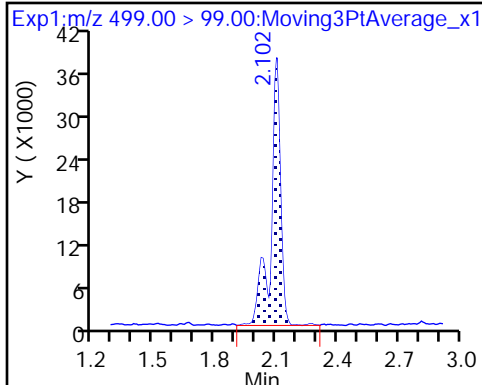
8 Perfluorooctane sulfonic acid (M)



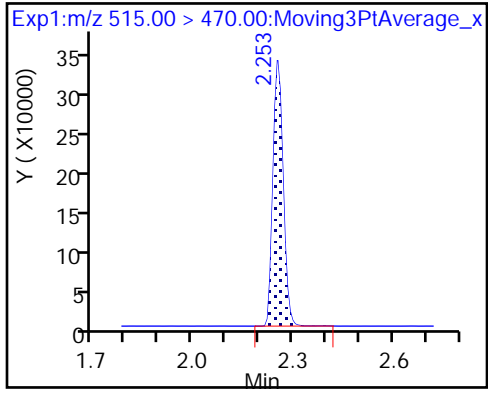
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_060.d
 Lims ID: 320-37675-A-17-A
 Client ID: NAWC-032819-FRB-117
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:52:31 ALS Bottle#: 44 Worklist Smp#: 32
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-17-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: barnettj Date: 13-Apr-2018 10:10:23

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.59 | 95.89 |
| \$ 10 13C2 PFDA | 10.0 | 8.83 | 88.26 |

TestAmerica Sacramento

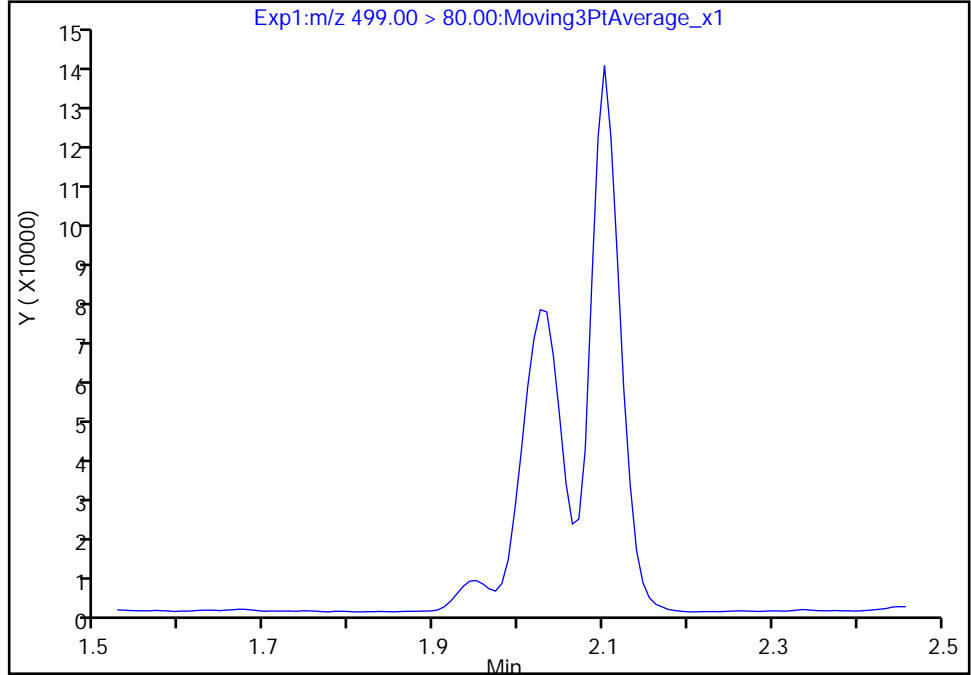
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_060.d
Injection Date: 13-Apr-2018 02:52:31 Instrument ID: A8_N
Lims ID: 320-37675-A-17-A Lab Sample ID: 320-37675-17
Client ID: NAWC-032819-FRB-117
Operator ID: SACINSTLCMS01 ALS Bottle#: 44 Worklist Smp#: 32
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

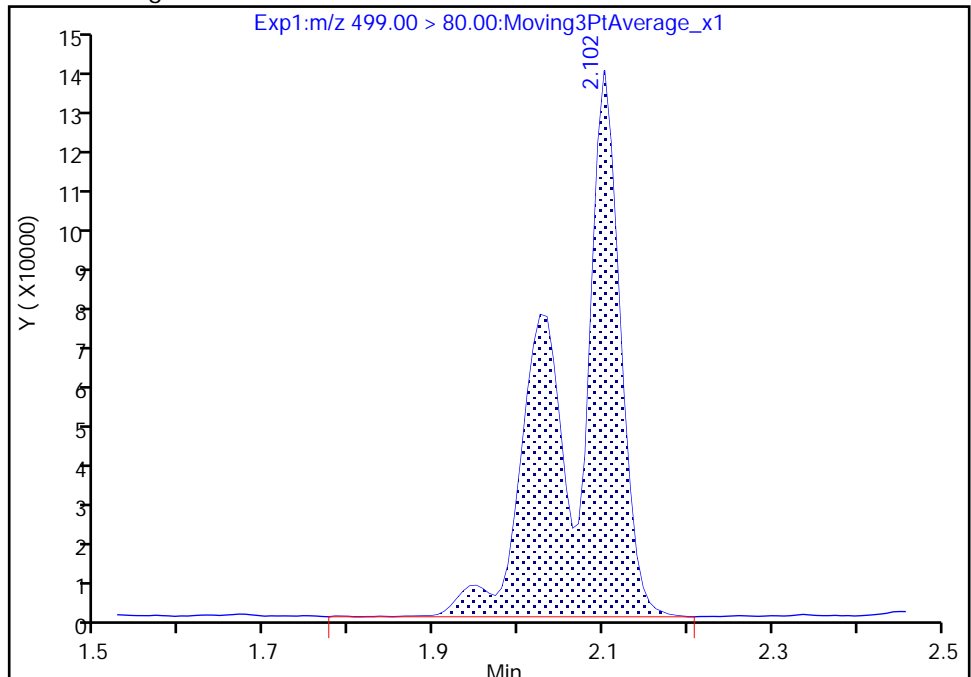
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.10
Area: 609625
Amount: 7.168675
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 13-Apr-2018 10:10:08
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

NAS JRB Willow Grove/NAWC Warminster
SDG 320-27675-1

Sample Identification NAWC-032819-FRB-117

Compound PFOS

Compound Area 609625
Internal Standard Amount (ng) 28.7
Dilution Factor 1
Internal Standard Area 2287790
Average RRF 1.0661
Sample Volume(ml) 258.6
Volume Extract (µl) 1000
Injection Volume (µl) 2

Concentration 27.7397 ng/L

Surrogate Compound 13C2 PFDA

Compound Area 713896
Internal Standard Amount (ng) 10
Dilution Factor 1
Internal Standard Area 951026
Average RRF 0.8505
Sample Volume(ml) 258.6
Volume Extract (µl) 1000
Injection Volume (µl) 2

Concentration 17.0651 ng/L

Spike Added 19.3349

Pecent Recovery 88 %

NAS JRB Willow Grove/NAWC Warminster
SDG 320-27675-1

Sample Identification LCS 320-216791/2-A

Compound PFOS

Compound Area 2901417

Internal Standard Amount (ng) 28.7

Dilution Factor 1

Internal Standard Area 2367322

Average RRF 1.0661

Sample Volume(ml) 250

Volume Extract (μ l) 1000

Injection Volume (μ l) 2

Concentration 132 ng/L

Spike Added 132

Percent Recovery 100 %

PFAS Calibration Calculations:

Initial Calibration 4/11/2018
Instrument A8_N

PFOS

| Analyte Concentration | Analyte Response | Internal Standard Response | Internal Standard Amount | RRF | Reported RRF |
|-----------------------|------------------|----------------------------|--------------------------|---------|--------------|
| 3.95 | 349354 | 2429483 | 28.7 | 1.04481 | 1.0432 |
| 8.79 | 715378 | 2220259 | 28.7 | 1.05202 | 1.0519 |
| 19.8 | 1693810 | 2380125 | 28.7 | 1.03153 | 1.0326 |
| 39.5 | 3678059 | 2440107 | 28.7 | 1.09520 | 1.0935 |
| 59.3 | 5081660 | 2283311 | 28.7 | 1.07713 | 1.0764 |
| 79.1 | 7016962 | 2316327 | 28.7 | 1.09914 | 1.0989 |
| Average | | | | 1.06664 | 1.0661 |
| Standard Deviation | | | | 0.0279 | |
| RSD | | | | 0.0262 | |
| %RSD | | | | 2.62018 | 2.6 |

|

Continuing Calibration 04/13/2018 @ 02:19

PFOS

| Analyte Concentration | Analyte Response | Internal Standard Response | Internal Standard Amount | RRF | %D | Reported RRF | Reported %D |
|-----------------------|------------------|----------------------------|--------------------------|--------|----------|--------------|-------------|
| 59.3 | 4759332 | 2115143 | 28.7 | 1.0890 | 2.149331 | 1.088 | 2.1 |

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-37675-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

| Client Sample ID | Lab Sample ID | PFHxA # | PFDA # |
|------------------------|------------------------|---------|--------|
| WGNA-032918-DUP-31 | 320-37675-1 | 95 | 93 |
| NAWC-032819-RW-286 | 320-37675-2 | 98 | 101 |
| NAWC-032819-FRB-286 | 320-37675-3 | 101 | 95 |
| WGNA-032819-RW-0518 | 320-37675-4 | 106 | 104 |
| WGNA-032819-FRB-0518 | 320-37675-5 | 100 | 98 |
| NAWC-032819-RW-010 | 320-37675-6 | 91 | 88 |
| NAWC-032819-FRB-010 | 320-37675-7 | 101 | 101 |
| NAWC-032819-RW-127 | 320-37675-8 | 93 | 96 |
| NAWC-032819-FRB-127 | 320-37675-9 | 95 | 100 |
| NAWC-032819-RW-195 | 320-37675-10 | 97 | 91 |
| NAWC-032819-FRB-195 | 320-37675-11 | 97 | 94 |
| NAWC-032819-RW-048 | 320-37675-12 | 91 | 96 |
| NAWC-032819-FRB-048 | 320-37675-13 | 94 | 94 |
| NAWC-032819-RW-139 | 320-37675-14 | 87 | 100 |
| NAWC-032819-FRB-139 | 320-37675-15 | 98 | 98 |
| NAWC-032819-RW-117 | 320-37675-16 | 97 | 98 |
| NAWC-032819-FRB-117 | 320-37675-17 | 96 | 88 |
| NAWC-032819-RW-181 | 320-37675-18 | 94 | 86 |
| NAWC-032819-FRB-181 | 320-37675-19 | 100 | 104 |
| NAWC-032819-RW-138 | 320-37675-20 | 98 | 99 |
| NAWC-032819-FRB-138 | 320-37675-21 | 96 | 91 |
| | MB 320-216791/1-A | 83 | 94 |
| | MB 320-216792/1-A | 91 | 90 |
| | LCS 320-216791/2-A | 95 | 93 |
| | LCSD 320-216791/3-A | 87 | 101 |
| | LLCS 320-216792/2-A | 99 | 92 |
| NAWC-032819-RW-139 LMS | 320-37675-14 LMS | 101 | 97 |

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

| Client Sample ID | Lab Sample ID | PFHxA # | PFDA # |
|----------------------------|----------------------|---------|--------|
| NAWC-032819-RW-139 LMSD | 320-37675-14 LMSD | 93 | 98 |

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_032.d
 Lab ID: LCS 320-216791/2-A Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCS CONCENTRATION (ng/L) | LCS % REC | QC LIMITS REC | # |
|---|--------------------------|--------------------------------|-----------------|---------------------|---|
| Perfluorooctanesulfonic acid (PFOS) | 132 | 132 | 100 | 70-130 | M |
| Perfluorooctanoic acid (PFOA) | 66.0 | 67.8 | 103 | 70-130 | |
| Perfluorononanoic acid (PFNA) | 66.0 | 62.6 | 95 | 70-130 | |
| Perfluorohexanesulfonic acid (PFHxS) | 100 | 105 | 105 | 70-130 | |
| Perfluoroheptanoic acid (PFHpA) | 32.0 | 32.0 | 100 | 70-130 | |
| Perfluorobutanesulfonic acid (PFBS) | 300 | 303 | 101 | 70-130 | |

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_033.d

Lab ID: LCSD 320-216791/3-A Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCSD CONCENTRATION (ng/L) | LCSD % REC | % RPD | QC LIMITS | | # |
|---|--------------------------|---------------------------------|------------------|----------|-----------|--------|---|
| | | | | | RPD | REC | |
| Perfluorooctanesulfonic acid (PFOS) | 132 | 126 | 96 | 4 | 30 | 70-130 | M |
| Perfluorooctanoic acid (PFOA) | 66.0 | 65.5 | 99 | 3 | 30 | 70-130 | |
| Perfluorononanoic acid (PFNA) | 66.0 | 62.7 | 95 | 0 | 30 | 70-130 | |
| Perfluorohexanesulfonic acid (PFHxS) | 100 | 102 | 102 | 3 | 30 | 70-130 | |
| Perfluoroheptanoic acid (PFHpA) | 32.0 | 31.0 | 97 | 3 | 30 | 70-130 | |
| Perfluorobutanesulfonic acid (PFBS) | 300 | 266 | 89 | 13 | 30 | 70-130 | |

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_050.d

Lab ID: LLCS 320-216792/2-A Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LLCS CONCENTRATION (ng/L) | LLCS % REC | QC LIMITS REC | # |
|---|--------------------------|---------------------------------|------------------|---------------------|---|
| Perfluorooctanesulfonic acid (PFOS) | 40.2 | 38.9 J | 97 | 50-150 | M |
| Perfluorooctanoic acid (PFOA) | 20.0 | 19.1 J | 95 | 50-150 | |
| Perfluorononanoic acid (PFNA) | 20.0 | 17.5 J | 88 | 50-150 | |
| Perfluorohexanesulfonic acid (PFHxS) | 30.3 | 31.7 | 105 | 50-150 | |
| Perfluoroheptanoic acid (PFHpA) | 10.0 | 9.59 J | 96 | 50-150 | |
| Perfluorobutanesulfonic acid (PFBS) | 90.2 | 97.1 | 108 | 50-150 | |

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_056.d
 Lab ID: 320-37675-14 LMS Client ID: NAWC-032819-RW-139 LMS

| COMPOUND | SPIKE ADDED (ng/L) | SAMPLE CONCENTRATION (ng/L) | LMS CONCENTRATION (ng/L) | LMS % REC | QC LIMITS REC | # |
|---|--------------------------|-----------------------------------|--------------------------------|-----------------|---------------------|---|
| Perfluorooctanesulfonic acid (PFOS) | 39.3 | 16 U | 42.7 | 109 | 50-150 | M |
| Perfluorooctanoic acid (PFOA) | 19.6 | 9.5 J | 28.1 | 95 | 50-150 | |
| Perfluorononanoic acid (PFNA) | 19.6 | 20 U | 19.0 J | 97 | 50-150 | |
| Perfluorohexanesulfonic acid (PFHxS) | 29.7 | 12 U | 31.3 | 106 | 50-150 | |
| Perfluoroheptanoic acid (PFHpA) | 9.78 | 4.0 J | 13.4 | 96 | 50-150 | |
| Perfluorobutanesulfonic acid (PFBS) | 88.2 | 36 U | 104 | 118 | 50-150 | |

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-37675-1

SDG No.: _____

Matrix: Water Level: Low

Lab File ID: 2018.04.12_537AA_057.d

Lab ID: 320-37675-14 LMSD

Client ID: NAWC-032819-RW-139 LMSD

| COMPOUND | SPIKE ADDED (ng/L) | LMSD CONCENTRATION (ng/L) | LMSD % REC | % RPD | QC LIMITS | | # |
|--------------------------------------|--------------------------|---------------------------------|------------------|----------|-----------|--------|---|
| | | | | | RPD | REC | |
| Perfluorooctanesulfonic acid (PFOS) | 39.8 | 41.2 | 104 | 3 | 50 | 50-150 | M |
| Perfluorooctanoic acid (PFOA) | 19.8 | 27.4 | 91 | 3 | 50 | 50-150 | |
| Perfluorononanoic acid (PFNA) | 19.8 | 18.5 J | 94 | 3 | 50 | 50-150 | |
| Perfluorohexanesulfonic acid (PFHxS) | 30.0 | 29.4 J | 98 | 6 | 50 | 50-150 | |
| Perfluoroheptanoic acid (PFHpA) | 9.89 | 13.0 | 91 | 3 | 50 | 50-150 | |
| Perfluorobutanesulfonic acid (PFBS) | 89.1 | 94.4 | 106 | 9 | 50 | 50-150 | |

