



**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 320-32132-1**

*Naval Air Warfare Center Warminster
Warminster, Pennsylvania*

August 2019

N62269_001155
WARMINSTER_NAWC
SSIC 5000-33c

**LABORATORY DATA PACKAGE, 320-32132-1, NAS WILLOW GROVE NAWC
WARMINSTER PA**

10/24/2017
TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-32132-1

Job Description: Warminster: PFAS, NAS JRB Willow Grove

For:
Tetra Tech, Inc.
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Attention: Andy Frebowitz



Approved for release.
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10/24/2017 10:15 AM

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Definitions/Glossary

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

TestAmerica Job ID: 320-32132-1

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.
Q	One or more quality control criteria failed.

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
320-32132-1

Receipt

The samples were received on 10/4/2017 1:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 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: Surrogate recovery for the following sample was outside control limits: NAWC-100317-RW-143 (320-32132-9). Re-analysis was performed with concurring results. The original analysis has been 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 320-189331.

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: 320-32132-1

Client Sample ID: NAWC-100317-RW-132

Lab Sample ID: 320-32132-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	10	J	36	6.1	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	20		18	2.5	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.0	J	9.0	1.7	ng/L	1		537	Total/NA

Client Sample ID: NAWC-100317-FRB-132

Lab Sample ID: 320-32132-2

No Detections.

Client Sample ID: NAWC-100317-RW-275

Lab Sample ID: 320-32132-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	28	J M	35	5.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	20		17	2.4	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.8	J	26	4.8	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.6	J	8.7	1.7	ng/L	1		537	Total/NA

Client Sample ID: NAWC-100317-FRB-275

Lab Sample ID: 320-32132-4

No Detections.

Client Sample ID: NAWC-100317-RW-146

Lab Sample ID: 320-32132-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	11	J	35	5.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	24		17	2.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.4	J	8.7	1.6	ng/L	1		537	Total/NA

Client Sample ID: NAWC-100317-RW-146

Lab Sample ID: 320-32132-6

No Detections.

Client Sample ID: NAWC-100317-RW-134

Lab Sample ID: 320-32132-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	8.6	J M	35	6.0	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	7.0	J	18	2.5	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.3	J M	8.8	1.7	ng/L	1		537	Total/NA

Client Sample ID: NAWC-100317-FRB-134

Lab Sample ID: 320-32132-8

No Detections.

Client Sample ID: NAWC-100317-RW-143

Lab Sample ID: 320-32132-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	8.9	J M	36	6.2	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	10	J	18	2.5	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.4	J	9.1	1.7	ng/L	1		537	Total/NA

Client Sample ID: NAWC-100317-FRB-143

Lab Sample ID: 320-32132-10

No Detections.

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: 320-32132-1

Client Sample ID: NAWC-100317-RW-149

Lab Sample ID: 320-32132-11

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	20	J M	39	6.6	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	14	J	19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.2	J	29	5.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.5	J	9.7	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-100317-FRB-149

Lab Sample ID: 320-32132-12

No Detections.

Client Sample ID: NAWC-100317-RW-229

Lab Sample ID: 320-32132-13

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	30	J M	37	6.3	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	39		18	2.6	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	13	J	28	5.1	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	14		9.2	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-100317-FRB-229

Lab Sample ID: 320-32132-14

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: 320-32132-1

Client Sample ID: NAWC-100317-RW-132

Date Collected: 10/03/17 08:10

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-1

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	10	J	36	6.1	ng/L	—	10/13/17 14:28	10/20/17 21:27	1
Perfluorooctanoic acid (PFOA)	20		18	2.5	ng/L		10/13/17 14:28	10/20/17 21:27	1
Perfluorononanoic acid (PFNA)	18	U	22	7.2	ng/L		10/13/17 14:28	10/20/17 21:27	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	5.0	ng/L		10/13/17 14:28	10/20/17 21:27	1
Perfluoroheptanoic acid (PFHpA)	8.0	J	9.0	1.7	ng/L		10/13/17 14:28	10/20/17 21:27	1
Perfluorobutanesulfonic acid (PFBS)	32	U	81	15	ng/L		10/13/17 14:28	10/20/17 21:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	84		70 - 130				10/13/17 14:28	10/20/17 21:27	1
13C2 PFDA	109		70 - 130				10/13/17 14:28	10/20/17 21:27	1

Client Sample ID: NAWC-100317-FRB-132

Date Collected: 10/03/17 08:05

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-2

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	37	6.3	ng/L	—	10/13/17 14:28	10/20/17 21:32	1
Perfluorooctanoic acid (PFOA)	7.4	U	19	2.6	ng/L		10/13/17 14:28	10/20/17 21:32	1
Perfluorononanoic acid (PFNA)	19	U	22	7.4	ng/L		10/13/17 14:28	10/20/17 21:32	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	28	5.1	ng/L		10/13/17 14:28	10/20/17 21:32	1
Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	1.8	ng/L		10/13/17 14:28	10/20/17 21:32	1
Perfluorobutanesulfonic acid (PFBS)	33	U	84	15	ng/L		10/13/17 14:28	10/20/17 21:32	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		70 - 130				10/13/17 14:28	10/20/17 21:32	1
13C2 PFDA	113		70 - 130				10/13/17 14:28	10/20/17 21:32	1

Client Sample ID: NAWC-100317-RW-275

Date Collected: 10/03/17 09:10

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-3

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	28	J M	35	5.9	ng/L	—	10/13/17 14:28	10/20/17 21:37	1
Perfluorooctanoic acid (PFOA)	20		17	2.4	ng/L		10/13/17 14:28	10/20/17 21:37	1
Perfluorononanoic acid (PFNA)	17	U	21	7.0	ng/L		10/13/17 14:28	10/20/17 21:37	1
Perfluorohexanesulfonic acid (PFHxS)	8.8	J	26	4.8	ng/L		10/13/17 14:28	10/20/17 21:37	1
Perfluoroheptanoic acid (PFHpA)	6.6	J	8.7	1.7	ng/L		10/13/17 14:28	10/20/17 21:37	1
Perfluorobutanesulfonic acid (PFBS)	31	U	78	14	ng/L		10/13/17 14:28	10/20/17 21:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		70 - 130				10/13/17 14:28	10/20/17 21:37	1
13C2 PFDA	119		70 - 130				10/13/17 14:28	10/20/17 21:37	1

Client Sample Results

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

TestAmerica Job ID: 320-32132-1

Client Sample ID: NAWC-100317-FRB-275

Lab Sample ID: 320-32132-4

Date Collected: 10/03/17 09:05

Matrix: Water

Date Received: 10/04/17 13:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	36	6.1	ng/L	—	10/13/17 14:28	10/20/17 21:41	1
Perfluorooctanoic acid (PFOA)	7.2	U	18	2.5	ng/L	—	10/13/17 14:28	10/20/17 21:41	1
Perfluorononanoic acid (PFNA)	18	U	22	7.2	ng/L	—	10/13/17 14:28	10/20/17 21:41	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	5.0	ng/L	—	10/13/17 14:28	10/20/17 21:41	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	1.7	ng/L	—	10/13/17 14:28	10/20/17 21:41	1
Perfluorobutanesulfonic acid (PFBS)	32	U	81	14	ng/L	—	10/13/17 14:28	10/20/17 21:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		70 - 130	10/13/17 14:28	10/20/17 21:41	1
13C2 PFDA	121		70 - 130	10/13/17 14:28	10/20/17 21:41	1

Client Sample ID: NAWC-100317-RW-146

Lab Sample ID: 320-32132-5

Date Collected: 10/03/17 09:40

Matrix: Water

Date Received: 10/04/17 13:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	11	J	35	5.9	ng/L	—	10/13/17 14:28	10/20/17 21:46	1
Perfluorooctanoic acid (PFOA)	24		17	2.4	ng/L	—	10/13/17 14:28	10/20/17 21:46	1
Perfluorononanoic acid (PFNA)	17	U	21	6.9	ng/L	—	10/13/17 14:28	10/20/17 21:46	1
Perfluorohexanesulfonic acid (PFHxS)	10	U	26	4.8	ng/L	—	10/13/17 14:28	10/20/17 21:46	1
Perfluoroheptanoic acid (PFHpA)	5.4	J	8.7	1.6	ng/L	—	10/13/17 14:28	10/20/17 21:46	1
Perfluorobutanesulfonic acid (PFBS)	31	U	78	14	ng/L	—	10/13/17 14:28	10/20/17 21:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		70 - 130	10/13/17 14:28	10/20/17 21:46	1
13C2 PFDA	119		70 - 130	10/13/17 14:28	10/20/17 21:46	1

Client Sample ID: NAWC-100317-RW-146

Lab Sample ID: 320-32132-6

Date Collected: 10/03/17 09:35

Matrix: Water

Date Received: 10/04/17 13:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	37	6.3	ng/L	—	10/13/17 14:28	10/20/17 21:51	1
Perfluorooctanoic acid (PFOA)	7.4	U	19	2.6	ng/L	—	10/13/17 14:28	10/20/17 21:51	1
Perfluorononanoic acid (PFNA)	19	U	22	7.4	ng/L	—	10/13/17 14:28	10/20/17 21:51	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	28	5.1	ng/L	—	10/13/17 14:28	10/20/17 21:51	1
Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	1.8	ng/L	—	10/13/17 14:28	10/20/17 21:51	1
Perfluorobutanesulfonic acid (PFBS)	33	U	84	15	ng/L	—	10/13/17 14:28	10/20/17 21:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		70 - 130	10/13/17 14:28	10/20/17 21:51	1
13C2 PFDA	114		70 - 130	10/13/17 14:28	10/20/17 21:51	1

Client Sample Results

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

TestAmerica Job ID: 320-32132-1

Client Sample ID: NAWC-100317-RW-134

Date Collected: 10/03/17 11:40

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-7

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	8.6	J M	35	6.0	ng/L	—	10/13/17 14:28	10/20/17 21:56	1
Perfluorooctanoic acid (PFOA)	7.0	J	18	2.5	ng/L	—	10/13/17 14:28	10/20/17 21:56	1
Perfluorononanoic acid (PFNA)	18	U	21	7.0	ng/L	—	10/13/17 14:28	10/20/17 21:56	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	26	4.8	ng/L	—	10/13/17 14:28	10/20/17 21:56	1
Perfluoroheptanoic acid (PFHpA)	2.3	J M	8.8	1.7	ng/L	—	10/13/17 14:28	10/20/17 21:56	1
Perfluorobutanesulfonic acid (PFBS)	32	U	79	14	ng/L	—	10/13/17 14:28	10/20/17 21:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	83		70 - 130				10/13/17 14:28	10/20/17 21:56	1
13C2 PFDA	107		70 - 130				10/13/17 14:28	10/20/17 21:56	1

Client Sample ID: NAWC-100317-FRB-134

Date Collected: 10/03/17 11:35

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-8

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	37	6.3	ng/L	—	10/13/17 14:28	10/20/17 22:10	1
Perfluorooctanoic acid (PFOA)	7.5	U	19	2.6	ng/L	—	10/13/17 14:28	10/20/17 22:10	1
Perfluorononanoic acid (PFNA)	19	U	22	7.5	ng/L	—	10/13/17 14:28	10/20/17 22:10	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	28	5.1	ng/L	—	10/13/17 14:28	10/20/17 22:10	1
Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	1.8	ng/L	—	10/13/17 14:28	10/20/17 22:10	1
Perfluorobutanesulfonic acid (PFBS)	34	U	84	15	ng/L	—	10/13/17 14:28	10/20/17 22:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		70 - 130				10/13/17 14:28	10/20/17 22:10	1
13C2 PFDA	107		70 - 130				10/13/17 14:28	10/20/17 22:10	1

Client Sample ID: NAWC-100317-RW-143

Date Collected: 10/03/17 13:40

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-9

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	8.9	J M	36	6.2	ng/L	—	10/13/17 14:28	10/20/17 22:15	1
Perfluorooctanoic acid (PFOA)	10	J	18	2.5	ng/L	—	10/13/17 14:28	10/20/17 22:15	1
Perfluorononanoic acid (PFNA)	18	U	22	7.3	ng/L	—	10/13/17 14:28	10/20/17 22:15	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	5.0	ng/L	—	10/13/17 14:28	10/20/17 22:15	1
Perfluoroheptanoic acid (PFHpA)	3.4	J	9.1	1.7	ng/L	—	10/13/17 14:28	10/20/17 22:15	1
Perfluorobutanesulfonic acid (PFBS)	33	U	82	15	ng/L	—	10/13/17 14:28	10/20/17 22:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	64	Q	70 - 130				10/13/17 14:28	10/20/17 22:15	1
13C2 PFDA	104		70 - 130				10/13/17 14:28	10/20/17 22:15	1

Client Sample Results

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

TestAmerica Job ID: 320-32132-1

Client Sample ID: NAWC-100317-FRB-143

Lab Sample ID: 320-32132-10

Date Collected: 10/03/17 13:35

Matrix: Water

Date Received: 10/04/17 13:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	37	6.3	ng/L		10/13/17 14:28	10/20/17 22:19	1
Perfluorooctanoic acid (PFOA)	7.4	U	19	2.6	ng/L		10/13/17 14:28	10/20/17 22:19	1
Perfluorononanoic acid (PFNA)	19	U	22	7.4	ng/L		10/13/17 14:28	10/20/17 22:19	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	28	5.1	ng/L		10/13/17 14:28	10/20/17 22:19	1
Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	1.8	ng/L		10/13/17 14:28	10/20/17 22:19	1
Perfluorobutanesulfonic acid (PFBS)	33	U	83	15	ng/L		10/13/17 14:28	10/20/17 22:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		70 - 130	10/13/17 14:28	10/20/17 22:19	1
13C2 PFDA	112		70 - 130	10/13/17 14:28	10/20/17 22:19	1

Client Sample ID: NAWC-100317-RW-149

Lab Sample ID: 320-32132-11

Date Collected: 10/03/17 15:10

Matrix: Water

Date Received: 10/04/17 13:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	20	J M	39	6.6	ng/L		10/13/17 14:28	10/20/17 22:24	1
Perfluorooctanoic acid (PFOA)	14	J	19	2.7	ng/L		10/13/17 14:28	10/20/17 22:24	1
Perfluorononanoic acid (PFNA)	19	U	23	7.8	ng/L		10/13/17 14:28	10/20/17 22:24	1
Perfluorohexanesulfonic acid (PFHxS)	7.2	J	29	5.4	ng/L		10/13/17 14:28	10/20/17 22:24	1
Perfluoroheptanoic acid (PFHpA)	4.5	J	9.7	1.9	ng/L		10/13/17 14:28	10/20/17 22:24	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		10/13/17 14:28	10/20/17 22:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	79		70 - 130	10/13/17 14:28	10/20/17 22:24	1
13C2 PFDA	113		70 - 130	10/13/17 14:28	10/20/17 22:24	1

Client Sample ID: NAWC-100317-FRB-149

Lab Sample ID: 320-32132-12

Date Collected: 10/03/17 15:05

Matrix: Water

Date Received: 10/04/17 13:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	38	6.5	ng/L		10/13/17 14:28	10/20/17 22:29	1
Perfluorooctanoic acid (PFOA)	7.6	U	19	2.7	ng/L		10/13/17 14:28	10/20/17 22:29	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		10/13/17 14:28	10/20/17 22:29	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	29	5.2	ng/L		10/13/17 14:28	10/20/17 22:29	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	1.8	ng/L		10/13/17 14:28	10/20/17 22:29	1
Perfluorobutanesulfonic acid (PFBS)	34	U	86	15	ng/L		10/13/17 14:28	10/20/17 22:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		70 - 130	10/13/17 14:28	10/20/17 22:29	1
13C2 PFDA	107		70 - 130	10/13/17 14:28	10/20/17 22:29	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-32132-1

Client Sample ID: NAWC-100317-RW-229

Lab Sample ID: 320-32132-13

Date Collected: 10/03/17 15:40

Matrix: Water

Date Received: 10/04/17 13:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	30	J M	37	6.3	ng/L		10/13/17 14:28	10/20/17 22:34	1
Perfluorooctanoic acid (PFOA)	39		18	2.6	ng/L		10/13/17 14:28	10/20/17 22:34	1
Perfluorononanoic acid (PFNA)	18	U M	22	7.4	ng/L		10/13/17 14:28	10/20/17 22:34	1
Perfluorohexanesulfonic acid (PFHxS)	13	J	28	5.1	ng/L		10/13/17 14:28	10/20/17 22:34	1
Perfluoroheptanoic acid (PFHpA)	14		9.2	1.8	ng/L		10/13/17 14:28	10/20/17 22:34	1
Perfluorobutanesulfonic acid (PFBS)	33	U	83	15	ng/L		10/13/17 14:28	10/20/17 22:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	72		70 - 130	10/13/17 14:28	10/20/17 22:34	1
13C2 PFDA	113		70 - 130	10/13/17 14:28	10/20/17 22:34	1

Client Sample ID: NAWC-100317-FRB-229

Lab Sample ID: 320-32132-14

Date Collected: 10/03/17 15:35

Matrix: Water

Date Received: 10/04/17 13:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	38	6.4	ng/L		10/13/17 14:28	10/20/17 22:38	1
Perfluorooctanoic acid (PFOA)	7.6	U	19	2.6	ng/L		10/13/17 14:28	10/20/17 22:38	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		10/13/17 14:28	10/20/17 22:38	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	28	5.2	ng/L		10/13/17 14:28	10/20/17 22:38	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.4	1.8	ng/L		10/13/17 14:28	10/20/17 22:38	1
Perfluorobutanesulfonic acid (PFBS)	34	U	85	15	ng/L		10/13/17 14:28	10/20/17 22:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		70 - 130	10/13/17 14:28	10/20/17 22:38	1
13C2 PFDA	128		70 - 130	10/13/17 14:28	10/20/17 22:38	1

Default Detection Limits

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-32132-1

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

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: 320-32132-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		3C2 PFHx (70-130)	3C2 PFD/ (70-130)
320-32132-1	NAWC-100317-RW-132	84	109
320-32132-2	NAWC-100317-FRB-132	96	113
320-32132-3	NAWC-100317-RW-275	85	119
320-32132-4	NAWC-100317-FRB-275	96	121
320-32132-5	NAWC-100317-RW-146	86	119
320-32132-6	NAWC-100317-RW-146	94	114
320-32132-7	NAWC-100317-RW-134	83	107
320-32132-8	NAWC-100317-FRB-134	96	107
320-32132-9	NAWC-100317-RW-143	64 Q	104
320-32132-10	NAWC-100317-FRB-143	95	112
320-32132-11	NAWC-100317-RW-149	79	113
320-32132-12	NAWC-100317-FRB-149	95	107
320-32132-13	NAWC-100317-RW-229	72	113
320-32132-14	NAWC-100317-FRB-229	98	128
LCS 320-189331/2-A	Lab Control Sample	100	114
LCSD 320-189331/3-A	Lab Control Sample Dup	99	116
MB 320-189331/1-A	Method Blank	101	105

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

QC Sample Results

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

TestAmerica Job ID: 320-32132-1

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

Lab Sample ID: MB 320-189331/1-A

Matrix: Water

Analysis Batch: 190444

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 189331

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		10/13/17 14:28	10/20/17 21:13	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		10/13/17 14:28	10/20/17 21:13	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		10/13/17 14:28	10/20/17 21:13	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		10/13/17 14:28	10/20/17 21:13	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		10/13/17 14:28	10/20/17 21:13	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		10/13/17 14:28	10/20/17 21:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		70 - 130	10/13/17 14:28	10/20/17 21:13	1
13C2 PFDA	105		70 - 130	10/13/17 14:28	10/20/17 21:13	1

Lab Sample ID: LCS 320-189331/2-A

Matrix: Water

Analysis Batch: 190444

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 189331

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	133	130	M	ng/L		98	70 - 130
Perfluorooctanoic acid (PFOA)	66.7	71.9		ng/L		108	70 - 130
Perfluorononanoic acid (PFNA)	66.7	69.0		ng/L		103	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	100	106		ng/L		106	70 - 130
Perfluoroheptanoic acid (PFHpA)	33.3	36.0		ng/L		108	70 - 130
Perfluorobutanesulfonic acid (PFBS)	300	327		ng/L		109	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	100		70 - 130
13C2 PFDA	114		70 - 130

Lab Sample ID: LCSD 320-189331/3-A

Matrix: Water

Analysis Batch: 190444

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 189331

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	133	132	M	ng/L		99	70 - 130	2	30
Perfluorooctanoic acid (PFOA)	66.7	72.1		ng/L		108	70 - 130	0	30
Perfluorononanoic acid (PFNA)	66.7	72.6		ng/L		109	70 - 130	5	30
Perfluorohexanesulfonic acid (PFHxS)	100	105		ng/L		105	70 - 130	1	30
Perfluoroheptanoic acid (PFHpA)	33.3	37.9		ng/L		114	70 - 130	5	30
Perfluorobutanesulfonic acid (PFBS)	300	337		ng/L		112	70 - 130	3	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
13C2 PFHxA	99		70 - 130
13C2 PFDA	116		70 - 130

TestAmerica Sacramento

QC Association Summary

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

TestAmerica Job ID: 320-32132-1

LCMS

Prep Batch: 189331

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-32132-1	NAWC-100317-RW-132	Total/NA	Water	537	
320-32132-2	NAWC-100317-FRB-132	Total/NA	Water	537	
320-32132-3	NAWC-100317-RW-275	Total/NA	Water	537	
320-32132-4	NAWC-100317-FRB-275	Total/NA	Water	537	
320-32132-5	NAWC-100317-RW-146	Total/NA	Water	537	
320-32132-6	NAWC-100317-RW-146	Total/NA	Water	537	
320-32132-7	NAWC-100317-RW-134	Total/NA	Water	537	
320-32132-8	NAWC-100317-FRB-134	Total/NA	Water	537	
320-32132-9	NAWC-100317-RW-143	Total/NA	Water	537	
320-32132-10	NAWC-100317-FRB-143	Total/NA	Water	537	
320-32132-11	NAWC-100317-RW-149	Total/NA	Water	537	
320-32132-12	NAWC-100317-FRB-149	Total/NA	Water	537	
320-32132-13	NAWC-100317-RW-229	Total/NA	Water	537	
320-32132-14	NAWC-100317-FRB-229	Total/NA	Water	537	
MB 320-189331/1-A	Method Blank	Total/NA	Water	537	
LCS 320-189331/2-A	Lab Control Sample	Total/NA	Water	537	
LCSD 320-189331/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 190444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-32132-1	NAWC-100317-RW-132	Total/NA	Water	537	189331
320-32132-2	NAWC-100317-FRB-132	Total/NA	Water	537	189331
320-32132-3	NAWC-100317-RW-275	Total/NA	Water	537	189331
320-32132-4	NAWC-100317-FRB-275	Total/NA	Water	537	189331
320-32132-5	NAWC-100317-RW-146	Total/NA	Water	537	189331
320-32132-6	NAWC-100317-RW-146	Total/NA	Water	537	189331
320-32132-7	NAWC-100317-RW-134	Total/NA	Water	537	189331
MB 320-189331/1-A	Method Blank	Total/NA	Water	537	189331
LCS 320-189331/2-A	Lab Control Sample	Total/NA	Water	537	189331
LCSD 320-189331/3-A	Lab Control Sample Dup	Total/NA	Water	537	189331

Analysis Batch: 190445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-32132-8	NAWC-100317-FRB-134	Total/NA	Water	537	189331
320-32132-9	NAWC-100317-RW-143	Total/NA	Water	537	189331
320-32132-10	NAWC-100317-FRB-143	Total/NA	Water	537	189331
320-32132-11	NAWC-100317-RW-149	Total/NA	Water	537	189331
320-32132-12	NAWC-100317-FRB-149	Total/NA	Water	537	189331
320-32132-13	NAWC-100317-RW-229	Total/NA	Water	537	189331
320-32132-14	NAWC-100317-FRB-229	Total/NA	Water	537	189331

Lab Chronicle

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

TestAmerica Job ID: 320-32132-1

Client Sample ID: NAWC-100317-RW-132

Date Collected: 10/03/17 08:10

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			189331	10/13/17 14:28	TWL	TAL SAC
Total/NA	Analysis	537		1	190444	10/20/17 21:27	JRB	TAL SAC

Client Sample ID: NAWC-100317-FRB-132

Date Collected: 10/03/17 08:05

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			189331	10/13/17 14:28	TWL	TAL SAC
Total/NA	Analysis	537		1	190444	10/20/17 21:32	JRB	TAL SAC

Client Sample ID: NAWC-100317-RW-275

Date Collected: 10/03/17 09:10

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			189331	10/13/17 14:28	TWL	TAL SAC
Total/NA	Analysis	537		1	190444	10/20/17 21:37	JRB	TAL SAC

Client Sample ID: NAWC-100317-FRB-275

Date Collected: 10/03/17 09:05

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			189331	10/13/17 14:28	TWL	TAL SAC
Total/NA	Analysis	537		1	190444	10/20/17 21:41	JRB	TAL SAC

Client Sample ID: NAWC-100317-RW-146

Date Collected: 10/03/17 09:40

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			189331	10/13/17 14:28	TWL	TAL SAC
Total/NA	Analysis	537		1	190444	10/20/17 21:46	JRB	TAL SAC

Client Sample ID: NAWC-100317-RW-146

Date Collected: 10/03/17 09:35

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			189331	10/13/17 14:28	TWL	TAL SAC
Total/NA	Analysis	537		1	190444	10/20/17 21:51	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-32132-1

Client Sample ID: NAWC-100317-RW-134

Date Collected: 10/03/17 11:40

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			189331	10/13/17 14:28	TWL	TAL SAC
Total/NA	Analysis	537		1	190444	10/20/17 21:56	JRB	TAL SAC

Client Sample ID: NAWC-100317-FRB-134

Date Collected: 10/03/17 11:35

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			189331	10/13/17 14:28	TWL	TAL SAC
Total/NA	Analysis	537		1	190445	10/20/17 22:10	JRB	TAL SAC

Client Sample ID: NAWC-100317-RW-143

Date Collected: 10/03/17 13:40

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			189331	10/13/17 14:28	TWL	TAL SAC
Total/NA	Analysis	537		1	190445	10/20/17 22:15	JRB	TAL SAC

Client Sample ID: NAWC-100317-FRB-143

Date Collected: 10/03/17 13:35

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			189331	10/13/17 14:28	TWL	TAL SAC
Total/NA	Analysis	537		1	190445	10/20/17 22:19	JRB	TAL SAC

Client Sample ID: NAWC-100317-RW-149

Date Collected: 10/03/17 15:10

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			189331	10/13/17 14:28	TWL	TAL SAC
Total/NA	Analysis	537		1	190445	10/20/17 22:24	JRB	TAL SAC

Client Sample ID: NAWC-100317-FRB-149

Date Collected: 10/03/17 15:05

Date Received: 10/04/17 13:30

Lab Sample ID: 320-32132-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			189331	10/13/17 14:28	TWL	TAL SAC
Total/NA	Analysis	537		1	190445	10/20/17 22:29	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-32132-1

Client Sample ID: NAWC-100317-RW-229

Lab Sample ID: 320-32132-13

Date Collected: 10/03/17 15:40

Matrix: Water

Date Received: 10/04/17 13:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			189331	10/13/17 14:28	TWL	TAL SAC
Total/NA	Analysis	537		1	190445	10/20/17 22:34	JRB	TAL SAC

Client Sample ID: NAWC-100317-FRB-229

Lab Sample ID: 320-32132-14

Date Collected: 10/03/17 15:35

Matrix: Water

Date Received: 10/04/17 13:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			189331	10/13/17 14:28	TWL	TAL SAC
Total/NA	Analysis	537		1	190445	10/20/17 22:38	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: 320-32132-1

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Oregon	NELAP	10	4040	01-28-18

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
537	537	Water	Perfluorobutanesulfonic acid (PFBS)
537	537	Water	Perfluoroheptanoic acid (PFHpA)
537	537	Water	Perfluorohexanesulfonic acid (PFHxS)
537	537	Water	Perfluorononanoic acid (PFNA)
537	537	Water	Perfluorooctanesulfonic acid (PFOS)
537	537	Water	Perfluorooctanoic acid (PFOA)

Method Summary

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

TestAmerica Job ID: 320-32132-1

Method	Method Description	Protocol	Laboratory
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: 320-32132-1

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-32132-1	NAWC-100317-RW-132	Water	10/03/17 08:10	10/04/17 13:30
320-32132-2	NAWC-100317-FRB-132	Water	10/03/17 08:05	10/04/17 13:30
320-32132-3	NAWC-100317-RW-275	Water	10/03/17 09:10	10/04/17 13:30
320-32132-4	NAWC-100317-FRB-275	Water	10/03/17 09:05	10/04/17 13:30
320-32132-5	NAWC-100317-RW-146	Water	10/03/17 09:40	10/04/17 13:30
320-32132-6	NAWC-100317-RW-146	Water	10/03/17 09:35	10/04/17 13:30
320-32132-7	NAWC-100317-RW-134	Water	10/03/17 11:40	10/04/17 13:30
320-32132-8	NAWC-100317-FRB-134	Water	10/03/17 11:35	10/04/17 13:30
320-32132-9	NAWC-100317-RW-143	Water	10/03/17 13:40	10/04/17 13:30
320-32132-10	NAWC-100317-FRB-143	Water	10/03/17 13:35	10/04/17 13:30
320-32132-11	NAWC-100317-RW-149	Water	10/03/17 15:10	10/04/17 13:30
320-32132-12	NAWC-100317-FRB-149	Water	10/03/17 15:05	10/04/17 13:30
320-32132-13	NAWC-100317-RW-229	Water	10/03/17 15:40	10/04/17 13:30
320-32132-14	NAWC-100317-FRB-229	Water	10/03/17 15:35	10/04/17 13:30

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 185329Lab Sample ID: IC 320-185329/4 Client Sample ID: _____Date Analyzed: 09/20/17 02:56 Lab File ID: 2017.09.19_537ICAL_004.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Missed Peak	barnettj	09/20/17 10:03

Lab Sample ID: IC 320-185329/5 Client Sample ID: _____Date Analyzed: 09/20/17 03:00 Lab File ID: 2017.09.19_537ICAL_005.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Missed Peak	barnettj	09/20/17 10:04

Lab Sample ID: IC 320-185329/6 Client Sample ID: _____Date Analyzed: 09/20/17 03:05 Lab File ID: 2017.09.19_537ICAL_006.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.10	Missed Peak	barnettj	09/20/17 10:05

Lab Sample ID: IC 320-185329/7 ICISAV Client Sample ID: _____Date Analyzed: 09/20/17 03:10 Lab File ID: 2017.09.19_537ICAL_007.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Missed Peak	barnettj	09/20/17 10:05

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 185329Lab Sample ID: IC 320-185329/8 Client Sample ID: _____Date Analyzed: 09/20/17 03:15 Lab File ID: 2017.09.19_537ICAL_008.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Missed Peak	barnettj	09/20/17 10:06

Lab Sample ID: IC 320-185329/9 Client Sample ID: _____Date Analyzed: 09/20/17 03:19 Lab File ID: 2017.09.19_537ICAL_009.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Missed Peak	barnettj	09/20/17 10:07

Lab Sample ID: CCVL 320-185329/11 Client Sample ID: _____Date Analyzed: 09/20/17 03:29 Lab File ID: 2017.09.19_537ICAL_011.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.10	Missed Peak	barnettj	09/20/17 10:10

Lab Sample ID: ICV 320-185329/13 Client Sample ID: _____Date Analyzed: 09/20/17 03:38 Lab File ID: 2017.09.19_537ICAL_013.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Missed Peak	barnettj	09/20/17 10:11

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 190437Lab Sample ID: CCVL 320-190437/4 Client Sample ID: _____Date Analyzed: 10/20/17 17:49 Lab File ID: 2017.10.20_537A_004.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.13	Missed Peak	barnettj	10/23/17 09:48

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 190444Lab Sample ID: CCV 320-190444/1 CCVIS Client Sample ID: _____Date Analyzed: 10/20/17 21:04 Lab File ID: 2017.10.20_537A_045.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Missed Peak	barnettj	10/23/17 10:15

Lab Sample ID: LCS 320-189331/2-A Client Sample ID: _____Date Analyzed: 10/20/17 21:18 Lab File ID: 2017.10.20_537A_048.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.13	Missed Peak	barnettj	10/23/17 10:16

Lab Sample ID: LCSD 320-189331/3-A Client Sample ID: _____Date Analyzed: 10/20/17 21:23 Lab File ID: 2017.10.20_537A_049.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Missed Peak	barnettj	10/23/17 10:17

Lab Sample ID: 320-32132-3 Client Sample ID: NAWC-100317-RW-275Date Analyzed: 10/20/17 21:37 Lab File ID: 2017.10.20_537A_052.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Missed Peak	barnettj	10/23/17 10:19

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 190444Lab Sample ID: 320-32132-7 Client Sample ID: NAWC-100317-RW-134Date Analyzed: 10/20/17 21:56 Lab File ID: 2017.10.20_537A_056.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.69	Missed Peak	barnettj	10/23/17 10:21
Perfluorooctanesulfonic acid (PFOS)	2.12	Missed Peak	barnettj	10/23/17 10:21

Lab Sample ID: CCV 320-190444/13 CCVIS Client Sample ID: _____Date Analyzed: 10/20/17 22:00 Lab File ID: 2017.10.20_537A_057.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Missed Peak	barnettj	10/23/17 10:22

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 190445Lab Sample ID: CCV 320-190445/13 CCVIS Client Sample ID: _____Date Analyzed: 10/20/17 22:00 Lab File ID: 2017.10.20_537A_057.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Missed Peak	barnettj	10/23/17 10:22

Lab Sample ID: 320-32132-9 Client Sample ID: NAWC-100317-RW-143Date Analyzed: 10/20/17 22:15 Lab File ID: 2017.10.20_537A_060.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Missed Peak	barnettj	10/23/17 10:22

Lab Sample ID: 320-32132-11 Client Sample ID: NAWC-100317-RW-149Date Analyzed: 10/20/17 22:24 Lab File ID: 2017.10.20_537A_062.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Missed Peak	barnettj	10/23/17 10:24

Lab Sample ID: 320-32132-13 Client Sample ID: NAWC-100317-RW-229Date Analyzed: 10/20/17 22:34 Lab File ID: 2017.10.20_537A_064.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Missed Peak	barnettj	10/23/17 10:25
Perfluorononanoic acid (PFNA)	2.13	Split Peak	barnettj	10/23/17 10:25

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 190445Lab Sample ID: CCV 320-190445/22 CCVIS Client Sample ID: _____Date Analyzed: 10/20/17 22:43 Lab File ID: 2017.10.20_537A_066.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Missed Peak	barnettj	10/23/17 10:26

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-32132-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-ICV_00028	01/05/18	08/02/17	MeOH/H2O, Lot 067374	10 mL	LC537-IS_00045	1000 uL	13C2-PFOA	10 ng/mL
.LC537-IS_00045	01/05/18	07/05/17	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_00019	180 uL	13C4 PFOS	0.1 ug/mL
..LCMPFOS_00019	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	0.2868 ug/mL
LC537-ICV_00028	01/05/18	08/02/17	MeOH/H2O, Lot 067374	10 mL	LC537-SU_00046	1000 uL	13C2-PFOA	50 ug/mL
					LC537ICIM_00019	20 uL	13C2 PFDA	47.8 ug/mL
							13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	100.119 ng/mL
							Perfluoroheptanoic acid (PFHpA)	9.99613 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	20.0761 ng/mL
							Perfluorononanoic acid (PFNA)	20.1272 ng/mL
							Perfluorooctanoic acid (PFOA)	20.4843 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	19.698 ng/mL
.LC537-SU_00046	01/05/18	07/05/17	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_00013	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LC537ICIM_00019	01/25/18	08/01/17	Methanol, Lot 090285	25 mL	LC537-PFBS2_00008	0.6 mL	13C2 PFHxA	50 ug/mL
					LC537-PFHxA2_00011	0.061 mL	Perfluorobutanesulfonic acid (PFBS)	50.0597 ug/mL
					LC537-PFHxS2_00008	0.122 mL	Perfluoroheptanoic acid (PFHpA)	4.99806 ug/mL
					LC537-PFNA2_00009	0.126 mL	Perfluorohexanesulfonic acid (PFHxS)	10.038 ug/mL
					LC537-PFOA2_00010	0.122 mL	Perfluorononanoic acid (PFNA)	10.0636 ug/mL
					LC537-PFOS2_00010	0.124 mL	Perfluorooctanoic acid (PFOA)	10.2421 ug/mL
..LC537-PFBS2_00008	01/25/18	07/25/17	Methanol, Lot 090285	20 mL	LC537-PFOS2_00002	0.0418 g	Perfluorooctanesulfonic acid (PFOS)	9.849 ug/mL
...LC537-PFBS2_00002	09/08/22	Santa Cruz Biotechnology, Lot F0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	2085.82 ug/mL
..LC537-PFHxA2_00011	01/25/18	07/25/17	Methanol, Lot 09092	31 mL	LC537-PFHxA2_00002	0.0635 g	Perfluoroheptanoic acid (PFHpA)	0.998 g/g
...LC537-PFHxA2_00002	06/13/22	Afla Aesar, Lot 10200390			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	2048.39 ug/mL
..LC537-PFHxS2_00008	01/25/18	07/25/17	Methanol, Lot 090285	21 mL	LC537-PFHxS2_00002	0.0475 g	Perfluorohexanesulfonic acid (PFHxS)	1 g/g
...LC537-PFHxS2_00002	06/08/22	Santa Cruz Biotechnology, Lot G2516			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	2056.98 ug/mL
..LC537-PFNA2_00009	01/25/18	07/25/17	Methanol, Lot 090285	21 mL	LC537-PFNA2_00002	0.0421 g	Perfluorononanoic acid (PFNA)	0.9094 g/g
...LC537-PFNA2_00002	06/14/22	Aldrich, Lot MKCC0699			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	1996.74 ug/mL
..LC537-PFOA2_00010	01/25/18	08/01/17	Methanol, Lot 090285	20 mL	LC537-PFOA2_00002	0.0424 g	Perfluorooctanoic acid (PFOA)	0.996 g/g
...LC537-PFOA2_00002	06/09/22	Afla Aesar, Lot 10199078			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	2098.8 ug/mL
							Perfluorooctanoic acid (PFOA)	0.99 g/g

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-32132-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LC537-PFOS2_00010	01/25/18	08/01/17	Methanol, Lot 090285	22 mL	LC537_PFOS2_00002	0.0561 g	Perfluorooctanesulfonic acid (PFOS)	1985.68 ug/mL
...LC537_PFOS2_00002	06/14/22	Sigma, Lot BCBQ0108V			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.7787 g/g
LC537-IS_00051	03/20/18	09/20/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00006	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
.LCM2PFOA_00006	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-L1_00020	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-MSP_00029	60 uL	Perfluorobutanesulfonic acid (PFBS)	9.0018 ng/mL
							Perfluoroheptanoic acid (PFHpA)	1.00036 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	3.00103 ng/mL
							Perfluorononanoic acid (PFNA)	2.0006 ng/mL
							Perfluorooctanoic acid (PFOA)	2.00191 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.00146 ng/mL
					LC537-SU_00049	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-MSP_00029	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	166.7 uL	Perfluorobutanesulfonic acid (PFBS)	750.15 ng/mL
							Perfluoroheptanoic acid (PFHpA)	83.3637 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	250.086 ng/mL
							Perfluorononanoic acid (PFNA)	166.716 ng/mL
							Perfluorooctanoic acid (PFOA)	166.826 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	333.455 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-32132-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
....LC537_PFBs_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBs)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537 PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537 PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537 PFOA_00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19		sigma alrich, Lot SZBE107XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-SU_00049	02/04/18	08/04/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFHxA	0.1 ug/mL
..LCMPFHxA_00013	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L2_00020	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	80 uL	Perfluorobutanesulfonic acid (PFBs)	20.0016 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.22277 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	6.66817 ng/mL
							Perfluorononanoic acid (PFNA)	4.44524 ng/mL
							Perfluorooctanoic acid (PFOA)	4.44816 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	8.89106 ng/mL
					LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
					LC537-SU_00049	500 uL	13C4 PFOS	28.68 ng/mL
							13C2 PFDA	10 ng/mL
.LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBs)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBs_00008	450 uL	Perfluorobutanesulfonic acid (PFBs)	90 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-32132-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537_PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537_PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537 PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LC537-SU_00049	02/04/18	08/04/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C4 PFOS	47.8 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			LCMPFHxA_00013	60 uL	13C2 PFDA	0.1 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	0.1 ug/mL
LC537-L3_00023	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	180 uL	Perfluorobutanesulfonic acid (PFBS)	45.0036 ng/mL
							Perfluoroheptanoic acid (PFHpA)	5.00122 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	15.0034 ng/mL
							Perfluorononanoic acid (PFNA)	10.0018 ng/mL
							Perfluorooctanoic acid (PFOA)	10.0084 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	20.0049 ng/mL
					LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
					LC537-SU_00049	500 uL	13C4 PFOS	28.68 ng/mL
							13C2 PFDA	10 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-32132-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
							Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
							Perfluorononanoic acid (PFNA)	20.002 ug/mL
							Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537 PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537 PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537 PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LC537-SU_00049	02/04/18	08/04/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C4 PFOS	47.8 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			LCMPFHxA_00013	60 uL	13C2 PFDA	0.1 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	0.1 ug/mL
							13C2 PFDA	50 ug/mL
							13C2 PFHxA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-32132-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
LC537-L4_00020	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	360 uL	Perfluorobutanesulfonic acid (PFBS)	90.0072 ng/mL		
							Perfluoroheptanoic acid (PFHpA)	10.0024 ng/mL		
							Perfluorohexanesulfonic acid (PFHxS)	30.0067 ng/mL		
							Perfluorononanoic acid (PFNA)	20.0036 ng/mL		
							Perfluorooctanoic acid (PFOA)	20.0167 ng/mL		
					Perfluorooctanesulfonic acid (PFOS)	40.0098 ng/mL				
					LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL		
							13C4 PFOS	28.68 ng/mL		
					LC537-SU_00049	500 uL	13C2 PFDA	10 ng/mL		
13C2 PFHxA	10 ng/mL									
LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL		
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL		
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL		
							Perfluorononanoic acid (PFNA)	277.827 ng/mL		
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL		
							Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL		
LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL		
							LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
							LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
							LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
							LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
							LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL		
LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g		
LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL		
LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g		
LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL		
LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g		
LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537_PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL		
LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g		
LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537_PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL		
LC537_PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g		

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-32132-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA 00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS 00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA 00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS 00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00049	02/04/18	08/04/17	Methanol, Lot 104453	30000 uL	LCMPFDA 00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA 00013	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 00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L5_00024	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	540 uL	Perfluorobutanesulfonic acid (PFBS)	135.011 ng/mL
							Perfluoroheptanoic acid (PFHpA)	15.0037 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.0101 ng/mL
							Perfluorononanoic acid (PFNA)	30.0053 ng/mL
							Perfluorooctanoic acid (PFOA)	30.0251 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	60.0146 ng/mL
					LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
					LC537-SU_00049	500 uL	13C4 PFOS	28.68 ng/mL
							13C2 PFDA	10 ng/mL
.LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL
					LC537-PFHpA_00015	100 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFNA 00013	200 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFOA 00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	2 mg/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-32132-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
....LC537_PFBs_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBs)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537 PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537 PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537 PFOA_00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19		sigma alrich, Lot SZBE107XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
..LCM2PFOA_00007	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C4 PFOS	0.2868 ug/mL
..LCMPFOS_00021	12/12/21		Wellington Laboratories, Lot MPFOS1216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LC537-SU_00049	02/04/18	08/04/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFHxA	0.1 ug/mL
..LCMPFHxA_00013	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFDA	50 ug/mL
LC537-L6_00020	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	720 uL	Perfluorobutanesulfonic acid (PFBs)	180.014 ng/mL
							Perfluoroheptanoic acid (PFHpA)	20.0049 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	60.0135 ng/mL
							Perfluorononanoic acid (PFNA)	40.0071 ng/mL
							Perfluorooctanoic acid (PFOA)	40.0334 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	80.0195 ng/mL
					LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
							13C2 PFDA	10 ng/mL
.LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBs)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-32132-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537 PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537 PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537_PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C4 PFOS	0.2868 ug/mL
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LC537-SU_00049	02/04/18	08/04/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C4 PFOS	47.8 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	0.1 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	0.1 ug/mL
LC537-MSP_00026	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	166.7 uL	Perfluorobutane Sulfonate	750.15 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	750.15 ng/mL
							Perfluoroheptanoic acid (PFHpA)	83.3637 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	250.086 ng/mL
							Perfluorononanoic acid (PFNA)	166.716 ng/mL
							Perfluorooctanoic acid (PFOA)	166.826 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	333.455 ng/mL
.LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutane Sulfonate	90 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
..LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutane Sulfonate	2 mg/mL
							Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
...LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutane Sulfonate	1 g/g
							Perfluorobutanesulfonic acid (PFBS)	1 g/g
..LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
...LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
..LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
...LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
..LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537 PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
...LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
..LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537 PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
...LC537 PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
..LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
...LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
LC537-SU_00051	03/20/18	09/20/17	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_PFB_00002

4/1/15 SPV

SIGMA-ALDRICH®

sigma-aldrich.com

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:

Nonafluorobutane-1-sulfonic acid - 97%

Product Number:

562629

Batch Number:

MKBP8842V

Brand:

ALDRICH

CAS Number:

375-73-5

MDL Number:

MFCD01320794

Formula:

C₄HF₉O₃S

Formula Weight:

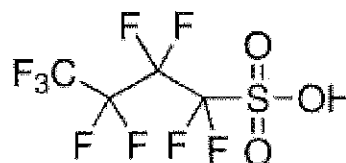
300.10 g/mol

Storage Temperature:

Store at 2 - 8 °C

Quality Release Date:

11 OCT 2013



PFBS

Test	Specification	Result
Appearance (Color)	Colorless	Colorless
Appearance (Form)	Liquid	Liquid
Infrared Spectrum	Conforms to Structure	Conforms
Fluorine NMR Spectrum	Conforms to Structure	Conforms
Purity (Titration by NaOH)	96.5 - 103.5 %	101.6 %

Jamie Gleason

Jamie Gleason, Manager

Quality Control

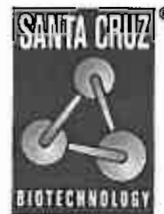
Milwaukee, Wisconsin US

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_PFB2_00002

11.6.8.17 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_PFH_pA_00002

Certificate of Analysis

Product Name: PERFLUOROHEPTANOIC ACID
99 %
Product Number: 342041
Batch Number: BCBM2579V
Brand: Aldrich
CAS Number: 375-85-9
Formula: $\text{CF}_3(\text{CF}_2)_5\text{CO}_2\text{H}$
Formula Weight: 364.06
Quality Release Date: 06 DEC 2013
Recommended Retest Date: OCT 2018

PFH₇A

TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	COLORLESS OR WHITE	WHITE
APPEARANCE (FORM)	LIQUID OR SOLID	SOLID
TITRATION	98.5 - 101.5 %	99.8 %
TITRATION (METHOD)	-	BACK TITRATION
PURITY (GC AREA %)	≥ 98.5 %	99.5 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS



Dr. Claudia Geithner
Manager Quality Control
Buchs, Switzerland

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Reagent

LC537_PFHpA2_00002

Certificate of analysis

r:6.13.17 SW

PFHe A

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

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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ThermoFisher
SCIENTIFIC

Reagent

LC537_PFHxS_00002

r: 4/1/15 stw

Certificate of Analysis

Product Name: TRIDECAFLUOROHXANE-1-SULFONIC ACID POTASSIUM SALT
Product Number: 50929
Batch Number: BCBL3545V
Brand: Aldrich
CAS Number: 3871-99-6
Formula: $C_8F_{13}KO_3S$
Formula Weight: 438.20
Quality Release Date: 20 JUN 2013

PFH₁₃S-K

TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE TO FAINT BEIGE	WHITE
APPEARANCE (FORM)	POWDER OR CRYSTALS	POWDER
TITRATION (ION EXCHANGE)	≥ 98.0 %	99.5 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS



Dr. Claudia Geitner
 Manager Quality Control
 Buchs, Switzerland

$$MW_{corr} = \frac{(k_{form}) - (k) + (H)}{438.20 (k_{form})} = \frac{(438.20 - 39.10 + 1.01)}{438.20 (k_{form})} = 0.91307 \text{ (anion form)}$$

$$Purity = 90.94 \% \text{ w/m.w correction}$$

stw 4/1/15

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_PFHxS2_00002

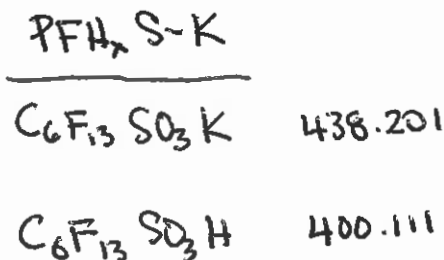


The Future is Now

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)	$\geq 98.0\%$	100.4%



$$MW \text{ correction} = \frac{400.11}{438.201} = 0.91307 \quad \frac{PFH_2S}{\text{CAS \# 355-46-4}}$$

$$\text{Purity \% MW correction} = 90.9\%$$

This document was produced electronically and is valid without a signature.

Reagent

LC537_PFNA_00002

R: 4/1/15 SKV



Certificate of Analysis

Apr 2, 2015 (JST)

TOKYO CHEMICAL INDUSTRY CO.,LTD.
4-10-1 Nihonbashi-Honcho, Chuo-ku, Tokyo 103-0023 Japan

Chemical Name: Heptadecafluorononanoic Acid		
Product Number: H0843	Lot: QN44F	
CAS: 375-95-1		

Tests	Results	Specifications
Purity(GC)	96.3 %	min. 95.0 %
Purity(Neutralization titration)	98.1 %	min. 95.0 %
Melting point	63.3 deg-C	62.0 to 67.0 deg-C

TCI Lot numbers are 4-5 characters in length.
Characters listed after the first 4-5 characters are control numbers for internal purpose only.

Customer service:

TCI AMERICA
Tel: +1-800-423-8616 / +1-503-283-1681
Fax: +1-888-520-1075 / +1-503-283-1987
E-mail: Sales-US@TCIchemicals.com

PFNA

Reagent

LC537_PFNA2_00002

17.14.16 SW

SIGMA-ALDRICH

sigma-aldrich.com

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:

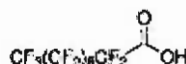
C₉H₁₇O₂

Formula Weight:

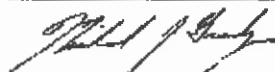
464.08 g/mol

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

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Reagent

LC537_PFOA_00003

C: 11/30/16 SKV
PFA

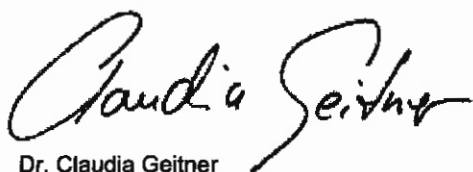
SIGMA-ALDRICH

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

Certificate of Analysis

Product Name: PENTADECAFLUOROOCTANOIC ACID
analytical standard
Product Number: 33824
Batch Number: BCBS1198V
Brand: Sigma-Aldrich
CAS Number: 335-67-1
Formula: $\text{CF}_3(\text{CF}_2)_6\text{COOH}$
Formula Weight: 414.07
Expiration Date: OCT 2023
Quality Release Date: 12 MAY 2016

TEST	SPECIFICATION	RESULT
PURITY (HPLC AREA %)	$\geq 98.0\%$	100.0%
IDENTIFICATION (LC-MS)	IDENTITY CONFORMS	CONFORMS



Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

17: 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_PFOS_00003

n: 11/30/16 SV
PFOS

SIGMA-ALDRICH

CERTIFICATE OF ANALYSIS

Sigma-Aldrich Laborchemikalien GmbH D-30918 Seelze
Telefon: +49 5137 8238-150

Seelze, 22.04.2014/524107/14/08646

Order-No.:

Customer-No.:

Order-Code:

Quantity:

Production Date: 17.Apr.2014

Expiry Date: 17.Apr.2019

Article/Product: 33829

Batch : SZBE107XV

Heptadecafluorooctanesulfonic acid potassium salt OEKANAL®

Reference Material (RM)

1. General Information

Formula: C₈F₁₇KO₃S

CAS-No.: [2795-39-3]

Usage : PFOS

Molar mass: 538.22 g/Mole

Recomm. storage temp.: roomtemp.

The estimated uncertainty of a single measurement of the assay can be expected to be 0.5 % relative (confidence level = 95%, n= 6) whereby the assay measurements are calculated by 100% minus found impurities.

2. Batch Analysis

Identity

Assay (LC-MS)

Date of Analysis

complying

98 %

22.Apr.2014

3. Advice and Remarks

- The expiry date is based on the current knowledge and holds only for proper storage conditions in the originally closed flasks/ packages.
- Whenever the container is opened for removal of aliquot portions of the substance, the person handling the substance must assure, that the integrity of the substance is maintained and proper records of all its handlings are kept. Special care has to be taken to avoid any contamination or adulteration of the substance.
- We herewith confirm that the delivery is effected according to the technical delivery conditions agreed.
- Particular properties of the products or the suitability for a particular area of application are not assured.
- We guarantee a proper quality within our General Conditions of Sales.

Sigma-Aldrich Laborchemikalien GmbH
Quality Management SA-LC

Reagent

LC537_PFOS2_00002

R: 6.14.17 SKV

SIGMA-ALDRICH

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

Certificate of Analysis

Product Name: HEPTADECAFLUOROOCTANESULFONIC ACID TETRAETHYLAMMONIUM SALT
98 %
Product Number: 365289
Batch Number: BCBQ0108V
Brand: Aldrich
CAS Number: 56773-42-3
Formula: $\text{CF}_3(\text{CF}_2)_6\text{CF}_2\text{SO}_3\text{N}(\text{C}_2\text{H}_5)_4$
Formula Weight: 629.37
Quality Release Date: 11 JUN 2015

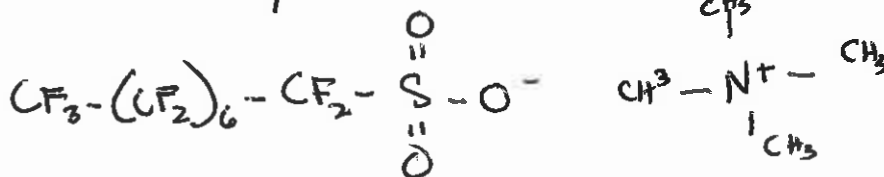
TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE TO OFF WHITE	OFF-WHITE
APPEARANCE (FORM)	POWDER OR POWDER WITH CHUNK(S)	POWDER
CARBON CONTENT	29.77 % - 31.29 %	29.97 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

$$\text{Purity \& MW correction} = 77.37\%$$



$$\begin{array}{r} \text{C}_8\text{F}_{17}\text{SO}_3^+\text{H} \\ \text{C} = 12.011 \quad 96.088 \\ \text{F} = 18.998 \quad 322.966 \\ \text{S} = 32.066 \quad 32.066 \\ \text{O} = 16.000 \quad 47.947 \\ \text{H} = 1.008 \quad 1.008 \\ \text{N} = 14.007 \quad - \\ \hline 500.125 \end{array}$$

$$\begin{array}{r} \text{C}_8\text{H}_{20}\text{N} \\ 96.088 \\ - \\ - \\ 20.60 \\ 14.007 \\ \hline 130.255 \end{array}$$

Reagent

LCM2PFOA_00006

R: 8BC 12/21/16



814260

ID: LCM2PFOA_00006

Exp: 02/12/21 Prod: SBC

13C2-PFOA Stock 50ug/mL



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:**¹³C₂¹²C₆HF₁₆O₂**CONCENTRATION:**

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

416.05

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99%¹³C**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

(1,2-¹³C₂)**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:

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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.

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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:

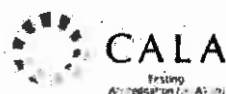
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

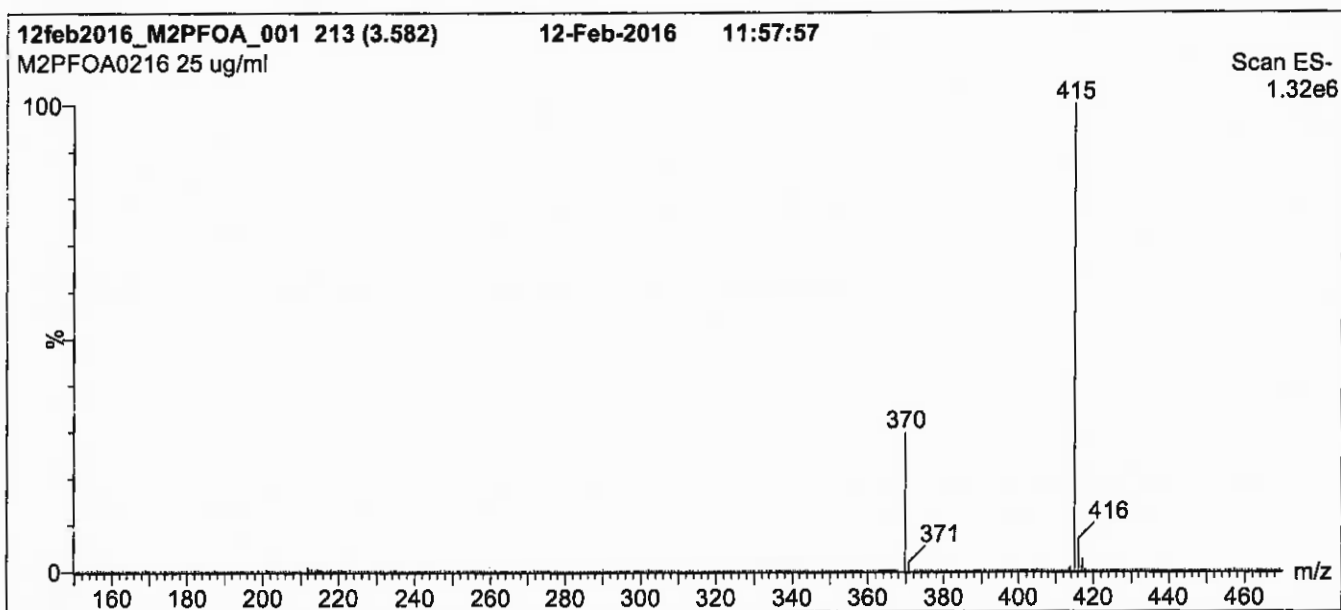
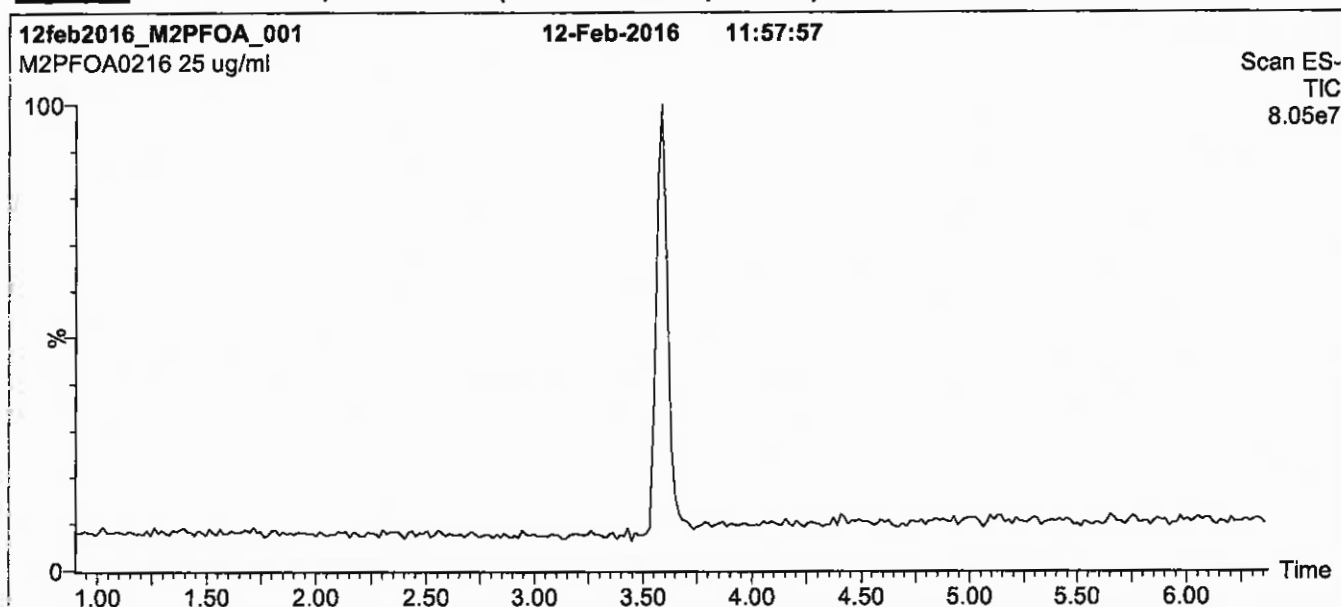
QUALITY MANAGEMENT:

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

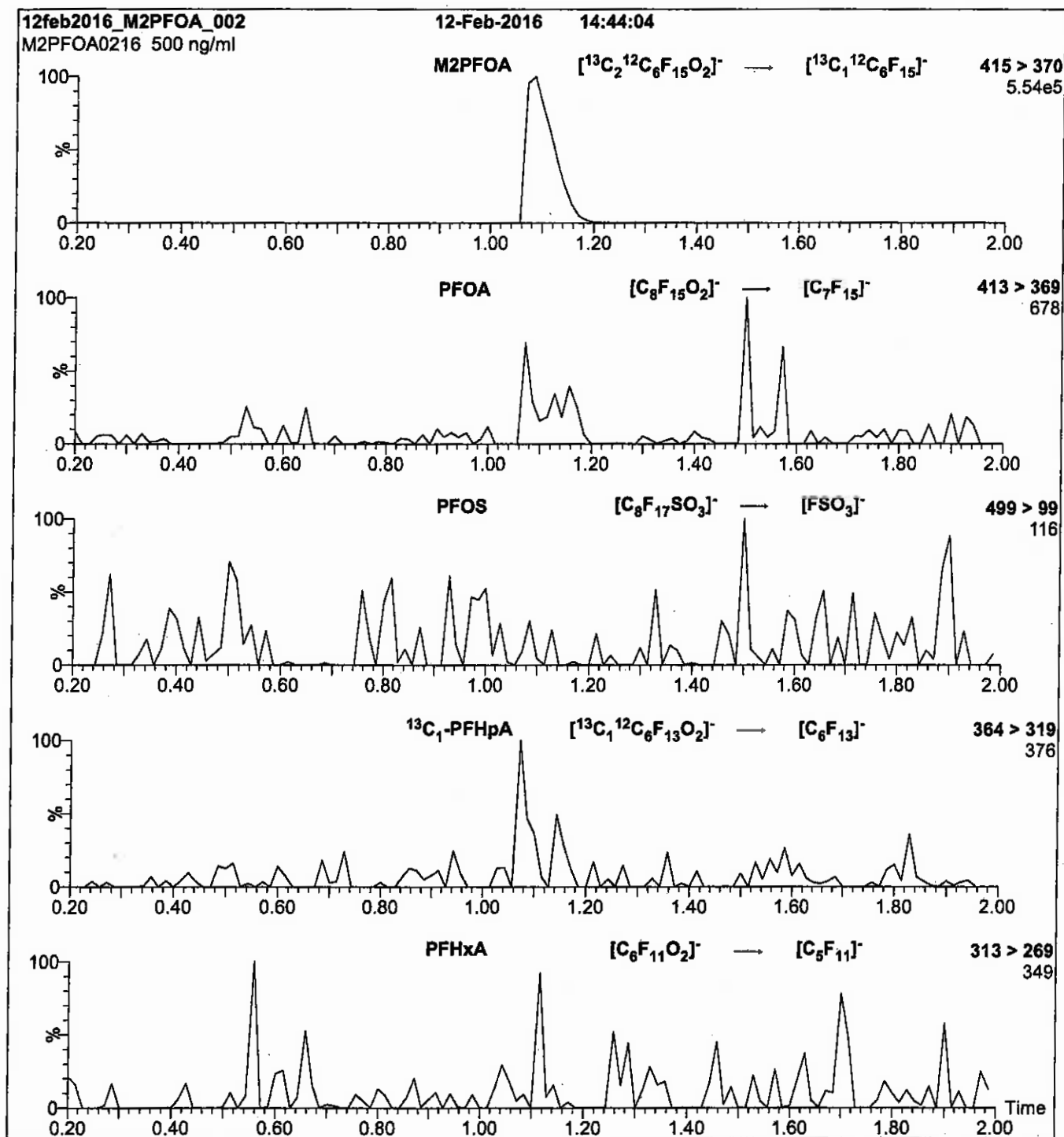
Flow: 300 μ l/min

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% H_2O

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

MS Parameters

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

Reagent

LCM2PFOA_00007



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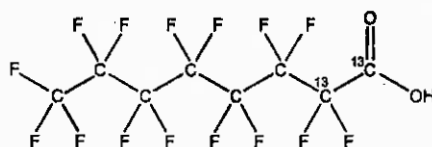
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: M2PFOA0216

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆H₁₆F₁₆O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 416.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/12/2016
EXPIRY DATE: (mm/dd/yyyy) 02/12/2021

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

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:

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EXPIRY DATE / PERIOD OF VALIDITY:

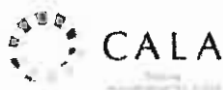
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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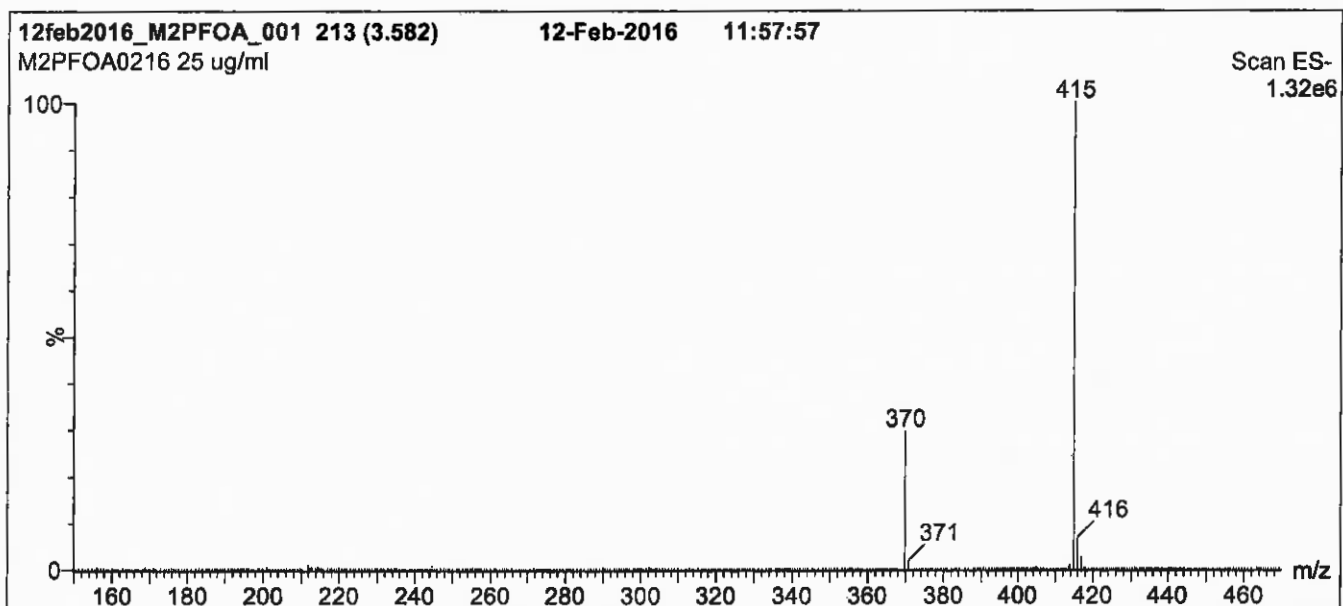
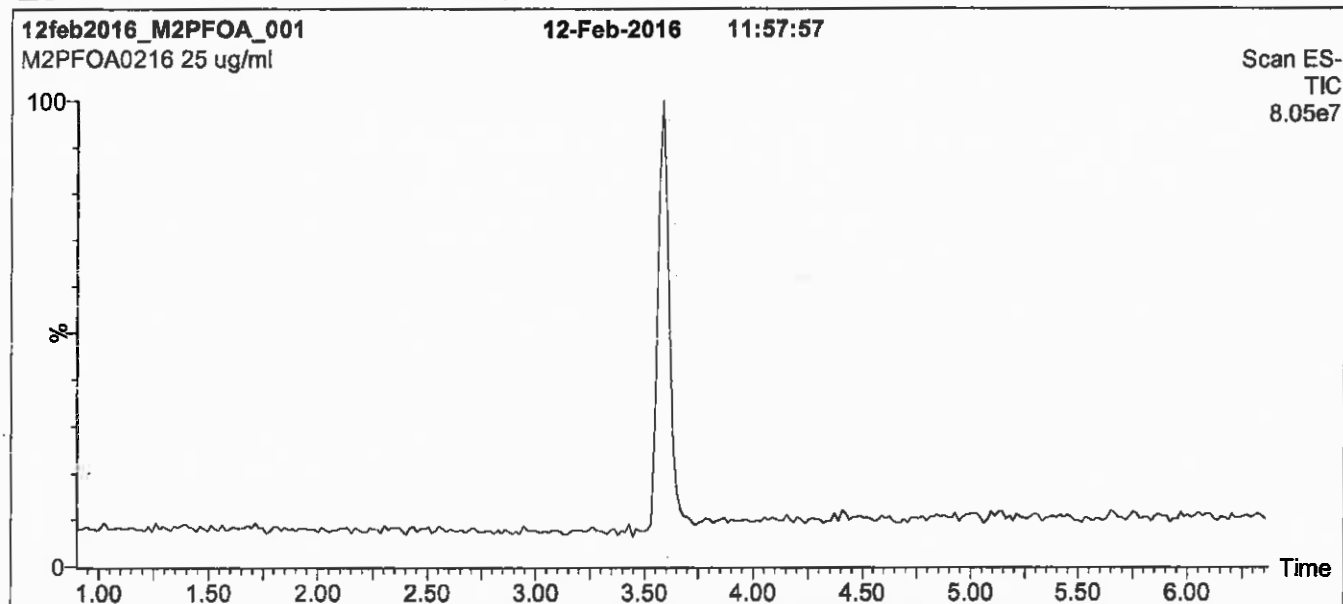
QUALITY MANAGEMENT:

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Figure 1: 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

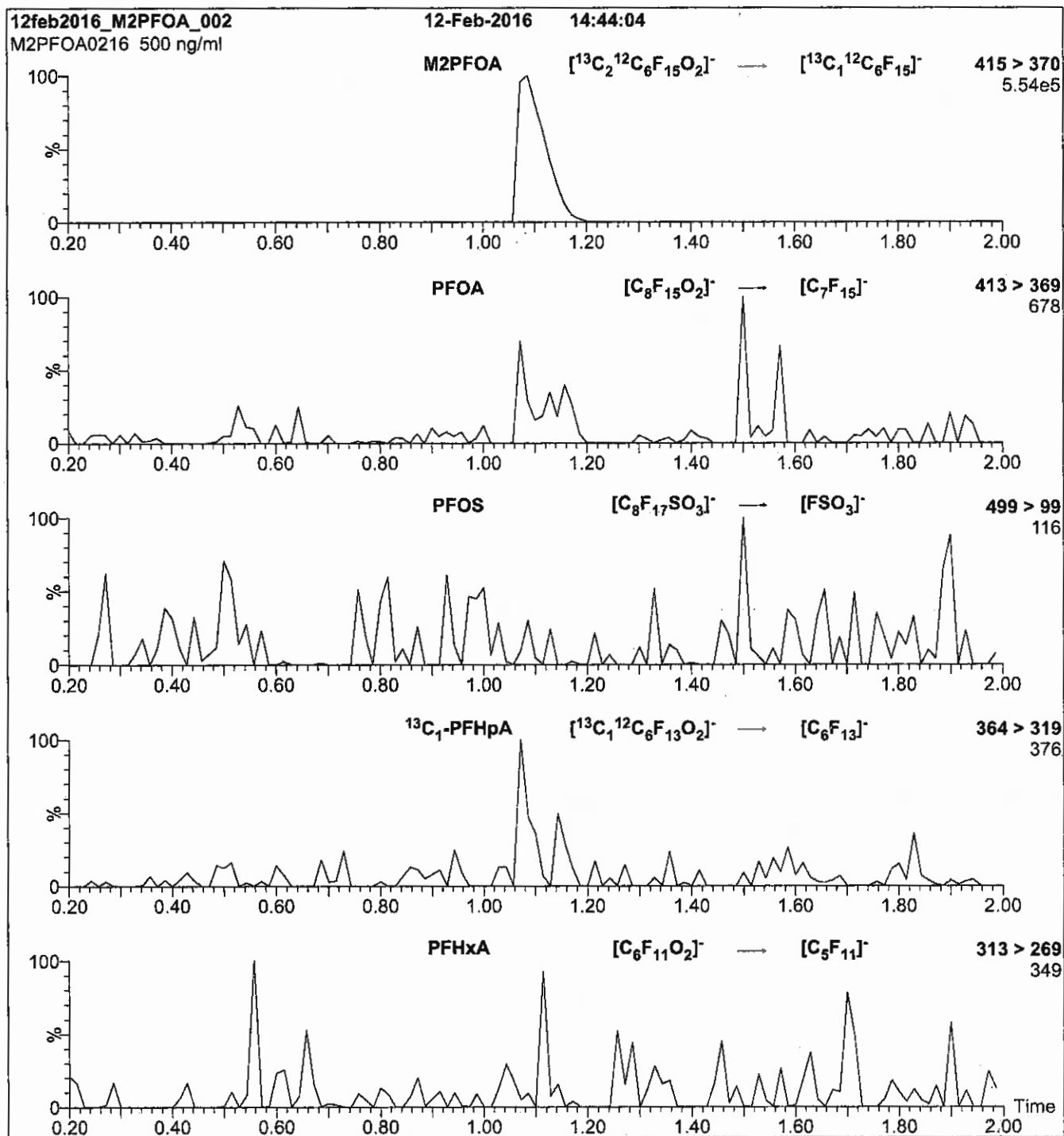
Flow: 300 μ l/min

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 Prod: SBC

13C2-Perfluorodecanoic a



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

MPFDA

COMPOUND:

Perfluoro-n-[1,2-¹³C₂]decanoic acid

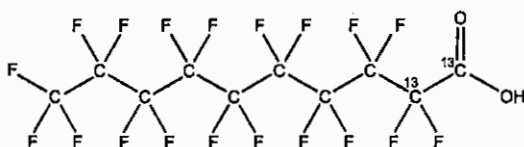
LOT NUMBER:

MPFDA0916

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₈HF₁₉O₂

CONCENTRATION:

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

516.07

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

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

(1,2-¹³C₂)

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. Chritton

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

INTENDED USE:

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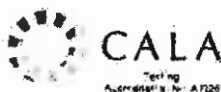
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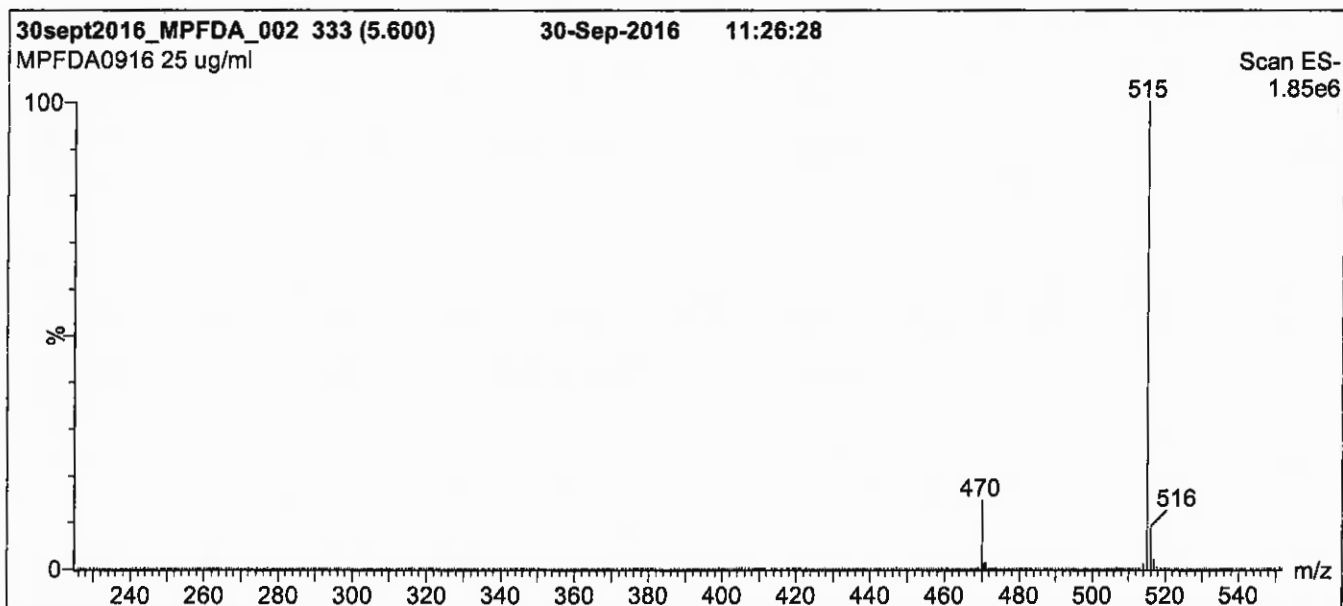
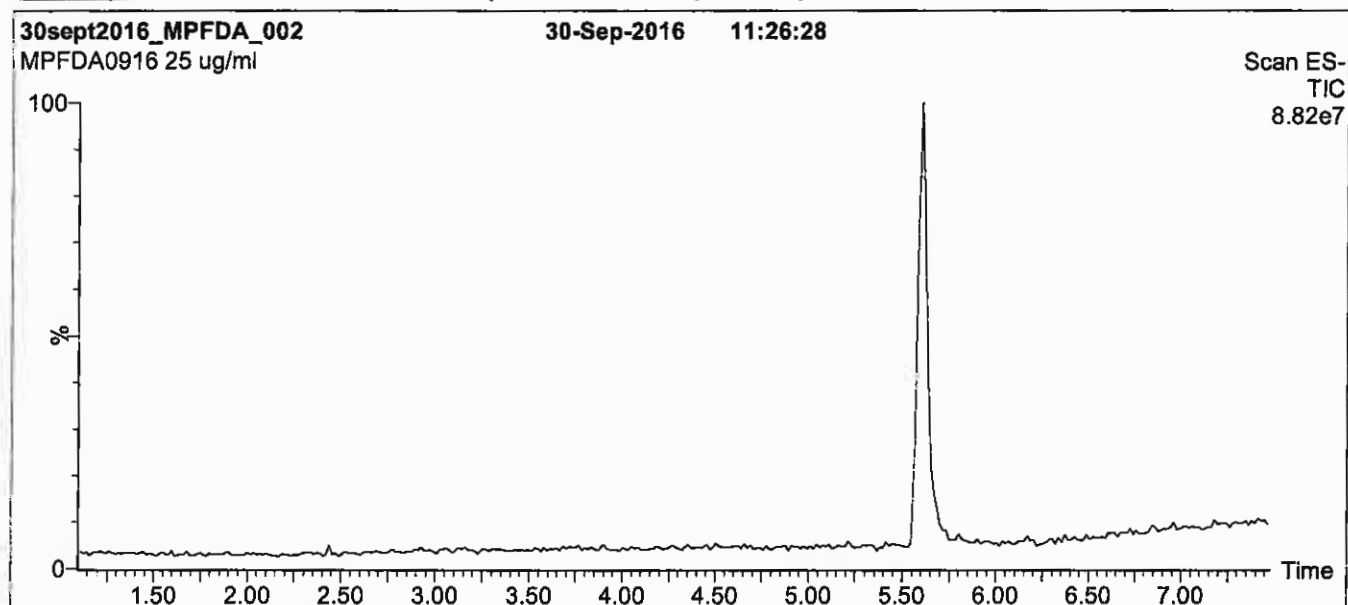
QUALITY MANAGEMENT:

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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

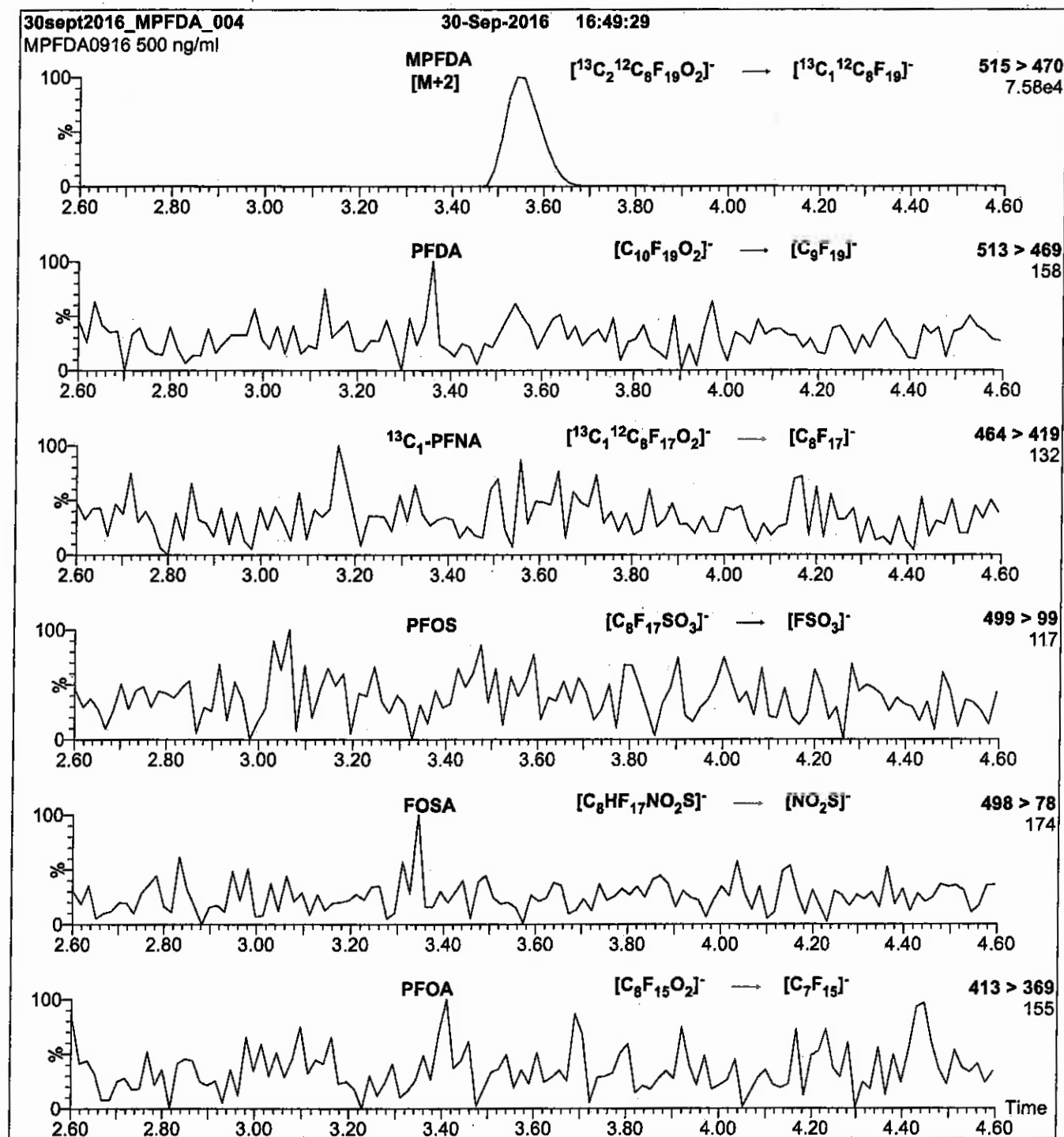
Flow: 300 μ l/min

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% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCMPFHxA_00013

R: SBC 12/21/16

814258
ID: LCMPFHxA_00013
Exp: 04/08/21 Ppdt: SBC
13C2-Perfluorohexanoic ac**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:**

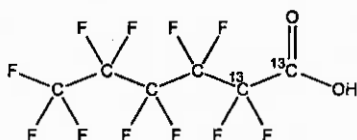
MPFHxA

LOT NUMBER:

MPFHxA0416

COMPOUND:Perfluoro-n-[1,2-¹³C₂]hexanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₂¹²C₄HF₁₁O₂**CONCENTRATION:**

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

316.04

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99%¹³C**LAST TESTED:** (mm/dd/yyyy)

04/08/2016

(1,2-¹³C₂)**EXPIRY DATE:** (mm/dd/yyyy)

04/08/2021

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:

B.G. Chittim

Date: 04/29/2016

(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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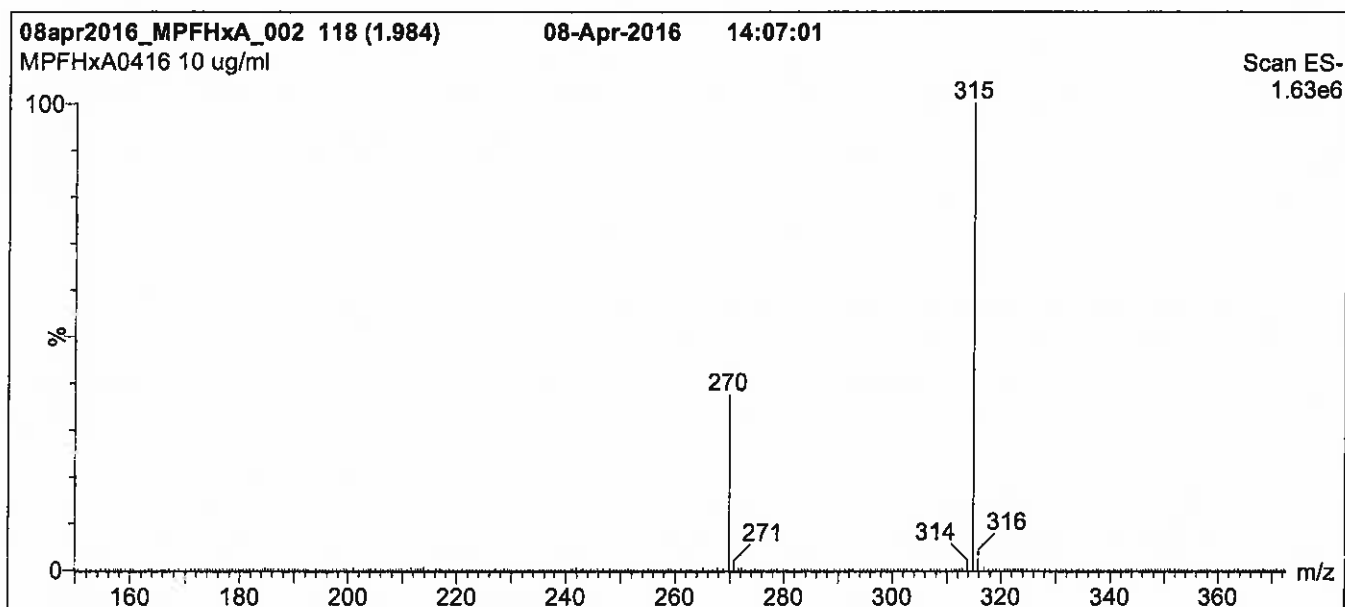
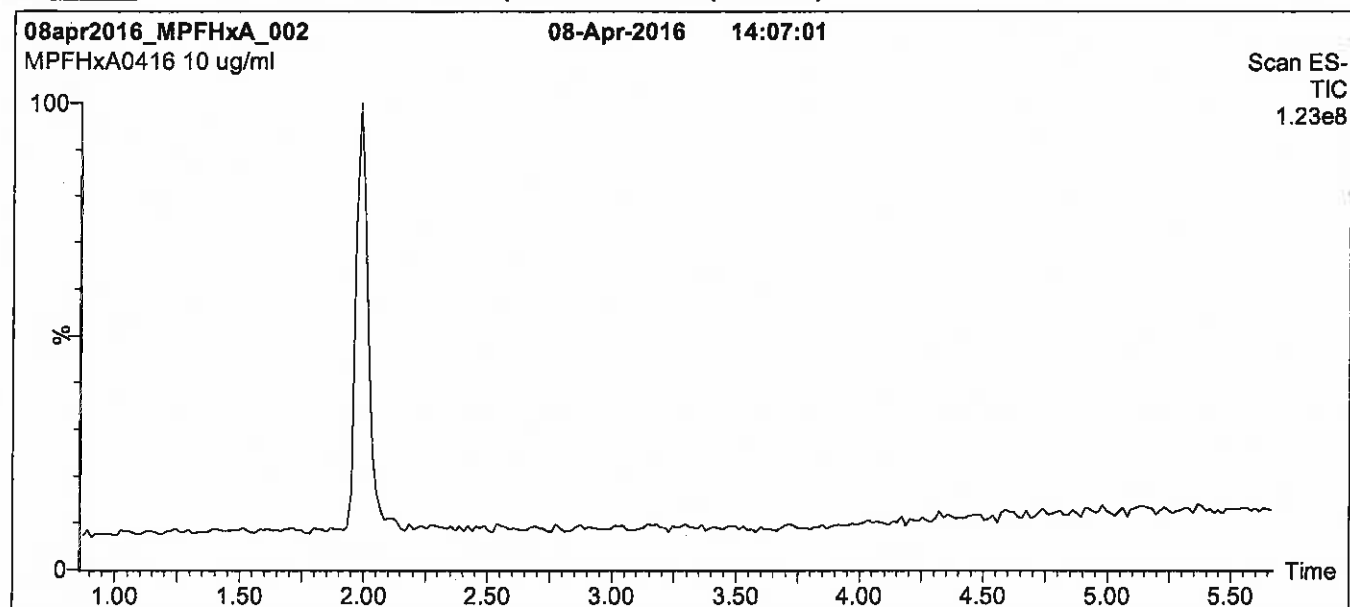
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MS: Micromass Quattro *micro* API MS

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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 over 0.5 min.

Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)

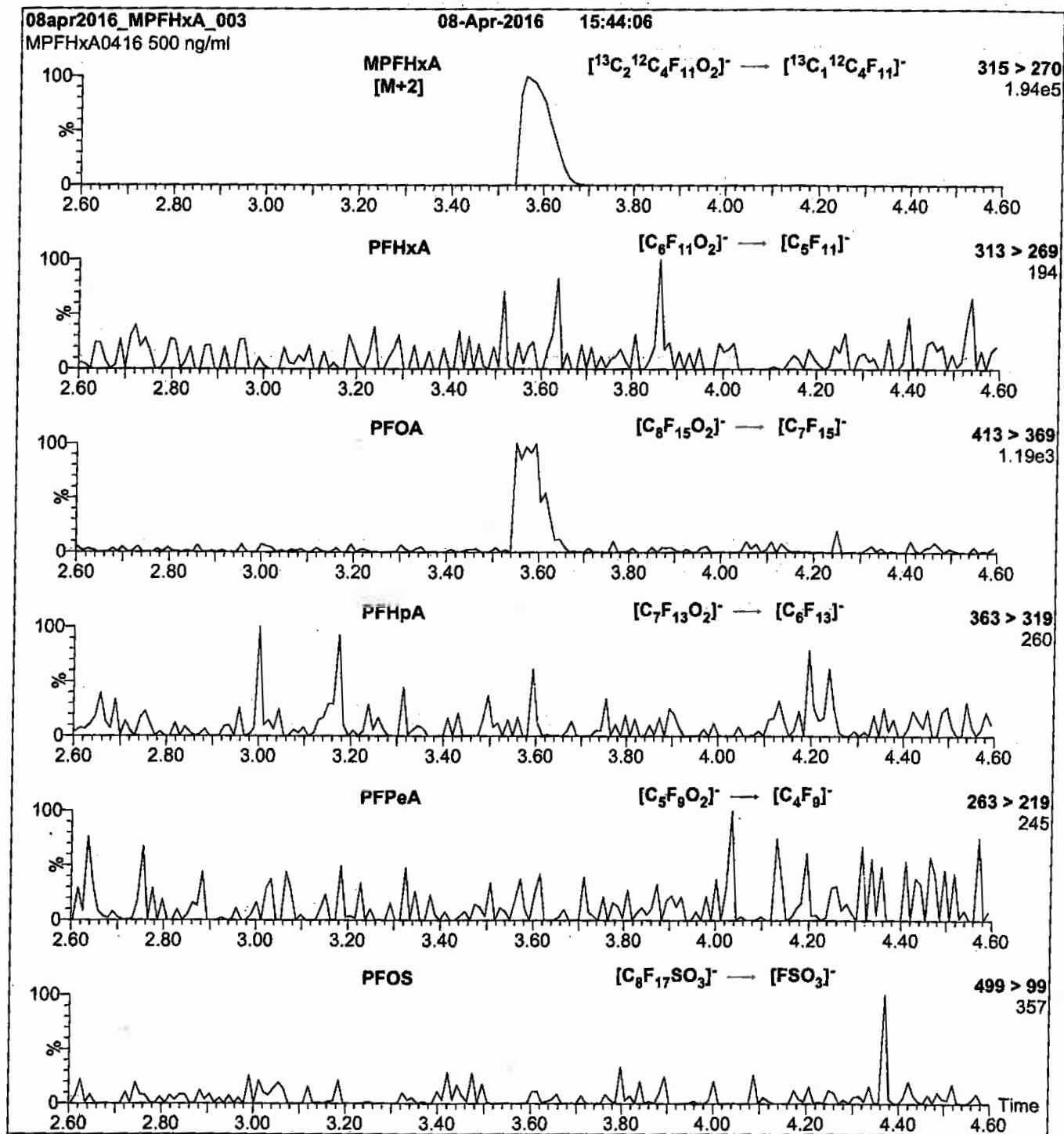
Capillary Voltage (kV) = 2.00

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% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCMPFHxA_00015

m: 5/6/17 SKJ



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: MPFHxA1116

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₄HF₁₁O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 316.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/22/2016
EXPIRY DATE: (mm/dd/yyyy) 11/22/2021

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

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:

B.G. Chittim

Date: 12/13/2016
(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:

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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.

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EXPIRY DATE / PERIOD OF VALIDITY:

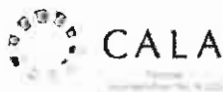
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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.

