



**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 320-32464-1**

*Naval Air Warfare Center Warminster
Warminster, Pennsylvania*

August 2019

N00158_000736
WILLOW_GROVE_NAS
SSIC 5000-33c

**LABORATORY DATA PACKAGE, 320-32464-1, NAWC WARMINSTER NAS
WILLOW GROVE PA**

11/06/2017
TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-32464-1

Job Description: Warminster: PFAS, NAS JRB Willow Grove

For:
Tetra Tech, Inc.
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Suite 260
King of Prussia, PA 19406
Attention: Andy Frebowitz



Approved for release.
David R Alltucker
Project Manager I
11/6/2017 9:14 AM

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11/06/2017

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Definitions/Glossary

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

TestAmerica Job ID: 320-32464-1

Qualifiers

LCMS

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

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
320-32464-1

Receipt

The samples were received on 10/17/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.6° C.

LCMS

Method(s) 537, 537 DW: 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.

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 batch 320-191138.

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: 320-32464-1

Client Sample ID: WGNA-101617-RW-3283

Lab Sample ID: 320-32464-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	20	J M	38	6.4	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	20		19	2.6	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.3	J	28	5.2	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.4	J	9.4	1.8	ng/L	1		537	Total/NA
Perfluorobutanesulfonic acid (PFBS)	21	J	85	15	ng/L	1		537	Total/NA

Client Sample ID: WGNA-101617-FRB-3283

Lab Sample ID: 320-32464-2

No Detections.

Client Sample ID: WGNA-101617-RW-150

Lab Sample ID: 320-32464-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	11	J M	35	5.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	20		17	2.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.3	J	8.7	1.7	ng/L	1		537	Total/NA

Client Sample ID: WGNA-101617-FRB-150

Lab Sample ID: 320-32464-4

No Detections.

Client Sample ID: WGNA-101617-RW-3382

Lab Sample ID: 320-32464-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	12	J M	36	6.2	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	14	J M	18	2.6	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.3	J	27	5.0	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.2	J	9.1	1.7	ng/L	1		537	Total/NA

Client Sample ID: WGNA-101617-FRB-3382

Lab Sample ID: 320-32464-6

No Detections.

Client Sample ID: WGNA-101617-RW-3991

Lab Sample ID: 320-32464-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	16	J M	35	5.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	17		17	2.4	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.2	J	26	4.8	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: WGNA-101617-FRB-3991

Lab Sample ID: 320-32464-8

No Detections.

Client Sample ID: WGNA-101617-RW-085

Lab Sample ID: 320-32464-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	11	J M	37	6.3	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	9.8	J	19	2.6	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.7	J	9.3	1.8	ng/L	1		537	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

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

TestAmerica Job ID: 320-32464-1

Client Sample ID: WGNA-101617-FRB-085

Lab Sample ID: 320-32464-10

No Detections.

Client Sample ID: WGNA-101617-RW-4834

Lab Sample ID: 320-32464-11

No Detections.

Client Sample ID: WGNA-101617-FRB-4834

Lab Sample ID: 320-32464-12

No Detections.

Client Sample ID: WGNA-101617-DUP11

Lab Sample ID: 320-32464-13

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	16	J M	36	6.0	ng/L	1			537	Total/NA
Perfluorooctanoic acid (PFOA)	15	J	18	2.5	ng/L	1			537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.0	J	27	4.9	ng/L	1			537	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.2	J	8.9	1.7	ng/L	1			537	Total/NA

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: 320-32464-1

Client Sample ID: WGNA-101617-RW-3283

Date Collected: 10/16/17 08:10

Date Received: 10/17/17 09:30

Lab Sample ID: 320-32464-1

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	20	J M	38	6.4	ng/L	—	10/25/17 16:24	10/31/17 18:22	1
Perfluorooctanoic acid (PFOA)	20		19	2.6	ng/L		10/25/17 16:24	10/31/17 18:22	1
Perfluorononanoic acid (PFNA)	19	U M	23	7.5	ng/L		10/25/17 16:24	10/31/17 18:22	1
Perfluorohexanesulfonic acid (PFHxS)	8.3	J	28	5.2	ng/L		10/25/17 16:24	10/31/17 18:22	1
Perfluoroheptanoic acid (PFHpA)	6.4	J	9.4	1.8	ng/L		10/25/17 16:24	10/31/17 18:22	1
Perfluorobutanesulfonic acid (PFBS)	21	J	85	15	ng/L		10/25/17 16:24	10/31/17 18:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	84		70 - 130				10/25/17 16:24	10/31/17 18:22	1
13C2 PFDA	97		70 - 130				10/25/17 16:24	10/31/17 18:22	1

Client Sample ID: WGNA-101617-FRB-3283

Date Collected: 10/16/17 08:05

Date Received: 10/17/17 09:30

Lab Sample ID: 320-32464-2

Matrix: Water

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	—	10/25/17 16:24	10/31/17 18:27	1
Perfluorooctanoic acid (PFOA)	7.2	U	18	2.5	ng/L		10/25/17 16:24	10/31/17 18:27	1
Perfluorononanoic acid (PFNA)	18	U	22	7.2	ng/L		10/25/17 16:24	10/31/17 18:27	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	5.0	ng/L		10/25/17 16:24	10/31/17 18:27	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	1.7	ng/L		10/25/17 16:24	10/31/17 18:27	1
Perfluorobutanesulfonic acid (PFBS)	33	U	81	15	ng/L		10/25/17 16:24	10/31/17 18:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		70 - 130				10/25/17 16:24	10/31/17 18:27	1
13C2 PFDA	96		70 - 130				10/25/17 16:24	10/31/17 18:27	1

Client Sample ID: WGNA-101617-RW-150

Date Collected: 10/16/17 08:40

Date Received: 10/17/17 09:30

Lab Sample ID: 320-32464-3

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	11	J M	35	5.9	ng/L	—	10/25/17 16:24	10/31/17 18:32	1
Perfluorooctanoic acid (PFOA)	20		17	2.4	ng/L		10/25/17 16:24	10/31/17 18:32	1
Perfluorononanoic acid (PFNA)	17	U M	21	6.9	ng/L		10/25/17 16:24	10/31/17 18:32	1
Perfluorohexanesulfonic acid (PFHxS)	10	U	26	4.8	ng/L		10/25/17 16:24	10/31/17 18:32	1
Perfluoroheptanoic acid (PFHpA)	8.3	J	8.7	1.7	ng/L		10/25/17 16:24	10/31/17 18:32	1
Perfluorobutanesulfonic acid (PFBS)	31	U M	78	14	ng/L		10/25/17 16:24	10/31/17 18:32	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	72		70 - 130				10/25/17 16:24	10/31/17 18:32	1
13C2 PFDA	96		70 - 130				10/25/17 16:24	10/31/17 18:32	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-32464-1

Client Sample ID: WGNA-101617-FRB-150

Lab Sample ID: 320-32464-4

Date Collected: 10/16/17 08:35

Matrix: Water

Date Received: 10/17/17 09:30

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		10/25/17 16:24	10/31/17 18:37	1
Perfluorooctanoic acid (PFOA)	7.2	U	18	2.5	ng/L		10/25/17 16:24	10/31/17 18:37	1
Perfluorononanoic acid (PFNA)	18	U	21	7.2	ng/L		10/25/17 16:24	10/31/17 18:37	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	4.9	ng/L		10/25/17 16:24	10/31/17 18:37	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	8.9	1.7	ng/L		10/25/17 16:24	10/31/17 18:37	1
Perfluorobutanesulfonic acid (PFBS)	32	U	81	14	ng/L		10/25/17 16:24	10/31/17 18:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		70 - 130	10/25/17 16:24	10/31/17 18:37	1
13C2 PFDA	95		70 - 130	10/25/17 16:24	10/31/17 18:37	1

Client Sample ID: WGNA-101617-RW-3382

Lab Sample ID: 320-32464-5

Date Collected: 10/16/17 10:10

Matrix: Water

Date Received: 10/17/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	12	J M	36	6.2	ng/L		10/25/17 16:24	10/31/17 18:42	1
Perfluorooctanoic acid (PFOA)	14	J M	18	2.6	ng/L		10/25/17 16:24	10/31/17 18:42	1
Perfluorononanoic acid (PFNA)	18	U M	22	7.3	ng/L		10/25/17 16:24	10/31/17 18:42	1
Perfluorohexanesulfonic acid (PFHxS)	8.3	J	27	5.0	ng/L		10/25/17 16:24	10/31/17 18:42	1
Perfluoroheptanoic acid (PFHpA)	4.2	J	9.1	1.7	ng/L		10/25/17 16:24	10/31/17 18:42	1
Perfluorobutanesulfonic acid (PFBS)	33	U	82	15	ng/L		10/25/17 16:24	10/31/17 18:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	79		70 - 130	10/25/17 16:24	10/31/17 18:42	1
13C2 PFDA	89		70 - 130	10/25/17 16:24	10/31/17 18:42	1

Client Sample ID: WGNA-101617-FRB-3382

Lab Sample ID: 320-32464-6

Date Collected: 10/16/17 10:05

Matrix: Water

Date Received: 10/17/17 09:30

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		10/25/17 16:24	10/31/17 18:46	1
Perfluorooctanoic acid (PFOA)	7.4	U	18	2.6	ng/L		10/25/17 16:24	10/31/17 18:46	1
Perfluorononanoic acid (PFNA)	18	U	22	7.4	ng/L		10/25/17 16:24	10/31/17 18:46	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	28	5.1	ng/L		10/25/17 16:24	10/31/17 18:46	1
Perfluoroheptanoic acid (PFHpA)	3.7	U	9.2	1.7	ng/L		10/25/17 16:24	10/31/17 18:46	1
Perfluorobutanesulfonic acid (PFBS)	33	U	83	15	ng/L		10/25/17 16:24	10/31/17 18:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		70 - 130	10/25/17 16:24	10/31/17 18:46	1
13C2 PFDA	92		70 - 130	10/25/17 16:24	10/31/17 18:46	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-32464-1

Client Sample ID: WGNA-101617-RW-3991

Lab Sample ID: 320-32464-7

Date Collected: 10/16/17 09:10

Matrix: Water

Date Received: 10/17/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	J M	35	5.9	ng/L		10/25/17 16:24	10/31/17 18:51	1
Perfluorooctanoic acid (PFOA)	17		17	2.4	ng/L		10/25/17 16:24	10/31/17 18:51	1
Perfluorononanoic acid (PFNA)	17	U M	21	6.9	ng/L		10/25/17 16:24	10/31/17 18:51	1
Perfluorohexanesulfonic acid (PFHxS)	7.2	J	26	4.8	ng/L		10/25/17 16:24	10/31/17 18:51	1
Perfluoroheptanoic acid (PFHpA)	5.4	J	8.7	1.6	ng/L		10/25/17 16:24	10/31/17 18:51	1
Perfluorobutanesulfonic acid (PFBS)	31	U	78	14	ng/L		10/25/17 16:24	10/31/17 18:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	78		70 - 130				10/25/17 16:24	10/31/17 18:51	1
13C2 PFDA	93		70 - 130				10/25/17 16:24	10/31/17 18:51	1

Client Sample ID: WGNA-101617-FRB-3991

Lab Sample ID: 320-32464-8

Date Collected: 10/16/17 09:05

Matrix: Water

Date Received: 10/17/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	5.9	ng/L		10/25/17 16:24	10/31/17 19:05	1
Perfluorooctanoic acid (PFOA)	7.0	U	17	2.4	ng/L		10/25/17 16:24	10/31/17 19:05	1
Perfluorononanoic acid (PFNA)	17	U	21	7.0	ng/L		10/25/17 16:24	10/31/17 19:05	1
Perfluorohexanesulfonic acid (PFHxS)	10	U	26	4.8	ng/L		10/25/17 16:24	10/31/17 19:05	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	1.7	ng/L		10/25/17 16:24	10/31/17 19:05	1
Perfluorobutanesulfonic acid (PFBS)	31	U	78	14	ng/L		10/25/17 16:24	10/31/17 19:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	87		70 - 130				10/25/17 16:24	10/31/17 19:05	1
13C2 PFDA	93		70 - 130				10/25/17 16:24	10/31/17 19:05	1

Client Sample ID: WGNA-101617-RW-085

Lab Sample ID: 320-32464-9

Date Collected: 10/16/17 09:40

Matrix: Water

Date Received: 10/17/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	11	J M	37	6.3	ng/L		10/25/17 16:24	10/31/17 19:10	1
Perfluorooctanoic acid (PFOA)	9.8	J	19	2.6	ng/L		10/25/17 16:24	10/31/17 19:10	1
Perfluorononanoic acid (PFNA)	19	U M	22	7.5	ng/L		10/25/17 16:24	10/31/17 19:10	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	28	5.1	ng/L		10/25/17 16:24	10/31/17 19:10	1
Perfluoroheptanoic acid (PFHpA)	2.7	J	9.3	1.8	ng/L		10/25/17 16:24	10/31/17 19:10	1
Perfluorobutanesulfonic acid (PFBS)	34	U	84	15	ng/L		10/25/17 16:24	10/31/17 19:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	76		70 - 130				10/25/17 16:24	10/31/17 19:10	1
13C2 PFDA	94		70 - 130				10/25/17 16:24	10/31/17 19:10	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-32464-1

Client Sample ID: WGNA-101617-FRB-085

Lab Sample ID: 320-32464-10

Date Collected: 10/16/17 09:35

Matrix: Water

Date Received: 10/17/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	36	6.2	ng/L		10/25/17 16:24	10/31/17 19:15	1
Perfluorooctanoic acid (PFOA)	7.3	U	18	2.5	ng/L		10/25/17 16:24	10/31/17 19:15	1
Perfluorononanoic acid (PFNA)	18	U	22	7.3	ng/L		10/25/17 16:24	10/31/17 19:15	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	5.0	ng/L		10/25/17 16:24	10/31/17 19:15	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	1.7	ng/L		10/25/17 16:24	10/31/17 19:15	1
Perfluorobutanesulfonic acid (PFBS)	33	U	82	15	ng/L		10/25/17 16:24	10/31/17 19:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		70 - 130	10/25/17 16:24	10/31/17 19:15	1
13C2 PFDA	98		70 - 130	10/25/17 16:24	10/31/17 19:15	1

Client Sample ID: WGNA-101617-RW-4834

Lab Sample ID: 320-32464-11

Date Collected: 10/16/17 10:40

Matrix: Water

Date Received: 10/17/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	6.0	ng/L		10/25/17 16:24	10/31/17 19:20	1
Perfluorooctanoic acid (PFOA)	7.0	U	18	2.5	ng/L		10/25/17 16:24	10/31/17 19:20	1
Perfluorononanoic acid (PFNA)	18	U	21	7.0	ng/L		10/25/17 16:24	10/31/17 19:20	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	26	4.8	ng/L		10/25/17 16:24	10/31/17 19:20	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	1.7	ng/L		10/25/17 16:24	10/31/17 19:20	1
Perfluorobutanesulfonic acid (PFBS)	32	U	79	14	ng/L		10/25/17 16:24	10/31/17 19:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		70 - 130	10/25/17 16:24	10/31/17 19:20	1
13C2 PFDA	96		70 - 130	10/25/17 16:24	10/31/17 19:20	1

Client Sample ID: WGNA-101617-FRB-4834

Lab Sample ID: 320-32464-12

Date Collected: 10/16/17 10:35

Matrix: Water

Date Received: 10/17/17 09:30

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		10/25/17 16:24	10/31/17 19:24	1
Perfluorooctanoic acid (PFOA)	7.2	U	18	2.5	ng/L		10/25/17 16:24	10/31/17 19:24	1
Perfluorononanoic acid (PFNA)	18	U	22	7.2	ng/L		10/25/17 16:24	10/31/17 19:24	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	4.9	ng/L		10/25/17 16:24	10/31/17 19:24	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	1.7	ng/L		10/25/17 16:24	10/31/17 19:24	1
Perfluorobutanesulfonic acid (PFBS)	32	U	81	14	ng/L		10/25/17 16:24	10/31/17 19:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	87		70 - 130	10/25/17 16:24	10/31/17 19:24	1
13C2 PFDA	95		70 - 130	10/25/17 16:24	10/31/17 19:24	1

Client Sample Results

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

TestAmerica Job ID: 320-32464-1

Client Sample ID: WGNA-101617-DUP11

Lab Sample ID: 320-32464-13

Date Collected: 10/16/17 07:00

Matrix: Water

Date Received: 10/17/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	J M	36	6.0	ng/L		10/25/17 16:24	10/31/17 19:29	1
Perfluorooctanoic acid (PFOA)	15	J	18	2.5	ng/L		10/25/17 16:24	10/31/17 19:29	1
Perfluorononanoic acid (PFNA)	18	U M	21	7.1	ng/L		10/25/17 16:24	10/31/17 19:29	1
Perfluorohexanesulfonic acid (PFHxS)	7.0	J	27	4.9	ng/L		10/25/17 16:24	10/31/17 19:29	1
Perfluoroheptanoic acid (PFHpA)	5.2	J	8.9	1.7	ng/L		10/25/17 16:24	10/31/17 19:29	1
Perfluorobutanesulfonic acid (PFBS)	32	U	80	14	ng/L		10/25/17 16:24	10/31/17 19:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	76		70 - 130	10/25/17 16:24	10/31/17 19:29	1
13C2 PFDA	92		70 - 130	10/25/17 16:24	10/31/17 19:29	1

Default Detection Limits

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-32464-1

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: 320-32464-1

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)
320-32464-1	WGNA-101617-RW-3283	84	97
320-32464-2	WGNA-101617-FRB-3283	91	96
320-32464-3	WGNA-101617-RW-150	72	96
320-32464-4	WGNA-101617-FRB-150	90	95
320-32464-5	WGNA-101617-RW-3382	79	89
320-32464-6	WGNA-101617-FRB-3382	91	92
320-32464-7	WGNA-101617-RW-3991	78	93
320-32464-8	WGNA-101617-FRB-3991	87	93
320-32464-9	WGNA-101617-RW-085	76	94
320-32464-10	WGNA-101617-FRB-085	92	98
320-32464-11	WGNA-101617-RW-4834	92	96
320-32464-12	WGNA-101617-FRB-4834	87	95
320-32464-13	WGNA-101617-DUP11	76	92
LCS 320-191138/2-A	Lab Control Sample	92	98
LCSD 320-191138/3-A	Lab Control Sample Dup	94	98
MB 320-191138/1-A	Method Blank	89	99

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: 320-32464-1

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

Lab Sample ID: MB 320-191138/1-A

Matrix: Water

Analysis Batch: 192279

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 191138

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		10/25/17 16:24	10/31/17 18:08	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		10/25/17 16:24	10/31/17 18:08	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		10/25/17 16:24	10/31/17 18:08	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		10/25/17 16:24	10/31/17 18:08	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		10/25/17 16:24	10/31/17 18:08	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		10/25/17 16:24	10/31/17 18:08	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		70 - 130	10/25/17 16:24	10/31/17 18:08	1
13C2 PFDA	99		70 - 130	10/25/17 16:24	10/31/17 18:08	1

Lab Sample ID: LCS 320-191138/2-A

Matrix: Water

Analysis Batch: 192279

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 191138

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	133	127	M	ng/L		96	70 - 130
Perfluorooctanoic acid (PFOA)	66.7	64.9		ng/L		97	70 - 130
Perfluorononanoic acid (PFNA)	66.7	65.1		ng/L		98	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	100	101		ng/L		101	70 - 130
Perfluoroheptanoic acid (PFHpA)	33.3	33.0		ng/L		99	70 - 130
Perfluorobutanesulfonic acid (PFBS)	300	279		ng/L		93	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	92		70 - 130
13C2 PFDA	98		70 - 130

Lab Sample ID: LCSD 320-191138/3-A

Matrix: Water

Analysis Batch: 192279

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 191138

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	133	135	M	ng/L		101	70 - 130	5	30
Perfluorooctanoic acid (PFOA)	66.7	69.4		ng/L		104	70 - 130	7	30
Perfluorononanoic acid (PFNA)	66.7	68.6		ng/L		103	70 - 130	5	30
Perfluorohexanesulfonic acid (PFHxS)	100	106		ng/L		106	70 - 130	5	30
Perfluoroheptanoic acid (PFHpA)	33.3	36.2		ng/L		108	70 - 130	9	30
Perfluorobutanesulfonic acid (PFBS)	300	288		ng/L		96	70 - 130	3	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
13C2 PFHxA	94		70 - 130
13C2 PFDA	98		70 - 130

TestAmerica Sacramento

QC Association Summary

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

TestAmerica Job ID: 320-32464-1

LCMS

Prep Batch: 191138

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-32464-1	WGNA-101617-RW-3283	Total/NA	Water	537	
320-32464-2	WGNA-101617-FRB-3283	Total/NA	Water	537	
320-32464-3	WGNA-101617-RW-150	Total/NA	Water	537	
320-32464-4	WGNA-101617-FRB-150	Total/NA	Water	537	
320-32464-5	WGNA-101617-RW-3382	Total/NA	Water	537	
320-32464-6	WGNA-101617-FRB-3382	Total/NA	Water	537	
320-32464-7	WGNA-101617-RW-3991	Total/NA	Water	537	
320-32464-8	WGNA-101617-FRB-3991	Total/NA	Water	537	
320-32464-9	WGNA-101617-RW-085	Total/NA	Water	537	
320-32464-10	WGNA-101617-FRB-085	Total/NA	Water	537	
320-32464-11	WGNA-101617-RW-4834	Total/NA	Water	537	
320-32464-12	WGNA-101617-FRB-4834	Total/NA	Water	537	
320-32464-13	WGNA-101617-DUP11	Total/NA	Water	537	
MB 320-191138/1-A	Method Blank	Total/NA	Water	537	
LCS 320-191138/2-A	Lab Control Sample	Total/NA	Water	537	
LCSD 320-191138/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 192279

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-32464-1	WGNA-101617-RW-3283	Total/NA	Water	537	191138
320-32464-2	WGNA-101617-FRB-3283	Total/NA	Water	537	191138
320-32464-3	WGNA-101617-RW-150	Total/NA	Water	537	191138
320-32464-4	WGNA-101617-FRB-150	Total/NA	Water	537	191138
320-32464-5	WGNA-101617-RW-3382	Total/NA	Water	537	191138
320-32464-6	WGNA-101617-FRB-3382	Total/NA	Water	537	191138
320-32464-7	WGNA-101617-RW-3991	Total/NA	Water	537	191138
MB 320-191138/1-A	Method Blank	Total/NA	Water	537	191138
LCS 320-191138/2-A	Lab Control Sample	Total/NA	Water	537	191138
LCSD 320-191138/3-A	Lab Control Sample Dup	Total/NA	Water	537	191138

Analysis Batch: 192281

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-32464-8	WGNA-101617-FRB-3991	Total/NA	Water	537	191138
320-32464-9	WGNA-101617-RW-085	Total/NA	Water	537	191138
320-32464-10	WGNA-101617-FRB-085	Total/NA	Water	537	191138
320-32464-11	WGNA-101617-RW-4834	Total/NA	Water	537	191138
320-32464-12	WGNA-101617-FRB-4834	Total/NA	Water	537	191138
320-32464-13	WGNA-101617-DUP11	Total/NA	Water	537	191138

Lab Chronicle

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

TestAmerica Job ID: 320-32464-1

Client Sample ID: WGNA-101617-RW-3283

Date Collected: 10/16/17 08:10

Date Received: 10/17/17 09:30

Lab Sample ID: 320-32464-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			191138	10/25/17 16:24	JER	TAL SAC
Total/NA	Analysis	537		1	192279	10/31/17 18:22	JRB	TAL SAC

Client Sample ID: WGNA-101617-FRB-3283

Date Collected: 10/16/17 08:05

Date Received: 10/17/17 09:30

Lab Sample ID: 320-32464-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			191138	10/25/17 16:24	JER	TAL SAC
Total/NA	Analysis	537		1	192279	10/31/17 18:27	JRB	TAL SAC

Client Sample ID: WGNA-101617-RW-150

Date Collected: 10/16/17 08:40

Date Received: 10/17/17 09:30

Lab Sample ID: 320-32464-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			191138	10/25/17 16:24	JER	TAL SAC
Total/NA	Analysis	537		1	192279	10/31/17 18:32	JRB	TAL SAC

Client Sample ID: WGNA-101617-FRB-150

Date Collected: 10/16/17 08:35

Date Received: 10/17/17 09:30

Lab Sample ID: 320-32464-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			191138	10/25/17 16:24	JER	TAL SAC
Total/NA	Analysis	537		1	192279	10/31/17 18:37	JRB	TAL SAC

Client Sample ID: WGNA-101617-RW-3382

Date Collected: 10/16/17 10:10

Date Received: 10/17/17 09:30

Lab Sample ID: 320-32464-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			191138	10/25/17 16:24	JER	TAL SAC
Total/NA	Analysis	537		1	192279	10/31/17 18:42	JRB	TAL SAC

Client Sample ID: WGNA-101617-FRB-3382

Date Collected: 10/16/17 10:05

Date Received: 10/17/17 09:30

Lab Sample ID: 320-32464-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			191138	10/25/17 16:24	JER	TAL SAC
Total/NA	Analysis	537		1	192279	10/31/17 18:46	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-32464-1

Client Sample ID: WGNA-101617-RW-3991

Date Collected: 10/16/17 09:10

Date Received: 10/17/17 09:30

Lab Sample ID: 320-32464-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			191138	10/25/17 16:24	JER	TAL SAC
Total/NA	Analysis	537		1	192279	10/31/17 18:51	JRB	TAL SAC

Client Sample ID: WGNA-101617-FRB-3991

Date Collected: 10/16/17 09:05

Date Received: 10/17/17 09:30

Lab Sample ID: 320-32464-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			191138	10/25/17 16:24	JER	TAL SAC
Total/NA	Analysis	537		1	192281	10/31/17 19:05	JRB	TAL SAC

Client Sample ID: WGNA-101617-RW-085

Date Collected: 10/16/17 09:40

Date Received: 10/17/17 09:30

Lab Sample ID: 320-32464-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			191138	10/25/17 16:24	JER	TAL SAC
Total/NA	Analysis	537		1	192281	10/31/17 19:10	JRB	TAL SAC

Client Sample ID: WGNA-101617-FRB-085

Date Collected: 10/16/17 09:35

Date Received: 10/17/17 09:30

Lab Sample ID: 320-32464-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			191138	10/25/17 16:24	JER	TAL SAC
Total/NA	Analysis	537		1	192281	10/31/17 19:15	JRB	TAL SAC

Client Sample ID: WGNA-101617-RW-4834

Date Collected: 10/16/17 10:40

Date Received: 10/17/17 09:30

Lab Sample ID: 320-32464-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			191138	10/25/17 16:24	JER	TAL SAC
Total/NA	Analysis	537		1	192281	10/31/17 19:20	JRB	TAL SAC

Client Sample ID: WGNA-101617-FRB-4834

Date Collected: 10/16/17 10:35

Date Received: 10/17/17 09:30

Lab Sample ID: 320-32464-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			191138	10/25/17 16:24	JER	TAL SAC
Total/NA	Analysis	537		1	192281	10/31/17 19:24	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-32464-1

Client Sample ID: WGNA-101617-DUP11
Date Collected: 10/16/17 07:00
Date Received: 10/17/17 09:30

Lab Sample ID: 320-32464-13
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			191138	10/25/17 16:24	JER	TAL SAC
Total/NA	Analysis	537		1	192281	10/31/17 19:29	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: 320-32464-1

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: 320-32464-1

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: 320-32464-1

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-32464-1	WGNA-101617-RW-3283	Water	10/16/17 08:10	10/17/17 09:30
320-32464-2	WGNA-101617-FRB-3283	Water	10/16/17 08:05	10/17/17 09:30
320-32464-3	WGNA-101617-RW-150	Water	10/16/17 08:40	10/17/17 09:30
320-32464-4	WGNA-101617-FRB-150	Water	10/16/17 08:35	10/17/17 09:30
320-32464-5	WGNA-101617-RW-3382	Water	10/16/17 10:10	10/17/17 09:30
320-32464-6	WGNA-101617-FRB-3382	Water	10/16/17 10:05	10/17/17 09:30
320-32464-7	WGNA-101617-RW-3991	Water	10/16/17 09:10	10/17/17 09:30
320-32464-8	WGNA-101617-FRB-3991	Water	10/16/17 09:05	10/17/17 09:30
320-32464-9	WGNA-101617-RW-085	Water	10/16/17 09:40	10/17/17 09:30
320-32464-10	WGNA-101617-FRB-085	Water	10/16/17 09:35	10/17/17 09:30
320-32464-11	WGNA-101617-RW-4834	Water	10/16/17 10:40	10/17/17 09:30
320-32464-12	WGNA-101617-FRB-4834	Water	10/16/17 10:35	10/17/17 09:30
320-32464-13	WGNA-101617-DUP11	Water	10/16/17 07:00	10/17/17 09:30

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 192162Lab Sample ID: IC 320-192162/4 Client Sample ID: _____Date Analyzed: 10/31/17 11:44 Lab File ID: 2017.10.31_537ICAL_004.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Assign Peak	phomsopha t	10/31/17 12:20

Lab Sample ID: IC 320-192162/5 Client Sample ID: _____Date Analyzed: 10/31/17 11:49 Lab File ID: 2017.10.31_537ICAL_005.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Assign Peak	phomsopha t	10/31/17 13:18

Lab Sample ID: IC 320-192162/6 Client Sample ID: _____Date Analyzed: 10/31/17 11:54 Lab File ID: 2017.10.31_537ICAL_006.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Assign Peak	phomsopha t	10/31/17 13:18

Lab Sample ID: IC 320-192162/7 ICISAV Client Sample ID: _____Date Analyzed: 10/31/17 11:58 Lab File ID: 2017.10.31_537ICAL_007.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Assign Peak	phomsopha t	10/31/17 13:19

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 192162Lab Sample ID: IC 320-192162/8 Client Sample ID: _____Date Analyzed: 10/31/17 12:03 Lab File ID: 2017.10.31_537ICAL_008.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.10	Assign Peak	phomsopha t	10/31/17 13:20

Lab Sample ID: CCVL 320-192162/11 Client Sample ID: _____Date Analyzed: 10/31/17 12:17 Lab File ID: 2017.10.31_537ICAL_011.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	10/31/17 14:37

Lab Sample ID: ICV 320-192162/16 Client Sample ID: _____Date Analyzed: 10/31/17 14:58 Lab File ID: 2017.10.31_537AICAL_003.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Isomers	barnettj	10/31/17 15:08

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 192279Lab Sample ID: CCV 320-192279/10 CCVIS Client Sample ID: _____Date Analyzed: 10/31/17 17:59 Lab File ID: 2017.10.31_537C_010.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	11/01/17 10:39

Lab Sample ID: LCS 320-191138/2-A Client Sample ID: _____Date Analyzed: 10/31/17 18:13 Lab File ID: 2017.10.31_537C_013.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	11/01/17 10:59

Lab Sample ID: LCSD 320-191138/3-A Client Sample ID: _____Date Analyzed: 10/31/17 18:18 Lab File ID: 2017.10.31_537C_014.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	11/01/17 11:00

Lab Sample ID: 320-32464-1 Client Sample ID: WGNA-101617-RW-3283Date Analyzed: 10/31/17 18:22 Lab File ID: 2017.10.31_537C_015.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	11/01/17 11:00
Perfluorononanoic acid (PFNA)	2.11	Split Peak	barnettj	11/01/17 11:01

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 192279Lab Sample ID: 320-32464-3 Client Sample ID: WGNA-101617-RW-150Date Analyzed: 10/31/17 18:32 Lab File ID: 2017.10.31_537C_017.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.40	Split Peak	barnettj	11/01/17 11:02
Perfluorooctanesulfonic acid (PFOS)	2.10	Missed Peak	barnettj	11/01/17 11:02
Perfluorononanoic acid (PFNA)	2.11	Split Peak	barnettj	11/01/17 11:02

Lab Sample ID: 320-32464-5 Client Sample ID: WGNA-101617-RW-3382Date Analyzed: 10/31/17 18:42 Lab File ID: 2017.10.31_537C_019.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.86	Incomplete Integration	barnettj	11/01/17 11:03
Perfluorononanoic acid (PFNA)	2.11	Baseline	barnettj	11/01/17 11:04
Perfluorooctanesulfonic acid (PFOS)	2.11	Missed Peak	barnettj	11/01/17 11:03

Lab Sample ID: 320-32464-7 Client Sample ID: WGNA-101617-RW-3991Date Analyzed: 10/31/17 18:51 Lab File ID: 2017.10.31_537C_021.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	11/01/17 11:04
Perfluorononanoic acid (PFNA)	2.11	Split Peak	barnettj	11/01/17 11:05

Lab Sample ID: CCV 320-192279/22 CCVIS Client Sample ID: _____Date Analyzed: 10/31/17 18:56 Lab File ID: 2017.10.31_537C_022.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	11/01/17 10:39

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 192281Lab Sample ID: CCV 320-192281/22 CCVIS Client Sample ID: _____Date Analyzed: 10/31/17 18:56 Lab File ID: 2017.10.31_537C_022.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	11/01/17 10:39

Lab Sample ID: 320-32464-9 Client Sample ID: WGNA-101617-RW-085Date Analyzed: 10/31/17 19:10 Lab File ID: 2017.10.31_537C_025.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	11/01/17 11:06
Perfluorononanoic acid (PFNA)	2.11	Baseline	barnettj	11/01/17 11:06

Lab Sample ID: 320-32464-13 Client Sample ID: WGNA-101617-DUP11Date Analyzed: 10/31/17 19:29 Lab File ID: 2017.10.31_537C_029.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	11/01/17 11:08
Perfluorononanoic acid (PFNA)	2.11	Split Peak	barnettj	11/01/17 11:08

Lab Sample ID: CCV 320-192281/30 CCVIS Client Sample ID: _____Date Analyzed: 10/31/17 19:34 Lab File ID: 2017.10.31_537C_030.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.09	Missed Peak	barnettj	11/01/17 10:44

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-32464-1

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					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					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					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					Perfluoroheptanoic acid (PFHpA)	1 g/g
..LC537-PFHxS2_00008	01/25/18	07/25/17	Methanol, Lot 090285	21 mL	LC537-PFHxS2_00002	0.0475 g	Perfluorohexanesulfonic acid (PFHxS)	2056.98 ug/mL
...LC537-PFHxS2_00002	06/08/22	Santa Cruz Biotechnology, Lot G2516					Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
..LC537-PFNA2_00009	01/25/18	07/25/17	Methanol, Lot 090285	21 mL	LC537-PFNA2_00002	0.0421 g	Perfluorononanoic acid (PFNA)	1996.74 ug/mL
...LC537-PFNA2_00002	06/14/22	Aldrich, Lot MKCC0699					Perfluorononanoic acid (PFNA)	0.996 g/g
..LC537-PFOA2_00010	01/25/18	08/01/17	Methanol, Lot 090285	20 mL	LC537-PFOA2_00002	0.0424 g	Perfluorooctanoic acid (PFOA)	2098.8 ug/mL
...LC537-PFOA2_00002	06/09/22	Afla Aesar, Lot 10199078					Perfluorooctanoic acid (PFOA)	0.99 g/g

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-32464-1

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.: 320-32464-1

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 PFDA	50 ug/mL
							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
							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.: 320-32464-1

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 PFDA	50 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.: 320-32464-1

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_PFB_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFB_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.: 320-32464-1

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
					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
							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
LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537-PFOS_00008	400 uL	Perfluorobutanesulfonic acid (PFBS)	40.0066 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_00002	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFB_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_PFH_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.: 320-32464-1

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.: 320-32464-1

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	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-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.: 320-32464-1

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.: 320-32464-1

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_00050	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_PFBs_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:

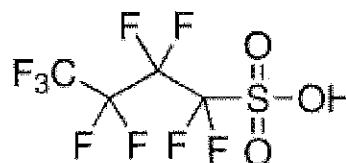
300.10 g/mol

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

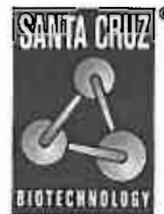
Milwaukee, Wisconsin US

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

1:6&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_PFHpA_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 Geitner
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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Reagent

LC537_PFHxS_00002

Y: 4/1/15 SW

SIGMA-ALDRICH®

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Email USA: techserv@sial.com Outside USA: eurtechserv@sial.com

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: $C_{13}F_{27}KO_2S$
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

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

$$MW_{corr} = \frac{(k_{form}) - (k) + (H)}{438.20 (k_{form})} = \frac{(438.20 - 3910 + 101)}{438.20 (k_{form})} = 0.91307 \text{ (anion form)}$$

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

SW 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

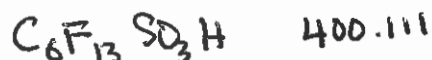
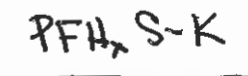


The Future is Now

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%



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

Purity $\frac{1}{9}$ 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:

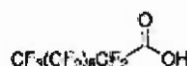
C₉H₁₇O₂

Formula Weight:

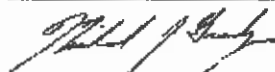
464.08 g/mol

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

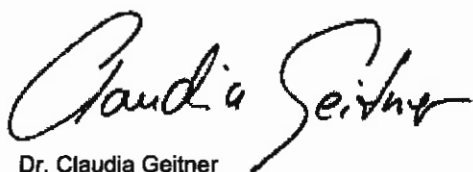
SIGMA-ALDRICH

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

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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: HEPTADEC AFLUORO OCTANESULFONIC 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

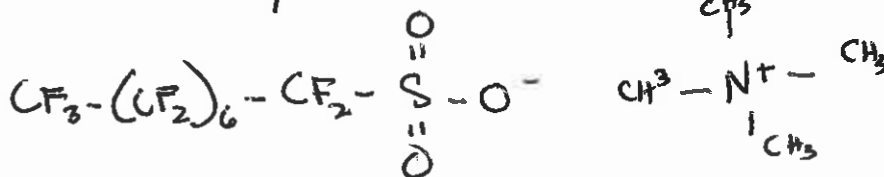
TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE TO OFF WHITE	OFF-WHITE
APPEARANCE (FORM)	POWDER OR POWDER WITH CHUNK(S)	POWDER
CARBON CONTENT	29.77 % - 31.29 %	29.97 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS

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:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

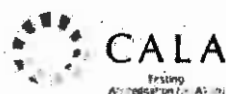
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

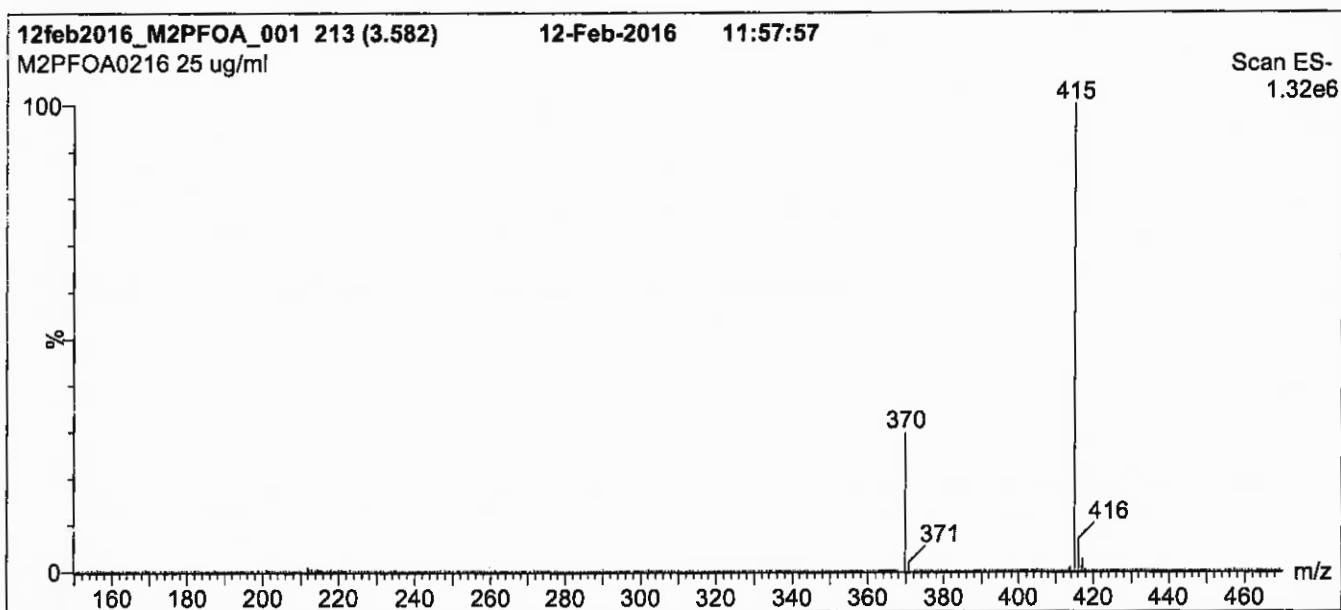
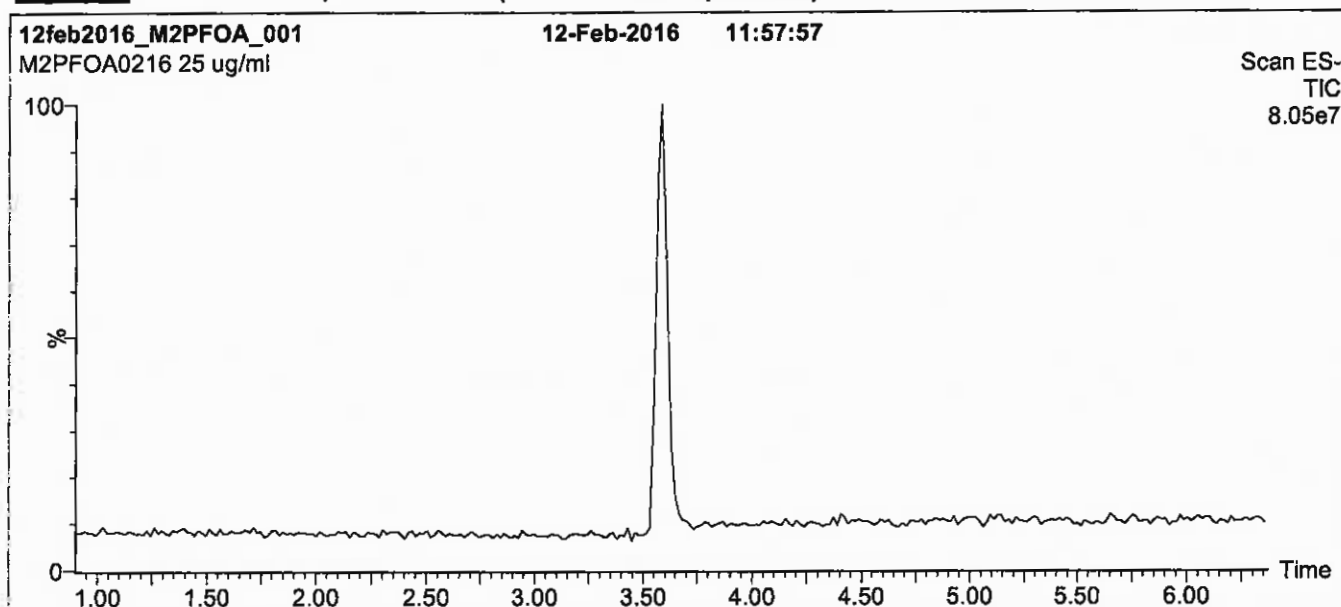
QUALITY MANAGEMENT:

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).



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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

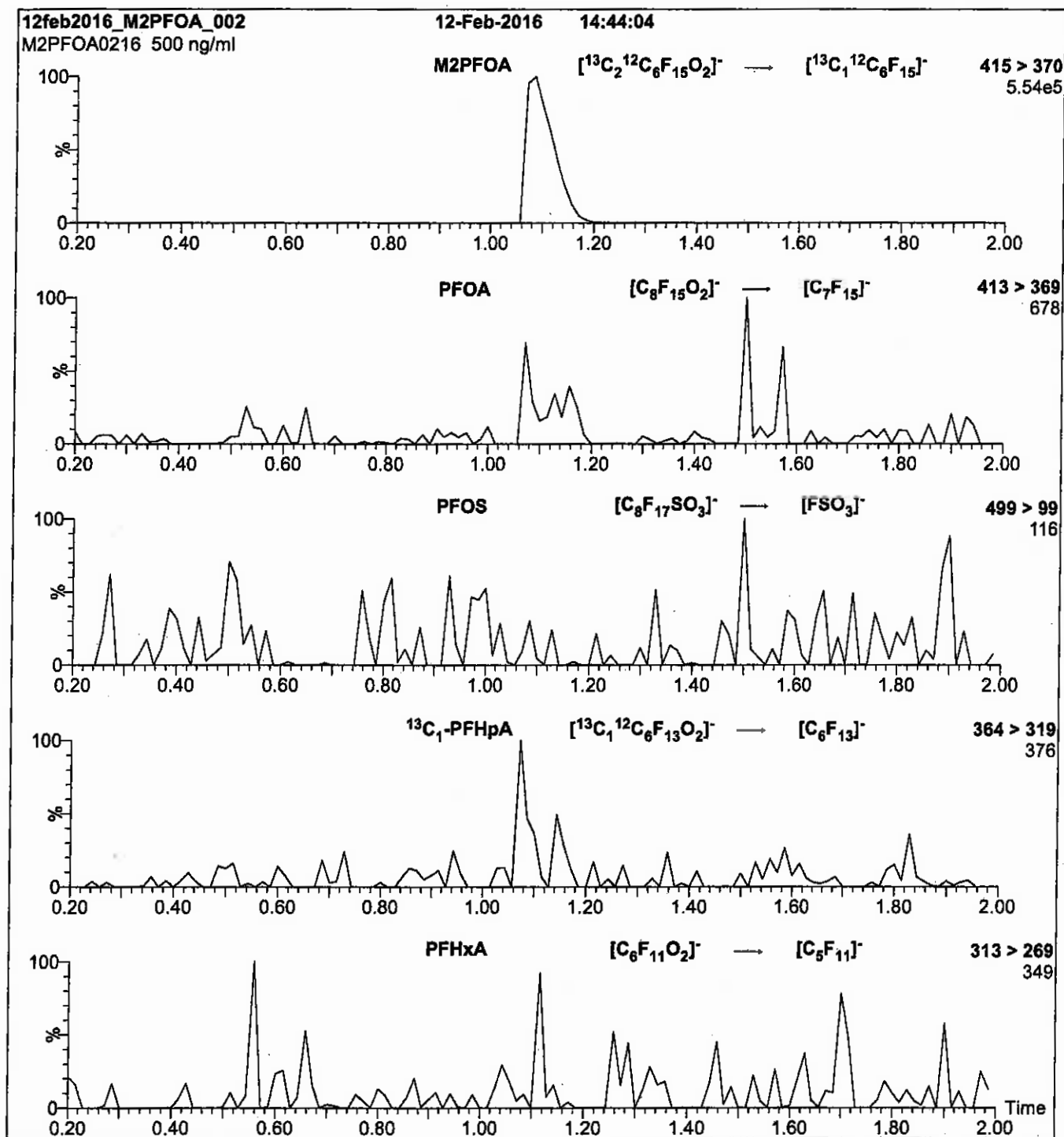
Flow: 300 μ l/min

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



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

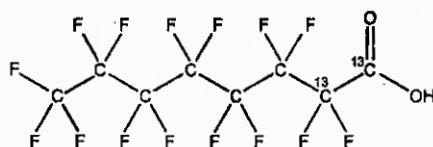
M2PFOA

LOT NUMBER:

M2PFOA0216

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

Not available

**MOLECULAR FORMULA:**¹³C₂¹²C₆H₁₆F₁₆O₂**CONCENTRATION:**

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

416.05

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99% ¹³C(1,2-¹³C₂)**LAST TESTED:** (mm/dd/yyyy)

02/12/2016

EXPIRY DATE: (mm/dd/yyyy)

02/12/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 02/24/2016

(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

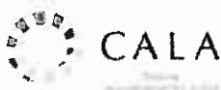
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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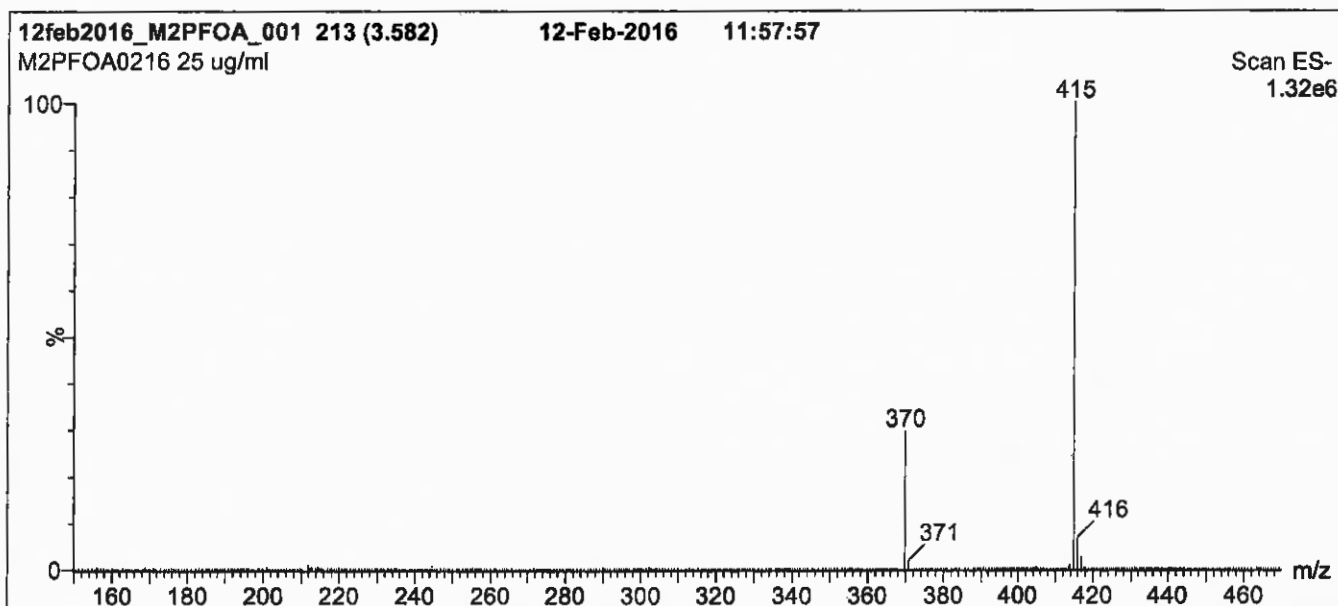
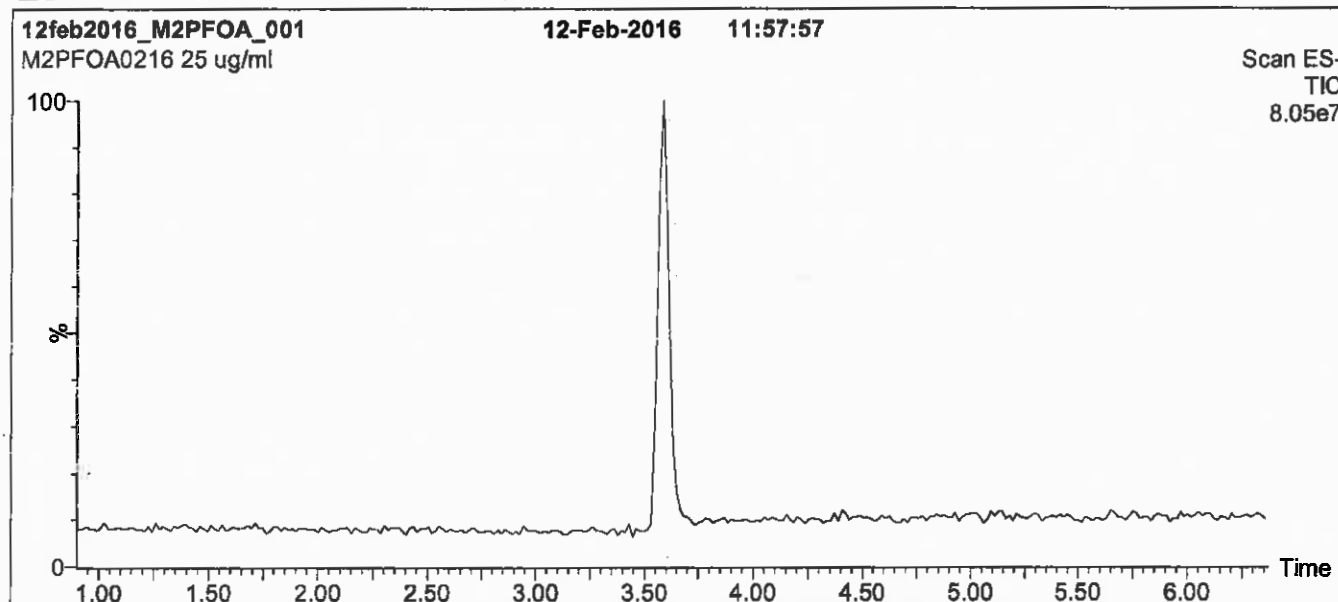
QUALITY MANAGEMENT:

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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

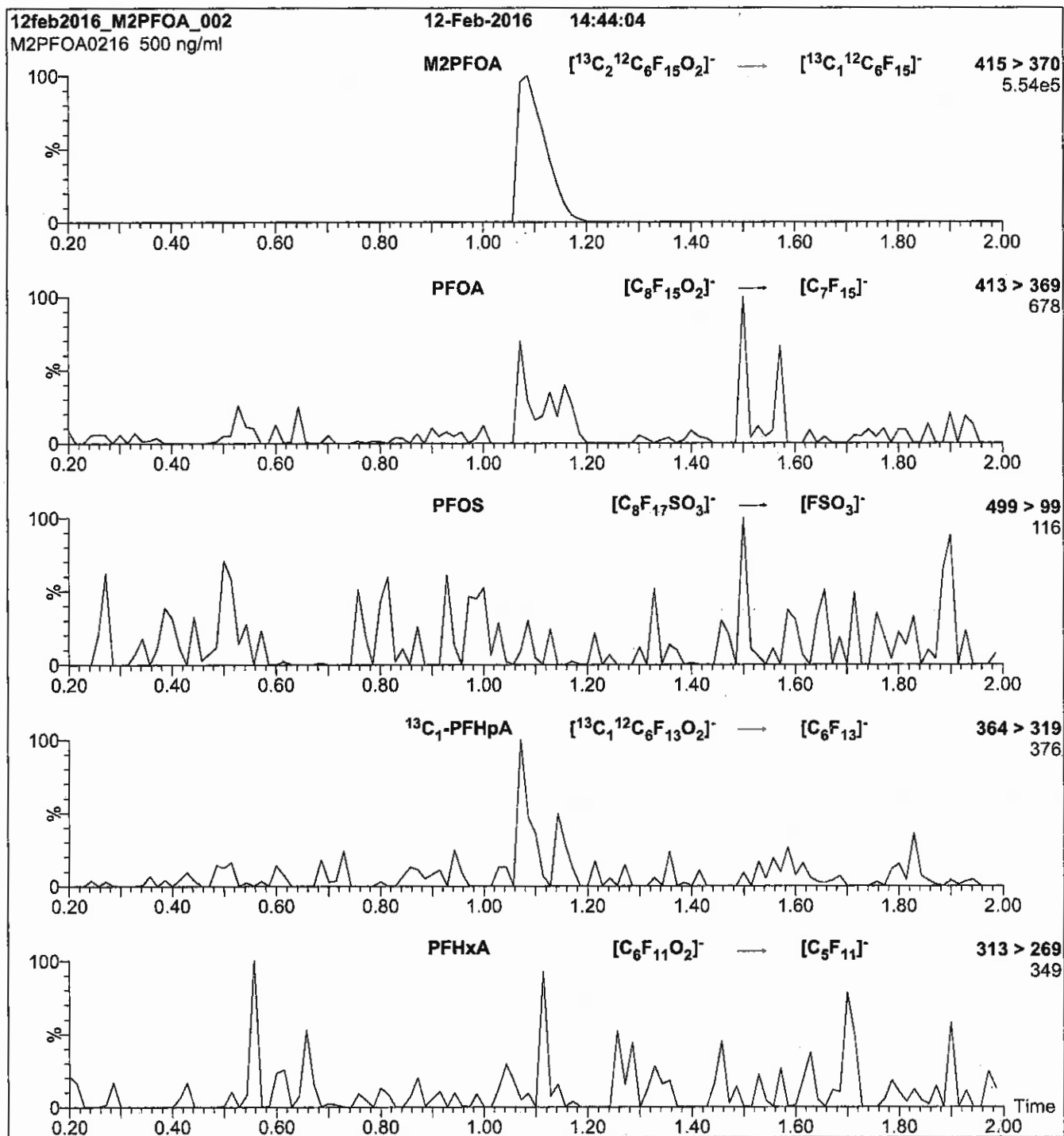
Flow: 300 μ l/min

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 acid



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

(1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy)

09/30/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Crittitt

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:

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.

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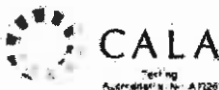
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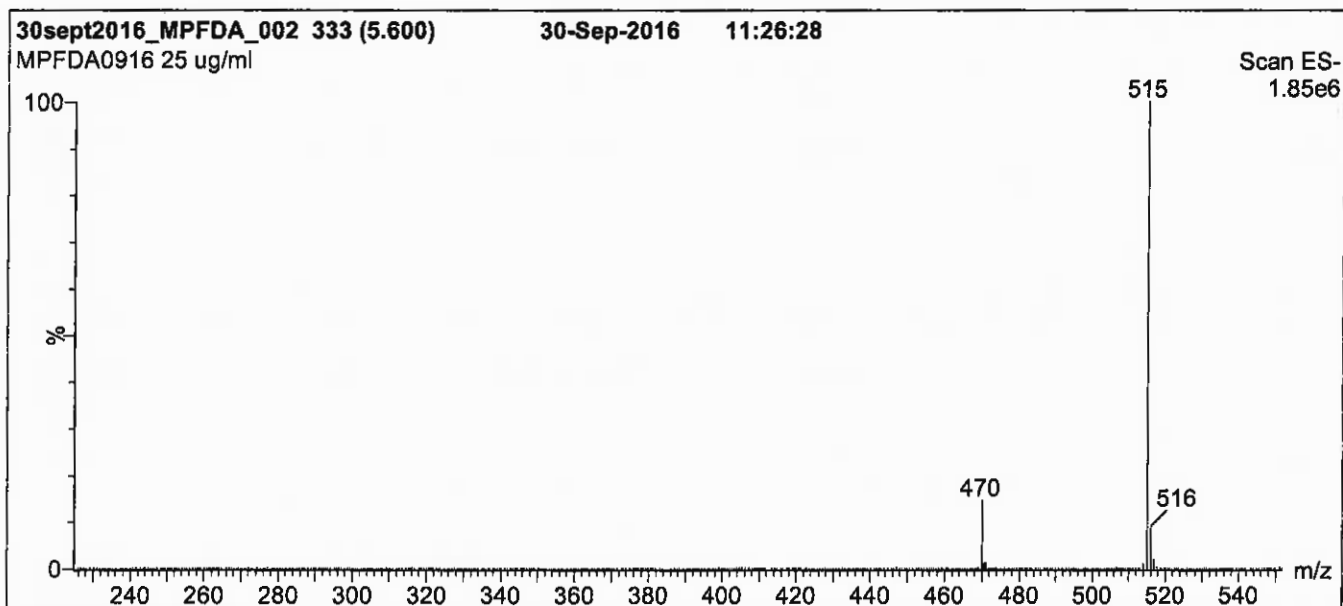
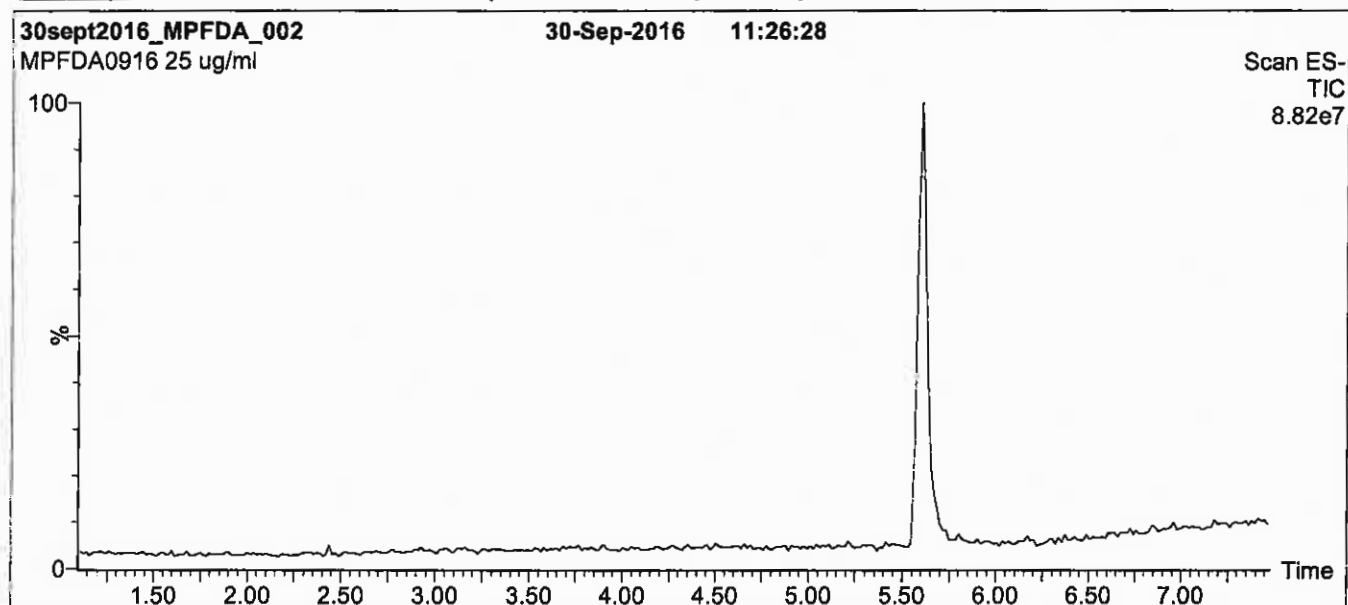
QUALITY MANAGEMENT:

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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

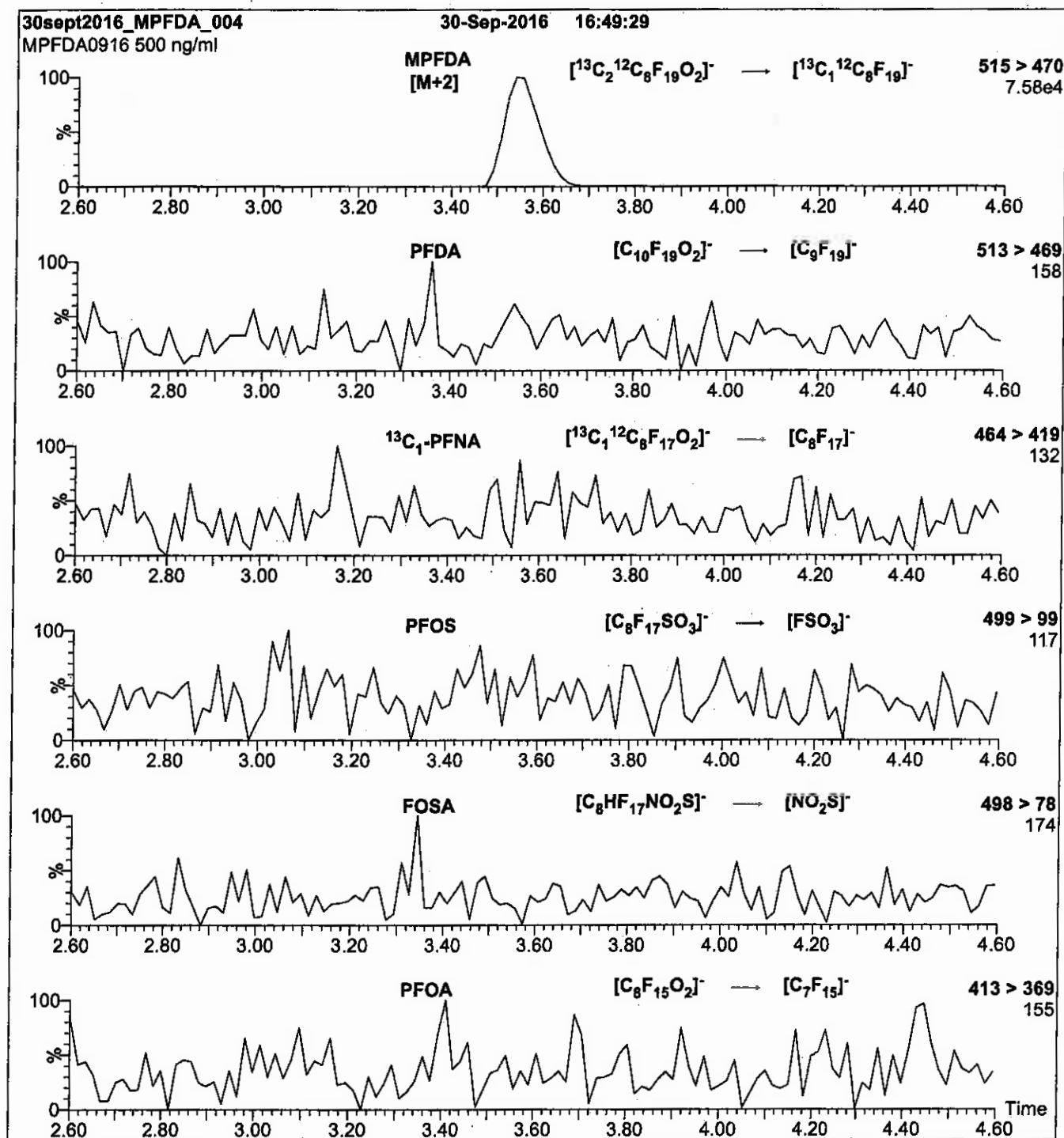
Flow: 300 μ l/min

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:**

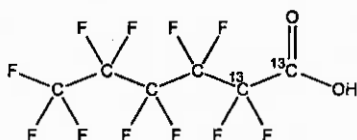
MPFHxA

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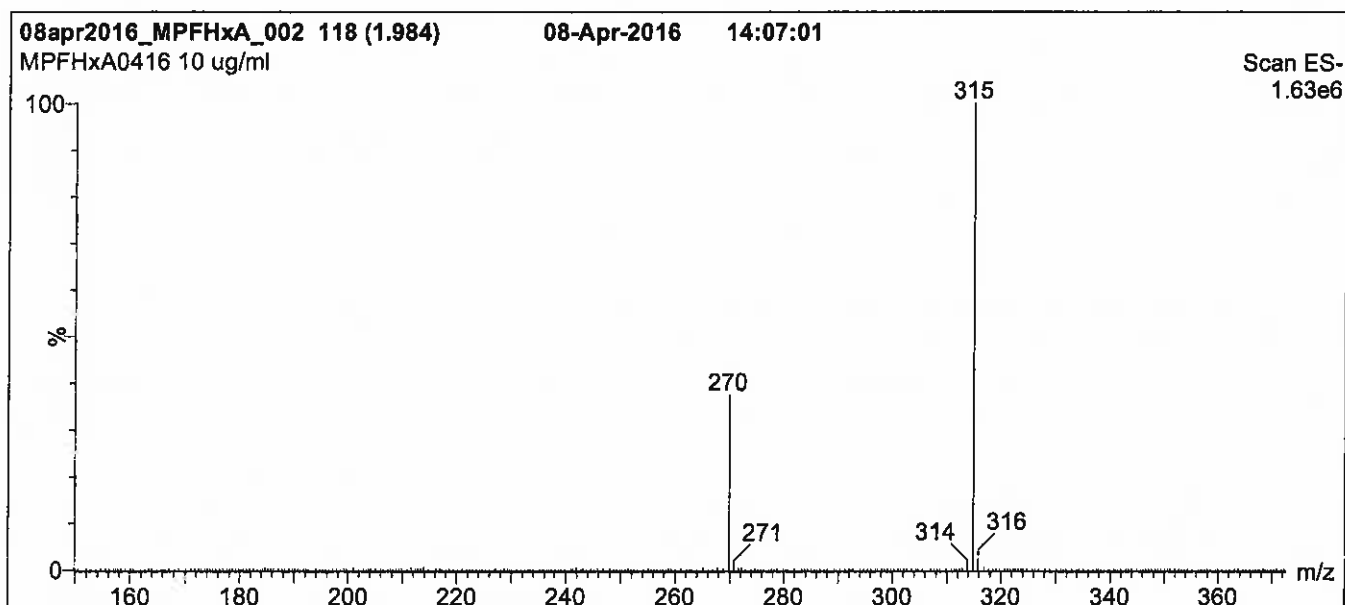
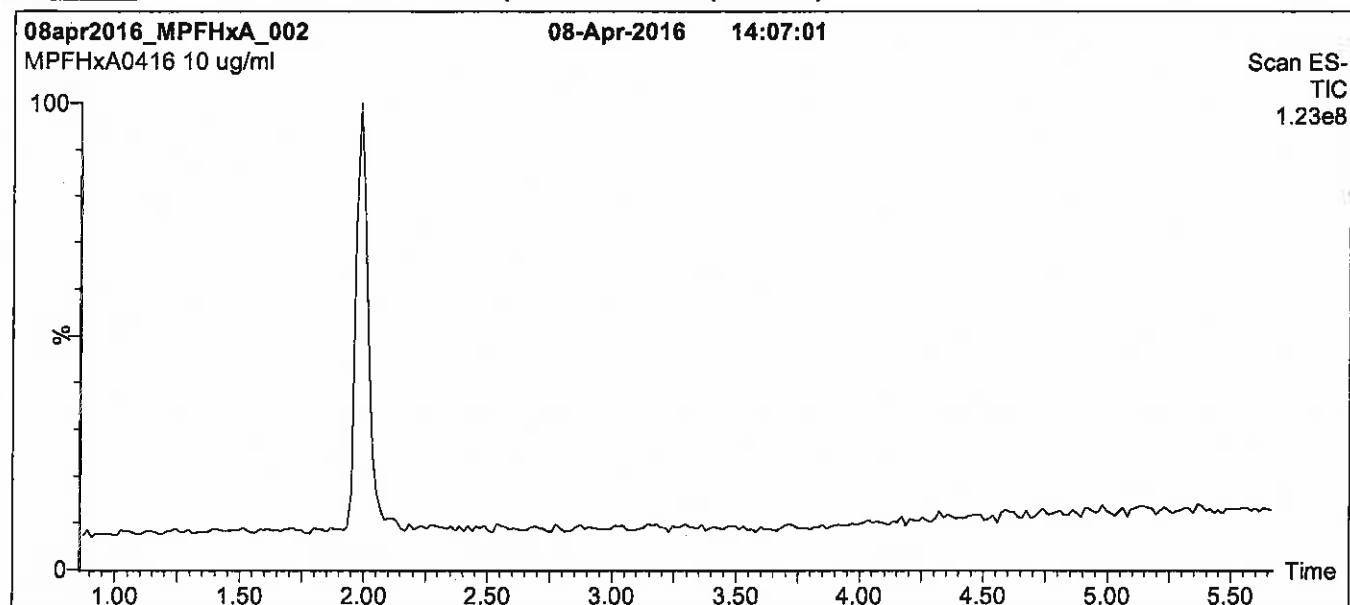
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Figure 1: MPFHxA; LC/MS Data (TIC and Mass Spectrum)



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: 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)

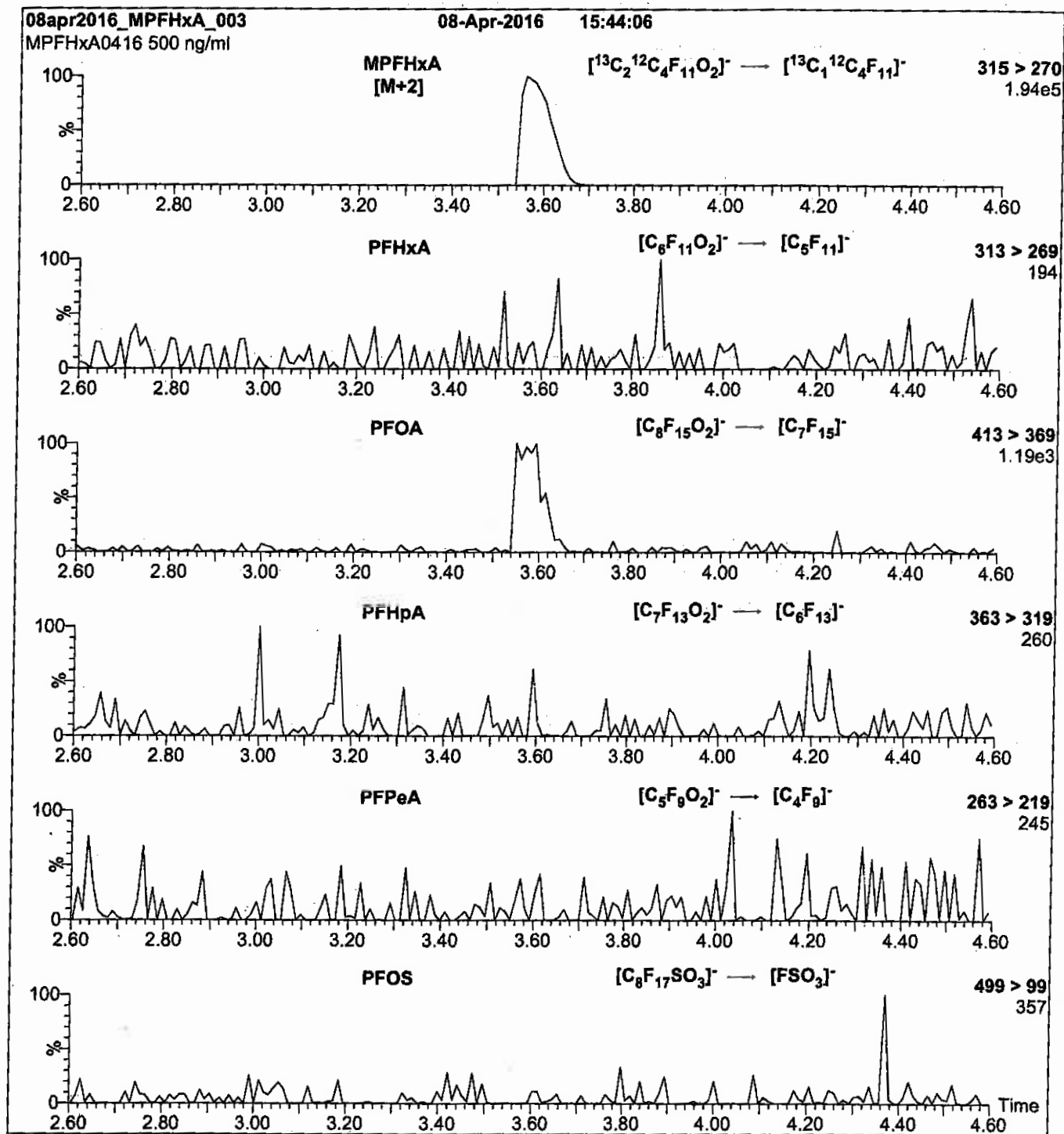
Capillary Voltage (kV) = 2.00

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 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) = $3.39\text{e-}3$
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:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

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

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

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

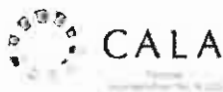
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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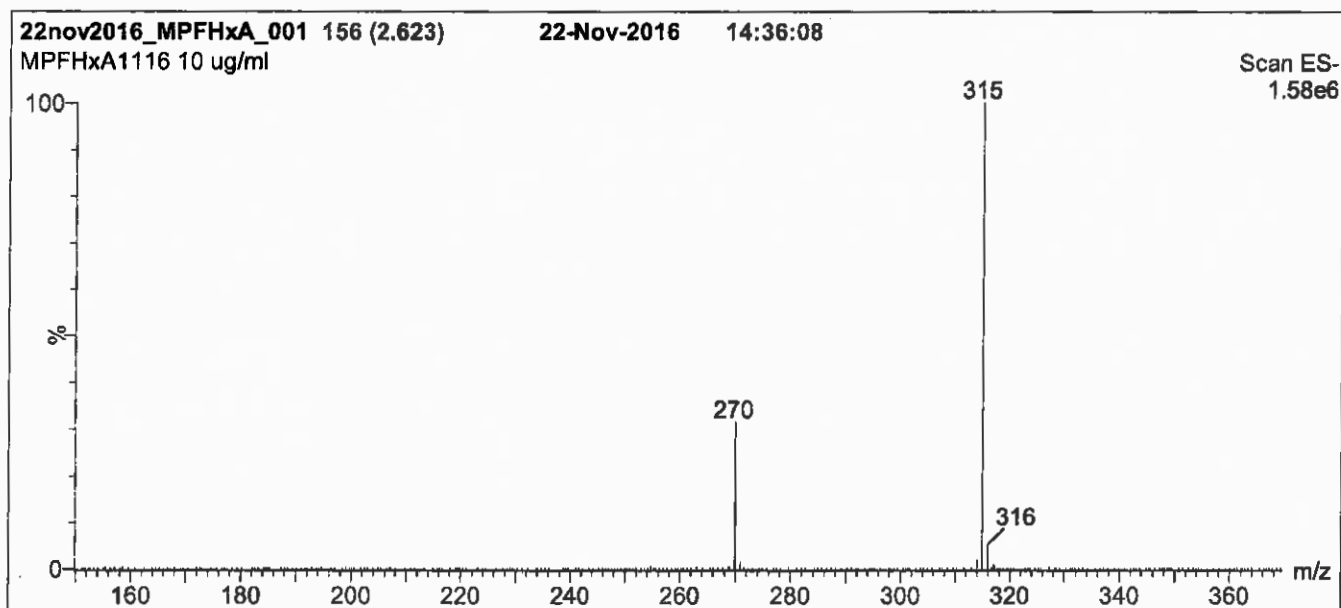
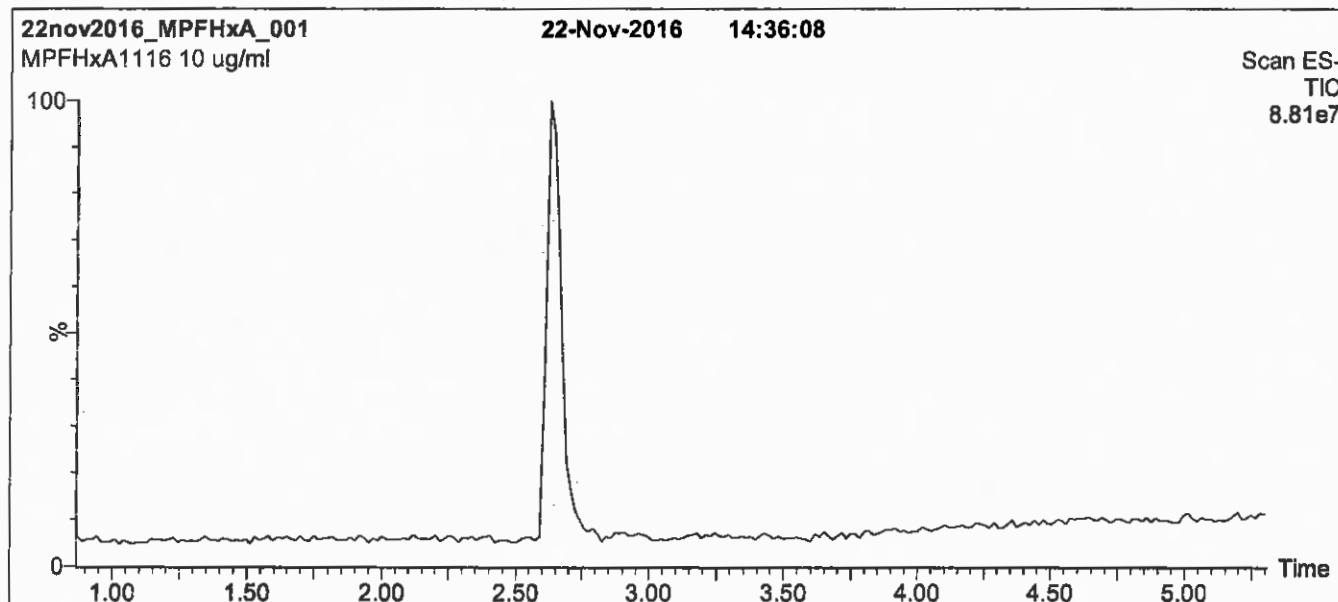
QUALITY MANAGEMENT:

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



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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

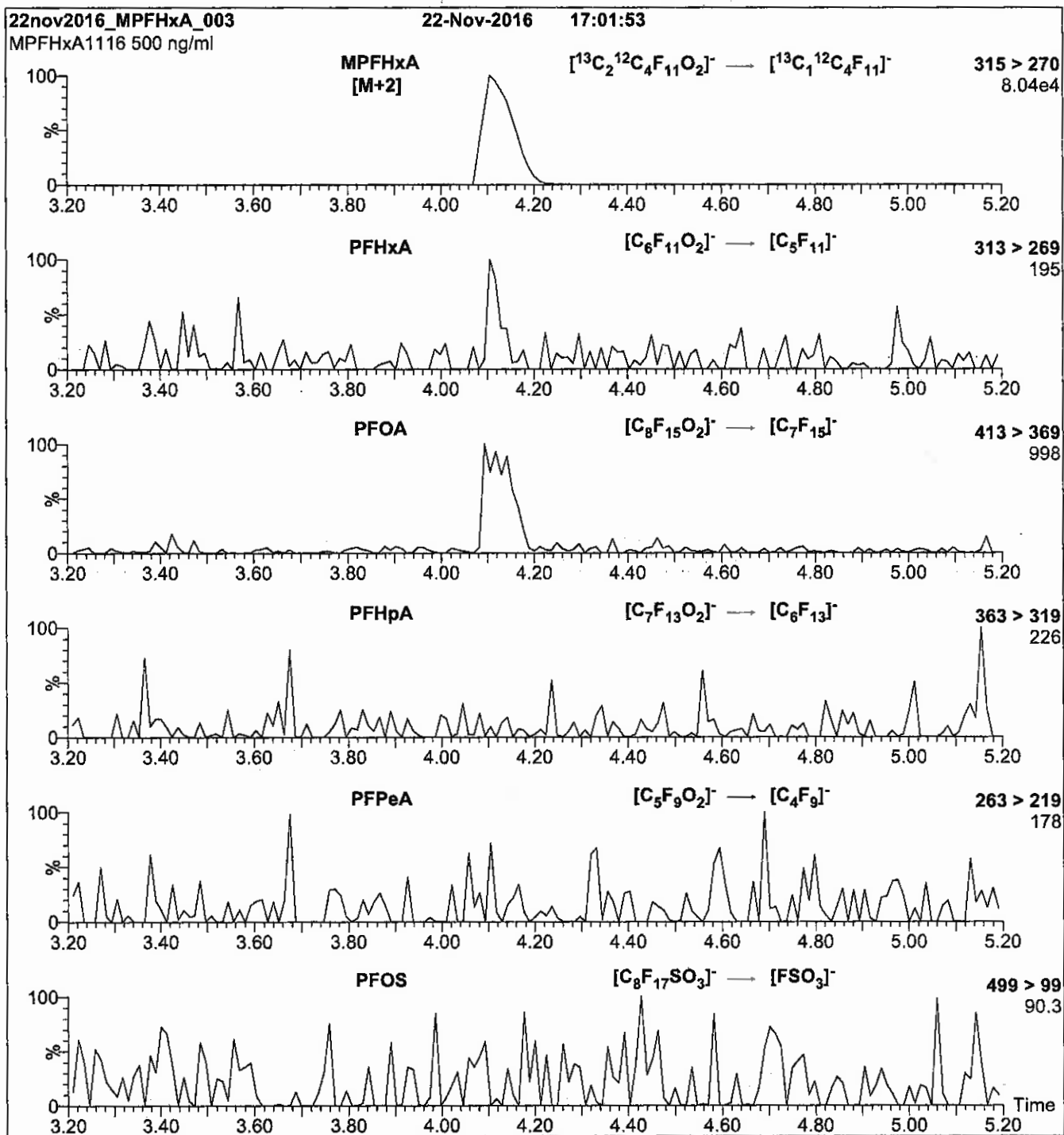
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCMPFOS_00019

R: SBC 12/21/16



814253

ID: LCMFOS_00019

Exp: 08/03/21 Pipd: SBC

13C4-Perfluorooctanesulfo

WELLINGTON
LABORATORIESCERTIFICATE OF ANALYSIS
DOCUMENTATION**PRODUCT CODE:**

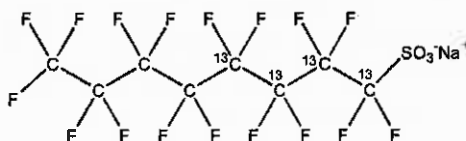
MPFOS

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
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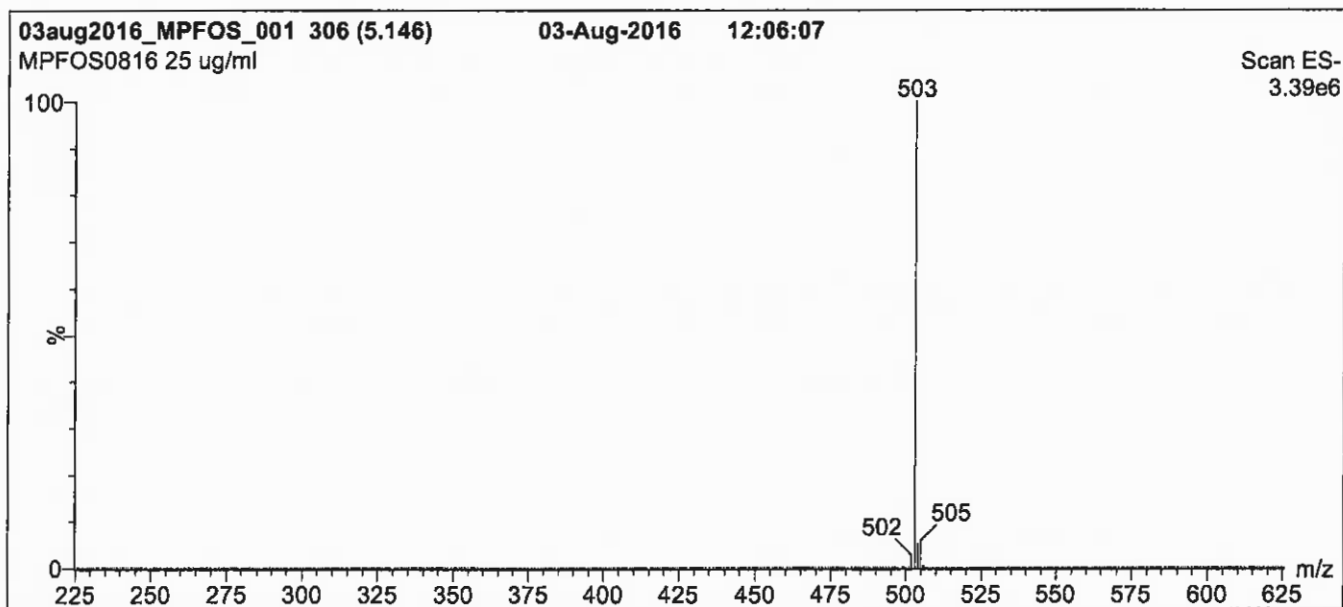
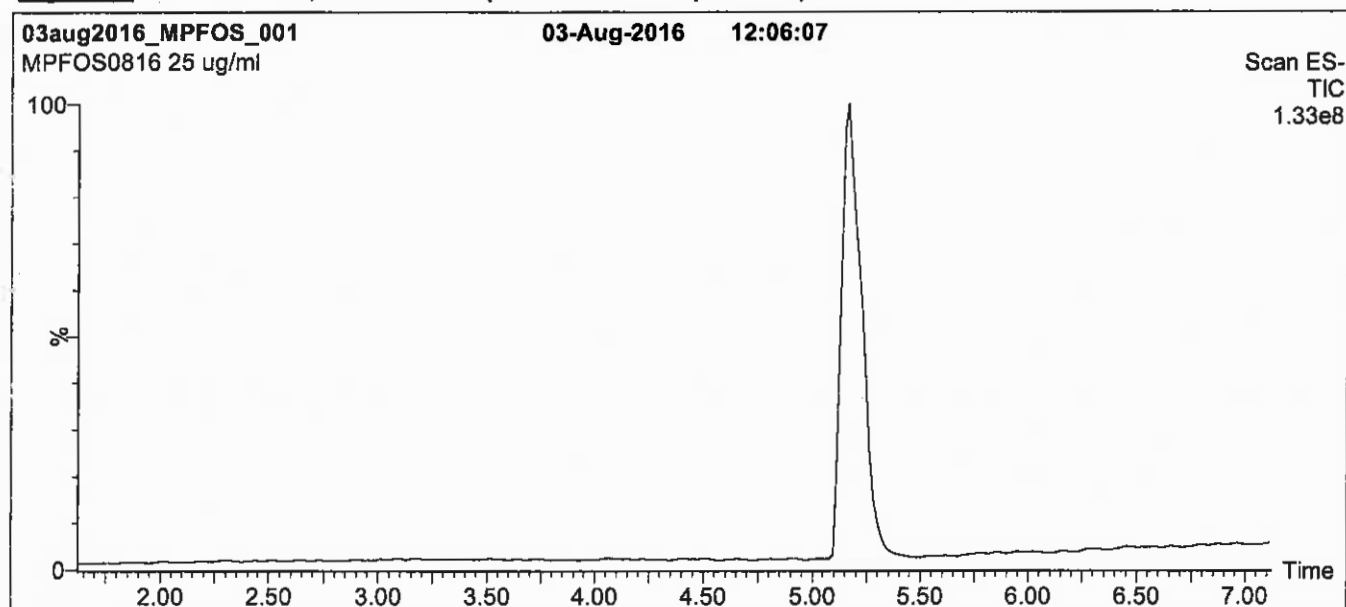
QUALITY MANAGEMENT:

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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

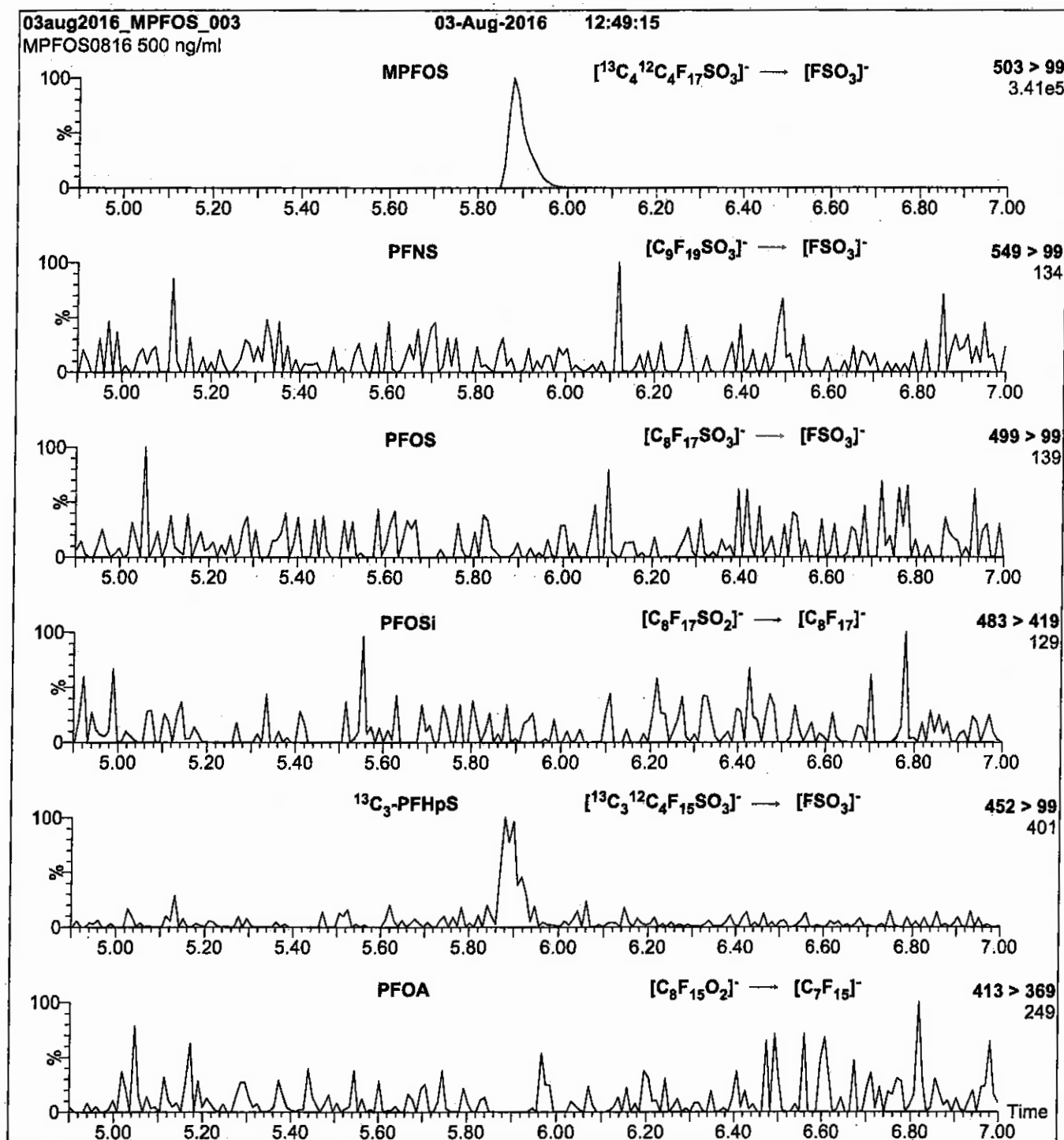
Flow: 300 μ l/min

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

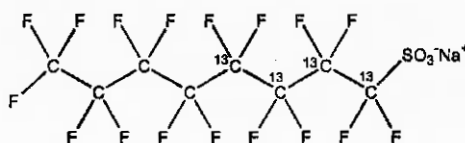
LCMPFOS_00021



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

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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.