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab File ID: 2018.04.12_537AA_031.d Lab Sample ID: MB 320-216791/1-A
 Matrix: Water Date Extracted: 04/07/2018 08:11
 Instrument ID: A8_N Date Analyzed: 04/13/2018 00:37
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|----------------------|---------------------|------------------------|------------------|
| | LCS 320-216791/2-A | 2018.04.12_537AA_032.d | 04/13/2018 00:41 |
| | LCSD 320-216791/3-A | 2018.04.12_537AA_033.d | 04/13/2018 00:46 |
| WGNA-032918-DUP-31 | 320-37675-1 | 2018.04.12_537AA_034.d | 04/13/2018 00:51 |
| NAWC-032819-RW-286 | 320-37675-2 | 2018.04.12_537AA_035.d | 04/13/2018 00:55 |
| NAWC-032819-FRB-286 | 320-37675-3 | 2018.04.12_537AA_036.d | 04/13/2018 01:00 |
| WGNA-032819-RW-0518 | 320-37675-4 | 2018.04.12_537AA_037.d | 04/13/2018 01:05 |
| WGNA-032819-FRB-0518 | 320-37675-5 | 2018.04.12_537AA_038.d | 04/13/2018 01:09 |
| NAWC-032819-RW-010 | 320-37675-6 | 2018.04.12_537AA_039.d | 04/13/2018 01:14 |
| NAWC-032819-FRB-010 | 320-37675-7 | 2018.04.12_537AA_040.d | 04/13/2018 01:19 |
| NAWC-032819-RW-127 | 320-37675-8 | 2018.04.12_537AA_043.d | 04/13/2018 01:33 |
| NAWC-032819-FRB-127 | 320-37675-9 | 2018.04.12_537AA_044.d | 04/13/2018 01:37 |
| NAWC-032819-RW-195 | 320-37675-10 | 2018.04.12_537AA_045.d | 04/13/2018 01:42 |
| NAWC-032819-FRB-195 | 320-37675-11 | 2018.04.12_537AA_046.d | 04/13/2018 01:47 |

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab File ID: 2018.04.12_537AA_049.d Lab Sample ID: MB 320-216792/1-A
 Matrix: Water Date Extracted: 04/07/2018 08:19
 Instrument ID: A8_N Date Analyzed: 04/13/2018 02:01
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|-------------------------|---------------------|------------------------|------------------|
| | LLCS 320-216792/2-A | 2018.04.12_537AA 050.d | 04/13/2018 02:05 |
| NAWC-032819-RW-048 | 320-37675-12 | 2018.04.12_537AA 051.d | 04/13/2018 02:10 |
| NAWC-032819-FRB-048 | 320-37675-13 | 2018.04.12_537AA 052.d | 04/13/2018 02:15 |
| NAWC-032819-RW-139 | 320-37675-14 | 2018.04.12_537AA 055.d | 04/13/2018 02:29 |
| NAWC-032819-RW-139 LMS | 320-37675-14 LMS | 2018.04.12_537AA 056.d | 04/13/2018 02:33 |
| NAWC-032819-RW-139 LMSD | 320-37675-14 LMSD | 2018.04.12_537AA 057.d | 04/13/2018 02:38 |
| NAWC-032819-FRB-139 | 320-37675-15 | 2018.04.12_537AA 058.d | 04/13/2018 02:43 |
| NAWC-032819-RW-117 | 320-37675-16 | 2018.04.12_537AA 059.d | 04/13/2018 02:47 |
| NAWC-032819-FRB-117 | 320-37675-17 | 2018.04.12_537AA 060.d | 04/13/2018 02:52 |
| NAWC-032819-RW-181 | 320-37675-18 | 2018.04.12_537AA 061.d | 04/13/2018 02:57 |
| NAWC-032819-FRB-181 | 320-37675-19 | 2018.04.12_537AA 062.d | 04/13/2018 03:01 |
| NAWC-032819-RW-138 | 320-37675-20 | 2018.04.12_537AA 063.d | 04/13/2018 03:06 |
| NAWC-032819-FRB-138 | 320-37675-21 | 2018.04.12_537AA 064.d | 04/13/2018 03:11 |

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 04/11/2018 12:09
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|---|----------------------|---------|---------|------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| INITIAL CALIBRATION MEAN AREA AND MEAN RT | 970041 | 1.86 | 2344935 | 2.10 | | |
| UPPER LIMIT | 1455062 | 2.36 | 3517403 | 2.60 | | |
| LOWER LIMIT | 485021 | 1.36 | 1172468 | 1.60 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| CCVL 320-217453/10 | 964533 | 1.87 | 2387973 | 2.10 | | |
| ICV 320-217453/12 | 1123391 | 1.86 | 2710764 | 2.10 | | |
| CCVL 320-217726/1 | 1007212 | 1.89 | 2413051 | 2.12 | | |
| CCV 320-217814/1 CCVIS | 945293 | 1.89 | 2202701 | 2.12 | | |
| MB 320-216791/1-A | 949828 | 1.88 | 2322770 | 2.12 | | |
| LCS 320-216791/2-A | 993342 | 1.87 | 2367322 | 2.11 | | |
| LCSD 320-216791/3-A | 1202728 | 1.87 | 2870335 | 2.11 | | |
| 320-37675-1 | WGNA-032918-DUP-31 | 935283 | 2285394 | 2.11 | | |
| 320-37675-2 | NAWC-032819-RW-286 | 1004022 | 2445606 | 2.11 | | |
| 320-37675-3 | NAWC-032819-FRB-286 | 931391 | 2287824 | 2.11 | | |
| 320-37675-4 | WGNA-032819-RW-0518 | 939190 | 2335776 | 2.11 | | |
| 320-37675-5 | WGNA-032819-FRB-0518 | 954713 | 2370457 | 2.11 | | |
| 320-37675-6 | NAWC-032819-RW-010 | 1003975 | 2389703 | 2.11 | | |
| 320-37675-7 | NAWC-032819-FRB-010 | 998861 | 2402516 | 2.11 | | |
| CCV 320-217814/13 CCVIS | 947894 | 1.87 | 2307891 | 2.10 | | |
| CCV 320-217816/13 CCVIS | 947894 | 1.87 | 2307891 | 2.10 | | |
| 320-37675-8 | NAWC-032819-RW-127 | 915274 | 2281073 | 2.11 | | |
| 320-37675-9 | NAWC-032819-FRB-127 | 893479 | 2204862 | 2.11 | | |
| 320-37675-10 | NAWC-032819-RW-195 | 926217 | 2305396 | 2.10 | | |
| 320-37675-11 | NAWC-032819-FRB-195 | 921584 | 2286972 | 2.10 | | |
| CCV 320-217816/19 CCVIS | 899573 | 1.87 | 2148163 | 2.10 | | |
| CCV 320-217818/19 CCVIS | 899573 | 1.87 | 2148163 | 2.10 | | |
| MB 320-216792/1-A | 927774 | 1.87 | 2237326 | 2.10 | | |
| LLCS 320-216792/2-A | 932269 | 1.87 | 2141422 | 2.10 | | |
| 320-37675-12 | NAWC-032819-RW-048 | 933636 | 2208683 | 2.10 | | |
| 320-37675-13 | NAWC-032819-FRB-048 | 921490 | 2241801 | 2.11 | | |
| CCV 320-217818/25 CCVIS | 921520 | 1.87 | 2115143 | 2.10 | | |

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 04/11/2018 12:09
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|---|----------------------------|--------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| INITIAL CALIBRATION MEAN AREA AND MEAN RT | 970041 | 1.86 | 2344935 | 2.10 | | |
| UPPER LIMIT | 1455062 | 2.36 | 3517403 | 2.60 | | |
| LOWER LIMIT | 485021 | 1.36 | 1172468 | 1.60 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| CCV 320-217820/25 CCVIS | | 921520 | 1.87 | 2115143 | 2.10 | |
| 320-37675-14 | NAWC-032819-RW-139 | 941432 | 1.87 | 2279160 | 2.10 | |
| 320-37675-14 LMS | NAWC-032819-RW-139 LMS | 907706 | 1.87 | 2270226 | 2.10 | |
| 320-37675-14 LMSD | NAWC-032819-RW-139 LMSD | 932927 | 1.87 | 2349968 | 2.10 | |
| 320-37675-15 | NAWC-032819-FRB-139 | 938492 | 1.87 | 2282460 | 2.10 | |
| 320-37675-16 | NAWC-032819-RW-117 | 946733 | 1.87 | 2304139 | 2.10 | |
| 320-37675-17 | NAWC-032819-FRB-117 | 951026 | 1.87 | 2287790 | 2.10 | |
| 320-37675-18 | NAWC-032819-RW-181 | 960037 | 1.86 | 2317950 | 2.09 | |
| 320-37675-19 | NAWC-032819-FRB-181 | 957412 | 1.87 | 2371551 | 2.10 | |
| 320-37675-20 | NAWC-032819-RW-138 | 941041 | 1.87 | 2361059 | 2.10 | |
| 320-37675-21 | NAWC-032819-FRB-138 | 924480 | 1.87 | 2293177 | 2.10 | |
| CCV 320-217820/37 CCVIS | | 934501 | 1.86 | 2203770 | 2.09 | |

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217814/1 Date Analyzed: 04/13/2018 00:27
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_02 Heated Purge: (Y/N) N
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|---------------------|----------------------|---------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| 12/24 HOUR STD | 945293 | 1.89 | 2202701 | 2.12 | | |
| UPPER LIMIT | 1323410 | 2.39 | 3083781 | 2.62 | | |
| LOWER LIMIT | 661705 | 1.39 | 1541891 | 1.62 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| MB 320-216791/1-A | | 949828 | 1.88 | 2322770 | 2.12 | |
| LCS 320-216791/2-A | | 993342 | 1.87 | 2367322 | 2.11 | |
| LCSD 320-216791/3-A | | 1202728 | 1.87 | 2870335 | 2.11 | |
| 320-37675-1 | WGNA-032918-DUP-31 | 935283 | 1.87 | 2285394 | 2.11 | |
| 320-37675-2 | NAWC-032819-RW-286 | 1004022 | 1.87 | 2445606 | 2.11 | |
| 320-37675-3 | NAWC-032819-FRB-286 | 931391 | 1.87 | 2287824 | 2.11 | |
| 320-37675-4 | WGNA-032819-RW-0518 | 939190 | 1.87 | 2335776 | 2.11 | |
| 320-37675-5 | WGNA-032819-FRB-0518 | 954713 | 1.87 | 2370457 | 2.11 | |
| 320-37675-6 | NAWC-032819-RW-010 | 1003975 | 1.87 | 2389703 | 2.11 | |
| 320-37675-7 | NAWC-032819-FRB-010 | 998861 | 1.87 | 2402516 | 2.11 | |

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217814/13 Date Analyzed: 04/13/2018 01:23
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_04 Heated Purge: (Y/N) N
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|---------------------|----------------------|---------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| 12/24 HOUR STD | 947894 | 1.87 | 2307891 | 2.10 | | |
| UPPER LIMIT | 1327052 | 2.37 | 3231047 | 2.60 | | |
| LOWER LIMIT | 663526 | 1.37 | 1615524 | 1.60 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| MB 320-216791/1-A | | 949828 | 1.88 | 2322770 | 2.12 | |
| LCS 320-216791/2-A | | 993342 | 1.87 | 2367322 | 2.11 | |
| LCSD 320-216791/3-A | | 1202728 | 1.87 | 2870335 | 2.11 | |
| 320-37675-1 | WGNA-032918-DUP-31 | 935283 | 1.87 | 2285394 | 2.11 | |
| 320-37675-2 | NAWC-032819-RW-286 | 1004022 | 1.87 | 2445606 | 2.11 | |
| 320-37675-3 | NAWC-032819-FRB-286 | 931391 | 1.87 | 2287824 | 2.11 | |
| 320-37675-4 | WGNA-032819-RW-0518 | 939190 | 1.87 | 2335776 | 2.11 | |
| 320-37675-5 | WGNA-032819-FRB-0518 | 954713 | 1.87 | 2370457 | 2.11 | |
| 320-37675-6 | NAWC-032819-RW-010 | 1003975 | 1.87 | 2389703 | 2.11 | |
| 320-37675-7 | NAWC-032819-FRB-010 | 998861 | 1.87 | 2402516 | 2.11 | |

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217816/13 Date Analyzed: 04/13/2018 01:23
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_04 Heated Purge: (Y/N) N
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|----------------|---------------------|--------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| 12/24 HOUR STD | 947894 | 1.87 | 2307891 | 2.10 | | |
| UPPER LIMIT | 1327052 | 2.37 | 3231047 | 2.60 | | |
| LOWER LIMIT | 663526 | 1.37 | 1615524 | 1.60 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| 320-37675-8 | NAWC-032819-RW-127 | 915274 | 1.87 | 2281073 | 2.11 | |
| 320-37675-9 | NAWC-032819-FRB-127 | 893479 | 1.87 | 2204862 | 2.11 | |
| 320-37675-10 | NAWC-032819-RW-195 | 926217 | 1.87 | 2305396 | 2.10 | |
| 320-37675-11 | NAWC-032819-FRB-195 | 921584 | 1.87 | 2286972 | 2.10 | |

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217816/19 Date Analyzed: 04/13/2018 01:51
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_04 Heated Purge: (Y/N) N
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|----------------|---------------------|--------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| 12/24 HOUR STD | 899573 | 1.87 | 2148163 | 2.10 | | |
| UPPER LIMIT | 1259402 | 2.37 | 3007428 | 2.60 | | |
| LOWER LIMIT | 629701 | 1.37 | 1503714 | 1.60 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| 320-37675-8 | NAWC-032819-RW-127 | 915274 | 1.87 | 2281073 | 2.11 | |
| 320-37675-9 | NAWC-032819-FRB-127 | 893479 | 1.87 | 2204862 | 2.11 | |
| 320-37675-10 | NAWC-032819-RW-195 | 926217 | 1.87 | 2305396 | 2.10 | |
| 320-37675-11 | NAWC-032819-FRB-195 | 921584 | 1.87 | 2286972 | 2.10 | |

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217818/19 Date Analyzed: 04/13/2018 01:51
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_04 Heated Purge: (Y/N) N
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|---------------------|---------------------|--------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| 12/24 HOUR STD | 899573 | 1.87 | 2148163 | 2.10 | | |
| UPPER LIMIT | 1259402 | 2.37 | 3007428 | 2.60 | | |
| LOWER LIMIT | 629701 | 1.37 | 1503714 | 1.60 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| MB 320-216792/1-A | | 927774 | 1.87 | 2237326 | 2.10 | |
| LLCS 320-216792/2-A | | 932269 | 1.87 | 2141422 | 2.10 | |
| 320-37675-12 | NAWC-032819-RW-048 | 933636 | 1.87 | 2208683 | 2.10 | |
| 320-37675-13 | NAWC-032819-FRB-048 | 921490 | 1.87 | 2241801 | 2.11 | |

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217818/25 Date Analyzed: 04/13/2018 02:19
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_05 Heated Purge: (Y/N) N
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|---------------------|---------------------|--------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| 12/24 HOUR STD | 921520 | 1.87 | 2115143 | 2.10 | | |
| UPPER LIMIT | 1290128 | 2.37 | 2961200 | 2.60 | | |
| LOWER LIMIT | 645064 | 1.37 | 1480600 | 1.60 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| MB 320-216792/1-A | | 927774 | 1.87 | 2237326 | 2.10 | |
| LLCS 320-216792/2-A | | 932269 | 1.87 | 2141422 | 2.10 | |
| 320-37675-12 | NAWC-032819-RW-048 | 933636 | 1.87 | 2208683 | 2.10 | |
| 320-37675-13 | NAWC-032819-FRB-048 | 921490 | 1.87 | 2241801 | 2.11 | |

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217820/25 Date Analyzed: 04/13/2018 02:19
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_05 Heated Purge: (Y/N) N
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|-------------------|----------------------------|--------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| 12/24 HOUR STD | 921520 | 1.87 | 2115143 | 2.10 | | |
| UPPER LIMIT | 1290128 | 2.37 | 2961200 | 2.60 | | |
| LOWER LIMIT | 645064 | 1.37 | 1480600 | 1.60 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| 320-37675-14 | NAWC-032819-RW-139 | 941432 | 1.87 | 2279160 | 2.10 | |
| 320-37675-14 LMS | NAWC-032819-RW-139 LMS | 907706 | 1.87 | 2270226 | 2.10 | |
| 320-37675-14 LMSD | NAWC-032819-RW-139 LMSD | 932927 | 1.87 | 2349968 | 2.10 | |
| 320-37675-15 | NAWC-032819-FRB-139 | 938492 | 1.87 | 2282460 | 2.10 | |
| 320-37675-16 | NAWC-032819-RW-117 | 946733 | 1.87 | 2304139 | 2.10 | |
| 320-37675-17 | NAWC-032819-FRB-117 | 951026 | 1.87 | 2287790 | 2.10 | |
| 320-37675-18 | NAWC-032819-RW-181 | 960037 | 1.86 | 2317950 | 2.09 | |
| 320-37675-19 | NAWC-032819-FRB-181 | 957412 | 1.87 | 2371551 | 2.10 | |
| 320-37675-20 | NAWC-032819-RW-138 | 941041 | 1.87 | 2361059 | 2.10 | |
| 320-37675-21 | NAWC-032819-FRB-138 | 924480 | 1.87 | 2293177 | 2.10 | |