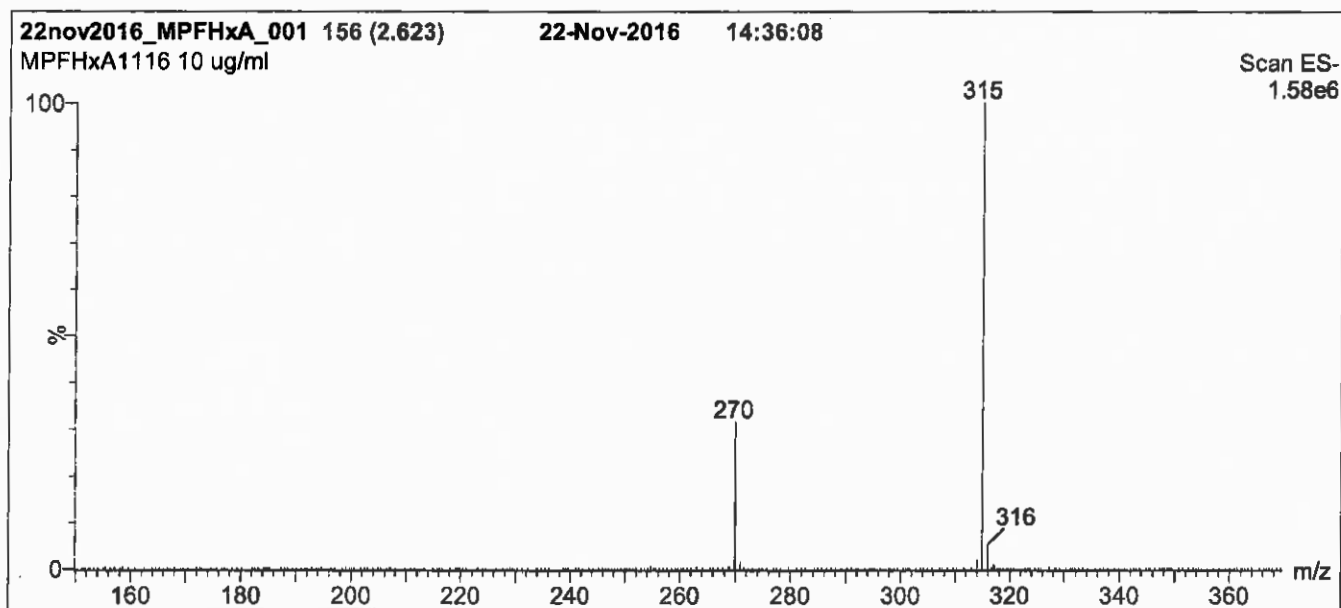
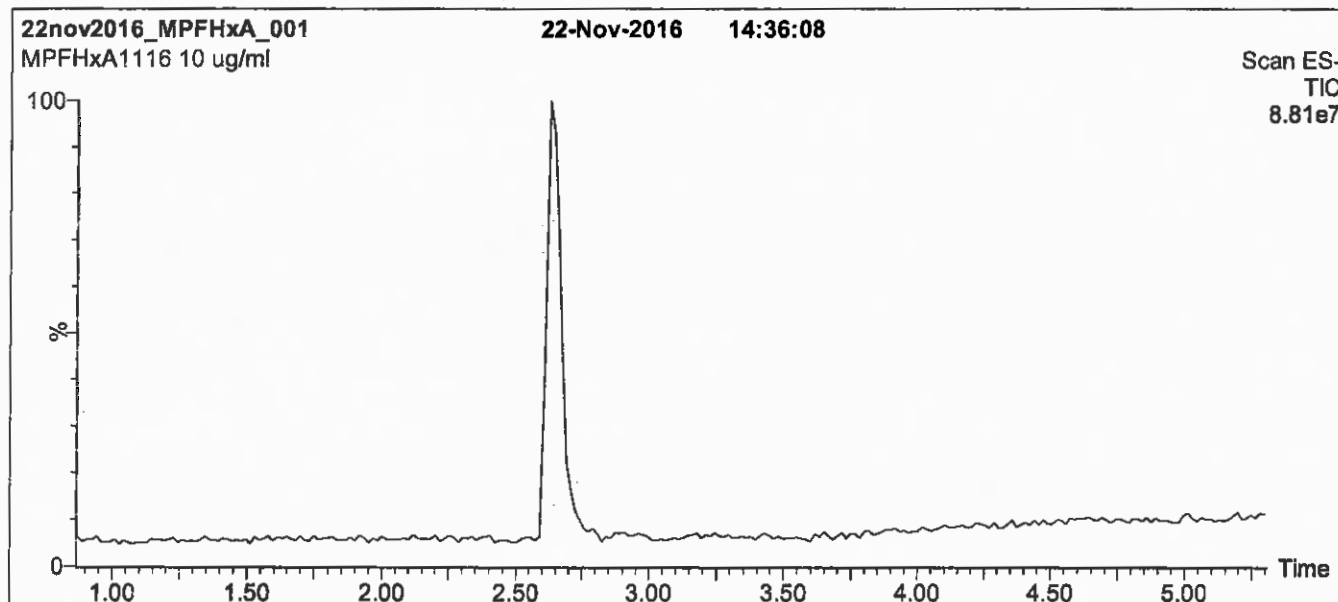
QUALITY MANAGEMENT:

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

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

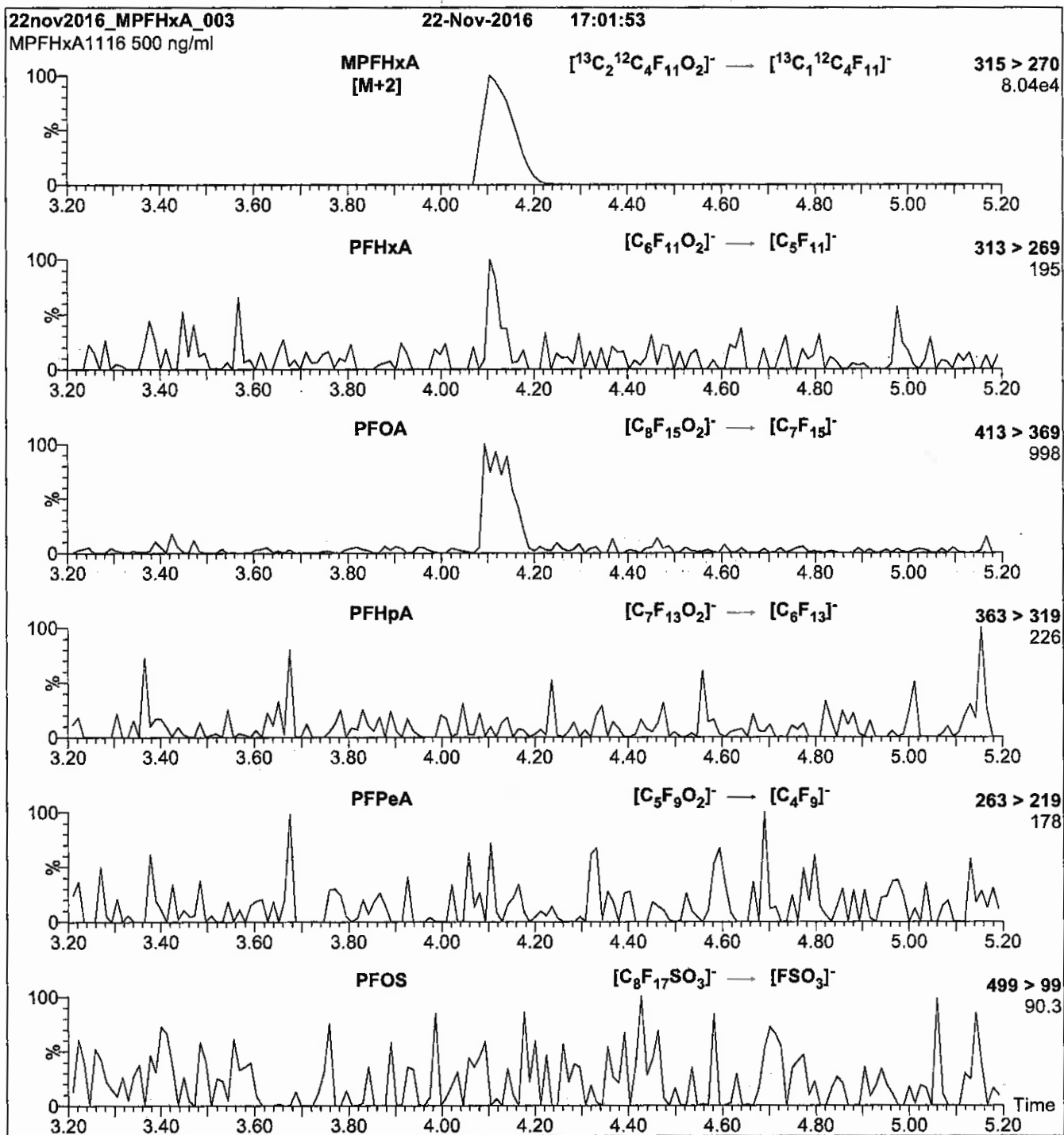
Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions over 0.5 min.
Time: 10 min

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 μl (500 ng/ml MPFHxA)

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) = $3.46\text{e-}3$
Collision Energy (eV) = 10

Reagent

LCMPFOS_00019

R: SBC 12/21/16



814253

ID: LCMFOS_00019

Exp: 08/03/21 Pipd: SBC

13C4-Perfluorooctanesulfo



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

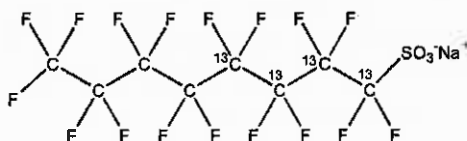
MPFOS

LOT NUMBER:

MPFOS0816

COMPOUND:Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₄¹²C₄F₁₇SO₃Na**CONCENTRATION:**

50.0 ± 2.5 µg/ml (Na salt)

47.8 ± 2.4 µg/ml (MPFOS anion)

MOLECULAR WEIGHT:

526.08

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99% ¹³C**LAST TESTED:** (mm/dd/yyyy)

08/03/2016

(1,2,3,4-¹³C₄)**EXPIRY DATE:** (mm/dd/yyyy)

08/03/2021

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:

B.G. Chittim

Date: 08/05/2016

(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:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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EXPIRY DATE / PERIOD OF VALIDITY:

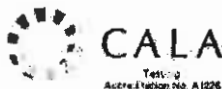
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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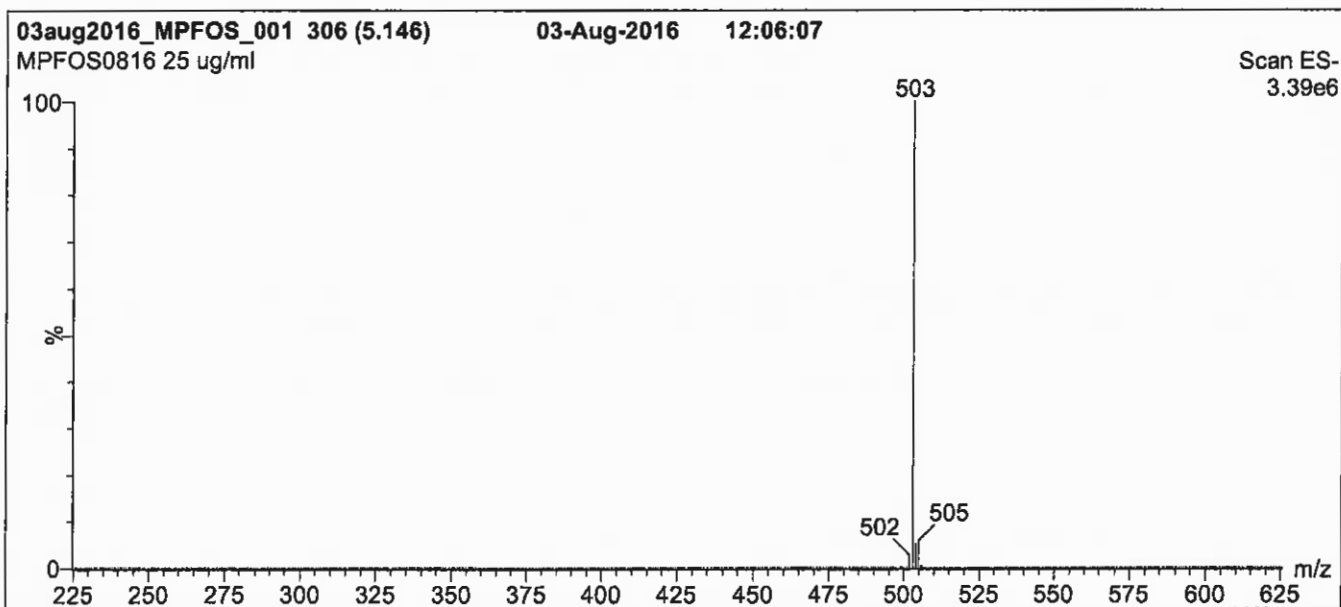
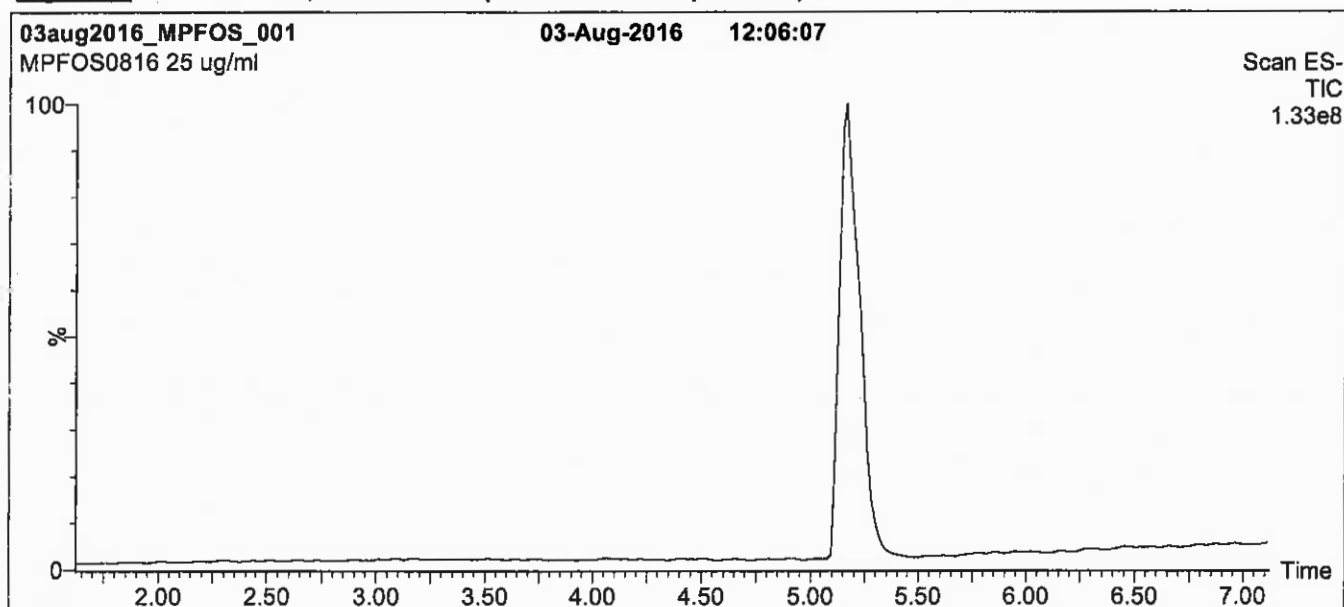
QUALITY MANAGEMENT:

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Figure 1: 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: 45% (80:20 MeOH:ACN) / 55% 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

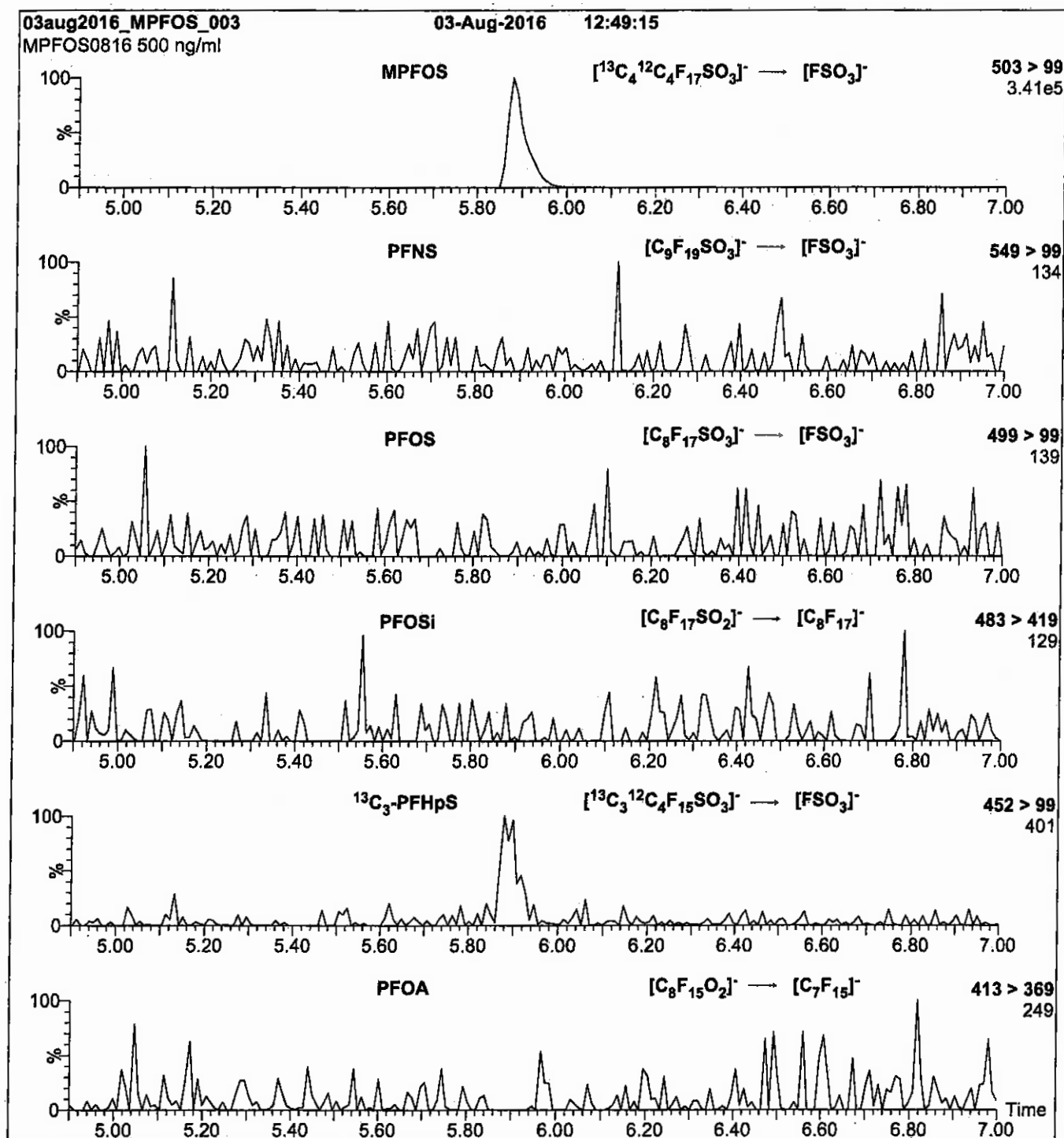
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 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) = 3.46e-3

Collision Energy (eV) = 40

Reagent

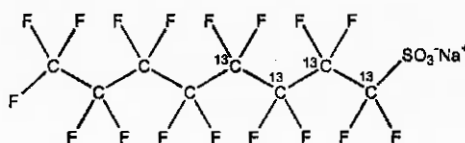
LCMPFOS_00021



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: ¹³C₄¹²C₄F₁₇SO₃Na **MOLECULAR WEIGHT:** 526.08
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 47.8 ± 2.4 µg/ml (MPFOS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 12/12/2016 (1,2,3,4-¹³C₄)
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:

B.G. Chittim

Date: 12/14/2016

(mm/dd/yyyy)

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

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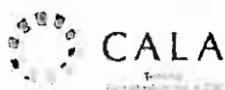
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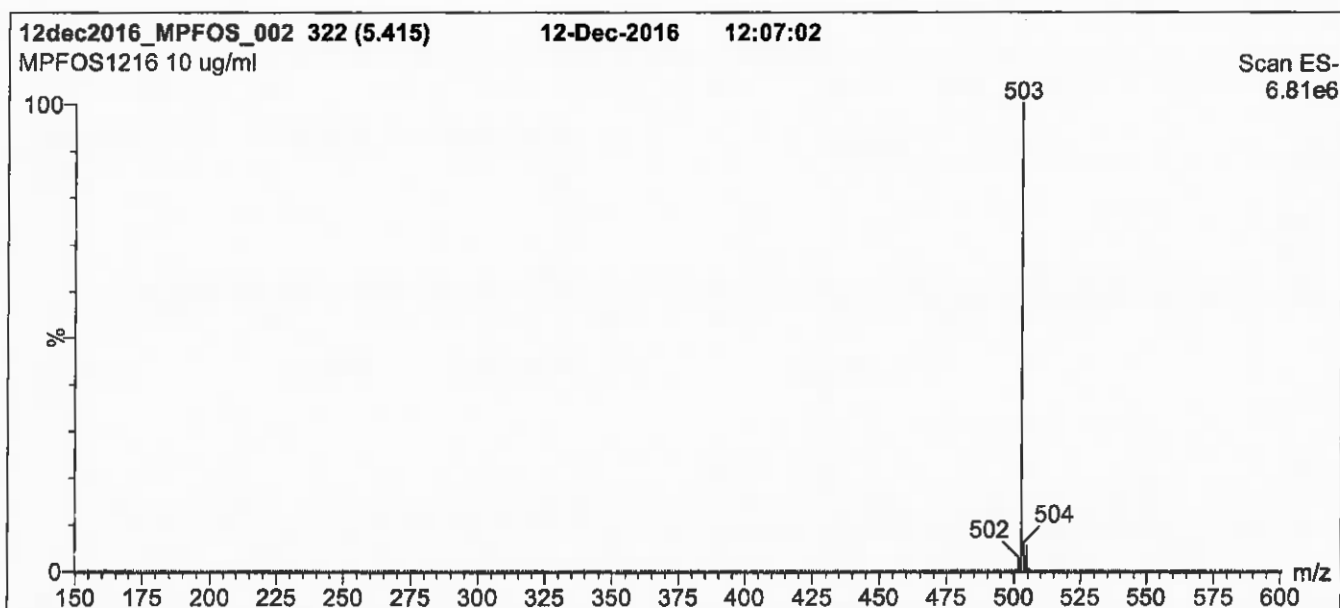
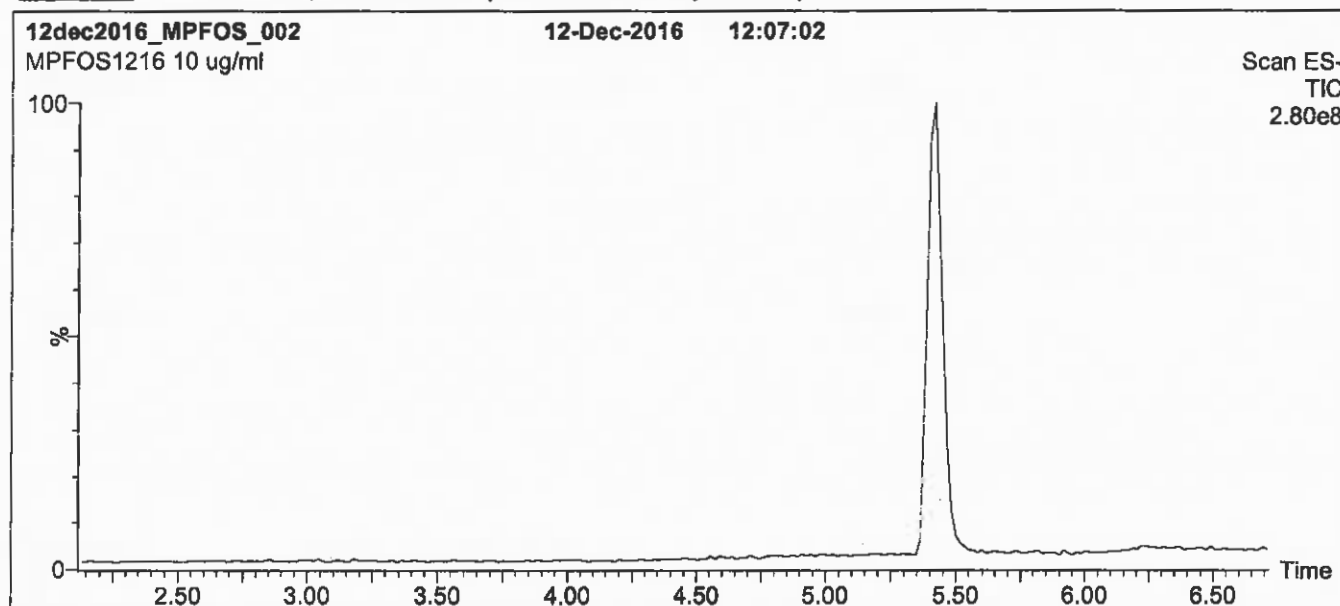
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Figure 1: MPFOS; LC/MS Data (TIC and Mass Spectrum)



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)

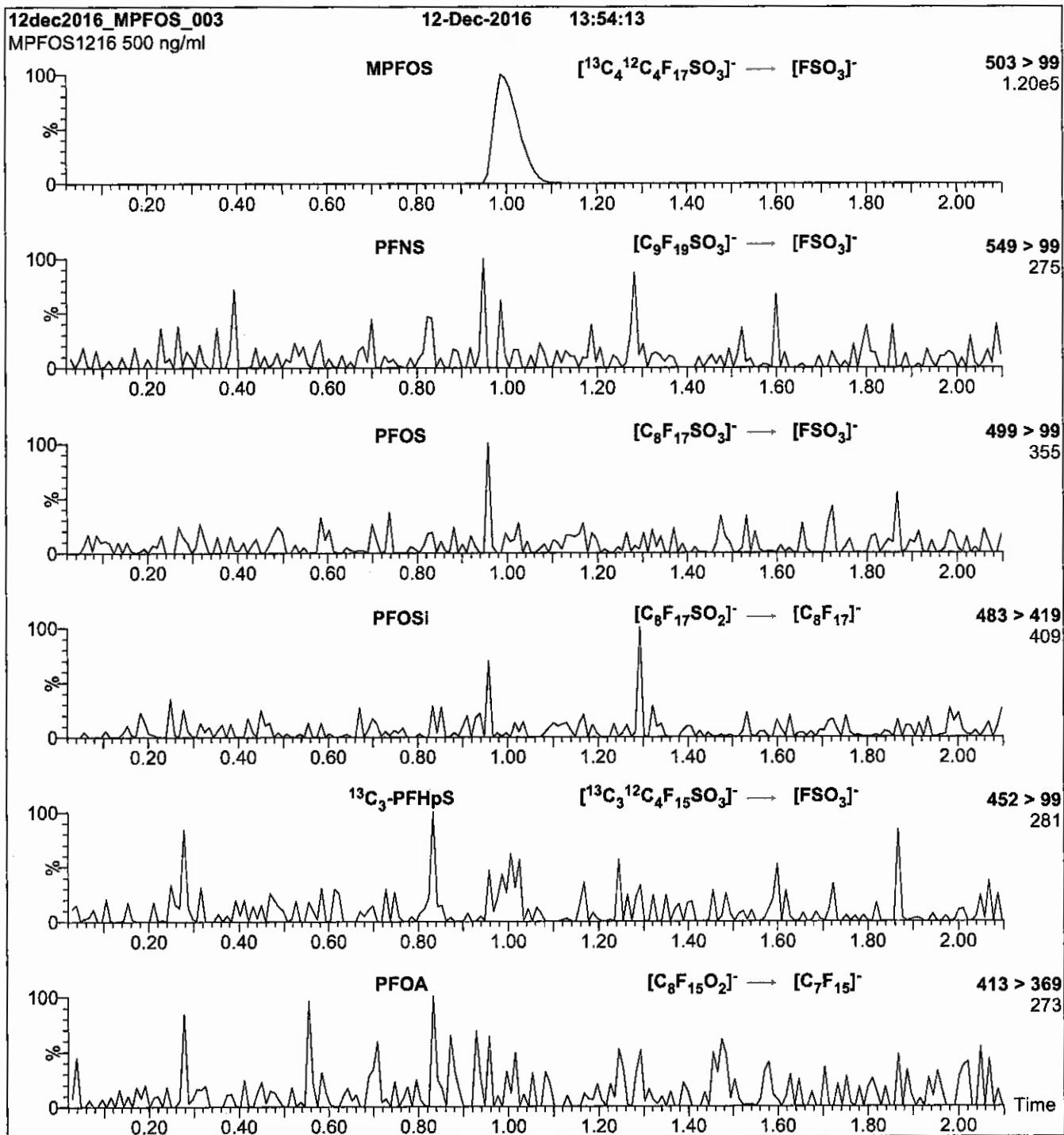
Capillary Voltage (kV) = 3.00

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

Method 537 DOD

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

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-100317-RW-132	320-32132-1	84	109
NAWC-100317-FRB-132	320-32132-2	96	113
NAWC-100317-RW-275	320-32132-3	85	119
NAWC-100317-FRB-275	320-32132-4	96	121
NAWC-100317-RW-146	320-32132-5	86	119
NAWC-100317-RW-146	320-32132-6	94	114
NAWC-100317-RW-134	320-32132-7	83	107
NAWC-100317-FRB-134	320-32132-8	96	107
NAWC-100317-RW-143	320-32132-9	64 Q	104
NAWC-100317-FRB-143	320-32132-10	95	112
NAWC-100317-RW-149	320-32132-11	79	113
NAWC-100317-FRB-149	320-32132-12	95	107
NAWC-100317-RW-229	320-32132-13	72	113
NAWC-100317-FRB-229	320-32132-14	98	128
	MB 320-189331/1-A	101	105
	LCS 320-189331/2-A	100	114
	LCSD 320-189331/3-A	99	116

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.: 320-32132-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.10.20_537A_048.d
 Lab ID: LCS 320-189331/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	133	130	98	70-130	M
Perfluorooctanoic acid (PFOA)	66.7	71.9	108	70-130	
Perfluorononanoic acid (PFNA)	66.7	69.0	103	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	106	106	70-130	
Perfluoroheptanoic acid (PFHpA)	33.3	36.0	108	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	327	109	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.: 320-32132-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.10.20_537A_049.d
 Lab ID: LCSD 320-189331/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	133	132	99	2	30	70-130	M
Perfluorooctanoic acid (PFOA)	66.7	72.1	108	0	30	70-130	
Perfluorononanoic acid (PFNA)	66.7	72.6	109	5	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	105	105	1	30	70-130	
Perfluoroheptanoic acid (PFHpA)	33.3	37.9	114	5	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	337	112	3	30	70-130	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Lab File ID: 2017.10.20_537A_047.d Lab Sample ID: MB 320-189331/1-A
 Matrix: Water Date Extracted: 10/13/2017 14:28
 Instrument ID: A8_N Date Analyzed: 10/20/2017 21:13
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-189331/2-A	2017.10.20_537A_048.d	10/20/2017 21:18
	LCSD 320-189331/3-A	2017.10.20_537A_049.d	10/20/2017 21:23
NAWC-100317-RW-132	320-32132-1	2017.10.20_537A_050.d	10/20/2017 21:27
NAWC-100317-FRB-132	320-32132-2	2017.10.20_537A_051.d	10/20/2017 21:32
NAWC-100317-RW-275	320-32132-3	2017.10.20_537A_052.d	10/20/2017 21:37
NAWC-100317-FRB-275	320-32132-4	2017.10.20_537A_053.d	10/20/2017 21:41
NAWC-100317-RW-146	320-32132-5	2017.10.20_537A_054.d	10/20/2017 21:46
NAWC-100317-RW-146	320-32132-6	2017.10.20_537A_055.d	10/20/2017 21:51
NAWC-100317-RW-134	320-32132-7	2017.10.20_537A_056.d	10/20/2017 21:56
NAWC-100317-FRB-134	320-32132-8	2017.10.20_537A_059.d	10/20/2017 22:10
NAWC-100317-RW-143	320-32132-9	2017.10.20_537A_060.d	10/20/2017 22:15
NAWC-100317-FRB-143	320-32132-10	2017.10.20_537A_061.d	10/20/2017 22:19
NAWC-100317-RW-149	320-32132-11	2017.10.20_537A_062.d	10/20/2017 22:24
NAWC-100317-FRB-149	320-32132-12	2017.10.20_537A_063.d	10/20/2017 22:29
NAWC-100317-RW-229	320-32132-13	2017.10.20_537A_064.d	10/20/2017 22:34
NAWC-100317-FRB-229	320-32132-14	2017.10.20_537A_065.d	10/20/2017 22:38

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 09/20/2017 02:56
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 09/20/2017 03:19
 Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		2116635	1.86	5570738	2.11		
UPPER LIMIT		3174953	2.36	8356107	2.61		
LOWER LIMIT		1058318	1.36	2785369	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-185329/11		2252465	1.85	5723538	2.10		
ICV 320-185329/13		2616480	1.85	7294448	2.10		
CCV 320-190444/1 CCVIS		1708886	1.88	5239449	2.12		
MB 320-189331/1-A		1772538	1.88	5264025	2.12		
LCS 320-189331/2-A		1699695	1.88	5200651	2.12		
LCSD 320-189331/3-A		1642035	1.88	5027322	2.12		
320-32132-1	NAWC-100317-RW-132	1698819	1.88	5121505	2.12		
320-32132-2	NAWC-100317-FRB-132	1726608	1.89	5125020	2.13		
320-32132-3	NAWC-100317-RW-275	1610344	1.87	5057931	2.12		
320-32132-4	NAWC-100317-FRB-275	1886218	1.88	5401469	2.12		
320-32132-5	NAWC-100317-RW-146	1753617	1.87	5223140	2.12		
320-32132-6	NAWC-100317-RW-146	1785533	1.88	5329603	2.12		
320-32132-7	NAWC-100317-RW-134	1693408	1.88	5137204	2.12		
CCV 320-190444/13 CCVIS		1826407	1.87	5345335	2.12		
CCV 320-190445/13 CCVIS		1826407	1.87	5345335	2.12		
320-32132-8	NAWC-100317-FRB-134	1834581	1.87	5405544	2.12		
320-32132-9	NAWC-100317-RW-143	1942278	1.88	6003895	2.12		
320-32132-10	NAWC-100317-FRB-143	1755409	1.88	5349350	2.12		
320-32132-11	NAWC-100317-RW-149	1957151	1.88	5991734	2.12		
320-32132-12	NAWC-100317-FRB-149	1752876	1.87	5373811	2.12		
320-32132-13	NAWC-100317-RW-229	1860530	1.88	5656035	2.12		
320-32132-14	NAWC-100317-FRB-229	1709466	1.87	5242457	2.12		
CCV 320-190445/22 CCVIS		1760502	1.88	5237323	2.12		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area

RT Limit = $\pm$ 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.: 320-32132-1
 SDG No.: _____
 Sample No.: CCV 320-190444/1 Date Analyzed: 10/20/2017 21:04
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.10.20_537A_045 Heated Purge: (Y/N) N
 Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1708886	1.88	5239449	2.12		
UPPER LIMIT		2392440	2.38	7335229	2.62		
LOWER LIMIT		1196220	1.38	3667614	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-189331/1-A		1772538	1.88	5264025	2.12		
LCS 320-189331/2-A		1699695	1.88	5200651	2.12		
LCSD 320-189331/3-A		1642035	1.88	5027322	2.12		
320-32132-1	NAWC-100317-RW-132	1698819	1.88	5121505	2.12		
320-32132-2	NAWC-100317-FRB-132	1726608	1.89	5125020	2.13		
320-32132-3	NAWC-100317-RW-275	1610344	1.87	5057931	2.12		
320-32132-4	NAWC-100317-FRB-275	1886218	1.88	5401469	2.12		
320-32132-5	NAWC-100317-RW-146	1753617	1.87	5223140	2.12		
320-32132-6	NAWC-100317-RW-146	1785533	1.88	5329603	2.12		
320-32132-7	NAWC-100317-RW-134	1693408	1.88	5137204	2.12		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area

RT Limit = $\pm$ 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.: 320-32132-1
 SDG No.: _____
 Sample No.: CCV 320-190444/13 Date Analyzed: 10/20/2017 22:00
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.10.20_537A_057 Heated Purge: (Y/N) N
 Calibration ID: 34457

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	1826407	1.87	5345335	2.12		
UPPER LIMIT	2556970	2.37	7483469	2.62		
LOWER LIMIT	1278485	1.37	3741735	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-189331/1-A		1772538	1.88	5264025	2.12	
LCS 320-189331/2-A		1699695	1.88	5200651	2.12	
LCSD 320-189331/3-A		1642035	1.88	5027322	2.12	
320-32132-1	NAWC-100317-RW-132	1698819	1.88	5121505	2.12	
320-32132-2	NAWC-100317-FRB-132	1726608	1.89	5125020	2.13	
320-32132-3	NAWC-100317-RW-275	1610344	1.87	5057931	2.12	
320-32132-4	NAWC-100317-FRB-275	1886218	1.88	5401469	2.12	
320-32132-5	NAWC-100317-RW-146	1753617	1.87	5223140	2.12	
320-32132-6	NAWC-100317-RW-146	1785533	1.88	5329603	2.12	
320-32132-7	NAWC-100317-RW-134	1693408	1.88	5137204	2.12	

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area

RT Limit = $\pm$ 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.: 320-32132-1
 SDG No.: _____
 Sample No.: CCV 320-190445/13 Date Analyzed: 10/20/2017 22:00
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.10.20_537A_057 Heated Purge: (Y/N) N
 Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1826407	1.87	5345335	2.12		
UPPER LIMIT		2556970	2.37	7483469	2.62		
LOWER LIMIT		1278485	1.37	3741735	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-32132-8	NAWC-100317-FRB-134	1834581	1.87	5405544	2.12		
320-32132-9	NAWC-100317-RW-143	1942278	1.88	6003895	2.12		
320-32132-10	NAWC-100317-FRB-143	1755409	1.88	5349350	2.12		
320-32132-11	NAWC-100317-RW-149	1957151	1.88	5991734	2.12		
320-32132-12	NAWC-100317-FRB-149	1752876	1.87	5373811	2.12		
320-32132-13	NAWC-100317-RW-229	1860530	1.88	5656035	2.12		
320-32132-14	NAWC-100317-FRB-229	1709466	1.87	5242457	2.12		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area

RT Limit = $\pm$ 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.: 320-32132-1
 SDG No.: _____
 Sample No.: CCV 320-190445/22 Date Analyzed: 10/20/2017 22:43
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.10.20_537A_066 Heated Purge: (Y/N) N
 Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1760502	1.88	5237323	2.12		
UPPER LIMIT		2464703	2.38	7332252	2.62		
LOWER LIMIT		1232351	1.38	3666126	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-32132-8	NAWC-100317-FRB-134	1834581	1.87	5405544	2.12		
320-32132-9	NAWC-100317-RW-143	1942278	1.88	6003895	2.12		
320-32132-10	NAWC-100317-FRB-143	1755409	1.88	5349350	2.12		
320-32132-11	NAWC-100317-RW-149	1957151	1.88	5991734	2.12		
320-32132-12	NAWC-100317-FRB-149	1752876	1.87	5373811	2.12		
320-32132-13	NAWC-100317-RW-229	1860530	1.88	5656035	2.12		
320-32132-14	NAWC-100317-FRB-229	1709466	1.87	5242457	2.12		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area

RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-RW-132</u>	Lab Sample ID: <u>320-32132-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_050.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 08:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>277(mL)</u>	Date Analyzed: <u>10/20/2017 21:27</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190444</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	10	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	20		18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.0	J	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	109		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_050.d
 Lims ID: 320-32132-A-1-A
 Client ID: NAWC-100317-RW-132
 Sample Type: Client
 Inject. Date: 20-Oct-2017 21:27:44 ALS Bottle#: 36 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32132-a-1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:18:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	288058	1.33		192	
298.90 > 99.00	1.419	1.402	0.017	1.000	191438		1.50(0.00-0.00)	279	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.524	0.016	1.000	1678924	8.43		5762	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.668	0.024	1.000	298925	1.02		107	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.668	0.024	1.000	353023	2.21		42.7	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.855	0.027		1698819	10.0		4992	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.856	0.026	1.000	870727	5.57		19.7	
413.00 > 169.00	1.882	1.856	0.026	1.000	512505		1.70(0.00-0.00)	1086	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		5121505	28.7		3135	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.116	0.016	1.000	68892	0.6521		2.1	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.117	0.007	1.000	476894	2.87		56.7	
499.00 > 99.00	2.124	2.117	0.007	1.000	82071		5.81(0.00-0.00)	31.6	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.282	0.002	1.000	1035820	10.9		5643	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_050.d

Injection Date: 20-Oct-2017 21:27:44

Instrument ID: A8_N

Lims ID: 320-32132-A-1-A

Lab Sample ID: 320-32132-1

Client ID: NAWC-100317-RW-132

Operator ID: SACINSTLCMS01

ALS Bottle#: 36

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

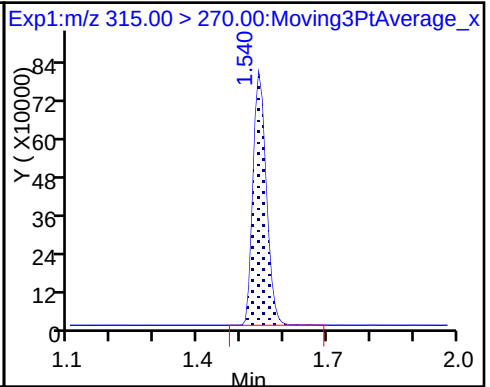
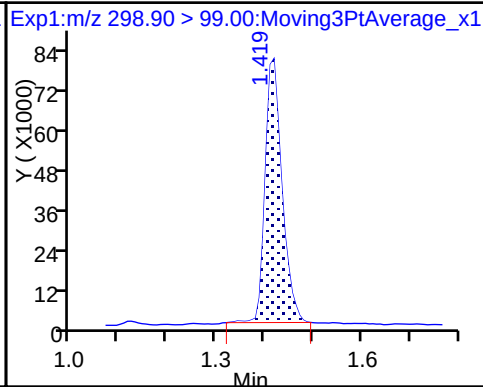
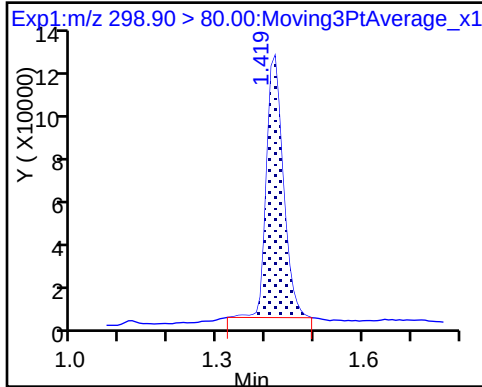
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

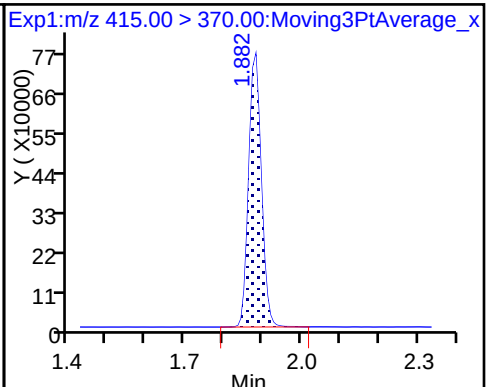
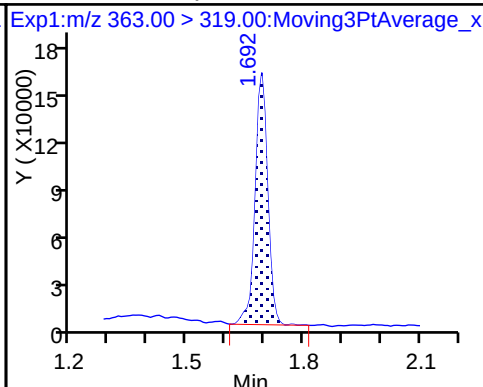
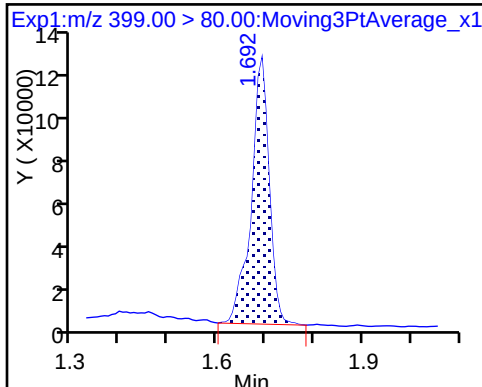
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

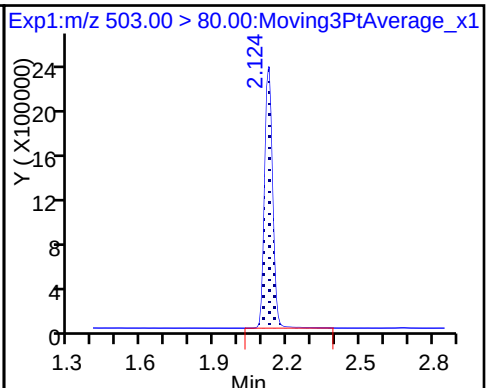
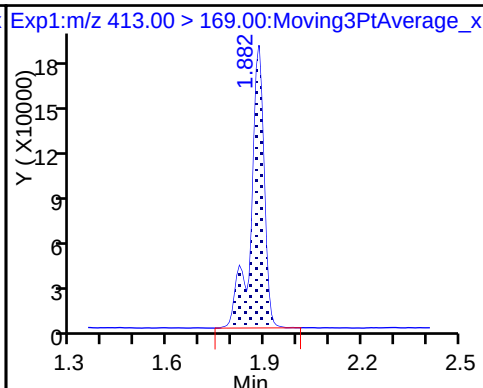
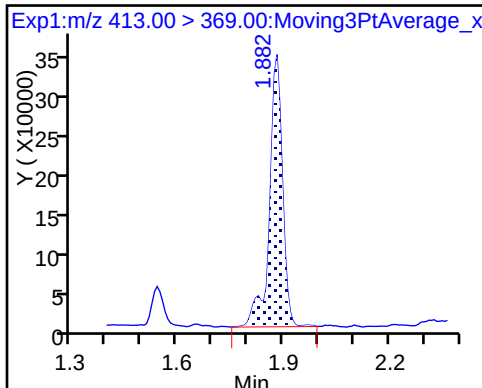
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

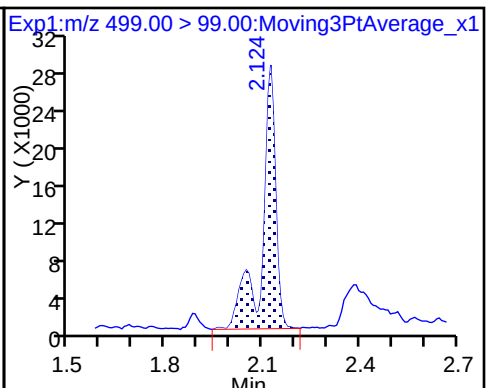
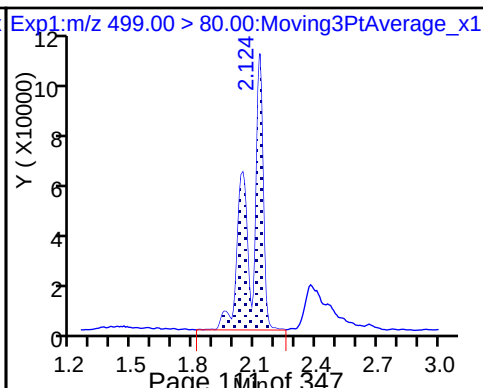
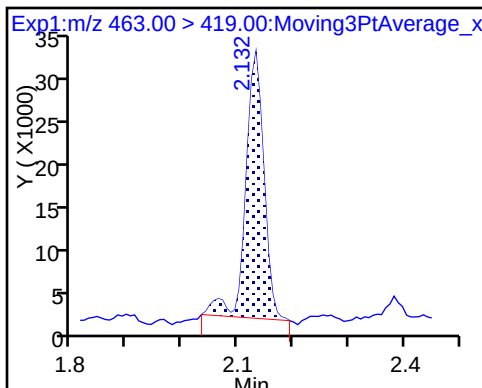
* 7 13C4 PFOS



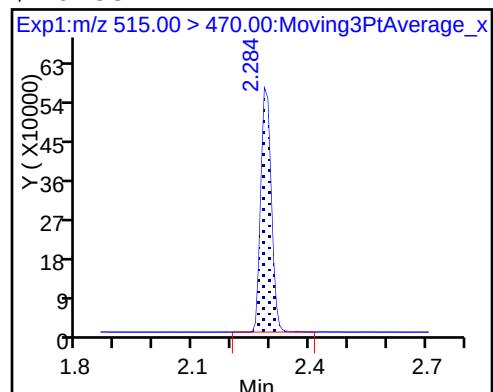
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_050.d
Lims ID: 320-32132-A-1-A
Client ID: NAWC-100317-RW-132
Sample Type: Client
Inject. Date: 20-Oct-2017 21:27:44 ALS Bottle#: 36 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32132-a-1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:18:08

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.43	84.34
\$ 10 13C2 PFDA	10.0	10.9	109.32

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: NAWC-100317-FRB-132 Lab Sample ID: 320-32132-2
 Matrix: Water Lab File ID: 2017.10.20_537A_051.d
 Analysis Method: 537 Date Collected: 10/03/2017 08:05
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 269.3 (mL) Date Analyzed: 10/20/2017 21:32
 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.: 190444 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.4	U	19	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	84	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	113		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_051.d
 Lims ID: 320-32132-A-2-A
 Client ID: NAWC-100317-FRB-132
 Sample Type: Client
 Inject. Date: 20-Oct-2017 21:32:28 ALS Bottle#: 37 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32132-a-2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:18:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
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\$ 2 13C2 PFHxA

315.00 > 270.00 1.548 1.524 0.024 1.000 1939913 9.59 3671

* 6 13C2-PFOA

415.00 > 370.00 1.889 1.855 0.034 1726608 10.0 3177

* 7 13C4 PFOS

503.00 > 80.00 2.132 2.108 0.024 5125020 28.7 2535

\$ 10 13C2 PFDA

515.00 > 470.00 2.291 2.282 0.009 1.000 1087470 11.3 4175

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_051.d

Injection Date: 20-Oct-2017 21:32:28

Instrument ID: A8_N

Lims ID: 320-32132-A-2-A

Lab Sample ID: 320-32132-2

Client ID: NAWC-100317-FRB-132

Operator ID: SACINSTLCMS01

ALS Bottle#: 37

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

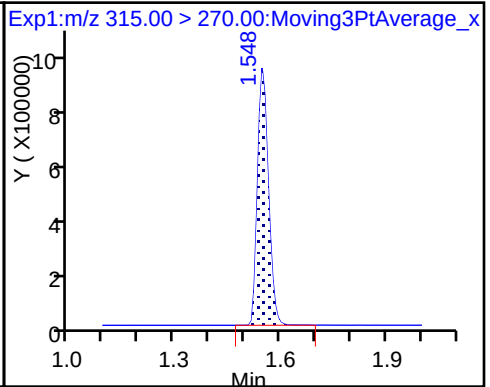
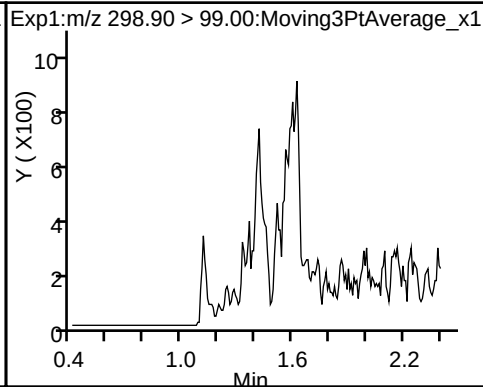
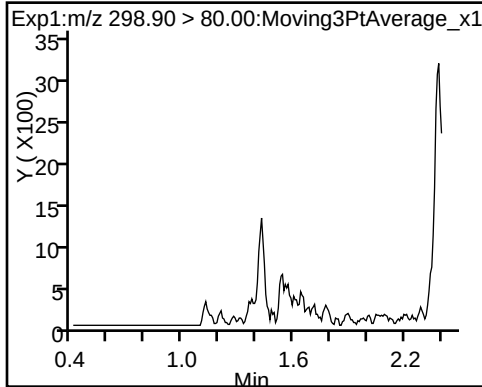
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

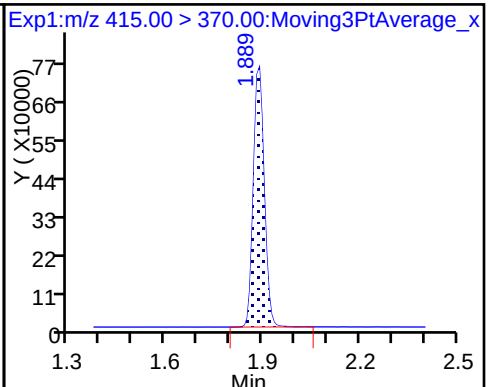
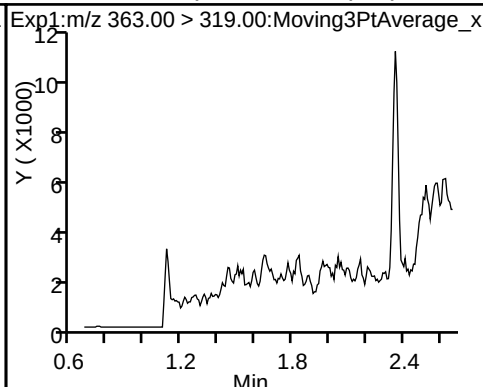
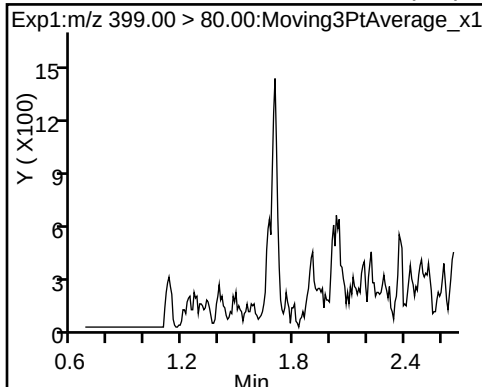
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

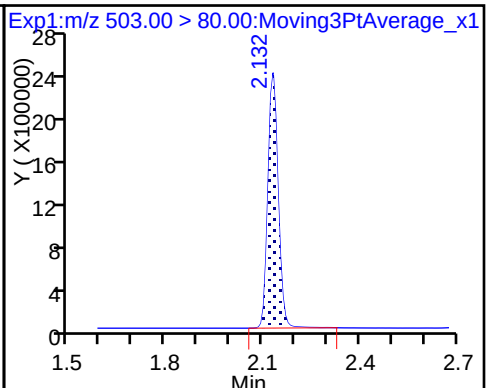
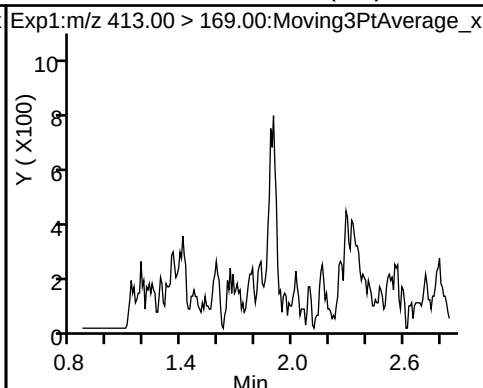
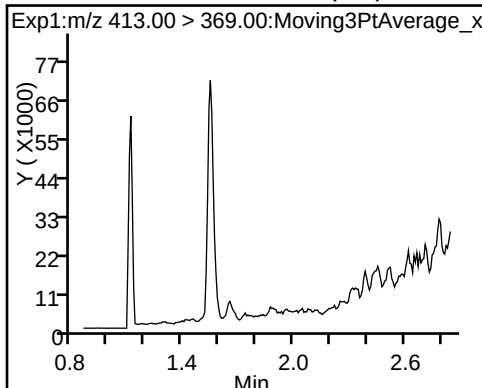
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

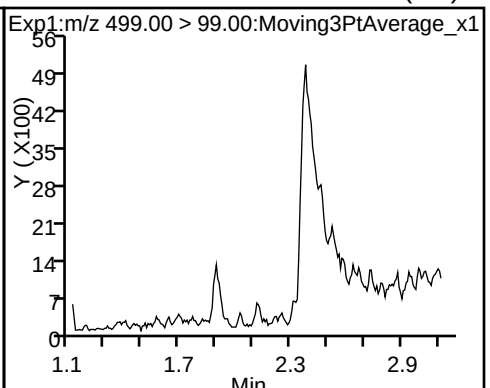
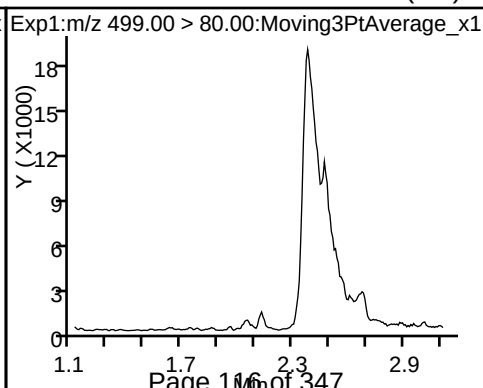
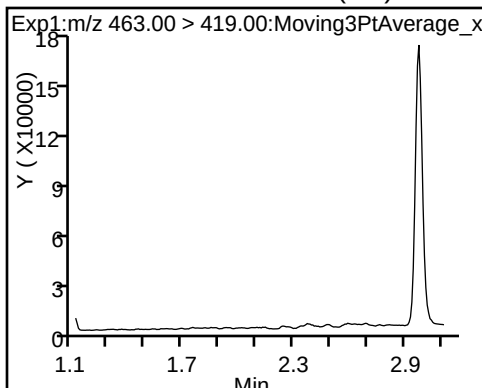
* 7 13C4 PFOS



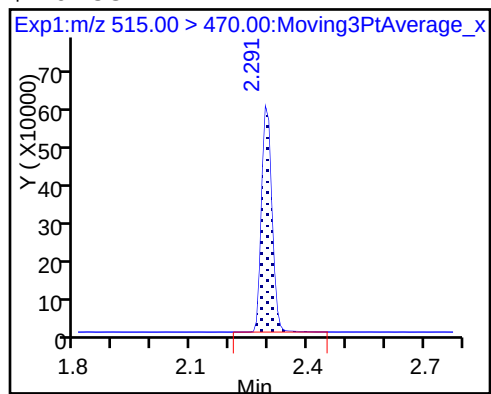
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_051.d
Lims ID: 320-32132-A-2-A
Client ID: NAWC-100317-FRB-132
Sample Type: Client
Inject. Date: 20-Oct-2017 21:32:28 ALS Bottle#: 37 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32132-a-2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:18:35

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.59	95.88
\$ 10 13C2 PFDA	10.0	11.3	112.92

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: NAWC-100317-RW-275 Lab Sample ID: 320-32132-3
 Matrix: Water Lab File ID: 2017.10.20_537A_052.d
 Analysis Method: 537 Date Collected: 10/03/2017 09:10
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 287.1(mL) Date Analyzed: 10/20/2017 21:37
 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.: 190444 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	J M	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	20		17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.8	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.6	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	119		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_052.d
 Lims ID: 320-32132-A-3-A
 Client ID: NAWC-100317-RW-275
 Sample Type: Client
 Inject. Date: 20-Oct-2017 21:37:13 ALS Bottle#: 38 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32132-a-3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:19:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	638869	3.01		240	
298.90 > 99.00	1.411	1.402	0.009	0.995	446411		1.43(0.00-0.00)	561	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.524	0.016	1.000	1595993	8.46		4869	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.668	0.024	1.000	728505	2.52		153	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.668	0.024	1.000	288745	1.90		26.7	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.855	0.019		1610344	10.0		4256	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.856	0.018	1.000	840566	5.68		17.4	
413.00 > 169.00	1.874	1.856	0.018	1.000	490131		1.71(0.00-0.00)	885	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		5057931	28.7		1734	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.116	0.016	1.000	116865	1.17		3.0	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.117	0.007	1.000	1300476	7.91		130	M
499.00 > 99.00	2.124	2.117	0.007	1.000	238065		5.46(0.00-0.00)	84.0	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.282	0.002	1.000	1066949	11.9		5313	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_052.d

Injection Date: 20-Oct-2017 21:37:13

Instrument ID: A8_N

Lims ID: 320-32132-A-3-A

Lab Sample ID: 320-32132-3

Client ID: NAWC-100317-RW-275

Operator ID: SACINSTLCMS01

ALS Bottle#: 38

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

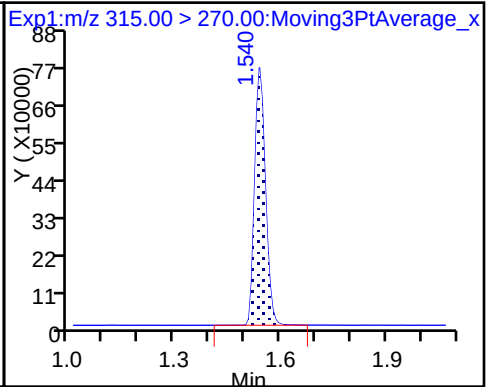
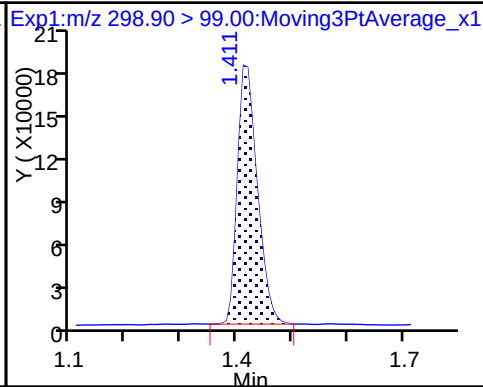
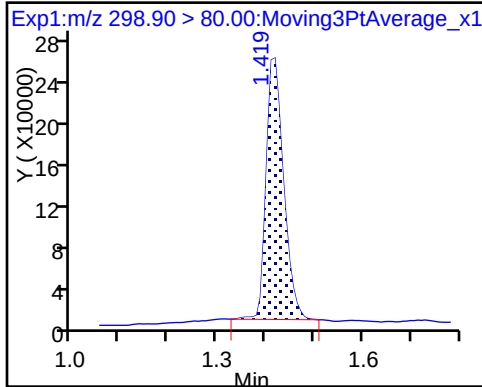
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

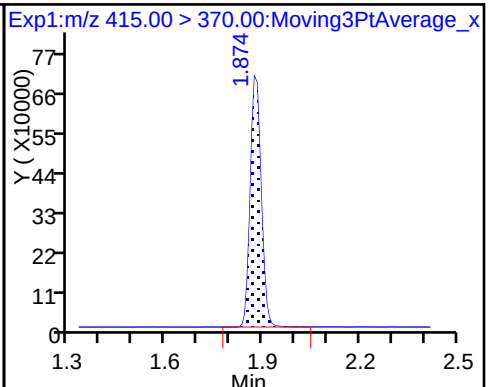
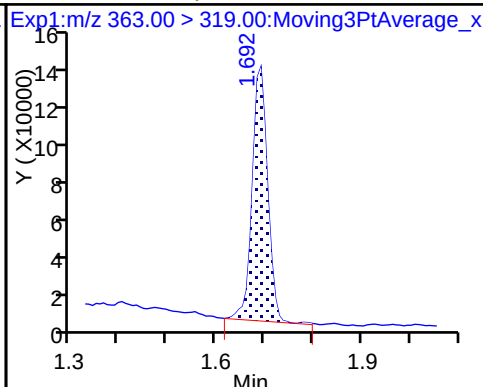
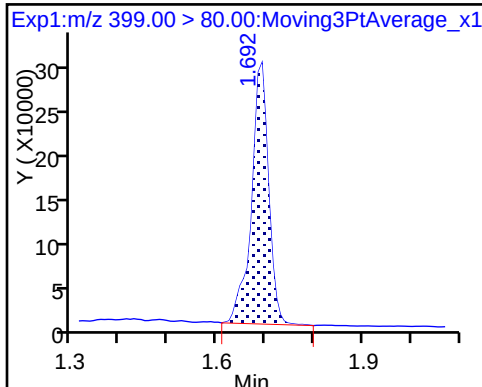
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

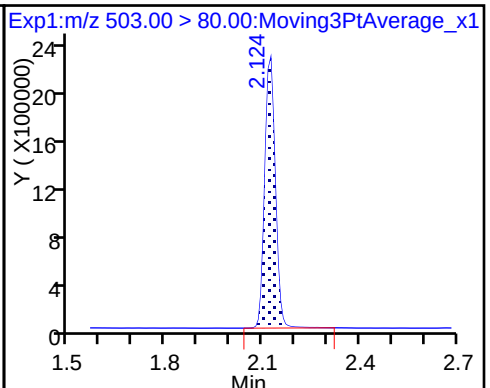
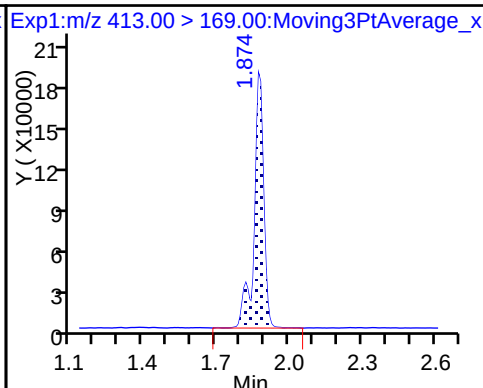
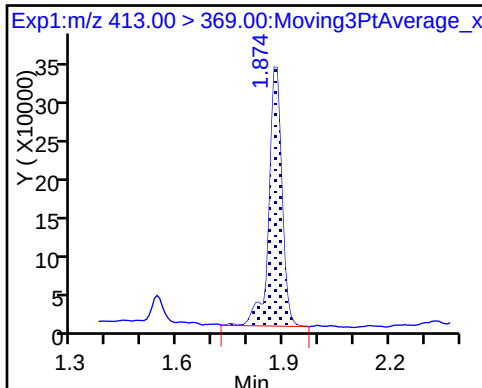
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

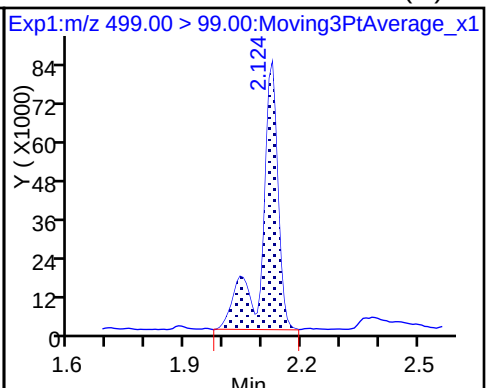
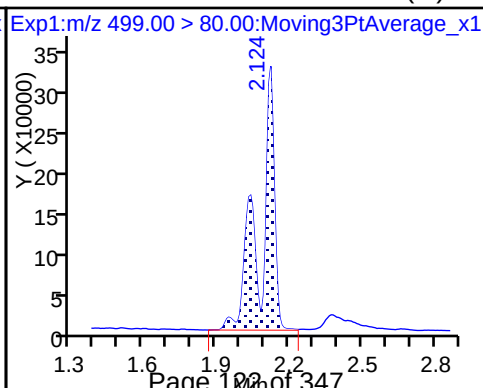
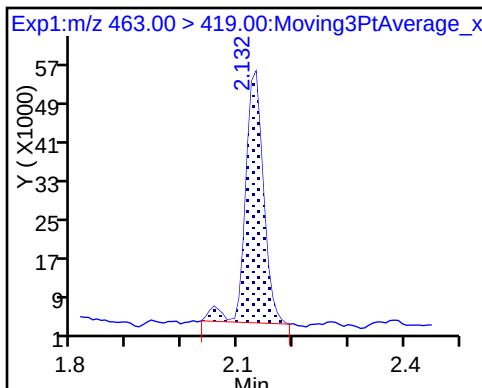
* 7 13C4 PFOS



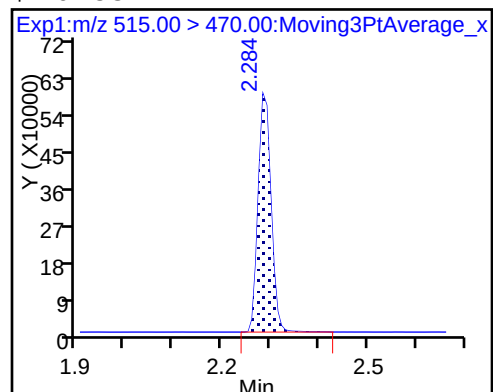
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_052.d
Lims ID: 320-32132-A-3-A
Client ID: NAWC-100317-RW-275
Sample Type: Client
Inject. Date: 20-Oct-2017 21:37:13 ALS Bottle#: 38 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32132-a-3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:19:56

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.46	84.58
\$ 10 13C2 PFDA	10.0	11.9	118.79

TestAmerica Sacramento

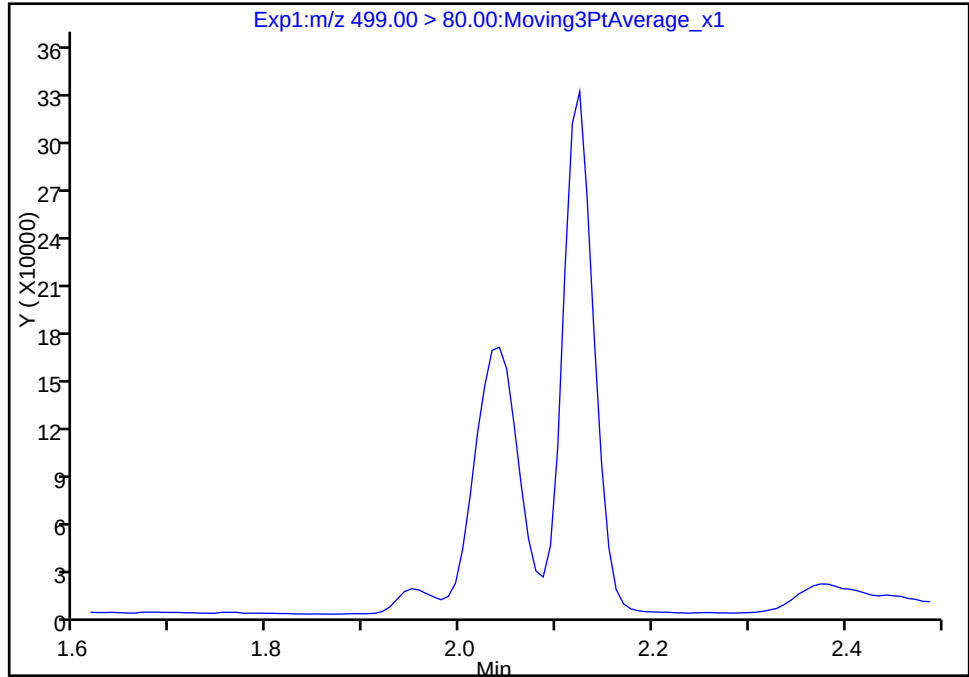
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Injection Date:	20-Oct-2017 21:37:13	Instrument ID:	A8_N		
Lims ID:	320-32132-A-3-A	Lab Sample ID:	320-32132-3		
Client ID:	NAWC-100317-RW-275				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	38	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

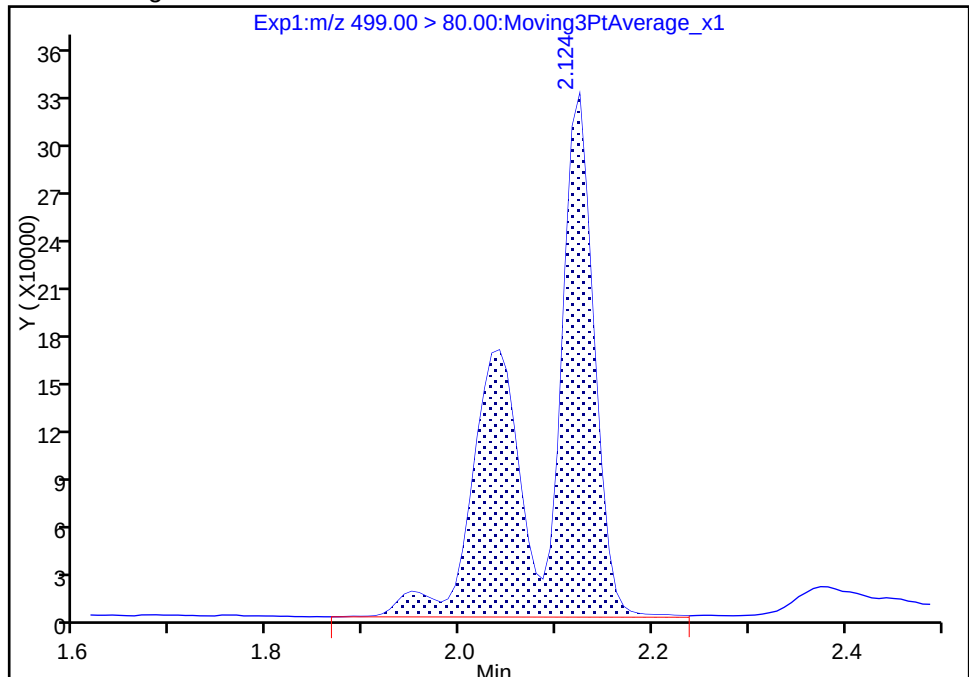
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 1300476
Amount: 7.914663
Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 10:19:15

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

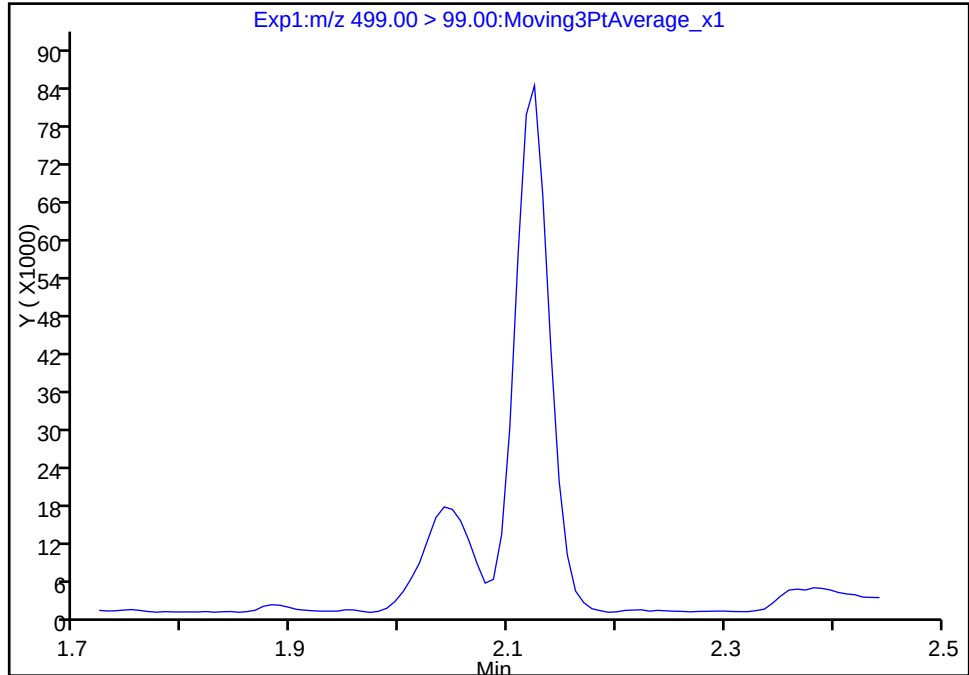
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_052.d		
Injection Date:	20-Oct-2017 21:37:13	Instrument ID:	A8_N
Lims ID:	320-32132-A-3-A	Lab Sample ID:	320-32132-3
Client ID:	NAWC-100317-RW-275		
Operator ID:	SACINSTLCMS01	ALS Bottle#:	38
Injection Vol:	2.0 ul	Dil. Factor:	1.0000
Method:	537_A8_N	Limit Group:	LC 537 ICAL
Column:		Detector	EXP1
		Worklist Smp#:	8

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

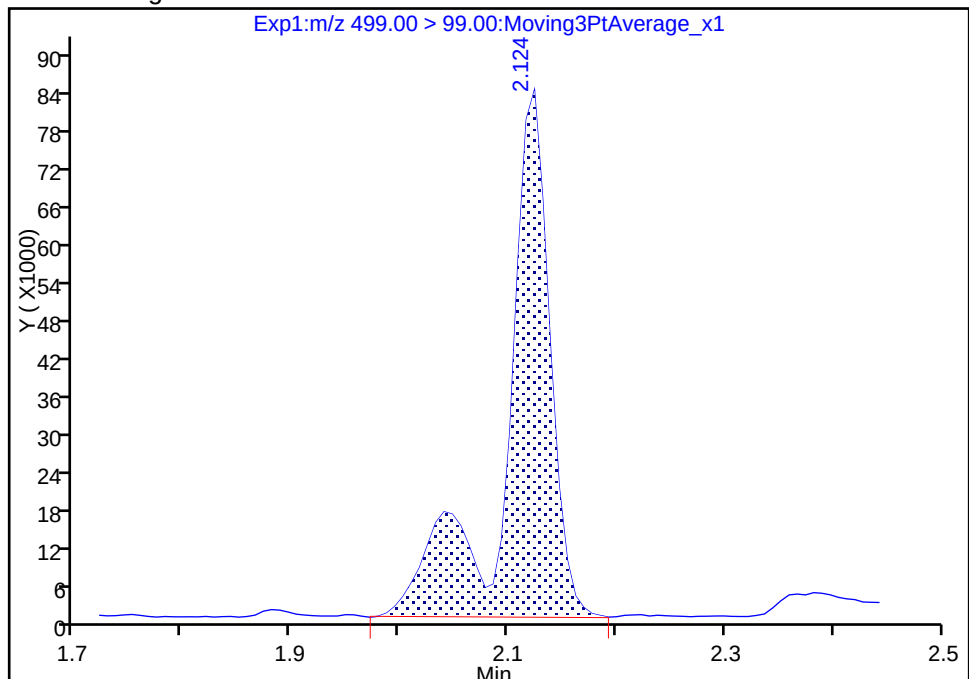
Signal: 2

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 238065
Amount: 7.914663
Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 10:19:34

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

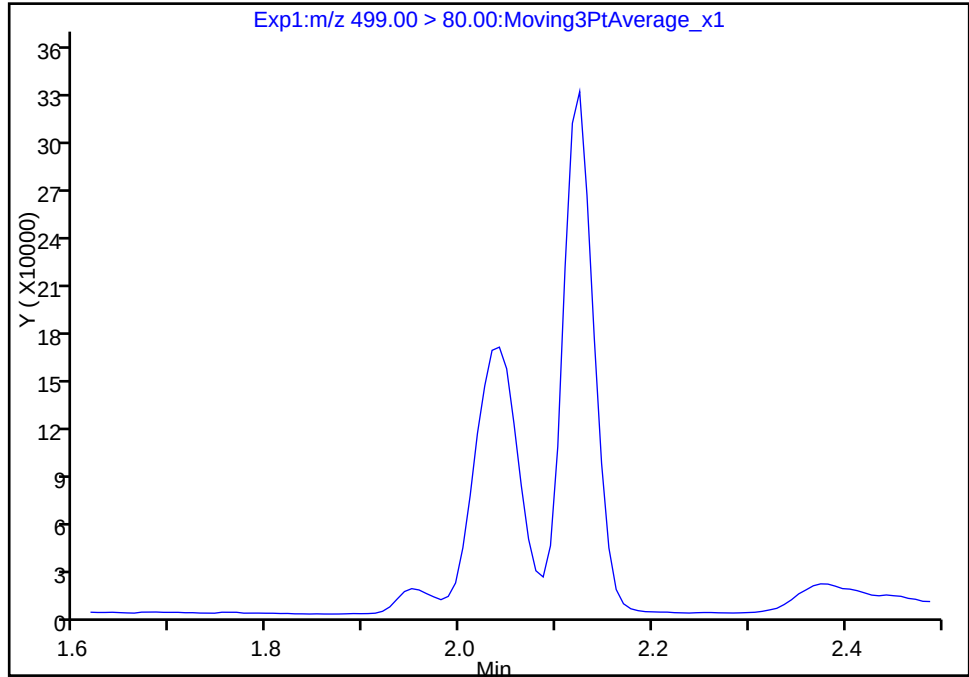
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_052.d				
Injection Date:	20-Oct-2017 21:37:13	Instrument ID:	A8_N		
Lims ID:	320-32132-A-3-A	Lab Sample ID:	320-32132-3		
Client ID:	NAWC-100317-RW-275				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	38	Worklist Smp#:	8
Injection 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

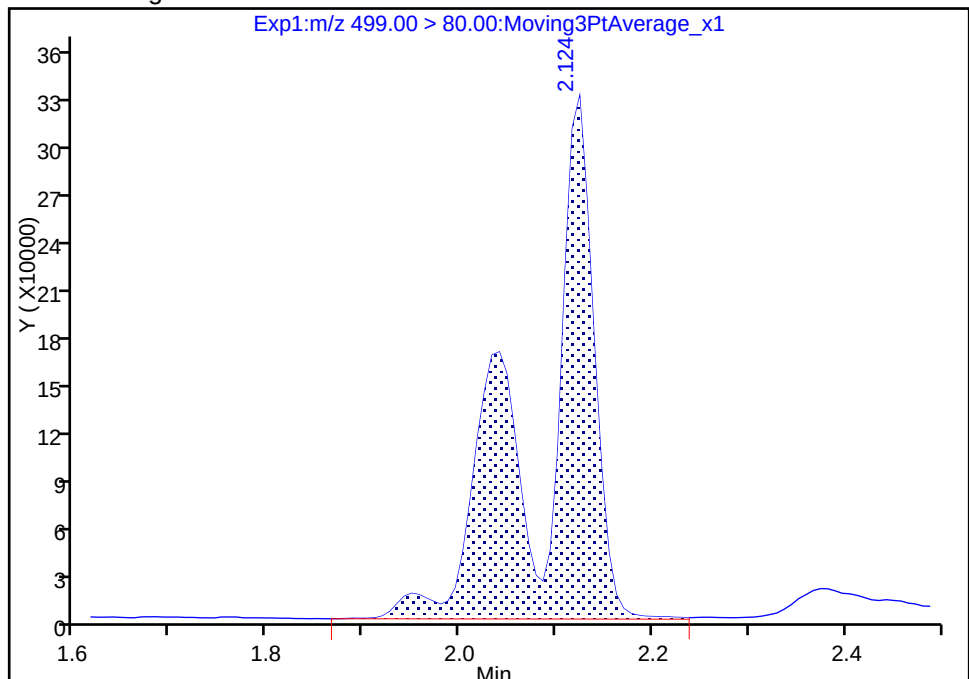
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 1300476
Amount: 7.914663
Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 10:19:34

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: NAWC-100317-FRB-275 Lab Sample ID: 320-32132-4
 Matrix: Water Lab File ID: 2017.10.20_537A_053.d
 Analysis Method: 537 Date Collected: 10/03/2017 09:05
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 277.7(mL) Date Analyzed: 10/20/2017 21:41
 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.: 190444 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	121		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_053.d
 Lims ID: 320-32132-A-4-A
 Client ID: NAWC-100317-FRB-275
 Sample Type: Client
 Inject. Date: 20-Oct-2017 21:41:58 ALS Bottle#: 39 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32132-a-4-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK012

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.524	0.024	1.000	2111770	9.55		6924	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.855	0.027		1886218	10.0		5452	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		5401469	28.7		3984	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	1276569	12.1		7087	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_053.d

Injection Date: 20-Oct-2017 21:41:58

Instrument ID: A8_N

Lims ID: 320-32132-A-4-A

Lab Sample ID: 320-32132-4

Client ID: NAWC-100317-FRB-275

Operator ID: SACINSTLCMS01

ALS Bottle#: 39

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

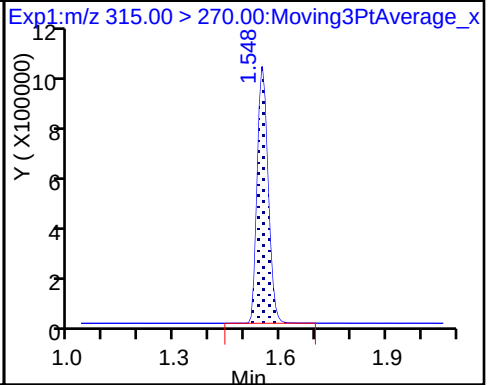
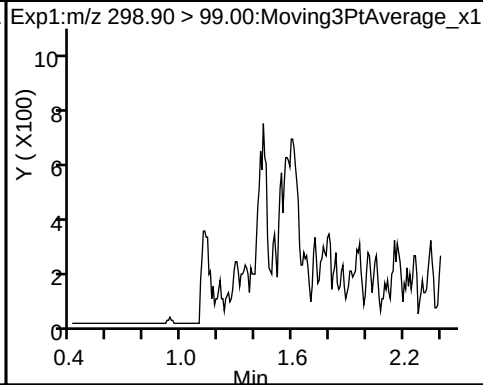
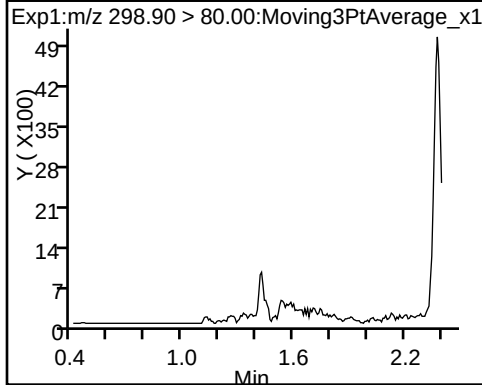
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

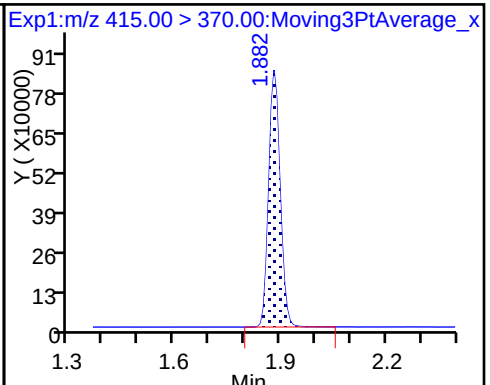
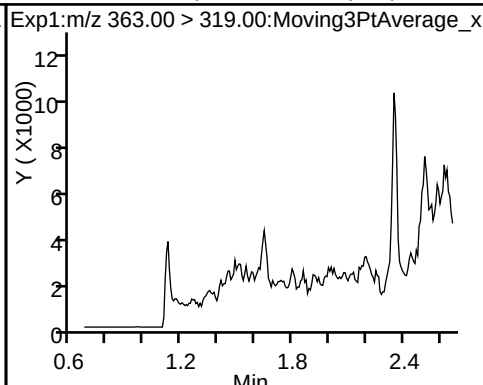
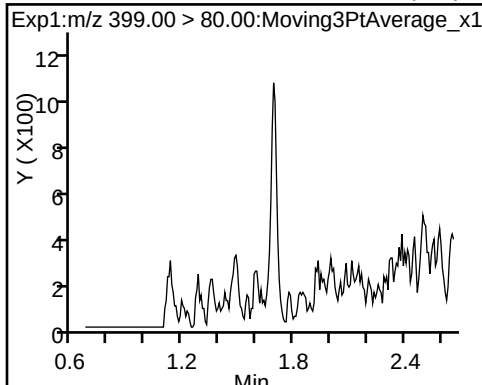
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

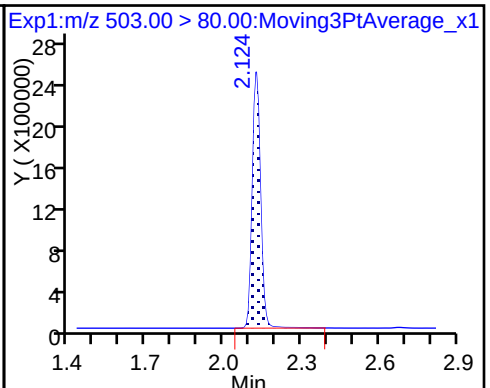
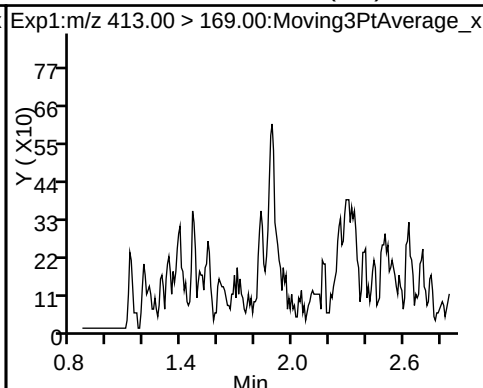
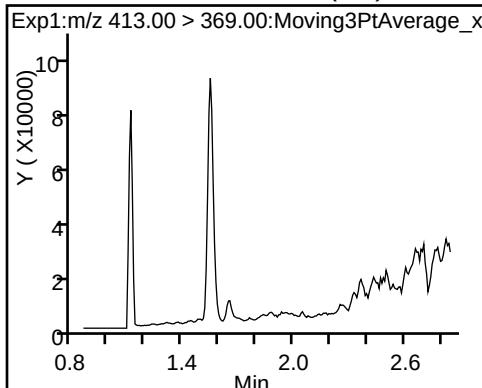
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

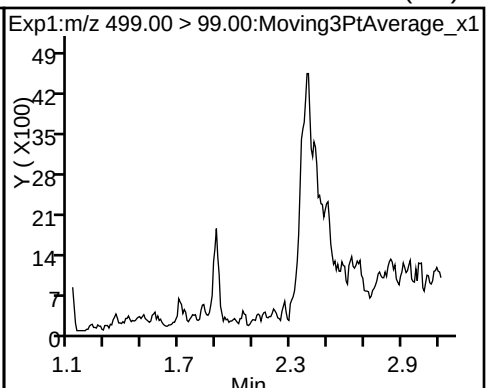
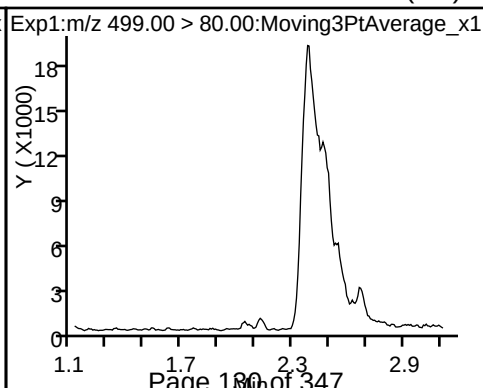
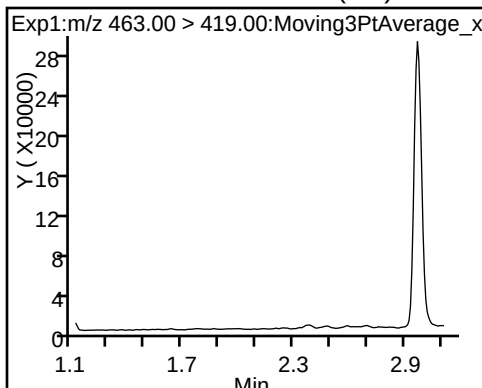
* 7 13C4 PFOS



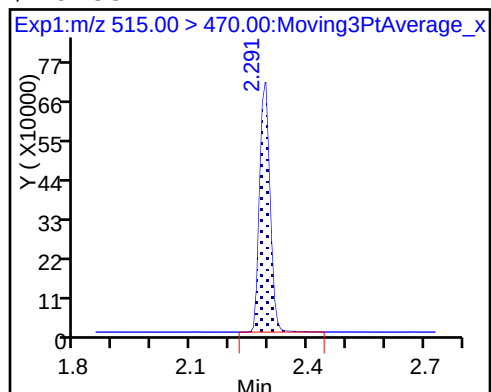
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_053.d
Lims ID: 320-32132-A-4-A
Client ID: NAWC-100317-FRB-275
Sample Type: Client
Inject. Date: 20-Oct-2017 21:41:58 ALS Bottle#: 39 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32132-a-4-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 :

Det: EXP1

Process Host: XAWRK012

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.55	95.55
\$ 10 13C2 PFDA	10.0	12.1	121.34

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-RW-146</u>	Lab Sample ID: <u>320-32132-5</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_054.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 09:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>289(mL)</u>	Date Analyzed: <u>10/20/2017 21:46</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190444</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	24		17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.4	J	8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	119		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_054.d
 Lims ID: 320-32132-A-5-A
 Client ID: NAWC-100317-RW-146
 Sample Type: Client
 Inject. Date: 20-Oct-2017 21:46:42 ALS Bottle#: 40 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32132-a-5-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK012

First Level Reviewer: barnettj Date: 23-Oct-2017 10:20:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	201393	0.9136		104	
298.90 > 99.00	1.411	1.402	0.009	0.995	128730		1.56(0.00-0.00)	226	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.524	0.016	1.000	1763098	8.58		6187	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.668	0.016	1.000	227397	0.7622		60.4	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.668	0.024	1.000	257228	1.56		28.6	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.855	0.019		1753617	10.0		5137	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.856	0.018	1.000	1112971	6.90		23.9	
413.00 > 169.00	1.874	1.856	0.018	1.000	604271		1.84(0.00-0.00)	1299	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.108	0.009		5223140	28.7		2203	
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.116	0.008	1.000	56226	0.5156		1.9	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.117	0.0	1.000	562078	3.31		59.3	
499.00 > 99.00	2.117	2.117	0.0	1.000	92712		6.06(0.00-0.00)	33.2	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.282	0.002	1.000	1164182	11.9		5811	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_054.d

Injection Date: 20-Oct-2017 21:46:42

Instrument ID: A8_N

Lims ID: 320-32132-A-5-A

Lab Sample ID: 320-32132-5

Client ID: NAWC-100317-RW-146

Operator ID: SACINSTLCMS01

ALS Bottle#: 40

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

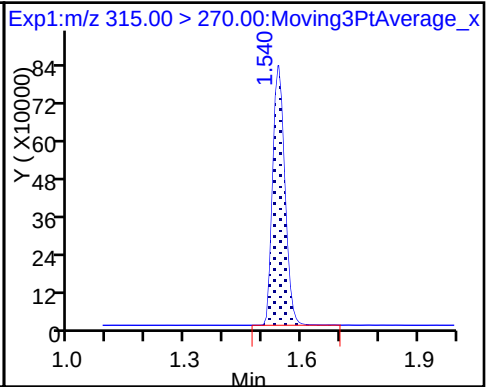
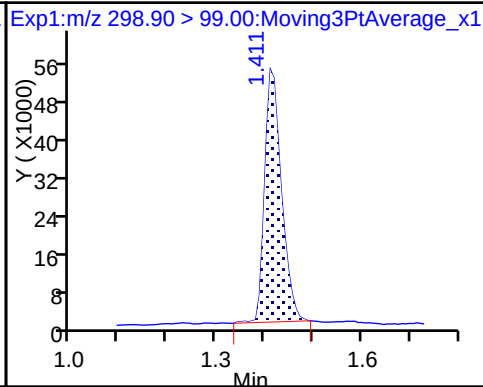
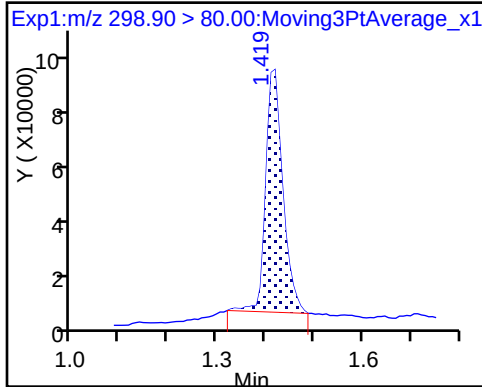
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

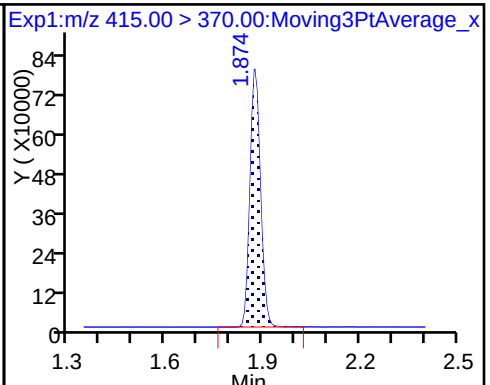
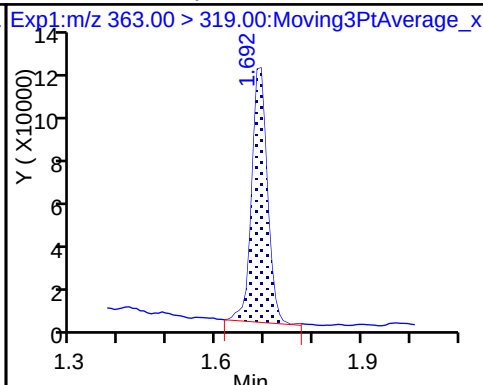
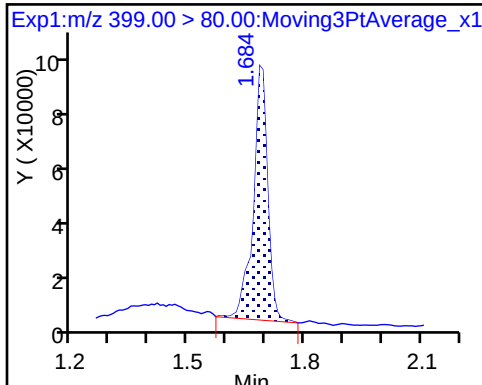
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

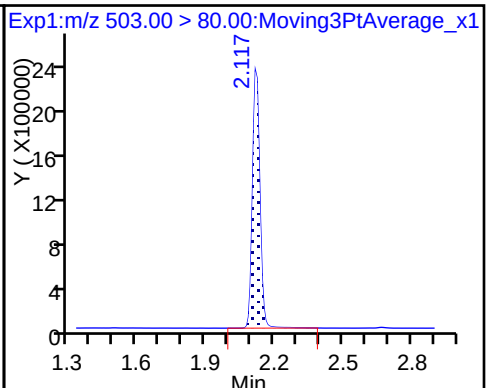
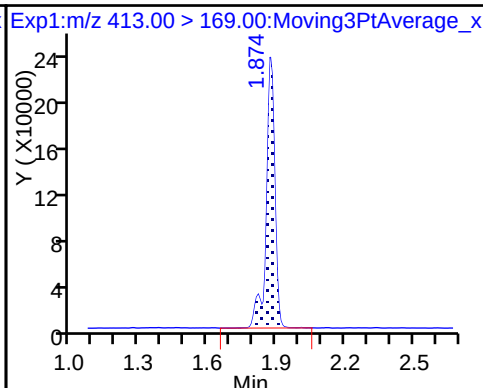
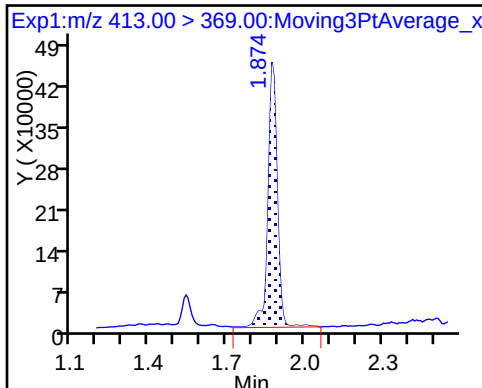
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

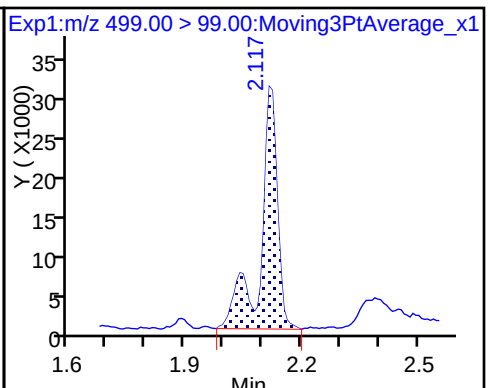
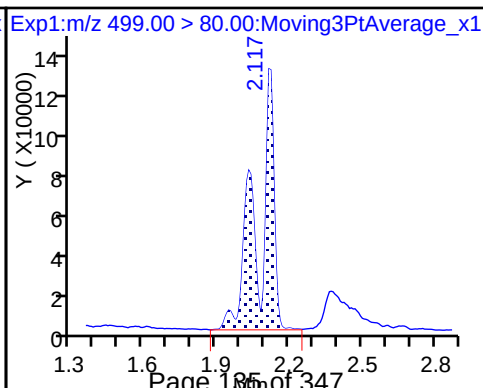
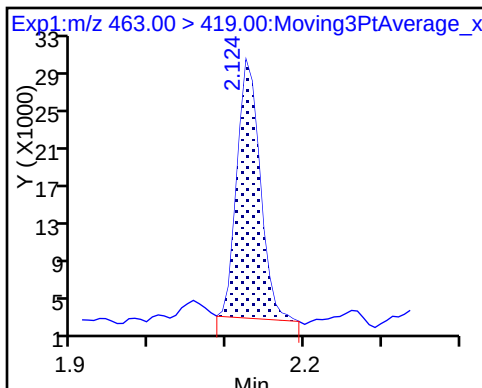
* 7 13C4 PFOS



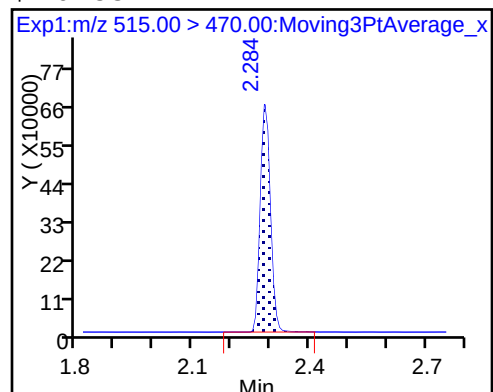
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_054.d
Lims ID: 320-32132-A-5-A
Client ID: NAWC-100317-RW-146
Sample Type: Client
Inject. Date: 20-Oct-2017 21:46:42 ALS Bottle#: 40 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32132-a-5-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:20:29

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.58	85.80
\$ 10 13C2 PFDA	10.0	11.9	119.02

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-RW-146</u>	Lab Sample ID: <u>320-32132-6</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_055.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 09:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>269.2 (mL)</u>	Date Analyzed: <u>10/20/2017 21:51</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100</u> ID: <u>3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190444</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.4	U	19	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	84	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	114		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_055.d
 Lims ID: 320-32132-A-6-A
 Client ID: NAWC-100317-RW-146
 Sample Type: Client
 Inject. Date: 20-Oct-2017 21:51:26 ALS Bottle#: 41 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32132-a-6-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:20:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
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\$ 2 13C2 PFHxA

315.00 > 270.00 1.548 1.524 0.024 1.000 1969932 9.42 6905

* 6 13C2-PFOA

415.00 > 370.00 1.882 1.855 0.027 1785533 10.0 5827

* 7 13C4 PFOS

503.00 > 80.00 2.124 2.108 0.016 5329603 28.7 4402

\$ 10 13C2 PFDA

515.00 > 470.00 2.291 2.282 0.009 1.000 1138130 11.4 5859

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_055.d

Injection Date: 20-Oct-2017 21:51:26

Instrument ID: A8_N

Lims ID: 320-32132-A-6-A

Lab Sample ID: 320-32132-6

Client ID: NAWC-100317-RW-146

Operator ID: SACINSTLCMS01

ALS Bottle#: 41

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

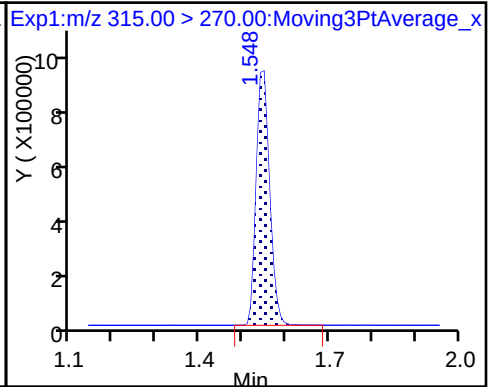
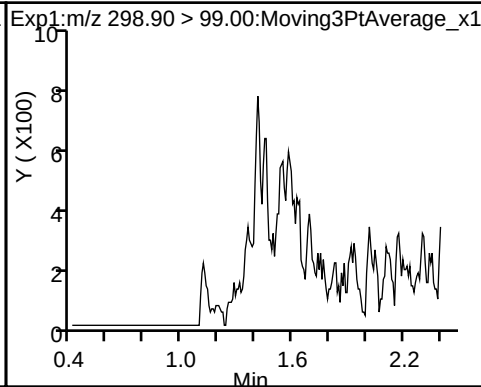
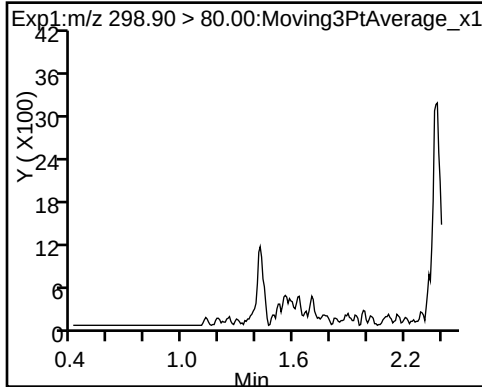
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

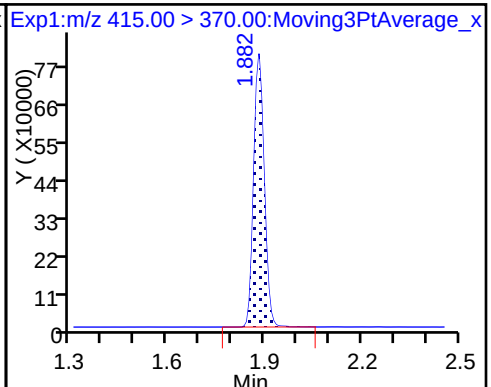
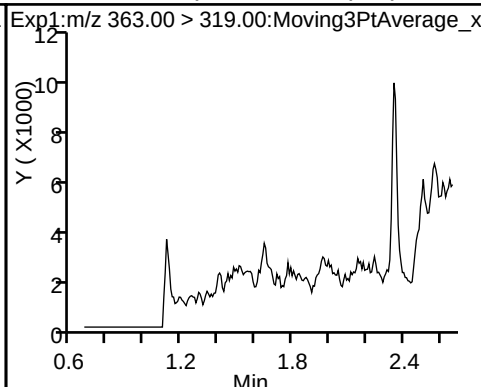
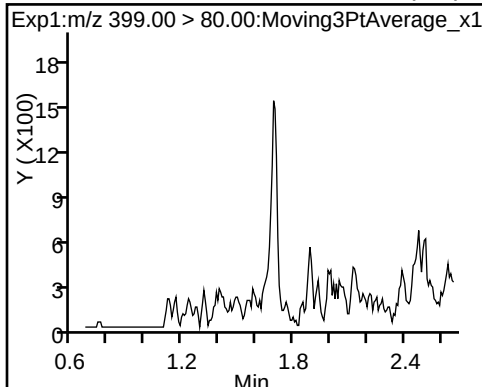
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

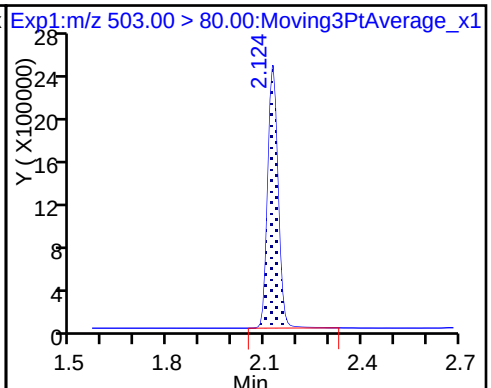
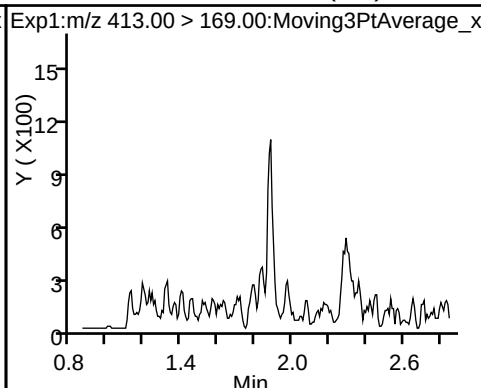
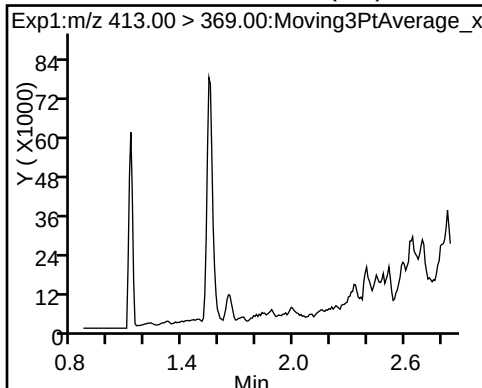
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

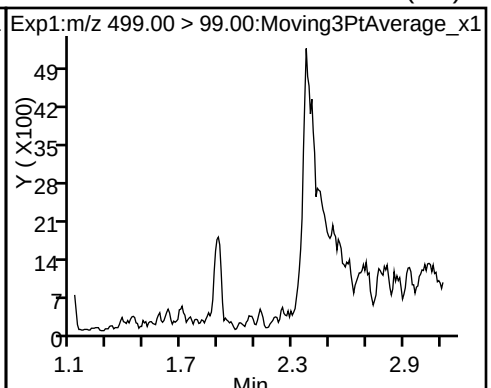
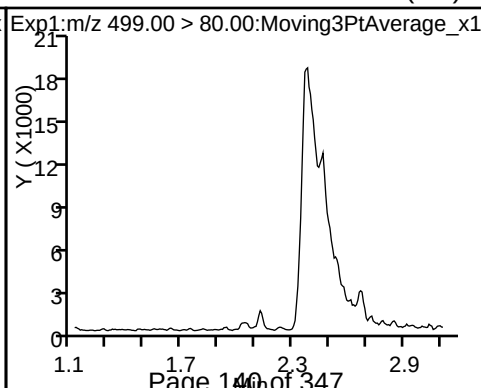
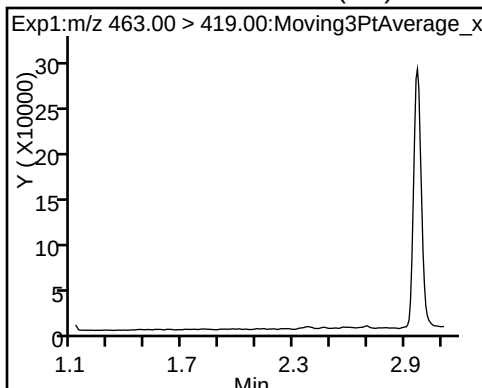
* 7 13C4 PFOS



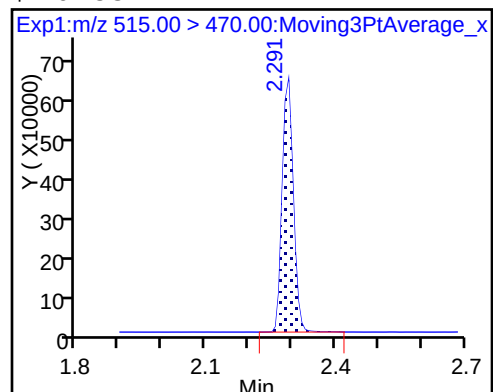
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_055.d
Lims ID: 320-32132-A-6-A
Client ID: NAWC-100317-RW-146
Sample Type: Client
Inject. Date: 20-Oct-2017 21:51:26 ALS Bottle#: 41 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32132-a-6-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:20:53

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.42	94.16
\$ 10 13C2 PFDA	10.0	11.4	114.28

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-RW-134</u>	Lab Sample ID: <u>320-32132-7</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_056.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 11:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>284.7(mL)</u>	Date Analyzed: <u>10/20/2017 21:56</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190444</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.6	J M	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	J	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.3	J M	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	83		70-130
STL00996	13C2 PFDA	107		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_056.d
 Lims ID: 320-32132-A-7-A
 Client ID: NAWC-100317-RW-134
 Sample Type: Client
 Inject. Date: 20-Oct-2017 21:56:10 ALS Bottle#: 42 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32132-a-7-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:21:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	190219	0.8773		138	
298.90 > 99.00	1.419	1.402	0.017	1.000	136503		1.39(0.00-0.00)	222	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.524	0.016	1.000	1639071	8.26		5168	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.668	0.024	1.000	284477	0.9695		105	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.668	0.024	1.000	105026	0.6586		11.7	M
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.855	0.027		1693408	10.0		5280	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.856	0.026	1.000	308878	1.98		6.6	
413.00 > 169.00	1.882	1.856	0.026	1.000	188896		1.64(0.00-0.00)	375	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		5137204	28.7		3072	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.117	0.007	1.000	406559	2.44		51.1	M
499.00 > 99.00	2.124	2.117	0.007	1.000	73659		5.52(0.00-0.00)	27.8	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	1014994	10.7		5077	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_056.d