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Certified By:

B.G. Chittim

Date: 12/14/2016

(mm/dd/yyyy)

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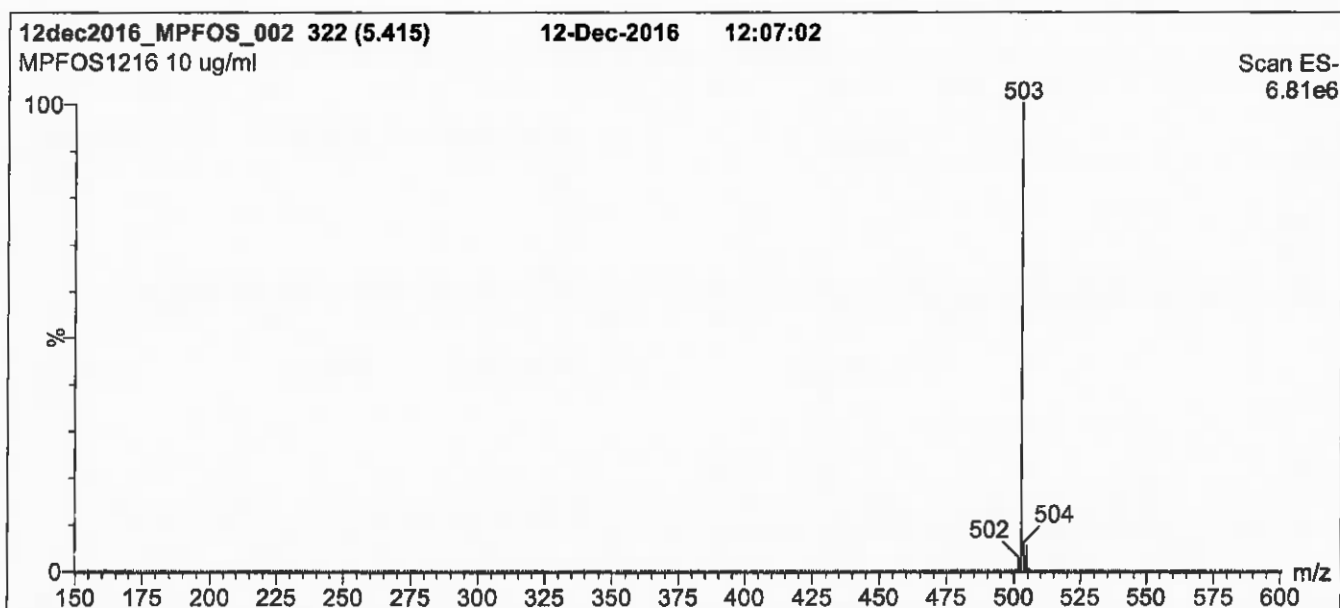
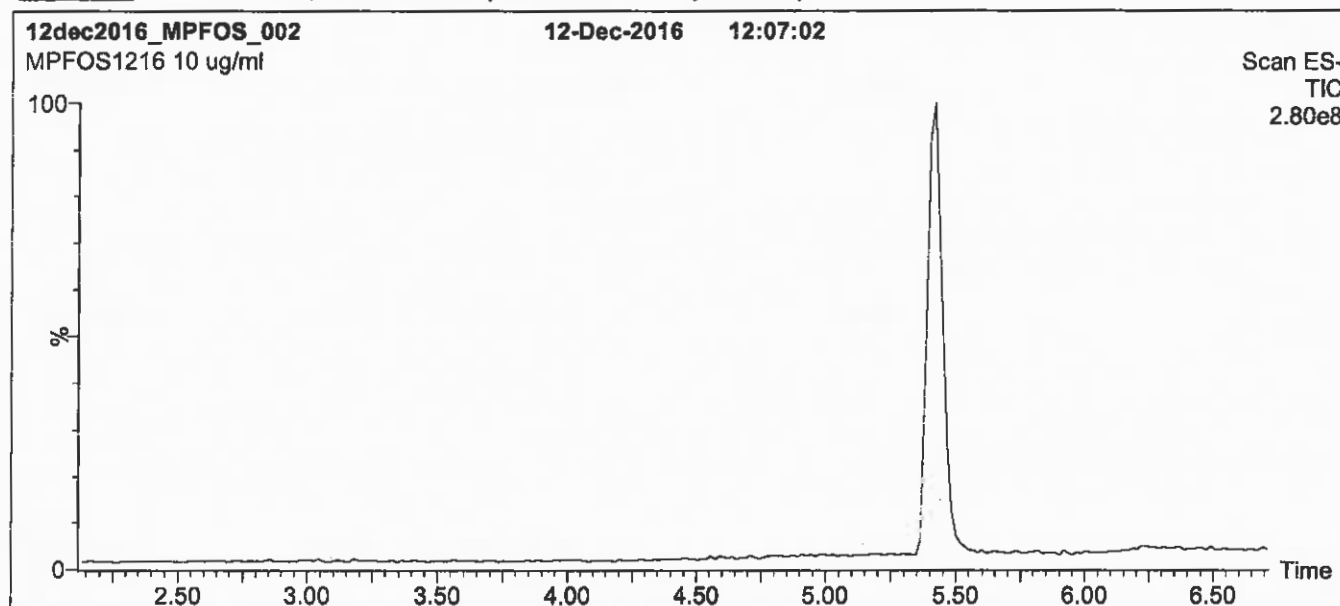
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Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient

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

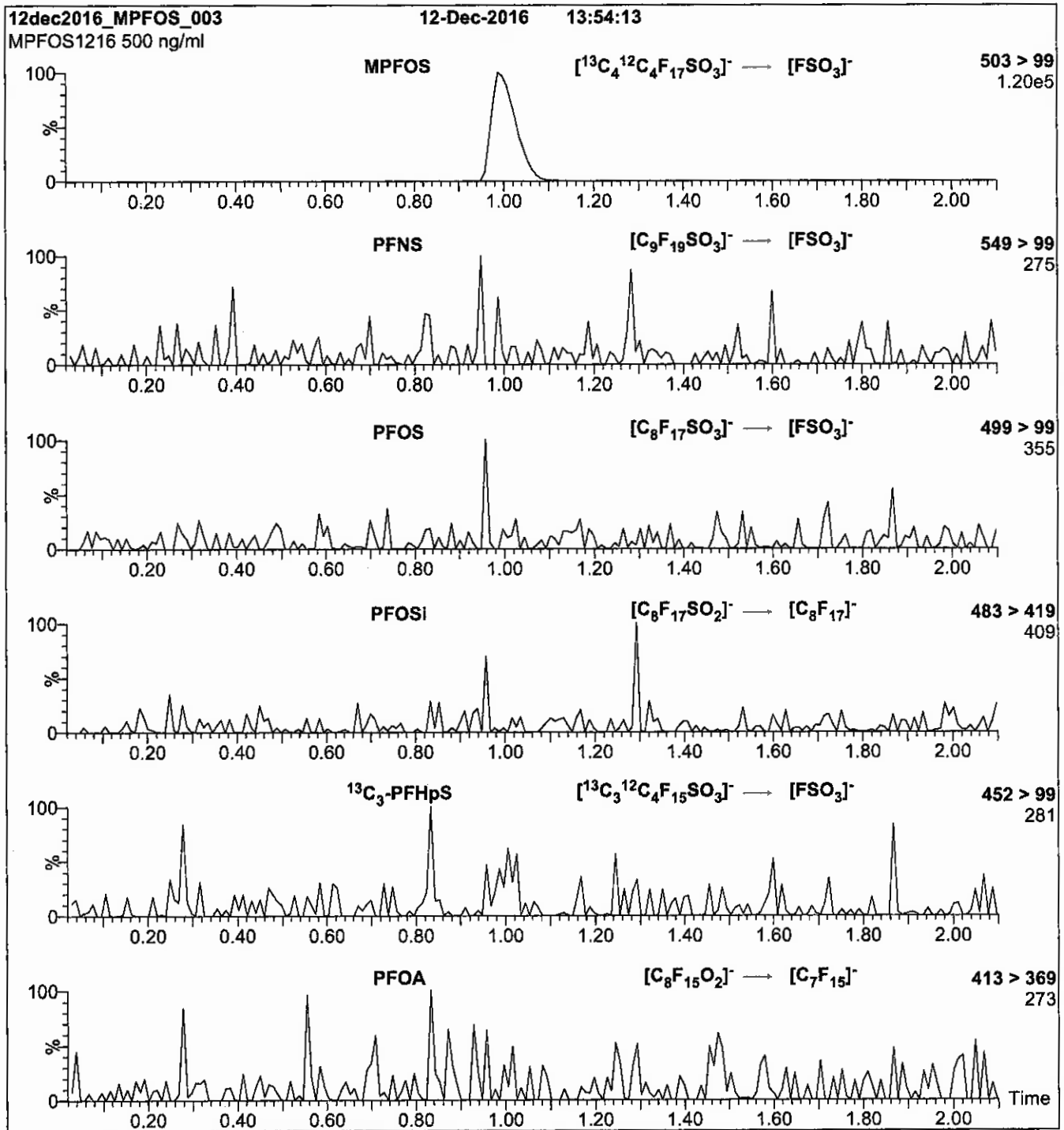
Flow: 300 μ l/min

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.: 320-32464-1

SDG No.: _____

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-101617-RW-328 3	320-32464-1	84	97
WGNA-101617-FRB-32 83	320-32464-2	91	96
WGNA-101617-RW-150	320-32464-3	72	96
WGNA-101617-FRB-15 0	320-32464-4	90	95
WGNA-101617-RW-338 2	320-32464-5	79	89
WGNA-101617-FRB-33 82	320-32464-6	91	92
WGNA-101617-RW-399 1	320-32464-7	78	93
WGNA-101617-FRB-39 91	320-32464-8	87	93
WGNA-101617-RW-085	320-32464-9	76	94
WGNA-101617-FRB-08 5	320-32464-10	92	98
WGNA-101617-RW-483 4	320-32464-11	92	96
WGNA-101617-FRB-48 34	320-32464-12	87	95
WGNA-101617-DUP11	320-32464-13	76	92
	MB 320-191138/1-A	89	99
	LCS 320-191138/2-A	92	98
	LCSD 320-191138/3-A	94	98

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.10.31_537C_013.d
 Lab ID: LCS 320-191138/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	133	127	96	70-130	M
Perfluorooctanoic acid (PFOA)	66.7	64.9	97	70-130	
Perfluorononanoic acid (PFNA)	66.7	65.1	98	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	101	101	70-130	
Perfluoroheptanoic acid (PFHpA)	33.3	33.0	99	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	279	93	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.: 320-32464-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.10.31_537C_014.d
 Lab ID: LCSD 320-191138/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	133	135	101	5	30	70-130	M
Perfluorooctanoic acid (PFOA)	66.7	69.4	104	7	30	70-130	
Perfluorononanoic acid (PFNA)	66.7	68.6	103	5	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	106	106	5	30	70-130	
Perfluoroheptanoic acid (PFHpA)	33.3	36.2	108	9	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	288	96	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.: 320-32464-1
 SDG No.: _____
 Lab File ID: 2017.10.31_537C_012.d Lab Sample ID: MB 320-191138/1-A
 Matrix: Water Date Extracted: 10/25/2017 16:24
 Instrument ID: A8_N Date Analyzed: 10/31/2017 18:08
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-191138/2-A	2017.10.31_537C_013.d	10/31/2017 18:13
	LCSD 320-191138/3-A	2017.10.31_537C_014.d	10/31/2017 18:18
WGNA-101617-RW-3283	320-32464-1	2017.10.31_537C_015.d	10/31/2017 18:22
WGNA-101617-FRB-3283	320-32464-2	2017.10.31_537C_016.d	10/31/2017 18:27
WGNA-101617-RW-150	320-32464-3	2017.10.31_537C_017.d	10/31/2017 18:32
WGNA-101617-FRB-150	320-32464-4	2017.10.31_537C_018.d	10/31/2017 18:37
WGNA-101617-RW-3382	320-32464-5	2017.10.31_537C_019.d	10/31/2017 18:42
WGNA-101617-FRB-3382	320-32464-6	2017.10.31_537C_020.d	10/31/2017 18:46
WGNA-101617-RW-3991	320-32464-7	2017.10.31_537C_021.d	10/31/2017 18:51
WGNA-101617-FRB-3991	320-32464-8	2017.10.31_537C_024.d	10/31/2017 19:05
WGNA-101617-RW-085	320-32464-9	2017.10.31_537C_025.d	10/31/2017 19:10
WGNA-101617-FRB-085	320-32464-10	2017.10.31_537C_026.d	10/31/2017 19:15
WGNA-101617-RW-4834	320-32464-11	2017.10.31_537C_027.d	10/31/2017 19:20
WGNA-101617-FRB-4834	320-32464-12	2017.10.31_537C_028.d	10/31/2017 19:24
WGNA-101617-DUP11	320-32464-13	2017.10.31_537C_029.d	10/31/2017 19:29

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 10/31/2017 11:44
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 10/31/2017 12:08
 Calibration ID: 35621

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		2775806	1.86	6114108	2.11		
UPPER LIMIT		4163709	2.36	9171162	2.61		
LOWER LIMIT		1387903	1.36	3057054	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-192162/11		2865147	1.87	6394781	2.11		
ICV 320-192162/16		2807375	1.87	6562646	2.11		
CCV 320-192279/10 CCVIS		2852910	1.86	6200813	2.10		
MB 320-191138/1-A		3230211	1.86	7280484	2.10		
LCS 320-191138/2-A		3009860	1.86	6684674	2.10		
LCSD 320-191138/3-A		3010680	1.86	6592068	2.10		
320-32464-1	WGNA-101617-RW-3283	2897739	1.86	6536909	2.10		
320-32464-2	WGNA-101617-FRB-3283	2780021	1.85	6463758	2.09		
320-32464-3	WGNA-101617-RW-150	3168524	1.86	6981584	2.09		
320-32464-4	WGNA-101617-FRB-150	3234474	1.85	7346826	2.09		
320-32464-5	WGNA-101617-RW-3382	3626162	1.86	8189404	2.10		
320-32464-6	WGNA-101617-FRB-3382	3504926	1.86	7852365	2.10		
320-32464-7	WGNA-101617-RW-3991	3786228	1.86	8405612	2.10		
CCV 320-192279/22 CCVIS		2961630	1.86	6344077	2.10		
CCV 320-192281/22 CCVIS		2961630	1.86	6344077	2.10		
320-32464-8	WGNA-101617-FRB-3991	3273656	1.86	7124343	2.10		
320-32464-9	WGNA-101617-RW-085	3118551	1.86	6691853	2.10		
320-32464-10	WGNA-101617-FRB-085	3079446	1.86	6817273	2.10		
320-32464-11	WGNA-101617-RW-4834	2788845	1.85	6264447	2.09		
320-32464-12	WGNA-101617-FRB-4834	3049835	1.85	6757724	2.09		
320-32464-13	WGNA-101617-DUP11	3479117	1.86	7576347	2.10		
CCV 320-192281/30 CCVIS		2729865	1.85	5740357	2.09		

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.: 320-32464-1
 SDG No.: _____
 Sample No.: CCV 320-192279/10 Date Analyzed: 10/31/2017 17:59
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.10.31_537C_010 Heated Purge: (Y/N) N
 Calibration ID: 35621

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2852910	1.86	6200813	2.10		
UPPER LIMIT		3994074	2.36	8681138	2.60		
LOWER LIMIT		1997037	1.36	4340569	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-191138/1-A		3230211	1.86	7280484	2.10		
LCS 320-191138/2-A		3009860	1.86	6684674	2.10		
LCSD 320-191138/3-A		3010680	1.86	6592068	2.10		
320-32464-1	WGNA-101617-RW-3283	2897739	1.86	6536909	2.10		
320-32464-2	WGNA-101617-FRB-3283	2780021	1.85	6463758	2.09		
320-32464-3	WGNA-101617-RW-150	3168524	1.86	6981584	2.09		
320-32464-4	WGNA-101617-FRB-150	3234474	1.85	7346826	2.09		
320-32464-5	WGNA-101617-RW-3382	3626162	1.86	8189404	2.10		
320-32464-6	WGNA-101617-FRB-3382	3504926	1.86	7852365	2.10		
320-32464-7	WGNA-101617-RW-3991	3786228	1.86	8405612	2.10		

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.: 320-32464-1
 SDG No.: _____
 Sample No.: CCV 320-192279/22 Date Analyzed: 10/31/2017 18:56
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.10.31_537C_022 Heated Purge: (Y/N) N
 Calibration ID: 35621

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	2961630	1.86	6344077	2.10		
UPPER LIMIT	4146282	2.36	8881708	2.60		
LOWER LIMIT	2073141	1.36	4440854	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-191138/1-A		3230211	1.86	7280484	2.10	
LCS 320-191138/2-A		3009860	1.86	6684674	2.10	
LCSD 320-191138/3-A		3010680	1.86	6592068	2.10	
320-32464-1	WGNA-101617-RW-3283	2897739	1.86	6536909	2.10	
320-32464-2	WGNA-101617-FRB-3283	2780021	1.85	6463758	2.09	
320-32464-3	WGNA-101617-RW-150	3168524	1.86	6981584	2.09	
320-32464-4	WGNA-101617-FRB-150	3234474	1.85	7346826	2.09	
320-32464-5	WGNA-101617-RW-3382	3626162	1.86	8189404	2.10	
320-32464-6	WGNA-101617-FRB-3382	3504926	1.86	7852365	2.10	
320-32464-7	WGNA-101617-RW-3991	3786228	1.86	8405612	2.10	

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.: 320-32464-1
 SDG No.: _____
 Sample No.: CCV 320-192281/22 Date Analyzed: 10/31/2017 18:56
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.10.31_537C_022 Heated Purge: (Y/N) N
 Calibration ID: 35621

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	2961630	1.86	6344077	2.10		
UPPER LIMIT	4146282	2.36	8881708	2.60		
LOWER LIMIT	2073141	1.36	4440854	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-32464-8	WGNA-101617-FRB-3991	3273656	1.86	7124343	2.10	
320-32464-9	WGNA-101617-RW-085	3118551	1.86	6691853	2.10	
320-32464-10	WGNA-101617-FRB-085	3079446	1.86	6817273	2.10	
320-32464-11	WGNA-101617-RW-4834	2788845	1.85	6264447	2.09	
320-32464-12	WGNA-101617-FRB-4834	3049835	1.85	6757724	2.09	
320-32464-13	WGNA-101617-DUP11	3479117	1.86	7576347	2.10	

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.: 320-32464-1
 SDG No.: _____
 Sample No.: CCV 320-192281/30 Date Analyzed: 10/31/2017 19:34
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.10.31_537C_030 Heated Purge: (Y/N) N
 Calibration ID: 35621

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	2729865	1.85	5740357	2.09		
UPPER LIMIT	3821811	2.35	8036500	2.59		
LOWER LIMIT	1910906	1.35	4018250	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-32464-8	WGNA-101617-FRB-3991		3273656	1.86	7124343	2.10
320-32464-9	WGNA-101617-RW-085		3118551	1.86	6691853	2.10
320-32464-10	WGNA-101617-FRB-085		3079446	1.86	6817273	2.10
320-32464-11	WGNA-101617-RW-4834		2788845	1.85	6264447	2.09
320-32464-12	WGNA-101617-FRB-4834		3049835	1.85	6757724	2.09
320-32464-13	WGNA-101617-DUP11		3479117	1.86	7576347	2.10

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: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Client Sample ID: WGNA-101617-RW-3283 Lab Sample ID: 320-32464-1
 Matrix: Water Lab File ID: 2017.10.31_537C_015.d
 Analysis Method: 537 Date Collected: 10/16/2017 08:10
 Extraction Method: 537 Date Extracted: 10/25/2017 16:24
 Sample wt/vol: 266.1(mL) Date Analyzed: 10/31/2017 18:22
 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.: 192279 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	20		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U M	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.3	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.4	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	21	J	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	97		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_015.d
 Lims ID: 320-32464-A-1-A
 Client ID: WGNA-101617-RW-3283
 Sample Type: Client
 Inject. Date: 31-Oct-2017 18:22:54 ALS Bottle#: 11 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32464-a-1-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 11:01:24

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	1.405	-0.001	1.000	1319595	5.46		394	
298.90 > 99.00	1.404	1.405	-0.001	1.000	946190		1.39(0.00-0.00)	748	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.528	-0.003	1.000	2752769	8.42		4051	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.677	-0.008	1.000	463918	1.70		80.1	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.678	-0.001	1.000	821296	2.21		285	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		2897739	10.0		3578	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.864	-0.005	1.000	1425666	5.29		107	
413.00 > 169.00	1.859	1.864	-0.005	1.000	834084		1.71(0.00-0.00)	164	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	1144566	5.41		104	M
499.00 > 99.00	2.102	2.094	0.008	1.000	194714		5.88(0.00-0.00)	120	M
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.107	-0.005		6536909	28.7		3345	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	158508	0.8381		27.3	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2282269	9.73		6775	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_015.d

Injection Date: 31-Oct-2017 18:22:54

Instrument ID: A8_N

Lims ID: 320-32464-A-1-A

Lab Sample ID: 320-32464-1

Client ID: WGNA-101617-RW-3283

Operator ID: SACINSTLCMS01

ALS Bottle#: 11

Worklist Smp#: 15

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

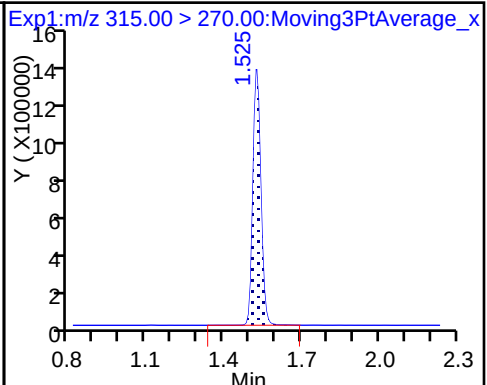
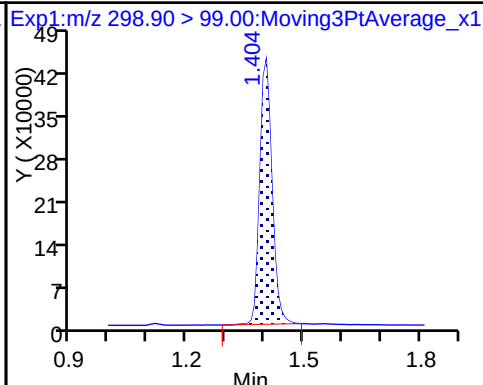
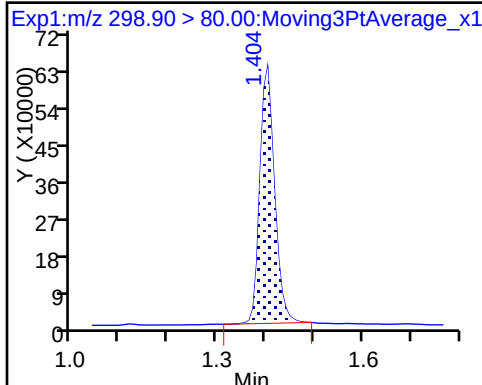
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

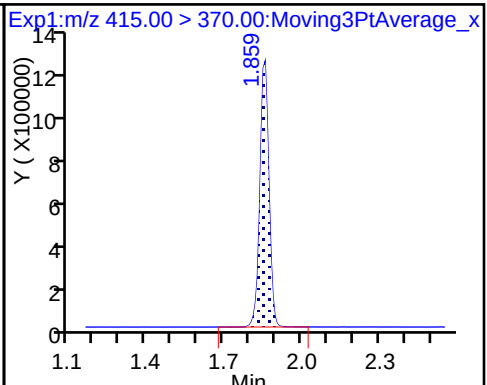
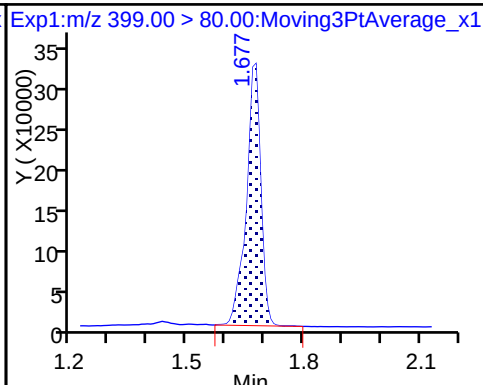
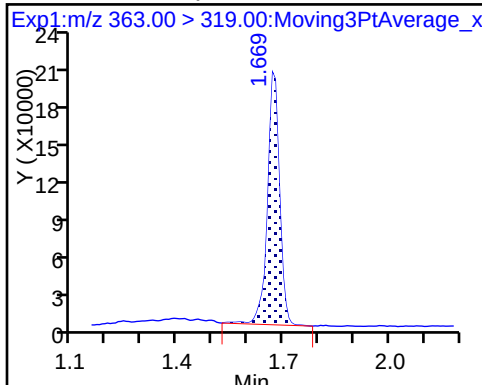
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

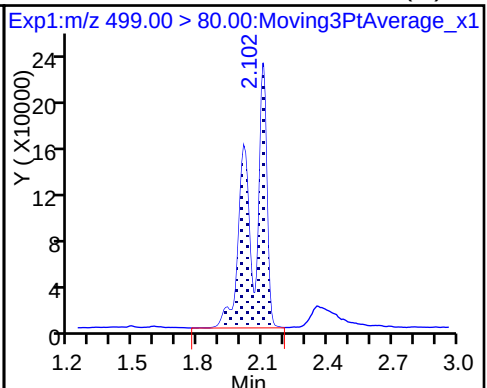
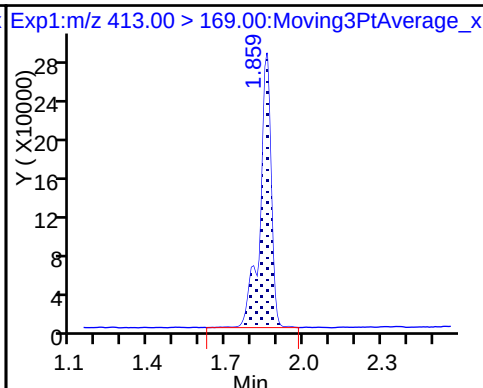
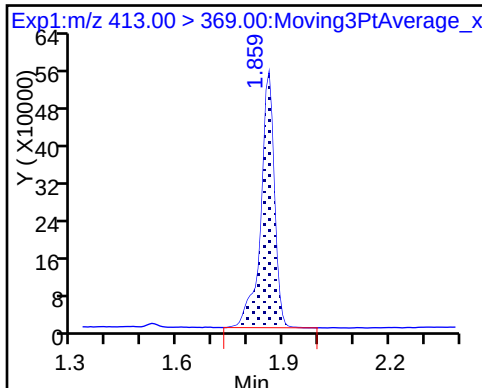
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

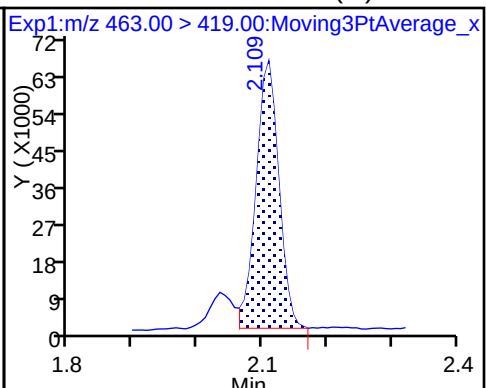
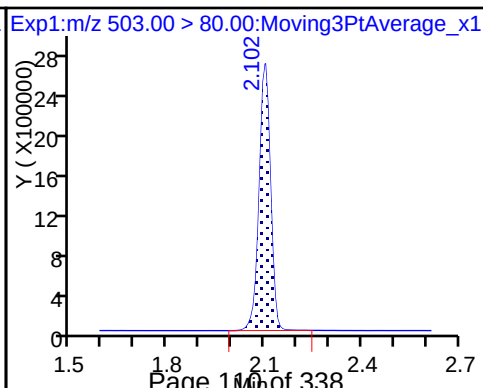
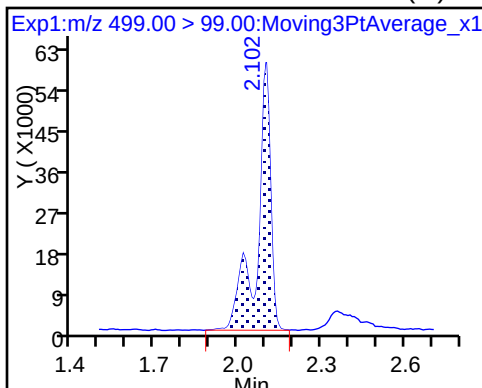
8 Perfluorooctane sulfonic acid (M)



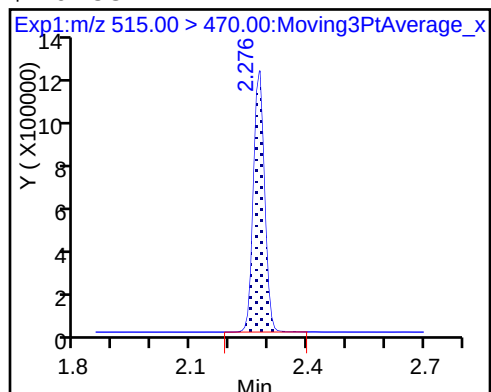
8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_015.d
Lims ID: 320-32464-A-1-A
Client ID: WGNA-101617-RW-3283
Sample Type: Client
Inject. Date: 31-Oct-2017 18:22:54 ALS Bottle#: 11 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32464-a-1-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 11:01:24

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.42	84.18
\$ 10 13C2 PFDA	10.0	9.73	97.31

TestAmerica Sacramento

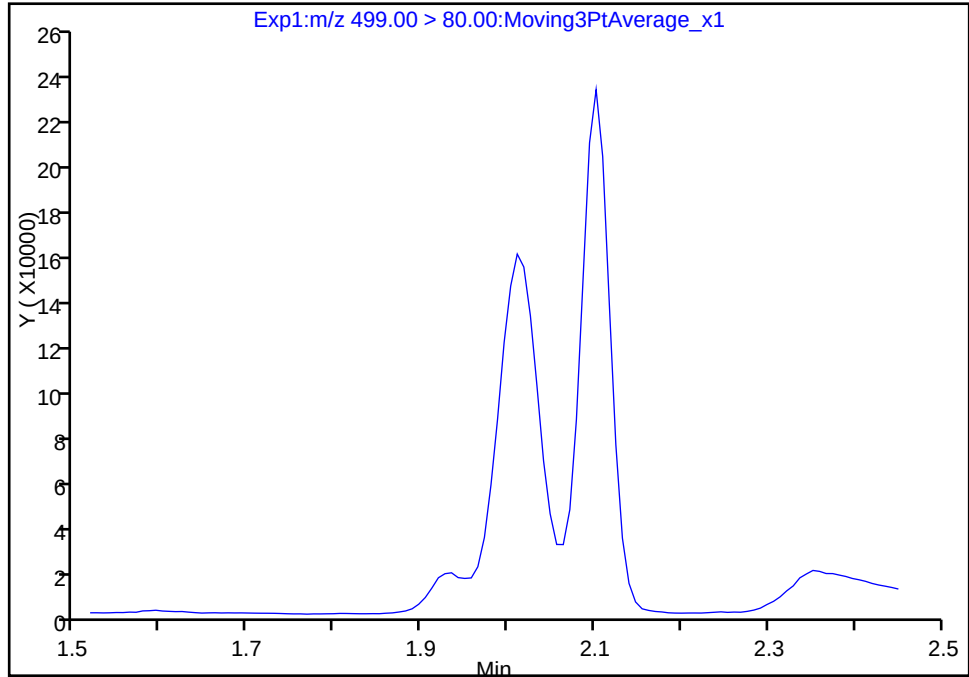
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_015.d				
Injection Date:	31-Oct-2017 18:22:54	Instrument ID:	A8_N		
Lims ID:	320-32464-A-1-A	Lab Sample ID:	320-32464-1		
Client ID:	WGNA-101617-RW-3283				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

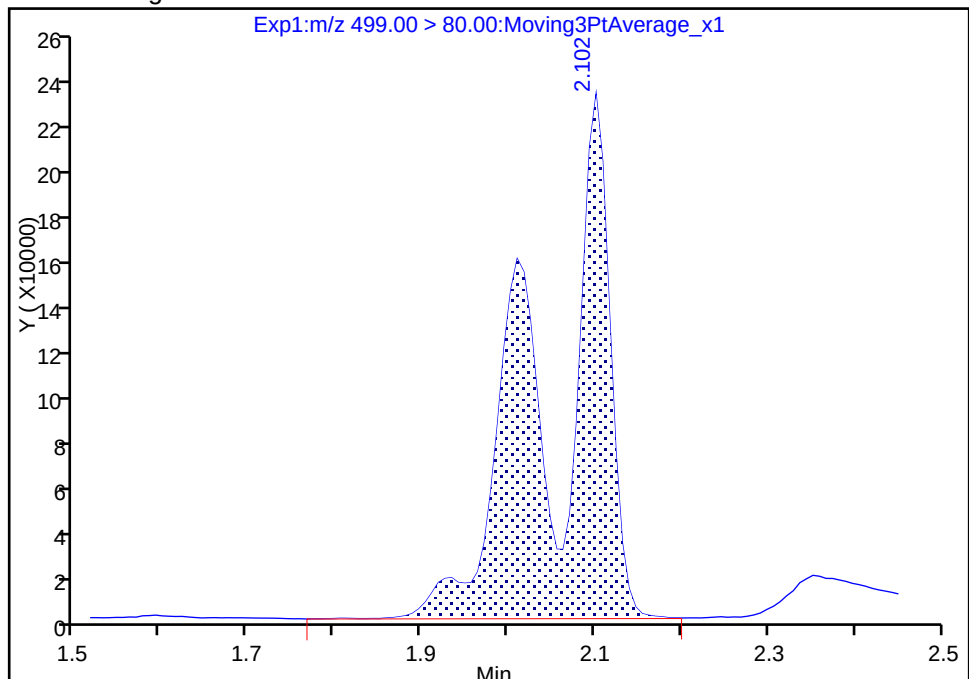
Signal: 1

Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.10
Area: 1144566
Amount: 5.409703
Amount Units: ng/ml

Reviewer: barnettj, 01-Nov-2017 11:00:34

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

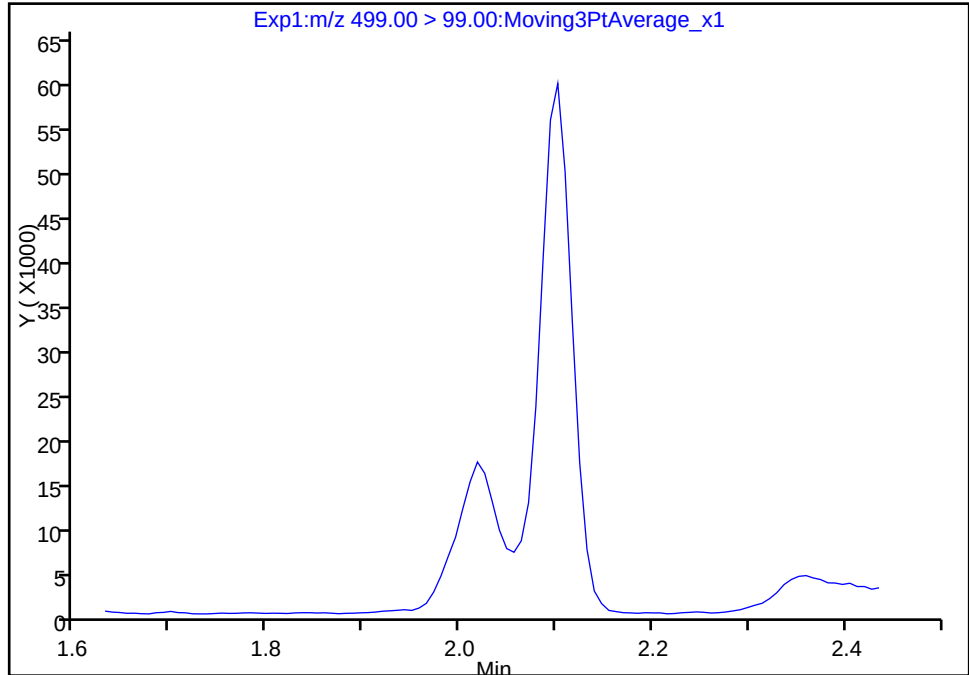
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_015.d				
Injection Date:	31-Oct-2017 18:22:54	Instrument ID:	A8_N		
Lims ID:	320-32464-A-1-A	Lab Sample ID:	320-32464-1		
Client ID:	WGNA-101617-RW-3283				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	15
Injection 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

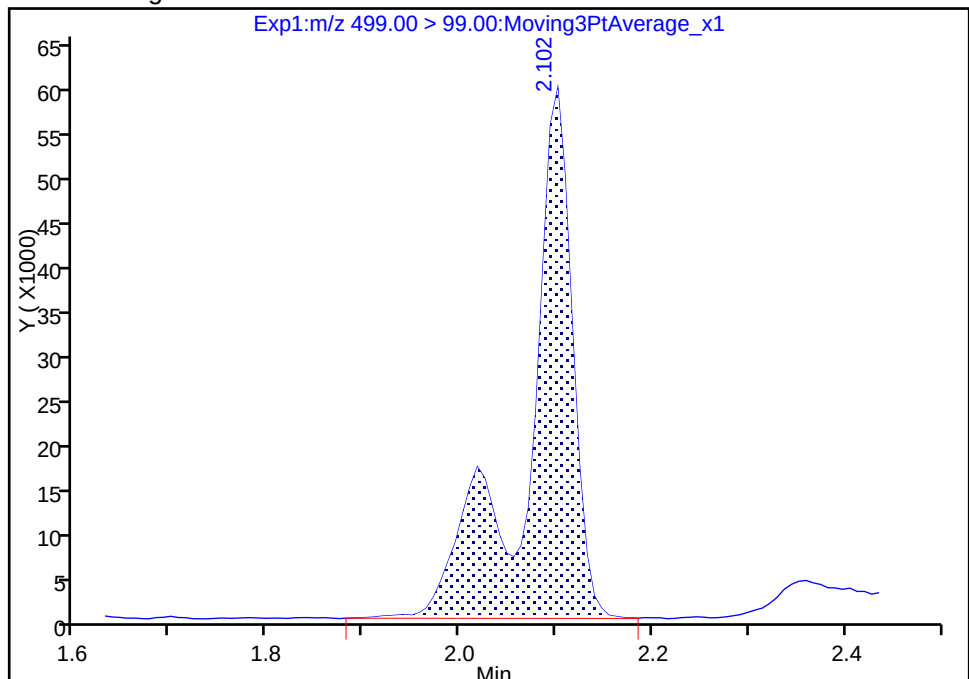
Signal: 2

Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 194714
Amount: 5.409703
Amount Units: ng/ml

Reviewer: barnettj, 01-Nov-2017 11:00:48

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

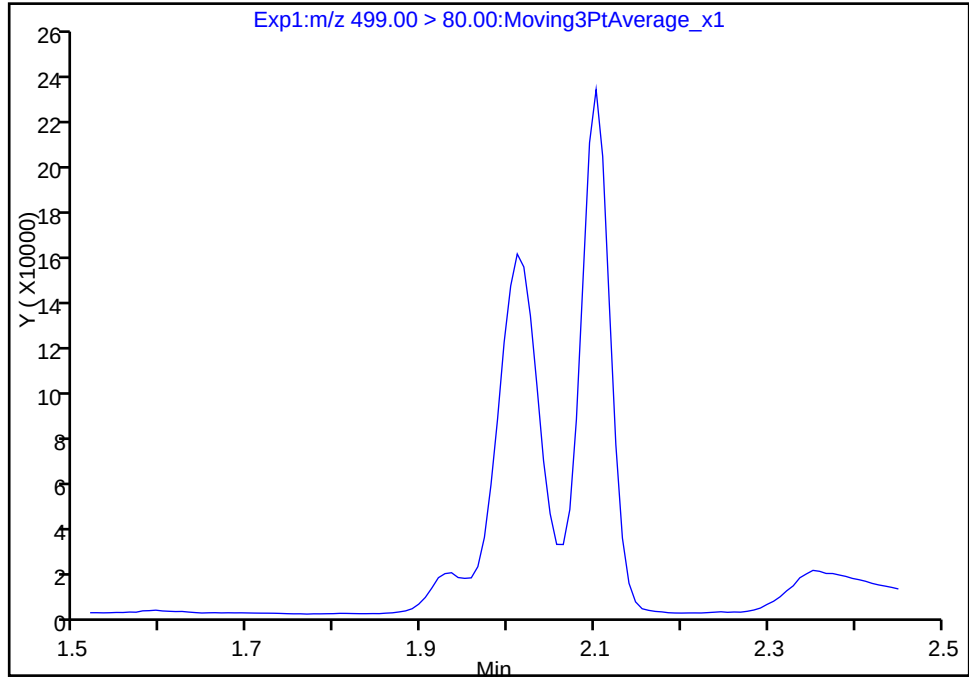
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_015.d
Injection Date: 31-Oct-2017 18:22:54 Instrument ID: A8_N
Lims ID: 320-32464-A-1-A Lab Sample ID: 320-32464-1
Client ID: WGNA-101617-RW-3283
Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

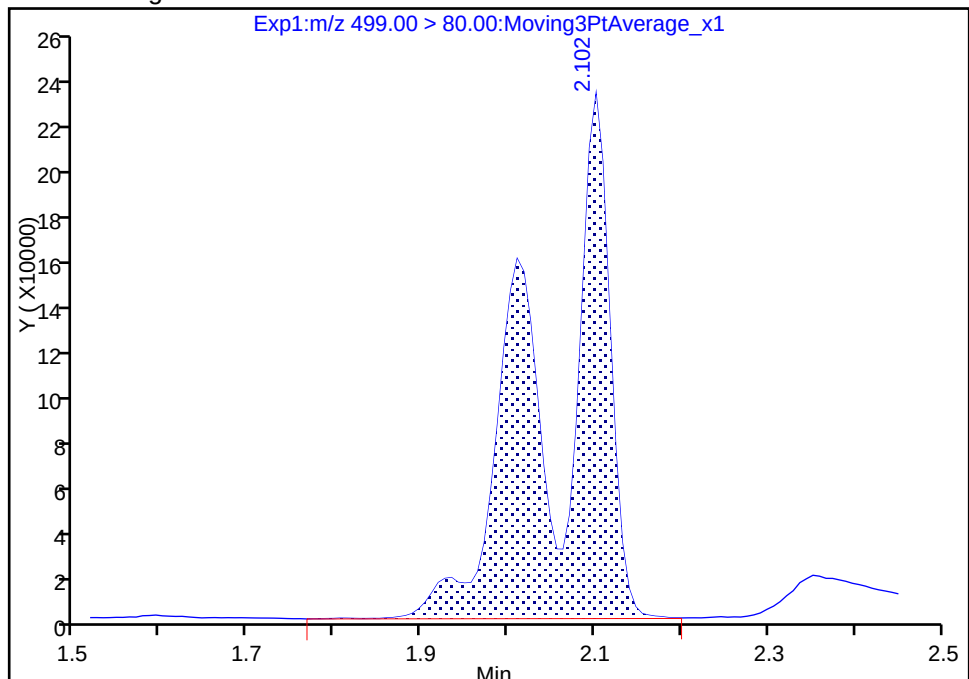
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 1144566
Amount: 5.409703
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 11:00:48

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

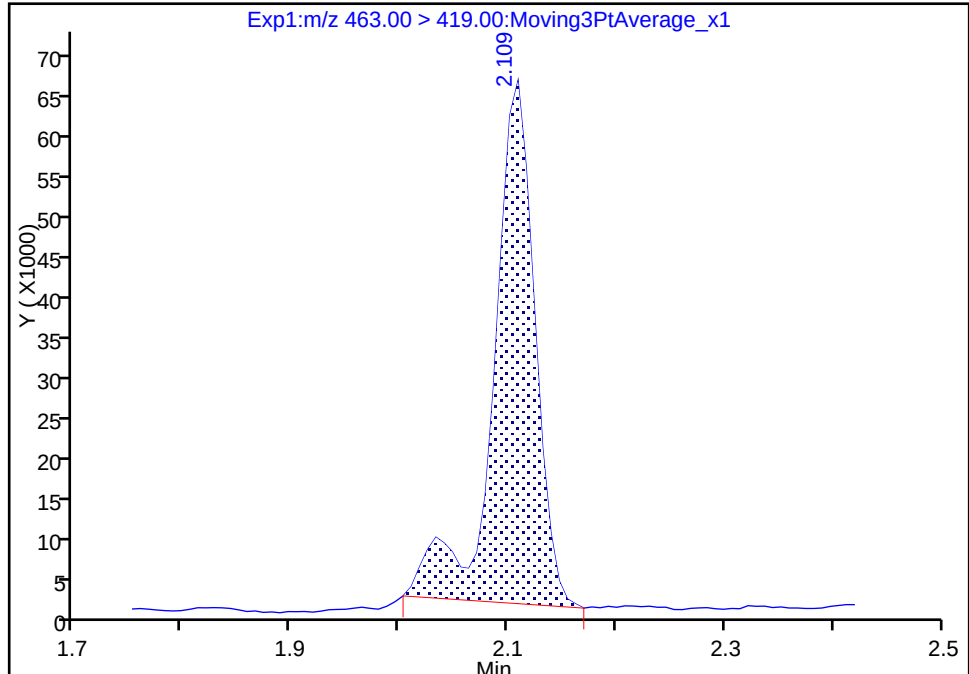
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Injection Date: 31-Oct-2017 18:22:54 Instrument ID: A8_N
Lims ID: 320-32464-A-1-A Lab Sample ID: 320-32464-1
Client ID: WGNA-101617-RW-3283
Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

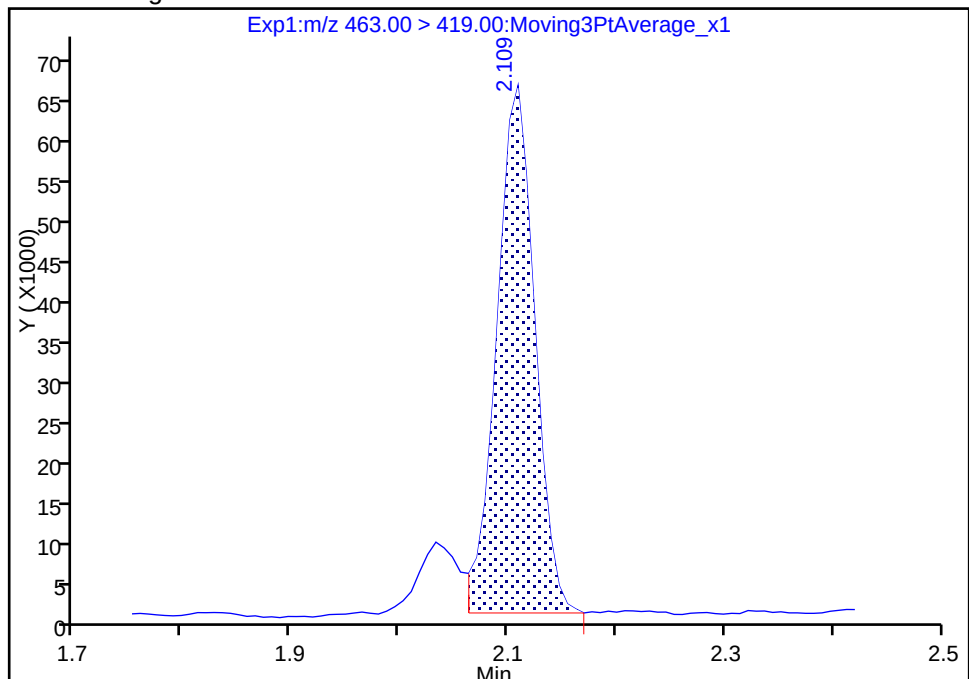
RT: 2.11
Area: 172374
Amount: 0.911425
Amount Units: ng/ml

Processing Integration Results



RT: 2.11
Area: 158508
Amount: 0.838109
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 01-Nov-2017 11:01:16
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-FRB-3283</u>	Lab Sample ID: <u>320-32464-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_016.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 08:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>276.8 (mL)</u>	Date Analyzed: <u>10/31/2017 18:27</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>192279</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)	33	U	81	33	15

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_016.d
 Lims ID: 320-32464-A-2-A
 Client ID: WGNA-101617-FRB-3283
 Sample Type: Client
 Inject. Date: 31-Oct-2017 18:27:41 ALS Bottle#: 12 Worklist Smp#: 16
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32464-a-2-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.528	-0.003	1.000	2857604	9.11		3731	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.863	-0.012		2780021	10.0		3275	
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.107	-0.013		6463758	28.7		3787	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.277	-0.009	1.000	2155715	9.58		5337	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_016.d

Injection Date: 31-Oct-2017 18:27:41

Instrument ID: A8_N

Lims ID: 320-32464-A-2-A

Lab Sample ID: 320-32464-2

Client ID: WGNA-101617-FRB-3283

Operator ID: SACINSTLCMS01

ALS Bottle#: 12

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

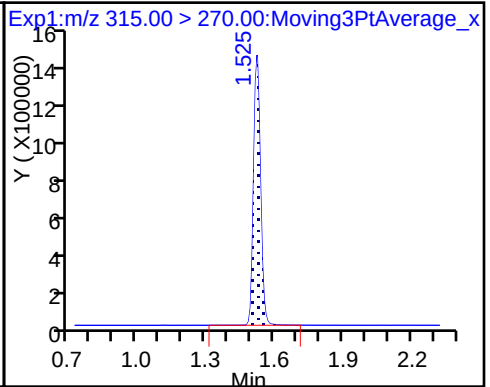
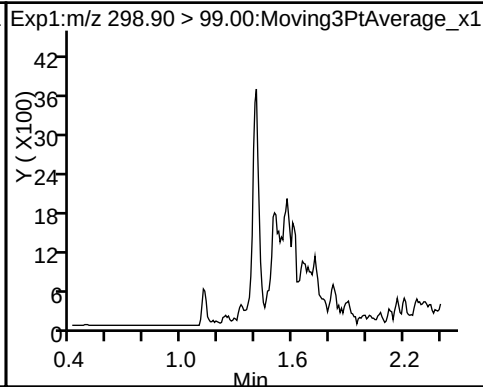
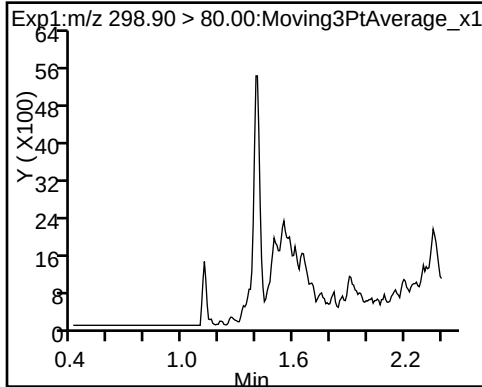
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

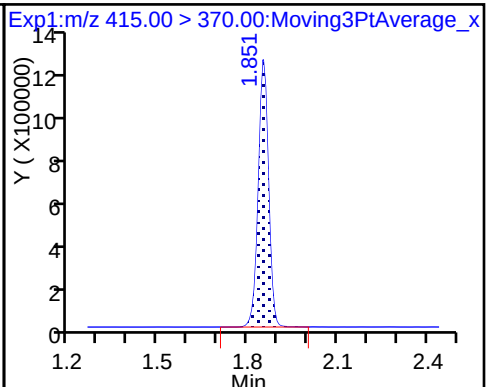
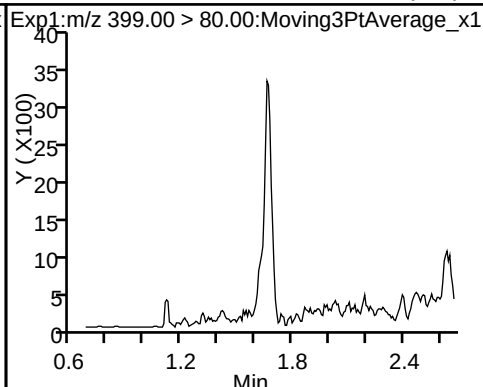
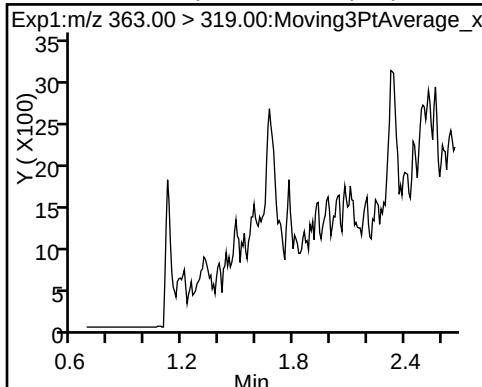
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

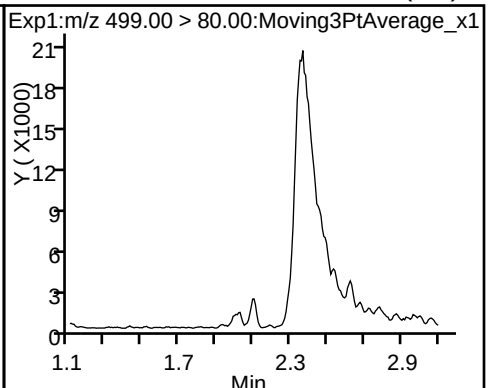
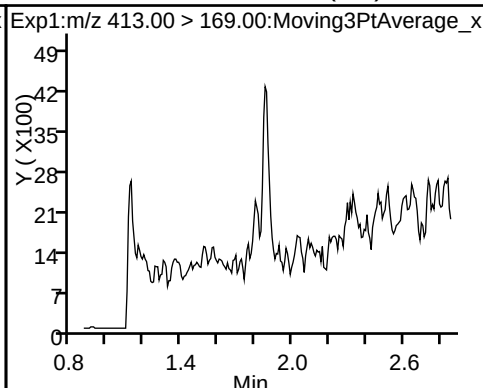
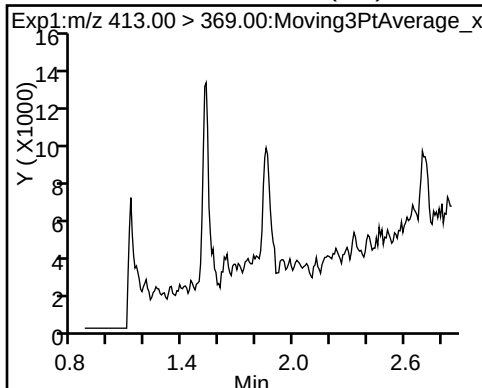
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

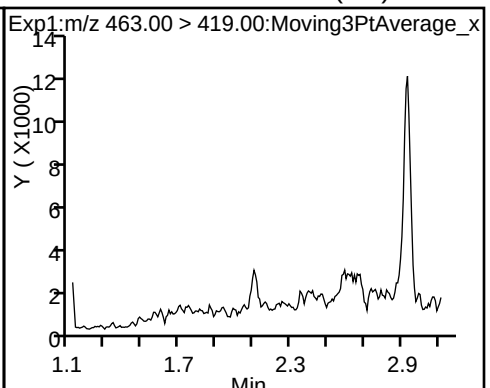
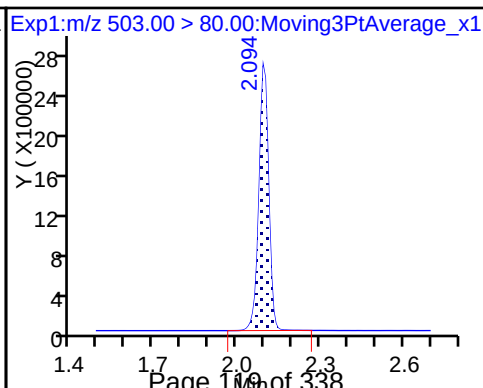
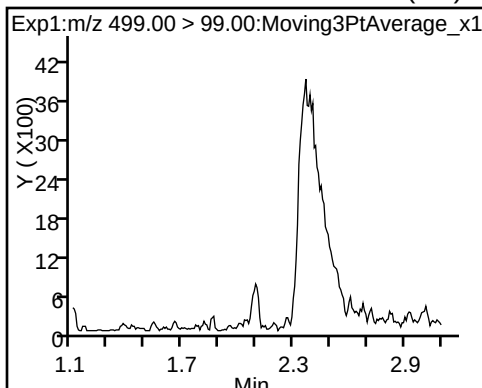
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

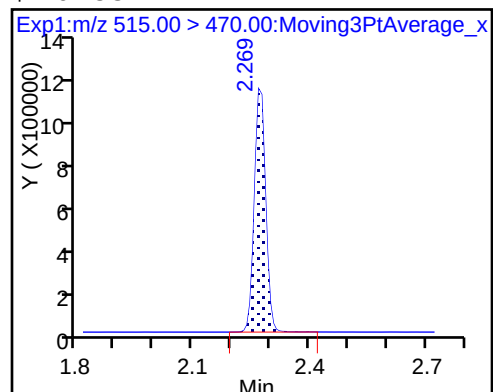


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_016.d
Lims ID: 320-32464-A-2-A
Client ID: WGNA-101617-FRB-3283
Sample Type: Client
Inject. Date: 31-Oct-2017 18:27:41 ALS Bottle#: 12 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32464-a-2-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.11	91.09
\$ 10 13C2 PFDA	10.0	9.58	95.80

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-RW-150</u>	Lab Sample ID: <u>320-32464-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_017.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 08:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>287.8 (mL)</u>	Date Analyzed: <u>10/31/2017 18:32</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>192279</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J M	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	20		17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.3	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U M	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	72		70-130
STL00996	13C2 PFDA	96		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_017.d
 Lims ID: 320-32464-A-3-A
 Client ID: WGNA-101617-RW-150
 Sample Type: Client
 Inject. Date: 31-Oct-2017 18:32:27 ALS Bottle#: 13 Worklist Smp#: 17
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32464-a-3-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 11:02:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									M
298.90 > 80.00	1.404	1.405	-0.001	1.000	164023	0.6303		23.0	M
298.90 > 99.00	1.404	1.405	-0.001	1.000	113356		1.45(0.00-0.00)	100	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.528	-0.003	1.000	2587286	7.24		3823	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	715724	2.40		73.8	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.678	-0.001	1.000	536479	1.35		78.1	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		3168524	10.0		3613	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.864	-0.005	1.000	1715219	5.82		102	
413.00 > 169.00	1.859	1.864	-0.005	1.000	990291		1.73(0.00-0.00)	199	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.102	2.094	0.008	1.000	709153	3.14		52.4	M
499.00 > 99.00	2.102	2.094	0.008	1.000	118718		5.97(0.00-0.00)	68.5	M
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.107	-0.013		6981584	28.7		2025	
9 Perfluorononanoic acid									M
463.00 > 419.00	2.109	2.116	-0.007	1.000	209790	1.01		27.4	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.277	-0.009	1.000	2454746	9.57		6769	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_017.d

Injection Date: 31-Oct-2017 18:32:27

Instrument ID: A8_N

Lims ID: 320-32464-A-3-A

Lab Sample ID: 320-32464-3

Client ID: WGNA-101617-RW-150

Operator ID: SACINSTLCMS01

ALS Bottle#: 13

Worklist Smp#: 17

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

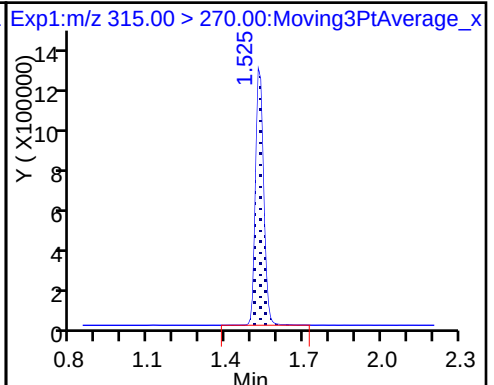
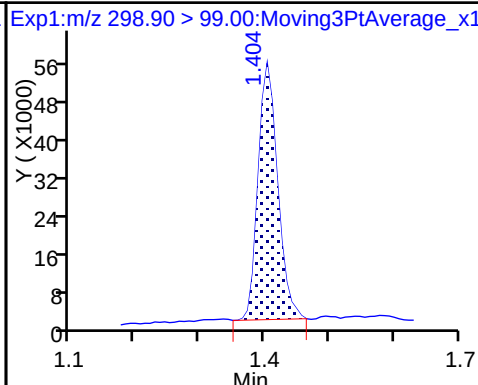
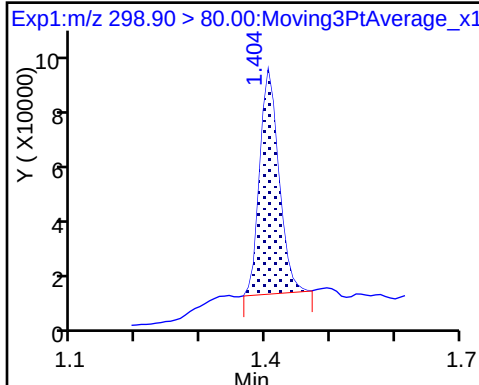
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (M)

1 Perfluorobutanesulfonic acid

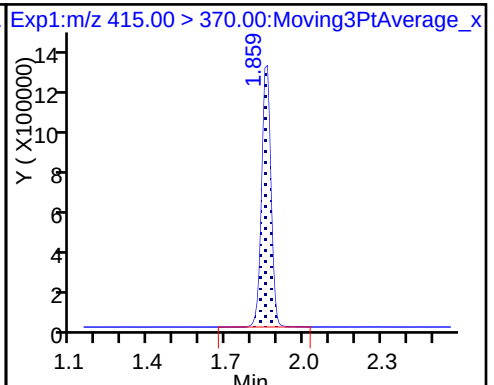
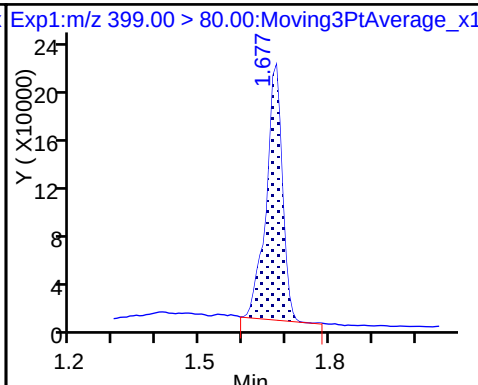
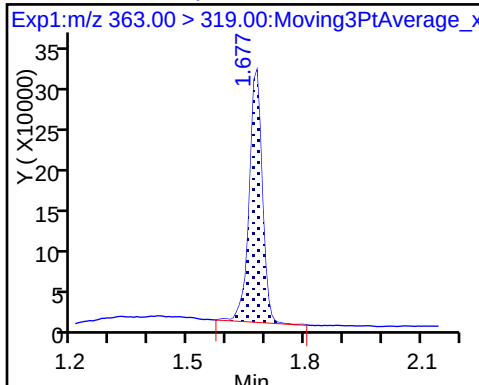
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

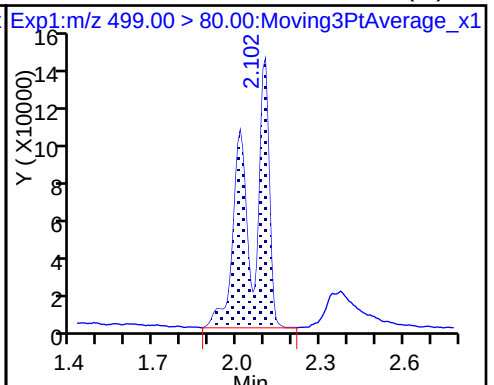
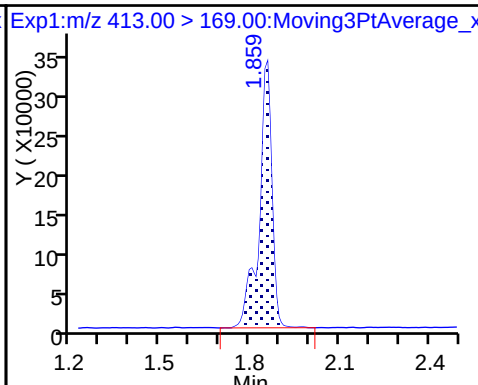
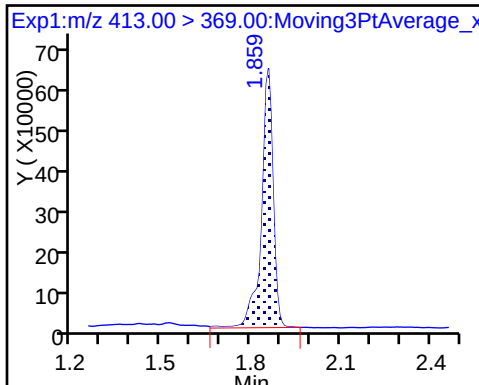
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

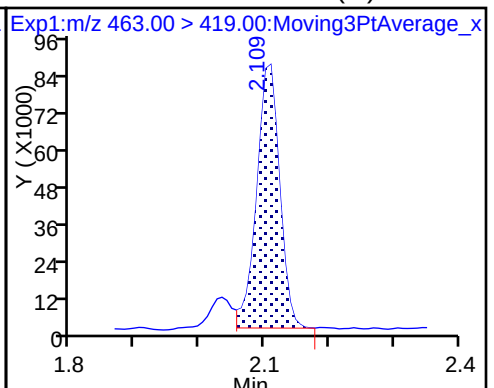
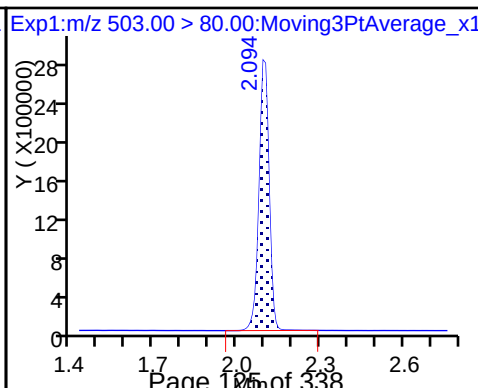
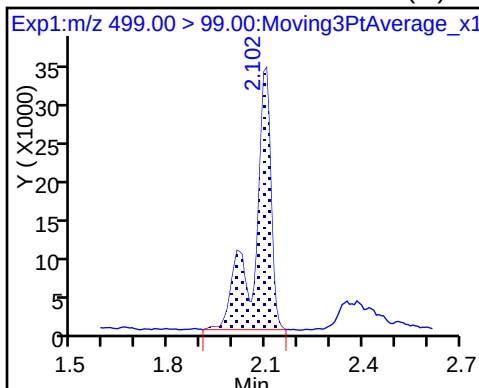
8 Perfluorooctane sulfonic acid (M)



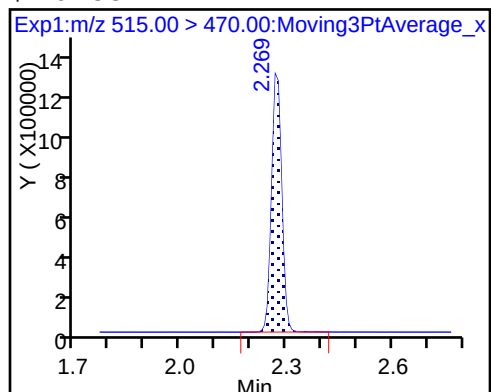
8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_017.d
Lims ID: 320-32464-A-3-A
Client ID: WGNA-101617-RW-150
Sample Type: Client
Inject. Date: 31-Oct-2017 18:32:27 ALS Bottle#: 13 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32464-a-3-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 11:02:56

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	7.24	72.36
\$ 10 13C2 PFDA	10.0	9.57	95.72

TestAmerica Sacramento

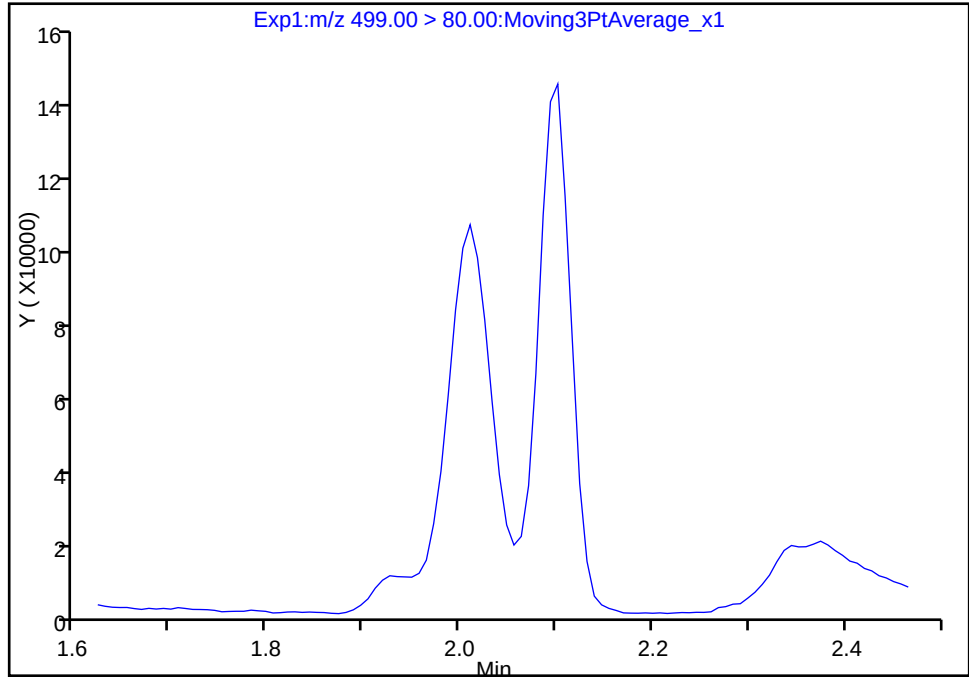
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_017.d				
Injection Date:	31-Oct-2017 18:32:27	Instrument ID:	A8_N		
Lims ID:	320-32464-A-3-A	Lab Sample ID:	320-32464-3		
Client ID:	WGNA-101617-RW-150				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

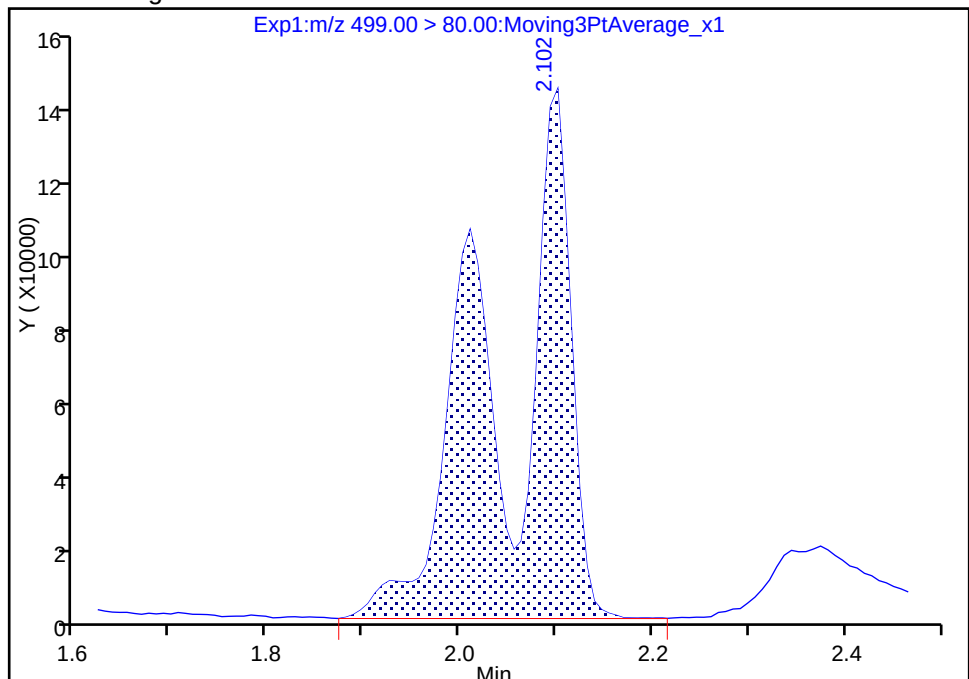
Signal: 1

Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 709153
Amount: 3.138275
Amount Units: ng/mlReviewer: barnettj, 01-Nov-2017 11:02:11
Audit Action: Assigned Compound ID

Audit Reason: Split Peak

TestAmerica Sacramento

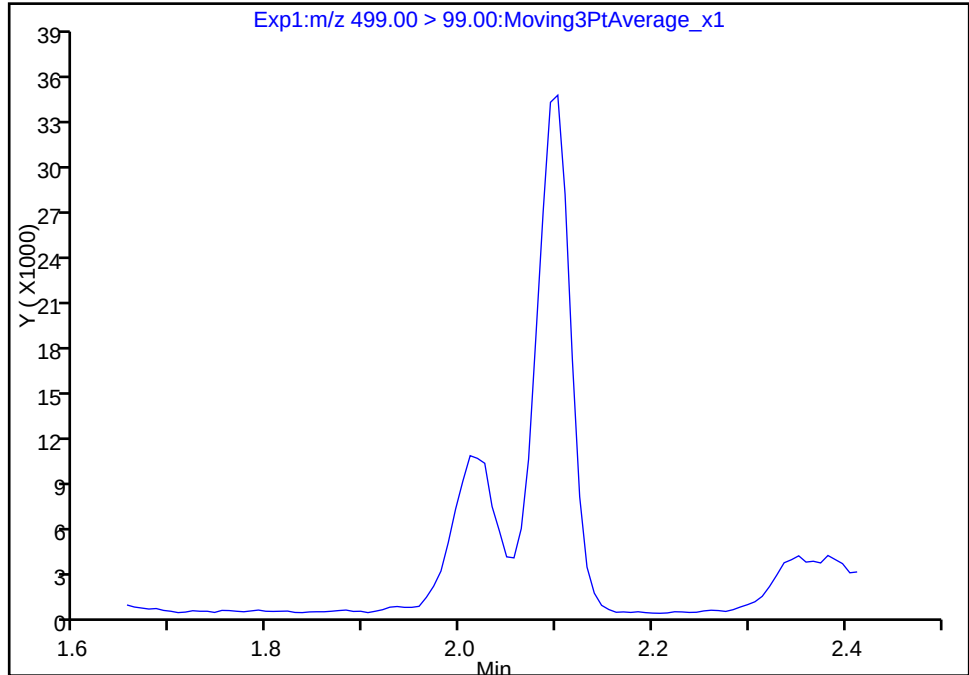
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_017.d
Injection Date: 31-Oct-2017 18:32:27 Instrument ID: A8_N
Lims ID: 320-32464-A-3-A Lab Sample ID: 320-32464-3
Client ID: WGNA-101617-RW-150
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

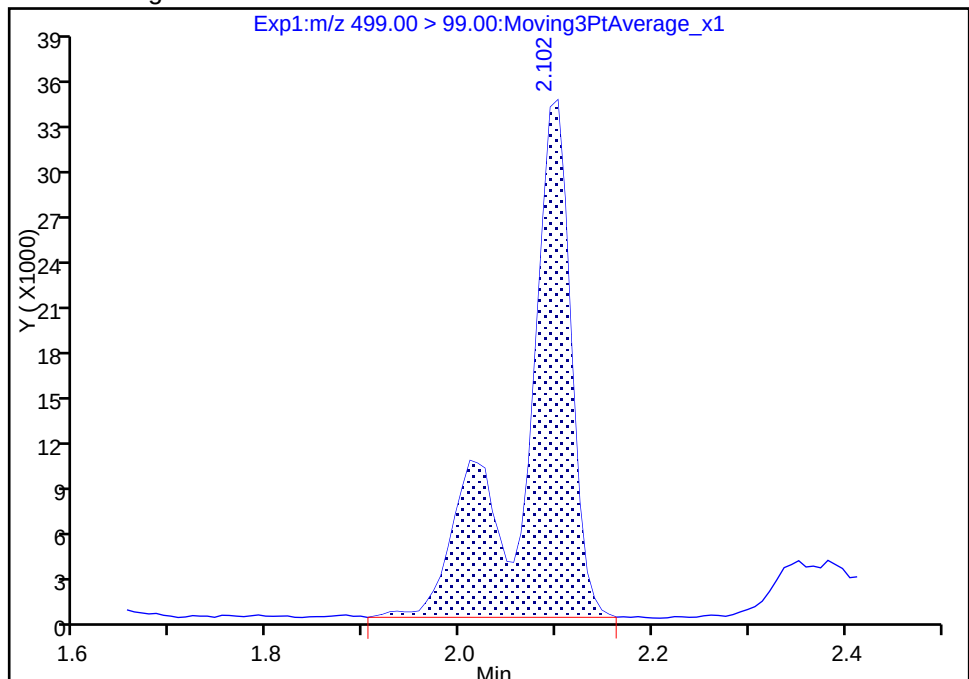
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 118718
Amount: 3.138275
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 11:02:25

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

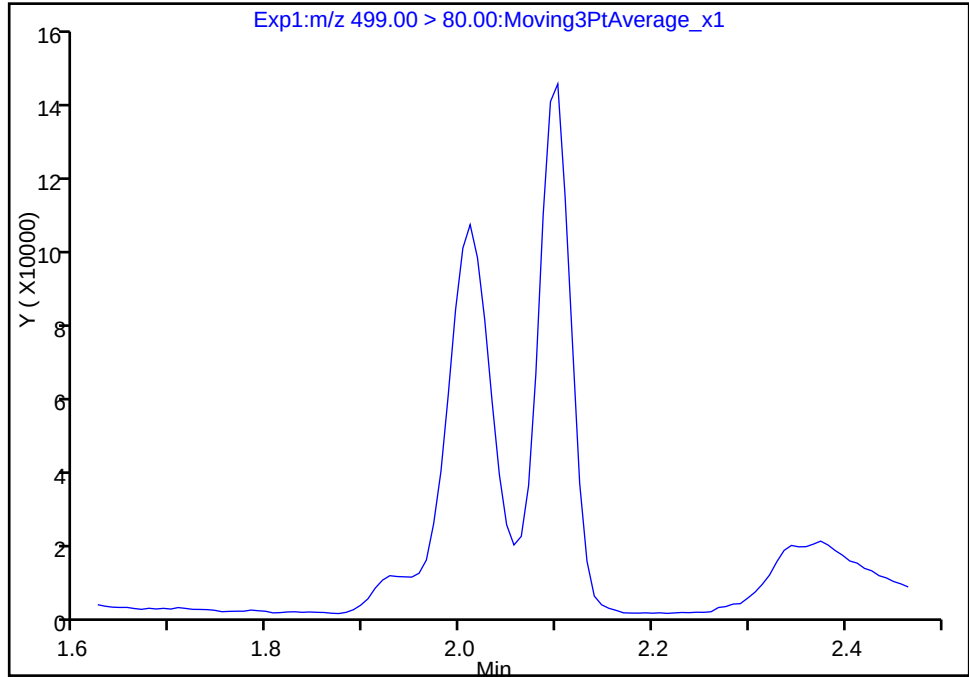
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_017.d
Injection Date: 31-Oct-2017 18:32:27 Instrument ID: A8_N
Lims ID: 320-32464-A-3-A Lab Sample ID: 320-32464-3
Client ID: WGNA-101617-RW-150
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

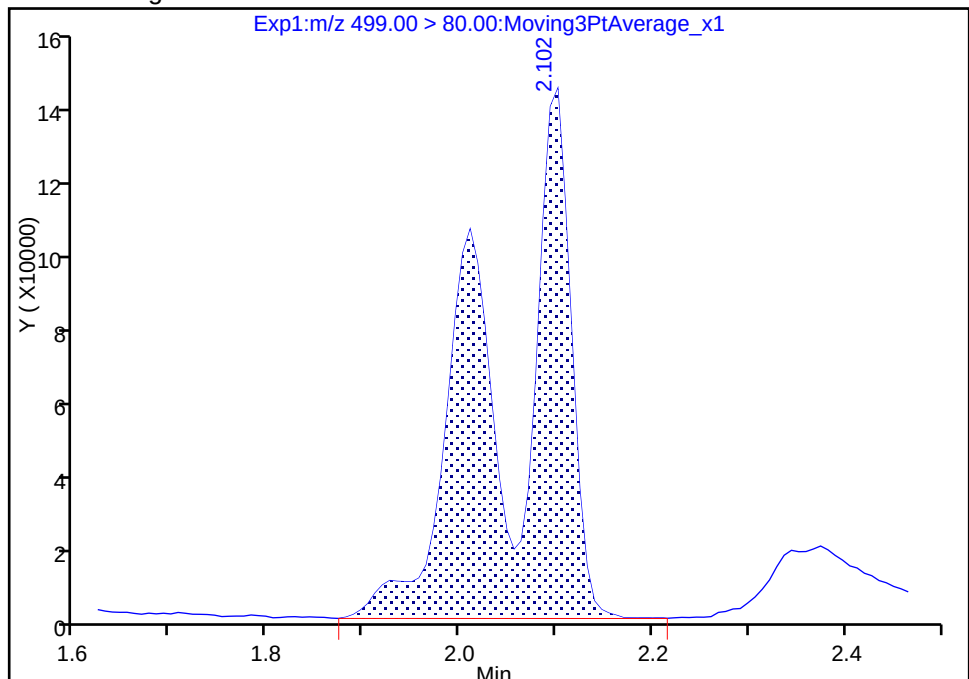
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 709153
Amount: 3.138275
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 11:02:25

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

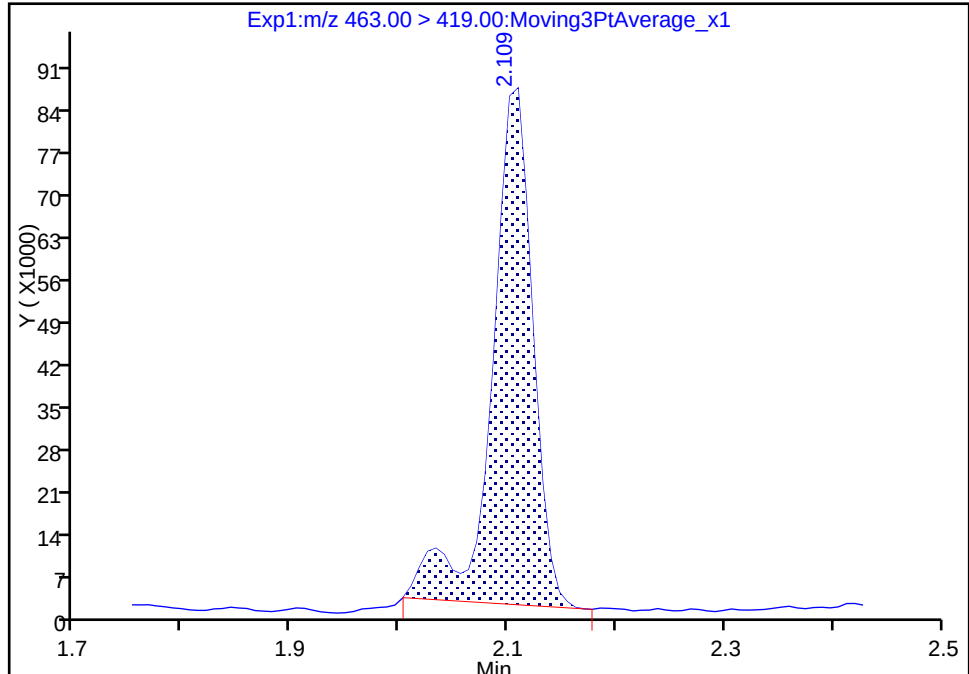
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_017.d
Injection Date: 31-Oct-2017 18:32:27 Instrument ID: A8_N
Lims ID: 320-32464-A-3-A Lab Sample ID: 320-32464-3
Client ID: WGNA-101617-RW-150
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

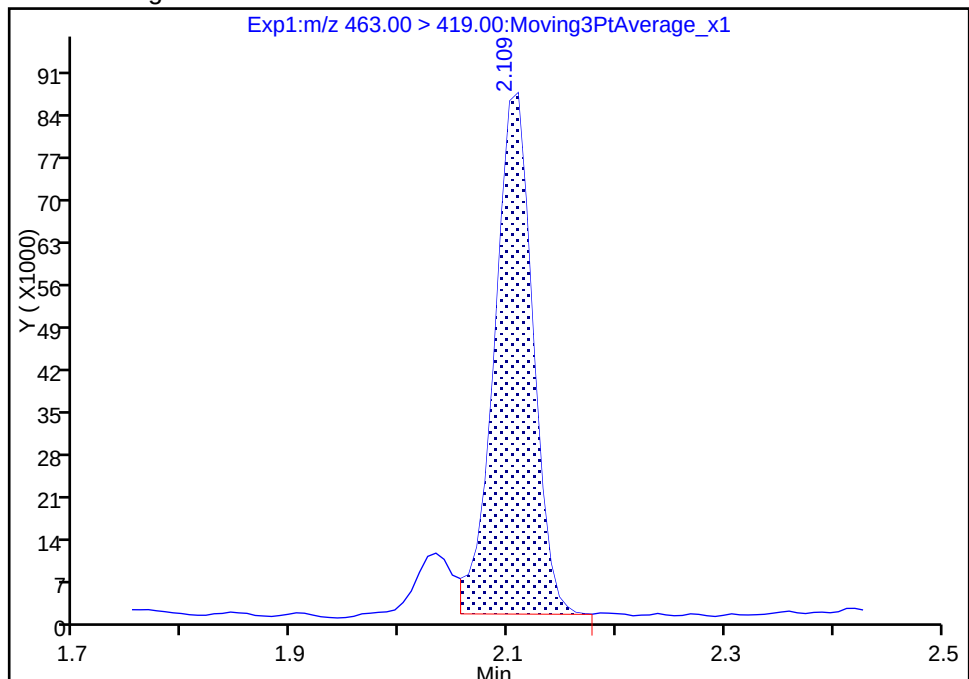
RT: 2.11
Area: 222409
Amount: 1.075484
Amount Units: ng/ml

Processing Integration Results



RT: 2.11
Area: 209790
Amount: 1.014463
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 01-Nov-2017 11:02:03
Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

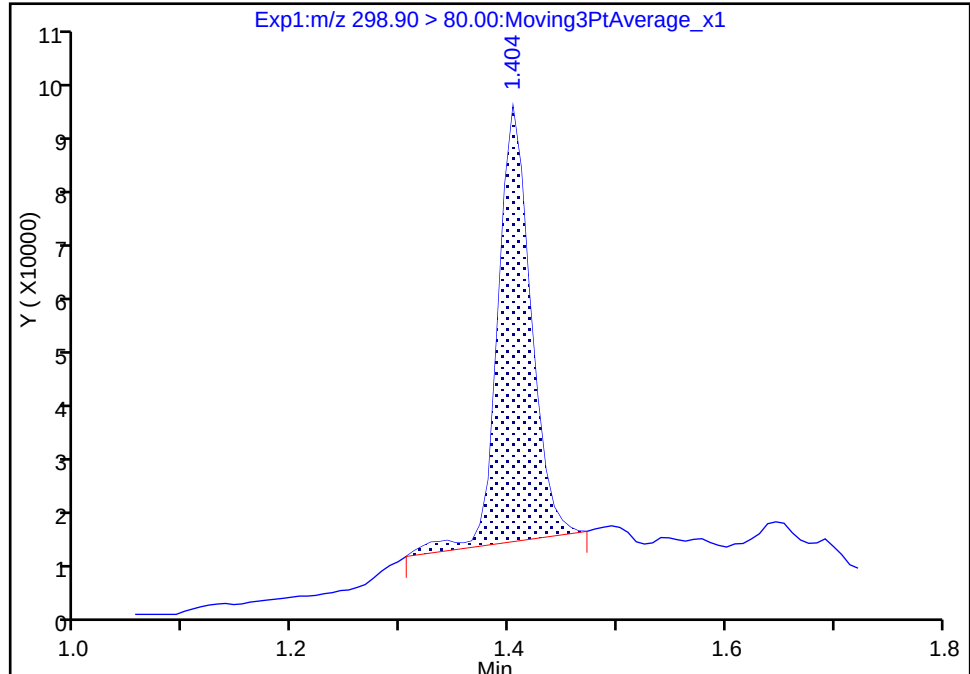
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_017.d				
Injection Date:	31-Oct-2017 18:32:27	Instrument ID:	A8_N		
Lims ID:	320-32464-A-3-A	Lab Sample ID:	320-32464-3		
Client ID:	WGNA-101617-RW-150				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector:	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

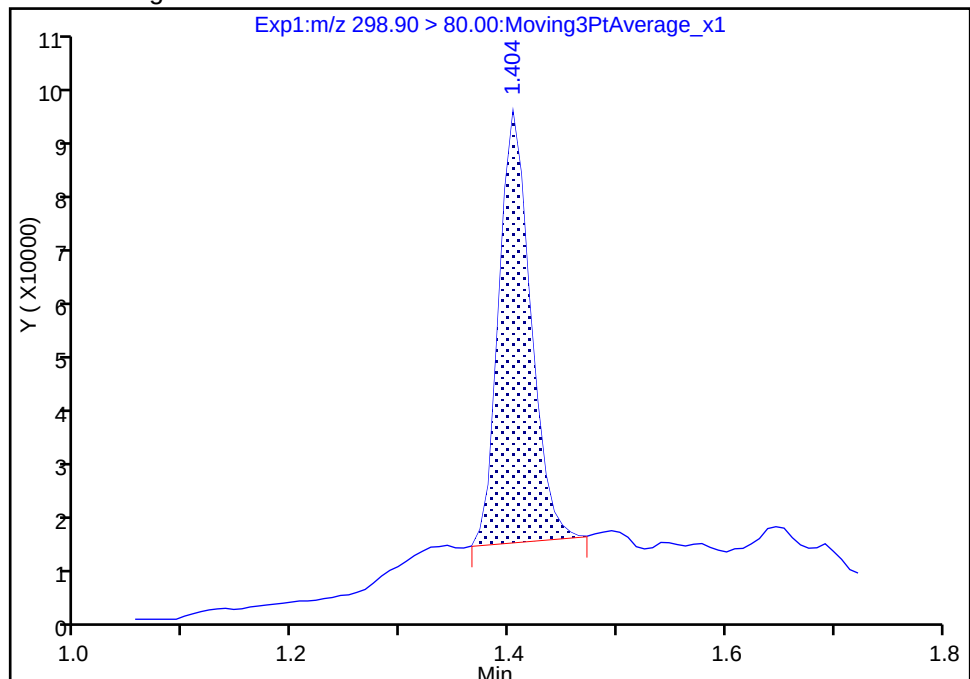
RT: 1.40
Area: 172226
Amount: 0.661852
Amount Units: ng/ml

Processing Integration Results



RT: 1.40
Area: 164023
Amount: 0.630292
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 01-Nov-2017 11:02:40

Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Client Sample ID: WGNA-101617-FRB-150 Lab Sample ID: 320-32464-4

Matrix: Water Lab File ID: 2017.10.31_537C_018.d

Analysis Method: 537 Date Collected: 10/16/2017 08:35

Extraction Method: 537 Date Extracted: 10/25/2017 16:24

Sample wt/vol: 279.4 (mL) Date Analyzed: 10/31/2017 18:37

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.: 192279 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	21	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	8.9	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	95		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_018.d
 Lims ID: 320-32464-A-4-A
 Client ID: WGNA-101617-FRB-150
 Sample Type: Client
 Inject. Date: 31-Oct-2017 18:37:13 ALS Bottle#: 14 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32464-a-4-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.528	-0.003	1.000	3274014	8.97		4034	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.863	-0.012		3234474	10.0		3345	
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.107	-0.013		7346826	28.7		3962	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2476416	9.46		5677	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_018.d

Injection Date: 31-Oct-2017 18:37:13

Instrument ID: A8_N

Lims ID: 320-32464-A-4-A

Lab Sample ID: 320-32464-4

Client ID: WGNA-101617-FRB-150

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 18

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

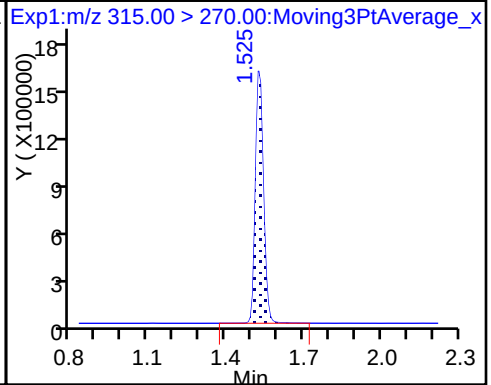
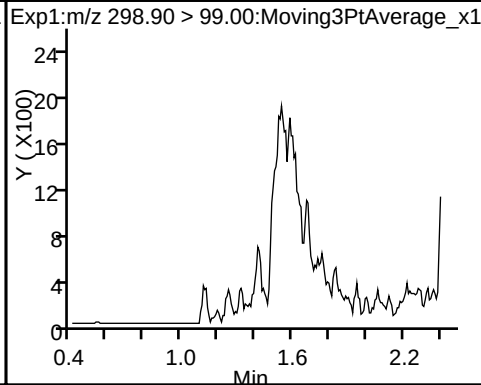
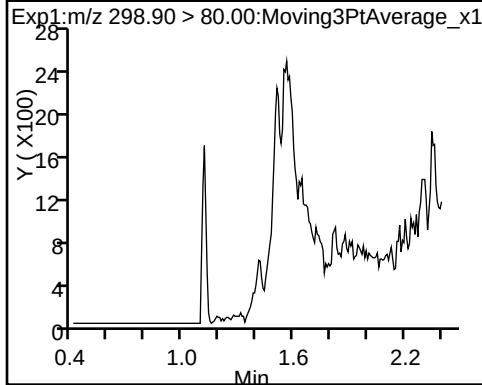
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

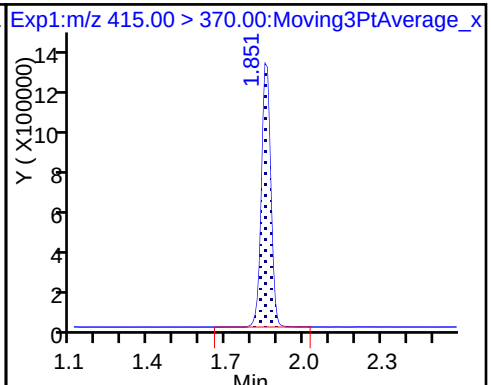
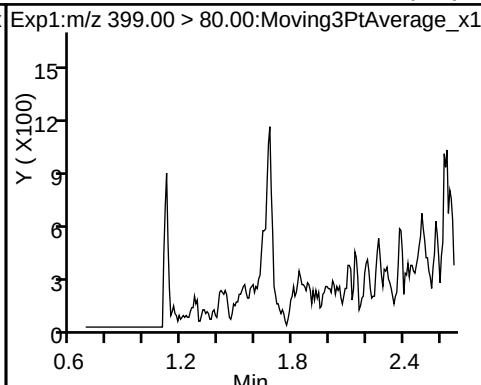
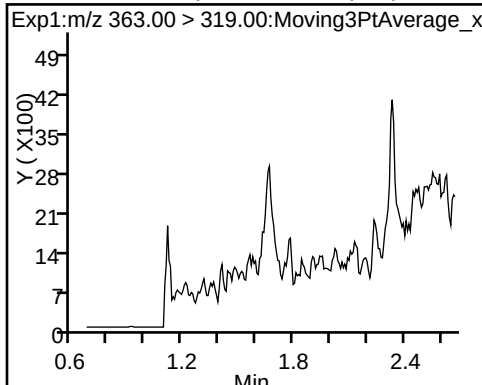
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

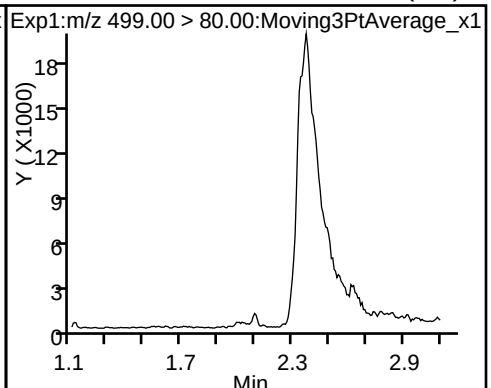
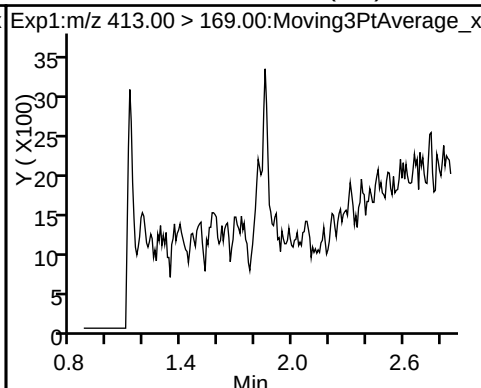
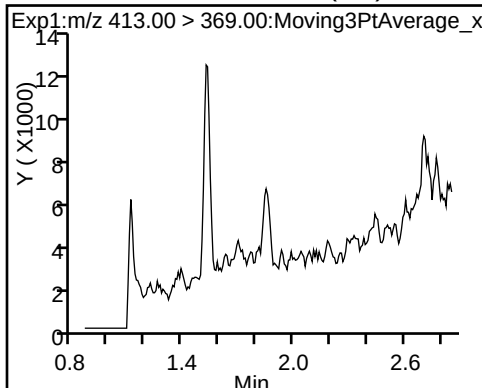
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

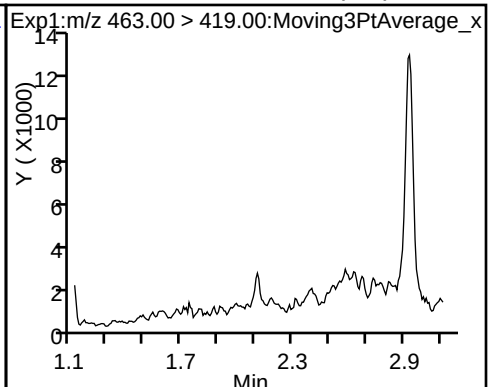
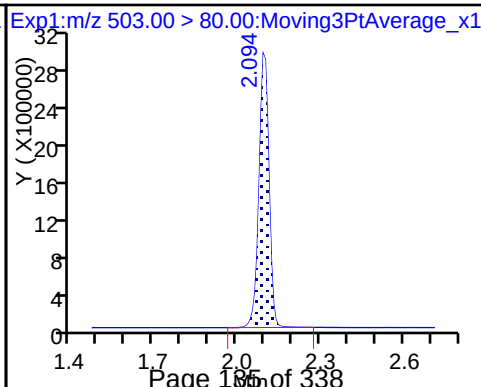
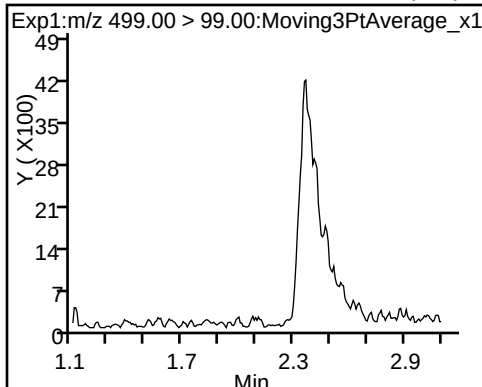
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

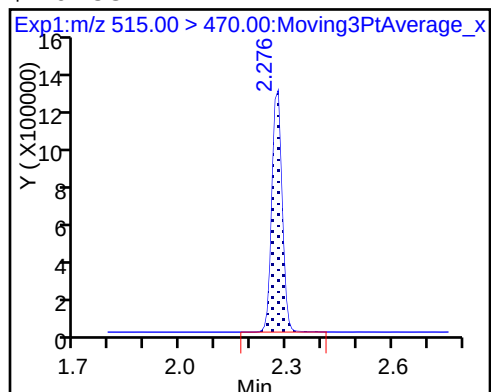


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_018.d
Lims ID: 320-32464-A-4-A
Client ID: WGNA-101617-FRB-150
Sample Type: Client
Inject. Date: 31-Oct-2017 18:37:13 ALS Bottle#: 14 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32464-a-4-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.97	89.70
\$ 10 13C2 PFDA	10.0	9.46	94.59

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-RW-3382</u>	Lab Sample ID: <u>320-32464-5</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_019.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 10:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>274.1 (mL)</u>	Date Analyzed: <u>10/31/2017 18:42</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>192279</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J M	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	14	J M	18	7.3	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.3	J	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.2	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	79		70-130
STL00996	13C2 PFDA	89		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_019.d
 Lims ID: 320-32464-A-5-A
 Client ID: WGNA-101617-RW-3382
 Sample Type: Client
 Inject. Date: 31-Oct-2017 18:42:00 ALS Bottle#: 15 Worklist Smp#: 19
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32464-a-5-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 11:04:24

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	1.405	-0.001	1.000	625889	2.06		214	
298.90 > 99.00	1.404	1.405	-0.001	1.000	442961		1.41(0.00-0.00)	497	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.528	0.005	1.000	3230806	7.90		5471	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	396563	1.16		57.9	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.678	-0.001	1.000	1055040	2.27		432	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		3626162	10.0		4768	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.864	-0.005	1.000	1314391	3.90		94.6	M
413.00 > 169.00	1.859	1.864	-0.005	1.000	789201		1.67(0.00-0.00)	159	M
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.094	0.015	1.000	883374	3.33		78.3	M
499.00 > 99.00	2.102	2.094	0.008	0.996	138292		6.39(0.00-0.00)	79.6	M
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.107	-0.005		8189404	28.7		4282	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	88755	0.3750		12.8	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2603181	8.87		8051	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_019.d

Injection Date: 31-Oct-2017 18:42:00

Instrument ID: A8_N

Lims ID: 320-32464-A-5-A

Lab Sample ID: 320-32464-5

Client ID: WGNA-101617-RW-3382

Operator ID: SACINSTLCMS01

ALS Bottle#: 15

Worklist Smp#: 19

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

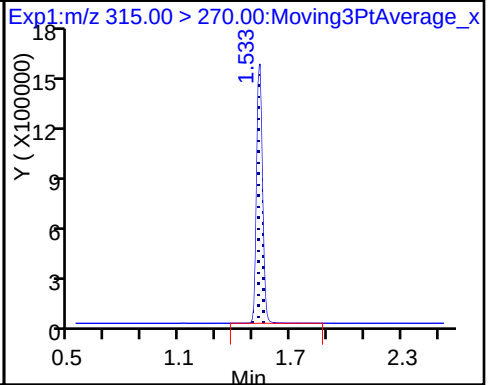
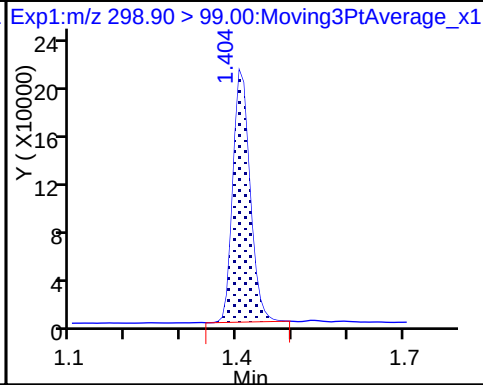
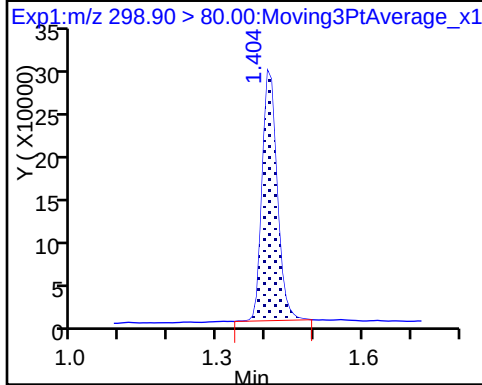
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