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217820/37 Date Analyzed: 04/13/2018 03:15
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_06 Heated Purge: (Y/N) N
 Calibration ID: 38530

| | 13PFOA | | PFOS | | AREA # | RT # |
|-------------------|----------------------------|--------|---------|---------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| 12/24 HOUR STD | 934501 | 1.86 | 2203770 | 2.09 | | |
| UPPER LIMIT | 1308301 | 2.36 | 3085278 | 2.59 | | |
| LOWER LIMIT | 654151 | 1.36 | 1542639 | 1.59 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| 320-37675-14 | NAWC-032819-RW-139 | 941432 | 1.87 | 2279160 | 2.10 | |
| 320-37675-14 LMS | NAWC-032819-RW-139 LMS | 907706 | 1.87 | 2270226 | 2.10 | |
| 320-37675-14 LMSD | NAWC-032819-RW-139 LMSD | 932927 | 1.87 | 2349968 | 2.10 | |
| 320-37675-15 | NAWC-032819-FRB-139 | 938492 | 1.87 | 2282460 | 2.10 | |
| 320-37675-16 | NAWC-032819-RW-117 | 946733 | 1.87 | 2304139 | 2.10 | |
| 320-37675-17 | NAWC-032819-FRB-117 | 951026 | 1.87 | 2287790 | 2.10 | |
| 320-37675-18 | NAWC-032819-RW-181 | 960037 | 1.86 | 2317950 | 2.09 | |
| 320-37675-19 | NAWC-032819-FRB-181 | 957412 | 1.87 | 2371551 | 2.10 | |
| 320-37675-20 | NAWC-032819-RW-138 | 941041 | 1.87 | 2361059 | 2.10 | |
| 320-37675-21 | NAWC-032819-FRB-138 | 924480 | 1.87 | 2293177 | 2.10 | |

13PFOA = 13C2-PFOA
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1 Analy Batch No.: 217453

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 04/11/2018 11:45 Calibration End Date: 04/11/2018 12:09 Calibration ID: 38530

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|---------------------------|
| Level 1 | IC 320-217453/3 | 2018.04.11_537ICALB_004.d |
| Level 2 | IC 320-217453/4 | 2018.04.11_537ICALB_005.d |
| Level 3 | IC 320-217453/5 | 2018.04.11_537ICALB_006.d |
| Level 4 | IC 320-217453/6 | 2018.04.11_537ICALB_007.d |
| Level 5 | IC 320-217453/7 | 2018.04.11_537ICALB_008.d |
| Level 6 | IC 320-217453/8 | 2018.04.11_537ICALB_009.d |

| ANALYTE | RRF | | | | | CURVE TYPE | COEFFICIENT | | | # | MIN RRF | %RSD | # | MAX %RSD | R ² OR COD | # | MIN R ² OR COD |
|--------------------------------------|------------------|--------|--------|--------|--------|------------|-------------|--------|----|---|---------|------|------|----------|-----------------------|---|---------------------------|
| | LVL 1 LVL 6 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | | B | M1 | M2 | | | | | | | | |
| Perfluorobutanesulfonic acid (PFBS) | 1.1422 0.9535 | 1.0952 | 1.0744 | 1.0454 | 1.0008 | Ave | | 1.0519 | | | 6.4 | | 30.0 | | | | |
| Perfluoroheptanoic acid (PFHpA) | 1.0850 1.0447 | 1.0991 | 1.0649 | 1.0783 | 1.0702 | Ave | | 1.0737 | | | 1.7 | | 30.0 | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | 1.6457 1.6837 | 1.5988 | 1.6030 | 1.6384 | 1.6838 | Ave | | 1.6422 | | | 2.3 | | 30.0 | | | | |
| Perfluorooctanoic acid (PFOA) | 1.0599 1.0325 | 1.0296 | 1.0703 | 1.0516 | 1.1300 | Ave | | 1.0623 | | | 3.5 | | 30.0 | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 1.0432 1.0989 | 1.0519 | 1.0326 | 1.0935 | 1.0764 | Ave | | 1.0661 | | | 2.6 | | 30.0 | | | | |
| Perfluorononanoic acid (PFNA) | 0.8261 0.8363 | 0.8133 | 0.8488 | 0.8818 | 0.8480 | Ave | | 0.8424 | | | 2.8 | | 30.0 | | | | |
| 13C2 PFHxA | 1.0447 1.0648 | 1.0532 | 1.0875 | 1.0687 | 1.0602 | Ave | | 1.0632 | | | 1.4 | | 30.0 | | | | |
| 13C2 PFDA | 0.8513 0.8262 | 0.8714 | 0.8533 | 0.8487 | 0.8519 | Ave | | 0.8505 | | | 1.7 | | 30.0 | | | | |

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1 Analy Batch No.: 217453

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 04/11/2018 11:45 Calibration End Date: 04/11/2018 12:09 Calibration ID: 38530

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|---------------------------|
| Level 1 | IC 320-217453/3 | 2018.04.11_537ICALB_004.d |
| Level 2 | IC 320-217453/4 | 2018.04.11_537ICALB_005.d |
| Level 3 | IC 320-217453/5 | 2018.04.11_537ICALB_006.d |
| Level 4 | IC 320-217453/6 | 2018.04.11_537ICALB_007.d |
| Level 5 | IC 320-217453/7 | 2018.04.11_537ICALB_008.d |
| Level 6 | IC 320-217453/8 | 2018.04.11_537ICALB_009.d |

| ANALYTE | IS REF | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (NG/ML) | | | | |
|--------------------------------------|------------|------------|--------------------|---------|---------|---------|----------|-----------------------|-------|-------|-------|-------|
| | | | LVL 1 LVL 6 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 1 LVL 6 | LVL 2 | LVL 3 | LVL 4 | LVL 5 |
| Perfluorobutanesulfonic acid (PFBS) | PFOS | Ave | 870696 13871852 | 1696932 | 4015148 | 8010147 | 10764182 | 9.00 180 | 20.0 | 45.0 | 90.1 | 135 |
| Perfluoroheptanoic acid (PFHpA) | 13PF OA | Ave | 108741 1996261 | 218860 | 489075 | 1044752 | 1450463 | 0.960 19.4 | 2.16 | 4.86 | 9.72 | 14.6 |
| Perfluorohexanesulfonic acid (PFHxS) | PFOS | Ave | 418640 8226588 | 831963 | 2012030 | 4216387 | 6082352 | 3.00 60.5 | 6.72 | 15.1 | 30.2 | 45.4 |
| Perfluorooctanoic acid (PFOA) | 13PF OA | Ave | 219100 4019004 | 417632 | 1001316 | 2075568 | 3119787 | 1.98 39.6 | 4.40 | 9.90 | 19.8 | 29.7 |
| Perfluorooctanesulfonic acid (PFOS) | PFOS | Ave | 349354 7016962 | 715378 | 1693810 | 3678059 | 5081660 | 3.95 79.1 | 8.79 | 19.8 | 39.5 | 59.3 |
| Perfluorononanoic acid (PFNA) | 13PF OA | Ave | 170770 3255374 | 329904 | 794076 | 1740422 | 2341235 | 1.98 39.6 | 4.40 | 9.90 | 19.8 | 29.7 |
| 13C2 PFHxA | 13PF OA | Ave | 1090690 1046576 | 970942 | 1027706 | 1065262 | 985534 | 10.0 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| 13C2 PFDA | 13PF OA | Ave | 888742 812112 | 803402 | 806360 | 845990 | 791901 | 10.0 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |

Curve Type Legend:

Ave = Average ISTD

FORM VI
 LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
 READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1 Analy Batch No.: 217453

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 04/11/2018 11:45 Calibration End Date: 04/11/2018 12:09 Calibration ID: 38530

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|-----------------|---------------------------|
| Level 1 | IC 320-217453/3 | 2018.04.11_537ICALB_004.d |
| Level 2 | IC 320-217453/4 | 2018.04.11_537ICALB_005.d |
| Level 3 | IC 320-217453/5 | 2018.04.11_537ICALB_006.d |
| Level 4 | IC 320-217453/6 | 2018.04.11_537ICALB_007.d |
| Level 5 | IC 320-217453/7 | 2018.04.11_537ICALB_008.d |
| Level 6 | IC 320-217453/8 | 2018.04.11_537ICALB_009.d |

| ANALYTE | PERCENT ERROR | | | | | | PERCENT ERROR LIMIT | | | | | |
|--------------------------------------|---------------|---------|---------|---------|---------|---------|---------------------|-------|-------|-------|-------|-------|
| | LVL 1 # | LVL 2 # | LVL 3 # | LVL 4 # | LVL 5 # | LVL 6 # | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 6 |
| Perfluorobutanesulfonic acid (PFBS) | 8.6 | 4.1 | 2.1 | -0.6 | -4.9 | -9.4 | 50 | 30 | 30 | 30 | 30 | 30 |
| Perfluoroheptanoic acid (PFHpA) | 1.0 | 2.4 | -0.8 | 0.4 | -0.3 | -2.7 | 50 | 30 | 30 | 30 | 30 | 30 |
| Perfluorohexanesulfonic acid (PFHxS) | 0.2 | -2.6 | -2.4 | -0.2 | 2.5 | 2.5 | 50 | 30 | 30 | 30 | 30 | 30 |
| Perfluorooctanoic acid (PFOA) | -0.2 | -3.1 | 0.7 | -1.0 | 6.4 | -2.8 | 50 | 30 | 30 | 30 | 30 | 30 |
| Perfluorooctanesulfonic acid (PFOS) | -2.1 | -1.3 | -3.1 | 2.6 | 1.0 | 3.1 | 50 | 30 | 30 | 30 | 30 | 30 |
| Perfluorononanoic acid (PFNA) | -1.9 | -3.5 | 0.8 | 4.7 | 0.7 | -0.7 | 50 | 30 | 30 | 30 | 30 | 30 |
| 13C2 PFHxA | -1.7 | -0.9 | 2.3 | 0.5 | -0.3 | 0.1 | 30 | 30 | 30 | 30 | 30 | 30 |
| 13C2 PFDA | 0.1 | 2.5 | 0.3 | -0.2 | 0.2 | -2.9 | 30 | 30 | 30 | 30 | 30 | 30 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-217453/10 Calibration Date: 04/11/2018 12:18
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.11_537ICALB_011.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 1.078 | | 20.5 | 20.0 | 2.5 | 50.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 1.079 | | 2.17 | 2.16 | 0.5 | 50.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.583 | | 6.48 | 6.72 | -3.6 | 50.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 1.067 | | 4.42 | 4.40 | 0.4 | 50.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 1.026 | | 8.45 | 8.79 | -3.8 | 50.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.8056 | | 4.21 | 4.40 | -4.4 | 50.0 |
| 13C2 PFHxA | Ave | 1.063 | 1.036 | | 9.74 | 10.0 | -2.6 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.8798 | | 10.3 | 10.0 | 3.4 | 30.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: ICV 320-217453/12 Calibration Date: 04/11/2018 12:27
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.11_537ICALB_013.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|-------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 0.9079 | | 86.4 | 100 | -13.7 | 30.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 0.9453 | | 8.80 | 10.0 | -12.0 | 30.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.546 | | 19.0 | 20.2 | -5.8 | 30.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 0.8947 | | 17.0 | 20.2 | -15.8 | 30.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 0.9451 | | 17.9 | 20.2 | -11.3 | 30.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.7643 | | 18.3 | 20.2 | -9.3 | 30.0 |
| 13C2 PFHxA | Ave | 1.063 | 0.9887 | | 9.30 | 10.0 | -7.0 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.7817 | | 9.19 | 10.0 | -8.1 | 30.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-217726/1 Calibration Date: 04/12/2018 14:48
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.12_537A_004.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 1.091 | | 20.8 | 20.0 | 3.8 | 50.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.529 | | 6.26 | 6.72 | -6.9 | 50.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 1.003 | | 2.02 | 2.16 | -6.6 | 50.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 1.016 | | 4.21 | 4.40 | -4.3 | 50.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 1.003 | | 8.27 | 8.79 | -5.9 | 50.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.7699 | | 4.02 | 4.40 | -8.6 | 50.0 |
| 13C2 PFHxA | Ave | 1.063 | 1.016 | | 9.56 | 10.0 | -4.4 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.8461 | | 9.95 | 10.0 | -0.5 | 30.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217814/1 Calibration Date: 04/13/2018 00:27
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.12_537AA_029.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 1.051 | | 135 | 135 | -0.0 | 30.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 1.071 | | 14.5 | 14.6 | -0.2 | 30.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.648 | | 45.5 | 45.4 | 0.4 | 30.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 1.050 | | 29.3 | 29.7 | -1.2 | 30.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 1.056 | | 58.8 | 59.3 | -0.9 | 30.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.8015 | | 28.3 | 29.7 | -4.9 | 30.0 |
| 13C2 PFHxA | Ave | 1.063 | 1.028 | | 9.67 | 10.0 | -3.3 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.8168 | | 9.60 | 10.0 | -4.0 | 30.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217814/13 Calibration Date: 04/13/2018 01:23
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.12_537AA_041.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 1.132 | | 48.5 | 45.0 | 7.7 | 30.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 1.050 | | 4.75 | 4.86 | -2.2 | 30.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.680 | | 15.5 | 15.1 | 2.3 | 30.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 1.051 | | 9.79 | 9.90 | -1.1 | 30.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 1.068 | | 19.8 | 19.8 | 0.2 | 30.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.8010 | | 9.41 | 9.90 | -4.9 | 30.0 |
| 13C2 PFHxA | Ave | 1.063 | 1.074 | | 10.1 | 10.0 | 1.0 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.7979 | | 9.38 | 10.0 | -6.2 | 30.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217816/19 Calibration Date: 04/13/2018 01:51
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.12_537AA_047.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 1.083 | | 139 | 135 | 2.9 | 30.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 1.081 | | 14.7 | 14.6 | 0.7 | 30.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.709 | | 47.2 | 45.4 | 4.0 | 30.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 1.082 | | 30.2 | 29.7 | 1.8 | 30.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.8552 | | 30.2 | 29.7 | 1.5 | 30.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 1.096 | | 61.0 | 59.3 | 2.8 | 30.0 |
| 13C2 PFHxA | Ave | 1.063 | 1.086 | | 10.2 | 10.0 | 2.1 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.8255 | | 9.71 | 10.0 | -2.9 | 30.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217818/25 Calibration Date: 04/13/2018 02:19
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.12_537AA_053.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 1.098 | | 141 | 135 | 4.4 | 30.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 1.071 | | 14.5 | 14.6 | -0.3 | 30.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.747 | | 48.3 | 45.4 | 6.4 | 30.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 1.078 | | 30.1 | 29.7 | 1.4 | 30.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 1.088 | | 60.5 | 59.3 | 2.1 | 30.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.8382 | | 29.6 | 29.7 | -0.5 | 30.0 |
| 13C2 PFHxA | Ave | 1.063 | 1.058 | | 9.96 | 10.0 | -0.4 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.8187 | | 9.63 | 10.0 | -3.7 | 30.0 |

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217820/37 Calibration Date: 04/13/2018 03:15
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.12_537AA_065.d Conc. Units: ng/mL

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|--------------------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| Perfluorobutanesulfonic acid (PFBS) | Ave | 1.052 | 1.204 | | 51.5 | 45.0 | 14.5 | 30.0 |
| Perfluoroheptanoic acid (PFHpA) | Ave | 1.074 | 1.056 | | 4.78 | 4.86 | -1.7 | 30.0 |
| Perfluorohexanesulfonic acid (PFHxS) | Ave | 1.642 | 1.705 | | 15.7 | 15.1 | 3.8 | 30.0 |
| Perfluorooctanoic acid (PFOA) | Ave | 1.062 | 1.007 | | 9.39 | 9.90 | -5.2 | 30.0 |
| Perfluorooctanesulfonic acid (PFOS) | Ave | 1.066 | 1.068 | | 19.8 | 19.8 | 0.2 | 30.0 |
| Perfluorononanoic acid (PFNA) | Ave | 0.8424 | 0.8345 | | 9.81 | 9.90 | -0.9 | 30.0 |
| 13C2 PFHxA | Ave | 1.063 | 1.043 | | 9.81 | 10.0 | -1.9 | 30.0 |
| 13C2 PFDA | Ave | 0.8505 | 0.8029 | | 9.44 | 10.0 | -5.6 | 30.0 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-216791/1-A
 Matrix: Water Lab File ID: 2018.04.12_537AA_031.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 00:37
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 8.0 | U | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 83 | | 70-130 |
| STL00996 | 13C2 PFDA | 94 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-216792/1-A
 Matrix: Water Lab File ID: 2018.04.12_537AA_049.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 02:01
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217818 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 16 | U | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 8.0 | U | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 20 | U | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 12 | U | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 4.0 | U | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 36 | U | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 91 | | 70-130 |
| STL00996 | 13C2 PFDA | 90 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-216791/2-A
 Matrix: Water Lab File ID: 2018.04.12_537AA_032.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 00:41
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 132 | M | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 67.8 | | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 62.6 | | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 105 | | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 32.0 | | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 303 | | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 95 | | 70-130 |
| STL00996 | 13C2 PFDA | 93 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_032.d
 Lims ID: LCS 320-216791/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 13-Apr-2018 00:41:45 ALS Bottle#: 22 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-216791/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: roycea Date: 13-Apr-2018 09:25:11