Injection Date: 20-Oct-2017 21:56:10

Instrument ID: A8_N

Lims ID: 320-32132-A-7-A

Lab Sample ID: 320-32132-7

Client ID: NAWC-100317-RW-134

Operator ID: SACINSTLCMS01

ALS Bottle#: 42

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

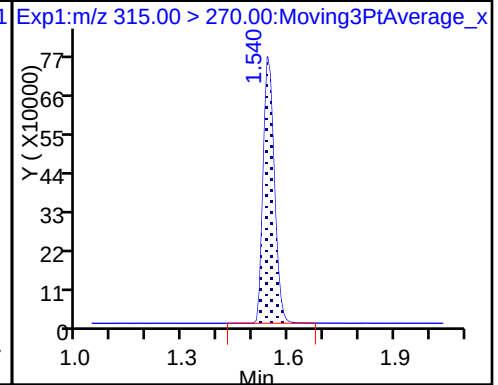
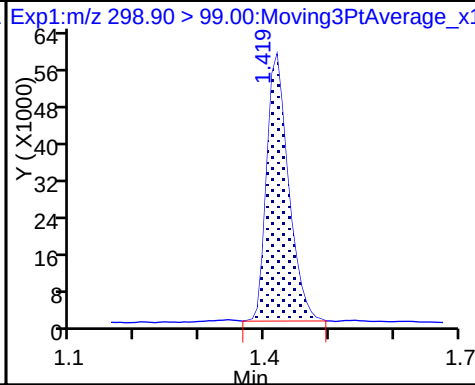
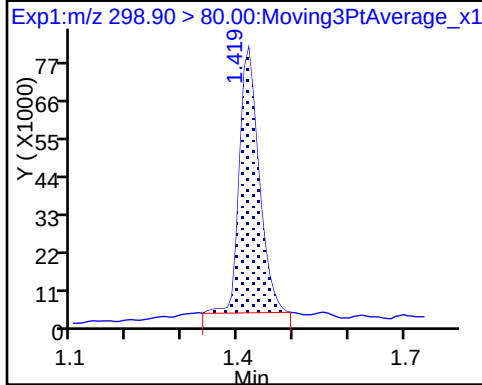
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

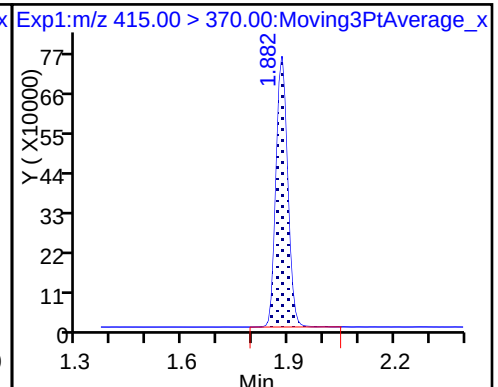
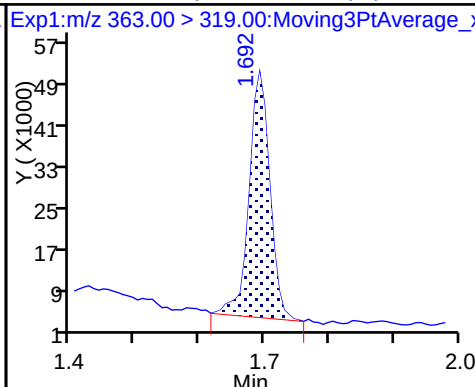
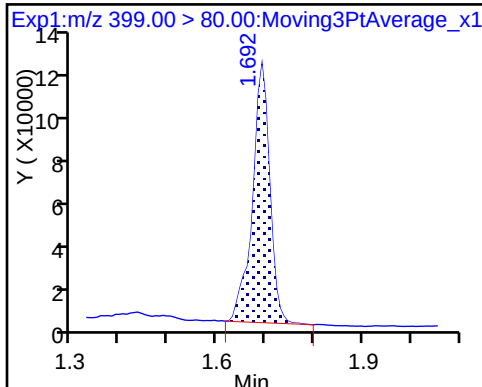
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid (M)

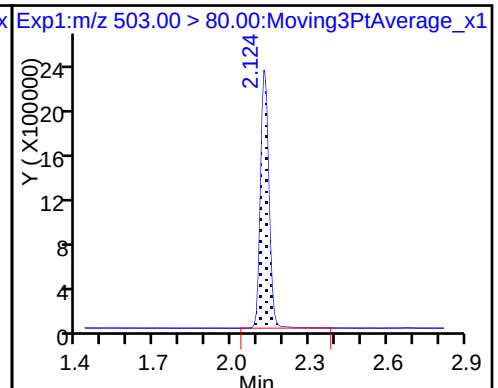
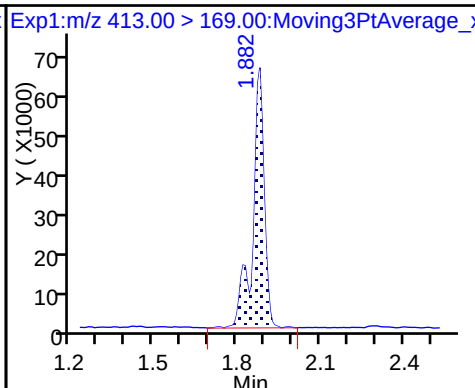
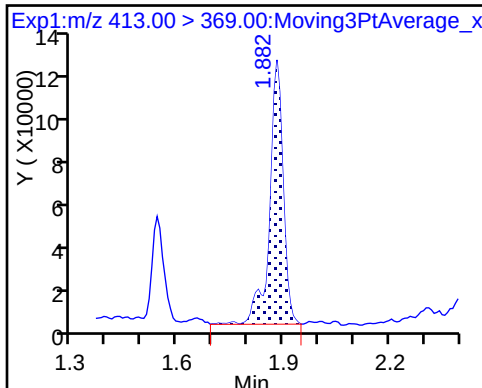
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

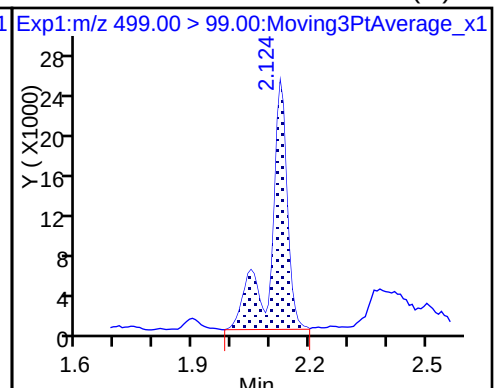
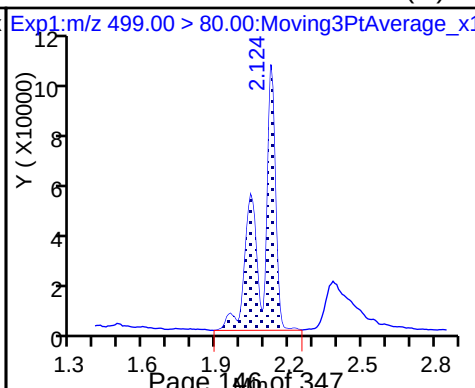
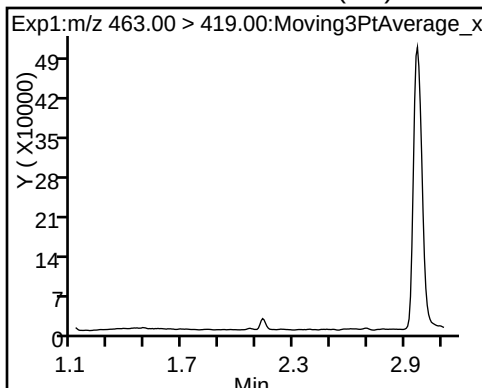
* 7 13C4 PFOS



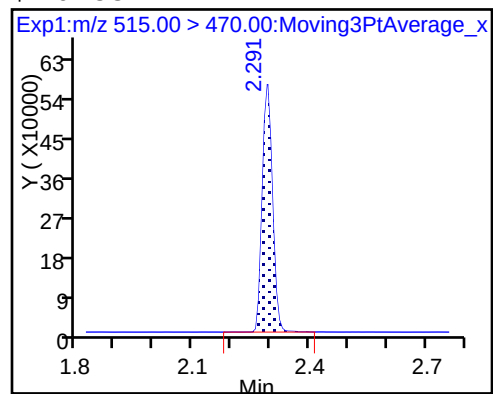
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_056.d
Lims ID: 320-32132-A-7-A
Client ID: NAWC-100317-RW-134
Sample Type: Client
Inject. Date: 20-Oct-2017 21:56:10 ALS Bottle#: 42 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32132-a-7-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:21:48

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.26	82.60
\$ 10 13C2 PFDA	10.0	10.7	107.46

TestAmerica Sacramento

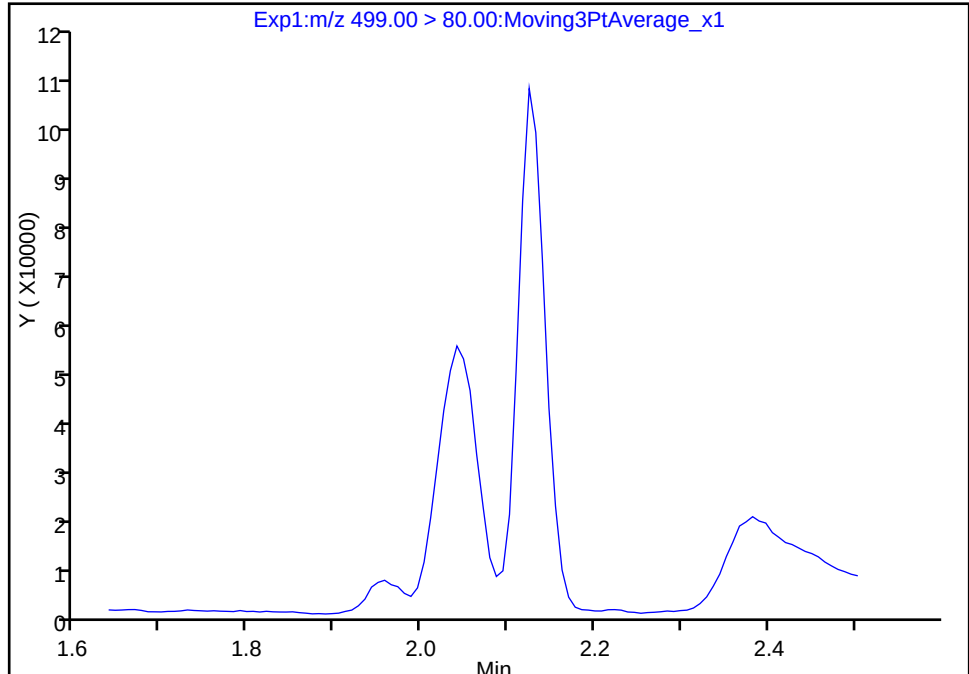
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_056.d				
Injection Date:	20-Oct-2017 21:56:10	Instrument ID:	A8_N		
Lims ID:	320-32132-A-7-A	Lab Sample ID:	320-32132-7		
Client ID:	NAWC-100317-RW-134				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	42	Worklist Smp#:	12
Injection 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

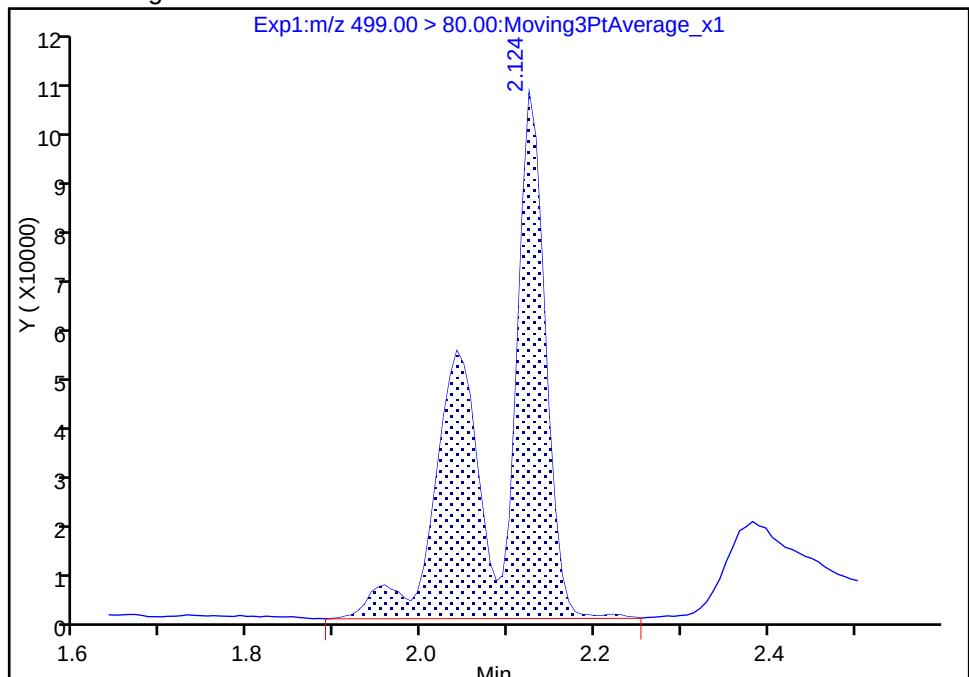
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 406559
Amount: 2.436126
Amount Units: ng/mlReviewer: barnettj, 23-Oct-2017 10:21:01
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

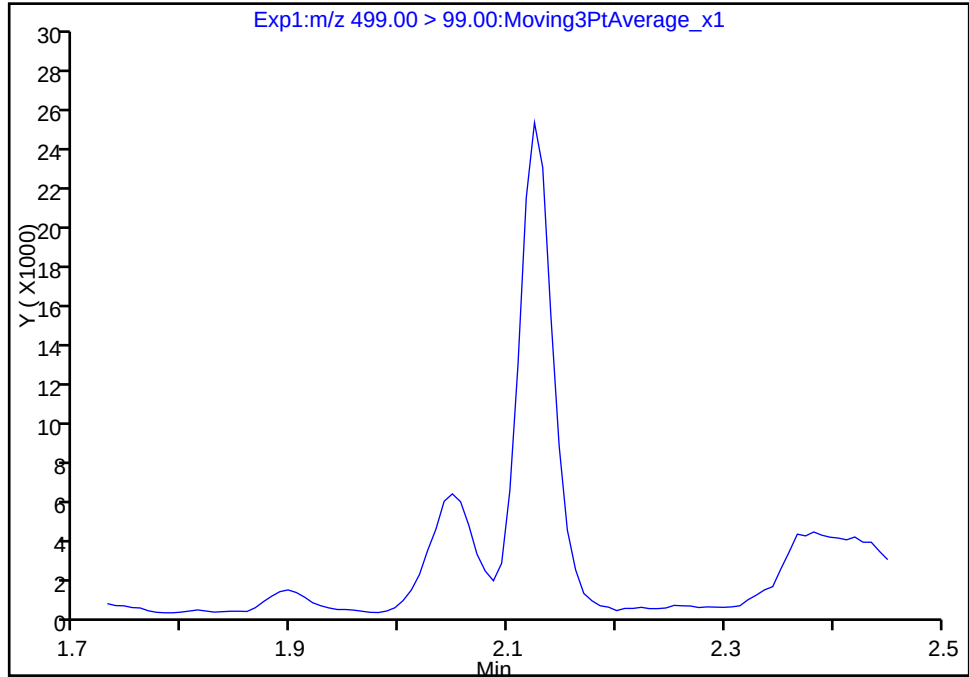
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Injection Date:	20-Oct-2017 21:56:10	Instrument ID:	A8_N		
Lims ID:	320-32132-A-7-A	Lab Sample ID:	320-32132-7		
Client ID:	NAWC-100317-RW-134				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	42	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

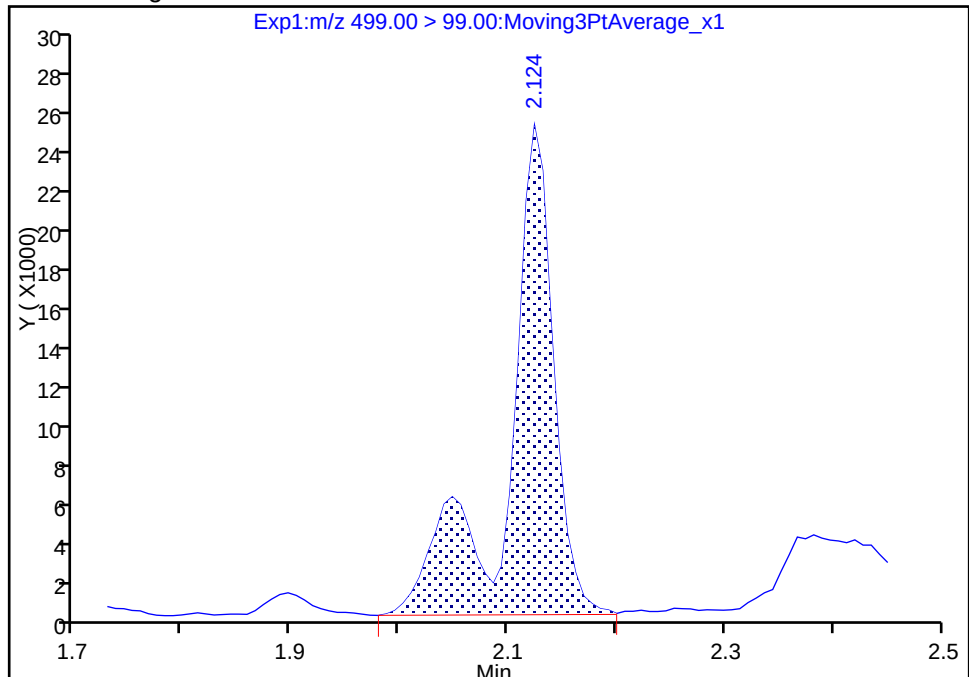
Signal: 2

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 73659
Amount: 2.436126
Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 10:21:12

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

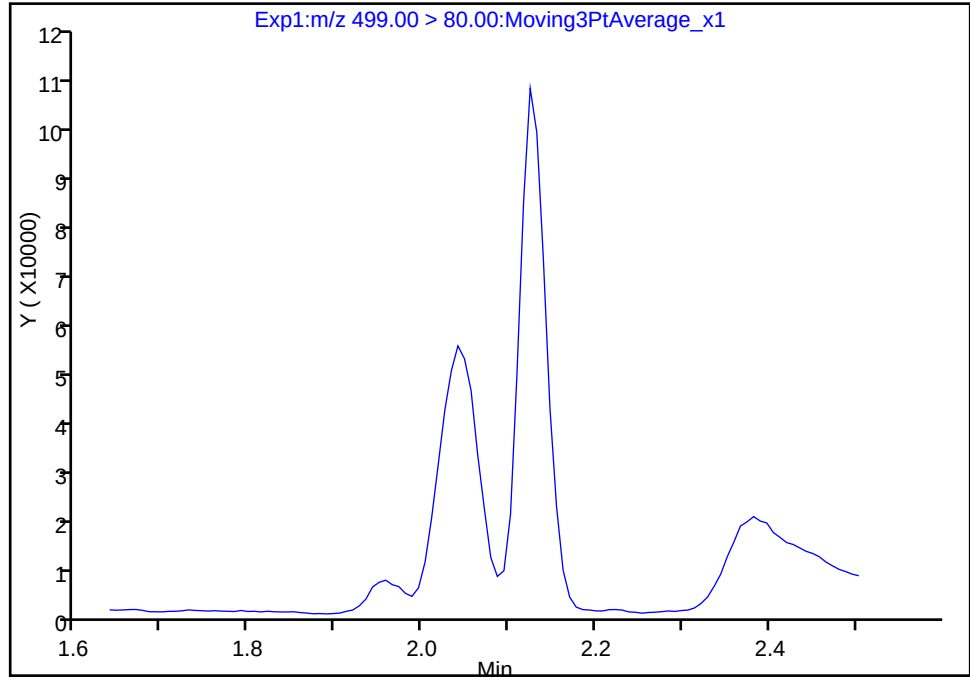
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_056.d
Injection Date: 20-Oct-2017 21:56:10 Instrument ID: A8_N
Lims ID: 320-32132-A-7-A Lab Sample ID: 320-32132-7
Client ID: NAWC-100317-RW-134
Operator ID: SACINSTLCMS01 ALS Bottle#: 42 Worklist Smp#: 12
Injection Vol: 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

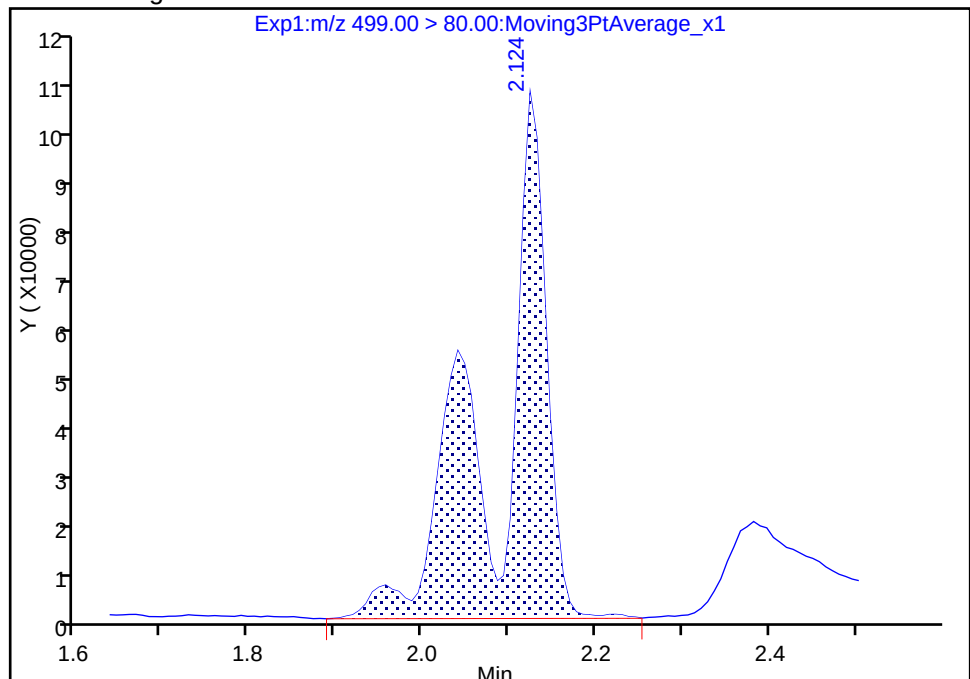
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 406559
Amount: 2.436126
Amount Units: ng/ml



Reviewer: barnettj, 23-Oct-2017 10:21:12

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

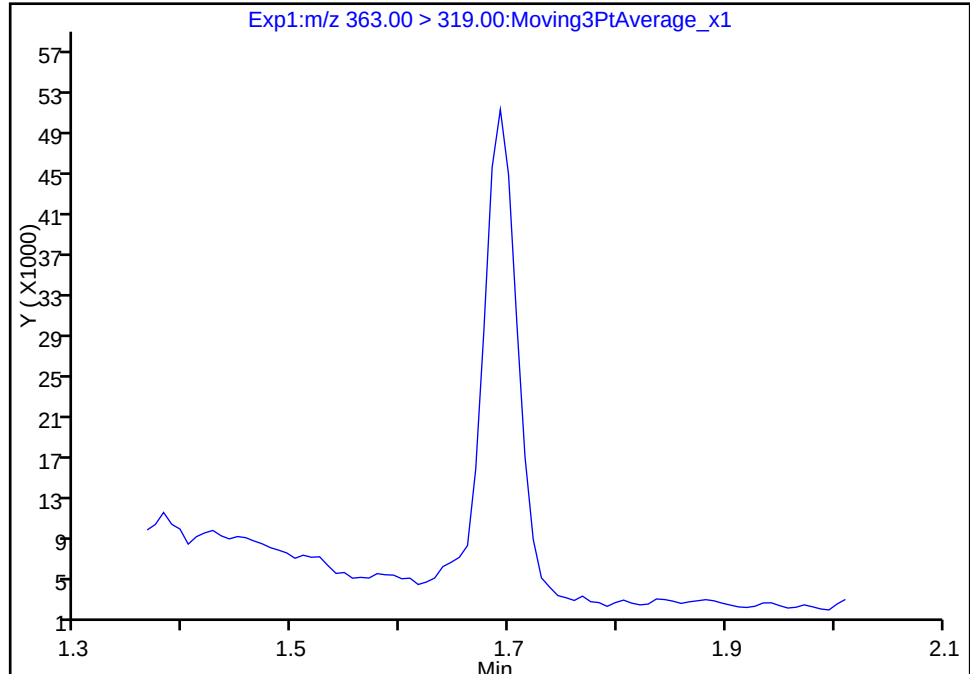
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Injection Date:	20-Oct-2017 21:56:10	Instrument ID:	A8_N		
Lims ID:	320-32132-A-7-A	Lab Sample ID:	320-32132-7		
Client ID:	NAWC-100317-RW-134				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	42	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

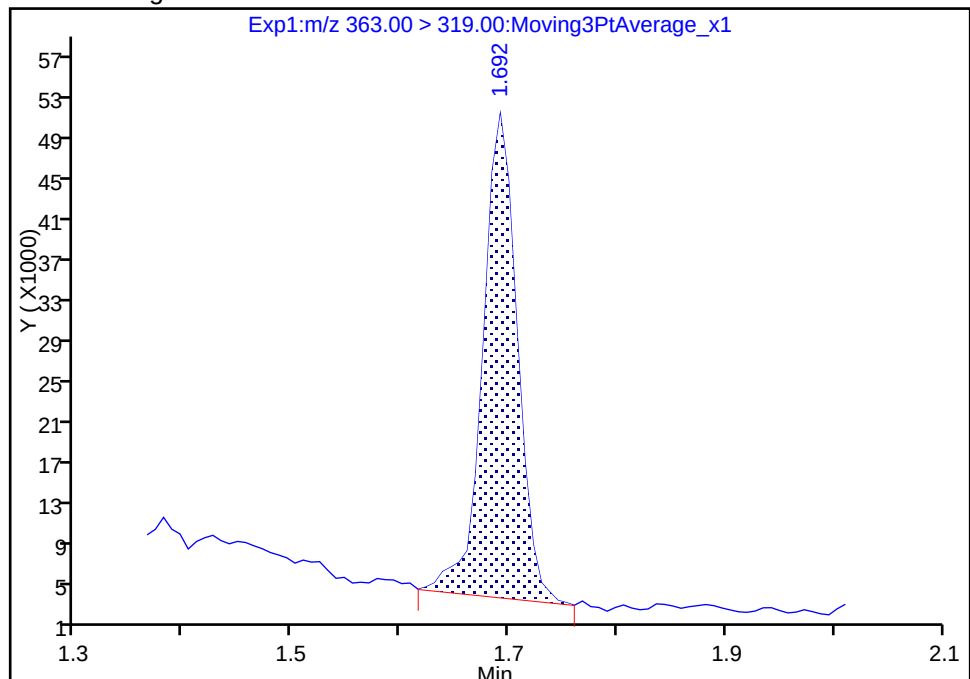
Signal: 1

Not Detected
Expected RT: 1.67

Processing Integration Results



Manual Integration Results

RT: 1.69
Area: 105026
Amount: 0.658561
Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 10:21:29

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-FRB-134</u>	Lab Sample ID: <u>320-32132-8</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_059.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 11:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>267.8 (mL)</u>	Date Analyzed: <u>10/20/2017 22:10</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190445</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.5	U	19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	84	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	107		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_059.d
 Lims ID: 320-32132-A-8-A
 Client ID: NAWC-100317-FRB-134
 Sample Type: Client
 Inject. Date: 20-Oct-2017 22:10:23 ALS Bottle#: 43 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32132-a-8-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:59:31 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK012

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.524	0.016	1.000	2067767	9.62		5006	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.855	0.019		1834581	10.0		4044	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.108	0.009		5405544	28.7		3514	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.282	0.002	1.000	1097134	10.7		4956	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_059.d

Injection Date: 20-Oct-2017 22:10:23

Instrument ID: A8_N

Lims ID: 320-32132-A-8-A

Lab Sample ID: 320-32132-8

Client ID: NAWC-100317-FRB-134

Operator ID: SACINSTLCMS01

ALS Bottle#: 43

Worklist Smp#: 15

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

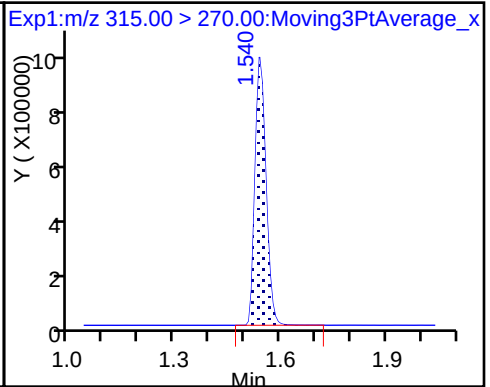
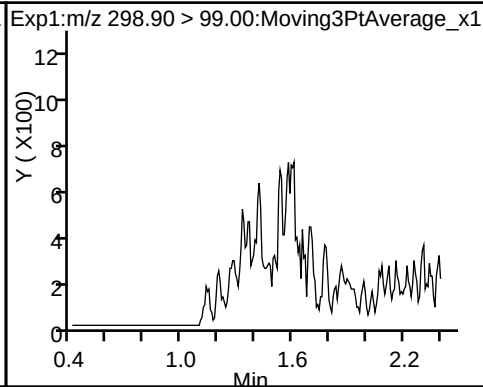
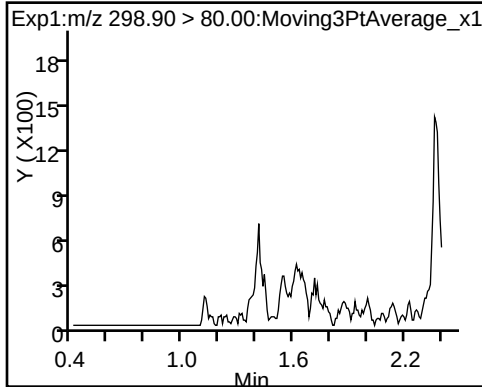
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

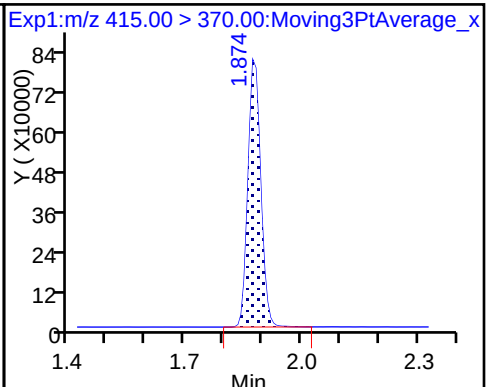
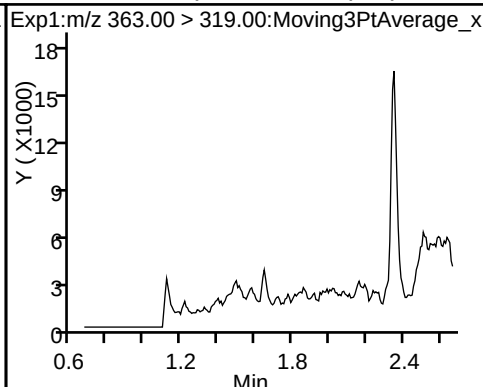
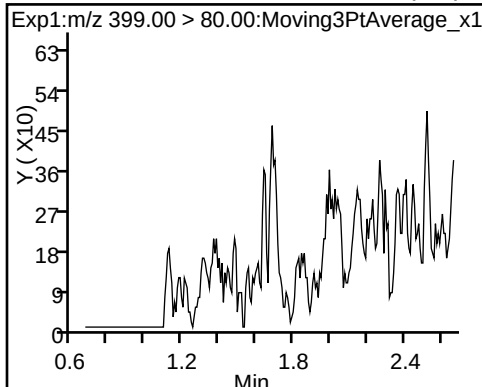
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

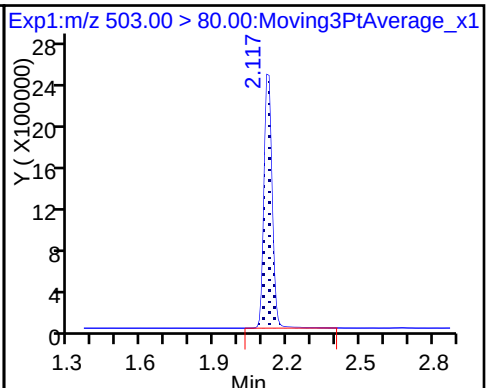
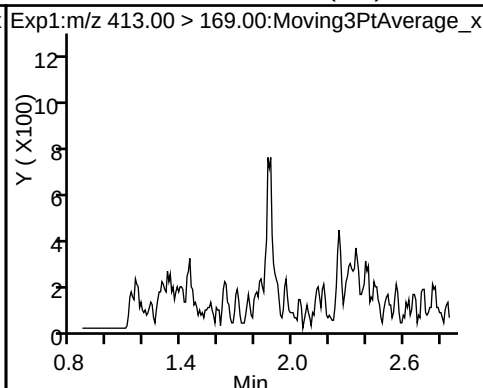
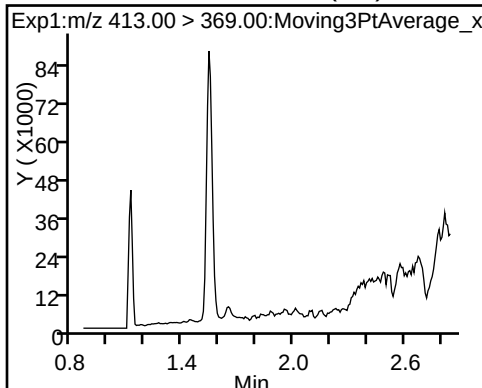
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

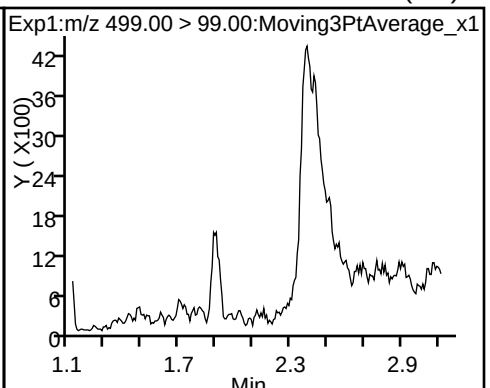
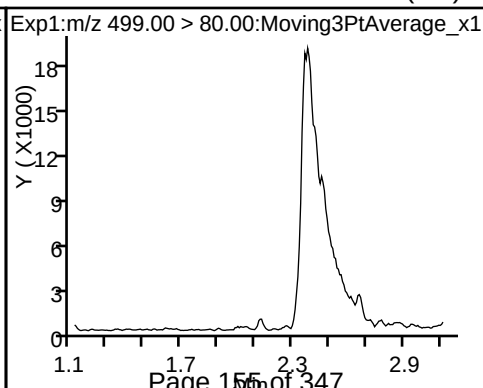
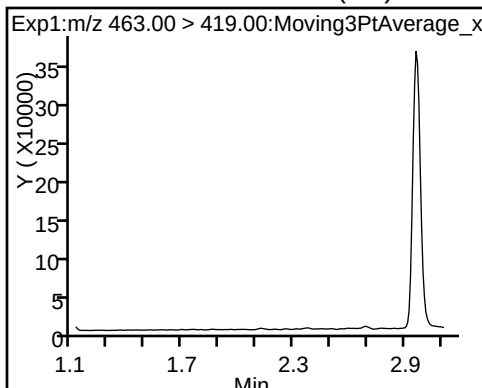
* 7 13C4 PFOS



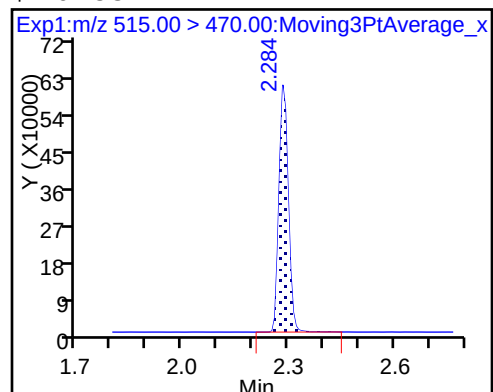
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_059.d
Lims ID: 320-32132-A-8-A
Client ID: NAWC-100317-FRB-134
Sample Type: Client
Inject. Date: 20-Oct-2017 22:10:23 ALS Bottle#: 43 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32132-a-8-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 23-Oct-2017 10:59:31 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK012

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.62	96.19
\$ 10 13C2 PFDA	10.0	10.7	107.22

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Client Sample ID: NAWC-100317-RW-143 Lab Sample ID: 320-32132-9

Matrix: Water Lab File ID: 2017.10.20_537A_060.d

Analysis Method: 537 Date Collected: 10/03/2017 13:40

Extraction Method: 537 Date Extracted: 10/13/2017 14:28

Sample wt/vol: 274.6(mL) Date Analyzed: 10/20/2017 22:15

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.: 190445 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.9	J M	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	10	J	18	7.3	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.4	J	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	64	Q	70-130
STL00996	13C2 PFDA	104		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_060.d
 Lims ID: 320-32132-A-9-A
 Client ID: NAWC-100317-RW-143
 Sample Type: Client
 Inject. Date: 20-Oct-2017 22:15:07 ALS Bottle#: 44 Worklist Smp#: 16
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32132-a-9-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:59:31 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:23:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	278066	1.10		237	
298.90 > 99.00	1.419	1.402	0.017	1.000	193227		1.44(0.00-0.00)	349	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.524	0.024	1.000	1458346	6.41		5455	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.668	0.024	1.000	170839	0.4982		78.8	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.699	1.668	0.031	1.000	171011	0.9349		21.9	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.855	0.027		1942278	10.0		4557	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.856	0.026	1.000	490178	2.74		11.3	
413.00 > 169.00	1.882	1.856	0.026	1.000	278089		1.76(0.00-0.00)	615	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		6003895	28.7		3437	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.117	0.007	1.000	478888	2.46		61.9	M
499.00 > 99.00	2.124	2.117	0.007	1.000	84607		5.66(0.00-0.00)	35.9	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	1128756	10.4		6162	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_060.d

Injection Date: 20-Oct-2017 22:15:07

Instrument ID: A8_N

Lims ID: 320-32132-A-9-A

Lab Sample ID: 320-32132-9

Client ID: NAWC-100317-RW-143

Operator ID: SACINSTLCMS01

ALS Bottle#: 44

Worklist Smp#: 16

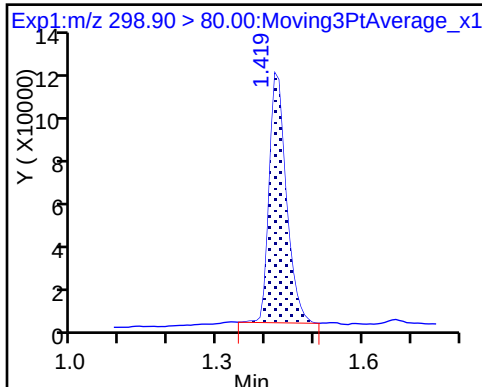
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

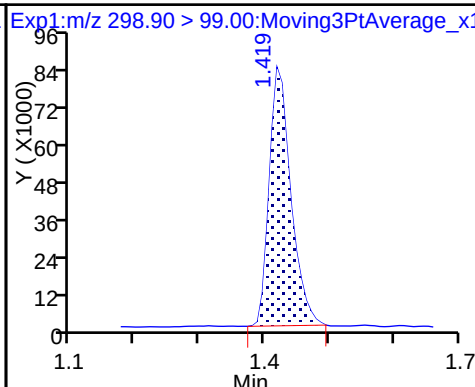
Method: 537_A8_N

Limit Group: LC 537 ICAL

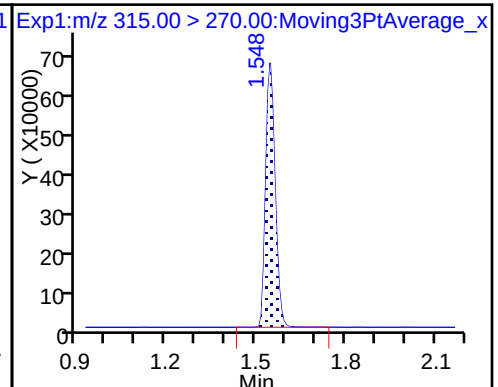
1 Perfluorobutanesulfonic acid



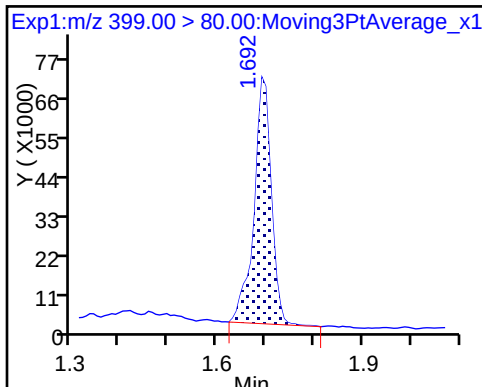
1 Perfluorobutanesulfonic acid



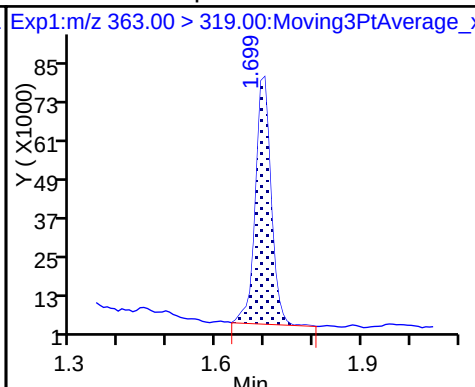
\$ 2 13C2 PFHxA



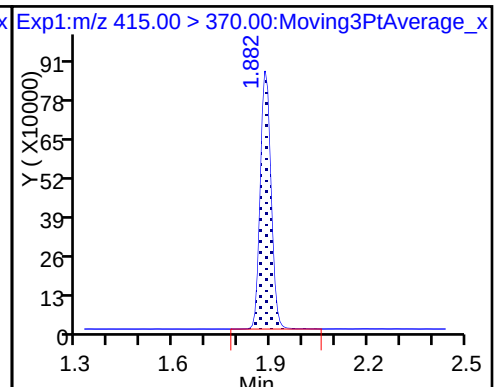
3 Perfluorohexanesulfonic acid



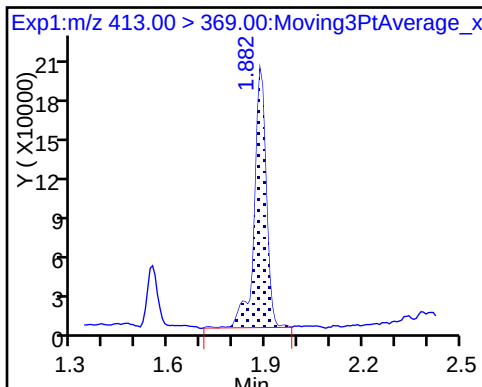
4 Perfluoroheptanoic acid



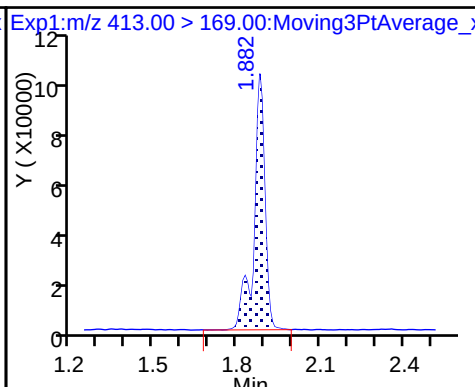
* 6 13C2-PFOA



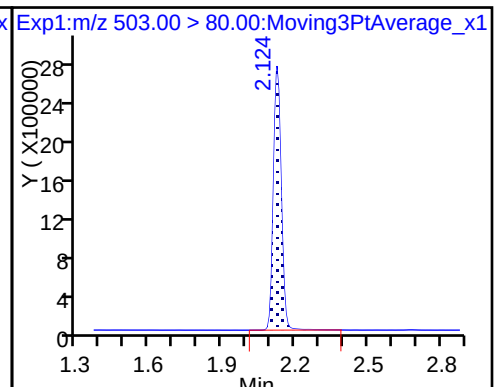
5 Perfluorooctanoic acid



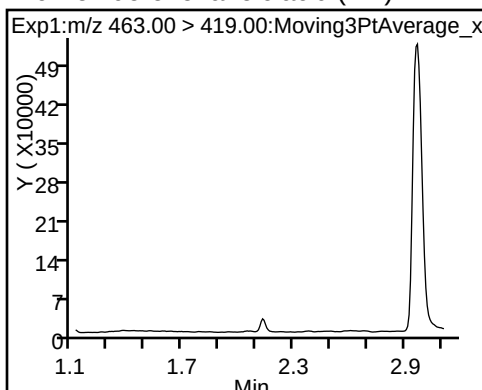
5 Perfluorooctanoic acid



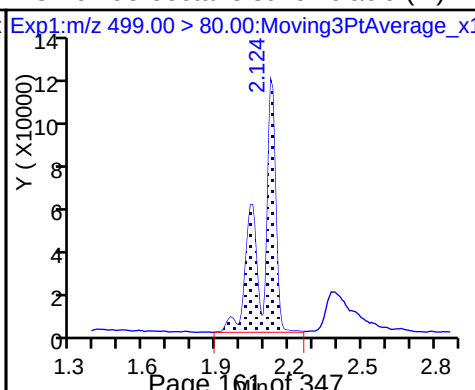
* 7 13C4 PFOS



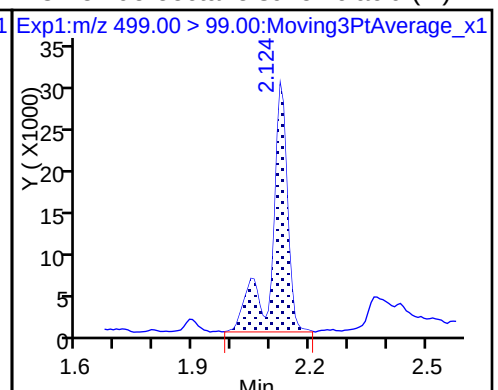
9 Perfluorononanoic acid (ND)



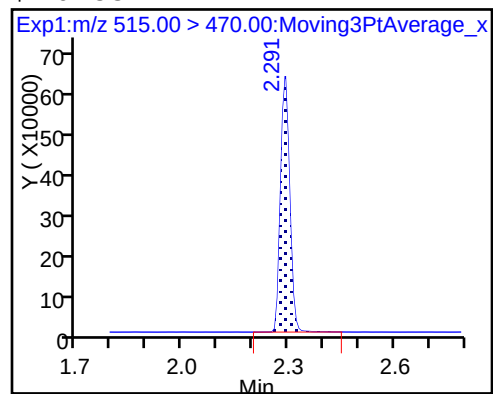
8 Perfluorooctane sulfonic acid (M)



8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_060.d
Lims ID: 320-32132-A-9-A
Client ID: NAWC-100317-RW-143
Sample Type: Client
Inject. Date: 20-Oct-2017 22:15:07 ALS Bottle#: 44 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32132-a-9-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 23-Oct-2017 10:59:31 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:23:34

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	6.41	64.08
\$ 10 13C2 PFDA	10.0	10.4	104.19

TestAmerica Sacramento

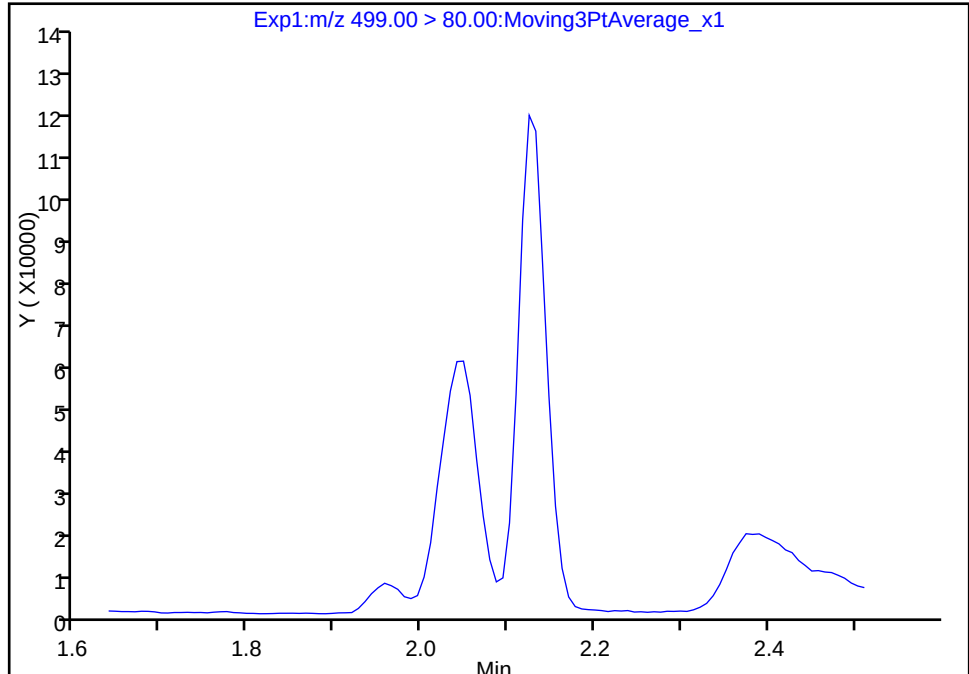
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_060.d				
Injection Date:	20-Oct-2017 22:15:07	Instrument ID:	A8_N		
Lims ID:	320-32132-A-9-A	Lab Sample ID:	320-32132-9		
Client ID:	NAWC-100317-RW-143				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	44	Worklist Smp#:	16
Injection 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

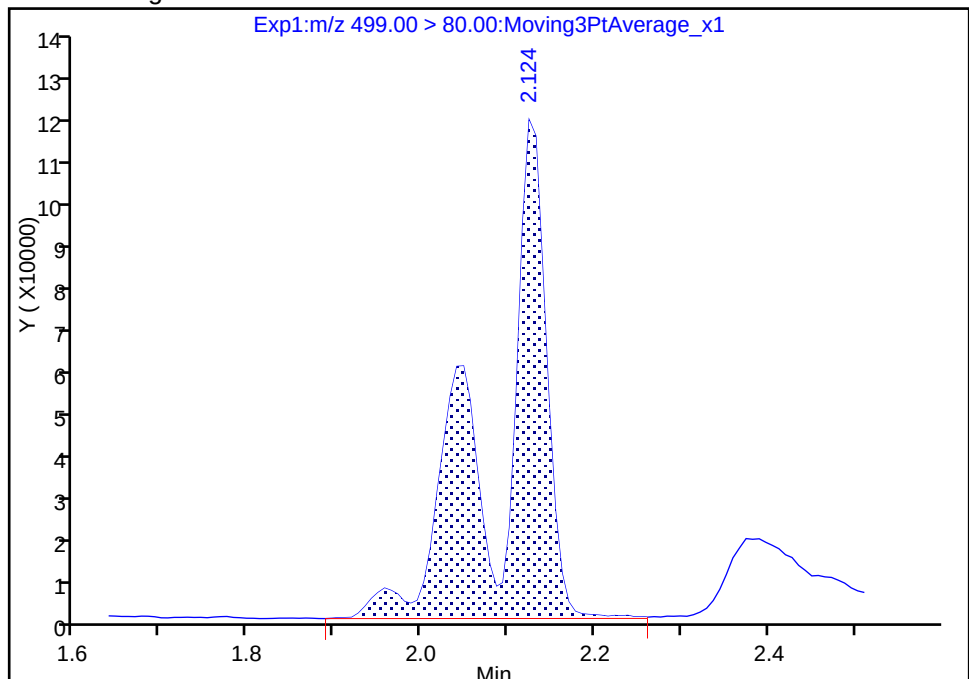
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results



RT: 2.12
Area: 478888
Amount: 2.455296
Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 10:22:34

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

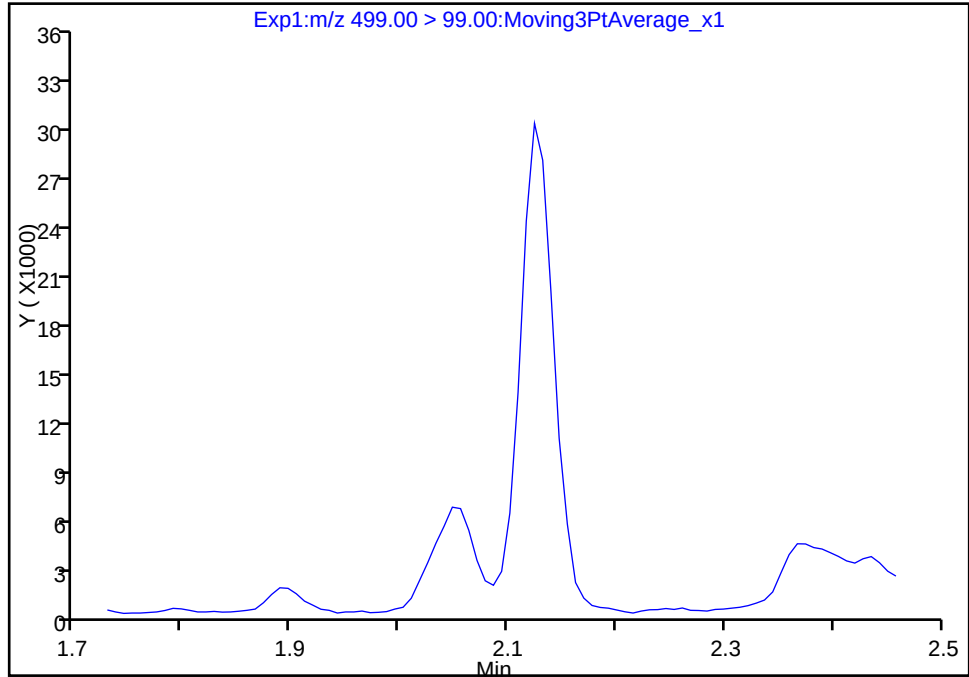
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_060.d
Injection Date: 20-Oct-2017 22:15:07 Instrument ID: A8_N
Lims ID: 320-32132-A-9-A Lab Sample ID: 320-32132-9
Client ID: NAWC-100317-RW-143
Operator ID: SACINSTLCMS01 ALS Bottle#: 44 Worklist Smp#: 16
Injection Vol: 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: 2

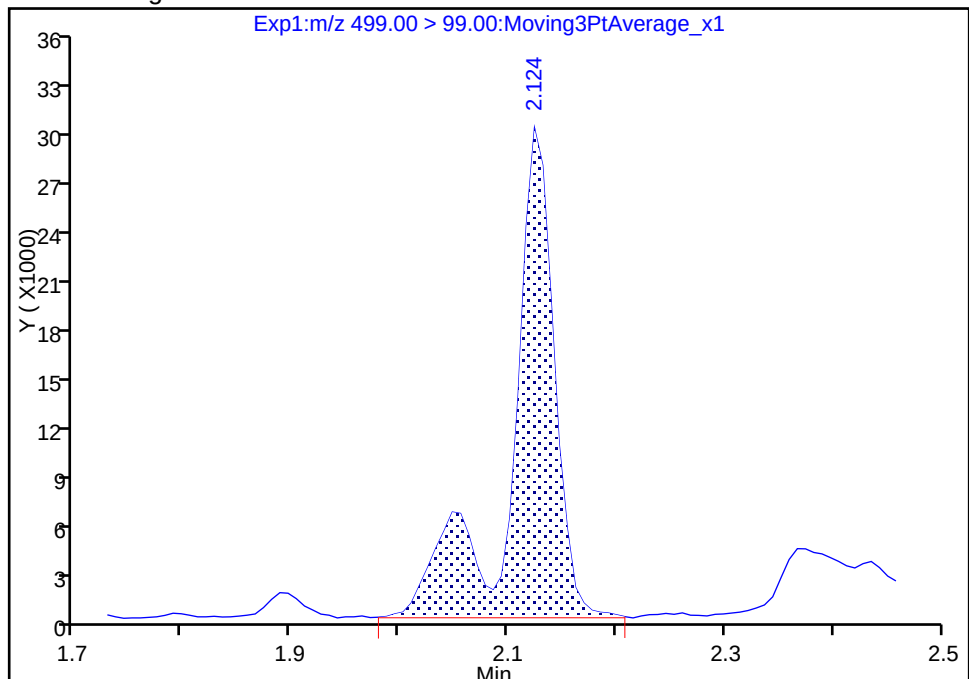
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 84607
Amount: 2.455296
Amount Units: ng/ml



Reviewer: barnettj, 23-Oct-2017 10:22:57

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

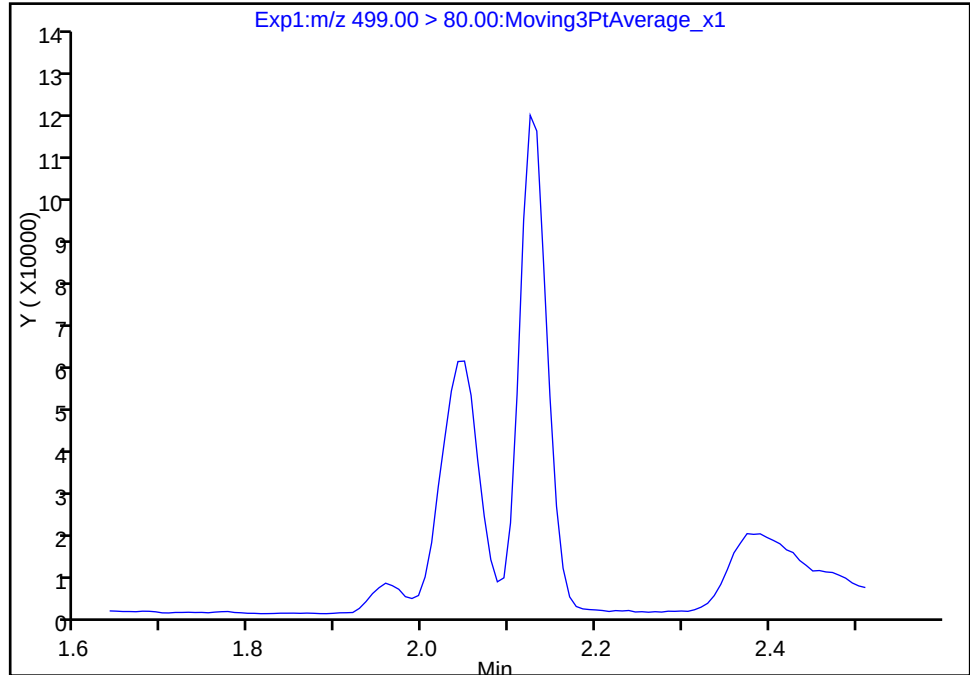
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Injection Date: 20-Oct-2017 22:15:07 Instrument ID: A8_N
Lims ID: 320-32132-A-9-A Lab Sample ID: 320-32132-9
Client ID: NAWC-100317-RW-143
Operator ID: SACINSTLCMS01 ALS Bottle#: 44 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

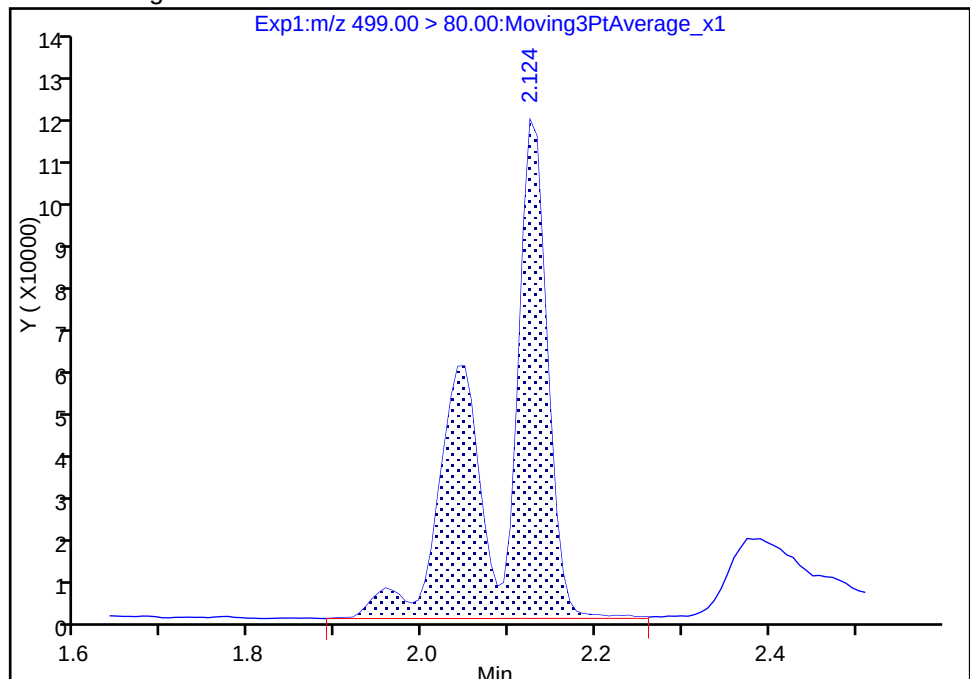
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 478888
Amount: 2.455296
Amount Units: ng/ml



Reviewer: barnettj, 23-Oct-2017 10:22:57

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-FRB-143</u>	Lab Sample ID: <u>320-32132-10</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_061.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 13:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>269.8 (mL)</u>	Date Analyzed: <u>10/20/2017 22:19</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100</u> ID: <u>3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190445</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.4	U	19	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	83	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	112		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_061.d
 Lims ID: 320-32132-A-10-A
 Client ID: NAWC-100317-FRB-143
 Sample Type: Client
 Inject. Date: 20-Oct-2017 22:19:50 ALS Bottle#: 45 Worklist Smp#: 17
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32132-a-10-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:59:31 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK012

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.524	0.016	1.000	1944670	9.45		6746	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.855	0.027		1755409	10.0		5098	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		5349350	28.7		5173	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	1100770	11.2		5920	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_061.d

Injection Date: 20-Oct-2017 22:19:50

Instrument ID: A8_N

Lims ID: 320-32132-A-10-A

Lab Sample ID: 320-32132-10

Client ID: NAWC-100317-FRB-143

Operator ID: SACINSTLCMS01

ALS Bottle#: 45

Worklist Smp#: 17

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

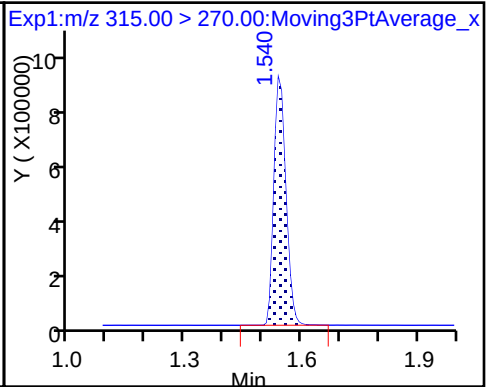
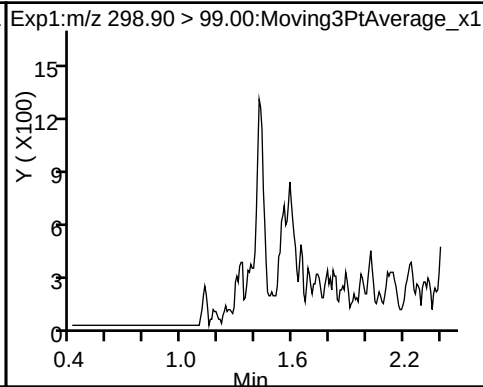
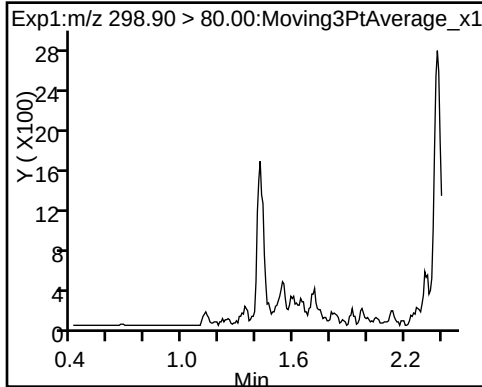
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

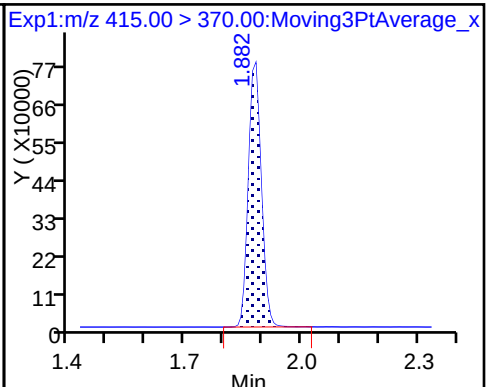
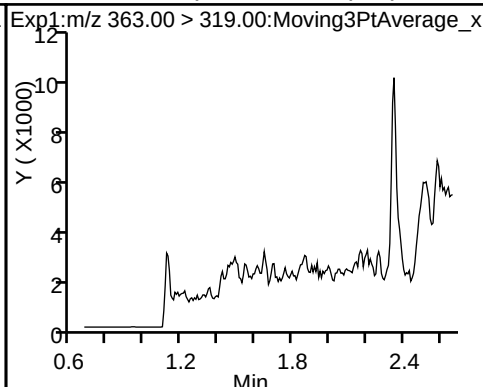
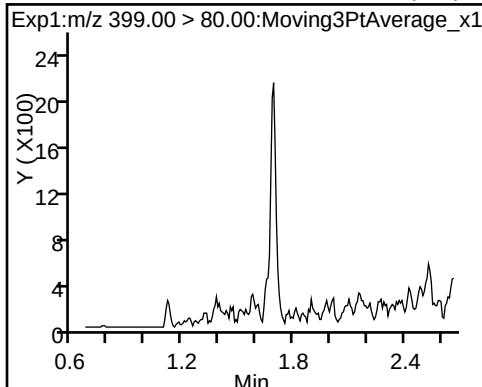
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

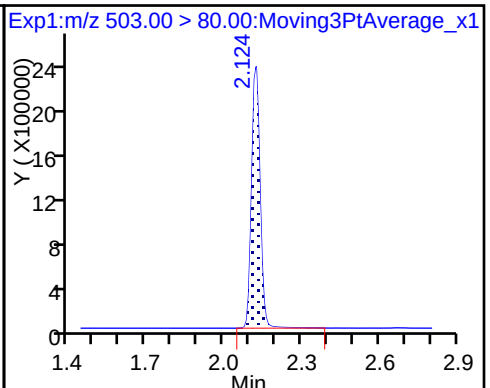
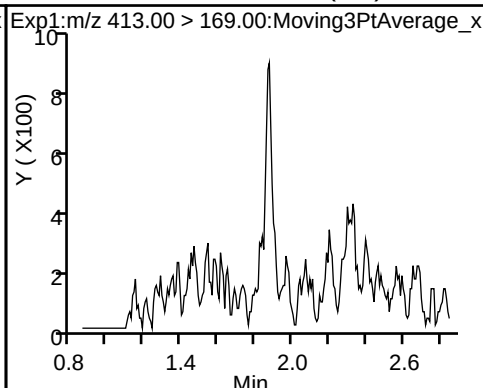
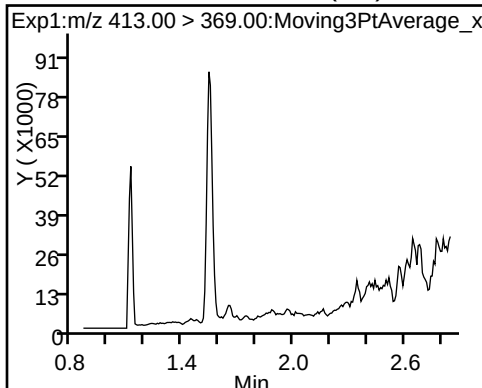
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

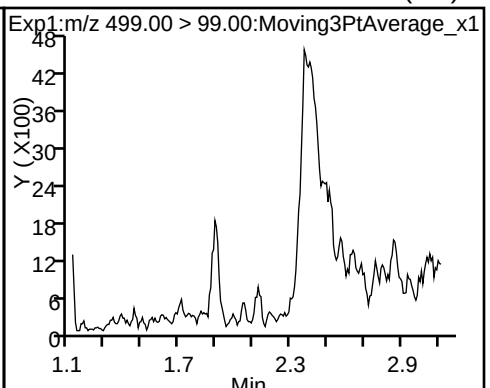
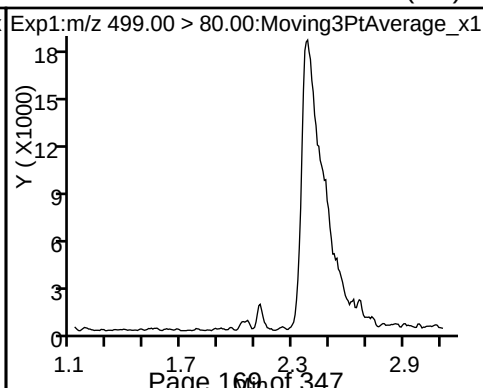
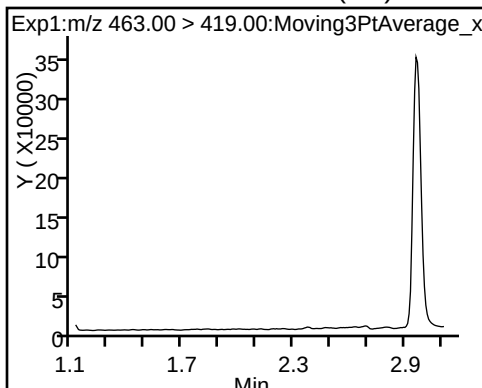
* 7 13C4 PFOS



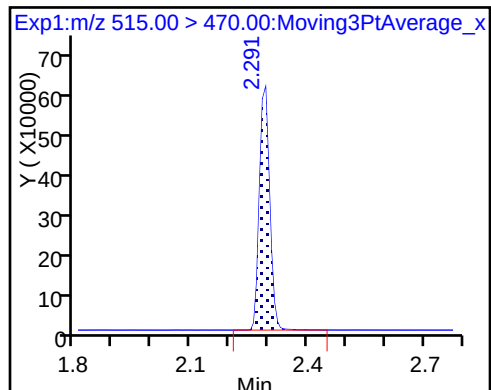
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_061.d
Lims ID: 320-32132-A-10-A
Client ID: NAWC-100317-FRB-143
Sample Type: Client
Inject. Date: 20-Oct-2017 22:19:50 ALS Bottle#: 45 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32132-a-10-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 23-Oct-2017 10:59:31 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK012

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.45	94.54
\$ 10 13C2 PFDA	10.0	11.2	112.42

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-RW-149</u>	Lab Sample ID: <u>320-32132-11</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_062.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 15:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>256.6(mL)</u>	Date Analyzed: <u>10/20/2017 22:24</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190445</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	14	J	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.2	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.5	J	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	79		70-130
STL00996	13C2 PFDA	113		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_062.d
 Lims ID: 320-32132-A-11-A
 Client ID: NAWC-100317-RW-149
 Sample Type: Client
 Inject. Date: 20-Oct-2017 22:24:34 ALS Bottle#: 46 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32132-a-11-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:59:31 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:24:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	331129	1.31		244	
298.90 > 99.00	1.419	1.402	0.017	1.000	229654		1.44(0.00-0.00)	329	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.524	0.024	1.000	1822505	7.95		5311	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.668	0.024	1.000	630535	1.84		143	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.668	0.024	1.000	212612	1.15		9.7	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.855	0.027		1957151	10.0		5244	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.856	0.026	1.000	628565	3.49		14.6	
413.00 > 169.00	1.882	1.856	0.026	1.000	381347		1.65(0.00-0.00)	802	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		5991734	28.7		2799	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.117	0.007	1.000	980342	5.04		79.7	M
499.00 > 99.00	2.124	2.117	0.007	1.000	181111		5.41(0.00-0.00)	63.5	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	1238240	11.3		6762	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_062.d

Injection Date: 20-Oct-2017 22:24:34

Instrument ID: A8_N

Lims ID: 320-32132-A-11-A

Lab Sample ID: 320-32132-11

Client ID: NAWC-100317-RW-149

Operator ID: SACINSTLCMS01

ALS Bottle#: 46

Worklist Smp#: 18

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

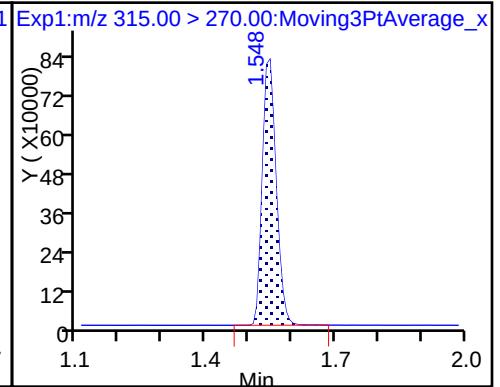
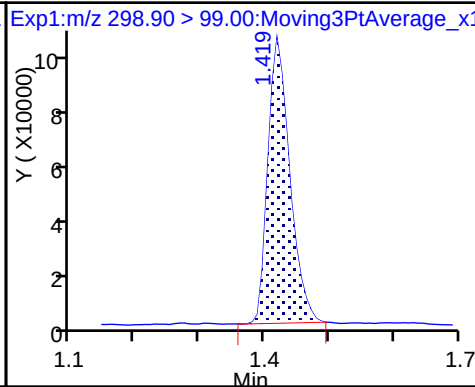
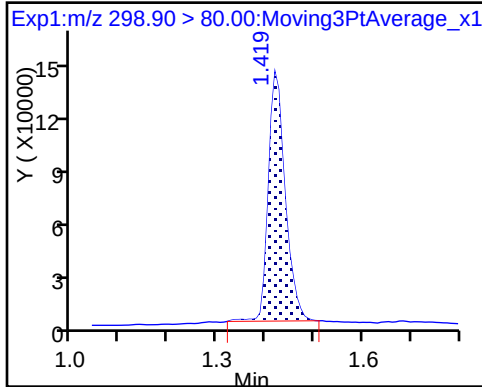
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

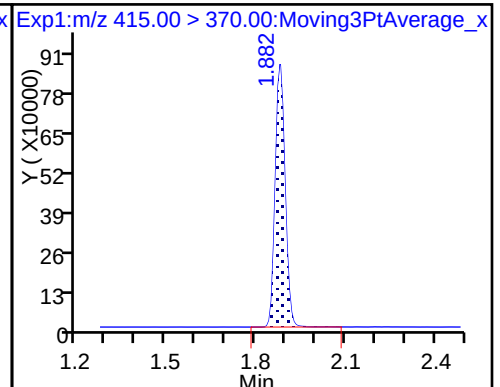
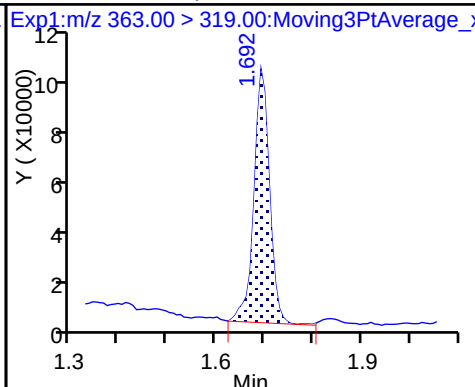
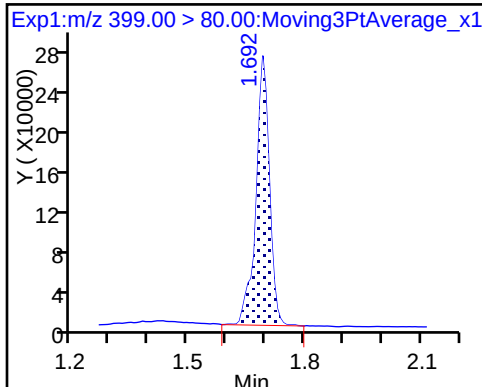
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

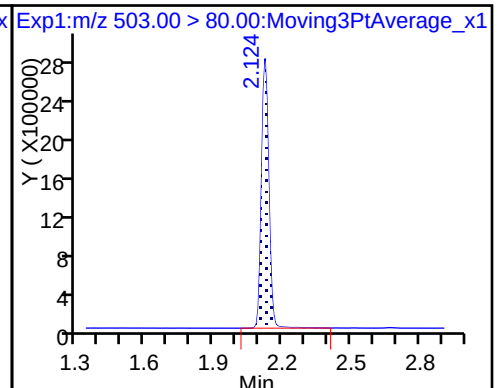
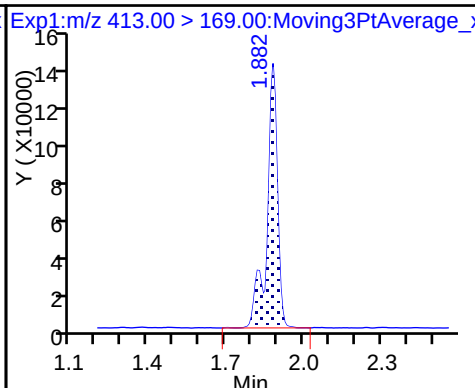
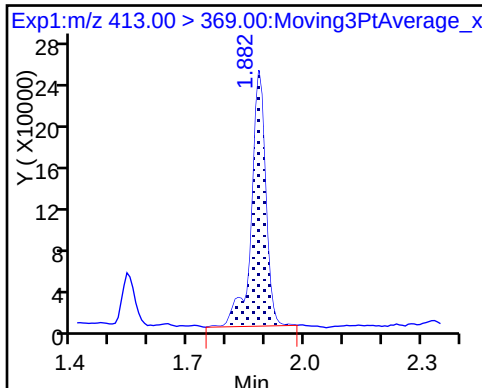
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

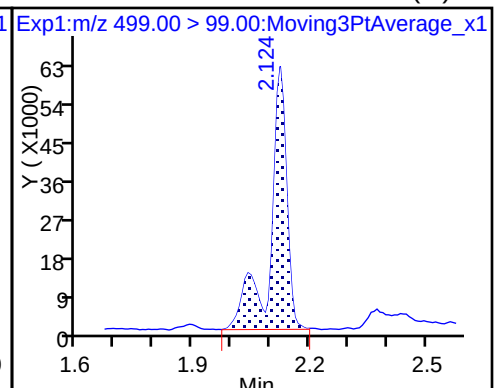
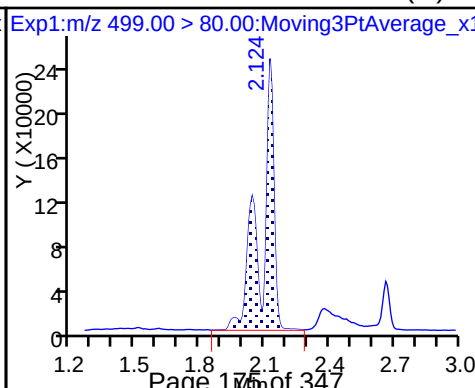
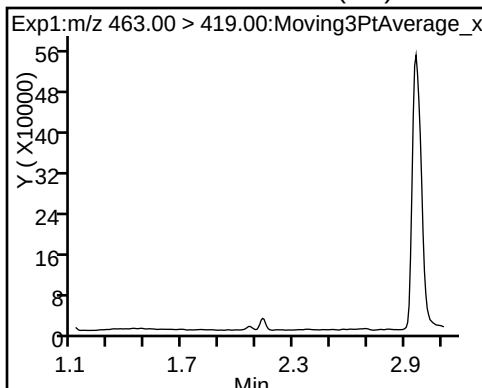
* 7 13C4 PFOS



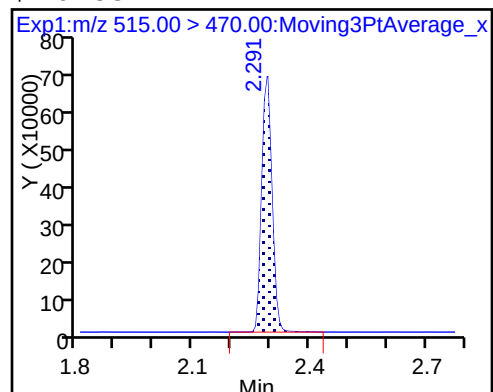
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_062.d
Lims ID: 320-32132-A-11-A
Client ID: NAWC-100317-RW-149
Sample Type: Client
Inject. Date: 20-Oct-2017 22:24:34 ALS Bottle#: 46 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32132-a-11-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 23-Oct-2017 10:59:31 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:24:28

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	7.95	79.47
\$ 10 13C2 PFDA	10.0	11.3	113.43

TestAmerica Sacramento

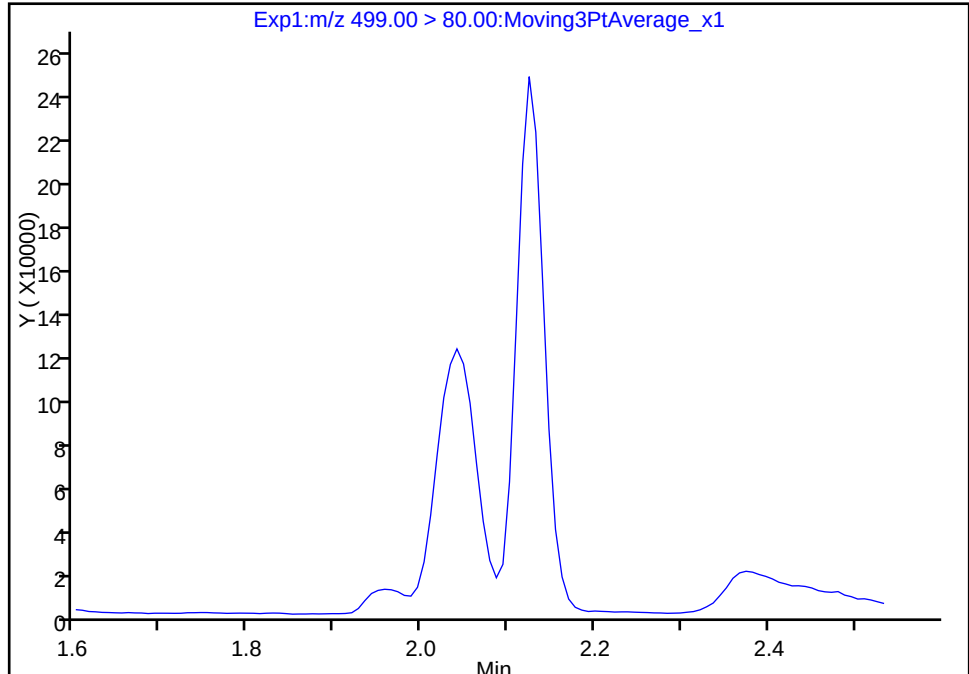
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_062.d				
Injection Date:	20-Oct-2017 22:24:34	Instrument ID:	A8_N		
Lims ID:	320-32132-A-11-A	Lab Sample ID:	320-32132-11		
Client ID:	NAWC-100317-RW-149				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	46	Worklist Smp#:	18
Injection 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

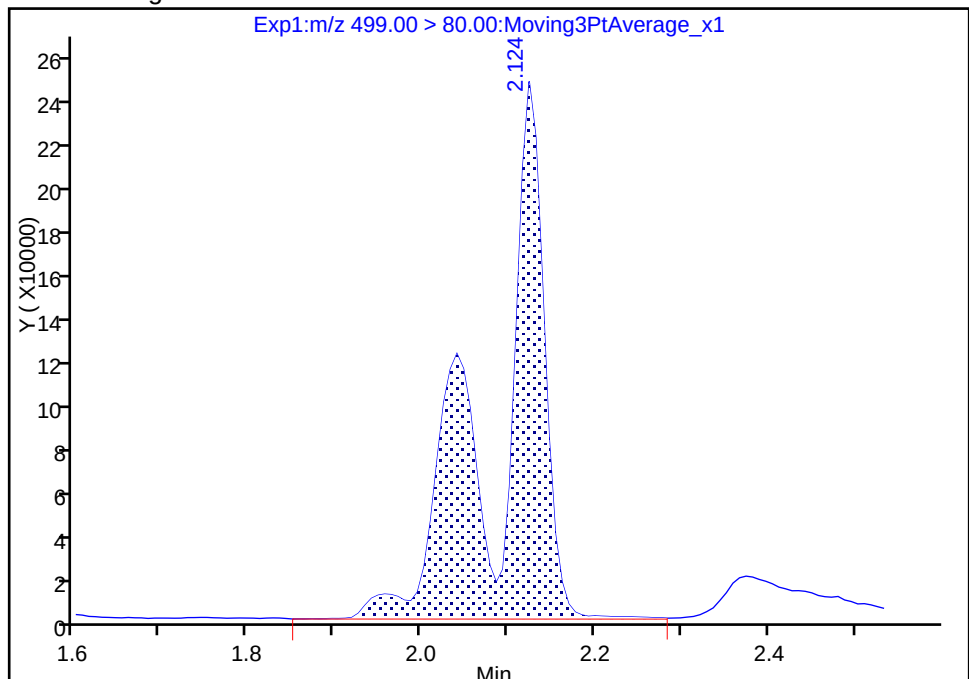
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results



Reviewer: barnettj, 23-Oct-2017 10:23:49

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

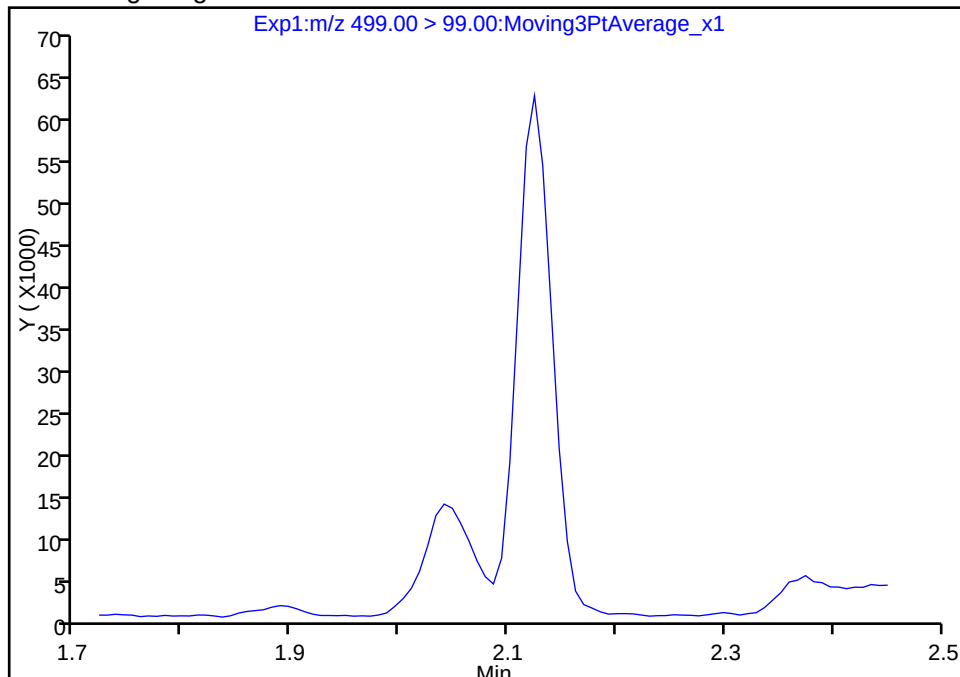
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_062.d				
Injection Date:	20-Oct-2017 22:24:34	Instrument ID:	A8_N		
Lims ID:	320-32132-A-11-A	Lab Sample ID:	320-32132-11		
Client ID:	NAWC-100317-RW-149				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	46	Worklist Smp#:	18
Injection 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

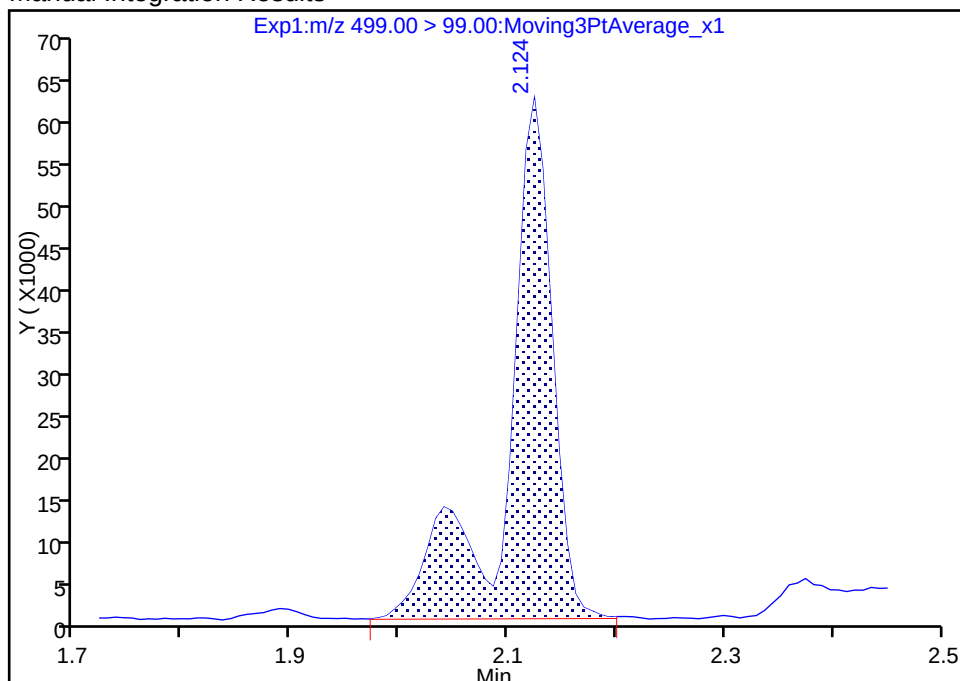
Signal: 2

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 181111
Amount: 5.036491
Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 10:24:03

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

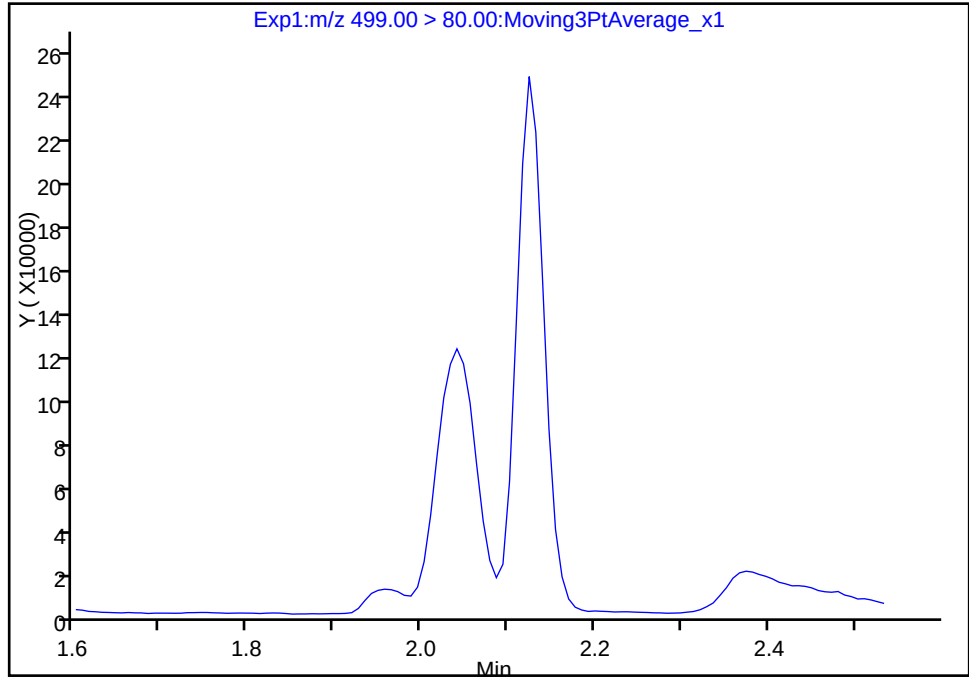
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Injection Date:	20-Oct-2017 22:24:34	Instrument ID:	A8_N		
Lims ID:	320-32132-A-11-A	Lab Sample ID:	320-32132-11		
Client ID:	NAWC-100317-RW-149				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	46	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

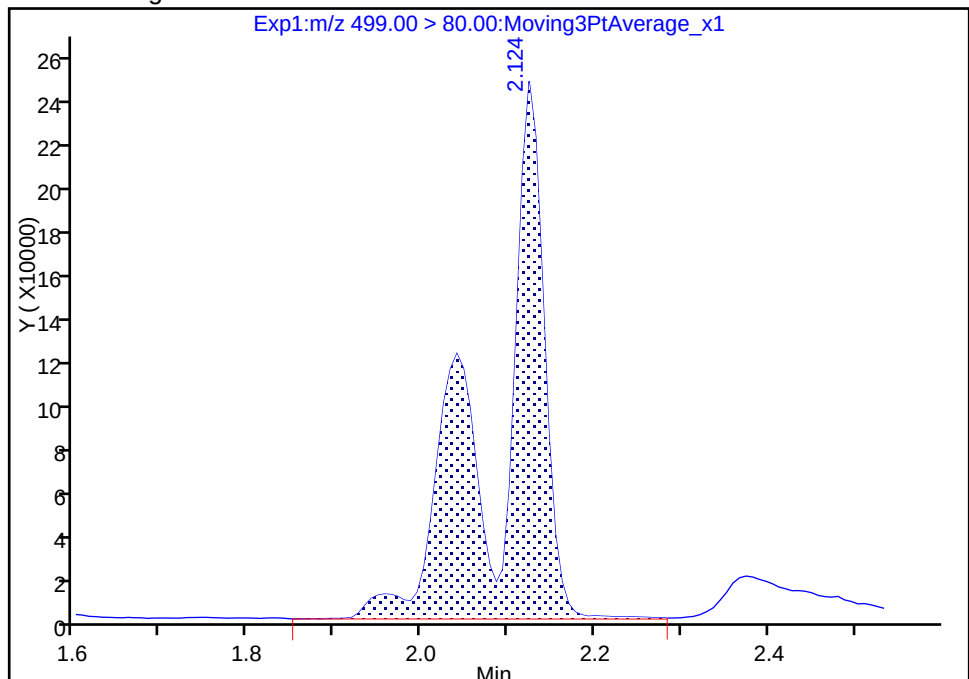
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 980342
Amount: 5.036491
Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 10:24:03

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Client Sample ID: NAWC-100317-FRB-149 Lab Sample ID: 320-32132-12

Matrix: Water Lab File ID: 2017.10.20_537A_063.d

Analysis Method: 537 Date Collected: 10/03/2017 15:05

Extraction Method: 537 Date Extracted: 10/13/2017 14:28

Sample wt/vol: 262.9(mL) Date Analyzed: 10/20/2017 22:29

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.: 190445 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	107		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_063.d
 Lims ID: 320-32132-A-12-A
 Client ID: NAWC-100317-FRB-149
 Sample Type: Client
 Inject. Date: 20-Oct-2017 22:29:21 ALS Bottle#: 47 Worklist Smp#: 19
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32132-a-12-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:59:31 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK012

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.524	0.016	1.000	1942105	9.46		5805	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.855	0.019		1752876	10.0		4179	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		5373811	28.7		4585	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.282	0.002	1.000	1044302	10.7		5167	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_063.d

Injection Date: 20-Oct-2017 22:29:21

Instrument ID: A8_N

Lims ID: 320-32132-A-12-A

Lab Sample ID: 320-32132-12

Client ID: NAWC-100317-FRB-149

Operator ID: SACINSTLCMS01

ALS Bottle#: 47

Worklist Smp#: 19

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

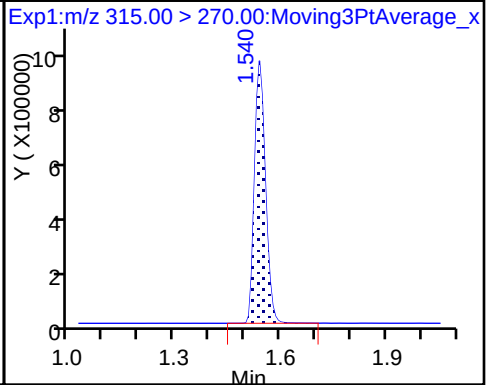
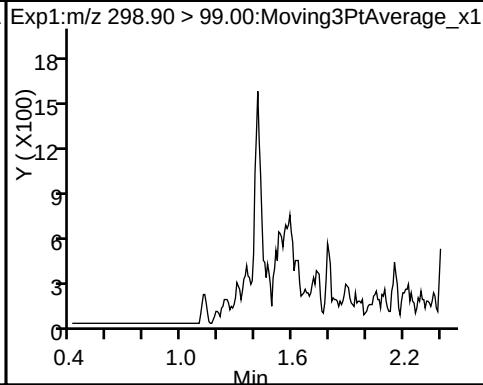
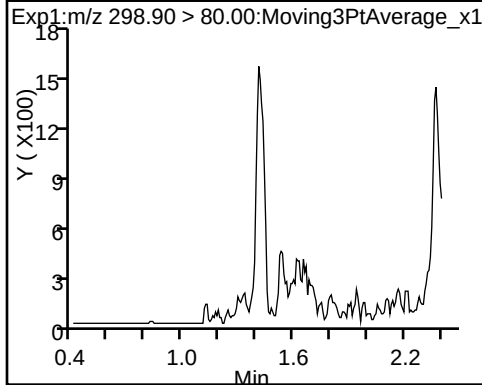
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

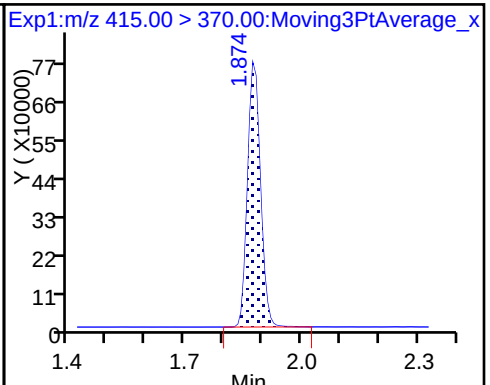
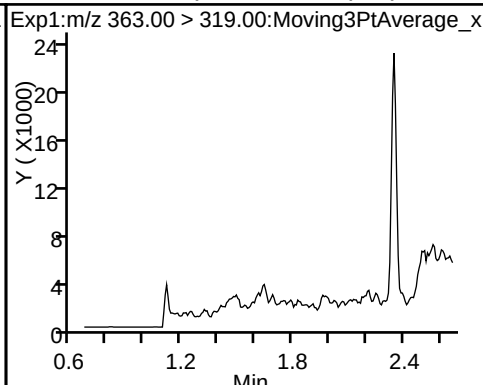
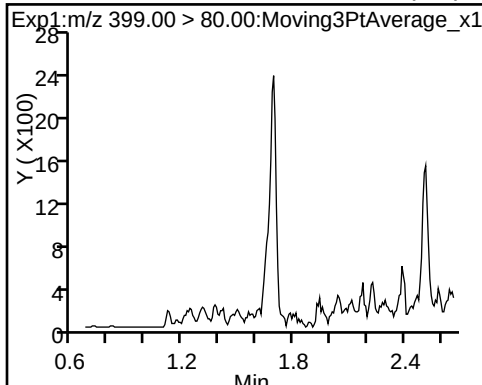
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

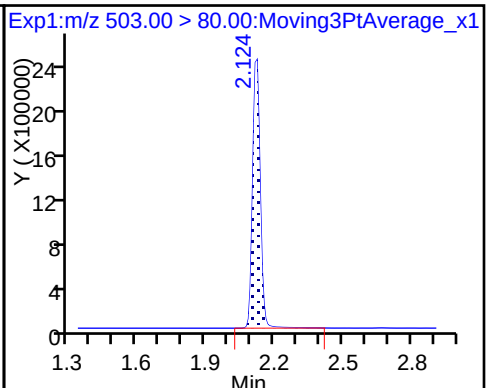
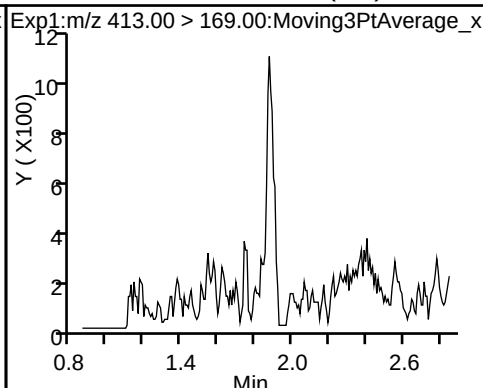
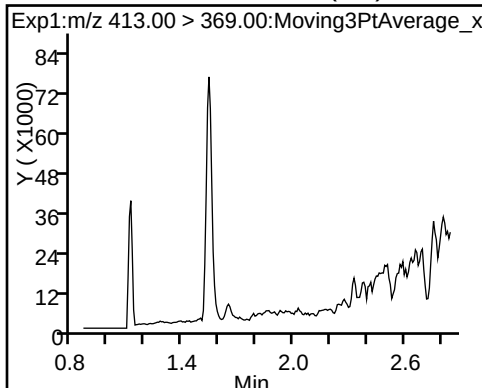
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

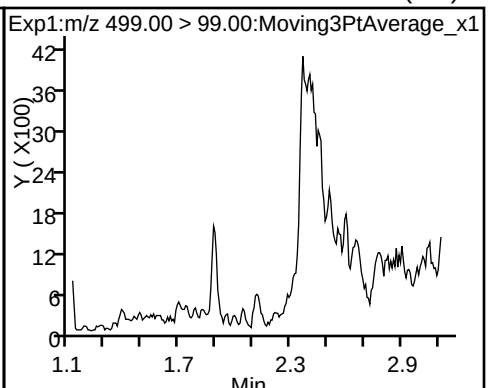
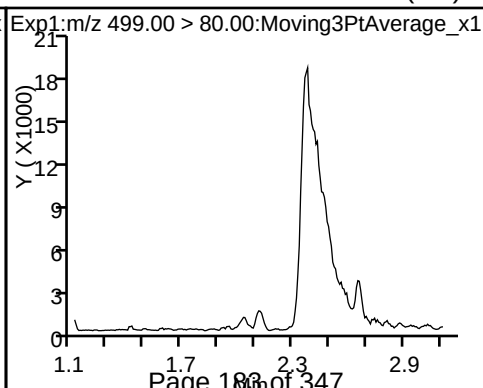
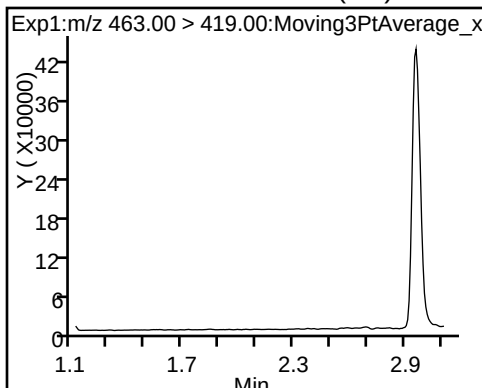
* 7 13C4 PFOS



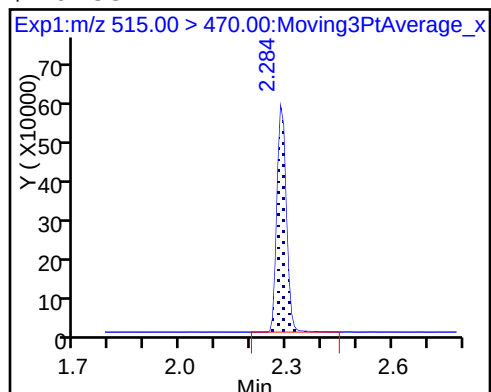
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_063.d
Lims ID: 320-32132-A-12-A
Client ID: NAWC-100317-FRB-149
Sample Type: Client
Inject. Date: 20-Oct-2017 22:29:21 ALS Bottle#: 47 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32132-a-12-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 23-Oct-2017 10:59:31 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK012