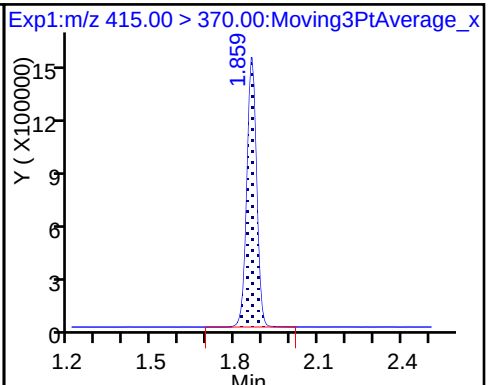
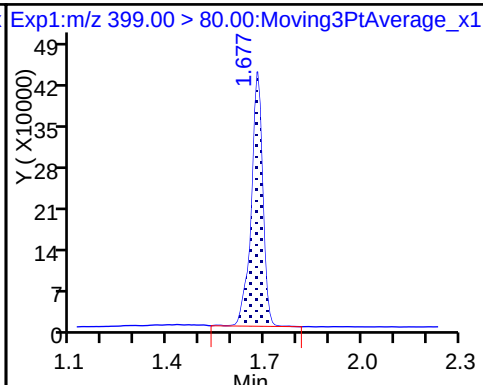
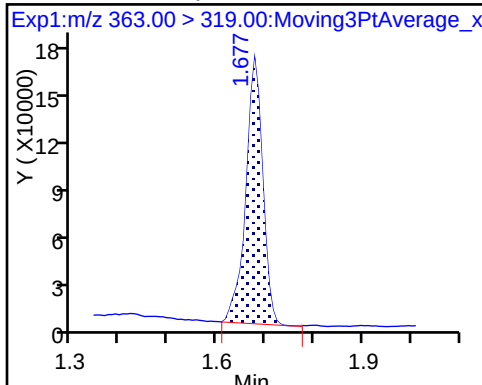
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

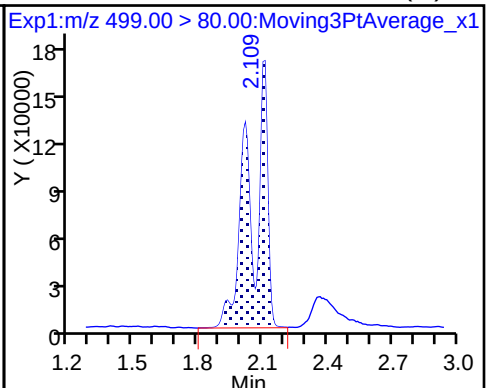
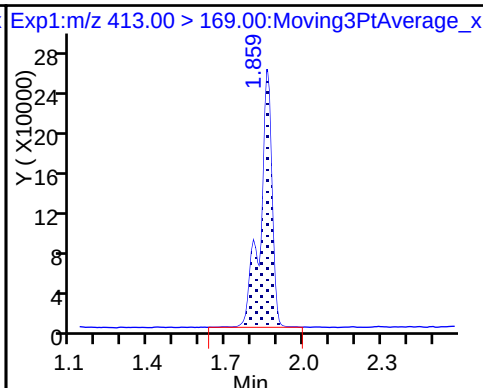
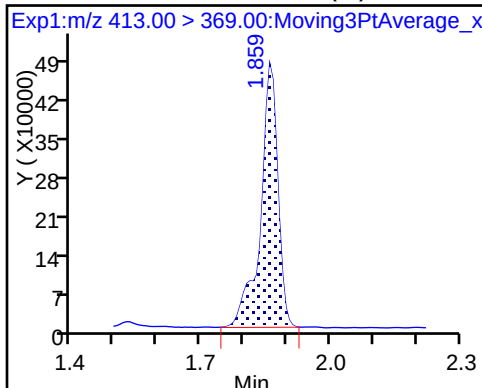
* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid

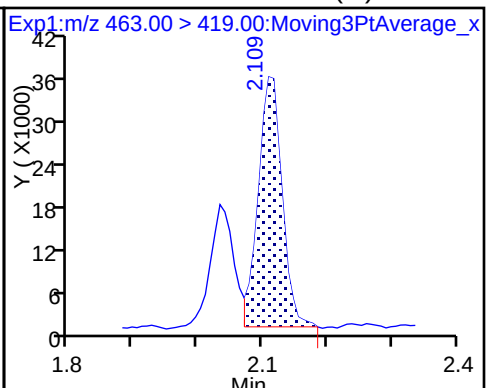
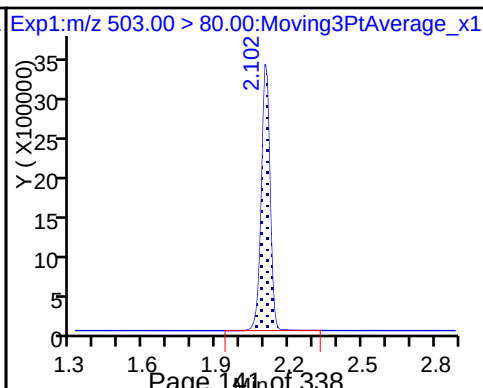
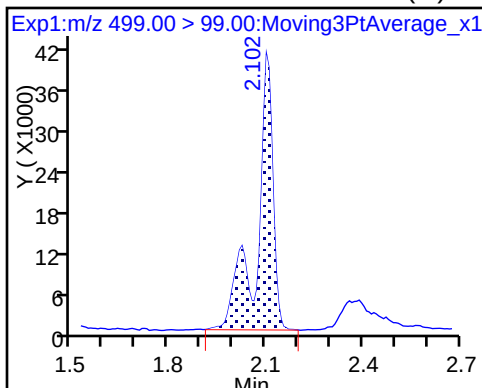
8 Perfluorooctane sulfonic acid (M)



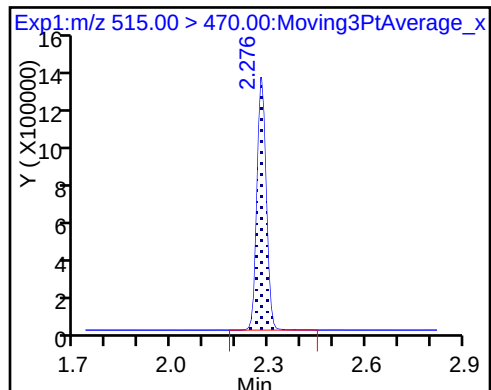
8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_019.d
Lims ID: 320-32464-A-5-A
Client ID: WGNA-101617-RW-3382
Sample Type: Client
Inject. Date: 31-Oct-2017 18:42:00 ALS Bottle#: 15 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32464-a-5-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 11:04:24

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	7.90	78.95
\$ 10 13C2 PFDA	10.0	8.87	88.70

TestAmerica Sacramento

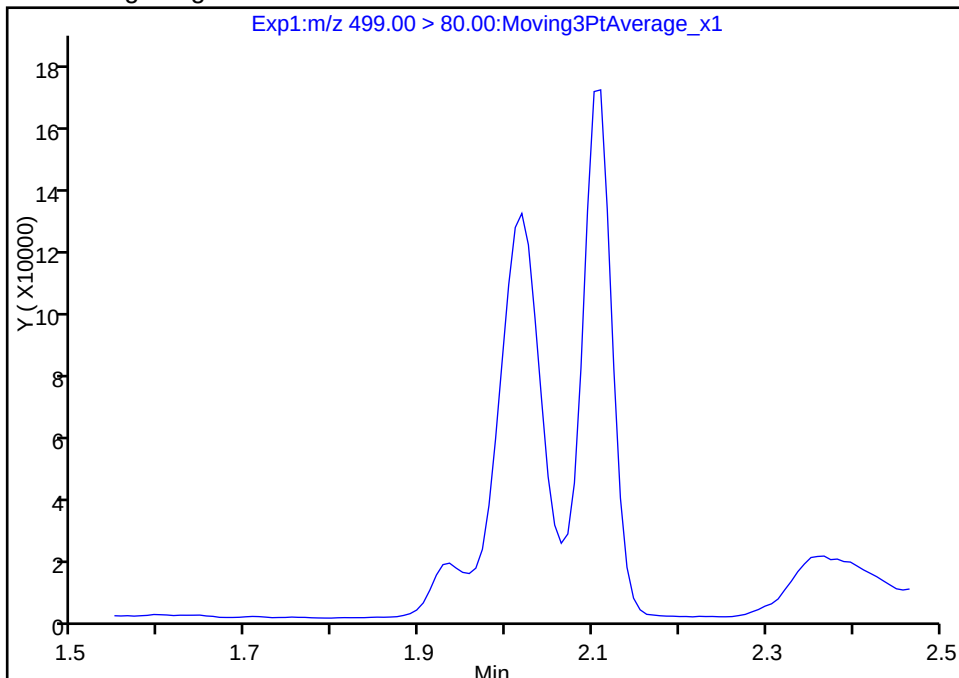
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_019.d
Injection Date: 31-Oct-2017 18:42:00 Instrument ID: A8_N
Lims ID: 320-32464-A-5-A Lab Sample ID: 320-32464-5
Client ID: WGNA-101617-RW-3382
Operator ID: SACINSTLCMS01 ALS Bottle#: 15 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

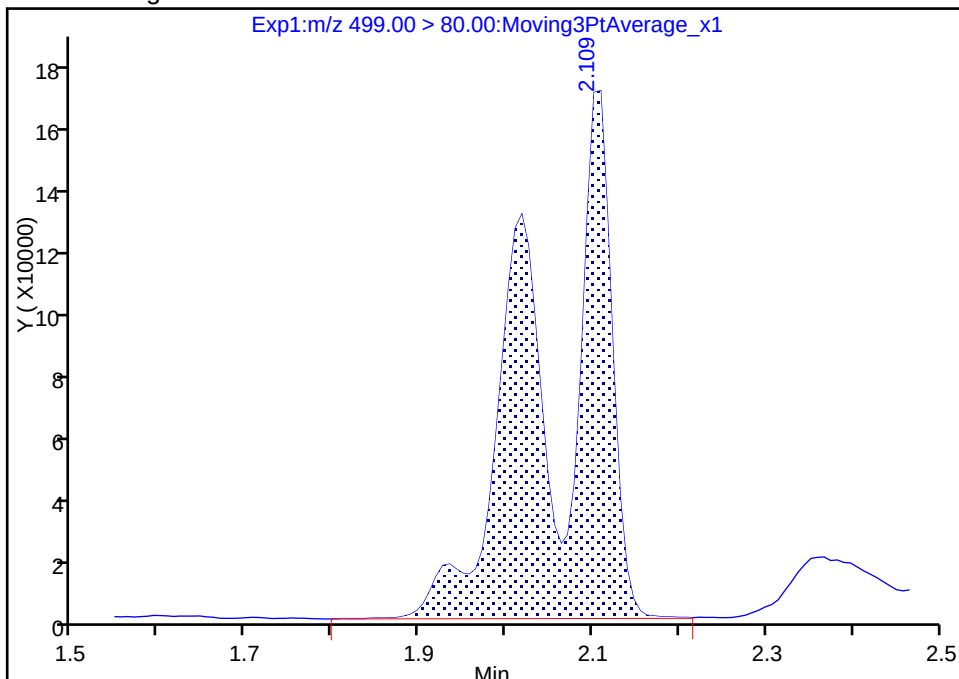
Signal: 1

Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.11
Area: 883374
Amount: 3.332709
Amount Units: ng/ml

Reviewer: barnettj, 01-Nov-2017 11:03:12

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

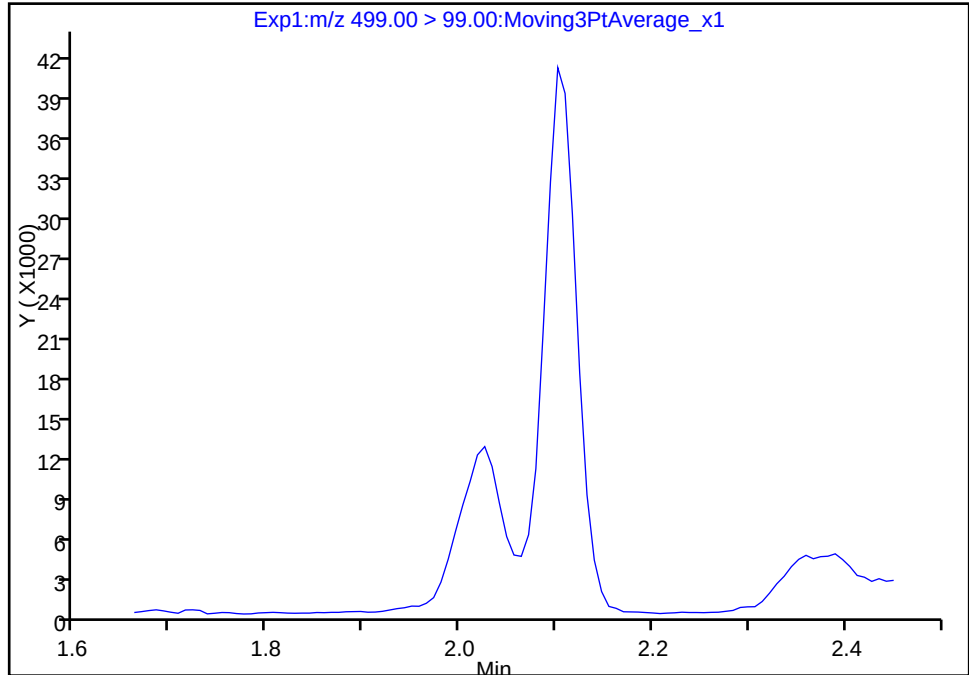
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_019.d
Injection Date: 31-Oct-2017 18:42:00 Instrument ID: A8_N
Lims ID: 320-32464-A-5-A Lab Sample ID: 320-32464-5
Client ID: WGNA-101617-RW-3382
Operator ID: SACINSTLCMS01 ALS Bottle#: 15 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

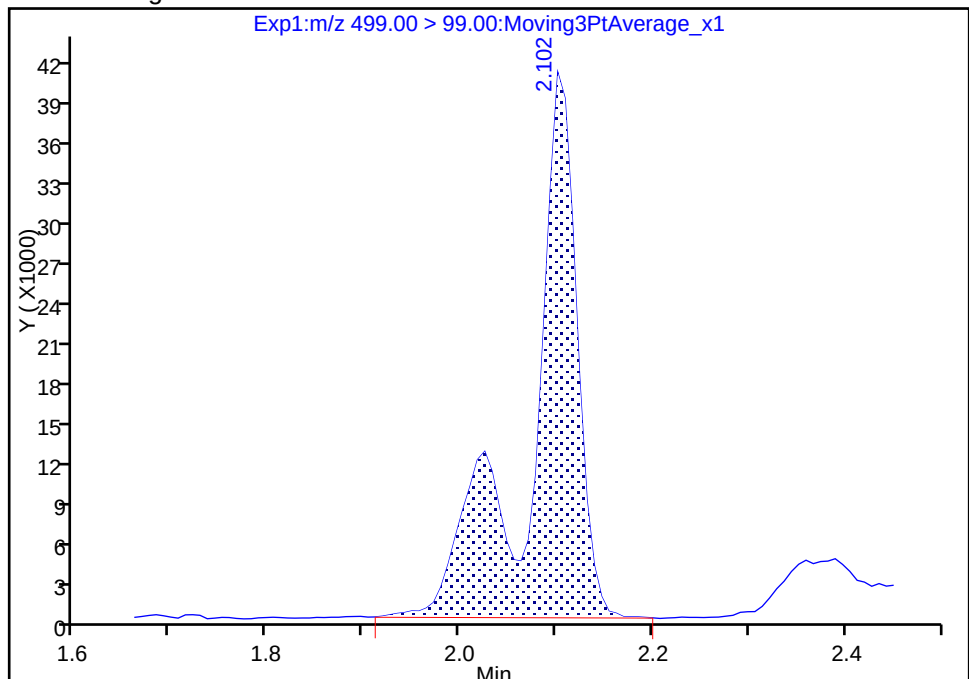
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 138292
Amount: 3.332709
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 11:03:27

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

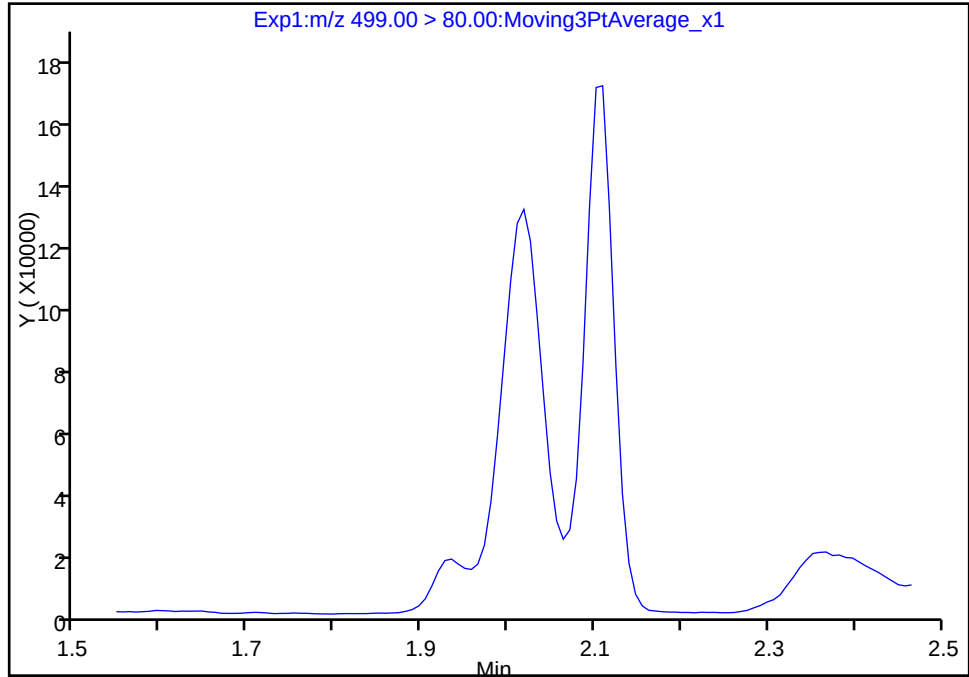
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_019.d
Injection Date: 31-Oct-2017 18:42:00 Instrument ID: A8_N
Lims ID: 320-32464-A-5-A Lab Sample ID: 320-32464-5
Client ID: WGNA-101617-RW-3382
Operator ID: SACINSTLCMS01 ALS Bottle#: 15 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

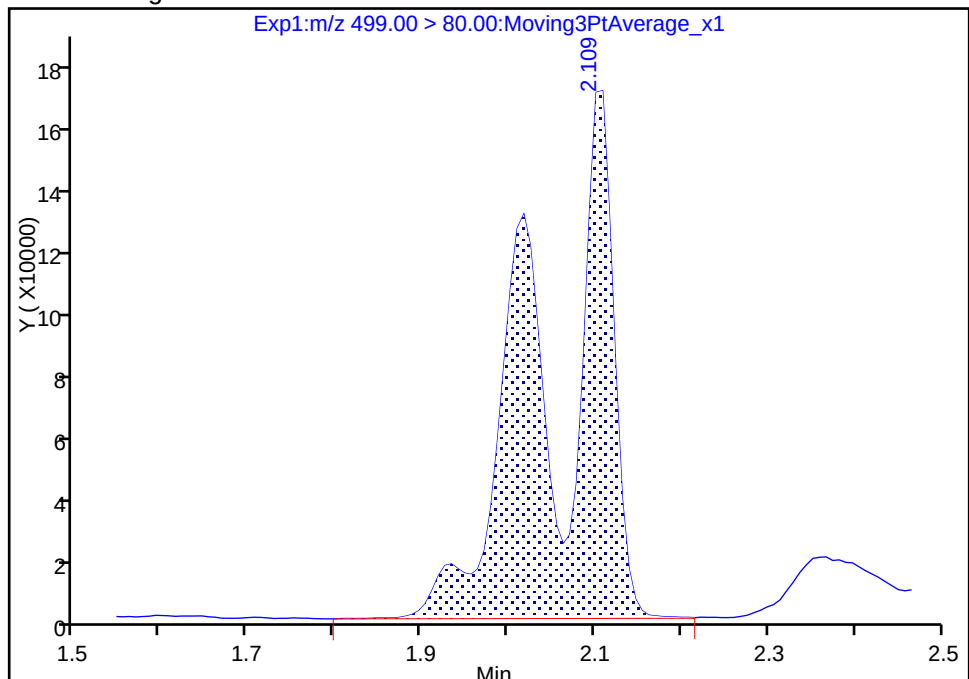
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 883374
Amount: 3.332709
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 11:03:27

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

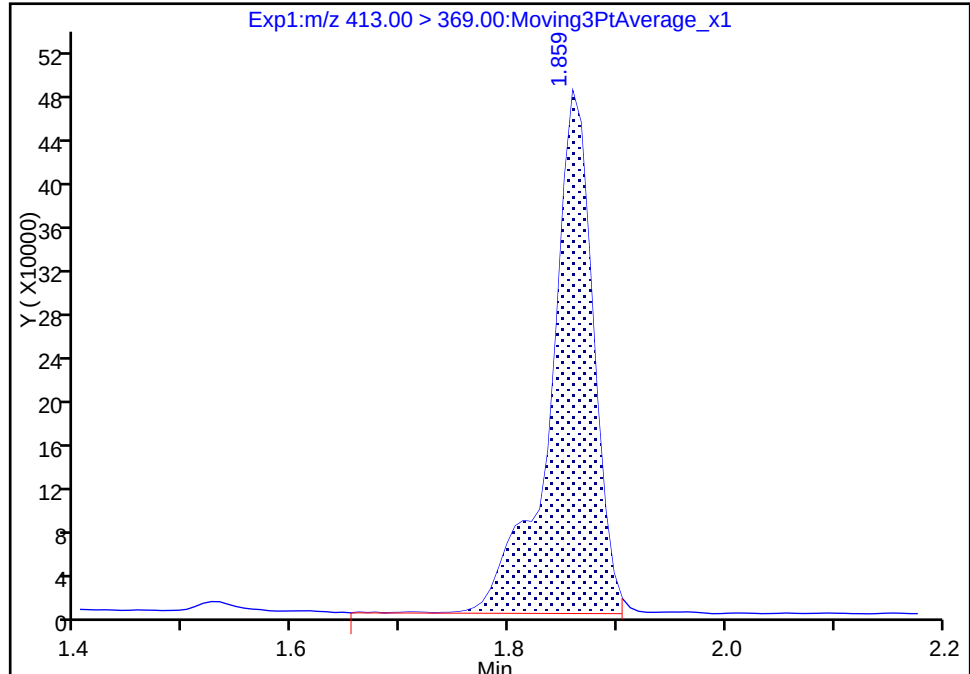
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_019.d
Injection Date: 31-Oct-2017 18:42:00 Instrument ID: A8_N
Lims ID: 320-32464-A-5-A Lab Sample ID: 320-32464-5
Client ID: WGNA-101617-RW-3382
Operator ID: SACINSTLCMS01 ALS Bottle#: 15 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

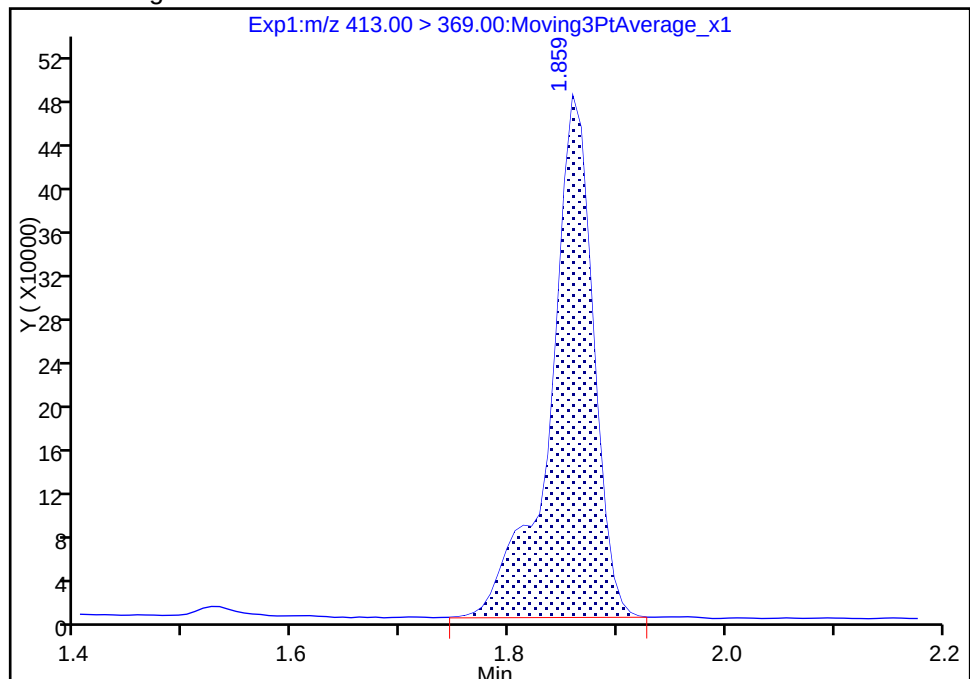
RT: 1.86
Area: 1317393
Amount: 3.906127
Amount Units: ng/ml

Processing Integration Results



RT: 1.86
Area: 1314391
Amount: 3.897226
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 01-Nov-2017 11:03:51

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento

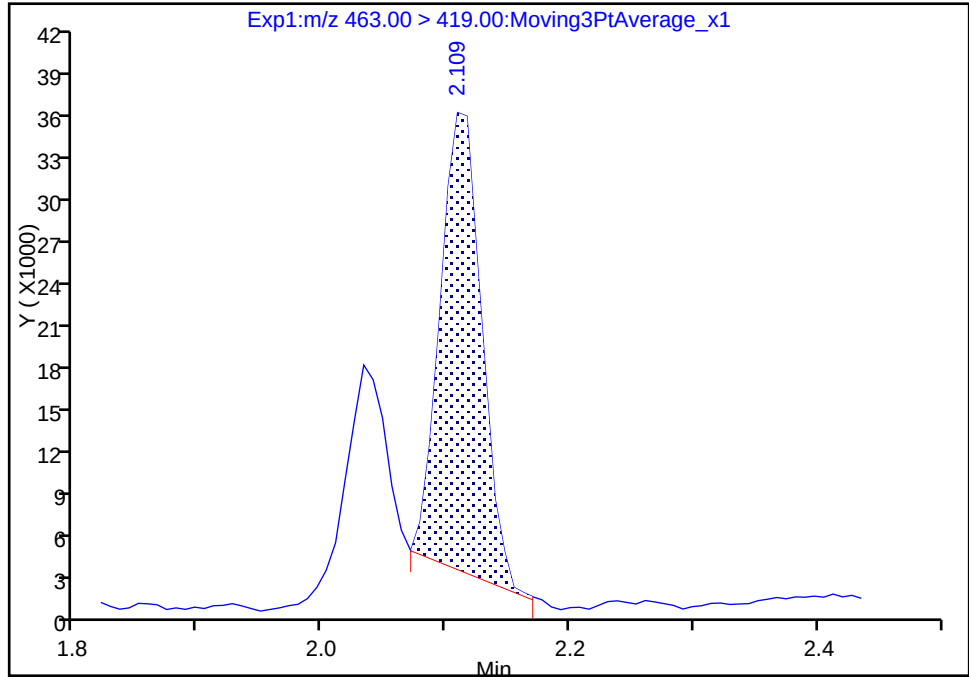
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_019.d				
Injection Date:	31-Oct-2017 18:42:00	Instrument ID:	A8_N		
Lims ID:	320-32464-A-5-A	Lab Sample ID:	320-32464-5		
Client ID:	WGNA-101617-RW-3382				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	19
Injection 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

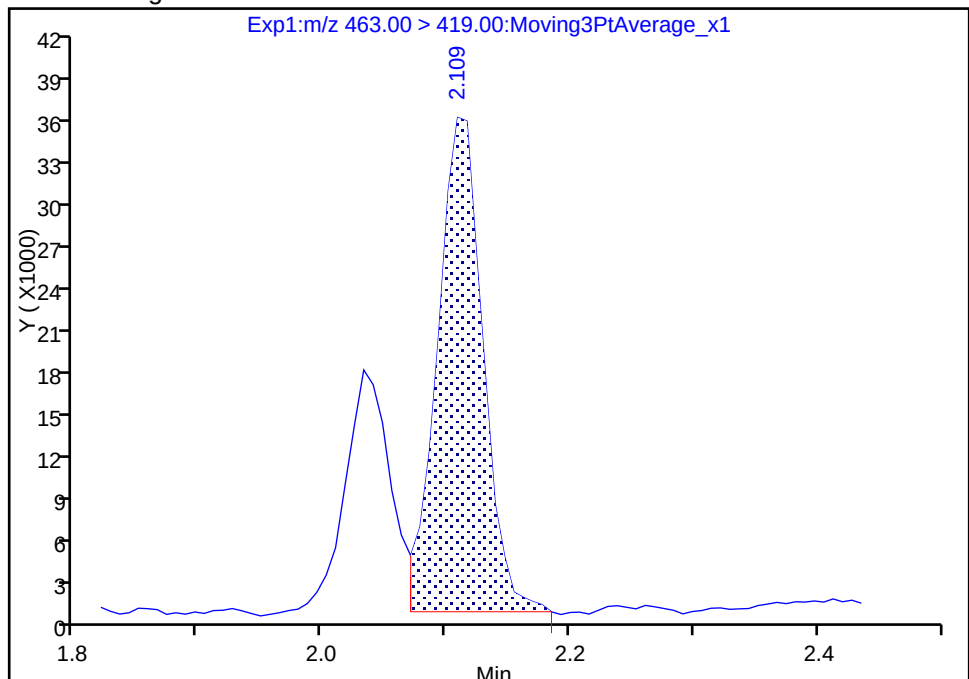
RT: 2.11
Area: 75196
Amount: 0.317728
Amount Units: ng/ml

Processing Integration Results



RT: 2.11
Area: 88755
Amount: 0.375020
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 01-Nov-2017 11:04:15
Audit Action: Manually Integrated

Audit Reason: Baseline
Page 148 of 338

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-FRB-3382</u>	Lab Sample ID: <u>320-32464-6</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_020.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 10:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>271.9(mL)</u>	Date Analyzed: <u>10/31/2017 18:46</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>192279</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	18	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.2	3.7	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	83	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	92		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_020.d
 Lims ID: 320-32464-A-6-A
 Client ID: WGNA-101617-FRB-3382
 Sample Type: Client
 Inject. Date: 31-Oct-2017 18:46:46 ALS Bottle#: 16 Worklist Smp#: 20
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32464-a-6-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.528	0.005	1.000	3590685	9.08		6219	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		3504926	10.0		4985	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.107	-0.005		7852365	28.7		6180	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2620566	9.24		8025	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_020.d

Injection Date: 31-Oct-2017 18:46:46

Instrument ID: A8_N

Lims ID: 320-32464-A-6-A

Lab Sample ID: 320-32464-6

Client ID: WGNA-101617-FRB-3382

Operator ID: SACINSTLCMS01

ALS Bottle#: 16

Worklist Smp#: 20

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

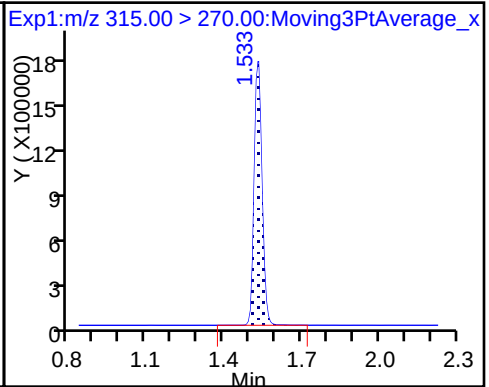
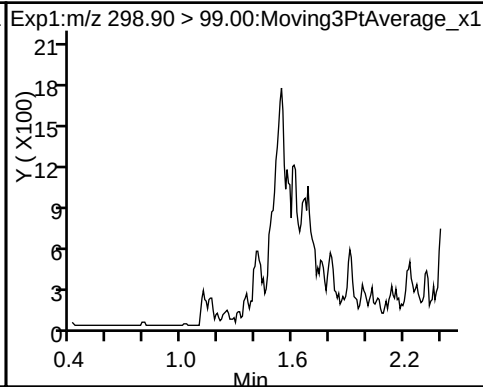
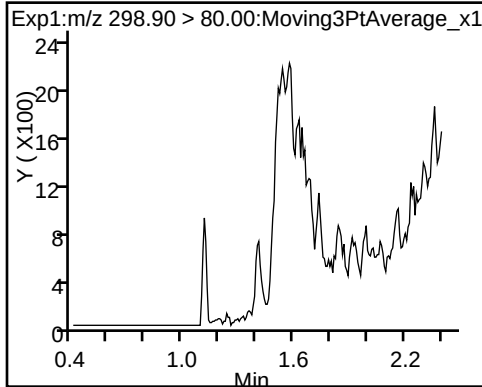
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

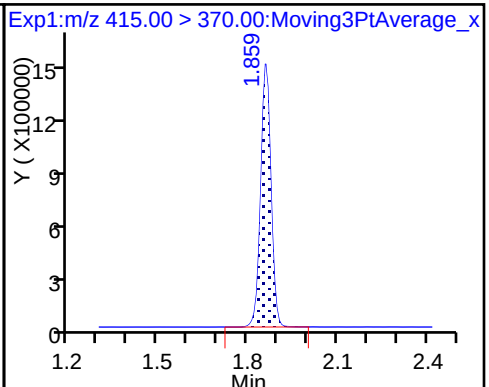
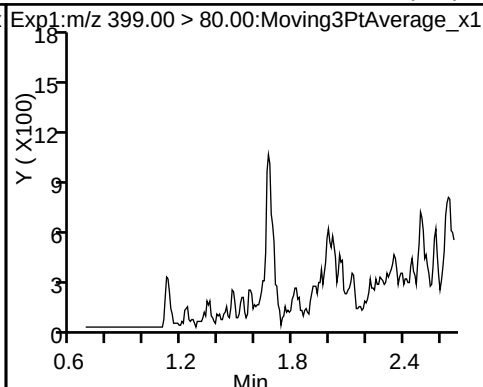
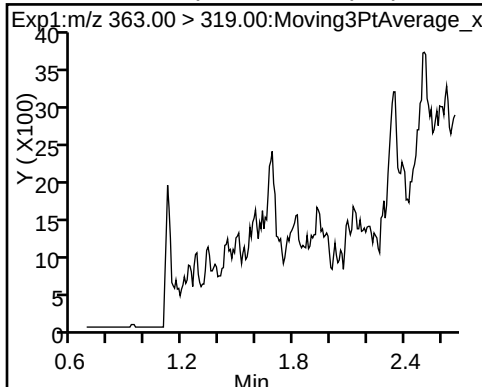
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

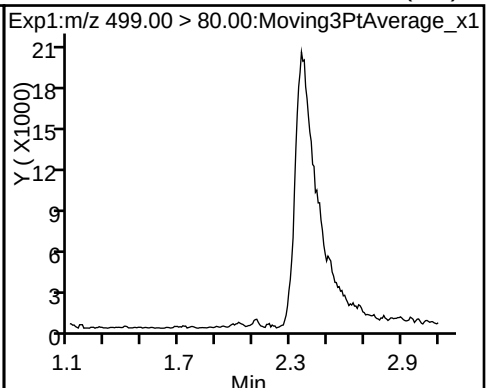
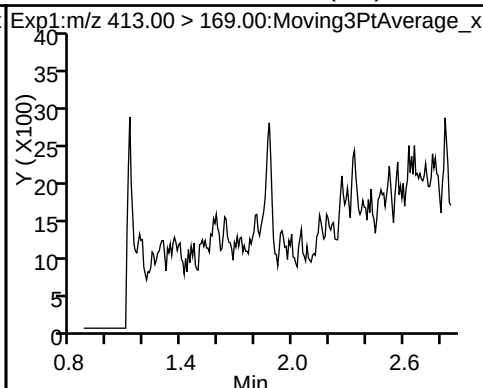
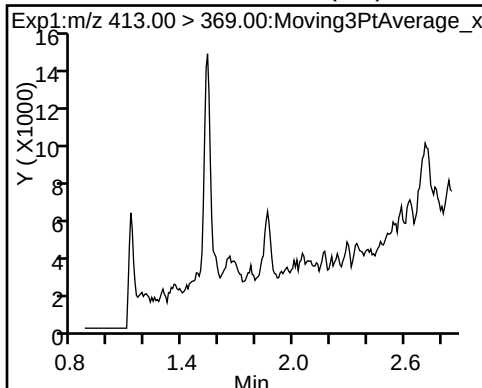
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

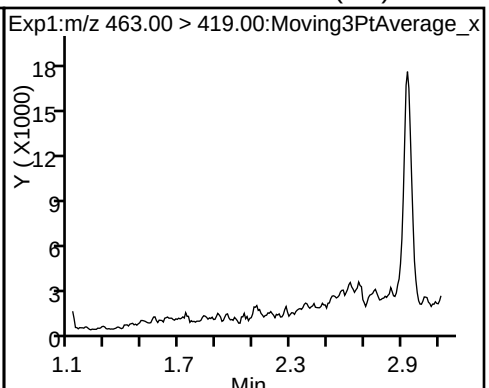
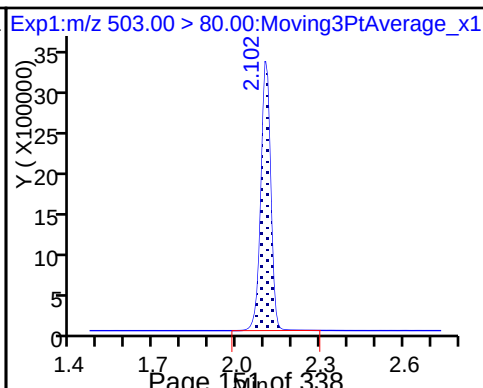
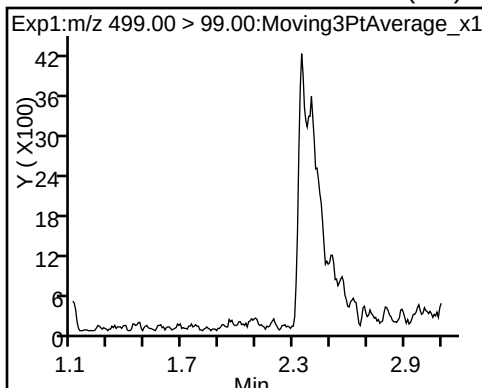
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

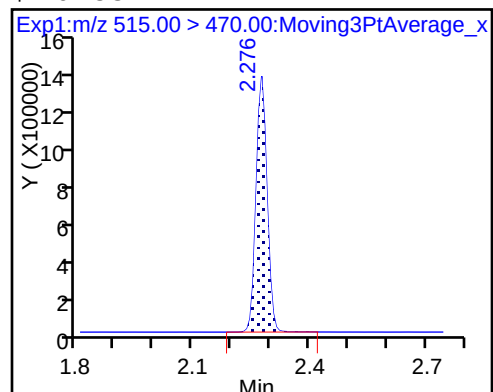


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_020.d
Lims ID: 320-32464-A-6-A
Client ID: WGNA-101617-FRB-3382
Sample Type: Client
Inject. Date: 31-Oct-2017 18:46:46 ALS Bottle#: 16 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32464-a-6-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.08	90.78
\$ 10 13C2 PFDA	10.0	9.24	92.38

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-RW-3991</u>	Lab Sample ID: <u>320-32464-7</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_021.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 09:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>288.5 (mL)</u>	Date Analyzed: <u>10/31/2017 18:51</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 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>192279</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	J M	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	17		17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.2	J	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	78		70-130
STL00996	13C2 PFDA	93		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_021.d
 Lims ID: 320-32464-A-7-A
 Client ID: WGNA-101617-RW-3991
 Sample Type: Client
 Inject. Date: 31-Oct-2017 18:51:31 ALS Bottle#: 17 Worklist Smp#: 21
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32464-a-7-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 11:05:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.405	0.006	1.000	604158	1.93		158	
298.90 > 99.00	1.411	1.405	0.006	1.000	417359		1.45(0.00-0.00)	419	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.528	0.005	1.000	3349497	7.84		6267	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	553384	1.55		74.6	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.678	-0.001	1.000	985948	2.07		266	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		3786228	10.0		5161	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.864	-0.005	1.000	1695573	4.81		111	
413.00 > 169.00	1.859	1.864	-0.005	1.000	958458		1.77(0.00-0.00)	201	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	1292299	4.75		112	M
499.00 > 99.00	2.102	2.094	0.008	1.000	211003		6.12(0.00-0.00)	126	M
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.107	-0.005		8405612	28.7		4294	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	167313	0.6771		21.8	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2850421	9.30		9908	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_021.d

Injection Date: 31-Oct-2017 18:51:31

Instrument ID: A8_N

Lims ID: 320-32464-A-7-A

Lab Sample ID: 320-32464-7

Client ID: WGNA-101617-RW-3991

Operator ID: SACINSTLCMS01

ALS Bottle#: 17

Worklist Smp#: 21

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

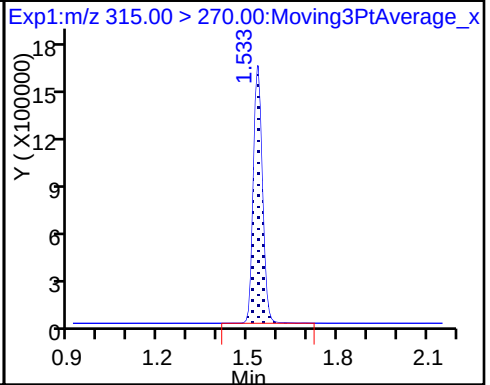
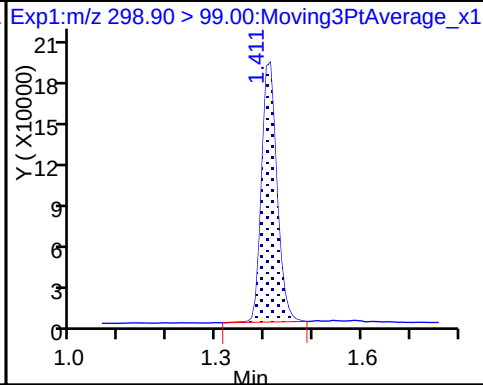
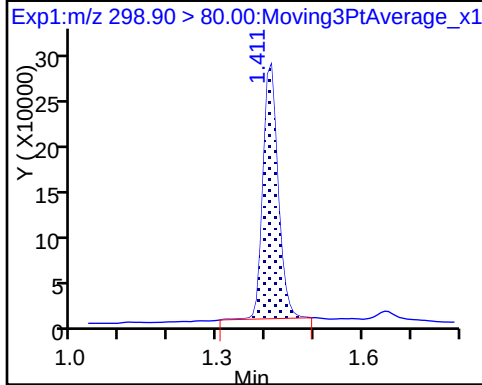
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

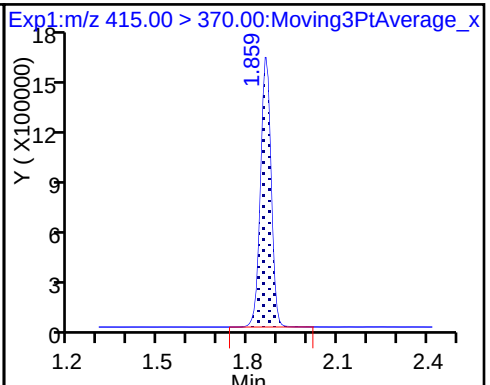
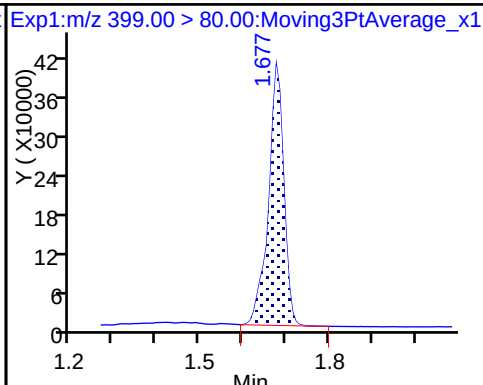
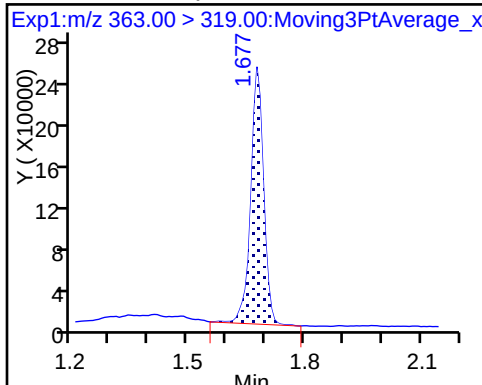
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

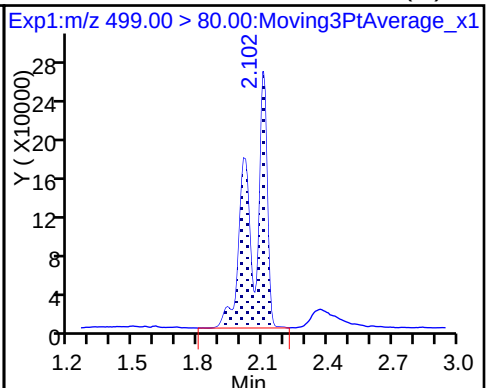
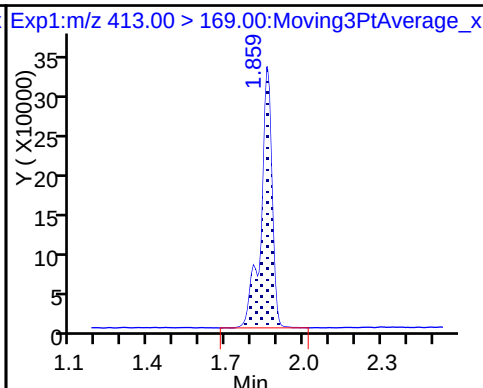
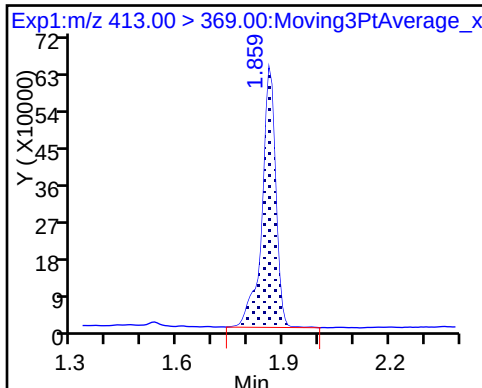
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

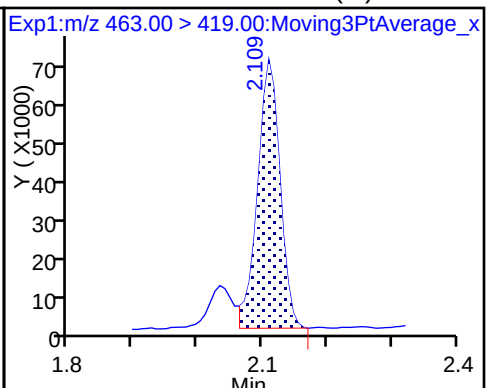
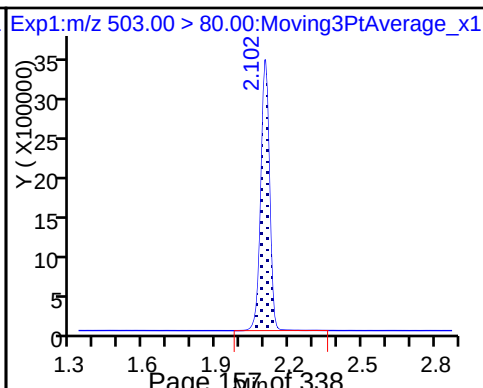
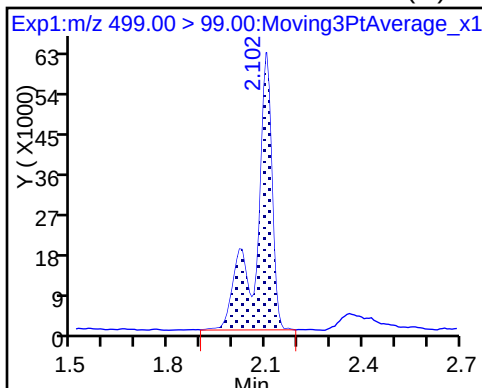
8 Perfluorooctane sulfonic acid (M)



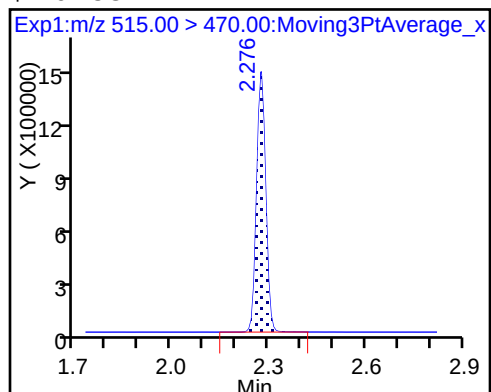
8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_021.d
Lims ID: 320-32464-A-7-A
Client ID: WGNA-101617-RW-3991
Sample Type: Client
Inject. Date: 31-Oct-2017 18:51:31 ALS Bottle#: 17 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32464-a-7-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 11:05:36

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	7.84	78.39
\$ 10 13C2 PFDA	10.0	9.30	93.01

TestAmerica Sacramento

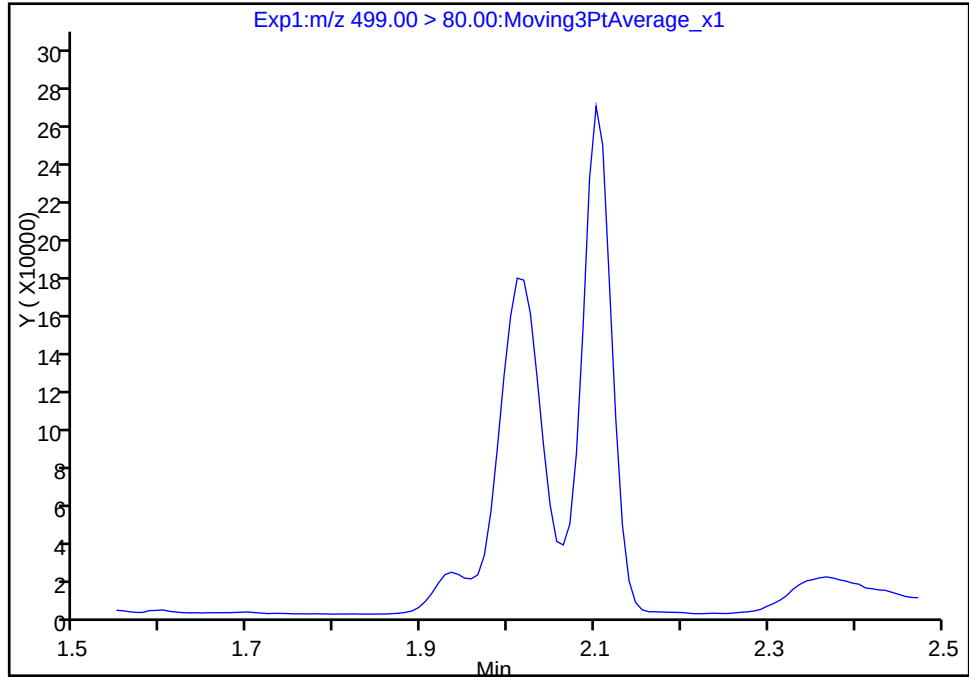
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_021.d
Injection Date: 31-Oct-2017 18:51:31 Instrument ID: A8_N
Lims ID: 320-32464-A-7-A Lab Sample ID: 320-32464-7
Client ID: WGNA-101617-RW-3991
Operator ID: SACINSTLCMS01 ALS Bottle#: 17 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

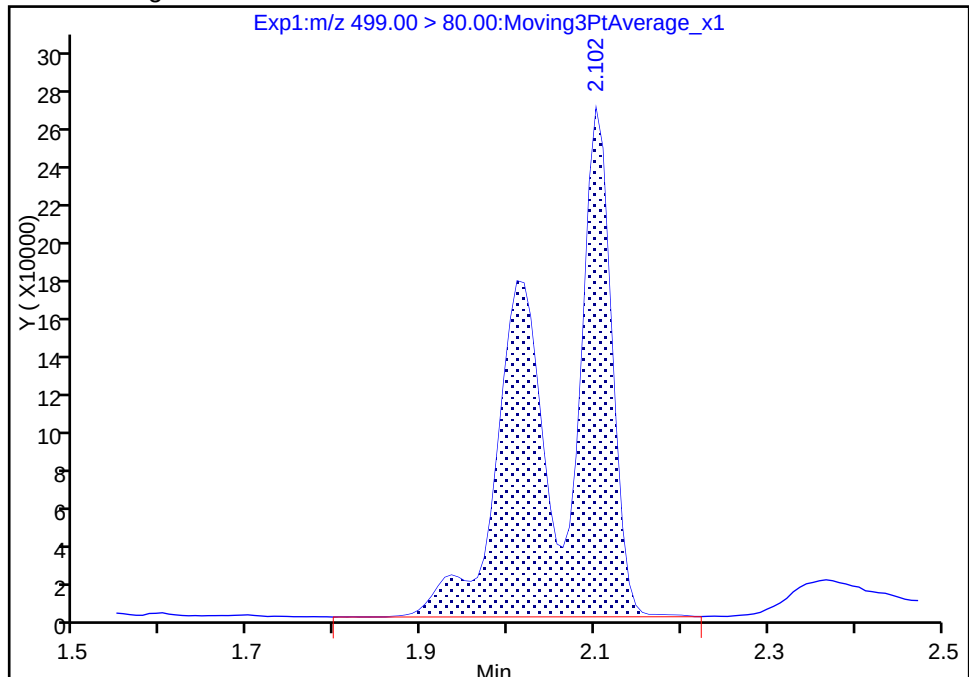
Signal: 1

Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.10
Area: 1292299
Amount: 4.750056
Amount Units: ng/ml

Reviewer: barnettj, 01-Nov-2017 11:04:39

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

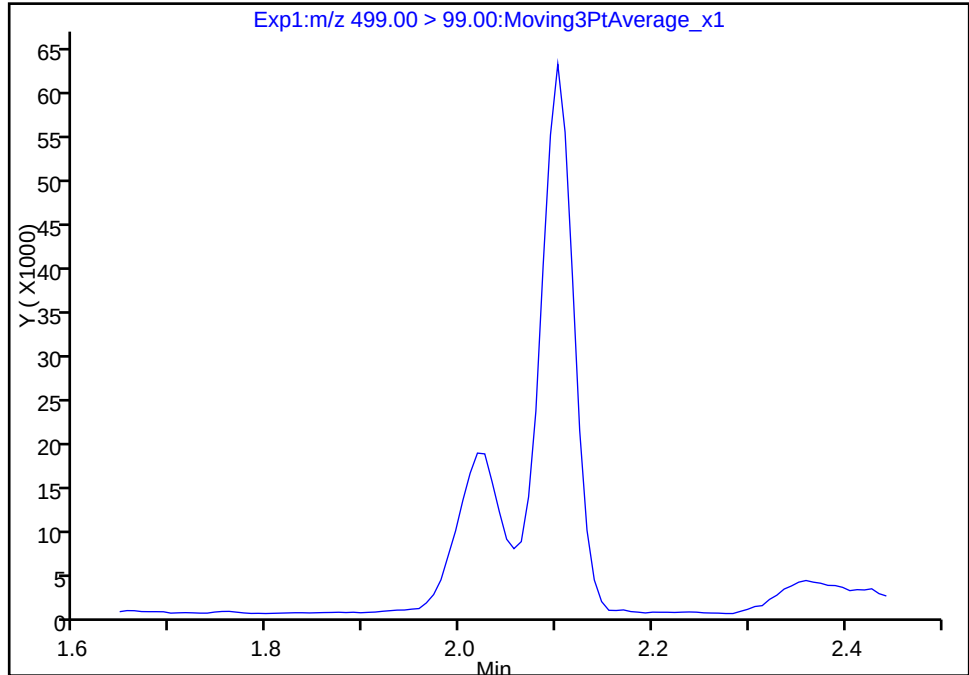
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_021.d
Injection Date: 31-Oct-2017 18:51:31 Instrument ID: A8_N
Lims ID: 320-32464-A-7-A Lab Sample ID: 320-32464-7
Client ID: WGNA-101617-RW-3991
Operator ID: SACINSTLCMS01 ALS Bottle#: 17 Worklist Smp#: 21
Injection Vol: 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

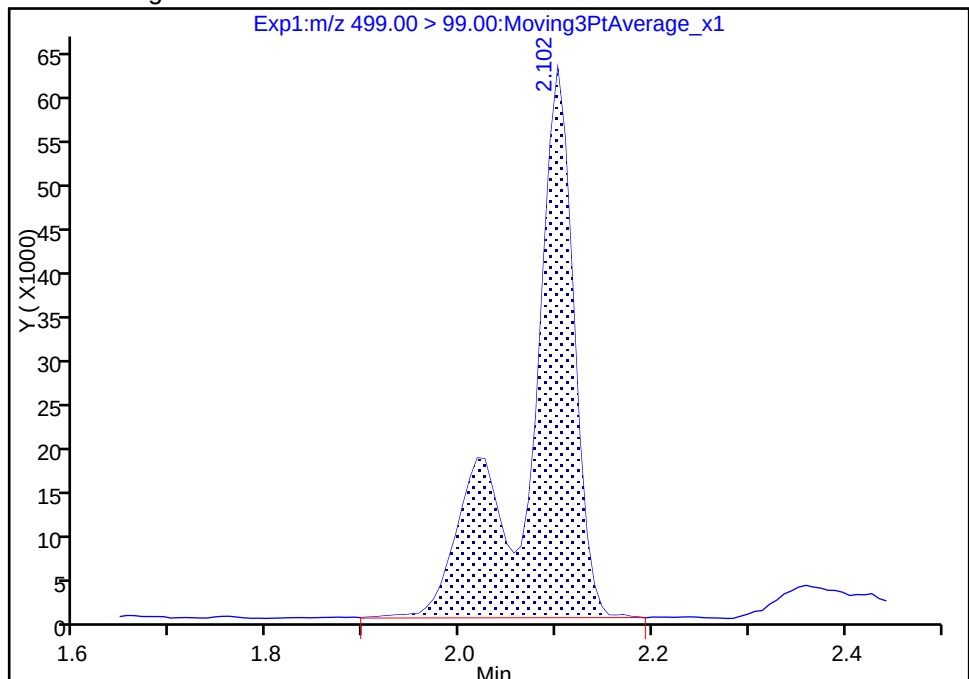
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 211003
Amount: 4.750056
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 11:04:58

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

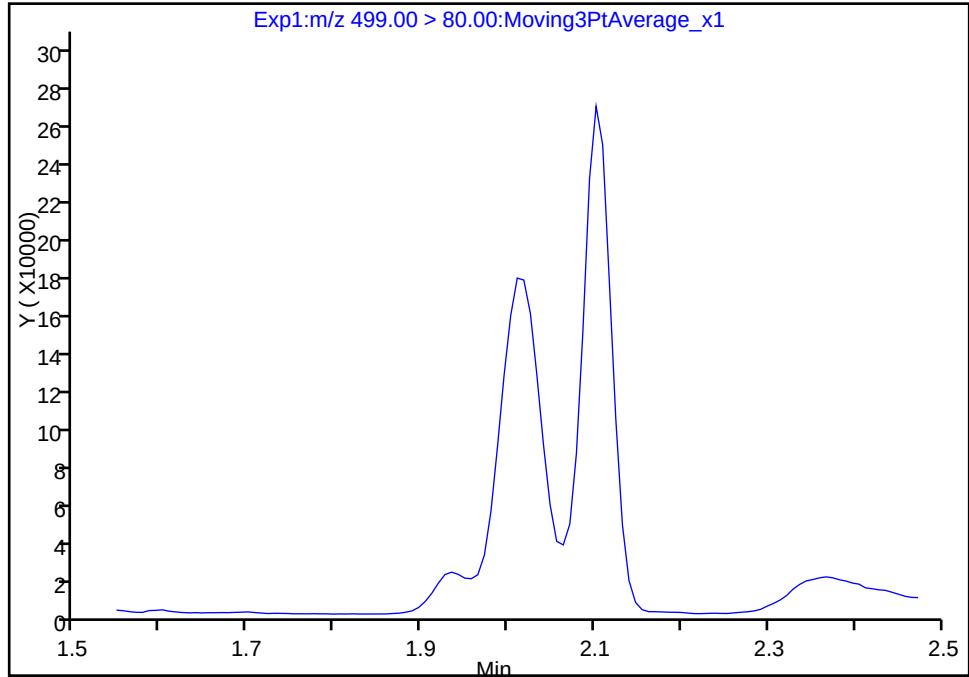
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_021.d
Injection Date: 31-Oct-2017 18:51:31 Instrument ID: A8_N
Lims ID: 320-32464-A-7-A Lab Sample ID: 320-32464-7
Client ID: WGNA-101617-RW-3991
Operator ID: SACINSTLCMS01 ALS Bottle#: 17 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

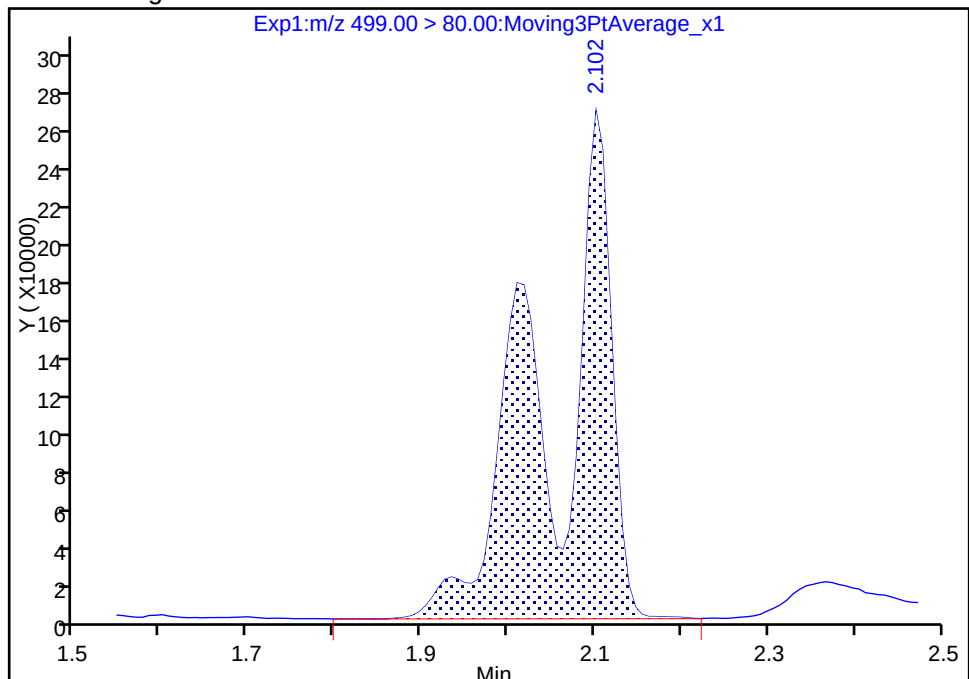
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 1292299
Amount: 4.750056
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 11:04:58

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

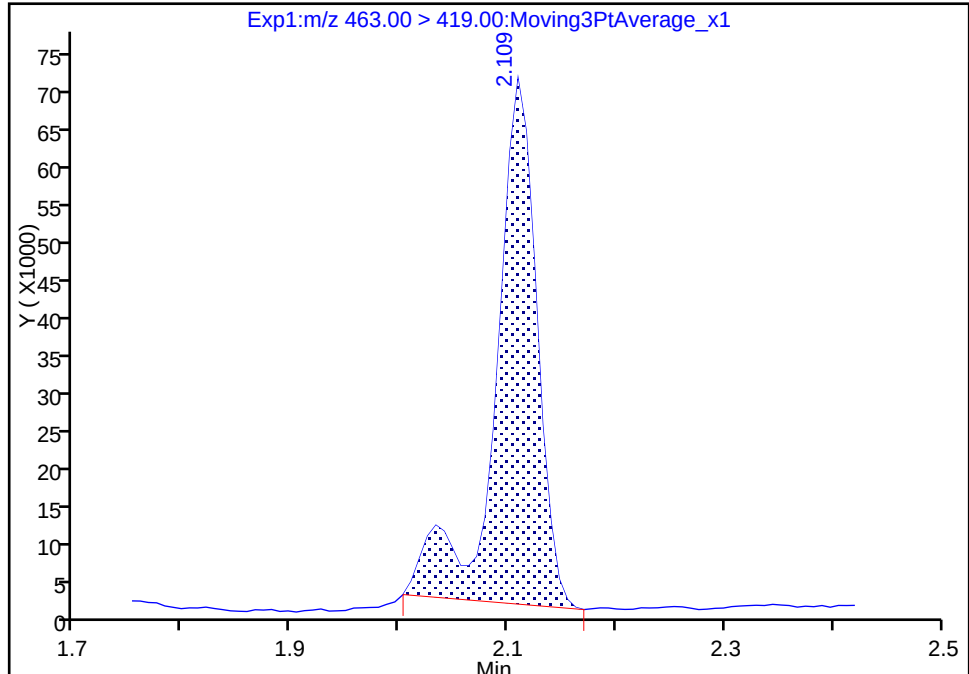
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Injection Date: 31-Oct-2017 18:51:31 Instrument ID: A8_N
Lims ID: 320-32464-A-7-A Lab Sample ID: 320-32464-7
Client ID: WGNA-101617-RW-3991
Operator ID: SACINSTLCMS01 ALS Bottle#: 17 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

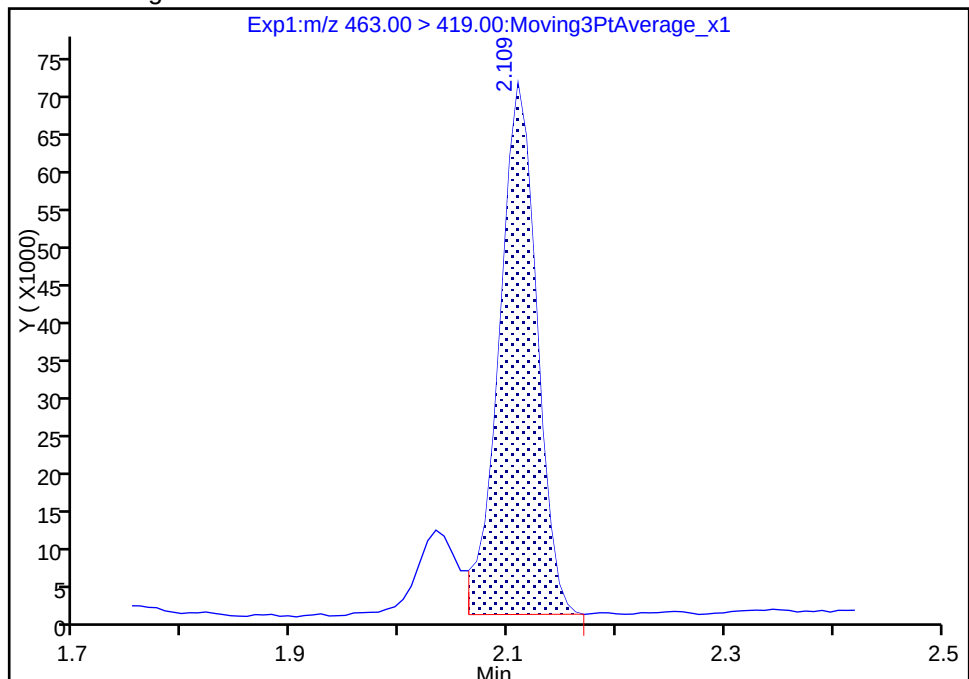
RT: 2.11
Area: 184461
Amount: 0.746460
Amount Units: ng/ml

Processing Integration Results



RT: 2.11
Area: 167313
Amount: 0.677067
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 01-Nov-2017 11:05:17

Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-FRB-3991</u>	Lab Sample ID: <u>320-32464-8</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_024.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 09:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>287(mL)</u>	Date Analyzed: <u>10/31/2017 19:05</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>192281</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	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	87		70-130
STL00996	13C2 PFDA	93		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_024.d
 Lims ID: 320-32464-A-8-A
 Client ID: WGNA-101617-FRB-3991
 Sample Type: Client
 Inject. Date: 31-Oct-2017 19:05:44 ALS Bottle#: 18 Worklist Smp#: 24
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32464-a-8-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:21:28 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.528	0.005	1.000	3214977	8.70		5834	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		3273656	10.0		4983	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.107	-0.005		7124343	28.7		5435	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2468403	9.32		8827	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_024.d

Injection Date: 31-Oct-2017 19:05:44

Instrument ID: A8_N

Lims ID: 320-32464-A-8-A

Lab Sample ID: 320-32464-8

Client ID: WGNA-101617-FRB-3991

Operator ID: SACINSTLCMS01

ALS Bottle#: 18

Worklist Smp#: 24

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

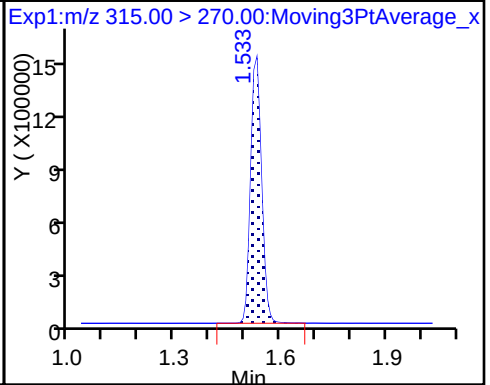
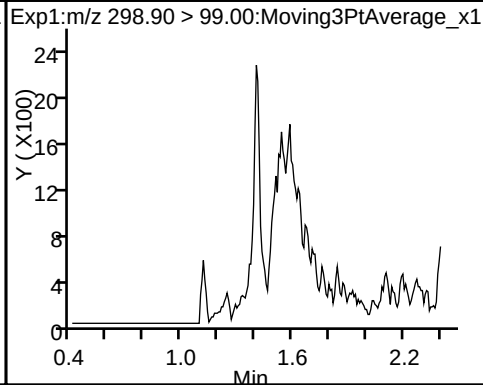
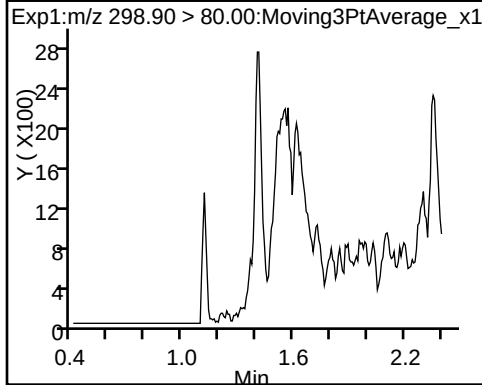
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

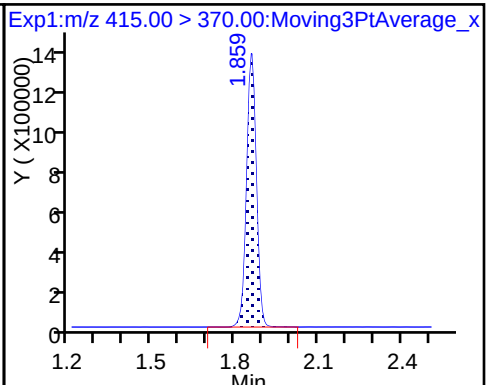
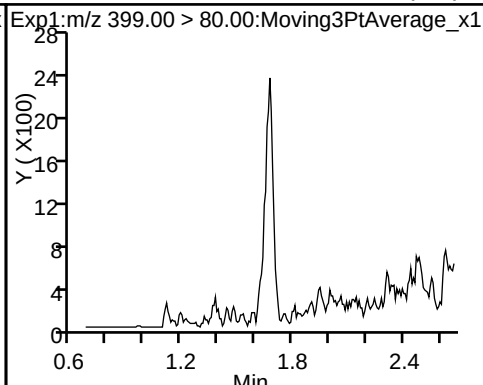
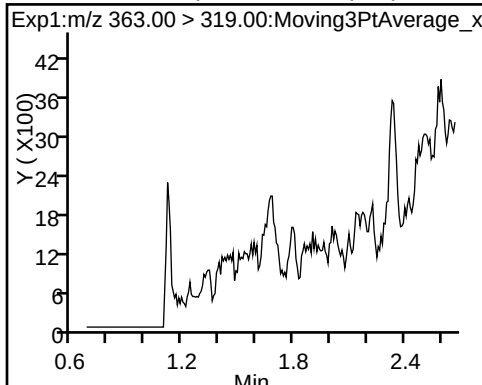
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

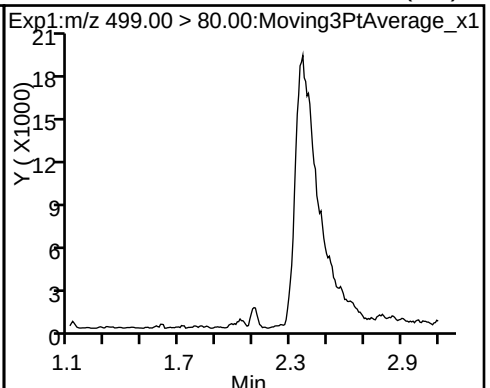
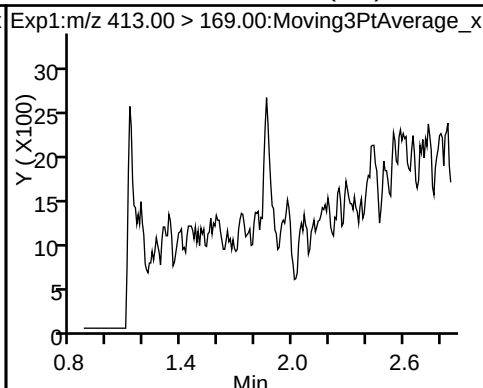
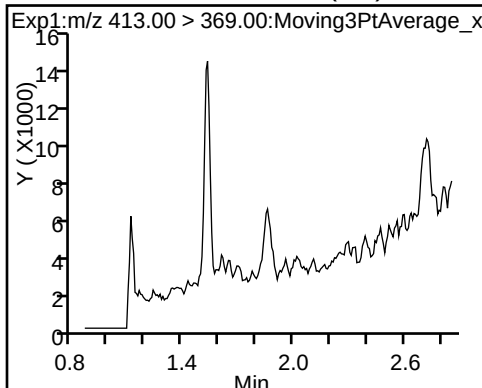
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

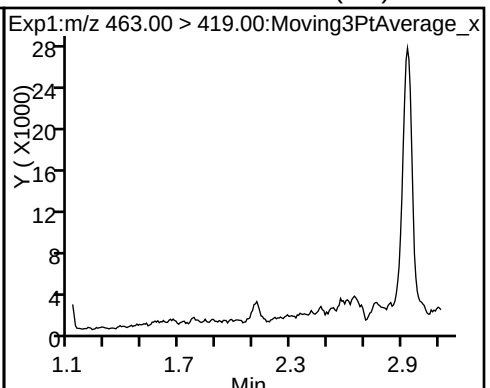
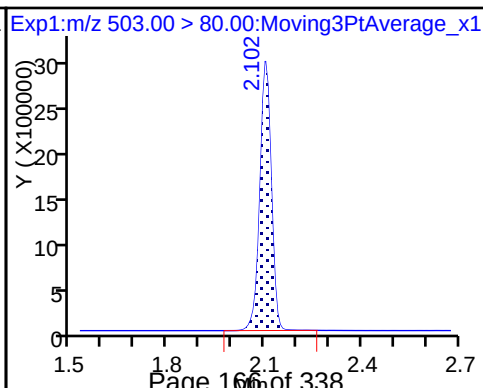
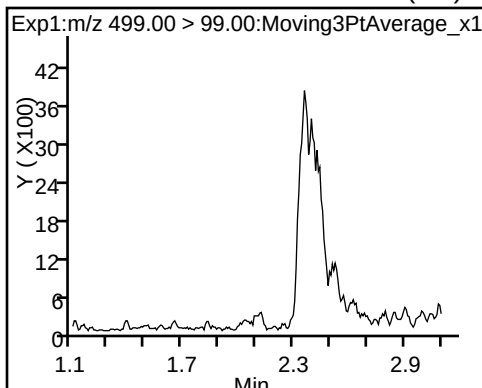
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

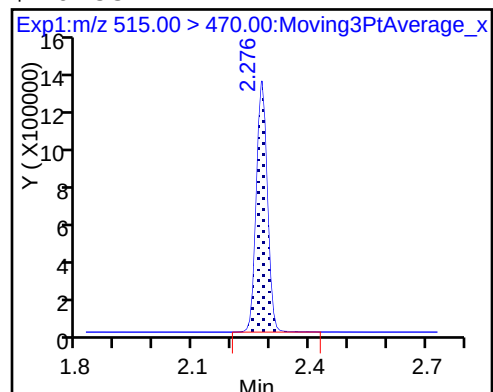


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_024.d
Lims ID: 320-32464-A-8-A
Client ID: WGNA-101617-FRB-3991
Sample Type: Client
Inject. Date: 31-Oct-2017 19:05:44 ALS Bottle#: 18 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32464-a-8-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Nov-2017 11:21:28 Calib Date: 31-Oct-2017 12:08:27
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.70	87.02
\$ 10 13C2 PFDA	10.0	9.32	93.16

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-RW-085</u>	Lab Sample ID: <u>320-32464-9</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_025.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 09:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>267.8 (mL)</u>	Date Analyzed: <u>10/31/2017 19:10</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</u> ID: <u>3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>192281</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J M	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	9.8	J	19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U M	22	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.7	J	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	76		70-130
STL00996	13C2 PFDA	94		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_025.d
 Lims ID: 320-32464-A-9-A
 Client ID: WGNA-101617-RW-085
 Sample Type: Client
 Inject. Date: 31-Oct-2017 19:10:29 ALS Bottle#: 19 Worklist Smp#: 25
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32464-a-9
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:21:28 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 11:06:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.405	0.006	1.000	187350	0.7513		62.3	
298.90 > 99.00	1.404	1.405	-0.001	0.995	131026		1.43(0.00-0.00)	144	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.528	0.005	1.000	2682445	7.62		4629	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	214748	0.7320		38.5	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.678	-0.001	1.000	350547	0.9225		169	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		3118551	10.0		4035	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.864	-0.005	1.000	759854	2.62		59.9	
413.00 > 169.00	1.859	1.864	-0.005	1.000	440532		1.72(0.00-0.00)	93.8	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	631558	2.92		33.1	M
499.00 > 99.00	2.102	2.094	0.008	1.000	98624		6.40(0.00-0.00)	61.4	M
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.107	-0.005		6691853	28.7		3744	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	67237	0.3303		10.1	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2380005	9.43		8091	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_025.d

Injection Date: 31-Oct-2017 19:10:29

Instrument ID: A8_N

Lims ID: 320-32464-A-9-A

Lab Sample ID: 320-32464-9

Client ID: WGNA-101617-RW-085

Operator ID: SACINSTLCMS01

ALS Bottle#: 19

Worklist Smp#: 25

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

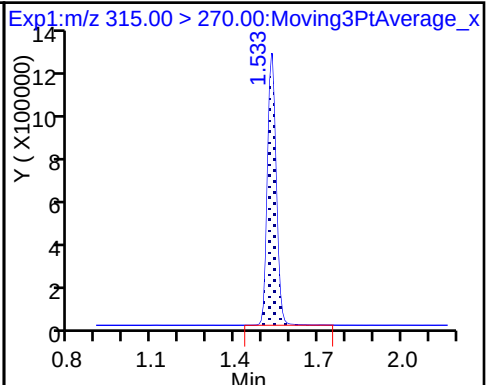
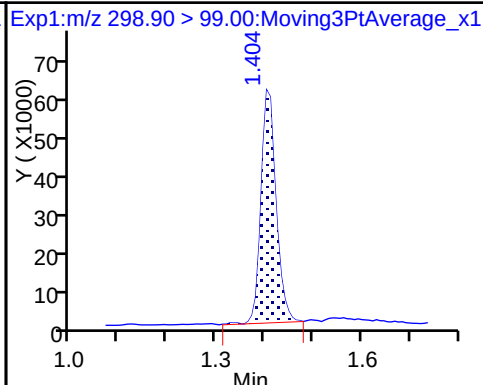
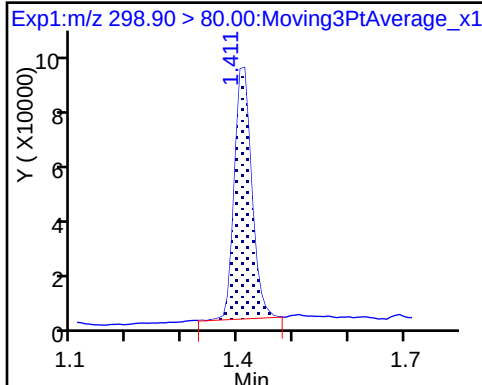
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

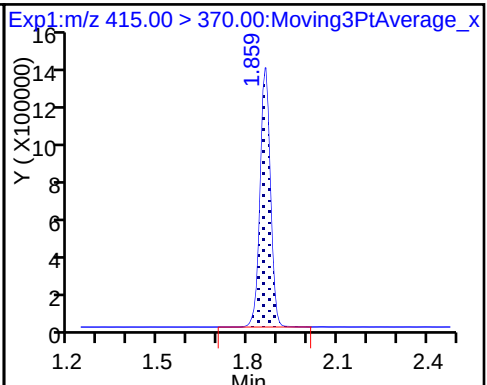
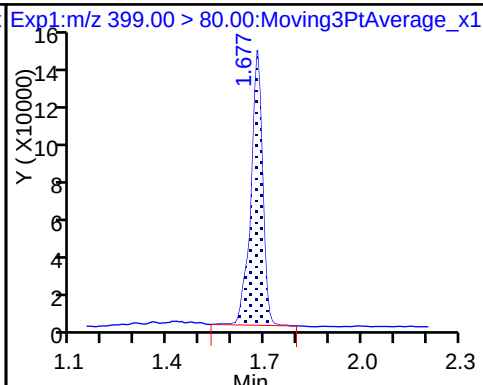
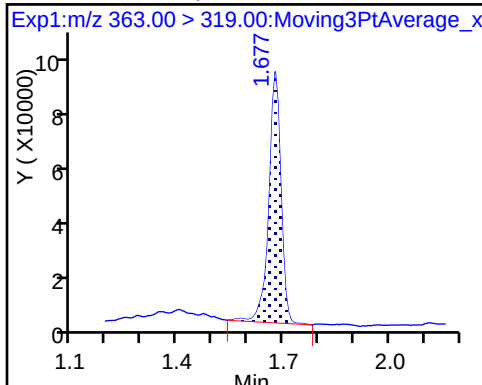
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

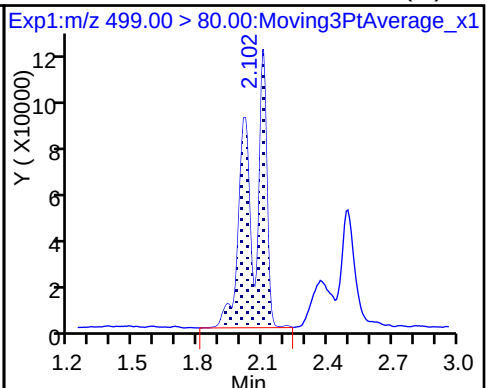
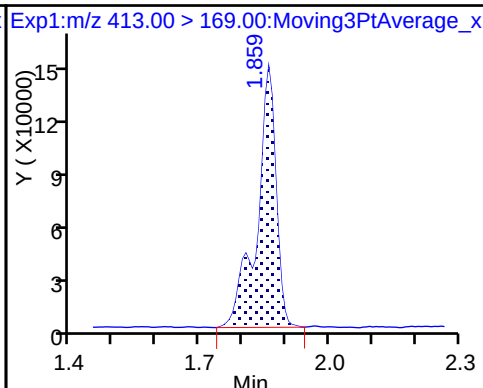
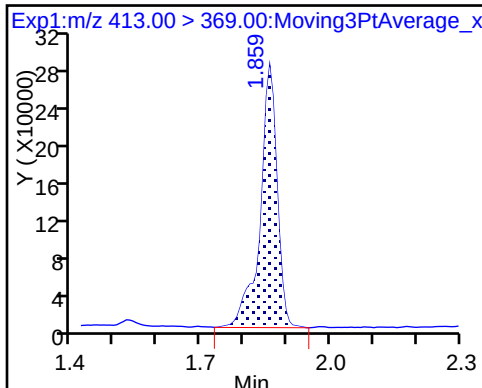
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

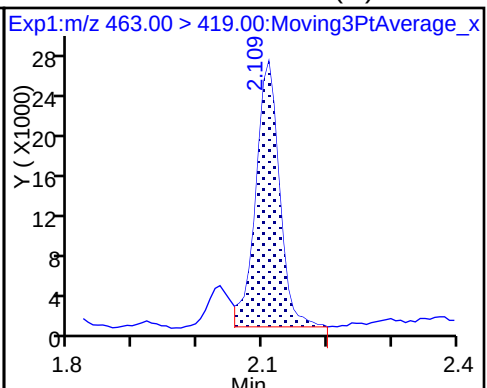
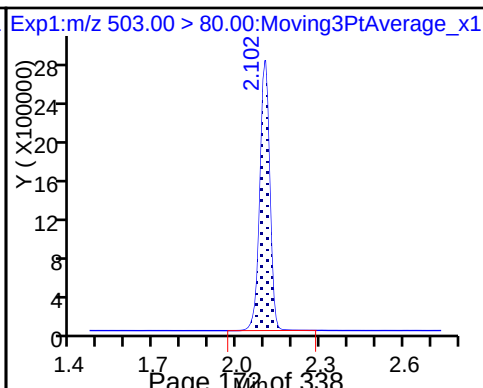
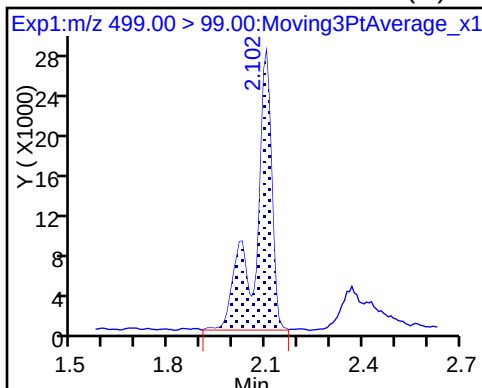
8 Perfluorooctane sulfonic acid (M)



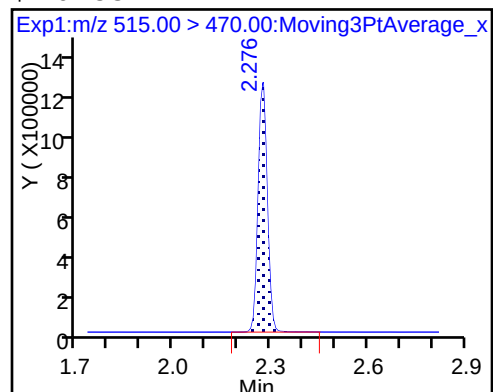
8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_025.d
Lims ID: 320-32464-A-9-A
Client ID: WGNA-101617-RW-085
Sample Type: Client
Inject. Date: 31-Oct-2017 19:10:29 ALS Bottle#: 19 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32464-a-9
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Nov-2017 11:21:28 Calib Date: 31-Oct-2017 12:08:27
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 11:06:54

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	7.62	76.22
\$ 10 13C2 PFDA	10.0	9.43	94.29

TestAmerica Sacramento

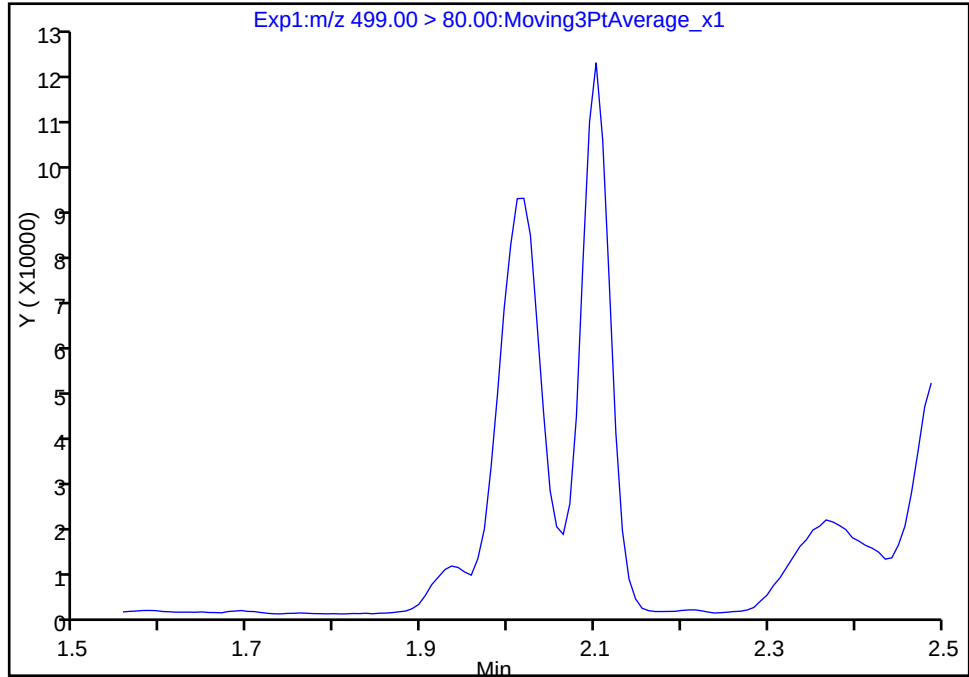
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_025.d				
Injection Date:	31-Oct-2017 19:10:29	Instrument ID:	A8_N		
Lims ID:	320-32464-A-9-A	Lab Sample ID:	320-32464-9		
Client ID:	WGNA-101617-RW-085				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	19	Worklist Smp#:	25
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

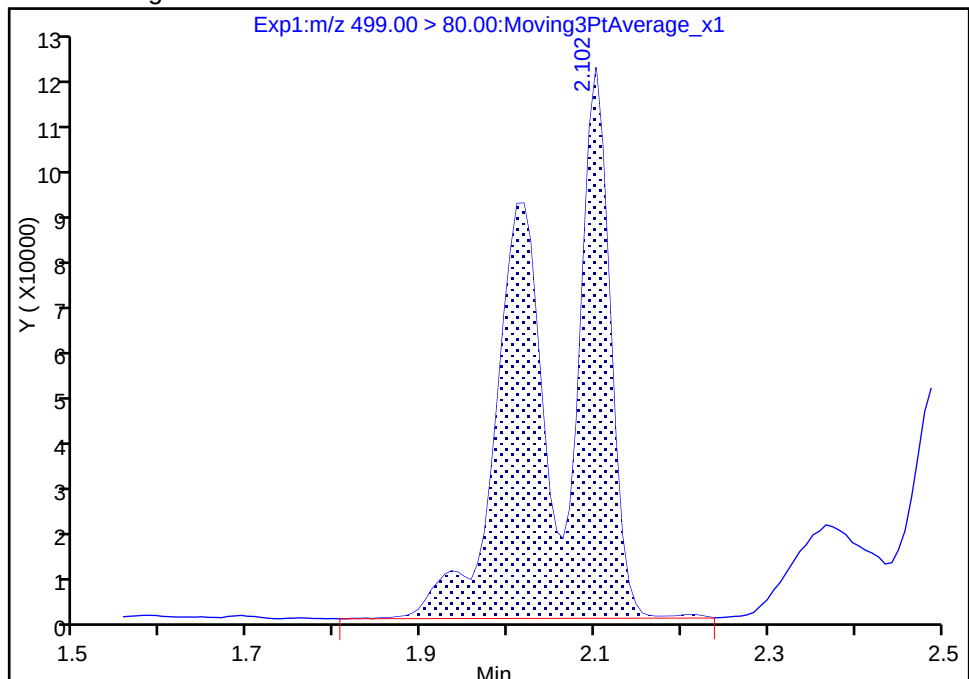
Signal: 1

Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 631558
Amount: 2.915895
Amount Units: ng/ml

Reviewer: barnettj, 01-Nov-2017 11:06:03

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

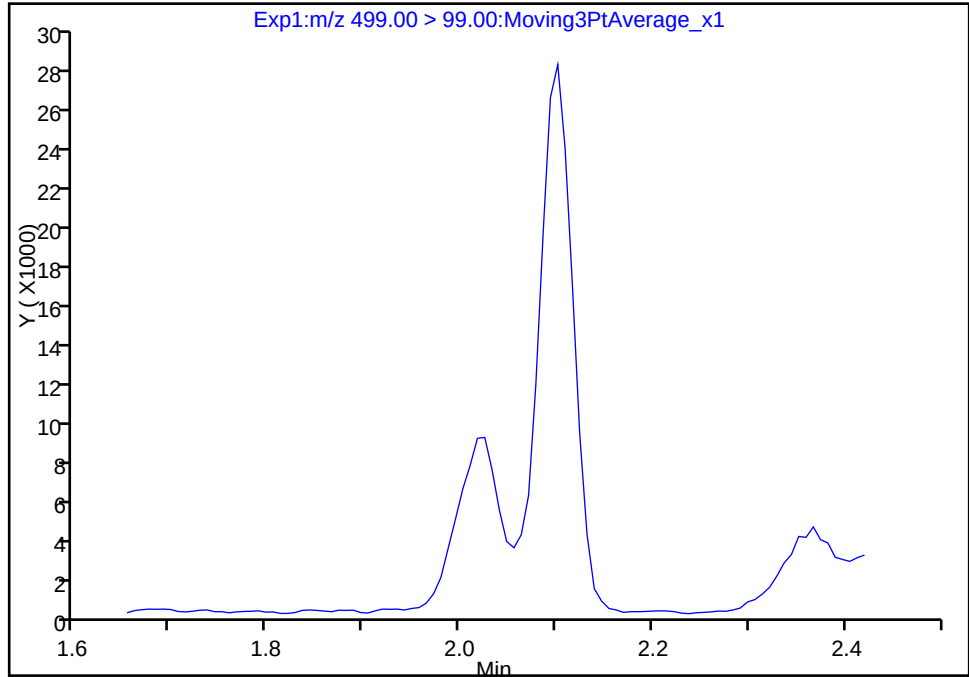
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_025.d
Injection Date: 31-Oct-2017 19:10:29 Instrument ID: A8_N
Lims ID: 320-32464-A-9-A Lab Sample ID: 320-32464-9
Client ID: WGNA-101617-RW-085
Operator ID: SACINSTLCMS01 ALS Bottle#: 19 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

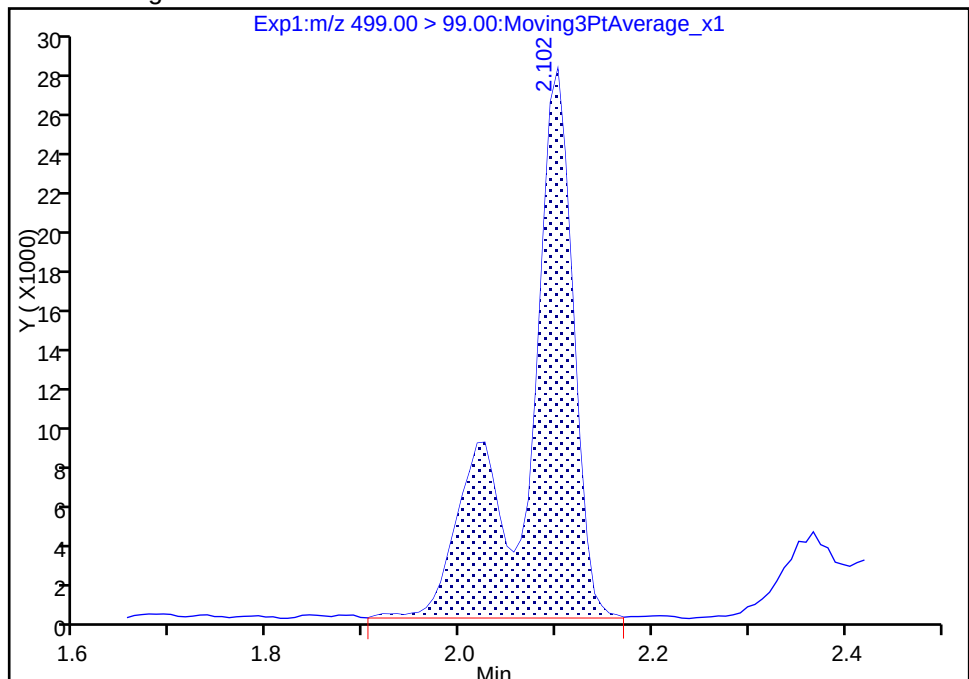
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 98624
Amount: 2.915895
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 11:06:19

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

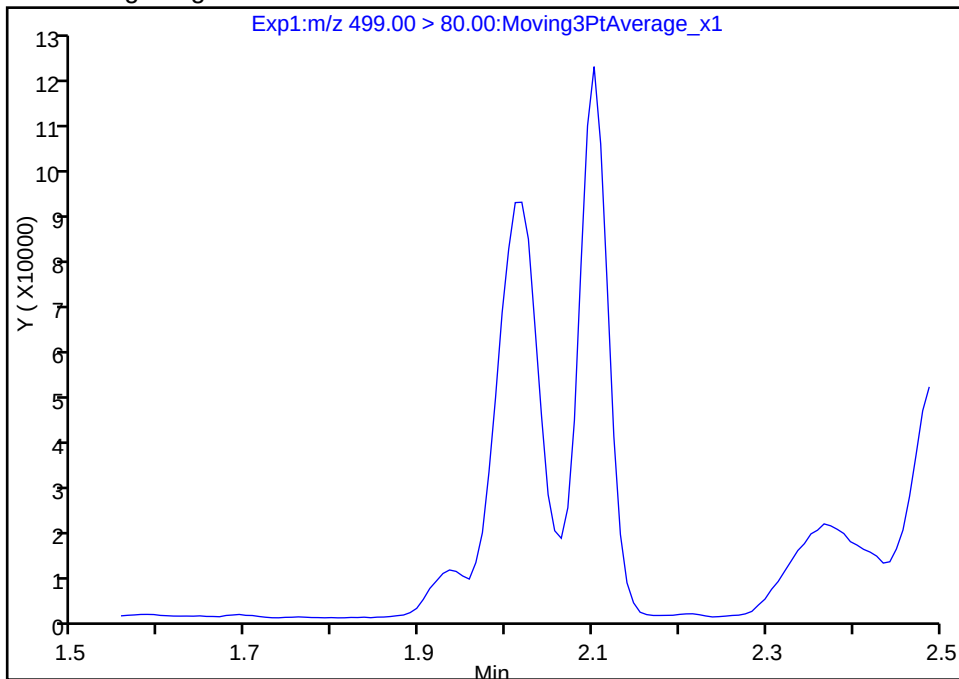
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_025.d
Injection Date: 31-Oct-2017 19:10:29 Instrument ID: A8_N
Lims ID: 320-32464-A-9-A Lab Sample ID: 320-32464-9
Client ID: WGNA-101617-RW-085
Operator ID: SACINSTLCMS01 ALS Bottle#: 19 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