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|-------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.388 | -0.007 | 1.000 | 6576564 | 75.7 | | 10071 | |
| 298.90 > 99.00 | 1.381 | 1.388 | -0.007 | 1.000 | 4927734 | | 1.33(0.00-0.00) | 10491 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.525 | -0.008 | 1.000 | 1006889 | 9.53 | | 9400 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.684 | -0.007 | 1.000 | 853699 | 8.00 | | 30.5 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.677 | 1.684 | -0.007 | 1.000 | 3562570 | 26.3 | | 4991 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.874 | 1.889 | -0.015 | | 993342 | 10.0 | | 5431 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.874 | 1.889 | -0.015 | 1.000 | 1788752 | 17.0 | | 261 | |
| 413.00 > 169.00 | 1.874 | 1.889 | -0.015 | 1.000 | 972580 | | 1.84(0.00-0.00) | 1250 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.109 | 2.094 | 0.015 | 1.000 | 2901417 | 33.0 | | 2908 | a |
| 499.00 > 99.00 | 2.109 | 2.094 | 0.015 | 1.000 | 631804 | | 4.59(0.00-0.00) | 1620 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.109 | 2.124 | -0.015 | | 2367322 | 28.7 | | 4643 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.117 | 2.132 | -0.015 | 1.000 | 1308823 | 15.6 | | 232 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.261 | 2.269 | -0.007 | 1.000 | 789843 | 9.35 | | 7864 | |

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_032.d

Injection Date: 13-Apr-2018 00:41:45

Instrument ID: A8_N

Lims ID: LCS 320-216791/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 22

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

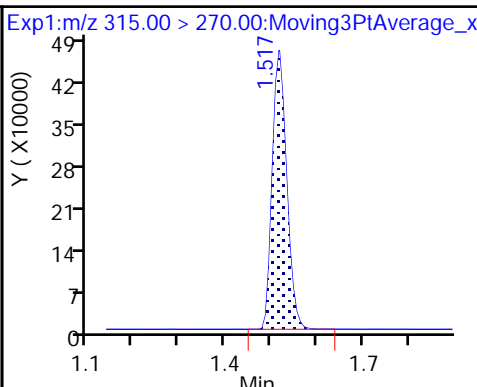
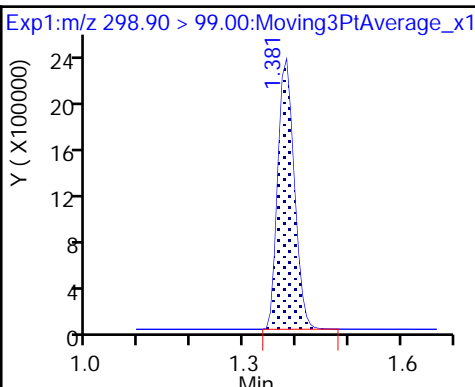
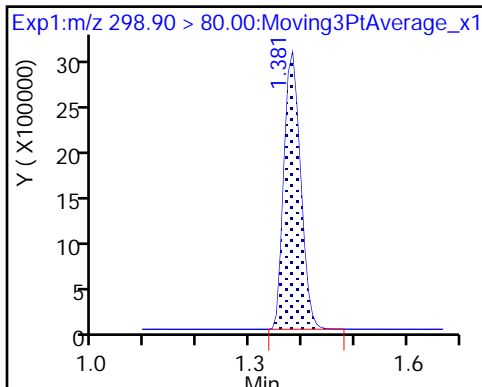
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

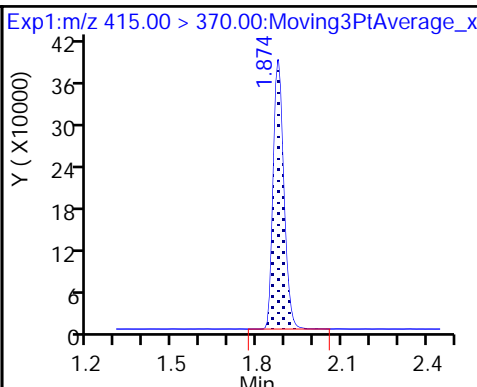
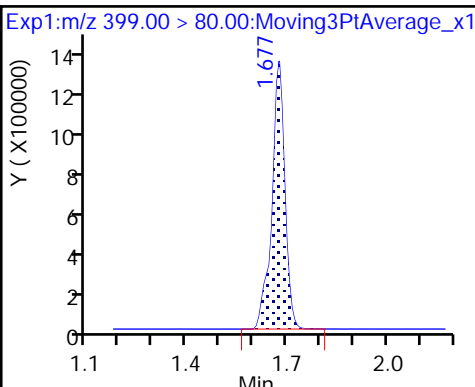
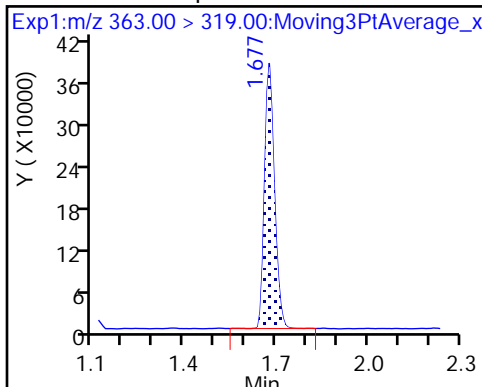
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

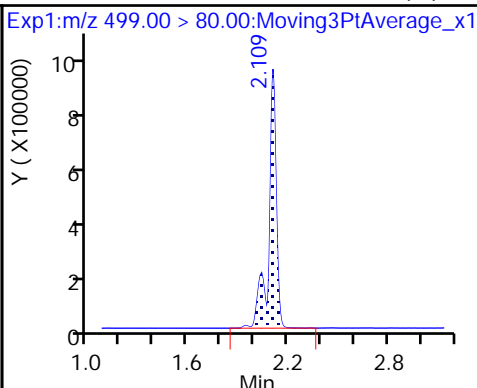
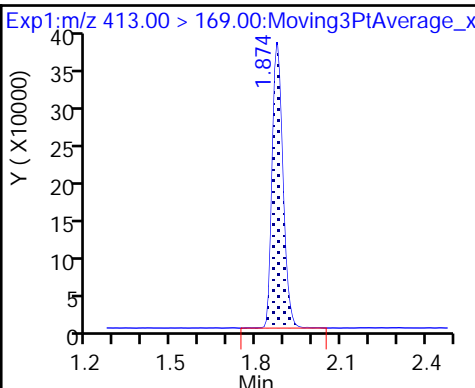
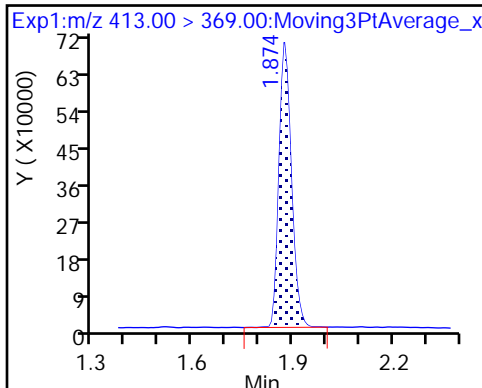
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

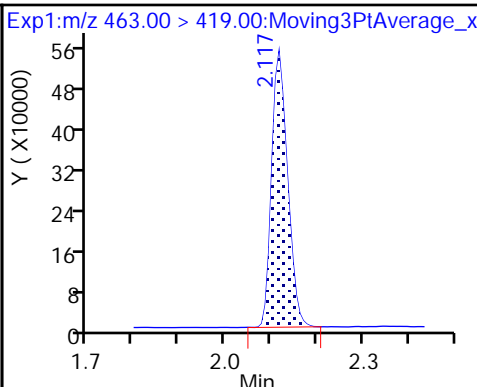
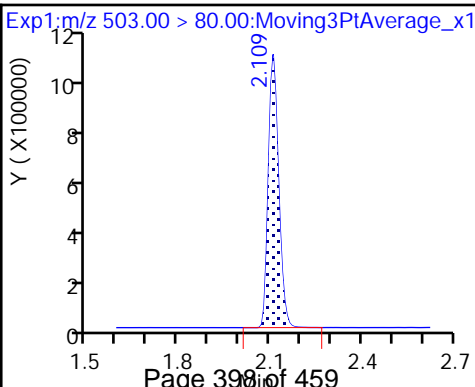
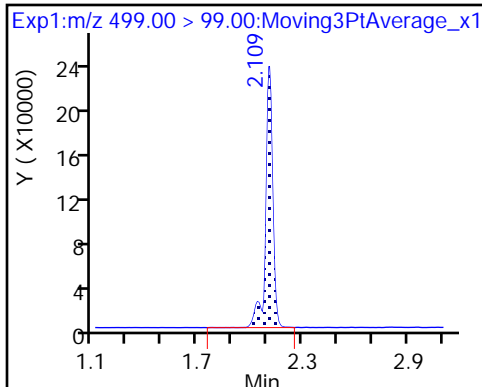
8 Perfluorooctane sulfonic acid (M)



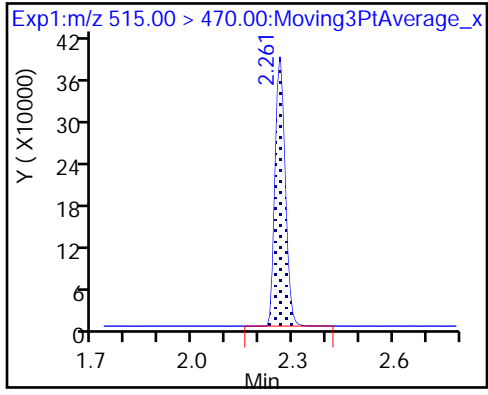
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_032.d
 Lims ID: LCS 320-216791/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 13-Apr-2018 00:41:45 ALS Bottle#: 22 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-216791/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: roycea Date: 13-Apr-2018 09:25:11

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 9.53 | 95.34 |
| \$ 10 13C2 PFDA | 10.0 | 9.35 | 93.49 |

TestAmerica Sacramento

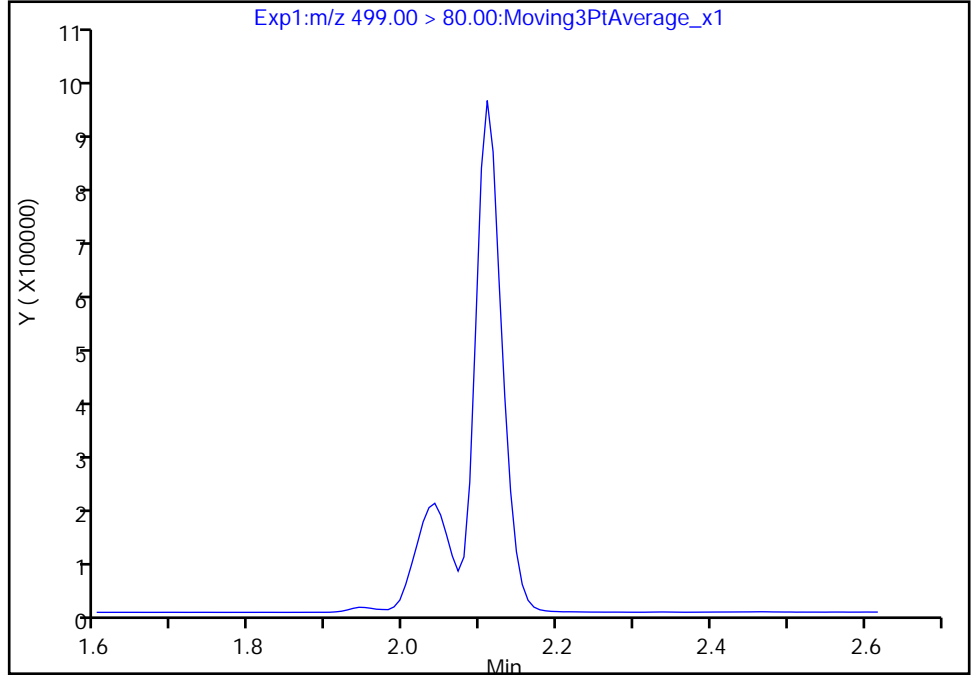
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_032.d
Injection Date: 13-Apr-2018 00:41:45 Instrument ID: A8_N
Lims ID: LCS 320-216791/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 22 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

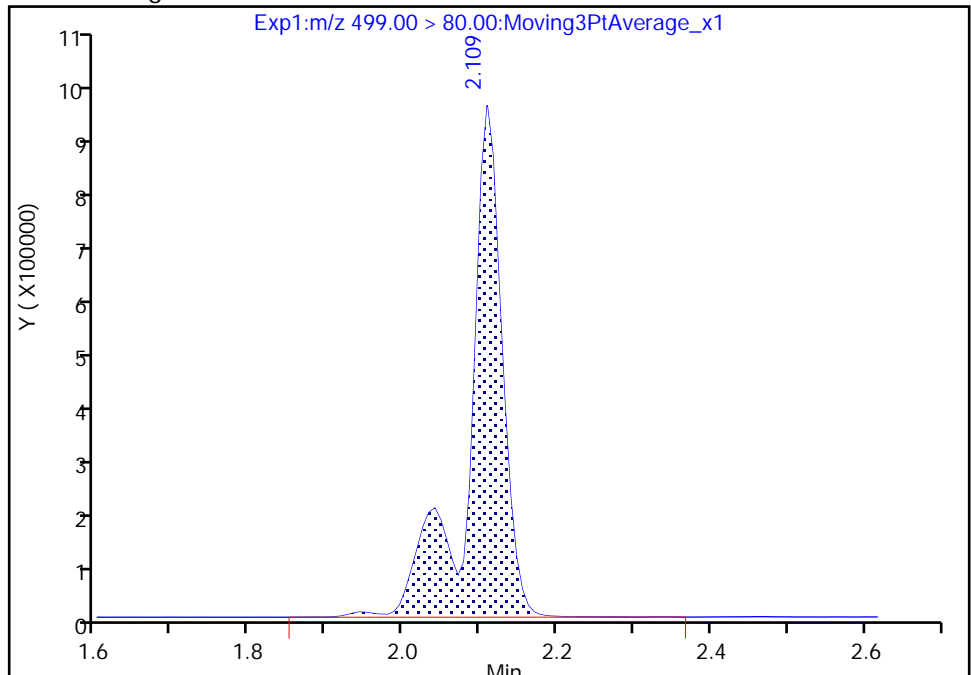
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 2901417
Amount: 32.971983
Amount Units: ng/ml



Reviewer: roycea, 13-Apr-2018 09:25:00
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-216791/3-A
 Matrix: Water Lab File ID: 2018.04.12_537AA_033.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 00:46
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 126 | M | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 65.5 | | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 62.7 | | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 102 | | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 31.0 | | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 266 | | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 87 | | 70-130 |
| STL00996 | 13C2 PFDA | 101 | | 70-130 |

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_033.d
 Lims ID: LCSD 320-216791/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 13-Apr-2018 00:46:25 ALS Bottle#: 23 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-216791/3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: roycea Date: 13-Apr-2018 09:25:25

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits) | S/N | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|-------|-------|
| 1 Perfluorobutanesulfonic acid | | | | | | | | | |
| 298.90 > 80.00 | 1.381 | 1.388 | -0.007 | 1.000 | 7007922 | 66.6 | | 9915 | |
| 298.90 > 99.00 | 1.381 | 1.388 | -0.007 | 1.000 | 5149999 | | 1.36(0.00-0.00) | 9442 | |
| \$ 2 13C2 PFHxA | | | | | | | | | |
| 315.00 > 270.00 | 1.517 | 1.525 | -0.008 | 1.000 | 1106293 | 8.65 | | 10515 | |
| 4 Perfluoroheptanoic acid | | | | | | | | | |
| 363.00 > 319.00 | 1.677 | 1.684 | -0.007 | 1.000 | 1002202 | 7.76 | | 38.6 | |
| 3 Perfluorohexanesulfonic acid | | | | | | | | | |
| 399.00 > 80.00 | 1.677 | 1.684 | -0.007 | 1.000 | 4194932 | 25.5 | | 5333 | |
| * 6 13C2-PFOA | | | | | | | | | |
| 415.00 > 370.00 | 1.874 | 1.889 | -0.015 | | 1202728 | 10.0 | | 6204 | |
| 5 Perfluorooctanoic acid | | | | | | | | | |
| 413.00 > 369.00 | 1.874 | 1.889 | -0.015 | 1.000 | 2092357 | 16.4 | | 310 | |
| 413.00 > 169.00 | 1.874 | 1.889 | -0.015 | 1.000 | 1140620 | | 1.83(0.00-0.00) | 1377 | |
| 8 Perfluorooctane sulfonic acid | | | | | | | | | |
| 499.00 > 80.00 | 2.109 | 2.094 | 0.015 | 1.000 | 3372791 | 31.6 | | 3119 | a |
| 499.00 > 99.00 | 2.109 | 2.094 | 0.015 | 1.000 | 733408 | | 4.60(0.00-0.00) | 2009 | a |
| * 7 13C4 PFOS | | | | | | | | | |
| 503.00 > 80.00 | 2.109 | 2.124 | -0.015 | | 2870335 | 28.7 | | 5607 | |
| 9 Perfluorononanoic acid | | | | | | | | | |
| 463.00 > 419.00 | 2.117 | 2.132 | -0.015 | 1.000 | 1587382 | 15.7 | | 268 | |
| \$ 10 13C2 PFDA | | | | | | | | | |
| 515.00 > 470.00 | 2.261 | 2.269 | -0.007 | 1.000 | 1036314 | 10.1 | | 10315 | |