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.46	94.55
\$ 10 13C2 PFDA	10.0	10.7	106.81

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-RW-229</u>	Lab Sample ID: <u>320-32132-13</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_064.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 15:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>270.8 (mL)</u>	Date Analyzed: <u>10/20/2017 22:34</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190445</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	30	J M	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	39		18	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	22	18	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	13	J	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	14		9.2	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	83	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	72		70-130
STL00996	13C2 PFDA	113		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_064.d
 Lims ID: 320-32132-A-13-A
 Client ID: NAWC-100317-RW-229
 Sample Type: Client
 Inject. Date: 20-Oct-2017 22:34:05 ALS Bottle#: 48 Worklist Smp#: 20
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32132-a-13-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:59:31 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:25:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	653941	2.75		333	
298.90 > 99.00	1.419	1.402	0.017	1.000	436098		1.50(0.00-0.00)	571	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.524	0.024	1.000	1570456	7.20		4285	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.668	0.024	1.000	1125432	3.48		361	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.668	0.024	1.000	670735	3.83		66.3	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.855	0.027		1860530	10.0		4504	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.856	0.026	1.000	1787547	10.4		33.7	
413.00 > 169.00	1.882	1.856	0.026	1.000	1197870		1.49(0.00-0.00)	1456	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		5656035	28.7		2671	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.116	0.016	1.000	151647	1.31		3.9	M
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.117	0.007	1.000	1478145	8.04		177	M
499.00 > 99.00	2.124	2.117	0.007	1.000	281646		5.25(0.00-0.00)	105	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	1170404	11.3		6029	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_064.d

Injection Date: 20-Oct-2017 22:34:05

Instrument ID: A8_N

Lims ID: 320-32132-A-13-A

Lab Sample ID: 320-32132-13

Client ID: NAWC-100317-RW-229

Operator ID: SACINSTLCMS01

ALS Bottle#: 48

Worklist Smp#: 20

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

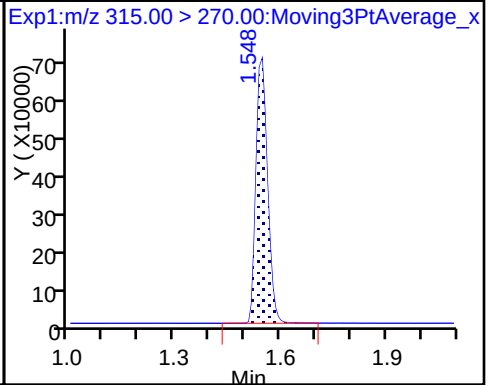
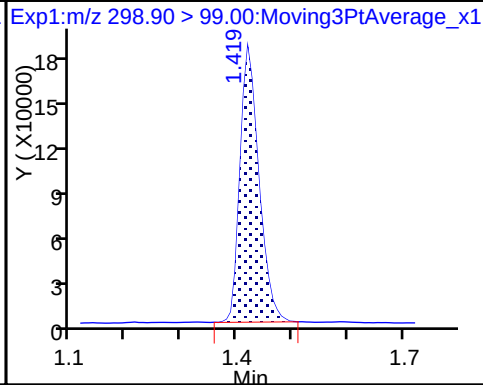
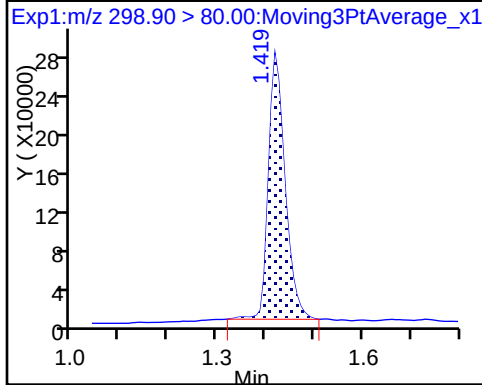
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

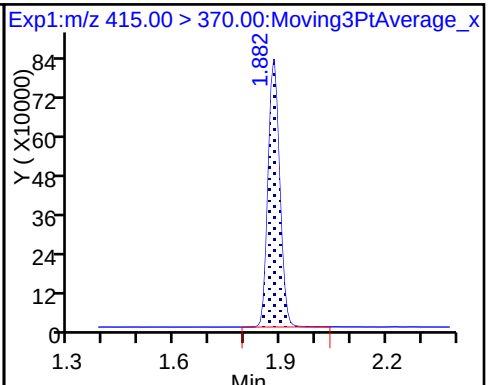
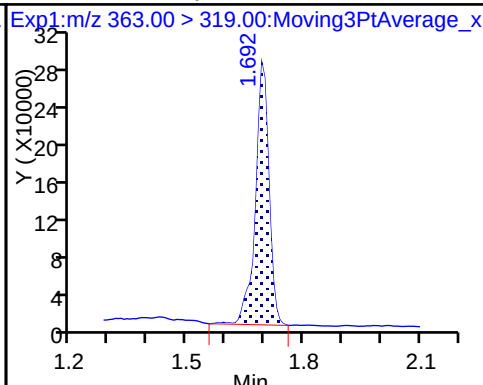
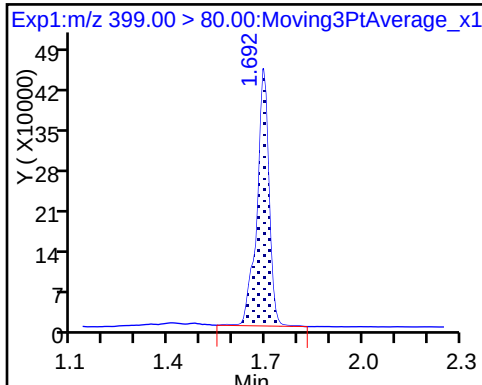
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

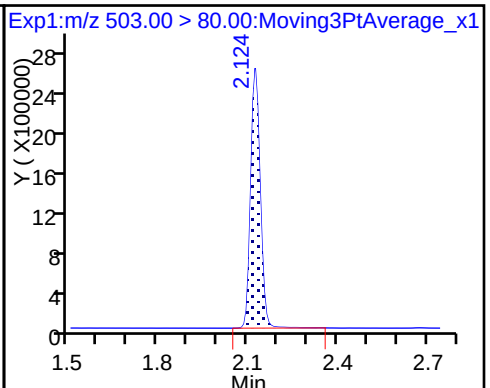
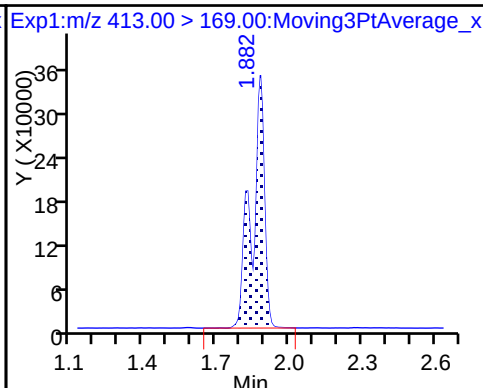
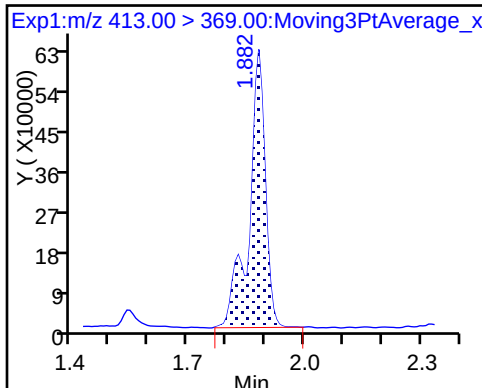
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

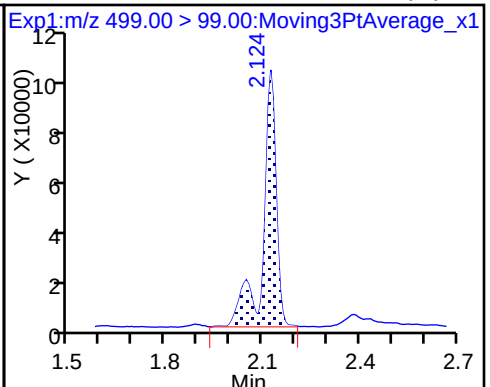
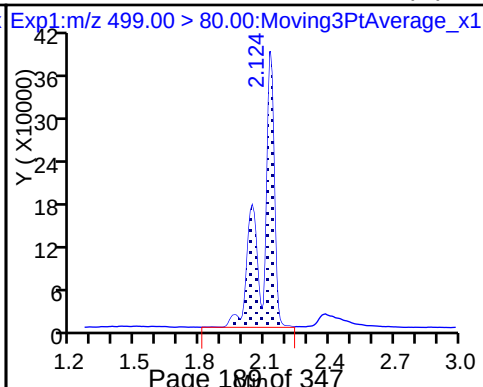
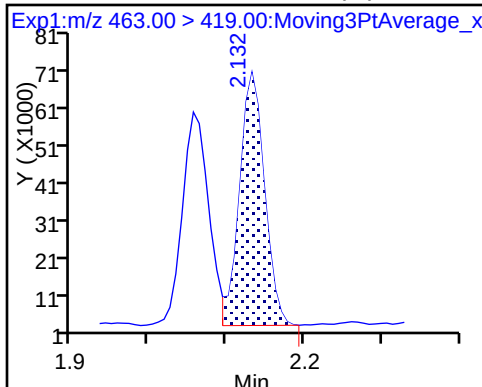
* 7 13C4 PFOS



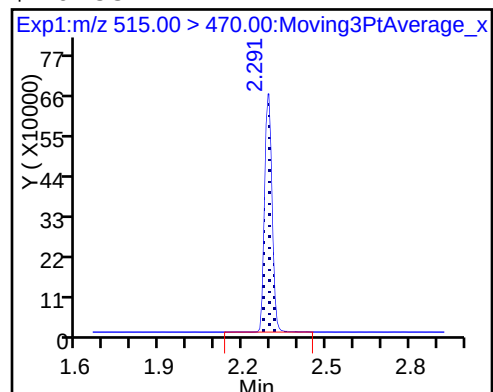
9 Perfluorononanoic acid (M)

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_064.d
Lims ID: 320-32132-A-13-A
Client ID: NAWC-100317-RW-229
Sample Type: Client
Inject. Date: 20-Oct-2017 22:34:05 ALS Bottle#: 48 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32132-a-13-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 23-Oct-2017 10:59:31 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:25:39

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	7.20	72.04
\$ 10 13C2 PFDA	10.0	11.3	112.78

TestAmerica Sacramento

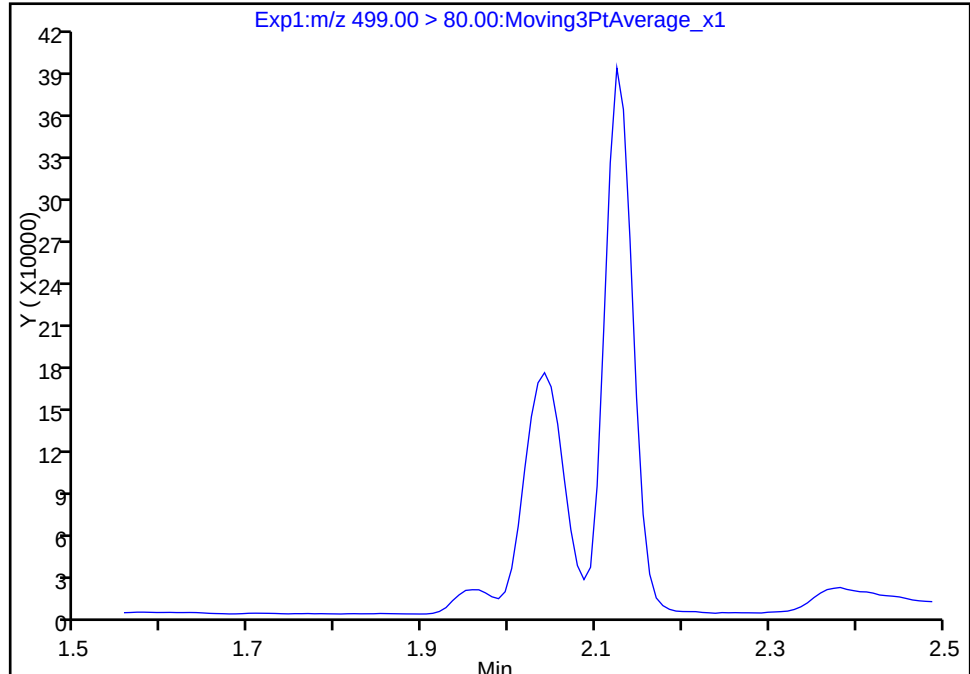
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Injection Date: 20-Oct-2017 22:34:05 Instrument ID: A8_N
Lims ID: 320-32132-A-13-A Lab Sample ID: 320-32132-13
Client ID: NAWC-100317-RW-229
Operator ID: SACINSTLCMS01 ALS Bottle#: 48 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

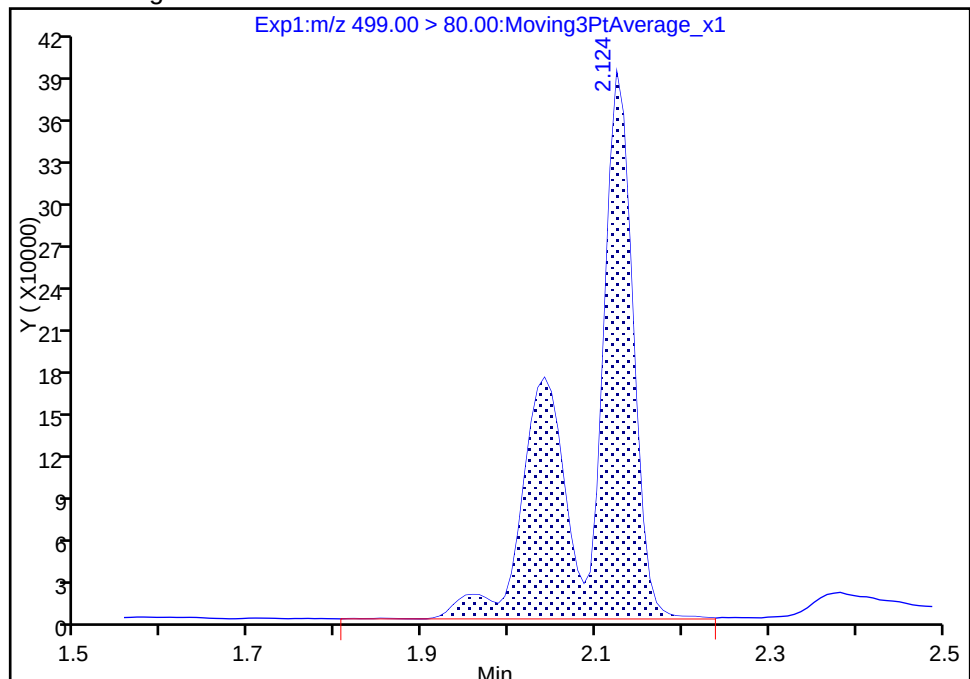
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 1478145
Amount: 8.044664
Amount Units: ng/ml



Reviewer: barnettj, 23-Oct-2017 10:24:45

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

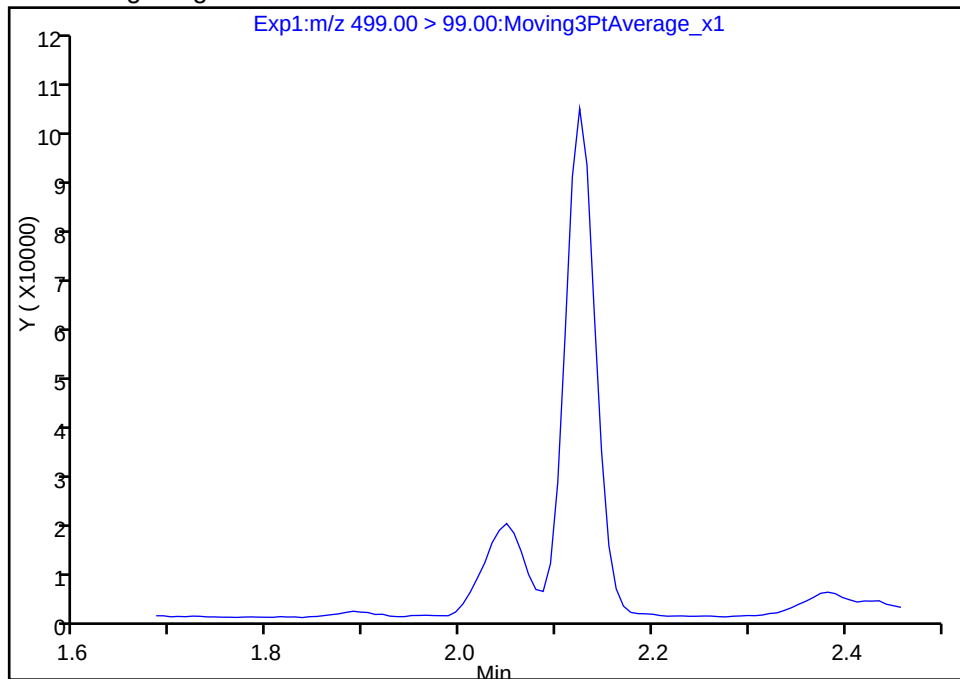
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_064.d
Injection Date: 20-Oct-2017 22:34:05 Instrument ID: A8_N
Lims ID: 320-32132-A-13-A Lab Sample ID: 320-32132-13
Client ID: NAWC-100317-RW-229
Operator ID: SACINSTLCMS01 ALS Bottle#: 48 Worklist Smp#: 20
Injection Vol: 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: 2

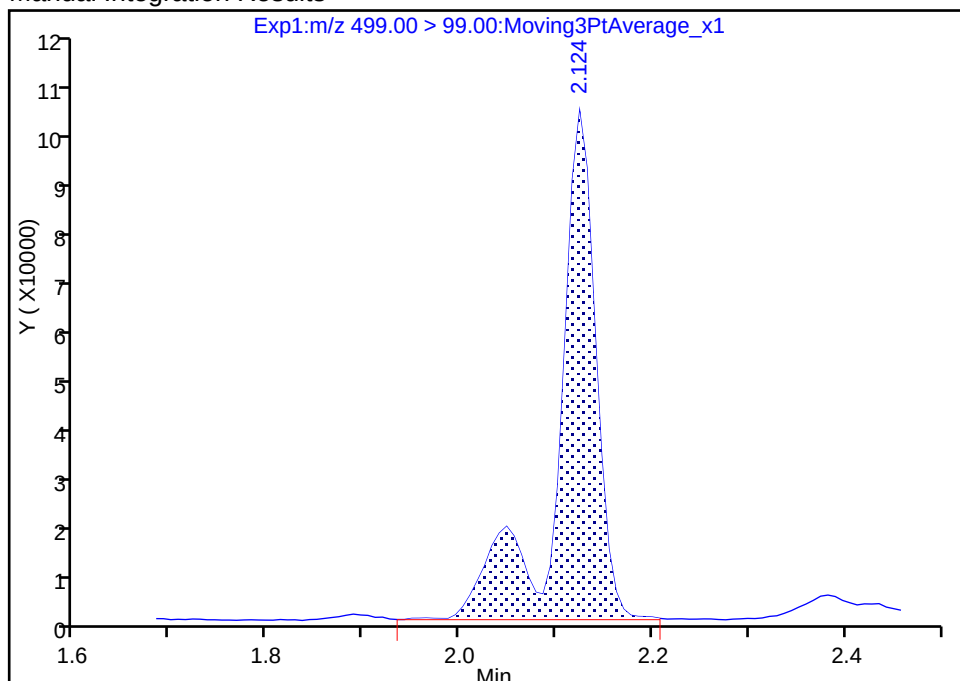
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 281646
Amount: 8.044664
Amount Units: ng/ml



Reviewer: barnettj, 23-Oct-2017 10:25:00

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

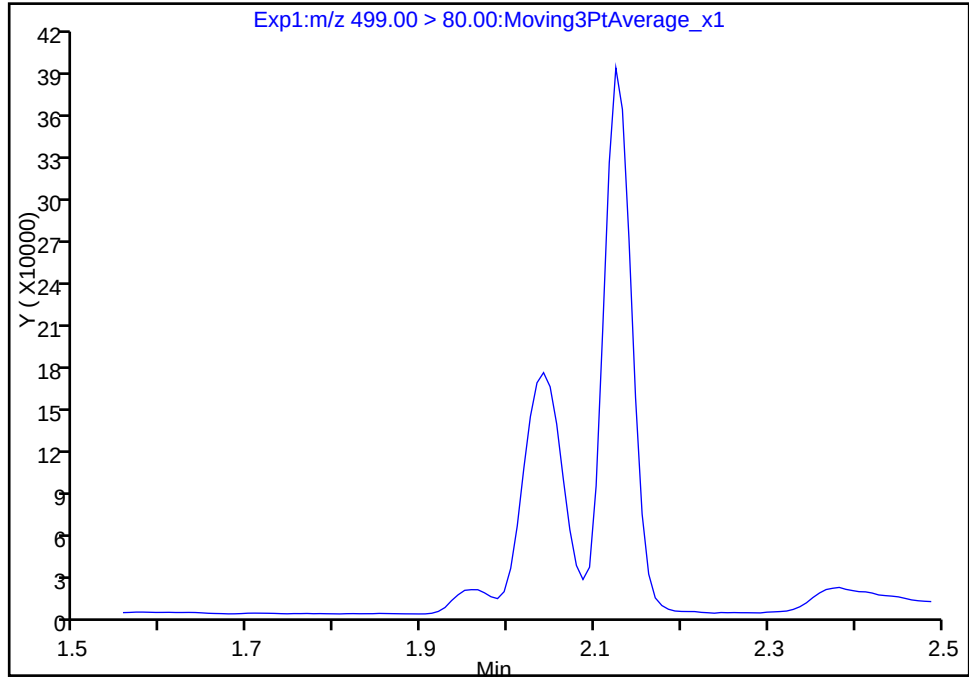
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Injection Date: 20-Oct-2017 22:34:05 Instrument ID: A8_N
Lims ID: 320-32132-A-13-A Lab Sample ID: 320-32132-13
Client ID: NAWC-100317-RW-229
Operator ID: SACINSTLCMS01 ALS Bottle#: 48 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

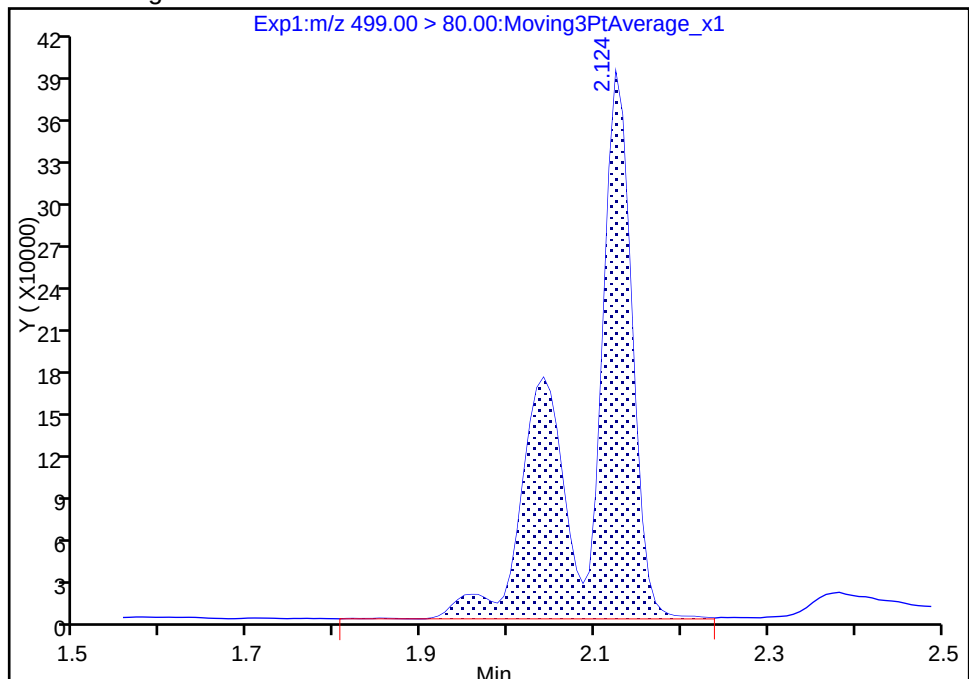
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 1478145
Amount: 8.044664
Amount Units: ng/ml



Reviewer: barnettj, 23-Oct-2017 10:25:00

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

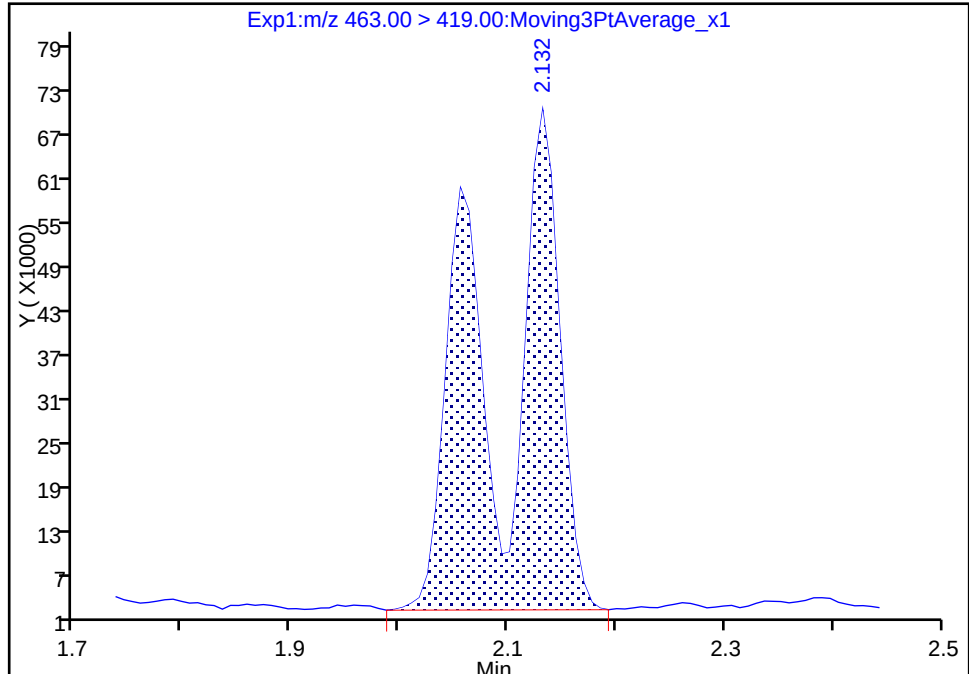
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Injection Date: 20-Oct-2017 22:34:05 Instrument ID: A8_N
Lims ID: 320-32132-A-13-A Lab Sample ID: 320-32132-13
Client ID: NAWC-100317-RW-229
Operator ID: SACINSTLCMS01 ALS Bottle#: 48 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

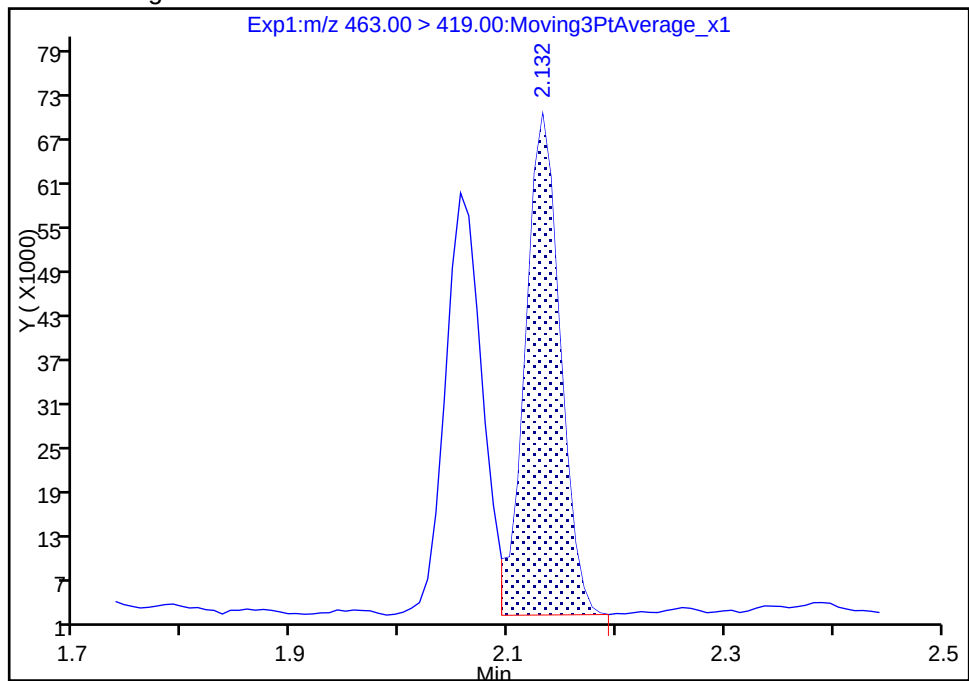
RT: 2.13
Area: 286295
Amount: 2.474562
Amount Units: ng/ml

Processing Integration Results



RT: 2.13
Area: 151647
Amount: 1.310746
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 23-Oct-2017 10:25:23

Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-FRB-229</u>	Lab Sample ID: <u>320-32132-14</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_065.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 15:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>264.7(mL)</u>	Date Analyzed: <u>10/20/2017 22:38</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190445</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	128		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_065.d
 Lims ID: 320-32132-A-14-A
 Client ID: NAWC-100317-FRB-229
 Sample Type: Client
 Inject. Date: 20-Oct-2017 22:38:50 ALS Bottle#: 49 Worklist Smp#: 21
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32132-a-14-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:59:31 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK012

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.524	0.024	1.000	1954592	9.76		6398	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.855	0.019		1709466	10.0		4688	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.108	0.009		5242457	28.7		3679	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	1221653	12.8		6075	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_065.d

Injection Date: 20-Oct-2017 22:38:50

Instrument ID: A8_N

Lims ID: 320-32132-A-14-A

Lab Sample ID: 320-32132-14

Client ID: NAWC-100317-FRB-229

Operator ID: SACINSTLCMS01

ALS Bottle#: 49

Worklist Smp#: 21

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

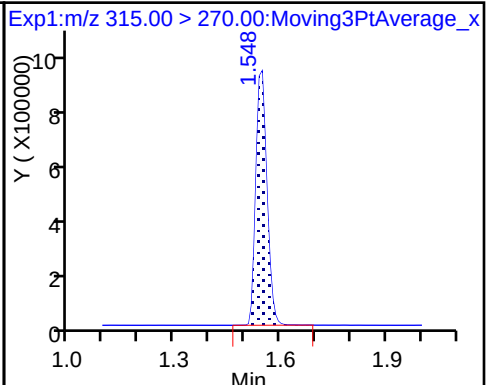
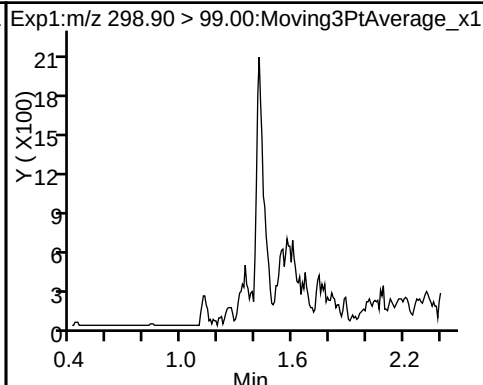
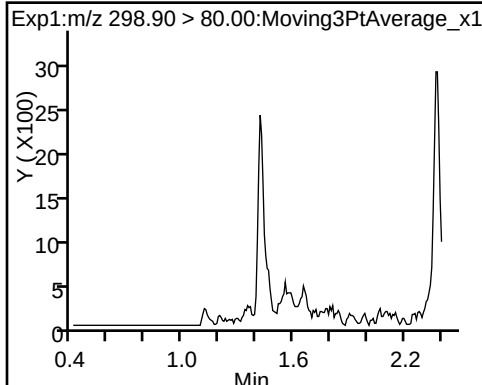
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

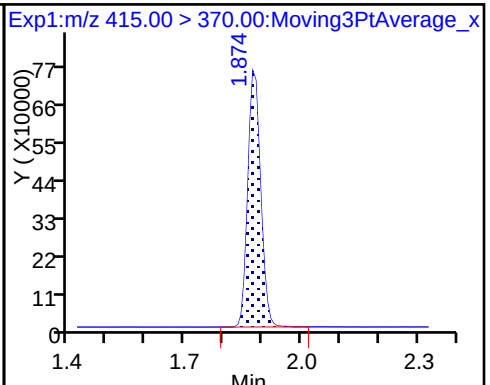
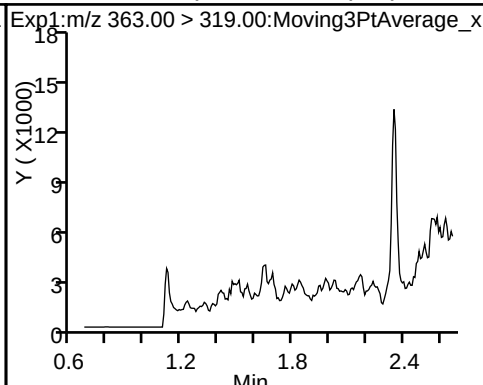
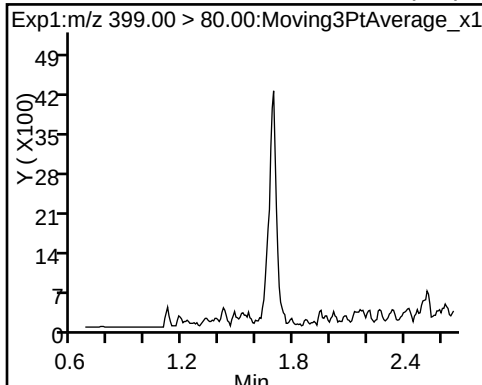
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

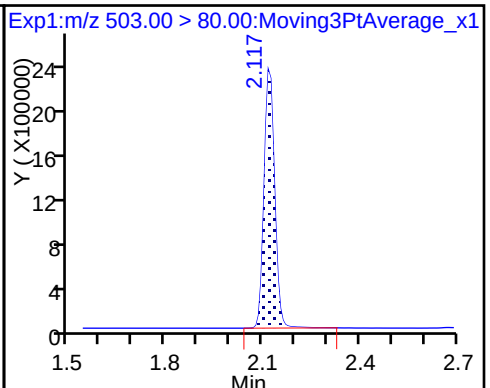
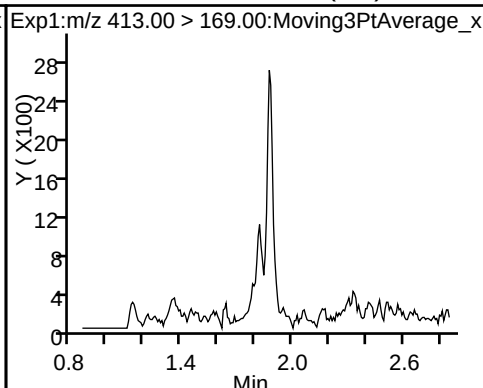
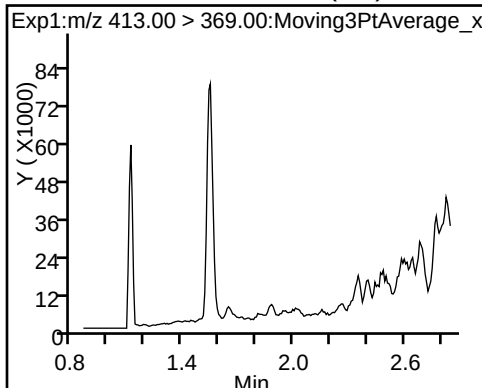
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

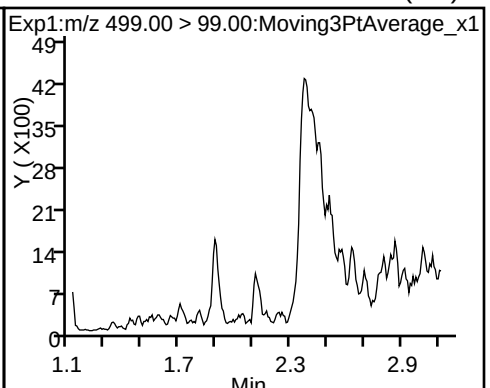
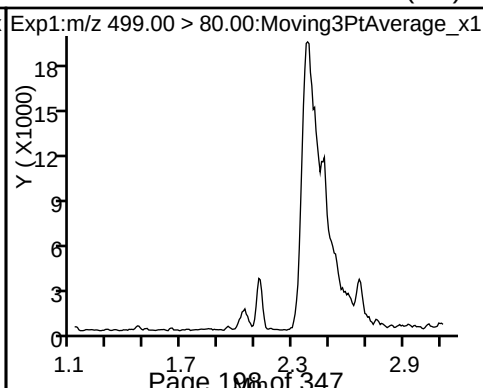
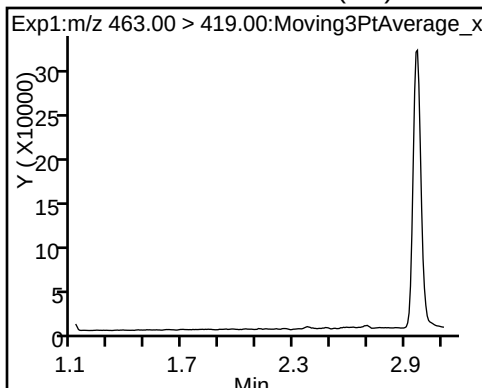
* 7 13C4 PFOS



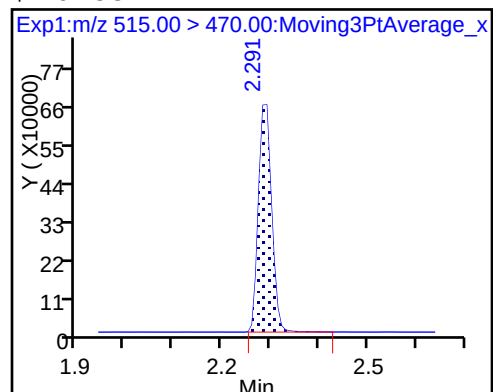
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_065.d
Lims ID: 320-32132-A-14-A
Client ID: NAWC-100317-FRB-229
Sample Type: Client
Inject. Date: 20-Oct-2017 22:38:50 ALS Bottle#: 49 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32132-a-14-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 23-Oct-2017 10:59:31 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK012

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.76	97.58
\$ 10 13C2 PFDA	10.0	12.8	128.12

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1 Analy Batch No.: 185329

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/20/2017 02:56 Calibration End Date: 09/20/2017 03:19 Calibration ID: 34457

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_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)	1.1549 0.7675	1.2218	1.1299	0.9825	0.8671	QuaF		1.2127	-0.002495						1.0000		0.9600
Perfluoroheptanoic acid (PFHpA)	0.9156 0.9157	1.0104	0.9599	0.9323	0.9167	Ave		0.9418				4.0		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.6240 1.5024	1.7562	1.6778	1.6725	1.5962	Ave		1.6382				5.3		30.0			
Perfluorooctanoic acid (PFOA)	0.8827 0.9310	0.9355	0.9297	0.9101	0.9278	Ave		0.9195				2.2		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.8786 0.9472	0.9205	0.9514	0.9450	0.9475	Ave		0.9317				3.0		30.0			
Perfluorononanoic acid (PFNA)	0.6171 0.6192	0.6458	0.6231	0.6183	0.6076	Ave		0.6218				2.1		30.0			
13C2 PFHxA	1.1170 1.2085	1.1856	1.1778	1.1659	1.1757	Ave		1.1718				2.6		30.0			
13C2 PFDA	0.5262 0.5719	0.5663	0.5603	0.5520	0.5699	Ave		0.5578				3.1		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.: 320-32132-1 Analy Batch No.: 185329

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/20/2017 02:56 Calibration End Date: 09/20/2017 03:19 Calibration ID: 34457

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_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	QuaF	2072419 26277877	5031340	9714039	16708415	22246597	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	202553 3731330	492336	996370	1954380	2871658	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	971572 17148552	2411042	4809005	9481986	13653533	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	390753 7591950	912252	1931186	3817782	5816384	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	700862 14414630	1684976	3635963	7143258	10806665	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PF OA	Ave	273016 5046017	629304	1293375	2592159	3806555	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PF OA	Ave	2470192 2461679	2599092	2444565	2443470	2454801	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	1163662 1164862	1241510	1162968	1156914	1189895	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD
QuaF = Quadratic ISTD forced zero

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1 Analy Batch No.: 185329

SDG No.: _____

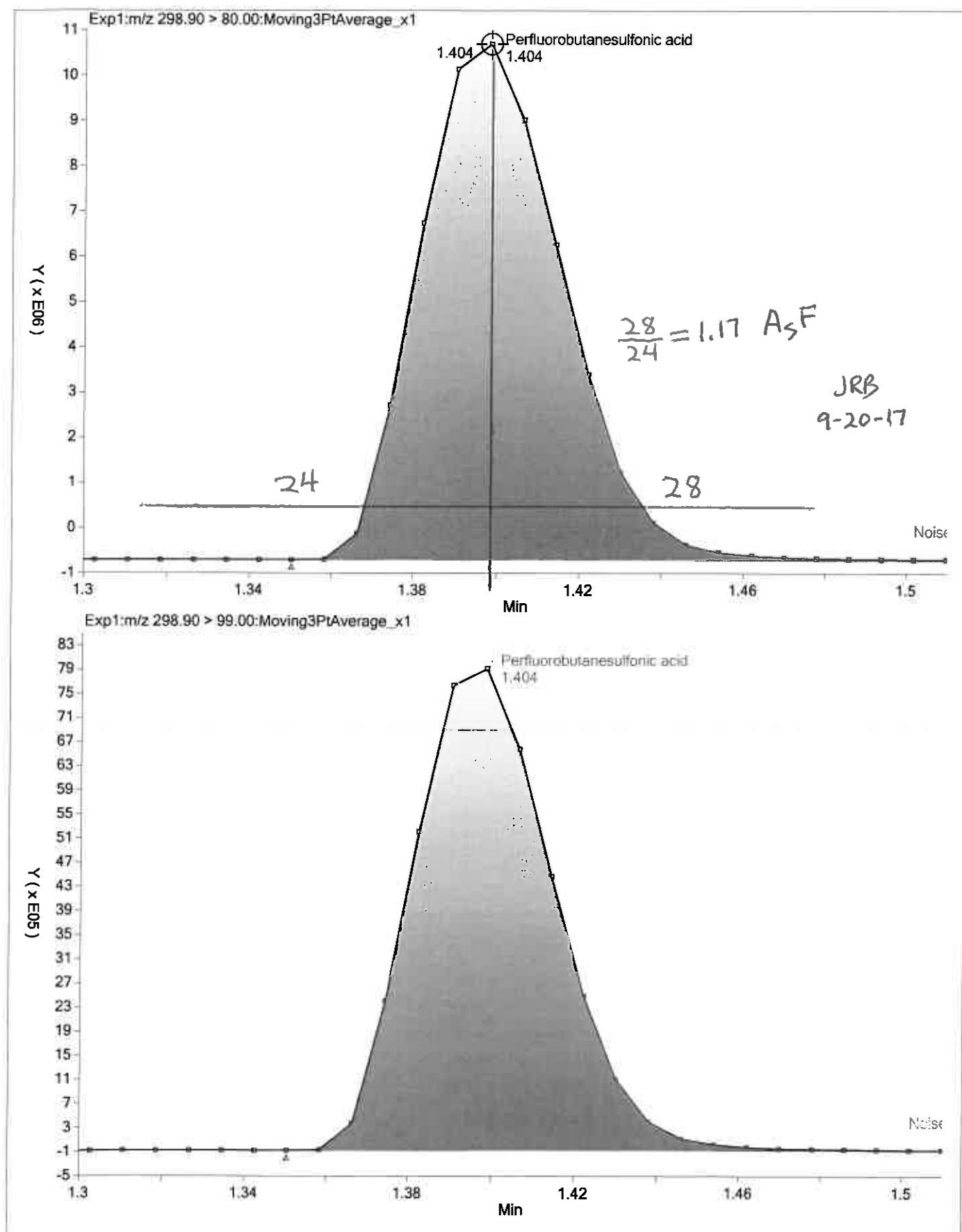
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N

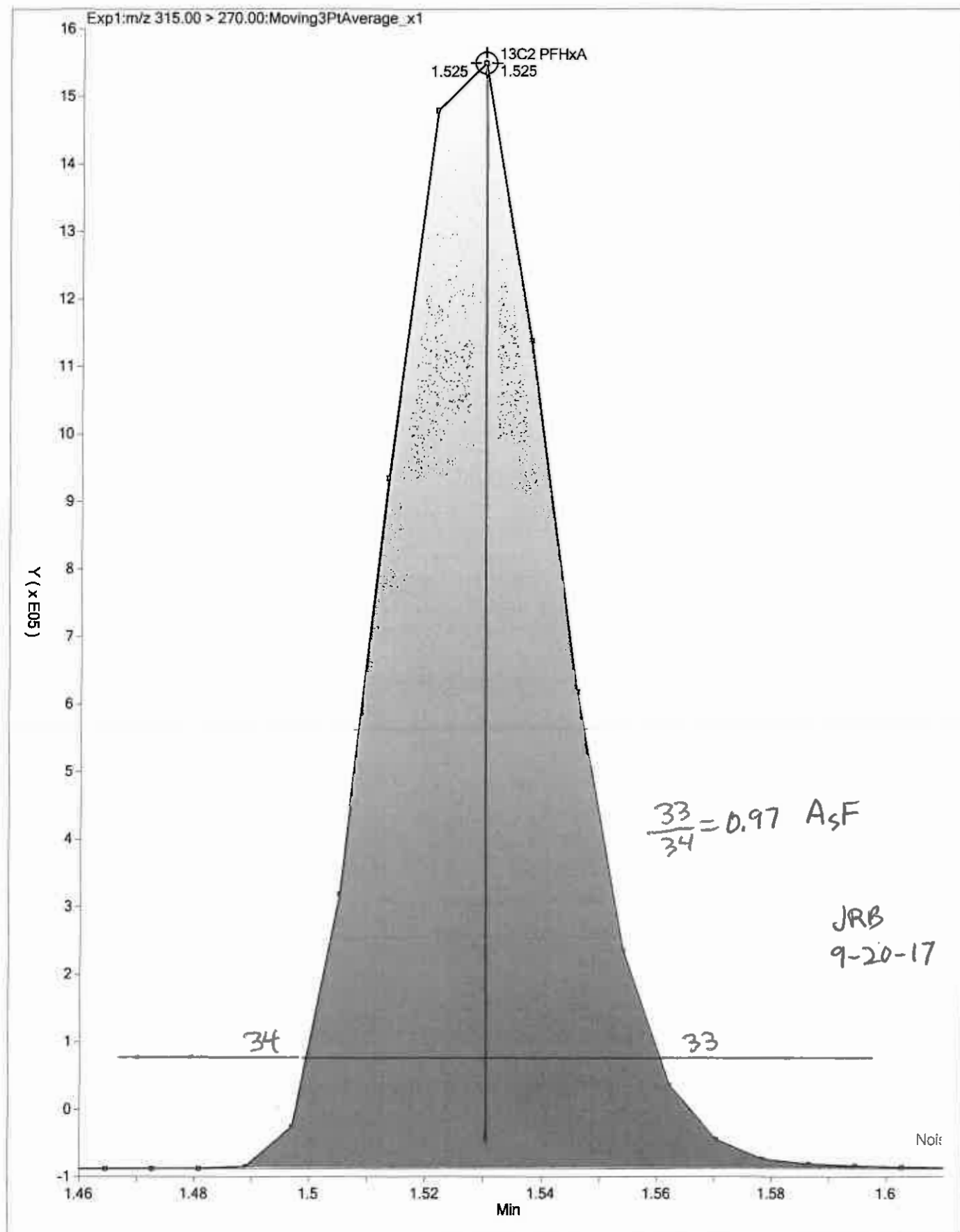
Calibration Start Date: 09/20/2017 02:56 Calibration End Date: 09/20/2017 03:19 Calibration ID: 34457

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_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)	-3.0	5.3	3.0	-0.7	-1.6	1.3	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	-2.8	7.3	1.9	-1.0	-2.7	-2.8	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-0.9	7.2	2.4	2.1	-2.6	-8.3	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-4.0	1.7	1.1	-1.0	0.9	1.3	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-5.7	-1.2	2.1	1.4	1.7	1.7	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-0.8	3.8	0.2	-0.6	-2.3	-0.4	50	30	30	30	30	30
13C2 PFHxA	-4.7	1.2	0.5	-0.5	0.3	3.1	30	30	30	30	30	30
13C2 PFDA	-5.7	1.5	0.5	-1.0	2.2	2.5	30	30	30	30	30	30





TestAmerica Laboratories
Istd/Surrogate Recovery Report

Worklist Name: 19SEP2017_537_ICAL

Worklist Num: 48154

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b

Limit Group: LC 537 ICAI

Analysis Type: SemiVOA

Inj Volume: 2.00

Inj Vol Units: ul

Lims Batch: 185329

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			1939425 1.94	5718230 2.17
# 1 RB	20-Sep-2017 02:41:50			2065918 106.5	5411709 94.6
# 2 RB	20-Sep-2017 02:46:34			2077017 107.1	5614007 98.2
	IS Std			2075431 1.85	5478893 2.10
# 3 RB	20-Sep-2017 02:51:19			1999632 96.3	5340682 97.5
	IS Std				
# 4 IC L1	20-Sep-2017 02:56:02	1.53 95.33	2.28 94.34	2211369> 100.0*	5717338> 100.0*
# 5 IC L2	20-Sep-2017 03:00:47	1.53 101.20	2.28 101.50	2192240> 99.1*	5904759> 103.3*
# 6 IC L3	20-Sep-2017 03:05:32	1.52 100.50	2.28 100.50	2075481> 93.9*	5478893> 95.8*
# 7 IC L4	20-Sep-2017 03:10:16	1.53 99.50	2.28 98.97	2095801> 94.8*	5418565> 94.8*
# 8 IC L5	20-Sep-2017 03:15:01	1.53 100.30	2.28 102.20	2087979> 94.4*	5450221> 95.3*
# 9 IC L6	20-Sep-2017 03:19:48	1.53 103.10	2.28 102.50	2036942> 92.1*	5454650> 95.4*
	IS Std			2075481 1.85	5478893 2.10
#10 RB	20-Sep-2017 03:24:33			2085152 100.5	5726961 104.5
	IS Std			2095801 1.86	5418565 2.11
#11 CCVL	20-Sep-2017 03:29:17	1.52 97.20	2.28 102.10	2252465 107.5	5723538 105.6
	IS Std			2252465 1.85	5723538 2.10
#12 RB	20-Sep-2017 03:34:02			2077507 92.2	5580721 97.5
	IS Std			2095801 1.86	5418565 2.11
#13 ICV	20-Sep-2017 03:38:46	1.53 99.40	2.28 103.60	2616480 124.8	7294448 134.6
	IS Std			1963439 1.85	5207540 2.11
#14 RB	20-Sep-2017 03:43:31			1963439 100.0	5207540 100.0

13C2-PFOA

$$RPD = \frac{2211369 - 2036942}{2211369 + 2036942} = 8.2$$

13C4-PFOS

$$RPD = \frac{5904759 - 5418565}{5904759 + 5418565} = 8.6$$

JRB

9-20-17

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_004.d
 Lims ID: IC L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 20-Sep-2017 02:56:02 ALS Bottle#: 1 Worklist Smp#: 4
 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*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Sep-2017 10:35:29 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK008

First Level Reviewer: barnettj

Date: 20-Sep-2017 10:03:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.402	0.002	1.000	2072419	8.73		6405	
298.90 > 99.00	1.404	1.402	0.002	1.000	1455019		1.42(0.00-0.00)	3941	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.524	0.001	1.000	2470192	9.53		11139	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.668	0.001	1.000	971572	2.98		3003	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.668	0.001	1.000	202553	0.9726		61.6	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.855	-0.004		2211369	10.0		9755	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.856	0.003	1.000	390753	1.92		17.1	
413.00 > 169.00	1.859	1.856	0.003	1.000	208681		1.87(0.00-0.00)	858	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		5717338	28.7		8554	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	700862	3.77		668	M
499.00 > 99.00	2.109	2.109	0.0	1.000	152073		4.61(0.00-0.00)	192	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	273016	1.99		41.2	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.282	0.002	1.000	1163662	9.43		9791	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L1_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_004.d

Injection Date: 20-Sep-2017 02:56:02

Instrument ID: A8_N

Lims ID: IC L1

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 1

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

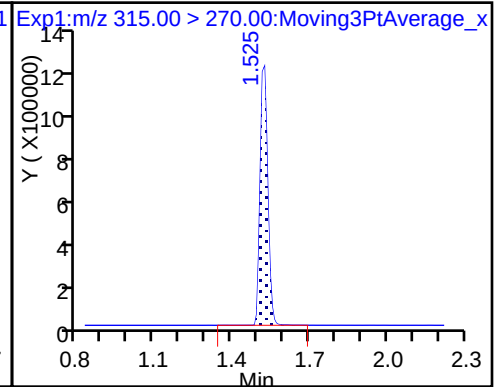
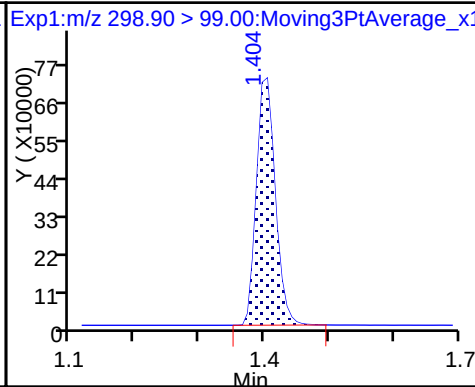
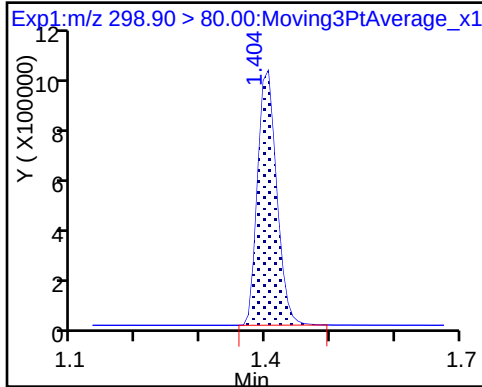
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

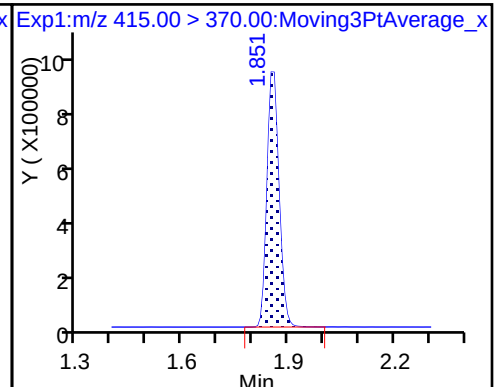
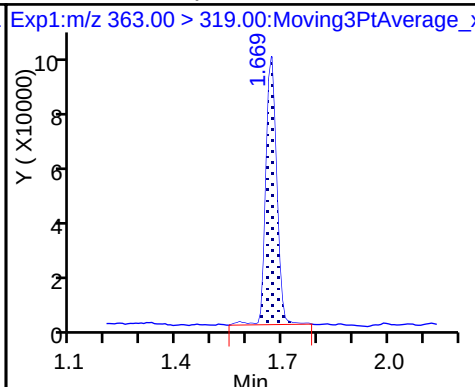
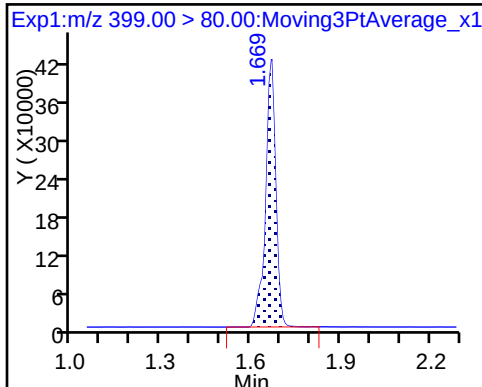
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

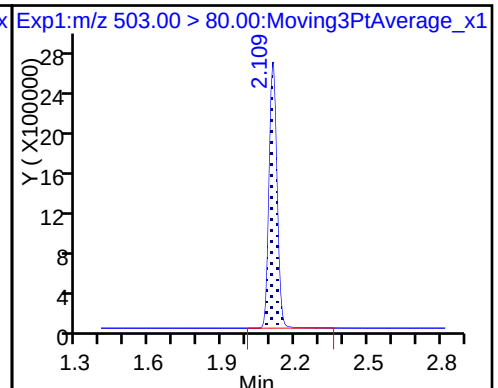
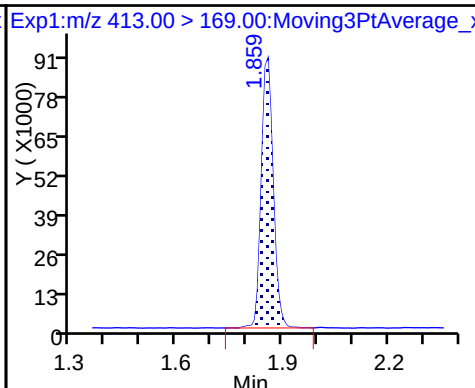
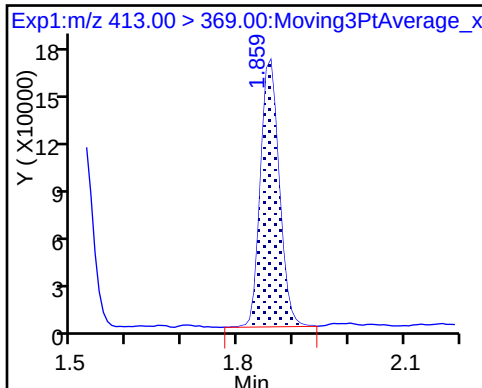
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

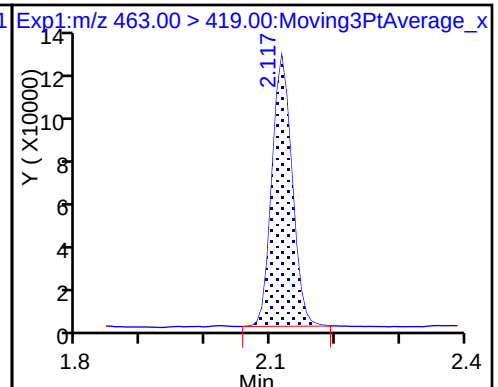
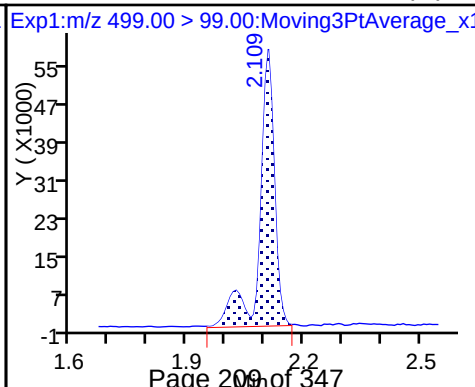
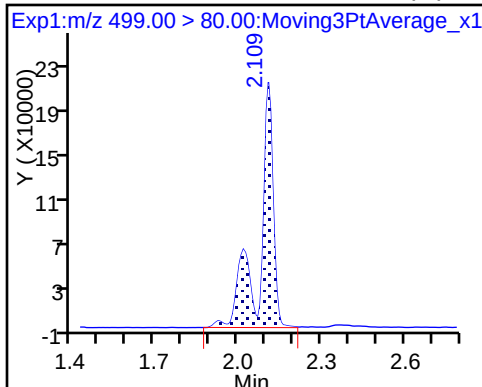
* 7 13C4 PFOS



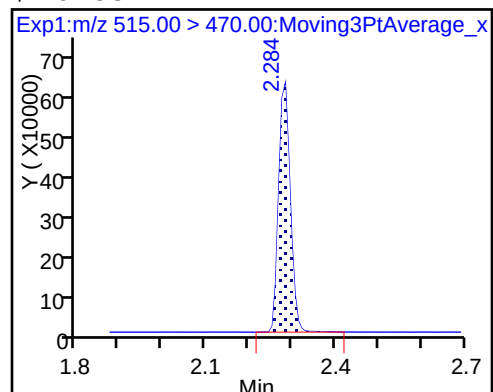
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

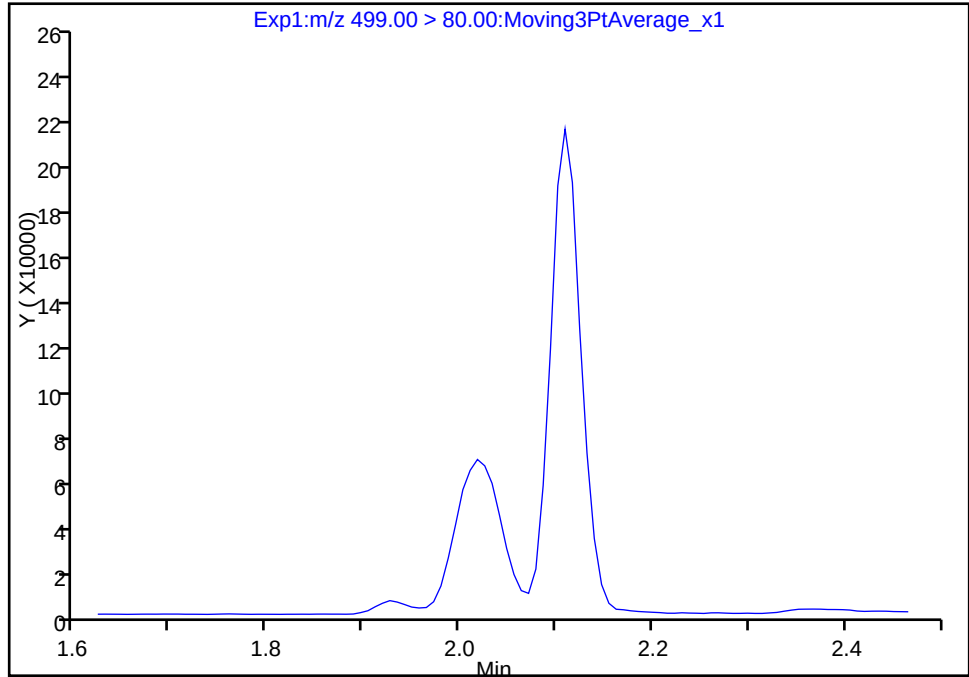
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_004.d
Injection Date: 20-Sep-2017 02:56:02 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

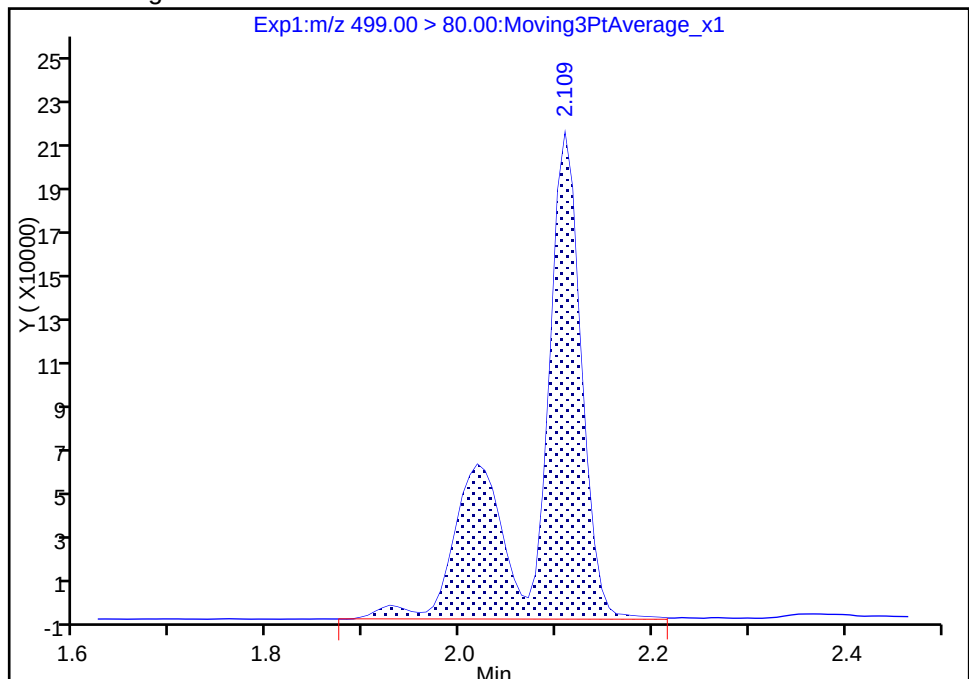
Signal: 1

Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results



RT: 2.11
Area: 700862
Amount: 3.773476
Amount Units: ng/ml

Reviewer: barnettj, 20-Sep-2017 10:02:54
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

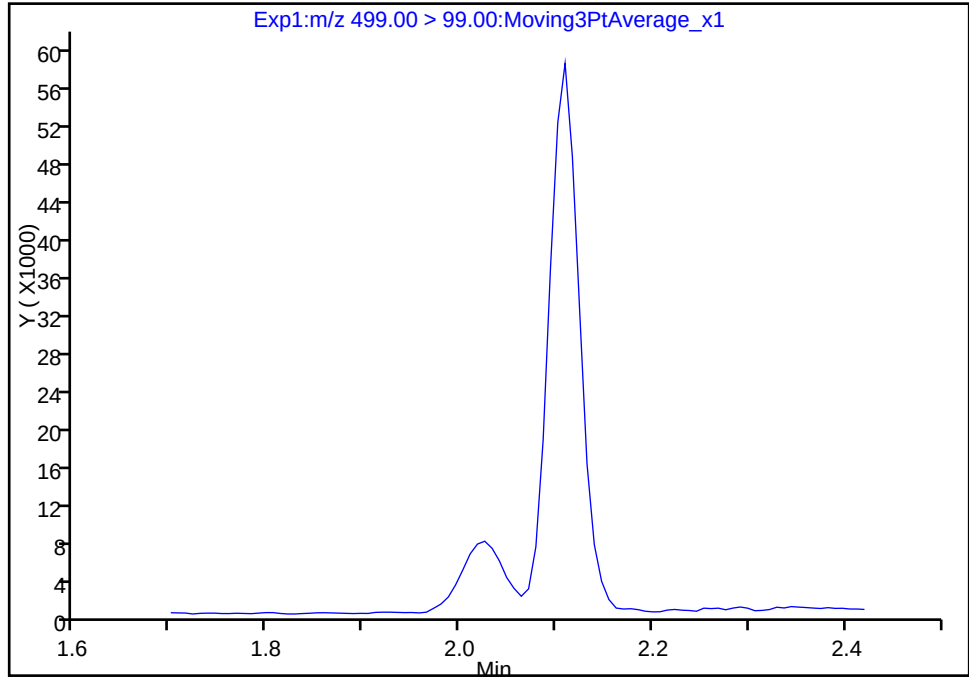
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_004.d
Injection Date: 20-Sep-2017 02:56:02 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

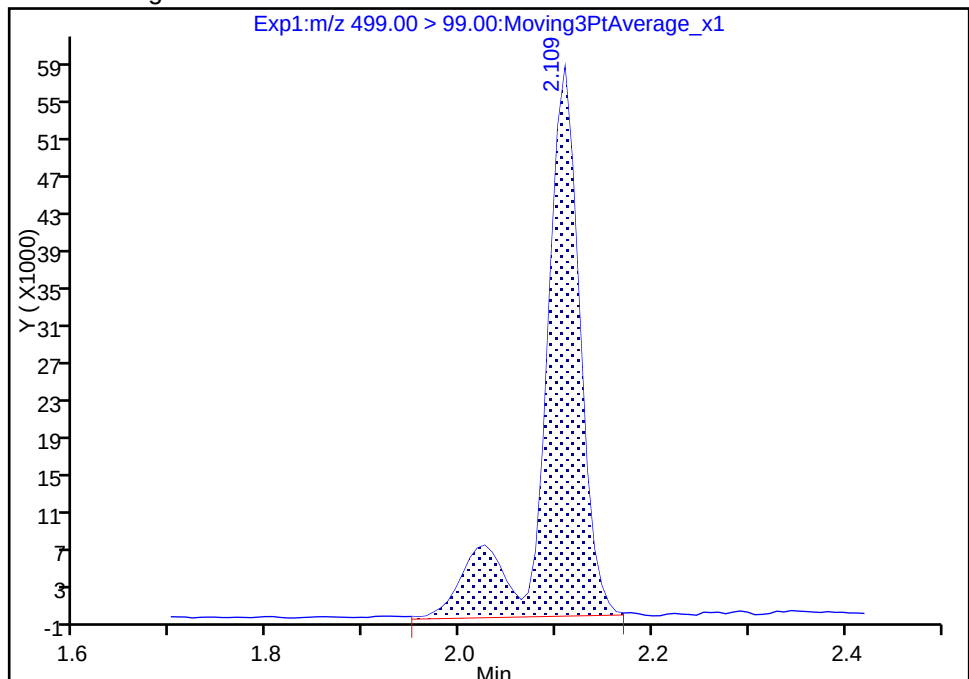
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 152073
Amount: 3.773476
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:03:37

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

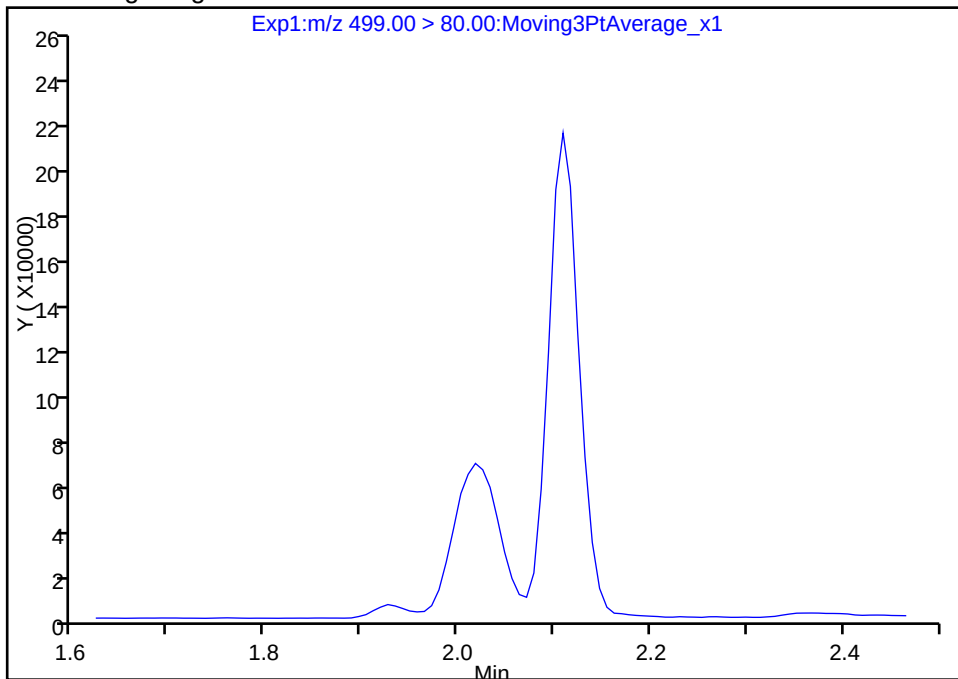
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_004.d
Injection Date: 20-Sep-2017 02:56:02 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

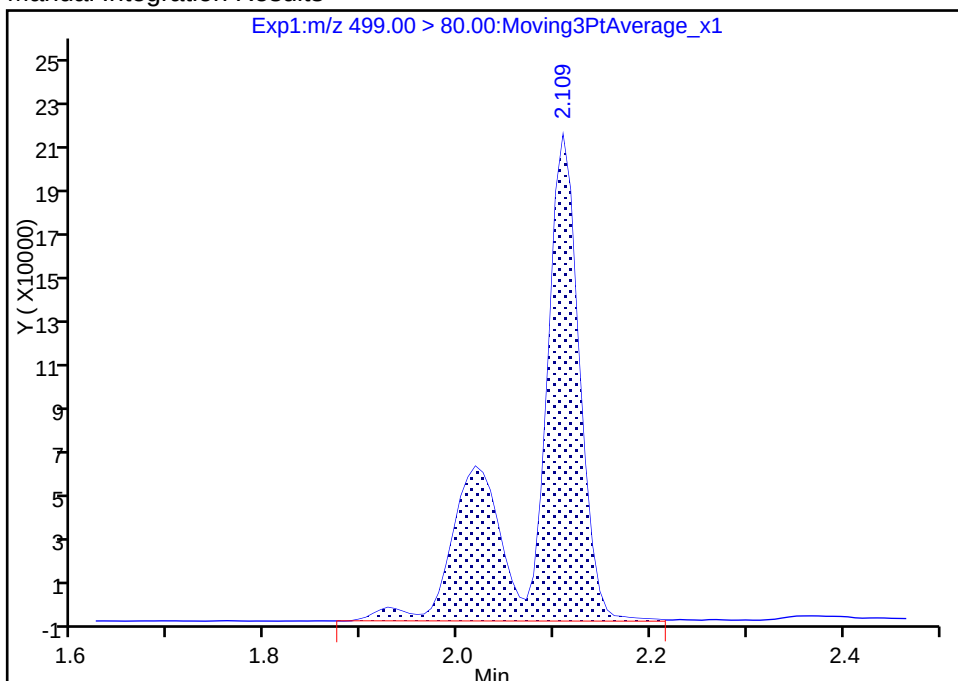
Signal: 1

Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results



RT: 2.11
Area: 700862
Amount: 3.773476
Amount Units: ng/ml

Reviewer: barnettj, 20-Sep-2017 10:03:36

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_005.d
 Lims ID: IC L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 20-Sep-2017 03:00:47 ALS Bottle#: 2 Worklist Smp#: 5
 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*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Sep-2017 10:35:30 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK008

First Level Reviewer: barnettj

Date: 20-Sep-2017 10:04:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.402	0.002	1.000	5031340	21.1		7563	
298.90 > 99.00	1.404	1.402	0.002	1.000	3464667		1.45(0.00-0.00)	5263	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.524	0.001	1.000	2599092	10.1		7997	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.668	0.001	1.000	492336	2.38		155	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.668	0.001	1.000	2411042	7.15		4372	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.855	0.004		2192240	10.0		6795	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.856	0.003	1.000	912252	4.53		39.5	
413.00 > 169.00	1.859	1.856	0.003	1.000	481504		1.89(0.00-0.00)	1816	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		5904759	28.7		8529	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	1684976	8.78		1115	M
499.00 > 99.00	2.109	2.109	0.0	1.000	369952		4.55(0.00-0.00)	447	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	629304	4.62		87.1	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.282	0.002	1.000	1241510	10.2		10447	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L2_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_005.d

Injection Date: 20-Sep-2017 03:00:47

Instrument ID: A8_N

Lims ID: IC L2

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

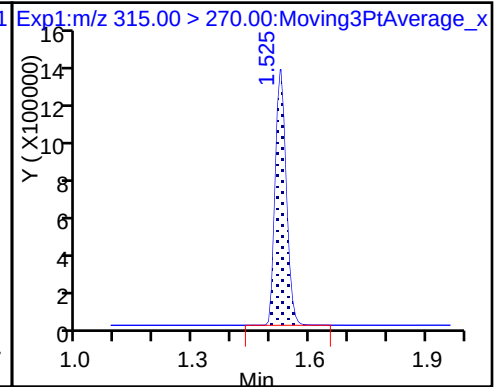
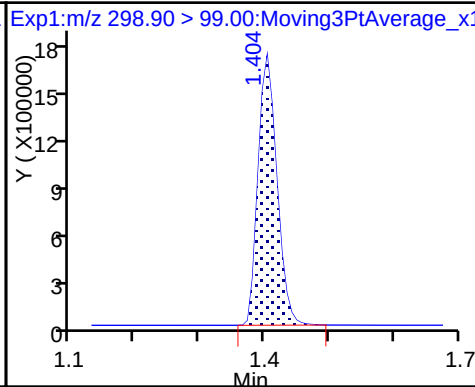
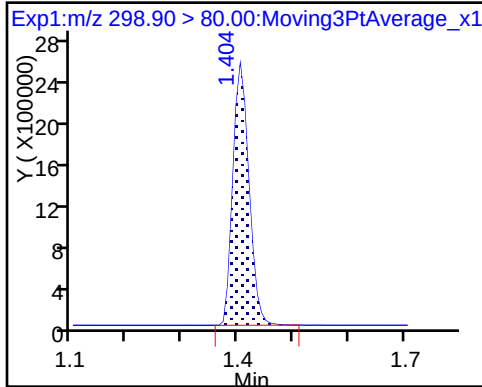
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

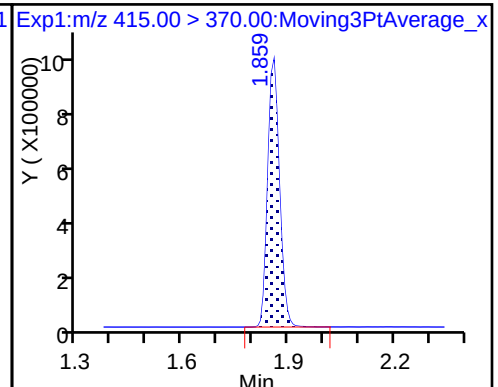
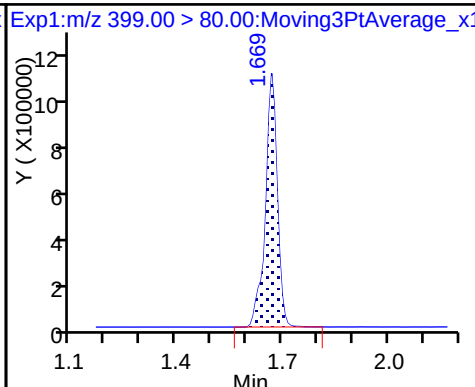
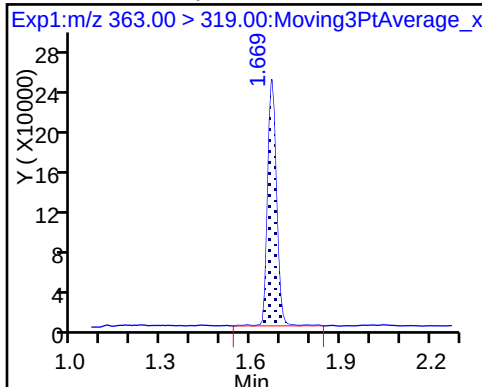
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

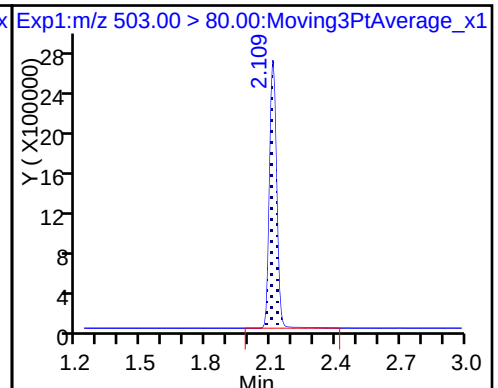
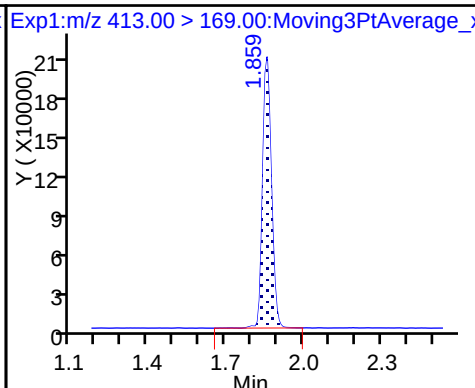
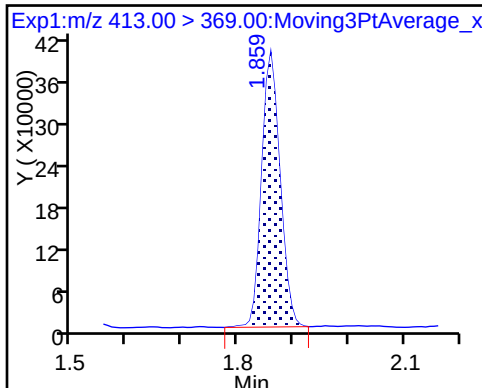
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

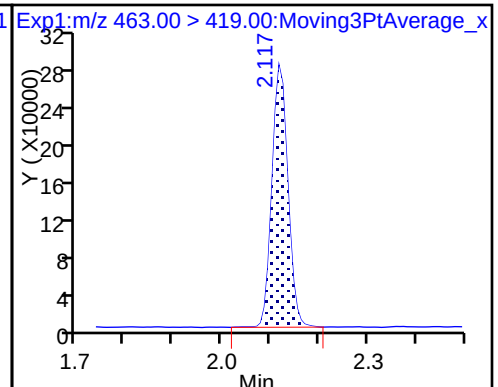
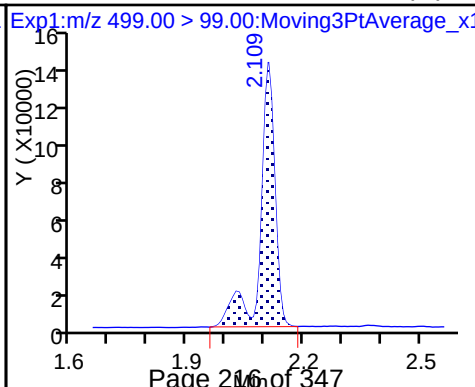
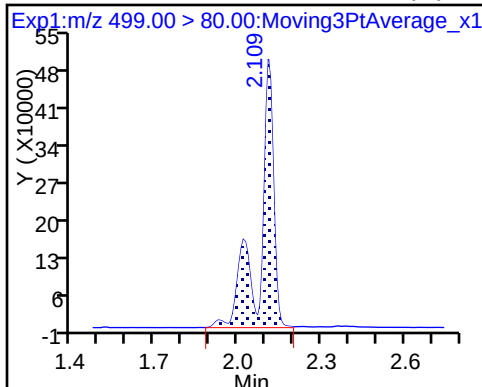
* 7 13C4 PFOS



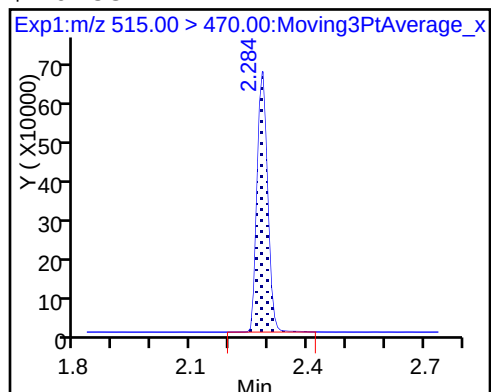
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

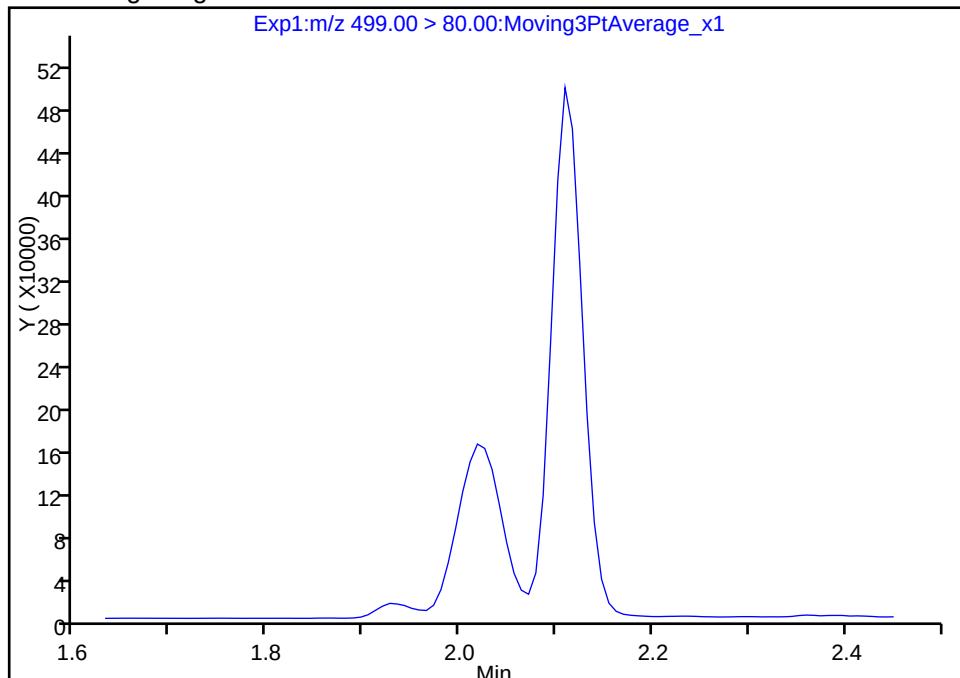
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_005.d
Injection Date: 20-Sep-2017 03:00:47 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

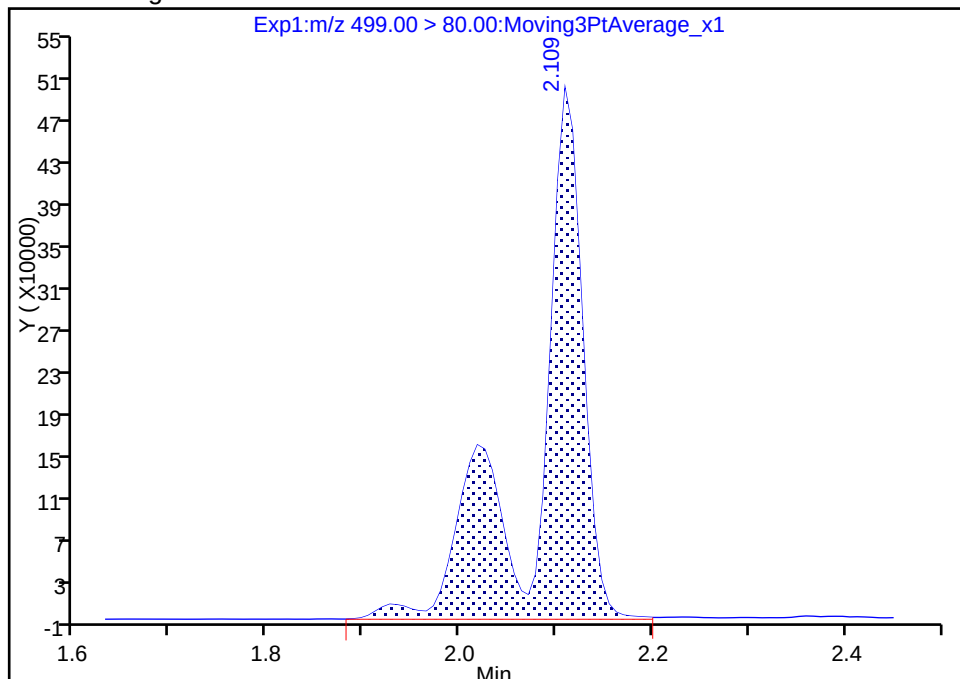
Signal: 1

Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results



RT: 2.11
Area: 1684976
Amount: 8.784044
Amount Units: ng/ml

Reviewer: barnettj, 20-Sep-2017 10:04:03

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

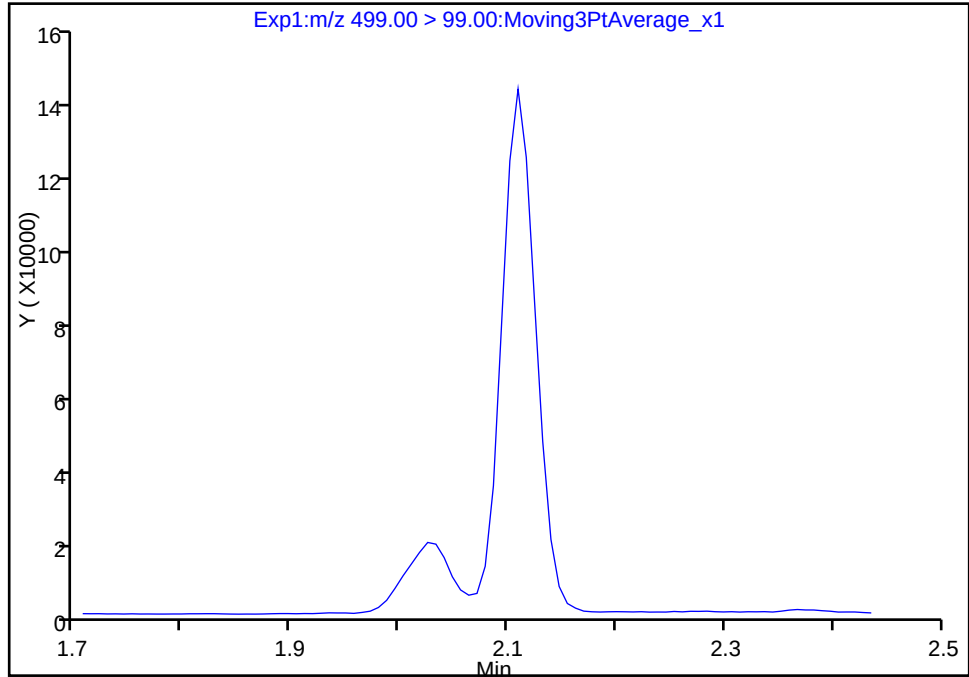
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_005.d
Injection Date: 20-Sep-2017 03:00:47 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

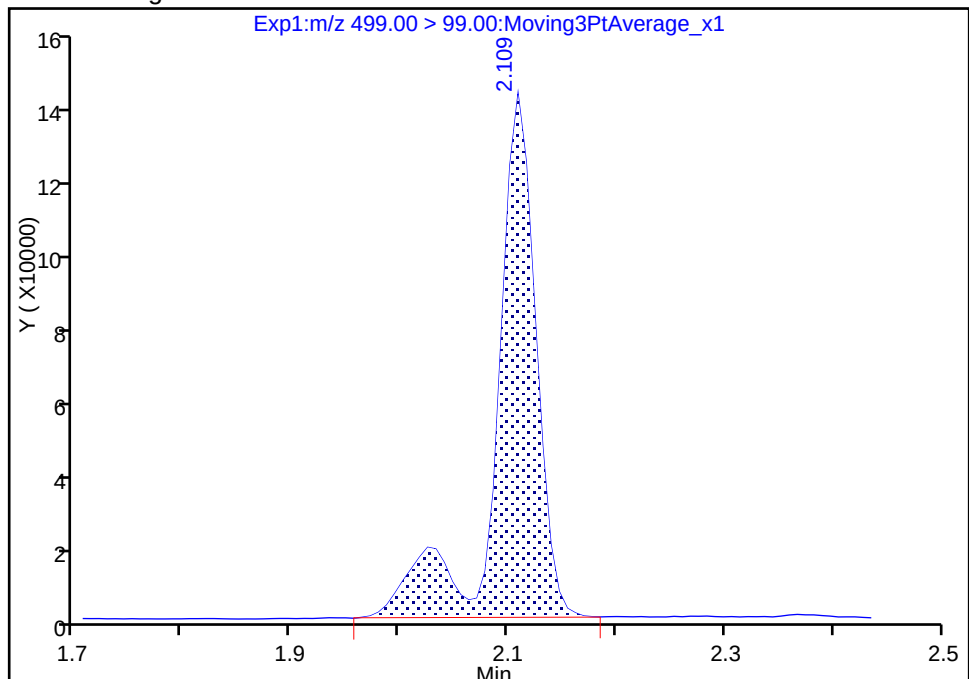
Not Detected
Expected RT: 2.11

Processing Integration Results



RT: 2.11
Area: 369952
Amount: 8.784044
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 20-Sep-2017 10:04:48

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

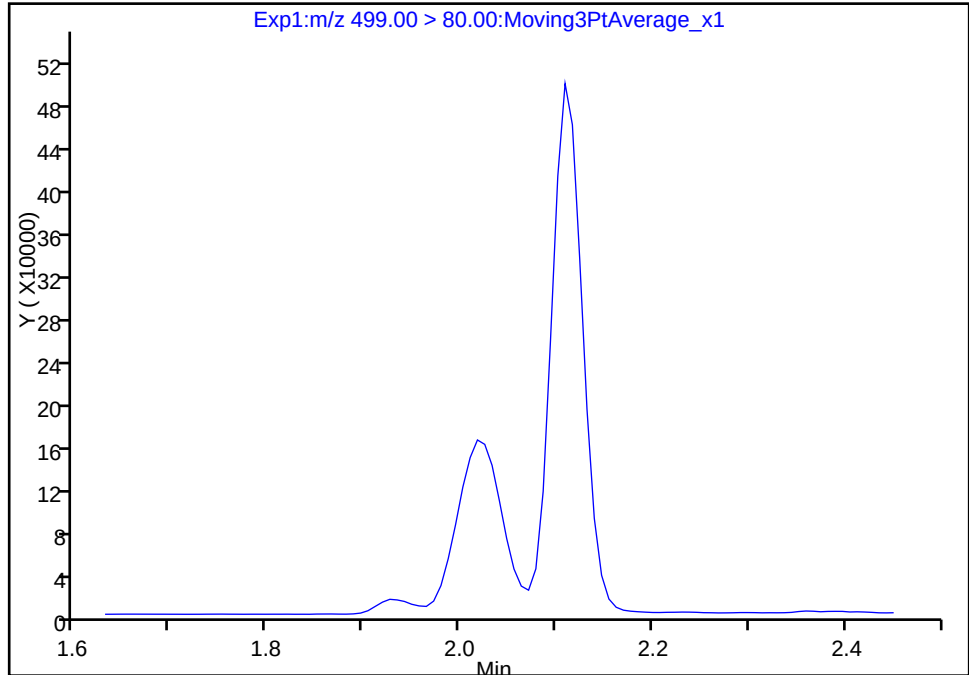
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_005.d
Injection Date: 20-Sep-2017 03:00:47 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

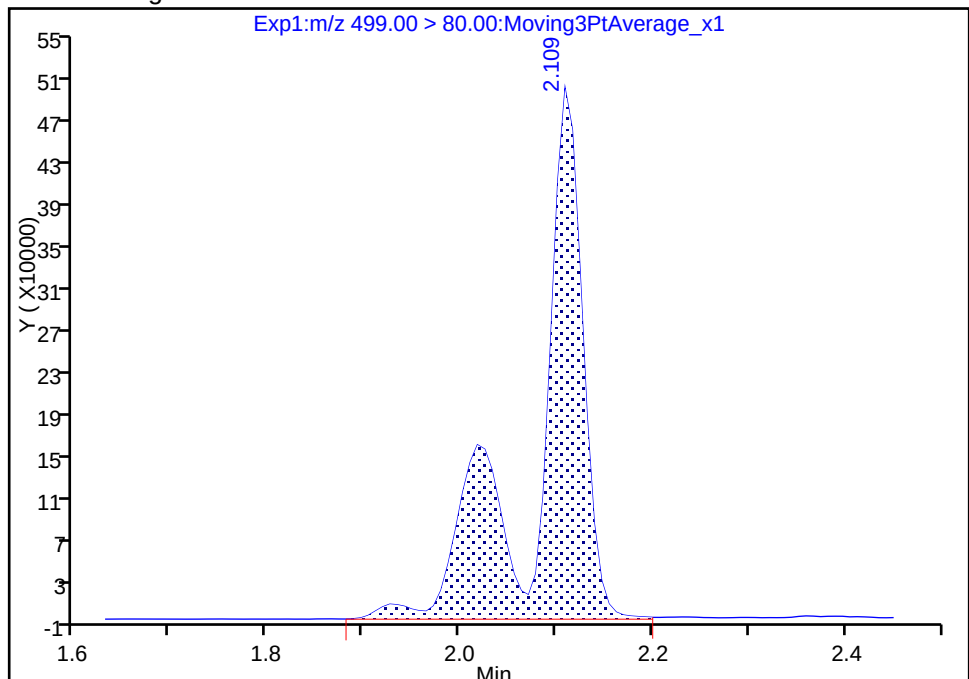
Signal: 1

Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results



RT: 2.11
Area: 1684976
Amount: 8.784044
Amount Units: ng/ml

Reviewer: barnettj, 20-Sep-2017 10:04:48

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_006.d
 Lims ID: IC L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 20-Sep-2017 03:05:32 ALS Bottle#: 3 Worklist Smp#: 6
 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*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Sep-2017 10:35:31 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK008

First Level Reviewer: barnettj

Date: 20-Sep-2017 10:05:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.402	-0.006	1.000	9714039	46.3		7320	
298.90 > 99.00	1.396	1.402	-0.006	1.000	6860395		1.42(0.00-0.00)	6049	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2444565	10.1		7634	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.668	-0.006	1.000	4809005	15.4		5113	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.668	-0.006	1.000	996370	5.10		304	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.855	-0.004		2075481	10.0		7307	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.856	-0.005	1.000	1931186	10.1		80.1	
413.00 > 169.00	1.851	1.856	-0.005	1.000	1010441		1.91(0.00-0.00)	3393	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.108	-0.006		5478893	28.7		7009	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	3635963	20.4		4871	M
499.00 > 99.00	2.102	2.109	-0.007	1.000	723199		5.03(0.00-0.00)	729	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	1293375	10.0		234	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.282	-0.006	1.000	1162968	10.0		8493	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L3_00023

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_006.d

Injection Date: 20-Sep-2017 03:05:32

Instrument ID: A8_N

Lims ID: IC L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

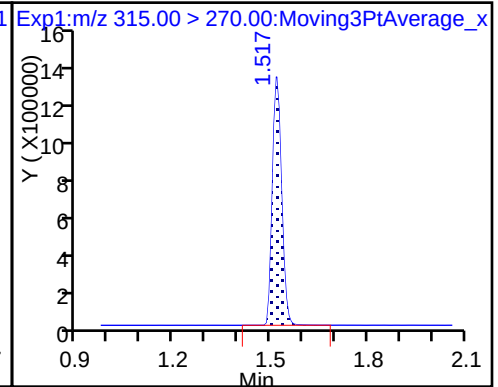
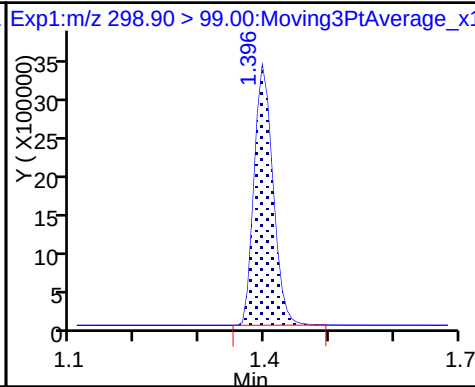
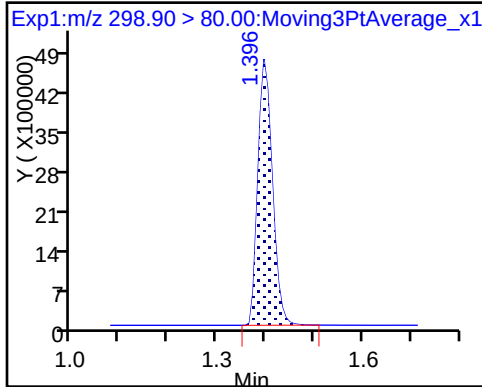
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

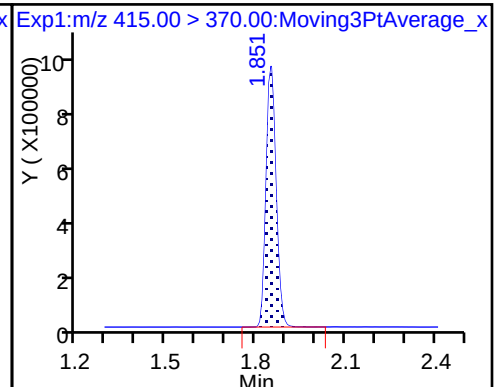
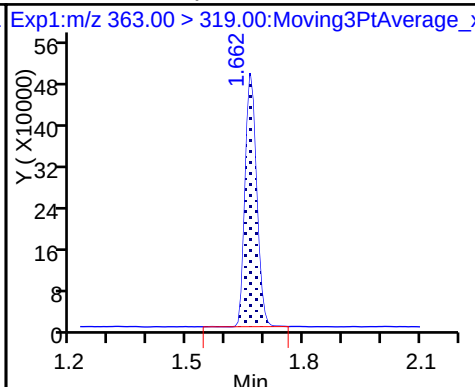
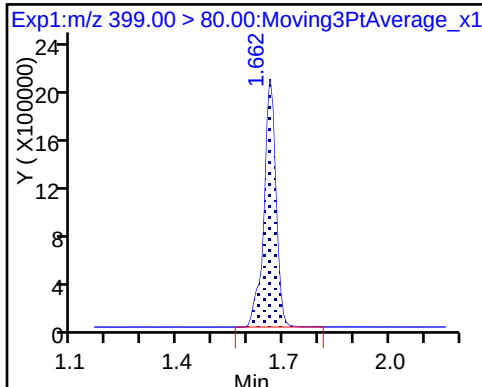
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

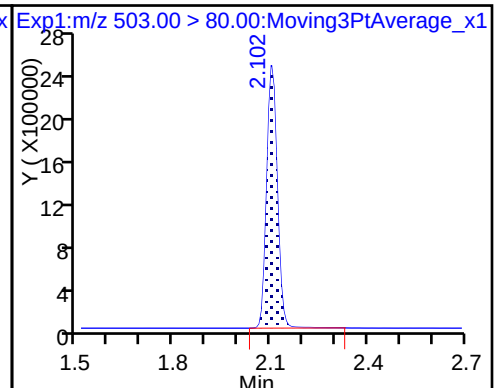
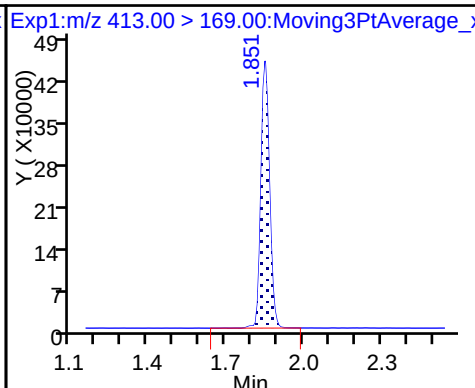
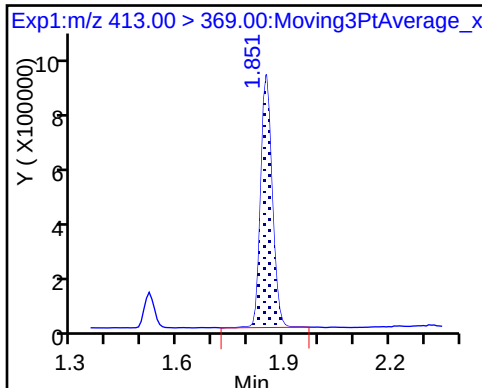
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