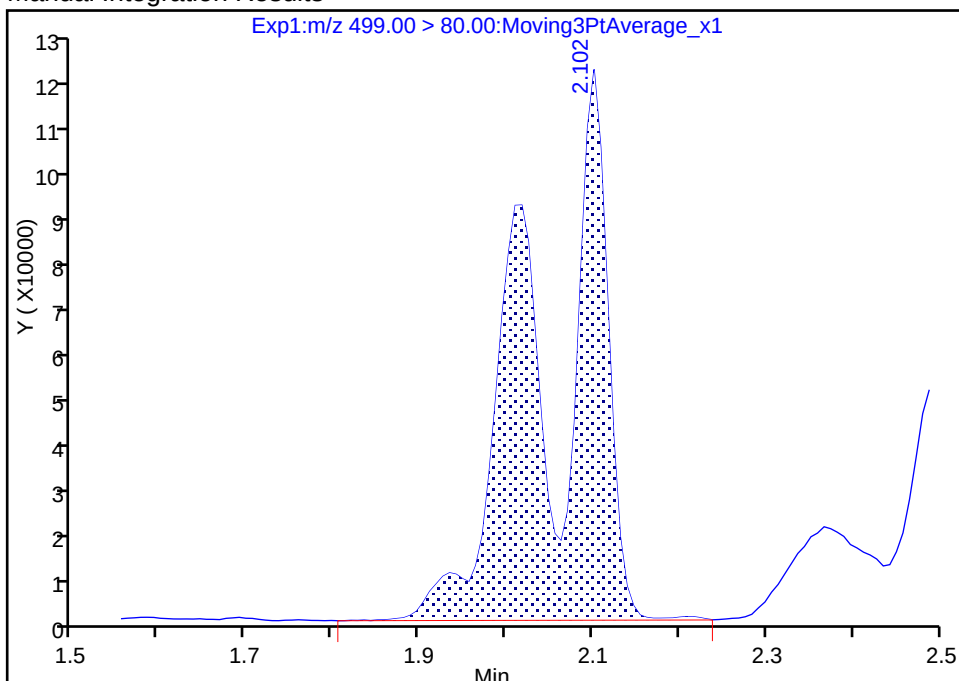
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 631558
Amount: 2.915895
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 11:06:19

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

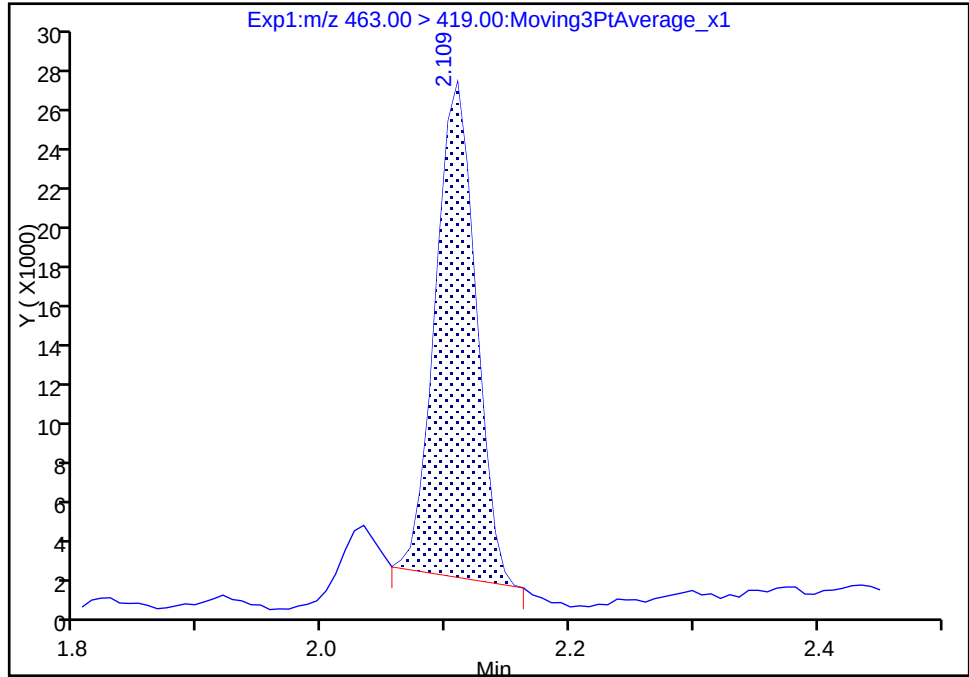
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Injection Date: 31-Oct-2017 19:10:29 Instrument ID: A8_N
Lims ID: 320-32464-A-9-A Lab Sample ID: 320-32464-9
Client ID: WGNA-101617-RW-085
Operator ID: SACINSTLCMS01 ALS Bottle#: 19 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

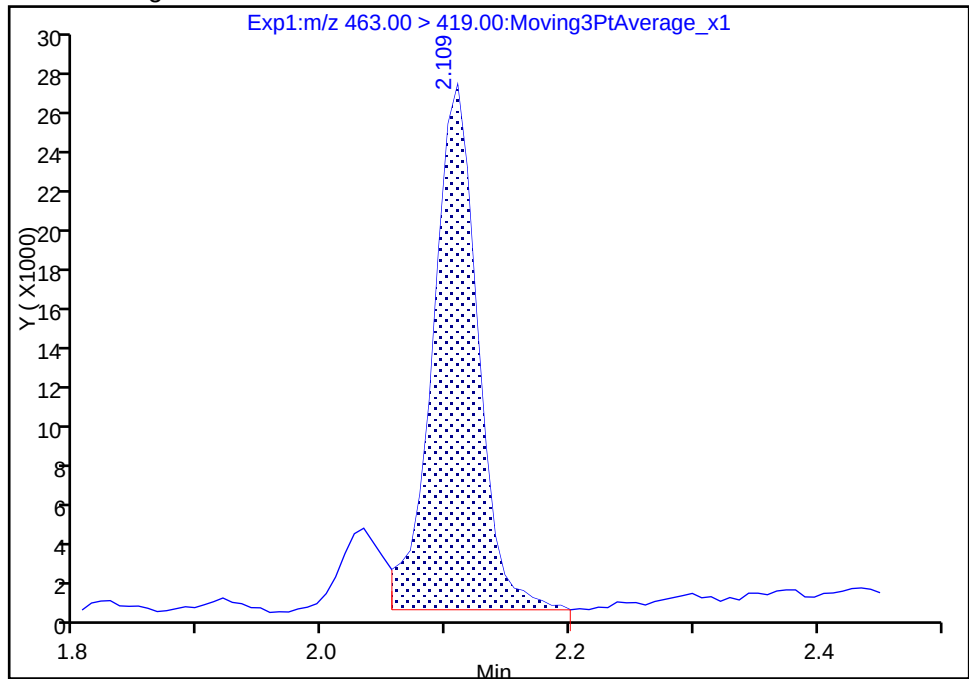
RT: 2.11
Area: 56791
Amount: 0.279020
Amount Units: ng/ml

Processing Integration Results



RT: 2.11
Area: 67237
Amount: 0.330342
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 01-Nov-2017 11:06:43
Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-FRB-085</u>	Lab Sample ID: <u>320-32464-10</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_026.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 09:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>275 (mL)</u>	Date Analyzed: <u>10/31/2017 19:15</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>192281</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	U	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)	3.6	U	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	92		70-130
STL00996	13C2 PFDA	98		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_026.d
 Lims ID: 320-32464-A-10-A
 Client ID: WGNA-101617-FRB-085
 Sample Type: Client
 Inject. Date: 31-Oct-2017 19:15:15 ALS Bottle#: 20 Worklist Smp#: 26
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32464-a-10-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:21:28 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.528	0.005	1.000	3179868	9.15		4978	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		3079446	10.0		3934	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.107	-0.005		6817273	28.7		4676	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2447496	9.82		7034	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_026.d

Injection Date: 31-Oct-2017 19:15:15

Instrument ID: A8_N

Lims ID: 320-32464-A-10-A

Lab Sample ID: 320-32464-10

Client ID: WGNA-101617-FRB-085

Operator ID: SACINSTLCMS01

ALS Bottle#: 20

Worklist Smp#: 26

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

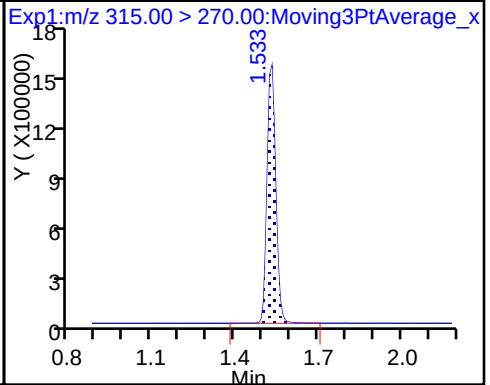
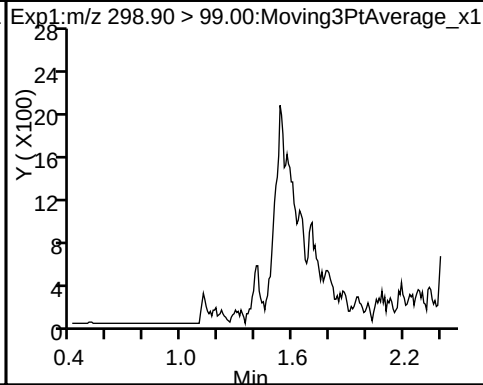
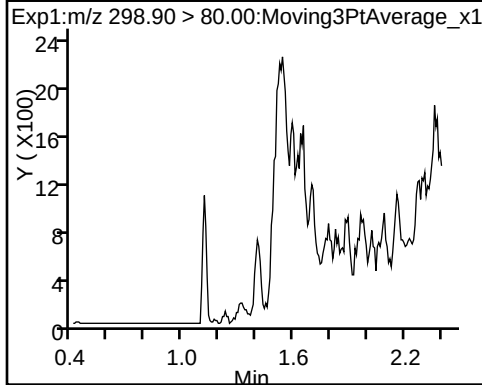
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

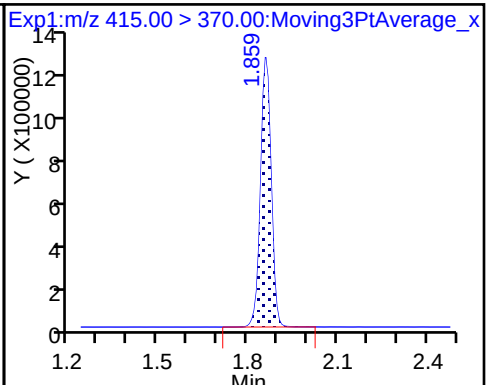
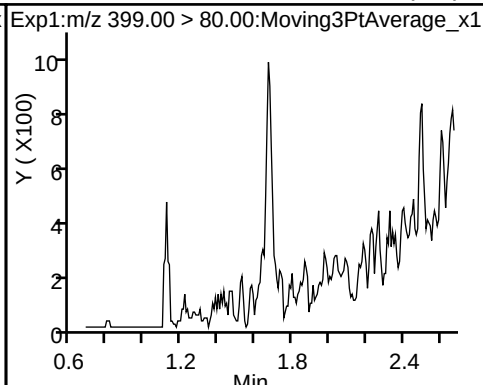
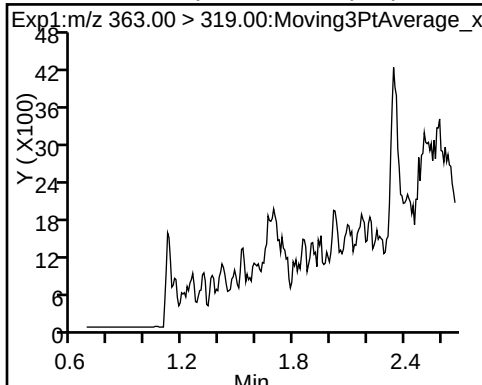
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

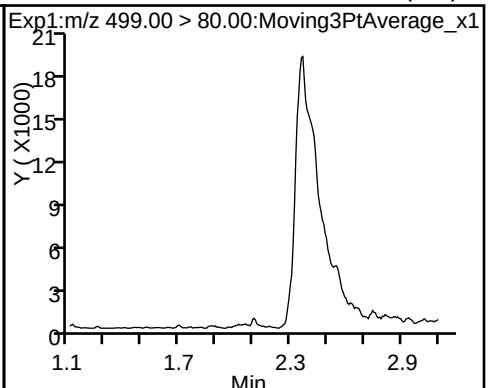
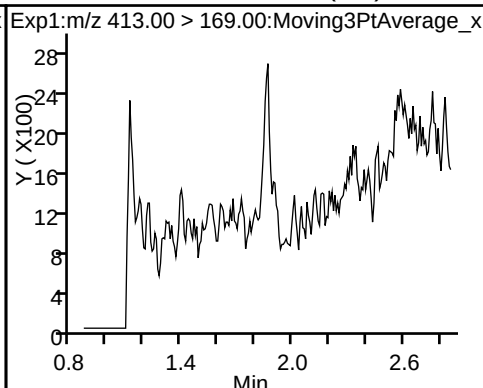
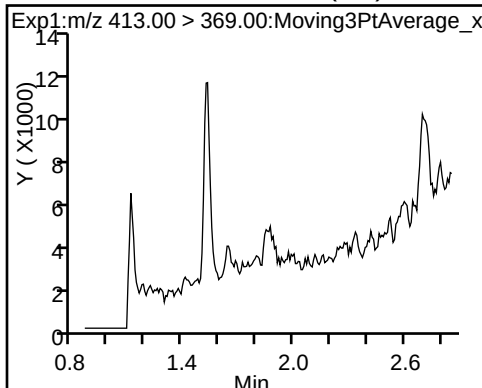
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

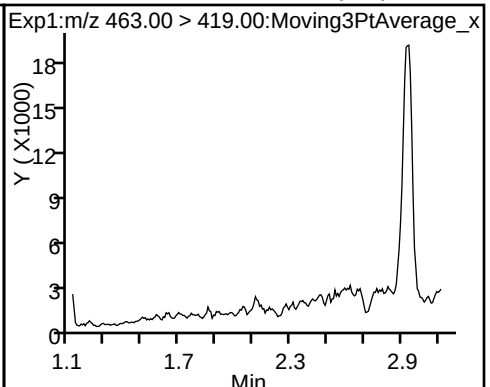
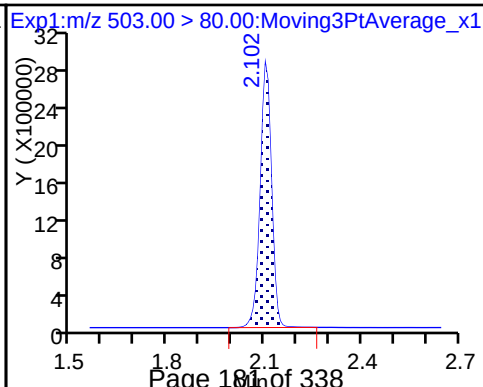
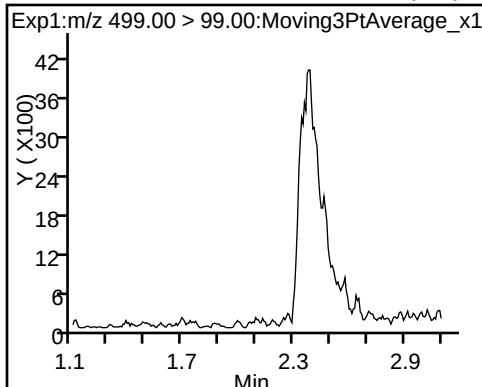
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

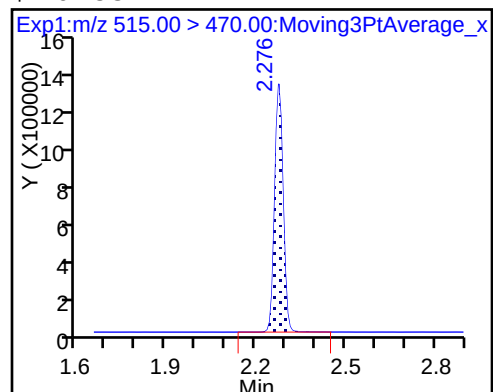


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_026.d
Lims ID: 320-32464-A-10-A
Client ID: WGNA-101617-FRB-085
Sample Type: Client
Inject. Date: 31-Oct-2017 19:15:15 ALS Bottle#: 20 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32464-a-10-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Nov-2017 11:21:28 Calib Date: 31-Oct-2017 12:08:27
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 :

Det: EXP1

Process Host: XAWRK027

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.15	91.50
\$ 10 13C2 PFDA	10.0	9.82	98.20

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-RW-4834</u>	Lab Sample ID: <u>320-32464-11</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_027.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 10:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>284.9(mL)</u>	Date Analyzed: <u>10/31/2017 19:20</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>192281</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	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)	3.5	U	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	92		70-130
STL00996	13C2 PFDA	96		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_027.d
 Lims ID: 320-32464-A-11-A
 Client ID: WGNA-101617-RW-4834
 Sample Type: Client
 Inject. Date: 31-Oct-2017 19:20:00 ALS Bottle#: 21 Worklist Smp#: 27
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32464-a-11-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:21:28 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.528	-0.003	1.000	2889250	9.18		4869	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.863	-0.012		2788845	10.0		3813	
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.107	-0.013		6264447	28.7		4819	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.277	-0.009	1.000	2171730	9.62		6741	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_027.d

Injection Date: 31-Oct-2017 19:20:00

Instrument ID: A8_N

Lims ID: 320-32464-A-11-A

Lab Sample ID: 320-32464-11

Client ID: WGNA-101617-RW-4834

Operator ID: SACINSTLCMS01

ALS Bottle#: 21

Worklist Smp#: 27

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

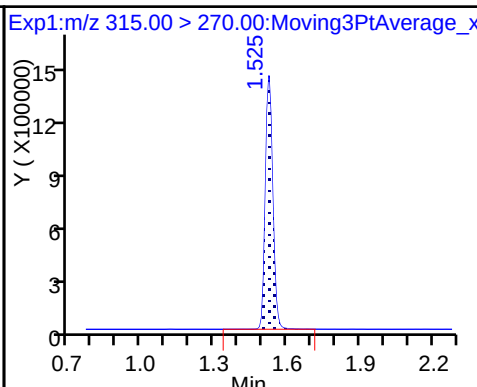
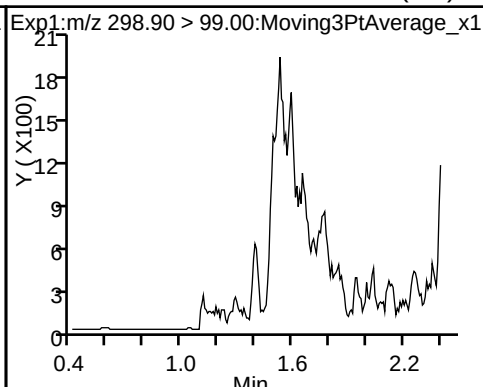
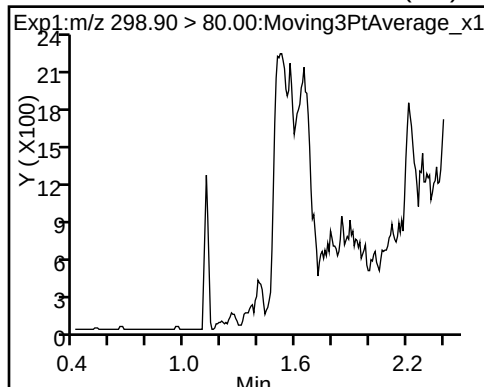
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

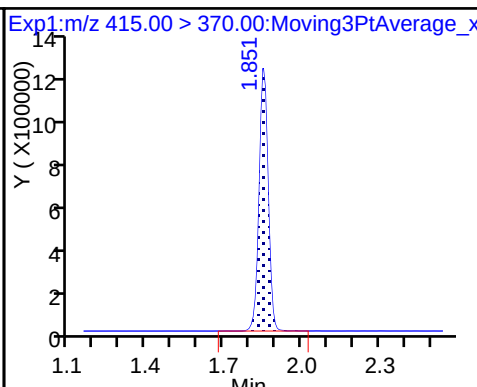
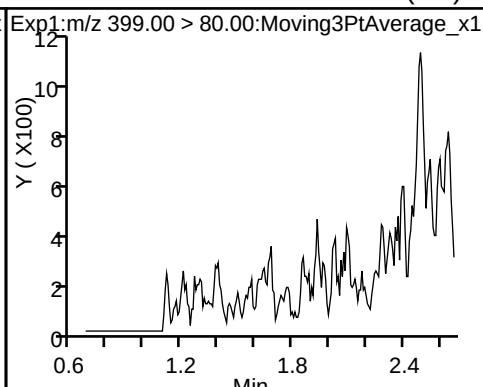
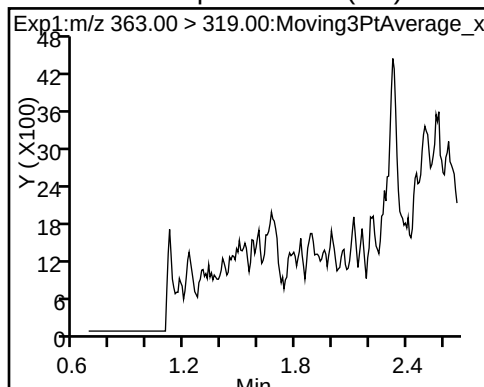
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

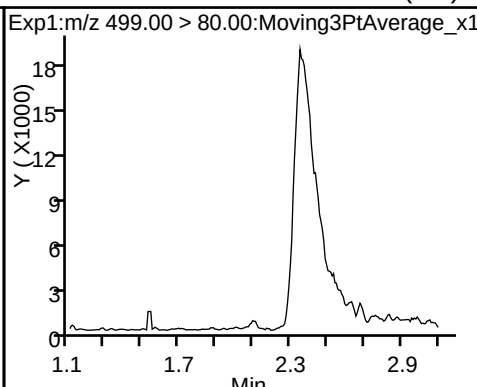
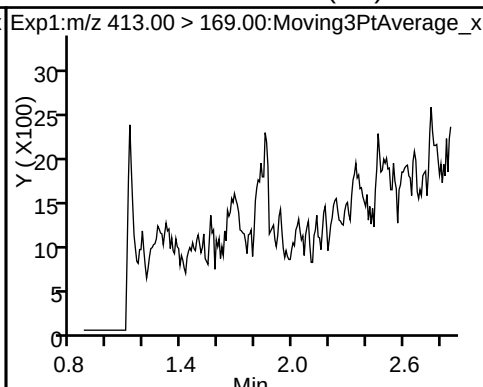
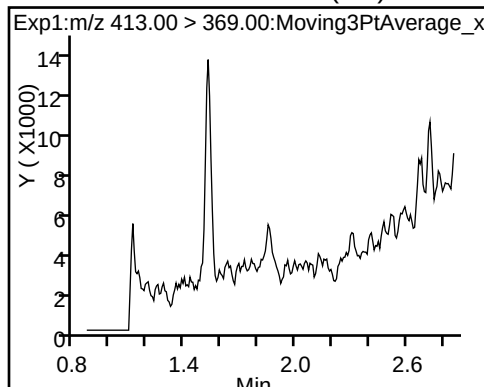
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

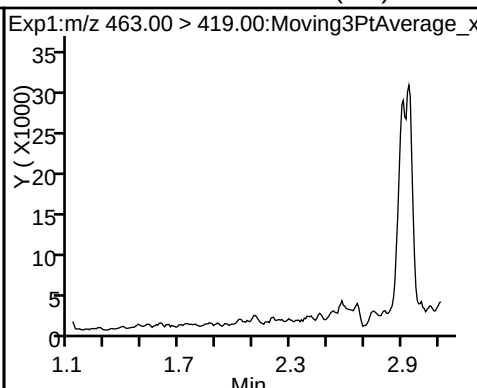
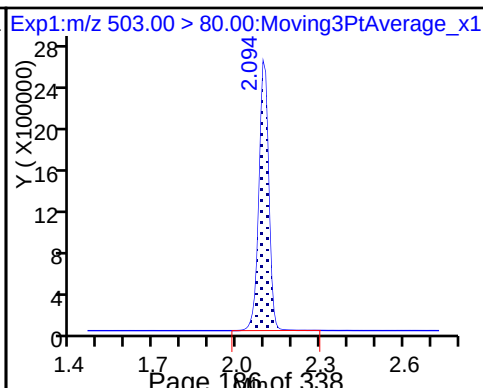
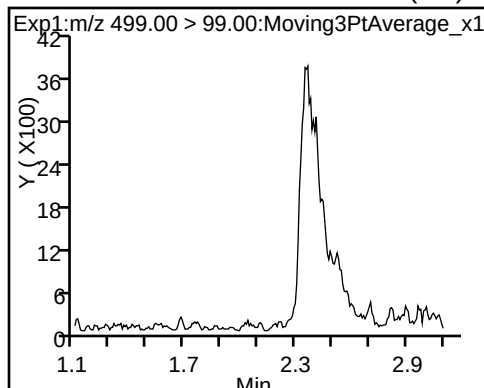
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

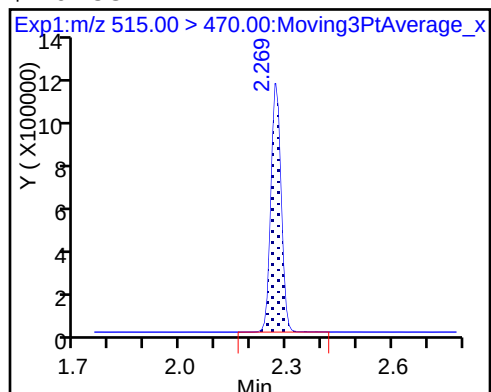


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_027.d
Lims ID: 320-32464-A-11-A
Client ID: WGNA-101617-RW-4834
Sample Type: Client
Inject. Date: 31-Oct-2017 19:20:00 ALS Bottle#: 21 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32464-a-11-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Nov-2017 11:21:28 Calib Date: 31-Oct-2017 12:08:27
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.18	91.80
\$ 10 13C2 PFDA	10.0	9.62	96.21

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-FRB-4834</u>	Lab Sample ID: <u>320-32464-12</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_028.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 10:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>278.7(mL)</u>	Date Analyzed: <u>10/31/2017 19:24</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>192281</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	4.9
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	87		70-130
STL00996	13C2 PFDA	95		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_028.d
 Lims ID: 320-32464-A-12-A
 Client ID: WGNA-101617-FRB-4834
 Sample Type: Client
 Inject. Date: 31-Oct-2017 19:24:46 ALS Bottle#: 22 Worklist Smp#: 28
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32464-a-12-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:21:28 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.528	-0.003	1.000	3006119	8.73		5029	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.863	-0.012		3049835	10.0		3921	
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.107	-0.013		6757724	28.7		4598	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.277	-0.009	1.000	2333630	9.45		7256	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_028.d

Injection Date: 31-Oct-2017 19:24:46

Instrument ID: A8_N

Lims ID: 320-32464-A-12-A

Lab Sample ID: 320-32464-12

Client ID: WGNA-101617-FRB-4834

Operator ID: SACINSTLCMS01

ALS Bottle#: 22

Worklist Smp#: 28

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

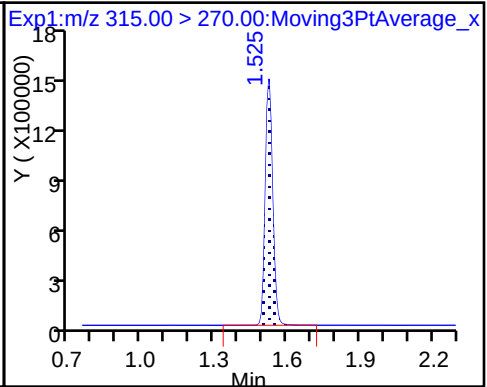
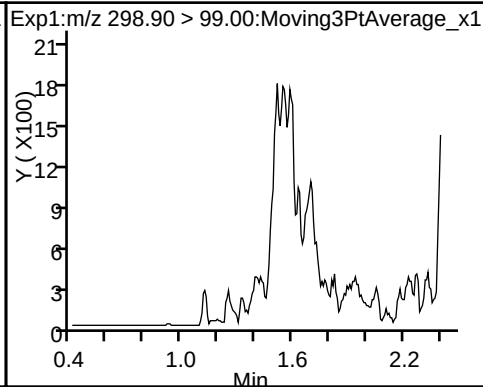
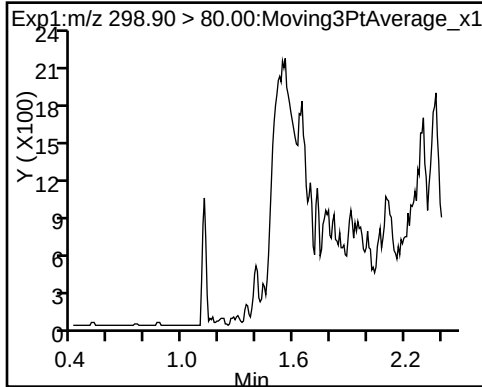
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

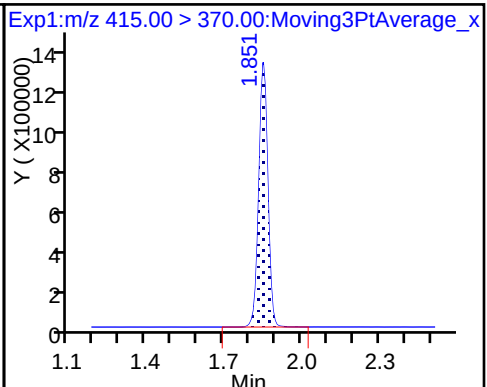
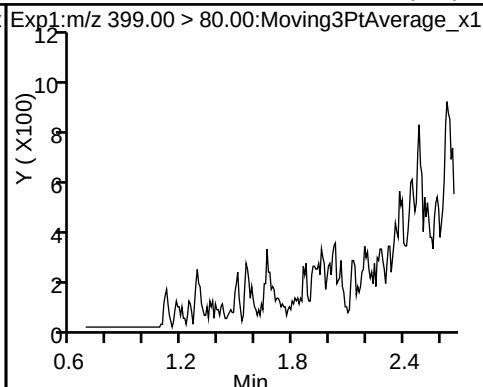
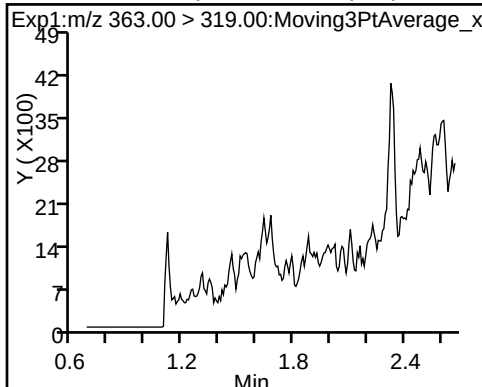
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

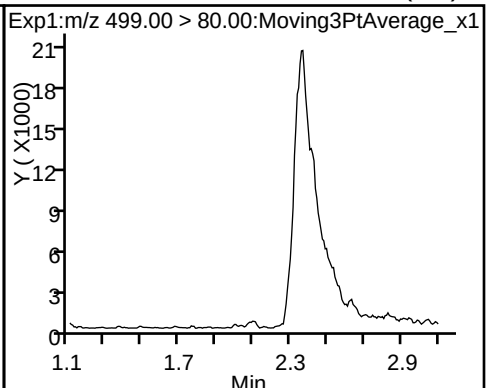
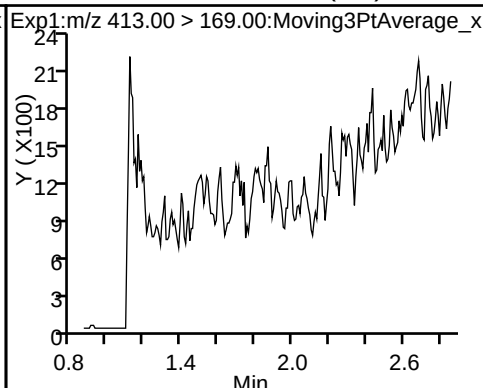
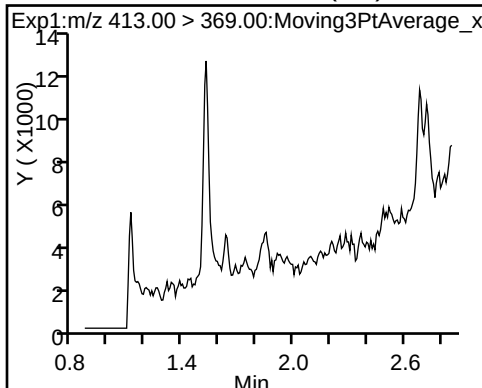
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

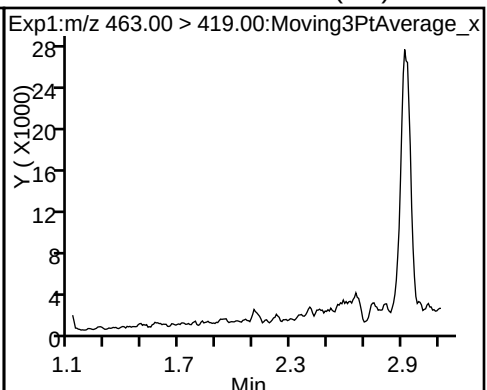
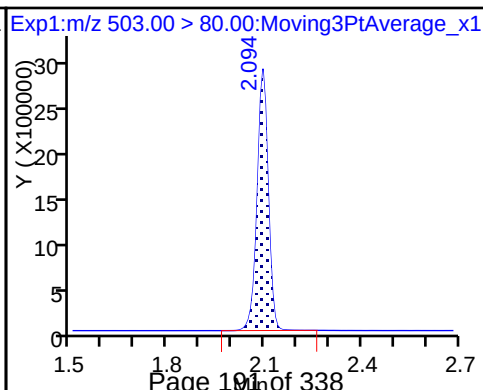
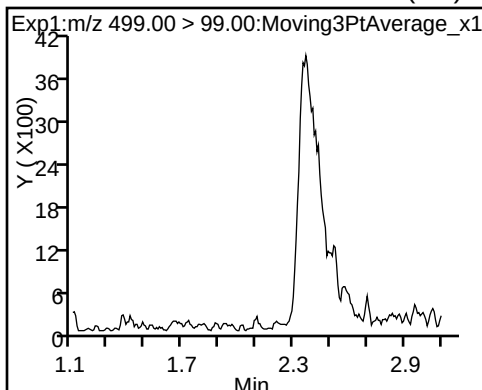
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

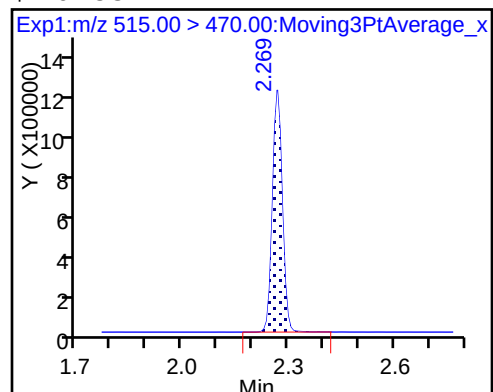


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_028.d
Lims ID: 320-32464-A-12-A
Client ID: WGNA-101617-FRB-4834
Sample Type: Client
Inject. Date: 31-Oct-2017 19:24:46 ALS Bottle#: 22 Worklist Smp#: 28
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32464-a-12-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Nov-2017 11:21:28 Calib Date: 31-Oct-2017 12:08:27
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.73	87.34
\$ 10 13C2 PFDA	10.0	9.45	94.54

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Client Sample ID: WGNA-101617-DUP11 Lab Sample ID: 320-32464-13

Matrix: Water Lab File ID: 2017.10.31_537C_029.d

Analysis Method: 537 Date Collected: 10/16/2017 07:00

Extraction Method: 537 Date Extracted: 10/25/2017 16:24

Sample wt/vol: 281.6(mL) Date Analyzed: 10/31/2017 19:29

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.: 192281 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	J M	36	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.0	J	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.2	J	8.9	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	76		70-130
STL00996	13C2 PFDA	92		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_029.d
 Lims ID: 320-32464-A-13-A
 Client ID: WGNA-101617-DUP11
 Sample Type: Client
 Inject. Date: 31-Oct-2017 19:29:31 ALS Bottle#: 23 Worklist Smp#: 29
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-32464-a-13-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:21:28 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 11:08:59

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	1.405	-0.001	1.000	530822	1.88		146	
298.90 > 99.00	1.404	1.405	-0.001	1.000	362080		1.47(0.00-0.00)	361	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.528	-0.003	1.000	2997434	7.63		4765	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.677	-0.008	1.000	475649	1.45		64.7	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.678	-0.009	1.000	849990	1.98		259	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		3479117	10.0		4596	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.864	-0.005	1.000	1407515	4.35		101	
413.00 > 169.00	1.851	1.864	-0.013	0.996	834807		1.69(0.00-0.00)	178	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	1089780	4.44		94.1	M
499.00 > 99.00	2.102	2.094	0.008	1.000	182131		5.98(0.00-0.00)	112	M
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.107	-0.005		7576347	28.7		3491	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	134408	0.5919		18.6	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2596957	9.22		8375	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_029.d

Injection Date: 31-Oct-2017 19:29:31

Instrument ID: A8_N

Lims ID: 320-32464-A-13-A

Lab Sample ID: 320-32464-13

Client ID: WGNA-101617-DUP11

Operator ID: SACINSTLCMS01

ALS Bottle#: 23

Worklist Smp#: 29

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

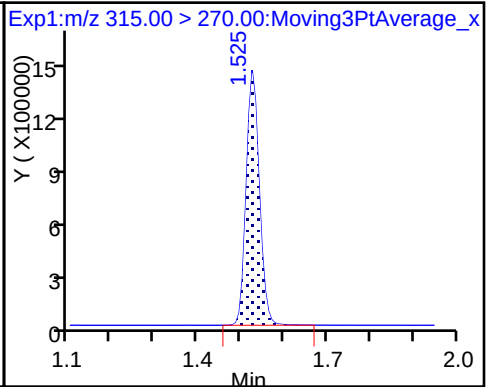
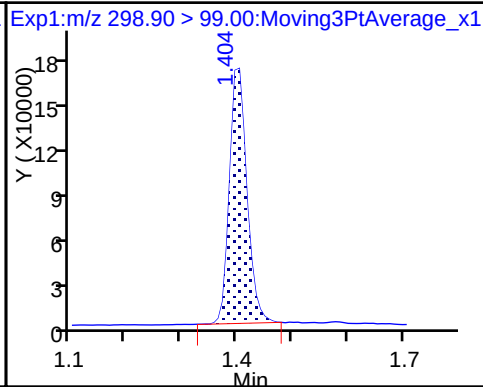
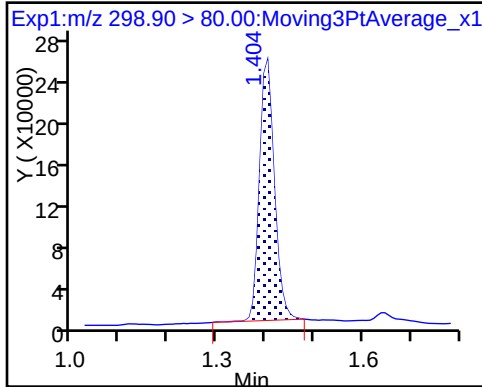
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

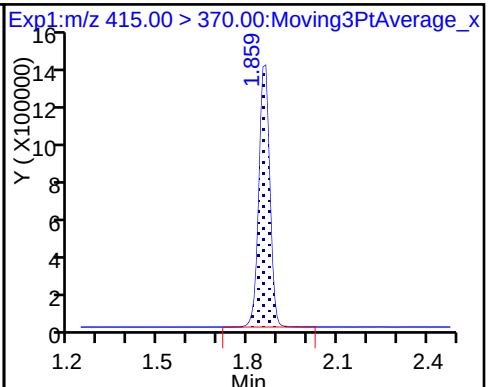
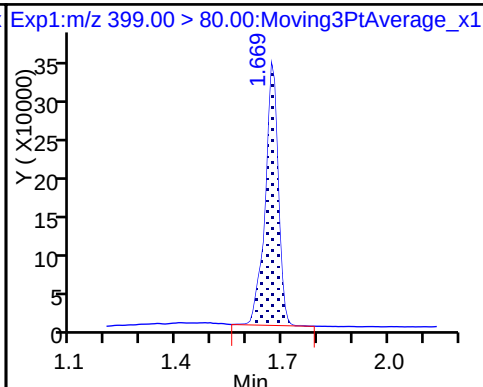
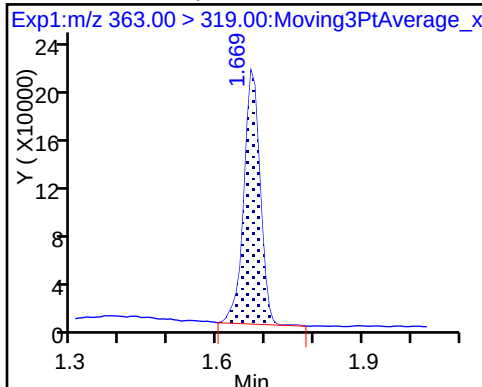
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

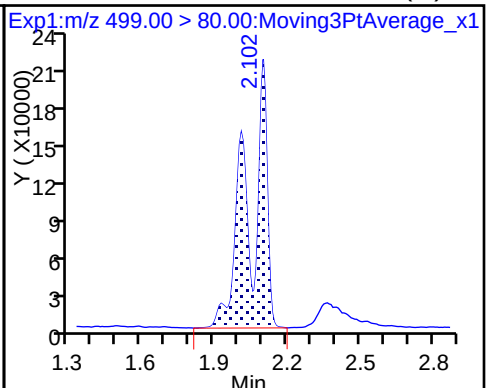
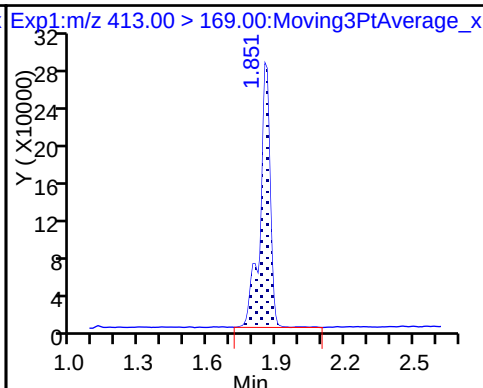
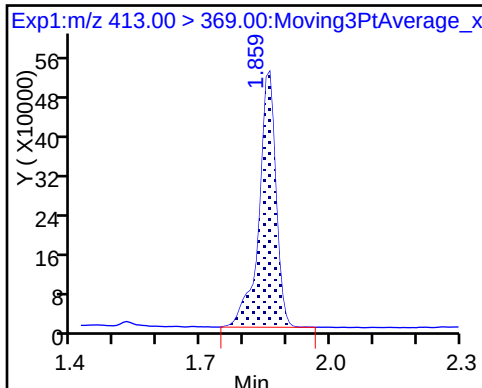
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

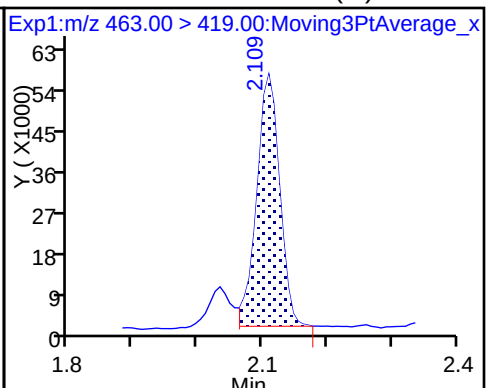
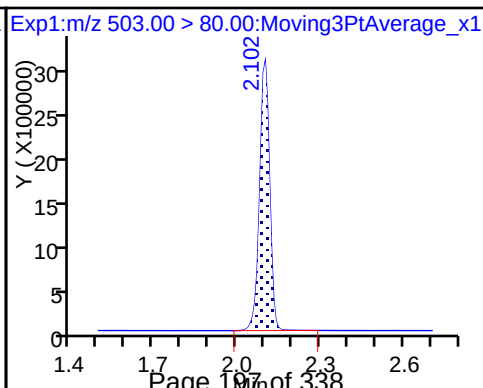
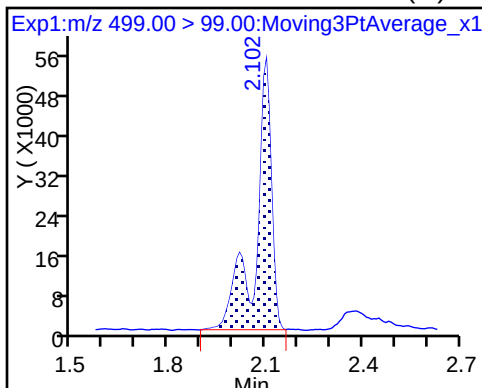
8 Perfluorooctane sulfonic acid (M)



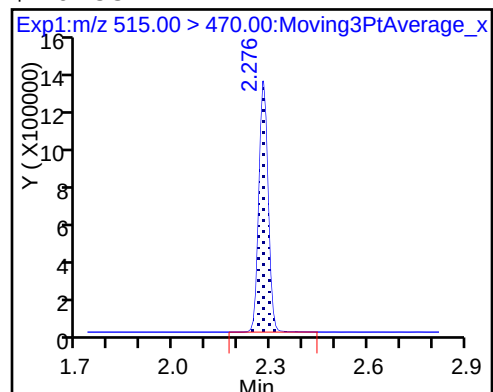
8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_029.d
Lims ID: 320-32464-A-13-A
Client ID: WGNA-101617-DUP11
Sample Type: Client
Inject. Date: 31-Oct-2017 19:29:31 ALS Bottle#: 23 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-32464-a-13-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Nov-2017 11:21:28 Calib Date: 31-Oct-2017 12:08:27
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 11:08:59

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	7.63	76.34
\$ 10 13C2 PFDA	10.0	9.22	92.22

TestAmerica Sacramento

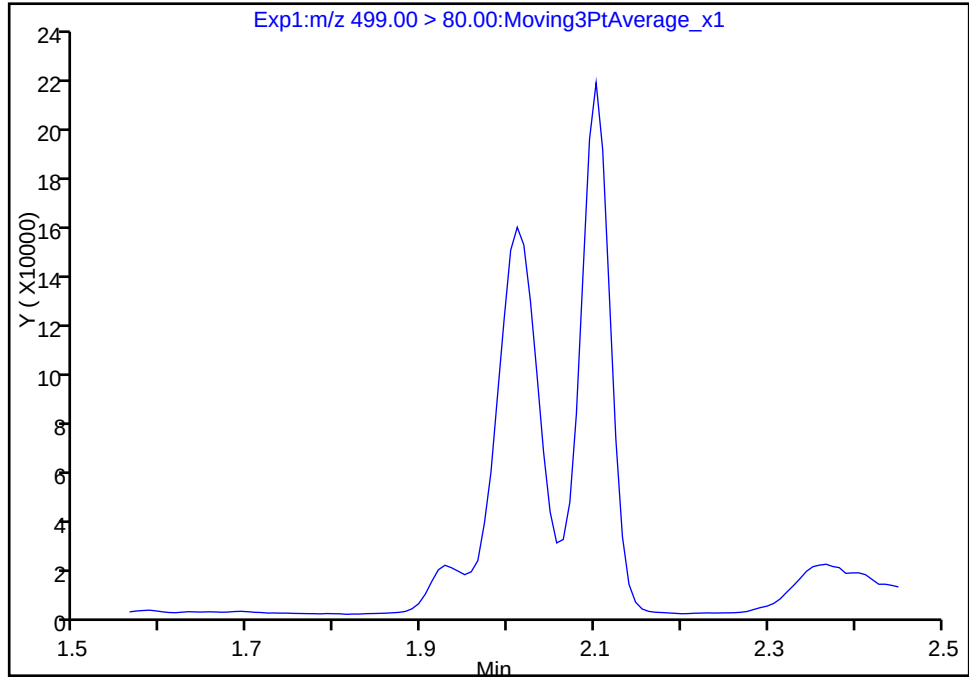
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Lims ID: 320-32464-A-13-A Lab Sample ID: 320-32464-13
Client ID: WGNA-101617-DUP11
Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

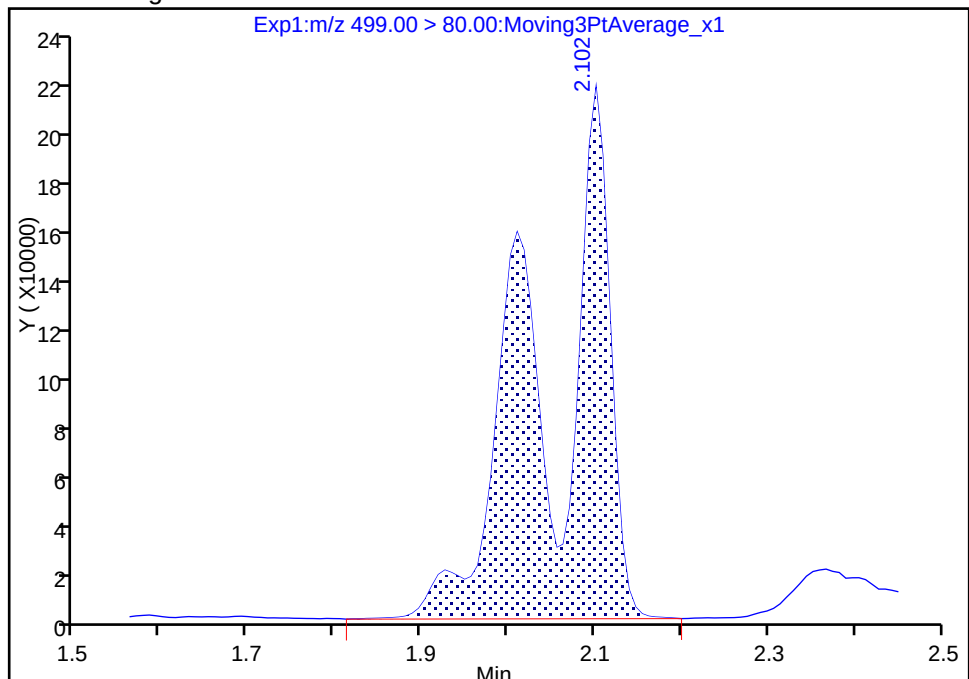
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.10
Area: 1089780
Amount: 4.444102
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 01-Nov-2017 11:08:14
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

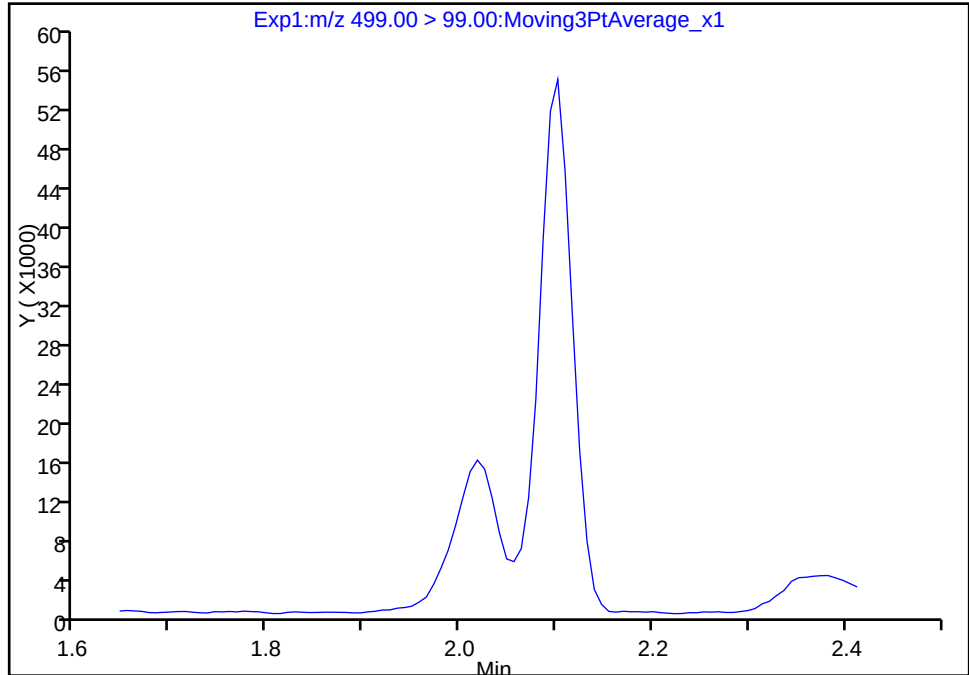
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_029.d
Injection Date: 31-Oct-2017 19:29:31 Instrument ID: A8_N
Lims ID: 320-32464-A-13-A Lab Sample ID: 320-32464-13
Client ID: WGNA-101617-DUP11
Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

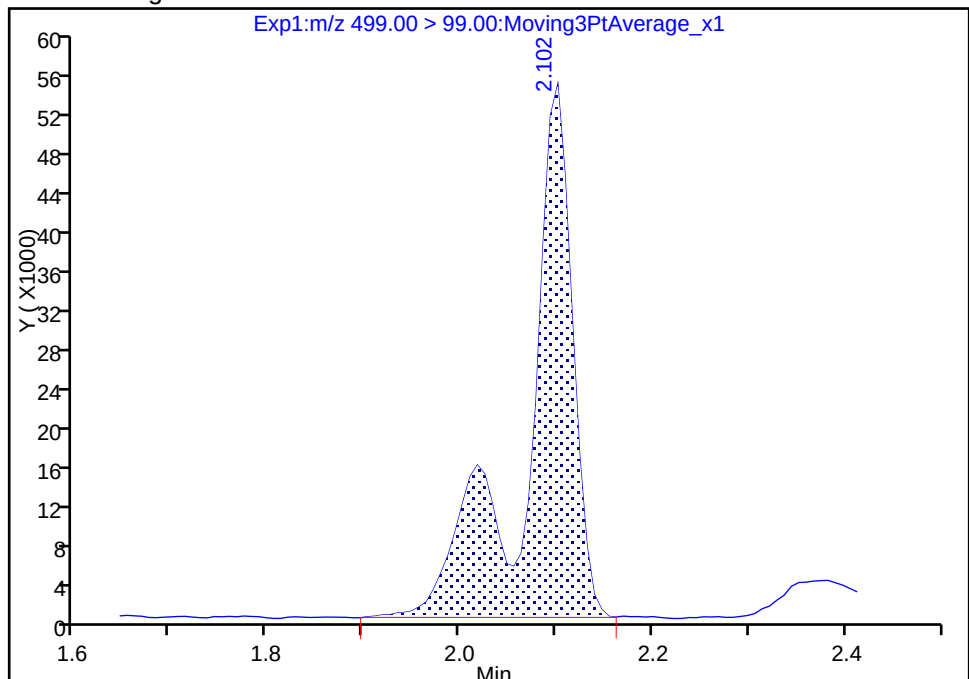
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 182131
Amount: 4.444102
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 11:08:27

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

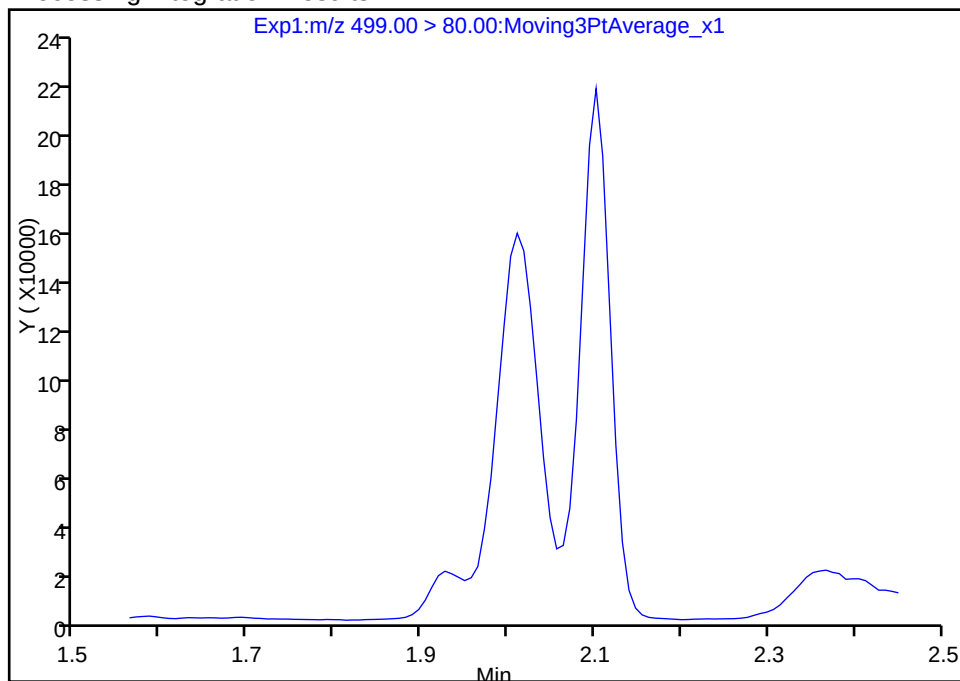
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_029.d
Injection Date: 31-Oct-2017 19:29:31 Instrument ID: A8_N
Lims ID: 320-32464-A-13-A Lab Sample ID: 320-32464-13
Client ID: WGNA-101617-DUP11
Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

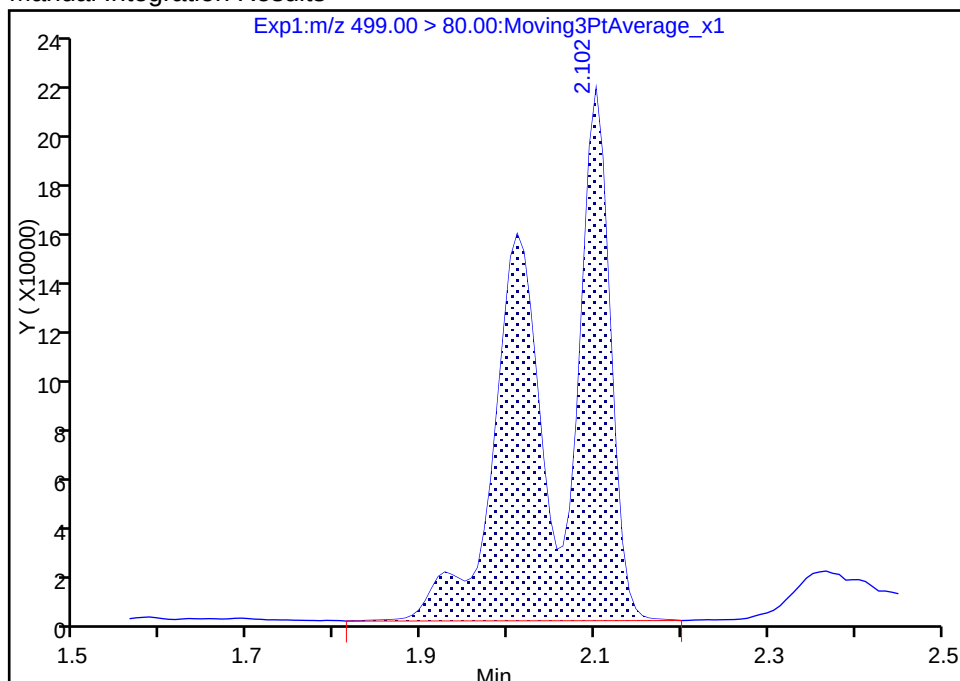
Signal: 1

Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.10
Area: 1089780
Amount: 4.444102
Amount Units: ng/ml

Reviewer: barnettj, 01-Nov-2017 11:08:27

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

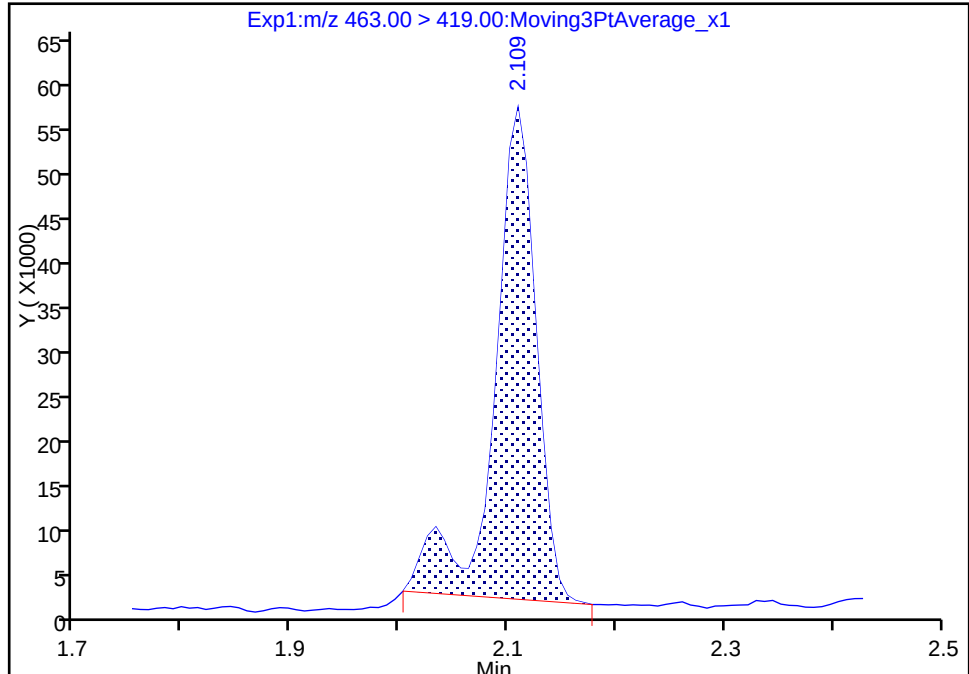
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_029.d
Injection Date: 31-Oct-2017 19:29:31 Instrument ID: A8_N
Lims ID: 320-32464-A-13-A Lab Sample ID: 320-32464-13
Client ID: WGNA-101617-DUP11
Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 29
Injection Vol: 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

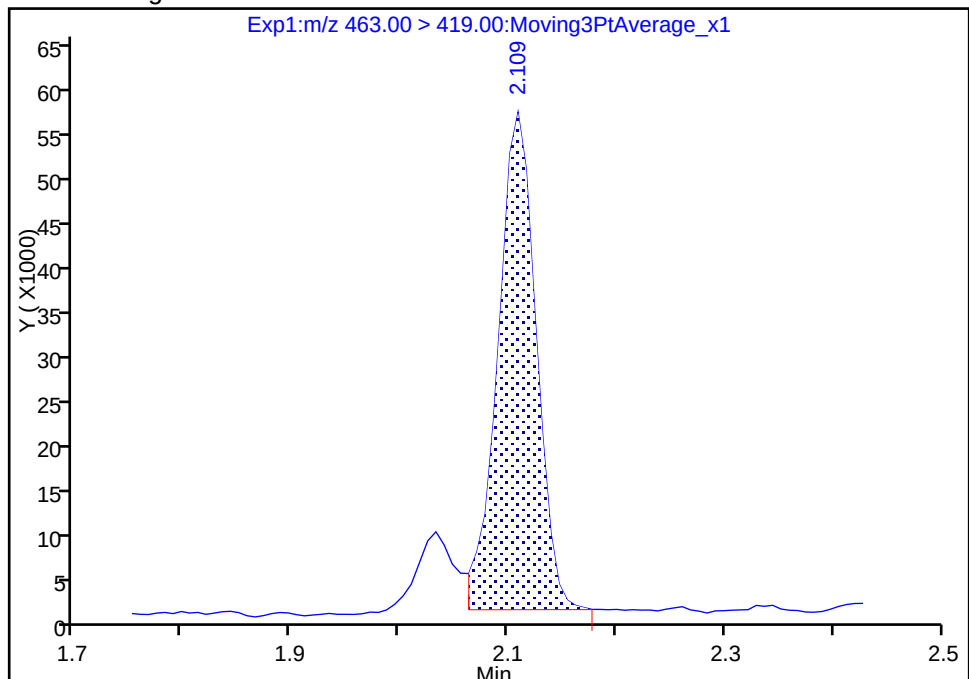
RT: 2.11
Area: 146026
Amount: 0.643087
Amount Units: ng/ml

Processing Integration Results



RT: 2.11
Area: 134408
Amount: 0.591922
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 01-Nov-2017 11:08:52
Audit Action: Manually Integrated

Audit Reason: Split Peak

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

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1 Analy Batch No.: 192162

SDG No.: _____

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

Calibration Start Date: 10/31/2017 11:44 Calibration End Date: 10/31/2017 12:08 Calibration ID: 35621

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-192162/4	2017.10.31_537ICAL_004.d
Level 2	IC 320-192162/5	2017.10.31_537ICAL_005.d
Level 3	IC 320-192162/6	2017.10.31_537ICAL_006.d
Level 4	IC 320-192162/7	2017.10.31_537ICAL_007.d
Level 5	IC 320-192162/8	2017.10.31_537ICAL_008.d
Level 6	IC 320-192162/9	2017.10.31_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)	1.0555 0.7230	1.1099	1.0105	0.8851	0.8003	QuaF		1.0703	-0.001949						0.9990		0.9600
Perfluoroheptanoic acid (PFHpA)	0.9747 0.9495	0.9317	0.9152	0.9490	0.9245	Ave		0.9408				2.3		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.6000 1.5277	1.6916	1.7164	1.6515	1.5848	Ave		1.6287				4.4		30.0			
Perfluorooctanoic acid (PFOA)	0.9001 0.9319	0.9648	0.9220	0.9359	0.9258	Ave		0.9301				2.3		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.8822 0.9438	0.9288	0.9148	0.9474	0.9527	Ave		0.9283				2.9		30.0			
Perfluorononanoic acid (PFNA)	0.6310 0.6692	0.6490	0.6407	0.6829	0.6432	Ave		0.6527				3.0		30.0			
13C2 PFHxA	1.1162 1.1576	1.0680	1.0953	1.1948	1.1392	Ave		1.1285				4.0		30.0			
13C2 PFDA	0.7945 0.8580	0.7675	0.7780	0.8355	0.8229	Ave		0.8094				4.3		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.: 320-32464-1 Analy Batch No.: 192162

SDG No.: _____

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

Calibration Start Date: 10/31/2017 11:44 Calibration End Date: 10/31/2017 12:08 Calibration ID: 35621

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-192162/4	2017.10.31_537ICAL_004.d
Level 2	IC 320-192162/5	2017.10.31_537ICAL_005.d
Level 3	IC 320-192162/6	2017.10.31_537ICAL_006.d
Level 4	IC 320-192162/7	2017.10.31_537ICAL_007.d
Level 5	IC 320-192162/8	2017.10.31_537ICAL_008.d
Level 6	IC 320-192162/9	2017.10.31_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	2055386 27165476	4905442	9915456	16876130	21956734	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	275477 5107421	614703	1311091	2526779	3670615	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	1038660 19137035	2492517	5615014	10497872	14494918	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	509095 10031020	1273846	2643153	4986613	7356038	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	763610 15763683	1824729	3990091	8030345	11617530	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PF OA	Ave	356641 7198655	856305	1835636	3636277	5107150	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PF OA	Ave	3153457 3112456	3170056	3137333	3180555	3014571	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	2244762 2306925	2277991	2228390	2223928	2177702	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.: 320-32464-1 Analy Batch No.: 192162

SDG No.: _____

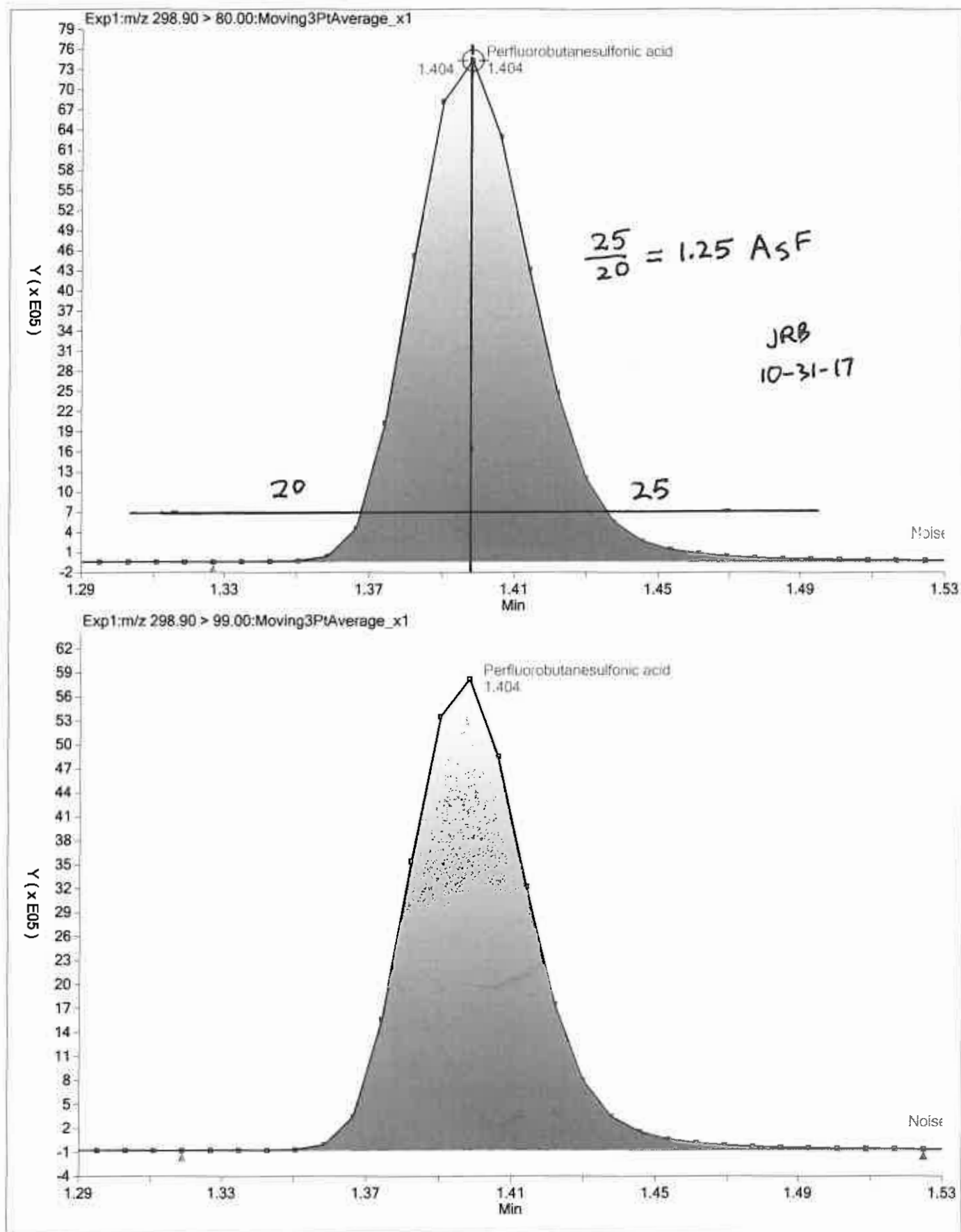
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

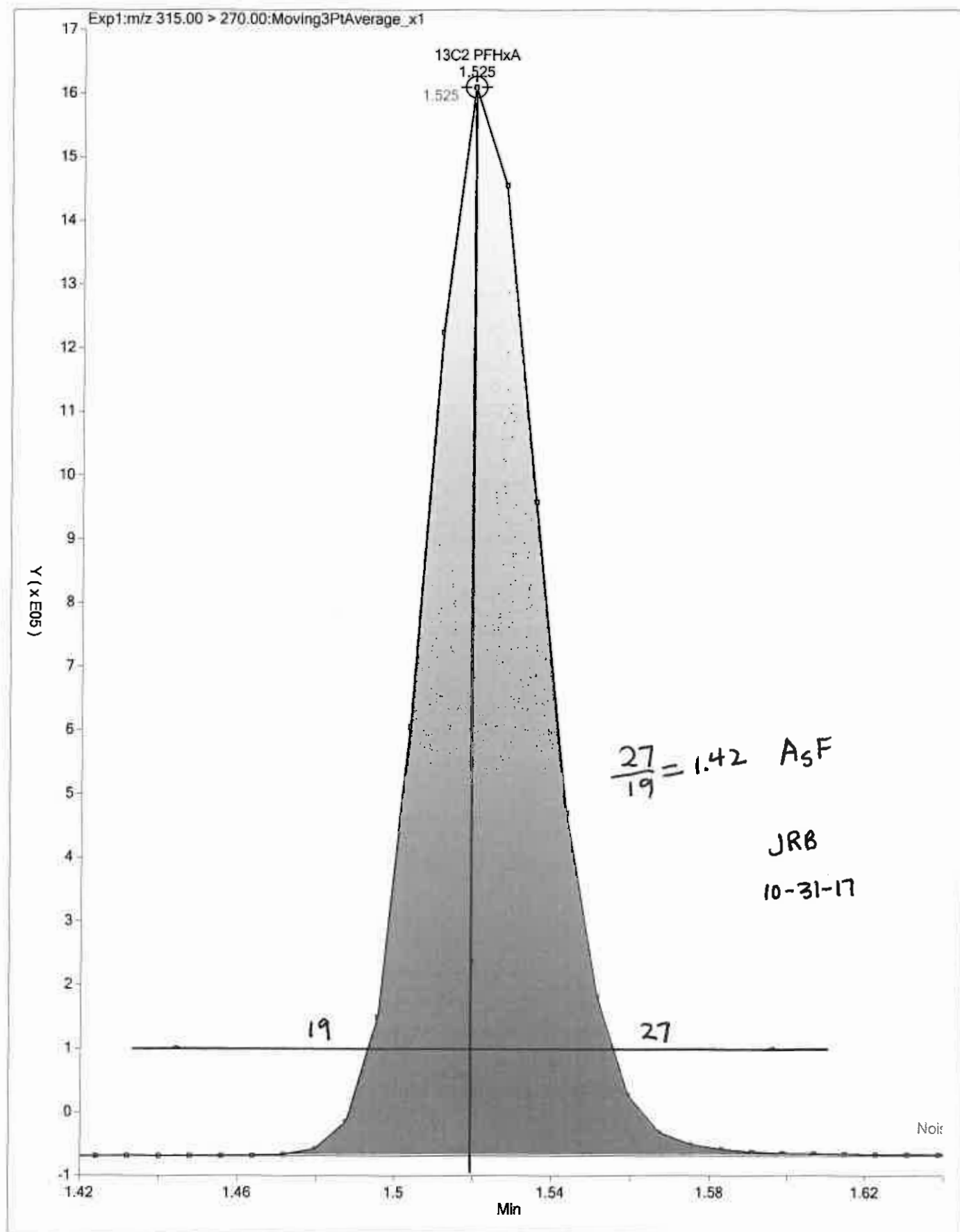
Calibration Start Date: 10/31/2017 11:44 Calibration End Date: 10/31/2017 12:08 Calibration ID: 35621

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-192162/4	2017.10.31_537ICAL_004.d
Level 2	IC 320-192162/5	2017.10.31_537ICAL_005.d
Level 3	IC 320-192162/6	2017.10.31_537ICAL_006.d
Level 4	IC 320-192162/7	2017.10.31_537ICAL_007.d
Level 5	IC 320-192162/8	2017.10.31_537ICAL_008.d
Level 6	IC 320-192162/9	2017.10.31_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)	0.3	7.9	3.1	-1.4	-1.2	1.0	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	3.6	-1.0	-2.7	0.9	-1.7	0.9	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-1.8	3.9	5.4	1.4	-2.7	-6.2	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-3.2	3.7	-0.9	0.6	-0.5	0.2	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-5.0	0.1	-1.5	2.1	2.6	1.7	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-3.3	-0.6	-1.8	4.6	-1.5	2.5	50	30	30	30	30	30
13C2 PFHxA	-1.1	-5.4	-2.9	5.9	0.9	2.6	30	30	30	30	30	30
13C2 PFDA	-1.8	-5.2	-3.9	3.2	1.7	6.0	30	30	30	30	30	30





TestAmerica Laboratories
Istd/Surrogate Recovery Report

Worklist Name: 31OCT2017_537_ICAL

Worklist Num: 49808

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b

Limit Group: LC 537 ICAI

Analysis Type: SemiVOA

Inj Volume: 2.00

Inj Vol Units: ul

Lims Batch: 192162

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				2075481 1.85	5478893 2.10
# 1 RB	31-Oct-2017 11:30:30			2827290 136.2 1.88	6263224 114.3 2.12
# 2 RB	31-Oct-2017 11:35:15			2445339 117.8 1.87	5641209 103.0 2.11
# 3 RB	31-Oct-2017 11:39:58			2657492 128.0 1.87	5954650 108.7 2.12
IS Std					
# 4 IC L1	31-Oct-2017 11:44:43	1.53 98.91	2.28 98.17	1.86 2825241> 100.0*	2.10 6203989> 100.0*
# 5 IC L2	31-Oct-2017 11:49:28	1.53 94.64	2.28 94.82	1.87 2968175> 105.1*	2.11 6337478> 102.2*
# 6 IC L3	31-Oct-2017 11:54:13	1.53 97.06	2.28 96.12	1.87 2864400> 101.4*	2.11 6253426> 100.8*
# 7 IC L4	31-Oct-2017 11:58:57	1.53 105.90	2.28 103.20	1.86 2661913> 94.2*	2.11 6075693> 97.9*
# 8 IC L5	31-Oct-2017 12:03:42	1.53 100.90	2.28 101.70	1.86 2646287> 93.7*	2.10 5827765> 93.9*
# 9 IC L6	31-Oct-2017 12:08:27	1.53 102.60	2.28 106.00	1.87 2688817> 95.2*	2.11 5986294> 96.5*

13C2-PFDA

$$RPD = \frac{2968175 - 2646287}{\left(\frac{2968175 + 2646287}{2} \right)} (100) = 11.5$$

13C4-PFOS

$$RPD = \frac{6337478 - 5827765}{\left(\frac{6337478 + 5827765}{2} \right)} (100) = 8.4$$

JRB

10-31-17

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_004.d
 Lims ID: IC L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 31-Oct-2017 11:44:43 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\20171031-49808.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 31-Oct-2017 15:26:02 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK004

First Level Reviewer: phomsophat

Date: 31-Oct-2017 13:17:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.405	-0.001	1.000	2055386	9.03		938	
298.90 > 99.00	1.404	1.405	-0.001	1.000	1477718		1.39(0.00-0.00)	1790	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.528	-0.003	1.000	3153457	9.89		3952	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	275477	1.04		57.1	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.678	-0.001	1.000	1038660	2.95		1502	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		2825241	10.0		2716	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.864	0.002	1.000	509095	1.94		15.6	
413.00 > 169.00	1.859	1.864	-0.005	0.996	289513		1.76(0.00-0.00)	17.1	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.107	-0.005		6203989	28.7		4696	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	763610	3.80		116	M
499.00 > 99.00	2.102	2.109	-0.007	0.996	158418		4.82(0.00-0.00)	135	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	356641	1.93		83.2	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2244762	9.82		5730	

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\20171031-49808.b\2017.10.31_537ICAL_004.d

Injection Date: 31-Oct-2017 11:44:43

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

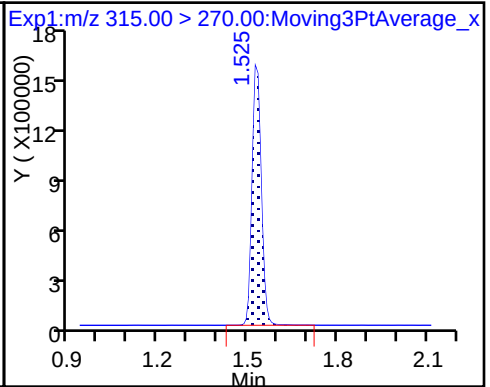
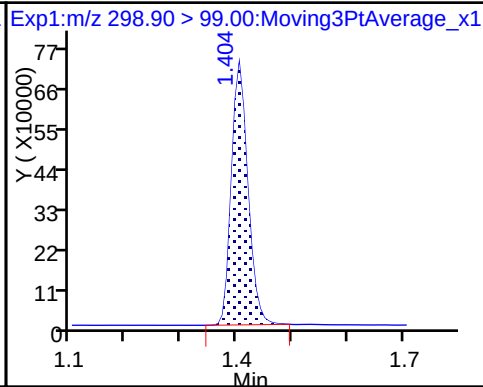
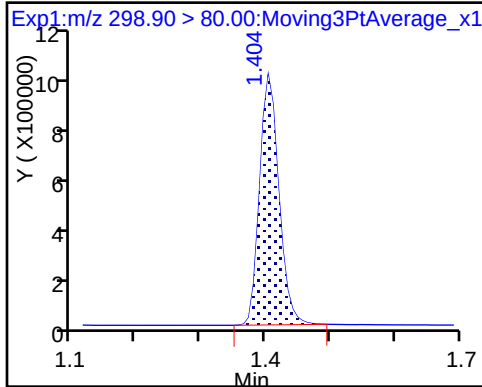
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

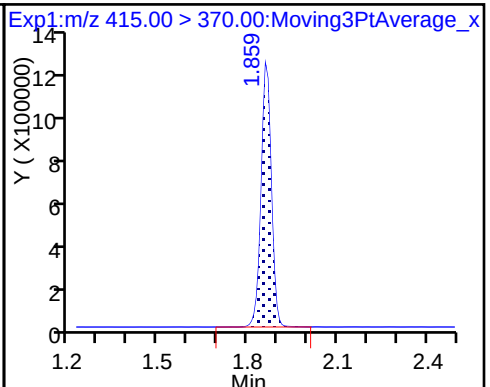
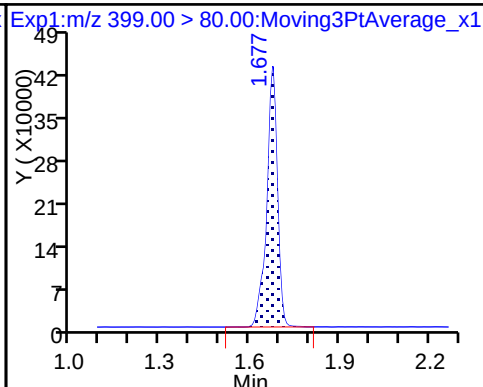
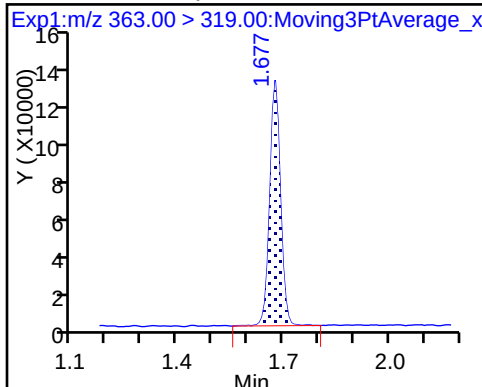
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

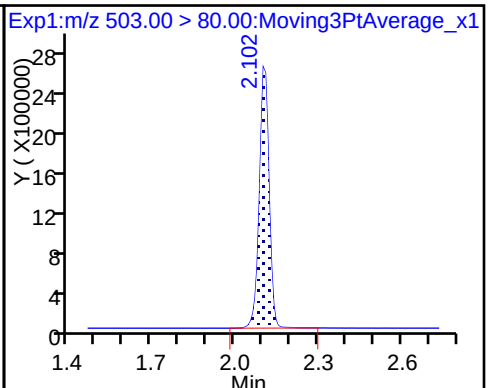
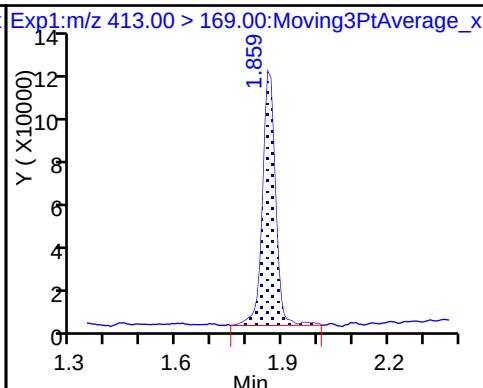
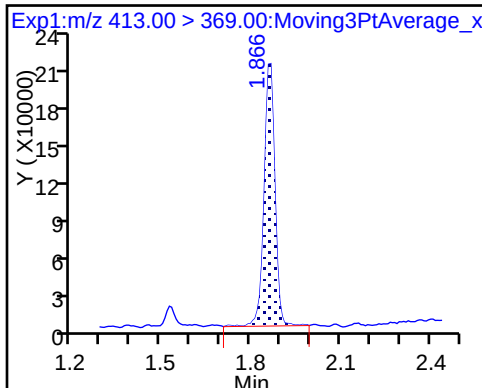
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

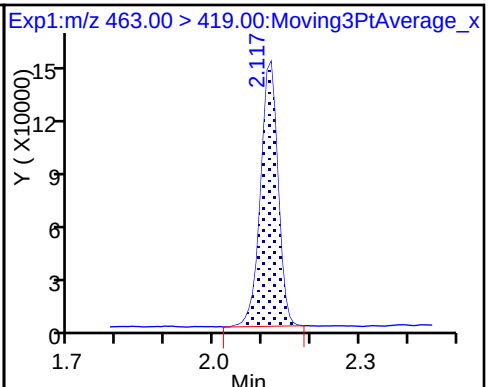
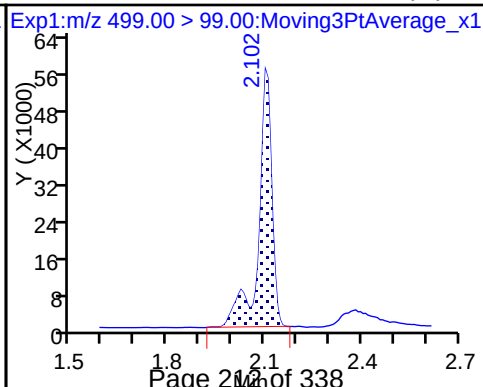
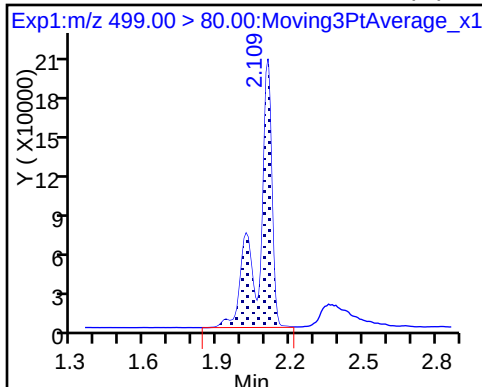
* 7 13C4 PFOS



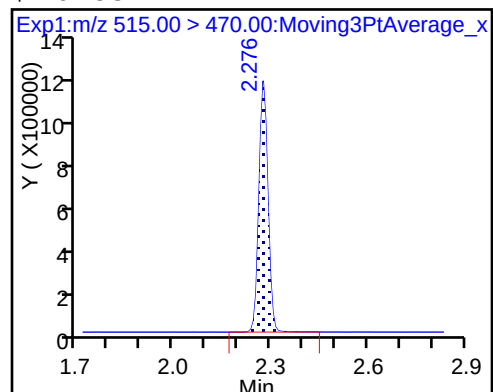
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

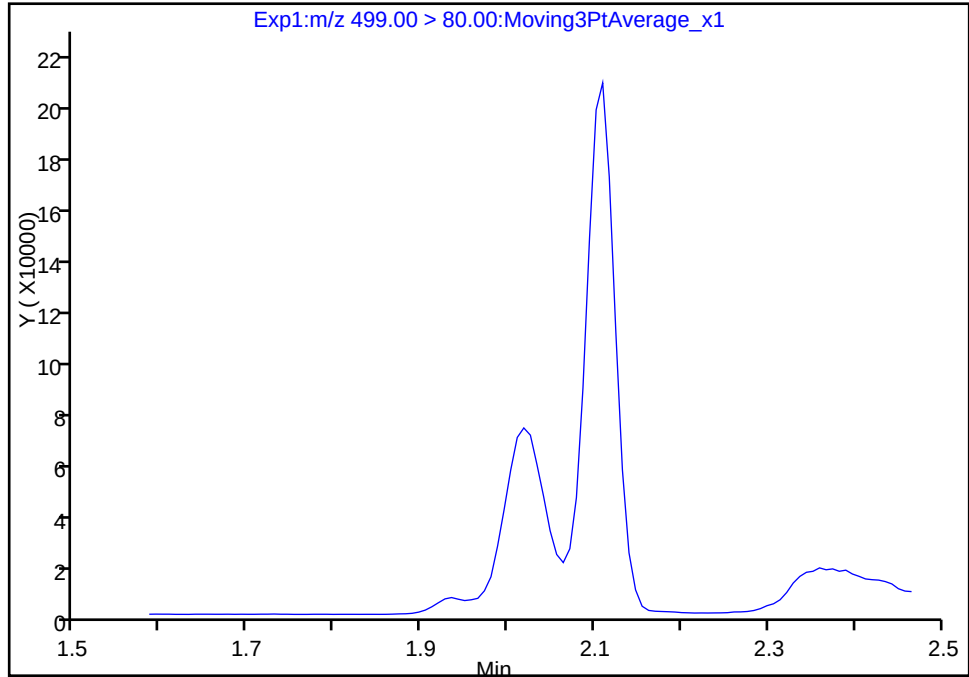
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_004.d
Injection Date: 31-Oct-2017 11:44:43 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

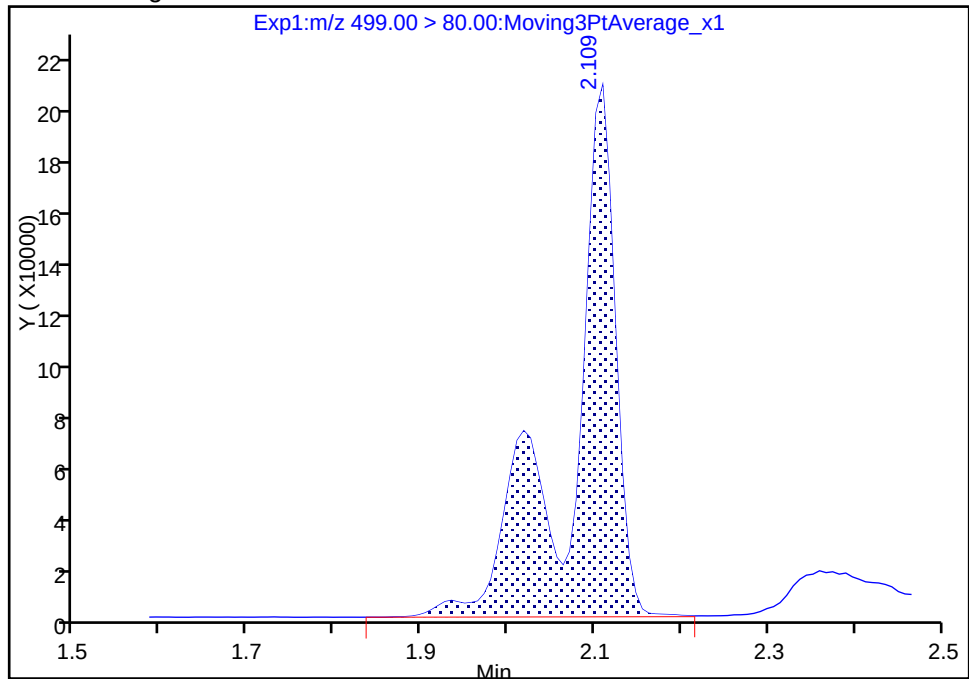
Not Detected
Expected RT: 2.11

Processing Integration Results



RT: 2.11
Area: 763610
Amount: 3.802819
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 31-Oct-2017 12:19:42

Audit Action: Assigned Compound ID

Audit Reason: Assign Peak

TestAmerica Sacramento

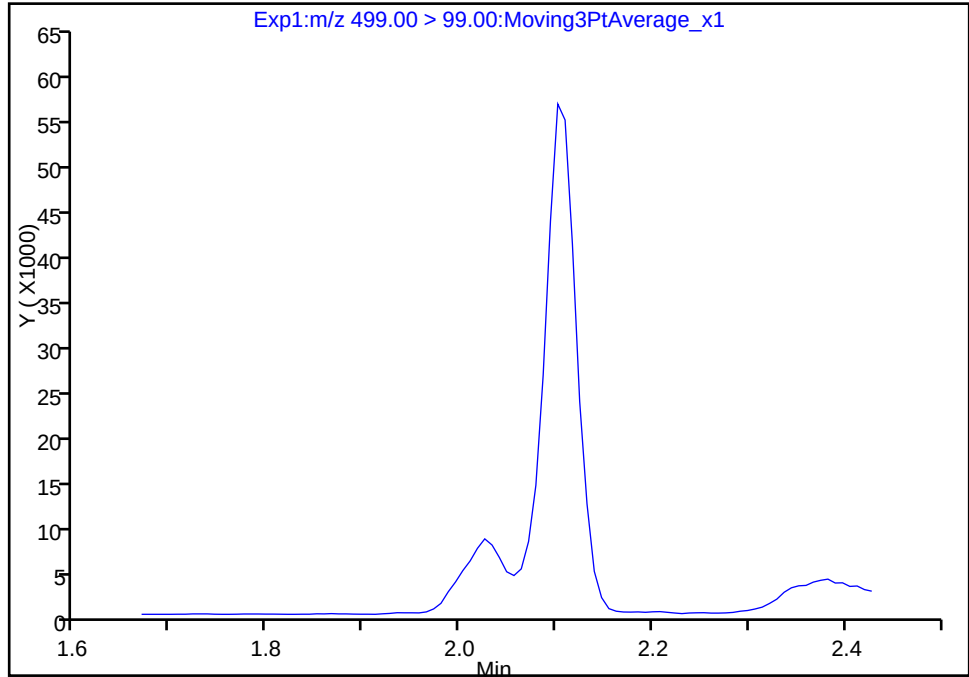
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_004.d
Injection Date: 31-Oct-2017 11:44:43 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

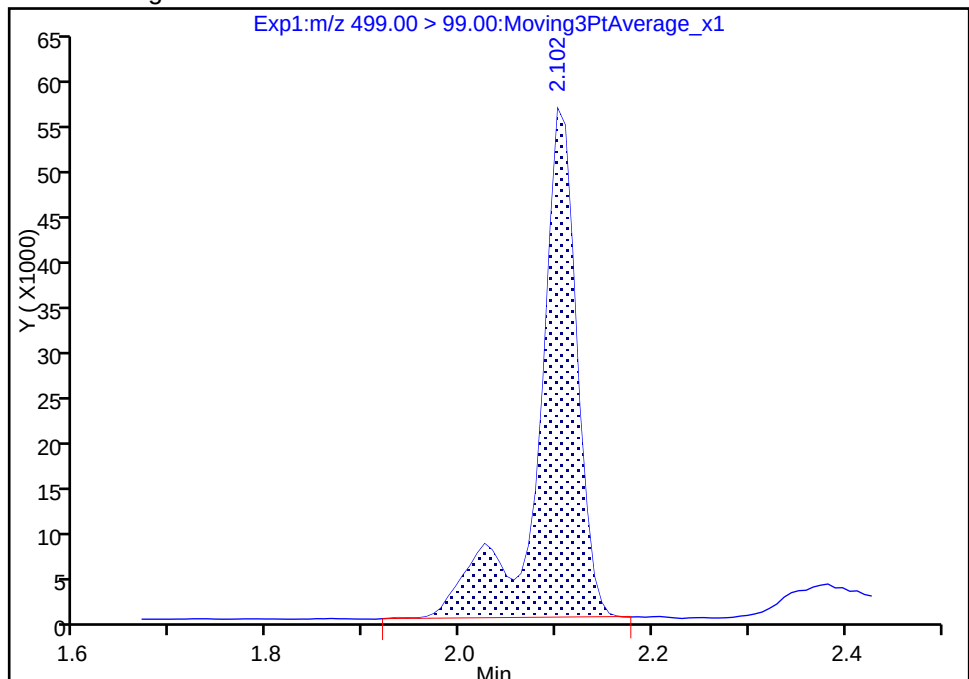
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 158418
Amount: 3.802819
Amount Units: ng/ml



Reviewer: phomsophat, 31-Oct-2017 12:20:04

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

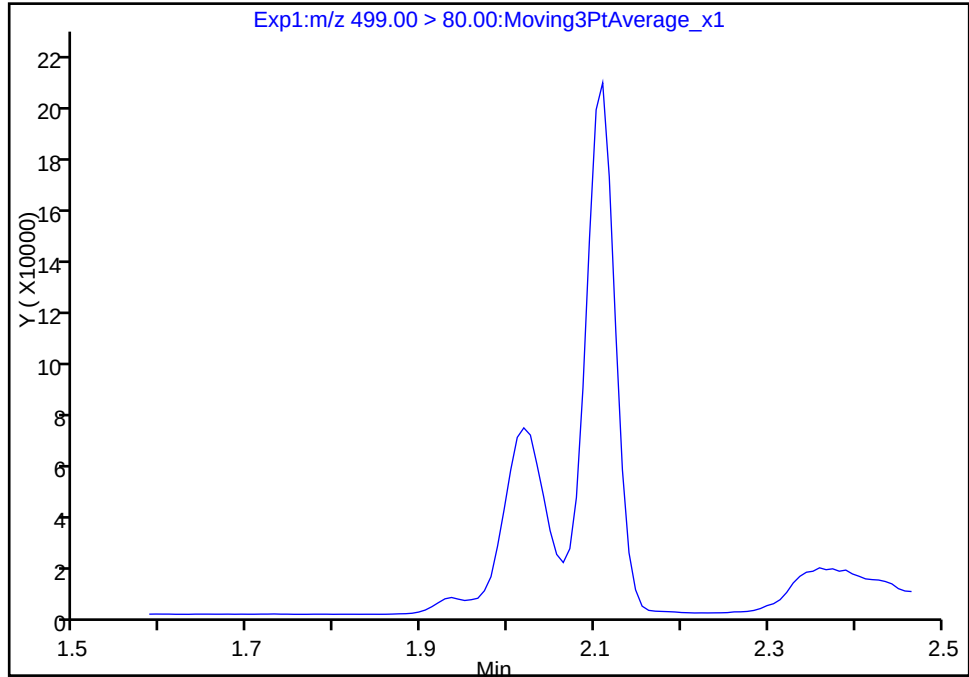
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_004.d
Injection Date: 31-Oct-2017 11:44:43 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

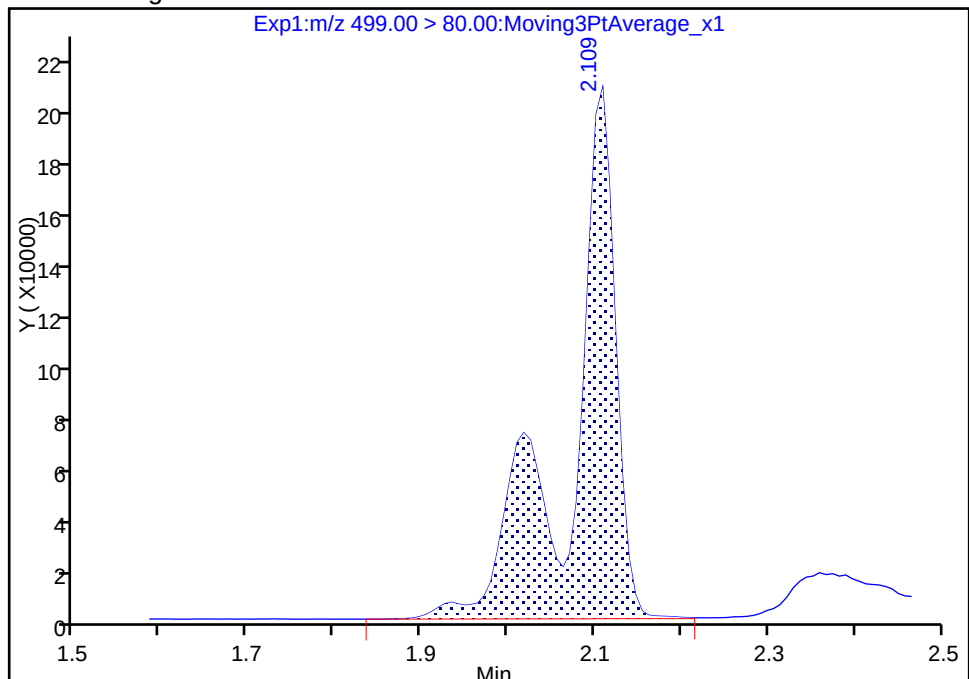
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 763610
Amount: 3.802819
Amount Units: ng/ml