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_033.d

Injection Date: 13-Apr-2018 00:46:25

Instrument ID: A8_N

Lims ID: LCSD 320-216791/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 23

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

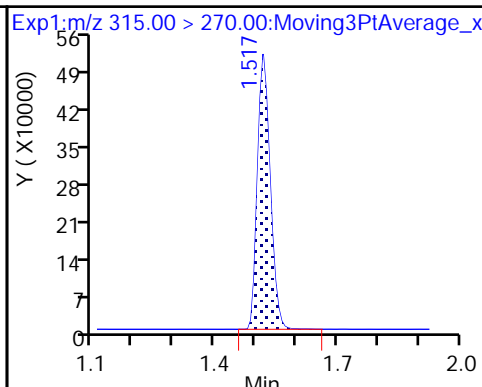
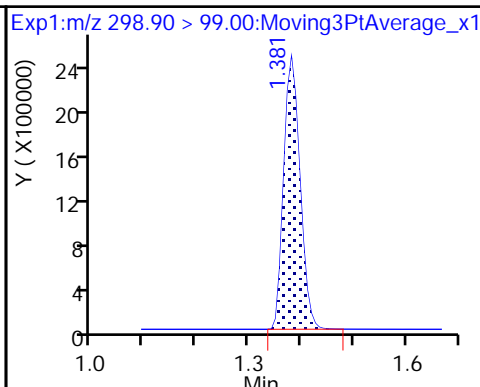
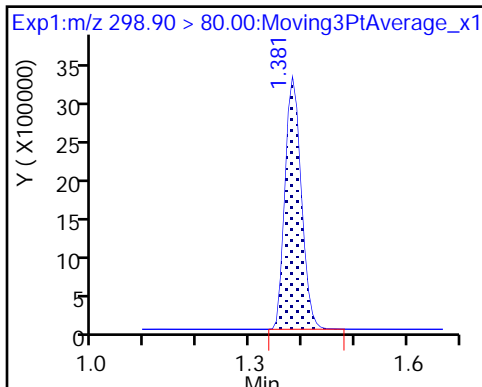
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

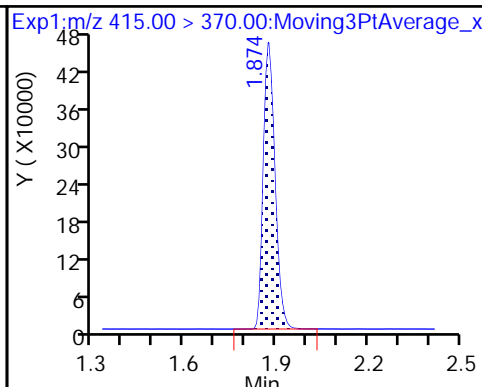
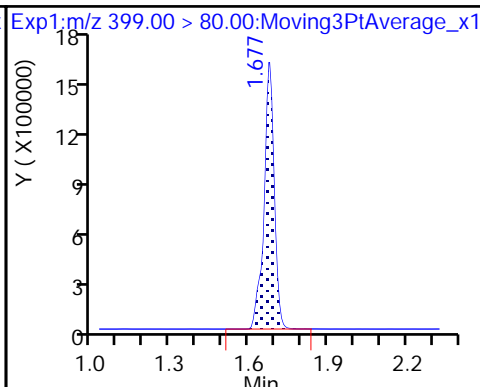
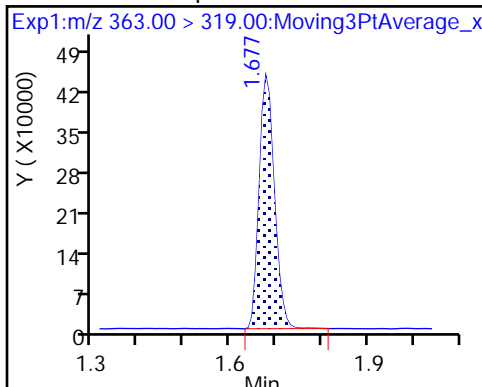
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

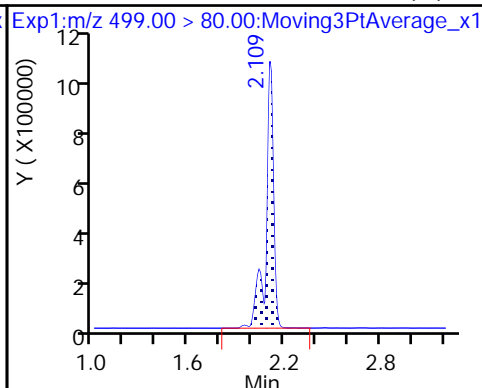
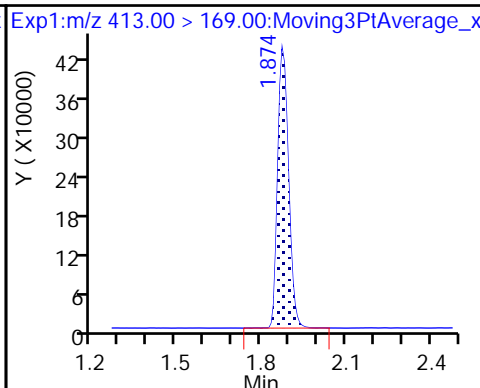
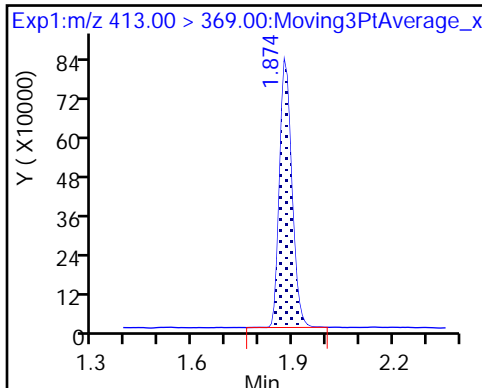
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

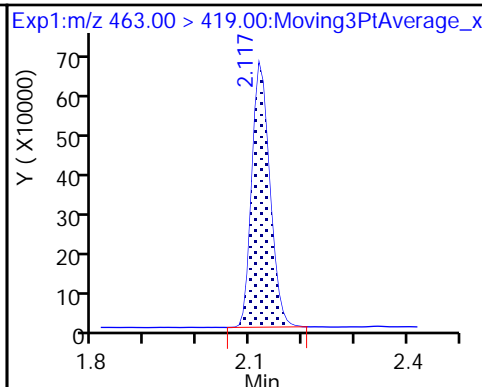
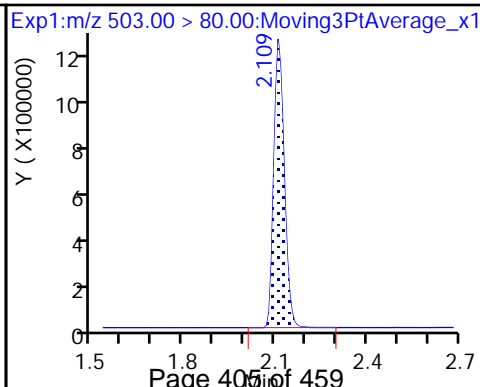
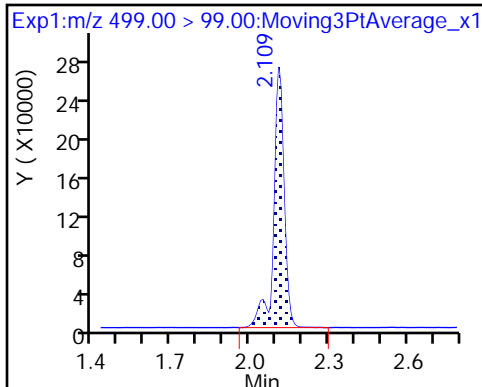
8 Perfluorooctane sulfonic acid (M)



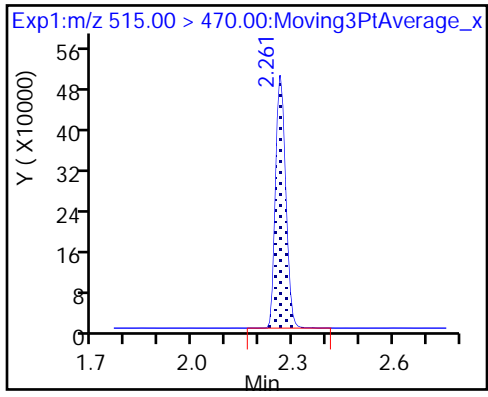
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_033.d
 Lims ID: LCSD 320-216791/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 13-Apr-2018 00:46:25 ALS Bottle#: 23 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-216791/3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK028

First Level Reviewer: roycea Date: 13-Apr-2018 09:25:25

| Compound | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0 | 8.65 | 86.52 |
| \$ 10 13C2 PFDA | 10.0 | 10.1 | 101.31 |

TestAmerica Sacramento

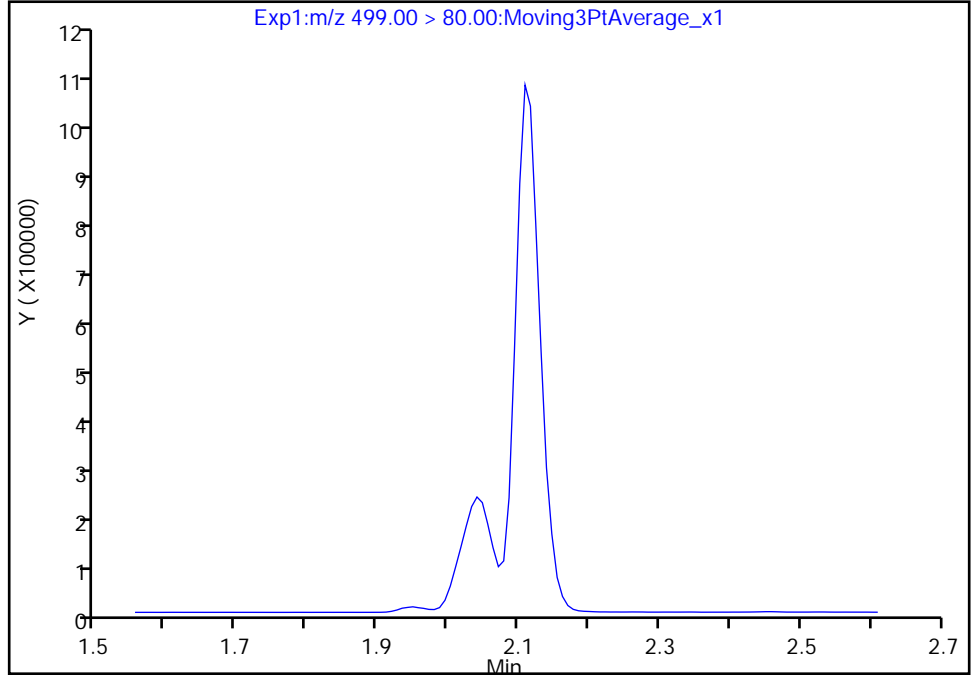
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_033.d
Injection Date: 13-Apr-2018 00:46:25 Instrument ID: A8_N
Lims ID: LCSD 320-216791/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

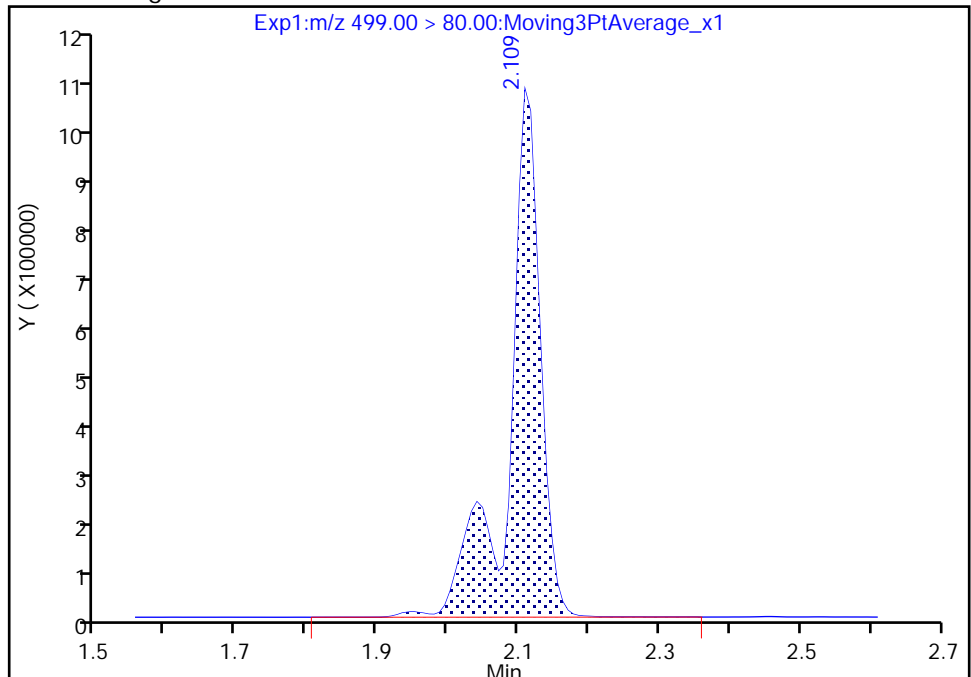
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 3372791
Amount: 31.611790
Amount Units: ng/ml



Reviewer: roycea, 13-Apr-2018 09:25:14
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LLCS 320-216792/2-A
 Matrix: Water Lab File ID: 2018.04.12_537AA_050.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 02:05
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217818 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 38.9 | J M | 40 | 16 | 6.8 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 19.1 | J | 20 | 8.0 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 17.5 | J | 24 | 20 | 8.0 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 31.7 | | 30 | 12 | 5.5 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 9.59 | J | 10 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 97.1 | | 90 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 99 | | 70-130 |
| STL00996 | 13C2 PFDA | 92 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-139 LMS Lab Sample ID: 320-37675-14 LMS
 Matrix: Water Lab File ID: 2018.04.12_537AA_056.d
 Analysis Method: 537 Date Collected: 03/29/2018 11:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 255.7(mL) Date Analyzed: 04/13/2018 02:33
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 42.7 | M | 39 | 16 | 6.6 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 28.1 | | 20 | 7.8 | 2.7 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 19.0 | J | 23 | 20 | 7.8 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 31.3 | | 29 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 13.4 | | 9.8 | 3.9 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 104 | | 88 | 35 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 101 | | 70-130 |
| STL00996 | 13C2 PFDA | 97 | | 70-130 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-139 LMSD Lab Sample ID: 320-37675-14 LMSD
 Matrix: Water Lab File ID: 2018.04.12_537AA_057.d
 Analysis Method: 537 Date Collected: 03/29/2018 11:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 252.9(mL) Date Analyzed: 04/13/2018 02:38
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 41.2 | M | 40 | 16 | 6.7 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 27.4 | | 20 | 7.9 | 2.8 |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 18.5 | J | 24 | 20 | 7.9 |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 29.4 | J | 30 | 12 | 5.4 |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 13.0 | | 9.9 | 4.0 | 1.9 |
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 94.4 | | 89 | 36 | 16 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 93 | | 70-130 |
| STL00996 | 13C2 PFDA | 98 | | 70-130 |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Start Date: 04/11/2018 11:45

Analysis Batch Number: 217453 End Date: 04/11/2018 12:27

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|---------------------------|------------------|------------------|-----------------|-------------------------------|-----------------------|
| IC 320-217453/3 | | 04/11/2018 11:45 | 1 | 2018.04.11_537I CALB 004.d | GeminiC18 3x100 3(mm) |
| IC 320-217453/4 | | 04/11/2018 11:50 | 1 | 2018.04.11_537I CALB 005.d | GeminiC18 3x100 3(mm) |
| IC 320-217453/5 | | 04/11/2018 11:55 | 1 | 2018.04.11_537I CALB 006.d | GeminiC18 3x100 3(mm) |
| IC 320-217453/6 ICISAV | | 04/11/2018 11:59 | 1 | 2018.04.11_537I CALB 007.d | GeminiC18 3x100 3(mm) |
| IC 320-217453/7 | | 04/11/2018 12:04 | 1 | 2018.04.11_537I CALB 008.d | GeminiC18 3x100 3(mm) |
| IC 320-217453/8 | | 04/11/2018 12:09 | 1 | 2018.04.11_537I CALB 009.d | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/11/2018 12:13 | 1 | | GeminiC18 3x100 3(mm) |
| CCVL 320-217453/10 | | 04/11/2018 12:18 | 1 | 2018.04.11_537I CALB 011.d | GeminiC18 3x100 3(mm) |
| ICB 320-217453/11 | | 04/11/2018 12:23 | 1 | | GeminiC18 3x100 3(mm) |
| ICV 320-217453/12 | | 04/11/2018 12:27 | 1 | 2018.04.11_537I CALB 013.d | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Start Date: 04/12/2018 14:48