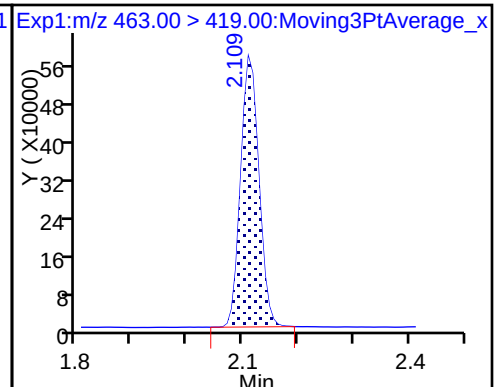
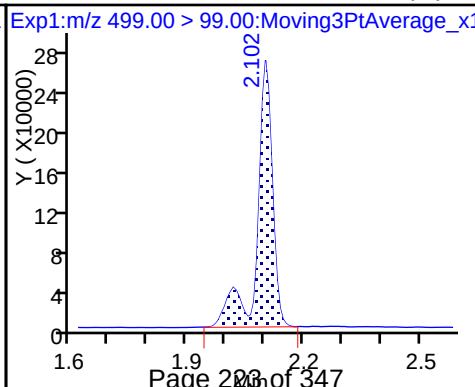
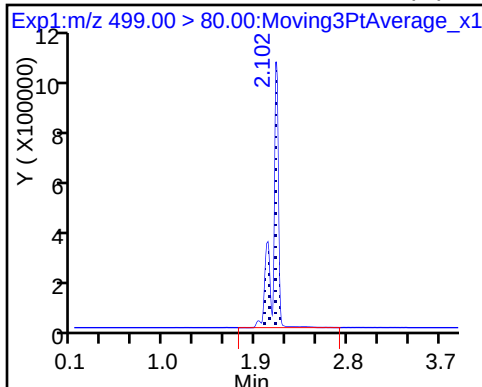
* 7 13C4 PFOS



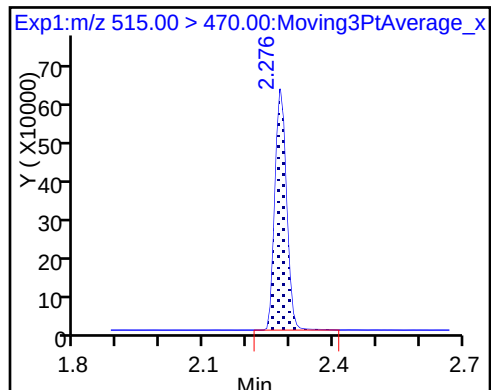
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

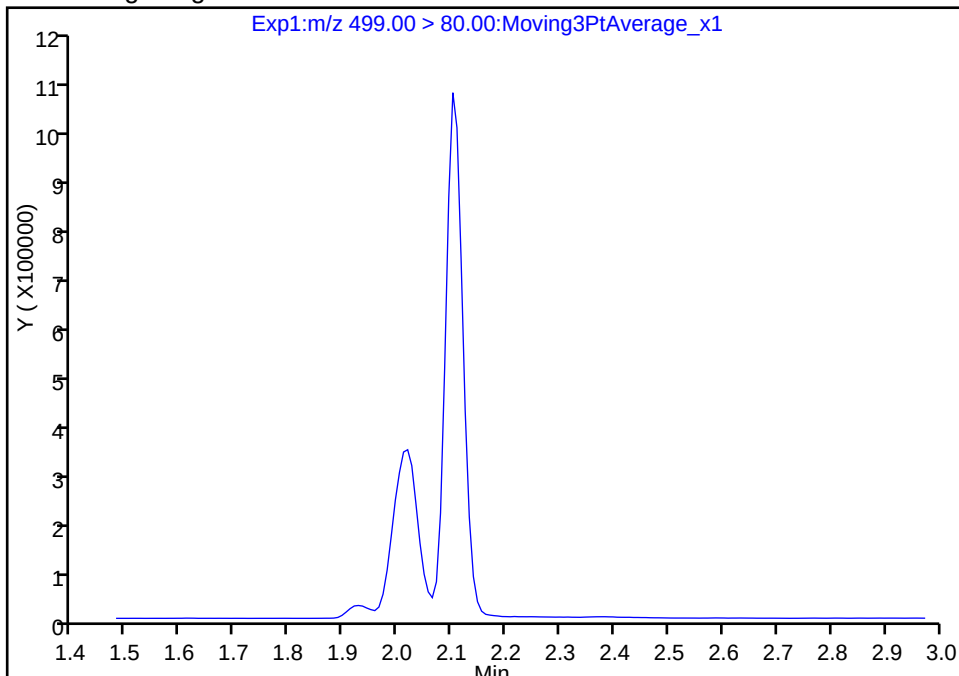
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_006.d
Injection Date: 20-Sep-2017 03:05:32 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

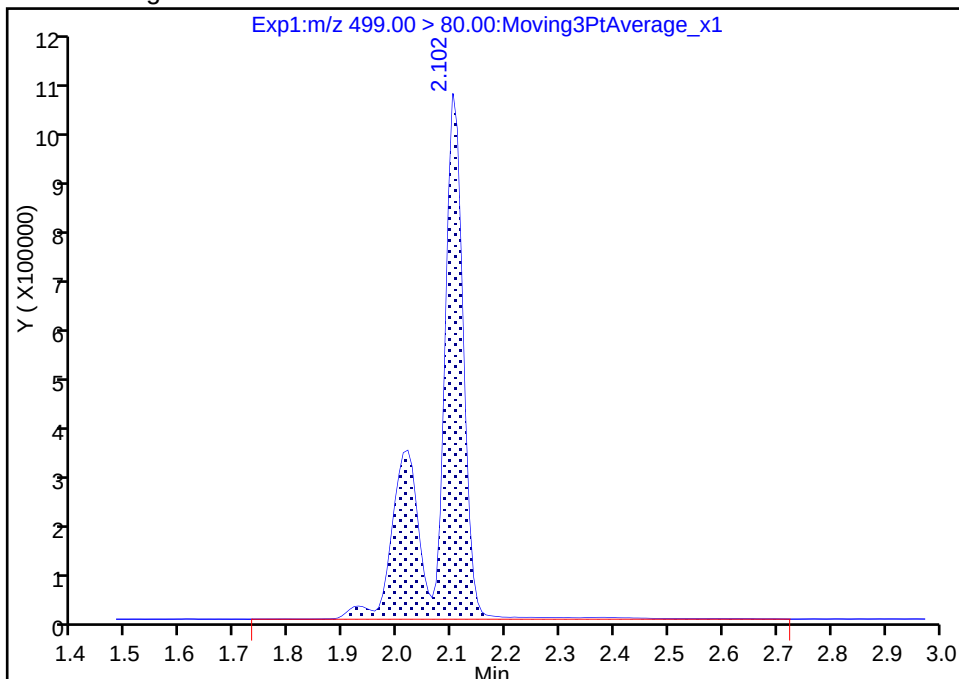
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 3635963
Amount: 20.428176
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:05:06
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

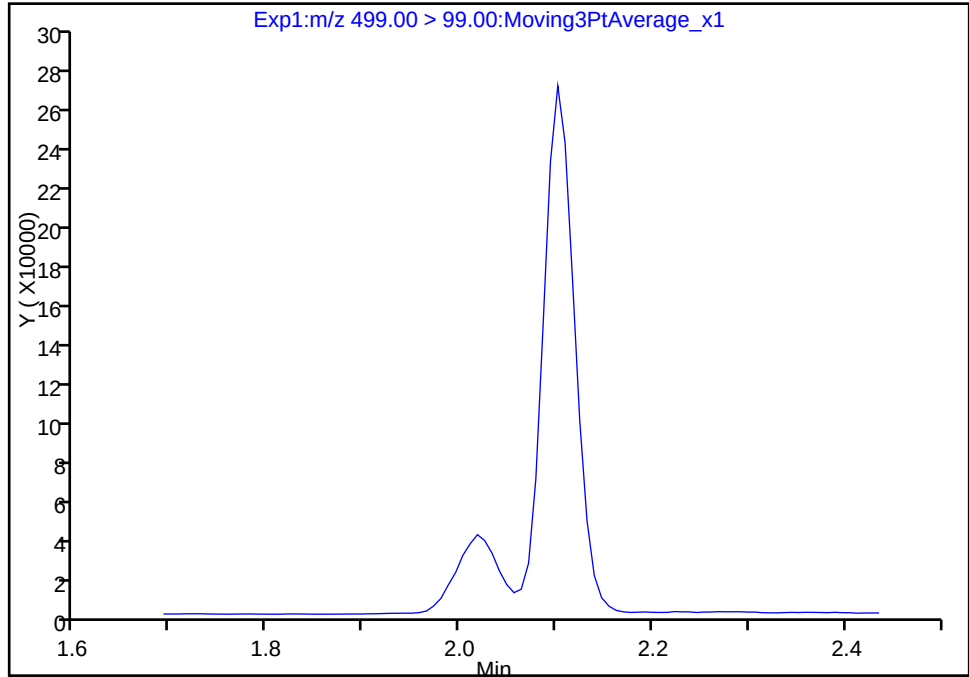
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_006.d
Injection Date: 20-Sep-2017 03:05:32 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

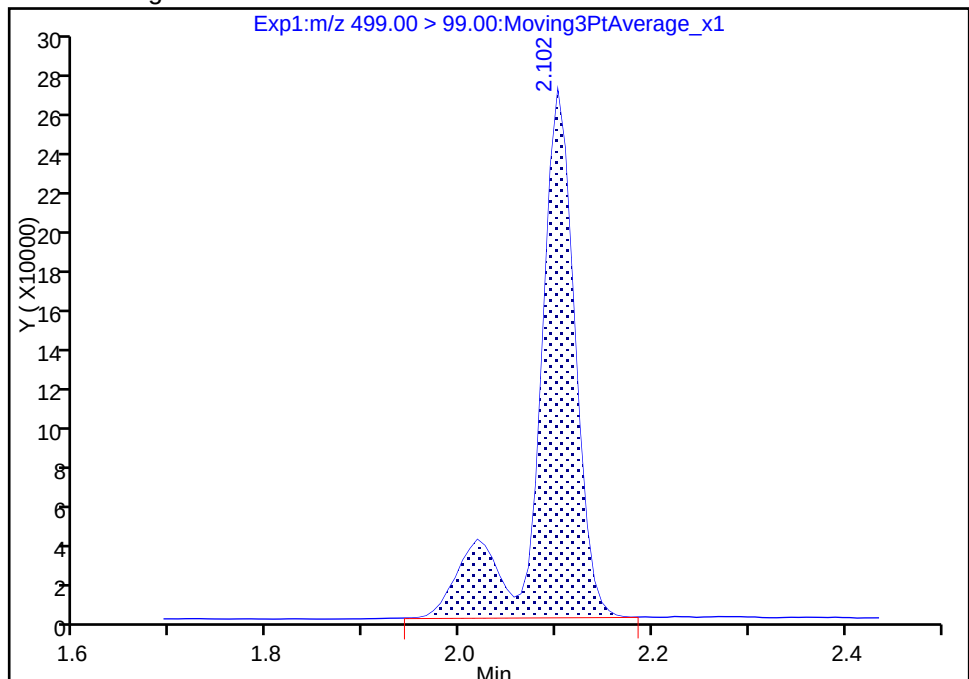
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 723199
Amount: 20.428176
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:05:21

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

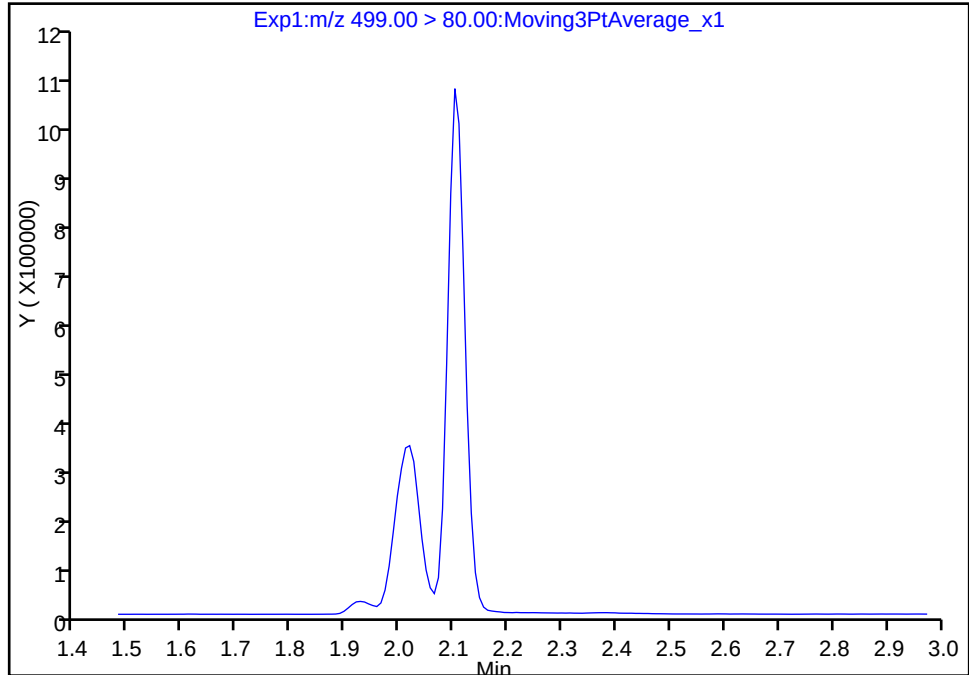
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_006.d
Injection Date: 20-Sep-2017 03:05:32 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

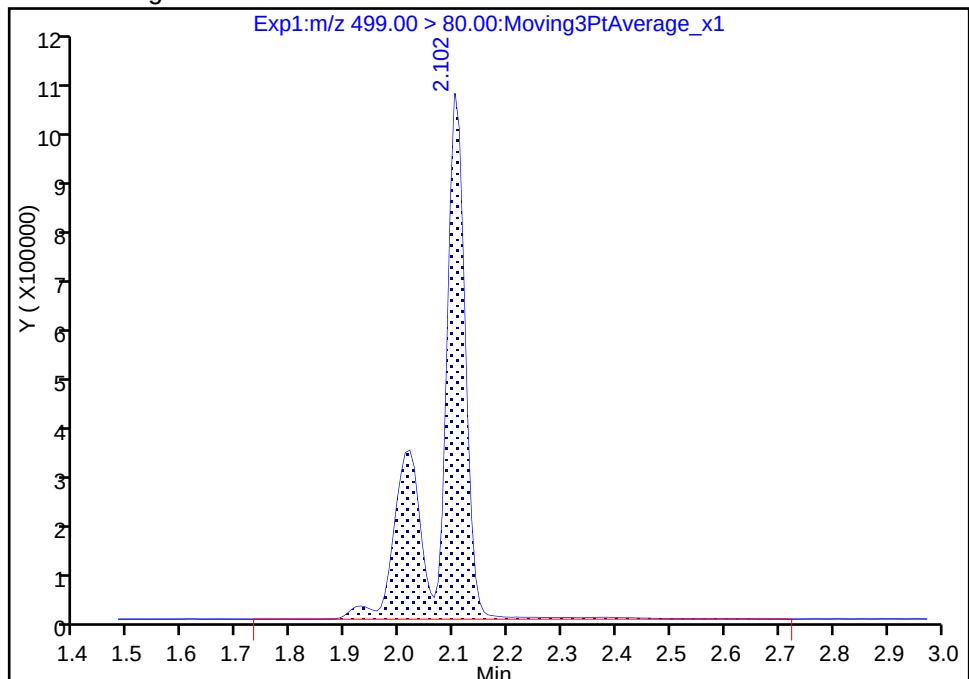
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 3635963
Amount: 20.428176
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:05:21

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_007.d
 Lims ID: IC L4
 Client ID:
 Sample Type: ICISAV Calib Level: 4
 Inject. Date: 20-Sep-2017 03:10:16 ALS Bottle#: 4 Worklist Smp#: 7
 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*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Sep-2017 10:35:32 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK008

First Level Reviewer: barnettj

Date: 20-Sep-2017 10:06:05

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.402	0.002	1.000	16708415	89.3		6528	
298.90 > 99.00	1.404	1.402	0.002	1.000	12155594		1.37(0.00-0.00)	6466	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.524	0.001	1.000	2443470	9.95		7571	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.668	0.001	1.000	1954380	9.90		573	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.668	0.001	1.000	9481986	30.6		5903	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.855	0.004		2095801	10.0		7193	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.856	0.003	1.000	3817782	19.8		156	
413.00 > 169.00	1.859	1.856	0.003	1.000	2029912		1.88(0.00-0.00)	6086	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		5418565	28.7		8070	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	7143258	40.6		5401	M
499.00 > 99.00	2.109	2.109	0.0	1.000	1480190		4.83(0.00-0.00)	1160	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	2592159	19.9		433	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.282	0.002	1.000	1156914	9.90		8203	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L4_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_007.d

Injection Date: 20-Sep-2017 03:10:16

Instrument ID: A8_N

Lims ID: IC L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 4

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

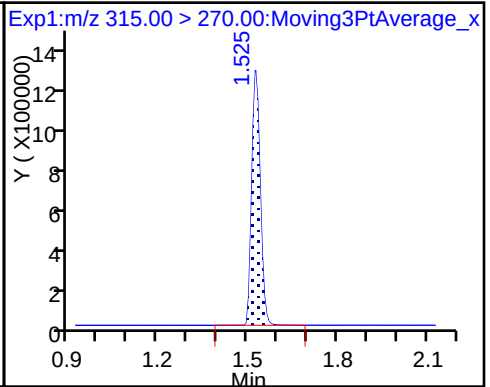
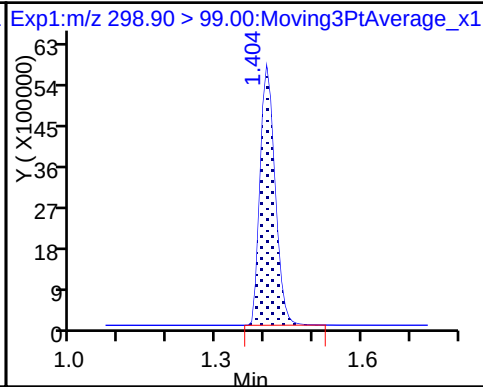
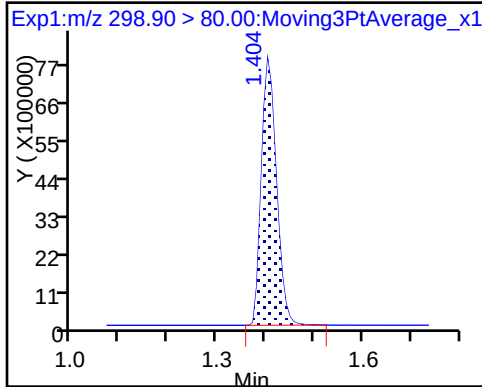
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

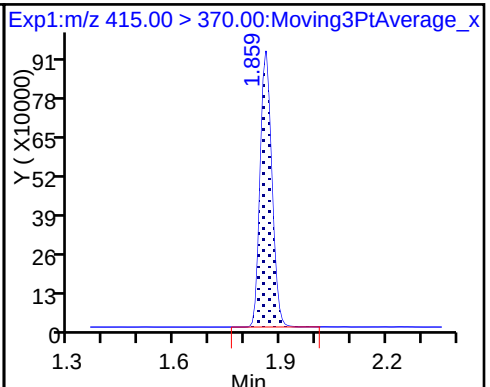
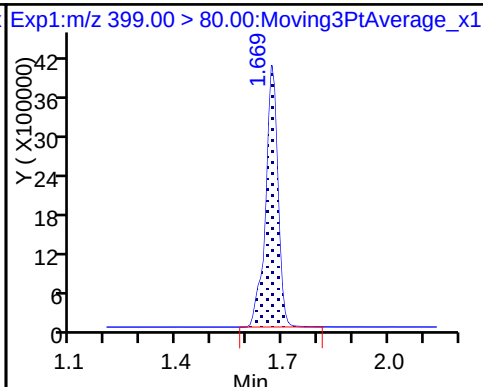
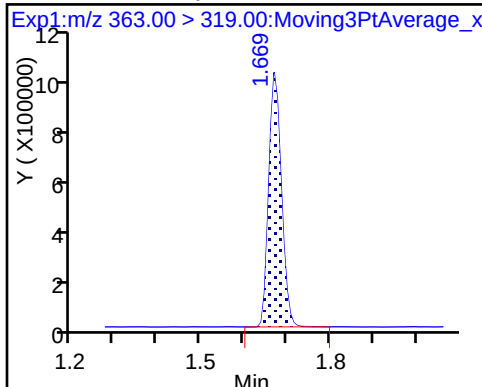
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

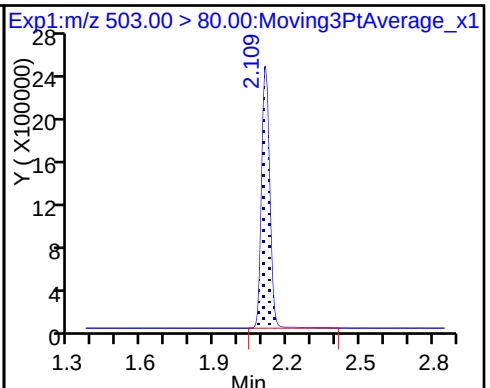
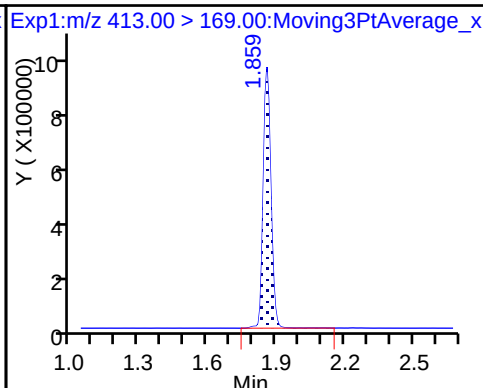
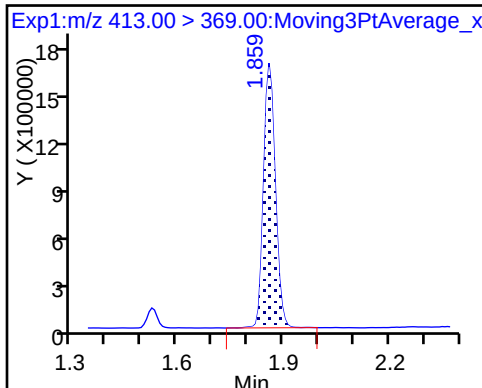
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

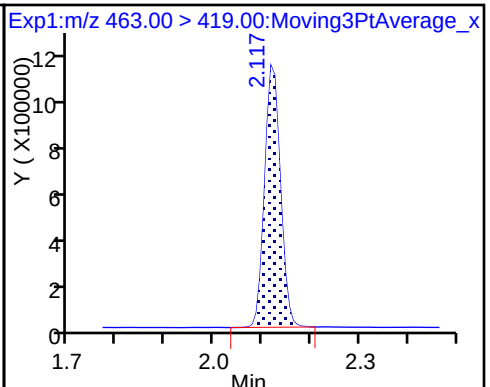
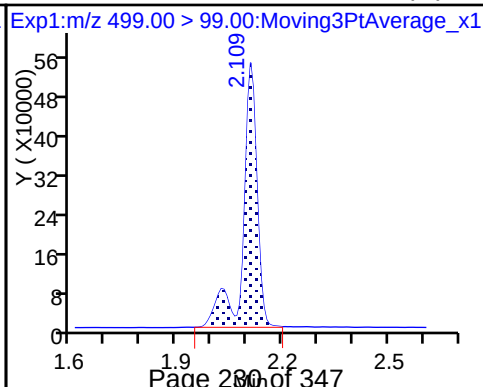
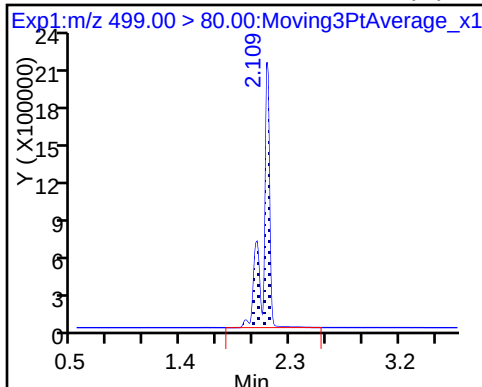
* 7 13C4 PFOS



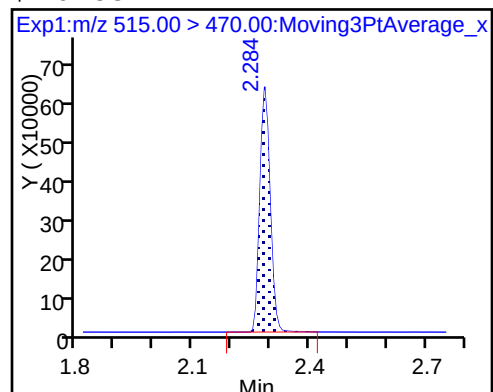
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

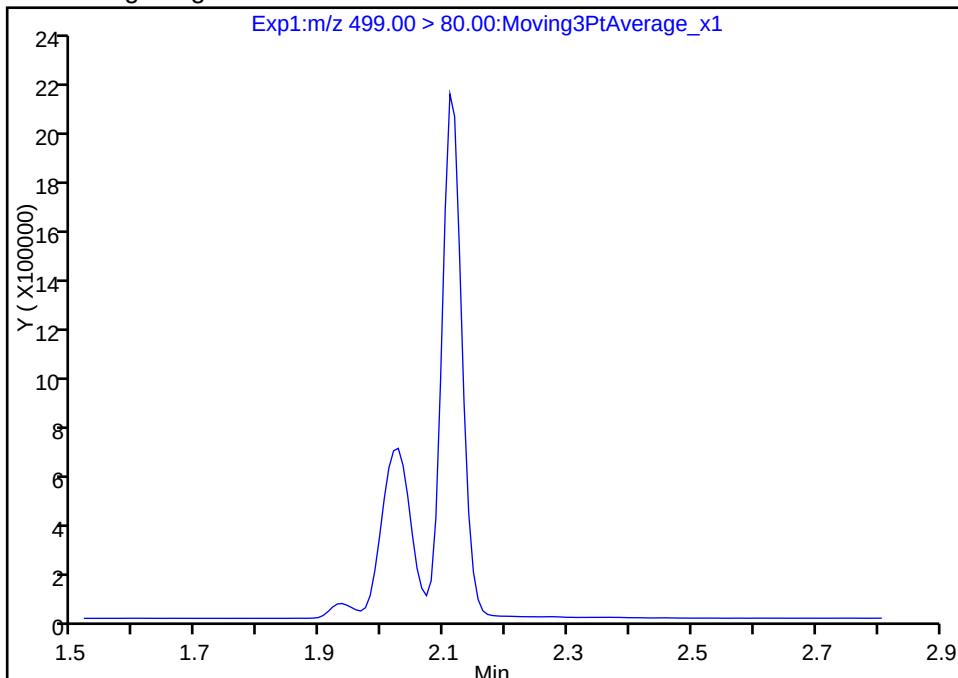
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_007.d
Injection Date: 20-Sep-2017 03:10:16 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

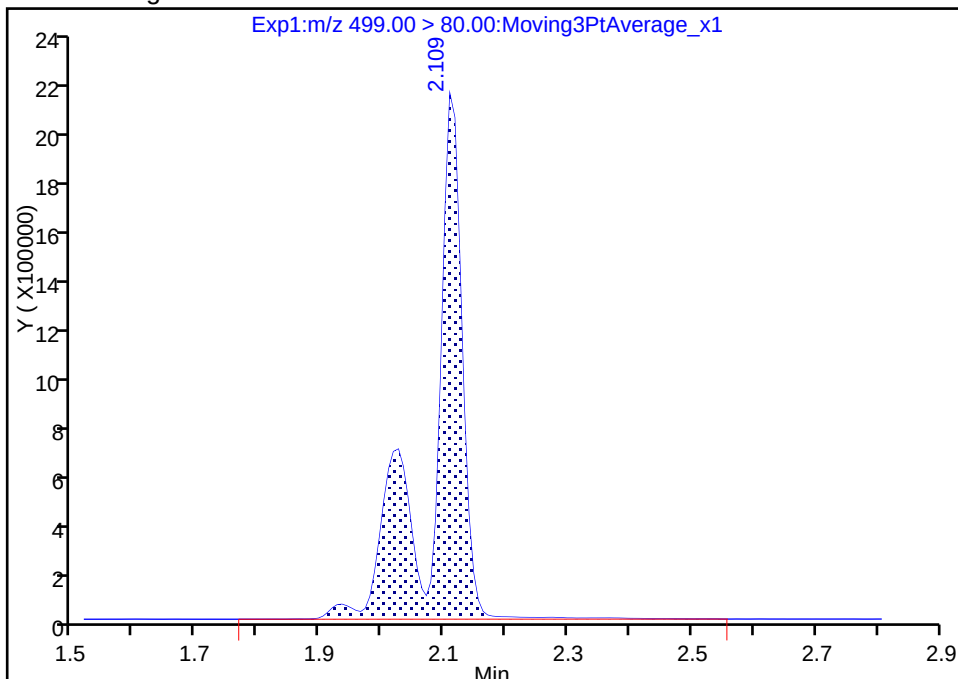
Not Detected
Expected RT: 2.11

Processing Integration Results



RT: 2.11
Area: 7143258
Amount: 40.580278
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 20-Sep-2017 10:05:35

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

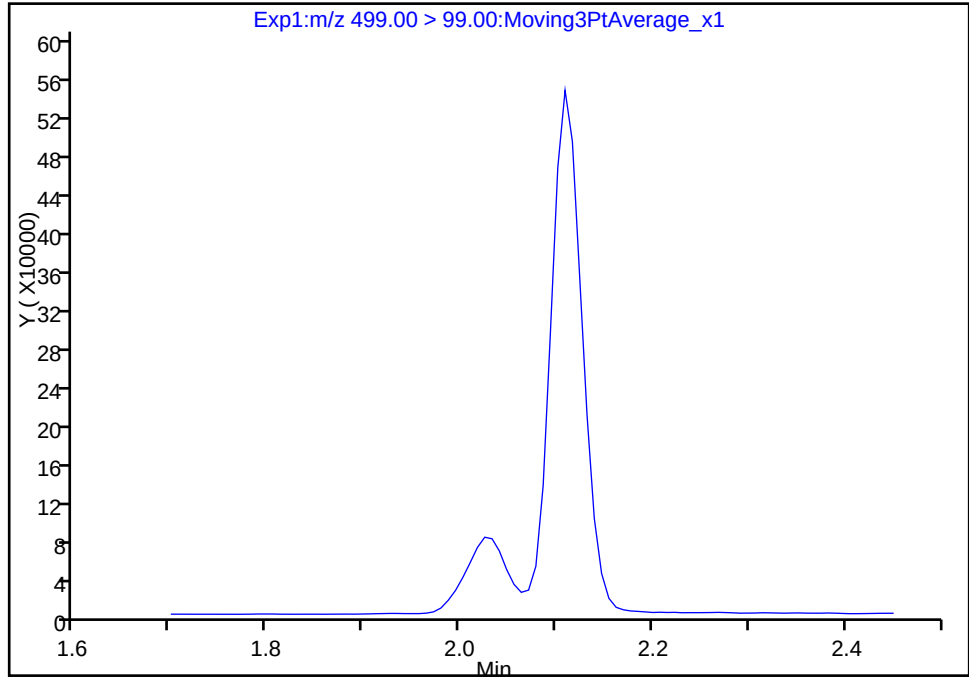
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_007.d
Injection Date: 20-Sep-2017 03:10:16 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

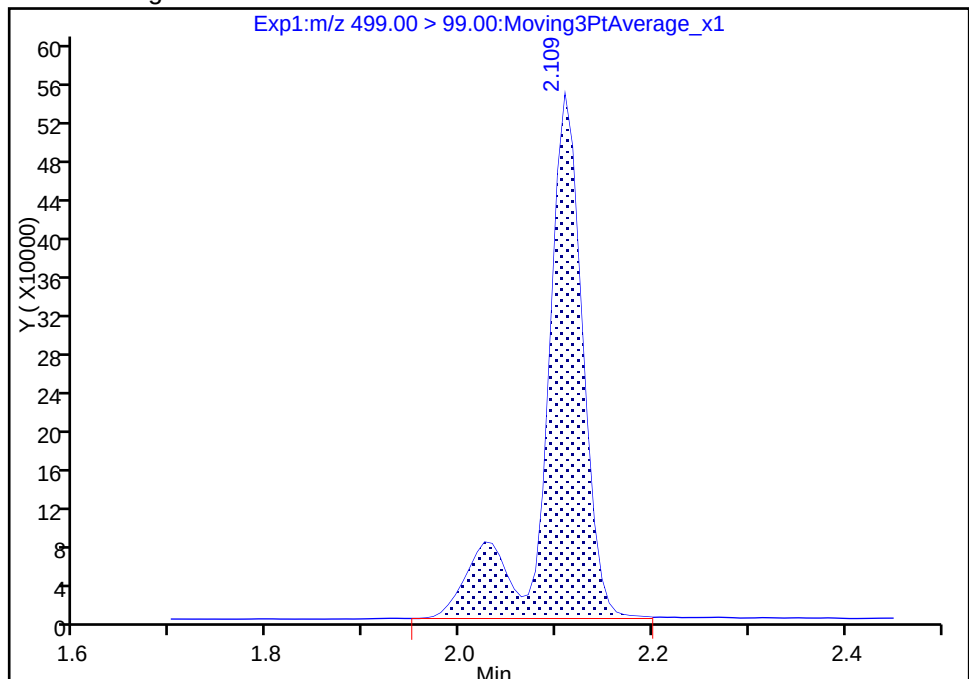
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 1480190
Amount: 40.580278
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:05:50

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

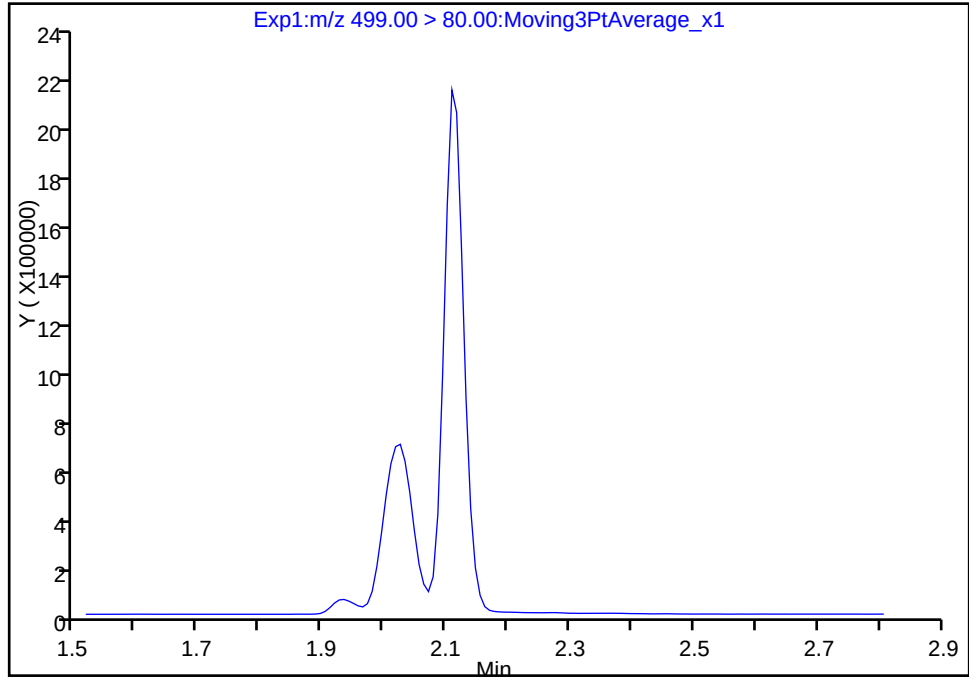
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_007.d
Injection Date: 20-Sep-2017 03:10:16 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

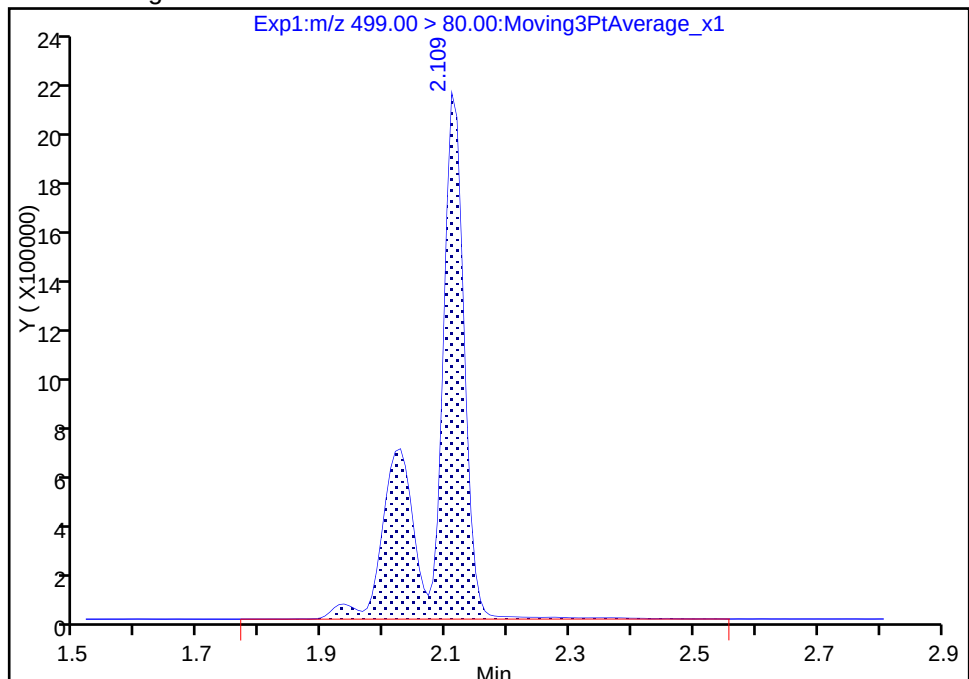
Signal: 1

Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results



RT: 2.11
Area: 7143258
Amount: 40.580278
Amount Units: ng/ml

Reviewer: barnettj, 20-Sep-2017 10:05:50

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_008.d
 Lims ID: IC L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 20-Sep-2017 03:15:01 ALS Bottle#: 5 Worklist Smp#: 8
 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*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Sep-2017 10:35:33 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK008

First Level Reviewer: barnettj

Date: 20-Sep-2017 10:06:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.402	0.002	1.000	22246597	132.8		7166	
298.90 > 99.00	1.404	1.402	0.002	1.000	16593473		1.34(0.00-0.00)	7174	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.524	0.001	1.000	2454801	10.0		9700	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.668	0.001	1.000	13653533	43.9		6726	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.668	0.001	1.000	2871658	14.6		836	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.855	0.004		2087979	10.0		8636	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.856	0.003	1.000	5816384	30.3		226	
413.00 > 169.00	1.859	1.856	0.003	1.000	3025635		1.92(0.00-0.00)	7093	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		5450221	28.7		7142	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	10806665	61.0		6680	M
499.00 > 99.00	2.109	2.109	0.0	1.000	2283151		4.73(0.00-0.00)	1726	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	3806555	29.3		645	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.282	0.002	1.000	1189895	10.2		10440	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L5_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_008.d

Injection Date: 20-Sep-2017 03:15:01

Instrument ID: A8_N

Lims ID: IC L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

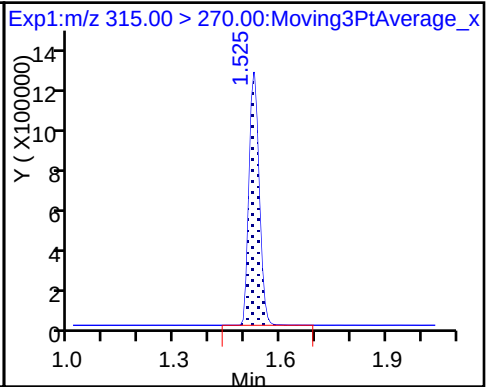
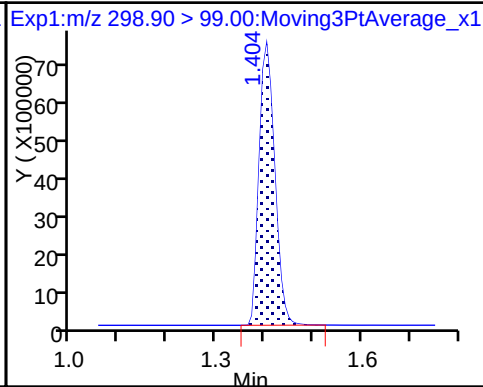
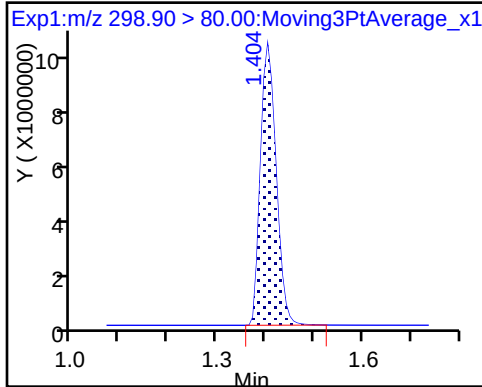
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

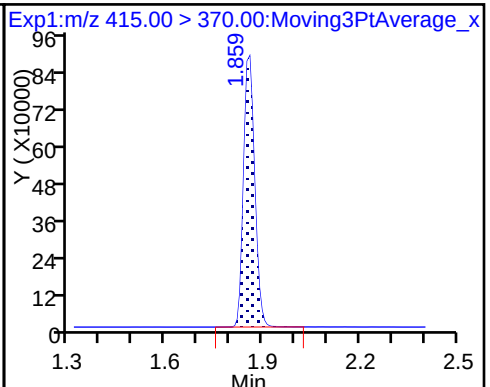
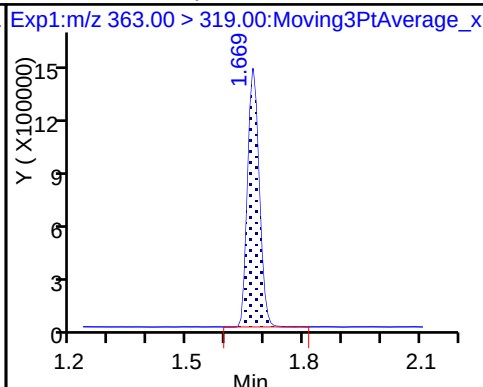
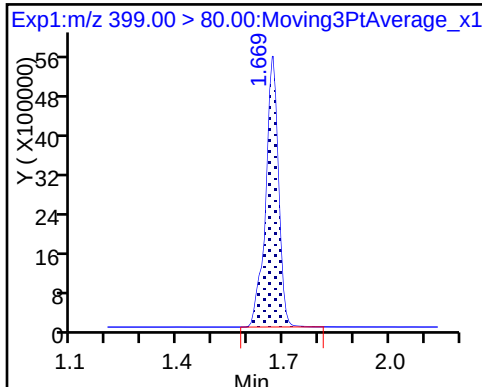
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

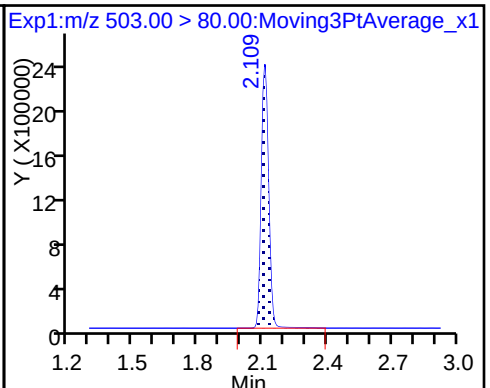
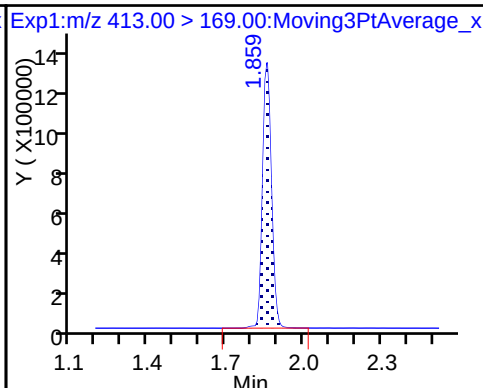
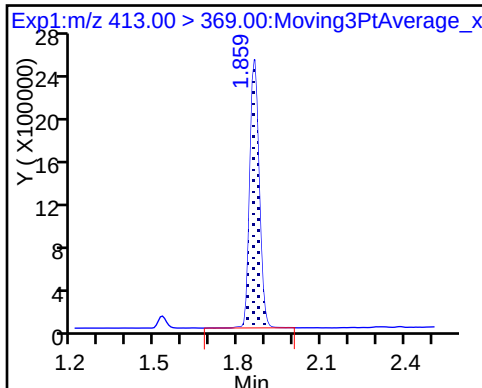
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

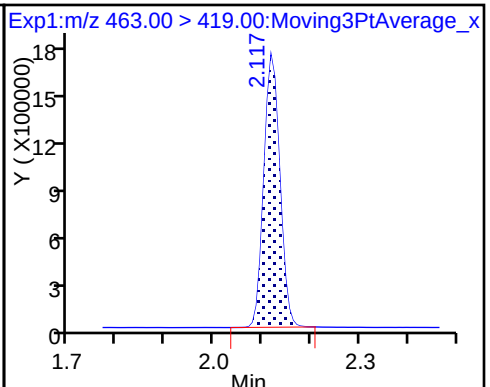
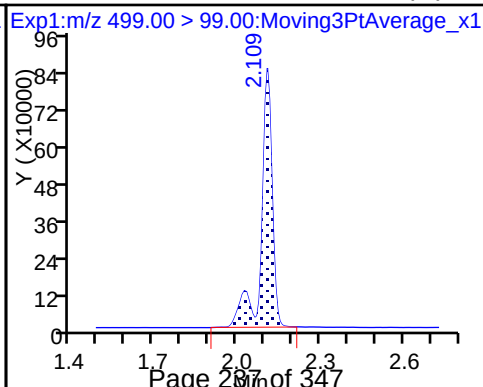
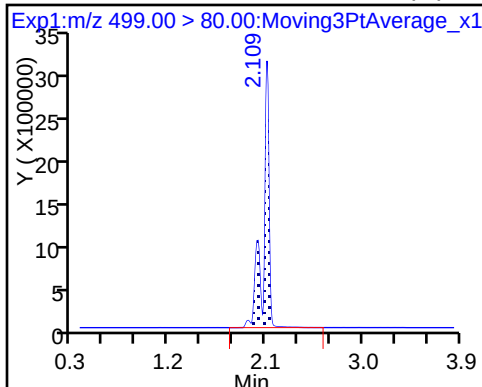
* 7 13C4 PFOS



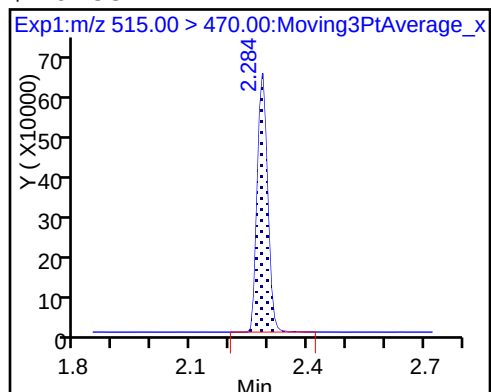
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

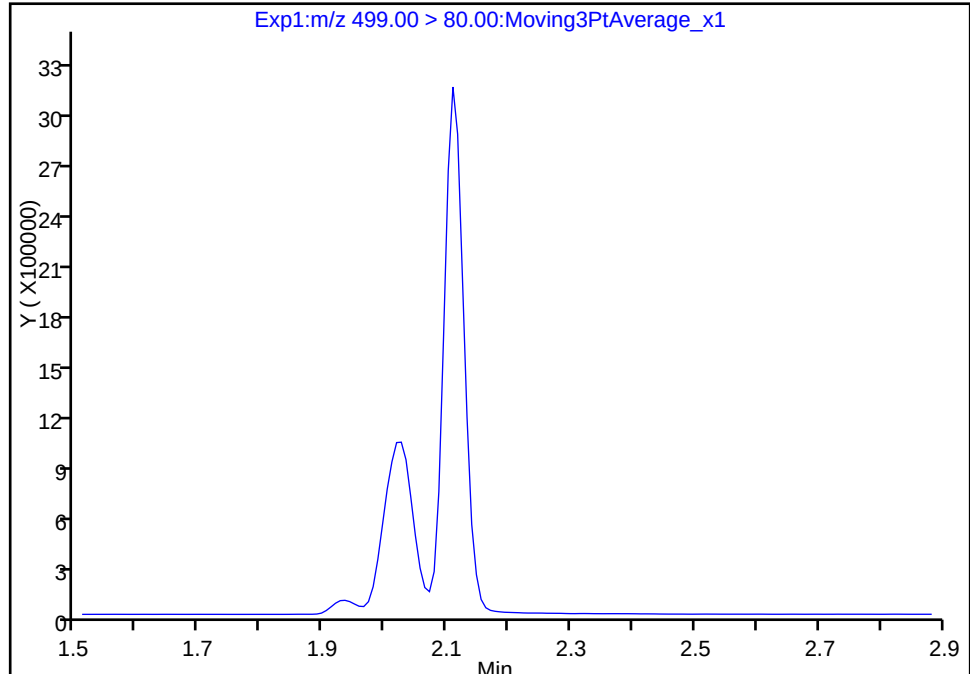
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_008.d
Injection Date: 20-Sep-2017 03:15:01 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

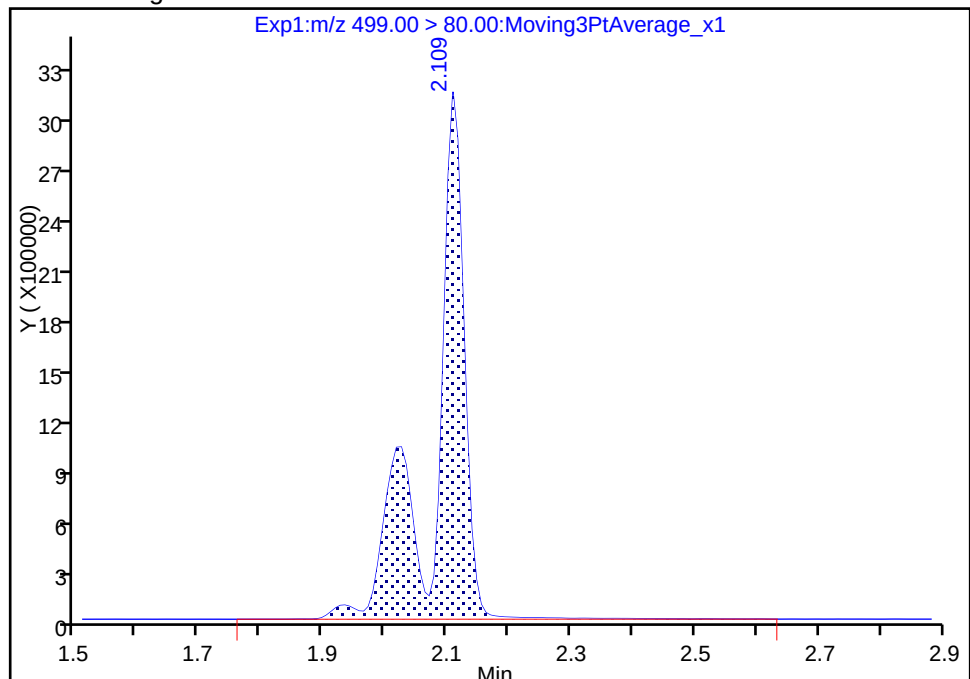
Signal: 1

Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results



RT: 2.11
Area: 10806665
Amount: 61.035224
Amount Units: ng/ml

Reviewer: barnettj, 20-Sep-2017 10:06:19

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

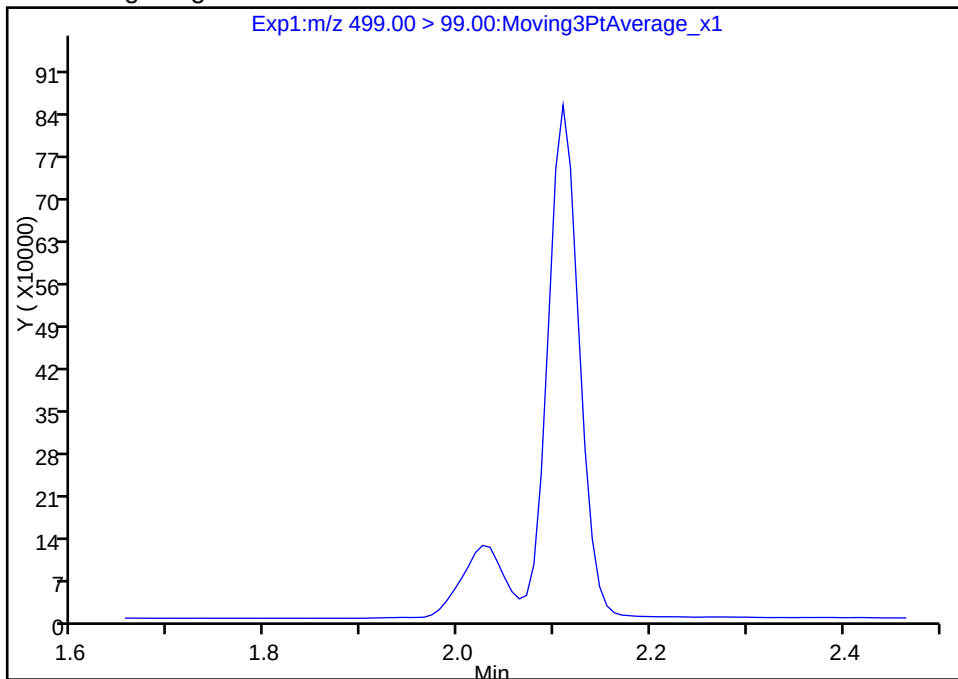
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_008.d
Injection Date: 20-Sep-2017 03:15:01 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

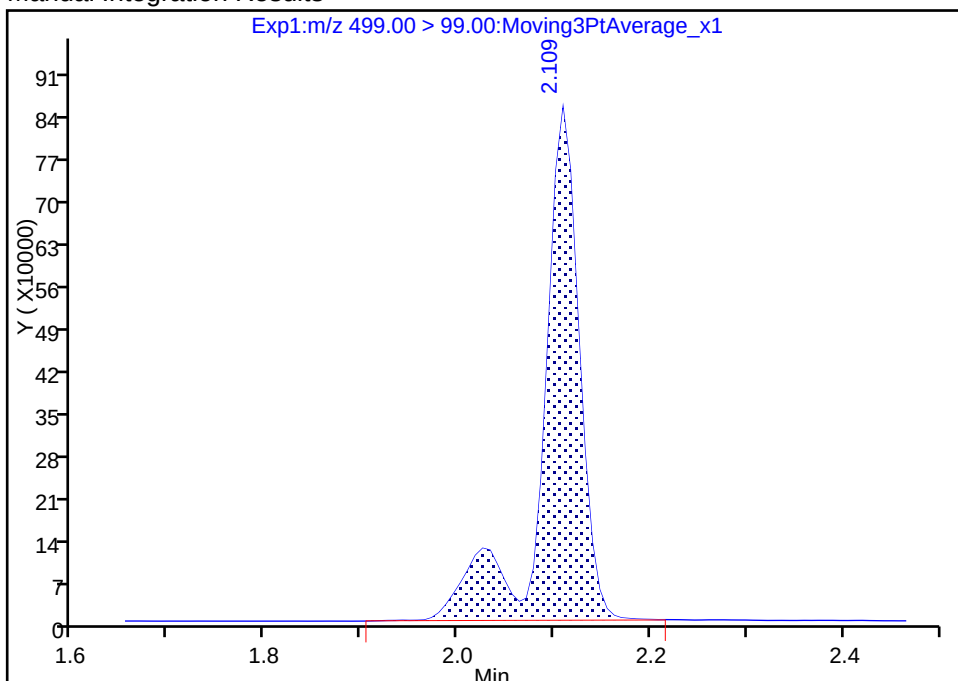
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 2283151
Amount: 61.035224
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:06:32

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

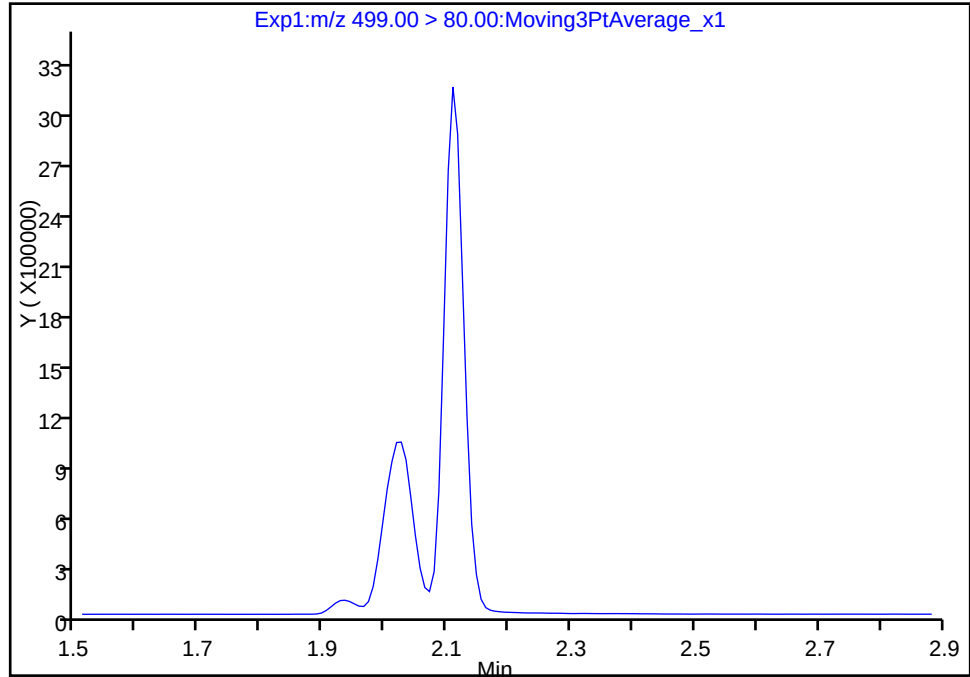
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_008.d
Injection Date: 20-Sep-2017 03:15:01 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

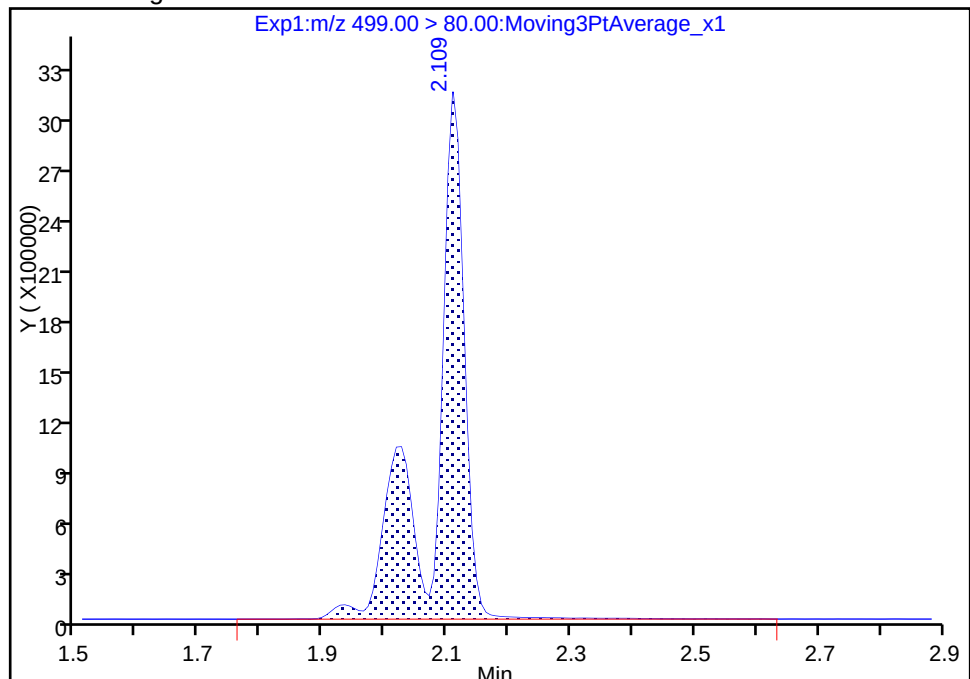
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 10806665
Amount: 61.035224
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:06:32

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
 Lims ID: IC L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 20-Sep-2017 03:19:48 ALS Bottle#: 6 Worklist Smp#: 9
 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*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Sep-2017 10:35:34 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK008

First Level Reviewer: barnettj

Date: 20-Sep-2017 10:07:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.402	0.002	1.000	26277877	182.3		5148	
298.90 > 99.00	1.404	1.402	0.002	1.000	20065753		1.31(0.00-0.00)	5796	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.524	0.001	1.000	2461679	10.3		8448	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.668	0.001	1.000	3731330	19.5		999	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.668	0.001	1.000	17148552	55.0		5562	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.855	-0.004		2036942	10.0		7709	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.856	-0.005	1.000	7591950	40.5		298	
413.00 > 169.00	1.851	1.856	-0.005	1.000	4055944		1.87(0.00-0.00)	6840	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		5454650	28.7		5153	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	14414630	81.3		7141	M
499.00 > 99.00	2.102	2.109	-0.007	0.996	3087448		4.67(0.00-0.00)	1891	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	5046017	39.8		666	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.282	0.002	1.000	1164862	10.3		8578	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L6_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Injection Date: 20-Sep-2017 03:19:48

Instrument ID: A8_N

Lims ID: IC L6

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 6

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

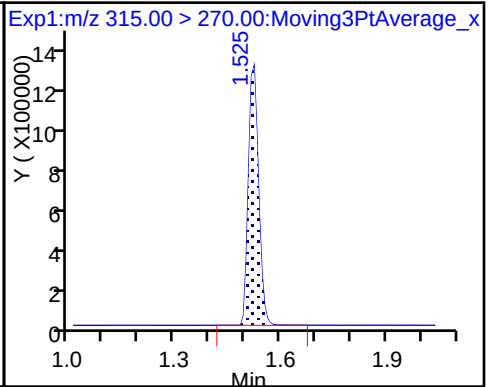
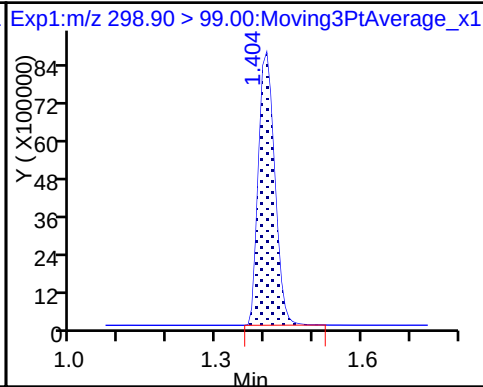
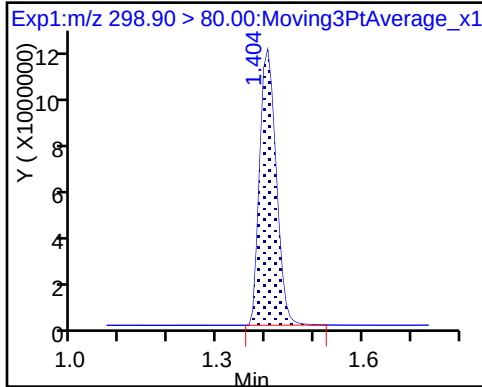
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

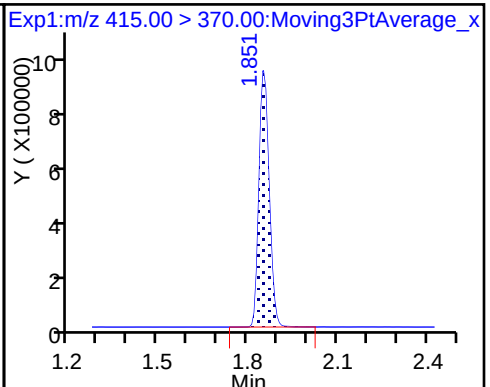
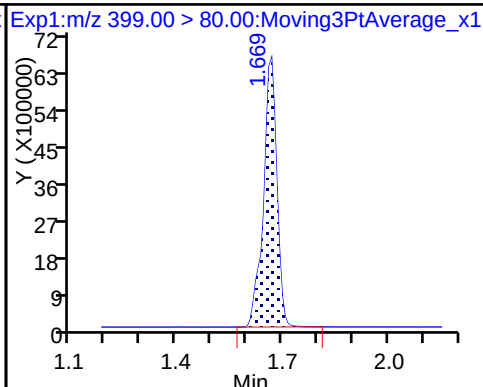
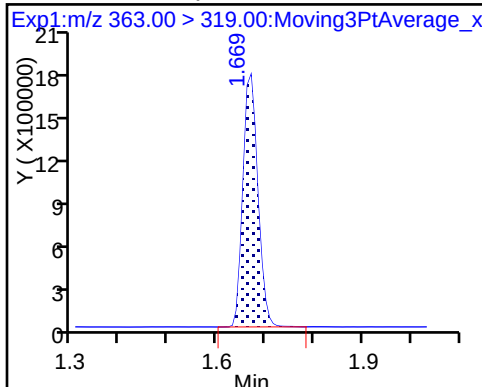
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

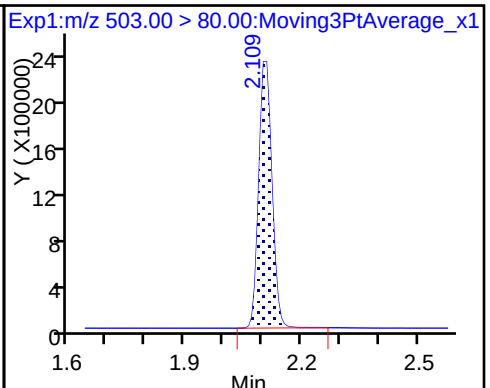
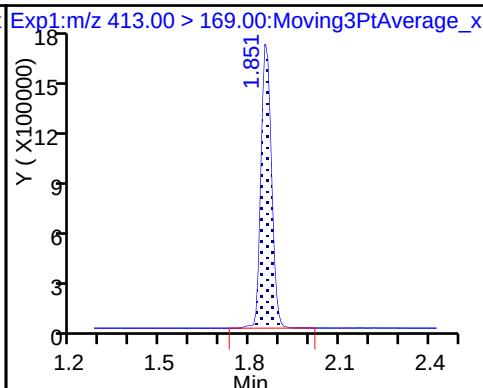
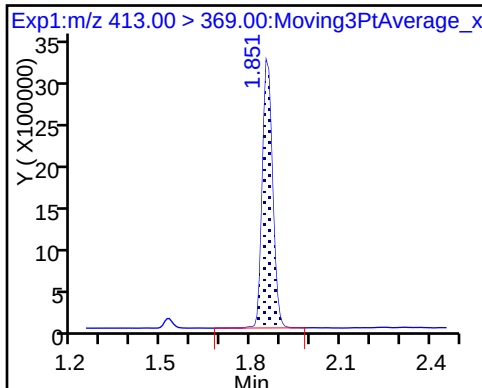
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

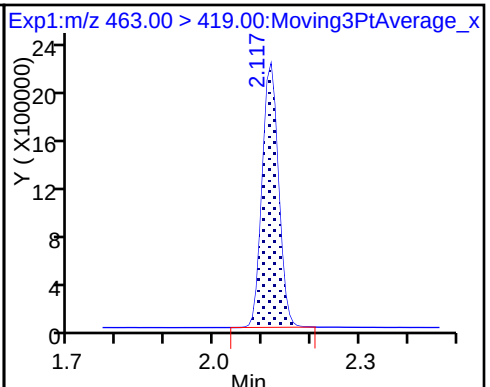
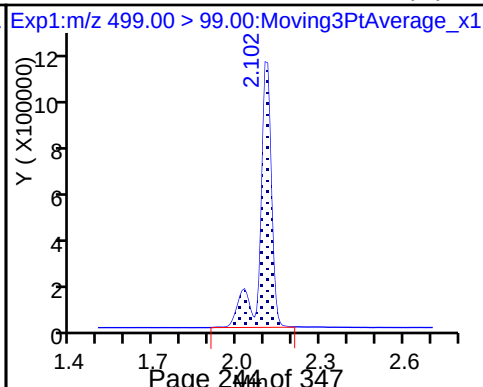
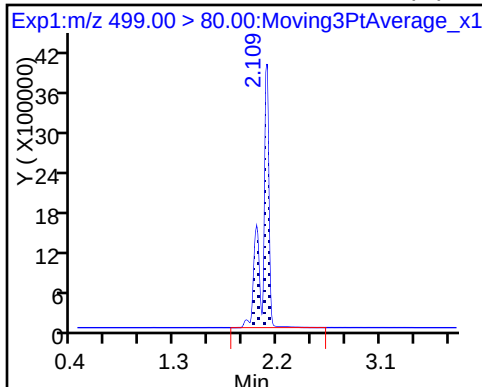
* 7 13C4 PFOS



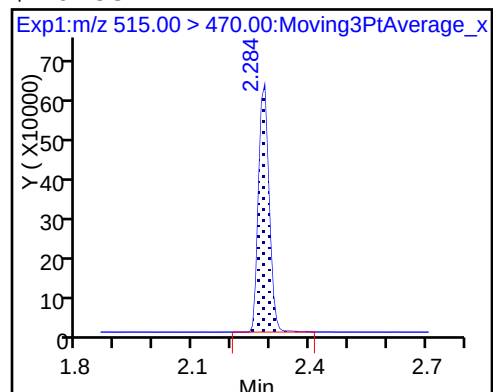
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

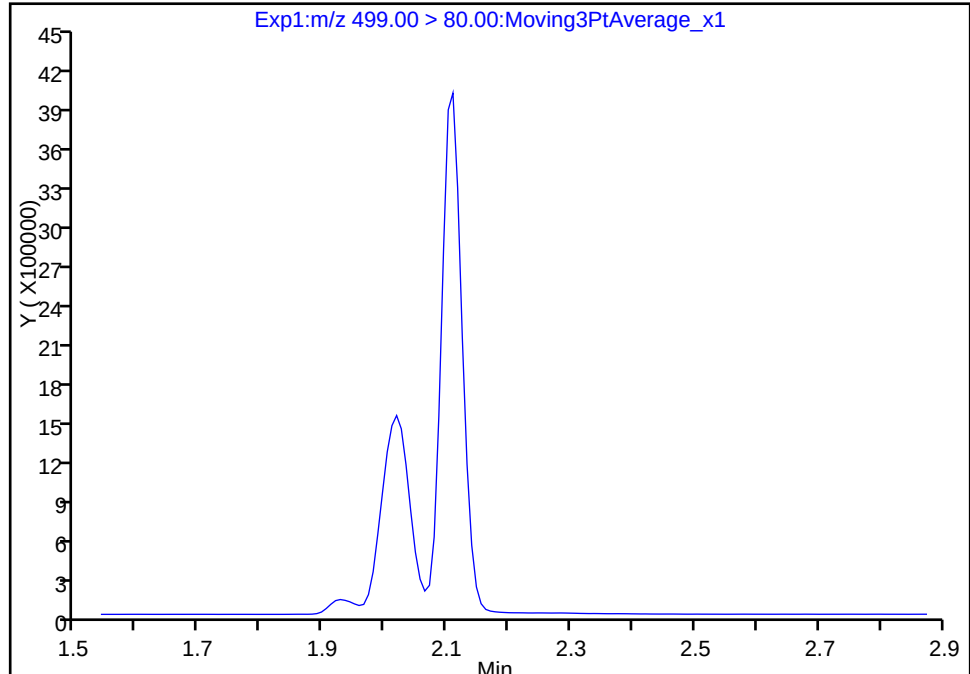
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Injection Date: 20-Sep-2017 03:19:48 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

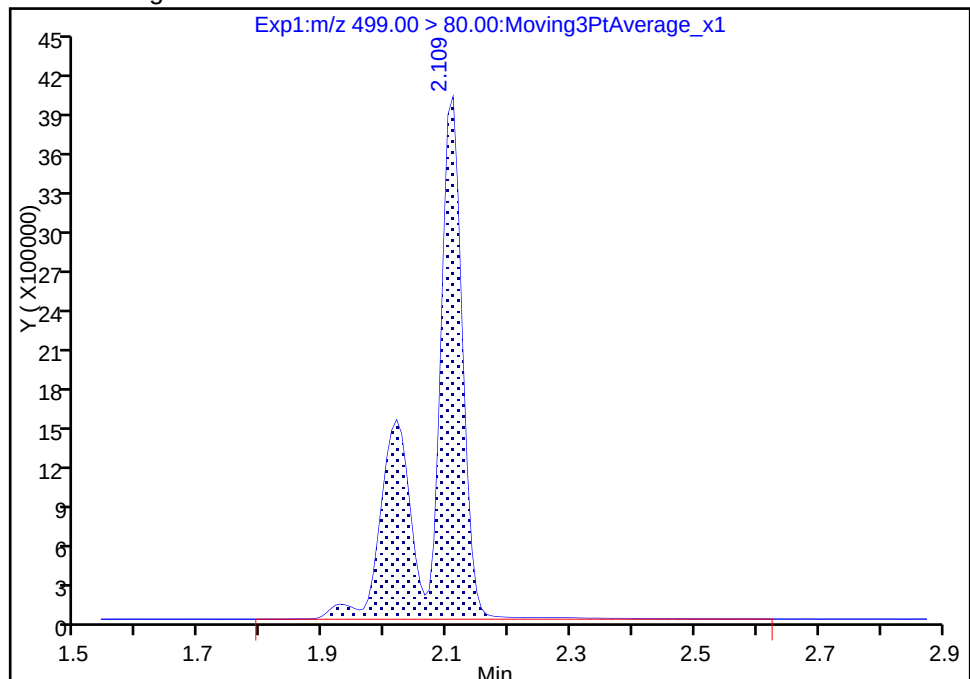
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 14414630
Amount: 81.346632
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:06:49

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

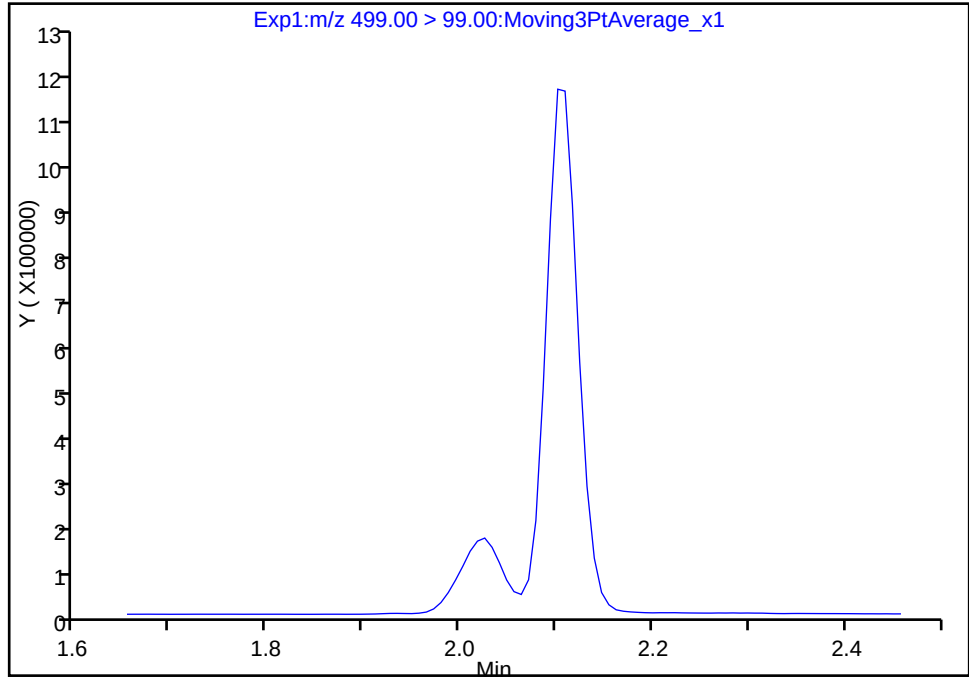
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Injection Date: 20-Sep-2017 03:19:48 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

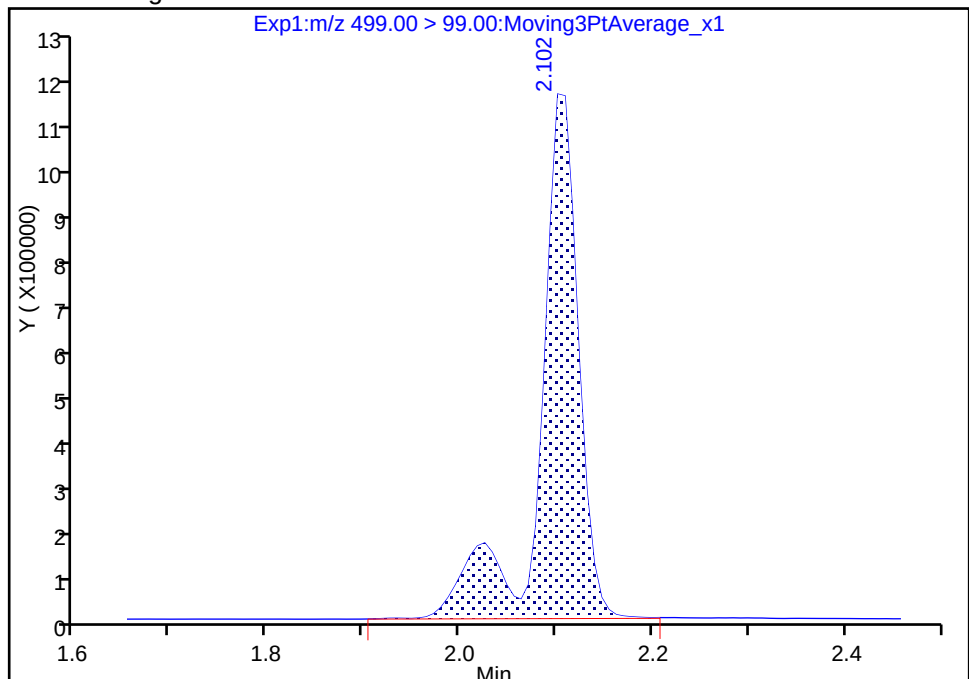
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 3087448
Amount: 81.346632
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:07:12

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

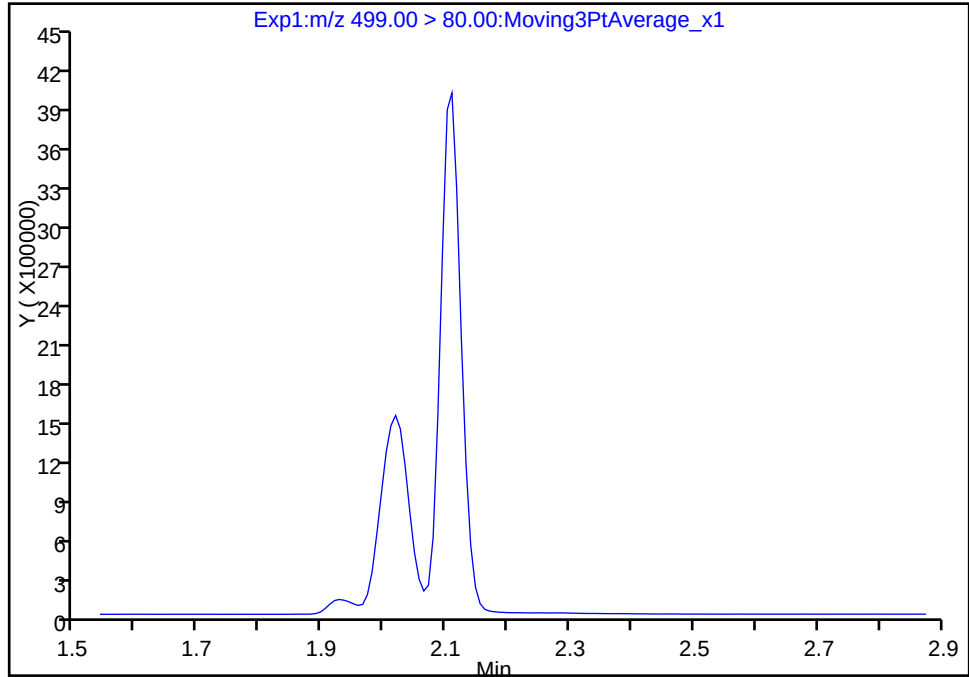
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Injection Date: 20-Sep-2017 03:19:48 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

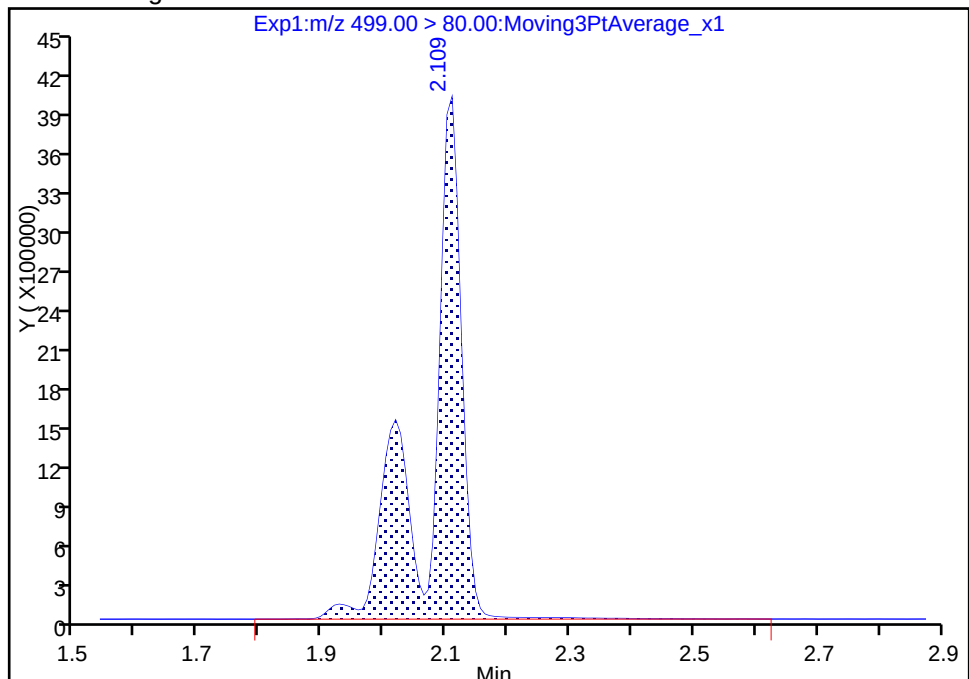
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 14414630
Amount: 81.346632
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:07:12

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-185329/11 Calibration Date: 09/20/2017 03:29
 Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19
 Lab File ID: 2017.09.19_537ICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.235		21.3	20.0	6.5	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9779		2.31	2.22	3.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.762		7.17	6.67	7.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9059		4.38	4.45	-1.5	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9490		9.06	8.89	1.9	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6352		4.54	4.45	2.2	50.0
13C2 PFHxA	Ave	1.172	1.139		9.72	10.0	-2.8	30.0
13C2 PFDA	Ave	0.5578	0.5694		10.2	10.0	2.1	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_011.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 20-Sep-2017 03:29:17 ALS Bottle#: 2 Worklist Smp#: 11
 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*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Sep-2017 10:35:36 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK008

First Level Reviewer: barnettj

Date: 20-Sep-2017 10:10:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.402	-0.006	1.000	4928523	21.3		8745	
298.90 > 99.00	1.396	1.402	-0.006	1.000	3609505		1.37(0.00-0.00)	6187	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.524	-0.007	1.000	2565324	9.72		10005	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.668	-0.006	1.000	2344621	7.17		4423	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.668	-0.006	1.000	489617	2.31		144	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.855	-0.004		2252465	10.0		8774	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.856	-0.005	1.000	907626	4.38		34.8	
413.00 > 169.00	1.851	1.856	-0.005	1.000	489379		1.85(0.00-0.00)	2088	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.108	-0.006		5723538	28.7		6648	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	1683920	9.06		2776	M
499.00 > 99.00	2.102	2.109	-0.007	1.000	342465		4.92(0.00-0.00)	388	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	636035	4.54		88.8	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.282	-0.006	1.000	1282617	10.2		10770	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L2_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_011.d

Injection Date: 20-Sep-2017 03:29:17

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

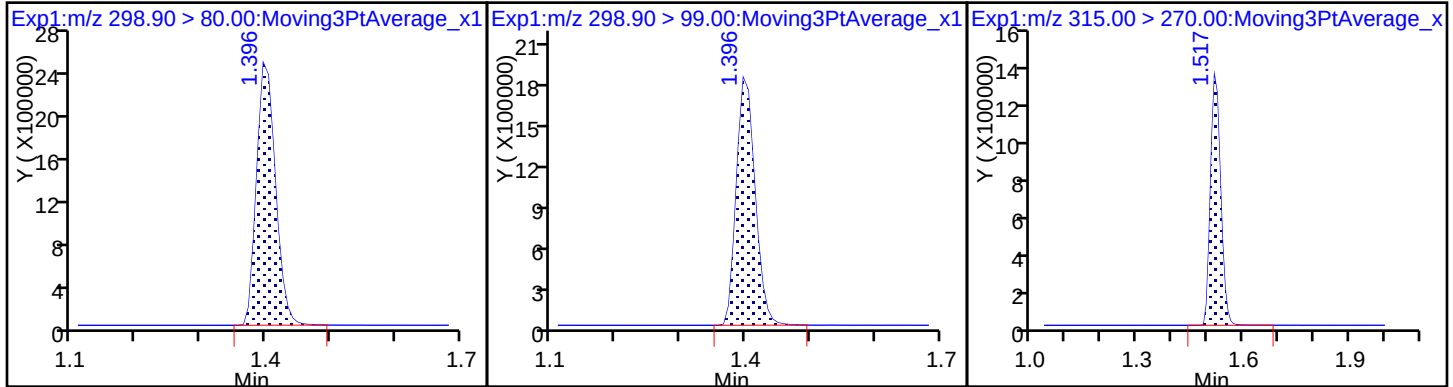
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

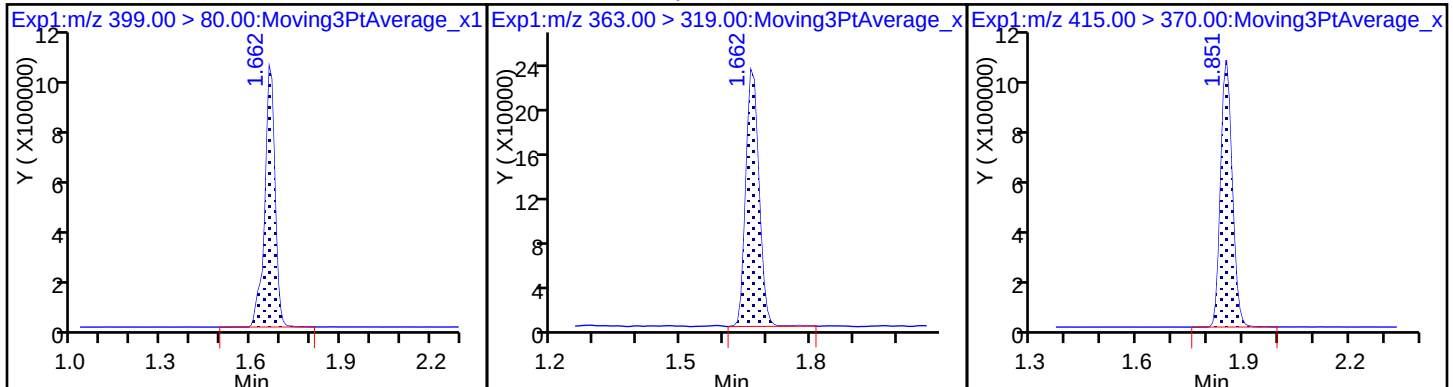
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

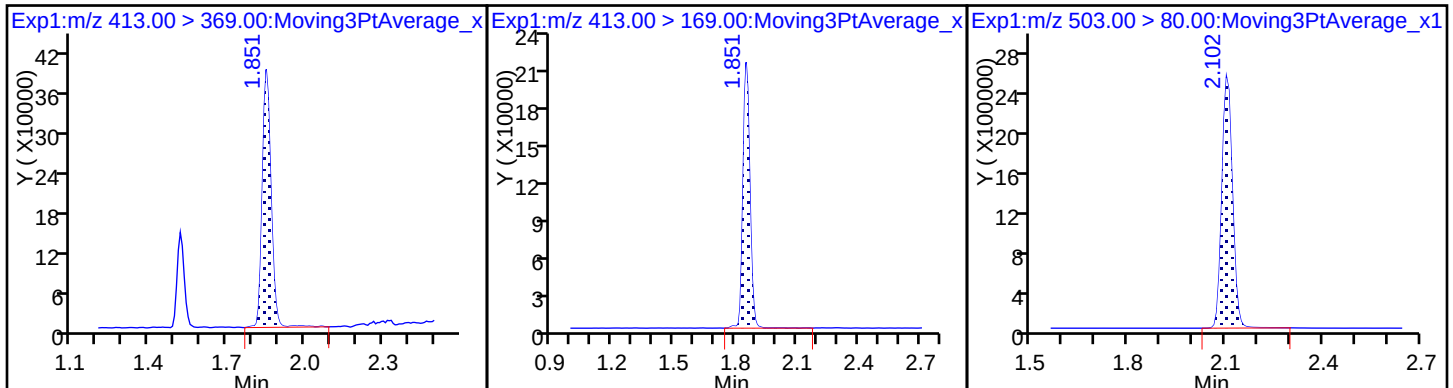
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

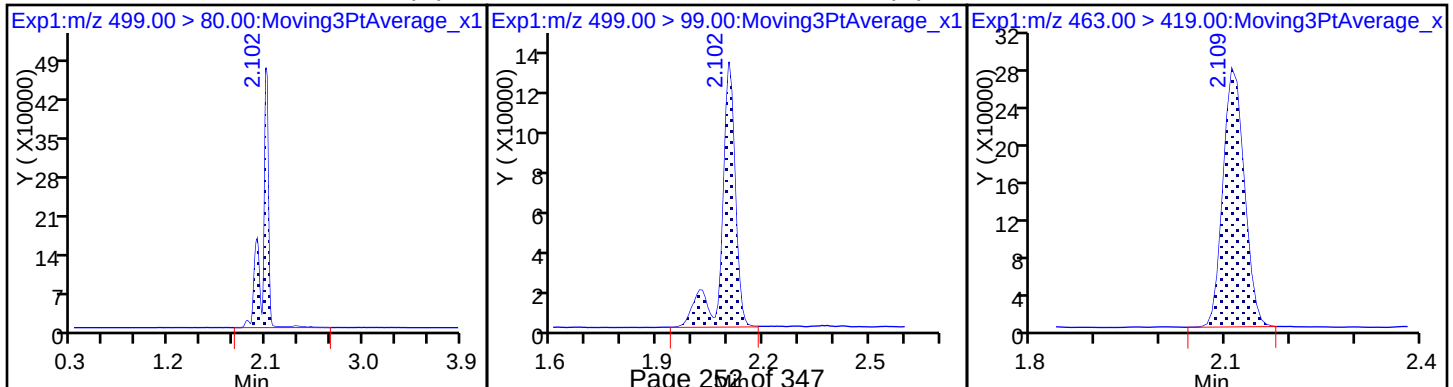
* 7 13C4 PFOS



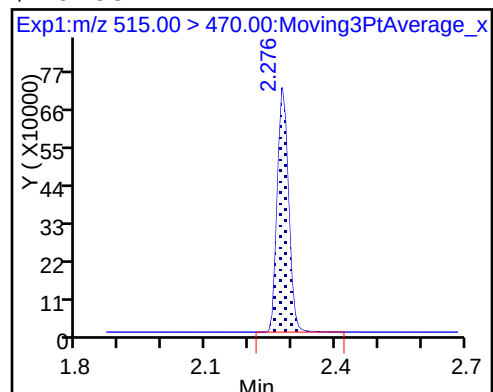
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

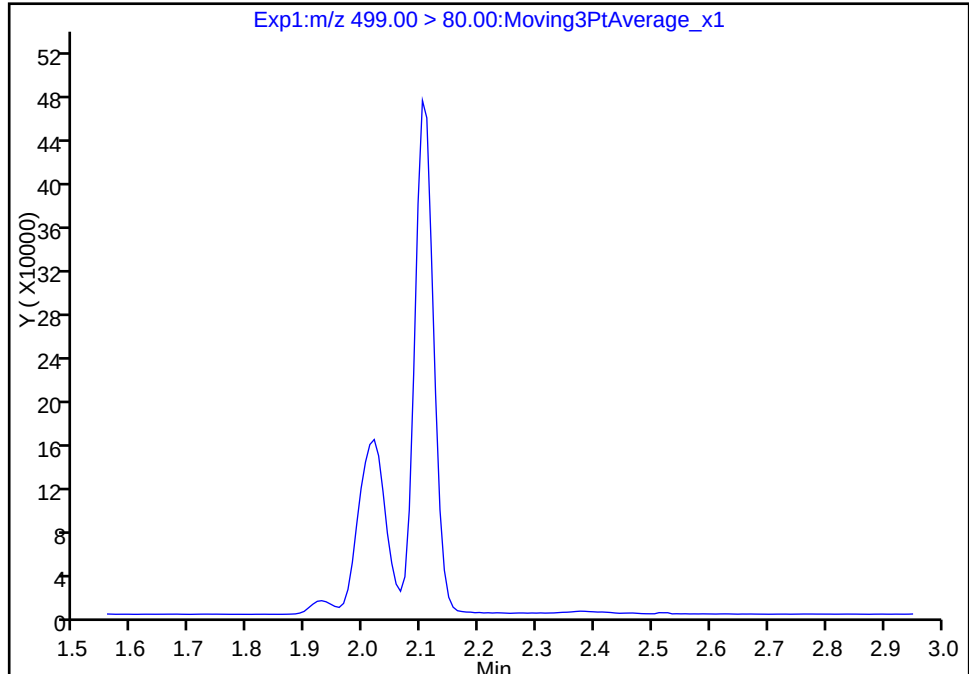
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_011.d
Injection Date: 20-Sep-2017 03:29:17 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

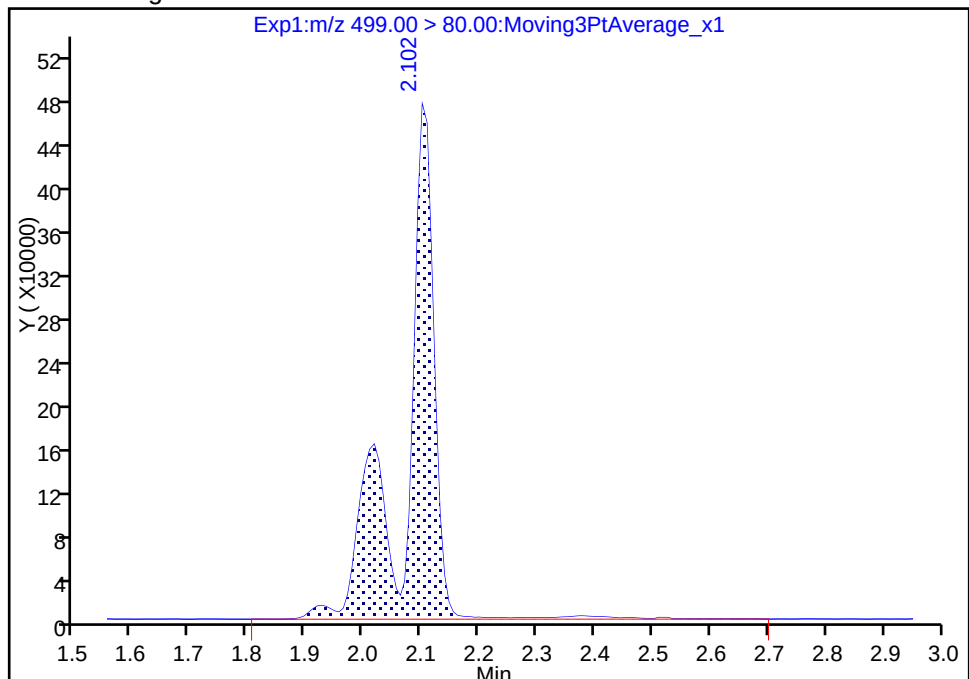
Signal: 1

Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results



RT: 2.10
Area: 1683920
Amount: 9.056489
Amount Units: ng/ml

Reviewer: barnettj, 20-Sep-2017 10:10:03

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

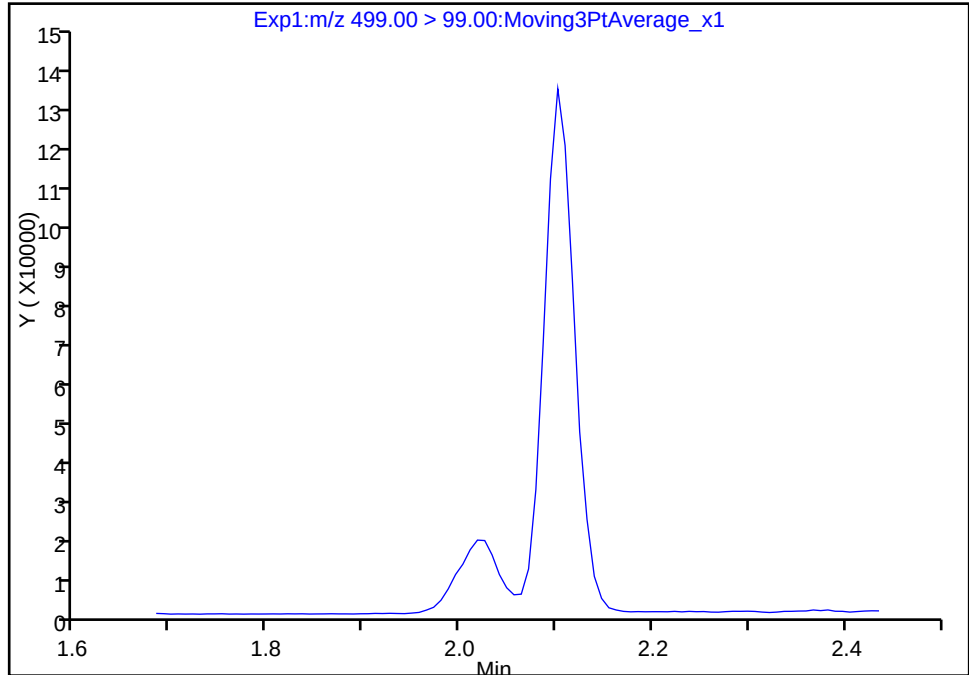
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_011.d
Injection Date: 20-Sep-2017 03:29:17 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

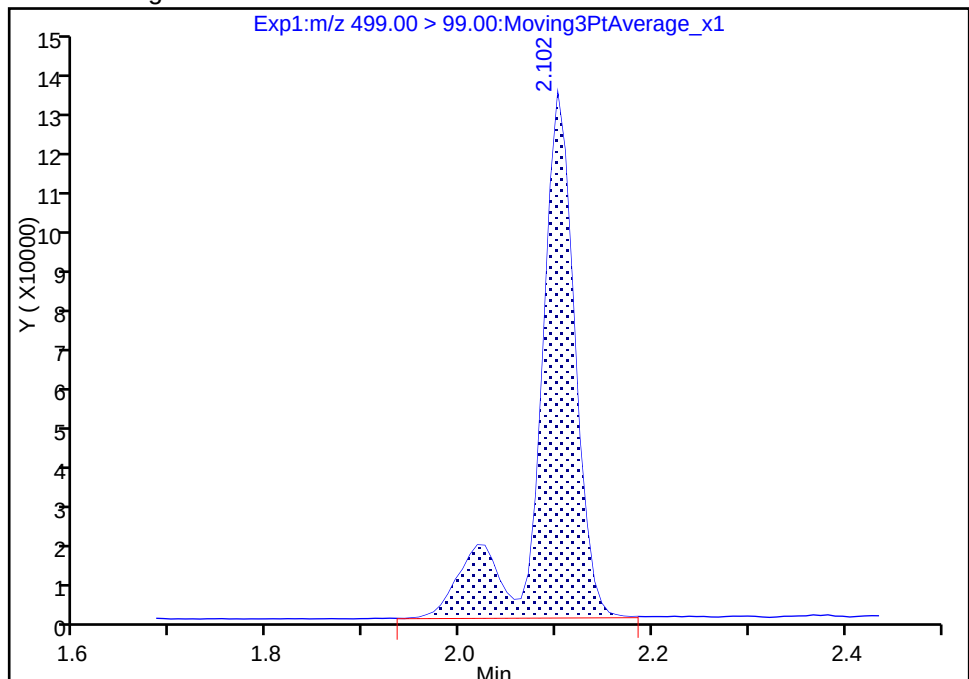
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 342465
Amount: 9.056489
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:10:20

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

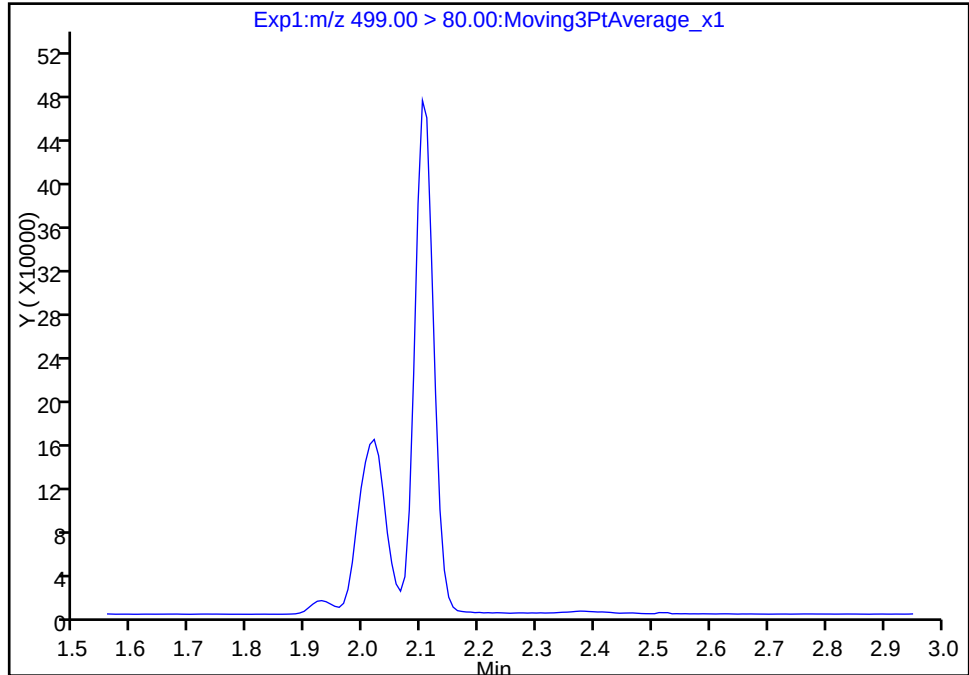
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_011.d
Injection Date: 20-Sep-2017 03:29:17 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

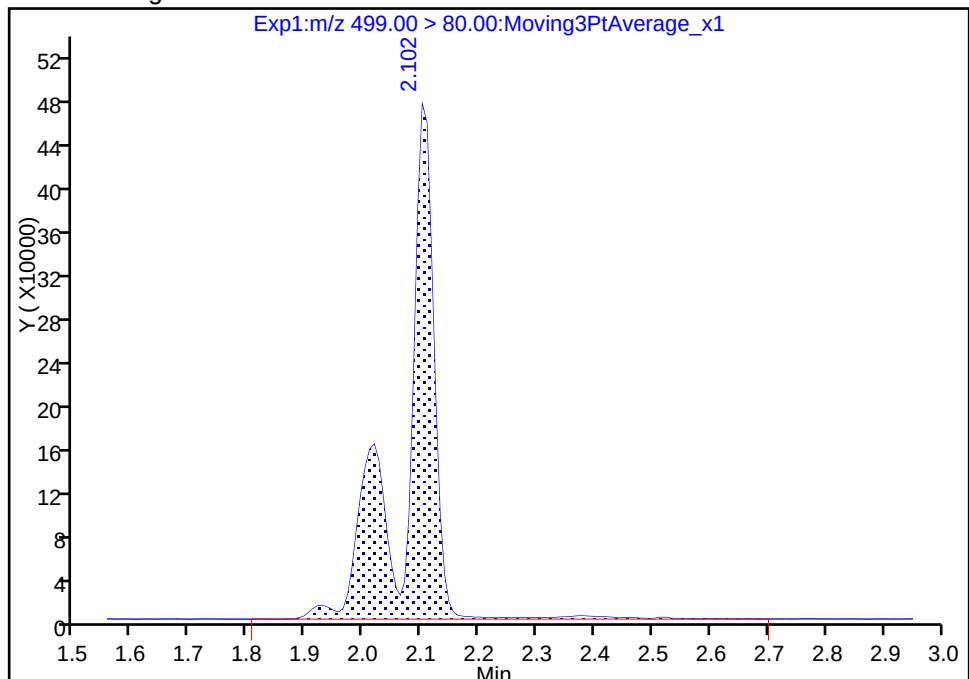
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 1683920
Amount: 9.056489
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:10:20