Reviewer: phomsophat, 31-Oct-2017 12:20:04

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_005.d
 Lims ID: IC L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 31-Oct-2017 11:49:28 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\20171031-49808.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 31-Oct-2017 15:26:03 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK004

First Level Reviewer: phomsophat

Date: 31-Oct-2017 13:18:33

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	1.405	-0.001	1.000	4905442	21.6		1994	
298.90 > 99.00	1.404	1.405	-0.001	1.000	3389563		1.45(0.00-0.00)	3096	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.528	-0.003	1.000	3170056	9.46		3619	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	614703	2.20		120	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.678	-0.001	1.000	2492517	6.93		2875	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.863	0.003		2968175	10.0		2970	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.864	0.002	1.000	1273846	4.61		38.8	
413.00 > 169.00	1.866	1.864	0.002	1.000	684504		1.86(0.00-0.00)	40.5	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.107	0.002		6337478	28.7		4510	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	1824729	8.90		289	M
499.00 > 99.00	2.109	2.109	0.0	1.000	388629		4.70(0.00-0.00)	336	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	856305	4.42		193	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2277991	9.48		5288	

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\20171031-49808.b\2017.10.31_537ICAL_005.d

Injection Date: 31-Oct-2017 11:49:28

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

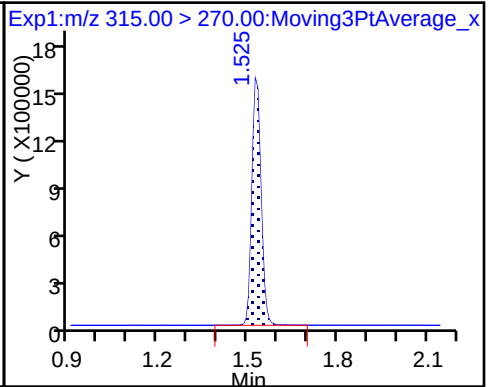
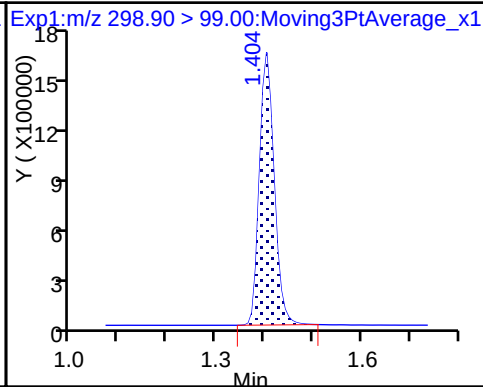
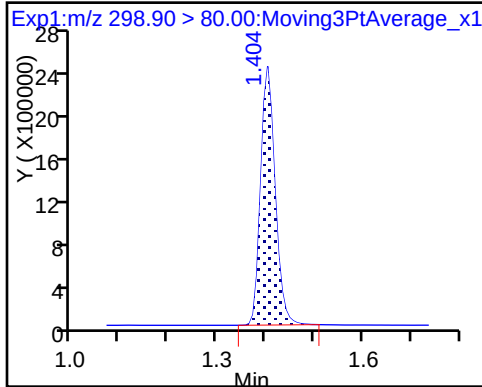
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

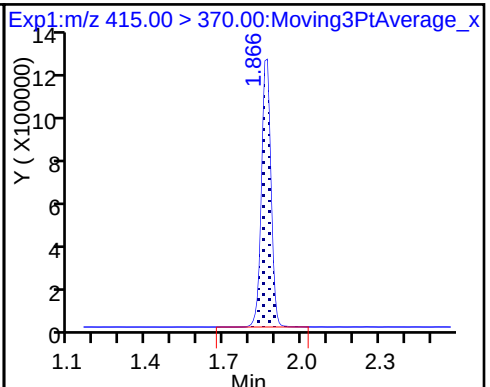
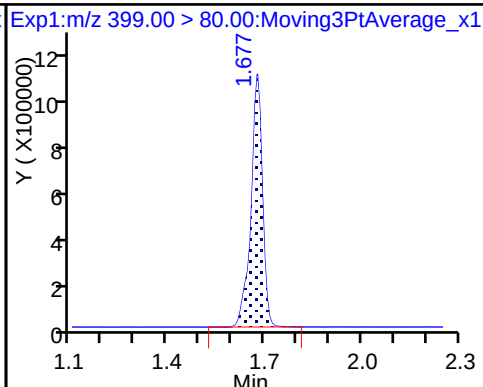
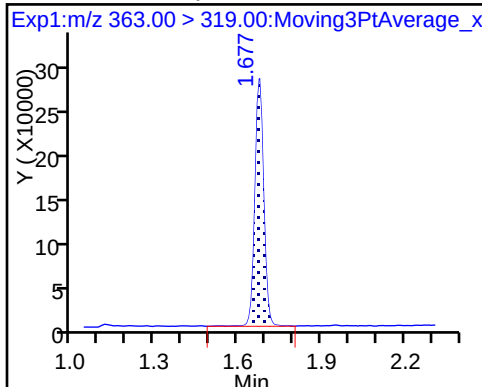
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

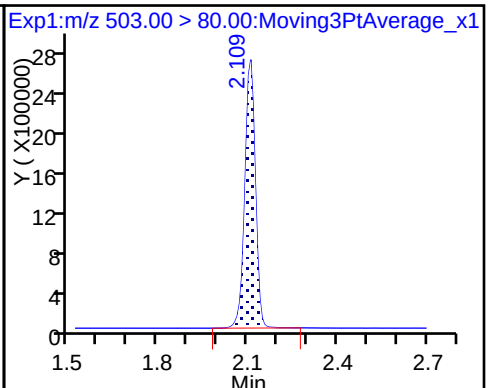
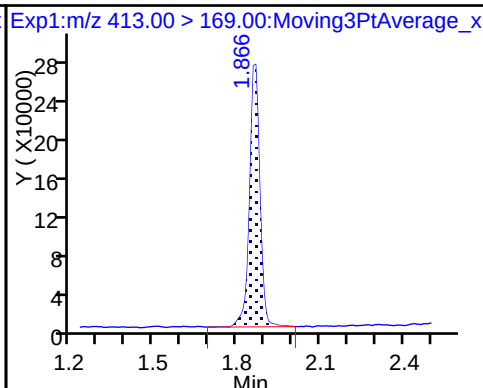
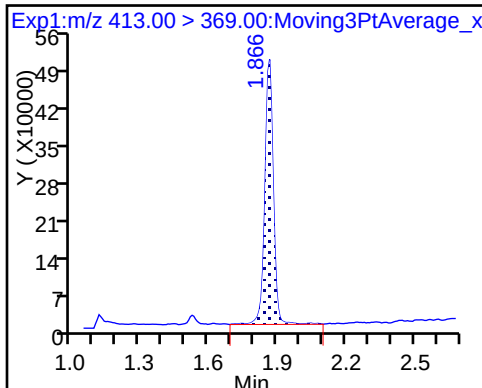
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

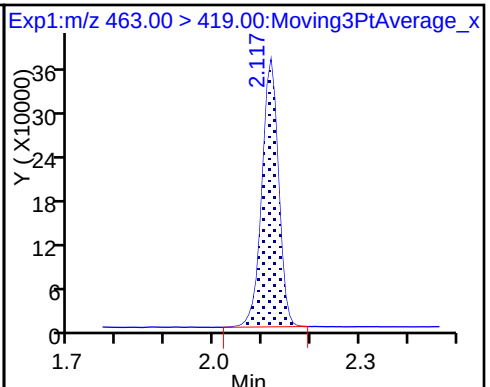
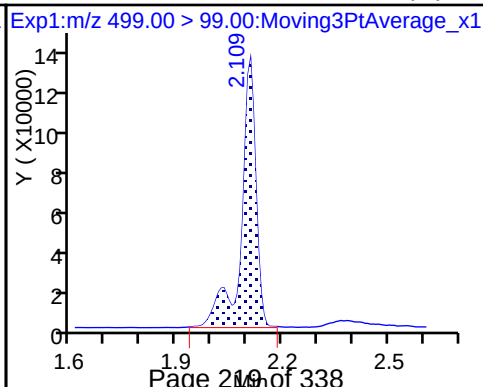
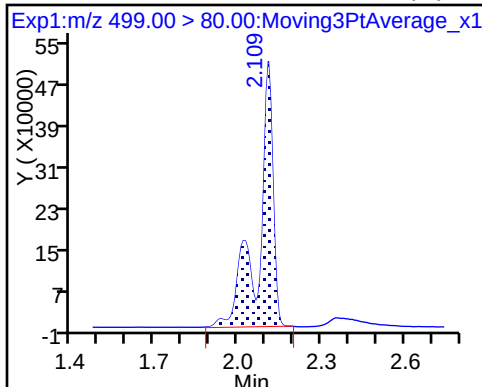
* 7 13C4 PFOS



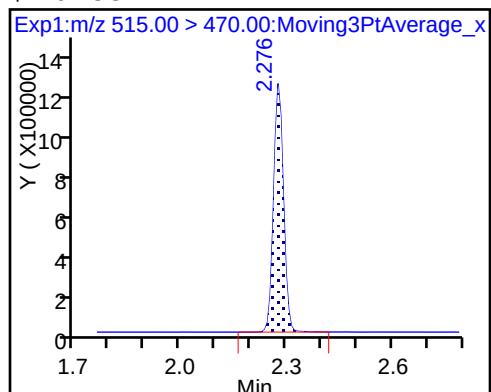
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

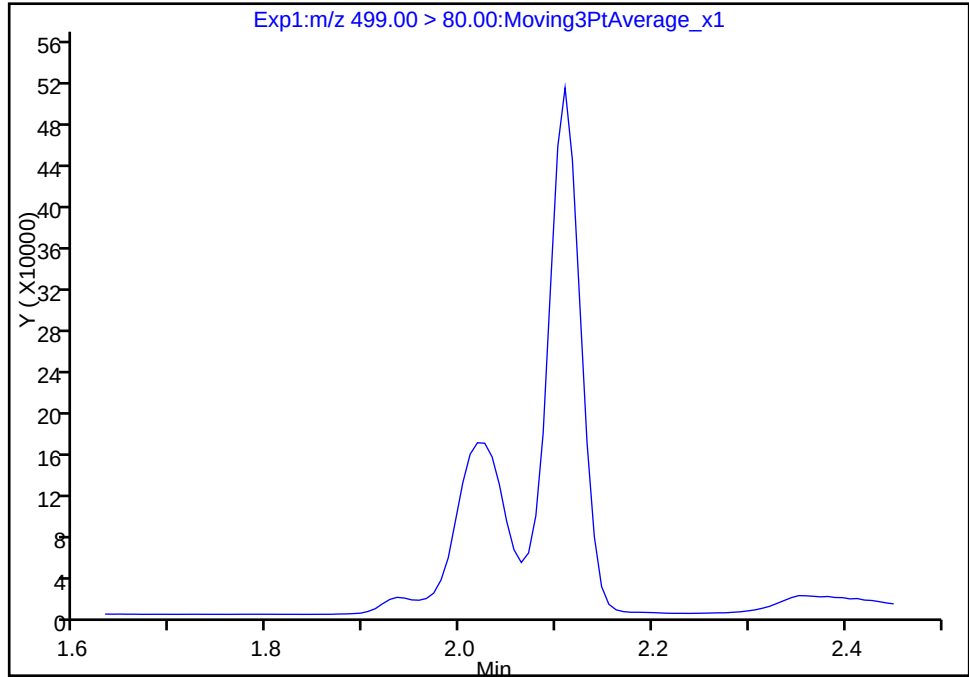
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_005.d
Injection Date: 31-Oct-2017 11:49:28 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

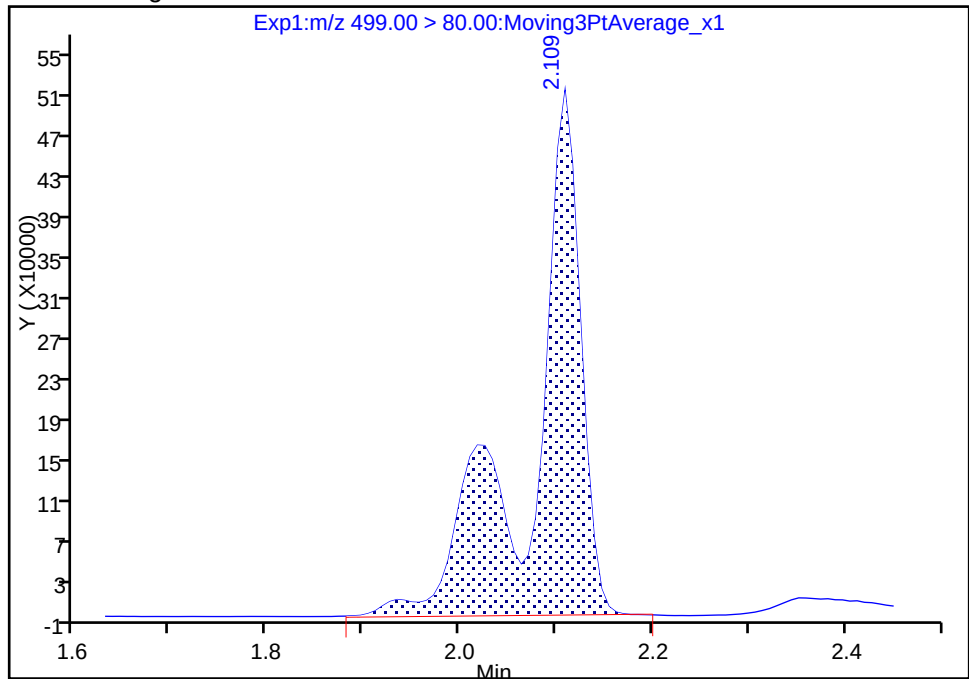
Not Detected
Expected RT: 2.11

Processing Integration Results



RT: 2.11
Area: 1824729
Amount: 8.895840
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 31-Oct-2017 13:18:03

Audit Action: Assigned Compound ID

Audit Reason: Assign Peak

TestAmerica Sacramento

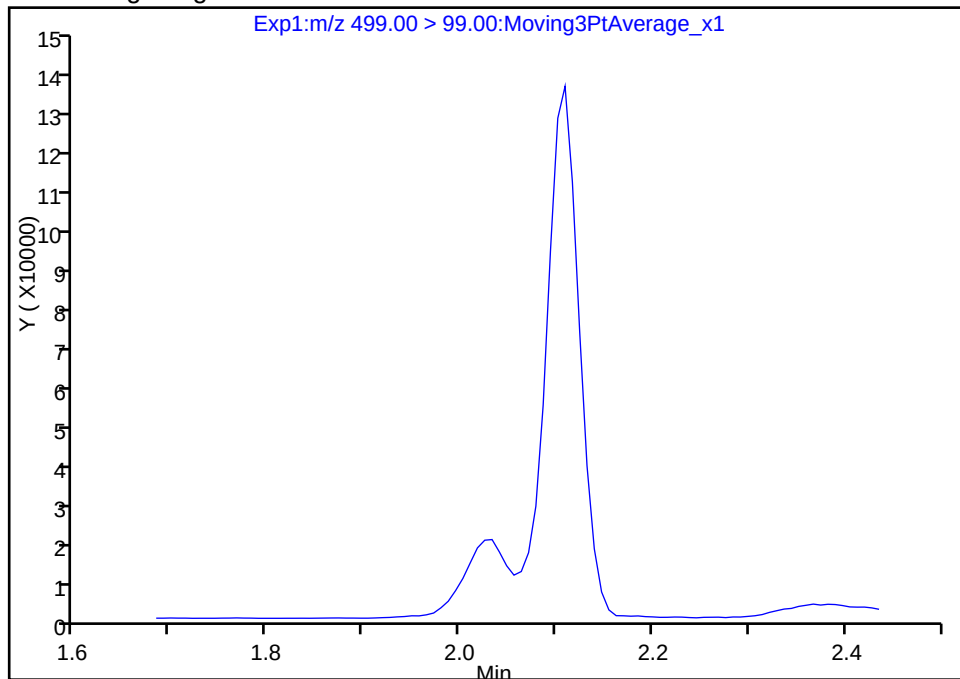
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_005.d
Injection Date: 31-Oct-2017 11:49:28 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

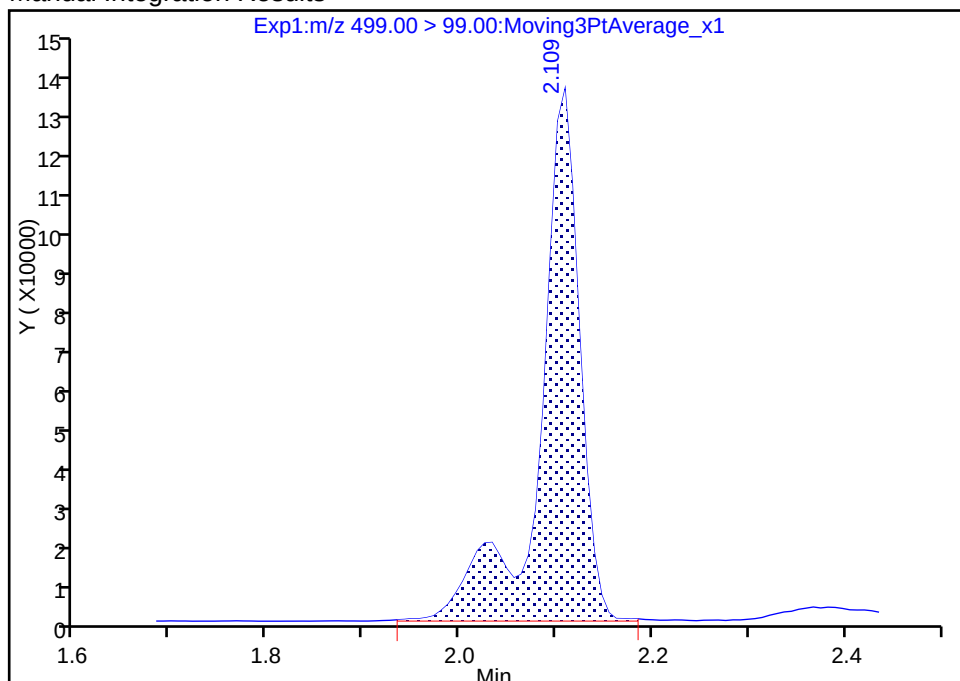
Not Detected
Expected RT: 2.11

Processing Integration Results



RT: 2.11
Area: 388629
Amount: 8.895840
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 31-Oct-2017 13:18:07

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

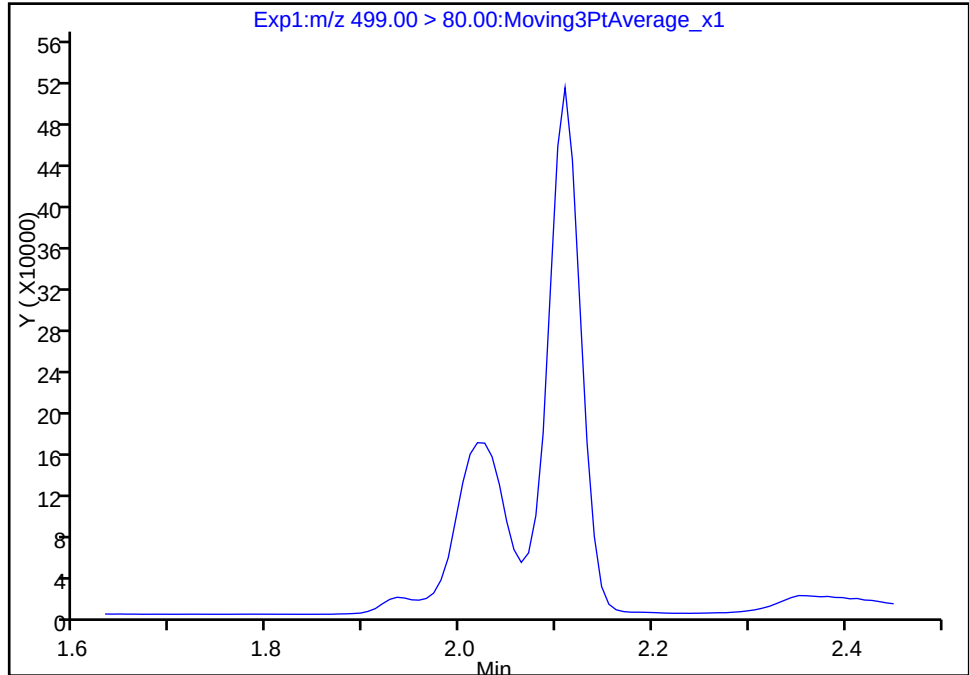
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_005.d
Injection Date: 31-Oct-2017 11:49:28 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

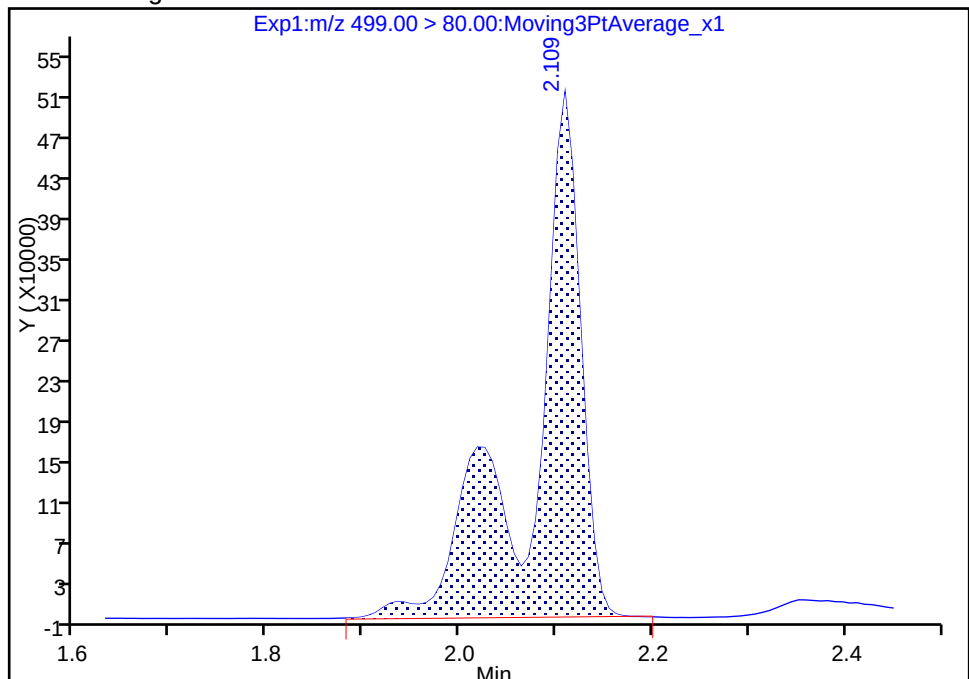
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 1824729
Amount: 8.895840
Amount Units: ng/ml



Reviewer: phomsophat, 31-Oct-2017 13:18:15

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_006.d
 Lims ID: IC L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 31-Oct-2017 11:54:13 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\20171031-49808.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 31-Oct-2017 15:26:04 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK004

First Level Reviewer: phomsophat

Date: 31-Oct-2017 13:19:26

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	1.405	-0.001	1.000	9915456	46.4		2784	
298.90 > 99.00	1.404	1.405	-0.001	1.000	7375640		1.34(0.00-0.00)	4222	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.528	0.005	1.000	3137333	9.71		3516	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	1311091	4.87		257	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.678	-0.001	1.000	5615014	15.8		4292	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.863	0.003		2864400	10.0		2870	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.864	0.002	1.000	2643153	9.92		83.8	
413.00 > 169.00	1.866	1.864	0.002	1.000	1411735		1.87(0.00-0.00)	90.1	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.107	0.002		6253426	28.7		4891	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	3990091	19.7		546	M
499.00 > 99.00	2.109	2.109	0.0	1.000	831932		4.80(0.00-0.00)	594	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	1835636	9.82		397	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2228390	9.61		5084	

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\20171031-49808.b\2017.10.31_537ICAL_006.d

Injection Date: 31-Oct-2017 11:54:13

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

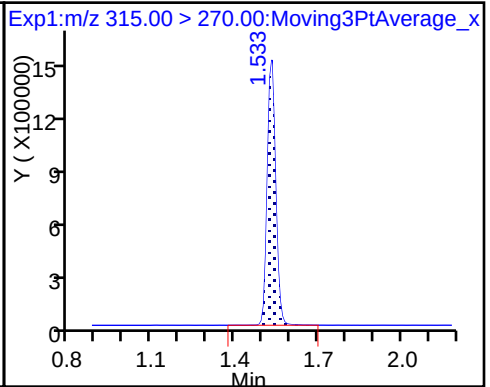
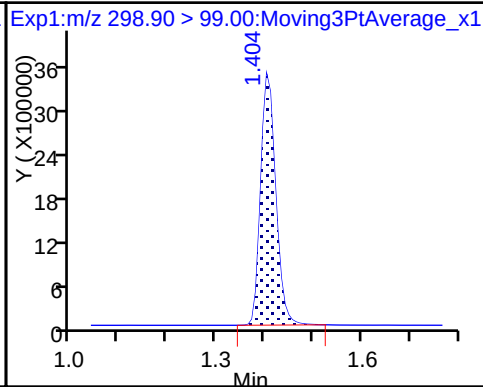
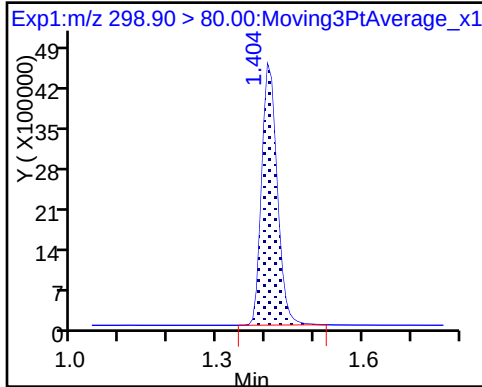
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

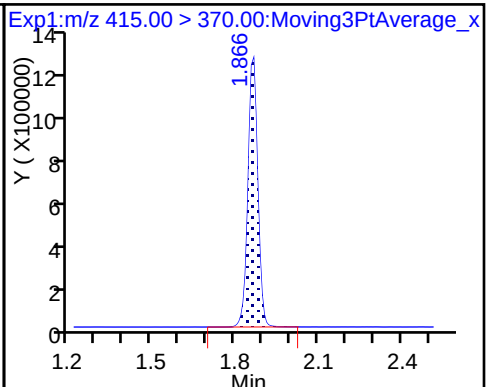
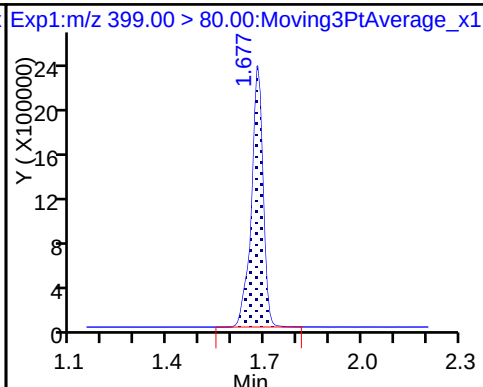
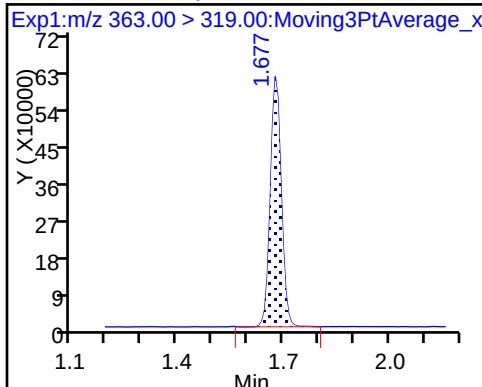
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

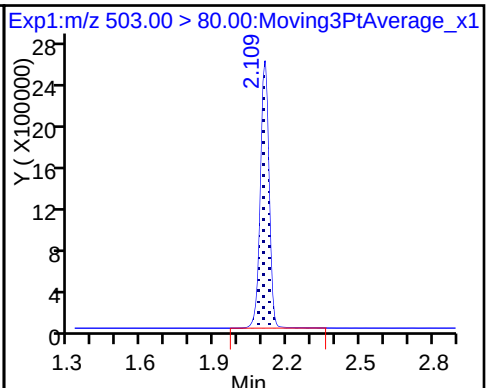
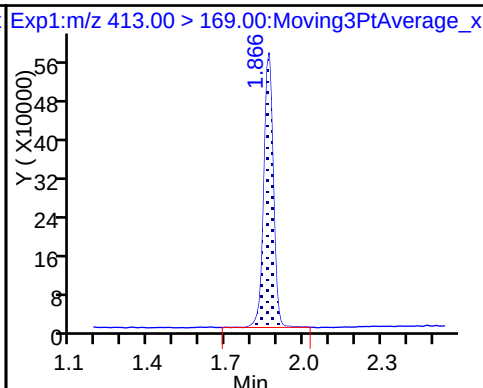
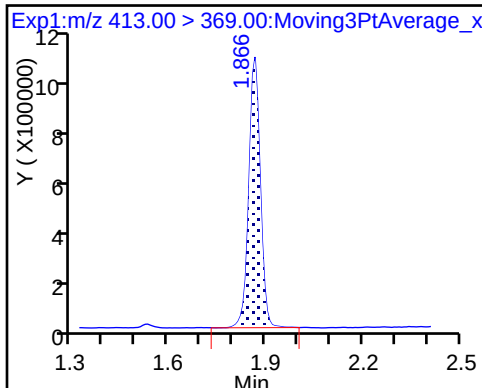
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

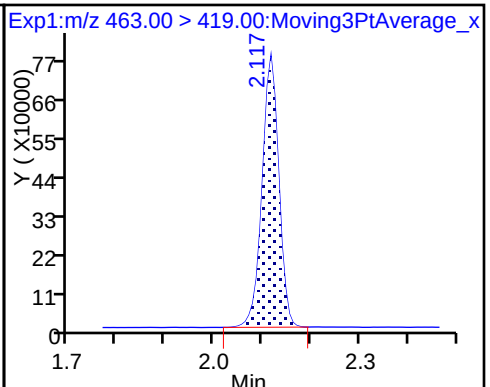
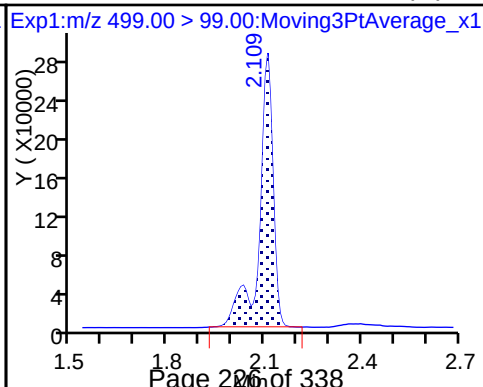
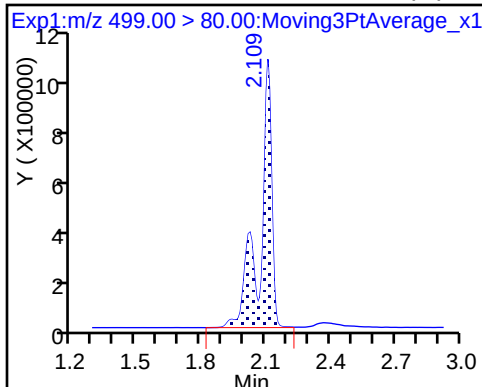
* 7 13C4 PFOS



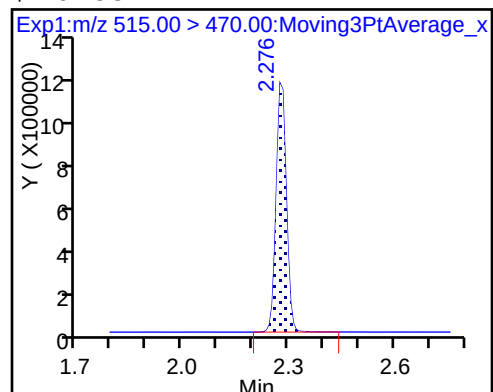
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

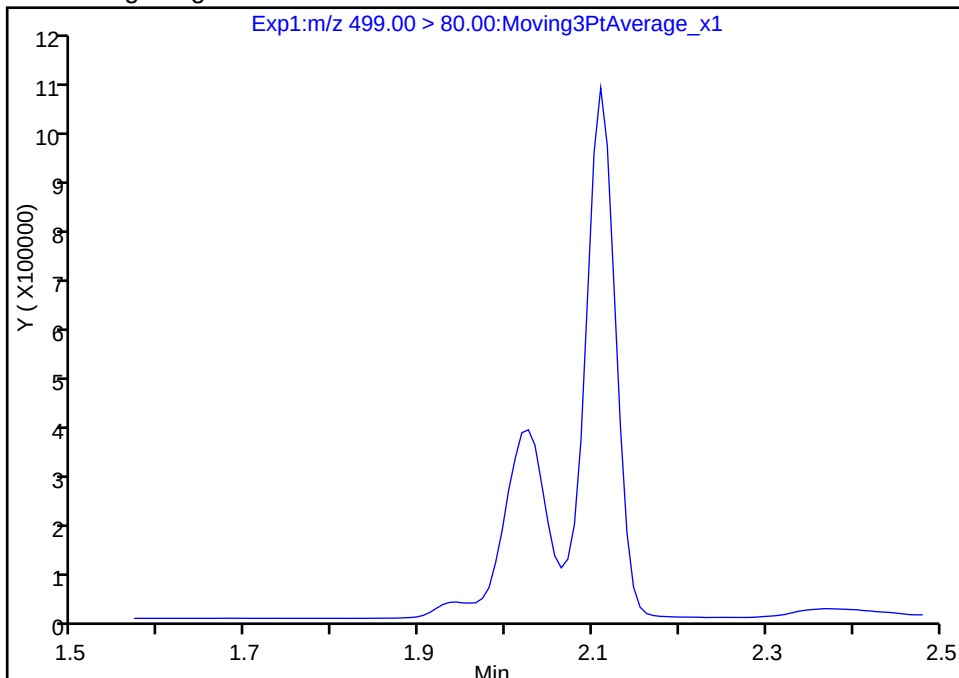
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_006.d
Injection Date: 31-Oct-2017 11:54:13 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

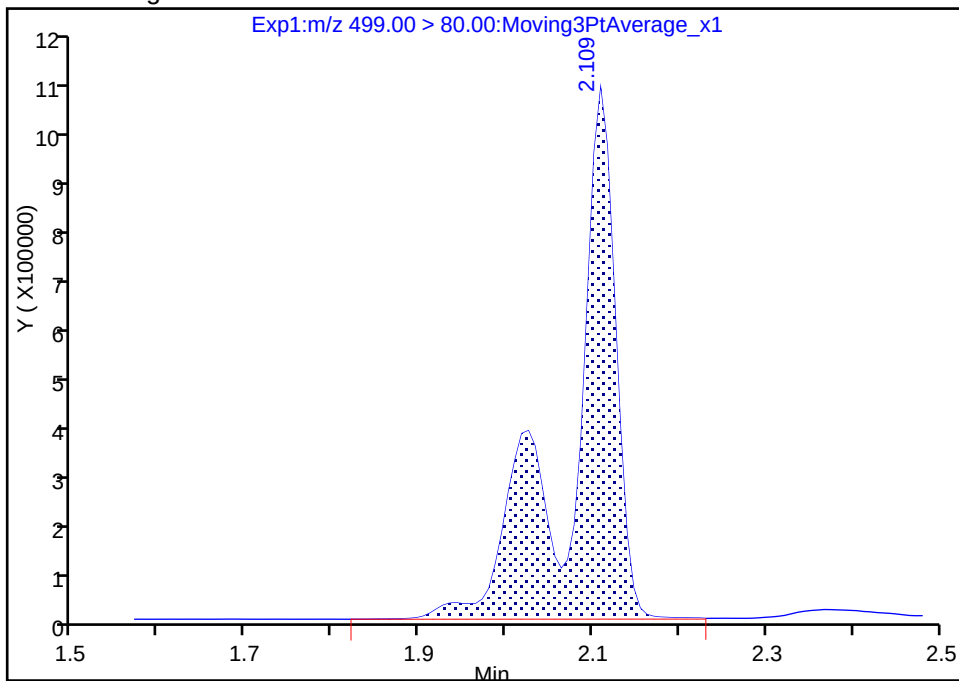
Not Detected
Expected RT: 2.11

Processing Integration Results



RT: 2.11
Area: 3990091
Amount: 19.713777
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 31-Oct-2017 13:18:39

Audit Action: Assigned Compound ID

Audit Reason: Assign Peak

TestAmerica Sacramento

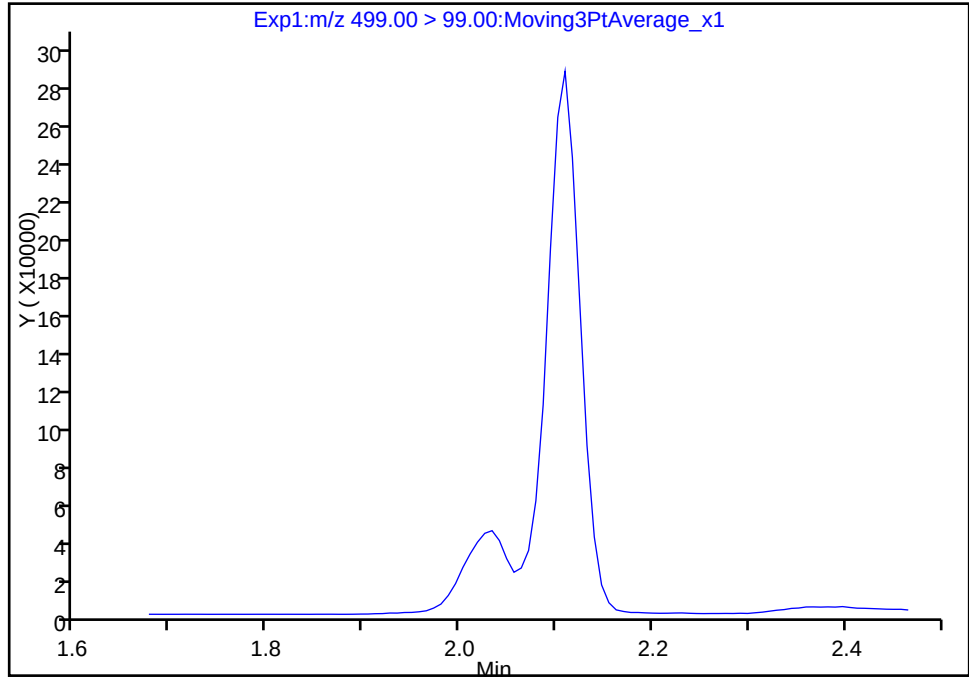
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_006.d
Injection Date: 31-Oct-2017 11:54:13 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

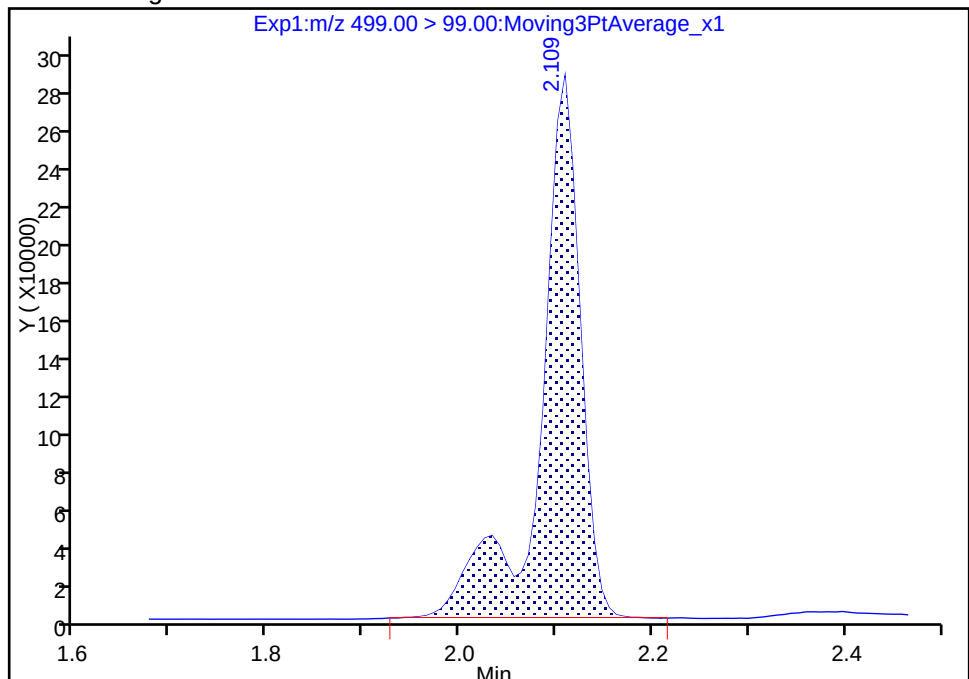
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 831932
Amount: 19.713777
Amount Units: ng/ml



Reviewer: phomsophat, 31-Oct-2017 13:18:53

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

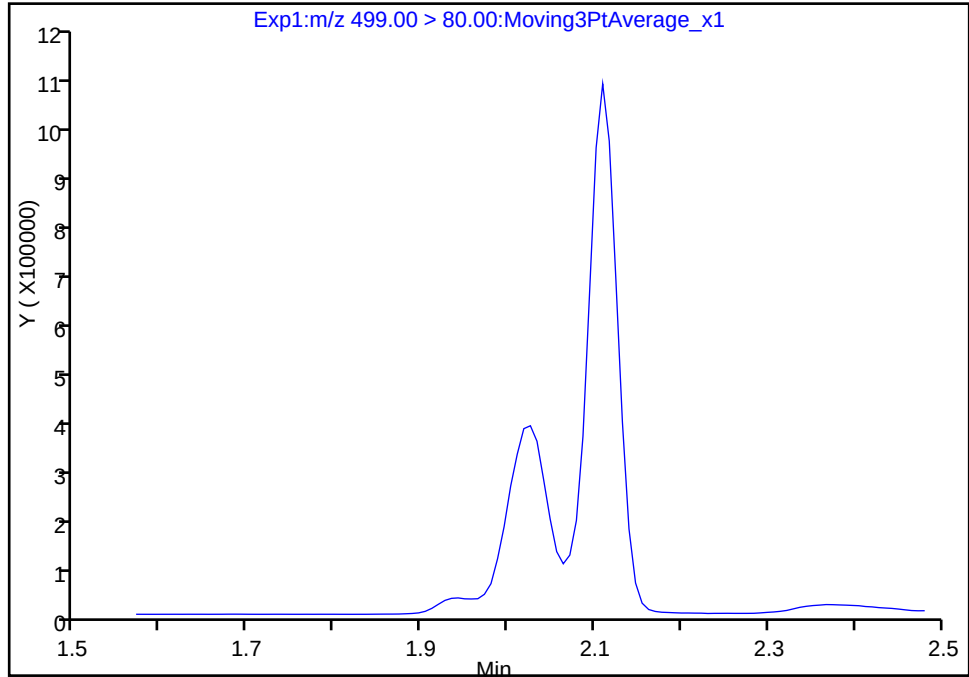
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_006.d
Injection Date: 31-Oct-2017 11:54:13 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

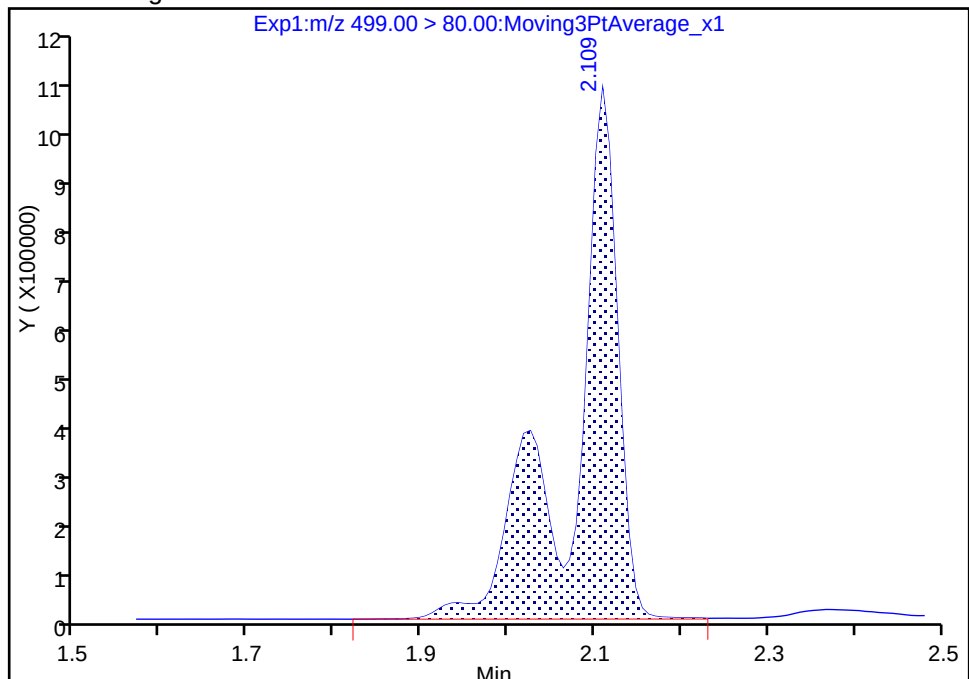
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 3990091
Amount: 19.713777
Amount Units: ng/ml



Reviewer: phomsophat, 31-Oct-2017 13:18:53

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_007.d
 Lims ID: IC L4
 Client ID:
 Sample Type: ICISAV Calib Level: 4
 Inject. Date: 31-Oct-2017 11:58:57 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\20171031-49808.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 31-Oct-2017 15:26:05 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK004

First Level Reviewer: phomsophat

Date: 31-Oct-2017 13:19:59

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	1.405	-0.001	1.000	16876130	88.8		2843	
298.90 > 99.00	1.404	1.405	-0.001	1.000	12859332		1.31(0.00-0.00)	3659	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.528	-0.003	1.000	3180555	10.6		3583	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	2526779	10.1		485	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.678	-0.001	1.000	10497872	30.4		4311	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		2661913	10.0		2517	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.864	-0.005	1.000	4986613	20.1		156	
413.00 > 169.00	1.859	1.864	-0.005	1.000	2700868		1.85(0.00-0.00)	194	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.107	0.002		6075693	28.7		4017	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	8030345	40.8		2995	M
499.00 > 99.00	2.109	2.109	0.0	1.000	1667728		4.82(0.00-0.00)	1040	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	3636277	20.9		740	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2223928	10.3		4842	

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\20171031-49808.b\2017.10.31_537ICAL_007.d

Injection Date: 31-Oct-2017 11:58:57

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

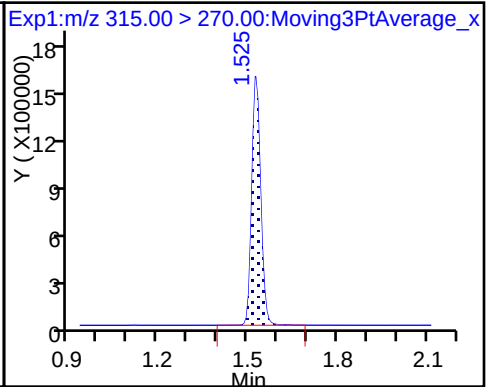
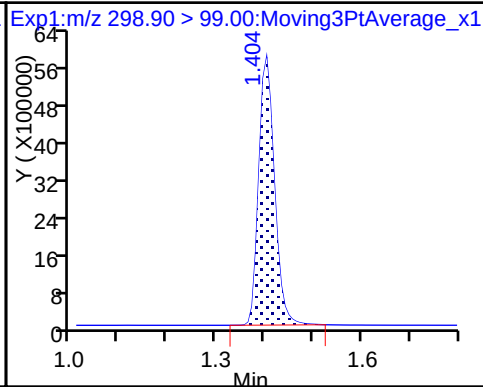
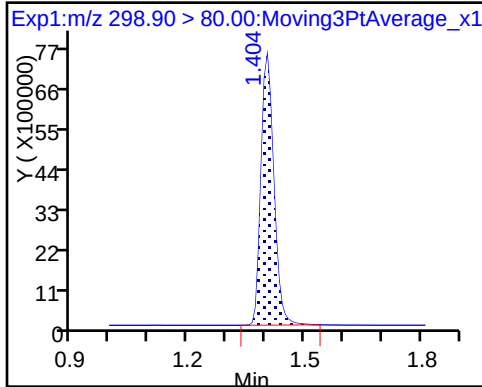
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

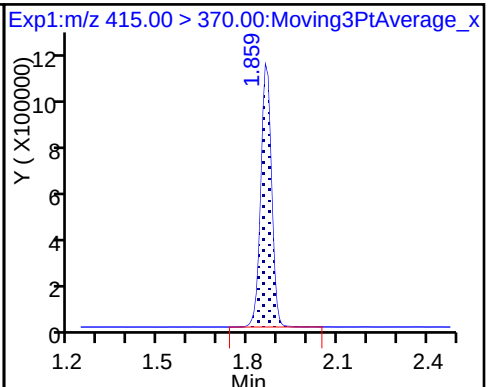
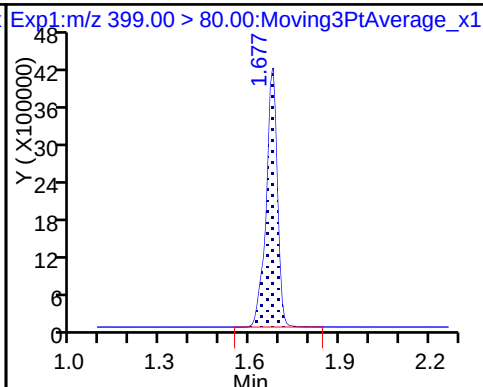
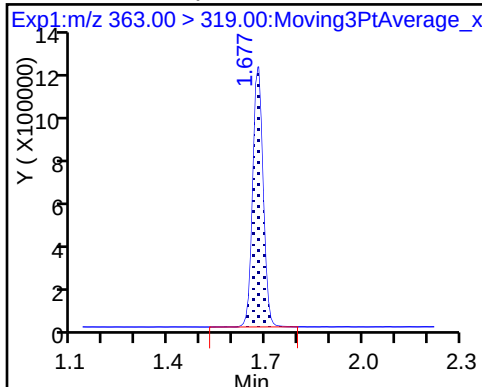
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

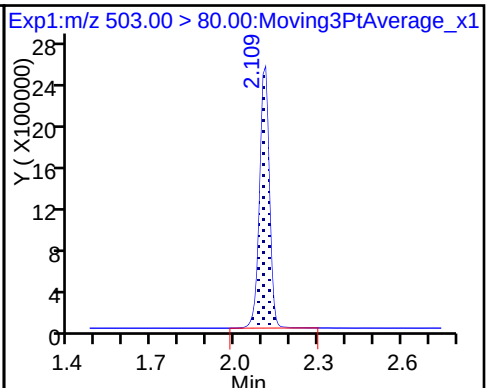
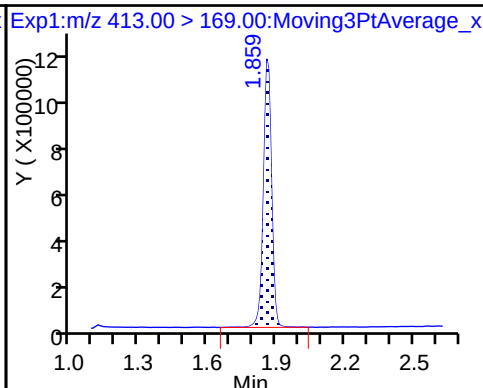
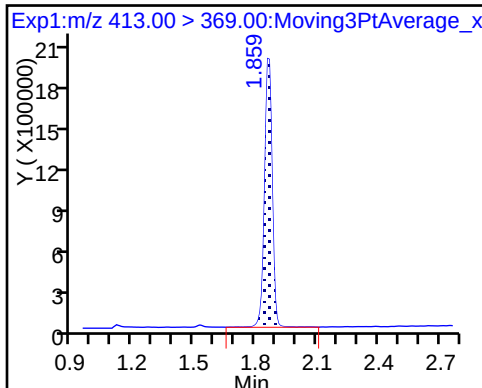
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

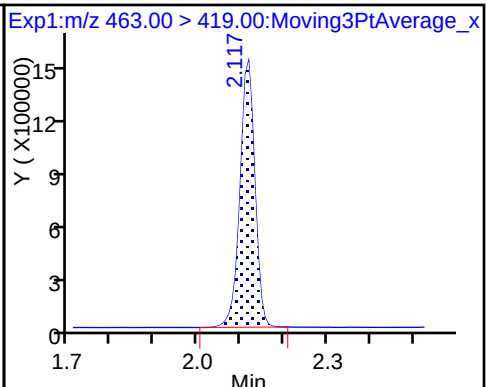
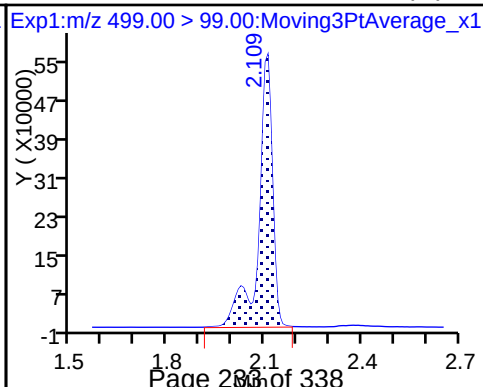
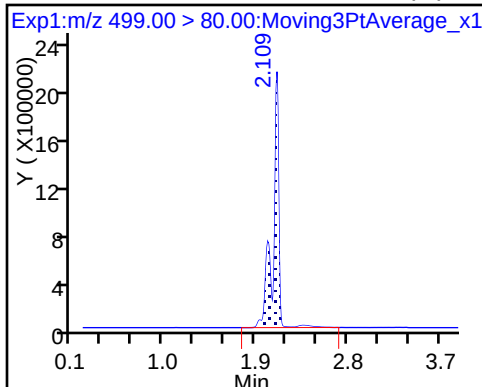
* 7 13C4 PFOS



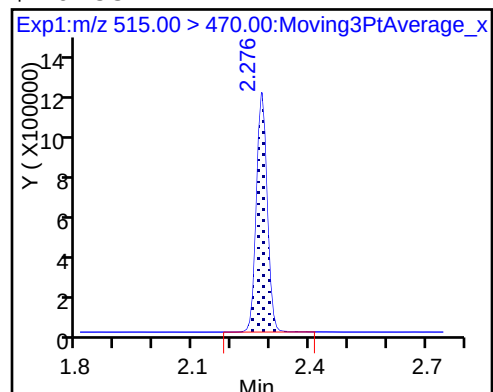
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

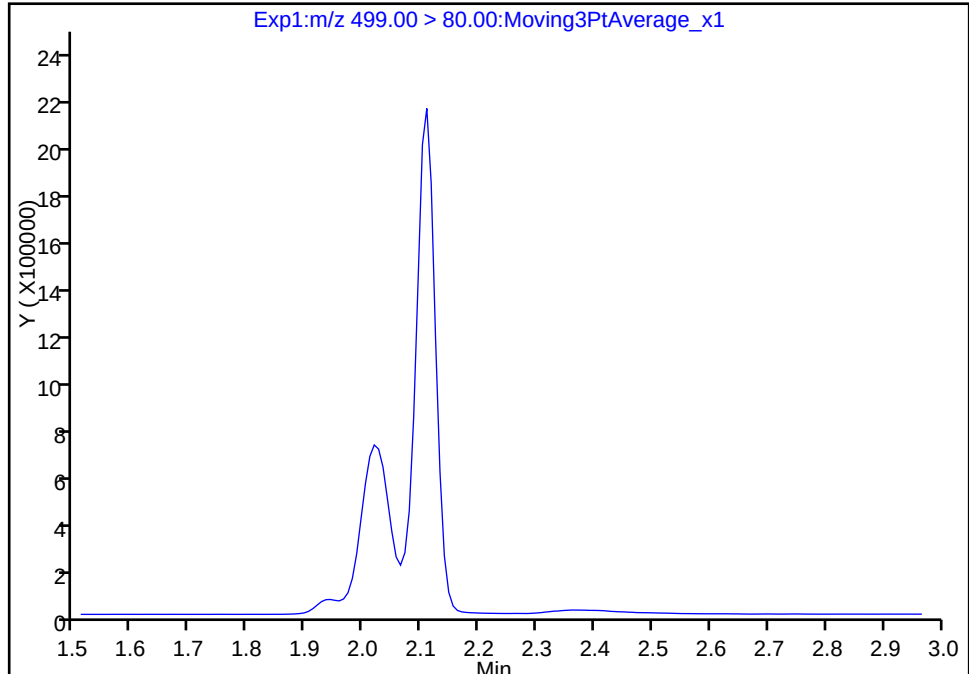
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_007.d
Injection Date: 31-Oct-2017 11:58:57 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

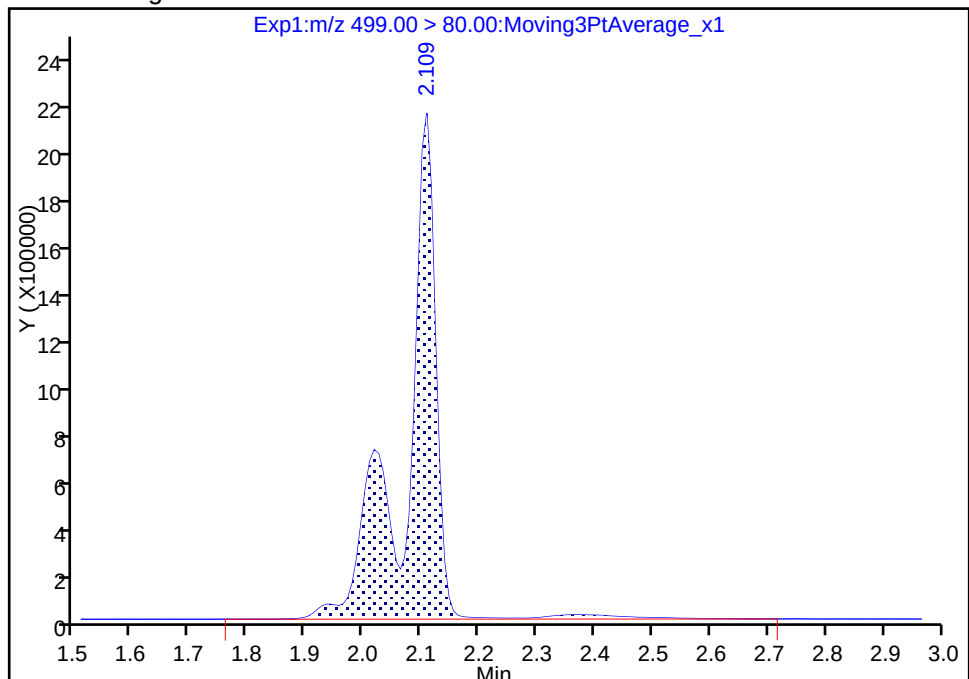
Signal: 1

Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results



RT: 2.11
Area: 8030345
Amount: 40.836023
Amount Units: ng/ml

Reviewer: phomsophat, 31-Oct-2017 13:19:34

Audit Action: Assigned Compound ID

Audit Reason: Assign Peak

TestAmerica Sacramento

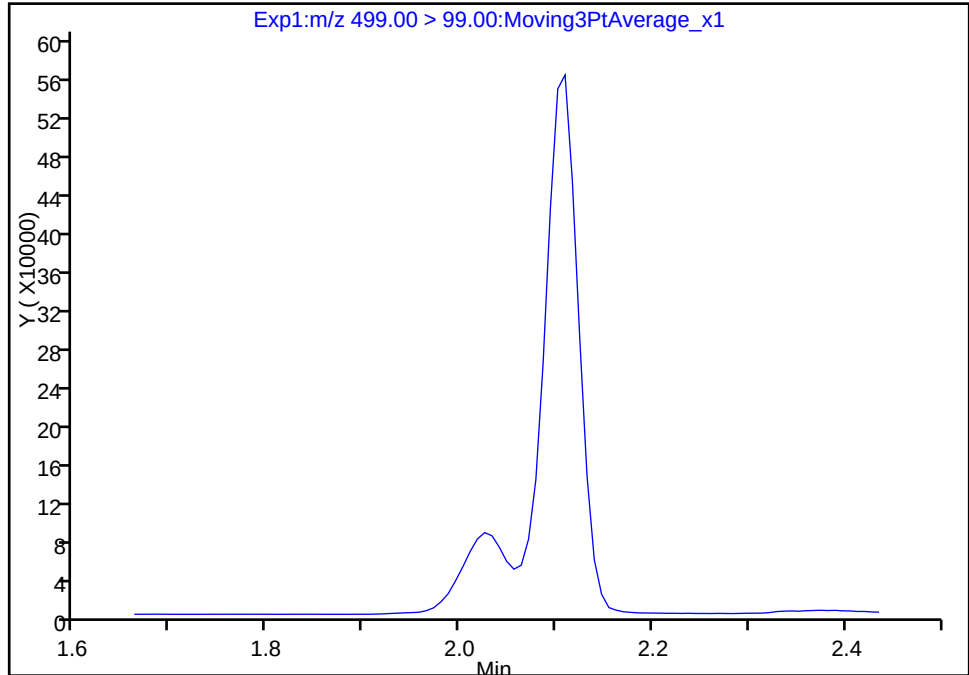
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_007.d
Injection Date: 31-Oct-2017 11:58:57 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

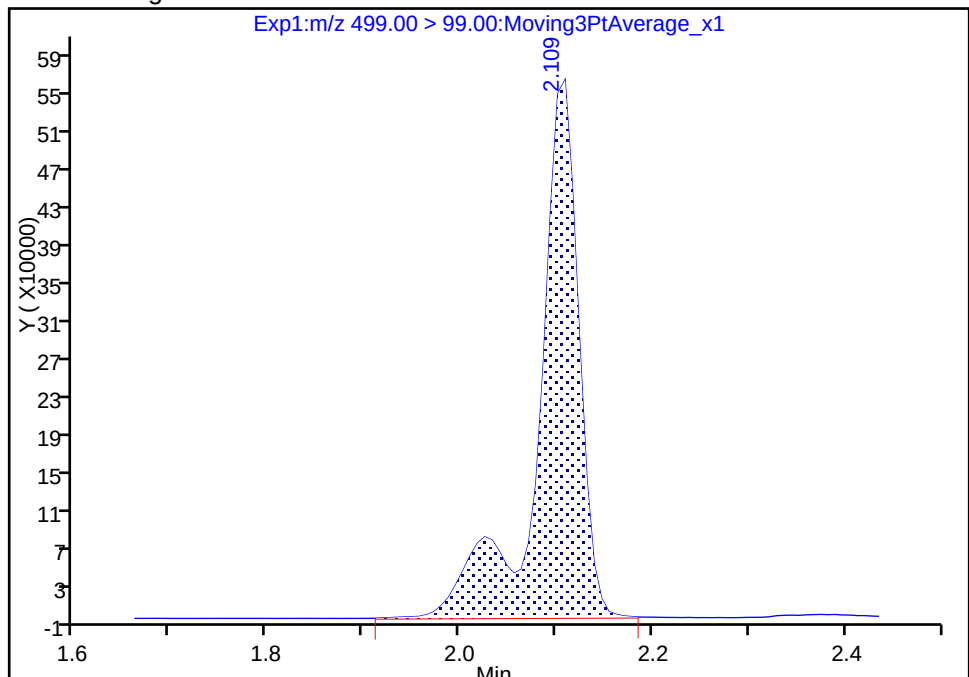
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 1667728
Amount: 40.836023
Amount Units: ng/ml



Reviewer: phomsophat, 31-Oct-2017 13:19:43

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

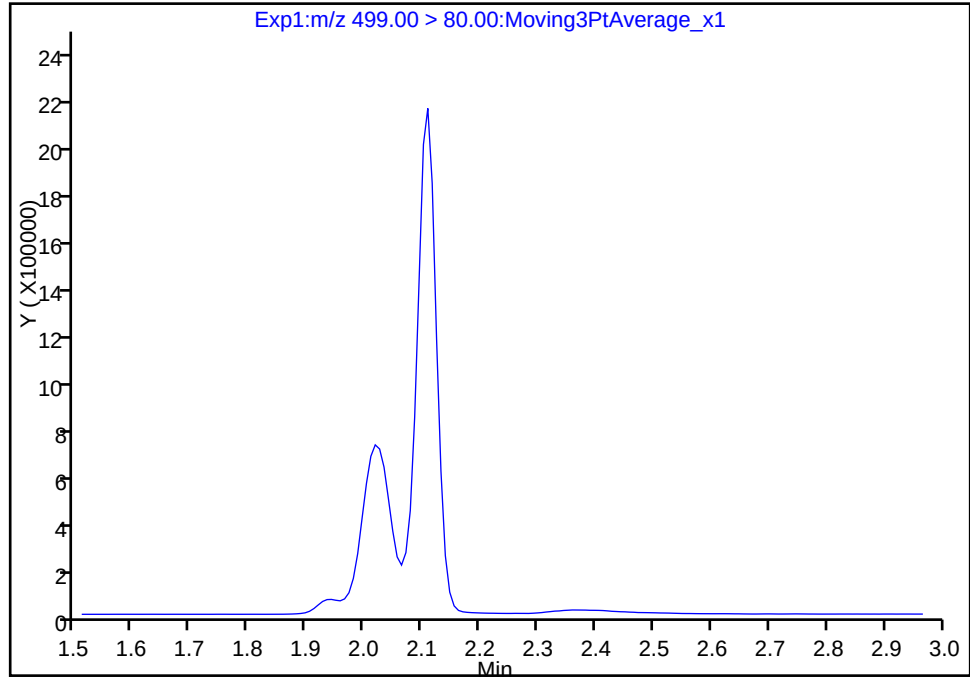
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_007.d
Injection Date: 31-Oct-2017 11:58:57 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

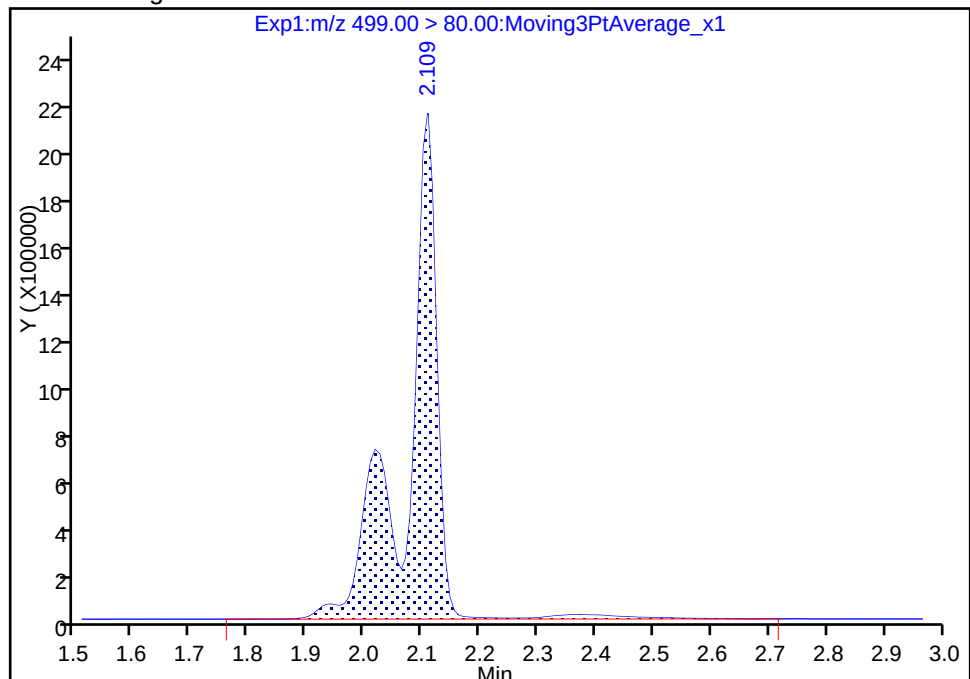
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 8030345
Amount: 40.836023
Amount Units: ng/ml



Reviewer: phomsophat, 31-Oct-2017 13:19:43

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_008.d
 Lims ID: IC L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 31-Oct-2017 12:03:42 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\20171031-49808.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 31-Oct-2017 15:26:06 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK004

First Level Reviewer: barnettj

Date: 31-Oct-2017 15:25:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.405	-0.001	1.000	21956734	133.3		2615	
298.90 > 99.00	1.404	1.405	-0.001	1.000	17051539		1.29(0.00-0.00)	3328	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.528	-0.003	1.000	3014571	10.1		3152	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	3670615	14.7		668	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.678	-0.001	1.000	14494918	43.8		4061	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		2646287	10.0		2621	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.864	-0.005	1.000	7356038	29.9		245	
413.00 > 169.00	1.859	1.864	-0.005	1.000	3978749		1.85(0.00-0.00)	284	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.107	-0.005		5827765	28.7		4187	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	11617530	61.6		3284	M
499.00 > 99.00	2.102	2.109	-0.007	1.000	2399643		4.84(0.00-0.00)	1360	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	5107150	29.6		883	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2177702	10.2		5529	

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\20171031-49808.b\2017.10.31_537ICAL_008.d

Injection Date: 31-Oct-2017 12:03:42

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

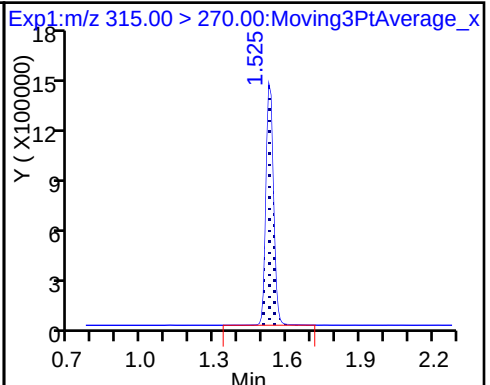
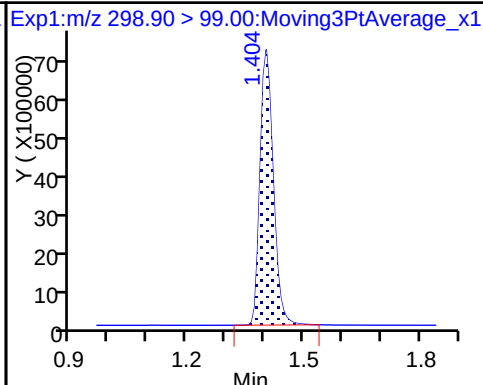
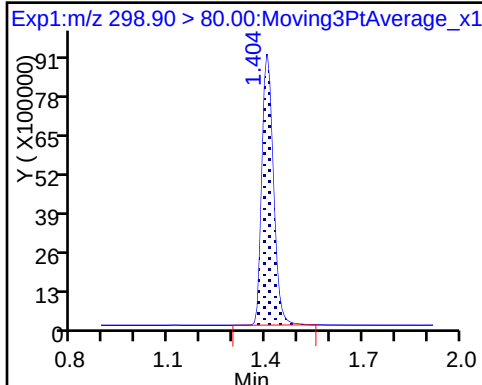
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

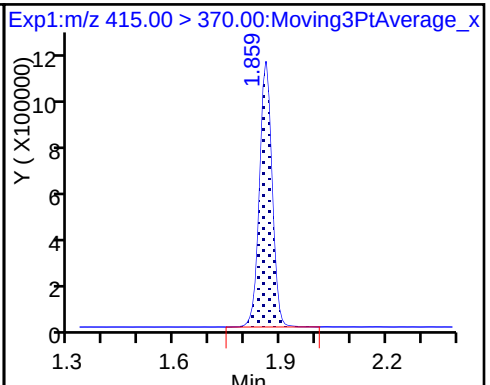
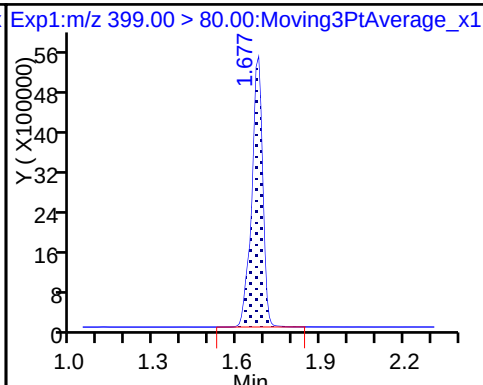
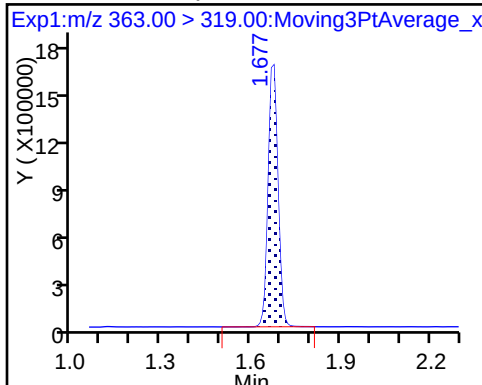
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

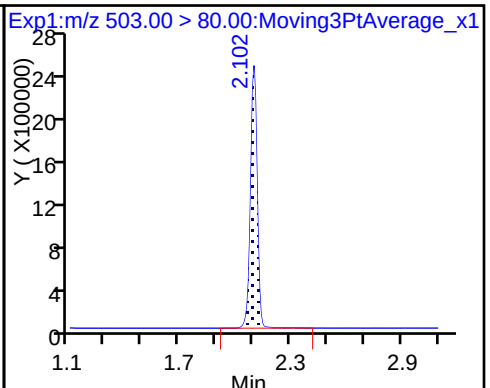
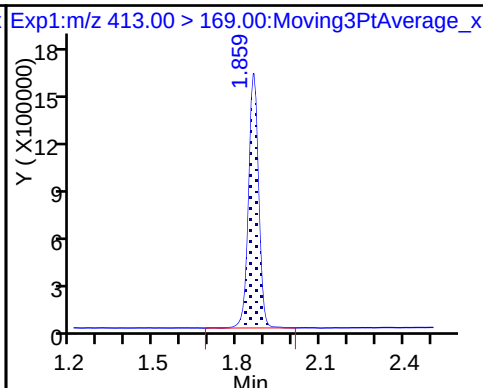
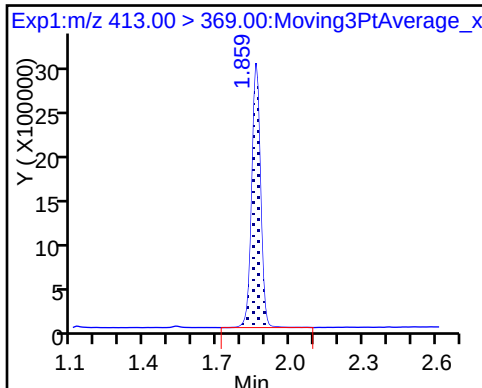
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

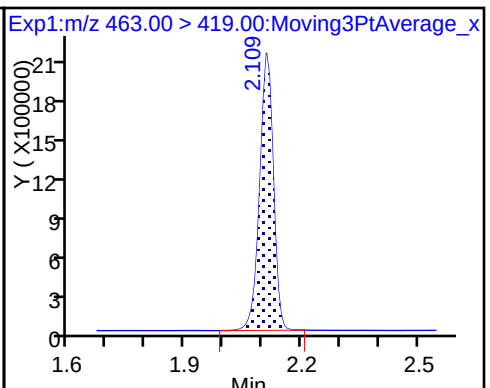
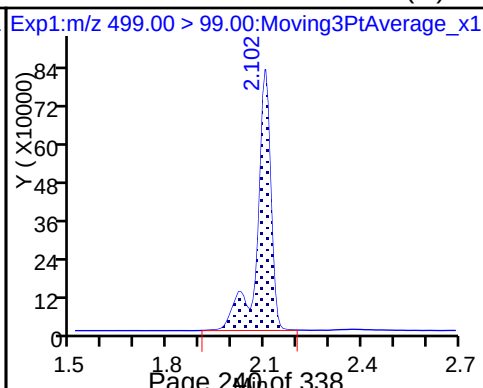
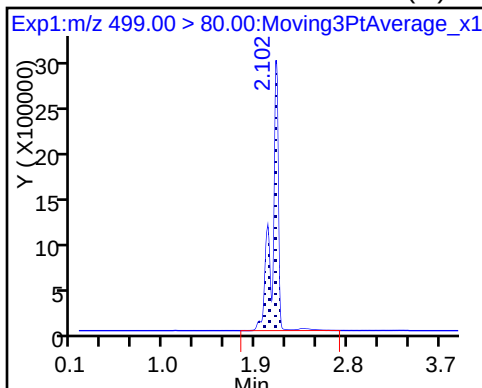
* 7 13C4 PFOS



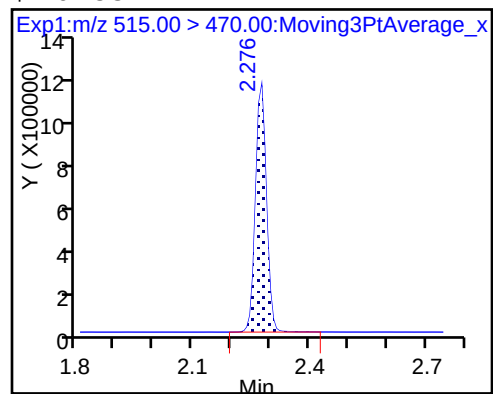
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

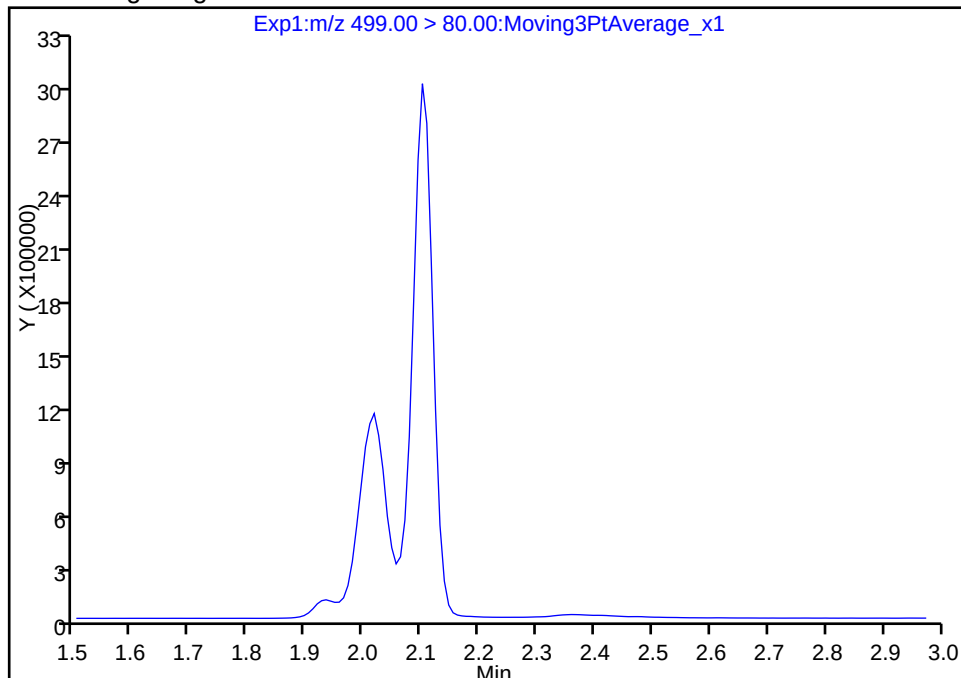
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_008.d
Injection Date: 31-Oct-2017 12:03:42 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

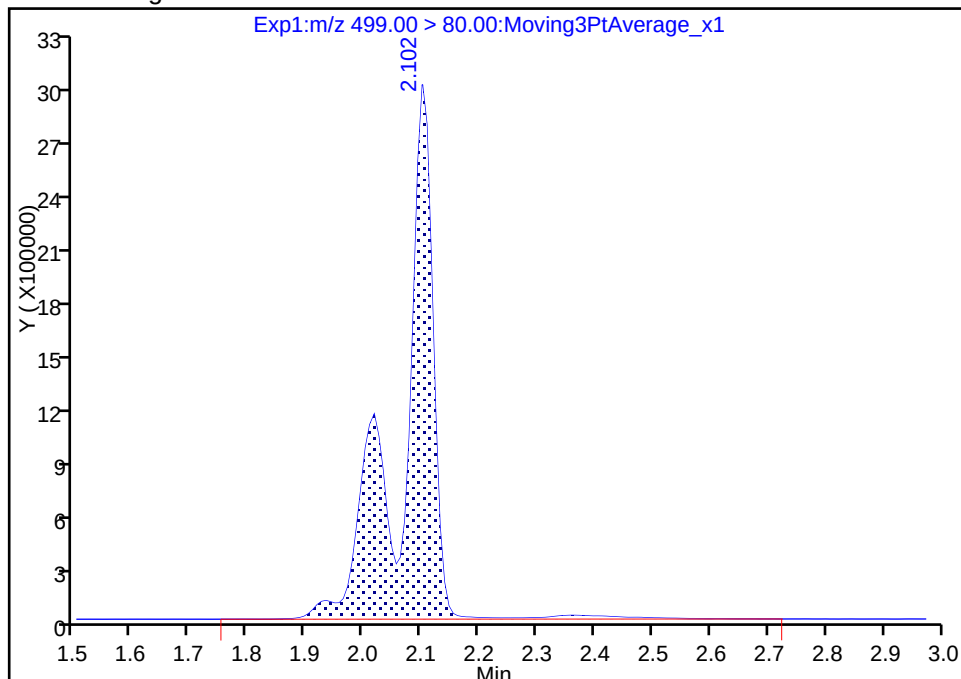
Not Detected
Expected RT: 2.11

Processing Integration Results



RT: 2.10
Area: 11617530
Amount: 61.590940
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 31-Oct-2017 13:20:08

Audit Action: Assigned Compound ID

Audit Reason: Assign Peak

TestAmerica Sacramento

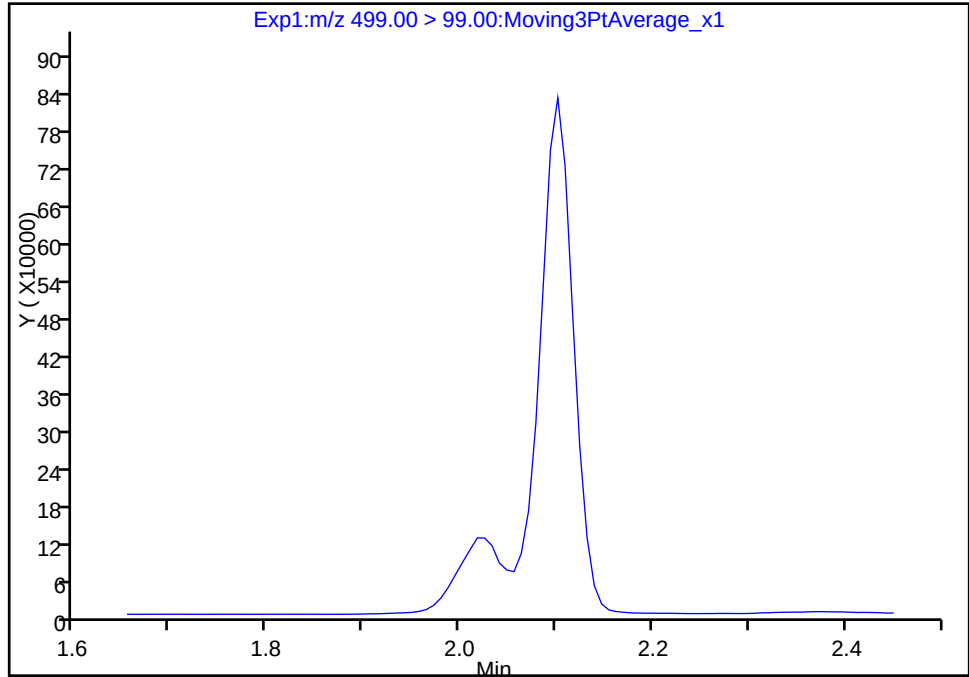
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_008.d
Injection Date: 31-Oct-2017 12:03:42 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

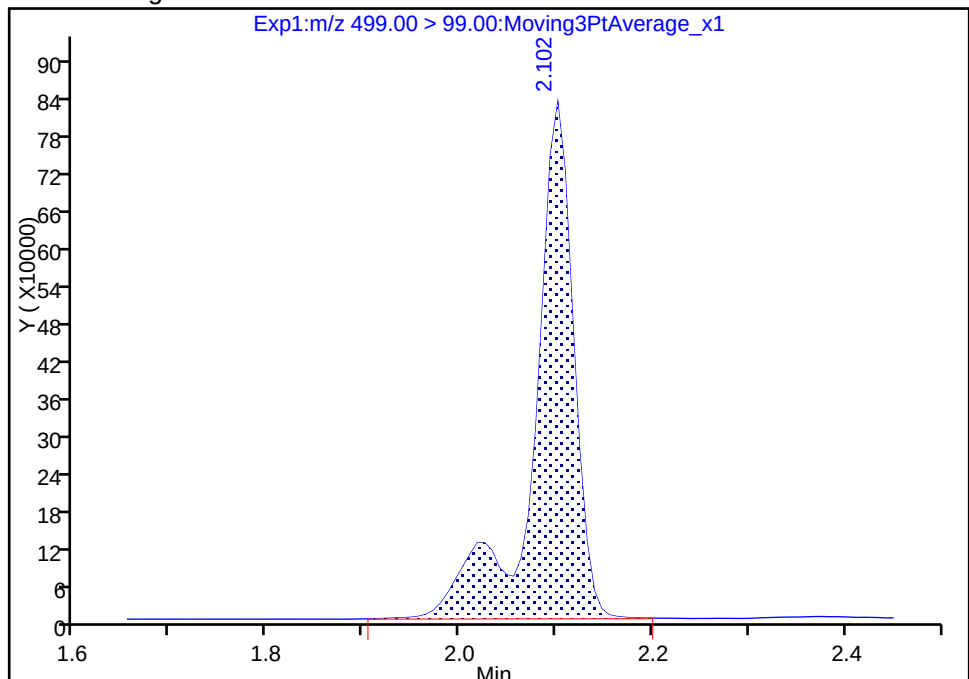
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 2399643
Amount: 61.590940
Amount Units: ng/ml



Reviewer: phomsophat, 31-Oct-2017 13:20:16

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

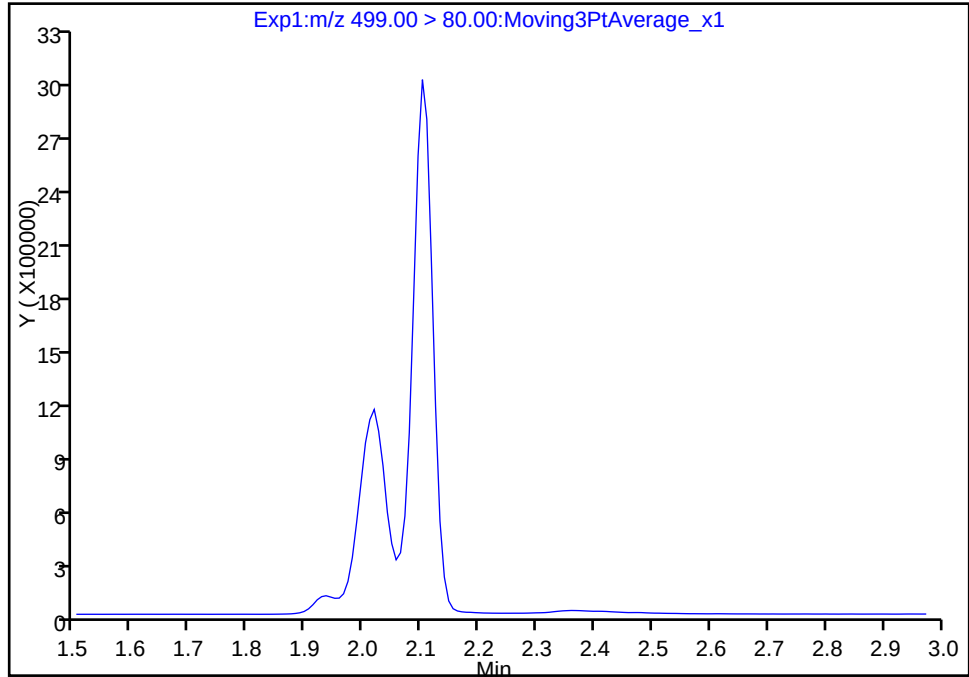
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_008.d
Injection Date: 31-Oct-2017 12:03:42 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

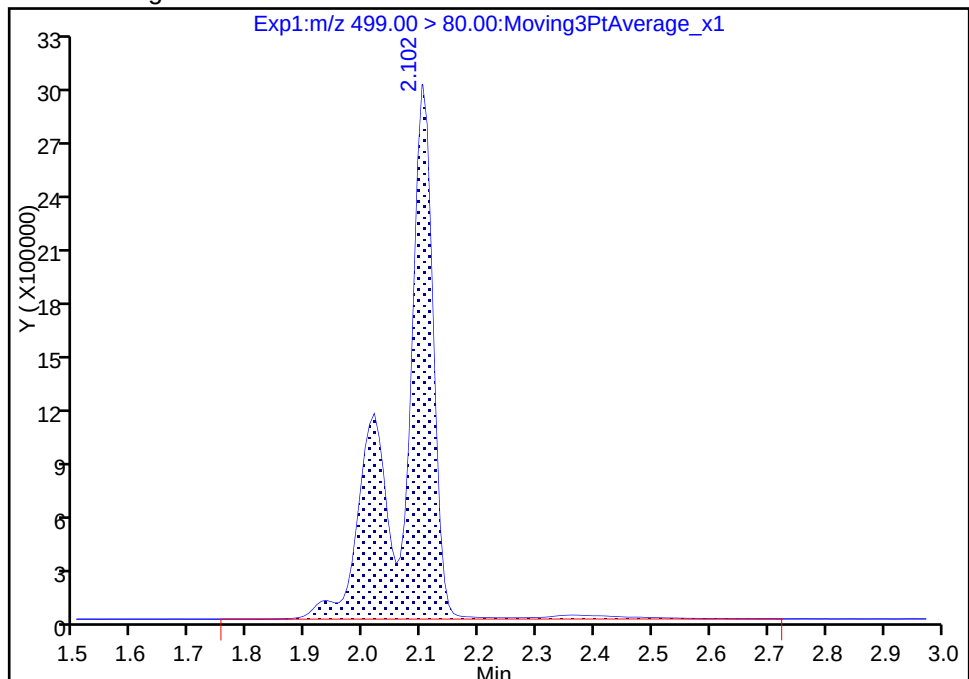
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 11617530
Amount: 61.590940
Amount Units: ng/ml



Reviewer: phomsophat, 31-Oct-2017 13:20:16

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d
 Lims ID: IC L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 31-Oct-2017 12:08:27 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\20171031-49808.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 31-Oct-2017 15:26:07 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK004

First Level Reviewer: phomsophat

Date: 31-Oct-2017 13:22:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.405	0.006	1.000	27165476	181.8		2852	
298.90 > 99.00	1.411	1.405	0.006	1.000	20927026		1.30(0.00-0.00)	3478	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.528	0.005	1.000	3112456	10.3		3699	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	5107421	20.2		924	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.678	0.006	1.000	19137035	56.3		4304	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.863	0.003		2688817	10.0		2801	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.864	0.002	1.000	10031020	40.1		364	
413.00 > 169.00	1.866	1.864	0.002	1.000	5458522		1.84(0.00-0.00)	401	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.107	0.002		5986294	28.7		4032	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	15763683	81.4		1273	
499.00 > 99.00	2.109	2.109	0.0	1.000	3417607		4.61(0.00-0.00)	1767	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	7198655	41.0		1257	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.277	0.007	1.000	2306925	10.6		5660	

Reagents:

LC537-L6_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Injection Date: 31-Oct-2017 12:08:27

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

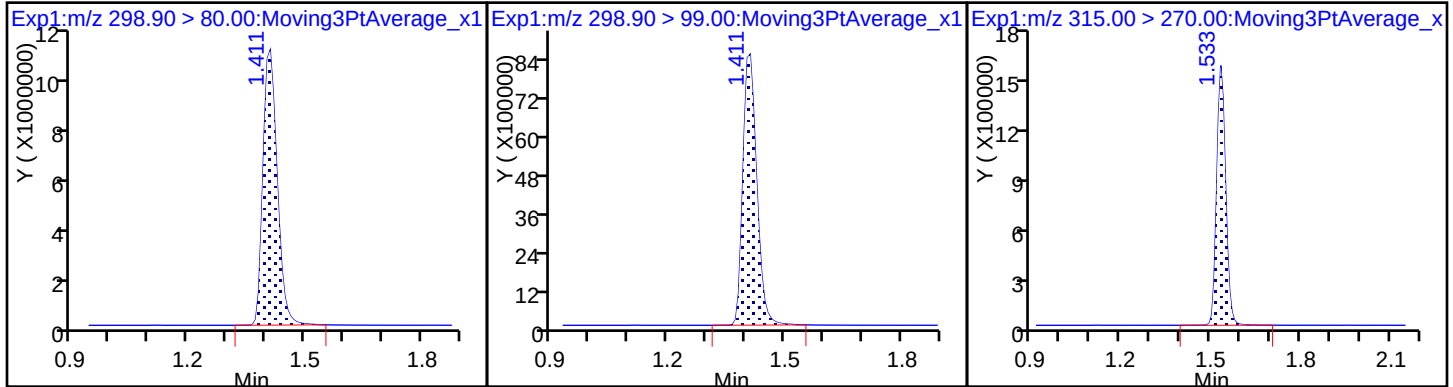
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

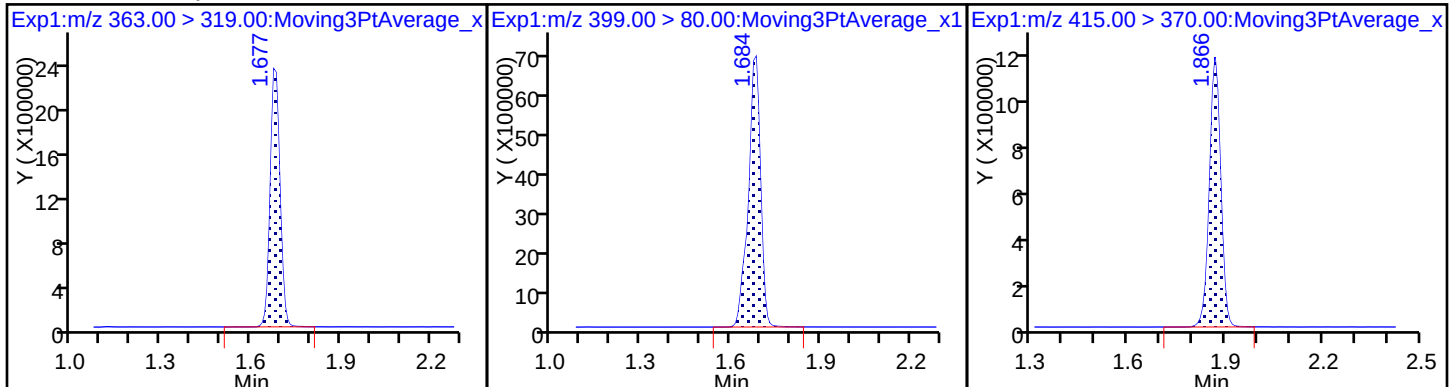
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

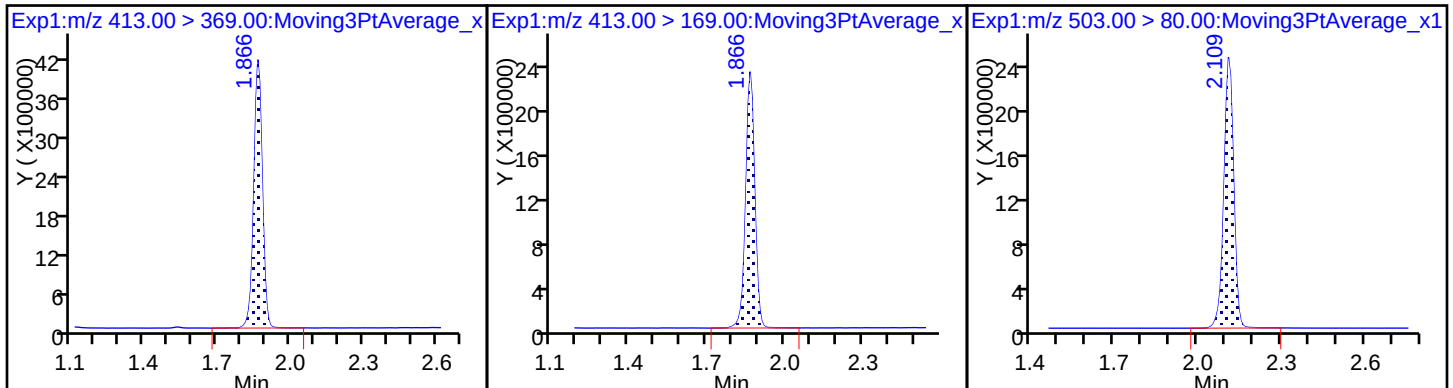
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