Analysis Batch Number: 217726 End Date: 04/12/2018 15:49

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|----------------------------|------------------|------------------|-----------------|--------------------------|-----------------------|
| CCVL 320-217726/1 | | 04/12/2018 14:48 | 1 | 2018.04.12_537A 004.d | GeminiC18 3x100 3(mm) |
| CCV 320-217726/2 CCVIS | | 04/12/2018 14:53 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:02 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:07 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:12 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:16 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:21 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:26 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:30 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:35 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:40 | 1 | | GeminiC18 3x100 3(mm) |
| ZZZZZ | | 04/12/2018 15:44 | 1 | | GeminiC18 3x100 3(mm) |
| CCV 320-217726/14 CCVIS | | 04/12/2018 15:49 | 1 | | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Start Date: 04/13/2018 00:27

Analysis Batch Number: 217814 End Date: 04/13/2018 01:23

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|----------------------------|------------------|------------------|-----------------|----------------------------|-----------------------|
| CCV 320-217814/1 CCVIS | | 04/13/2018 00:27 | 1 | 2018.04.12_537A A 029.d | GeminiC18 3x100 3(mm) |
| MB 320-216791/1-A | | 04/13/2018 00:37 | 1 | 2018.04.12_537A A 031.d | GeminiC18 3x100 3(mm) |
| LCS 320-216791/2-A | | 04/13/2018 00:41 | 1 | 2018.04.12_537A A 032.d | GeminiC18 3x100 3(mm) |
| LCSD 320-216791/3-A | | 04/13/2018 00:46 | 1 | 2018.04.12_537A A 033.d | GeminiC18 3x100 3(mm) |
| 320-37675-1 | | 04/13/2018 00:51 | 1 | 2018.04.12_537A A 034.d | GeminiC18 3x100 3(mm) |
| 320-37675-2 | | 04/13/2018 00:55 | 1 | 2018.04.12_537A A 035.d | GeminiC18 3x100 3(mm) |
| 320-37675-3 | | 04/13/2018 01:00 | 1 | 2018.04.12_537A A 036.d | GeminiC18 3x100 3(mm) |
| 320-37675-4 | | 04/13/2018 01:05 | 1 | 2018.04.12_537A A 037.d | GeminiC18 3x100 3(mm) |
| 320-37675-5 | | 04/13/2018 01:09 | 1 | 2018.04.12_537A A 038.d | GeminiC18 3x100 3(mm) |
| 320-37675-6 | | 04/13/2018 01:14 | 1 | 2018.04.12_537A A 039.d | GeminiC18 3x100 3(mm) |
| 320-37675-7 | | 04/13/2018 01:19 | 1 | 2018.04.12_537A A 040.d | GeminiC18 3x100 3(mm) |
| CCV 320-217814/13 CCVIS | | 04/13/2018 01:23 | 1 | 2018.04.12_537A A 041.d | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Start Date: 04/13/2018 01:23

Analysis Batch Number: 217816 End Date: 04/13/2018 01:51

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|----------------------------|------------------|------------------|-----------------|----------------------------|-----------------------|
| CCV 320-217816/13 CCVIS | | 04/13/2018 01:23 | 1 | 2018.04.12_537A A 041.d | GeminiC18 3x100 3(mm) |
| 320-37675-8 | | 04/13/2018 01:33 | 1 | 2018.04.12_537A A 043.d | GeminiC18 3x100 3(mm) |
| 320-37675-9 | | 04/13/2018 01:37 | 1 | 2018.04.12_537A A 044.d | GeminiC18 3x100 3(mm) |
| 320-37675-10 | | 04/13/2018 01:42 | 1 | 2018.04.12_537A A 045.d | GeminiC18 3x100 3(mm) |
| 320-37675-11 | | 04/13/2018 01:47 | 1 | 2018.04.12_537A A 046.d | GeminiC18 3x100 3(mm) |
| CCV 320-217816/19 CCVIS | | 04/13/2018 01:51 | 1 | 2018.04.12_537A A 047.d | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Start Date: 04/13/2018 01:51

Analysis Batch Number: 217818 End Date: 04/13/2018 02:19

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|----------------------------|------------------|------------------|-----------------|----------------------------|-----------------------|
| CCV 320-217818/19 CCVIS | | 04/13/2018 01:51 | 1 | 2018.04.12_537A A 047.d | GeminiC18 3x100 3(mm) |
| MB 320-216792/1-A | | 04/13/2018 02:01 | 1 | 2018.04.12_537A A 049.d | GeminiC18 3x100 3(mm) |
| LLCS 320-216792/2-A | | 04/13/2018 02:05 | 1 | 2018.04.12_537A A 050.d | GeminiC18 3x100 3(mm) |
| 320-37675-12 | | 04/13/2018 02:10 | 1 | 2018.04.12_537A A 051.d | GeminiC18 3x100 3(mm) |
| 320-37675-13 | | 04/13/2018 02:15 | 1 | 2018.04.12_537A A 052.d | GeminiC18 3x100 3(mm) |
| CCV 320-217818/25 CCVIS | | 04/13/2018 02:19 | 1 | 2018.04.12_537A A 053.d | GeminiC18 3x100 3(mm) |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Start Date: 04/13/2018 02:19

Analysis Batch Number: 217820 End Date: 04/13/2018 03:15

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|----------------------------|------------------|------------------|-----------------|----------------------------|-----------------------|
| CCV 320-217820/25 CCVIS | | 04/13/2018 02:19 | 1 | 2018.04.12_537A A 053.d | GeminiC18 3x100 3(mm) |
| 320-37675-14 | | 04/13/2018 02:29 | 1 | 2018.04.12_537A A 055.d | GeminiC18 3x100 3(mm) |
| 320-37675-14 LMS | | 04/13/2018 02:33 | 1 | 2018.04.12_537A A 056.d | GeminiC18 3x100 3(mm) |
| 320-37675-14 LMSD | | 04/13/2018 02:38 | 1 | 2018.04.12_537A A 057.d | GeminiC18 3x100 3(mm) |
| 320-37675-15 | | 04/13/2018 02:43 | 1 | 2018.04.12_537A A 058.d | GeminiC18 3x100 3(mm) |
| 320-37675-16 | | 04/13/2018 02:47 | 1 | 2018.04.12_537A A 059.d | GeminiC18 3x100 3(mm) |
| 320-37675-17 | | 04/13/2018 02:52 | 1 | 2018.04.12_537A A 060.d | GeminiC18 3x100 3(mm) |
| 320-37675-18 | | 04/13/2018 02:57 | 1 | 2018.04.12_537A A 061.d | GeminiC18 3x100 3(mm) |
| 320-37675-19 | | 04/13/2018 03:01 | 1 | 2018.04.12_537A A 062.d | GeminiC18 3x100 3(mm) |
| 320-37675-20 | | 04/13/2018 03:06 | 1 | 2018.04.12_537A A 063.d | GeminiC18 3x100 3(mm) |
| 320-37675-21 | | 04/13/2018 03:11 | 1 | 2018.04.12_537A A 064.d | GeminiC18 3x100 3(mm) |
| CCV 320-217820/37 CCVIS | | 04/13/2018 03:15 | 1 | 2018.04.12_537A A 065.d | GeminiC18 3x100 3(mm) |

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216791 Batch Start Date: 04/07/18 08:11 Batch Analyst: Kouchari, Shamiran

Batch Method: 537 Batch End Date: 04/11/18 17:25

| Lab Sample ID | Client Sample ID | Method Chain | Basis | GrossWeight | TareWeight | InitialAmount | FinalAmount | ReceivedpH | LC537-IS 00067 |
|-------------------|----------------------|--------------|-------|-------------|------------|---------------|-------------|------------|----------------|
| MB 320-216791/1 | | 537, 537 | | | | 250 mL | 1.00 mL | 7 SU | 100 uL |
| LCS 320-216791/2 | | 537, 537 | | | | 250 mL | 1.00 mL | 7 SU | 100 uL |
| LCSD 320-216791/3 | | 537, 537 | | | | 250 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-1 | WGNA-032918-DUP-31 | 537, 537 | T | 280.59 g | 28.55 g | 252 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-2 | NAWC-032819-RW-286 | 537, 537 | T | 281.11 g | 27.82 g | 253.3 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-3 | NAWC-032819-FRB-286 | 537, 537 | T | 274.84 g | 28.16 g | 246.7 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-4 | WGNA-032819-RW-0518 | 537, 537 | T | 282.88 g | 30.48 g | 252.4 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-5 | WGNA-032819-FRB-0518 | 537, 537 | T | 281.85 g | 28.39 g | 253.5 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-6 | NAWC-032819-RW-010 | 537, 537 | T | 277.26 g | 28.73 g | 248.5 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-7 | NAWC-032819-FRB-010 | 537, 537 | T | 283.60 g | 28.07 g | 255.5 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-8 | NAWC-032819-RW-127 | 537, 537 | T | 285.35 g | 30.57 g | 254.8 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-9 | NAWC-032819-FRB-127 | 537, 537 | T | 278.07 g | 28.78 g | 249.3 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-10 | NAWC-032819-RW-195 | 537, 537 | T | 279.50 g | 28.42 g | 251.1 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-11 | NAWC-032819-FRB-195 | 537, 537 | T | 283.84 g | 28.05 g | 255.8 mL | 1.00 mL | 7 SU | 100 uL |

| Lab Sample ID | Client Sample ID | Method Chain | Basis | LC537-MSP 00033 | LC537-SU 00064 | AnalysisComment | | | |
|-------------------|---------------------|--------------|-------|-----------------|----------------|-----------------|--|--|--|
| MB 320-216791/1 | | 537, 537 | | | 100 uL | Chlorine, ND | | | |
| LCS 320-216791/2 | | 537, 537 | | 100 uL | 100 uL | Chlorine, ND | | | |
| LCSD 320-216791/3 | | 537, 537 | | 100 uL | 100 uL | Chlorine, ND | | | |
| 320-37675-A-1 | WGNA-032918-DUP-31 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-2 | NAWC-032819-RW-286 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-3 | NAWC-032819-FRB-286 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216791 Batch Start Date: 04/07/18 08:11 Batch Analyst: Kouchari, Shamiran

Batch Method: 537 Batch End Date: 04/11/18 17:25

| Lab Sample ID | Client Sample ID | Method Chain | Basis | LC537-MSP 00033 | LC537-SU 00064 | AnalysisComment | | | |
|----------------|----------------------|--------------|-------|-----------------|----------------|-----------------|--|--|--|
| 320-37675-A-4 | WGNA-032819-RW-0518 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-5 | WGNA-032819-FRB-0518 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-6 | NAWC-032819-RW-010 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-7 | NAWC-032819-FRB-010 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-8 | NAWC-032819-RW-127 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-9 | NAWC-032819-FRB-127 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-10 | NAWC-032819-RW-195 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-11 | NAWC-032819-FRB-195 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216791 Batch Start Date: 04/07/18 08:11 Batch Analyst: Kouchari, Shamiran

Batch Method: 537 Batch End Date: 04/11/18 17:25

| Batch Notes | |
|--------------------------------------|--|
| Analyst ID - Aliquot Step | VPM |
| Batch Comment | Client labels match TA label, 04/07/18 SKD |
| Analyst ID - Concentration | KMK/SKD |
| Analyst ID - Final Volume Step | VPM |
| Internal Standard ID# | 1208799 |
| Manifold ID | 3, 4 |
| Methanol ID | 1204219 |
| pH Indicator ID | 3817 |
| Pipette ID | 043082F |
| Analyst ID - IS Reagent Drop | VPM |
| Analyst ID - IS Reagent Drop Witness | JER |
| Analyst ID - SU Reagent Drop | SKD |
| Analyst ID - SU Reagent Drop Witness | HJA |
| Analyst ID - TA Reagent Drop | SKD |
| Analyst ID - TA Reagent Drop Witness | HJA |
| SPE Cartridge Lot ID | 6369499-12 |
| Trizma ID | SLBR5241V |
| Reagent Water ID | 04/05/18 |

| Basis | Basis Description |
|-------|-------------------|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216792 Batch Start Date: 04/07/18 08:19 Batch Analyst: Kouchari, Shamiran

Batch Method: 537 Batch End Date: 04/11/18 17:15

| Lab Sample ID | Client Sample ID | Method Chain | Basis | GrossWeight | TareWeight | InitialAmount | FinalAmount | ReceivedpH | LC537-IS 00067 |
|------------------------|---------------------|--------------|-------|-------------|------------|---------------|-------------|------------|----------------|
| MB 320-216792/1 | | 537, 537 | | | | 250 mL | 1.00 mL | 7 SU | 100 uL |
| LLCS 320-216792/2 | | 537, 537 | | | | 250 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-12 | NAWC-032819-RW-048 | 537, 537 | T | 272.73 g | 27.71 g | 245 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-13 | NAWC-032819-FRB-048 | 537, 537 | T | 277.24 g | 28.50 g | 248.7 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-14 | NAWC-032819-RW-139 | 537, 537 | T | 277.94 g | 28.59 g | 249.4 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-14 LMS | NAWC-032819-RW-139 | 537, 537 | T | 284.31 g | 28.57 g | 255.7 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-14 LMSD | NAWC-032819-RW-139 | 537, 537 | T | 281.86 g | 28.92 g | 252.9 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-15 | NAWC-032819-FRB-139 | 537, 537 | T | 283.20 g | 28.57 g | 254.6 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-16 | NAWC-032819-RW-117 | 537, 537 | T | 286.53 g | 30.07 g | 256.5 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-17 | NAWC-032819-FRB-117 | 537, 537 | T | 286.61 g | 28.04 g | 258.6 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-18 | NAWC-032819-RW-181 | 537, 537 | T | 277.66 g | 28.73 g | 248.9 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-19 | NAWC-032819-FRB-181 | 537, 537 | T | 279.16 g | 28.59 g | 250.6 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-20 | NAWC-032819-RW-138 | 537, 537 | T | 270.92 g | 28.89 g | 242 mL | 1.00 mL | 7 SU | 100 uL |
| 320-37675-A-21 | NAWC-032819-FRB-138 | 537, 537 | T | 281.13 g | 27.98 g | 253.2 mL | 1.00 mL | 7 SU | 100 uL |

| Lab Sample ID | Client Sample ID | Method Chain | Basis | LC537-LSP 00032 | LC537-SU 00064 | AnalysisComment | | | |
|-----------------------|---------------------|--------------|-------|-----------------|----------------|-----------------|--|--|--|
| MB 320-216792/1 | | 537, 537 | | | 100 uL | Chlorine, ND | | | |
| LLCS 320-216792/2 | | 537, 537 | | 100 uL | 100 uL | Chlorine, ND | | | |
| 320-37675-A-12 | NAWC-032819-RW-048 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-13 | NAWC-032819-FRB-048 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-14 | NAWC-032819-RW-139 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-14 LMS | NAWC-032819-RW-139 | 537, 537 | T | 100 uL | 100 uL | Chlorine, ND | | | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216792 Batch Start Date: 04/07/18 08:19 Batch Analyst: Kouchari, Shamiran

Batch Method: 537 Batch End Date: 04/11/18 17:15

| Lab Sample ID | Client Sample ID | Method Chain | Basis | LC537-LSP 00032 | LC537-SU 00064 | AnalysisComment | | | |
|------------------------|-------------------------|--------------|-------|-----------------|----------------|-----------------|--|--|--|
| 320-37675-A-14 LMSD | NAWC-032819-RW-1 39 | 537, 537 | T | 100 uL | 100 uL | Chlorine, ND | | | |
| 320-37675-A-15 | NAWC-032819-FRB- 139 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-16 | NAWC-032819-RW-1 17 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-17 | NAWC-032819-FRB- 117 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-18 | NAWC-032819-RW-1 81 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-19 | NAWC-032819-FRB- 181 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-20 | NAWC-032819-RW-1 38 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |
| 320-37675-A-21 | NAWC-032819-FRB- 138 | 537, 537 | T | | 100 uL | Chlorine, ND | | | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216792 Batch Start Date: 04/07/18 08:19 Batch Analyst: Kouchari, Shamiran

Batch Method: 537 Batch End Date: 04/11/18 17:15

| Batch Notes | |
|--------------------------------------|--|
| Analyst ID - Aliquot Step | VPM |
| Batch Comment | Client labels match TA label, 04/07/18 SKD |
| Analyst ID - Concentration | SKD/KMK |
| Analyst ID - Final Volume Step | VPM |
| Internal Standard ID# | 1208799 |
| Manifold ID | 4, 2 |
| Methanol ID | 1204219 |
| pH Indicator ID | 3817 |
| Pipette ID | 043082F |
| Analyst ID - IS Reagent Drop | VPM |
| Analyst ID - IS Reagent Drop Witness | JER |
| Analyst ID - SU Reagent Drop | SKD |
| Analyst ID - SU Reagent Drop Witness | HJA |
| Analyst ID - TA Reagent Drop | SKD |
| Analyst ID - TA Reagent Drop Witness | HJA |
| SPE Cartridge Lot ID | 6369499-12 |
| Trizma ID | SLBR5241V |
| Reagent Water ID | 04/05/18 |

| Basis | Basis Description |
|-------|-------------------|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