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Lab Sample ID: ICV 320-185329/13 Calibration Date: 09/20/2017 03:38
 Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19
 Lab File ID: 2017.09.19_537ICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9069		92.5	100	-7.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9703		10.3	10.0	3.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.860		22.8	20.1	13.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9535		21.2	20.5	3.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	1.134		24.0	19.7	21.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.7173		23.2	20.1	15.3	30.0
13C2 PFHxA	Ave	1.172	1.165		9.94	10.0	-0.6	30.0
13C2 PFDA	Ave	0.5578	0.5781		10.4	10.0	3.6	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_013.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 20-Sep-2017 03:38:46 ALS Bottle#: 7 Worklist Smp#: 13
 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\20170919-48154.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 20-Sep-2017 10:35:38 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK008

First Level Reviewer: barnettj

Date: 20-Sep-2017 10:35:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.402	0.002	1.000	23093305	92.5		5826	
298.90 > 99.00	1.404	1.402	0.002	1.000	17724893		1.30(0.00-0.00)	6513	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.524	0.001	1.000	3047368	9.94		9351	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.668	0.001	1.000	9496803	22.8		6818	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.668	0.001	1.000	2537716	10.3		696	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.855	-0.004		2616480	10.0		7926	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.856	-0.005	1.000	5110686	21.2		193	
413.00 > 169.00	1.851	1.856	-0.005	1.000	2741837		1.86(0.00-0.00)	6488	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.108	-0.006		7294448	28.7		6378	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	5683706	24.0		5285	M
499.00 > 99.00	2.102	2.109	-0.007	0.996	1038148		5.47(0.00-0.00)	913	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	3777210	23.2		739	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.282	-0.006	1.000	1512622	10.4		11751	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-ICV_00028

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_013.d

Injection Date: 20-Sep-2017 03:38:46

Instrument ID: A8_N

Lims ID: ICV

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 7

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

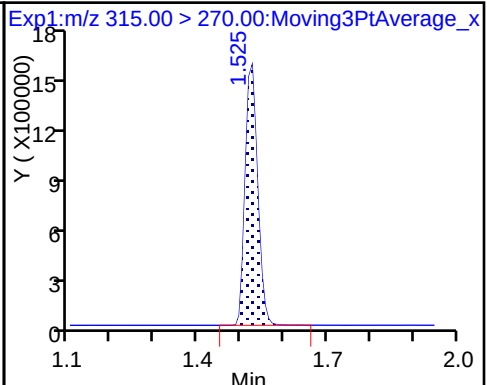
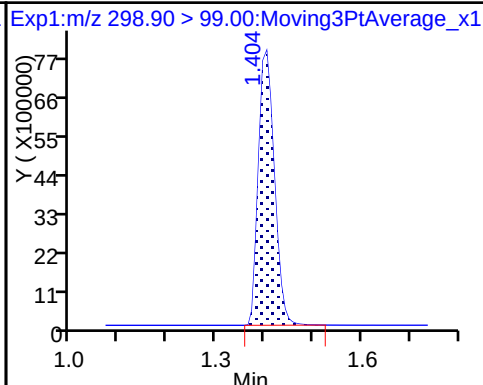
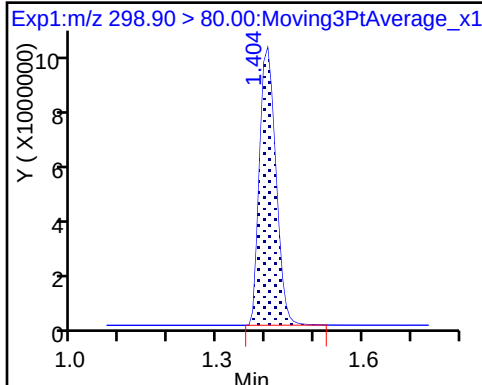
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

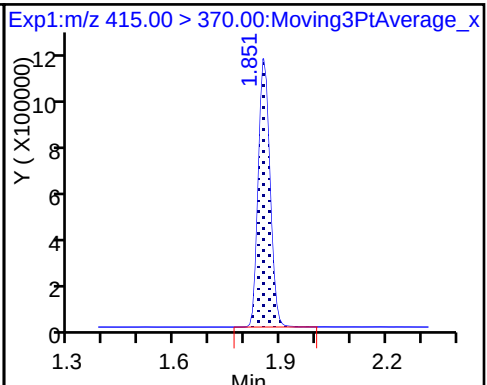
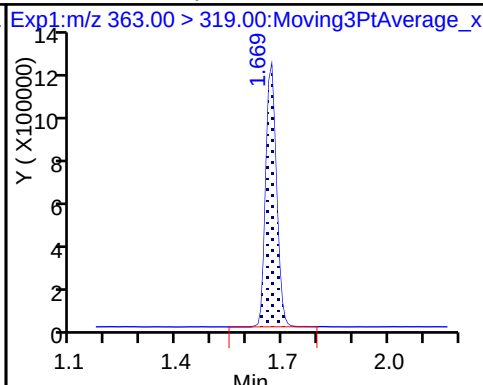
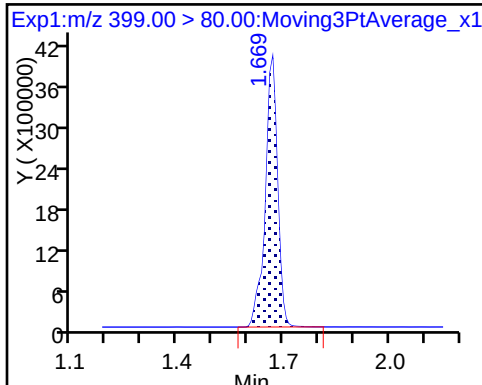
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

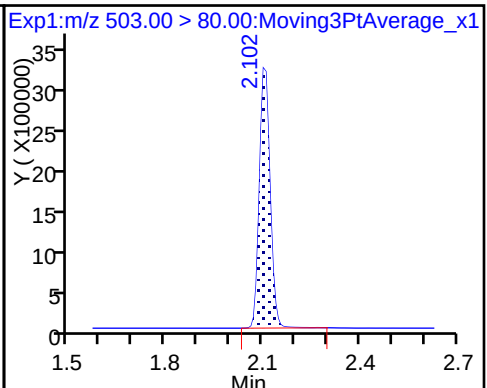
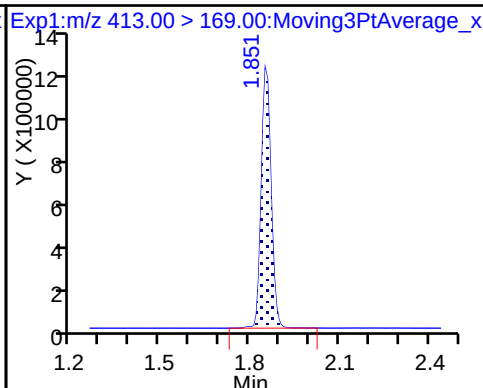
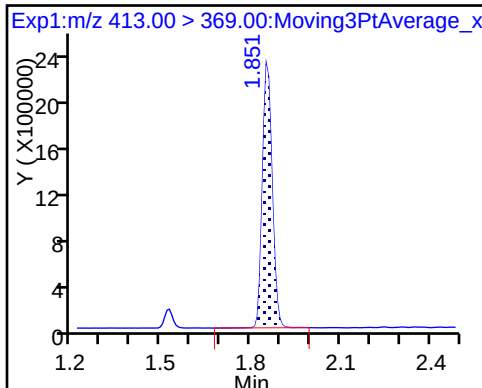
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

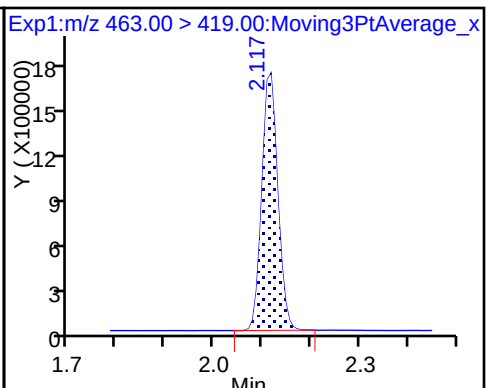
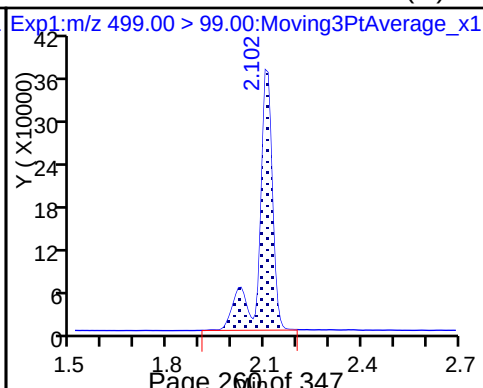
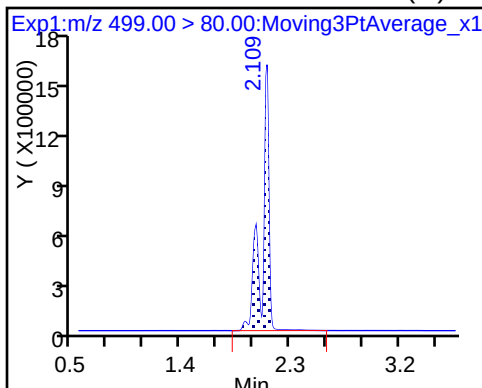
* 7 13C4 PFOS



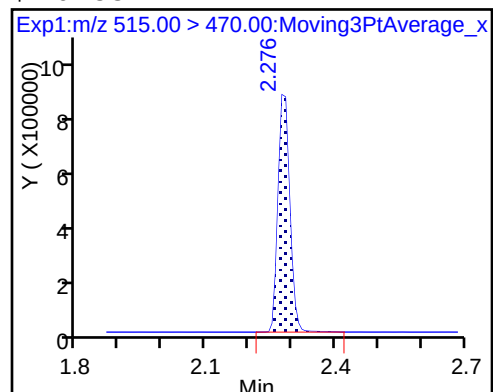
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

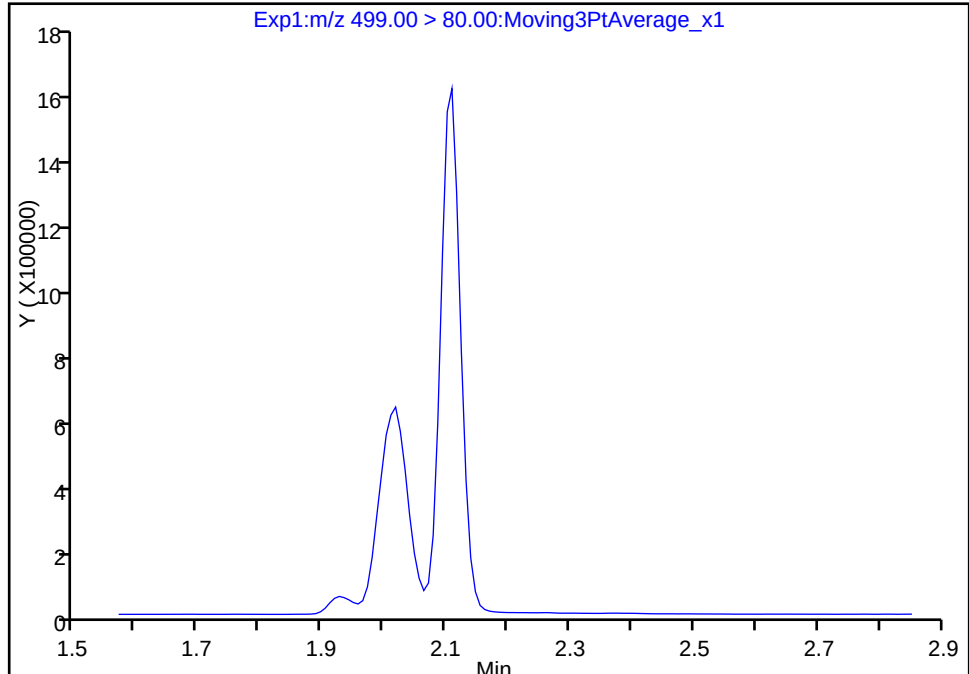
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_013.d
Injection Date: 20-Sep-2017 03:38:46 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

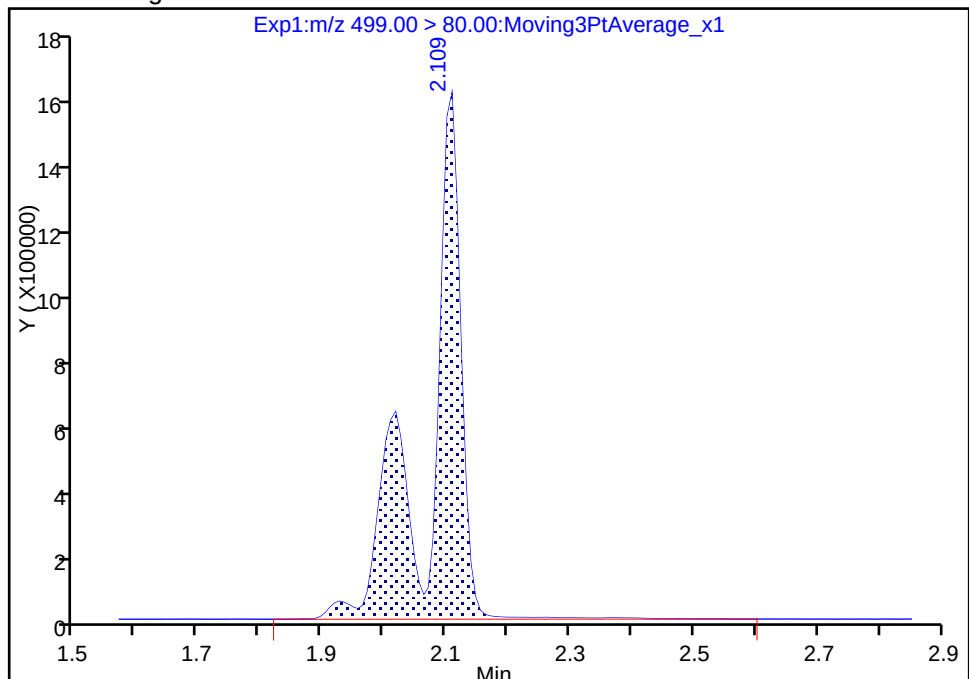
Signal: 1

Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results



RT: 2.11
Area: 5683706
Amount: 23.985133
Amount Units: ng/ml

TestAmerica Sacramento

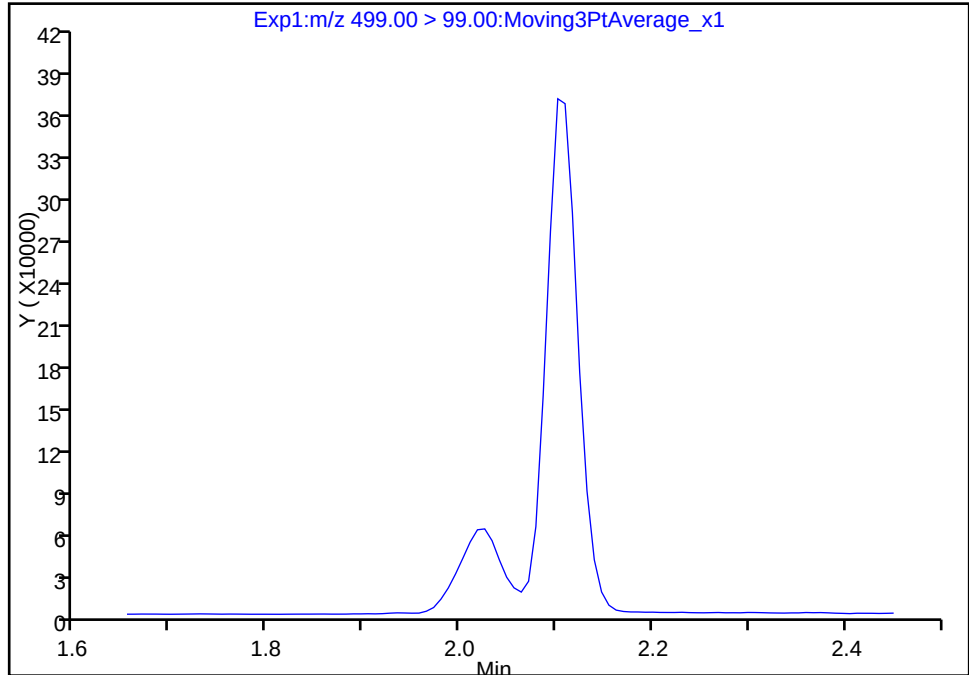
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Injection Date: 20-Sep-2017 03:38:46 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

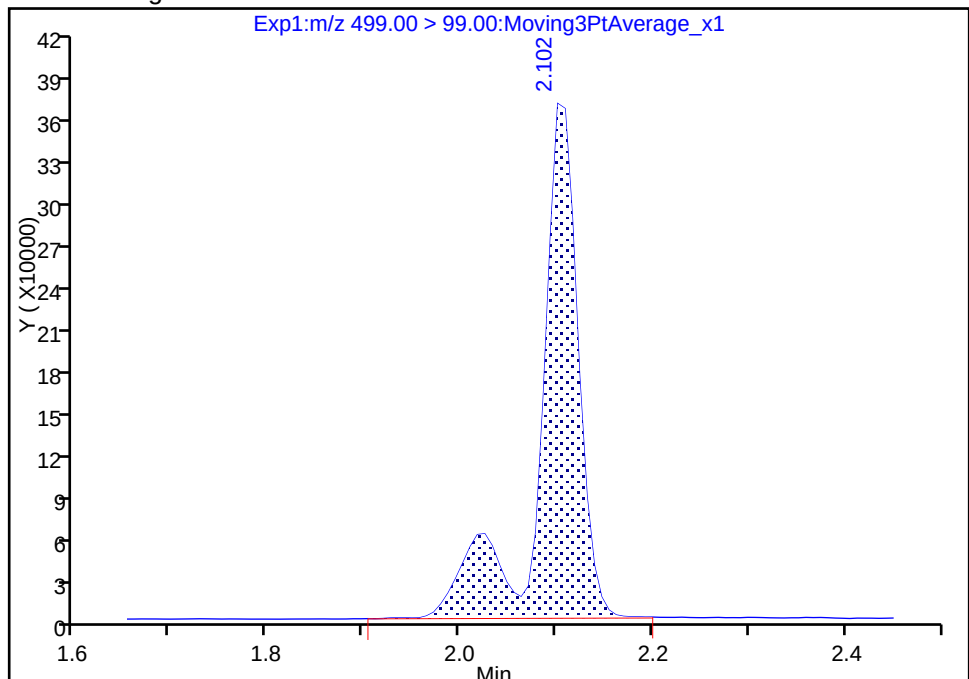
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 1038148
Amount: 23.985133
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:11:07

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

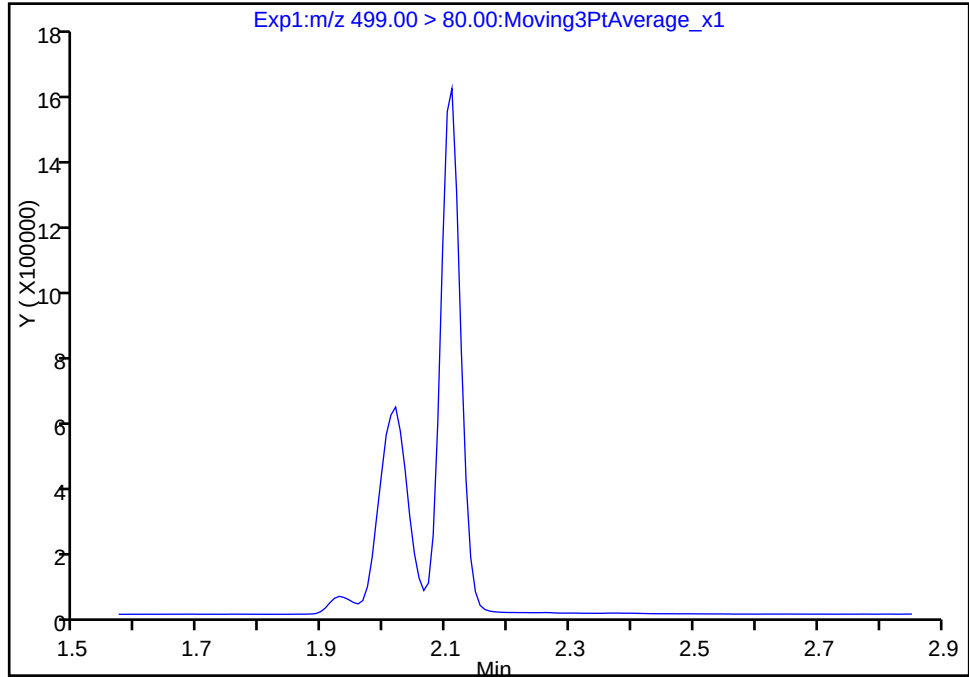
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Injection Date: 20-Sep-2017 03:38:46 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

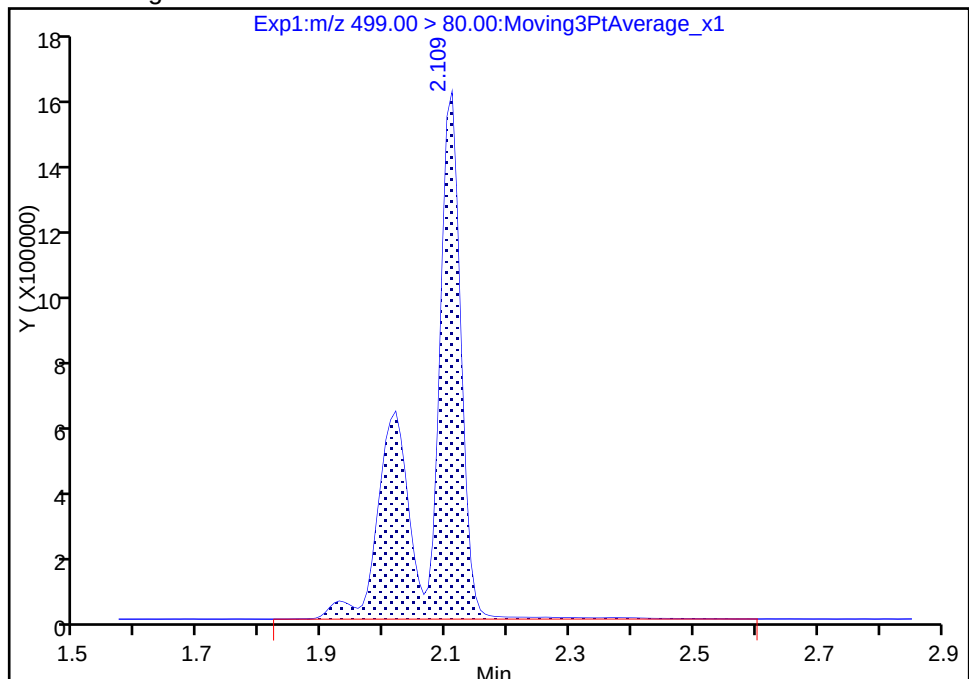
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 5683706
Amount: 23.985133
Amount Units: ng/ml



Reviewer: barnettj, 20-Sep-2017 10:11:07

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-190437/4 Calibration Date: 10/20/2017 17:49
 Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19
 Lab File ID: 2017.10.20_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)	QuaF		1.204		20.7	20.0	3.7	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9757		2.30	2.22	3.6	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.732		7.05	6.67	5.7	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.8825		4.27	4.45	-4.0	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.8839		8.44	8.89	-5.1	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.5891		4.21	4.45	-5.3	50.0
13C2 PFHxA	Ave	1.172	1.198		10.2	10.0	2.3	30.0
13C2 PFDA	Ave	0.5578	0.5295		9.49	10.0	-5.1	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49419.b\2017.10.20_537A_004.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 20-Oct-2017 17:49:29 ALS Bottle#: 2 Worklist Smp#: 4
 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*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49419.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:31:56 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 09:48:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	5070957	20.7		4777	
298.90 > 99.00	1.419	1.402	0.017	1.000	3633713		1.40(0.00-0.00)	3821	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.524	0.024	1.000	2508619	10.2		5691	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.668	0.024	1.000	2433028	7.05		2476	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.668	0.024	1.000	454065	2.30		82.8	
* 6 13C2-PFOA									
415.00 > 370.00	1.889	1.855	0.034		2093728	10.0		5031	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.889	1.856	0.033	1.000	821870	4.27		20.4	
413.00 > 169.00	1.889	1.856	0.033	1.000	451090		1.82(0.00-0.00)	1105	
* 7 13C4 PFOS									
503.00 > 80.00	2.132	2.108	0.024		6041408	28.7		6161	
9 Perfluorononanoic acid									
463.00 > 419.00	2.140	2.116	0.024	1.000	548282	4.21		60.2	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.132	2.124	0.008	1.000	1655520	8.44		294	M
499.00 > 99.00	2.132	2.124	0.008	1.000	343625		4.82(0.00-0.00)	163	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	1108549	9.49		4499	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L2_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49419.b\2017.10.20_537A_004.d

Injection Date: 20-Oct-2017 17:49:29

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

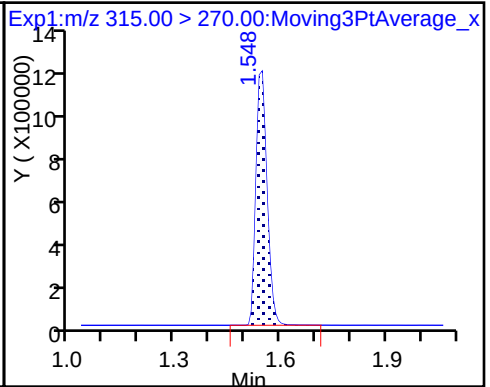
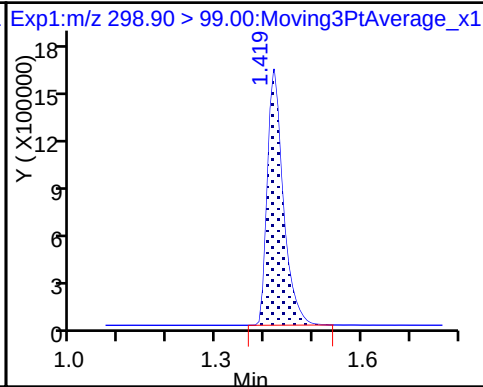
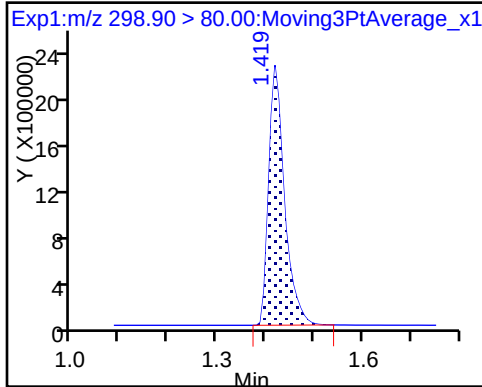
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

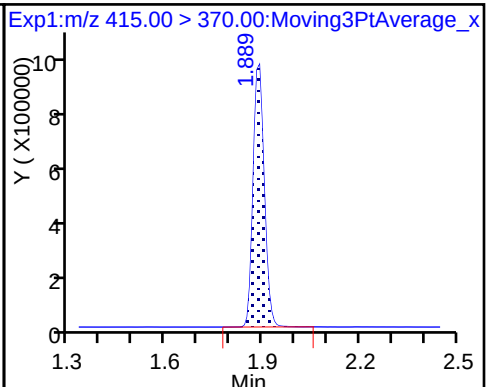
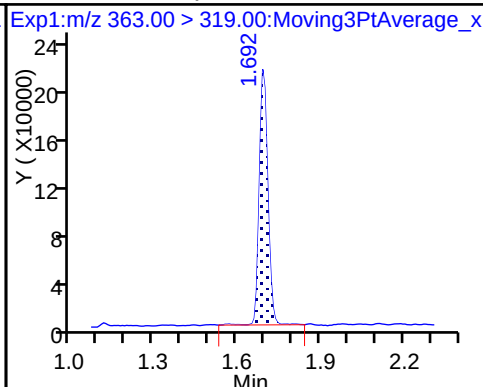
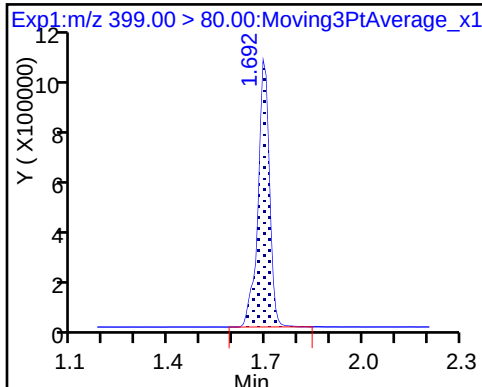
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

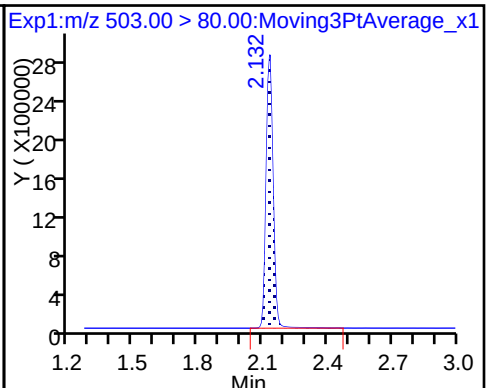
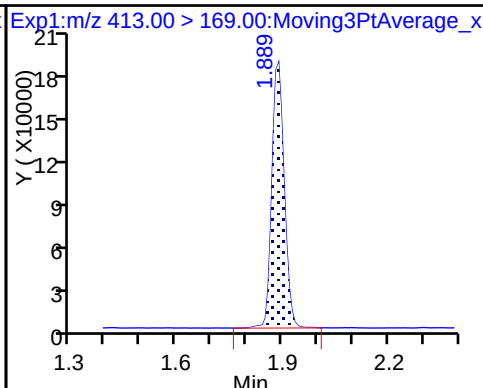
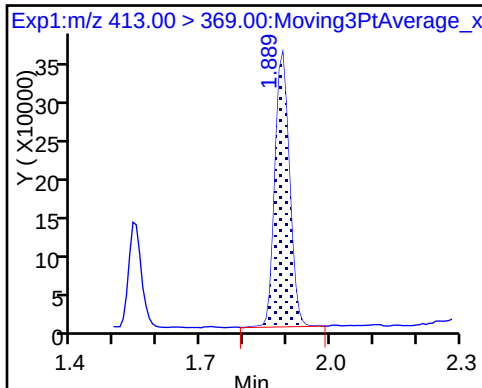
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

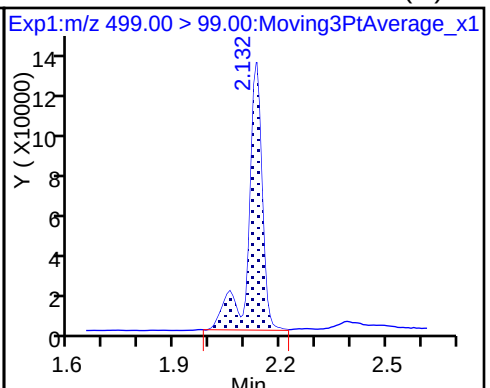
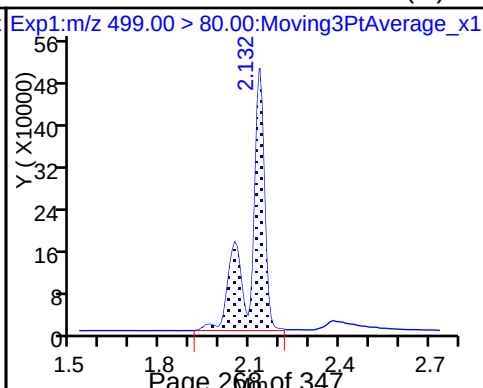
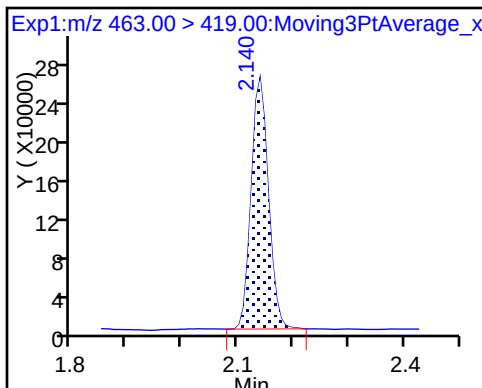
* 7 13C4 PFOS



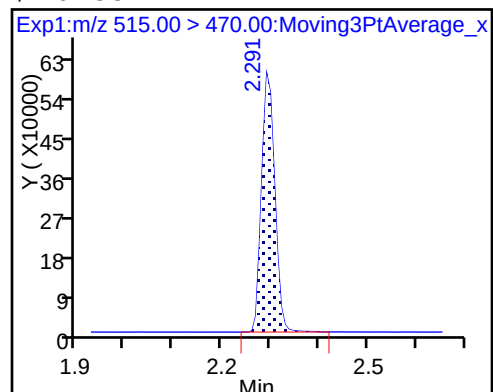
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento

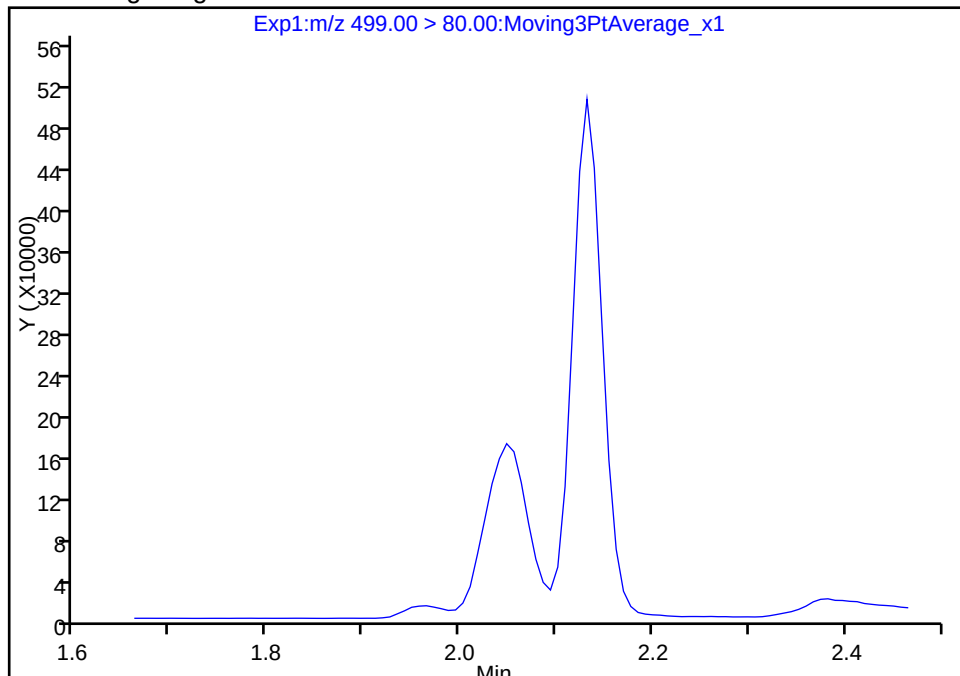
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49419.b\2017.10.20_537A_004.d
Injection Date: 20-Oct-2017 17:49:29 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

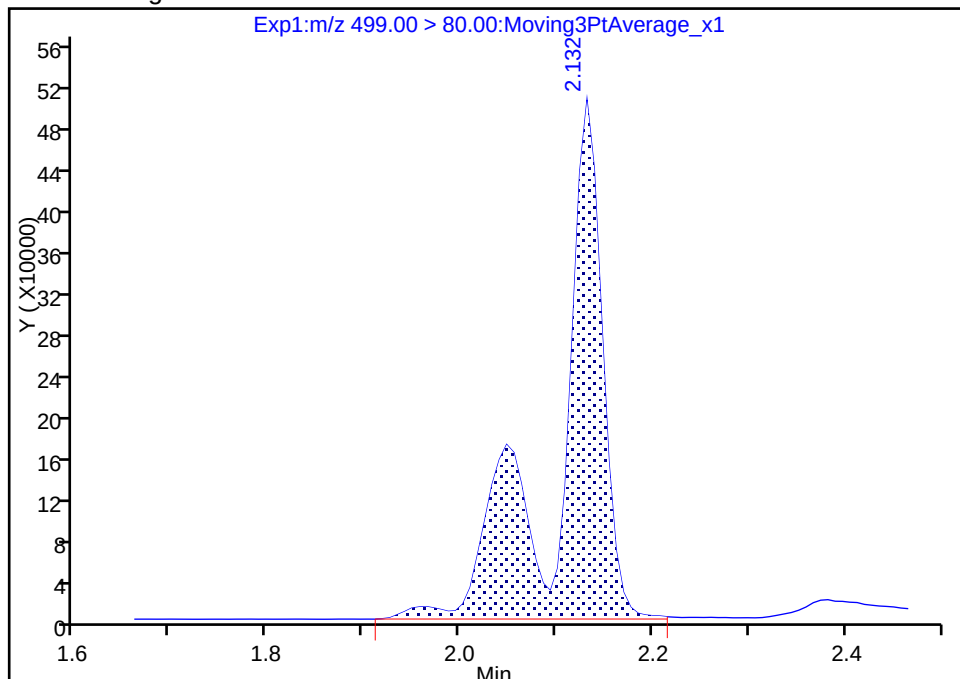
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 1655520
Amount: 8.435275
Amount Units: ng/ml



Reviewer: barnettj, 23-Oct-2017 09:47:53

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49419.b\2017.10.20_537A_004.d

Injection Date: 20-Oct-2017 17:49:29

Instrument ID: A8_N

Lims ID: CCVL

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

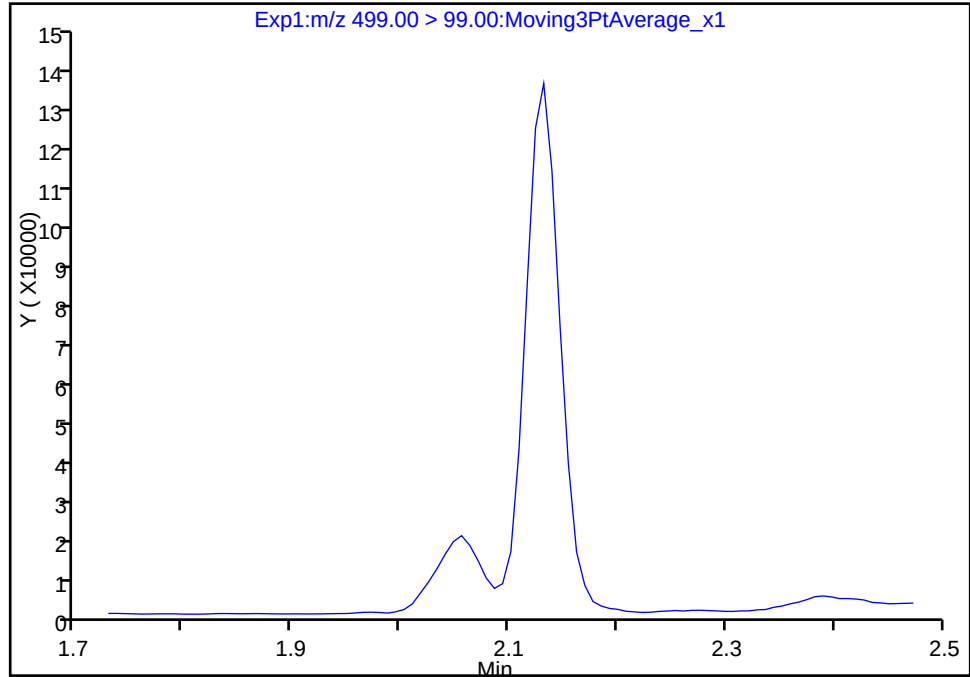
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

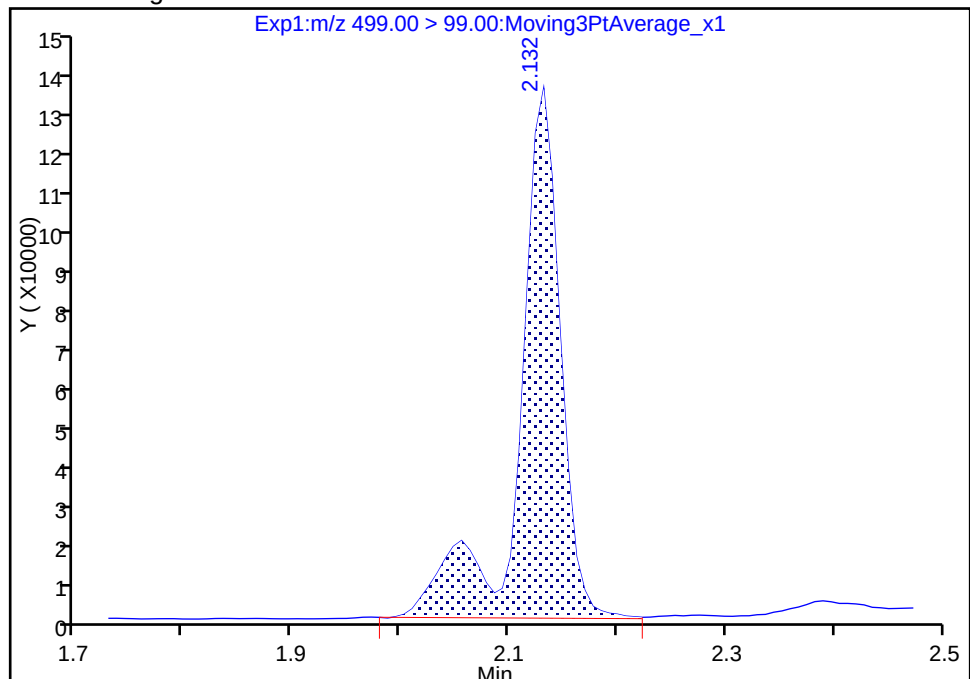
Not Detected

Expected RT: 2.12

Processing Integration Results



Manual Integration Results



RT: 2.13

Area: 343625

Amount: 8.435275

Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 09:48:15

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49419.b\2017.10.20_537A_004.d

Injection Date: 20-Oct-2017 17:49:29

Instrument ID: A8_N

Lims ID: CCVL

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

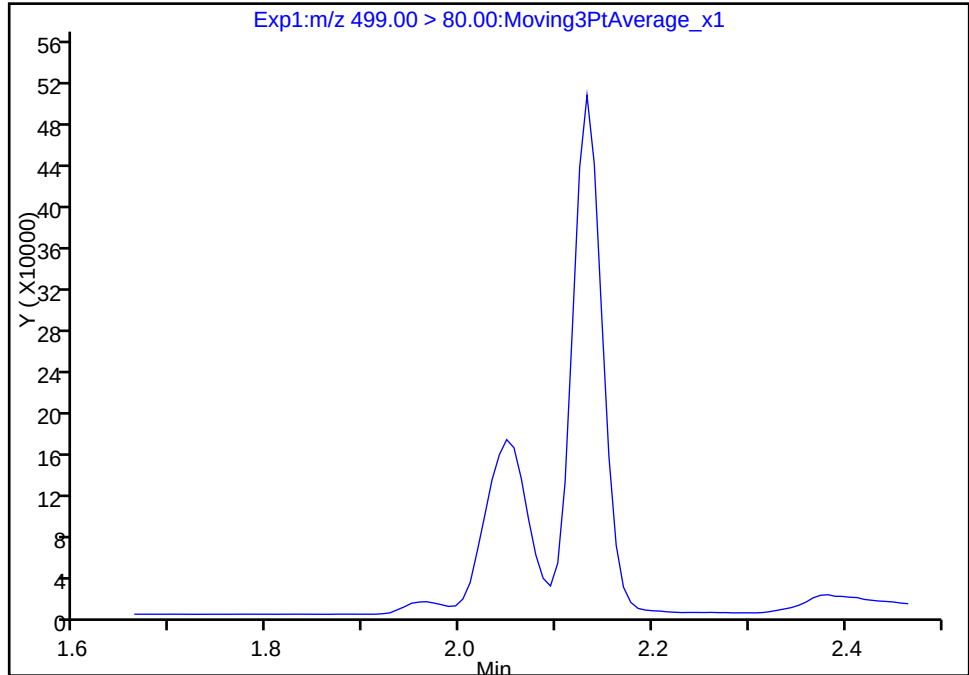
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

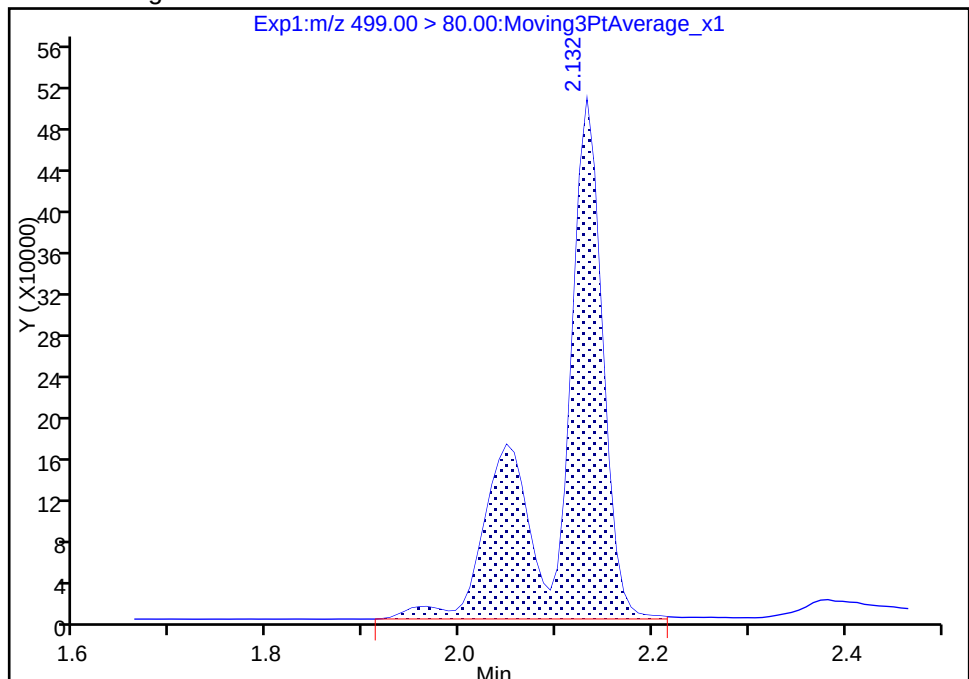
Not Detected

Expected RT: 2.12

Processing Integration Results



Manual Integration Results



RT: 2.13

Area: 1655520

Amount: 8.435275

Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 09:48:15

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Lab Sample ID: CCV 320-190444/1 Calibration Date: 10/20/2017 21:04
 Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19
 Lab File ID: 2017.10.20_537A_045.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9552		157	135	16.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	1.016		16.2	15.0	7.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.614		44.4	45.0	-1.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9447		30.8	30.0	2.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9208		59.3	60.0	-1.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6327		30.5	30.0	1.7	30.0
13C2 PFHxA	Ave	1.172	1.324		11.3	10.0	13.0	30.0
13C2 PFDA	Ave	0.5578	0.5802		10.4	10.0	4.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_045.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 20-Oct-2017 21:04:03 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*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:15:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	23558615	157.1		2917	
298.90 > 99.00	1.419	1.402	0.017	1.000	17672964		1.33(0.00-0.00)	3190	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.524	0.024	1.000	2261934	11.3		6447	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.668	0.024	1.000	13274669	44.4		3321	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.668	0.024	1.000	2604028	16.2		474	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.855	0.027		1708886	10.0		3700	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.856	0.026	1.000	4846989	30.8		113	
413.00 > 169.00	1.882	1.856	0.026	1.000	2578787		1.88(0.00-0.00)	3754	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		5239449	28.7		4348	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.116	0.016	1.000	3244144	30.5		276	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.117	0.007	1.000	10095244	59.3		1004	M
499.00 > 99.00	2.124	2.117	0.007	1.000	2086445		4.84(0.00-0.00)	683	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	991552	10.4		5015	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L5_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_045.d

Injection Date: 20-Oct-2017 21:04:03

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

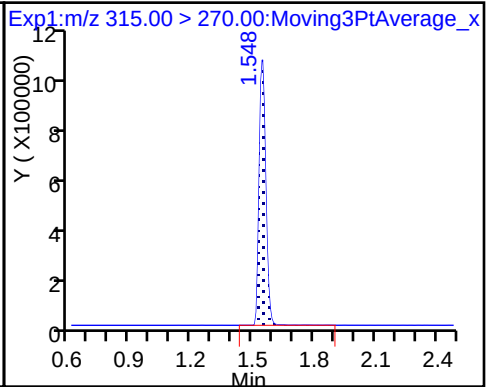
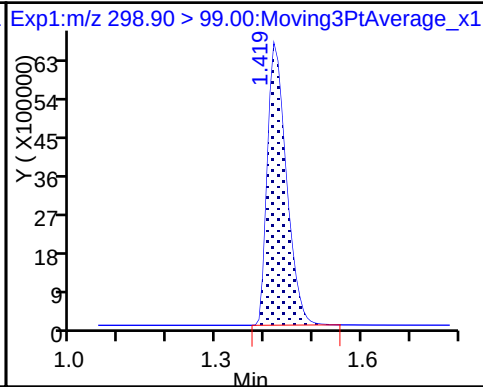
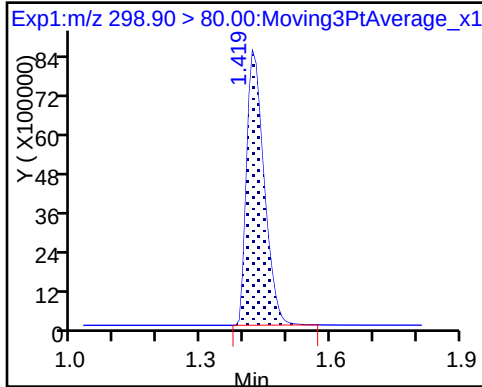
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

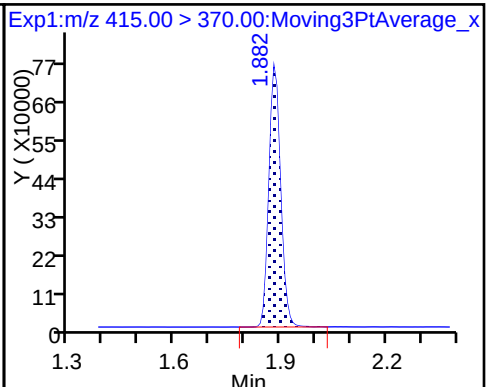
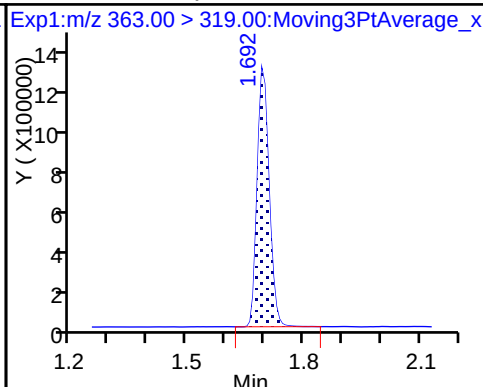
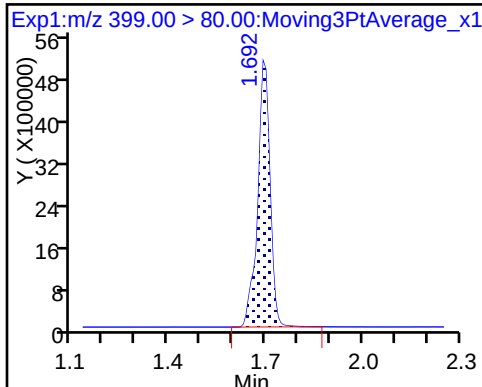
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

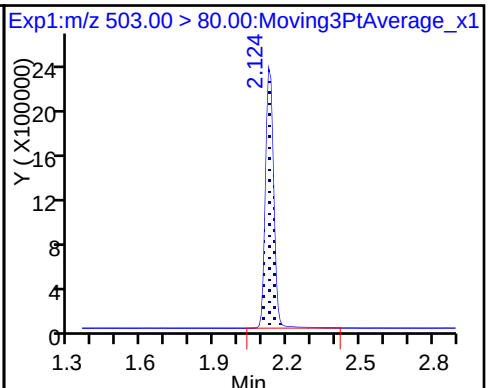
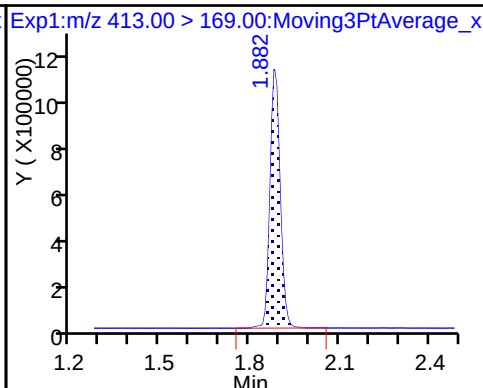
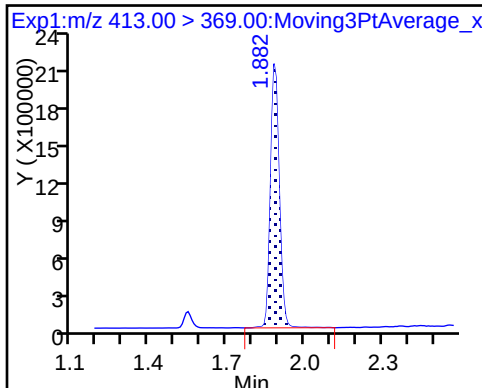
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

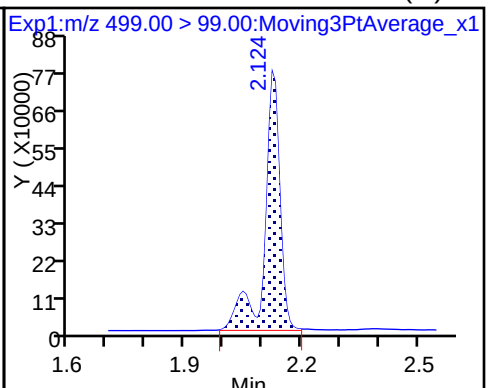
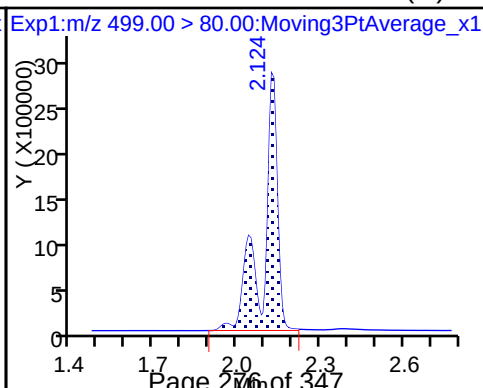
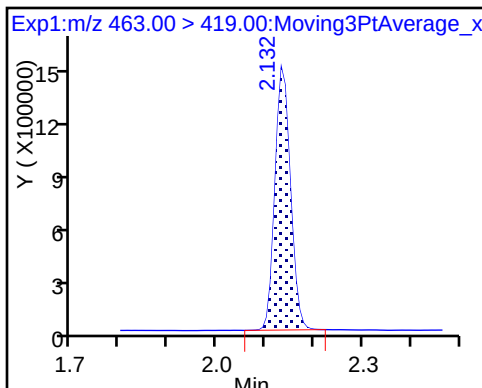
* 7 13C4 PFOS



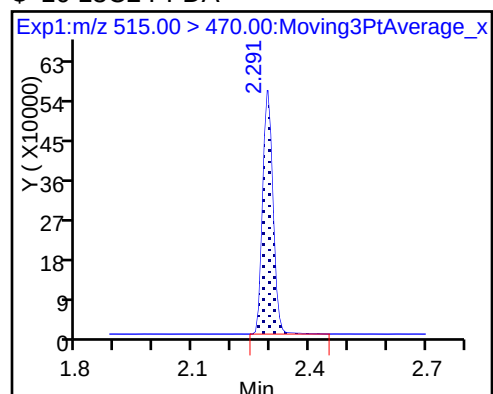
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento

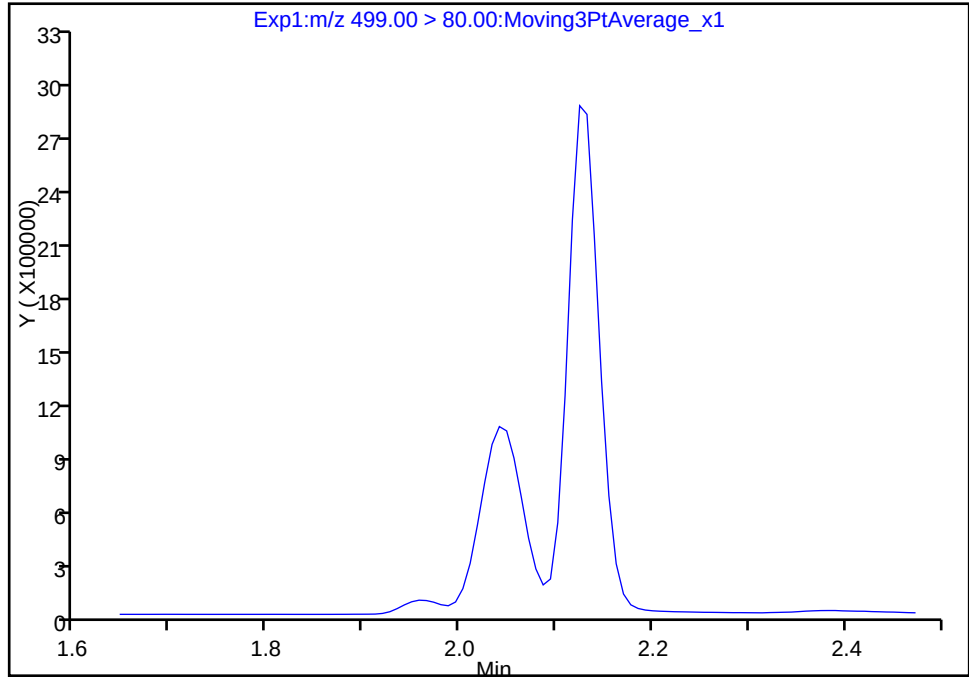
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Injection Date: 20-Oct-2017 21:04:03 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

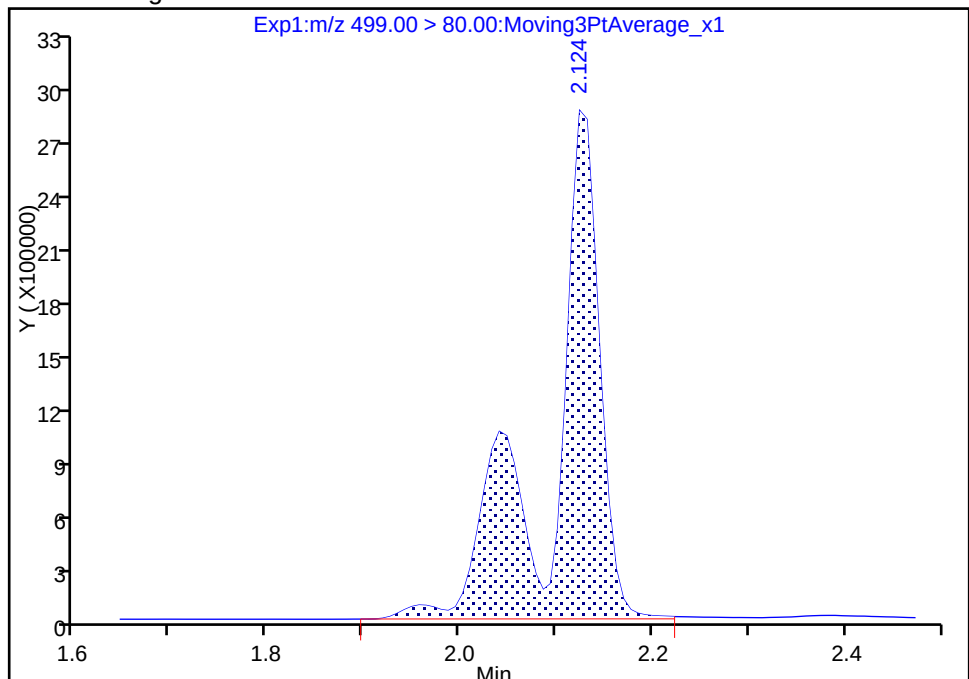
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results



RT: 2.12
Area: 10095244
Amount: 59.310853
Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 10:15:20

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

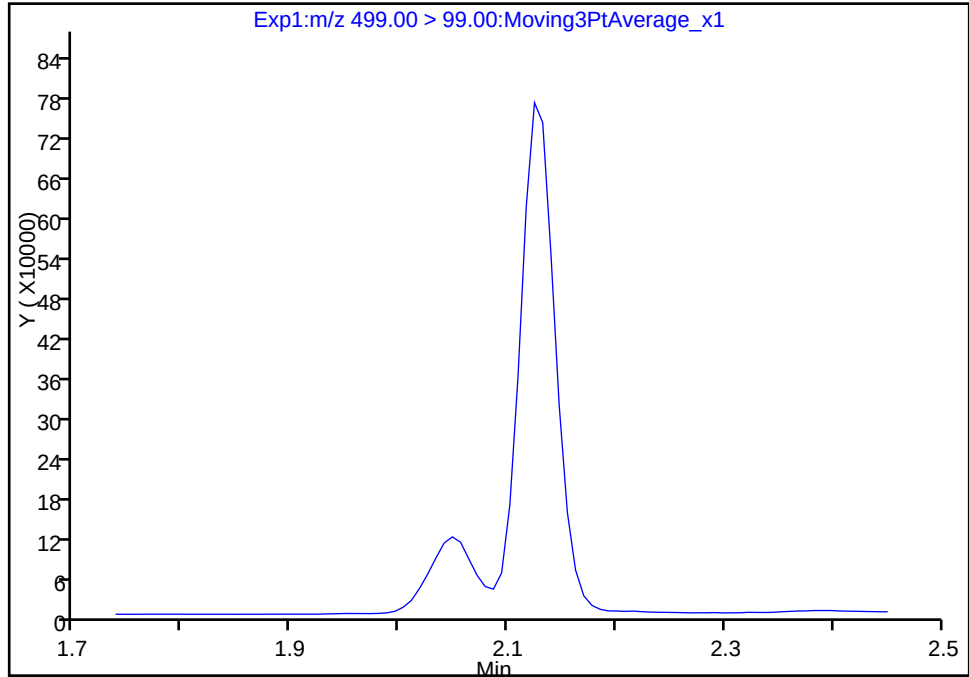
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_045.d
Injection Date: 20-Oct-2017 21:04:03 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

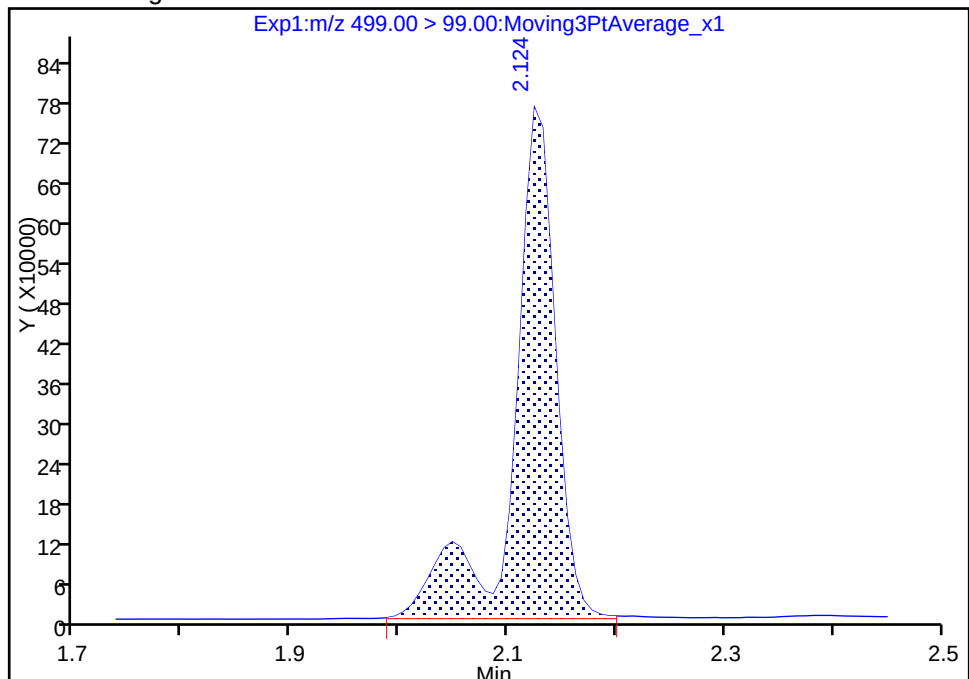
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 2086445
Amount: 59.310853
Amount Units: ng/ml



Reviewer: barnettj, 23-Oct-2017 10:15:42

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

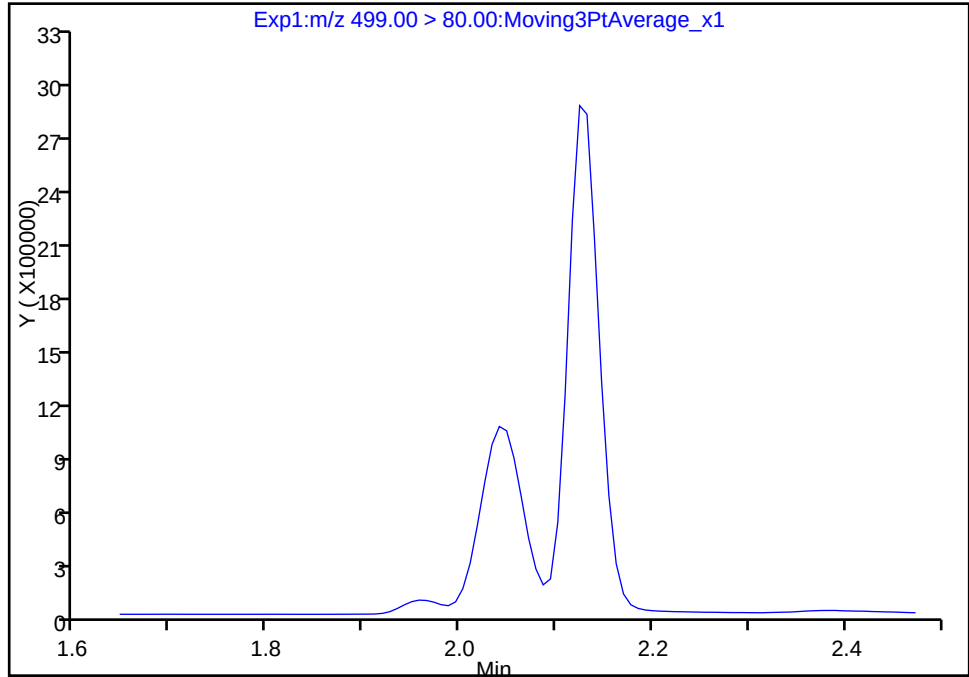
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_045.d
Injection Date: 20-Oct-2017 21:04:03 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

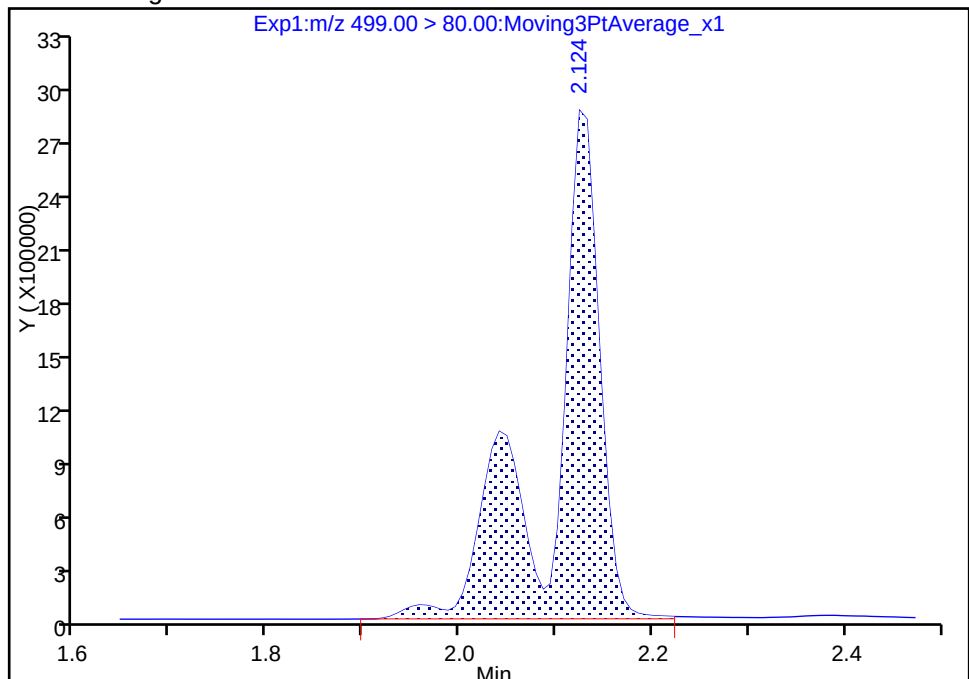
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 10095244
Amount: 59.310853
Amount Units: ng/ml



Reviewer: barnettj, 23-Oct-2017 10:15:42

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Lab Sample ID: CCV 320-190444/13 Calibration Date: 10/20/2017 22:00
 Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19
 Lab File ID: 2017.10.20_537A_057.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.218		50.4	45.0	12.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	1.015		5.39	5.00	7.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.777		16.3	15.0	8.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9311		10.1	10.0	1.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9347		20.1	20.0	0.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6224		10.0	10.0	0.0	30.0
13C2 PFHxA	Ave	1.172	1.281		10.9	10.0	9.3	30.0
13C2 PFDA	Ave	0.5578	0.5826		10.4	10.0	4.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Lab Sample ID: CCV 320-190445/13 Calibration Date: 10/20/2017 22:00
 Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19
 Lab File ID: 2017.10.20_537A_057.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.218		50.4	45.0	12.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	1.015		5.39	5.00	7.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.777		16.3	15.0	8.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9311		10.1	10.0	1.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9347		20.1	20.0	0.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6224		10.0	10.0	0.0	30.0
13C2 PFHxA	Ave	1.172	1.281		10.9	10.0	9.3	30.0
13C2 PFDA	Ave	0.5578	0.5826		10.4	10.0	4.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_057.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 20-Oct-2017 22:00:54 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*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:59:31 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:22:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	10214829	50.4		5719	
298.90 > 99.00	1.419	1.402	0.017	1.000	7398428		1.38(0.00-0.00)	5412	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.524	0.016	1.000	2339012	10.9		8325	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.668	0.024	1.000	4968197	16.3		4010	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.668	0.024	1.000	927304	5.39		176	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.855	0.019		1826407	10.0		5426	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.856	0.026	1.000	1702037	10.1		35.2	
413.00 > 169.00	1.882	1.856	0.026	1.000	890198		1.91(0.00-0.00)	2522	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		5345335	28.7		5620	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.116	0.016	1.000	1136879	10.0		104	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.117	0.007	1.000	3484969	20.1		580	M
499.00 > 99.00	2.124	2.117	0.007	1.000	723610		4.82(0.00-0.00)	320	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	1064046	10.4		4913	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L3_00023

Amount Added: 1.00

Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_057.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 20-Oct-2017 22:00:54 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*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:59:31 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:22:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	10214829	50.4		5719	
298.90 > 99.00	1.419	1.402	0.017	1.000	7398428		1.38(0.00-0.00)	5412	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.524	0.016	1.000	2339012	10.9		8325	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.668	0.024	1.000	4968197	16.3		4010	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.668	0.024	1.000	927304	5.39		176	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.855	0.019		1826407	10.0		5426	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.856	0.026	1.000	1702037	10.1		35.2	
413.00 > 169.00	1.882	1.856	0.026	1.000	890198		1.91(0.00-0.00)	2522	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		5345335	28.7		5620	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.116	0.016	1.000	1136879	10.0		104	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.117	0.007	1.000	3484969	20.1		580	M
499.00 > 99.00	2.124	2.117	0.007	1.000	723610		4.82(0.00-0.00)	320	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	1064046	10.4		4913	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L3_00023

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_057.d

Injection Date: 20-Oct-2017 22:00:54

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

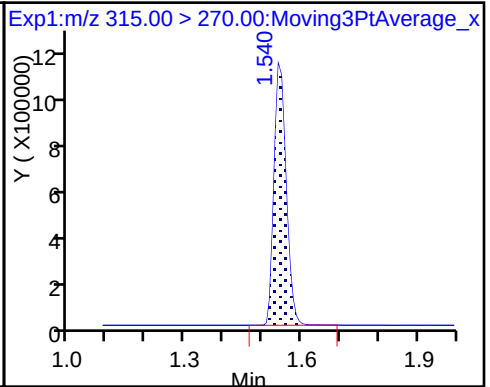
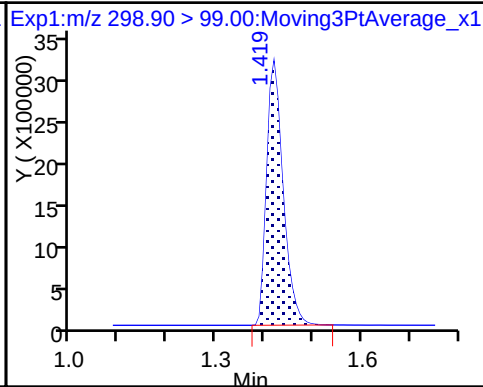
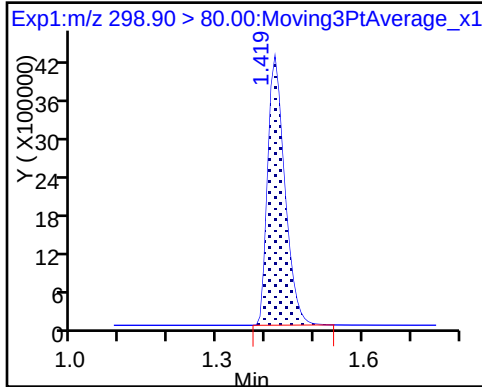
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

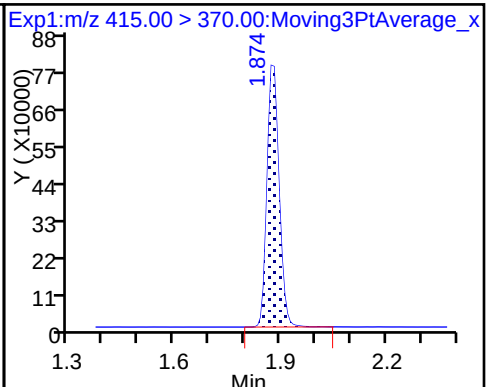
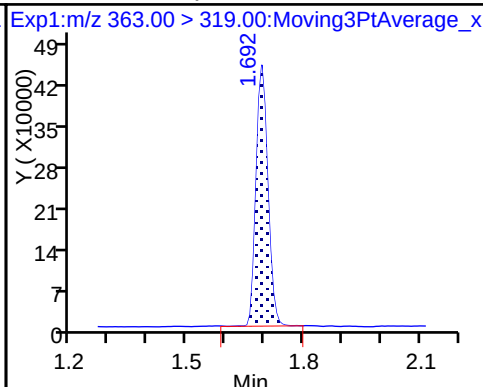
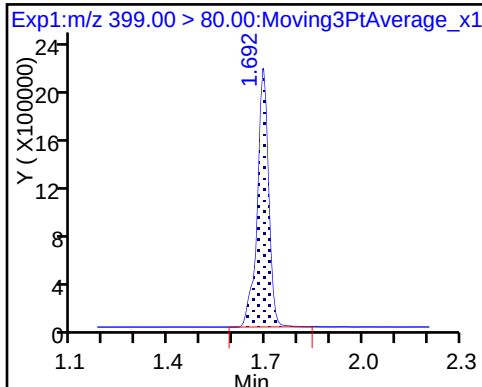
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

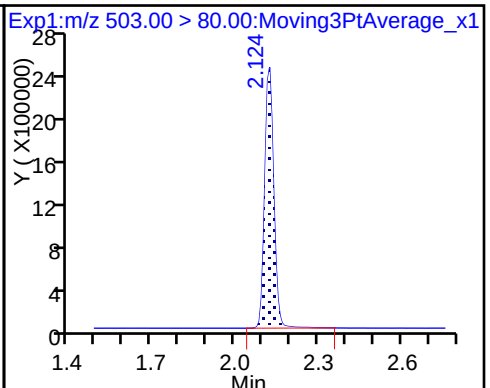
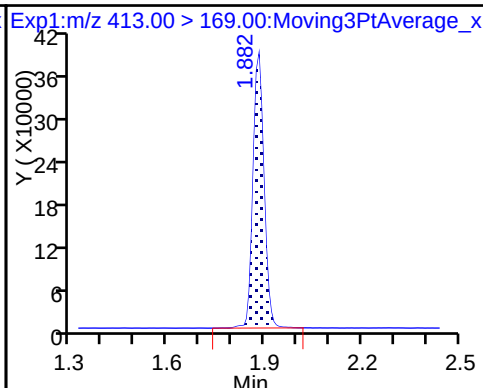
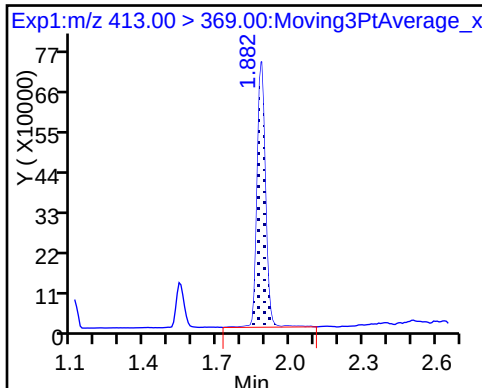
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

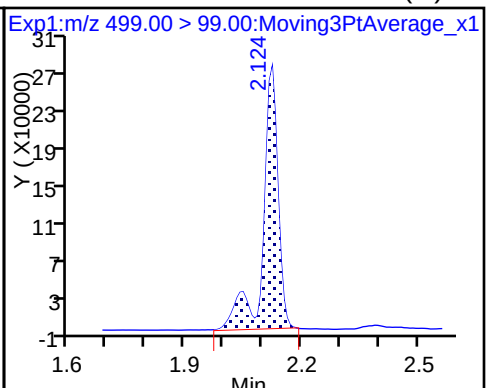
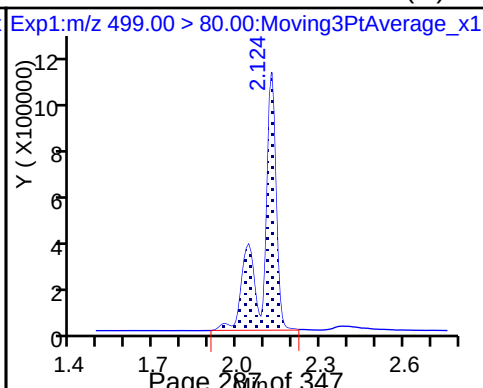
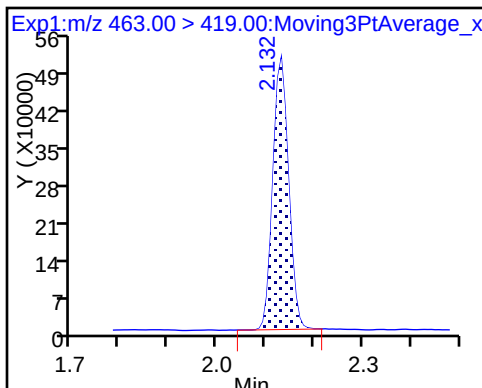
* 7 13C4 PFOS



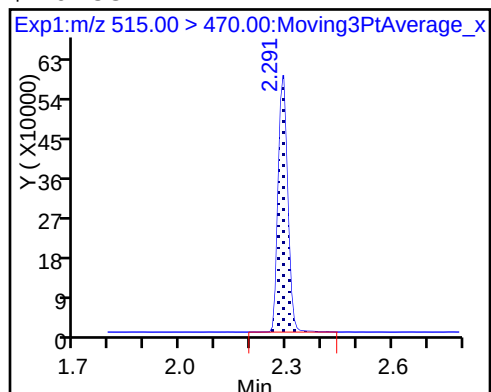
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_057.d

Injection Date: 20-Oct-2017 22:00:54

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

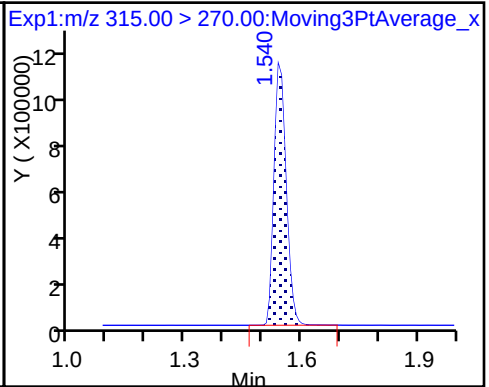
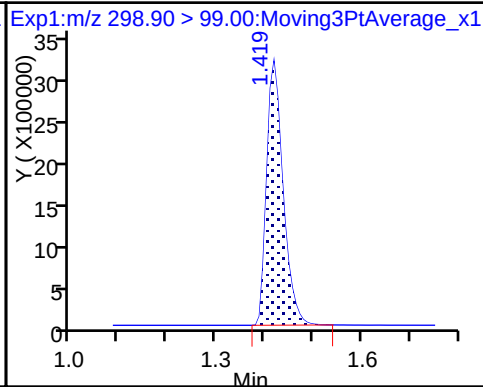
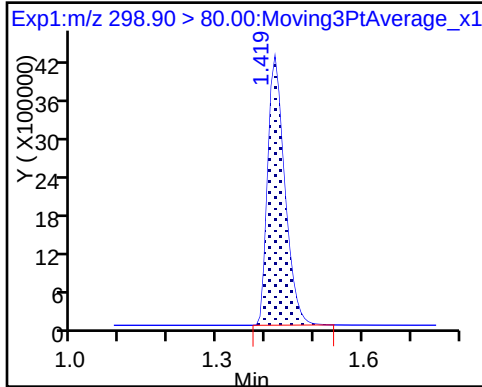
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

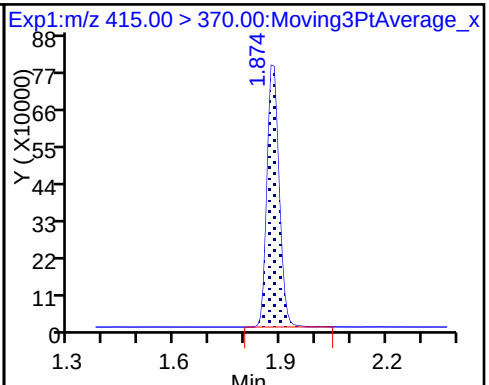
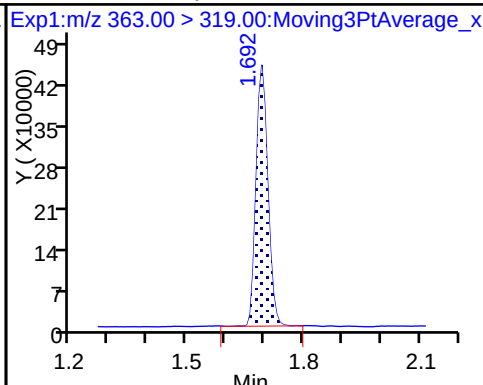
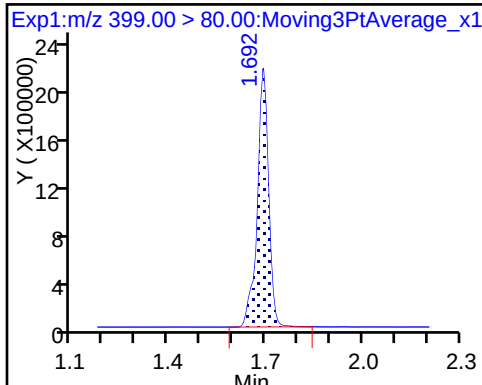
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

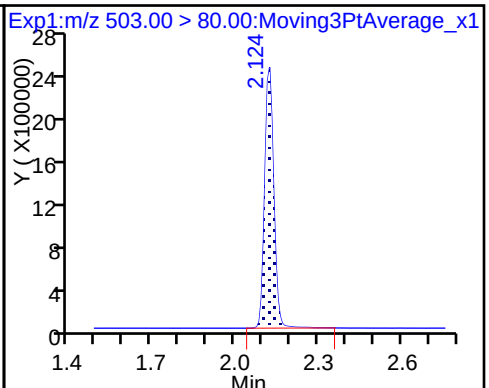
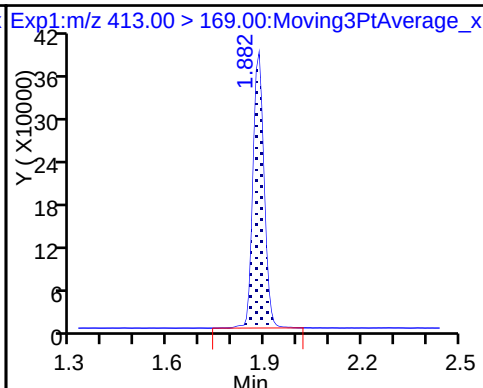
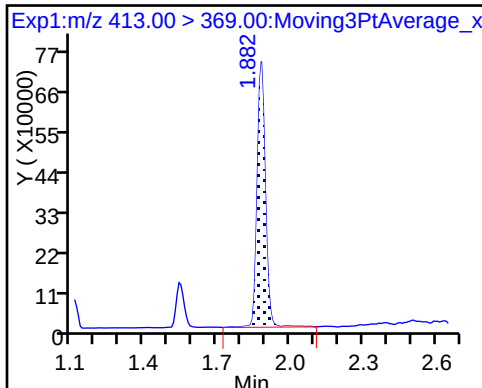
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

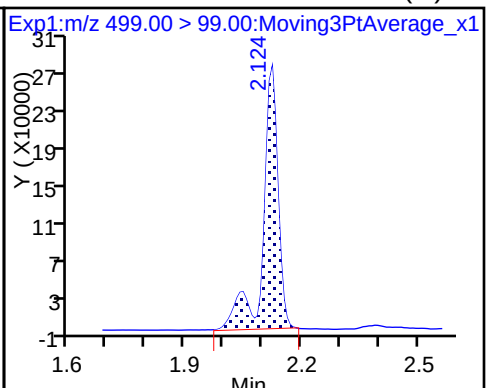
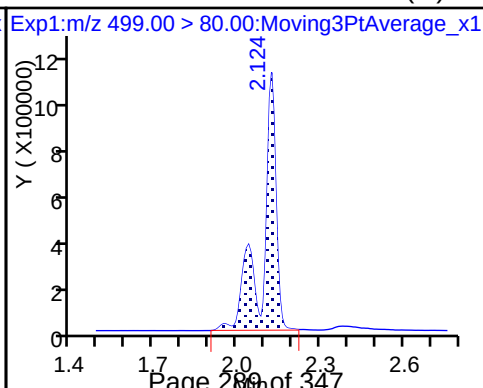
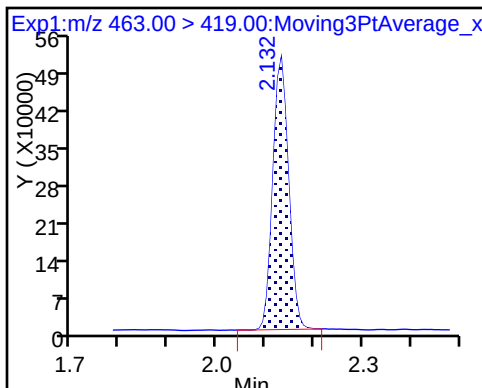
* 7 13C4 PFOS



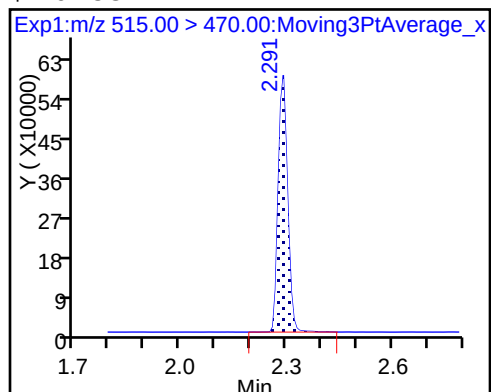
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento

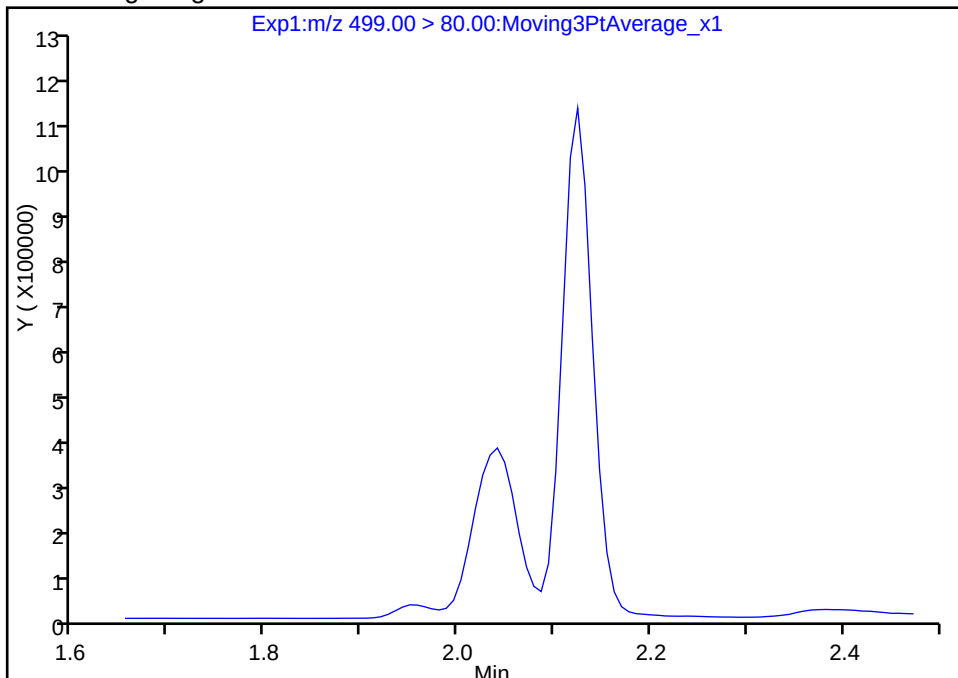
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Injection Date: 20-Oct-2017 22:00:54 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

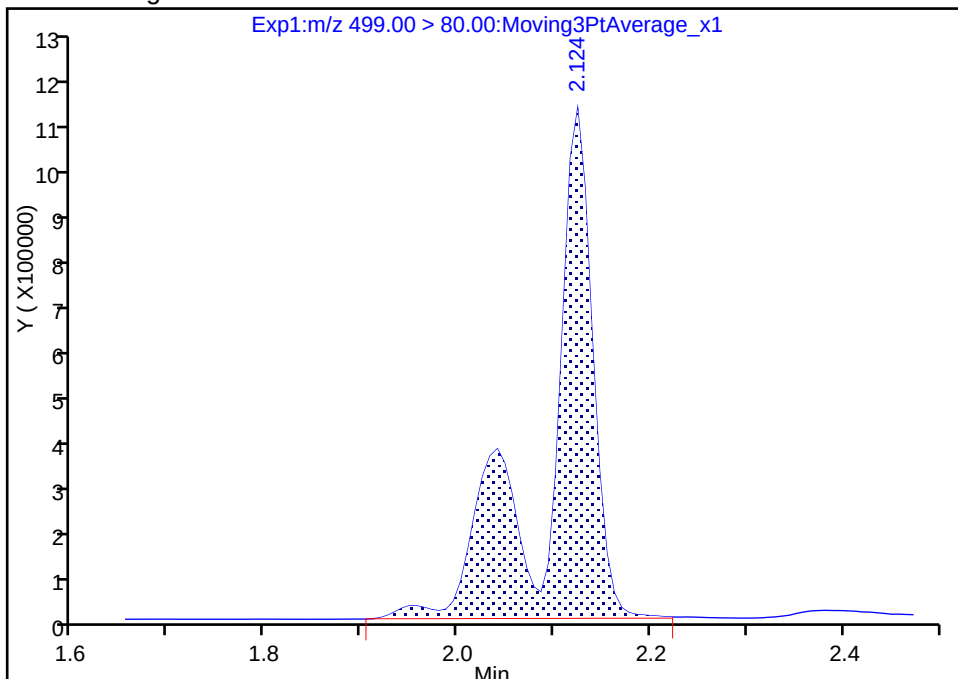
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results



RT: 2.12
Area: 3484969
Amount: 20.069056
Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 10:21:54

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

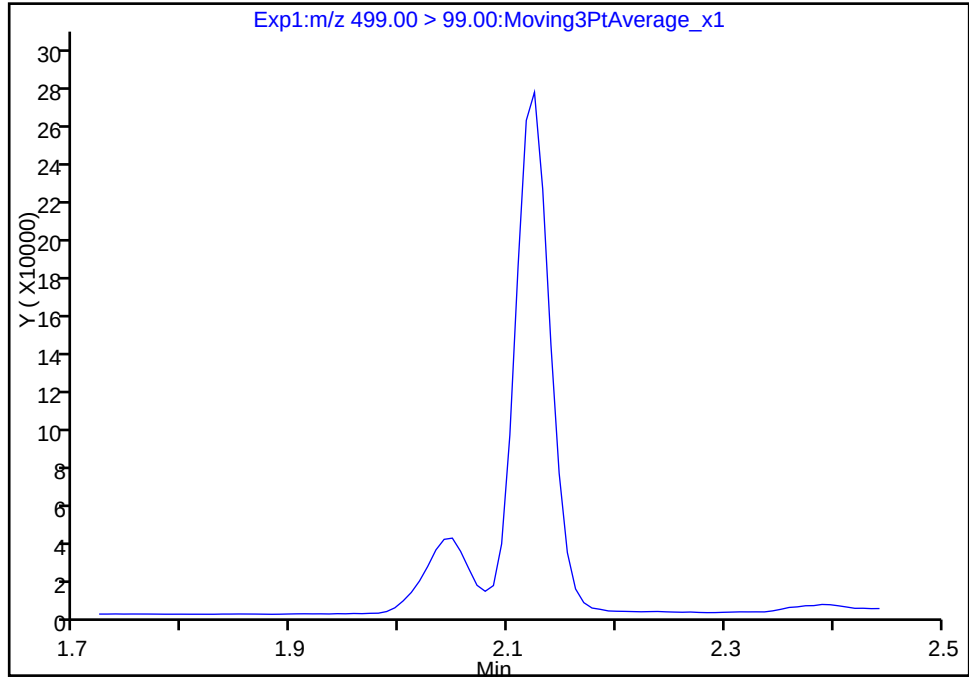
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_057.d
Injection Date: 20-Oct-2017 22:00:54 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

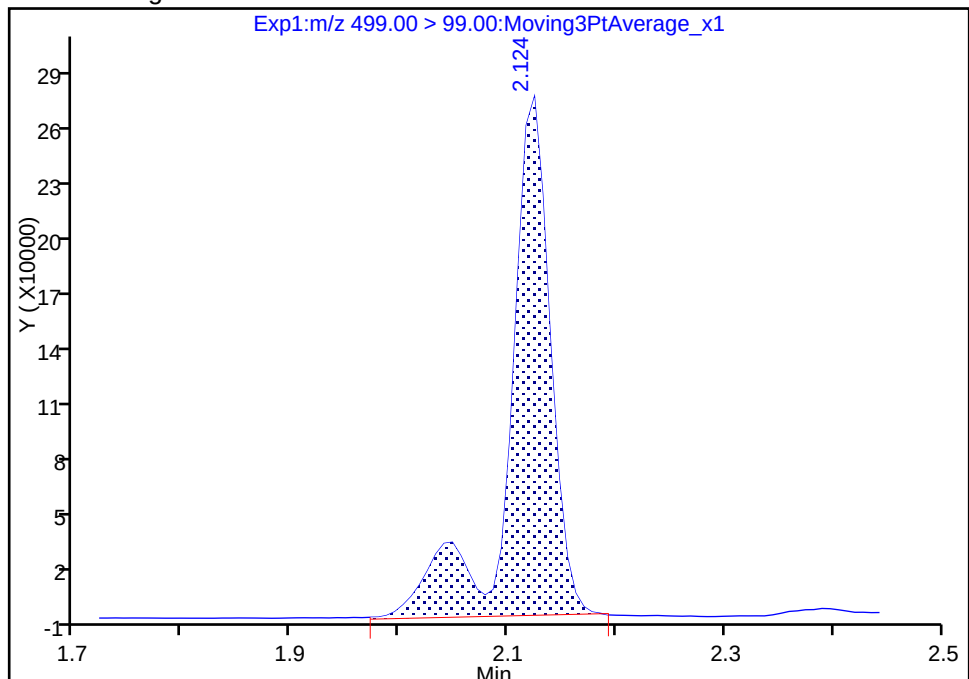
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 723610
Amount: 20.069056
Amount Units: ng/ml



Reviewer: barnettj, 23-Oct-2017 10:22:12

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

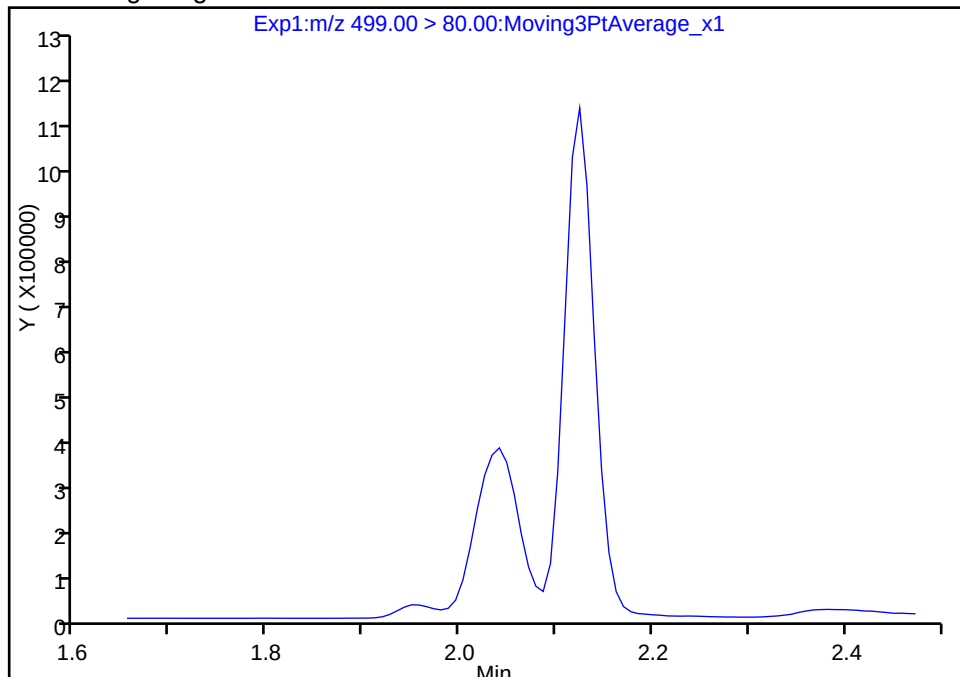
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Injection Date: 20-Oct-2017 22:00:54 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

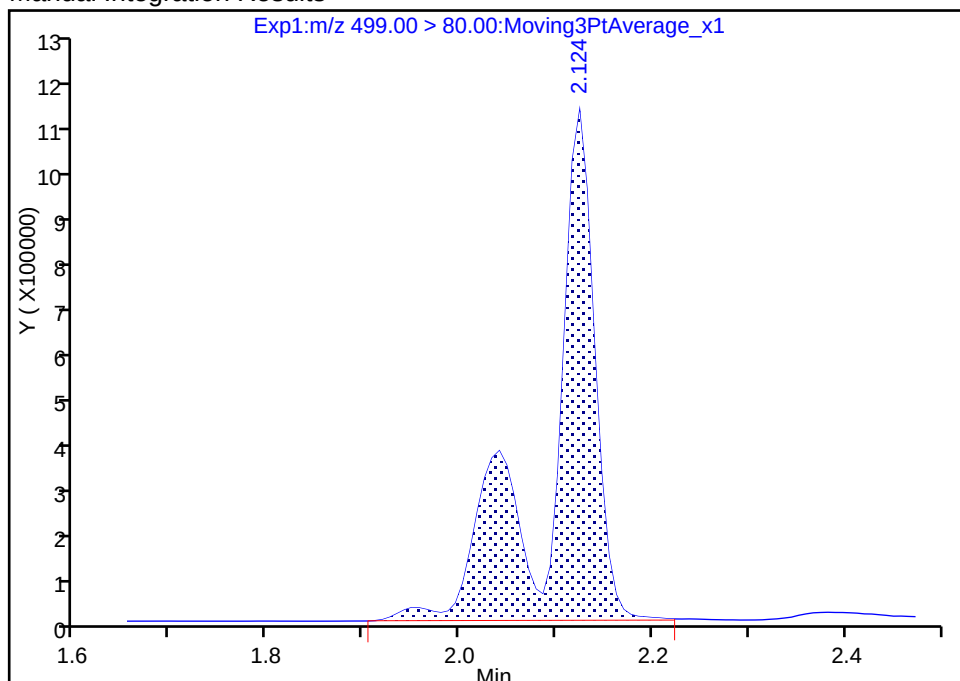
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 3484969
Amount: 20.069056
Amount Units: ng/ml



Reviewer: barnettj, 23-Oct-2017 10:22:12

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

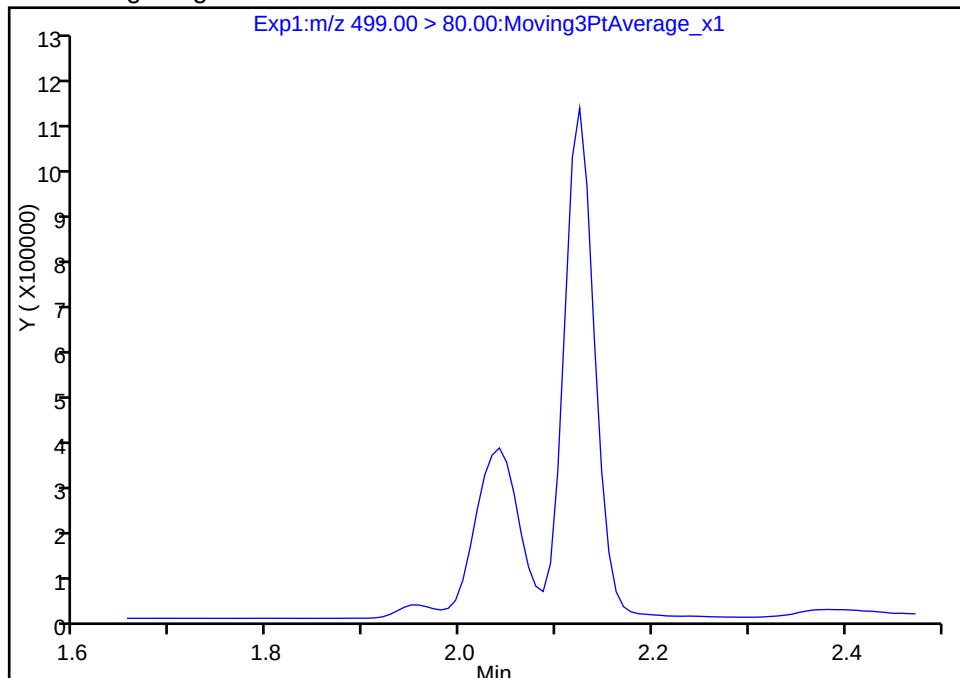
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_057.d
Injection Date: 20-Oct-2017 22:00:54 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