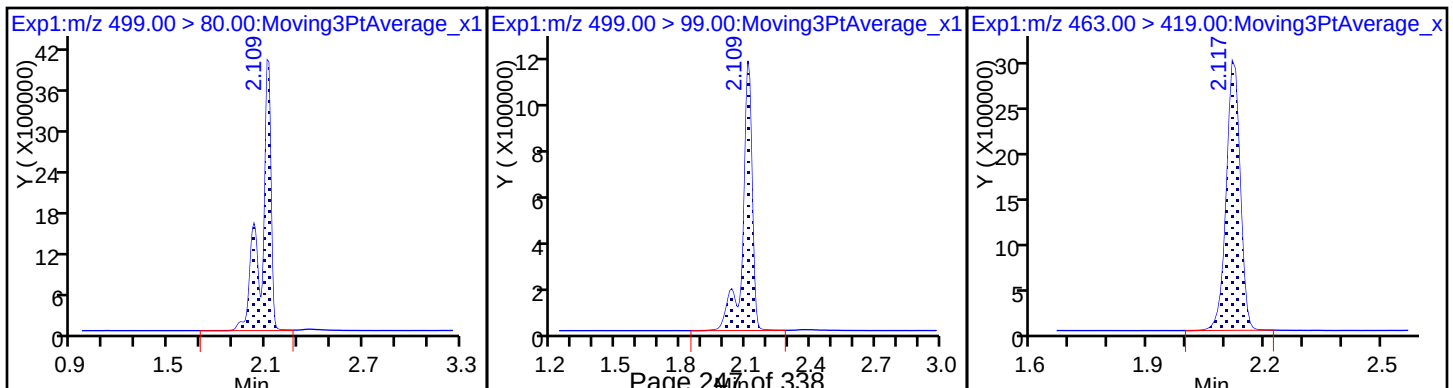
* 7 13C4 PFOS



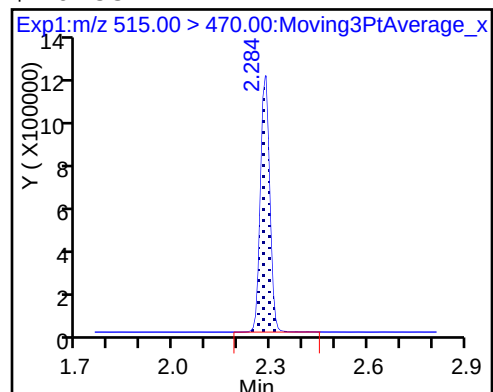
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-192162/11 Calibration Date: 10/31/2017 12:17
 Instrument ID: A8_N Calib Start Date: 10/31/2017 11:44
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/31/2017 12:08
 Lab File ID: 2017.10.31_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		1.102		21.4	20.0	7.2	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9408	0.9641		2.28	2.22	2.5	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.629	1.689		6.92	6.67	3.7	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9301	0.9239		4.42	4.45	-0.7	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9283	0.9317		8.92	8.89	0.4	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6527	0.6672		4.54	4.45	2.2	50.0
13C2 PFHxA	Ave	1.129	1.083		9.59	10.0	-4.1	30.0
13C2 PFDA	Ave	0.8094	0.8119		10.0	10.0	0.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_011.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 31-Oct-2017 12:17:57 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\20171031-49808.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 31-Oct-2017 15:26:08 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK004

First Level Reviewer: barnettj

Date: 31-Oct-2017 14:37:43

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	1.405	-0.001	1.000	4914906	21.4		1706	
298.90 > 99.00	1.404	1.405	-0.001	1.000	3545641		1.39(0.00-0.00)	2817	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.528	0.005	1.000	3102038	9.59		3913	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	614012	2.28		130	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.678	-0.001	1.000	2511290	6.92		2640	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.863	0.003		2865147	10.0		2953	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.864	0.002	1.000	1177501	4.42		44.8	
413.00 > 169.00	1.866	1.864	0.002	1.000	624441		1.89(0.00-0.00)	49.3	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.107	0.002		6394781	28.7		4537	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	1847034	8.92		264	M
499.00 > 99.00	2.109	2.109	0.0	1.000	381259		4.84(0.00-0.00)	311	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	849819	4.54		183	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2326112	10.0		5726	

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\20171031-49808.b\2017.10.31_537ICAL_011.d

Injection Date: 31-Oct-2017 12:17:57

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

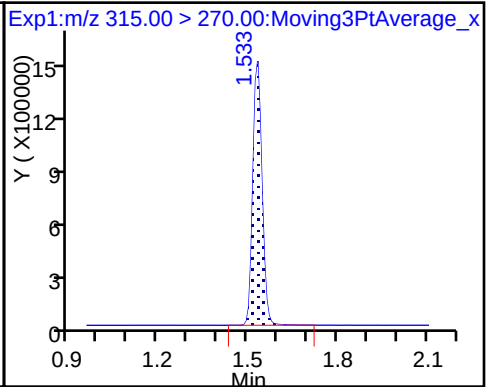
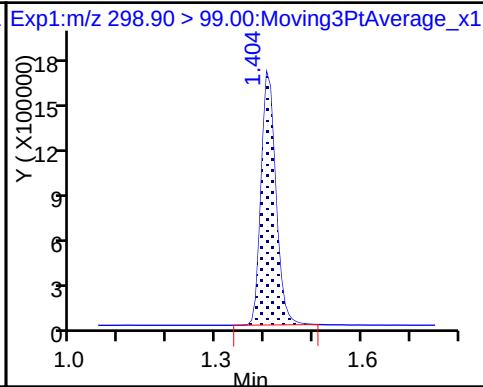
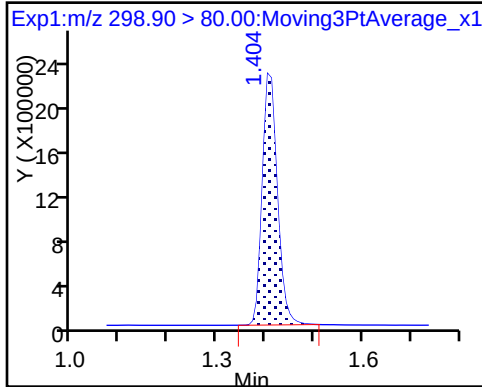
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

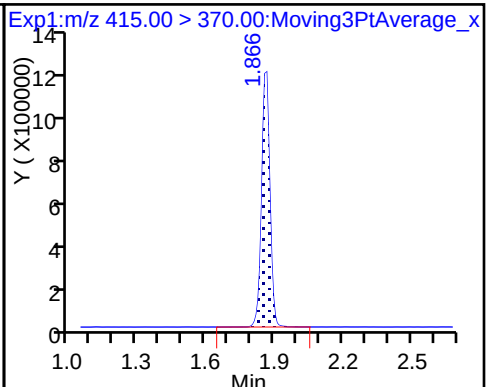
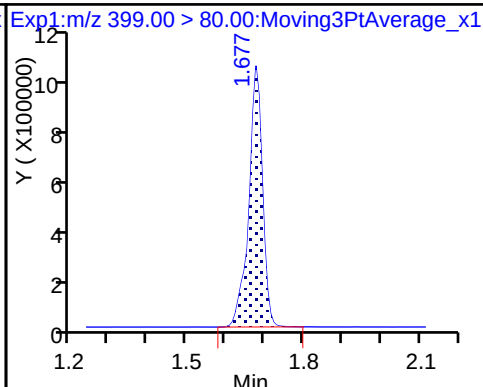
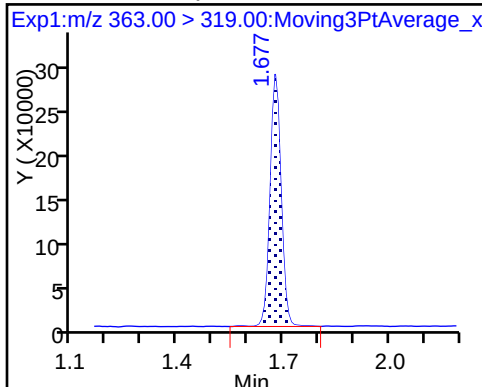
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

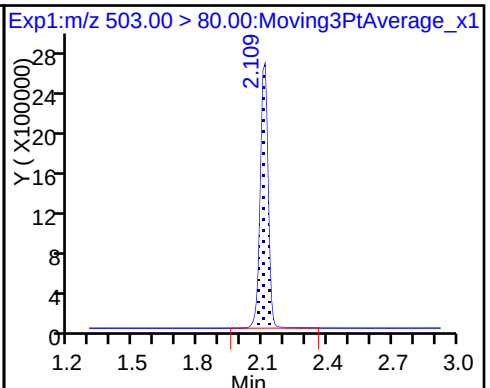
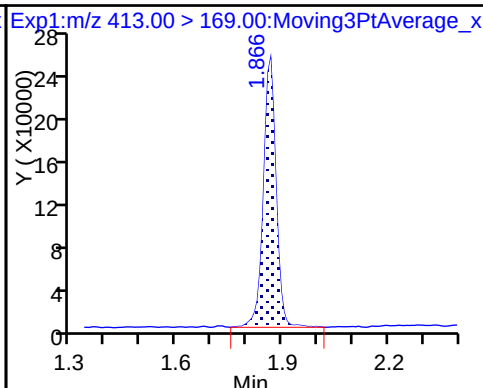
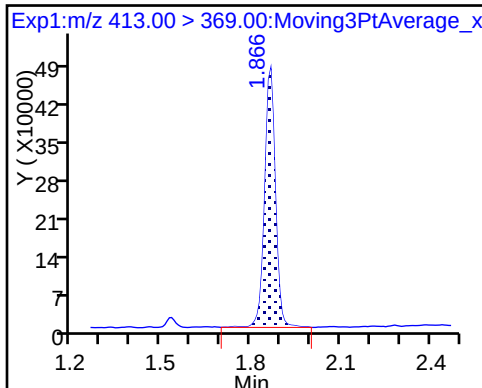
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

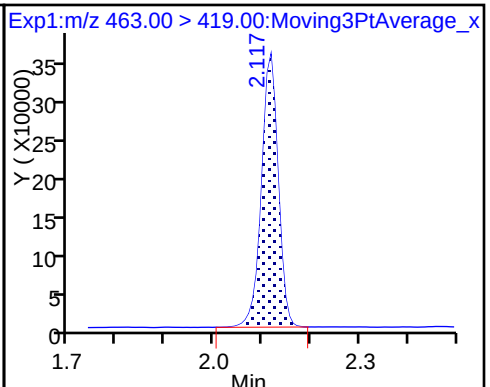
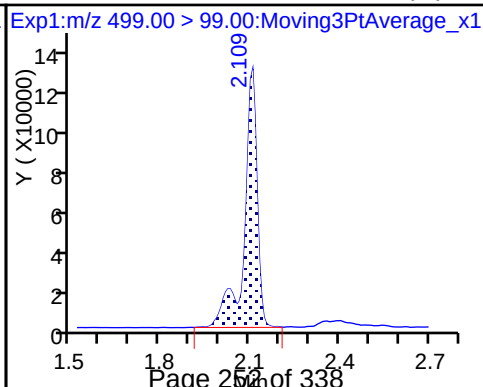
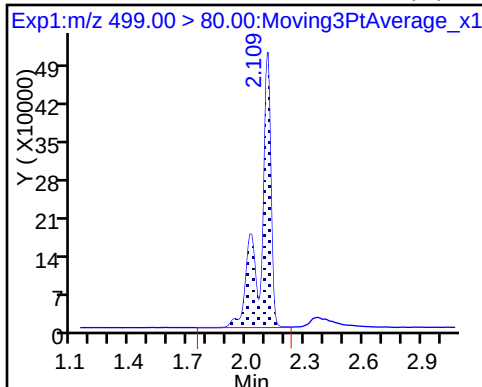
* 7 13C4 PFOS



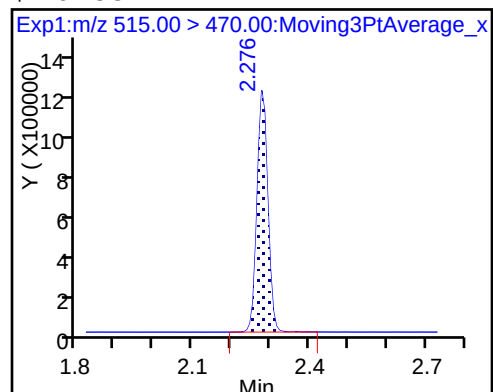
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

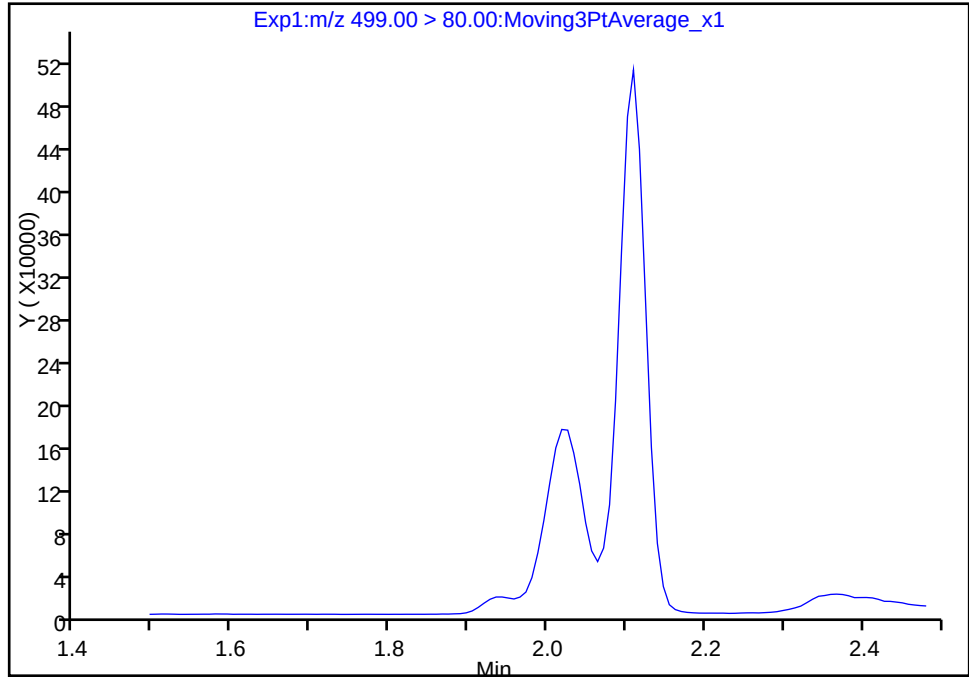
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_011.d
Injection Date: 31-Oct-2017 12:17:57 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

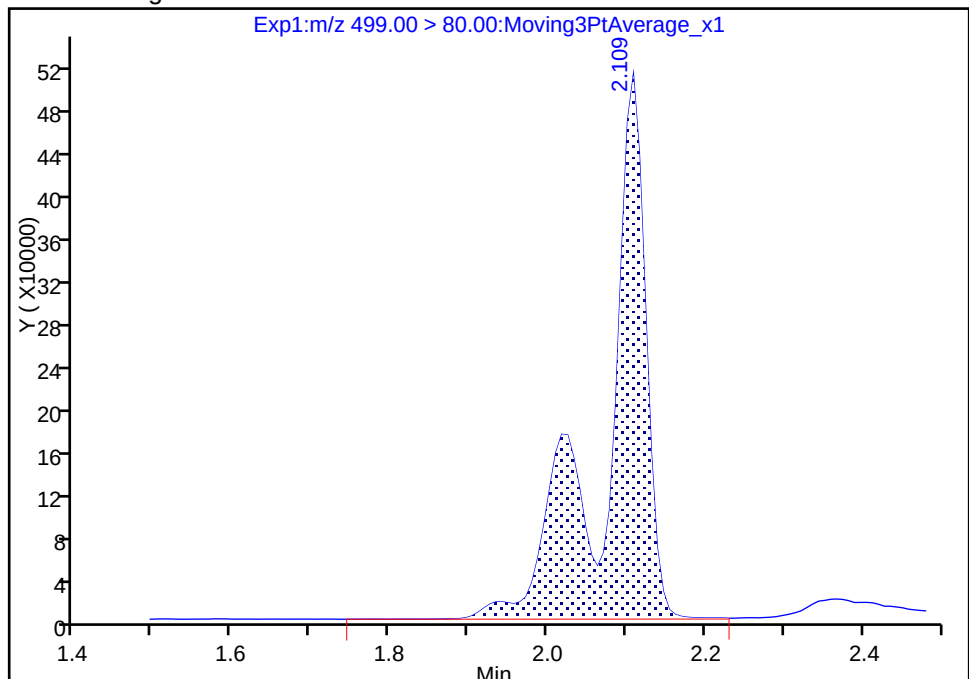
Signal: 1

Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results



RT: 2.11
Area: 1847034
Amount: 8.923891
Amount Units: ng/ml

Reviewer: barnettj, 31-Oct-2017 14:36:47

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

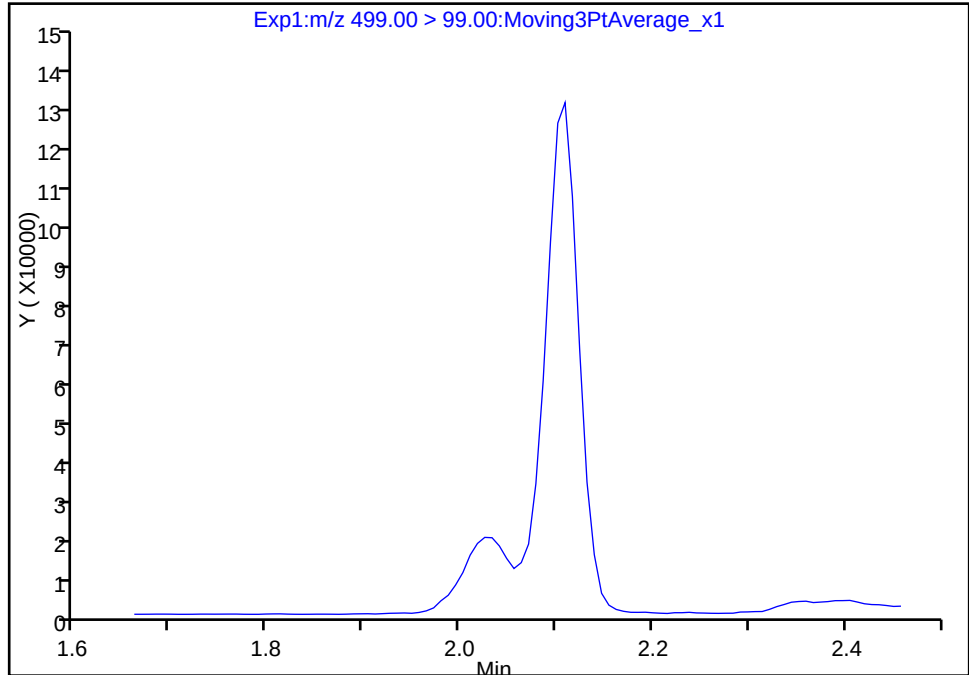
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_011.d
Injection Date: 31-Oct-2017 12:17:57 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

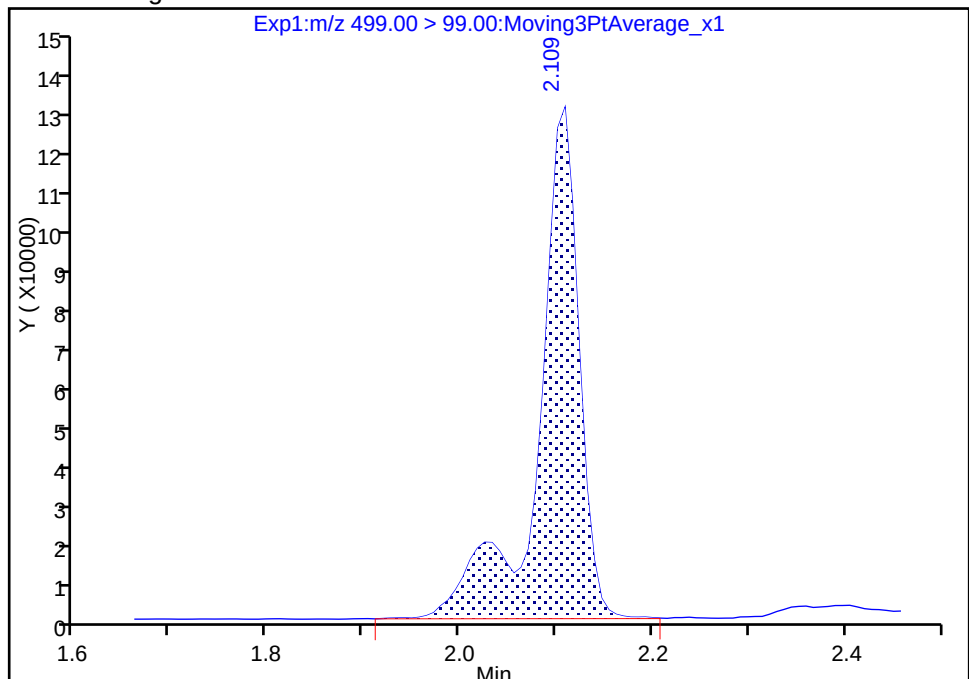
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 381259
Amount: 8.923891
Amount Units: ng/ml



Reviewer: barnettj, 31-Oct-2017 14:37:04

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

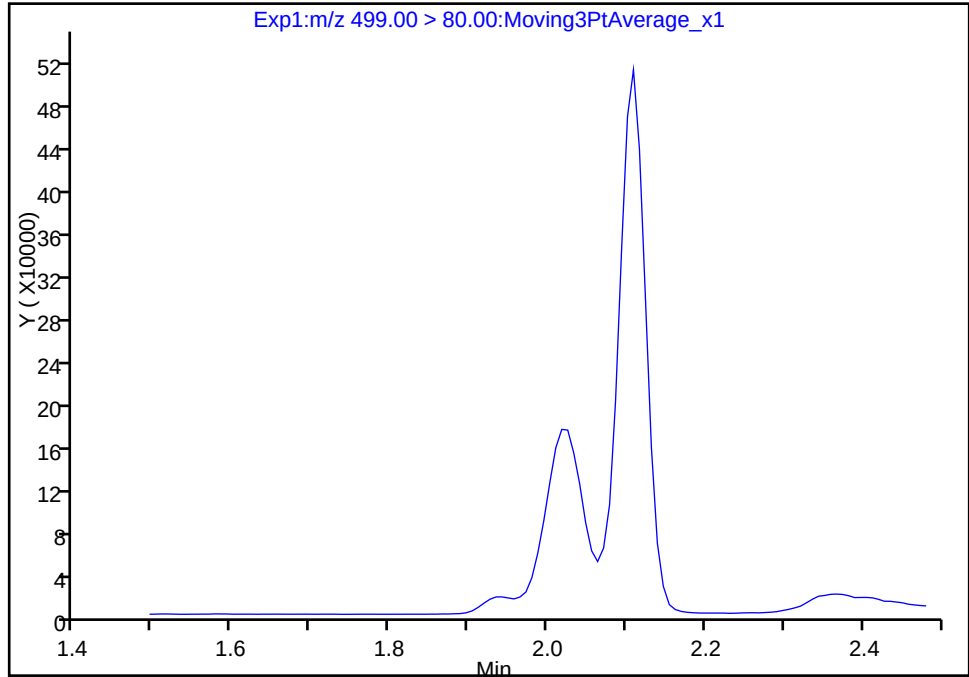
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_011.d
Injection Date: 31-Oct-2017 12:17:57 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

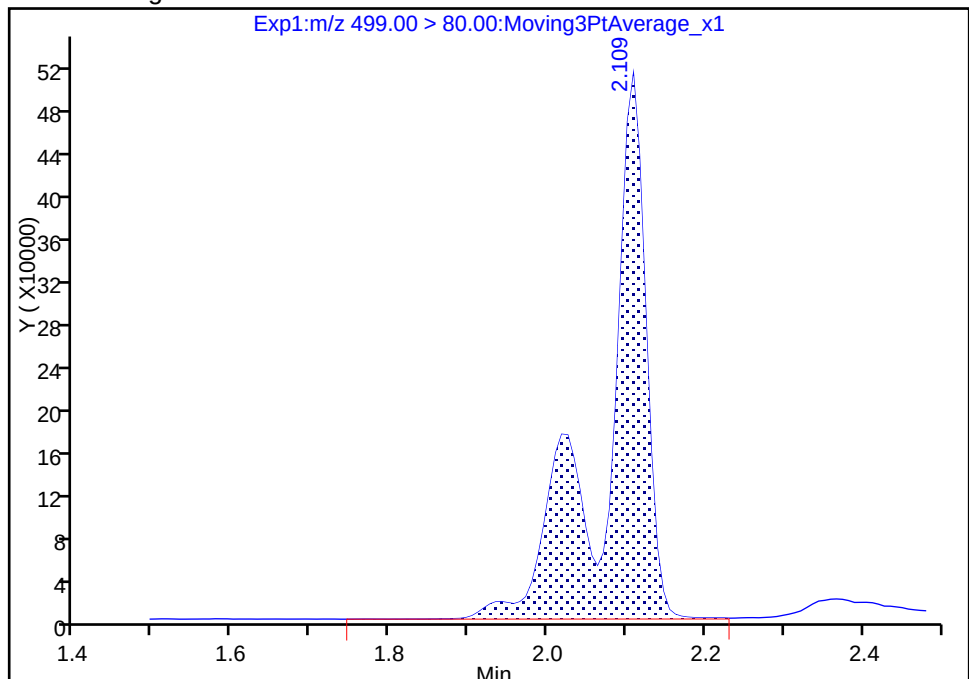
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 1847034
Amount: 8.923891
Amount Units: ng/ml



Reviewer: barnettj, 31-Oct-2017 14:37:04

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Lab Sample ID: ICV 320-192162/16 Calibration Date: 10/31/2017 14:58
 Instrument ID: A8_N Calib Start Date: 10/31/2017 11:44
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/31/2017 12:08
 Lab File ID: 2017.10.31_537AICAL_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.7489		82.4	100	-17.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9408	0.8366		8.89	10.0	-11.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.629	1.474		18.2	20.1	-9.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9301	0.8041		17.7	20.5	-13.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9283	0.8488		18.0	19.7	-8.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6527	0.6148		19.0	20.1	-5.8	30.0
13C2 PFHxA	Ave	1.129	1.069		9.47	10.0	-5.3	30.0
13C2 PFDA	Ave	0.8094	0.7781		9.61	10.0	-3.9	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_003.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 31-Oct-2017 14:58:42 ALS Bottle#: 7 Worklist Smp#: 16
 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\20171031-49808.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 31-Oct-2017 15:26:10 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK004

First Level Reviewer: barnettj

Date: 31-Oct-2017 15:13:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.405	0.006	1.000	17157551	82.4		3502	
298.90 > 99.00	1.411	1.405	0.006	1.000	12954498		1.32(0.00-0.00)	4512	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.528	0.005	1.000	3000464	9.47		5827	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	2347598	8.89		509	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.678	-0.001	1.000	6771103	18.2		4918	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.863	0.003		2807375	10.0		3695	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.864	0.002	1.000	4624349	17.7		288	
413.00 > 169.00	1.866	1.864	0.002	1.000	2450141		1.89(0.00-0.00)	377	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.107	0.002		6562646	28.7		4663	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	3825846	18.0		529	M
499.00 > 99.00	2.109	2.109	0.0	1.000	748921		5.11(0.00-0.00)	558	M
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	3473716	19.0		695	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2184301	9.61		6529	

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\20171031-49808.b\2017.10.31_537AICAL_003.d

Injection Date: 31-Oct-2017 14:58:42

Instrument ID: A8_N

Lims ID: ICV

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 7

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

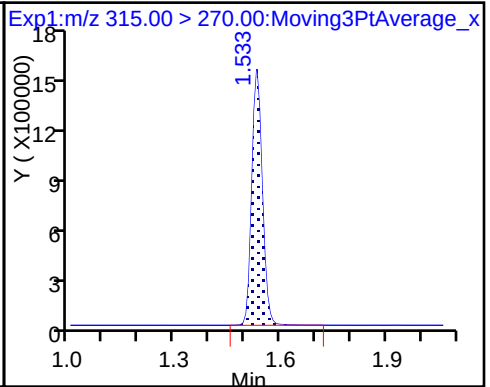
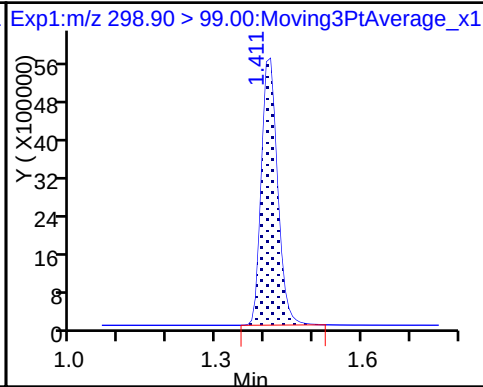
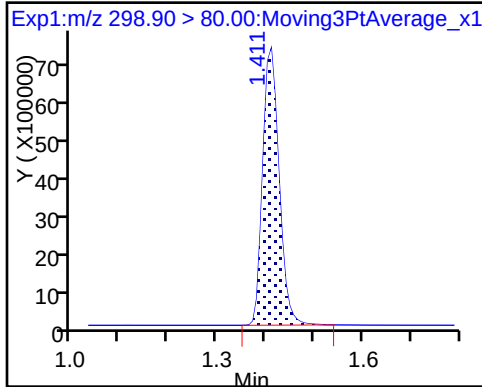
Method: 537_A8_N

Limit Group: LC 537 ICA

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

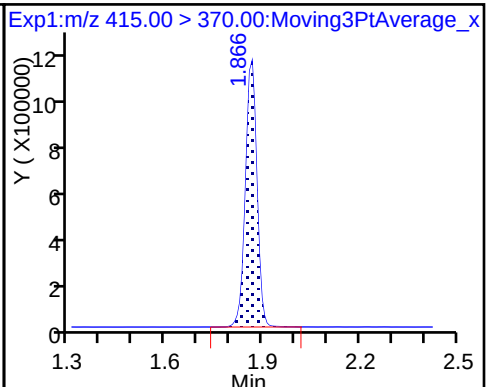
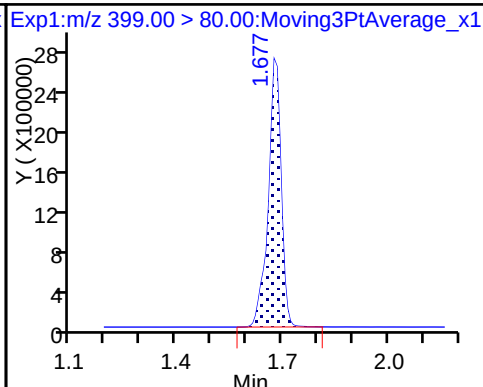
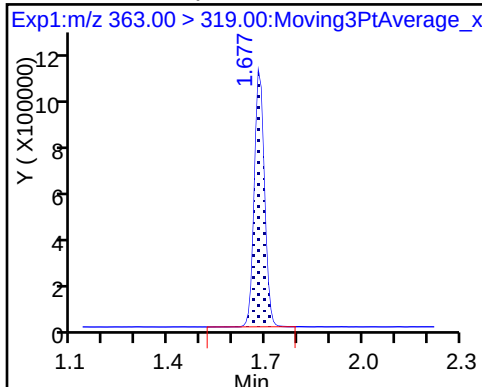
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

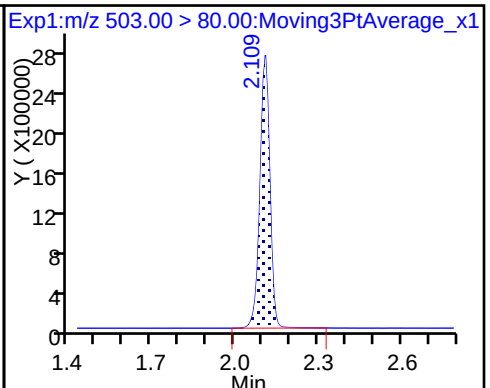
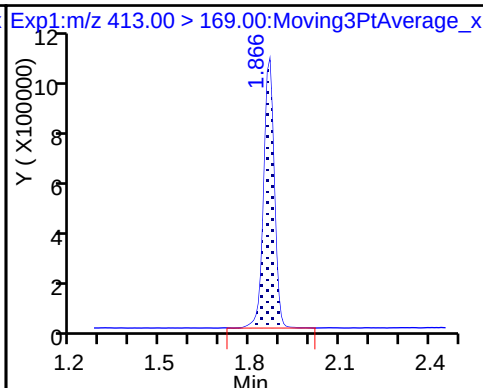
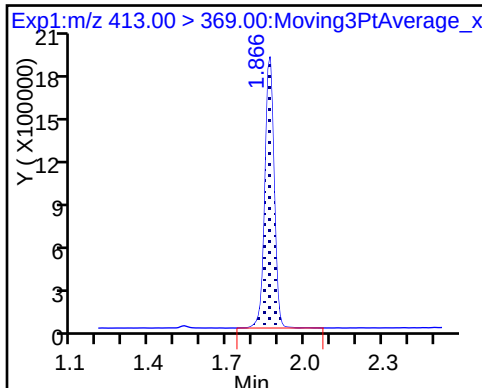
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

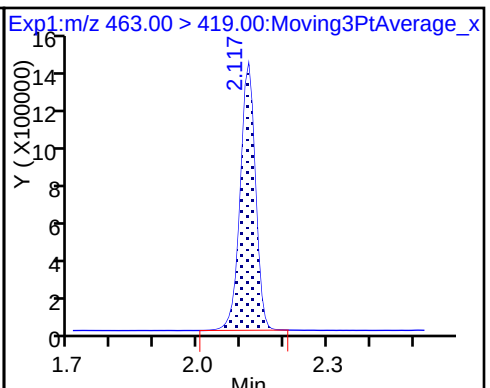
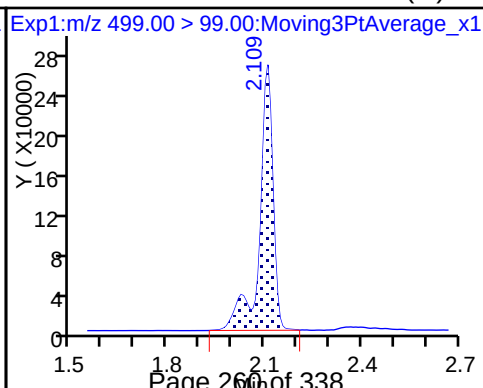
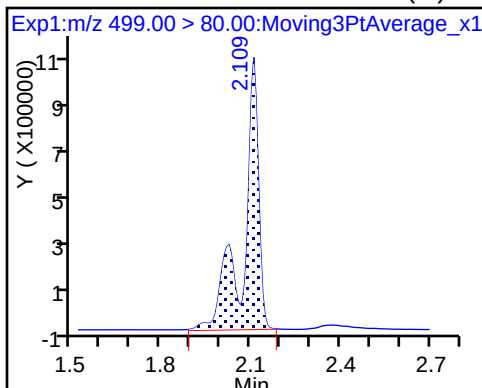
* 7 13C4 PFOS



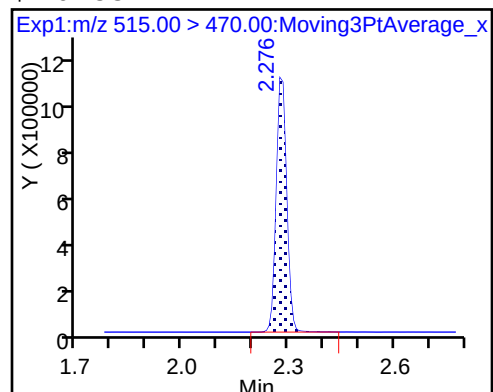
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

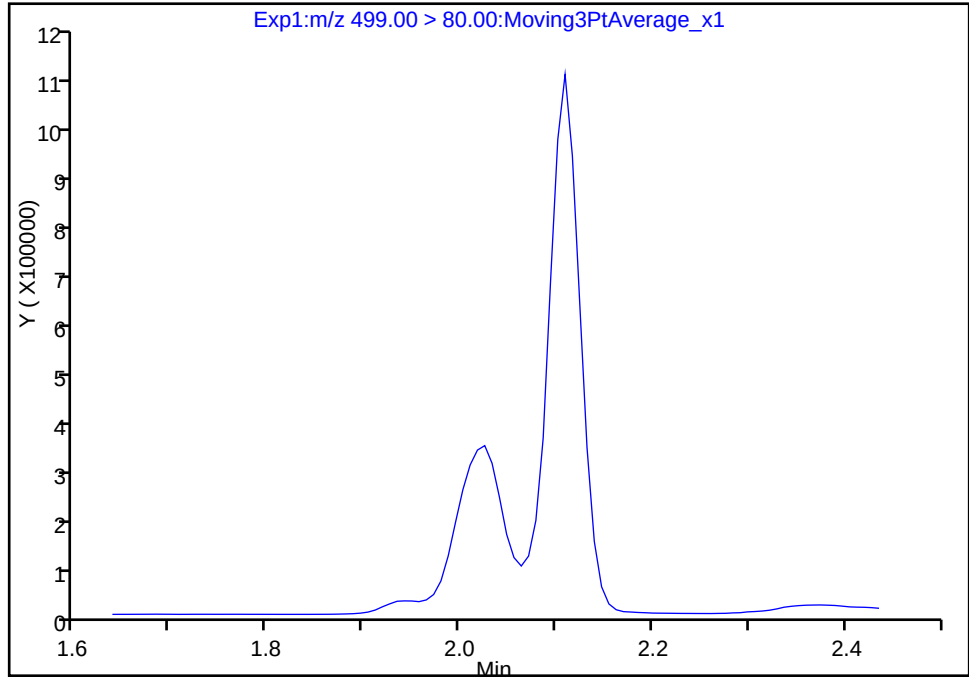
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Injection Date: 31-Oct-2017 14:58:42 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

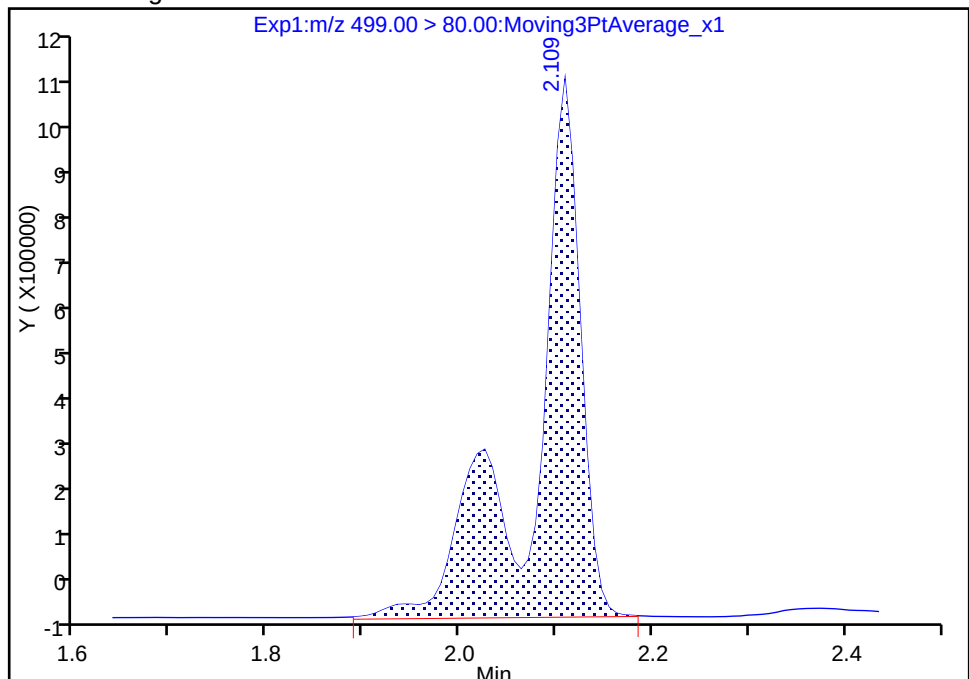
Signal: 1

Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results



RT: 2.11
Area: 3825846
Amount: 18.011653
Amount Units: ng/ml

TestAmerica Sacramento

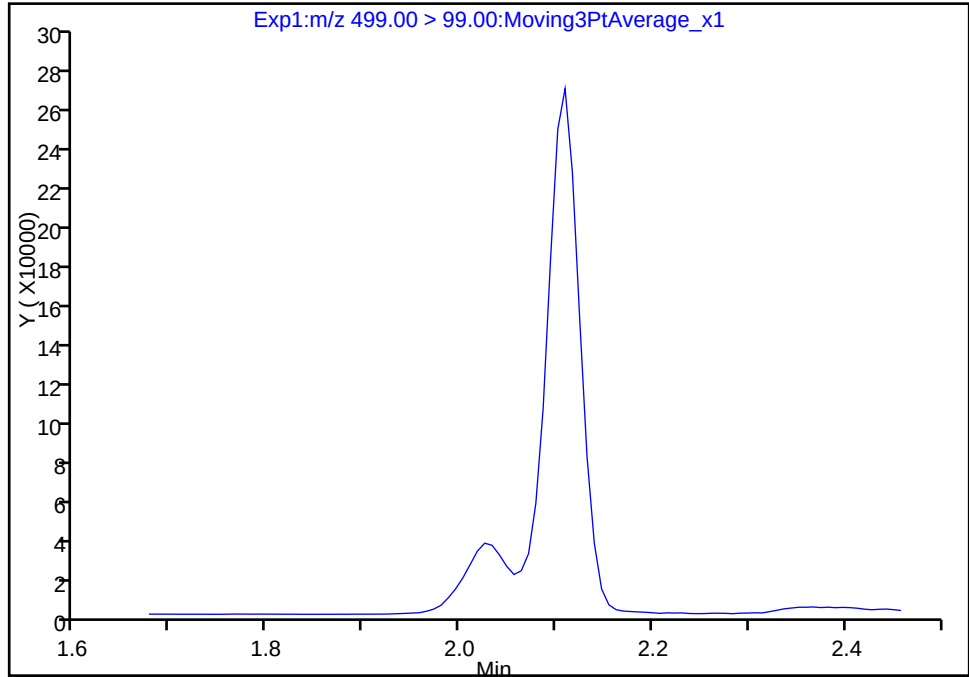
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537AICAL_003.d
Injection Date: 31-Oct-2017 14:58:42 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICA
Column: Detector EXP1

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

Signal: 2

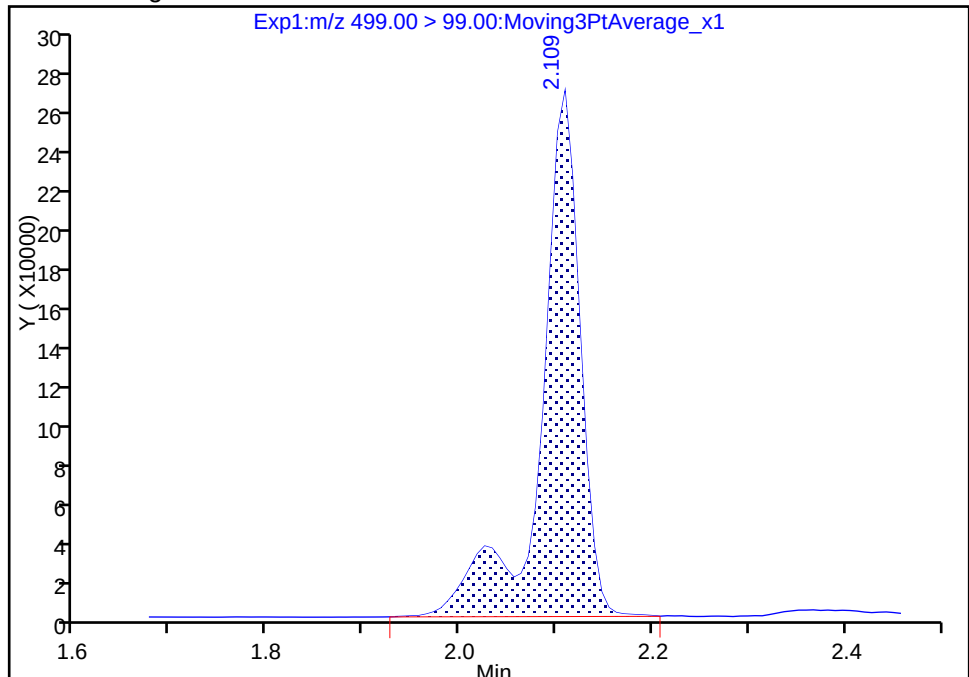
Not Detected
Expected RT: 2.11

Processing Integration Results



RT: 2.11
Area: 748921
Amount: 18.011653
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 31-Oct-2017 15:08:57

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

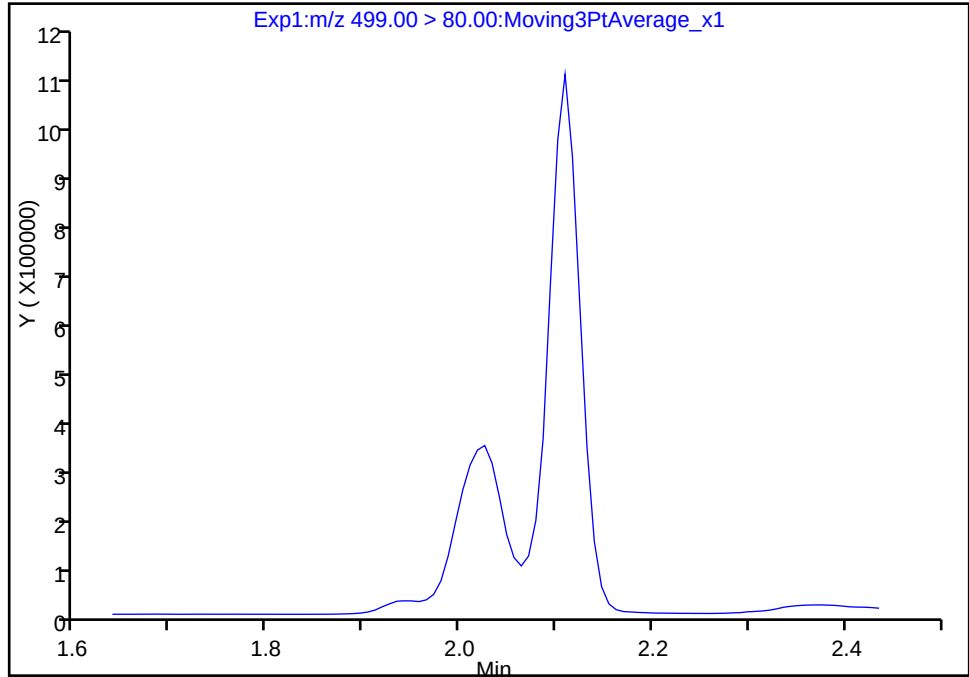
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Injection Date: 31-Oct-2017 14:58:42 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICA
Column: Detector EXP1

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

Signal: 1

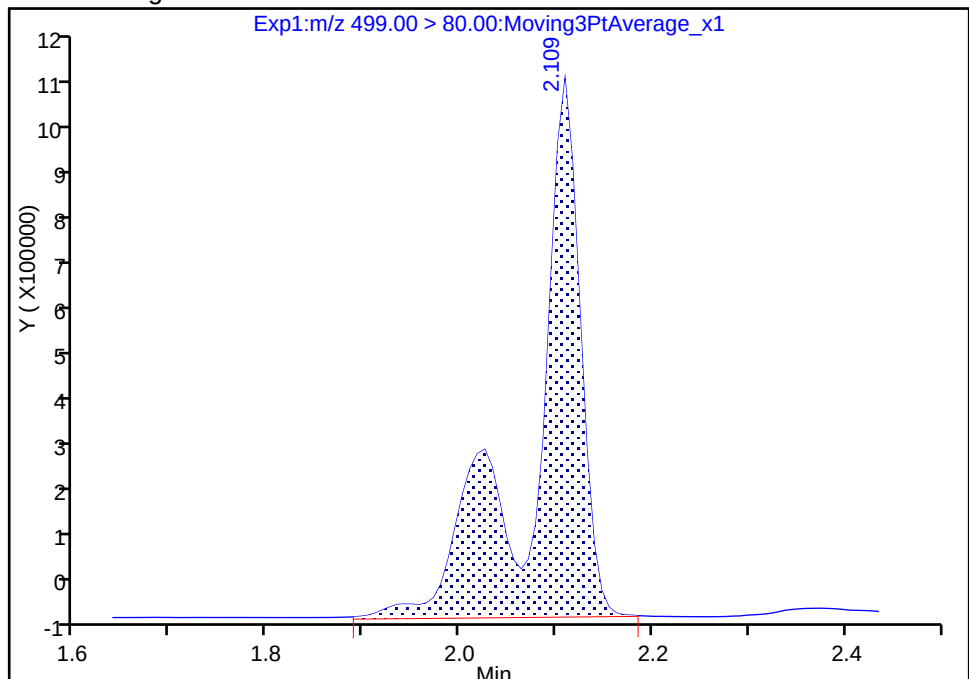
Not Detected
Expected RT: 2.11

Processing Integration Results



RT: 2.11
Area: 3825846
Amount: 18.011653
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 31-Oct-2017 15:08:57

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Lab Sample ID: CCV 320-192279/10 Calibration Date: 10/31/2017 17:59
 Instrument ID: A8_N Calib Start Date: 10/31/2017 11:44
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/31/2017 12:08
 Lab File ID: 2017.10.31_537C_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.7669		125	135	-7.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9408	0.9197		14.7	15.0	-2.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.629	1.564		43.2	45.0	-4.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9301	0.9192		29.7	30.0	-1.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9283	0.9333		60.3	60.0	0.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6527	0.6543		30.1	30.0	0.3	30.0
13C2 PFHxA	Ave	1.129	1.145		10.1	10.0	1.5	30.0
13C2 PFDA	Ave	0.8094	0.8077		9.98	10.0	-0.2	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_010.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 31-Oct-2017 17:59:10 ALS Bottle#: 5 Worklist Smp#: 10
 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\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 10:58:36 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 10:39:25

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.405	-0.001	1.000	22386185	125.4		3340	
298.90 > 99.00	1.404	1.405	-0.001	1.000	17594633		1.27(0.00-0.00)	4399	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.528	-0.003	1.000	3266354	10.1		5162	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	3936707	14.7		849	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.678	-0.001	1.000	15219351	43.2		5375	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		2852910	10.0		3847	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.864	-0.005	1.000	7873676	29.7		626	
413.00 > 169.00	1.859	1.864	-0.005	1.000	4126828		1.91(0.00-0.00)	883	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	12110391	60.3		1271	M
499.00 > 99.00	2.102	2.094	0.008	1.000	2495876		4.85(0.00-0.00)	1430	M
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.107	-0.005		6200813	28.7		4571	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	5601204	30.1		1007	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2304418	9.98		6834	

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\20171101-49829.b\2017.10.31_537C_010.d

Injection Date: 31-Oct-2017 17:59:10

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

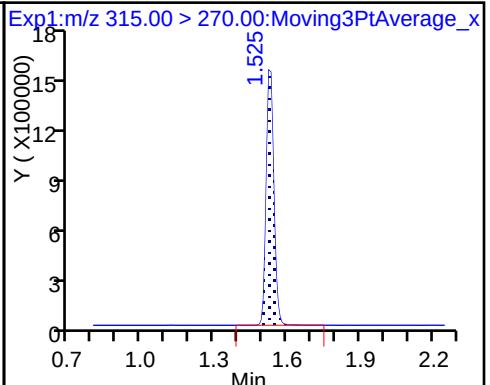
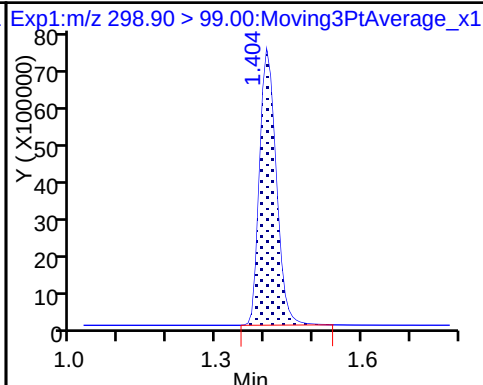
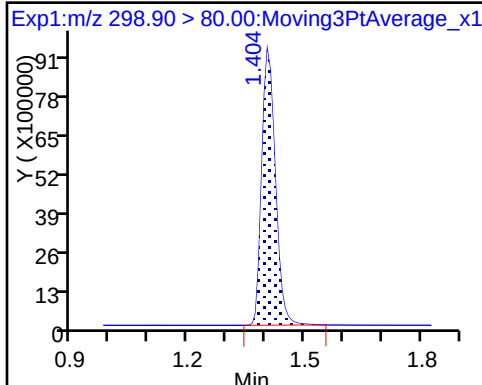
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

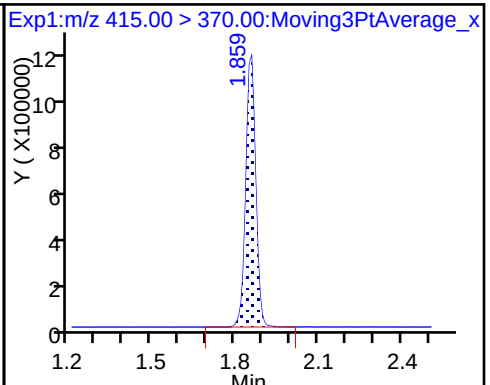
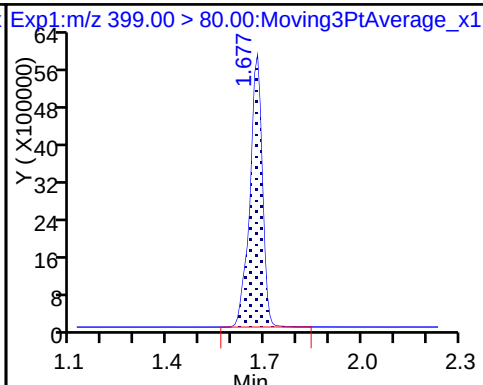
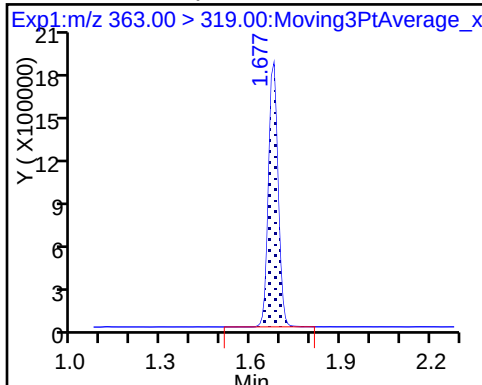
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

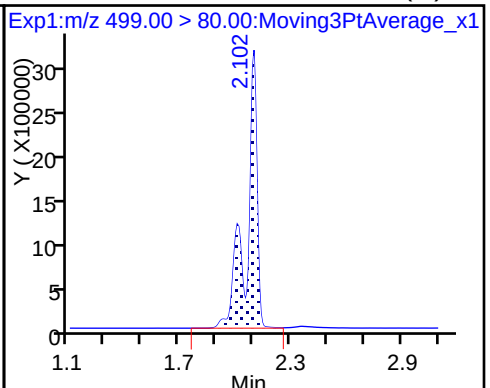
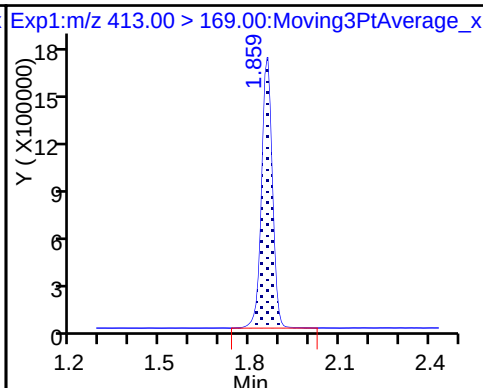
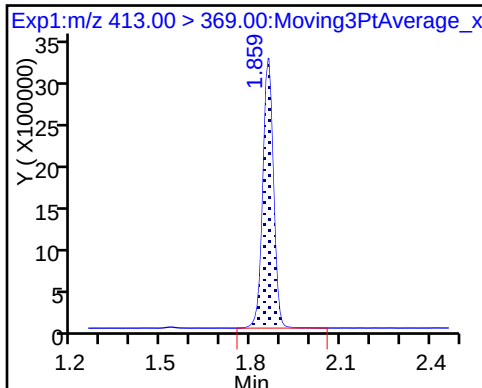
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

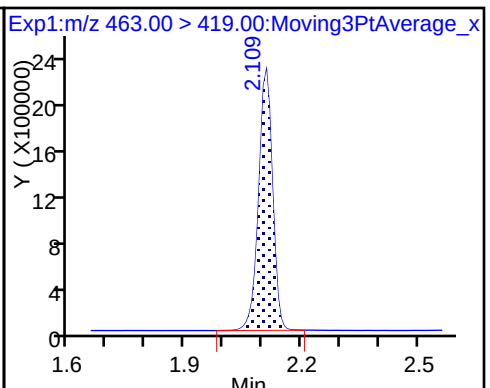
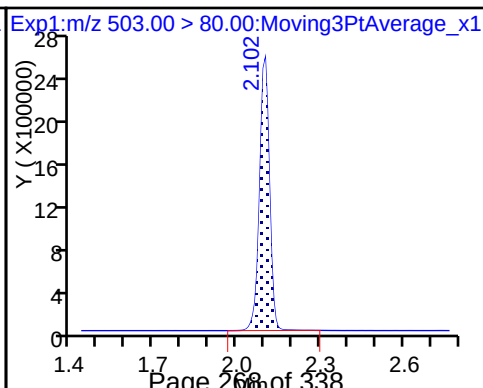
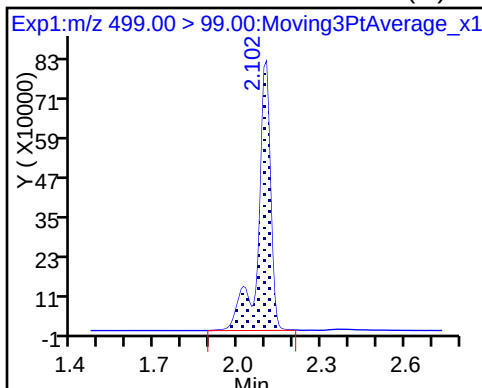
8 Perfluorooctane sulfonic acid (M)



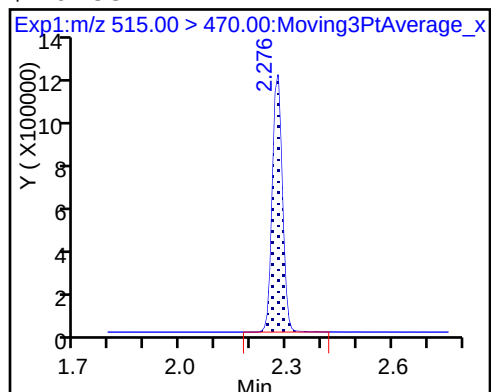
8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

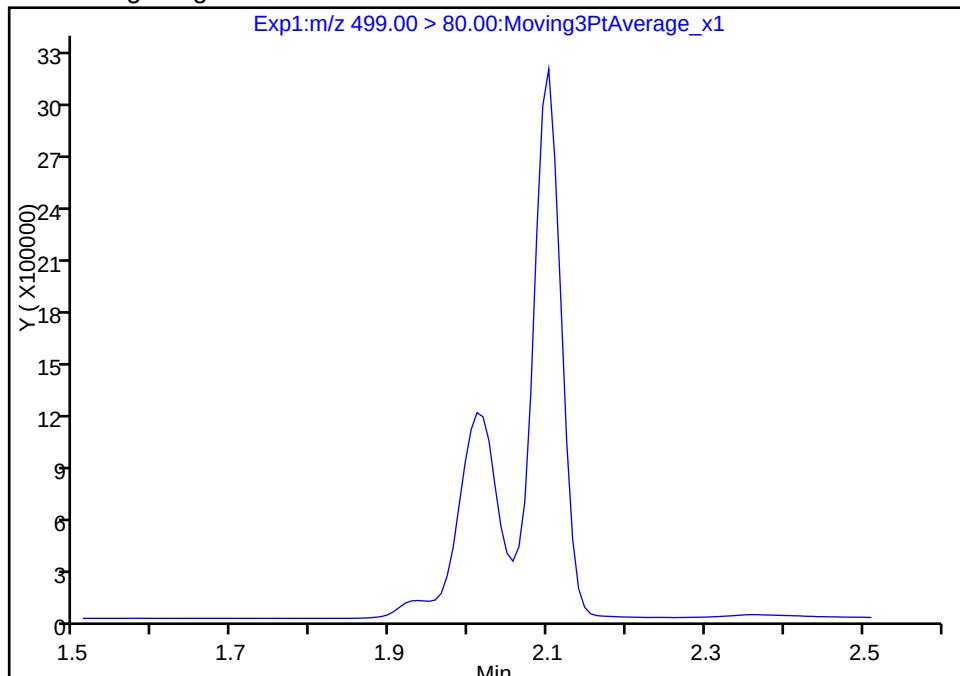
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_010.d
Injection Date: 31-Oct-2017 17:59:10 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

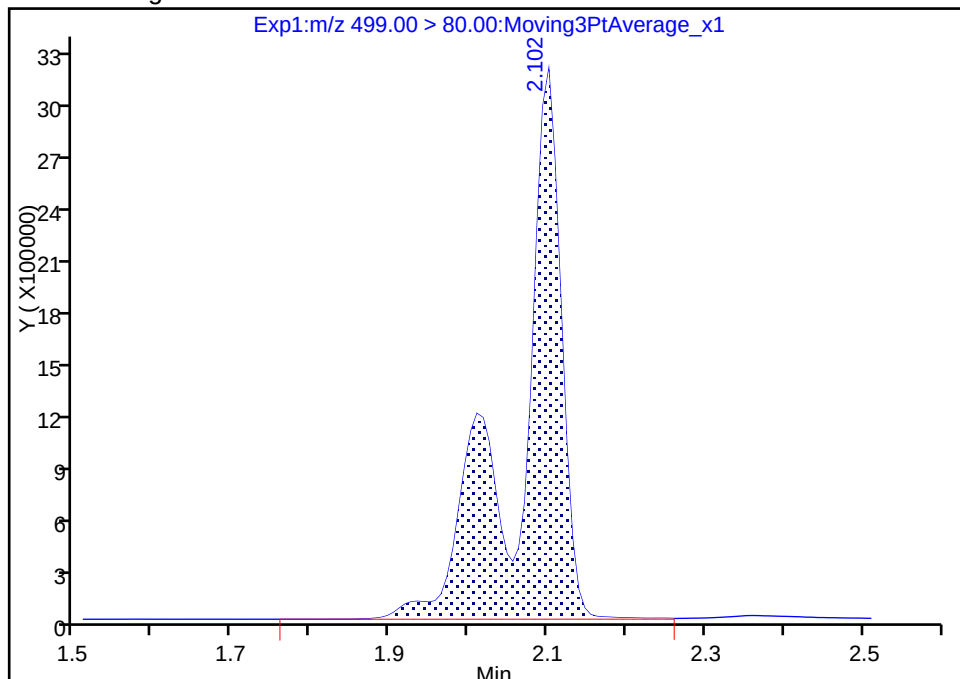
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.10
Area: 12110391
Amount: 60.341290
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 01-Nov-2017 10:39:04

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

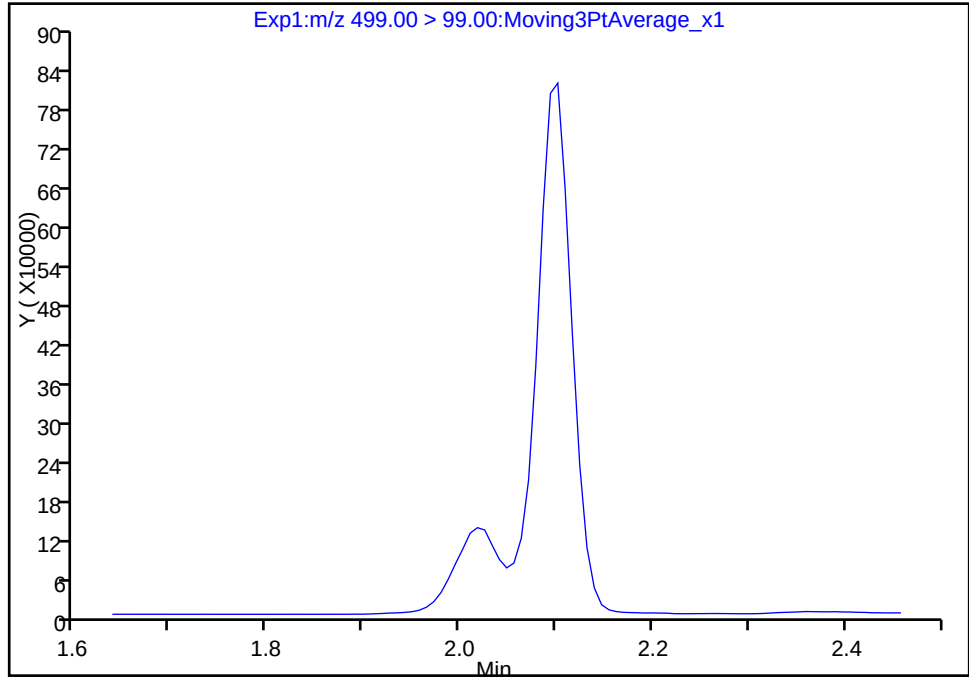
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_010.d
Injection Date: 31-Oct-2017 17:59:10 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

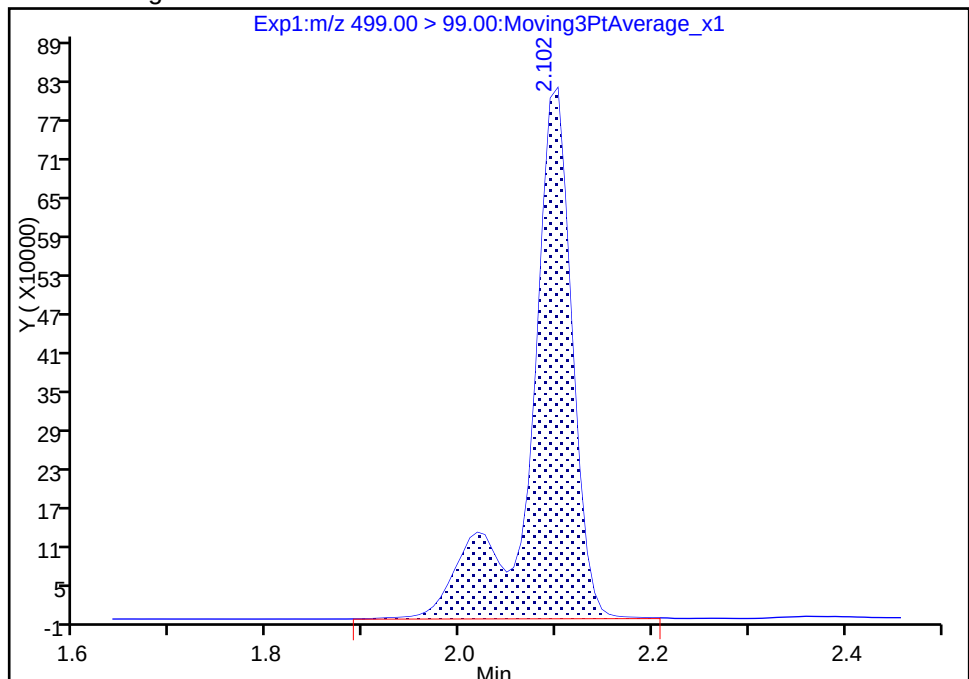
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 2495876
Amount: 60.341290
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 10:39:17

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

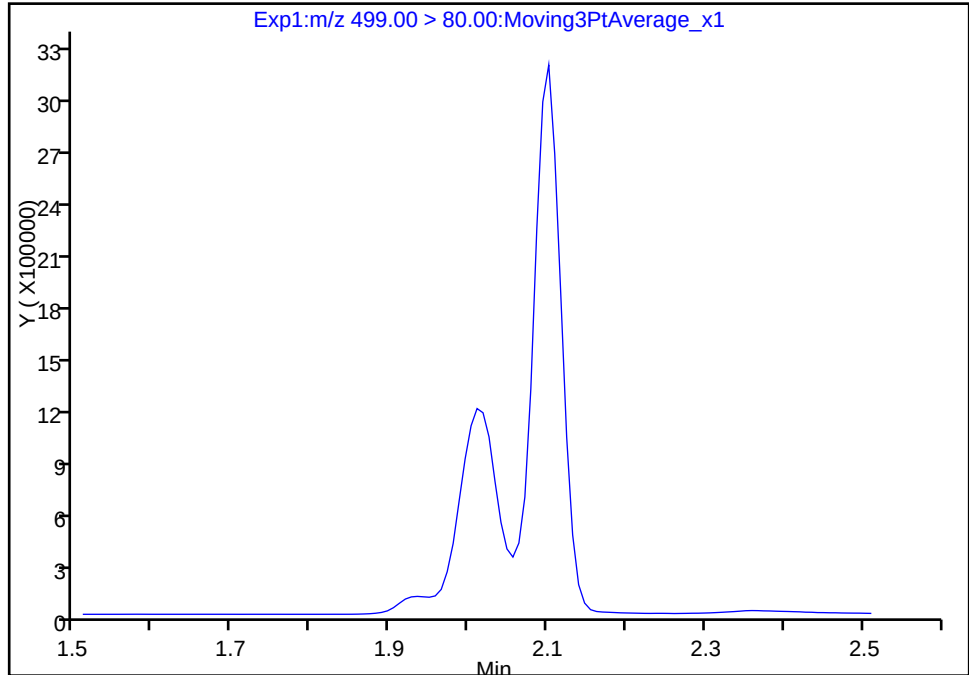
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_010.d
Injection Date: 31-Oct-2017 17:59:10 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

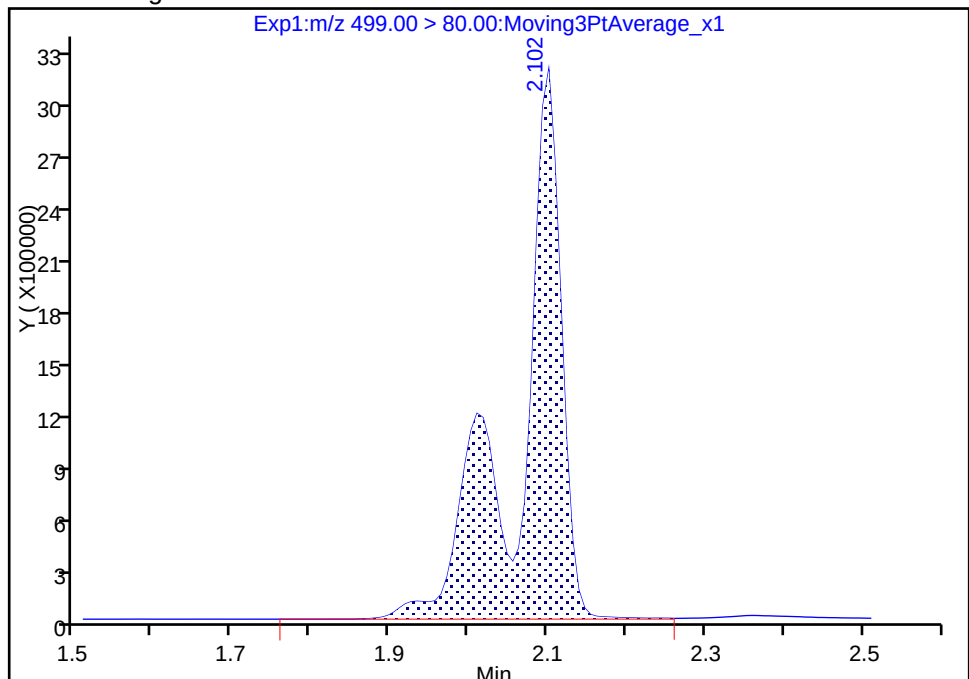
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 12110391
Amount: 60.341290
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 10:39:17

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Lab Sample ID: CCV 320-192279/22 Calibration Date: 10/31/2017 18:56
 Instrument ID: A8_N Calib Start Date: 10/31/2017 11:44
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/31/2017 12:08
 Lab File ID: 2017.10.31_537C_022.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.005		46.1	45.0	2.5	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9408	0.9285		4.94	5.00	-1.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.629	1.712		15.8	15.0	5.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9301	0.9228		9.93	10.0	-0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9283	0.9179		19.8	20.0	-1.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6527	0.6571		10.1	10.0	0.7	30.0
13C2 PFHxA	Ave	1.129	1.102		9.76	10.0	-2.4	30.0
13C2 PFDA	Ave	0.8094	0.7798		9.63	10.0	-3.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Lab Sample ID: CCV 320-192281/22 Calibration Date: 10/31/2017 18:56
 Instrument ID: A8_N Calib Start Date: 10/31/2017 11:44
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/31/2017 12:08
 Lab File ID: 2017.10.31_537C_022.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.005		46.1	45.0	2.5	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9408	0.9285		4.94	5.00	-1.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.629	1.712		15.8	15.0	5.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9301	0.9228		9.93	10.0	-0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9283	0.9179		19.8	20.0	-1.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6527	0.6571		10.1	10.0	0.7	30.0
13C2 PFHxA	Ave	1.129	1.102		9.76	10.0	-2.4	30.0
13C2 PFDA	Ave	0.8094	0.7798		9.63	10.0	-3.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_022.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 31-Oct-2017 18:56:16 ALS Bottle#: 3 Worklist Smp#: 22
 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\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:21:28 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

First Level Reviewer: barnettj Date: 01-Nov-2017 10:39:58

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	1.405	-0.001	1.000	10001617	46.1		2678	
298.90 > 99.00	1.396	1.405	-0.009	0.995	7325157		1.37(0.00-0.00)	3944	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.528	-0.003	1.000	3263440	9.76		5276	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.677	-0.008	1.000	1375212	4.94		325	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.678	-0.009	1.000	5683161	15.8		4135	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		2961630	10.0		4406	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.864	-0.005	1.000	2735334	9.93		235	
413.00 > 169.00	1.859	1.864	-0.005	1.000	1387408		1.97(0.00-0.00)	352	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	4062014	19.8		594	M
499.00 > 99.00	2.102	2.094	0.008	1.000	835321		4.86(0.00-0.00)	604	M
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.107	-0.005		6344077	28.7		5006	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	1946414	10.1		389	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2309565	9.63		6429	

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\20171101-49829.b\2017.10.31_537C_022.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 31-Oct-2017 18:56:16 ALS Bottle#: 3 Worklist Smp#: 22
 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\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:21:28 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 10:39:58

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	1.405	-0.001	1.000	10001617	46.1		2678	
298.90 > 99.00	1.396	1.405	-0.009	0.995	7325157		1.37(0.00-0.00)	3944	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.528	-0.003	1.000	3263440	9.76		5276	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.677	-0.008	1.000	1375212	4.94		325	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.678	-0.009	1.000	5683161	15.8		4135	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		2961630	10.0		4406	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.864	-0.005	1.000	2735334	9.93		235	
413.00 > 169.00	1.859	1.864	-0.005	1.000	1387408		1.97(0.00-0.00)	352	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	4062014	19.8		594	M
499.00 > 99.00	2.102	2.094	0.008	1.000	835321		4.86(0.00-0.00)	604	M
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.107	-0.005		6344077	28.7		5006	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	1946414	10.1		389	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2309565	9.63		6429	

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\20171101-49829.b\2017.10.31_537C_022.d

Injection Date: 31-Oct-2017 18:56:16

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

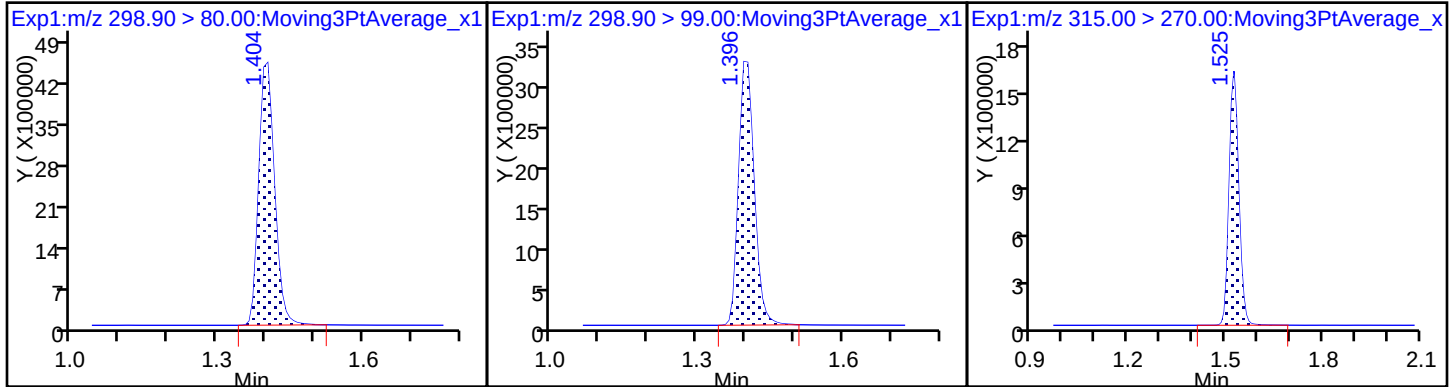
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

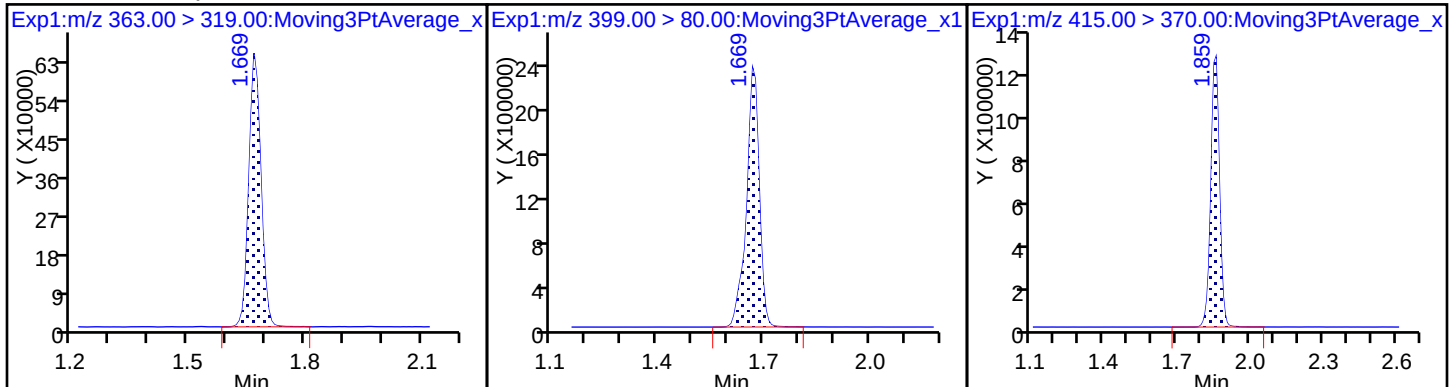
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

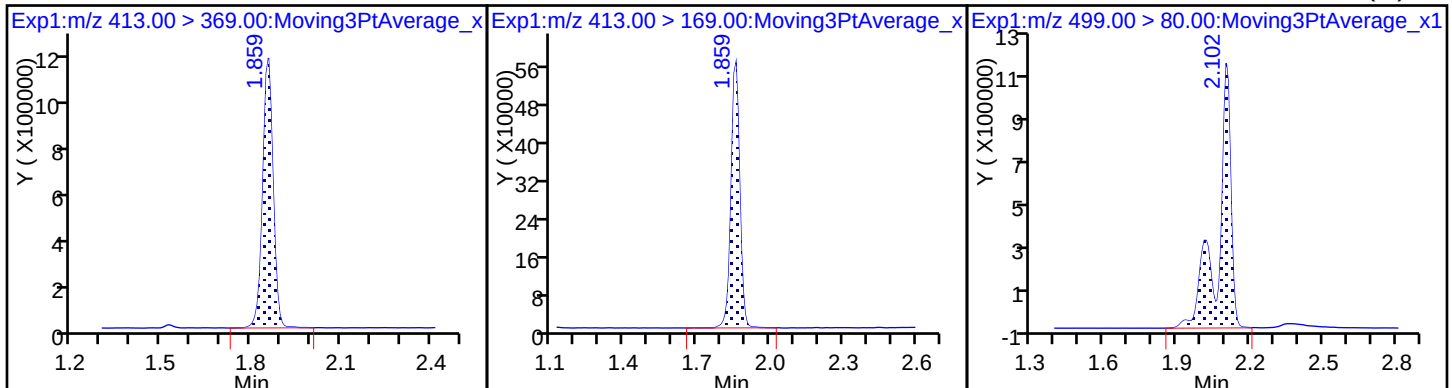
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

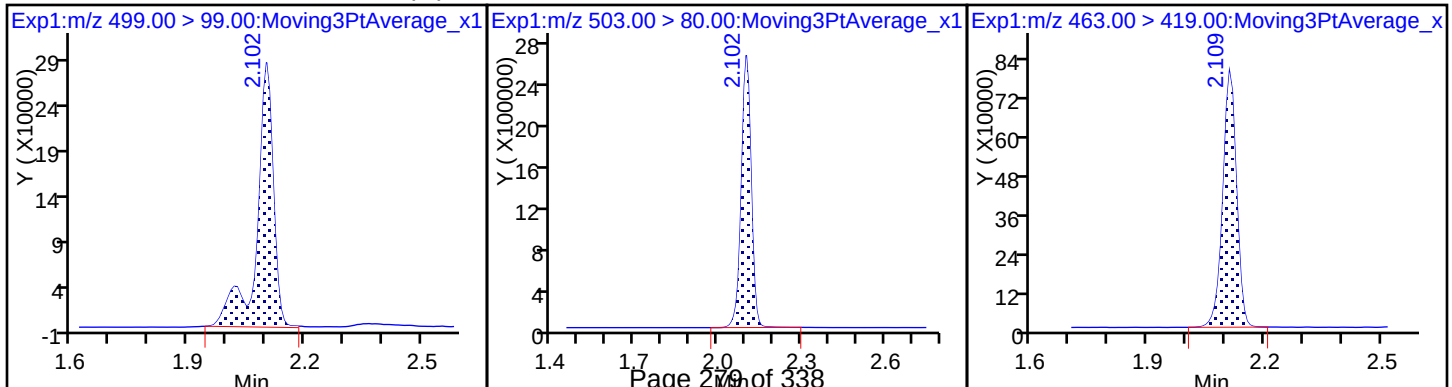
8 Perfluorooctane sulfonic acid (M)



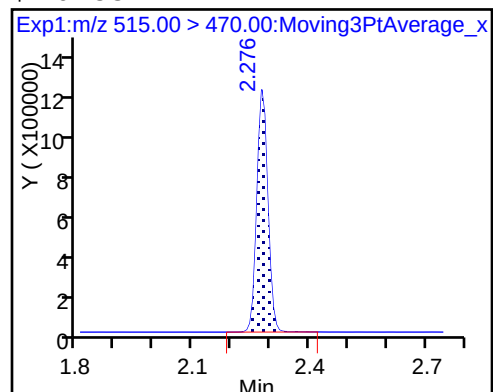
8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_022.d

Injection Date: 31-Oct-2017 18:56:16

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

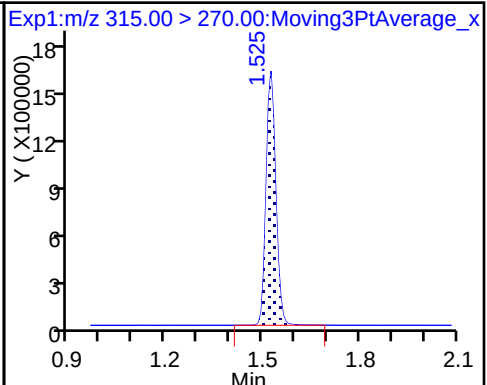
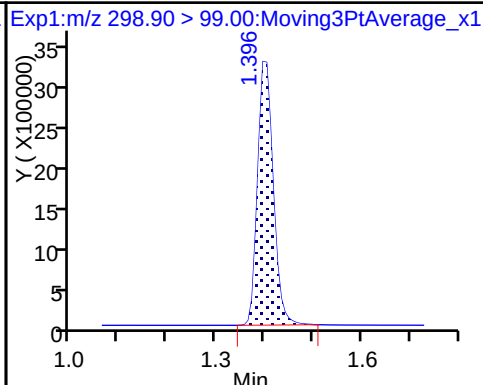
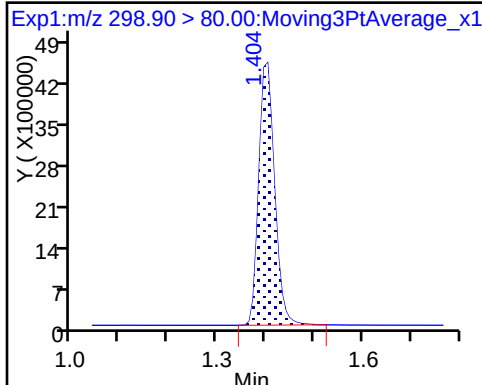
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

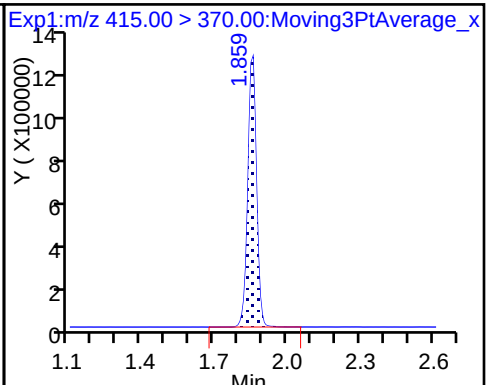
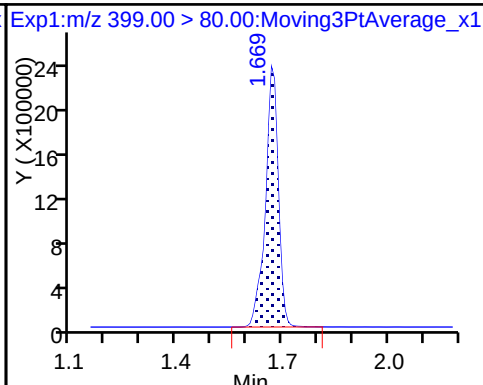
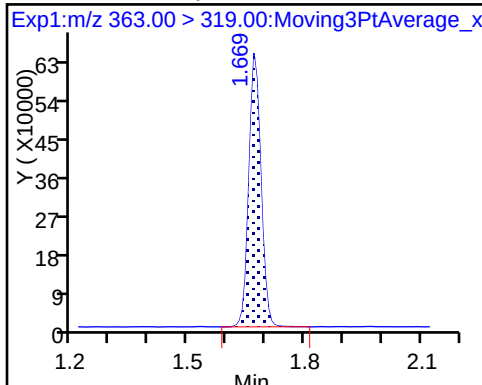
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

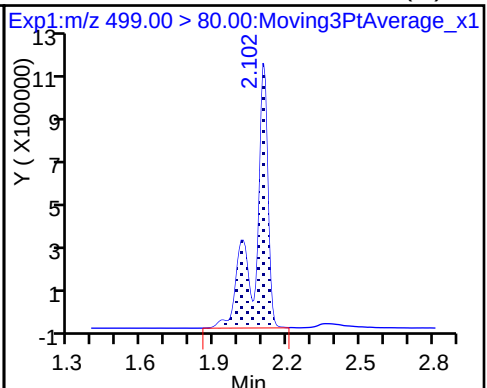
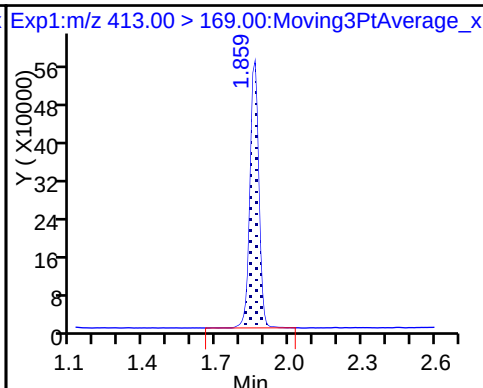
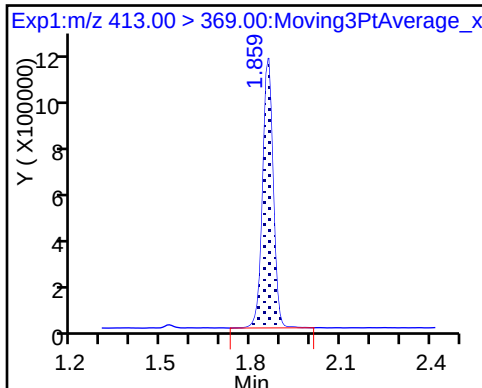
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

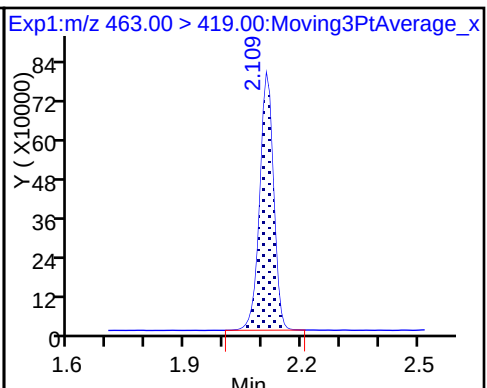
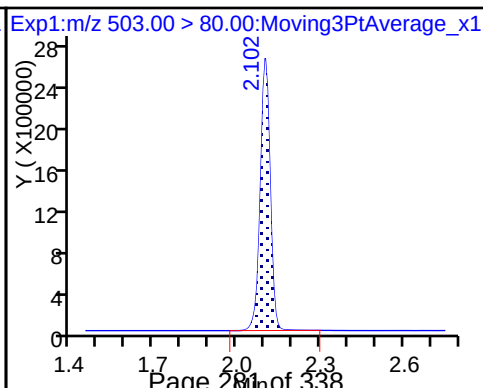
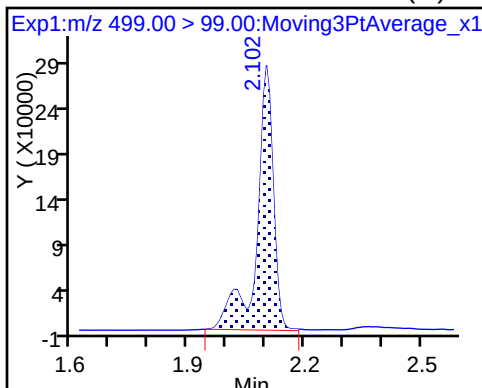
8 Perfluorooctane sulfonic acid (M)



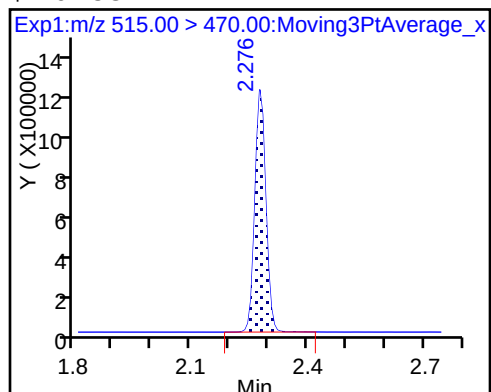
8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

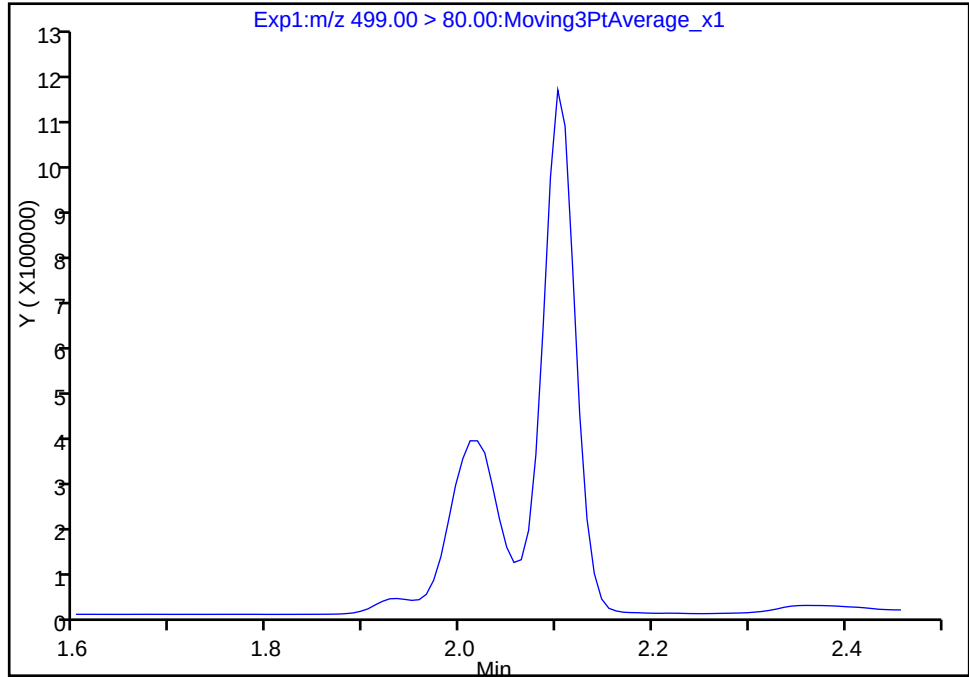
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_022.d
Injection Date: 31-Oct-2017 18:56:16 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

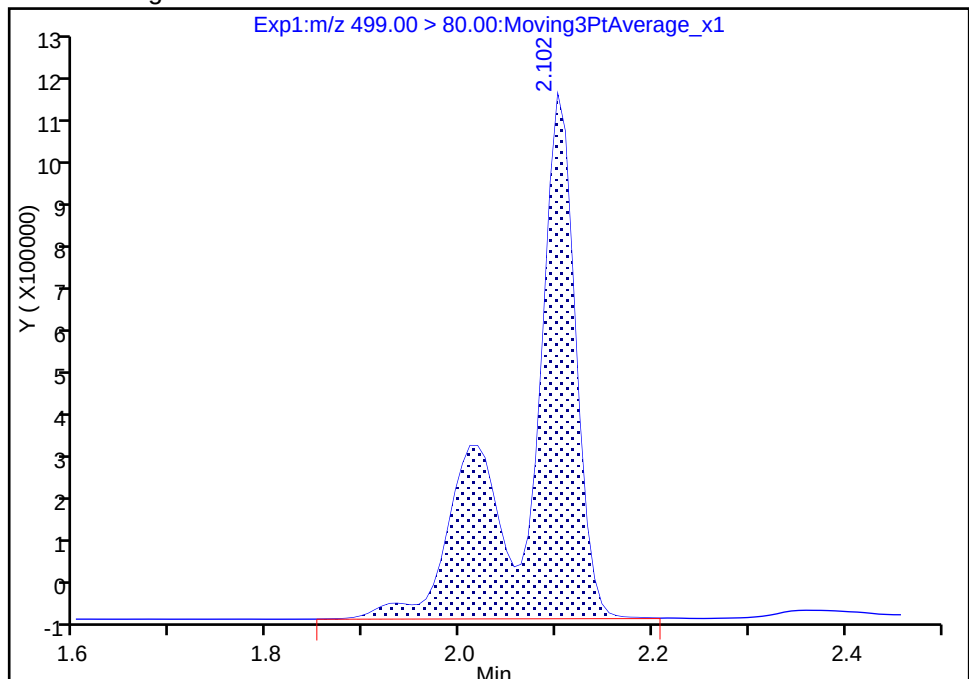
Signal: 1

Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.10
Area: 4062014
Amount: 19.782357
Amount Units: ng/ml

Reviewer: barnettj, 01-Nov-2017 10:39:30

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

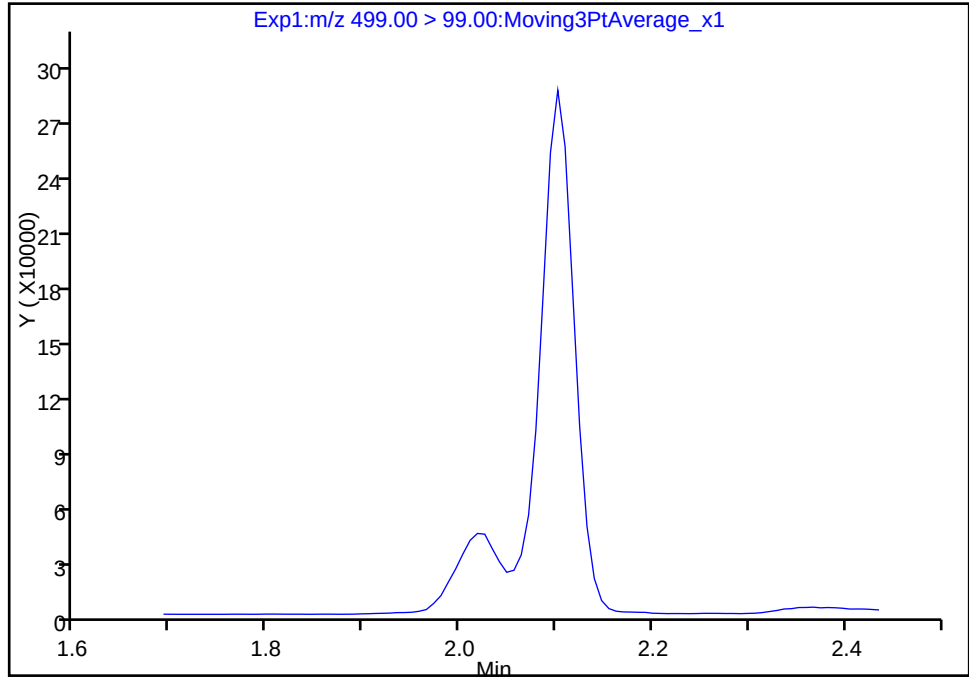
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_022.d
Injection Date: 31-Oct-2017 18:56:16 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

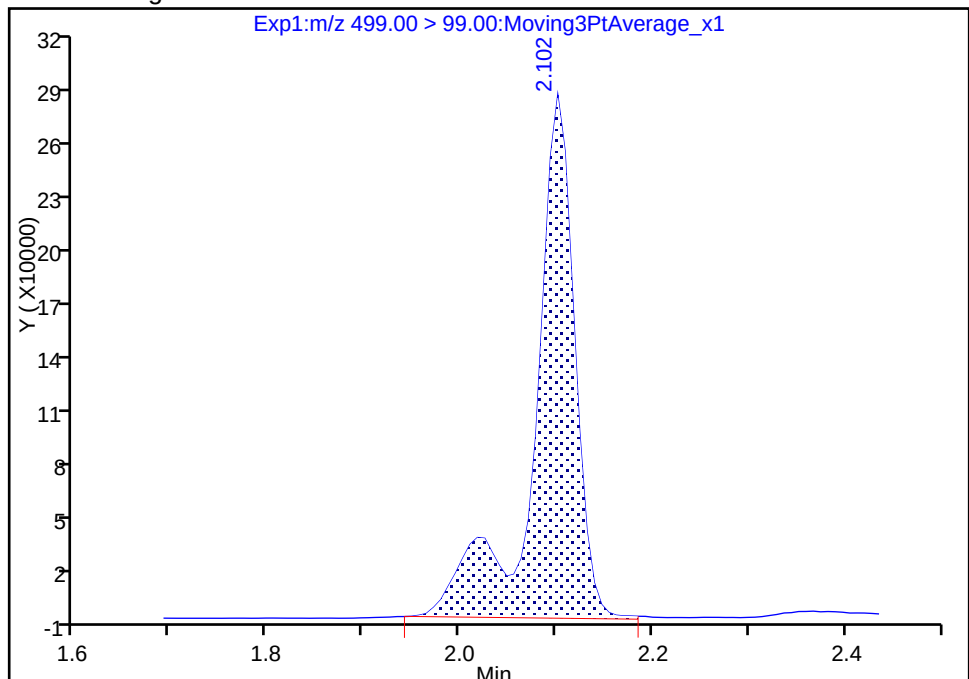
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 835321
Amount: 19.782357
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 10:39:50