A8

Job No: 37675 Instrument ID & Date: 4-13-18 ICAL Batch: 217453
 Extraction Batch: 216791 Worklist #: 56657 TALS Batch: 217814, 217816, 217818,
216792 217820

| Review Items | --- Level 1 --- | | | Level 2 |
|--|-----------------|----|-----|---------|
| | Yes | No | N/A | |
| Initial Calibration | | | | |
| 1. Is ICAL verified and locked in Chrom & TALS? | ✓ | | | ✓ |
| 2. Is ICV properly linked in TALS? | ✓ | | | ✓ |
| Continuing Calibration | | | | |
| 1. Low-range CCV injected at start of analytical run? CCV injected after every 10 samples and at the end of the analytical run and alternated between Low-range, Mid-range and High-range? | ✓ | | | ✓ |
| 2. If sequence was not after an ICAL was a low and mid range CCV injected at the start of the analytical run? | ✓ | | | ✓ |
| 3. Native compounds and surrogates in control? Low-range within ±50% of true value Mid and High-range within ±30% of true value | ✓ | | | ✓ |
| 4. Internal Standard areas in control? Areas ≥ 50% of average area of the ICAL and 70-140% of the most recent CCV. | ✓ | | | ✓ |
| Client Samples & QC Sample Results | | | | |
| 1. Were preparation and analysis done within holding times? | ✓ | | | ✓ |
| 2. Are Chromatograms reviewed and spectra verified? | ✓ | | | ✓ |
| 3. Are positive results within calibration range? | ✓ | | | ✓ |
| 4. Dilutions due to target cpds? _____ Dilutions due to non-targets? _____ | | | ✓ | ✓ |
| 5. All target compounds in MB < 1/3 RL ? (Requires NCM if "no.") | ✓ | | | ✓ |
| 6. Are target constituents in LCS/LCSD within method control limits? | ✓ | | | ✓ |
| 7. Internal Standard areas in control for all samples and QC reported? ±50% from the average area of the ICAL and 70-140% of the most recent CCV | ✓ | | | ✓ |
| 8. Do results (e.g., dilutions/trip blanks) make sense? | ✓ | | | ✓ |
| 9. Are MS/MSD recoveries and RPDs within method control limits? | ✓ | | | ✓ |
| 10. Are all QC samples properly linked in TALS? | ✓ | | | ✓ |
| 11. All manual integrations appropriate and completely documented? | ✓ | | | ✓ |
| 12. Are nonconformances documented as NCMs? <u>122866</u> | | | ✓ | ✓ |
| 13. Are all Chrom graphics uploaded? | ✓ | | | ✓ |

1st Level Reviewer / Date: JRB 4-13-18 2nd Level Reviewer / Date: mxway 4/18/2018

NCM # and Comments: Samples 16 and 17 scheduled for RX due to possible sample switch.

A8

Instrument ID & Date: 4/11/18 Worklist#: 56557

ICAL Batch: 217453, 217454 Calibration ID number: 38530, 38531

| Review Items | -- Level 1 -- | | | Level 2 |
|--|---------------|----|-----|---------|
| | Yes | No | N/A | |
| Initial Calibration | | | | |
| 1. Mass calibration, as needed, verified by full scan of PFC stock standard. All PFC ions used for quantitation are within 0.3 m/z of true mass? | ✓ | | | ✓ |
| 2. Responses increase with increasing concentration? | ✓ | | | ✓ |
| 3. Fit used (circle): <u>Average</u> Linear (1/x ²)Linear Quadratic (6 points minimum) | | | | |
| 4. Meets fit criteria? Intercept ≤ ½ RL RSD ≤ 30% for Average R ² ≥ 0.990 for Linear R ² ≥ 0.990 for Quadratic NOTE: "Force through Zero" must be used and weighted if needed | ✓ | | | ✓ |
| 5. If quadratic fit used the curve does not "bend over". | | | ✓ | |
| 6. Feed calibration points into the calculated curve. Are points ≤MRL within ±50% of true value? Are points >MRL within ±30% of true value? | ✓ | | | ✓ |
| 7. Any carryover from the high calibration point must be ≤ 1/3 RL | ✓ | | | ✓ |
| 8. Asymmetry check meets criteria for the first two eluting peaks? (0.8 - 1.5). | ✓ | | | ✓ |
| 9. Is the asymmetry check scanned and linked in TALS to the calibration point? | ✓ | | | ✓ |
| 10. Is ICV (2 nd source) ± 30% of true value? | ✓ | | | ✓ |
| 11. Is ICV (2 nd source) internal standards ±50% of average area of the ICAL? | ✓ | | | ✓ |
| 12. ICAL locked in Chrom and uploaded to TALS? | ✓ | | | ✓ |
| 13. ICAL locked in TALS and scanned? | ✓ | | | ✓ |

1st Level Reviewer / Date: JRB 4-11-18

2nd Level Reviewer / Date: CBW 4-11-18

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 12APR2018_537B

Worklist Number: 56657

Instrument Name: A8_N

Chrom Method: 537_A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b

QC Batching: Enabled

Limit Group Batching: Enabled

| QC Batch: 1 | LC 537 ICAL Raw Batch: 217814 |
|-------------------------|----------------------------------|
| # 1 CCV L5 | # 1 CCV L5 |
| # 2 RB | # 2 RB |
| # 3 MB 320-216791/1-A | # 3 MB 320-216791/1-A |
| # 4 LCS 320-216791/2-A | # 4 LCS 320-216791/2-A |
| # 5 LCSD 320-216791/3-A | # 5 LCSD 320-216791/3-A |
| # 6 320-37675-A-1-A | # 6 320-37675-A-1-A |
| # 7 320-37675-A-2-A | # 7 320-37675-A-2-A |
| # 8 320-37675-A-3-A | # 8 320-37675-A-3-A |
| # 9 320-37675-A-4-A | # 9 320-37675-A-4-A |
| #10 320-37675-A-5-A | #10 320-37675-A-5-A |
| #11 320-37675-A-6-A | #11 320-37675-A-6-A |
| #12 320-37675-A-7-A | #12 320-37675-A-7-A |
| #13 CCV L3 | #13 CCV L3 |

| QC Batch: 2 | LC 537 ICAL Raw Batch: 217816 |
|----------------------|----------------------------------|
| #13 CCV L3 | #13 CCV L3 |
| #14 RB | #14 RB |
| #15 320-37675-A-8-A | #15 320-37675-A-8-A |
| #16 320-37675-A-9-A | #16 320-37675-A-9-A |
| #17 320-37675-A-10-A | #17 320-37675-A-10-A |
| #18 320-37675-A-11-A | #18 320-37675-A-11-A |
| #19 CCV L5 | #19 CCV L5 |

| QC Batch: 3 | LC 537 ICAL Raw Batch: 217818 |
|-------------------------|----------------------------------|
| #19 CCV L5 | #19 CCV L5 |
| #20 RB | #20 RB |
| #21 MB 320-216792/1-A | #21 MB 320-216792/1-A |
| #22 LLCS 320-216792/2-A | #22 LLCS 320-216792/2-A |
| #23 320-37675-A-12-A | #23 320-37675-A-12-A |
| #24 320-37675-A-13-A | #24 320-37675-A-13-A |
| #25 CCV L5 | #25 CCV L5 |

| QC Batch: 4 | LC 537 ICAL Raw Batch: 217820 |
|---------------------------|----------------------------------|
| #25 CCV L5 | #25 CCV L5 |
| #26 RB | #26 RB |
| #27 320-37675-A-14-A | #27 320-37675-A-14-A |
| #28 320-37675-A-14-D LMS | #28 320-37675-A-14-D LMS |
| #29 320-37675-A-14-E LMSD | #29 320-37675-A-14-E LMSD |
| #30 320-37675-A-15-A | #30 320-37675-A-15-A |
| #31 320-37675-A-16-A | #31 320-37675-A-16-A |
| #32 320-37675-A-17-A | #32 320-37675-A-17-A |
| #33 320-37675-A-18-A | #33 320-37675-A-18-A |
| #34 320-37675-A-19-A | #34 320-37675-A-19-A |
| #35 320-37675-A-20-A | #35 320-37675-A-20-A |
| #36 320-37675-A-21-A | #36 320-37675-A-21-A |
| #37 CCV L3 | #37 CCV L3 |
| #38 RB | #38 RB |

CCV L in AB 217726

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 12APR2018_537B

Worklist Num: 56657

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b

Analysis Type: SemiVOA

Creator: Hannigan, Alyssa B

Inj Volume: 2.00

Inj Vol Units: ul

| Lab ID | Worklist ID | Sample Type | Inj Date/Time | File Name | Vial | Dil Factor | Client ID | Fract |
|---------------------|-----------------|-------------|----------------------|------------------------|------|------------|----------------------|-------|
| CCV L5 | 320-0056657-001 | CCVIS | 13-Apr-2018 00:27:43 | 2018.04.12_537AA_029.d | 5 | 1.0 | | sv |
| RB | 320-0056657-002 | RB | 13-Apr-2018 00:32:24 | 2018.04.12_537AA_030.d | 8 | 1.0 | | sv |
| MB 320-216791/1-A | 320-0056657-003 | MB | 13-Apr-2018 00:37:03 | 2018.04.12_537AA_031.d | 21 | 1.0 | | sv |
| LCS 320-216791/2-A | 320-0056657-004 | LCS | 13-Apr-2018 00:41:45 | 2018.04.12_537AA_032.d | 22 | 1.0 | | sv |
| LCSD 320-216791/3-A | 320-0056657-005 | LCSD | 13-Apr-2018 00:46:25 | 2018.04.12_537AA_033.d | 23 | 1.0 | | sv |
| 320-37675-A-1-A | 320-0056657-006 | Client | 13-Apr-2018 00:51:05 | 2018.04.12_537AA_034.d | 24 | 1.0 | WGNA-032918-DUP-31 | sv |
| 320-37675-A-2-A | 320-0056657-007 | Client | 13-Apr-2018 00:55:45 | 2018.04.12_537AA_035.d | 25 | 1.0 | NAWC-032819-RW-286 | sv |
| 320-37675-A-3-A | 320-0056657-008 | Client | 13-Apr-2018 01:00:24 | 2018.04.12_537AA_036.d | 26 | 1.0 | NAWC-032819-FRB-286 | sv |
| 320-37675-A-4-A | 320-0056657-009 | Client | 13-Apr-2018 01:05:04 | 2018.04.12_537AA_037.d | 27 | 1.0 | WGNA-032819-RW-0518 | sv |
| 320-37675-A-5-A | 320-0056657-010 | Client | 13-Apr-2018 01:09:44 | 2018.04.12_537AA_038.d | 28 | 1.0 | WGNA-032819-FRB-0518 | sv |
| 320-37675-A-6-A | 320-0056657-011 | Client | 13-Apr-2018 01:14:26 | 2018.04.12_537AA_039.d | 29 | 1.0 | NAWC-032819-RW-010 | sv |
| 320-37675-A-7-A | 320-0056657-012 | Client | 13-Apr-2018 01:19:06 | 2018.04.12_537AA_040.d | 30 | 1.0 | NAWC-032819-FRB-010 | sv |
| CCV L3 | 320-0056657-013 | CCVIS | 13-Apr-2018 01:23:46 | 2018.04.12_537AA_041.d | 3 | 1.0 | | sv |
| RB | 320-0056657-014 | RB | 13-Apr-2018 01:28:27 | 2018.04.12_537AA_042.d | 8 | 1.0 | | sv |
| 320-37675-A-8-A | 320-0056657-015 | Client | 13-Apr-2018 01:33:06 | 2018.04.12_537AA_043.d | 31 | 1.0 | NAWC-032819-RW-127 | sv |
| 320-37675-A-9-A | 320-0056657-016 | Client | 13-Apr-2018 01:37:46 | 2018.04.12_537AA_044.d | 32 | 1.0 | NAWC-032819-FRB-127 | sv |
| 320-37675-A-10-A | 320-0056657-017 | Client | 13-Apr-2018 01:42:27 | 2018.04.12_537AA_045.d | 33 | 1.0 | NAWC-032819-RW-195 | sv |
| 320-37675-A-11-A | 320-0056657-018 | Client | 13-Apr-2018 01:47:07 | 2018.04.12_537AA_046.d | 34 | 1.0 | NAWC-032819-FRB-195 | sv |
| CCV L5 | 320-0056657-019 | CCVIS | 13-Apr-2018 01:51:47 | 2018.04.12_537AA_047.d | 5 | 1.0 | | sv |
| RB | 320-0056657-020 | RB | 13-Apr-2018 01:56:27 | 2018.04.12_537AA_048.d | 8 | 1.0 | | sv |
| MB 320-216792/1-A | 320-0056657-021 | MB | 13-Apr-2018 02:01:08 | 2018.04.12_537AA_049.d | 35 | 1.0 | | sv |
| LLCS 320-216792/2-A | 320-0056657-022 | LLCS | 13-Apr-2018 02:05:48 | 2018.04.12_537AA_050.d | 36 | 1.0 | | sv |
| 320-37675-A-12-A | 320-0056657-023 | Client | 13-Apr-2018 02:10:28 | 2018.04.12_537AA_051.d | 37 | 1.0 | NAWC-032819-RW-048 | sv |
| 320-37675-A-13-A | 320-0056657-024 | Client | 13-Apr-2018 02:15:10 | 2018.04.12_537AA_052.d | 38 | 1.0 | NAWC-032819-FRB-048 | sv |
| CCV L5 | 320-0056657-025 | CCVIS | 13-Apr-2018 02:19:51 | 2018.04.12_537AA_053.d | 5 | 1.0 | | sv |

| Lab ID | Worklist ID | Sample Type | Inj Date/Time | File Name | Vial | Dil Factor | Client ID | Fract |
|-----------------------|-----------------|-------------|----------------------|------------------------|------|------------|---------------------|-------|
| RB | 320-0056657-026 | RB | 13-Apr-2018 02:24:32 | 2018.04.12_537AA_054.d | 8 | 1.0 | | sv |
| 320-37675-A-14-A | 320-0056657-027 | Client | 13-Apr-2018 02:29:11 | 2018.04.12_537AA_055.d | 39 | 1.0 | NAWC-032819-RW-139 | sv |
| 320-37675-A-14-D LMS | 320-0056657-028 | LMS | 13-Apr-2018 02:33:50 | 2018.04.12_537AA_056.d | 40 | 1.0 | | sv |
| 320-37675-A-14-E LMSD | 320-0056657-029 | LMSD | 13-Apr-2018 02:38:31 | 2018.04.12_537AA_057.d | 41 | 1.0 | | sv |
| 320-37675-A-15-A | 320-0056657-030 | Client | 13-Apr-2018 02:43:10 | 2018.04.12_537AA_058.d | 42 | 1.0 | NAWC-032819-FRB-139 | sv |
| 320-37675-A-16-A | 320-0056657-031 | Client | 13-Apr-2018 02:47:51 | 2018.04.12_537AA_059.d | 43 | 1.0 | NAWC-032819-RW-117 | sv |
| 320-37675-A-17-A | 320-0056657-032 | Client | 13-Apr-2018 02:52:31 | 2018.04.12_537AA_060.d | 44 | 1.0 | NAWC-032819-FRB-117 | sv |
| 320-37675-A-18-A | 320-0056657-033 | Client | 13-Apr-2018 02:57:11 | 2018.04.12_537AA_061.d | 45 | 1.0 | NAWC-032819-RW-181 | sv |
| 320-37675-A-19-A | 320-0056657-034 | Client | 13-Apr-2018 03:01:50 | 2018.04.12_537AA_062.d | 46 | 1.0 | NAWC-032819-FRB-181 | sv |
| 320-37675-A-20-A | 320-0056657-035 | Client | 13-Apr-2018 03:06:31 | 2018.04.12_537AA_063.d | 47 | 1.0 | NAWC-032819-RW-138 | sv |
| 320-37675-A-21-A | 320-0056657-036 | Client | 13-Apr-2018 03:11:13 | 2018.04.12_537AA_064.d | 48 | 1.0 | NAWC-032819-FRB-138 | sv |
| CCV L3 | 320-0056657-037 | CCVIS | 13-Apr-2018 03:15:54 | 2018.04.12_537AA_065.d | 3 | 1.0 | | sv |
| RB | 320-0056657-038 | RB | 13-Apr-2018 03:20:33 | 2018.04.12_537AA_066.d | 8 | 1.0 | | sv |