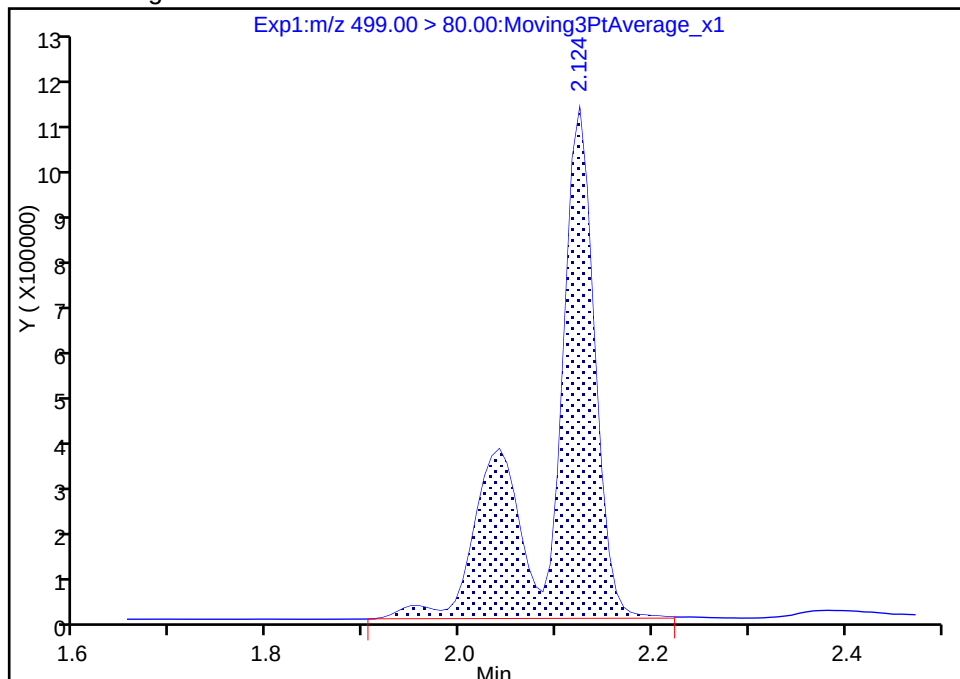
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 3484969
Amount: 20.069056
Amount Units: ng/ml



Reviewer: barnettj, 23-Oct-2017 10:21:54

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

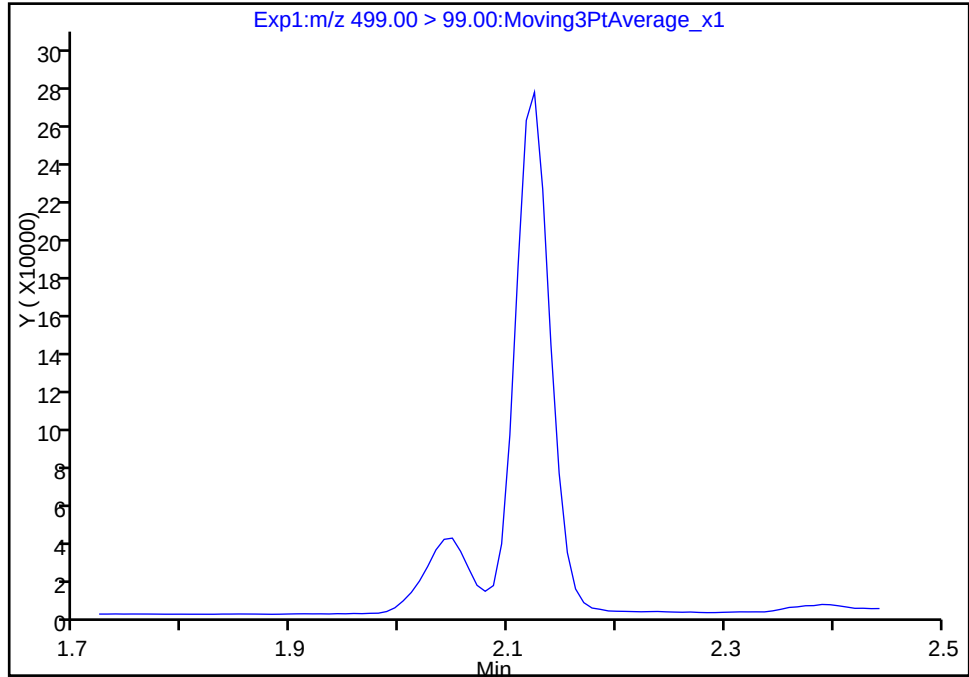
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_057.d
Injection Date: 20-Oct-2017 22:00:54 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

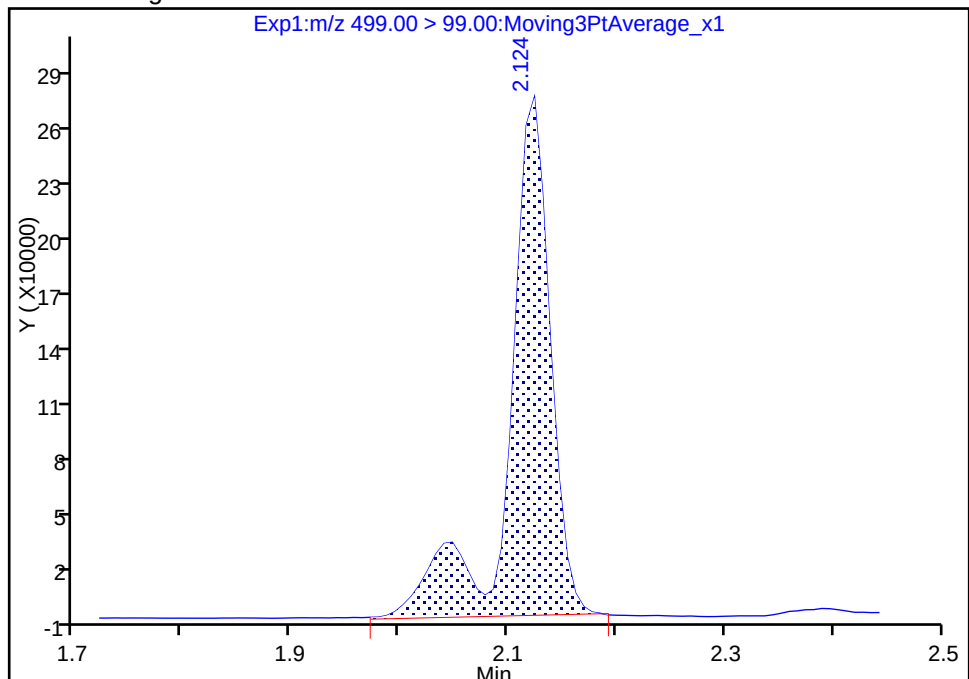
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 723610
Amount: 20.069056
Amount Units: ng/ml



Reviewer: barnettj, 23-Oct-2017 10:22:12

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

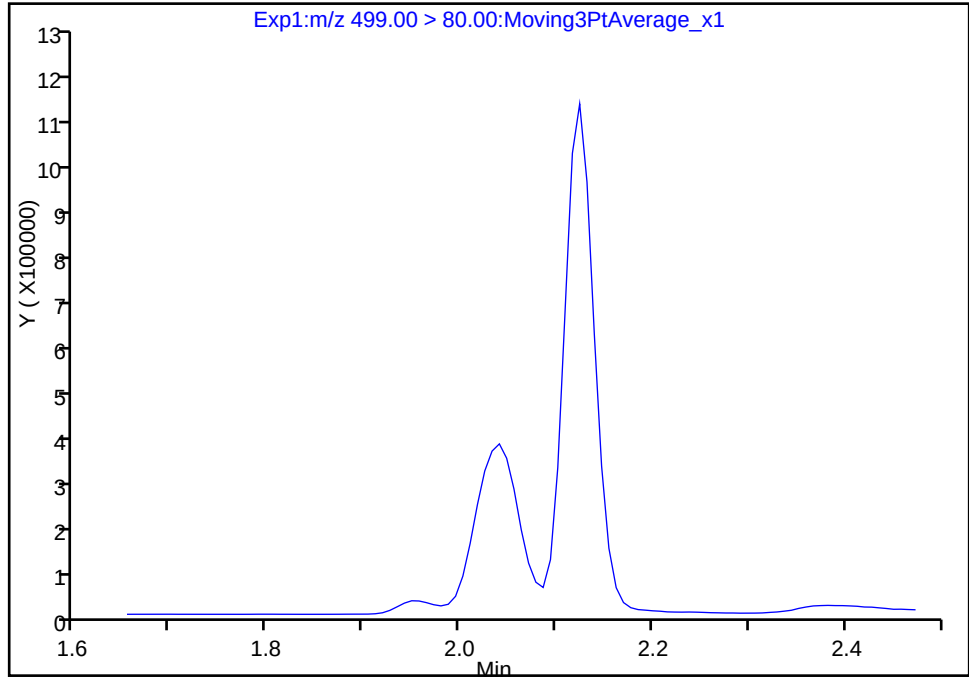
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Injection Date: 20-Oct-2017 22:00:54 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

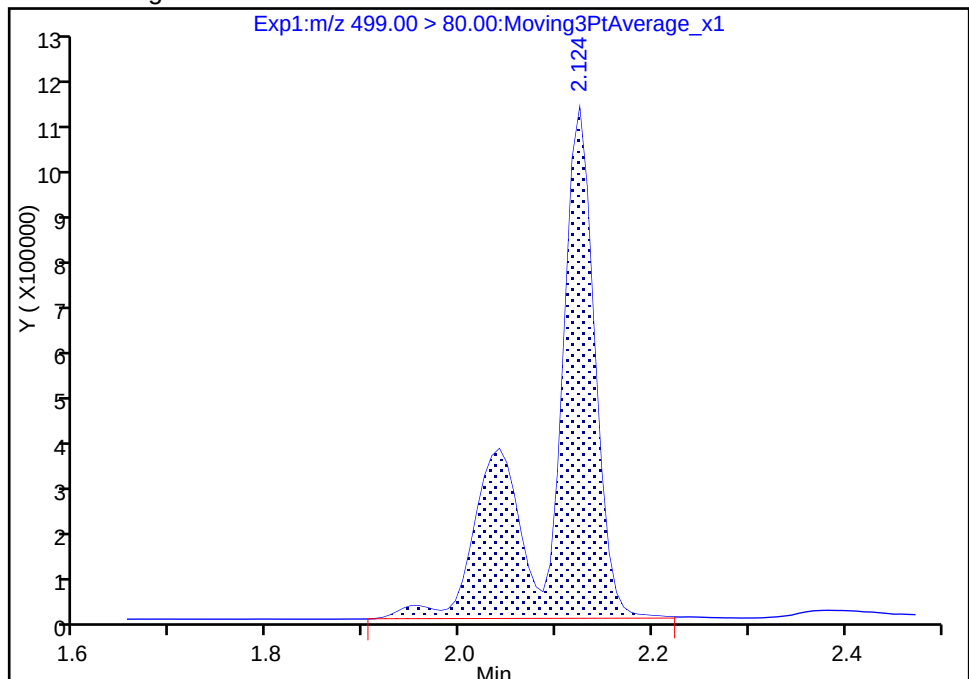
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 3484969
Amount: 20.069056
Amount Units: ng/ml



Reviewer: barnettj, 23-Oct-2017 10:22:12

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Lab Sample ID: CCV 320-190445/22 Calibration Date: 10/20/2017 22:43
 Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19
 Lab File ID: 2017.10.20_537A_066.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9420		153	135	13.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9682		15.4	15.0	2.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.613		44.3	45.0	-1.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9144		29.9	30.0	-0.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9355		60.3	60.0	0.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6209		30.0	30.0	-0.2	30.0
13C2 PFHxA	Ave	1.172	1.297		11.1	10.0	10.7	30.0
13C2 PFDA	Ave	0.5578	0.5872		10.5	10.0	5.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_066.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 20-Oct-2017 22:43:34 ALS Bottle#: 5 Worklist Smp#: 22
 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*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:59:54 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:26:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	23224835	153.1		4717	
298.90 > 99.00	1.419	1.402	0.017	1.000	17769061		1.31(0.00-0.00)	5192	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.524	0.024	1.000	2283522	11.1		8583	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.668	0.024	1.000	13261562	44.3		5144	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.668	0.024	1.000	2557474	15.4		455	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.855	0.027		1760502	10.0		6197	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.856	0.026	1.000	4833616	29.9		108	
413.00 > 169.00	1.882	1.856	0.026	1.000	2670092		1.81(0.00-0.00)	5205	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		5237323	28.7		5672	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.116	0.016	1.000	3279638	30.0		313	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.117	0.007	1.000	10252303	60.3		1229	M
499.00 > 99.00	2.124	2.117	0.007	1.000	2135921		4.80(0.00-0.00)	755	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	1033688	10.5		5587	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L5_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_066.d

Injection Date: 20-Oct-2017 22:43:34

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

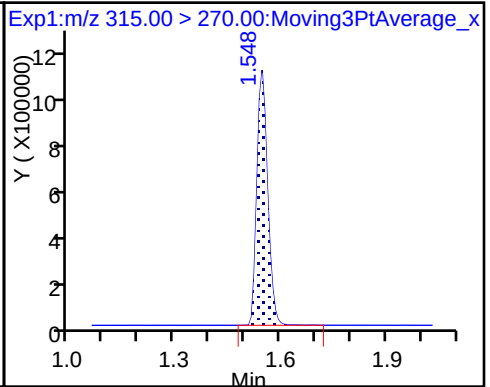
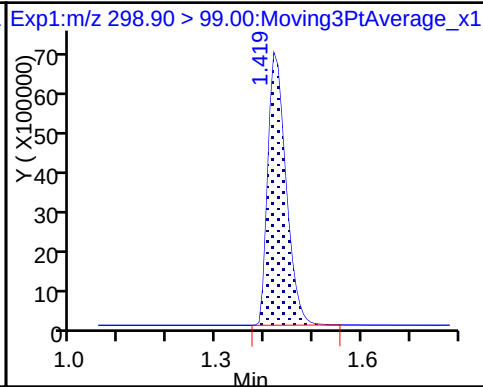
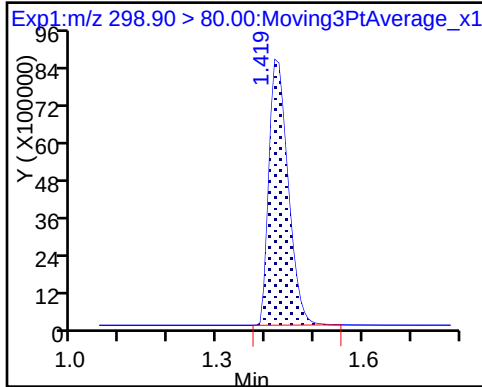
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

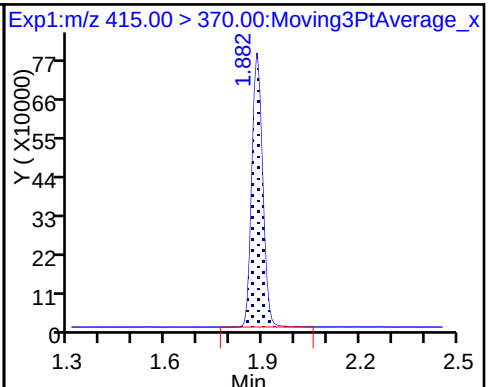
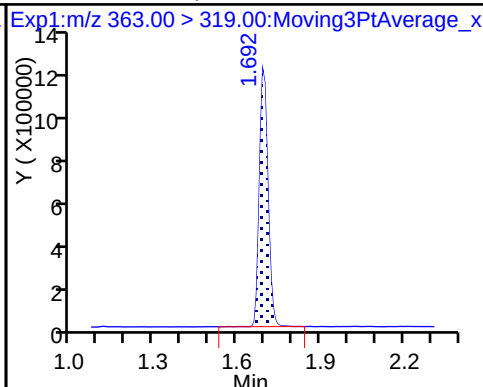
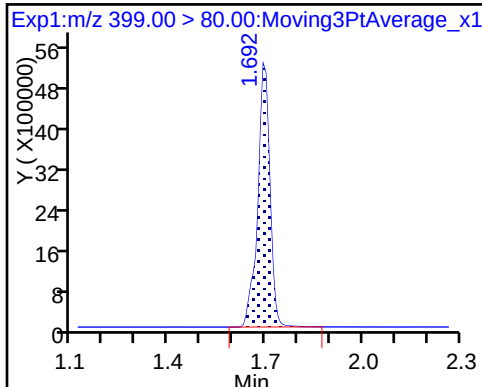
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

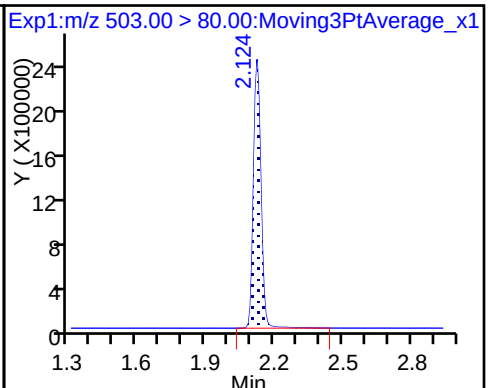
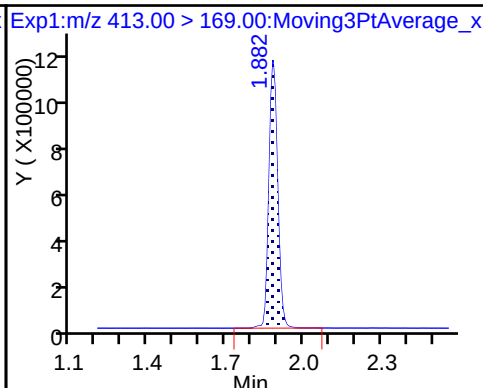
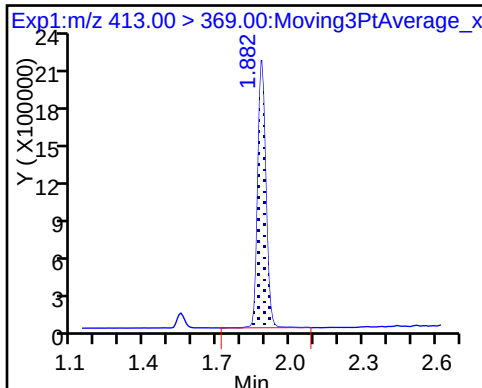
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

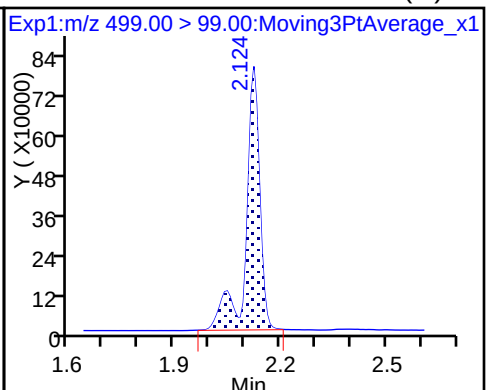
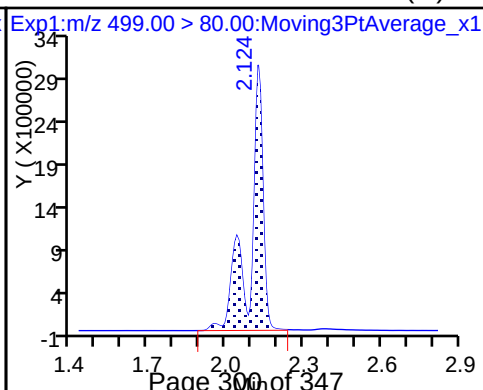
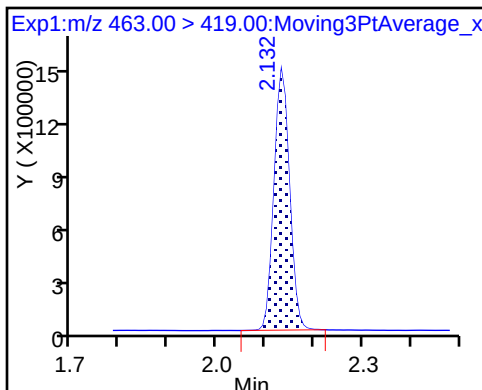
* 7 13C4 PFOS



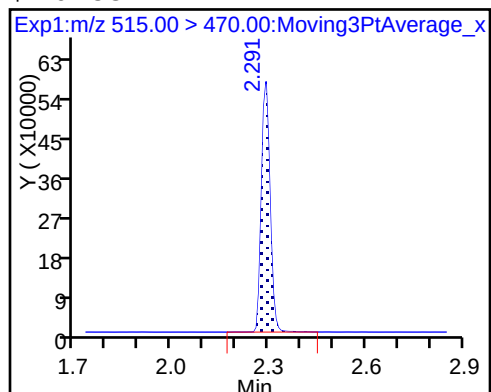
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento

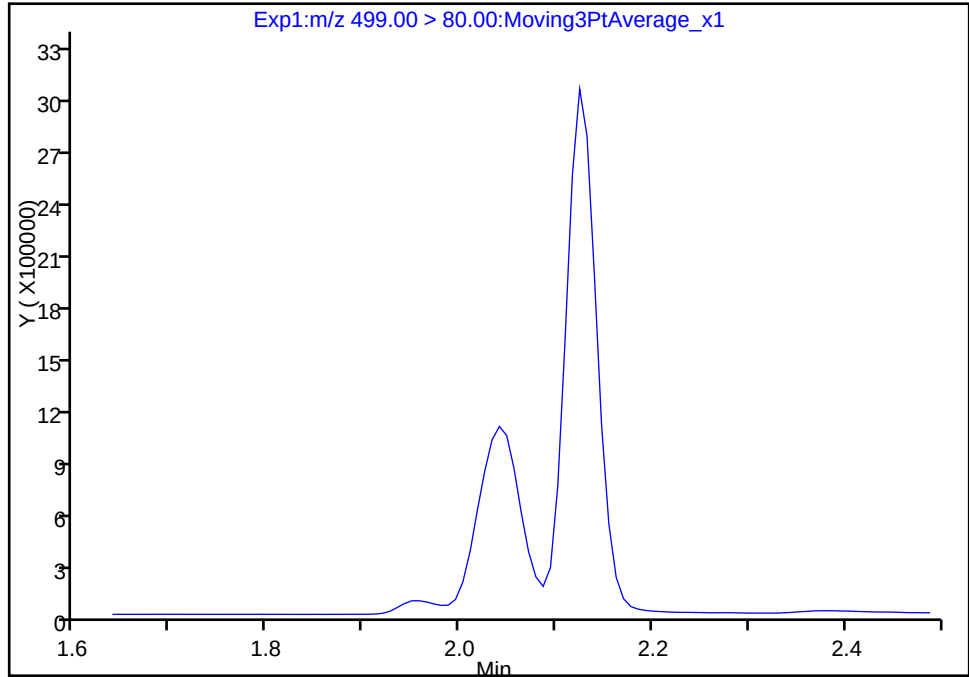
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_066.d
Injection Date: 20-Oct-2017 22:43:34 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

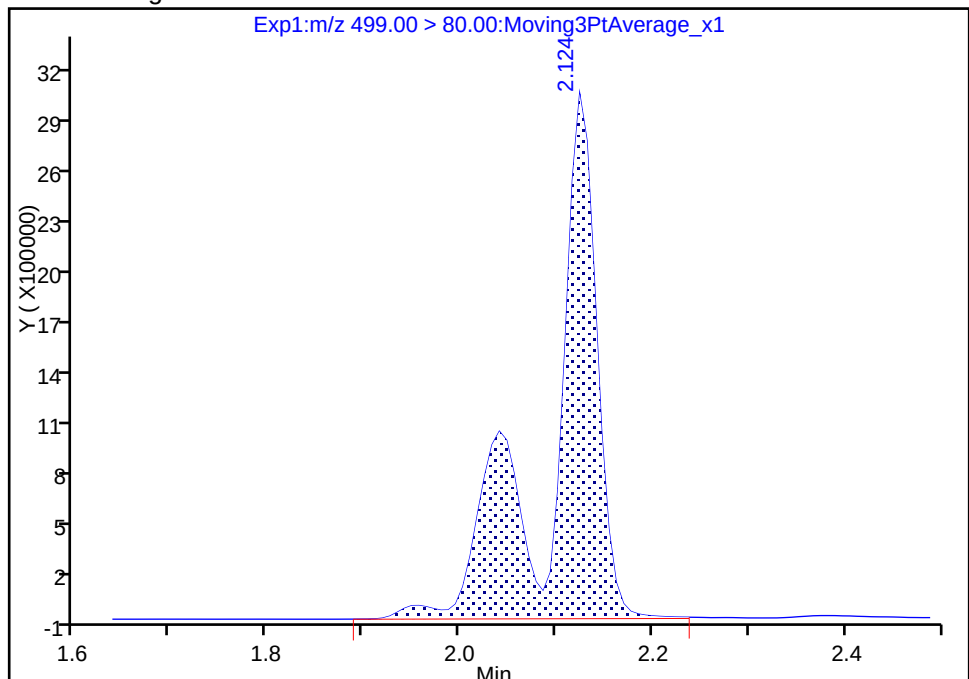
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results



RT: 2.12
Area: 10252303
Amount: 60.258045
Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 10:25:54

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

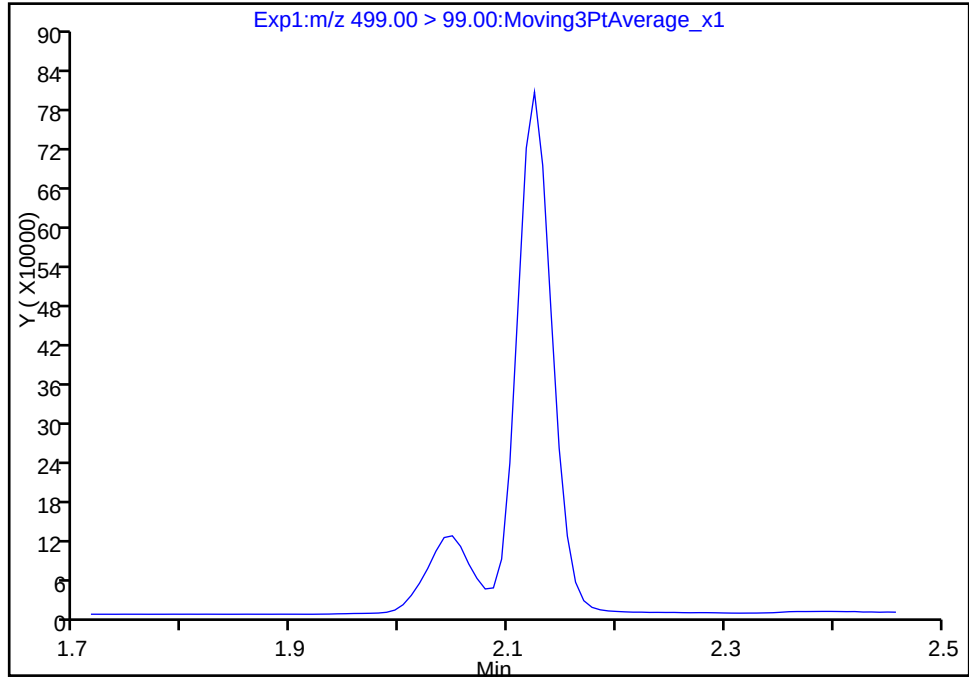
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Injection Date: 20-Oct-2017 22:43:34 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

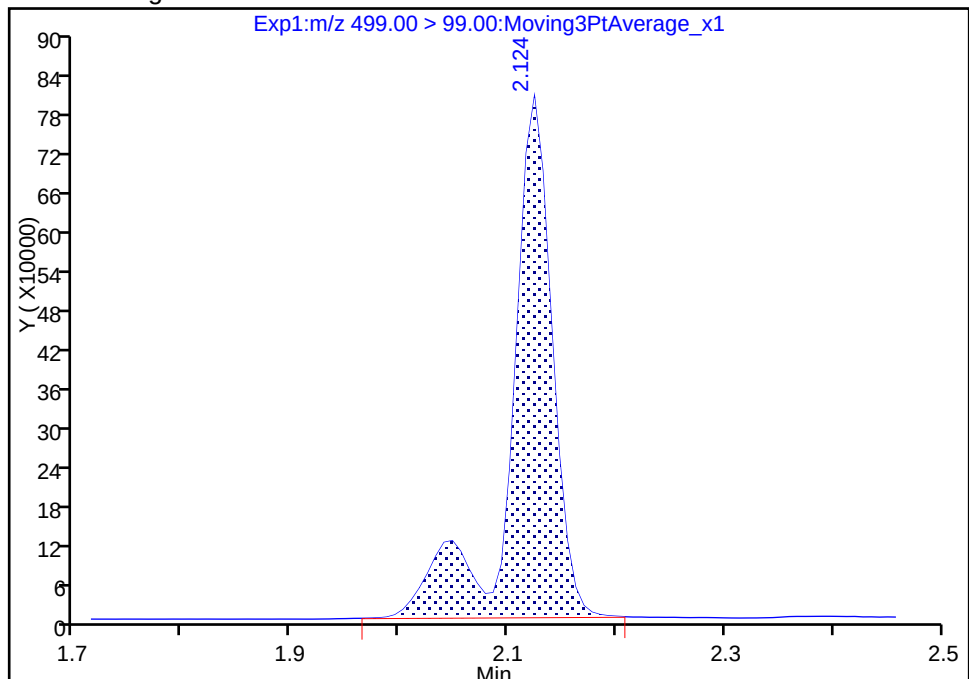
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 2135921
Amount: 60.258045
Amount Units: ng/ml



Reviewer: barnettj, 23-Oct-2017 10:26:13

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

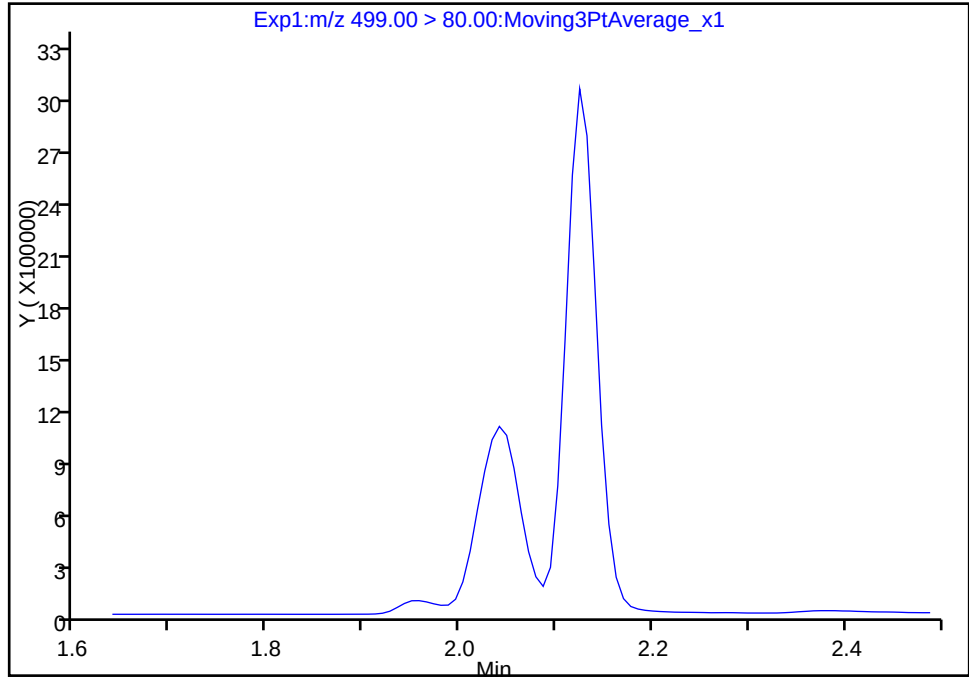
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Injection Date: 20-Oct-2017 22:43:34 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

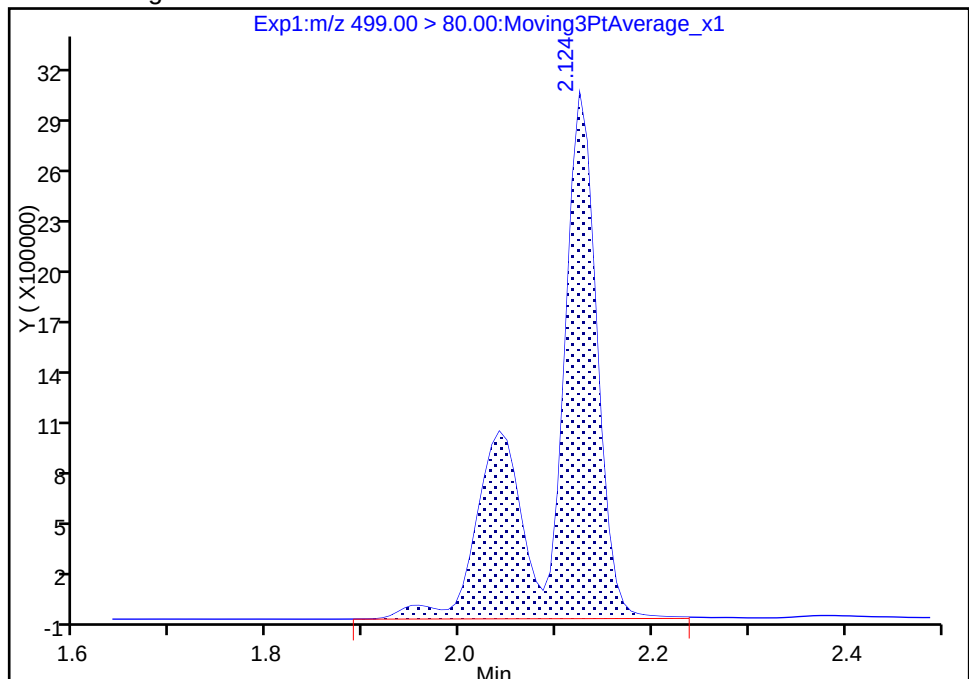
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 10252303
Amount: 60.258045
Amount Units: ng/ml



Reviewer: barnettj, 23-Oct-2017 10:26:13

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-189331/1-A
 Matrix: Water Lab File ID: 2017.10.20_537A_047.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 250 (mL) Date Analyzed: 10/20/2017 21:13
 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.: 190444 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	101		70-130
STL00996	13C2 PFDA	105		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_047.d
 Lims ID: MB 320-189331/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 20-Oct-2017 21:13:32 ALS Bottle#: 33 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-189331/1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK012

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.524	0.024	1.000	2091600	10.1		5955	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.855	0.027		1772538	10.0		4163	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		5264025	28.7		4574	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	1038064	10.5		5414	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_047.d

Injection Date: 20-Oct-2017 21:13:32

Instrument ID: A8_N

Lims ID: MB 320-189331/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 33

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

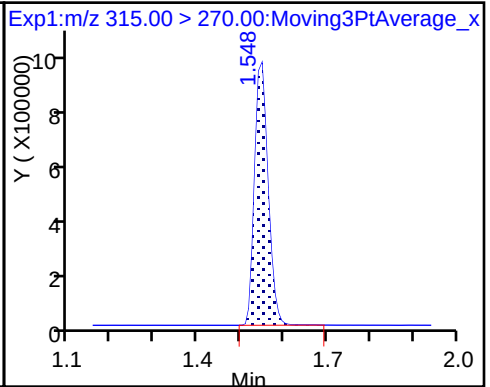
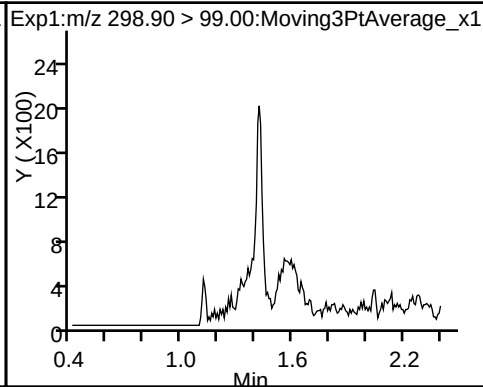
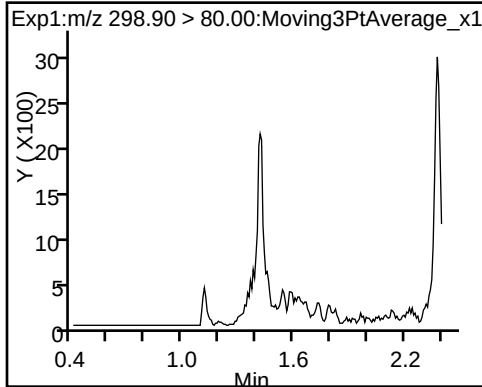
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

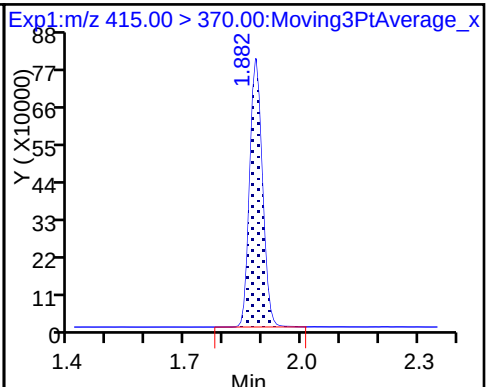
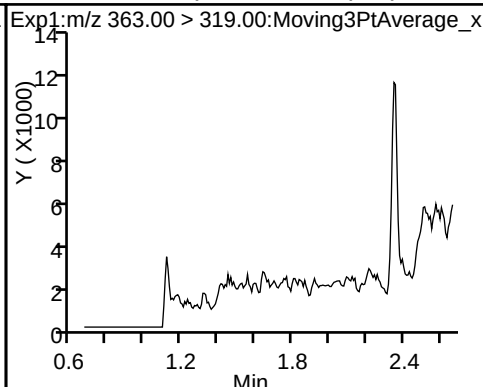
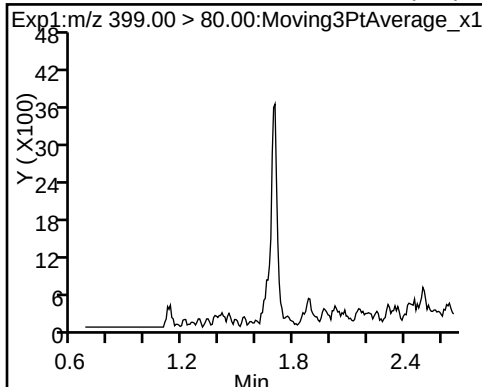
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

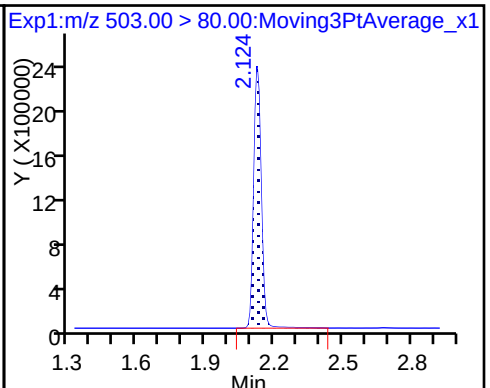
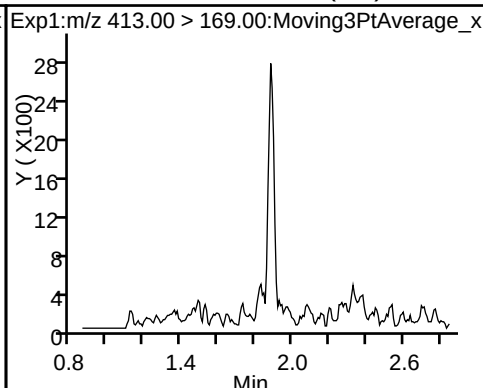
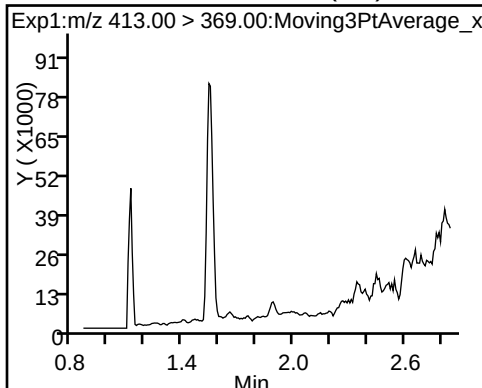
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

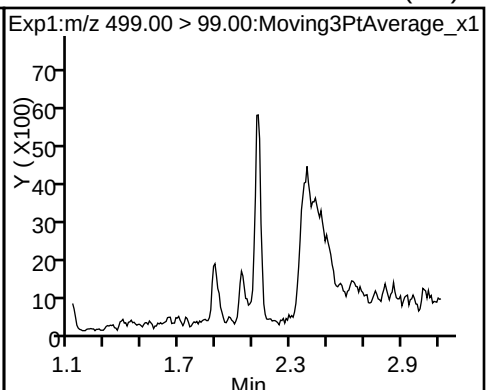
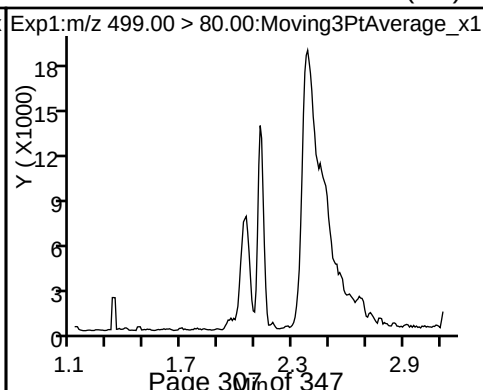
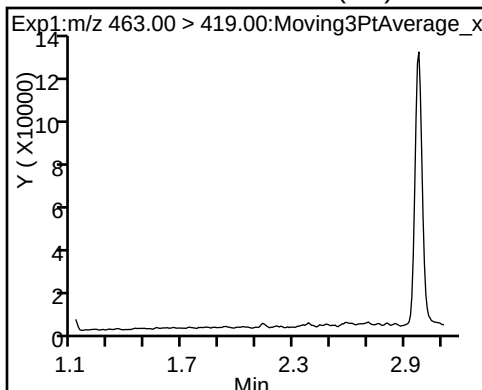
* 7 13C4 PFOS



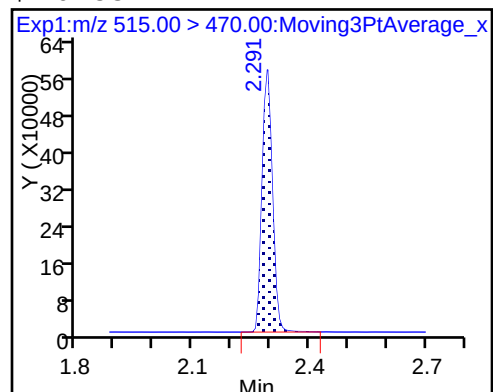
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_047.d
Lims ID: MB 320-189331/1-A
Client ID:
Sample Type: MB
Inject. Date: 20-Oct-2017 21:13:32 ALS Bottle#: 33 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-189331/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK012

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.1	100.70
\$ 10 13C2 PFDA	10.0	10.5	105.00

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-189331/2-A
 Matrix: Water Lab File ID: 2017.10.20_537A_048.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 250 (mL) Date Analyzed: 10/20/2017 21:18
 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.: 190444 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	130	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	71.9		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	69.0		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	106		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	36.0		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	327		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	114		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_048.d
 Lims ID: LCS 320-189331/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 20-Oct-2017 21:18:16 ALS Bottle#: 34 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-189331/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:16:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	14968968	81.9		4628	
298.90 > 99.00	1.419	1.402	0.017	1.000	10891614		1.37(0.00-0.00)	4419	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.524	0.024	1.000	1984684	9.97		6783	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.699	1.668	0.031	1.000	7881344	26.5		4348	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.699	1.668	0.031	1.000	1441712	9.01		242	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.855	0.027		1699695	10.0		4857	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.856	0.026	1.000	2810703	18.0		67.1	
413.00 > 169.00	1.882	1.856	0.026	1.000	1480812		1.90(0.00-0.00)	3414	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		5200651	28.7		4454	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.116	0.016	1.000	1823146	17.2		139	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.132	2.117	0.015	1.000	5500732	32.6		755	M
499.00 > 99.00	2.124	2.117	0.007	0.996	1169201		4.70(0.00-0.00)	481	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	1084051	11.4		5638	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_048.d

Injection Date: 20-Oct-2017 21:18:16

Instrument ID: A8_N

Lims ID: LCS 320-189331/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 34

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

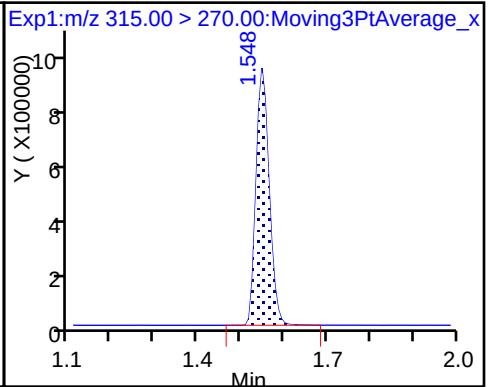
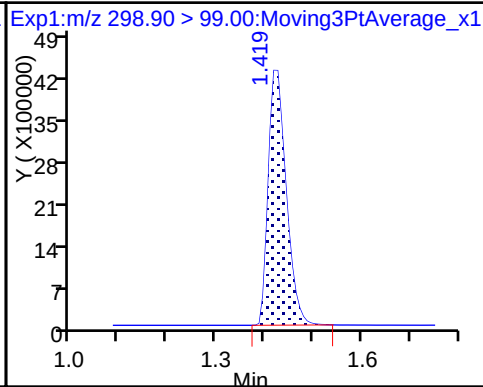
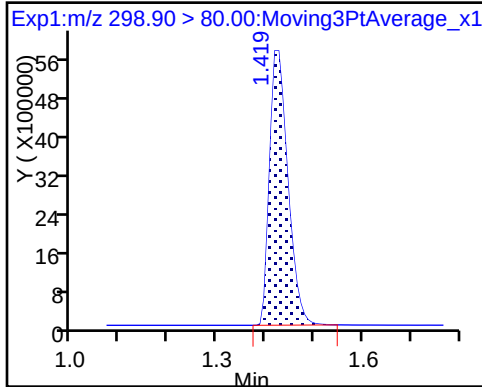
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

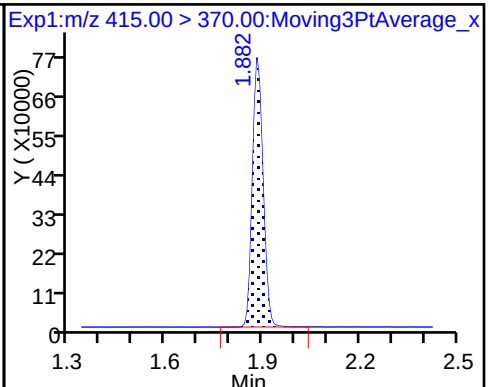
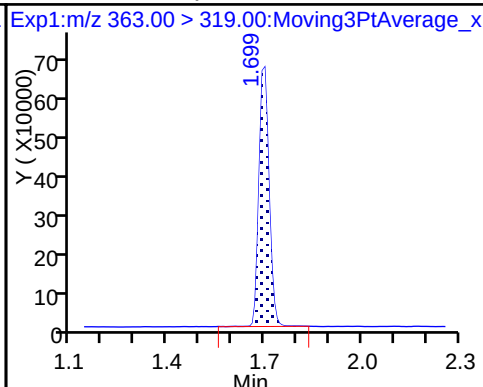
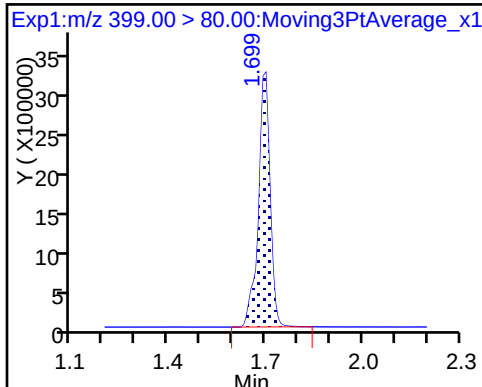
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

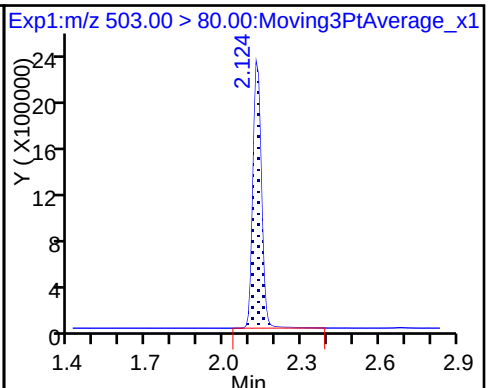
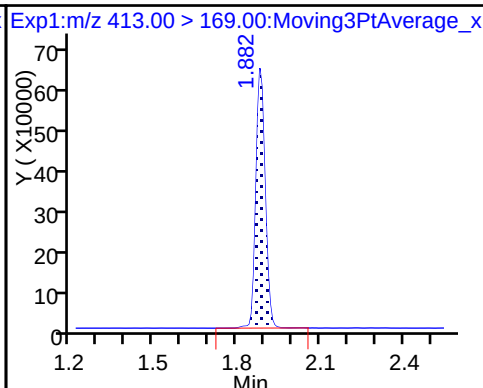
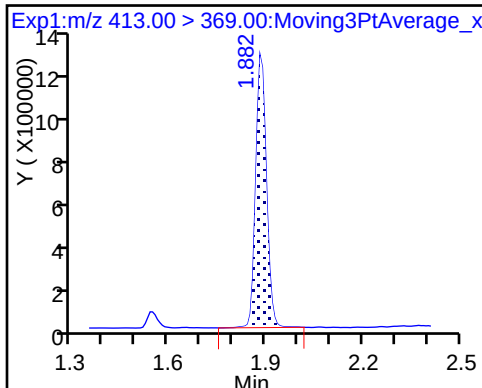
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

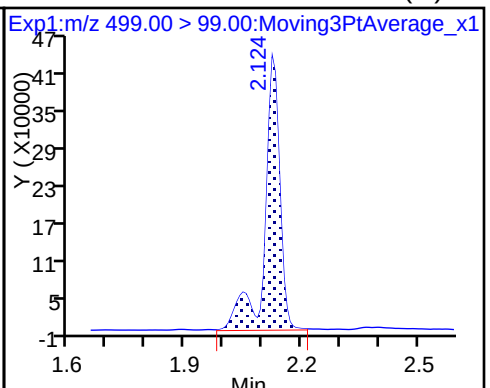
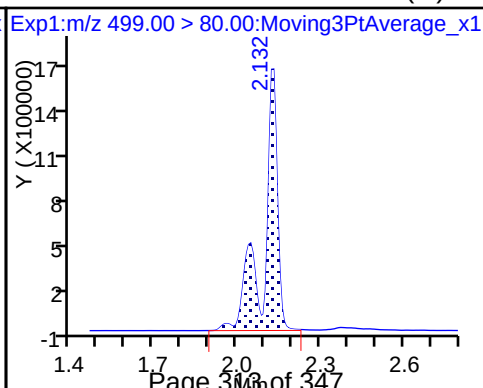
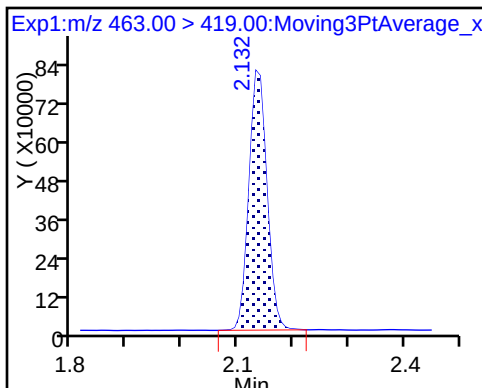
* 7 13C4 PFOS



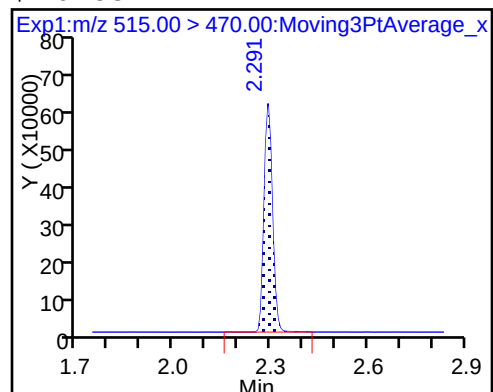
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_048.d
Lims ID: LCS 320-189331/2-A
Client ID:
Sample Type: LCS
Inject. Date: 20-Oct-2017 21:18:16 ALS Bottle#: 34 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-189331/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:16:57

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.97	99.65
\$ 10 13C2 PFDA	10.0	11.4	114.35

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_048.d

Injection Date: 20-Oct-2017 21:18:16

Instrument ID: A8_N

Lims ID: LCS 320-189331/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 34 Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

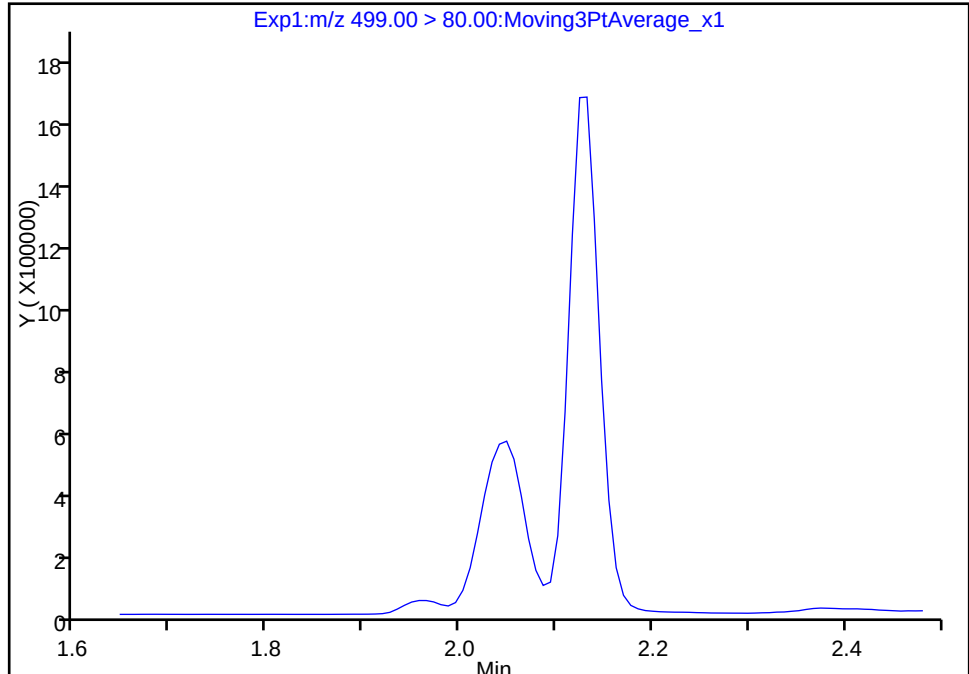
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

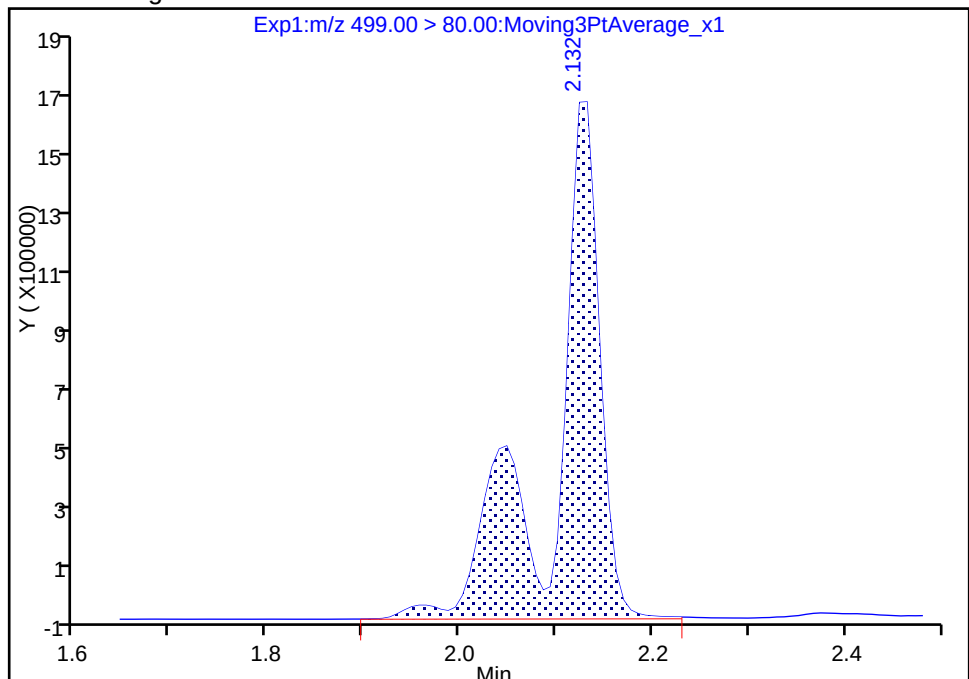
Not Detected

Expected RT: 2.12

Processing Integration Results



Manual Integration Results



RT: 2.13

Area: 5500732

Amount: 32.558601

Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 10:16:12

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

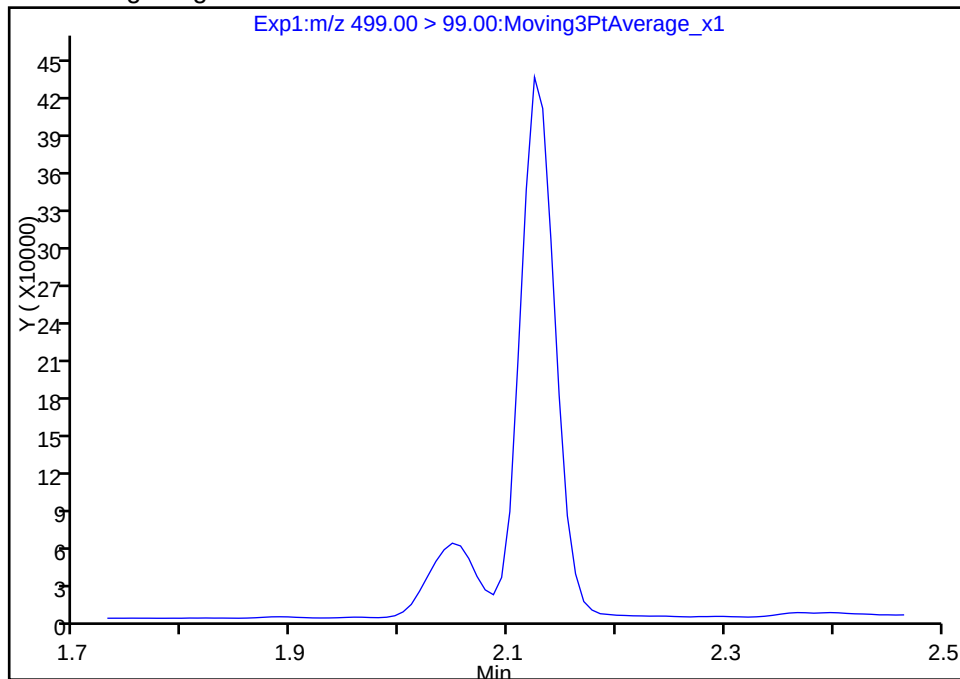
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_048.d
Injection Date: 20-Oct-2017 21:18:16 Instrument ID: A8_N
Lims ID: LCS 320-189331/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 34 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

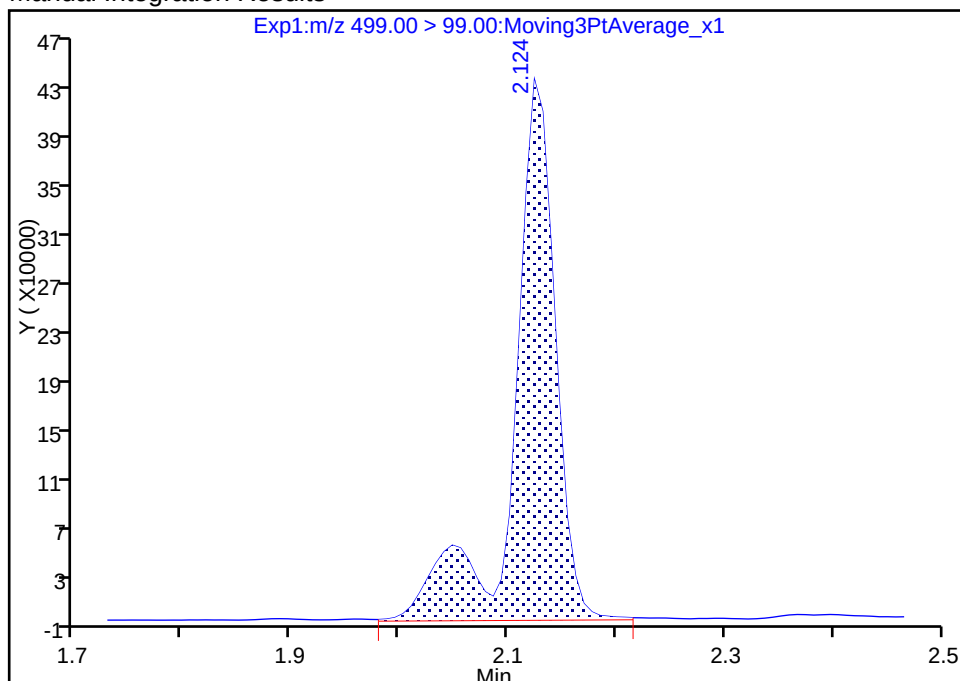
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 1169201
Amount: 32.558601
Amount Units: ng/ml



Reviewer: barnettj, 23-Oct-2017 10:16:33

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_048.d

Injection Date: 20-Oct-2017 21:18:16

Instrument ID: A8_N

Lims ID: LCS 320-189331/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 34

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

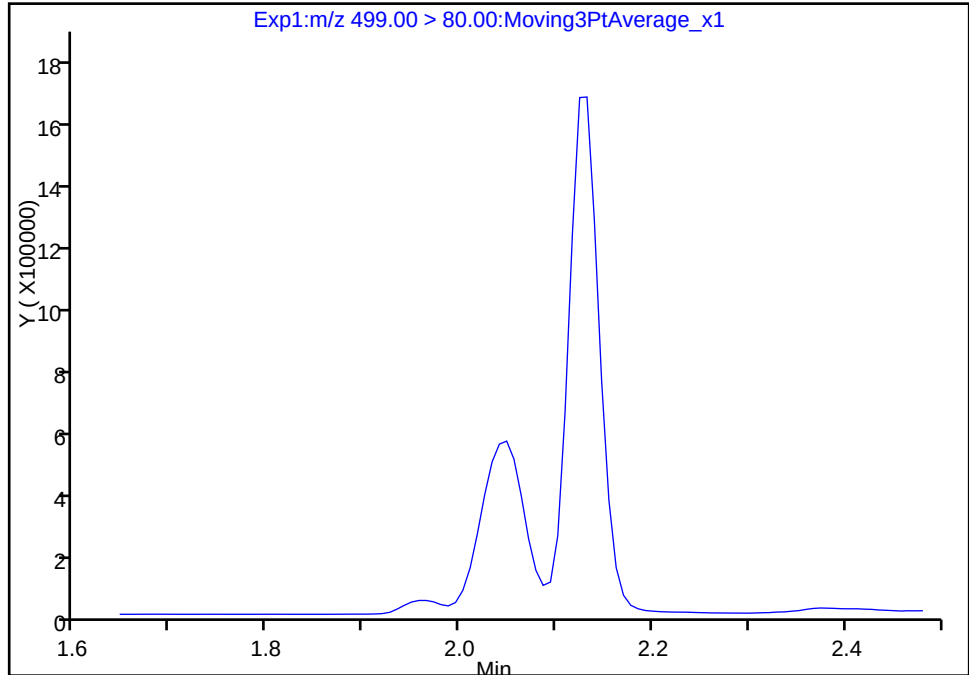
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

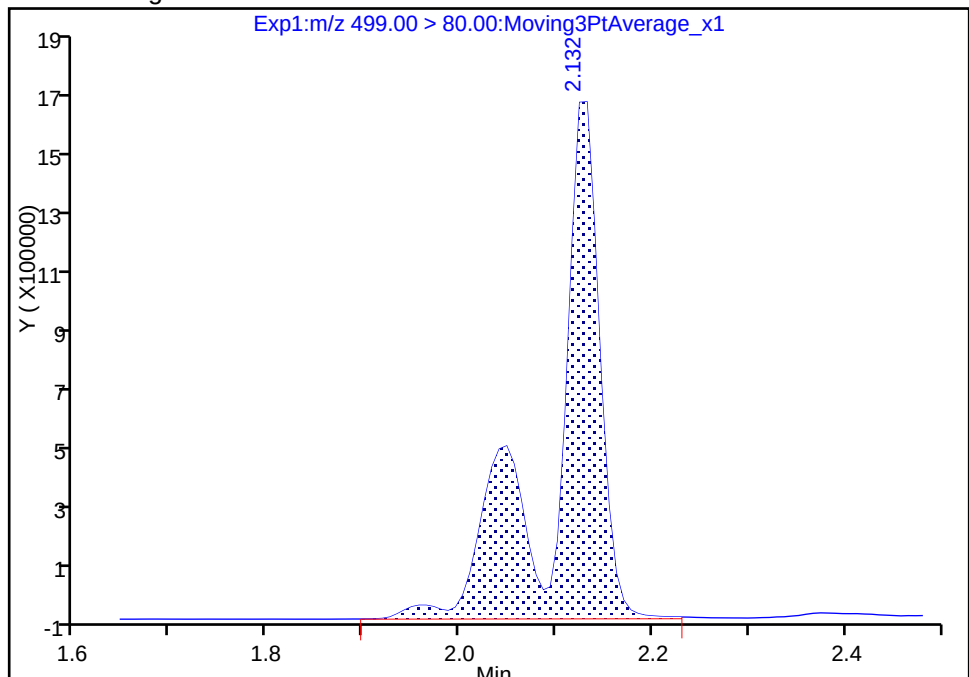
Not Detected

Expected RT: 2.12

Processing Integration Results



Manual Integration Results



RT: 2.13

Area: 5500732

Amount: 32.558601

Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 10:16:33

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-189331/3-A
 Matrix: Water Lab File ID: 2017.10.20_537A_049.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 250 (mL) Date Analyzed: 10/20/2017 21:23
 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.: 190444 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)	72.1		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	72.6		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	105		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	37.9		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	337		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		70-130
STL00996	13C2 PFDA	116		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_049.d
 Lims ID: LCSD 320-189331/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 20-Oct-2017 21:23:00 ALS Bottle#: 35 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-189331/3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:17:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	14792537	84.2		2822	
298.90 > 99.00	1.419	1.402	0.017	1.000	10869826		1.36(0.00-0.00)	2834	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.524	0.024	1.000	1902422	9.89		4474	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.668	0.024	1.000	7567918	26.4		2825	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.668	0.024	1.000	1463603	9.46		259	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.855	0.027		1642035	10.0		3496	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.856	0.026	1.000	2720430	18.0		67.7	
413.00 > 169.00	1.882	1.856	0.026	1.000	1462573		1.86(0.00-0.00)	2617	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		5027322	28.7		3203	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.116	0.016	1.000	1854495	18.2		107	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.117	0.007	1.000	5398747	33.1		662	M
499.00 > 99.00	2.124	2.117	0.007	1.000	1141581		4.73(0.00-0.00)	438	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.282	0.009	1.000	1061754	11.6		4940	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_049.d

Injection Date: 20-Oct-2017 21:23:00

Instrument ID: A8_N

Lims ID: LCSD 320-189331/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 35

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

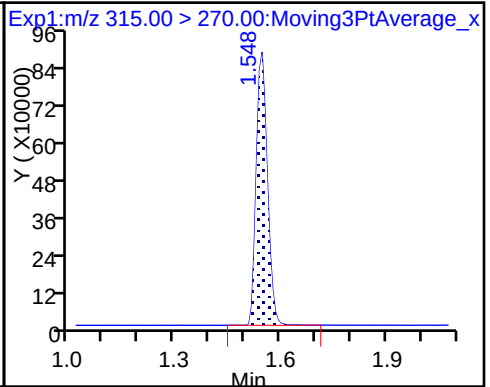
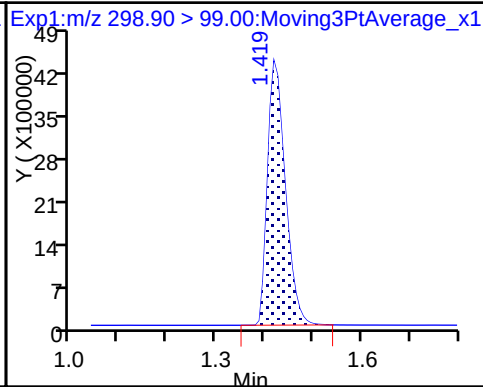
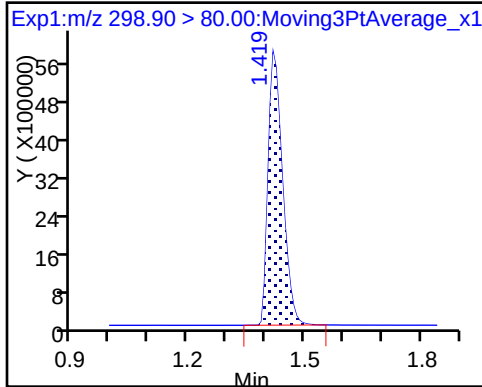
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

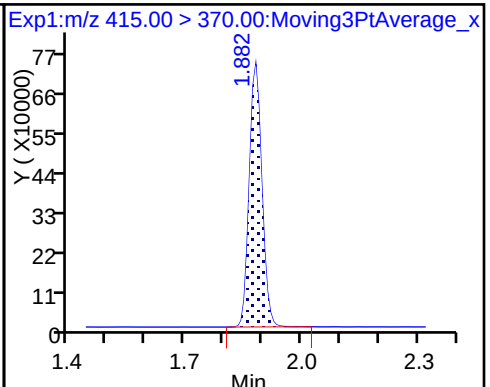
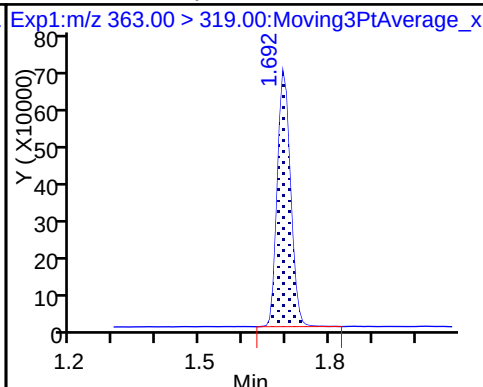
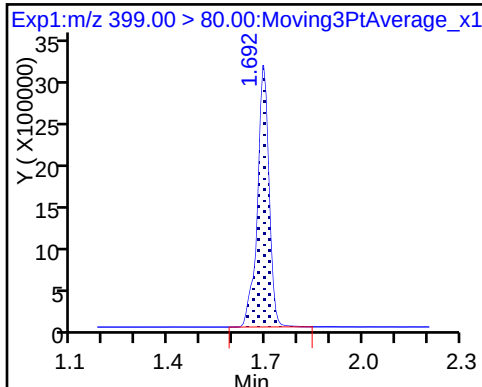
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

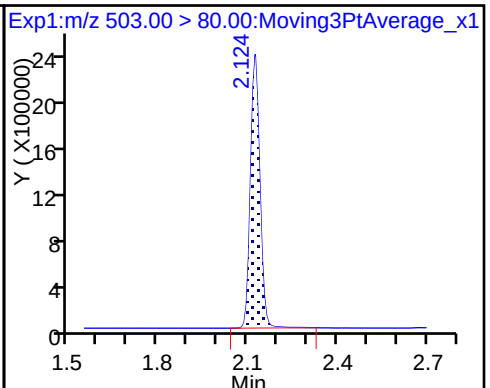
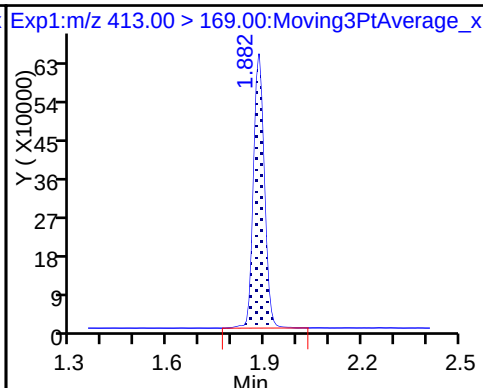
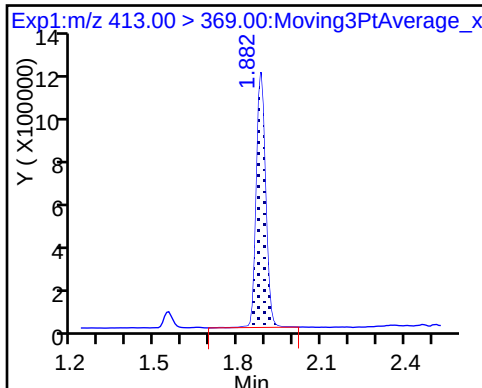
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

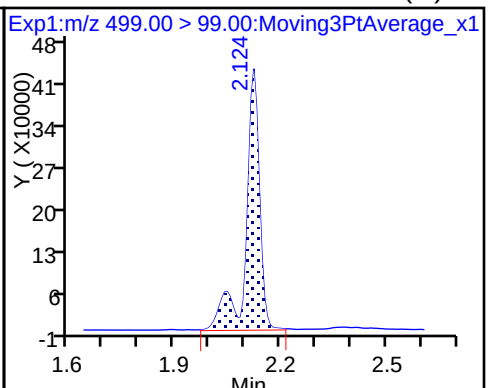
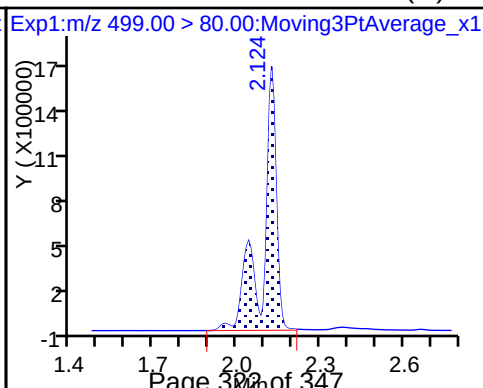
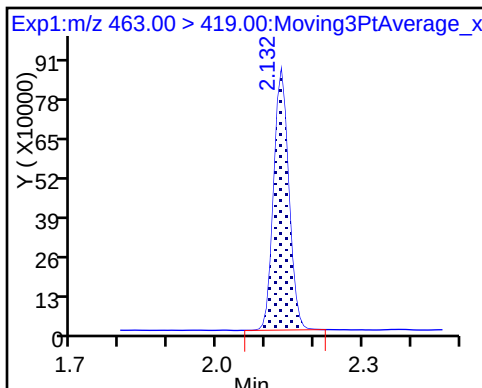
* 7 13C4 PFOS



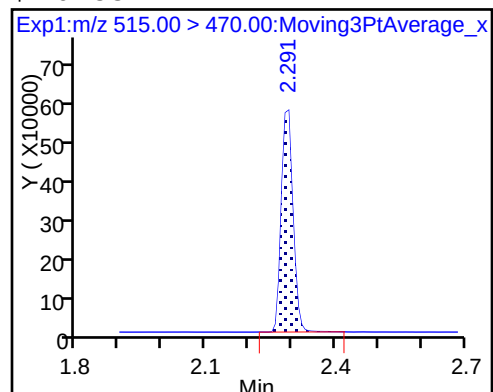
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_049.d
Lims ID: LCSD 320-189331/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 20-Oct-2017 21:23:00 ALS Bottle#: 35 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-189331/3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK012

First Level Reviewer: barnettj

Date: 23-Oct-2017 10:17:38

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.89	98.88
\$ 10 13C2 PFDA	10.0	11.6	115.93

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_049.d

Injection Date: 20-Oct-2017 21:23:00

Instrument ID: A8_N

Lims ID: LCSD 320-189331/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#:

35

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

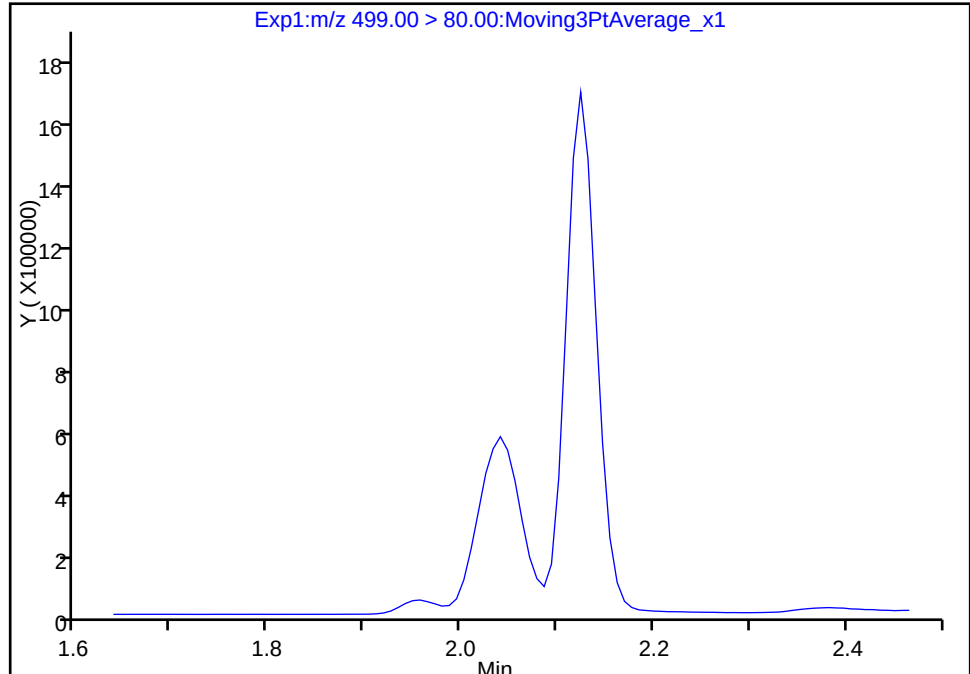
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

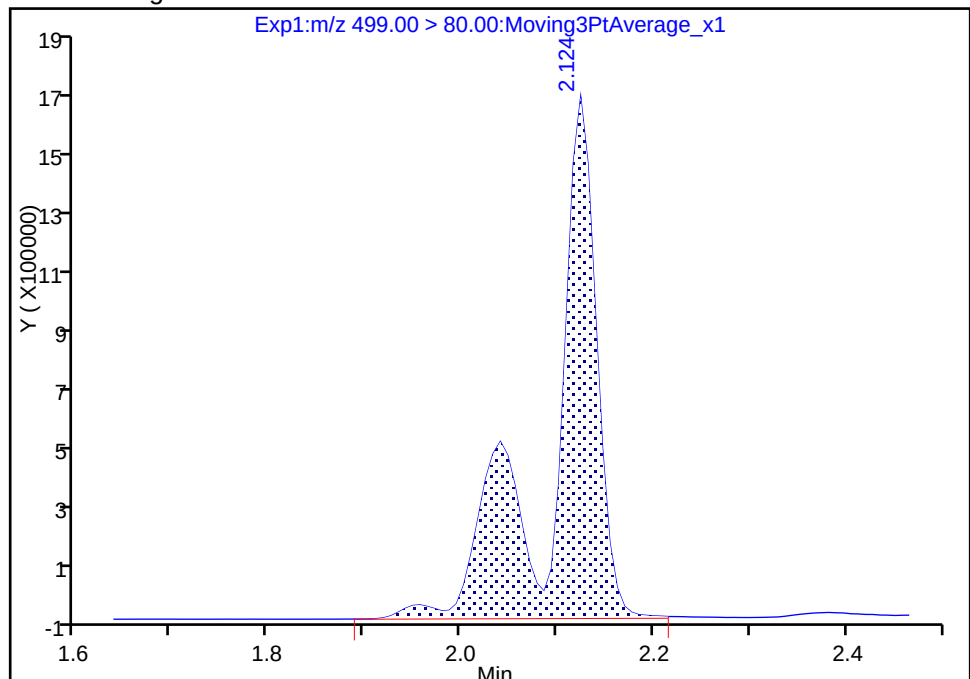
Not Detected

Expected RT: 2.12

Processing Integration Results



Manual Integration Results



RT: 2.12

Area: 5398747

Amount: 33.056680

Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 10:17:02

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_049.d

Injection Date: 20-Oct-2017 21:23:00

Instrument ID: A8_N

Lims ID: LCSD 320-189331/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 35

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

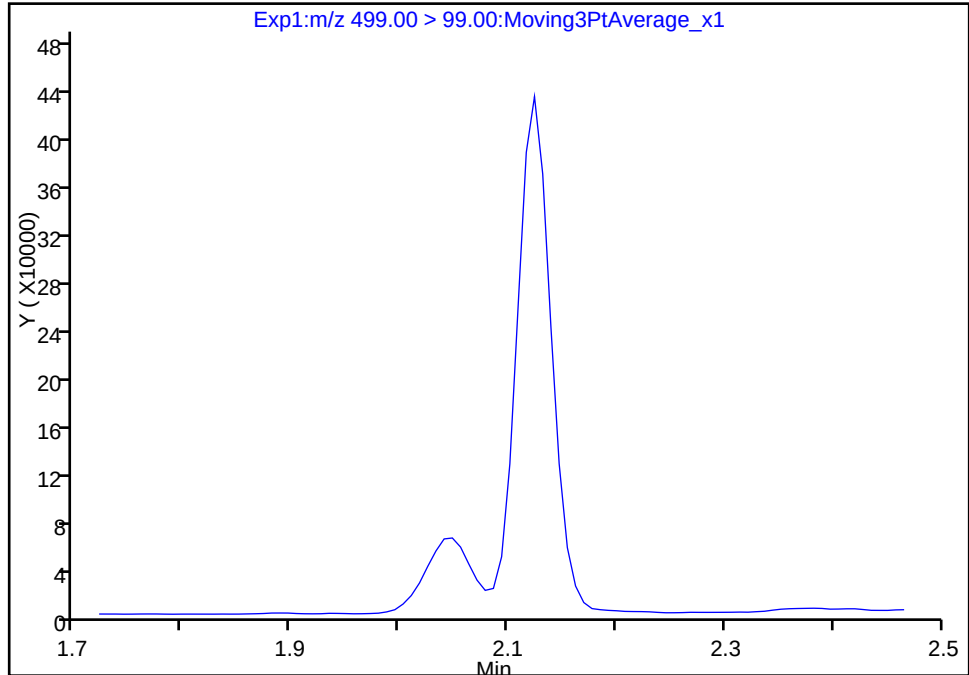
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

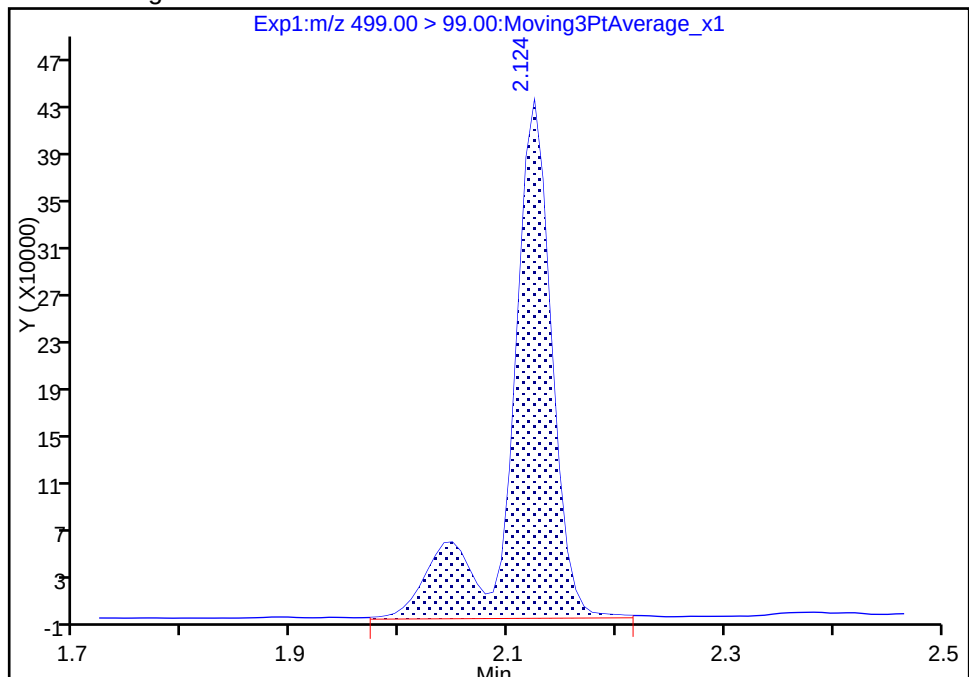
Not Detected

Expected RT: 2.12

Processing Integration Results



Manual Integration Results



RT: 2.12

Area: 1141581

Amount: 33.056680

Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 10:17:24

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_049.d

Injection Date: 20-Oct-2017 21:23:00

Instrument ID: A8_N

Lims ID: LCSD 320-189331/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 35

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

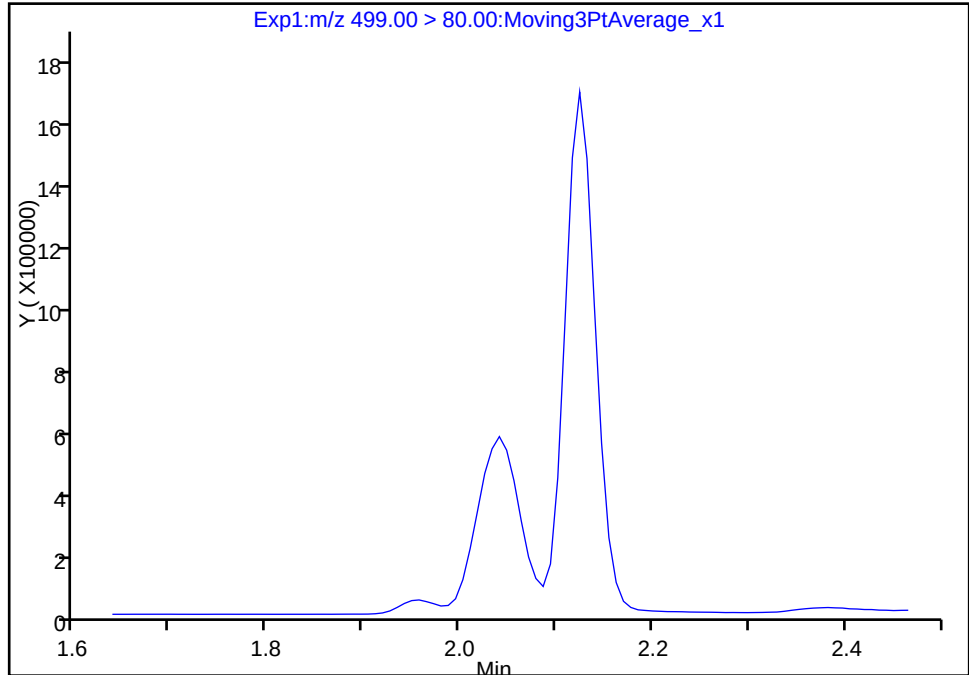
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

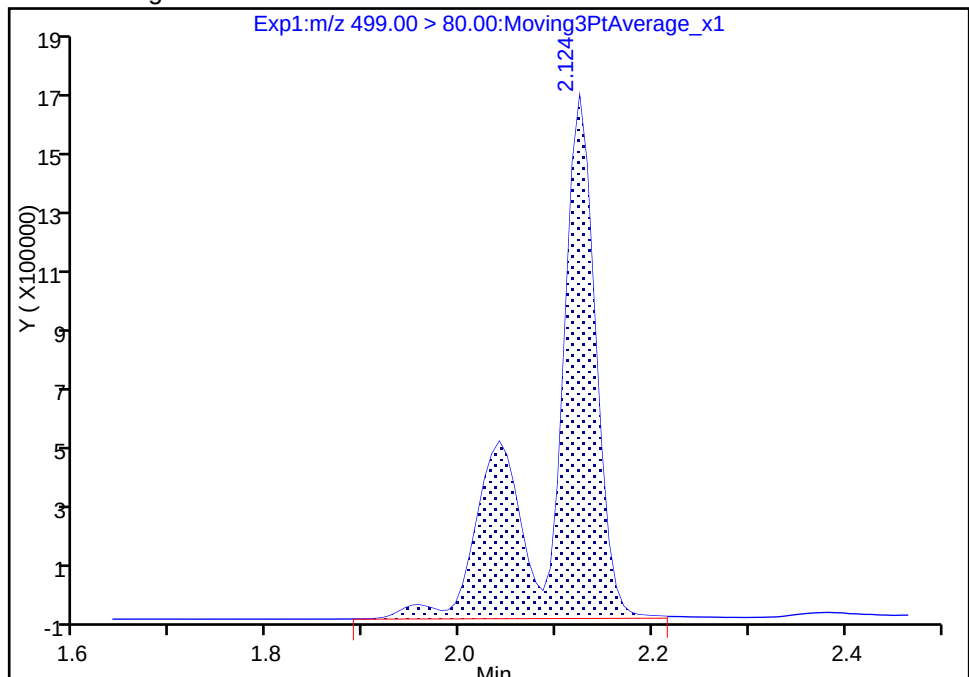
Not Detected

Expected RT: 2.12

Processing Integration Results



Manual Integration Results



RT: 2.12

Area: 5398747

Amount: 33.056680

Amount Units: ng/ml

Reviewer: barnettj, 23-Oct-2017 10:17:24

Audit Action: Manually Integrated

Audit Reason: Missed Peak

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-32132-1

SDG No.: _____

Instrument ID: A8_NStart Date: 09/20/2017 02:56Analysis Batch Number: 185329End Date: 09/20/2017 03:38

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-185329/4		09/20/2017 02:56	1	2017.09.19_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-185329/5		09/20/2017 03:00	1	2017.09.19_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-185329/6		09/20/2017 03:05	1	2017.09.19_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-185329/7 ICISAV		09/20/2017 03:10	1	2017.09.19_537I CAL 007.d	GeminiC18 3x100 3(mm)
IC 320-185329/8		09/20/2017 03:15	1	2017.09.19_537I CAL 008.d	GeminiC18 3x100 3(mm)
IC 320-185329/9		09/20/2017 03:19	1	2017.09.19_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 03:24	1		GeminiC18 3x100 3(mm)
CCVL 320-185329/11		09/20/2017 03:29	1	2017.09.19_537I CAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 03:34	1		GeminiC18 3x100 3(mm)
ICV 320-185329/13		09/20/2017 03:38	1	2017.09.19_537I CAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Instrument ID: A8_N Start Date: 10/20/2017 17:49

Analysis Batch Number: 190437 End Date: 10/20/2017 17:49

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-190437/4		10/20/2017 17:49	1	2017.10.20_537A 004.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-32132-1

SDG No.: _____

Instrument ID: A8_NStart Date: 10/20/2017 21:04Analysis Batch Number: 190444End Date: 10/20/2017 22:00

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-190444/1 CCVIS		10/20/2017 21:04	1	2017.10.20_537A 045.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/20/2017 21:08	1		GeminiC18 3x100 3(mm)
MB 320-189331/1-A		10/20/2017 21:13	1	2017.10.20_537A 047.d	GeminiC18 3x100 3(mm)
LCS 320-189331/2-A		10/20/2017 21:18	1	2017.10.20_537A 048.d	GeminiC18 3x100 3(mm)
LCSD 320-189331/3-A		10/20/2017 21:23	1	2017.10.20_537A 049.d	GeminiC18 3x100 3(mm)
320-32132-1		10/20/2017 21:27	1	2017.10.20_537A 050.d	GeminiC18 3x100 3(mm)
320-32132-2		10/20/2017 21:32	1	2017.10.20_537A 051.d	GeminiC18 3x100 3(mm)
320-32132-3		10/20/2017 21:37	1	2017.10.20_537A 052.d	GeminiC18 3x100 3(mm)
320-32132-4		10/20/2017 21:41	1	2017.10.20_537A 053.d	GeminiC18 3x100 3(mm)
320-32132-5		10/20/2017 21:46	1	2017.10.20_537A 054.d	GeminiC18 3x100 3(mm)
320-32132-6		10/20/2017 21:51	1	2017.10.20_537A 055.d	GeminiC18 3x100 3(mm)
320-32132-7		10/20/2017 21:56	1	2017.10.20_537A 056.d	GeminiC18 3x100 3(mm)
CCV 320-190444/13 CCVIS		10/20/2017 22:00	1	2017.10.20_537A 057.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Instrument ID: A8_N Start Date: 10/20/2017 22:00

Analysis Batch Number: 190445 End Date: 10/20/2017 22:43

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-190445/13 CCVIS		10/20/2017 22:00	1	2017.10.20_537A 057.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/20/2017 22:05	1		GeminiC18 3x100 3(mm)
320-32132-8		10/20/2017 22:10	1	2017.10.20_537A 059.d	GeminiC18 3x100 3(mm)
320-32132-9		10/20/2017 22:15	1	2017.10.20_537A 060.d	GeminiC18 3x100 3(mm)
320-32132-10		10/20/2017 22:19	1	2017.10.20_537A 061.d	GeminiC18 3x100 3(mm)
320-32132-11		10/20/2017 22:24	1	2017.10.20_537A 062.d	GeminiC18 3x100 3(mm)
320-32132-12		10/20/2017 22:29	1	2017.10.20_537A 063.d	GeminiC18 3x100 3(mm)
320-32132-13		10/20/2017 22:34	1	2017.10.20_537A 064.d	GeminiC18 3x100 3(mm)
320-32132-14		10/20/2017 22:38	1	2017.10.20_537A 065.d	GeminiC18 3x100 3(mm)
CCV 320-190445/22 CCVIS		10/20/2017 22:43	1	2017.10.20_537A 066.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Batch Number: 189331 Batch Start Date: 10/13/17 14:27 Batch Analyst: Long, Tyrel WBatch Method: 537 Batch End Date: 10/19/17 14:36

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00051
MB 320-189331/1		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCS 320-189331/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCSD 320-189331/3		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-32132-A-1	NAWC-100317-RW-132	537, 537	T	304.42 g	27.39 g	277 mL	1.00 mL	7 SU	100 uL
320-32132-A-2	NAWC-100317-FRB-132	537, 537	T	296.29 g	27.04 g	269.3 mL	1.00 mL	7 SU	100 uL
320-32132-A-3	NAWC-100317-RW-275	537, 537	T	314.34 g	27.20 g	287.1 mL	1.00 mL	7 SU	100 uL
320-32132-A-4	NAWC-100317-FRB-275	537, 537	T	304.93 g	27.22 g	277.7 mL	1.00 mL	7 SU	100 uL
320-32132-A-5	NAWC-100317-RW-146	537, 537	T	316.88 g	27.84 g	289 mL	1.00 mL	7 SU	100 uL
320-32132-A-6	NAWC-100317-RW-146	537, 537	T	296.34 g	27.11 g	269.2 mL	1.00 mL	7 SU	100 uL
320-32132-A-7	NAWC-100317-RW-134	537, 537	T	312.46 g	27.73 g	284.7 mL	1.00 mL	7 SU	100 uL
320-32132-A-8	NAWC-100317-FRB-134	537, 537	T	294.68 g	26.90 g	267.8 mL	1.00 mL	7 SU	100 uL
320-32132-A-9	NAWC-100317-RW-143	537, 537	T	302.09 g	27.53 g	274.6 mL	1.00 mL	7 SU	100 uL
320-32132-A-10	NAWC-100317-FRB-143	537, 537	T	296.75 g	26.97 g	269.8 mL	1.00 mL	7 SU	100 uL
320-32132-A-11	NAWC-100317-RW-149	537, 537	T	284.19 g	27.56 g	256.6 mL	1.00 mL	7 SU	100 uL
320-32132-A-12	NAWC-100317-FRB-149	537, 537	T	290.01 g	27.13 g	262.9 mL	1.00 mL	7 SU	100 uL
320-32132-A-13	NAWC-100317-RW-229	537, 537	T	298.10 g	27.34 g	270.8 mL	1.00 mL	7 SU	100 uL
320-32132-A-14	NAWC-100317-FRB-229	537, 537	T	291.52 g	26.87 g	264.7 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00026	LC537-SU 00051	AnalysisComment			
MB 320-189331/1		537, 537			100 uL	Chlorine ND			
LCS 320-189331/2		537, 537		100 uL	100 uL	Chlorine ND			
LCSD 320-189331/3		537, 537		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.: 320-32132-1

SDG No.: _____

Batch Number: 189331 Batch Start Date: 10/13/17 14:27 Batch Analyst: Long, Tyrel WBatch Method: 537 Batch End Date: 10/19/17 14:36

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00026	LC537-SU 00051	AnalysisComment			
320-32132-A-1	NAWC-100317-RW-1 32	537, 537	T		100 uL	Chlorine ND			
320-32132-A-2	NAWC-100317-FRB- 132	537, 537	T		100 uL	Chlorine ND			
320-32132-A-3	NAWC-100317-RW-2 75	537, 537	T		100 uL	Chlorine ND			
320-32132-A-4	NAWC-100317-FRB- 275	537, 537	T		100 uL	Chlorine ND			
320-32132-A-5	NAWC-100317-RW-1 46	537, 537	T		100 uL	Chlorine ND			
320-32132-A-6	NAWC-100317-RW-1 46	537, 537	T		100 uL	Chlorine ND			
320-32132-A-7	NAWC-100317-RW-1 34	537, 537	T		100 uL	Chlorine ND			
320-32132-A-8	NAWC-100317-FRB- 134	537, 537	T		100 uL	Chlorine ND			
320-32132-A-9	NAWC-100317-RW-1 43	537, 537	T		100 uL	Chlorine ND			
320-32132-A-10	NAWC-100317-FRB- 143	537, 537	T		100 uL	Chlorine ND			
320-32132-A-11	NAWC-100317-RW-1 49	537, 537	T		100 uL	Chlorine ND			
320-32132-A-12	NAWC-100317-FRB- 149	537, 537	T		100 uL	Chlorine ND			
320-32132-A-13	NAWC-100317-RW-2 29	537, 537	T		100 uL	Chlorine ND			
320-32132-A-14	NAWC-100317-FRB- 229	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.: 320-32132-1

SDG No.: _____

Batch Number: 189331 Batch Start Date: 10/13/17 14:27 Batch Analyst: Long, Tyrel WBatch Method: 537 Batch End Date: 10/19/17 14:36

Batch Notes	
Batch Comment	IS:1041860 BD: CCB/TQN FV:TQN AL:TQN
Methanol ID	1052423
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TQN
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	TWL
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	TWL
SPE Cartridge ID	6357081-08
Trizma ID	SLBR4303V
Reagent Water ID	10/12/17

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: 32132 Instrument ID & Date: 10-20-17 ICAL Batch: 185329
 Extraction Batch: 189331 Worklist #: 49420, 49469 TALS Batch: 190444, 190445, 190675

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 $\pm 50\%$ of true value Mid and High-range within $\pm 30\%$ of true value	✓			✓
4. Internal Standard areas in control? Areas $\geq 50\%$ 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? $\pm 50\%$ 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?	✓			✓
13. Are all Chrom graphics uploaded?	✓			✓

1st Level Reviewer / Date: 10-23-17 JRB 2nd Level Reviewer / Date: MWJ 10/24/2017
 by MWJ

NCM # and Comments: 104885

A8

Instrument ID & Date: 9-20-17 Worklist#: 48154

ICAL Batch: 185329, 185330 Calibration ID number: 34457

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 <u>Quadratic</u> (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: Murray for JRB
9/22/2017

2nd Level Reviewer / Date: Murray 9/22/2017

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 20OCT2017_537B

Worklist Number: 49420

Instrument Name: A8_N

Chrom Method: 537_A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b

QC Batching: Enabled

Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 190444
# 1 CCV L5	# 1 CCV L5
# 2 RB	# 2 RB
# 3 MB 320-189331/1-A	# 3 MB 320-189331/1-A
# 4 LCS 320-189331/2-A	# 4 LCS 320-189331/2-A
# 5 LCSD 320-189331/3-A	# 5 LCSD 320-189331/3-A
# 6 320-32132-A-1-A	# 6 320-32132-A-1-A
# 7 320-32132-A-2-A	# 7 320-32132-A-2-A
# 8 320-32132-A-3-A	# 8 320-32132-A-3-A
# 9 320-32132-A-4-A	# 9 320-32132-A-4-A
#10 320-32132-A-5-A	#10 320-32132-A-5-A
#11 320-32132-A-6-A	#11 320-32132-A-6-A
#12 320-32132-A-7-A	#12 320-32132-A-7-A
#13 CCV L3	#13 CCV L3

QC Batch: 2	LC 537 ICAL Raw Batch: 190445
#13 CCV L3	#13 CCV L3
#14 RB	#14 RB
#15 320-32132-A-8-A	#15 320-32132-A-8-A
#16 320-32132-A-9-A	#16 320-32132-A-9-A
#17 320-32132-A-10-A	#17 320-32132-A-10-A
#18 320-32132-A-11-A	#18 320-32132-A-11-A
#19 320-32132-A-12-A	#19 320-32132-A-12-A
#20 320-32132-A-13-A	#20 320-32132-A-13-A
#21 320-32132-A-14-A	#21 320-32132-A-14-A
#22 CCV L5	#22 CCV L5

QC Batch: 3	LC 537 ICAL Raw Batch: 190446
#22 CCV L5	#22 CCV L5
#23 RB	#23 RB
#24 MB 320-189627/1-A	#24 MB 320-189627/1-A
#25 LLCS 320-189627/2-A	#25 LLCS 320-189627/2-A
#26 LLCSD 320-189627/3-A	#26 LLCSD 320-189627/3-A
#27 320-32094-A-16-A	#27 320-32094-A-16-A
#28 320-32094-A-17-A	#28 320-32094-A-17-A
#29 320-32094-A-18-A	#29 320-32094-A-18-A
#30 320-32094-A-19-A	#30 320-32094-A-19-A
#31 320-32094-A-20-A	#31 320-32094-A-20-A
#32 320-32094-A-21-A	#32 320-32094-A-21-A
#33 320-32094-A-22-A	#33 320-32094-A-22-A
#34 CCV L3	#34 CCV L3

QC Batch: 4	LC 537 ICAL Raw Batch: 190447
#34 CCV L3	#34 CCV L3
#35 RB	#35 RB
#36 320-32094-A-23-A	#36 320-32094-A-23-A
#37 CCV L5	#37 CCV L5
#38 RB	#38 RB

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 23OCT2017_537B Worklist Number: 49469
Instrument Name: A8_N Chrom Method: 537_A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20171023-49469.b
QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 190675
# 1 RINSE	# 1 RINSE
# 2 RINSE	# 2 RINSE
# 3 RINSE	# 3 RINSE
# 4 CCV L5	# 4 CCV L5
# 5 RB	# 5 RB
# 6 320-32132-A-9-A	# 6 320-32132-A-9-A
# 7 CCV L3	# 7 CCV L3
# 8 RB	# 8 RB