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

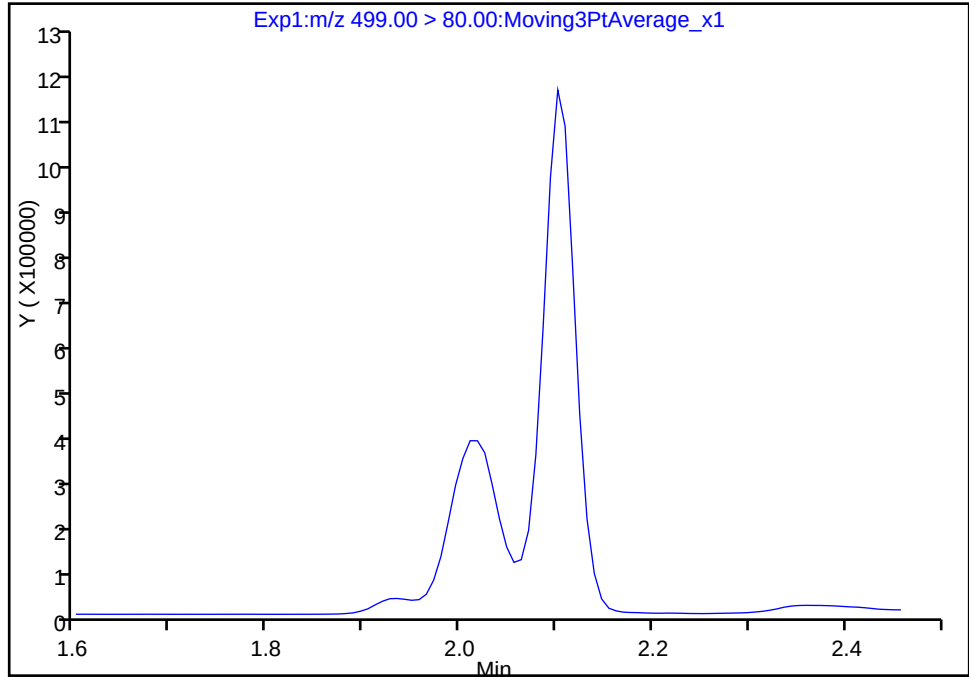
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Injection Date: 31-Oct-2017 18:56:16 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

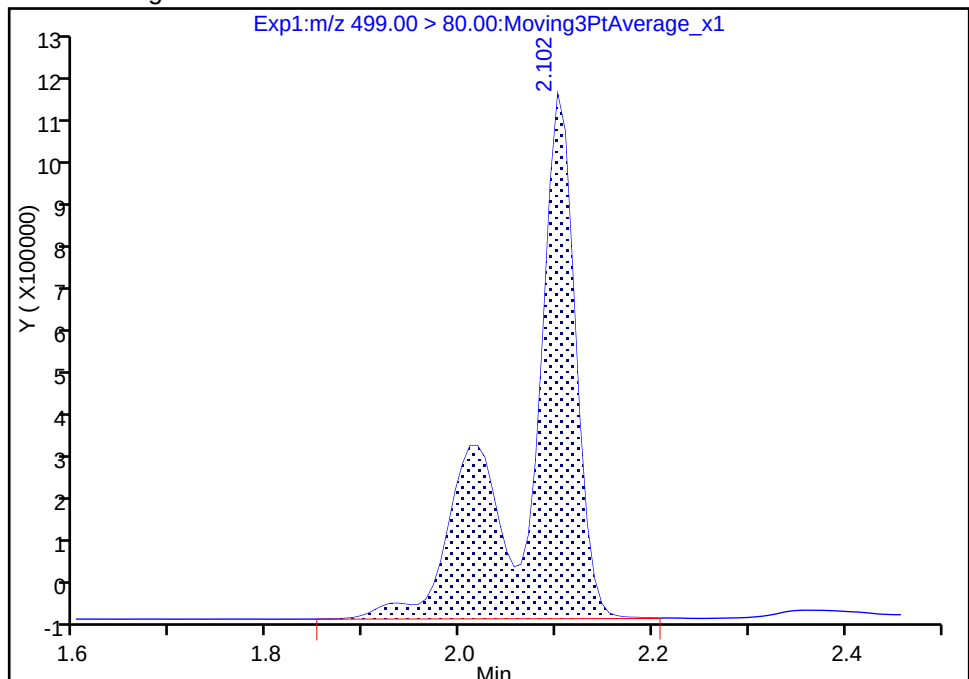
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 4062014
Amount: 19.782357
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 10:39:50

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

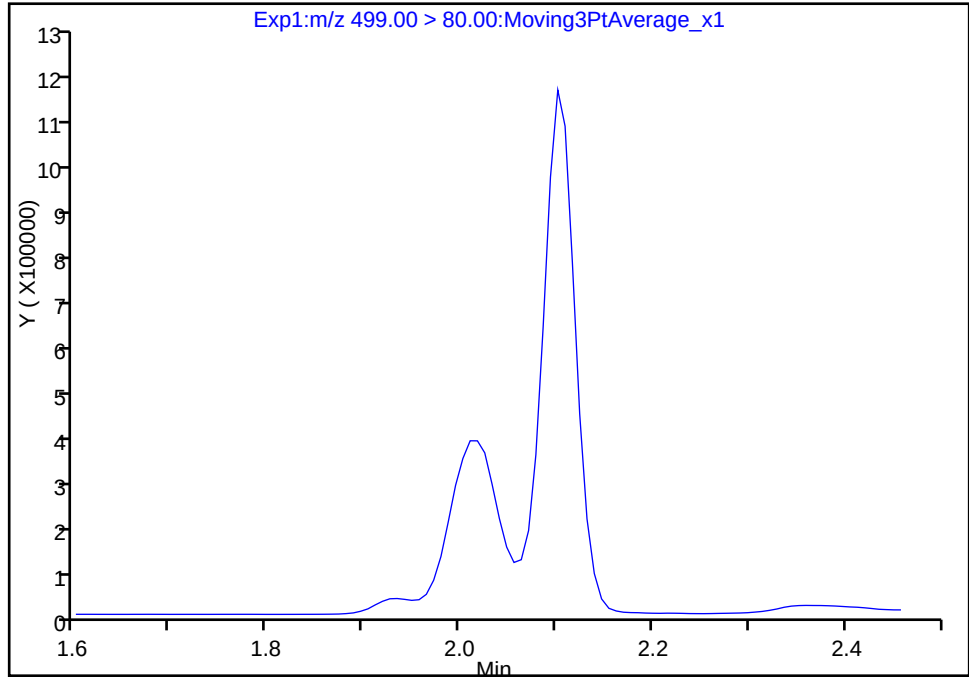
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_022.d
Injection Date: 31-Oct-2017 18:56:16 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

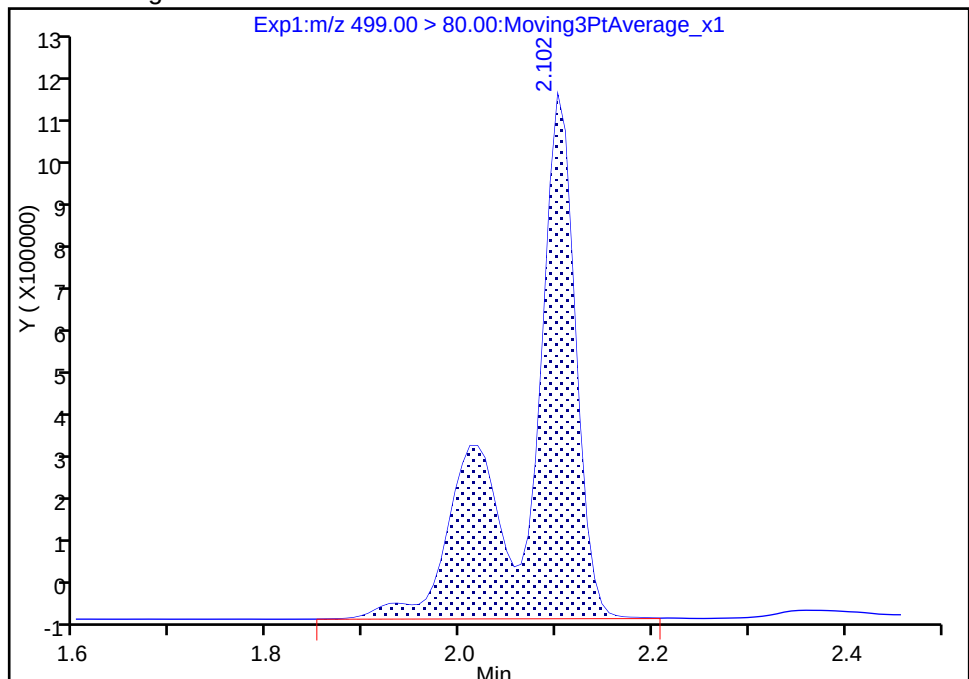
Signal: 1

Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.10
Area: 4062014
Amount: 19.782357
Amount Units: ng/ml

Reviewer: barnettj, 01-Nov-2017 10:39:30

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

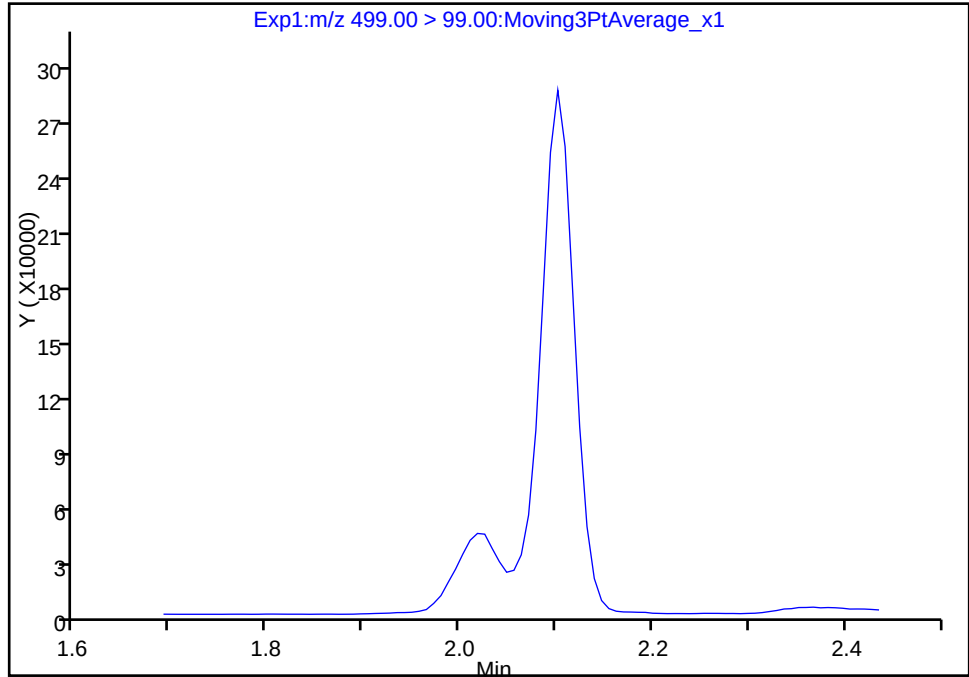
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_022.d
Injection Date: 31-Oct-2017 18:56:16 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

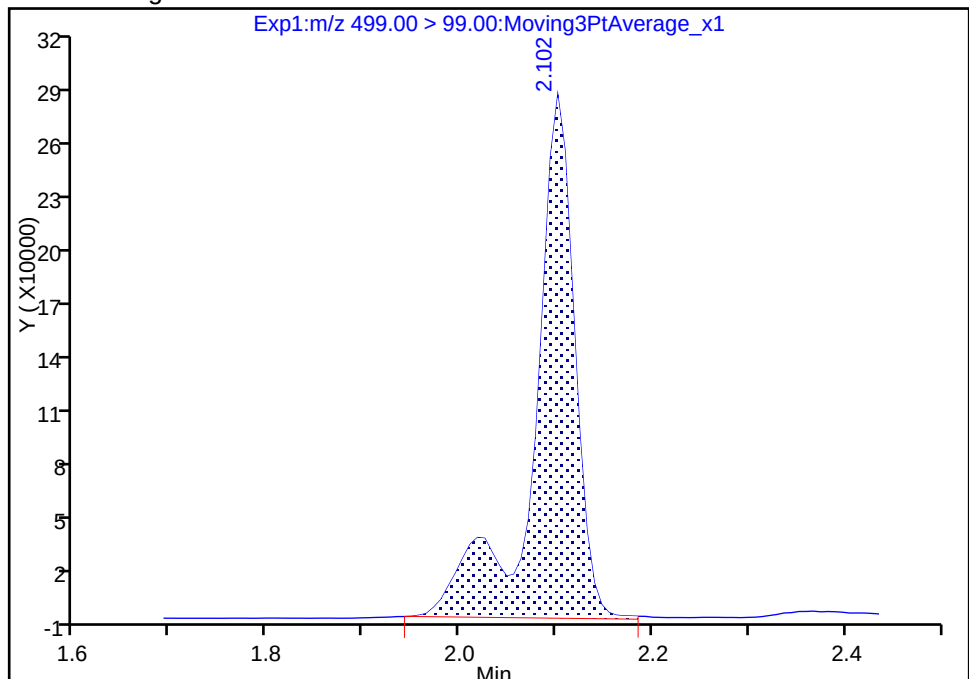
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 835321
Amount: 19.782357
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 10:39:50

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

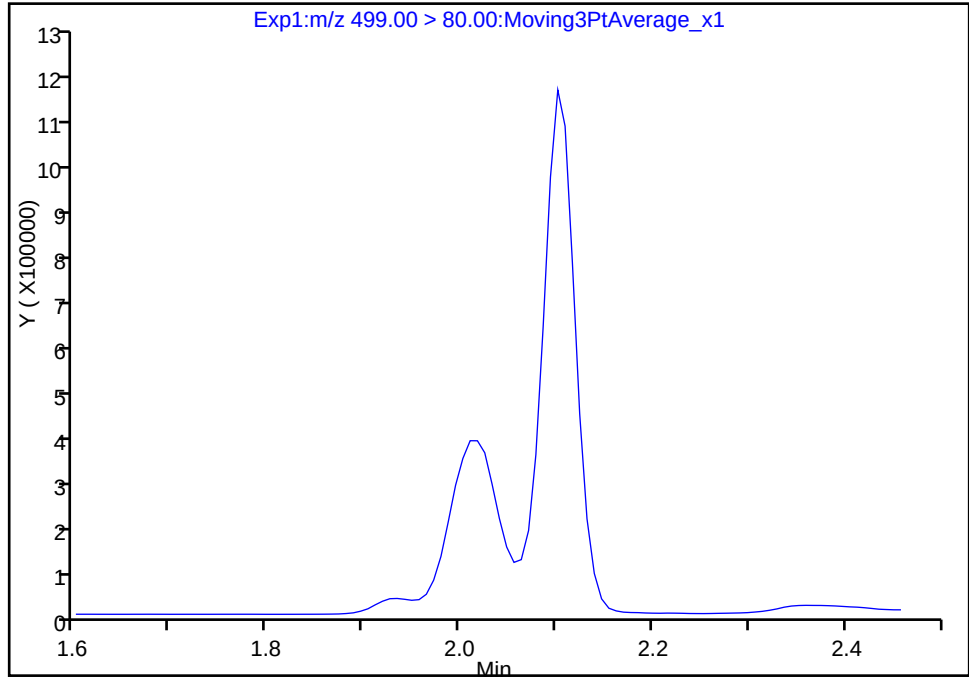
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Injection Date: 31-Oct-2017 18:56:16 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

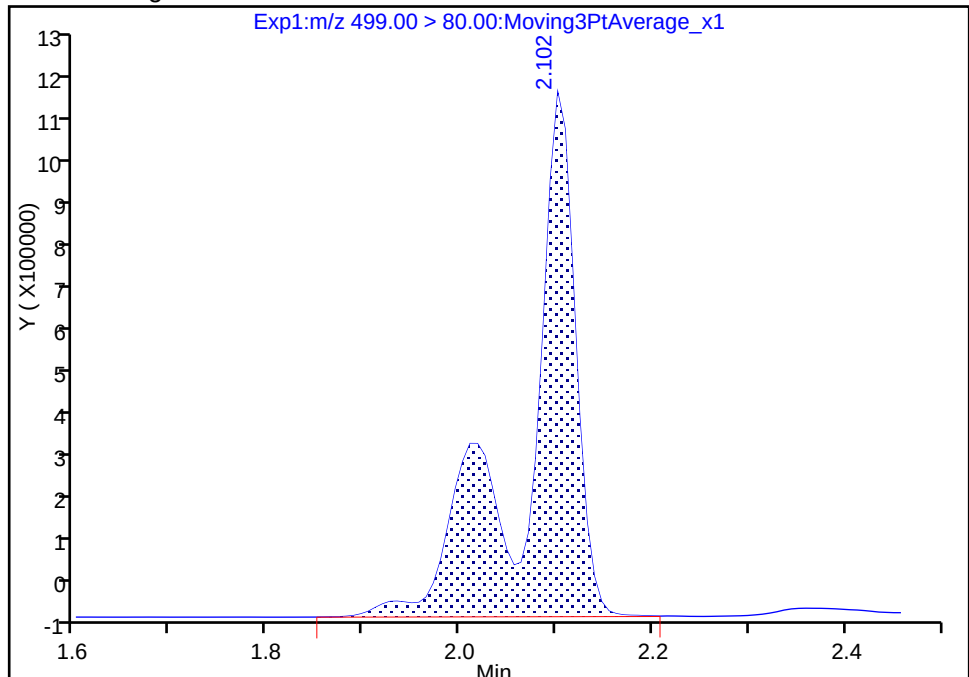
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 4062014
Amount: 19.782357
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 10:39:50

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Lab Sample ID: CCV 320-192281/30 Calibration Date: 10/31/2017 19:34
 Instrument ID: A8_N Calib Start Date: 10/31/2017 11:44
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/31/2017 12:08
 Lab File ID: 2017.10.31_537C_030.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8168		137	135	1.8	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9408	0.9140		14.6	15.0	-2.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.629	1.608		44.4	45.0	-1.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9301	0.9077		29.3	30.0	-2.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9283	0.9470		61.2	60.0	2.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6527	0.6499		29.9	30.0	-0.4	30.0
13C2 PFHxA	Ave	1.129	1.138		10.1	10.0	0.9	30.0
13C2 PFDA	Ave	0.8094	0.8007		9.89	10.0	-1.1	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_030.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 31-Oct-2017 19:34:17 ALS Bottle#: 5 Worklist Smp#: 30
 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\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:21:55 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 10:44:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.405	-0.001	1.000	22072460	137.4		3390	
298.90 > 99.00	1.404	1.405	-0.001	1.000	17186501		1.28(0.00-0.00)	4868	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.528	-0.003	1.000	3107520	10.1		5351	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.677	-0.008	1.000	3743541	14.6		871	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.678	-0.009	1.000	14488808	44.4		5700	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.863	-0.012		2729865	10.0		4049	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.864	-0.013	1.000	7439966	29.3		637	
413.00 > 169.00	1.851	1.864	-0.013	1.000	4074716		1.83(0.00-0.00)	1096	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.094	2.094	0.0	1.000	11375309	61.2		1156	M
499.00 > 99.00	2.094	2.094	0.0	1.000	2397414		4.74(0.00-0.00)	1292	M
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.107	-0.013		5740357	28.7		4467	
9 Perfluorononanoic acid									
463.00 > 419.00	2.102	2.116	-0.014	1.000	5323714	29.9		927	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.277	-0.009	1.000	2185727	9.89		6860	

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\20171101-49829.b\2017.10.31_537C_030.d

Injection Date: 31-Oct-2017 19:34:17

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 30

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

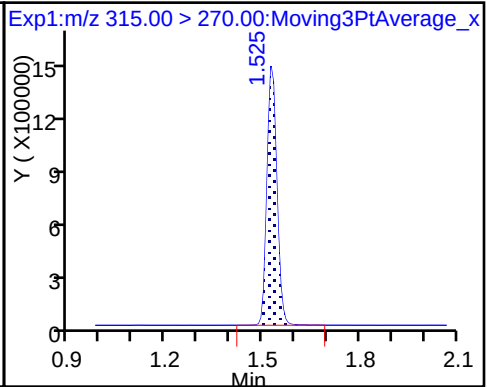
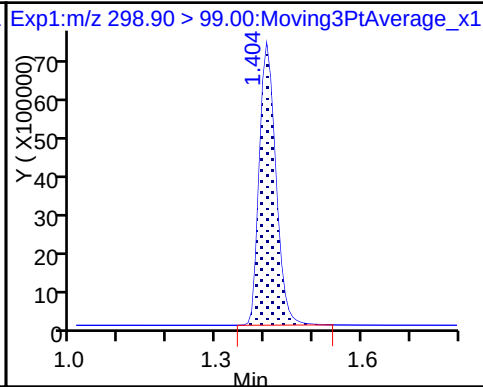
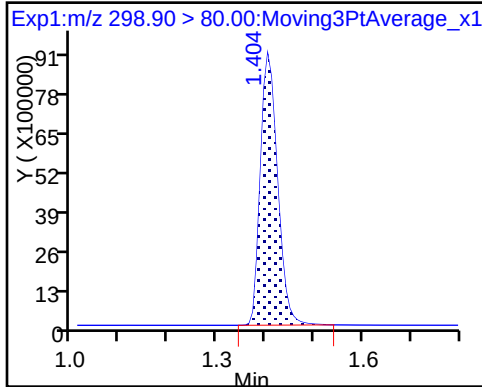
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

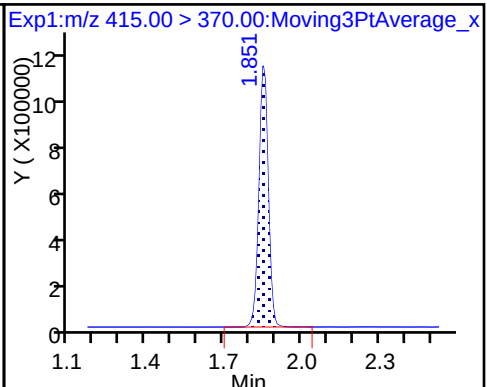
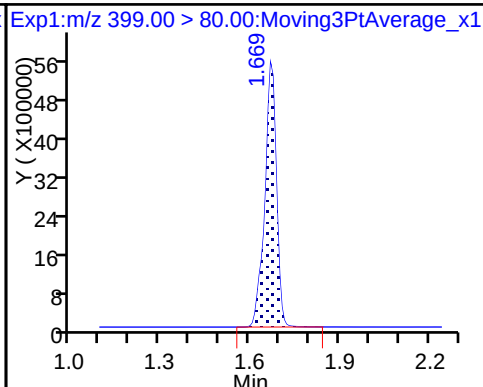
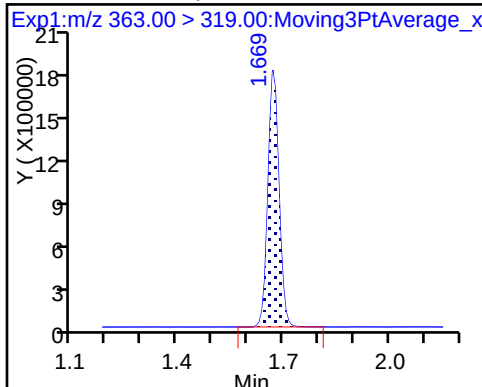
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

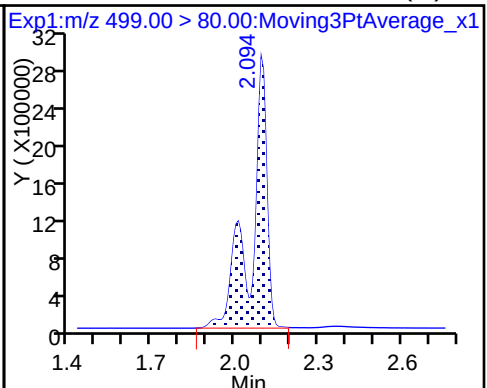
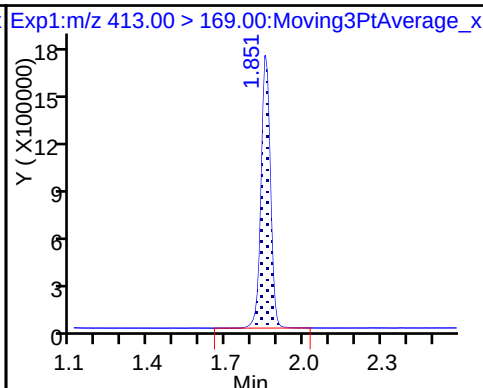
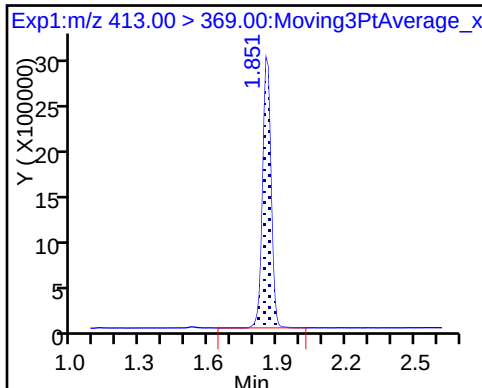
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

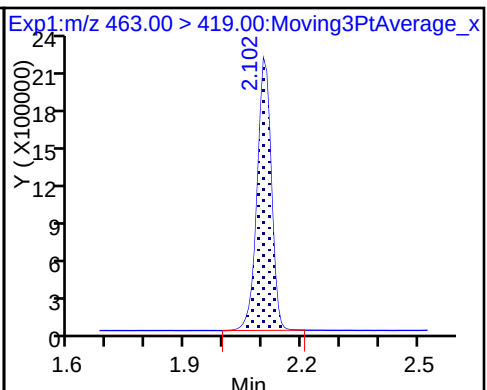
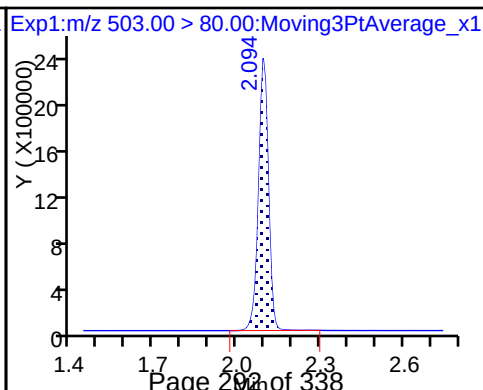
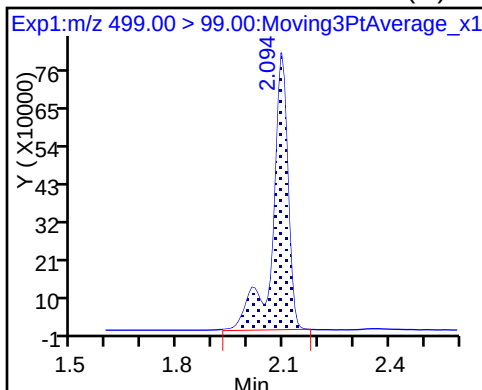
8 Perfluorooctane sulfonic acid (M)



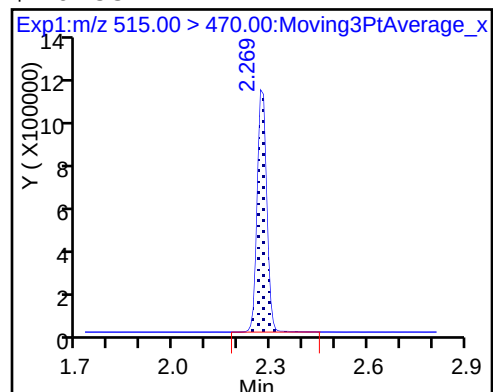
8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

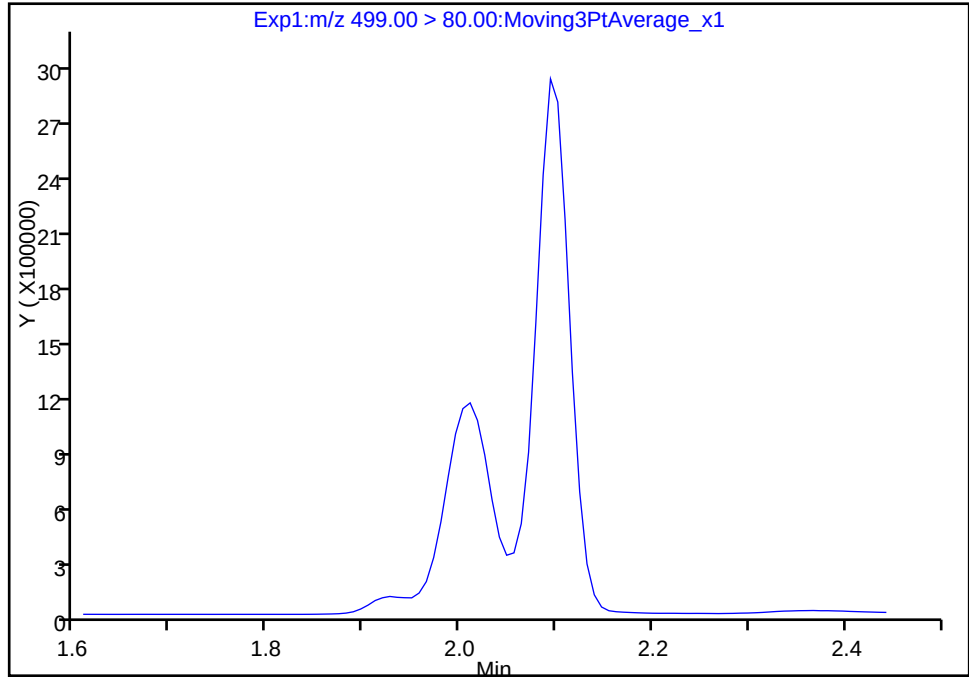
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_030.d
Injection Date: 31-Oct-2017 19:34:17 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

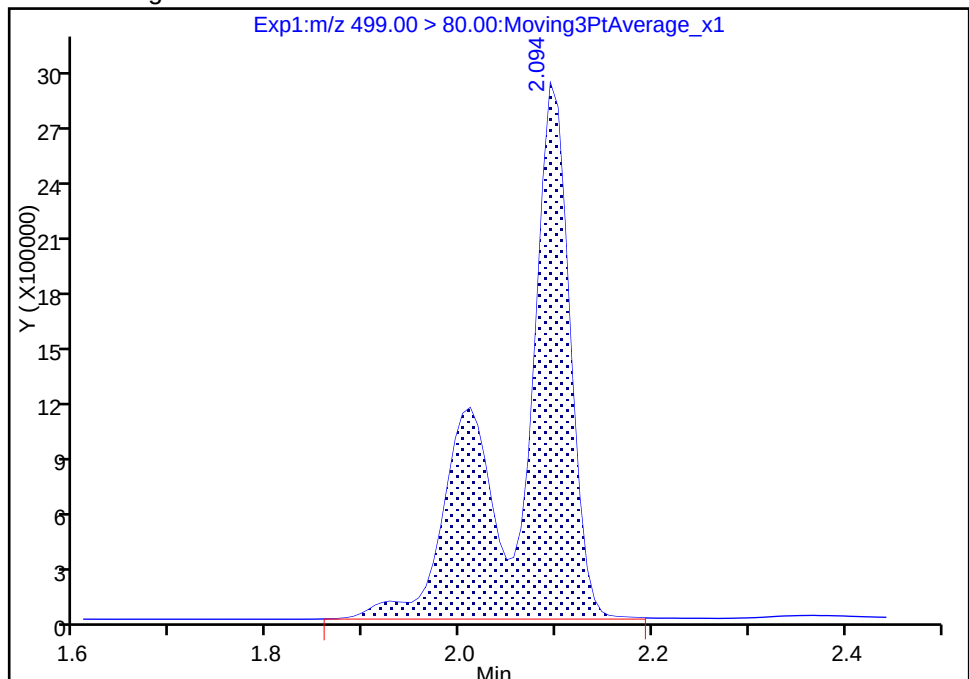
Signal: 1

Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.09
Area: 11375309
Amount: 61.225080
Amount Units: ng/ml

TestAmerica Sacramento

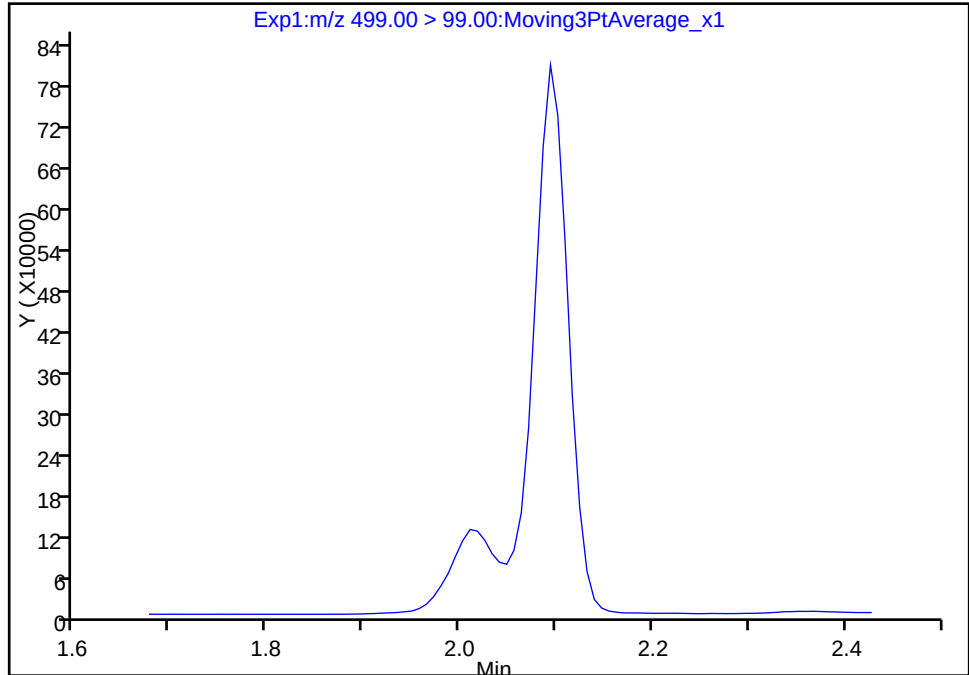
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Injection Date: 31-Oct-2017 19:34:17 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

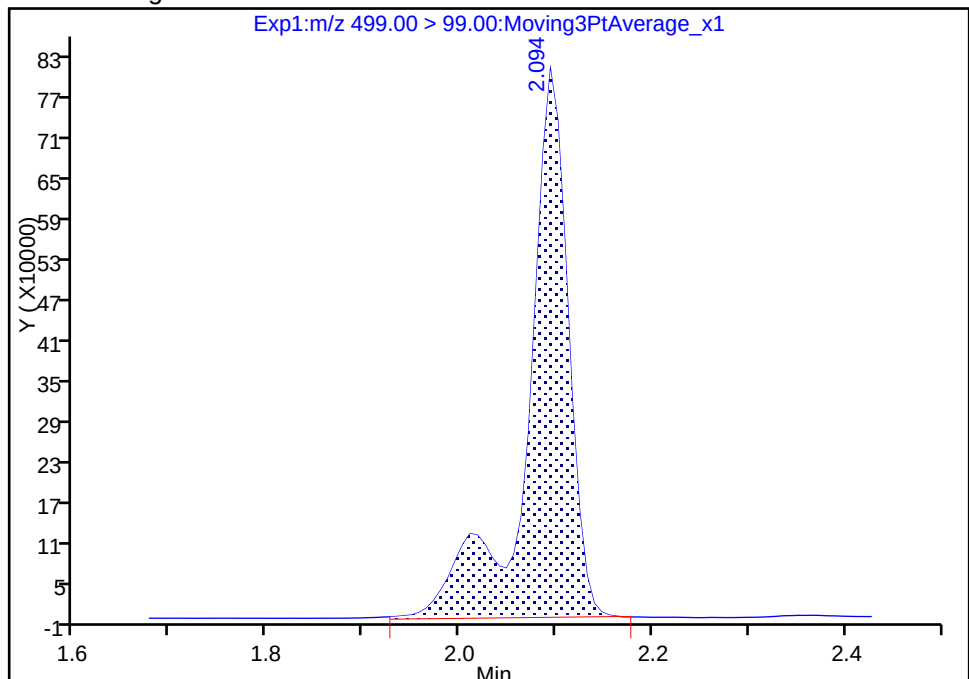
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 2397414
Amount: 61.225080
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 10:44:13

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

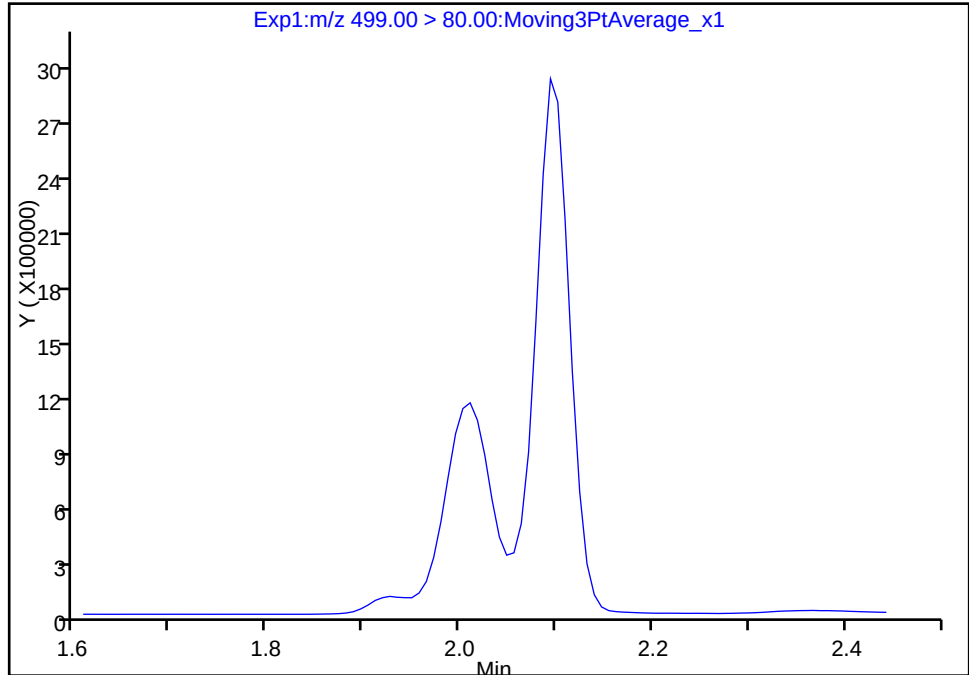
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Injection Date: 31-Oct-2017 19:34:17 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

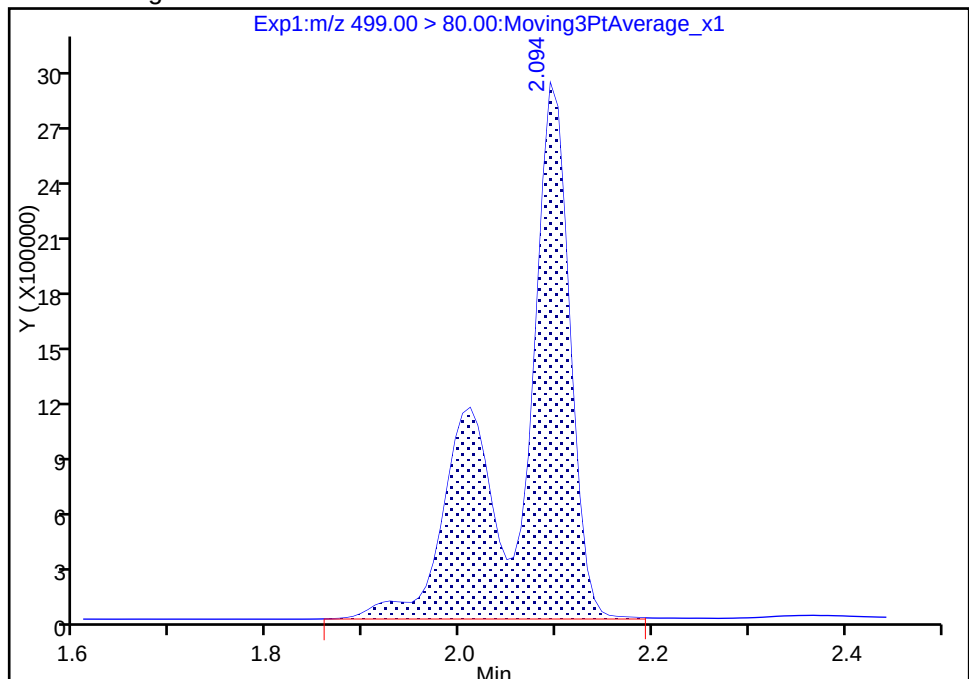
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 11375309
Amount: 61.225080
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 10:44:13

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-191138/1-A
 Matrix: Water Lab File ID: 2017.10.31_537C_012.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 10/25/2017 16:24
 Sample wt/vol: 250.00 (mL) Date Analyzed: 10/31/2017 18:08
 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.: 192279 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	89		70-130
STL00996	13C2 PFDA	99		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_012.d
 Lims ID: MB 320-191138/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 31-Oct-2017 18:08:37 ALS Bottle#: 8 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-191138/1-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.528	0.005	1.000	3236912	8.88		4565	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		3230211	10.0		3749	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.107	-0.005		7280484	28.7		4224	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2587897	9.90		7809	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_012.d

Injection Date: 31-Oct-2017 18:08:37

Instrument ID: A8_N

Lims ID: MB 320-191138/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 8

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

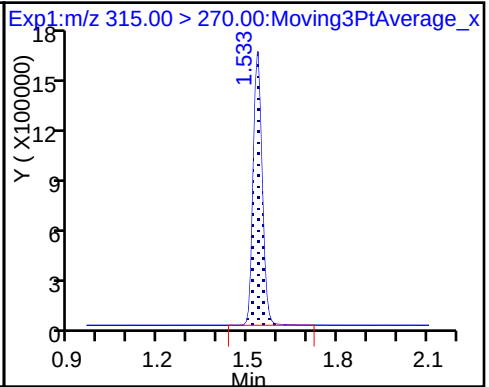
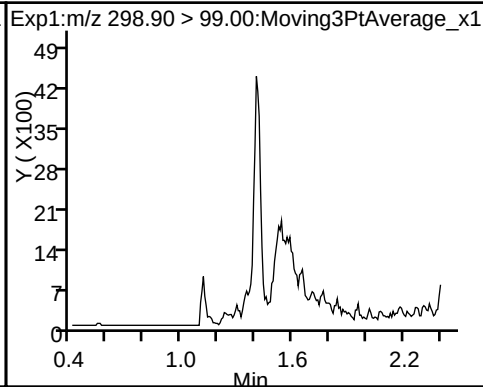
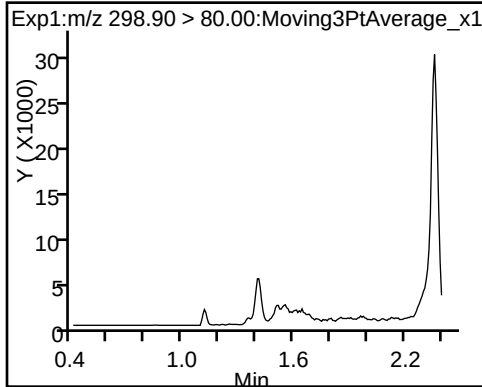
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

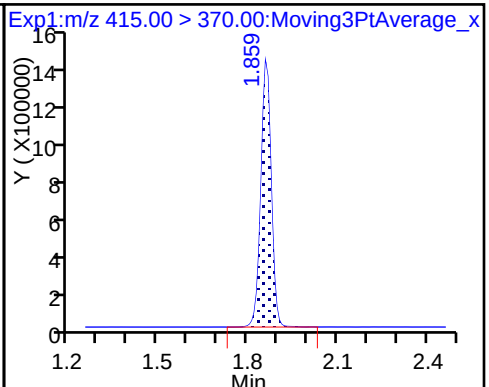
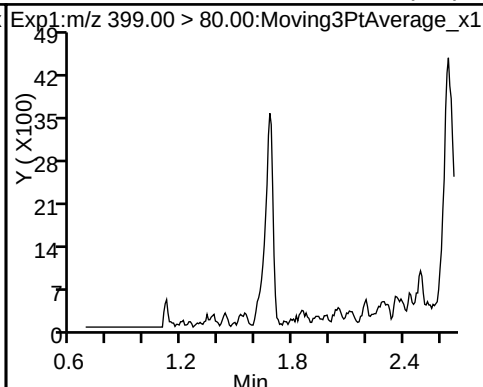
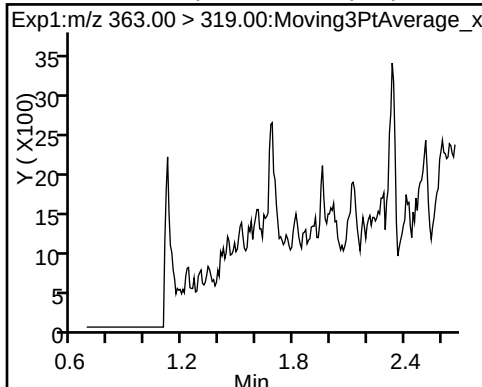
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

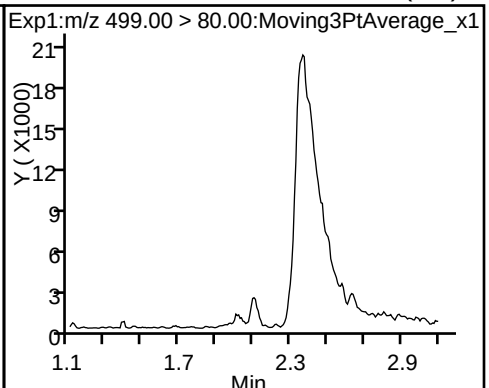
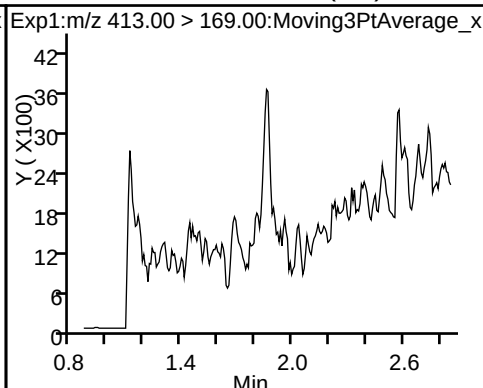
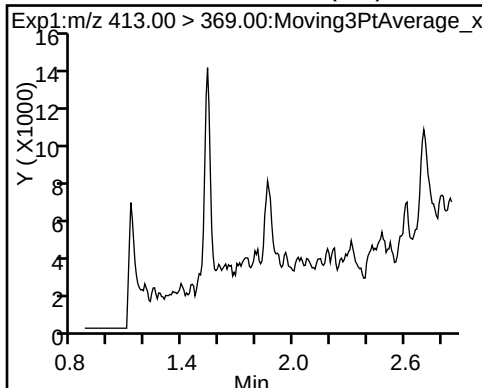
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

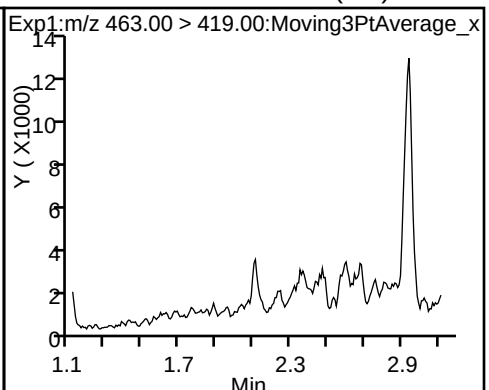
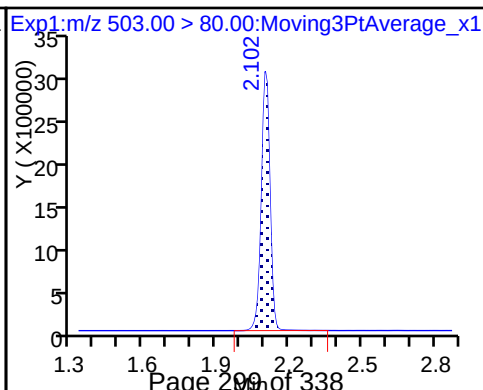
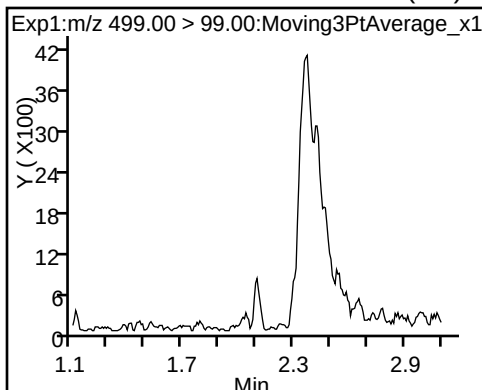
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

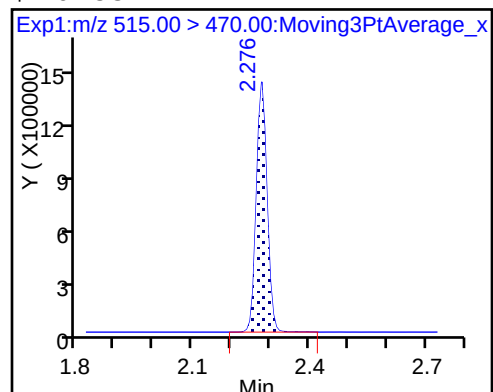


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_012.d
Lims ID: MB 320-191138/1-A
Client ID:
Sample Type: MB
Inject. Date: 31-Oct-2017 18:08:37 ALS Bottle#: 8 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-191138/1-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK027

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.88	88.80
\$ 10 13C2 PFDA	10.0	9.90	98.98

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-191138/2-A
 Matrix: Water Lab File ID: 2017.10.31_537C_013.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 10/25/2017 16:24
 Sample wt/vol: 250.00 (mL) Date Analyzed: 10/31/2017 18:13
 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.: 192279 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	127	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	64.9		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	65.1		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	101		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	33.0		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	279		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	98		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_013.d
 Lims ID: LCS 320-191138/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 31-Oct-2017 18:13:22 ALS Bottle#: 9 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-191138/2-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 10:59:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.405	-0.001	1.000	15196667	69.8		2566	
298.90 > 99.00	1.404	1.405	-0.001	1.000	11602803		1.31(0.00-0.00)	3586	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.528	0.005	1.000	3121427	9.19		3951	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	2335267	8.25		665	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.678	-0.001	1.000	9577999	25.2		3979	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		3009860	10.0		3458	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.864	-0.005	1.000	4538565	16.2		436	
413.00 > 169.00	1.859	1.864	-0.005	1.000	2401610		1.89(0.00-0.00)	552	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	6895564	31.9		787	M
499.00 > 99.00	2.102	2.094	0.008	1.000	1443085		4.78(0.00-0.00)	955	M
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.107	-0.005		6684674	28.7		4077	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	3198428	16.3		920	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2393399	9.82		5883	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_013.d

Injection Date: 31-Oct-2017 18:13:22

Instrument ID: A8_N

Lims ID: LCS 320-191138/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 9

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

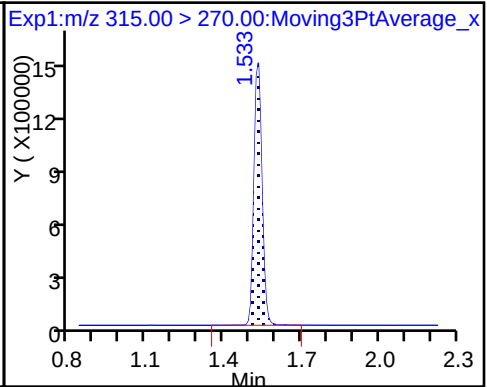
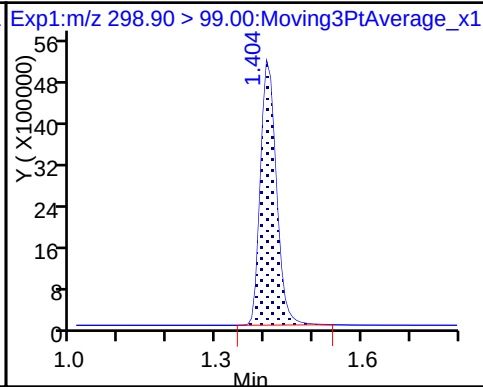
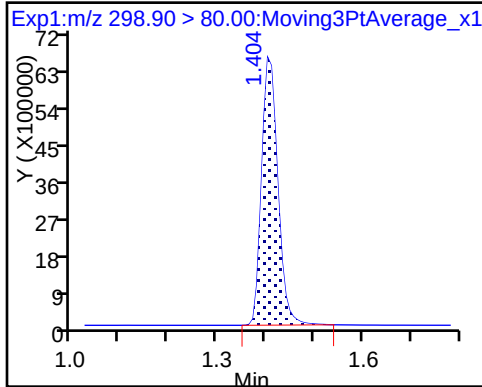
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

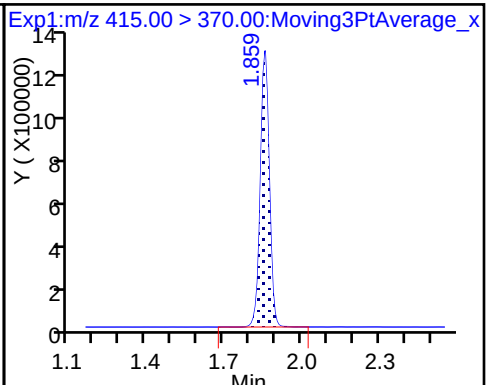
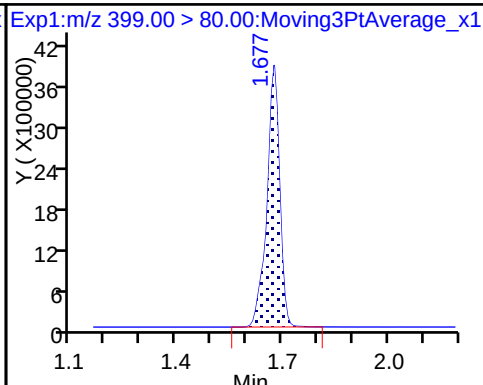
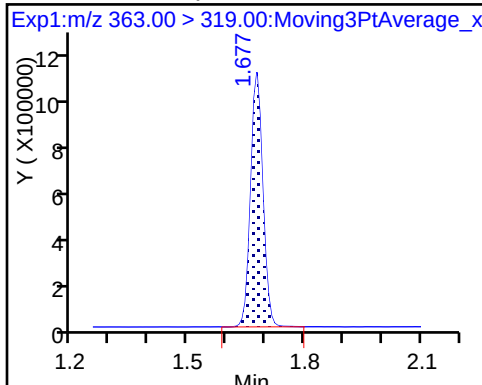
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

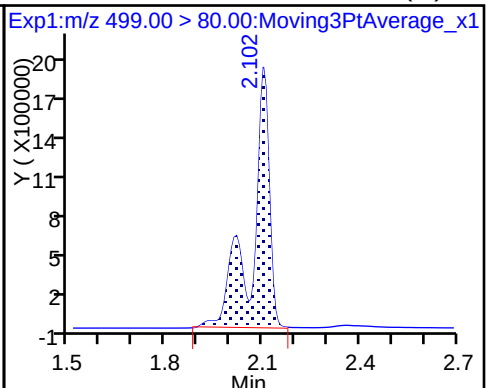
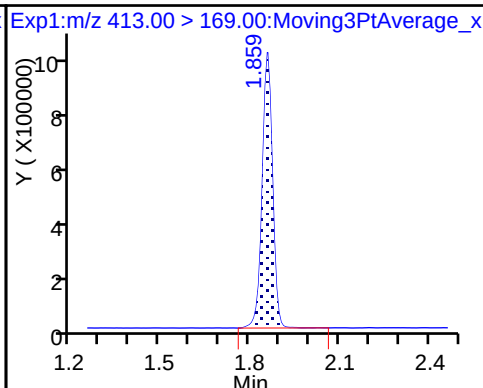
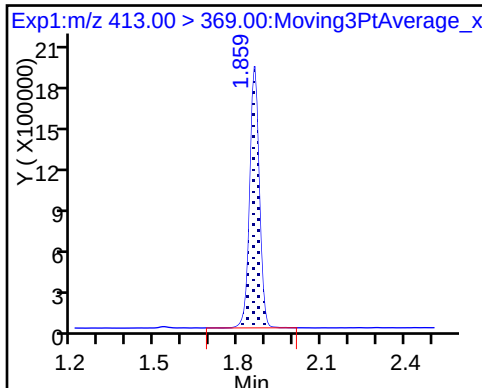
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

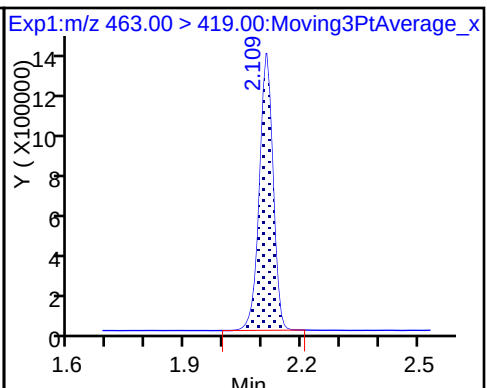
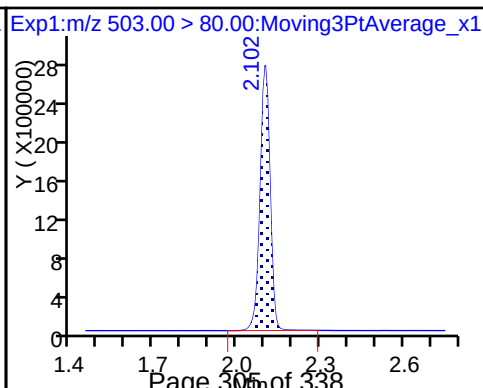
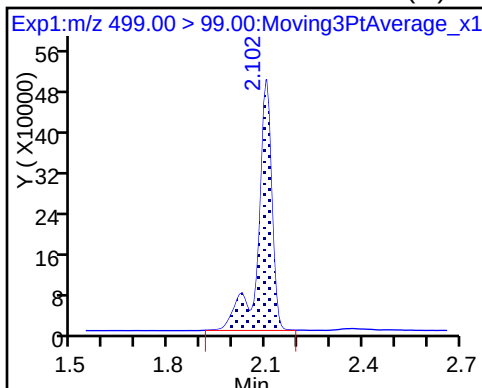
8 Perfluorooctane sulfonic acid (M)



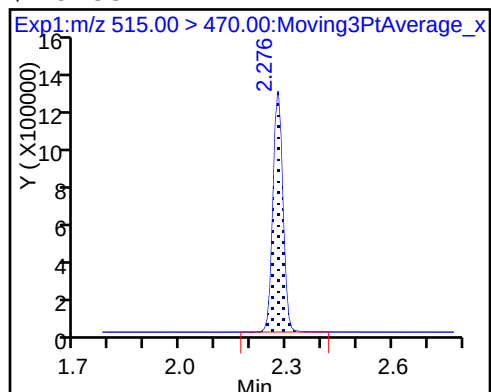
8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_013.d
Lims ID: LCS 320-191138/2-A
Client ID:
Sample Type: LCS
Inject. Date: 31-Oct-2017 18:13:22 ALS Bottle#: 9 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-191138/2-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 10:59:45

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.19	91.90
\$ 10 13C2 PFDA	10.0	9.82	98.25

TestAmerica Sacramento

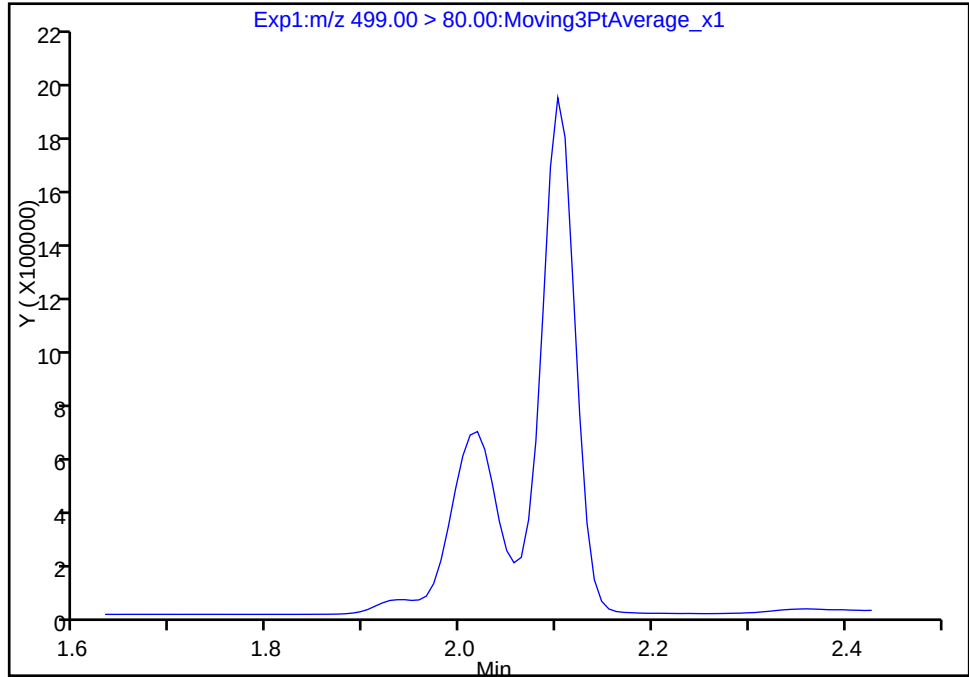
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Injection Date: 31-Oct-2017 18:13:22 Instrument ID: A8_N
Lims ID: LCS 320-191138/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

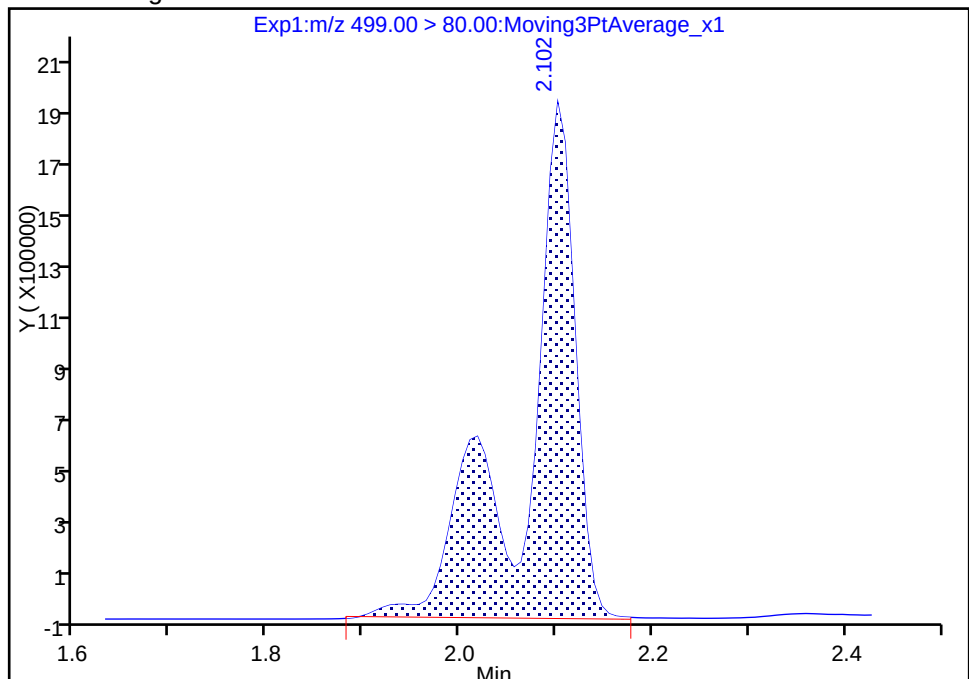
Signal: 1

Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.10
Area: 6895564
Amount: 31.870921
Amount Units: ng/ml

Reviewer: barnettj, 01-Nov-2017 10:58:58
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak
Page 308 of 338

TestAmerica Sacramento

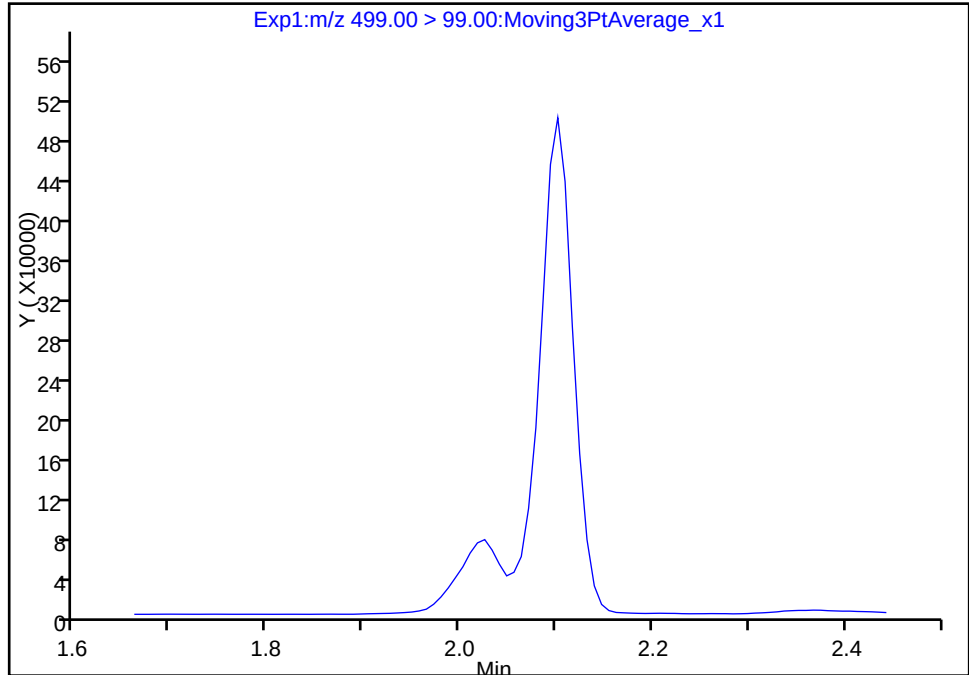
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_013.d
Injection Date: 31-Oct-2017 18:13:22 Instrument ID: A8_N
Lims ID: LCS 320-191138/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

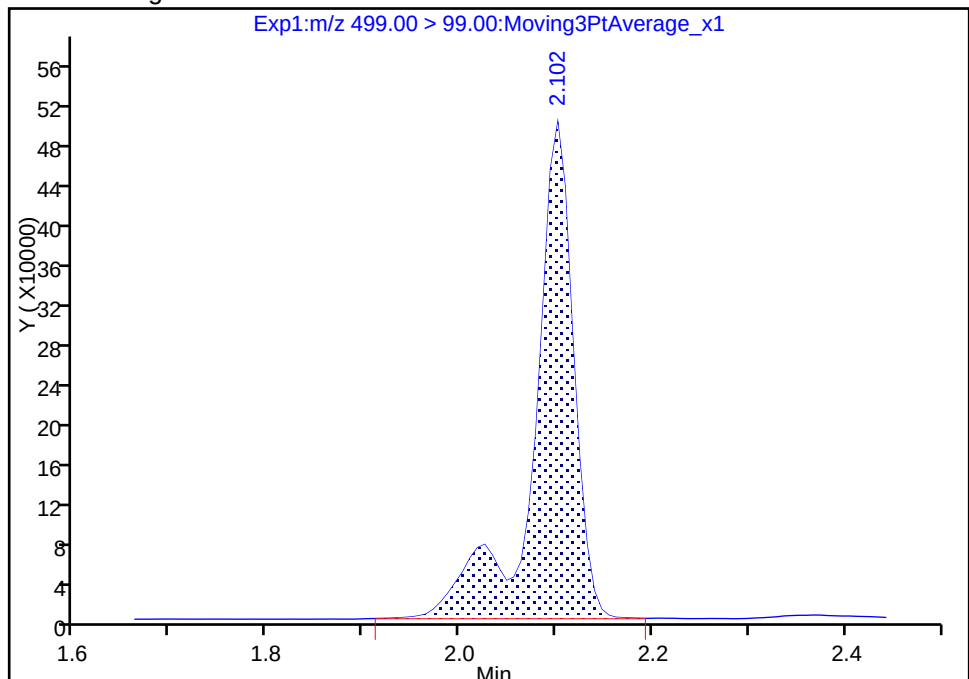
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 1443085
Amount: 31.870921
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 10:59:13

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_013.d

Injection Date: 31-Oct-2017 18:13:22

Instrument ID: A8_N

Lims ID: LCS 320-191138/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 9

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

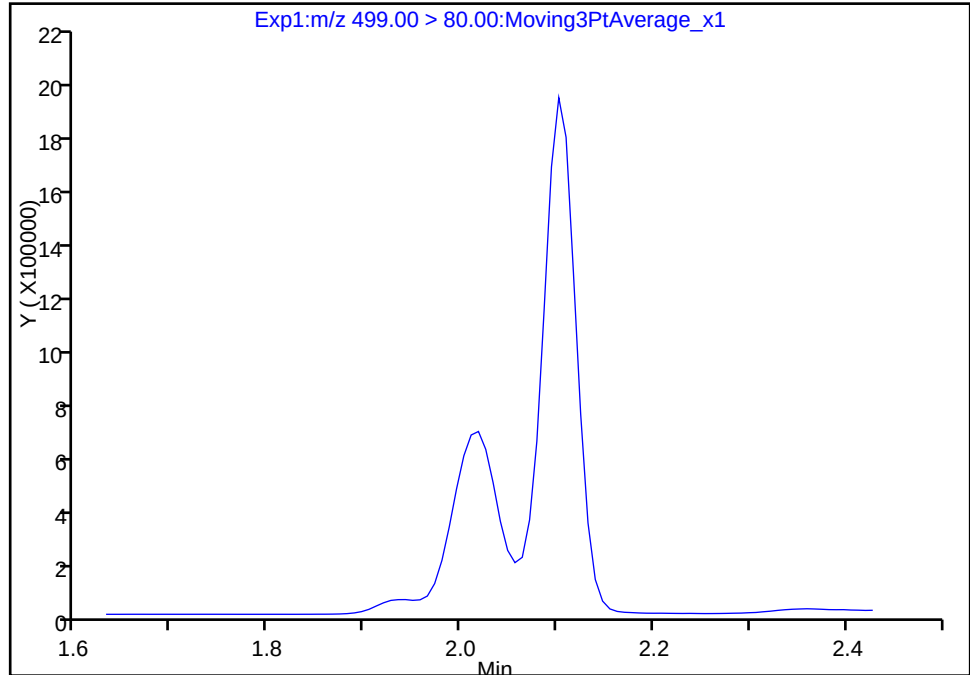
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

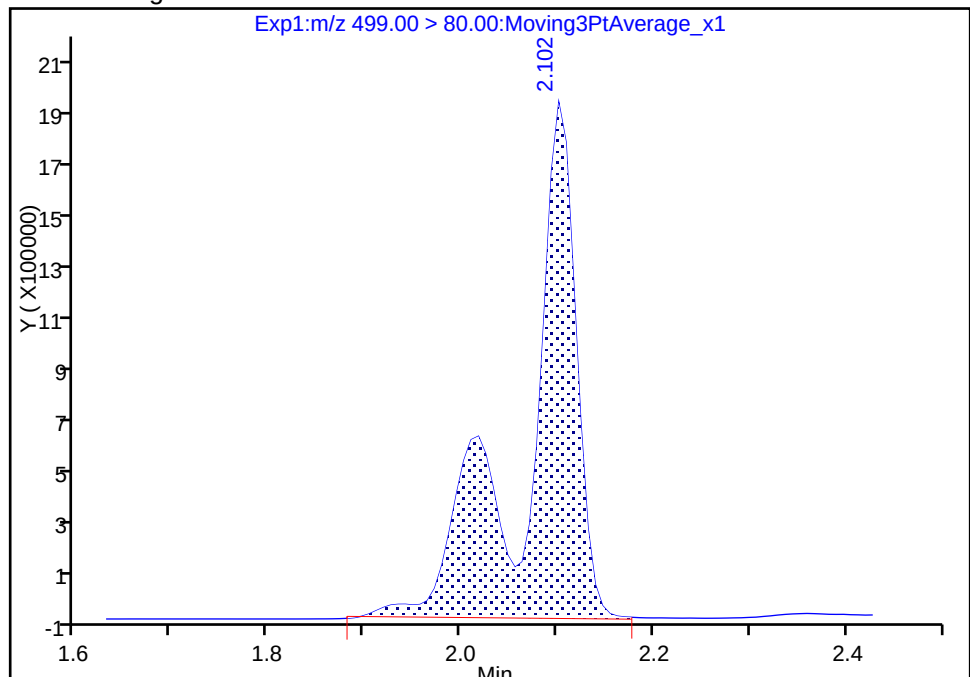
Not Detected

Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.10

Area: 6895564

Amount: 31.870921

Amount Units: ng/ml

Reviewer: barnettj, 01-Nov-2017 10:59:27

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-191138/3-A
 Matrix: Water Lab File ID: 2017.10.31_537C_014.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 10/25/2017 16:24
 Sample wt/vol: 250.00 (mL) Date Analyzed: 10/31/2017 18:18
 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.: 192279 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	135	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	69.4		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	68.6		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	106		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	36.2		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	288		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	98		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_014.d
 Lims ID: LCSD 320-191138/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 31-Oct-2017 18:18:08 ALS Bottle#: 10 Worklist Smp#: 14
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-191138/3-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 11:00:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.405	0.006	1.000	15381385	72.0		2590	
298.90 > 99.00	1.411	1.405	0.006	1.000	11938726		1.29(0.00-0.00)	3622	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.528	0.005	1.000	3199244	9.42		4437	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	2560997	9.04		752	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.678	-0.001	1.000	9942589	26.6		4005	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.863	-0.004		3010680	10.0		3718	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.864	-0.005	1.000	4855328	17.3		463	
413.00 > 169.00	1.859	1.864	-0.005	1.000	2619734		1.85(0.00-0.00)	609	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	7180023	33.7		832	M
499.00 > 99.00	2.102	2.094	0.008	1.000	1508350		4.76(0.00-0.00)	984	M
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.107	-0.005		6592068	28.7		4189	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	3372353	17.2		875	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.277	-0.001	1.000	2383251	9.78		6664	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_014.d

Injection Date: 31-Oct-2017 18:18:08

Instrument ID: A8_N

Lims ID: LCSD 320-191138/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 10

Worklist Smp#: 14

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

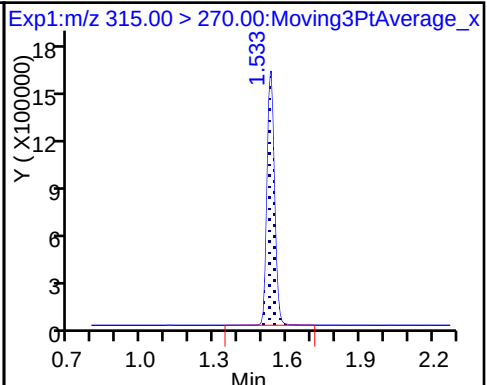
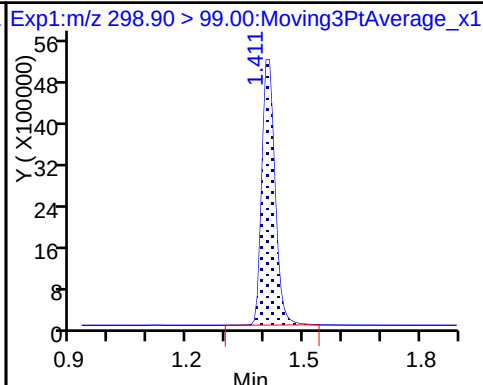
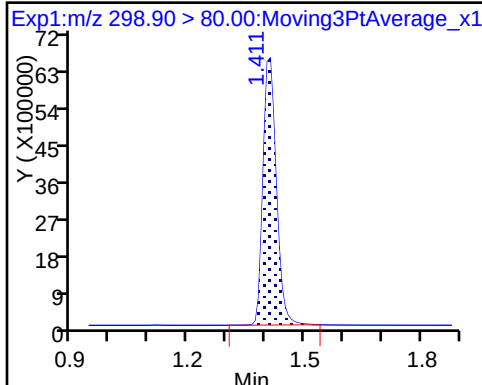
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

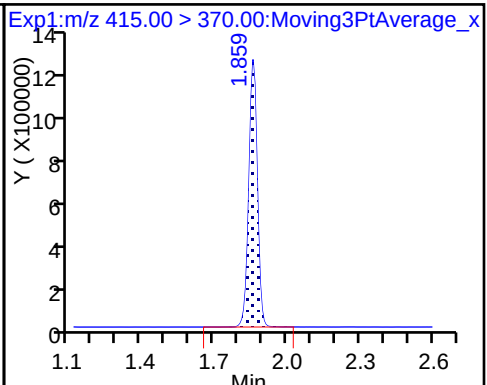
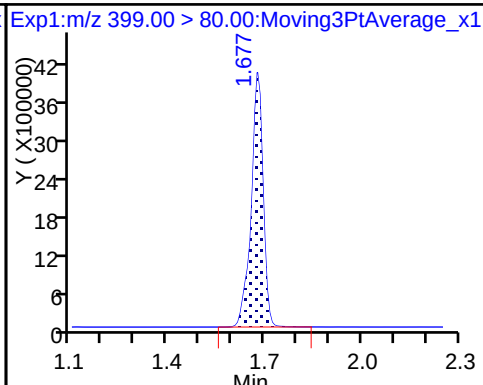
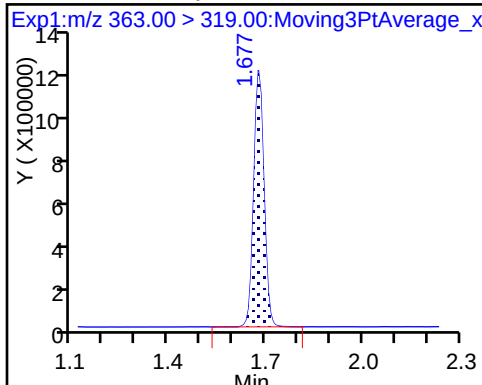
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

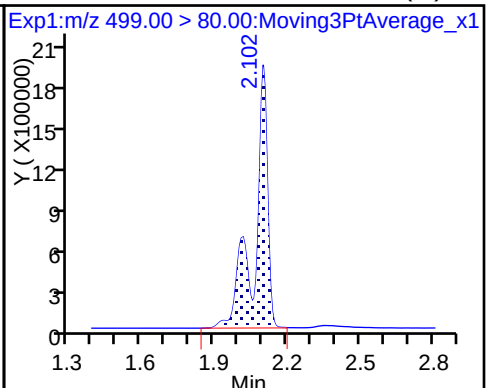
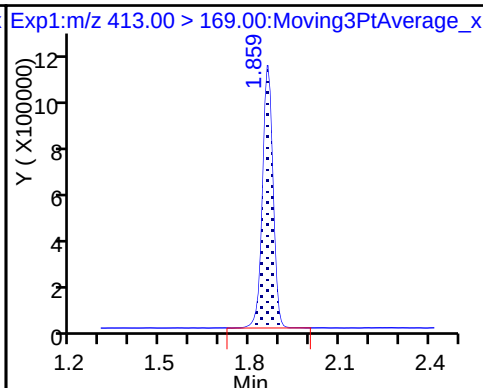
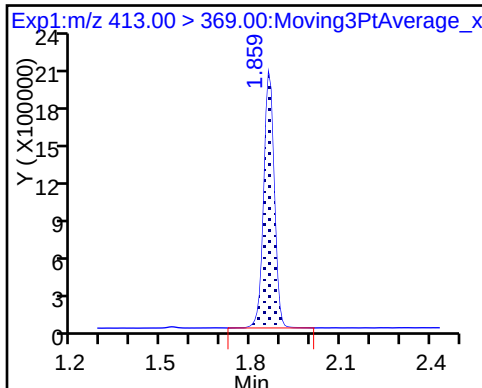
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

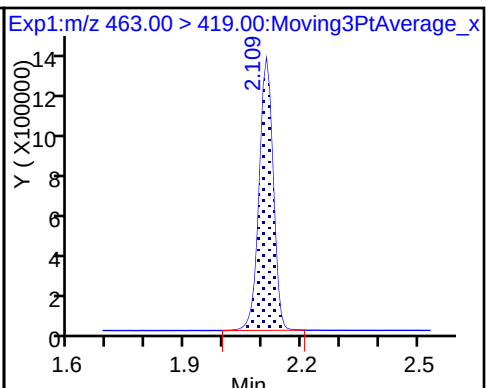
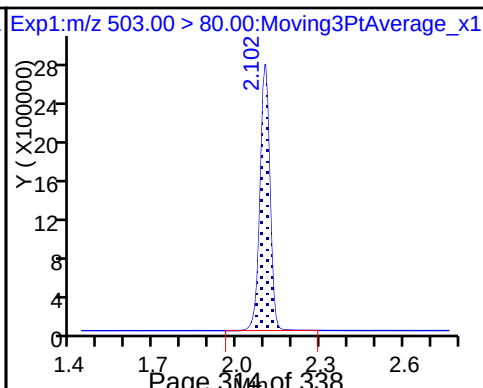
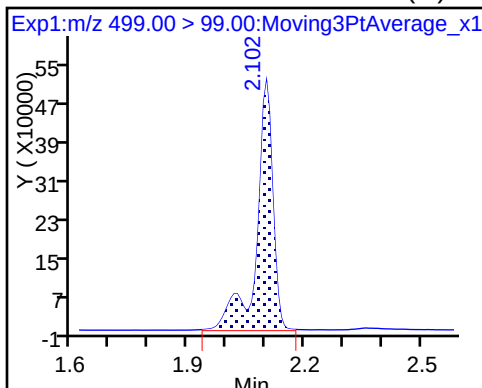
8 Perfluorooctane sulfonic acid (M)



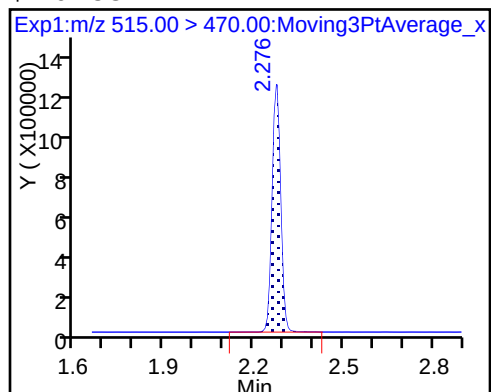
8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_014.d
Lims ID: LCSD 320-191138/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 31-Oct-2017 18:18:08 ALS Bottle#: 10 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-191138/3-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Nov-2017 11:08:59 Calib Date: 31-Oct-2017 12:08:27
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171031-49808.b\2017.10.31_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK027

First Level Reviewer: barnettj

Date: 01-Nov-2017 11:00:22

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.42	94.16
\$ 10 13C2 PFDA	10.0	9.78	97.80

TestAmerica Sacramento

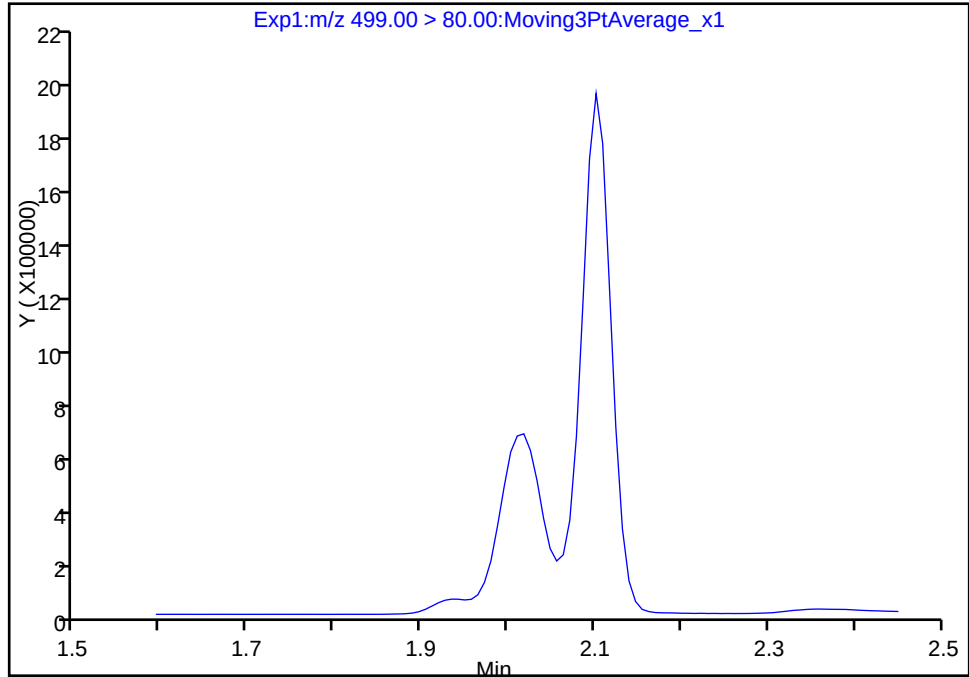
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b\2017.10.31_537C_014.d
Injection Date: 31-Oct-2017 18:18:08 Instrument ID: A8_N
Lims ID: LCSD 320-191138/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

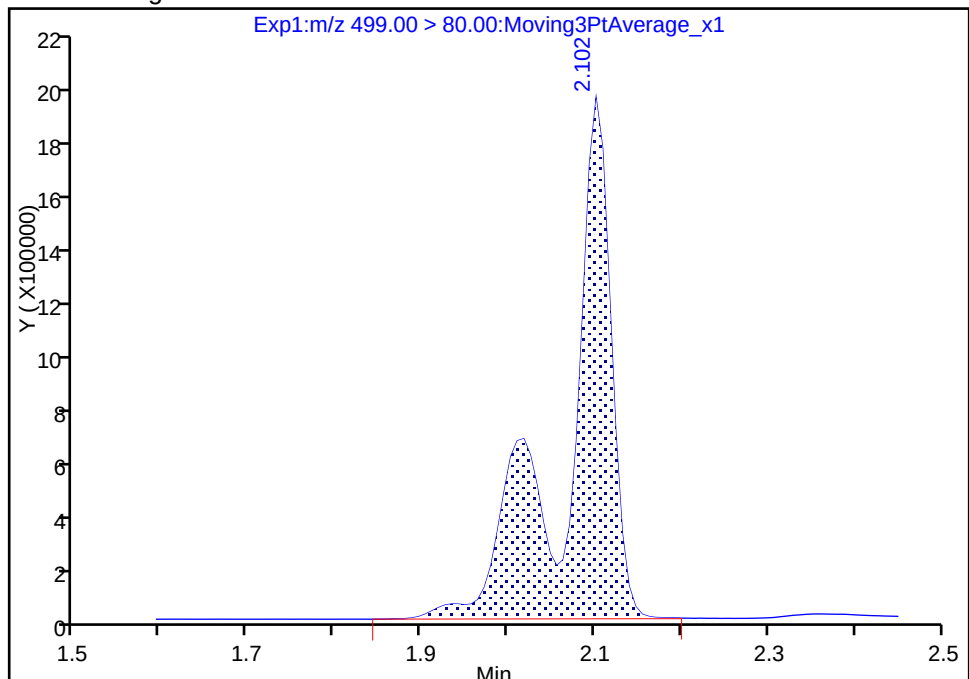
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.10
Area: 7180023
Amount: 33.651871
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 01-Nov-2017 10:59:52

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

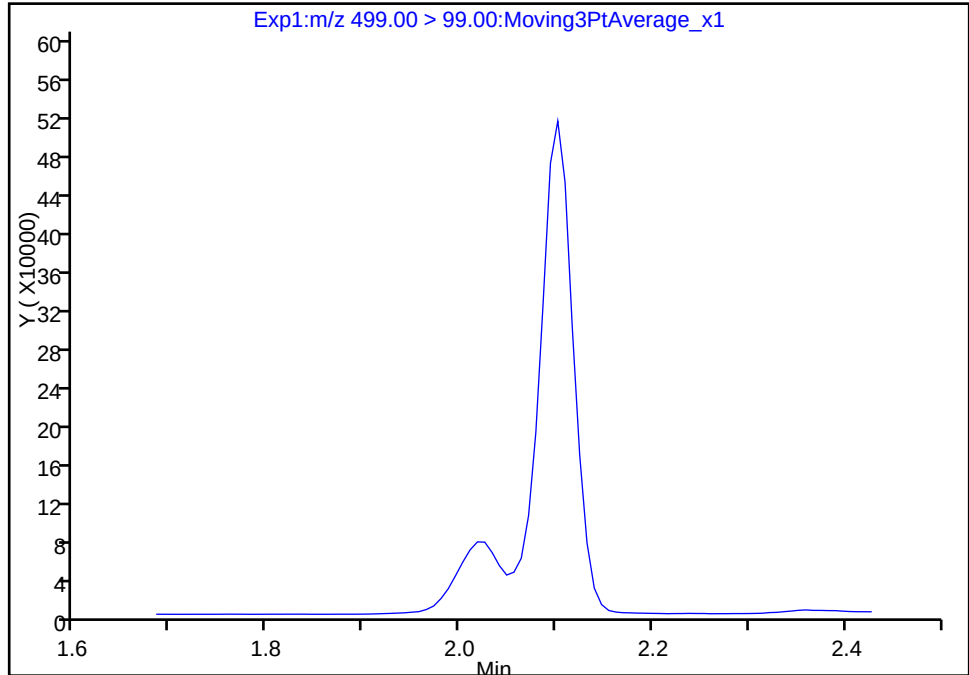
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Injection Date: 31-Oct-2017 18:18:08 Instrument ID: A8_N
Lims ID: LCSD 320-191138/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

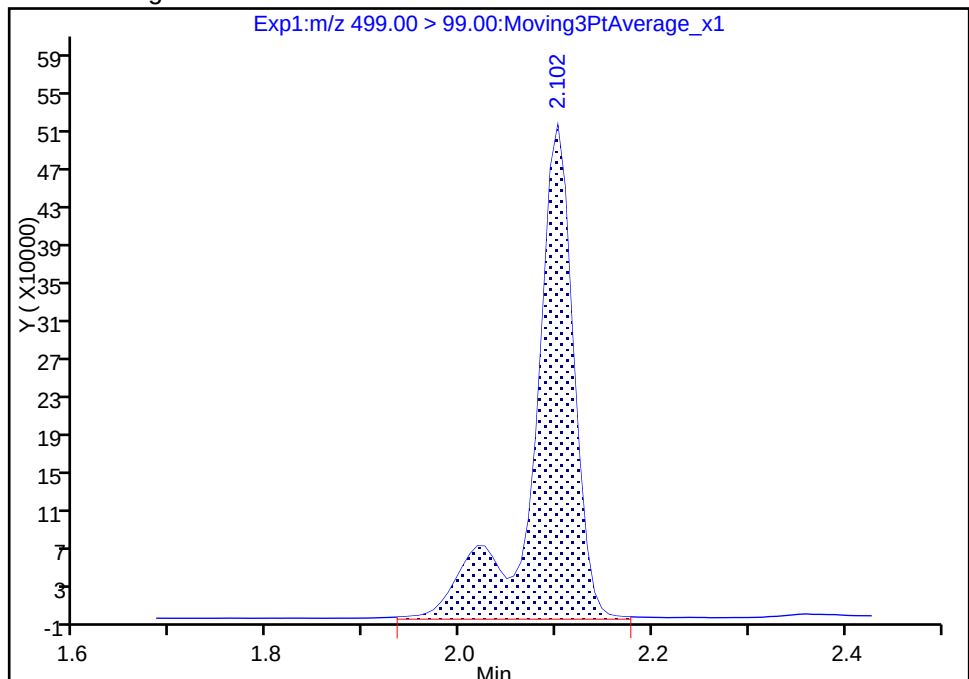
Signal: 2

Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.10
Area: 1508350
Amount: 33.651871
Amount Units: ng/ml

Reviewer: barnettj, 01-Nov-2017 11:00:13

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

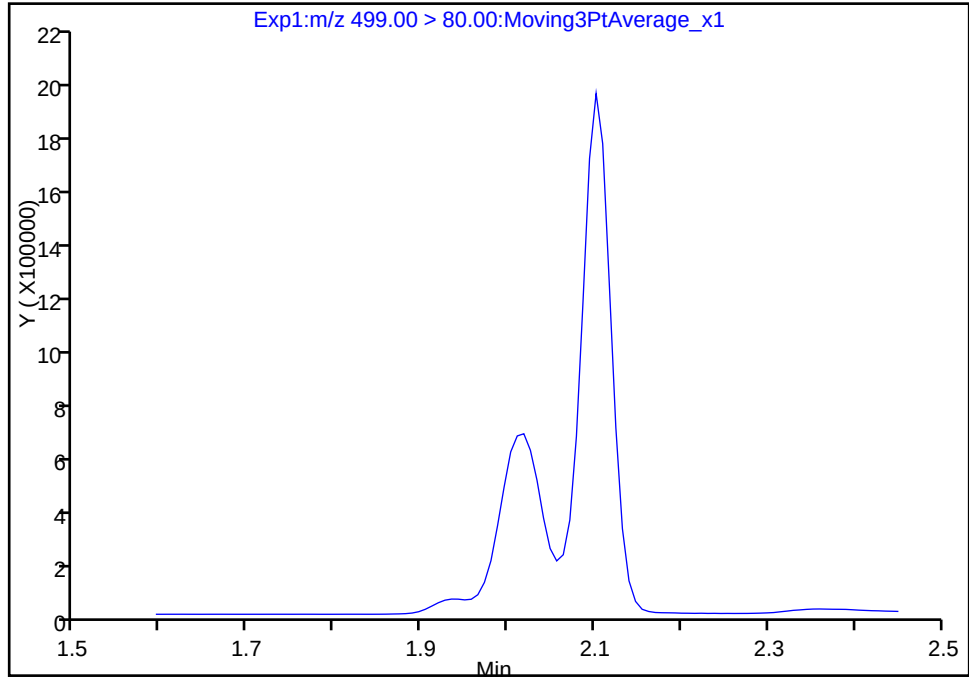
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Injection Date: 31-Oct-2017 18:18:08 Instrument ID: A8_N
Lims ID: LCSD 320-191138/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

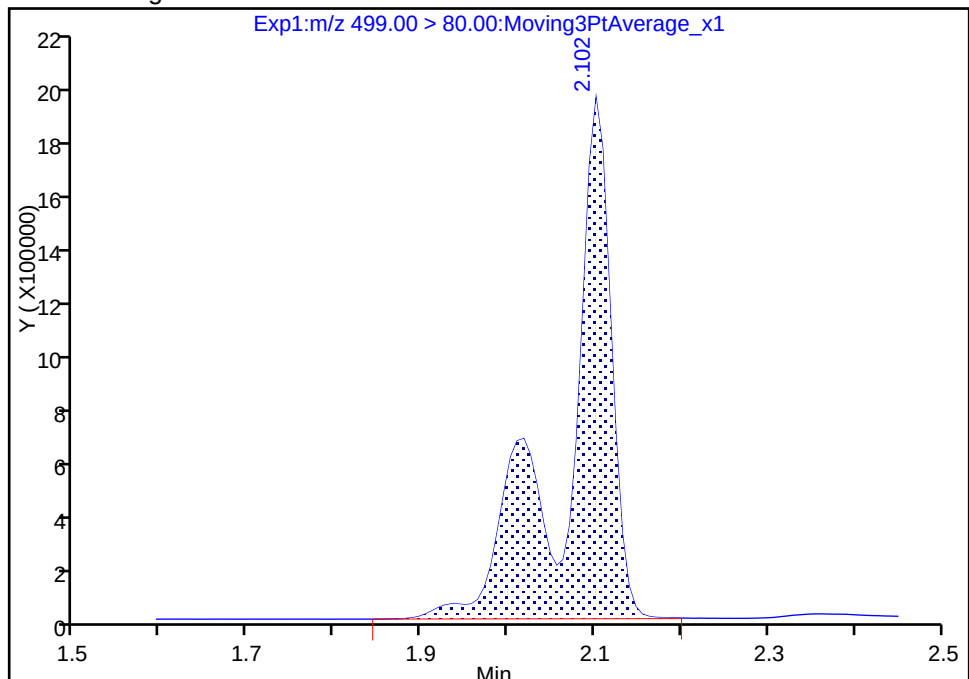
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 7180023
Amount: 33.651871
Amount Units: ng/ml



Reviewer: barnettj, 01-Nov-2017 11:00:13

Audit Action: Manually Integrated

Audit Reason: Missed Peak

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Instrument ID: A8_N Start Date: 10/31/2017 11:44Analysis Batch Number: 192162 End Date: 10/31/2017 14:58

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-192162/4		10/31/2017 11:44	1	2017.10.31_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-192162/5		10/31/2017 11:49	1	2017.10.31_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-192162/6		10/31/2017 11:54	1	2017.10.31_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-192162/7 ICISAV		10/31/2017 11:58	1	2017.10.31_537I CAL 007.d	GeminiC18 3x100 3(mm)
IC 320-192162/8		10/31/2017 12:03	1	2017.10.31_537I CAL 008.d	GeminiC18 3x100 3(mm)
IC 320-192162/9		10/31/2017 12:08	1	2017.10.31_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/31/2017 12:13	1		GeminiC18 3x100 3(mm)
CCVL 320-192162/11		10/31/2017 12:17	1	2017.10.31_537I CAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/31/2017 14:53	1		GeminiC18 3x100 3(mm)
ICV 320-192162/16		10/31/2017 14:58	1	2017.10.31_537A ICAL 003.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-32464-1

SDG No.: _____

Instrument ID: A8_NStart Date: 10/31/2017 17:59Analysis Batch Number: 192279End Date: 10/31/2017 18:56

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-192279/10 CCVIS		10/31/2017 17:59	1	2017.10.31_537C 010.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/31/2017 18:03	1		GeminiC18 3x100 3(mm)
MB 320-191138/1-A		10/31/2017 18:08	1	2017.10.31_537C 012.d	GeminiC18 3x100 3(mm)
LCS 320-191138/2-A		10/31/2017 18:13	1	2017.10.31_537C 013.d	GeminiC18 3x100 3(mm)
LCSD 320-191138/3-A		10/31/2017 18:18	1	2017.10.31_537C 014.d	GeminiC18 3x100 3(mm)
320-32464-1		10/31/2017 18:22	1	2017.10.31_537C 015.d	GeminiC18 3x100 3(mm)
320-32464-2		10/31/2017 18:27	1	2017.10.31_537C 016.d	GeminiC18 3x100 3(mm)
320-32464-3		10/31/2017 18:32	1	2017.10.31_537C 017.d	GeminiC18 3x100 3(mm)
320-32464-4		10/31/2017 18:37	1	2017.10.31_537C 018.d	GeminiC18 3x100 3(mm)
320-32464-5		10/31/2017 18:42	1	2017.10.31_537C 019.d	GeminiC18 3x100 3(mm)
320-32464-6		10/31/2017 18:46	1	2017.10.31_537C 020.d	GeminiC18 3x100 3(mm)
320-32464-7		10/31/2017 18:51	1	2017.10.31_537C 021.d	GeminiC18 3x100 3(mm)
CCV 320-192279/22 CCVIS		10/31/2017 18:56	1	2017.10.31_537C 022.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Instrument ID: A8_N Start Date: 10/31/2017 18:56Analysis Batch Number: 192281 End Date: 10/31/2017 19:34