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 12APR2018_537A

Worklist Num: 56633

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180412-56633.b

Analysis Type: SemiVOA

Creator: Royce, Amani A

Inj Volume: 2.00

Inj Vol Units: ul

| Lab ID | Worklist ID | Sample Type | Inj Date/Time | File Name | Vial | Dil Factor | Client ID | Fract |
|---------------------|-----------------|-------------|----------------------|-----------------------|------|------------|------------------------|-------|
| CCVL | 320-0056633-001 | CCVL | 12-Apr-2018 14:48:43 | 2018.04.12_537A_004.d | 2 | 1.0 | | sv |
| CCV L5 | 320-0056633-002 | CCVIS | 12-Apr-2018 14:53:23 | 2018.04.12_537A_005.d | 5 | 1.0 | | sv |
| RB | 320-0056633-003 | RB | 12-Apr-2018 14:58:03 | 2018.04.12_537A_006.d | 8 | 1.0 | | sv |
| MB 320-216980/1-A | 320-0056633-004 | MB | 12-Apr-2018 15:02:44 | 2018.04.12_537A_007.d | 1 | 1.0 | | sv |
| LCS 320-216980/2-A | 320-0056633-005 | LCS | 12-Apr-2018 15:07:24 | 2018.04.12_537A_008.d | 2 | 1.0 | | sv |
| 320-37934-A-1-A | 320-0056633-006 | Client | 12-Apr-2018 15:12:04 | 2018.04.12_537A_009.d | 3 | 1.0 | DUP-046 | sv |
| 320-37934-A-2-A | 320-0056633-007 | Client | 12-Apr-2018 15:16:45 | 2018.04.12_537A_010.d | 4 | 1.0 | WS-054 | sv |
| 320-37934-A-3-A | 320-0056633-008 | Client | 12-Apr-2018 15:21:26 | 2018.04.12_537A_011.d | 5 | 1.0 | WS-115 | sv |
| 320-37934-A-4-A | 320-0056633-009 | Client | 12-Apr-2018 15:26:06 | 2018.04.12_537A_012.d | 6 | 1.0 | WS-011 | sv |
| 320-37934-A-5-A | 320-0056633-010 | Client | 12-Apr-2018 15:30:47 | 2018.04.12_537A_013.d | 7 | 1.0 | WS-015 | sv |
| 320-37934-A-5-B MS | 320-0056633-011 | MS | 12-Apr-2018 15:35:28 | 2018.04.12_537A_014.d | 8 | 1.0 | WS-015 | sv |
| 320-37934-A-5-C MSD | 320-0056633-012 | MSD | 12-Apr-2018 15:40:08 | 2018.04.12_537A_015.d | 9 | 1.0 | WS-015 | sv |
| 320-37934-A-6-A | 320-0056633-013 | Client | 12-Apr-2018 15:44:48 | 2018.04.12_537A_016.d | 10 | 1.0 | WS-032 | sv |
| CCV L3 | 320-0056633-014 | CCVIS | 12-Apr-2018 15:49:29 | 2018.04.12_537A_017.d | 3 | 1.0 | | sv |
| RB | 320-0056633-015 | RB | 12-Apr-2018 15:54:09 | 2018.04.12_537A_018.d | 8 | 1.0 | | sv |
| 320-37934-A-7-A | 320-0056633-016 | Client | 12-Apr-2018 15:58:48 | 2018.04.12_537A_019.d | 11 | 1.0 | WS-057 | sv |
| 320-37934-A-8-A | 320-0056633-017 | Client | 12-Apr-2018 16:03:29 | 2018.04.12_537A_020.d | 12 | 1.0 | FIELD BLANK-04-04-2018 | sv |
| 320-37934-A-9-A | 320-0056633-018 | Client | 12-Apr-2018 16:08:10 | 2018.04.12_537A_021.d | 13 | 1.0 | WS-110A | sv |
| 320-37934-A-10-A | 320-0056633-019 | Client | 12-Apr-2018 16:12:51 | 2018.04.12_537A_022.d | 14 | 1.0 | WS-034 | sv |
| 320-37934-A-11-A | 320-0056633-020 | Client | 12-Apr-2018 16:17:32 | 2018.04.12_537A_023.d | 15 | 1.0 | WS-108 | sv |
| 320-37934-A-12-A | 320-0056633-021 | Client | 12-Apr-2018 16:22:14 | 2018.04.12_537A_024.d | 16 | 1.0 | WS-009 | sv |
| 320-37936-A-1-A | 320-0056633-022 | Client | 12-Apr-2018 16:26:56 | 2018.04.12_537A_025.d | 17 | 1.0 | WS-137 | sv |
| 320-37937-A-1-A | 320-0056633-023 | Client | 12-Apr-2018 16:31:36 | 2018.04.12_537A_026.d | 18 | 1.0 | POET-6-MID | sv |
| 320-37937-A-2-A | 320-0056633-024 | Client | 12-Apr-2018 16:36:16 | 2018.04.12_537A_027.d | 19 | 1.0 | WS-096 | sv |
| 320-37937-A-3-A | 320-0056633-025 | Client | 12-Apr-2018 16:40:57 | 2018.04.12_537A_028.d | 20 | 1.0 | DUP-047 | sv |

| Lab ID | Worklist ID | Sample Type | Inj Date/Time | File Name | Vial | Dil Factor | Client ID | Fract |
|--------|-----------------|-------------|----------------------|-----------------------|------|------------|-----------|-------|
| CCV L5 | 320-0056633-026 | CCVIS | 12-Apr-2018 16:45:38 | 2018.04.12_537A_029.d | 5 | 1.0 | | sv |
| RB | 320-0056633-027 | RB | 12-Apr-2018 16:50:17 | 2018.04.12_537A_030.d | 8 | 1.0 | | sv |

Aqueous Extraction Analysis Sheet

54 AS 4/12/18

(To Accompany Samples to Instruments)











Batch Number: 320-216791 ✓
Method Code: 320-537_Prep-320

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM
Batch End: 4/11/2018 5:25:00PM

Extraction of Perfluorinated Alkyl Acids

4/12

| | Input Sample Lab ID (Analytical Method) | SDG (Job #) | GrossWt TareWt | InitAmnt FinAmnt | Rcvd | PHs Adj1 Adj2 | Due Date | Analytical TAT | Div Rank | Comments | Output Sample Lab ID |
|----|--|----------------------|-------------------|---------------------|------|------------------|----------|-------------------|-------------|--------------|---|
| 1 | MB~320-216791/1 N/A | N/A | | 250 mL | 7 | | N/A | N/A | N/A | Chlorine, ND |  |
| | | | | 1.00 mL | | | | | | | |
| 2 | LCS~320-216791/2 N/A | N/A | | 250 mL | 7 | | N/A | N/A | N/A | Chlorine, ND |  |
| | | | | 1.00 mL | | | | | | | |
| 3 | LCSD~320-216791/3 N/A | N/A | | 250 mL | 7 | | N/A | N/A | N/A | Chlorine, ND |  |
| | | | | 1.00 mL | | | | | | | |
| 4 | 320-37675-A-1 (537_DOD5) | N/A (320-37675-1) | 280.59 g | 252 mL | 7 | | 4/3/18 | 16_Days | 4 | Chlorine, ND |  |
| | | | | 28.55 g | | | | | | | |
| 5 | 320-37675-A-2 (537_DOD5) | N/A (320-37675-1) | 281.11 g | 253.3 mL | 7 | | 4/3/18 | 16_Days | 4 | Chlorine, ND |  |
| | | | | 27.82 g | | | | | | | |
| 6 | 320-37675-A-3 (537_DOD5) | N/A (320-37675-1) | 274.84 g | 246.7 mL | 7 | | 4/3/18 | 16_Days | 4 | Chlorine, ND |  |
| | | | | 28.16 g | | | | | | | |
| 7 | 320-37675-A-4 (537_DOD5) | N/A (320-37675-1) | 282.88 g | 252.4 mL | 7 | | 4/3/18 | 16_Days | 4 | Chlorine, ND |  |
| | | | | 30.48 g | | | | | | | |
| 8 | 320-37675-A-5 (537_DOD5) | N/A (320-37675-1) | 281.85 g | 253.5 mL | 7 | | 4/3/18 | 16_Days | 4 | Chlorine, ND |  |
| | | | | 28.39 g | | | | | | | |
| 9 | 320-37675-A-6 (537_DOD5) | N/A (320-37675-1) | 277.26 g | 248.5 mL | 7 | | 4/3/18 | 16_Days | 4 | Chlorine, ND |  |
| | | | | 28.73 g | | | | | | | |
| 10 | 320-37675-A-7 (537_DOD5) | N/A (320-37675-1) | 283.60 g | 255.5 mL | 7 | | 4/3/18 | 16_Days | 4 | Chlorine, ND |  |
| | | | | 28.07 g | | | | | | | |

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)





Batch Number: 320-216791

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Method Code: 320-537_Prep-320

Batch End: 4/11/2018 5:25:00PM

| | | | | | | | | | | | | |
|----|------------------------------|----------------------|----------|----------|---|--|--|--------|---------|---|--------------|---|
| 11 | 320-37675-A-8 (537_DOD5) | N/A (320-37675-1) | 285.35 g | 254.8 mL | 7 | | | 4/3/18 | 16_Days | 4 | Chlorine, ND |  <small>3 2 0 - 3 7 6 7 5 - A - 8 - A</small> |
| | | | 80.57 g | 1.00 mL | | | | | | | | |
| 12 | 320-37675-A-9 (537_DOD5) | N/A (320-37675-1) | 278.07 g | 249.3 mL | 7 | | | 4/3/18 | 16_Days | 4 | Chlorine, ND |  <small>3 2 0 - 3 7 6 7 5 - A - 9 - A</small> |
| | | | 28.78 g | 1.00 mL | | | | | | | | |
| 13 | 320-37675-A-10 (537_DOD5) | N/A (320-37675-1) | 279.50 g | 251.1 mL | 7 | | | 4/3/18 | 16_Days | 4 | Chlorine, ND |  <small>3 2 0 - 3 7 6 7 5 - A - 1 0 - A</small> |
| | | | 28.42 g | 1.00 mL | | | | | | | | |
| 14 | 320-37675-A-11 (537_DOD5) | N/A (320-37675-1) | 283.84 g | 255.8 mL | 7 | | | 4/3/18 | 16_Days | 4 | Chlorine, ND |  <small>3 2 0 - 3 7 6 7 5 - A - 1 1 - A</small> |
| | | | 28.05 g | 1.00 mL | | | | | | | | |

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Method Code: 320-537_Prep-320

Batch End: 4/11/2018 5:25:00PM

Batch Notes

Manifold ID 3, 4

pH Indicator ID 3817

Trizma ID SLBR5241V

SPE Cartridge Lot ID 6369499-12

Methanol ID 1204219

Reagent Water ID 04/05/18

Internal Standard ID# 1208799

Pipette ID O43082F

Analyst ID - TA Reagent Drop SKD

Analyst ID - TA Reagent Drop HJA

Witness

Analyst ID - SU Reagent Drop SKD

Analyst ID - SU Reagent Drop HJA

Witness

Analyst ID - IS Reagent Drop VPM

Analyst ID - IS Reagent Drop JER

Witness

Analyst ID - Concentration KMK/SKD

Analyst ID - Aliquot Step VPM

Analyst ID - Final Volume Step VPM

Batch Comment Client labels match TA label, 04/07/18 SKD

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Method Code: 320-537_Prep-320

Batch End:

Batch Notes

Manifold ID 3, 4

pH Indicator ID 3817

Trizma ID SLBR5241V

SPE Cartridge Lot ID 6369499-12

Methanol ID 1204219

Reagent Water ID 04/05/18

Internal Standard ID# 1208799

Pipette ID O43082F

Analyst ID - TA Reagent Drop SKD

Analyst ID - TA Reagent Drop HJA
Witness

Analyst ID - SU Reagent Drop SKD

Analyst ID - SU Reagent Drop HAJ
Witness

Analyst ID - IS Reagent Drop VPM

Analyst ID - IS Reagent Drop JER
Witness

Analyst ID - Concentration KMK/SKD

Analyst ID - Aliquot Step VPM

Analyst ID - Final Volume Step VPM

Batch Comment Client labels match TA label, 04/07/18 SKD

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Method Code: 320-537_Prep-320

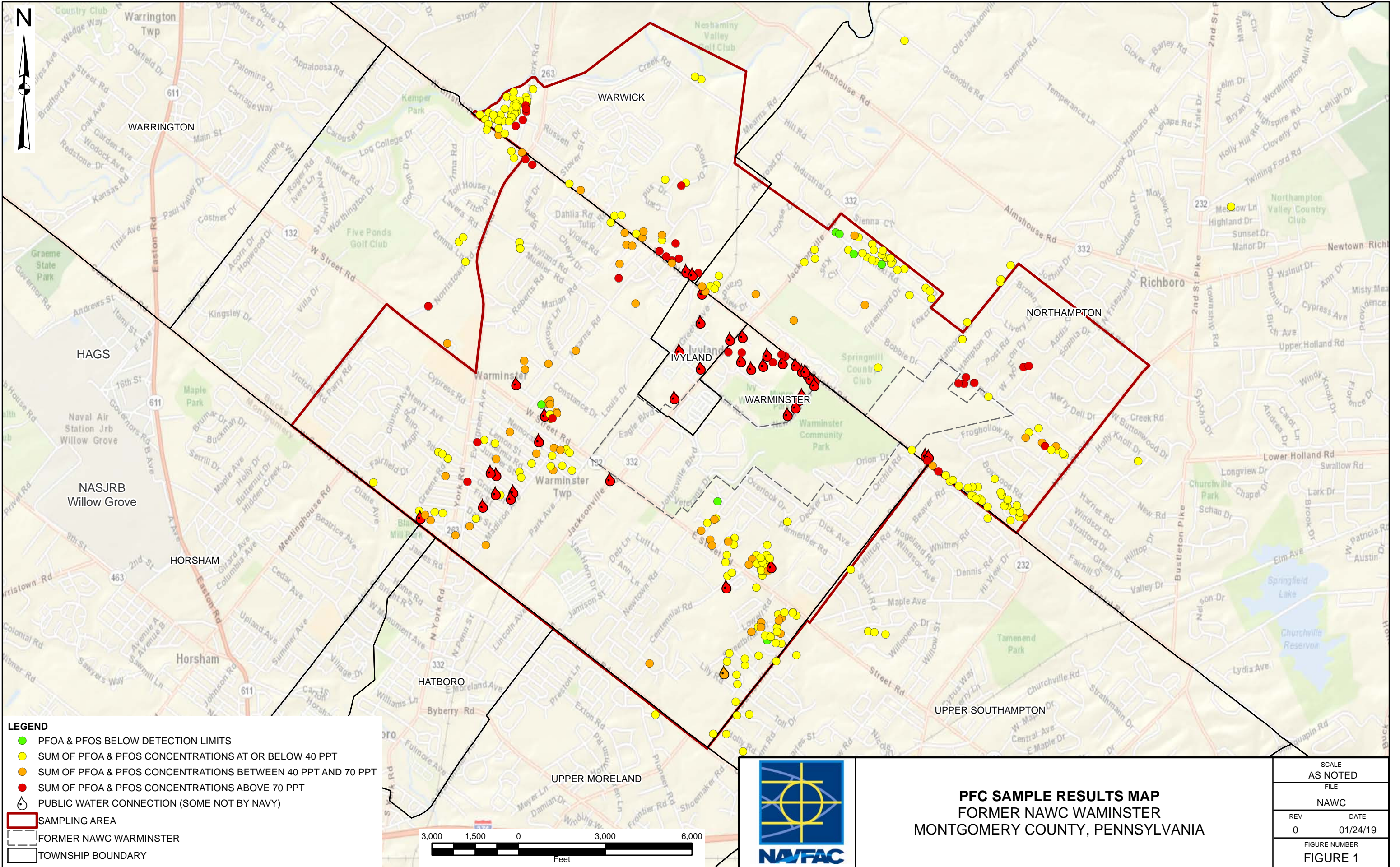
Batch End:

Reagent Additions Worksheet

| Lab ID | Reagent Code | Amount Added | Final Amount | By | Witness |
|-------------------|-----------------|--------------|--------------|------------|------------|
| MB 320-216791/1 | LC537-SU_00064 | 100 uL | 1.00 mL | SKD 4/7/18 | HSD 4-7-18 |
| LCS 320-216791/2 | LC537-MSP_00033 | 100 uL | 1.00 mL | ↓ | ↓ |
| LCS 320-216791/2 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| LCSD 320-216791/3 | LC537-MSP_00033 | 100 uL | 1.00 mL | | |
| LCSD 320-216791/3 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-1 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-2 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-3 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-4 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-5 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-6 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-7 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-8 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-9 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-10 | LC537-SU_00064 | 100 uL | 1.00 mL | | |
| 320-37675-A-11 | LC537-SU_00064 | 100 uL | 1.00 mL | | |

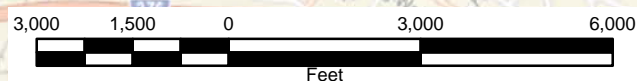
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LEGEND

- PFOA & PFOS BELOW DETECTION LIMITS
- SUM OF PFOA & PFOS CONCENTRATIONS AT OR BELOW 40 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS BETWEEN 40 PPT AND 70 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS ABOVE 70 PPT
- 💧 PUBLIC WATER CONNECTION (SOME NOT BY NAVY)
- SAMPLING AREA
- FORMER NAWC WARRINSTER
- TOWNSHIP BOUNDARY



PFC SAMPLE RESULTS MAP
FORMER NAWC WARRINSTER
MONTGOMERY COUNTY, PENNSYLVANIA

| | |
|----------------|---------------|
| SCALE AS NOTED | |
| FILE | |
| NAWC | |
| REV 0 | DATE 01/24/19 |
| FIGURE NUMBER | |
| FIGURE 1 | |