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-189331

Analyst: Long, Tyrel W

Batch Open: 10/13/2017 2:27:00PM

Method Code: 320-537_Prep-320

Batch End: 10/19/2017 2:36:00PM

Extraction of Perfluorinated Alkyl Acids

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-320-189331/1 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine ND	
			1.00 mL								
2 LCS-320-189331/2 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine ND	
			1.00 mL								
3 LCSD-320-189331/3 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine ND	
			1.00 mL								
4 320-32132-A-1 (537_DOD5)	N/A (320-32132-1)	304.42 g	277 mL	7			10/8/17	16_Days	4	Chlorine ND	
		27.39 g	1.00 mL								
5 320-32132-A-2 (537_DOD5)	N/A (320-32132-1)	296.29 g	269.3 mL	7			10/8/17	16_Days	4	Chlorine ND	
		27.04 g	1.00 mL								
6 320-32132-A-3 (537_DOD5)	N/A (320-32132-1)	314.34 g	287.1 mL	7			10/8/17	16_Days	4	Chlorine ND	
		27.20 g	1.00 mL								
7 320-32132-A-4 (537_DOD5)	N/A (320-32132-1)	304.93 g	277.7 mL	7			10/8/17	16_Days	4	Chlorine ND	
		27.22 g	1.00 mL								
8 320-32132-A-5 (537_DOD5)	N/A (320-32132-1)	316.88 g	289 mL	7			10/8/17	16_Days	4	Chlorine ND	
		27.84 g	1.00 mL								
9 320-32132-A-6 (537_DOD5)	N/A (320-32132-1)	296.34 g	269.2 mL	7			10/8/17	16_Days	4	Chlorine ND	
		27.11 g	1.00 mL								
10 320-32132-A-7 (537_DOD5)	N/A (320-32132-1)	312.46 g	284.7 mL	7			10/8/17	16_Days	4	Chlorine ND	
		27.73 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-189331

Analyst: Long, Tyrel W

Batch Open: 10/13/2017 2:27:00PM

Method Code: 320-537_Prep-320

Batch End: 10/19/2017 2:36:00PM

11	320-32132-A-8 (537_DOD5)	N/A (320-32132-1)	294.68 g	267.8 mL	7		10/8/17	16_Days	4	Chlorine ND	
			26.90 g	1.00 mL							
12	320-32132-A-9 (537_DOD5)	N/A (320-32132-1)	302.09 g	274.6 mL	7		10/8/17	16_Days	4	Chlorine ND RI	
			27.53 g	1.00 mL							
13	320-32132-A-10 (537_DOD5)	N/A (320-32132-1)	296.75 g	269.8 mL	7		10/8/17	16_Days	4	Chlorine ND	
			26.97 g	1.00 mL							
14	320-32132-A-11 (537_DOD5)	N/A (320-32132-1)	284.19 g	256.6 mL	7		10/8/17	16_Days	4	Chlorine ND	
			27.56 g	1.00 mL							
15	320-32132-A-12 (537_DOD5)	N/A (320-32132-1)	290.01 g	262.9 mL	7		10/8/17	16_Days	4	Chlorine ND	
			27.13 g	1.00 mL							
16	320-32132-A-13 (537_DOD5)	N/A (320-32132-1)	298.10 g	270.8 mL	7		10/8/17	16_Days	4	Chlorine ND	
			27.34 g	1.00 mL							
17	320-32132-A-14 (537_DOD5)	N/A (320-32132-1)	291.52 g	264.7 mL	7		10/8/17	16_Days	4	Chlorine ND	
			26.87 g	1.00 mL							

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-189331

Analyst: Long, Tyrel W

Batch Open: 10/13/2017 2:27:00PM

Method Code: 320-537_Prep-320

Batch End: 10/19/2017 2:36:00PM

Batch Notes

Manifold ID

Trizma ID SLBR4303V

SPE Cartridge ID 6357081-08

Methanol ID 1052423

Reagent Water ID 10/12/17

Pipette ID H14930F

Analyst ID - TA Reagent Drop JER

Analyst ID - TA Reagent Drop TWL

Witness

Analyst ID - SU Reagent Drop JER

Analyst ID - SU Reagent Drop TWL

Witness

Analyst ID - IS Reagent Drop JER

Analyst ID - IS Reagent Drop TQN

Witness

Batch Comment IS:1041860 BD: CCB/TQN FV:TQN AL:TQN

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-189331

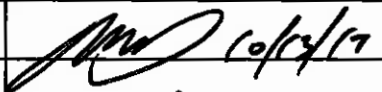
Analyst: Long, Tyrel W

Batch Open: 10/13/2017 2:27:00PM

Method Code: 320-537_Prep-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-189331/1	LC537-SU_00051	100 uL	1.00 mL	 10/13/17	JWC 10/13/17
LCS 320-189331/2	LC537-MSP_00026	100 uL	1.00 mL		
LCS 320-189331/2	LC537-SU_00051	100 uL	1.00 mL		
LCSD 320-189331/3	LC537-MSP_00026	100 uL	1.00 mL		
LCSD 320-189331/3	LC537-SU_00051	100 uL	1.00 mL		
320-32132-A-1	LC537-SU_00051	100 uL	1.00 mL		
320-32132-A-2	LC537-SU_00051	100 uL	1.00 mL		
320-32132-A-3	LC537-SU_00051	100 uL	1.00 mL		
320-32132-A-4	LC537-SU_00051	100 uL	1.00 mL		
320-32132-A-5	LC537-SU_00051	100 uL	1.00 mL		
320-32132-A-6	LC537-SU_00051	100 uL	1.00 mL		
320-32132-A-7	LC537-SU_00051	100 uL	1.00 mL		
320-32132-A-8	LC537-SU_00051	100 uL	1.00 mL		
320-32132-A-9	LC537-SU_00051	100 uL	1.00 mL		
320-32132-A-10	LC537-SU_00051	100 uL	1.00 mL		
320-32132-A-11	LC537-SU_00051	100 uL	1.00 mL		
320-32132-A-12	LC537-SU_00051	100 uL	1.00 mL		
320-32132-A-13	LC537-SU_00051	100 uL	1.00 mL		

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-189331

Analyst: Long, Tyrel W

Batch Open: 10/13/2017 2:27:00PM

Method Code: 320-537_Prep-320

Batch End:

320-32132-A-14	LC537-SU_00051	100 uL	1.00 mL	<i>[Signature]</i> 10/13/17	Twz 10/13/17
----------------	----------------	--------	---------	-----------------------------	--------------

Other Reagents:

Reagent

1041860

Amount/Units

Lot#:

100 µL of LC537-IS-00051 @ 0.1-0.2868 µg/mL Exp: 3/20/18

Spiked: *[Signature]* 10/19/17 Witness:

Preparation Batch Number(s): 189331

Test: 537 Prep

Earliest Holding Time: 10/17/17

Sample List Tab	1 st Level Reviewer	2 nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
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 correctly in TALS	✓	✓
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	1 st Level Reviewer	2 nd Level Reviewer
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
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	✓	✓

1st Level Reviewer: TAN

Date: 10/19/17

2nd Level Reviewer: M. K. Waag

Date: 10/24/2017

Comments: _____

Shipping and Receiving Documents

TestAmerica Sacramento
 880 Riverside Parkway
 West Sacramento, CA 95605-1500
 phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

TestAmerica
 THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact		Project Manager: Andy Frebowitz		Site Contact: Mary Kay Bond		Date: 10/3/2017		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		Filtered Sample (Y/N) Perform MS / MSD (Y/N) EPA 837_D05  320-32132 Chain of Custody		For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.: 		Sample Specific Notes:																					
☐ CALENDAR DAYS ☐ WORKING DAYS																													
TAT if different from Below 21 ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day																													
Project Name: WE04 Site: WE04 P O # 1132358 (through EarthToxics)																													
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_D05																					
NAWC-100317-RW-132	10/3/2017	8:10	G	DW	2	N	N	Y																					
NAWC-100317-FRB-132	10/3/2017	8:05	G	DW	2	N	N	Y											Field Reagent Blank										
NAWC-100317-RW-275	10/3/2017	9:10	G	DW	6	N	N	Y																					
NAWC-100317-FRB-275	10/3/2017	9:05	G	DW	2	N	N	Y											Field Reagent Blank										
NAWC-100317-RW-146	10/3/2017	9:40	G	DW	2	N	N	Y																					
NAWC-100317-FRB-146	10/3/2017	9:35	G	DW	2	N	N	Y											Field Reagent Blank										
NAWC-100317-RW-134	10/3/2017	11:40	G	DW	2	N	N	Y																					
NAWC-100317-FRB-134	10/3/2017	11:35	G	DW	2	N	N	Y											Field Reagent Blank										
NAWC-100317-RW-143	10/3/2017	13:40	G	DW	2	N	N	Y																					
NAWC-100317-FRB-143	10/3/2017	13:35	G	DW	2	N	N	Y											Field Reagent Blank										
NAWC-100317-RW-149	10/3/2017	15:10	G	DW	2	N	N	Y																					
NAWC-100317-FRB-149	10/3/2017	15:05	G	DW	2	N	N	Y											Field Reagent Blank										
NAWC-100317-RW-229	10/3/2017	15:40	G	DW	2	N	N	Y																					
NAWC-100317-FRB-229	10/3/2017	15:35	G	DW	2	N	N	Y											Field Reagent Blank										
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma																													
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown										Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months																			
FedEx Tracking: 7703 9983 1012																													
Custody Seals Intact: ☐ Yes ☐ No					Custody Seal No.:					Cooler Temp. (°C): Obs'd: 24°C Cor'd:					Therm ID No.: AKC														
Relinquished by: Mary Kay Bond					Company: Tetra Tech					Date/Time: 18:00					Received by: [Signature]					Company: TH WS					Date/Time: 10/4/17 1330				
Relinquished by:					Company:					Date/Time:					Received by:					Company:					Date/Time:				
Relinquished by:					Company:					Date/Time:					Received in Laboratory by:					Company:					Date/Time:				

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-32132-1

Login Number: 32132

List Source: TestAmerica Sacramento

List Number: 1

Creator: Turpen, Troy

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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

"NAWC-100317-RW-132","537","RES","320-32132-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","10","ng/L","J","6.1","DL","","TRG","","","36","LOQ","YES","-99","","277","1.00","14",""
"NAWC-100317-RW-132","537","RES","320-32132-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","20","ng/L","","2.5","DL","","TRG","","","18","LOQ","YES","-99","","277","1.00","7.2",""
"NAWC-100317-RW-132","537","RES","320-32132-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","11","ng/L","U","5.0","DL","","TRG","","","27","LOQ","YES","-99","","277","1.00","11",""
"NAWC-100317-RW-132","537","RES","320-32132-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","32","ng/L","U","15","DL","","TRG","","","81","LOQ","YES","-99","","277","1.00","32",""
"NAWC-100317-RW-132","537","RES","320-32132-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","8.0","ng/L","J","1.7","DL","","TRG","","","9.0","LOQ","YES","-99","","277","1.00","3.6",""
"NAWC-100317-RW-132","537","RES","320-32132-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","18","ng/L","U","7.2","DL","","TRG","","","22","LOQ","YES","-99","","277","1.00","18",""
"NAWC-100317-RW-132","537","RES","320-32132-1","TALSAC","STL00993","13C2 PFHxA","30","ng/L","","-99","DL","","SURRE","84","","-99","LOQ","YES","36.1","","277","1.00","0",""
"NAWC-100317-RW-132","537","RES","320-32132-1","TALSAC","STL00996","13C2 PFDA","39","ng/L","","-99","DL","","SURRE","109","","-99","LOQ","YES","36.1","","277","1.00","0",""
"NAWC-100317-FRB-143","537","RES","320-32132-10","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","15","ng/L","U","6.3","DL","","TRG","","","37","LOQ","YES","-99","","269.8","1.00","15",""
"NAWC-100317-FRB-143","537","RES","320-32132-10","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.4","ng/L","U","2.6","DL","","TRG","","","19","LOQ","YES","-99","","269.8","1.00","7.4",""
"NAWC-100317-FRB-143","537","RES","320-32132-10","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","11","ng/L","U","5.1","DL","","TRG","","","28","LOQ","YES","-99","","269.8","1.00","11",""
"NAWC-100317-FRB-143","537","RES","320-32132-10","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","33","ng/L","U","15","DL","","TRG","","","83","LOQ","YES","-99","","269.8","1.00","33",""
"NAWC-100317-FRB-143","537","RES","320-32132-10","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.7","ng/L","U","1.8","DL","","TRG","","","9.3","LOQ","YES","-99","","269.8","1.00","3.7",""
"NAWC-100317-FRB-143","537","RES","320-32132-10","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U","7.4","DL","","TRG","","","22","LOQ","YES","-99","","269.8","1.00","19",""
"NAWC-100317-FRB-143","537","RES","320-32132-10","TALSAC","STL00993","13C2 PFHxA","35","ng/L","","-99","DL","","SURRE","95","","-99","LOQ","YES","37.1","","269.8","1.00","0",""
"NAWC-100317-FRB-143","537","RES","320-32132-10","TALSAC","STL00996","13C2 PFDA","42","ng/L","","-99","DL","","SURRE","112","","-99","LOQ","YES","37.1","","269.8","1.00","0",""
"NAWC-100317-RW-149","537","RES","320-32132-11","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","20","ng/L","J M","6.6","DL","","TRG","","","39","LOQ","YES","-99","","256.6","1.00","16",""
"NAWC-100317-RW-149","537","RES","320-32132-11","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","14","ng/L","J","2.7","DL","","TRG","","","19","LOQ","YES","-99","","256.6","1.00","7.8",""
"NAWC-100317-RW-149","537","RES","320-32132-11","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","7.2","ng/L","J","5.4","DL","","TRG","","","29","LOQ","YES","-99","","256.6","1.00","12",""
"NAWC-100317-RW-149","537","RES","320-32132-11","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","256.6","1.00","35",""
"NAWC-100317-RW-149","537","RES","320-32132-11","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.5","ng/L","J","1.9","DL","","TRG","","","9.7","LOQ","YES","-99","","256.6","1.00","3.9",""
"NAWC-100317-RW-149","537","RES","320-32132-11","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES","-99","","256.6","1.00","19",""
"NAWC-100317-RW-149","537","RES","320-32132-11","TALSAC","STL00993","13C2 PFHxA","31","ng/L","","-99","DL","","SURRE","79","","-99","LOQ","YES","39.0","","256.6","1.00","0",""
"NAWC-100317-RW-149","537","RES","320-32132-11","TALSAC","STL00996","13C2 PFDA","44","ng/L","","-99","DL","","SURRE","113","","-99","LOQ","YES","39.0","","256.6","1.00","0",""
"NAWC-100317-FRB-149","537","RES","320-32132-12","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","15","ng/L","U","6.5","DL","","TRG","","","38","LOQ","YES","-99","","262.9","1.00","15",""
"NAWC-100317-FRB-149","537","RES","320-32132-12","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.6","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES","-99","","262.9","1.00","7.6",""
"NAWC-100317-FRB-149","537","RES","320-32132-12","TALSAC","355-46-4","Perfluorohexanesulfonic acid

(PFHxS)","11","ng/L","U","5.2","DL","","TRG","","","29","LOQ","YES",-99","","262.9","1.00","11","","
"NAWC-100317-FRB-149","537","RES","320-32132-12","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","TRG","","","86","LOQ","YES",-99","","262.9","1.00","34","","
"NAWC-100317-FRB-149","537","RES","320-32132-12","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.8","ng/L","U","1.8","DL","","TRG","","","9.5","LOQ","YES",-99","","262.9","1.00","3.8","","
"NAWC-100317-FRB-149","537","RES","320-32132-12","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.6","DL","","TRG","","","23","LOQ","YES",-99","","262.9","1.00","19","","
"NAWC-100317-FRB-149","537","RES","320-32132-12","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","-99","DL","","SURR","95","","-99","LOQ","YES","38.0","","262.9","1.00","0","","
"NAWC-100317-FRB-149","537","RES","320-32132-12","TALSAC","STL00996","13C2
PFDA","41","ng/L","","-99","DL","","SURR","107","","-99","LOQ","YES","38.0","","262.9","1.00","0","","
"NAWC-100317-RW-229","537","RES","320-32132-13","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","30","ng/L","J M","6.3","DL","","TRG","","","37","LOQ","YES",-99","","270.8","1.00","15","","
"NAWC-100317-RW-229","537","RES","320-32132-13","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","39","ng/L","","2.6","DL","","TRG","","","18","LOQ","YES",-99","","270.8","1.00","7.4","","
"NAWC-100317-RW-229","537","RES","320-32132-13","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","13","ng/L","J","5.1","DL","","TRG","","","28","LOQ","YES",-99","","270.8","1.00","11","","
"NAWC-100317-RW-229","537","RES","320-32132-13","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","33","ng/L","U","15","DL","","TRG","","","83","LOQ","YES",-99","","270.8","1.00","33","","
"NAWC-100317-RW-229","537","RES","320-32132-13","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","14","ng/L","","1.8","DL","","TRG","","","9.2","LOQ","YES",-99","","270.8","1.00","3.7","","
"NAWC-100317-RW-229","537","RES","320-32132-13","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U M","7.4","DL","","TRG","","","22","LOQ","YES",-99","","270.8","1.00","18","","
"NAWC-100317-RW-229","537","RES","320-32132-13","TALSAC","STL00993","13C2
PFHxA","27","ng/L","","-99","DL","","SURR","72","","-99","LOQ","YES","36.9","","270.8","1.00","0","","
"NAWC-100317-RW-229","537","RES","320-32132-13","TALSAC","STL00996","13C2
PFDA","42","ng/L","","-99","DL","","SURR","113","","-99","LOQ","YES","36.9","","270.8","1.00","0","","
"NAWC-100317-FRB-229","537","RES","320-32132-14","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.4","DL","","TRG","","","38","LOQ","YES",-99","","264.7","1.00","15","","
"NAWC-100317-FRB-229","537","RES","320-32132-14","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.6","ng/L","U","2.6","DL","","TRG","","","19","LOQ","YES",-99","","264.7","1.00","7.6","","
"NAWC-100317-FRB-229","537","RES","320-32132-14","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.2","DL","","TRG","","","28","LOQ","YES",-99","","264.7","1.00","11","","
"NAWC-100317-FRB-229","537","RES","320-32132-14","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","TRG","","","85","LOQ","YES",-99","","264.7","1.00","34","","
"NAWC-100317-FRB-229","537","RES","320-32132-14","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.8","ng/L","U","1.8","DL","","TRG","","","9.4","LOQ","YES",-99","","264.7","1.00","3.8","","
"NAWC-100317-FRB-229","537","RES","320-32132-14","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.6","DL","","TRG","","","23","LOQ","YES",-99","","264.7","1.00","19","","
"NAWC-100317-FRB-229","537","RES","320-32132-14","TALSAC","STL00993","13C2
PFHxA","37","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","37.8","","264.7","1.00","0","","
"NAWC-100317-FRB-229","537","RES","320-32132-14","TALSAC","STL00996","13C2
PFDA","48","ng/L","","-99","DL","","SURR","128","","-99","LOQ","YES","37.8","","264.7","1.00","0","","
"NAWC-100317-FRB-132","537","RES","320-32132-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.3","DL","","TRG","","","37","LOQ","YES",-99","","269.3","1.00","15","","
"NAWC-100317-FRB-132","537","RES","320-32132-2","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.4","ng/L","U","2.6","DL","","TRG","","","19","LOQ","YES",-99","","269.3","1.00","7.4","","
"NAWC-100317-FRB-132","537","RES","320-32132-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.1","DL","","TRG","","","28","LOQ","YES",-99","","269.3","1.00","11","","
"NAWC-100317-FRB-132","537","RES","320-32132-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","33","ng/L","U","15","DL","","TRG","","","84","LOQ","YES",-99","","269.3","1.00","33","","
"NAWC-100317-FRB-132","537","RES","320-32132-2","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.7","ng/L","U","1.8","DL","","TRG","","","9.3","LOQ","YES",-99","","269.3","1.00","3.7","","
"NAWC-100317-FRB-132","537","RES","320-32132-2","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA),"19","ng/L","U","7.4","DL","","","TRG","","","22","LOQ","YES","-99","","","269.3","1.00","19","","
"NAWC-100317-FRB-132","537","RES","320-32132-2","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","","-99","DL","","","SURRE","96","","","-99","LOQ","YES","37.1","","","269.3","1.00","0","","
"NAWC-100317-FRB-132","537","RES","320-32132-2","TALSAC","STL00996","13C2
PFDA","42","ng/L","","","-99","DL","","","SURRE","113","","","-99","LOQ","YES","37.1","","","269.3","1.00","0","","
"NAWC-100317-RW-275","537","RES","320-32132-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","28","ng/L","J M","5.9","DL","","","TRG","","","35","LOQ","YES","-99","","","287.1","1.00","14","","
"NAWC-100317-RW-275","537","RES","320-32132-3","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","20","ng/L","","","2.4","DL","","","TRG","","","17","LOQ","YES","-99","","","287.1","1.00","7.0","","
"NAWC-100317-RW-275","537","RES","320-32132-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","8.8","ng/L","J","4.8","DL","","","TRG","","","26","LOQ","YES","-99","","","287.1","1.00","10","","
"NAWC-100317-RW-275","537","RES","320-32132-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","31","ng/L","U","14","DL","","","TRG","","","78","LOQ","YES","-99","","","287.1","1.00","31","","
"NAWC-100317-RW-275","537","RES","320-32132-3","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","6.6","ng/L","J","1.7","DL","","","TRG","","","8.7","LOQ","YES","-99","","","287.1","1.00","3.5","","
"NAWC-100317-RW-275","537","RES","320-32132-3","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","17","ng/L","U","7.0","DL","","","TRG","","","21","LOQ","YES","-99","","","287.1","1.00","17","","
"NAWC-100317-RW-275","537","RES","320-32132-3","TALSAC","STL00993","13C2
PFHxA","29","ng/L","","","-99","DL","","","SURRE","85","","","-99","LOQ","YES","34.8","","","287.1","1.00","0","","
"NAWC-100317-RW-275","537","RES","320-32132-3","TALSAC","STL00996","13C2
PFDA","41","ng/L","","","-99","DL","","","SURRE","119","","","-99","LOQ","YES","34.8","","","287.1","1.00","0","","
"NAWC-100317-FRB-275","537","RES","320-32132-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.1","DL","","","TRG","","","36","LOQ","YES","-99","","","277.7","1.00","14","","
"NAWC-100317-FRB-275","537","RES","320-32132-4","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.2","ng/L","U","2.5","DL","","","TRG","","","18","LOQ","YES","-99","","","277.7","1.00","7.2","","
"NAWC-100317-FRB-275","537","RES","320-32132-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.0","DL","","","TRG","","","27","LOQ","YES","-99","","","277.7","1.00","11","","
"NAWC-100317-FRB-275","537","RES","320-32132-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","","TRG","","","81","LOQ","YES","-99","","","277.7","1.00","32","","
"NAWC-100317-FRB-275","537","RES","320-32132-4","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","U","1.7","DL","","","TRG","","","9.0","LOQ","YES","-99","","","277.7","1.00","3.6","","
"NAWC-100317-FRB-275","537","RES","320-32132-4","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.2","DL","","","TRG","","","22","LOQ","YES","-99","","","277.7","1.00","18","","
"NAWC-100317-FRB-275","537","RES","320-32132-4","TALSAC","STL00993","13C2
PFHxA","34","ng/L","","","-99","DL","","","SURRE","96","","","-99","LOQ","YES","36.0","","","277.7","1.00","0","","
"NAWC-100317-FRB-275","537","RES","320-32132-4","TALSAC","STL00996","13C2
PFDA","44","ng/L","","","-99","DL","","","SURRE","121","","","-99","LOQ","YES","36.0","","","277.7","1.00","0","","
"NAWC-100317-RW-146","537","RES","320-32132-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","11","ng/L","J","5.9","DL","","","TRG","","","35","LOQ","YES","-99","","","289","1.00","14","","
"NAWC-100317-RW-146","537","RES","320-32132-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","24","ng/L","","","2.4","DL","","","TRG","","","17","LOQ","YES","-99","","","289","1.00","6.9","","
"NAWC-100317-RW-146","537","RES","320-32132-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","10","ng/L","U","4.8","DL","","","TRG","","","26","LOQ","YES","-99","","","289","1.00","10","","
"NAWC-100317-RW-146","537","RES","320-32132-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","31","ng/L","U","14","DL","","","TRG","","","78","LOQ","YES","-99","","","289","1.00","31","","
"NAWC-100317-RW-146","537","RES","320-32132-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","5.4","ng/L","J","1.6","DL","","","TRG","","","8.7","LOQ","YES","-99","","","289","1.00","3.5","","
"NAWC-100317-RW-146","537","RES","320-32132-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","17","ng/L","U","6.9","DL","","","TRG","","","21","LOQ","YES","-99","","","289","1.00","17","","
"NAWC-100317-RW-146","537","RES","320-32132-5","TALSAC","STL00993","13C2
PFHxA","30","ng/L","","","-99","DL","","","SURRE","86","","","-99","LOQ","YES","34.6","","","289","1.00","0","","
"NAWC-100317-RW-146","537","RES","320-32132-5","TALSAC","STL00996","13C2
PFDA","41","ng/L","","","-99","DL","","","SURRE","119","","","-99","LOQ","YES","34.6","","","289","1.00","0","","
"NAWC-100317-RW-146","537","RES","320-32132-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS),"15","ng/L","U","6.3","DL","","","TRG","","","37","LOQ","YES",-99","","269.2","1.00","15",""
"NAWC-100317-RW-146","537","RES","320-32132-6","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"7.4","ng/L","U","2.6","DL","","","TRG","","","19","LOQ","YES",-99","","269.2","1.00","7.4",""
"NAWC-100317-RW-146","537","RES","320-32132-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"11","ng/L","U","5.1","DL","","","TRG","","","28","LOQ","YES",-99","","269.2","1.00","11",""
"NAWC-100317-RW-146","537","RES","320-32132-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"33","ng/L","U","15","DL","","","TRG","","","84","LOQ","YES",-99","","269.2","1.00","33",""
"NAWC-100317-RW-146","537","RES","320-32132-6","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"3.7","ng/L","U","1.8","DL","","","TRG","","","9.3","LOQ","YES",-99","","269.2","1.00","3.7",""
"NAWC-100317-RW-146","537","RES","320-32132-6","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"19","ng/L","U","7.4","DL","","","TRG","","","22","LOQ","YES",-99","","269.2","1.00","19",""
"NAWC-100317-RW-146","537","RES","320-32132-6","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","","-99","DL","","","SURR","94","","","-99","LOQ","YES","37.1","","269.2","1.00","0",""
"NAWC-100317-RW-146","537","RES","320-32132-6","TALSAC","STL00996","13C2
PFDA","42","ng/L","","","-99","DL","","","SURR","114","","","-99","LOQ","YES","37.1","","269.2","1.00","0",""
"NAWC-100317-RW-134","537","RES","320-32132-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"8.6","ng/L","J M","6.0","DL","","","TRG","","","35","LOQ","YES",-99","","284.7","1.00","14",""
"NAWC-100317-RW-134","537","RES","320-32132-7","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"7.0","ng/L","J","2.5","DL","","","TRG","","","18","LOQ","YES",-99","","284.7","1.00","7.0",""
"NAWC-100317-RW-134","537","RES","320-32132-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"11","ng/L","U","4.8","DL","","","TRG","","","26","LOQ","YES",-99","","284.7","1.00","11",""
"NAWC-100317-RW-134","537","RES","320-32132-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"32","ng/L","U","14","DL","","","TRG","","","79","LOQ","YES",-99","","284.7","1.00","32",""
"NAWC-100317-RW-134","537","RES","320-32132-7","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"2.3","ng/L","J M","1.7","DL","","","TRG","","","8.8","LOQ","YES",-99","","284.7","1.00","3.5",""
"NAWC-100317-RW-134","537","RES","320-32132-7","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"18","ng/L","U","7.0","DL","","","TRG","","","21","LOQ","YES",-99","","284.7","1.00","18",""
"NAWC-100317-RW-134","537","RES","320-32132-7","TALSAC","STL00993","13C2
PFHxA","29","ng/L","","","-99","DL","","","SURR","83","","","-99","LOQ","YES","35.1","","284.7","1.00","0",""
"NAWC-100317-RW-134","537","RES","320-32132-7","TALSAC","STL00996","13C2
PFDA","38","ng/L","","","-99","DL","","","SURR","107","","","-99","LOQ","YES","35.1","","284.7","1.00","0",""
"NAWC-100317-FRB-134","537","RES","320-32132-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"15","ng/L","U","6.3","DL","","","TRG","","","37","LOQ","YES",-99","","267.8","1.00","15",""
"NAWC-100317-FRB-134","537","RES","320-32132-8","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"7.5","ng/L","U","2.6","DL","","","TRG","","","19","LOQ","YES",-99","","267.8","1.00","7.5",""
"NAWC-100317-FRB-134","537","RES","320-32132-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"11","ng/L","U","5.1","DL","","","TRG","","","28","LOQ","YES",-99","","267.8","1.00","11",""
"NAWC-100317-FRB-134","537","RES","320-32132-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"34","ng/L","U","15","DL","","","TRG","","","84","LOQ","YES",-99","","267.8","1.00","34",""
"NAWC-100317-FRB-134","537","RES","320-32132-8","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"3.7","ng/L","U","1.8","DL","","","TRG","","","9.3","LOQ","YES",-99","","267.8","1.00","3.7",""
"NAWC-100317-FRB-134","537","RES","320-32132-8","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"19","ng/L","U","7.5","DL","","","TRG","","","22","LOQ","YES",-99","","267.8","1.00","19",""
"NAWC-100317-FRB-134","537","RES","320-32132-8","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","","-99","DL","","","SURR","96","","","-99","LOQ","YES","37.3","","267.8","1.00","0",""
"NAWC-100317-FRB-134","537","RES","320-32132-8","TALSAC","STL00996","13C2
PFDA","40","ng/L","","","-99","DL","","","SURR","107","","","-99","LOQ","YES","37.3","","267.8","1.00","0",""
"NAWC-100317-RW-143","537","RES","320-32132-9","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"8.9","ng/L","J M","6.2","DL","","","TRG","","","36","LOQ","YES",-99","","274.6","1.00","15",""
"NAWC-100317-RW-143","537","RES","320-32132-9","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"10","ng/L","J","2.5","DL","","","TRG","","","18","LOQ","YES",-99","","274.6","1.00","7.3",""
"NAWC-100317-RW-143","537","RES","320-32132-9","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"11","ng/L","U","5.0","DL","","","TRG","","","27","LOQ","YES",-99","","274.6","1.00","11",""
"NAWC-100317-RW-143","537","RES","320-32132-9","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)","33","ng/L","U","15","DL","","TRG","","","82","LOQ","YES","-99","","274.6","1.00","33","","
"NAWC-100317-RW-143","537","RES","320-32132-9","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.4","ng/L","J","1.7","DL","","TRG","","","9.1","LOQ","YES","-99","","274.6","1.00","3.6","","
"NAWC-100317-RW-143","537","RES","320-32132-9","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.3","DL","","TRG","","","22","LOQ","YES","-99","","274.6","1.00","18","","
"NAWC-100317-RW-143","537","RES","320-32132-9","TALSAC","STL00993","13C2
PFHxA","23","ng/L","Q","-99","DL","","SURRE","64","","-99","LOQ","YES","36.4","","274.6","1.00","0","","
"NAWC-100317-RW-143","537","RES","320-32132-9","TALSAC","STL00996","13C2
PFDA","38","ng/L","","-99","DL","","SURRE","104","","-99","LOQ","YES","36.4","","274.6","1.00","0","","
"LCS 320-189331/2-A","537","RES","LCS 320-189331/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","130","ng/L","M","6.8","DL","","SPK","98","","40","LOQ","YES","133","","250","1.00","16","","
"LCS 320-189331/2-A","537","RES","LCS 320-189331/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","71.9","ng/L","","2.8","DL","","SPK","108","","20","LOQ","YES","66.7","","250","1.00","8.0","","
"LCS 320-189331/2-A","537","RES","LCS 320-189331/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","106","ng/L","","5.5","DL","","SPK","106","","30","LOQ","YES","100","","250","1.00","12","","
"LCS 320-189331/2-A","537","RES","LCS 320-189331/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","327","ng/L","","16","DL","","SPK","109","","90","LOQ","YES","300","","250","1.00","36","","
"LCS 320-189331/2-A","537","RES","LCS 320-189331/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","36.0","ng/L","","1.9","DL","","SPK","108","","10","LOQ","YES","33.3","","250","1.00","4.0","","
"LCS 320-189331/2-A","537","RES","LCS 320-189331/2-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","69.0","ng/L","","8.0","DL","","SPK","103","","24","LOQ","YES","66.7","","250","1.00","20","","
"LCS 320-189331/2-A","537","RES","LCS 320-189331/2-A","TALSAC","STL00993","13C2
PFHxA","39.9","ng/L","","-99","DL","","SURRE","100","","-99","LOQ","YES","40.0","","250","1.00","0","","
"LCS 320-189331/2-A","537","RES","LCS 320-189331/2-A","TALSAC","STL00996","13C2
PFDA","45.7","ng/L","","-99","DL","","SURRE","114","","-99","LOQ","YES","40.0","","250","1.00","0","","
"LCSD 320-189331/3-A","537","RES","LCSD 320-189331/3-A","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","132","ng/L","M","6.8","DL","","SPK","99","2","40","LOQ","YES","133","LCS 320-189331/2-
A","250","1.00","16","","
"LCSD 320-189331/3-A","537","RES","LCSD 320-189331/3-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","72.1","ng/L","","2.8","DL","","SPK","108","0","20","LOQ","YES","66.7","LCS 320-189331/2-
A","250","1.00","8.0","","
"LCSD 320-189331/3-A","537","RES","LCSD 320-189331/3-A","TALSAC","355-46-4","Perfluorohexanesulfonic
acid (PFHxS)","105","ng/L","","5.5","DL","","SPK","105","1","30","LOQ","YES","100","LCS 320-189331/2-
A","250","1.00","12","","
"LCSD 320-189331/3-A","537","RES","LCSD 320-189331/3-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","337","ng/L","","16","DL","","SPK","112","3","90","LOQ","YES","300","LCS 320-189331/2-
A","250","1.00","36","","
"LCSD 320-189331/3-A","537","RES","LCSD 320-189331/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","37.9","ng/L","","1.9","DL","","SPK","114","5","10","LOQ","YES","33.3","LCS 320-189331/2-
A","250","1.00","4.0","","
"LCSD 320-189331/3-A","537","RES","LCSD 320-189331/3-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","72.6","ng/L","","8.0","DL","","SPK","109","5","24","LOQ","YES","66.7","LCS 320-189331/2-
A","250","1.00","20","","
"LCSD 320-189331/3-A","537","RES","LCSD 320-189331/3-A","TALSAC","STL00993","13C2
PFHxA","39.6","ng/L","","-99","DL","","SURRE","99","","-99","LOQ","YES","40.0","LCS 320-189331/2-
A","250","1.00","0","","
"LCSD 320-189331/3-A","537","RES","LCSD 320-189331/3-A","TALSAC","STL00996","13C2
PFDA","46.4","ng/L","","-99","DL","","SURRE","116","","-99","LOQ","YES","40.0","LCS 320-189331/2-
A","250","1.00","0","","
"MB 320-189331/1-A","537","RES","MB 320-189331/1-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 320-189331/1-A","537","RES","MB 320-189331/1-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 320-189331/1-A","537","RES","MB 320-189331/1-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 320-189331/1-A","537","RES","MB 320-189331/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250","1.00","36",""
"MB 320-189331/1-A","537","RES","MB 320-189331/1-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 320-189331/1-A","537","RES","MB 320-189331/1-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","250","1.00","20",""
"MB 320-189331/1-A","537","RES","MB 320-189331/1-A","TALSAC","STL00993","13C2
PFHxA","40.3","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","40.0","","250","1.00","0",""
"MB 320-189331/1-A","537","RES","MB 320-189331/1-A","TALSAC","STL00996","13C2
PFDA","42.0","ng/L","","-99","DL","","SURR","105","","-99","LOQ","YES","40.0","","250","1.00","0",""
"Unknown","Unknown","NAWC-100317-RW-132","10/03/2017 08:10","AQ","320-32132-
1","NM","","2.40","537","METHOD","RES","10/13/2017 14:28","10/20/2017
21:27","TALSAC","COA","WET","NA","1","NA","NA","","100","320-189331","320-189331","NA","320-
190444","320-32132-1","10/04/2017 13:30","10/05/2017 14:25",""
"Unknown","Unknown","NAWC-100317-FRB-143","10/03/2017 13:35","AQ","320-32132-
10","FB","","2.40","537","METHOD","RES","10/13/2017 14:28","10/20/2017
22:19","TALSAC","COA","WET","NA","1","NA","NA","","100","320-189331","320-189331","NA","320-
190445","320-32132-1","10/04/2017 13:30","10/05/2017 14:25",""
"Unknown","Unknown","NAWC-100317-RW-149","10/03/2017 15:10","AQ","320-32132-
11","NM","","2.40","537","METHOD","RES","10/13/2017 14:28","10/20/2017
22:24","TALSAC","COA","WET","NA","1","NA","NA","","100","320-189331","320-189331","NA","320-
190445","320-32132-1","10/04/2017 13:30","10/05/2017 14:25",""
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12","FB","","2.40","537","METHOD","RES","10/13/2017 14:28","10/20/2017
22:29","TALSAC","COA","WET","NA","1","NA","NA","","100","320-189331","320-189331","NA","320-
190445","320-32132-1","10/04/2017 13:30","10/05/2017 14:25",""
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13","NM","","2.40","537","METHOD","RES","10/13/2017 14:28","10/20/2017
22:34","TALSAC","COA","WET","NA","1","NA","NA","","100","320-189331","320-189331","NA","320-
190445","320-32132-1","10/04/2017 13:30","10/05/2017 14:25",""
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14","FB","","2.40","537","METHOD","RES","10/13/2017 14:28","10/20/2017
22:38","TALSAC","COA","WET","NA","1","NA","NA","","100","320-189331","320-189331","NA","320-
190445","320-32132-1","10/04/2017 13:30","10/05/2017 14:25",""
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2","FB","","2.40","537","METHOD","RES","10/13/2017 14:28","10/20/2017
21:32","TALSAC","COA","WET","NA","1","NA","NA","","100","320-189331","320-189331","NA","320-
190444","320-32132-1","10/04/2017 13:30","10/05/2017 14:25",""
"Unknown","Unknown","NAWC-100317-RW-275","10/03/2017 09:10","AQ","320-32132-
3","NM","","2.40","537","METHOD","RES","10/13/2017 14:28","10/20/2017
21:37","TALSAC","COA","WET","NA","1","NA","NA","","100","320-189331","320-189331","NA","320-
190444","320-32132-1","10/04/2017 13:30","10/05/2017 14:25",""
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4","FB","","2.40","537","METHOD","RES","10/13/2017 14:28","10/20/2017
21:41","TALSAC","COA","WET","NA","1","NA","NA","","100","320-189331","320-189331","NA","320-
190444","320-32132-1","10/04/2017 13:30","10/05/2017 14:25",""
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5","NM","","2.40","537","METHOD","RES","10/13/2017 14:28","10/20/2017
21:46","TALSAC","COA","WET","NA","1","NA","NA","","100","320-189331","320-189331","NA","320-
190444","320-32132-1","10/04/2017 13:30","10/05/2017 14:25",""
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7","NM","","2.40","537","METHOD","RES","10/13/2017 14:28","10/20/2017
21:56","TALSAC","COA","WET","NA","1","NA","NA","","100","320-189331","320-189331","NA","320-
190444","320-32132-1","10/04/2017 13:30","10/05/2017 14:25",""
"Unknown","Unknown","NAWC-100317-FRB-134","10/03/2017 11:35","AQ","320-32132-
8","FB","","2.40","537","METHOD","RES","10/13/2017 14:28","10/20/2017
22:10","TALSAC","COA","WET","NA","1","NA","NA","","100","320-189331","320-189331","NA","320-
190445","320-32132-1","10/04/2017 13:30","10/05/2017 14:25",""
"Unknown","Unknown","NAWC-100317-RW-143","10/03/2017 13:40","AQ","320-32132-
9","NM","","2.40","537","METHOD","RES","10/13/2017 14:28","10/20/2017
22:15","TALSAC","COA","WET","NA","1","NA","NA","","100","320-189331","320-189331","NA","320-
190445","320-32132-1","10/04/2017 13:30","10/05/2017 14:25",""
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A","LCS","","-99","537","METHOD","RES","10/13/2017 14:28","10/20/2017
21:18","TALSAC","COA","WET","NA","1","NA","NA","","100","320-189331","320-189331","NA","320-
190444","320-32132-1","10/13/2017 14:28","10/05/2017 14:25",""
"Unknown","Unknown","LCSD 320-189331/3-A","","AQ","LCSD 320-189331/3-
A","LCSD","","-99","537","METHOD","RES","10/13/2017 14:28","10/20/2017
21:23","TALSAC","COA","WET","NA","1","NA","NA","","100","320-189331","320-189331","NA","320-
190444","320-32132-1","10/13/2017 14:28","10/05/2017 14:25",""
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A","MB","","-99","537","METHOD","RES","10/13/2017 14:28","10/20/2017
21:13","TALSAC","COA","WET","NA","1","NA","NA","","100","320-189331","320-189331","NA","320-
190444","320-32132-1","10/13/2017 14:28","10/05/2017 14:25",""



TO: A. FREBOWITZ **DATE:** NOVEMBER 17, 2017
FROM: TERRI L. SOLOMON **COPIES:** DV FILE
SUBJECT: ORGANIC DATA VALIDATION –POLYFLUOROALKYL SUBSTANCES (PFAS)
NAS JRB WILLOW GROVE
SAMPLE DELIVERY GROUP (SDG) 320-32132-1

SAMPLES: 7/Field Reagent Blank (FRB)
NAWC-100317-FRB-132 NAWC-100317-FRB-134
NAWC-100317-FRB-143 NAWC-100317-FRB-146
NAWC-100317-FRB-149 NAWC-100317-FRB-229
NAWC-100317-FRB-275

7/Drinking Water
NAWC-100317-RW-132 NAWC-100317-RW-134
NAWC-100317-RW-143 NAWC-100317-RW-146
NAWC-100317-RW-149 NAWC-100317-RW-229
NAWC-100317-RW-275

Overview

The sample set for NAS JRB Willow Grove, SDG 320-32132-1, consisted of seven (7) drinking water samples and seven (7) FRB samples. All samples were analyzed for select polyfluorinated alkyl acids including pentadecafluorooctanoic acid (PFOA), perfluorobutane sulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA) and perfluorooctane sulfonic acid (PFOS). No field duplicate sample pairs were included in this SDG.

The samples were collected by Tetra Tech on October 3, 2017 and analyzed by Test America-Sacramento. All sample analyses were conducted in accordance with EPA Method 537 version 1.1 analytical and reporting protocols.

The data contained in this SDG was validated with regard to the following parameters: data completeness, holding times, initial/continuing calibrations, laboratory method/FRBs, surrogate spike recoveries, laboratory control sample / laboratory control sample duplicate results, internal standard areas and recoveries, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

None.

Minor

The following surrogate recovery was below the 70% quality control limit. The sample was reanalyzed by the laboratory with a similar recovery and the original analysis was reported. The detected and nondetected results reported in the affected sample were qualified as estimated (J) and (UJ), respectively.

<u>Sample</u>	<u>Surrogate</u>
NAWC-100317-RW-143	13C2 Perfluorohexanoic acid

Detected results reported below the limit of quantitation (LOQ) but above the detection limit (DL) were qualified as estimated, (J).

TO: A. FREBOWITZ
SDG: 320-32132-1

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Notes

The laboratory incorrectly labeled two samples with the same sample number, NAWC-100317-RW-146, in the data package. Using the sample date and time from the chain of custody it was determined that one of the samples should have been labeled NAWC-100317-FRB-146. The Form Is were amended with the correct sample number.

Samples with detections and their associated FRBs are summarized below. No detected results were present in any FRBs.

<u>Sample</u>	<u>Associated FRB</u>
NAWC-100317-RW-132	NAWC-100317-FRB-132
NAWC-100317-RW-134	NAWC-100317-FRB-134
NAWC-100317-RW-143	NAWC-100317-FRB-143
NAWC-100317-RW-146	NAWC-100317-FRB-146
NAWC-100317-RW-149	NAWC-100317-FRB-149
NAWC-100317-RW-229	NAWC-100317-FRB-229
NAWC-100317-RW-275	NAWC-100317-FRB-275

Non-detected results were reported to the Limit of Detection (LOD).

The buffering agent Trizma was added to all drinking water samples.

Executive Summary

Laboratory Performance: One surrogate recovery was below the quality control limit.

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.
Terri L. Solomon
Chemist/Data Validator



Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

TO: A. FREBOWITZ
SDG: 320-32132-1

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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.

Appendix A

Qualified Analytical Results

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 ($< 2 \times \text{IDL}$ for inorganics and $< \text{CRQL}$ 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

PROJ_NO: 08005-WE04 SDG: 320-32132-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-100317-FRB-132			NAWC-100317-FRB-134			NAWC-100317-FRB-143			NAWC-100317-FRB-146		
	LAB_ID	320-32132-2			320-32132-8			320-32132-10			320-32132-6		
	SAMP_DATE	10/3/2017			10/3/2017			10/3/2017			10/3/2017		
	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		7.4	U		7.5	U		7.4	U		7.4	U	
PERFLUOROBUTANESULFONIC ACID		33	U		34	U		33	U		33	U	
PERFLUOROHEPTANOIC ACID		3.7	U		3.7	U		3.7	U		3.7	U	
PERFLUOROHEXANESULFONIC ACID		11	U		11	U		11	U		11	U	
PERFLUORONONANOIC ACID		19	U		19	U		19	U		19	U	
PERFLUOROOCTANE SULFONIC ACID		15	U		15	U		15	U		15	U	

PROJ_NO: 08005-WE04 SDG: 320-32132-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-100317-FRB-149			NAWC-100317-FRB-229			NAWC-100317-FRB-275			NAWC-100317-RW-132		
	LAB_ID	320-32132-12			320-32132-14			320-32132-4			320-32132-1		
	SAMP_DATE	10/3/2017			10/3/2017			10/3/2017			10/3/2017		
	QC_TYPE	FB			FB			FB			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		7.6	U		7.6	U		7.2	U		20		
PERFLUOROBUTANESULFONIC ACID		34	U		34	U		32	U		32	U	
PERFLUOROHEPTANOIC ACID		3.8	U		3.8	U		3.6	U		8	J	P
PERFLUOROHEXANESULFONIC ACID		11	U		11	U		11	U		11	U	
PERFLUORONONANOIC ACID		19	U		19	U		18	U		18	U	
PERFLUOROOCTANE SULFONIC ACID		15	U		15	U		14	U		10	J	P

PROJ_NO: 08005-WE04 SDG: 320-32132-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-100317-RW-134			NAWC-100317-RW-143			NAWC-100317-RW-146			NAWC-100317-RW-149		
	LAB_ID	320-32132-7			320-32132-9			320-32132-5			320-32132-11		
	SAMP_DATE	10/3/2017			10/3/2017			10/3/2017			10/3/2017		
	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		7	J	P	10	J	PR	24			14	J	P
PERFLUOROBUTANESULFONIC ACID		32	U		33	UJ	R	31	U		35	U	
PERFLUOROHEPTANOIC ACID		2.3	J	P	3.4	J	PR	5.4	J	P	4.5	J	P
PERFLUOROHEXANESULFONIC ACID		11	U		11	UJ	R	10	U		7.2	J	P
PERFLUORONONANOIC ACID		18	U		18	UJ	R	17	U		19	U	
PERFLUOROOCTANE SULFONIC ACID		8.6	J	P	8.9	J	PR	11	J	P	20	J	P

PROJ_NO: 08005-WE04 SDG: 320-32132-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-100317-RW-229			NAWC-100317-RW-275		
	LAB_ID	320-32132-13			320-32132-3		
	SAMP_DATE	10/3/2017			10/3/2017		
	QC_TYPE	NM			NM		
	UNITS	NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		39			20		
PERFLUOROBUTANESULFONIC ACID		33	U		31	U	
PERFLUOROHEPTANOIC ACID		14			6.6	J	P
PERFLUOROHXANESULFONIC ACID		13	J	P	8.8	J	P
PERFLUORONONANOIC ACID		18	U		17	U	
PERFLUOROOCTANE SULFONIC ACID		30	J	P	28	J	P

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: NAWC-100317-RW-132 Lab Sample ID: 320-32132-1
 Matrix: Water Lab File ID: 2017.10.20_537A_050.d
 Analysis Method: 537 Date Collected: 10/03/2017 08:10
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 277(mL) Date Analyzed: 10/20/2017 21:27
 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.: 190444 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	10	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	20		18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.0	J	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	109		70-130

Teri L. Salmeron
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-FRB-132</u>	Lab Sample ID: <u>320-32132-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_051.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 08:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>269.3 (mL)</u>	Date Analyzed: <u>10/20/2017 21:32</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190444</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.4	U	19	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	84	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	113		70-130

Ali L. Salem
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: NAWC-100317-RW-275 Lab Sample ID: 320-32132-3
 Matrix: Water Lab File ID: 2017.10.20_537A_052.d
 Analysis Method: 537 Date Collected: 10/03/2017 09:10
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 287.1(mL) Date Analyzed: 10/20/2017 21:37
 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.: 190444 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	J M	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	20		17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.8	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.6	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	119		70-130

Teri L. Salmeron
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: NAWC-100317-FRB-275 Lab Sample ID: 320-32132-4
 Matrix: Water Lab File ID: 2017.10.20_537A_053.d
 Analysis Method: 537 Date Collected: 10/03/2017 09:05
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 277.7(mL) Date Analyzed: 10/20/2017 21:41
 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.: 190444 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	121		70-130

Ali L. Salameh
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: NAWC-100317-RW-146 Lab Sample ID: 320-32132-5
 Matrix: Water Lab File ID: 2017.10.20_537A_054.d
 Analysis Method: 537 Date Collected: 10/03/2017 09:40
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 289(mL) Date Analyzed: 10/20/2017 21:46
 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.: 190444 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	24		17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.4	J	8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	119		70-130

Wesley L. Salomon
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: NAWC-100317-~~RW~~-146 FRB Lab Sample ID: 320-32132-6
 Matrix: Water Lab File ID: 2017.10.20_537A_055.d
 Analysis Method: 537 Date Collected: 10/03/2017 09:35
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 269.2 (mL) Date Analyzed: 10/20/2017 21:51
 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.: 190444 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.4	U	19	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	84	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	114		70-130


11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-RW-134</u>	Lab Sample ID: <u>320-32132-7</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_056.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 11:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>284.7(mL)</u>	Date Analyzed: <u>10/20/2017 21:56</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190444</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.6	J M	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	J	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.3	J M	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	83		70-130
STL00996	13C2 PFDA	107		70-130

Ali L. Salaman
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: NAWC-100317-FRB-134 Lab Sample ID: 320-32132-8
 Matrix: Water Lab File ID: 2017.10.20_537A_059.d
 Analysis Method: 537 Date Collected: 10/03/2017 11:35
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 267.8 (mL) Date Analyzed: 10/20/2017 22:10
 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.: 190445 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.5	U	19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	84	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	107		70-130

Ali L. Salameh
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: NAWC-100317-RW-143 Lab Sample ID: 320-32132-9
 Matrix: Water Lab File ID: 2017.10.20_537A_060.d
 Analysis Method: 537 Date Collected: 10/03/2017 13:40
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 274.6(mL) Date Analyzed: 10/20/2017 22:15
 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.: 190445 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.9	J M	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	10	J	18	7.3	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U UJ	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U UJ	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.4	J	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U UJ	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	64	Q	70-130
STL00996	13C2 PFDA	104		70-130

Wesley L. Salomon
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: NAWC-100317-FRB-143 Lab Sample ID: 320-32132-10
 Matrix: Water Lab File ID: 2017.10.20_537A_061.d
 Analysis Method: 537 Date Collected: 10/03/2017 13:35
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 269.8 (mL) Date Analyzed: 10/20/2017 22:19
 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.: 190445 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.4	U	19	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	83	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	112		70-130

Wesley L. Salomon
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: NAWC-100317-RW-149 Lab Sample ID: 320-32132-11
 Matrix: Water Lab File ID: 2017.10.20_537A_062.d
 Analysis Method: 537 Date Collected: 10/03/2017 15:10
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 256.6(mL) Date Analyzed: 10/20/2017 22:24
 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.: 190445 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	14	J	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.2	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.5	J	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	79		70-130
STL00996	13C2 PFDA	113		70-130

Theresa L. Salomon
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: NAWC-100317-FRB-149 Lab Sample ID: 320-32132-12
 Matrix: Water Lab File ID: 2017.10.20_537A_063.d
 Analysis Method: 537 Date Collected: 10/03/2017 15:05
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 262.9(mL) Date Analyzed: 10/20/2017 22:29
 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.: 190445 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	107		70-130

Wesley L. Salomon
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: NAWC-100317-RW-229 Lab Sample ID: 320-32132-13
 Matrix: Water Lab File ID: 2017.10.20_537A_064.d
 Analysis Method: 537 Date Collected: 10/03/2017 15:40
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 270.8 (mL) Date Analyzed: 10/20/2017 22:34
 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.: 190445 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	30	J M	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	39		18	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	22	18	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	13	J	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	14		9.2	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	83	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	72		70-130
STL00996	13C2 PFDA	113		70-130

Heidi L. Salzman
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: NAWC-100317-FRB-229 Lab Sample ID: 320-32132-14
 Matrix: Water Lab File ID: 2017.10.20_537A_065.d
 Analysis Method: 537 Date Collected: 10/03/2017 15:35
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 264.7(mL) Date Analyzed: 10/20/2017 22:38
 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.: 190445 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	128		70-130

Wesley L. Salzman
11/08/2017

Appendix B

Results as Reported by the Laboratory

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-RW-132</u>	Lab Sample ID: <u>320-32132-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_050.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 08:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>277(mL)</u>	Date Analyzed: <u>10/20/2017 21:27</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190444</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	10	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	20		18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.0	J	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	109		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-FRB-132</u>	Lab Sample ID: <u>320-32132-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_051.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 08:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>269.3 (mL)</u>	Date Analyzed: <u>10/20/2017 21:32</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190444</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.4	U	19	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	84	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	113		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-RW-275</u>	Lab Sample ID: <u>320-32132-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_052.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 09:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>287.1 (mL)</u>	Date Analyzed: <u>10/20/2017 21:37</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190444</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	J M	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	20		17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.8	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.6	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	119		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-FRB-275</u>	Lab Sample ID: <u>320-32132-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_053.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 09:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>277.7(mL)</u>	Date Analyzed: <u>10/20/2017 21:41</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190444</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	121		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-RW-146</u>	Lab Sample ID: <u>320-32132-5</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_054.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 09:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>289(mL)</u>	Date Analyzed: <u>10/20/2017 21:46</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190444</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	24		17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.4	J	8.7	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	119		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: NAWC-100317-RW-146 FRB Lab Sample ID: 320-32132-6
 Matrix: Water Lab File ID: 2017.10.20_537A_055.d
 Analysis Method: 537 Date Collected: 10/03/2017 09:35
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 269.2 (mL) Date Analyzed: 10/20/2017 21:51
 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.: 190444 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.4	U	19	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	84	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	114		70-130

Wesley L. Salomon
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-RW-134</u>	Lab Sample ID: <u>320-32132-7</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_056.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 11:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>284.7 (mL)</u>	Date Analyzed: <u>10/20/2017 21:56</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190444</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.6	J M	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	J	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.3	J M	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	83		70-130
STL00996	13C2 PFDA	107		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-FRB-134</u>	Lab Sample ID: <u>320-32132-8</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_059.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 11:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>267.8 (mL)</u>	Date Analyzed: <u>10/20/2017 22:10</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190445</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.5	U	19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	84	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	107		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-RW-143</u>	Lab Sample ID: <u>320-32132-9</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_060.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 13:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>274.6(mL)</u>	Date Analyzed: <u>10/20/2017 22:15</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190445</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.9	J M	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	10	J	18	7.3	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.4	J	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	64	Q	70-130
STL00996	13C2 PFDA	104		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-FRB-143</u>	Lab Sample ID: <u>320-32132-10</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_061.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 13:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>269.8 (mL)</u>	Date Analyzed: <u>10/20/2017 22:19</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100</u> ID: <u>3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190445</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.4	U	19	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	83	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	112		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-RW-149</u>	Lab Sample ID: <u>320-32132-11</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_062.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 15:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>256.6(mL)</u>	Date Analyzed: <u>10/20/2017 22:24</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190445</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	14	J	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.2	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.5	J	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	79		70-130
STL00996	13C2 PFDA	113		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Client Sample ID: NAWC-100317-FRB-149 Lab Sample ID: 320-32132-12

Matrix: Water Lab File ID: 2017.10.20_537A_063.d

Analysis Method: 537 Date Collected: 10/03/2017 15:05

Extraction Method: 537 Date Extracted: 10/13/2017 14:28

Sample wt/vol: 262.9(mL) Date Analyzed: 10/20/2017 22:29

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.: 190445 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	107		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-RW-229</u>	Lab Sample ID: <u>320-32132-13</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_064.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 15:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>270.8 (mL)</u>	Date Analyzed: <u>10/20/2017 22:34</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190445</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	30	J M	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	39		18	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	22	18	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	13	J	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	14		9.2	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	83	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	72		70-130
STL00996	13C2 PFDA	113		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-FRB-229</u>	Lab Sample ID: <u>320-32132-14</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_065.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 15:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>264.7(mL)</u>	Date Analyzed: <u>10/20/2017 22:38</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190445</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	128		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

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact		Project Manager: Andy Frebowitz		Site Contact: Mary Kay Bond		Date: 10/3/2017		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		 320-32132 Chain of Custody		SAMPLER: Mary Kay Bond		For Lab Use Only: Walk-in Client: Lab Sampling:	
King of Prussia, PA 19406		☐ CALENDAR DAYS ☐ WORKING DAYS							
610-382-1174		TAT if different from Below 21							
610-491-9688		☐ 2 weeks							
Project Name: WE04		☐ 1 week							
Site: WE04		☐ 2 days							
P O # 1132358 (through EarthToxics)		☐ 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_D05
NAWC-100317-RW-132	10/3/2017	8:10	G	DW	2	N	N	Y	
NAWC-100317-FRB-132	10/3/2017	8:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-100317-RW-275	10/3/2017	9:10	G	DW	6	N	N	Y	
NAWC-100317-FRB-275	10/3/2017	9:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-100317-RW-146	10/3/2017	9:40	G	DW	2	N	N	Y	
NAWC-100317-FRB-146	10/3/2017	9:35	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-100317-RW-134	10/3/2017	11:40	G	DW	2	N	N	Y	
NAWC-100317-FRB-134	10/3/2017	11:35	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-100317-RW-143	10/3/2017	13:40	G	DW	2	N	N	Y	
NAWC-100317-FRB-143	10/3/2017	13:35	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-100317-RW-149	10/3/2017	15:10	G	DW	2	N	N	Y	
NAWC-100317-FRB-149	10/3/2017	15:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-100317-RW-229	10/3/2017	15:40	G	DW	2	N	N	Y	
NAWC-100317-FRB-229	10/3/2017	15:35	G	DW	2	N	N	Y	Field Reagent Blank
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma									
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown					☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months				
FedEx Tracking: 7703 9983 1012									
Custody Seals Intact: ☐ Yes ☐ No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: 24°C		Corr'd:		Therm ID No.: AKC	
Relinquished by: Mary Kay Bond		Company: Tetra Tech		Date/Time: 10/4/17 18:00		Received by: [Signature]		Company: TH WS	
Relinquished by:		Company:		Date/Time:		Received by:		Company:	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:	

Job Narrative
320-32132-1

Receipt

The samples were received on 10/4/2017 1:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 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: Surrogate recovery for the following sample was outside control limits: NAWC-100317-RW-143 (320-32132-9). Re-analysis was performed with concurring results. The original analysis has been 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 320-189331.

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

Method Summary

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

TestAmerica Job ID: 320-32132-1

Method	Method Description	Protocol	Laboratory
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: 320-32132-1

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-32132-1	NAWC-100317-RW-132	Water	10/03/17 08:10	10/04/17 13:30
320-32132-2	NAWC-100317-FRB-132	Water	10/03/17 08:05	10/04/17 13:30
320-32132-3	NAWC-100317-RW-275	Water	10/03/17 09:10	10/04/17 13:30
320-32132-4	NAWC-100317-FRB-275	Water	10/03/17 09:05	10/04/17 13:30
320-32132-5	NAWC-100317-RW-146	Water	10/03/17 09:40	10/04/17 13:30
320-32132-6	NAWC-100317-RW-146	Water	10/03/17 09:35	10/04/17 13:30
320-32132-7	NAWC-100317-RW-134	Water	10/03/17 11:40	10/04/17 13:30
320-32132-8	NAWC-100317-FRB-134	Water	10/03/17 11:35	10/04/17 13:30
320-32132-9	NAWC-100317-RW-143	Water	10/03/17 13:40	10/04/17 13:30
320-32132-10	NAWC-100317-FRB-143	Water	10/03/17 13:35	10/04/17 13:30
320-32132-11	NAWC-100317-RW-149	Water	10/03/17 15:10	10/04/17 13:30
320-32132-12	NAWC-100317-FRB-149	Water	10/03/17 15:05	10/04/17 13:30
320-32132-13	NAWC-100317-RW-229	Water	10/03/17 15:40	10/04/17 13:30
320-32132-14	NAWC-100317-FRB-229	Water	10/03/17 15:35	10/04/17 13:30

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-32132-1

SDG No.: _____

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-100317-RW-132	320-32132-1	84	109
NAWC-100317-FRB-132	320-32132-2	96	113
NAWC-100317-RW-275	320-32132-3	85	119
NAWC-100317-FRB-275	320-32132-4	96	121
NAWC-100317-RW-146	320-32132-5	86	119
NAWC-100317-RW-146	320-32132-6	94	114
NAWC-100317-RW-134	320-32132-7	83	107
NAWC-100317-FRB-134	320-32132-8	96	107
NAWC-100317-RW-143	320-32132-9	64 Q	104
NAWC-100317-FRB-143	320-32132-10	95	112
NAWC-100317-RW-149	320-32132-11	79	113
NAWC-100317-FRB-149	320-32132-12	95	107
NAWC-100317-RW-229	320-32132-13	72	113
NAWC-100317-FRB-229	320-32132-14	98	128
	MB 320-189331/1-A	101	105
	LCS 320-189331/2-A	100	114
	LCSD 320-189331/3-A	99	116

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.: 320-32132-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.10.20_537A_048.d
 Lab ID: LCS 320-189331/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	133	130	98	70-130	M
Perfluorooctanoic acid (PFOA)	66.7	71.9	108	70-130	
Perfluorononanoic acid (PFNA)	66.7	69.0	103	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	106	106	70-130	
Perfluoroheptanoic acid (PFHpA)	33.3	36.0	108	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	327	109	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.: 320-32132-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.10.20_537A_049.d
 Lab ID: LCSD 320-189331/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	133	132	99	2	30	70-130	M
Perfluorooctanoic acid (PFOA)	66.7	72.1	108	0	30	70-130	
Perfluorononanoic acid (PFNA)	66.7	72.6	109	5	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	105	105	1	30	70-130	
Perfluoroheptanoic acid (PFHpA)	33.3	37.9	114	5	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	337	112	3	30	70-130	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Lab File ID: 2017.10.20_537A_047.d Lab Sample ID: MB 320-189331/1-A
 Matrix: Water Date Extracted: 10/13/2017 14:28
 Instrument ID: A8_N Date Analyzed: 10/20/2017 21:13
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-189331/2-A	2017.10.20_537A_048.d	10/20/2017 21:18
	LCSD 320-189331/3-A	2017.10.20_537A_049.d	10/20/2017 21:23
NAWC-100317-RW-132	320-32132-1	2017.10.20_537A_050.d	10/20/2017 21:27
NAWC-100317-FRB-132	320-32132-2	2017.10.20_537A_051.d	10/20/2017 21:32
NAWC-100317-RW-275	320-32132-3	2017.10.20_537A_052.d	10/20/2017 21:37
NAWC-100317-FRB-275	320-32132-4	2017.10.20_537A_053.d	10/20/2017 21:41
NAWC-100317-RW-146	320-32132-5	2017.10.20_537A_054.d	10/20/2017 21:46
NAWC-100317-RW-146	320-32132-6	2017.10.20_537A_055.d	10/20/2017 21:51
NAWC-100317-RW-134	320-32132-7	2017.10.20_537A_056.d	10/20/2017 21:56
NAWC-100317-FRB-134	320-32132-8	2017.10.20_537A_059.d	10/20/2017 22:10
NAWC-100317-RW-143	320-32132-9	2017.10.20_537A_060.d	10/20/2017 22:15
NAWC-100317-FRB-143	320-32132-10	2017.10.20_537A_061.d	10/20/2017 22:19
NAWC-100317-RW-149	320-32132-11	2017.10.20_537A_062.d	10/20/2017 22:24
NAWC-100317-FRB-149	320-32132-12	2017.10.20_537A_063.d	10/20/2017 22:29
NAWC-100317-RW-229	320-32132-13	2017.10.20_537A_064.d	10/20/2017 22:34
NAWC-100317-FRB-229	320-32132-14	2017.10.20_537A_065.d	10/20/2017 22:38

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-189331/1-A
 Matrix: Water Lab File ID: 2017.10.20_537A_047.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 10/13/2017 14:28
 Sample wt/vol: 250 (mL) Date Analyzed: 10/20/2017 21:13
 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.: 190444 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	101		70-130
STL00996	13C2 PFDA	105		70-130

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 09/20/2017 02:56
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 09/20/2017 03:19
 Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		2116635	1.86	5570738	2.11		
UPPER LIMIT		3174953	2.36	8356107	2.61		
LOWER LIMIT		1058318	1.36	2785369	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-185329/11		2252465	1.85	5723538	2.10		
ICV 320-185329/13		2616480	1.85	7294448	2.10		
CCV 320-190444/1 CCVIS		1708886	1.88	5239449	2.12		
MB 320-189331/1-A		1772538	1.88	5264025	2.12		
LCS 320-189331/2-A		1699695	1.88	5200651	2.12		
LCSD 320-189331/3-A		1642035	1.88	5027322	2.12		
320-32132-1	NAWC-100317-RW-132	1698819	1.88	5121505	2.12		
320-32132-2	NAWC-100317-FRB-132	1726608	1.89	5125020	2.13		
320-32132-3	NAWC-100317-RW-275	1610344	1.87	5057931	2.12		
320-32132-4	NAWC-100317-FRB-275	1886218	1.88	5401469	2.12		
320-32132-5	NAWC-100317-RW-146	1753617	1.87	5223140	2.12		
320-32132-6	NAWC-100317-RW-146	1785533	1.88	5329603	2.12		
320-32132-7	NAWC-100317-RW-134	1693408	1.88	5137204	2.12		
CCV 320-190444/13 CCVIS		1826407	1.87	5345335	2.12		
CCV 320-190445/13 CCVIS		1826407	1.87	5345335	2.12		
320-32132-8	NAWC-100317-FRB-134	1834581	1.87	5405544	2.12		
320-32132-9	NAWC-100317-RW-143	1942278	1.88	6003895	2.12		
320-32132-10	NAWC-100317-FRB-143	1755409	1.88	5349350	2.12		
320-32132-11	NAWC-100317-RW-149	1957151	1.88	5991734	2.12		
320-32132-12	NAWC-100317-FRB-149	1752876	1.87	5373811	2.12		
320-32132-13	NAWC-100317-RW-229	1860530	1.88	5656035	2.12		
320-32132-14	NAWC-100317-FRB-229	1709466	1.87	5242457	2.12		
CCV 320-190445/22 CCVIS		1760502	1.88	5237323	2.12		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area

RT Limit = $\pm$ 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.: 320-32132-1
 SDG No.: _____
 Sample No.: CCV 320-190444/1 Date Analyzed: 10/20/2017 21:04
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.10.20_537A_045 Heated Purge: (Y/N) N
 Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1708886	1.88	5239449	2.12		
UPPER LIMIT		2392440	2.38	7335229	2.62		
LOWER LIMIT		1196220	1.38	3667614	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-189331/1-A		1772538	1.88	5264025	2.12		
LCS 320-189331/2-A		1699695	1.88	5200651	2.12		
LCSD 320-189331/3-A		1642035	1.88	5027322	2.12		
320-32132-1	NAWC-100317-RW-132	1698819	1.88	5121505	2.12		
320-32132-2	NAWC-100317-FRB-132	1726608	1.89	5125020	2.13		
320-32132-3	NAWC-100317-RW-275	1610344	1.87	5057931	2.12		
320-32132-4	NAWC-100317-FRB-275	1886218	1.88	5401469	2.12		
320-32132-5	NAWC-100317-RW-146	1753617	1.87	5223140	2.12		
320-32132-6	NAWC-100317-RW-146	1785533	1.88	5329603	2.12		
320-32132-7	NAWC-100317-RW-134	1693408	1.88	5137204	2.12		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area

RT Limit = $\pm$ 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.: 320-32132-1
 SDG No.: _____
 Sample No.: CCV 320-190444/13 Date Analyzed: 10/20/2017 22:00
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.10.20_537A_057 Heated Purge: (Y/N) N
 Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1826407	1.87	5345335	2.12		
UPPER LIMIT		2556970	2.37	7483469	2.62		
LOWER LIMIT		1278485	1.37	3741735	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-189331/1-A		1772538	1.88	5264025	2.12		
LCS 320-189331/2-A		1699695	1.88	5200651	2.12		
LCSD 320-189331/3-A		1642035	1.88	5027322	2.12		
320-32132-1	NAWC-100317-RW-132	1698819	1.88	5121505	2.12		
320-32132-2	NAWC-100317-FRB-132	1726608	1.89	5125020	2.13		
320-32132-3	NAWC-100317-RW-275	1610344	1.87	5057931	2.12		
320-32132-4	NAWC-100317-FRB-275	1886218	1.88	5401469	2.12		
320-32132-5	NAWC-100317-RW-146	1753617	1.87	5223140	2.12		
320-32132-6	NAWC-100317-RW-146	1785533	1.88	5329603	2.12		
320-32132-7	NAWC-100317-RW-134	1693408	1.88	5137204	2.12		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area

RT Limit = $\pm$ 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.: 320-32132-1
 SDG No.: _____
 Sample No.: CCV 320-190445/13 Date Analyzed: 10/20/2017 22:00
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.10.20_537A_057 Heated Purge: (Y/N) N
 Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1826407	1.87	5345335	2.12		
UPPER LIMIT		2556970	2.37	7483469	2.62		
LOWER LIMIT		1278485	1.37	3741735	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-32132-8	NAWC-100317-FRB-134	1834581	1.87	5405544	2.12		
320-32132-9	NAWC-100317-RW-143	1942278	1.88	6003895	2.12		
320-32132-10	NAWC-100317-FRB-143	1755409	1.88	5349350	2.12		
320-32132-11	NAWC-100317-RW-149	1957151	1.88	5991734	2.12		
320-32132-12	NAWC-100317-FRB-149	1752876	1.87	5373811	2.12		
320-32132-13	NAWC-100317-RW-229	1860530	1.88	5656035	2.12		
320-32132-14	NAWC-100317-FRB-229	1709466	1.87	5242457	2.12		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area

RT Limit = $\pm$ 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.: 320-32132-1
 SDG No.: _____
 Sample No.: CCV 320-190445/22 Date Analyzed: 10/20/2017 22:43
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.10.20_537A_066 Heated Purge: (Y/N) N
 Calibration ID: 34457

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1760502	1.88	5237323	2.12		
UPPER LIMIT		2464703	2.38	7332252	2.62		
LOWER LIMIT		1232351	1.38	3666126	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-32132-8	NAWC-100317-FRB-134	1834581	1.87	5405544	2.12		
320-32132-9	NAWC-100317-RW-143	1942278	1.88	6003895	2.12		
320-32132-10	NAWC-100317-FRB-143	1755409	1.88	5349350	2.12		
320-32132-11	NAWC-100317-RW-149	1957151	1.88	5991734	2.12		
320-32132-12	NAWC-100317-FRB-149	1752876	1.87	5373811	2.12		
320-32132-13	NAWC-100317-RW-229	1860530	1.88	5656035	2.12		
320-32132-14	NAWC-100317-FRB-229	1709466	1.87	5242457	2.12		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area

RT Limit = $\pm$ 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.: 320-32132-1 Analy Batch No.: 185329

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/20/2017 02:56 Calibration End Date: 09/20/2017 03:19 Calibration ID: 34457

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_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)	1.1549 0.7675	1.2218	1.1299	0.9825	0.8671	QuaF		1.2127	-0.002495						1.0000		0.9600
Perfluoroheptanoic acid (PFHpA)	0.9156 0.9157	1.0104	0.9599	0.9323	0.9167	Ave		0.9418				4.0		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.6240 1.5024	1.7562	1.6778	1.6725	1.5962	Ave		1.6382				5.3		30.0			
Perfluorooctanoic acid (PFOA)	0.8827 0.9310	0.9355	0.9297	0.9101	0.9278	Ave		0.9195				2.2		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.8786 0.9472	0.9205	0.9514	0.9450	0.9475	Ave		0.9317				3.0		30.0			
Perfluorononanoic acid (PFNA)	0.6171 0.6192	0.6458	0.6231	0.6183	0.6076	Ave		0.6218				2.1		30.0			
13C2 PFHxA	1.1170 1.2085	1.1856	1.1778	1.1659	1.1757	Ave		1.1718				2.6		30.0			
13C2 PFDA	0.5262 0.5719	0.5663	0.5603	0.5520	0.5699	Ave		0.5578				3.1		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.: 320-32132-1 Analy Batch No.: 185329

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/20/2017 02:56 Calibration End Date: 09/20/2017 03:19 Calibration ID: 34457

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_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	QuaF	2072419 26277877	5031340	9714039	16708415	22246597	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	202553 3731330	492336	996370	1954380	2871658	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	971572 17148552	2411042	4809005	9481986	13653533	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	390753 7591950	912252	1931186	3817782	5816384	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	700862 14414630	1684976	3635963	7143258	10806665	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PF OA	Ave	273016 5046017	629304	1293375	2592159	3806555	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PF OA	Ave	2470192 2461679	2599092	2444565	2443470	2454801	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	1163662 1164862	1241510	1162968	1156914	1189895	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD
QuaF = Quadratic ISTD forced zero

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1 Analy Batch No.: 185329

SDG No.: _____

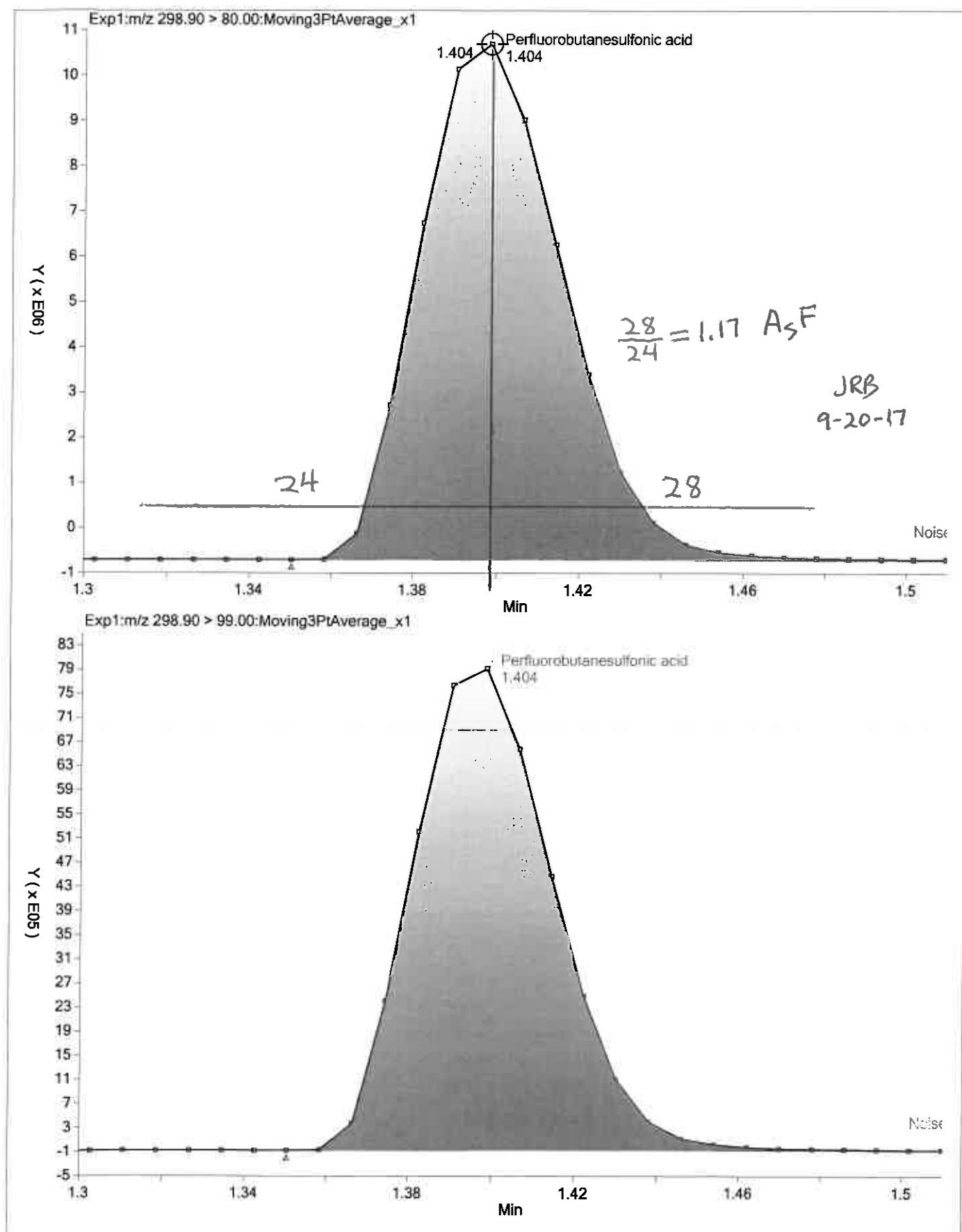
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N

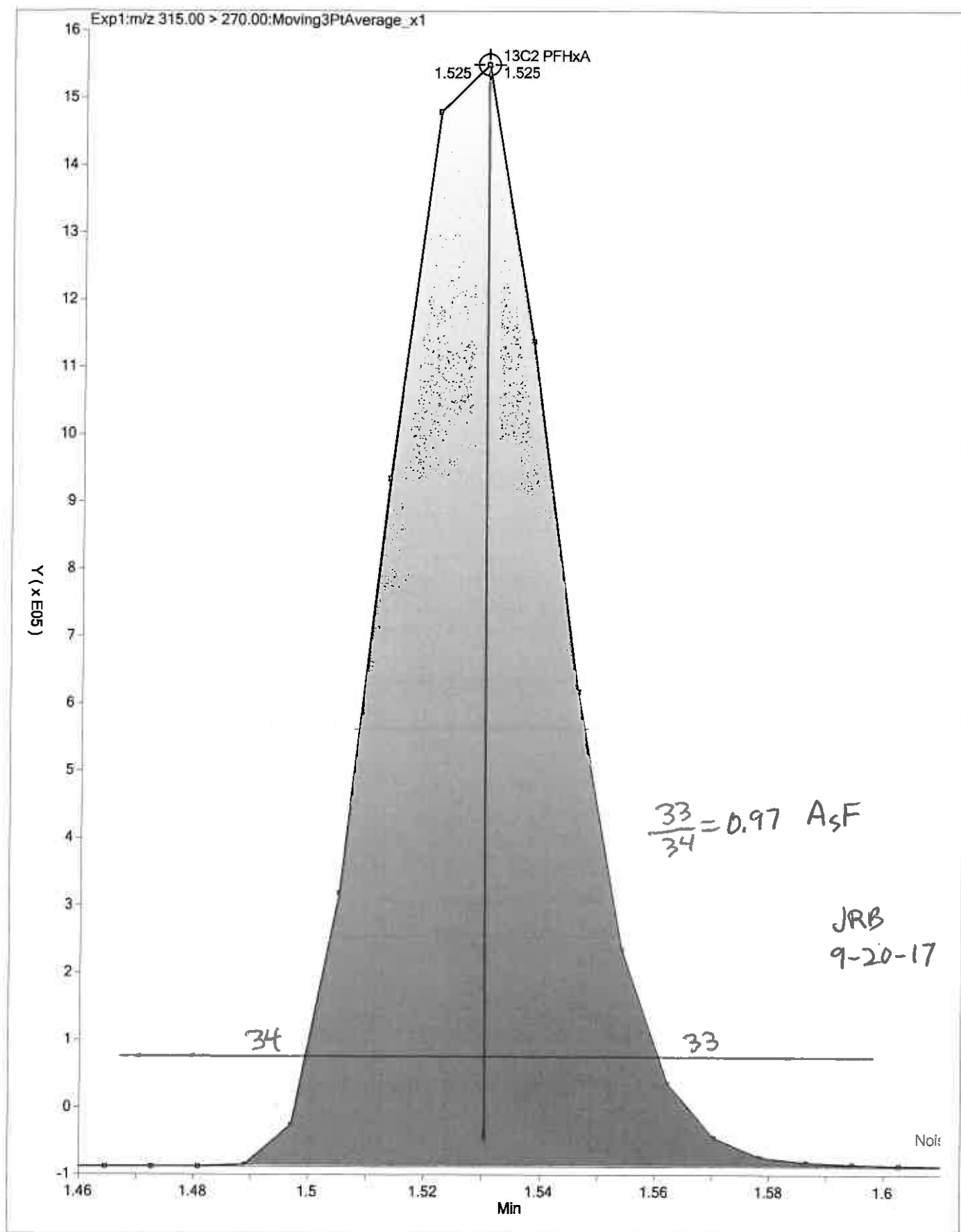
Calibration Start Date: 09/20/2017 02:56 Calibration End Date: 09/20/2017 03:19 Calibration ID: 34457

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185329/4	2017.09.19_537ICAL_004.d
Level 2	IC 320-185329/5	2017.09.19_537ICAL_005.d
Level 3	IC 320-185329/6	2017.09.19_537ICAL_006.d
Level 4	IC 320-185329/7	2017.09.19_537ICAL_007.d
Level 5	IC 320-185329/8	2017.09.19_537ICAL_008.d
Level 6	IC 320-185329/9	2017.09.19_537ICAL_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)	-3.0	5.3	3.0	-0.7	-1.6	1.3	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	-2.8	7.3	1.9	-1.0	-2.7	-2.8	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-0.9	7.2	2.4	2.1	-2.6	-8.3	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-4.0	1.7	1.1	-1.0	0.9	1.3	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-5.7	-1.2	2.1	1.4	1.7	1.7	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-0.8	3.8	0.2	-0.6	-2.3	-0.4	50	30	30	30	30	30
13C2 PFHxA	-4.7	1.2	0.5	-0.5	0.3	3.1	30	30	30	30	30	30
13C2 PFDA	-5.7	1.5	0.5	-1.0	2.2	2.5	30	30	30	30	30	30





FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-185329/11 Calibration Date: 09/20/2017 03:29
 Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19
 Lab File ID: 2017.09.19_537ICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.235		21.3	20.0	6.5	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9779		2.31	2.22	3.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.762		7.17	6.67	7.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9059		4.38	4.45	-1.5	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9490		9.06	8.89	1.9	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6352		4.54	4.45	2.2	50.0
13C2 PFHxA	Ave	1.172	1.139		9.72	10.0	-2.8	30.0
13C2 PFDA	Ave	0.5578	0.5694		10.2	10.0	2.1	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Lab Sample ID: ICV 320-185329/13 Calibration Date: 09/20/2017 03:38
 Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19
 Lab File ID: 2017.09.19_537ICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9069		92.5	100	-7.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9703		10.3	10.0	3.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.860		22.8	20.1	13.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9535		21.2	20.5	3.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	1.134		24.0	19.7	21.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.7173		23.2	20.1	15.3	30.0
13C2 PFHxA	Ave	1.172	1.165		9.94	10.0	-0.6	30.0
13C2 PFDA	Ave	0.5578	0.5781		10.4	10.0	3.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-190437/4 Calibration Date: 10/20/2017 17:49
 Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19
 Lab File ID: 2017.10.20_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)	QuaF		1.204		20.7	20.0	3.7	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9757		2.30	2.22	3.6	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.732		7.05	6.67	5.7	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.8825		4.27	4.45	-4.0	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.8839		8.44	8.89	-5.1	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.5891		4.21	4.45	-5.3	50.0
13C2 PFHxA	Ave	1.172	1.198		10.2	10.0	2.3	30.0
13C2 PFDA	Ave	0.5578	0.5295		9.49	10.0	-5.1	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Lab Sample ID: CCV 320-190444/1 Calibration Date: 10/20/2017 21:04
 Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19
 Lab File ID: 2017.10.20_537A_045.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9552		157	135	16.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	1.016		16.2	15.0	7.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.614		44.4	45.0	-1.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9447		30.8	30.0	2.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9208		59.3	60.0	-1.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6327		30.5	30.0	1.7	30.0
13C2 PFHxA	Ave	1.172	1.324		11.3	10.0	13.0	30.0
13C2 PFDA	Ave	0.5578	0.5802		10.4	10.0	4.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Lab Sample ID: CCV 320-190444/13 Calibration Date: 10/20/2017 22:00
 Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19
 Lab File ID: 2017.10.20_537A_057.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.218		50.4	45.0	12.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	1.015		5.39	5.00	7.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.777		16.3	15.0	8.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9311		10.1	10.0	1.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9347		20.1	20.0	0.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6224		10.0	10.0	0.0	30.0
13C2 PFHxA	Ave	1.172	1.281		10.9	10.0	9.3	30.0
13C2 PFDA	Ave	0.5578	0.5826		10.4	10.0	4.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Lab Sample ID: CCV 320-190445/13 Calibration Date: 10/20/2017 22:00
 Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19
 Lab File ID: 2017.10.20_537A_057.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.218		50.4	45.0	12.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	1.015		5.39	5.00	7.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.777		16.3	15.0	8.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9311		10.1	10.0	1.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9347		20.1	20.0	0.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6224		10.0	10.0	0.0	30.0
13C2 PFHxA	Ave	1.172	1.281		10.9	10.0	9.3	30.0
13C2 PFDA	Ave	0.5578	0.5826		10.4	10.0	4.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1
 SDG No.: _____
 Lab Sample ID: CCV 320-190445/22 Calibration Date: 10/20/2017 22:43
 Instrument ID: A8_N Calib Start Date: 09/20/2017 02:56
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/20/2017 03:19
 Lab File ID: 2017.10.20_537A_066.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9420		153	135	13.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9418	0.9682		15.4	15.0	2.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.638	1.613		44.3	45.0	-1.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9195	0.9144		29.9	30.0	-0.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9317	0.9355		60.3	60.0	0.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6218	0.6209		30.0	30.0	-0.2	30.0
13C2 PFHxA	Ave	1.172	1.297		11.1	10.0	10.7	30.0
13C2 PFDA	Ave	0.5578	0.5872		10.5	10.0	5.3	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Instrument ID: A8_N Start Date: 09/20/2017 02:56Analysis Batch Number: 185329 End Date: 09/20/2017 03:38

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-185329/4		09/20/2017 02:56	1	2017.09.19_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-185329/5		09/20/2017 03:00	1	2017.09.19_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-185329/6		09/20/2017 03:05	1	2017.09.19_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-185329/7 ICISAV		09/20/2017 03:10	1	2017.09.19_537I CAL 007.d	GeminiC18 3x100 3(mm)
IC 320-185329/8		09/20/2017 03:15	1	2017.09.19_537I CAL 008.d	GeminiC18 3x100 3(mm)
IC 320-185329/9		09/20/2017 03:19	1	2017.09.19_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 03:24	1		GeminiC18 3x100 3(mm)
CCVL 320-185329/11		09/20/2017 03:29	1	2017.09.19_537I CAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/20/2017 03:34	1		GeminiC18 3x100 3(mm)
ICV 320-185329/13		09/20/2017 03:38	1	2017.09.19_537I CAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Instrument ID: A8_N Start Date: 10/20/2017 17:49

Analysis Batch Number: 190437 End Date: 10/20/2017 17:49

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-190437/4		10/20/2017 17:49	1	2017.10.20_537A 004.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-32132-1

SDG No.: _____

Instrument ID: A8_NStart Date: 10/20/2017 21:04Analysis Batch Number: 190444End Date: 10/20/2017 22:00

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-190444/1 CCVIS		10/20/2017 21:04	1	2017.10.20_537A 045.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/20/2017 21:08	1		GeminiC18 3x100 3(mm)
MB 320-189331/1-A		10/20/2017 21:13	1	2017.10.20_537A 047.d	GeminiC18 3x100 3(mm)
LCS 320-189331/2-A		10/20/2017 21:18	1	2017.10.20_537A 048.d	GeminiC18 3x100 3(mm)
LCSD 320-189331/3-A		10/20/2017 21:23	1	2017.10.20_537A 049.d	GeminiC18 3x100 3(mm)
320-32132-1		10/20/2017 21:27	1	2017.10.20_537A 050.d	GeminiC18 3x100 3(mm)
320-32132-2		10/20/2017 21:32	1	2017.10.20_537A 051.d	GeminiC18 3x100 3(mm)
320-32132-3		10/20/2017 21:37	1	2017.10.20_537A 052.d	GeminiC18 3x100 3(mm)
320-32132-4		10/20/2017 21:41	1	2017.10.20_537A 053.d	GeminiC18 3x100 3(mm)
320-32132-5		10/20/2017 21:46	1	2017.10.20_537A 054.d	GeminiC18 3x100 3(mm)
320-32132-6		10/20/2017 21:51	1	2017.10.20_537A 055.d	GeminiC18 3x100 3(mm)
320-32132-7		10/20/2017 21:56	1	2017.10.20_537A 056.d	GeminiC18 3x100 3(mm)
CCV 320-190444/13 CCVIS		10/20/2017 22:00	1	2017.10.20_537A 057.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-32132-1

SDG No.: _____

Instrument ID: A8_NStart Date: 10/20/2017 22:00Analysis Batch Number: 190445End Date: 10/20/2017 22:43

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-190445/13 CCVIS		10/20/2017 22:00	1	2017.10.20_537A 057.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/20/2017 22:05	1		GeminiC18 3x100 3(mm)
320-32132-8		10/20/2017 22:10	1	2017.10.20_537A 059.d	GeminiC18 3x100 3(mm)
320-32132-9		10/20/2017 22:15	1	2017.10.20_537A 060.d	GeminiC18 3x100 3(mm)
320-32132-10		10/20/2017 22:19	1	2017.10.20_537A 061.d	GeminiC18 3x100 3(mm)
320-32132-11		10/20/2017 22:24	1	2017.10.20_537A 062.d	GeminiC18 3x100 3(mm)
320-32132-12		10/20/2017 22:29	1	2017.10.20_537A 063.d	GeminiC18 3x100 3(mm)
320-32132-13		10/20/2017 22:34	1	2017.10.20_537A 064.d	GeminiC18 3x100 3(mm)
320-32132-14		10/20/2017 22:38	1	2017.10.20_537A 065.d	GeminiC18 3x100 3(mm)
CCV 320-190445/22 CCVIS		10/20/2017 22:43	1	2017.10.20_537A 066.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32132-1

SDG No.: _____

Batch Number: 189331 Batch Start Date: 10/13/17 14:27 Batch Analyst: Long, Tyrel WBatch Method: 537 Batch End Date: 10/19/17 14:36

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00051
MB 320-189331/1		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCS 320-189331/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCSD 320-189331/3		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-32132-A-1	NAWC-100317-RW-132	537, 537	T	304.42 g	27.39 g	277 mL	1.00 mL	7 SU	100 uL
320-32132-A-2	NAWC-100317-FRB-132	537, 537	T	296.29 g	27.04 g	269.3 mL	1.00 mL	7 SU	100 uL
320-32132-A-3	NAWC-100317-RW-275	537, 537	T	314.34 g	27.20 g	287.1 mL	1.00 mL	7 SU	100 uL
320-32132-A-4	NAWC-100317-FRB-275	537, 537	T	304.93 g	27.22 g	277.7 mL	1.00 mL	7 SU	100 uL
320-32132-A-5	NAWC-100317-RW-146	537, 537	T	316.88 g	27.84 g	289 mL	1.00 mL	7 SU	100 uL
320-32132-A-6	NAWC-100317-RW-146	537, 537	T	296.34 g	27.11 g	269.2 mL	1.00 mL	7 SU	100 uL
320-32132-A-7	NAWC-100317-RW-134	537, 537	T	312.46 g	27.73 g	284.7 mL	1.00 mL	7 SU	100 uL
320-32132-A-8	NAWC-100317-FRB-134	537, 537	T	294.68 g	26.90 g	267.8 mL	1.00 mL	7 SU	100 uL
320-32132-A-9	NAWC-100317-RW-143	537, 537	T	302.09 g	27.53 g	274.6 mL	1.00 mL	7 SU	100 uL
320-32132-A-10	NAWC-100317-FRB-143	537, 537	T	296.75 g	26.97 g	269.8 mL	1.00 mL	7 SU	100 uL
320-32132-A-11	NAWC-100317-RW-149	537, 537	T	284.19 g	27.56 g	256.6 mL	1.00 mL	7 SU	100 uL
320-32132-A-12	NAWC-100317-FRB-149	537, 537	T	290.01 g	27.13 g	262.9 mL	1.00 mL	7 SU	100 uL
320-32132-A-13	NAWC-100317-RW-229	537, 537	T	298.10 g	27.34 g	270.8 mL	1.00 mL	7 SU	100 uL
320-32132-A-14	NAWC-100317-FRB-229	537, 537	T	291.52 g	26.87 g	264.7 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00026	LC537-SU 00051	AnalysisComment			
MB 320-189331/1		537, 537			100 uL	Chlorine ND			
LCS 320-189331/2		537, 537		100 uL	100 uL	Chlorine ND			
LCSD 320-189331/3		537, 537		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.: 320-32132-1

SDG No.: _____

Batch Number: 189331 Batch Start Date: 10/13/17 14:27 Batch Analyst: Long, Tyrel WBatch Method: 537 Batch End Date: 10/19/17 14:36

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00026	LC537-SU 00051	AnalysisComment			
320-32132-A-1	NAWC-100317-RW-1 32	537, 537	T		100 uL	Chlorine ND			
320-32132-A-2	NAWC-100317-FRB- 132	537, 537	T		100 uL	Chlorine ND			
320-32132-A-3	NAWC-100317-RW-2 75	537, 537	T		100 uL	Chlorine ND			
320-32132-A-4	NAWC-100317-FRB- 275	537, 537	T		100 uL	Chlorine ND			
320-32132-A-5	NAWC-100317-RW-1 46	537, 537	T		100 uL	Chlorine ND			
320-32132-A-6	NAWC-100317-RW-1 46	537, 537	T		100 uL	Chlorine ND			
320-32132-A-7	NAWC-100317-RW-1 34	537, 537	T		100 uL	Chlorine ND			
320-32132-A-8	NAWC-100317-FRB- 134	537, 537	T		100 uL	Chlorine ND			
320-32132-A-9	NAWC-100317-RW-1 43	537, 537	T		100 uL	Chlorine ND			
320-32132-A-10	NAWC-100317-FRB- 143	537, 537	T		100 uL	Chlorine ND			
320-32132-A-11	NAWC-100317-RW-1 49	537, 537	T		100 uL	Chlorine ND			
320-32132-A-12	NAWC-100317-FRB- 149	537, 537	T		100 uL	Chlorine ND			
320-32132-A-13	NAWC-100317-RW-2 29	537, 537	T		100 uL	Chlorine ND			
320-32132-A-14	NAWC-100317-FRB- 229	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.: 320-32132-1

SDG No.: _____

Batch Number: 189331 Batch Start Date: 10/13/17 14:27 Batch Analyst: Long, Tyrel WBatch Method: 537 Batch End Date: 10/19/17 14:36

Batch Notes	
Batch Comment	IS:1041860 BD: CCB/TQN FV:TQN AL:TQN
Methanol ID	1052423
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TQN
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	TWL
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	TWL
SPE Cartridge ID	6357081-08
Trizma ID	SLBR4303V
Reagent Water ID	10/12/17

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.

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-189331

Analyst: Long, Tyrel W

Batch Open: 10/13/2017 2:27:00PM

Method Code: 320-537_Prep-320

Batch End: 10/19/2017 2:36:00PM

Extraction of Perfluorinated Alkyl Acids

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Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd Adj1 Adj2			Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
MB-320-189331/1 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine ND	
			1.00 mL								
LCS-320-189331/2 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine ND	
			1.00 mL								
LCSD-320-189331/3 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine ND	
			1.00 mL								
320-32132-A-1 (537_DOD5)	N/A (320-32132-1)	304.42 g	277 mL	7			10/8/17	16_Days	4	Chlorine ND	
		27.39 g	1.00 mL								
320-32132-A-2 (537_DOD5)	N/A (320-32132-1)	296.29 g	269.3 mL	7			10/8/17	16_Days	4	Chlorine ND	
		27.04 g	1.00 mL								
320-32132-A-3 (537_DOD5)	N/A (320-32132-1)	314.34 g	287.1 mL	7			10/8/17	16_Days	4	Chlorine ND	
		27.20 g	1.00 mL								
320-32132-A-4 (537_DOD5)	N/A (320-32132-1)	304.93 g	277.7 mL	7			10/8/17	16_Days	4	Chlorine ND	
		27.22 g	1.00 mL								
320-32132-A-5 (537_DOD5)	N/A (320-32132-1)	316.88 g	289 mL	7			10/8/17	16_Days	4	Chlorine ND	
		27.84 g	1.00 mL								
320-32132-A-6 (537_DOD5)	N/A (320-32132-1)	296.34 g	269.2 mL	7			10/8/17	16_Days	4	Chlorine ND	
		27.11 g	1.00 mL								
320-32132-A-7 (537_DOD5)	N/A (320-32132-1)	312.46 g	284.7 mL	7			10/8/17	16_Days	4	Chlorine ND	
		27.73 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-189331

Analyst: Long, Tyrel W

Batch Open: 10/13/2017 2:27:00PM

Method Code: 320-537_Prep-320

Batch End: 10/19/2017 2:36:00PM

11	320-32132-A-8 (537_DOD5)	N/A (320-32132-1)	294.68 g 26.90 g	267.8 mL 1.00 mL	7		10/8/17	16_Days	4	Chlorine ND	
12	320-32132-A-9 (537_DOD5)	N/A (320-32132-1)	302.09 g 27.53 g	274.6 mL 1.00 mL	7		10/8/17	16_Days	4	Chlorine ND RI	
13	320-32132-A-10 (537_DOD5)	N/A (320-32132-1)	296.75 g 26.97 g	269.8 mL 1.00 mL	7		10/8/17	16_Days	4	Chlorine ND	
14	320-32132-A-11 (537_DOD5)	N/A (320-32132-1)	284.19 g 27.56 g	256.6 mL 1.00 mL	7		10/8/17	16_Days	4	Chlorine ND	
15	320-32132-A-12 (537_DOD5)	N/A (320-32132-1)	290.01 g 27.13 g	262.9 mL 1.00 mL	7		10/8/17	16_Days	4	Chlorine ND	
16	320-32132-A-13 (537_DOD5)	N/A (320-32132-1)	298.10 g 27.34 g	270.8 mL 1.00 mL	7		10/8/17	16_Days	4	Chlorine ND	
17	320-32132-A-14 (537_DOD5)	N/A (320-32132-1)	291.52 g 26.87 g	264.7 mL 1.00 mL	7		10/8/17	16_Days	4	Chlorine ND	

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-189331

Analyst: Long, Tyrel W

Batch Open: 10/13/2017 2:27:00PM

Method Code: 320-537_Prep-320

Batch End: 10/19/2017 2:36:00PM

Batch Notes

Manifold ID

Trizma ID SLBR4303V

SPE Cartridge ID 6357081-08

Methanol ID 1052423

Reagent Water ID 10/12/17

Pipette ID H14930F

Analyst ID - TA Reagent Drop JER

Analyst ID - TA Reagent Drop TWL

Witness

Analyst ID - SU Reagent Drop JER

Analyst ID - SU Reagent Drop TWL

Witness

Analyst ID - IS Reagent Drop JER

Analyst ID - IS Reagent Drop TQN

Witness

Batch Comment IS:1041860 BD: CCB/TQN FV:TQN AL:TQN

Comments

PFAS Calibration Calculations:

Initial Calibration 9/20/2017
Instrument A8_N

Perfluorohexanesulfonic acid

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF
3	971572	5717338	28.7	1.62571	1.624
6.67	2411042	5904759	28.7	1.75695	1.7562
15	4809005	5478893	28.7	1.67940	1.6778
30	9481986	5418565	28.7	1.67408	1.6725
45	13653533	5450221	28.7	1.59772	1.5962
60	17148552	5454650	28.7	1.50380	1.5024
Average				1.63961	1.6382
Standard Deviation				0.0859	
RSD				0.0524	
%RSD				5.24164	5.3

Continuing Calibration 10/20/2017 @ 17:49
A8_N

Perfluorohexanesulfonic acid

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
6.67	2433028	6041408	28.7	1.7329	5.7786651	1.732	5.7

Willow Grove
SDG 320-32132-1

Sample Identification

NAWC-100317-RW-132

Compound

Perfluorooctanesulfonic acid

Compound Area	476894
Internal Standard Amount (ng)	28.7
Dilution Factor	1
Internal Standard Area	5121505
Average RRF	0.9317
Sample Volume(ml)	277
Volume Extract (ml)	1
Injection Volume (µl)	1

Concentration

10.3550 ~~ug/L~~

ng/L

JS 11/17/17

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\2017.10.20_537A_050.d
 Lims ID: 320-32132-A-1-A
 Client ID: NAWC-100317-RW-132
 Sample Type: Client
 Inject. Date: 20-Oct-2017 21:27:44 ALS Bottle#: 36 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32132-a-1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171021-49420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Oct-2017 10:58:46 Calib Date: 20-Sep-2017 03:19:48
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170919-48154.b\2017.09.19_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK012

First Level Reviewer: barnettj Date: 23-Oct-2017 10:18:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.402	0.017	1.000	288058	1.33		192	
298.90 > 99.00	1.419	1.402	0.017	1.000	191438		1.50(0.00-0.00)	279	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.524	0.016	1.000	1678924	8.43		5762	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.668	0.024	1.000	298925	1.02		107	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.668	0.024	1.000	353023	2.21		42.7	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.855	0.027		1698819	10.0		4992	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.856	0.026	1.000	870727	5.57		19.7	
413.00 > 169.00	1.882	1.856	0.026	1.000	512505		1.70(0.00-0.00)	1086	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.108	0.016		5121505	28.7		3135	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.116	0.016	1.000	68892	0.6521		2.1	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.117	0.007	1.000	476894	2.87		56.7	
499.00 > 99.00	2.124	2.117	0.007	1.000	82071		5.81(0.00-0.00)	31.6	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.282	0.002	1.000	1035820	10.9		5643	

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32132-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-100317-RW-132</u>	Lab Sample ID: <u>320-32132-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.20_537A_050.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/03/2017 08:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/13/2017 14:28</u>
Sample wt/vol: <u>277(mL)</u>	Date Analyzed: <u>10/20/2017 21:27</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>190444</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	10	J	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	20		18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.0	J	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	109		70-130

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