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-192281/22 CCVIS		10/31/2017 18:56	1	2017.10.31_537C 022.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/31/2017 19:01	1		GeminiC18 3x100 3(mm)
320-32464-8		10/31/2017 19:05	1	2017.10.31_537C 024.d	GeminiC18 3x100 3(mm)
320-32464-9		10/31/2017 19:10	1	2017.10.31_537C 025.d	GeminiC18 3x100 3(mm)
320-32464-10		10/31/2017 19:15	1	2017.10.31_537C 026.d	GeminiC18 3x100 3(mm)
320-32464-11		10/31/2017 19:20	1	2017.10.31_537C 027.d	GeminiC18 3x100 3(mm)
320-32464-12		10/31/2017 19:24	1	2017.10.31_537C 028.d	GeminiC18 3x100 3(mm)
320-32464-13		10/31/2017 19:29	1	2017.10.31_537C 029.d	GeminiC18 3x100 3(mm)
CCV 320-192281/30 CCVIS		10/31/2017 19:34	1	2017.10.31_537C 030.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Batch Number: 191138 Batch Start Date: 10/25/17 16:24 Batch Analyst: Reed, Jonathan EBatch Method: 537 Batch End Date: 10/27/17 20:54

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00051
MB 320-191138/1		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
LCS 320-191138/2		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
LCSD 320-191138/3		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
320-32464-A-1	WGNA-101617-RW-3 283	537, 537	T	294.03 g	27.90 g	266.1 mL	1.00 mL	7 SU	100 uL
320-32464-A-2	WGNA-101617-FRB-3283	537, 537	T	304.22 g	27.43 g	276.8 mL	1.00 mL	7 SU	100 uL
320-32464-A-3	WGNA-101617-RW-1 50	537, 537	T	315.53 g	27.69 g	287.8 mL	1.00 mL	7 SU	100 uL
320-32464-A-4	WGNA-101617-FRB-150	537, 537	T	307.01 g	27.57 g	279.4 mL	1.00 mL	7 SU	100 uL
320-32464-A-5	WGNA-101617-RW-3 382	537, 537	T	302.14 g	28.03 g	274.1 mL	1.00 mL	7 SU	100 uL
320-32464-A-6	WGNA-101617-FRB-3382	537, 537	T	299.84 g	27.96 g	271.9 mL	1.00 mL	7 SU	100 uL
320-32464-A-7	WGNA-101617-RW-3 991	537, 537	T	316.39 g	27.87 g	288.5 mL	1.00 mL	7 SU	100 uL
320-32464-A-8	WGNA-101617-FRB-3991	537, 537	T	314.71 g	27.74 g	287 mL	1.00 mL	7 SU	100 uL
320-32464-A-9	WGNA-101617-RW-0 85	537, 537	T	296.09 g	28.32 g	267.8 mL	1.00 mL	7 SU	100 uL
320-32464-A-10	WGNA-101617-FRB-085	537, 537	T	302.93 g	27.98 g	275 mL	1.00 mL	7 SU	100 uL
320-32464-A-11	WGNA-101617-RW-4 834	537, 537	T	312.99 g	28.08 g	284.9 mL	1.00 mL	7 SU	100 uL
320-32464-A-12	WGNA-101617-FRB-4834	537, 537	T	306.47 g	27.80 g	278.7 mL	1.00 mL	7 SU	100 uL
320-32464-A-13	WGNA-101617-DUP1 1	537, 537	T	309.62 g	28.01 g	281.6 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00026	LC537-SU 00050	AnalysisComment			
MB 320-191138/1		537, 537			100 uL	Chlorine: ND			
LCS 320-191138/2		537, 537		100 uL	100 uL	Chlorine: ND			
LCSD 320-191138/3		537, 537		100 uL	100 uL	Chlorine: ND			
320-32464-A-1	WGNA-101617-RW-3 283	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.: 320-32464-1

SDG No.: _____

Batch Number: 191138 Batch Start Date: 10/25/17 16:24 Batch Analyst: Reed, Jonathan EBatch Method: 537 Batch End Date: 10/27/17 20:54

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00026	LC537-SU 00050	AnalysisComment			
320-32464-A-2	WGNA-101617-FRB-3283	537, 537	T		100 uL	Clorine: ND			
320-32464-A-3	WGNA-101617-RW-150	537, 537	T		100 uL	Clorine: ND			
320-32464-A-4	WGNA-101617-FRB-150	537, 537	T		100 uL	Clorine: ND			
320-32464-A-5	WGNA-101617-RW-3382	537, 537	T		100 uL	Clorine: ND			
320-32464-A-6	WGNA-101617-FRB-3382	537, 537	T		100 uL	Clorine: ND			
320-32464-A-7	WGNA-101617-RW-3991	537, 537	T		100 uL	Clorine: ND			
320-32464-A-8	WGNA-101617-FRB-3991	537, 537	T		100 uL	Clorine: ND			
320-32464-A-9	WGNA-101617-RW-085	537, 537	T		100 uL	Clorine: ND			
320-32464-A-10	WGNA-101617-FRB-085	537, 537	T		100 uL	Clorine: ND			
320-32464-A-11	WGNA-101617-RW-4834	537, 537	T		100 uL	Clorine: ND			
320-32464-A-12	WGNA-101617-FRB-4834	537, 537	T		100 uL	Clorine: ND			
320-32464-A-13	WGNA-101617-DUP11	537, 537	T		100 uL	Clorine: 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.: 320-32464-1

SDG No.: _____

Batch Number: 191138 Batch Start Date: 10/25/17 16:24 Batch Analyst: Reed, Jonathan EBatch Method: 537 Batch End Date: 10/27/17 20:54

Batch Notes	
Analyst ID - Aliquot Step	TQN
Analyst ID - Concentration	CCB/TQN
Analyst ID - Final Volume Step	TQN
Internal Standard ID#	1041860
Manifold ID	3, 10
Methanol ID	1061669
Pipette ID	N32728F
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	6357081-09
Trizma ID	SLBR4303V
Reagent Water ID	10/25/17

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: 32464 Instrument ID & Date: 10-31-17 ICAL Batch: 192162
 Extraction Batch: 191138 Worklist #: 49829 TALS Batch: 192279, 192281

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: JRB 11-1-17

2nd Level Reviewer / Date: MW 11/2/2017

NCM # and Comments: _____

A8

Instrument ID & Date: 10-31-17 Worklist#: 49808

ICAL Batch: 192162, 192163 Calibration ID number: 35621, 35622

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: JRB 10-31-17

2nd Level Reviewer / Date: Murphy 11/31/2017

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 31OCT2017_537B

Worklist Number: 49829

Instrument Name: A8_N

Chrom Method: 537_A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20171101-49829.b

QC Batching: Enabled

Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 192277
# 1 CCV L3	# 1 CCV L3
# 2 RB	# 2 RB
# 3 MB 320-191223/1-A	# 3 MB 320-191223/1-A
# 4 LCS 320-191223/2-A	# 4 LCS 320-191223/2-A
# 5 LCSD 320-191223/3-A	# 5 LCSD 320-191223/3-A
# 6 320-32528-A-1-A	# 6 320-32528-A-1-A
# 7 320-32528-A-2-A	# 7 320-32528-A-2-A
# 8 320-32528-A-3-A	# 8 320-32528-A-3-A
# 9 320-32528-A-4-A	# 9 320-32528-A-4-A
#10 CCV L5	#10 CCV L5

QC Batch: 2	LC 537 ICAL Raw Batch: 192279
#10 CCV L5	#10 CCV L5
#11 RB	#11 RB
#12 MB 320-191138/1-A	#12 MB 320-191138/1-A
#13 LCS 320-191138/2-A	#13 LCS 320-191138/2-A
#14 LCSD 320-191138/3-A	#14 LCSD 320-191138/3-A
#15 320-32464-A-1-A	#15 320-32464-A-1-A
#16 320-32464-A-2-A	#16 320-32464-A-2-A
#17 320-32464-A-3-A	#17 320-32464-A-3-A
#18 320-32464-A-4-A	#18 320-32464-A-4-A
#19 320-32464-A-5-A	#19 320-32464-A-5-A
#20 320-32464-A-6-A	#20 320-32464-A-6-A
#21 320-32464-A-7-A	#21 320-32464-A-7-A
#22 CCV L3	#22 CCV L3

QC Batch: 3	LC 537 ICAL Raw Batch: 192281	LC 537 CS ICAL Raw Batch: 192282
#22 CCV L3	#22 CCV L3	
#23 RB	#23 RB	
#24 320-32464-A-8-A	#24 320-32464-A-8-A	
#25 320-32464-A-9-A	#25 320-32464-A-9-A	
#26 320-32464-A-10-A	#26 320-32464-A-10-A	
#27 320-32464-A-11-A	#27 320-32464-A-11-A	
#28 320-32464-A-12-A	#28 320-32464-A-12-A	
#29 320-32464-A-13-A	#29 320-32464-A-13-A	
#30 CCV L5	#30 CCV L5	#30 CCV L5

QC Batch: 4	LC 537 ICAL Raw Batch: 192283	LC 537 CS ICAL Raw Batch: 192284
#30 CCV L5	#30 CCV L5	#30 CCV L5
#31 RB		#31 RB
#32 MB 320-191008/1-A		#32 MB 320-191008/1-A
#33 LCS 320-191008/2-A		#33 LCS 320-191008/2-A
#34 LCSD 320-191008/3-A		#34 LCSD 320-191008/3-A
#35 320-32552-A-1-A		#35 320-32552-A-1-A
#36 320-32552-A-1-B MS		#36 320-32552-A-1-B MS
#37 320-32552-A-1-C MSD		#37 320-32552-A-1-C MSD
#38 320-32552-A-2-A		#38 320-32552-A-2-A

QC Batch: 4	LC 537 ICAL Raw Batch: 192283	LC 537 CS ICAL Raw Batch: 192284
#39 320-32552-A-3-A		#39 320-32552-A-3-A
#40 320-32552-A-4-A		#40 320-32552-A-4-A
#41 320-32552-A-5-A		#41 320-32552-A-5-A
#42 CCV L3		#42 CCV L3

QC Batch: 5	LC 537 CS ICAL Raw Batch: 192286
#42 CCV L3	#42 CCV L3
#43 RB	#43 RB
#44 320-32552-A-6-B	#44 320-32552-A-6-B
#45 320-32552-A-7-B	#45 320-32552-A-7-B
#46 320-32551-A-1-A	#46 320-32551-A-1-A
#47 320-32551-A-2-A	#47 320-32551-A-2-A
#48 320-32551-A-3-A	#48 320-32551-A-3-A
#49 320-32551-A-3-B MS	#49 320-32551-A-3-B MS
#50 320-32551-A-3-C MSD	#50 320-32551-A-3-C MSD
#51 320-32551-A-4-A	#51 320-32551-A-4-A
#52 320-32551-A-5-A	#52 320-32551-A-5-A
#53 320-32551-A-6-A	#53 320-32551-A-6-A
#54 CCV L5	#54 CCV L5
#55 RB	#55 RB

61

Aqueous Extraction Analysis Sheet

AB 10/31/17

(To Accompany Samples to Instruments)

Batch Number: 320-191138

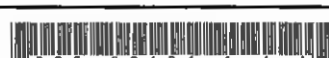
Analyst: Reed, Jonathan E

Batch Open: 10/25/2017 4:24:00PM

Method Code: 320-537_Prep-320

Batch End: 10/27/2017 8:54:00PM

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-320-191138/1 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	Clorine: ND	
			1.00 mL								
2 LCS-320-191138/2 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	Clorine: ND	
			1.00 mL								
3 LCSD-320-191138/3 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	Clorine: ND	
			1.00 mL								
320-32464-A-1 (537_DOD5)	N/A (320-32464-1)	294.03 g	266.1 mL	7			10/21/17	16_Days	4	Clorine: ND	
		27.90 g	1.00 mL								
320-32464-A-2 (537_DOD5)	N/A (320-32464-1)	304.22 g	276.8 mL	7			10/21/17	16_Days	4	Clorine: ND	
		27.43 g	1.00 mL								
320-32464-A-3 (537_DOD5)	N/A (320-32464-1)	315.53 g	287.8 mL	7			10/21/17	16_Days	4	Clorine: ND	
		27.69 g	1.00 mL								
320-32464-A-4 (537_DOD5)	N/A (320-32464-1)	307.01 g	279.4 mL	7			10/21/17	16_Days	4	Clorine: ND	
		27.57 g	1.00 mL								
320-32464-A-5 (537_DOD5)	N/A (320-32464-1)	302.14 g	274.1 mL	7			10/21/17	16_Days	4	Clorine: ND	
		28.03 g	1.00 mL								
320-32464-A-6 (537_DOD5)	N/A (320-32464-1)	299.84 g	271.9 mL	7			10/21/17	16_Days	4	Clorine: ND	
		27.96 g	1.00 mL								
320-32464-A-7 (537_DOD5)	N/A (320-32464-1)	316.39 g	288.5 mL	7			10/21/17	16_Days	4	Clorine: ND	
		27.87 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-191138

Analyst: Reed, Jonathan E

Batch Open: 10/25/2017 4:24:00PM

Method Code: 320-537_Prep-320

Batch End:

11	320-32464-A-8 (537_DOD5)	N/A (320-32464-1)	14.71 g	287 mL	7		10/21/17	16_Days	4	Clorine: ND	
			27.74 g	1.00 mL							
12	320-32464-A-9 (537_DOD5)	N/A (320-32464-1)	296.09 g	267.8 mL	7		10/21/17	16_Days	4	Clorine: ND	
			28.32 g	1.00 mL							
13	320-32464-A-10 (537_DOD5)	N/A (320-32464-1)	302.93 g	275 mL	7		10/21/17	16_Days	4	Clorine: ND	
			27.98 g	1.00 mL							
14	320-32464-A-11 (537_DOD5)	N/A (320-32464-1)	312.99 g	284.9 mL	7		10/21/17	16_Days	4	Clorine: ND	
			28.08 g	1.00 mL							
15	320-32464-A-12 (537_DOD5)	N/A (320-32464-1)	306.47 g	278.7 mL	7		10/21/17	16_Days	4	Clorine: ND	
			27.80 g	1.00 mL							
16	320-32464-A-13 (537_DOD5)	N/A (320-32464-1)	309.62 g	281.6 mL	7		10/21/17	16_Days	4	Clorine: ND	
			28.01 g	1.00 mL							

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-191138

Analyst: Reed, Jonathan E

Batch Open: 10/25/2017 4:24:00PM

Method Code: 320-537_Prep-320

Batch End:

Batch Notes

Manifold ID 3, 10

Trizma ID SLBR4303V

SPE Cartridge ID 6357081-09

Methanol ID 1061669

Reagent Water ID 10/25/17

Internal Standard ID# 1041860

Pipette ID N32728F

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 T&N

Witness

Analyst ID - Concentration GERS/T&N

Analyst ID - Aliquot Step T&N

Analyst ID - Final Volume Step T&N

Batch Comment N/A

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-191138

Analyst: Reed, Jonathan E

Batch Open: 10/25/2017 4:24:00PM

Method Code: 320-537_Prep-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-191138/1	LC537-SU_00050	100 uL	1.00 mL	<i>[Signature]</i> 10/25/17	TWZ 10/25/17
LCS 320-191138/2	LC537-MSP_00026	100 uL	1.00 mL		
LCS 320-191138/2	LC537-SU_00050	100 uL	1.00 mL	↓	↓
LCSD 320-191138/3	LC537-MSP_00026	100 uL	1.00 mL		
LCSD 320-191138/3	LC537-SU_00050	100 uL	1.00 mL		
320-32464-A-1	LC537-SU_00050	100 uL	1.00 mL		
320-32464-A-2	LC537-SU_00050	100 uL	1.00 mL		
320-32464-A-3	LC537-SU_00050	100 uL	1.00 mL		
320-32464-A-4	LC537-SU_00050	100 uL	1.00 mL		
320-32464-A-5	LC537-SU_00050	100 uL	1.00 mL		
320-32464-A-6	LC537-SU_00050	100 uL	1.00 mL		
320-32464-A-7	LC537-SU_00050	100 uL	1.00 mL		
320-32464-A-8	LC537-SU_00050	100 uL	1.00 mL		
320-32464-A-9	LC537-SU_00050	100 uL	1.00 mL		
320-32464-A-10	LC537-SU_00050	100 uL	1.00 mL		
320-32464-A-11	LC537-SU_00050	100 uL	1.00 mL		
320-32464-A-12	LC537-SU_00050	100 uL	1.00 mL		
320-32464-A-13	LC537-SU_00050	100 uL	1.00 mL	↓	↓

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-191138

Analyst: Reed, Jonathan E

Batch Open: 10/25/2017 4:24:00PM

Method Code: 320-537_Prep-320

Batch End:

Other Reagents:

Reagent

1041860

Amount/Units

Lot#:

100 µl of 537 IS @ 0.1-0.2868 µg/ml Exp 3/20/18

Spiked: *[Signature]* 10/22/17 units:

Preparation Batch Number(s) 191138 Test 587

Earliest Holding Time 10/30/17

Batch Information	1 st Level Reviewer	2 nd Level Reviewer
Date and time accurate and entered into TALS correctly	✓	✓
All necessary batch information complete and entered into TALS correctly	✓	✓
BD, FV, and AL initials are transcribed into the batch comment	✓	✓
Sample List Tab	1 st Level Reviewer	2 nd Level Reviewer
Samples identified to the correct method	✓	✓
Holding time violation NCM filed	N/A	NA
MS/MSD or MS/DU NCM filed	✓	✓
NCM for any anomalies filed	N/A	NA
All NCMs include method code, matrix, and prep batch	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
Batch contains no more than 20 live samples	✓	✓
Worksheet Tab	1 st Level Reviewer	2 nd Level Reviewer
All samples properly preserved	✓	✓
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)	✓	✓
The pH is transcribed properly in TALS	✓	✓
All additional information is transcribed into TALS and is correct and raw data is attached	✓	✓
Comments/Observations are transcribed correctly in TALS	✓	✓
Reagents Tab	1 st Level Reviewer	2 nd Level Reviewer
All necessary reagents not expired and checked into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Internal Standard is added to the reagents	✓	✓
All units are correctly transcribed into TALS	✓	✓

1st Level Reviewer: TAN

Date: 10/27/17

2nd Level Reviewer: VPM

Date: 10/28/17

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.
Regulatory Program: ☒ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact		Project Manager: Andy Frebowitz		Site Contact: Mary Kay Bond		Date: 10/16/2017		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 537 UCMR3				Sampler: Mary Kay Bond	
King of Prussia, PA 19406		☐ CALENDAR DAYS ☐ WORKING DAYS						For Lab Use Only: Walk-in Client: Lab Sampling:	
610-382-1174		TAT if different from Below 21						Job / SDG No.:	
610-491-9688		☐ 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 537 UCMR3	Sample Specific Notes:
WGNA-101617-RW-3283	10/16/2017	08:10	G	DW	2	N	N	Y	
WGNA-101617-FRB-3283	10/16/2017	08:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-101617-RW-150	10/16/2017	08:40	G	DW	2	N	N	Y	
NAWC-101617-FRB-150	10/16/2017	08:35	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-101617-RW-3382	10/16/2017	10:10	G	DW	2	N	N	Y	
WGNA-101617-FRB-3382	10/16/2017	10:05	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-101617-RW-3991	10/16/2017	09:10	G	DW	2	N	N	Y	
WGNA-101617-FRB-3991	10/16/2017	09:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-101617-RW-085	10/16/2017	09:40	G	DW	2	N	N	Y	
NAWC-101617-FRB-085	10/16/2017	09:35	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-101617-RW-4834	10/16/2017	10:40	G	DW	2	N	N	Y	
WGNA-101617-FRB-4834	10/16/2017	10:35	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-101617-DUP11	10/16/2017	7:00	G	DW	2	N	N	Y	Duplicate


 320-32464 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the		☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months	
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown			

Fed Ex Tracking: 7705 0450 4200

Custody Seals Intact: ☐ Yes ☐ No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: 26 Corr'd: _____		Therm ID No.: AK-03	
Relinquished by: 	Company: Tetra Tech	Date/Time: 10/16/2017 16:00	Received by: 	Company: TAWS	Date/Time: 10/17/17 09:30		
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:		
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:		

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Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-32464-1

Login Number: 32464

List Number: 1

Creator: Turpen, Troy

List Source: TestAmerica Sacramento

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	

"WGNA-101617-RW-3283","537","RES","320-32464-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","20","ng/L","J M","6.4","DL","","TRG","","","38","LOQ","YES","-99","","266.1","1.00","15","","

"WGNA-101617-RW-3283","537","RES","320-32464-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","20","ng/L","","","2.6","DL","","TRG","","","19","LOQ","YES","-99","","266.1","1.00","7.5","","

"WGNA-101617-RW-3283","537","RES","320-32464-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","8.3","ng/L","J","5.2","DL","","TRG","","","28","LOQ","YES","-99","","266.1","1.00","11","","

"WGNA-101617-RW-3283","537","RES","320-32464-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","21","ng/L","J","15","DL","","TRG","","","85","LOQ","YES","-99","","266.1","1.00","34","","

"WGNA-101617-RW-3283","537","RES","320-32464-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","6.4","ng/L","J","1.8","DL","","TRG","","","9.4","LOQ","YES","-99","","266.1","1.00","3.8","","

"WGNA-101617-RW-3283","537","RES","320-32464-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U M","7.5","DL","","TRG","","","23","LOQ","YES","-99","","266.1","1.00","19","","

"WGNA-101617-RW-3283","537","RES","320-32464-1","TALSAC","STL00993","13C2 PFHxA","32","ng/L","","","-99","DL","","SURRE","84","","","-99","LOQ","YES","37.6","","266.1","1.00","0","","

"WGNA-101617-RW-3283","537","RES","320-32464-1","TALSAC","STL00996","13C2 PFDA","37","ng/L","","","-99","DL","","SURRE","97","","","-99","LOQ","YES","37.6","","266.1","1.00","0","","

"WGNA-101617-FRB-085","537","RES","320-32464-10","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","15","ng/L","U","6.2","DL","","TRG","","","36","LOQ","YES","-99","","275","1.00","15","","

"WGNA-101617-FRB-085","537","RES","320-32464-10","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.3","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","275","1.00","7.3","","

"WGNA-101617-FRB-085","537","RES","320-32464-10","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","11","ng/L","U","5.0","DL","","TRG","","","27","LOQ","YES","-99","","275","1.00","11","","

"WGNA-101617-FRB-085","537","RES","320-32464-10","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","33","ng/L","U","15","DL","","TRG","","","82","LOQ","YES","-99","","275","1.00","33","","

"WGNA-101617-FRB-085","537","RES","320-32464-10","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.6","ng/L","U","1.7","DL","","TRG","","","9.1","LOQ","YES","-99","","275","1.00","3.6","","

"WGNA-101617-FRB-085","537","RES","320-32464-10","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","18","ng/L","U","7.3","DL","","TRG","","","22","LOQ","YES","-99","","275","1.00","18","","

"WGNA-101617-FRB-085","537","RES","320-32464-10","TALSAC","STL00993","13C2 PFHxA","33","ng/L","","","-99","DL","","SURRE","92","","","-99","LOQ","YES","36.4","","275","1.00","0","","

"WGNA-101617-FRB-085","537","RES","320-32464-10","TALSAC","STL00996","13C2 PFDA","36","ng/L","","","-99","DL","","SURRE","98","","","-99","LOQ","YES","36.4","","275","1.00","0","","

"WGNA-101617-RW-4834","537","RES","320-32464-11","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","14","ng/L","U","6.0","DL","","TRG","","","35","LOQ","YES","-99","","284.9","1.00","14","","

"WGNA-101617-RW-4834","537","RES","320-32464-11","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.0","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","284.9","1.00","7.0","","

"WGNA-101617-RW-4834","537","RES","320-32464-11","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","11","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES","-99","","284.9","1.00","11","","

"WGNA-101617-RW-4834","537","RES","320-32464-11","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","32","ng/L","U","14","DL","","TRG","","","79","LOQ","YES","-99","","284.9","1.00","32","","

"WGNA-101617-RW-4834","537","RES","320-32464-11","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.5","ng/L","U","1.7","DL","","TRG","","","8.8","LOQ","YES","-99","","284.9","1.00","3.5","","

"WGNA-101617-RW-4834","537","RES","320-32464-11","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","18","ng/L","U","7.0","DL","","TRG","","","21","LOQ","YES","-99","","284.9","1.00","18","","

"WGNA-101617-RW-4834","537","RES","320-32464-11","TALSAC","STL00993","13C2 PFHxA","32","ng/L","","","-99","DL","","SURRE","92","","","-99","LOQ","YES","35.1","","284.9","1.00","0","","

"WGNA-101617-RW-4834","537","RES","320-32464-11","TALSAC","STL00996","13C2 PFDA","34","ng/L","","","-99","DL","","SURRE","96","","","-99","LOQ","YES","35.1","","284.9","1.00","0","","

"WGNA-101617-FRB-4834","537","RES","320-32464-12","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","14","ng/L","U","6.1","DL","","TRG","","","36","LOQ","YES","-99","","278.7","1.00","14","","

"WGNA-101617-FRB-4834","537","RES","320-32464-12","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.2","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","278.7","1.00","7.2","","

"WGNA-101617-FRB-4834","537","RES","320-32464-12","TALSAC","355-46-4","Perfluorohexanesulfonic acid

(PFHxS)","11","ng/L","U","4.9","DL","","TRG","","","27","LOQ","YES","-99","","278.7","1.00","11","","
"WGNA-101617-FRB-4834","537","RES","320-32464-12","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","81","LOQ","YES","-99","","278.7","1.00","32","","
"WGNA-101617-FRB-4834","537","RES","320-32464-12","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","U","1.7","DL","","TRG","","","9.0","LOQ","YES","-99","","278.7","1.00","3.6","","
"WGNA-101617-FRB-4834","537","RES","320-32464-12","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.2","DL","","TRG","","","22","LOQ","YES","-99","","278.7","1.00","18","","
"WGNA-101617-FRB-4834","537","RES","320-32464-12","TALSAC","STL00993","13C2
PFHxA","31","ng/L","","","-99","DL","","SURRE","87","","","-99","LOQ","YES","35.9","","278.7","1.00","0","","
"WGNA-101617-FRB-4834","537","RES","320-32464-12","TALSAC","STL00996","13C2
PFDA","34","ng/L","","","-99","DL","","SURRE","95","","","-99","LOQ","YES","35.9","","278.7","1.00","0","","
"WGNA-101617-DUP11","537","RES","320-32464-13","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","J M","6.0","DL","","TRG","","","36","LOQ","YES","-99","","281.6","1.00","14","","
"WGNA-101617-DUP11","537","RES","320-32464-13","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","15","ng/L","J","2.5","DL","","TRG","","","18","LOQ","YES","-99","","281.6","1.00","7.1","","
"WGNA-101617-DUP11","537","RES","320-32464-13","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","7.0","ng/L","J","4.9","DL","","TRG","","","27","LOQ","YES","-99","","281.6","1.00","11","","
"WGNA-101617-DUP11","537","RES","320-32464-13","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","80","LOQ","YES","-99","","281.6","1.00","32","","
"WGNA-101617-DUP11","537","RES","320-32464-13","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","5.2","ng/L","J","1.7","DL","","TRG","","","8.9","LOQ","YES","-99","","281.6","1.00","3.6","","
"WGNA-101617-DUP11","537","RES","320-32464-13","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U M","7.1","DL","","TRG","","","21","LOQ","YES","-99","","281.6","1.00","18","","
"WGNA-101617-DUP11","537","RES","320-32464-13","TALSAC","STL00993","13C2
PFHxA","27","ng/L","","","-99","DL","","SURRE","76","","","-99","LOQ","YES","35.5","","281.6","1.00","0","","
"WGNA-101617-DUP11","537","RES","320-32464-13","TALSAC","STL00996","13C2
PFDA","33","ng/L","","","-99","DL","","SURRE","92","","","-99","LOQ","YES","35.5","","281.6","1.00","0","","
"WGNA-101617-FRB-3283","537","RES","320-32464-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.1","DL","","TRG","","","36","LOQ","YES","-99","","276.8","1.00","14","","
"WGNA-101617-FRB-3283","537","RES","320-32464-2","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.2","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","276.8","1.00","7.2","","
"WGNA-101617-FRB-3283","537","RES","320-32464-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.0","DL","","TRG","","","27","LOQ","YES","-99","","276.8","1.00","11","","
"WGNA-101617-FRB-3283","537","RES","320-32464-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","33","ng/L","U","15","DL","","TRG","","","81","LOQ","YES","-99","","276.8","1.00","33","","
"WGNA-101617-FRB-3283","537","RES","320-32464-2","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","U","1.7","DL","","TRG","","","9.0","LOQ","YES","-99","","276.8","1.00","3.6","","
"WGNA-101617-FRB-3283","537","RES","320-32464-2","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.2","DL","","TRG","","","22","LOQ","YES","-99","","276.8","1.00","18","","
"WGNA-101617-FRB-3283","537","RES","320-32464-2","TALSAC","STL00993","13C2
PFHxA","33","ng/L","","","-99","DL","","SURRE","91","","","-99","LOQ","YES","36.1","","276.8","1.00","0","","
"WGNA-101617-FRB-3283","537","RES","320-32464-2","TALSAC","STL00996","13C2
PFDA","35","ng/L","","","-99","DL","","SURRE","96","","","-99","LOQ","YES","36.1","","276.8","1.00","0","","
"WGNA-101617-RW-150","537","RES","320-32464-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","11","ng/L","J M","5.9","DL","","TRG","","","35","LOQ","YES","-99","","287.8","1.00","14","","
"WGNA-101617-RW-150","537","RES","320-32464-3","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","20","ng/L","","","2.4","DL","","TRG","","","17","LOQ","YES","-99","","287.8","1.00","6.9","","
"WGNA-101617-RW-150","537","RES","320-32464-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","10","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES","-99","","287.8","1.00","10","","
"WGNA-101617-RW-150","537","RES","320-32464-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","31","ng/L","U M","14","DL","","TRG","","","78","LOQ","YES","-99","","287.8","1.00","31","","
"WGNA-101617-RW-150","537","RES","320-32464-3","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","8.3","ng/L","J","1.7","DL","","TRG","","","8.7","LOQ","YES","-99","","287.8","1.00","3.5","","
"WGNA-101617-RW-150","537","RES","320-32464-3","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA),"17","ng/L","U M","6.9","DL","","","TRG","","","21","LOQ","YES",-99","","","287.8","1.00","17","","
"WGNA-101617-RW-150","537","RES","320-32464-3","TALSAC","STL00993","13C2
PFHxA","25","ng/L","","","-99","DL","","","SURRE","72","","","-99","LOQ","YES","34.7","","","287.8","1.00","0","","
"WGNA-101617-RW-150","537","RES","320-32464-3","TALSAC","STL00996","13C2
PFDA","33","ng/L","","","-99","DL","","","SURRE","96","","","-99","LOQ","YES","34.7","","","287.8","1.00","0","","
"WGNA-101617-FRB-150","537","RES","320-32464-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.1","DL","","","TRG","","","36","LOQ","YES",-99","","","279.4","1.00","14","","
"WGNA-101617-FRB-150","537","RES","320-32464-4","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.2","ng/L","U","2.5","DL","","","TRG","","","18","LOQ","YES",-99","","","279.4","1.00","7.2","","
"WGNA-101617-FRB-150","537","RES","320-32464-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","4.9","DL","","","TRG","","","27","LOQ","YES",-99","","","279.4","1.00","11","","
"WGNA-101617-FRB-150","537","RES","320-32464-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","","TRG","","","81","LOQ","YES",-99","","","279.4","1.00","32","","
"WGNA-101617-FRB-150","537","RES","320-32464-4","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","U","1.7","DL","","","TRG","","","8.9","LOQ","YES",-99","","","279.4","1.00","3.6","","
"WGNA-101617-FRB-150","537","RES","320-32464-4","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.2","DL","","","TRG","","","21","LOQ","YES",-99","","","279.4","1.00","18","","
"WGNA-101617-FRB-150","537","RES","320-32464-4","TALSAC","STL00993","13C2
PFHxA","32","ng/L","","","-99","DL","","","SURRE","90","","","-99","LOQ","YES","35.8","","","279.4","1.00","0","","
"WGNA-101617-FRB-150","537","RES","320-32464-4","TALSAC","STL00996","13C2
PFDA","34","ng/L","","","-99","DL","","","SURRE","95","","","-99","LOQ","YES","35.8","","","279.4","1.00","0","","
"WGNA-101617-RW-3382","537","RES","320-32464-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","12","ng/L","J M","6.2","DL","","","TRG","","","36","LOQ","YES",-99","","","274.1","1.00","15","","
"WGNA-101617-RW-3382","537","RES","320-32464-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","14","ng/L","J M","2.6","DL","","","TRG","","","18","LOQ","YES",-99","","","274.1","1.00","7.3","","
"WGNA-101617-RW-3382","537","RES","320-32464-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","8.3","ng/L","J","5.0","DL","","","TRG","","","27","LOQ","YES",-99","","","274.1","1.00","11","","
"WGNA-101617-RW-3382","537","RES","320-32464-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","33","ng/L","U","15","DL","","","TRG","","","82","LOQ","YES",-99","","","274.1","1.00","33","","
"WGNA-101617-RW-3382","537","RES","320-32464-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.2","ng/L","J","1.7","DL","","","TRG","","","9.1","LOQ","YES",-99","","","274.1","1.00","3.6","","
"WGNA-101617-RW-3382","537","RES","320-32464-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U M","7.3","DL","","","TRG","","","22","LOQ","YES",-99","","","274.1","1.00","18","","
"WGNA-101617-RW-3382","537","RES","320-32464-5","TALSAC","STL00993","13C2
PFHxA","29","ng/L","","","-99","DL","","","SURRE","79","","","-99","LOQ","YES","36.5","","","274.1","1.00","0","","
"WGNA-101617-RW-3382","537","RES","320-32464-5","TALSAC","STL00996","13C2
PFDA","32","ng/L","","","-99","DL","","","SURRE","89","","","-99","LOQ","YES","36.5","","","274.1","1.00","0","","
"WGNA-101617-FRB-3382","537","RES","320-32464-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.3","DL","","","TRG","","","37","LOQ","YES",-99","","","271.9","1.00","15","","
"WGNA-101617-FRB-3382","537","RES","320-32464-6","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.4","ng/L","U","2.6","DL","","","TRG","","","18","LOQ","YES",-99","","","271.9","1.00","7.4","","
"WGNA-101617-FRB-3382","537","RES","320-32464-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.1","DL","","","TRG","","","28","LOQ","YES",-99","","","271.9","1.00","11","","
"WGNA-101617-FRB-3382","537","RES","320-32464-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","33","ng/L","U","15","DL","","","TRG","","","83","LOQ","YES",-99","","","271.9","1.00","33","","
"WGNA-101617-FRB-3382","537","RES","320-32464-6","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.7","ng/L","U","1.7","DL","","","TRG","","","9.2","LOQ","YES",-99","","","271.9","1.00","3.7","","
"WGNA-101617-FRB-3382","537","RES","320-32464-6","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.4","DL","","","TRG","","","22","LOQ","YES",-99","","","271.9","1.00","18","","
"WGNA-101617-FRB-3382","537","RES","320-32464-6","TALSAC","STL00993","13C2
PFHxA","33","ng/L","","","-99","DL","","","SURRE","91","","","-99","LOQ","YES","36.8","","","271.9","1.00","0","","
"WGNA-101617-FRB-3382","537","RES","320-32464-6","TALSAC","STL00996","13C2
PFDA","34","ng/L","","","-99","DL","","","SURRE","92","","","-99","LOQ","YES","36.8","","","271.9","1.00","0","","
"WGNA-101617-RW-3991","537","RES","320-32464-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS),"16","ng/L","J M","5.9","DL","","TRG","","","35","LOQ","YES",-99","","288.5","1.00","14","","WGNA-101617-RW-3991","537","RES","320-32464-7","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","17","ng/L","","2.4","DL","","TRG","","","17","LOQ","YES",-99","","288.5","1.00","6.9","","WGNA-101617-RW-3991","537","RES","320-32464-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","7.2","ng/L","J","4.8","DL","","TRG","","","26","LOQ","YES",-99","","288.5","1.00","10","","WGNA-101617-RW-3991","537","RES","320-32464-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","31","ng/L","U","14","DL","","TRG","","","78","LOQ","YES",-99","","288.5","1.00","31","","WGNA-101617-RW-3991","537","RES","320-32464-7","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","5.4","ng/L","J","1.6","DL","","TRG","","","8.7","LOQ","YES",-99","","288.5","1.00","3.5","","WGNA-101617-RW-3991","537","RES","320-32464-7","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","17","ng/L","U M","6.9","DL","","TRG","","","21","LOQ","YES",-99","","288.5","1.00","17","","WGNA-101617-RW-3991","537","RES","320-32464-7","TALSAC","STL00993","13C2 PFHxA","27","ng/L","","-99","DL","","SURRE","78","","-99","LOQ","YES","34.7","","288.5","1.00","0","","WGNA-101617-RW-3991","537","RES","320-32464-7","TALSAC","STL00996","13C2 PFDA","32","ng/L","","-99","DL","","SURRE","93","","-99","LOQ","YES","34.7","","288.5","1.00","0","","WGNA-101617-FRB-3991","537","RES","320-32464-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","14","ng/L","U","5.9","DL","","TRG","","","35","LOQ","YES",-99","","287","1.00","14","","WGNA-101617-FRB-3991","537","RES","320-32464-8","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.0","ng/L","U","2.4","DL","","TRG","","","17","LOQ","YES",-99","","287","1.00","7.0","","WGNA-101617-FRB-3991","537","RES","320-32464-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","10","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES",-99","","287","1.00","10","","WGNA-101617-FRB-3991","537","RES","320-32464-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","31","ng/L","U","14","DL","","TRG","","","78","LOQ","YES",-99","","287","1.00","31","","WGNA-101617-FRB-3991","537","RES","320-32464-8","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.5","ng/L","U","1.7","DL","","TRG","","","8.7","LOQ","YES",-99","","287","1.00","3.5","","WGNA-101617-FRB-3991","537","RES","320-32464-8","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","17","ng/L","U","7.0","DL","","TRG","","","21","LOQ","YES",-99","","287","1.00","17","","WGNA-101617-FRB-3991","537","RES","320-32464-8","TALSAC","STL00993","13C2 PFHxA","30","ng/L","","-99","DL","","SURRE","87","","-99","LOQ","YES","34.8","","287","1.00","0","","WGNA-101617-FRB-3991","537","RES","320-32464-8","TALSAC","STL00996","13C2 PFDA","32","ng/L","","-99","DL","","SURRE","93","","-99","LOQ","YES","34.8","","287","1.00","0","","WGNA-101617-RW-085","537","RES","320-32464-9","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","11","ng/L","J M","6.3","DL","","TRG","","","37","LOQ","YES",-99","","267.8","1.00","15","","WGNA-101617-RW-085","537","RES","320-32464-9","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","9.8","ng/L","J","2.6","DL","","TRG","","","19","LOQ","YES",-99","","267.8","1.00","7.5","","WGNA-101617-RW-085","537","RES","320-32464-9","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","11","ng/L","U","5.1","DL","","TRG","","","28","LOQ","YES",-99","","267.8","1.00","11","","WGNA-101617-RW-085","537","RES","320-32464-9","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","34","ng/L","U","15","DL","","TRG","","","84","LOQ","YES",-99","","267.8","1.00","34","","WGNA-101617-RW-085","537","RES","320-32464-9","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","2.7","ng/L","J","1.8","DL","","TRG","","","9.3","LOQ","YES",-99","","267.8","1.00","3.7","","WGNA-101617-RW-085","537","RES","320-32464-9","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U M","7.5","DL","","TRG","","","22","LOQ","YES",-99","","267.8","1.00","19","","WGNA-101617-RW-085","537","RES","320-32464-9","TALSAC","STL00993","13C2 PFHxA","28","ng/L","","-99","DL","","SURRE","76","","-99","LOQ","YES","37.3","","267.8","1.00","0","","WGNA-101617-RW-085","537","RES","320-32464-9","TALSAC","STL00996","13C2 PFDA","35","ng/L","","-99","DL","","SURRE","94","","-99","LOQ","YES","37.3","","267.8","1.00","0","","LCS 320-191138/2-A","537","RES","LCS 320-191138/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","127","ng/L","M","6.8","DL","","SPK","96","","40","LOQ","YES","133","","250.00","1.00","16","","LCS 320-191138/2-A","537","RES","LCS 320-191138/2-A","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","64.9","ng/L","","2.8","DL","","SPK","97","","20","LOQ","YES","66.7","","250.00","1.00","8.0","","LCS 320-191138/2-A","537","RES","LCS 320-191138/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","101","ng/L","","5.5","DL","","SPK","101","","30","LOQ","YES","100","","250.00","1.00","12","","LCS 320-191138/2-A","537","RES","LCS 320-191138/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)","279","ng/L","","16","DL","","SPK","93","","90","LOQ","YES","300","","250.00","1.00","36",""
"LCS 320-191138/2-A","537","RES","LCS 320-191138/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","33.0","ng/L","","1.9","DL","","SPK","99","","10","LOQ","YES","33.3","","250.00","1.00","4.0",""
"LCS 320-191138/2-A","537","RES","LCS 320-191138/2-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","65.1","ng/L","","8.0","DL","","SPK","98","","24","LOQ","YES","66.7","","250.00","1.00","20",""
"LCS 320-191138/2-A","537","RES","LCS 320-191138/2-A","TALSAC","STL00993","13C2
PFHxA","36.8","ng/L","","-99","DL","","SURRE","92","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"LCS 320-191138/2-A","537","RES","LCS 320-191138/2-A","TALSAC","STL00996","13C2
PFDA","39.3","ng/L","","-99","DL","","SURRE","98","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"LCSD 320-191138/3-A","537","RES","LCSD 320-191138/3-A","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","135","ng/L","M","6.8","DL","","SPK","101","5","40","LOQ","YES","133","LCS 320-191138/2-
A","250.00","1.00","16",""
"LCSD 320-191138/3-A","537","RES","LCSD 320-191138/3-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","69.4","ng/L","","2.8","DL","","SPK","104","7","20","LOQ","YES","66.7","LCS 320-191138/2-
A","250.00","1.00","8.0",""
"LCSD 320-191138/3-A","537","RES","LCSD 320-191138/3-A","TALSAC","355-46-4","Perfluorohexanesulfonic
acid (PFHxS)","106","ng/L","","5.5","DL","","SPK","106","5","30","LOQ","YES","100","LCS 320-191138/2-
A","250.00","1.00","12",""
"LCSD 320-191138/3-A","537","RES","LCSD 320-191138/3-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","288","ng/L","","16","DL","","SPK","96","3","90","LOQ","YES","300","LCS 320-191138/2-
A","250.00","1.00","36",""
"LCSD 320-191138/3-A","537","RES","LCSD 320-191138/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","36.2","ng/L","","1.9","DL","","SPK","108","9","10","LOQ","YES","33.3","LCS 320-191138/2-
A","250.00","1.00","4.0",""
"LCSD 320-191138/3-A","537","RES","LCSD 320-191138/3-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","68.6","ng/L","","8.0","DL","","SPK","103","5","24","LOQ","YES","66.7","LCS 320-191138/2-
A","250.00","1.00","20",""
"LCSD 320-191138/3-A","537","RES","LCSD 320-191138/3-A","TALSAC","STL00993","13C2
PFHxA","37.7","ng/L","","-99","DL","","SURRE","94","","-99","LOQ","YES","40.0","LCS 320-191138/2-
A","250.00","1.00","0",""
"LCSD 320-191138/3-A","537","RES","LCSD 320-191138/3-A","TALSAC","STL00996","13C2
PFDA","39.1","ng/L","","-99","DL","","SURRE","98","","-99","LOQ","YES","40.0","LCS 320-191138/2-
A","250.00","1.00","0",""
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(PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","250.00","1.00","16",""
"MB 320-191138/1-A","537","RES","MB 320-191138/1-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","250.00","1.00","8.0",""
"MB 320-191138/1-A","537","RES","MB 320-191138/1-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","250.00","1.00","12",""
"MB 320-191138/1-A","537","RES","MB 320-191138/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250.00","1.00","36",""
"MB 320-191138/1-A","537","RES","MB 320-191138/1-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","250.00","1.00","4.0",""
"MB 320-191138/1-A","537","RES","MB 320-191138/1-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","250.00","1.00","20",""
"MB 320-191138/1-A","537","RES","MB 320-191138/1-A","TALSAC","STL00993","13C2
PFHxA","35.5","ng/L","","-99","DL","","SURRE","89","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"MB 320-191138/1-A","537","RES","MB 320-191138/1-A","TALSAC","STL00996","13C2
PFDA","39.6","ng/L","","-99","DL","","SURRE","99","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
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1","NM","","2.60","537","METHOD","RES","10/25/2017 16:24","10/31/2017
18:22","TALSAC","COA","WET","NA","1","NA","NA","","100","320-191138","320-191138","NA","320-
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"Unknown","Unknown","WGNA-101617-FRB-085","10/16/2017 09:35","AQ","320-32464-

10","FB","","2.60","537","METHOD","RES","10/25/2017 16:24","10/31/2017
19:15","TALSAC","COA","WET","NA","1","NA","NA","","100","320-191138","320-191138","NA","320-
192281","320-32464-1","10/17/2017 09:30","10/18/2017 10:50",""
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11","NM","","2.60","537","METHOD","RES","10/25/2017 16:24","10/31/2017
19:20","TALSAC","COA","WET","NA","1","NA","NA","","100","320-191138","320-191138","NA","320-
192281","320-32464-1","10/17/2017 09:30","10/18/2017 10:50",""
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12","FB","","2.60","537","METHOD","RES","10/25/2017 16:24","10/31/2017
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"Unknown","Unknown","WGNA-101617-DUP11","10/16/2017 07:00","AQ","320-32464-
13","FD","","2.60","537","METHOD","RES","10/25/2017 16:24","10/31/2017
19:29","TALSAC","COA","WET","NA","1","NA","NA","","100","320-191138","320-191138","NA","320-
192281","320-32464-1","10/17/2017 09:30","10/18/2017 10:50",""
"Unknown","Unknown","WGNA-101617-FRB-3283","10/16/2017 08:05","AQ","320-32464-
2","FB","","2.60","537","METHOD","RES","10/25/2017 16:24","10/31/2017
18:27","TALSAC","COA","WET","NA","1","NA","NA","","100","320-191138","320-191138","NA","320-
192279","320-32464-1","10/17/2017 09:30","10/18/2017 10:50",""
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3","NM","","2.60","537","METHOD","RES","10/25/2017 16:24","10/31/2017
18:32","TALSAC","COA","WET","NA","1","NA","NA","","100","320-191138","320-191138","NA","320-
192279","320-32464-1","10/17/2017 09:30","10/18/2017 10:50",""
"Unknown","Unknown","WGNA-101617-FRB-150","10/16/2017 08:35","AQ","320-32464-
4","FB","","2.60","537","METHOD","RES","10/25/2017 16:24","10/31/2017
18:37","TALSAC","COA","WET","NA","1","NA","NA","","100","320-191138","320-191138","NA","320-
192279","320-32464-1","10/17/2017 09:30","10/18/2017 10:50",""
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5","NM","","2.60","537","METHOD","RES","10/25/2017 16:24","10/31/2017
18:42","TALSAC","COA","WET","NA","1","NA","NA","","100","320-191138","320-191138","NA","320-
192279","320-32464-1","10/17/2017 09:30","10/18/2017 10:50",""
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6","FB","","2.60","537","METHOD","RES","10/25/2017 16:24","10/31/2017
18:46","TALSAC","COA","WET","NA","1","NA","NA","","100","320-191138","320-191138","NA","320-
192279","320-32464-1","10/17/2017 09:30","10/18/2017 10:50",""
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9","NM","","2.60","537","METHOD","RES","10/25/2017 16:24","10/31/2017
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A","LCS","","-99","537","METHOD","RES","10/25/2017 16:24","10/31/2017
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192279","320-32464-1","10/25/2017 16:24","10/18/2017 10:50",""
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A","LCSD","","-99","537","METHOD","RES","10/25/2017 16:24","10/31/2017
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192279","320-32464-1","10/25/2017 16:24","10/18/2017 10:50",""
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A","MB","","-99","537","METHOD","RES","10/25/2017 16:24","10/31/2017
18:08","TALSAC","COA","WET","NA","1","NA","NA","","100","320-191138","320-191138","NA","320-
192279","320-32464-1","10/25/2017 16:24","10/18/2017 10:50",""



TO: A. FREBOWITZ **DATE:** NOVEMBER 20, 2017
FROM: TERRI L. SOLOMON **COPIES:** DV FILE
SUBJECT: ORGANIC DATA VALIDATION –POLYFLUOROALKYL SUBSTANCES (PFAS)
NAS JRB WILLOW GROVE
SAMPLE DELIVERY GROUP (SDG) 320-32464-1

SAMPLES: 6/Field Reagent Blank (FRB)
NAWC-101617-FRB-085 NAWC-101617-FRB-150
WGNA-101617-FRB-3283 WGNA-101617-FRB-3382
WGNA-101617-FRB-3991 WGNA-101617-FRB-4834

7/Drinking Water
NAWC-101617-RW-085 NAWC-101617-RW-150
WGNA-101617-RW-3283 WGNA-101617-RW-3382
WGNA-101617-RW-3991 WGNA-101617-RW-4834
WGNA-101617-DUP11

Overview

The sample set for NAS JRB Willow Grove, SDG 320-32464-1, consisted of six (6) drinking water samples, one field duplicate, and six (6) 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). One (1) field duplicate sample pair, WGNA-101617-RW-3991 / WGNA-101617-DUP11, was included in this SDG.

The samples were collected by Tetra Tech on October 16, 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, field duplicate results, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

None.

Minor

Detected results reported below the limit of quantitation (LOQ) but above the detection limit (DL) were qualified as estimated, (J).

Notes

Four samples were incorrectly labeled by the laboratory. The sample IDs from the chain of custody were used for NAWC-101617-FRB-085, NAWC-101617-FRB-150, NAWC-101617-RW-085 and NAWC-101617-RW-150. The Form Is and electronic deliverable were amended with the correct sample numbers.

TO: A. FREBOWITZ
SDG: 320-32464-1

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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-101617-RW-085	NAWC-101617-FRB-085
NAWC-101617-RW-150	NAWC-101617-FRB-150
WGNA-101617-RW-3283	WGNA-101617-FRB-3283
WGNA-101617-RW-3382	WGNA-101617-FRB-3382
WGNA-101617-RW-3991	WGNA-101617-FRB-3991
WGNA-101617-RW-4834	WGNA-101617-FRB-4834
WGNA-101617-DUP11	WGNA-101617-FRB-3991

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: None.

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

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 ($< 2 \times$ IDL for inorganics and $<$ CRQL for organics)
- Q = Other problems (can encompass a number of issues; i.e. chromatography, interferences, etc.)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
- U = RPD between columns/detectors $>40\%$ for positive results determined via GC/HPLC
- V = Non-linear calibrations; correlation coefficient $r < 0.995$
- W = EMPC result
- X = Signal to noise response drop
- Y = Percent solids $<30\%$
- Z = Uncertainty at 2 standard deviations is greater than sample activity
- Z1 = Tentatively Identified Compound considered presumptively present
- Z2 = Tentatively Identified Compound column bleed
- Z3 = Tentatively Identified Compound aldol condensate
- Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
- Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

PROJ_NO: 08005-WE04 SDG: 320-32464-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-101617-FRB-085			NAWC-101617-FRB-150			NAWC-101617-RW-085			NAWC-101617-RW-150		
	LAB_ID	320-32464-10			320-32464-4			320-32464-9			320-32464-3		
	SAMP_DATE	10/16/2017			10/16/2017			10/16/2017			10/16/2017		
	QC_TYPE	FB			FB			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		7.3	U		7.2	U		9.8	J	P	20		
PERFLUOROBUTANESULFONIC ACID		33	U		32	U		34	U		31	U	
PERFLUOROHEPTANOIC ACID		3.6	U		3.6	U		2.7	J	P	8.3	J	P
PERFLUOROHEXANESULFONIC ACID		11	U		11	U		11	U		10	U	
PERFLUORONONANOIC ACID		18	U		18	U		19	U		17	U	
PERFLUOROOCTANE SULFONIC ACID		15	U		14	U		11	J	P	11	J	P

PROJ_NO: 08005-WE04 SDG: 320-32464-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	WGNA-101617-DUP11			WGNA-101617-FRB-3283			WGNA-101617-FRB-3382			WGNA-101617-FRB-3991		
	LAB_ID	320-32464-13			320-32464-2			320-32464-6			320-32464-8		
	SAMP_DATE	10/16/2017			10/16/2017			10/16/2017			10/16/2017		
	QC_TYPE	FD			FB			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	WGNA-101617-RW-3991											
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		15	J	P	7.2	U		7.4	U		7	U	
PERFLUOROBUTANESULFONIC ACID		32	U		33	U		33	U		31	U	
PERFLUOROHEPTANOIC ACID		5.2	J	P	3.6	U		3.7	U		3.5	U	
PERFLUOROHEXANESULFONIC ACID		7	J	P	11	U		11	U		10	U	
PERFLUORONONANOIC ACID		18	U		18	U		18	U		17	U	
PERFLUOROOCTANE SULFONIC ACID		16	J	P	14	U		15	U		14	U	

PROJ_NO: 08005-WE04 SDG: 320-32464-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	WGNA-101617-FRB-4834			WGNA-101617-RW-3283			WGNA-101617-RW-3382			WGNA-101617-RW-3991		
	LAB_ID	320-32464-12			320-32464-1			320-32464-5			320-32464-7		
	SAMP_DATE	10/16/2017			10/16/2017			10/16/2017			10/16/2017		
	QC_TYPE	FB			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		7.2	U		20			14	J	P	17		
PERFLUOROBUTANESULFONIC ACID		32	U		21	J	P	33	U		31	U	
PERFLUOROHEPTANOIC ACID		3.6	U		6.4	J	P	4.2	J	P	5.4	J	P
PERFLUOROHXANESULFONIC ACID		11	U		8.3	J	P	8.3	J	P	7.2	J	P
PERFLUORONONANOIC ACID		18	U		19	U		18	U		17	U	
PERFLUOROOCTANE SULFONIC ACID		14	U		20	J	P	12	J	P	16	J	P

PROJ_NO: 08005-WE04 SDG: 320-32464-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	WGNA-101617-RW-4834		
	LAB_ID	320-32464-11		
	SAMP_DATE	10/16/2017		
	QC_TYPE	NM		
	UNITS	NG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		7	U	
PERFLUOROBUTANESULFONIC ACID		32	U	
PERFLUOROHEPTANOIC ACID		3.5	U	
PERFLUOROHEXANESULFONIC ACID		11	U	
PERFLUORONONANOIC ACID		18	U	
PERFLUOROOCTANE SULFONIC ACID		14	U	

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Client Sample ID: WGNA-101617-RW-3283 Lab Sample ID: 320-32464-1
 Matrix: Water Lab File ID: 2017.10.31_537C_015.d
 Analysis Method: 537 Date Collected: 10/16/2017 08:10
 Extraction Method: 537 Date Extracted: 10/25/2017 16:24
 Sample wt/vol: 266.1 (mL) Date Analyzed: 10/31/2017 18:22
 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.: 192279 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J ~~M~~	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	20		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U ~~M~~	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.3	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.4	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	21	J	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	97		70-130

Ali L. Salameh
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-FRB-3283</u>	Lab Sample ID: <u>320-32464-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_016.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 08:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>276.8 (mL)</u>	Date Analyzed: <u>10/31/2017 18:27</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>192279</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)	33	U	81	33	15

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

Ali L. Salem
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: <u>NAWC</u>	
Client Sample ID: <u>WCNA-101617-RW-150</u>	Lab Sample ID: <u>320-32464-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_017.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 08:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>287.8 (mL)</u>	Date Analyzed: <u>10/31/2017 18:32</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: <u></u>	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>192279</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J ~~M~~	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	20		17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U ~~M~~	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.3	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U ~~M~~	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	72		70-130
STL00996	13C2 PFDA	96		70-130

Wesley L. Salomon
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Client Sample ID: ~~WCNA~~ ^{NAWC}-101617-FRB-150 Lab Sample ID: 320-32464-4

Matrix: Water Lab File ID: 2017.10.31_537C_018.d

Analysis Method: 537 Date Collected: 10/16/2017 08:35

Extraction Method: 537 Date Extracted: 10/25/2017 16:24

Sample wt/vol: 279.4 (mL) Date Analyzed: 10/31/2017 18:37

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.: 192279 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	21	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	8.9	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	95		70-130

Ali L. Salameh
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Client Sample ID: WGNA-101617-RW-3382 Lab Sample ID: 320-32464-5
 Matrix: Water Lab File ID: 2017.10.31_537C_019.d
 Analysis Method: 537 Date Collected: 10/16/2017 10:10
 Extraction Method: 537 Date Extracted: 10/25/2017 16:24
 Sample wt/vol: 274.1 (mL) Date Analyzed: 10/31/2017 18:42
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 192279 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J ~~M~~	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	14	J ~~M~~	18	7.3	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U ~~M~~	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.3	J	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.2	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	79		70-130
STL00996	13C2 PFDA	89		70-130

Teri L. Selman
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Client Sample ID: WGNA-101617-FRB-3382 Lab Sample ID: 320-32464-6
 Matrix: Water Lab File ID: 2017.10.31_537C_020.d
 Analysis Method: 537 Date Collected: 10/16/2017 10:05
 Extraction Method: 537 Date Extracted: 10/25/2017 16:24
 Sample wt/vol: 271.9(mL) Date Analyzed: 10/31/2017 18:46
 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.: 192279 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	18	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.2	3.7	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	83	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	92		70-130

Teri L. Solomon
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Client Sample ID: WGNA-101617-RW-3991 Lab Sample ID: 320-32464-7
 Matrix: Water Lab File ID: 2017.10.31_537C_021.d
 Analysis Method: 537 Date Collected: 10/16/2017 09:10
 Extraction Method: 537 Date Extracted: 10/25/2017 16:24
 Sample wt/vol: 288.5 (mL) Date Analyzed: 10/31/2017 18:51
 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.: 192279 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	J ~~M~~	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	17		17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U ~~M~~	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.2	J	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	78		70-130
STL00996	13C2 PFDA	93		70-130

Ali L. Salameh
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Client Sample ID: WGNA-101617-FRB-3991 Lab Sample ID: 320-32464-8
 Matrix: Water Lab File ID: 2017.10.31_537C_024.d
 Analysis Method: 537 Date Collected: 10/16/2017 09:05
 Extraction Method: 537 Date Extracted: 10/25/2017 16:24
 Sample wt/vol: 287(mL) Date Analyzed: 10/31/2017 19:05
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 192281 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	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	87		70-130
STL00996	13C2 PFDA	93		70-130

Atari L. Salomon
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Client Sample ID: ~~WCNA~~ ^{NAWC} -101617-RW-085 Lab Sample ID: 320-32464-9

Matrix: Water Lab File ID: 2017.10.31_537C_025.d

Analysis Method: 537 Date Collected: 10/16/2017 09:40

Extraction Method: 537 Date Extracted: 10/25/2017 16:24

Sample wt/vol: 267.8 (mL) Date Analyzed: 10/31/2017 19:10

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.: 192281 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J ~~M~~	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	9.8	J	19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U ~~M~~	22	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.7	J	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	76		70-130
STL00996	13C2 PFDA	94		70-130

Amir L. Salameh
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: <u>NAWC</u>	
Client Sample ID: <u>WCNA-101617-FRB-085</u>	Lab Sample ID: <u>320-32464-10</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_026.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 09:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>275 (mL)</u>	Date Analyzed: <u>10/31/2017 19:15</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>192281</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	U	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)	3.6	U	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	92		70-130
STL00996	13C2 PFDA	98		70-130

Wesley L. Salomon
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-RW-4834</u>	Lab Sample ID: <u>320-32464-11</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_027.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 10:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>284.9(mL)</u>	Date Analyzed: <u>10/31/2017 19:20</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>192281</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	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)	3.5	U	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	92		70-130
STL00996	13C2 PFDA	96		70-130

Ali L. Salem
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Client Sample ID: WGNA-101617-FRB-4834 Lab Sample ID: 320-32464-12
 Matrix: Water Lab File ID: 2017.10.31_537C_028.d
 Analysis Method: 537 Date Collected: 10/16/2017 10:35
 Extraction Method: 537 Date Extracted: 10/25/2017 16:24
 Sample wt/vol: 278.7(mL) Date Analyzed: 10/31/2017 19:24
 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.: 192281 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	4.9
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	87		70-130
STL00996	13C2 PFDA	95		70-130

Ali L. Salameh
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Client Sample ID: WGNA-101617-DUP11 Lab Sample ID: 320-32464-13
 Matrix: Water Lab File ID: 2017.10.31_537C_029.d
 Analysis Method: 537 Date Collected: 10/16/2017 07:00
 Extraction Method: 537 Date Extracted: 10/25/2017 16:24
 Sample wt/vol: 281.6(mL) Date Analyzed: 10/31/2017 19:29
 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.: 192281 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	J ~~M~~	36	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U ~~M~~	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.0	J	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.2	J	8.9	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	76		70-130
STL00996	13C2 PFDA	92		70-130

Wesley L. Salomon
11/08/2017

Appendix B

Results as Reported by the Laboratory

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Client Sample ID: WGNA-101617-RW-3283 Lab Sample ID: 320-32464-1
 Matrix: Water Lab File ID: 2017.10.31_537C_015.d
 Analysis Method: 537 Date Collected: 10/16/2017 08:10
 Extraction Method: 537 Date Extracted: 10/25/2017 16:24
 Sample wt/vol: 266.1(mL) Date Analyzed: 10/31/2017 18:22
 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.: 192279 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	20		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U M	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.3	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.4	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	21	J	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	97		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-FRB-3283</u>	Lab Sample ID: <u>320-32464-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_016.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 08:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>276.8 (mL)</u>	Date Analyzed: <u>10/31/2017 18:27</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>192279</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)	33	U	81	33	15

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: NAWC

Client Sample ID: WONA-101617-RW-150 Lab Sample ID: 320-32464-3

Matrix: Water Lab File ID: 2017.10.31_537C_017.d

Analysis Method: 537 Date Collected: 10/16/2017 08:40

Extraction Method: 537 Date Extracted: 10/25/2017 16:24

Sample wt/vol: 287.8 (mL) Date Analyzed: 10/31/2017 18:32

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.: 192279 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J M	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	20		17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.3	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U M	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	72		70-130
STL00996	13C2 PFDA	96		70-130

Ali L. Salameh
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: NAWC
 Client Sample ID: WCNA-101617-FRB-150 Lab Sample ID: 320-32464-4
 Matrix: Water Lab File ID: 2017.10.31_537C_018.d
 Analysis Method: 537 Date Collected: 10/16/2017 08:35
 Extraction Method: 537 Date Extracted: 10/25/2017 16:24
 Sample wt/vol: 279.4 (mL) Date Analyzed: 10/31/2017 18:37
 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.: 192279 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	21	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	8.9	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	95		70-130

Teri L. Salomon
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Client Sample ID: WGNA-101617-RW-3382 Lab Sample ID: 320-32464-5

Matrix: Water Lab File ID: 2017.10.31_537C_019.d

Analysis Method: 537 Date Collected: 10/16/2017 10:10

Extraction Method: 537 Date Extracted: 10/25/2017 16:24

Sample wt/vol: 274.1 (mL) Date Analyzed: 10/31/2017 18:42

Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1

Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)

% Moisture: _____ GPC Cleanup: (Y/N) N

Analysis Batch No.: 192279 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J M	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	14	J M	18	7.3	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.3	J	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.2	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	79		70-130
STL00996	13C2 PFDA	89		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-FRB-3382</u>	Lab Sample ID: <u>320-32464-6</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_020.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 10:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>271.9(mL)</u>	Date Analyzed: <u>10/31/2017 18:46</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>192279</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	18	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.2	3.7	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	83	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	92		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-RW-3991</u>	Lab Sample ID: <u>320-32464-7</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_021.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 09:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>288.5 (mL)</u>	Date Analyzed: <u>10/31/2017 18:51</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>192279</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	J M	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	17		17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U M	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.2	J	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	78		70-130
STL00996	13C2 PFDA	93		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-FRB-3991</u>	Lab Sample ID: <u>320-32464-8</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_024.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 09:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>287(mL)</u>	Date Analyzed: <u>10/31/2017 19:05</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>192281</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	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	87		70-130
STL00996	13C2 PFDA	93		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Client Sample ID: ~~WCNA~~ ^{NAWC}-101617-RW-085 Lab Sample ID: 320-32464-9

Matrix: Water Lab File ID: 2017.10.31_537C_025.d

Analysis Method: 537 Date Collected: 10/16/2017 09:40

Extraction Method: 537 Date Extracted: 10/25/2017 16:24

Sample wt/vol: 267.8 (mL) Date Analyzed: 10/31/2017 19:10

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.: 192281 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J M	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	9.8	J	19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U M	22	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.7	J	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	76		70-130
STL00996	13C2 PFDA	94		70-130

Ali L. Salameh
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: NAWC

Client Sample ID: ~~WCNA~~ 101617-FRB-085 Lab Sample ID: 320-32464-10

Matrix: Water Lab File ID: 2017.10.31_537C_026.d

Analysis Method: 537 Date Collected: 10/16/2017 09:35

Extraction Method: 537 Date Extracted: 10/25/2017 16:24

Sample wt/vol: 275 (mL) Date Analyzed: 10/31/2017 19:15

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.: 192281 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	U	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)	3.6	U	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	92		70-130
STL00996	13C2 PFDA	98		70-130

Teri L. Salomon
11/08/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-RW-4834</u>	Lab Sample ID: <u>320-32464-11</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_027.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 10:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>284.9(mL)</u>	Date Analyzed: <u>10/31/2017 19:20</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>192281</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	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)	3.5	U	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	92		70-130
STL00996	13C2 PFDA	96		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-32464-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-101617-FRB-4834</u>	Lab Sample ID: <u>320-32464-12</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.10.31_537C_028.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>10/16/2017 10:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>10/25/2017 16:24</u>
Sample wt/vol: <u>278.7(mL)</u>	Date Analyzed: <u>10/31/2017 19:24</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>192281</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	4.9
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	87		70-130
STL00996	13C2 PFDA	95		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Client Sample ID: WGNA-101617-DUP11 Lab Sample ID: 320-32464-13
 Matrix: Water Lab File ID: 2017.10.31_537C_029.d
 Analysis Method: 537 Date Collected: 10/16/2017 07:00
 Extraction Method: 537 Date Extracted: 10/25/2017 16:24
 Sample wt/vol: 281.6(mL) Date Analyzed: 10/31/2017 19:29
 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.: 192281 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	J M	36	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U M	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.0	J	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.2	J	8.9	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	76		70-130
STL00996	13C2 PFDA	92		70-130

Appendix C

Support Documentation

ANALYTE	ORIGINAL RW-3991	DUPLICATE DUP11	RL	RPD	RPD > 50%	ORIGINAL	DUPLICATE SAMPLE CONC >2xRL	DIFFERENCE >2XRL
						SAMPLE CONC >2xRL		
Perfluorooctanoic acid (PFOA)	17	15	17	12.500	FALSE	FALSE	FALSE	FALSE
Perfluoroheptanoic acid (PFHpA)	5.4	5.2	8.7	3.774	FALSE	FALSE	FALSE	FALSE
Perfluorohexanesulfonic acid (PFHxS)	7.2	7	26	2.817	FALSE	FALSE	FALSE	FALSE
Perfluorooctanesulfonic acid (PFOS)	16	16	35	0.000	FALSE	FALSE	FALSE	FALSE

880 Riverside Parkway
West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☒ DW ☐ NPDES ☐ RCRA ☐ Other:[illegible]

Job Narrative
320-32464-1

Receipt

The samples were received on 10/17/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.6° C.

LCMS

Method(s) 537, 537 DW: 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.

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 batch 320-191138.

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: 320-32464-1

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: 320-32464-1

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-32464-1	WGNA-101617-RW-3283	Water	10/16/17 08:10	10/17/17 09:30
320-32464-2	WGNA-101617-FRB-3283	Water	10/16/17 08:05	10/17/17 09:30
320-32464-3	WGNA-101617-RW-150	Water	10/16/17 08:40	10/17/17 09:30
320-32464-4	WGNA-101617-FRB-150	Water	10/16/17 08:35	10/17/17 09:30
320-32464-5	WGNA-101617-RW-3382	Water	10/16/17 10:10	10/17/17 09:30
320-32464-6	WGNA-101617-FRB-3382	Water	10/16/17 10:05	10/17/17 09:30
320-32464-7	WGNA-101617-RW-3991	Water	10/16/17 09:10	10/17/17 09:30
320-32464-8	WGNA-101617-FRB-3991	Water	10/16/17 09:05	10/17/17 09:30
320-32464-9	WGNA-101617-RW-085	Water	10/16/17 09:40	10/17/17 09:30
320-32464-10	WGNA-101617-FRB-085	Water	10/16/17 09:35	10/17/17 09:30
320-32464-11	WGNA-101617-RW-4834	Water	10/16/17 10:40	10/17/17 09:30
320-32464-12	WGNA-101617-FRB-4834	Water	10/16/17 10:35	10/17/17 09:30
320-32464-13	WGNA-101617-DUP11	Water	10/16/17 07:00	10/17/17 09:30

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-101617-RW-328 3	320-32464-1	84	97
WGNA-101617-FRB-32 83	320-32464-2	91	96
WGNA-101617-RW-150	320-32464-3	72	96
WGNA-101617-FRB-15 0	320-32464-4	90	95
WGNA-101617-RW-338 2	320-32464-5	79	89
WGNA-101617-FRB-33 82	320-32464-6	91	92
WGNA-101617-RW-399 1	320-32464-7	78	93
WGNA-101617-FRB-39 91	320-32464-8	87	93
WGNA-101617-RW-085	320-32464-9	76	94
WGNA-101617-FRB-08 5	320-32464-10	92	98
WGNA-101617-RW-483 4	320-32464-11	92	96
WGNA-101617-FRB-48 34	320-32464-12	87	95
WGNA-101617-DUP11	320-32464-13	76	92
	MB 320-191138/1-A	89	99
	LCS 320-191138/2-A	92	98
	LCSD 320-191138/3-A	94	98

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.10.31_537C_013.d
 Lab ID: LCS 320-191138/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	133	127	96	70-130	M
Perfluorooctanoic acid (PFOA)	66.7	64.9	97	70-130	
Perfluorononanoic acid (PFNA)	66.7	65.1	98	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	101	101	70-130	
Perfluoroheptanoic acid (PFHpA)	33.3	33.0	99	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	279	93	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.: 320-32464-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.10.31_537C_014.d
 Lab ID: LCSD 320-191138/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	133	135	101	5	30	70-130	M
Perfluorooctanoic acid (PFOA)	66.7	69.4	104	7	30	70-130	
Perfluorononanoic acid (PFNA)	66.7	68.6	103	5	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	106	106	5	30	70-130	
Perfluoroheptanoic acid (PFHpA)	33.3	36.2	108	9	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	288	96	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.: 320-32464-1
 SDG No.: _____
 Lab File ID: 2017.10.31_537C_012.d Lab Sample ID: MB 320-191138/1-A
 Matrix: Water Date Extracted: 10/25/2017 16:24
 Instrument ID: A8_N Date Analyzed: 10/31/2017 18:08
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-191138/2-A	2017.10.31_537C 013.d	10/31/2017 18:13
	LCSD 320-191138/3-A	2017.10.31_537C 014.d	10/31/2017 18:18
WGNA-101617-RW-3283	320-32464-1	2017.10.31_537C 015.d	10/31/2017 18:22
WGNA-101617-FRB-3283	320-32464-2	2017.10.31_537C 016.d	10/31/2017 18:27
WGNA-101617-RW-150	320-32464-3	2017.10.31_537C 017.d	10/31/2017 18:32
WGNA-101617-FRB-150	320-32464-4	2017.10.31_537C 018.d	10/31/2017 18:37
WGNA-101617-RW-3382	320-32464-5	2017.10.31_537C 019.d	10/31/2017 18:42
WGNA-101617-FRB-3382	320-32464-6	2017.10.31_537C 020.d	10/31/2017 18:46
WGNA-101617-RW-3991	320-32464-7	2017.10.31_537C 021.d	10/31/2017 18:51
WGNA-101617-FRB-3991	320-32464-8	2017.10.31_537C 024.d	10/31/2017 19:05
WGNA-101617-RW-085	320-32464-9	2017.10.31_537C 025.d	10/31/2017 19:10
WGNA-101617-FRB-085	320-32464-10	2017.10.31_537C 026.d	10/31/2017 19:15
WGNA-101617-RW-4834	320-32464-11	2017.10.31_537C 027.d	10/31/2017 19:20
WGNA-101617-FRB-4834	320-32464-12	2017.10.31_537C 028.d	10/31/2017 19:24
WGNA-101617-DUP11	320-32464-13	2017.10.31_537C 029.d	10/31/2017 19:29

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-191138/1-A
 Matrix: Water Lab File ID: 2017.10.31_537C_012.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 10/25/2017 16:24
 Sample wt/vol: 250.00 (mL) Date Analyzed: 10/31/2017 18:08
 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.: 192279 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	89		70-130
STL00996	13C2 PFDA	99		70-130

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 10/31/2017 11:44
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 10/31/2017 12:08
 Calibration ID: 35621

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		2775806	1.86	6114108	2.11		
UPPER LIMIT		4163709	2.36	9171162	2.61		
LOWER LIMIT		1387903	1.36	3057054	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-192162/11		2865147	1.87	6394781	2.11		
ICV 320-192162/16		2807375	1.87	6562646	2.11		
CCV 320-192279/10 CCVIS		2852910	1.86	6200813	2.10		
MB 320-191138/1-A		3230211	1.86	7280484	2.10		
LCS 320-191138/2-A		3009860	1.86	6684674	2.10		
LCSD 320-191138/3-A		3010680	1.86	6592068	2.10		
320-32464-1	WGNA-101617-RW-3283	2897739	1.86	6536909	2.10		
320-32464-2	WGNA-101617-FRB-3283	2780021	1.85	6463758	2.09		
320-32464-3	WGNA-101617-RW-150	3168524	1.86	6981584	2.09		
320-32464-4	WGNA-101617-FRB-150	3234474	1.85	7346826	2.09		
320-32464-5	WGNA-101617-RW-3382	3626162	1.86	8189404	2.10		
320-32464-6	WGNA-101617-FRB-3382	3504926	1.86	7852365	2.10		
320-32464-7	WGNA-101617-RW-3991	3786228	1.86	8405612	2.10		
CCV 320-192279/22 CCVIS		2961630	1.86	6344077	2.10		
CCV 320-192281/22 CCVIS		2961630	1.86	6344077	2.10		
320-32464-8	WGNA-101617-FRB-3991	3273656	1.86	7124343	2.10		
320-32464-9	WGNA-101617-RW-085	3118551	1.86	6691853	2.10		
320-32464-10	WGNA-101617-FRB-085	3079446	1.86	6817273	2.10		
320-32464-11	WGNA-101617-RW-4834	2788845	1.85	6264447	2.09		
320-32464-12	WGNA-101617-FRB-4834	3049835	1.85	6757724	2.09		
320-32464-13	WGNA-101617-DUP11	3479117	1.86	7576347	2.10		
CCV 320-192281/30 CCVIS		2729865	1.85	5740357	2.09		

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.: 320-32464-1
 SDG No.: _____
 Sample No.: CCV 320-192279/10 Date Analyzed: 10/31/2017 17:59
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.10.31_537C_010 Heated Purge: (Y/N) N
 Calibration ID: 35621

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2852910	1.86	6200813	2.10		
UPPER LIMIT		3994074	2.36	8681138	2.60		
LOWER LIMIT		1997037	1.36	4340569	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-191138/1-A		3230211	1.86	7280484	2.10		
LCS 320-191138/2-A		3009860	1.86	6684674	2.10		
LCSD 320-191138/3-A		3010680	1.86	6592068	2.10		
320-32464-1	WGNA-101617-RW-3283	2897739	1.86	6536909	2.10		
320-32464-2	WGNA-101617-FRB-3283	2780021	1.85	6463758	2.09		
320-32464-3	WGNA-101617-RW-150	3168524	1.86	6981584	2.09		
320-32464-4	WGNA-101617-FRB-150	3234474	1.85	7346826	2.09		
320-32464-5	WGNA-101617-RW-3382	3626162	1.86	8189404	2.10		
320-32464-6	WGNA-101617-FRB-3382	3504926	1.86	7852365	2.10		
320-32464-7	WGNA-101617-RW-3991	3786228	1.86	8405612	2.10		

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.: 320-32464-1
 SDG No.: _____
 Sample No.: CCV 320-192279/22 Date Analyzed: 10/31/2017 18:56
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.10.31_537C_022 Heated Purge: (Y/N) N
 Calibration ID: 35621

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	2961630	1.86	6344077	2.10		
UPPER LIMIT	4146282	2.36	8881708	2.60		
LOWER LIMIT	2073141	1.36	4440854	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-191138/1-A		3230211	1.86	7280484	2.10	
LCS 320-191138/2-A		3009860	1.86	6684674	2.10	
LCSD 320-191138/3-A		3010680	1.86	6592068	2.10	
320-32464-1	WGNA-101617-RW-3283	2897739	1.86	6536909	2.10	
320-32464-2	WGNA-101617-FRB-3283	2780021	1.85	6463758	2.09	
320-32464-3	WGNA-101617-RW-150	3168524	1.86	6981584	2.09	
320-32464-4	WGNA-101617-FRB-150	3234474	1.85	7346826	2.09	
320-32464-5	WGNA-101617-RW-3382	3626162	1.86	8189404	2.10	
320-32464-6	WGNA-101617-FRB-3382	3504926	1.86	7852365	2.10	
320-32464-7	WGNA-101617-RW-3991	3786228	1.86	8405612	2.10	

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.: 320-32464-1
 SDG No.: _____
 Sample No.: CCV 320-192281/22 Date Analyzed: 10/31/2017 18:56
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.10.31_537C_022 Heated Purge: (Y/N) N
 Calibration ID: 35621

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	2961630	1.86	6344077	2.10		
UPPER LIMIT	4146282	2.36	8881708	2.60		
LOWER LIMIT	2073141	1.36	4440854	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-32464-8	WGNA-101617-FRB-3991	3273656	1.86	7124343	2.10	
320-32464-9	WGNA-101617-RW-085	3118551	1.86	6691853	2.10	
320-32464-10	WGNA-101617-FRB-085	3079446	1.86	6817273	2.10	
320-32464-11	WGNA-101617-RW-4834	2788845	1.85	6264447	2.09	
320-32464-12	WGNA-101617-FRB-4834	3049835	1.85	6757724	2.09	
320-32464-13	WGNA-101617-DUP11	3479117	1.86	7576347	2.10	

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.: 320-32464-1
 SDG No.: _____
 Sample No.: CCV 320-192281/30 Date Analyzed: 10/31/2017 19:34
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2017.10.31_537C_030 Heated Purge: (Y/N) N
 Calibration ID: 35621

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	2729865	1.85	5740357	2.09		
UPPER LIMIT	3821811	2.35	8036500	2.59		
LOWER LIMIT	1910906	1.35	4018250	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-32464-8	WGNA-101617-FRB-3991		3273656	1.86	7124343	2.10
320-32464-9	WGNA-101617-RW-085		3118551	1.86	6691853	2.10
320-32464-10	WGNA-101617-FRB-085		3079446	1.86	6817273	2.10
320-32464-11	WGNA-101617-RW-4834		2788845	1.85	6264447	2.09
320-32464-12	WGNA-101617-FRB-4834		3049835	1.85	6757724	2.09
320-32464-13	WGNA-101617-DUP11		3479117	1.86	7576347	2.10

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.: 320-32464-1 Analy Batch No.: 192162

SDG No.: _____

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

Calibration Start Date: 10/31/2017 11:44 Calibration End Date: 10/31/2017 12:08 Calibration ID: 35621

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-192162/4	2017.10.31_537ICAL_004.d
Level 2	IC 320-192162/5	2017.10.31_537ICAL_005.d
Level 3	IC 320-192162/6	2017.10.31_537ICAL_006.d
Level 4	IC 320-192162/7	2017.10.31_537ICAL_007.d
Level 5	IC 320-192162/8	2017.10.31_537ICAL_008.d
Level 6	IC 320-192162/9	2017.10.31_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)	1.0555 0.7230	1.1099	1.0105	0.8851	0.8003	QuaF		1.0703	-0.001949						0.9990		0.9600
Perfluoroheptanoic acid (PFHpA)	0.9747 0.9495	0.9317	0.9152	0.9490	0.9245	Ave		0.9408				2.3		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.6000 1.5277	1.6916	1.7164	1.6515	1.5848	Ave		1.6287				4.4		30.0			
Perfluorooctanoic acid (PFOA)	0.9001 0.9319	0.9648	0.9220	0.9359	0.9258	Ave		0.9301				2.3		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.8822 0.9438	0.9288	0.9148	0.9474	0.9527	Ave		0.9283				2.9		30.0			
Perfluorononanoic acid (PFNA)	0.6310 0.6692	0.6490	0.6407	0.6829	0.6432	Ave		0.6527				3.0		30.0			
13C2 PFHxA	1.1162 1.1576	1.0680	1.0953	1.1948	1.1392	Ave		1.1285				4.0		30.0			
13C2 PFDA	0.7945 0.8580	0.7675	0.7780	0.8355	0.8229	Ave		0.8094				4.3		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.: 320-32464-1 Analy Batch No.: 192162

SDG No.: _____

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

Calibration Start Date: 10/31/2017 11:44 Calibration End Date: 10/31/2017 12:08 Calibration ID: 35621

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-192162/4	2017.10.31_537ICAL_004.d
Level 2	IC 320-192162/5	2017.10.31_537ICAL_005.d
Level 3	IC 320-192162/6	2017.10.31_537ICAL_006.d
Level 4	IC 320-192162/7	2017.10.31_537ICAL_007.d
Level 5	IC 320-192162/8	2017.10.31_537ICAL_008.d
Level 6	IC 320-192162/9	2017.10.31_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	2055386 27165476	4905442	9915456	16876130	21956734	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	275477 5107421	614703	1311091	2526779	3670615	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	1038660 19137035	2492517	5615014	10497872	14494918	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	509095 10031020	1273846	2643153	4986613	7356038	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	763610 15763683	1824729	3990091	8030345	11617530	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PF OA	Ave	356641 7198655	856305	1835636	3636277	5107150	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PF OA	Ave	3153457 3112456	3170056	3137333	3180555	3014571	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	2244762 2306925	2277991	2228390	2223928	2177702	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.: 320-32464-1 Analy Batch No.: 192162

SDG No.: _____

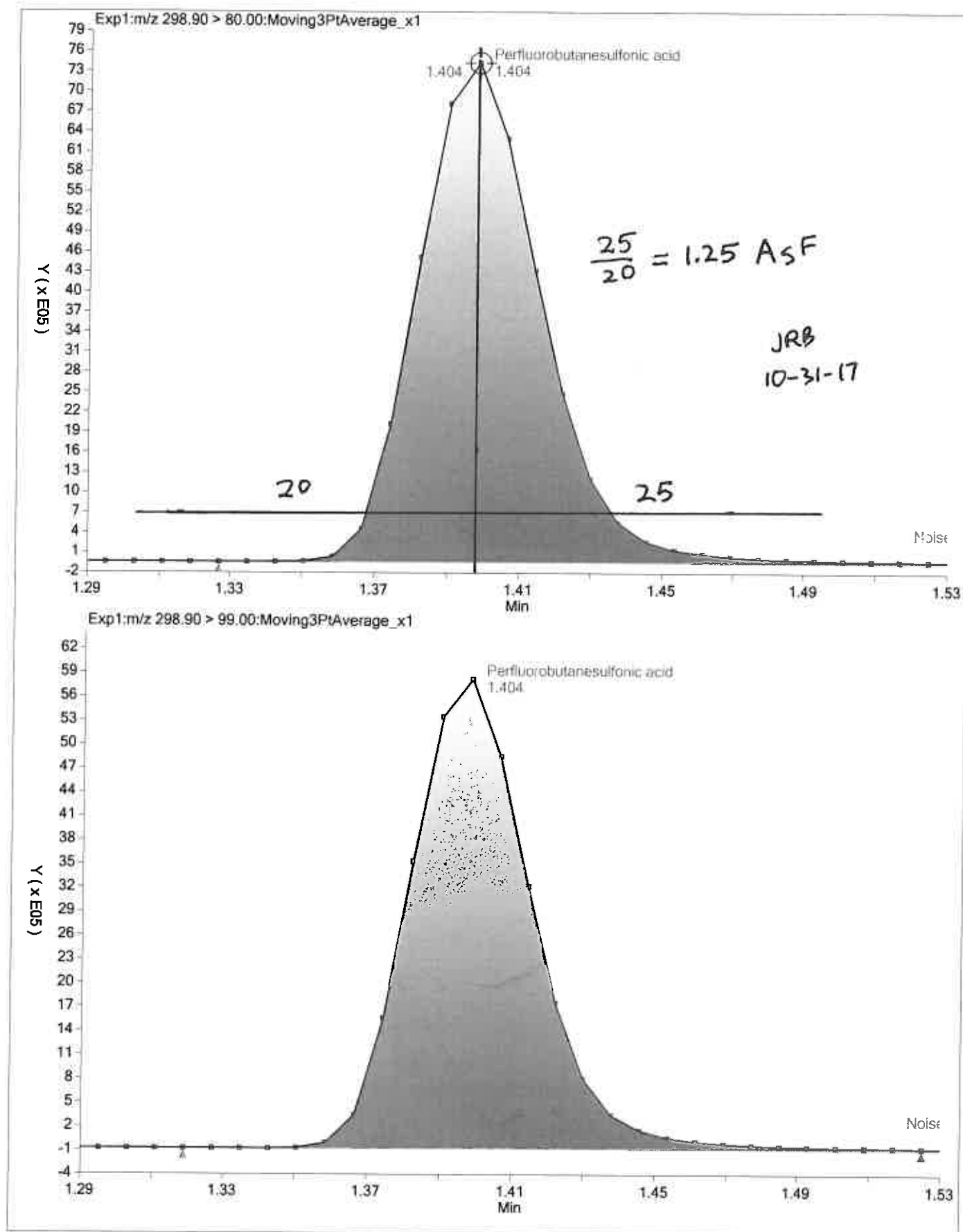
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

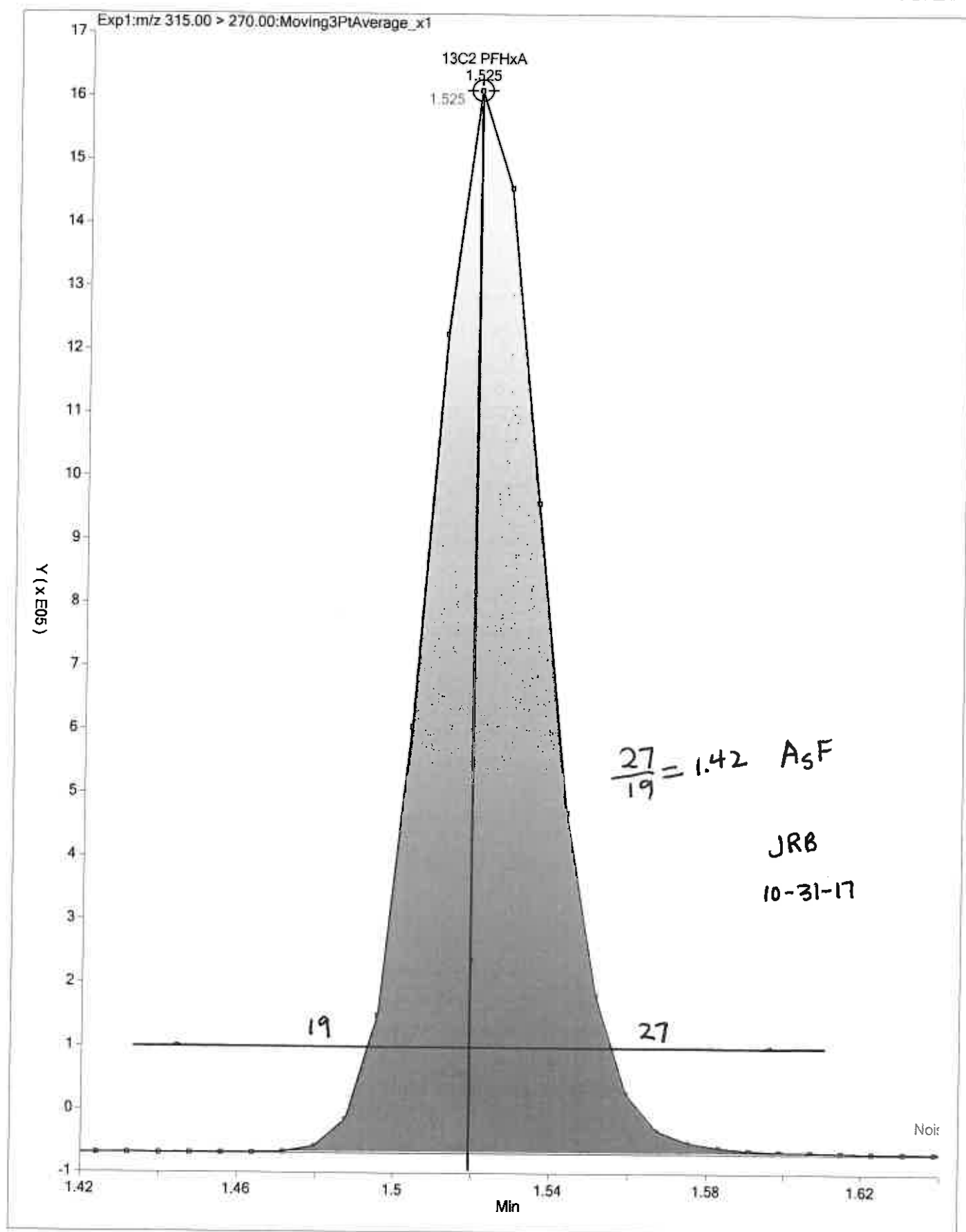
Calibration Start Date: 10/31/2017 11:44 Calibration End Date: 10/31/2017 12:08 Calibration ID: 35621

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-192162/4	2017.10.31_537ICAL_004.d
Level 2	IC 320-192162/5	2017.10.31_537ICAL_005.d
Level 3	IC 320-192162/6	2017.10.31_537ICAL_006.d
Level 4	IC 320-192162/7	2017.10.31_537ICAL_007.d
Level 5	IC 320-192162/8	2017.10.31_537ICAL_008.d
Level 6	IC 320-192162/9	2017.10.31_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)	0.3	7.9	3.1	-1.4	-1.2	1.0	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	3.6	-1.0	-2.7	0.9	-1.7	0.9	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-1.8	3.9	5.4	1.4	-2.7	-6.2	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-3.2	3.7	-0.9	0.6	-0.5	0.2	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-5.0	0.1	-1.5	2.1	2.6	1.7	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-3.3	-0.6	-1.8	4.6	-1.5	2.5	50	30	30	30	30	30
13C2 PFHxA	-1.1	-5.4	-2.9	5.9	0.9	2.6	30	30	30	30	30	30
13C2 PFDA	-1.8	-5.2	-3.9	3.2	1.7	6.0	30	30	30	30	30	30





FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-192162/11 Calibration Date: 10/31/2017 12:17
 Instrument ID: A8_N Calib Start Date: 10/31/2017 11:44
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/31/2017 12:08
 Lab File ID: 2017.10.31_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		1.102		21.4	20.0	7.2	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9408	0.9641		2.28	2.22	2.5	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.629	1.689		6.92	6.67	3.7	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9301	0.9239		4.42	4.45	-0.7	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9283	0.9317		8.92	8.89	0.4	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6527	0.6672		4.54	4.45	2.2	50.0
13C2 PFHxA	Ave	1.129	1.083		9.59	10.0	-4.1	30.0
13C2 PFDA	Ave	0.8094	0.8119		10.0	10.0	0.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Lab Sample ID: ICV 320-192162/16 Calibration Date: 10/31/2017 14:58
 Instrument ID: A8_N Calib Start Date: 10/31/2017 11:44
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/31/2017 12:08
 Lab File ID: 2017.10.31_537AICAL_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.7489		82.4	100	-17.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9408	0.8366		8.89	10.0	-11.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.629	1.474		18.2	20.1	-9.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9301	0.8041		17.7	20.5	-13.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9283	0.8488		18.0	19.7	-8.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6527	0.6148		19.0	20.1	-5.8	30.0
13C2 PFHxA	Ave	1.129	1.069		9.47	10.0	-5.3	30.0
13C2 PFDA	Ave	0.8094	0.7781		9.61	10.0	-3.9	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Lab Sample ID: CCV 320-192279/10 Calibration Date: 10/31/2017 17:59
 Instrument ID: A8_N Calib Start Date: 10/31/2017 11:44
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/31/2017 12:08
 Lab File ID: 2017.10.31_537C_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.7669		125	135	-7.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9408	0.9197		14.7	15.0	-2.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.629	1.564		43.2	45.0	-4.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9301	0.9192		29.7	30.0	-1.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9283	0.9333		60.3	60.0	0.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6527	0.6543		30.1	30.0	0.3	30.0
13C2 PFHxA	Ave	1.129	1.145		10.1	10.0	1.5	30.0
13C2 PFDA	Ave	0.8094	0.8077		9.98	10.0	-0.2	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Lab Sample ID: CCV 320-192279/22 Calibration Date: 10/31/2017 18:56
 Instrument ID: A8_N Calib Start Date: 10/31/2017 11:44
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/31/2017 12:08
 Lab File ID: 2017.10.31_537C_022.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.005		46.1	45.0	2.5	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9408	0.9285		4.94	5.00	-1.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.629	1.712		15.8	15.0	5.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9301	0.9228		9.93	10.0	-0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9283	0.9179		19.8	20.0	-1.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6527	0.6571		10.1	10.0	0.7	30.0
13C2 PFHxA	Ave	1.129	1.102		9.76	10.0	-2.4	30.0
13C2 PFDA	Ave	0.8094	0.7798		9.63	10.0	-3.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Lab Sample ID: CCV 320-192281/22 Calibration Date: 10/31/2017 18:56
 Instrument ID: A8_N Calib Start Date: 10/31/2017 11:44
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/31/2017 12:08
 Lab File ID: 2017.10.31_537C_022.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.005		46.1	45.0	2.5	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9408	0.9285		4.94	5.00	-1.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.629	1.712		15.8	15.0	5.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9301	0.9228		9.93	10.0	-0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9283	0.9179		19.8	20.0	-1.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6527	0.6571		10.1	10.0	0.7	30.0
13C2 PFHxA	Ave	1.129	1.102		9.76	10.0	-2.4	30.0
13C2 PFDA	Ave	0.8094	0.7798		9.63	10.0	-3.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1
 SDG No.: _____
 Lab Sample ID: CCV 320-192281/30 Calibration Date: 10/31/2017 19:34
 Instrument ID: A8_N Calib Start Date: 10/31/2017 11:44
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/31/2017 12:08
 Lab File ID: 2017.10.31_537C_030.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8168		137	135	1.8	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9408	0.9140		14.6	15.0	-2.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.629	1.608		44.4	45.0	-1.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9301	0.9077		29.3	30.0	-2.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9283	0.9470		61.2	60.0	2.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6527	0.6499		29.9	30.0	-0.4	30.0
13C2 PFHxA	Ave	1.129	1.138		10.1	10.0	0.9	30.0
13C2 PFDA	Ave	0.8094	0.8007		9.89	10.0	-1.1	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Instrument ID: A8_N Start Date: 10/31/2017 11:44Analysis Batch Number: 192162 End Date: 10/31/2017 14:58

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-192162/4		10/31/2017 11:44	1	2017.10.31_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-192162/5		10/31/2017 11:49	1	2017.10.31_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-192162/6		10/31/2017 11:54	1	2017.10.31_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-192162/7 ICISAV		10/31/2017 11:58	1	2017.10.31_537I CAL 007.d	GeminiC18 3x100 3(mm)
IC 320-192162/8		10/31/2017 12:03	1	2017.10.31_537I CAL 008.d	GeminiC18 3x100 3(mm)
IC 320-192162/9		10/31/2017 12:08	1	2017.10.31_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/31/2017 12:13	1		GeminiC18 3x100 3(mm)
CCVL 320-192162/11		10/31/2017 12:17	1	2017.10.31_537I CAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/31/2017 14:53	1		GeminiC18 3x100 3(mm)
ICV 320-192162/16		10/31/2017 14:58	1	2017.10.31_537A ICAL 003.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-32464-1

SDG No.: _____

Instrument ID: A8_NStart Date: 10/31/2017 17:59Analysis Batch Number: 192279End Date: 10/31/2017 18:56

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-192279/10 CCVIS		10/31/2017 17:59	1	2017.10.31_537C 010.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/31/2017 18:03	1		GeminiC18 3x100 3(mm)
MB 320-191138/1-A		10/31/2017 18:08	1	2017.10.31_537C 012.d	GeminiC18 3x100 3(mm)
LCS 320-191138/2-A		10/31/2017 18:13	1	2017.10.31_537C 013.d	GeminiC18 3x100 3(mm)
LCSD 320-191138/3-A		10/31/2017 18:18	1	2017.10.31_537C 014.d	GeminiC18 3x100 3(mm)
320-32464-1		10/31/2017 18:22	1	2017.10.31_537C 015.d	GeminiC18 3x100 3(mm)
320-32464-2		10/31/2017 18:27	1	2017.10.31_537C 016.d	GeminiC18 3x100 3(mm)
320-32464-3		10/31/2017 18:32	1	2017.10.31_537C 017.d	GeminiC18 3x100 3(mm)
320-32464-4		10/31/2017 18:37	1	2017.10.31_537C 018.d	GeminiC18 3x100 3(mm)
320-32464-5		10/31/2017 18:42	1	2017.10.31_537C 019.d	GeminiC18 3x100 3(mm)
320-32464-6		10/31/2017 18:46	1	2017.10.31_537C 020.d	GeminiC18 3x100 3(mm)
320-32464-7		10/31/2017 18:51	1	2017.10.31_537C 021.d	GeminiC18 3x100 3(mm)
CCV 320-192279/22 CCVIS		10/31/2017 18:56	1	2017.10.31_537C 022.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Instrument ID: A8_N Start Date: 10/31/2017 18:56Analysis Batch Number: 192281 End Date: 10/31/2017 19:34

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-192281/22 CCVIS		10/31/2017 18:56	1	2017.10.31_537C 022.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/31/2017 19:01	1		GeminiC18 3x100 3(mm)
320-32464-8		10/31/2017 19:05	1	2017.10.31_537C 024.d	GeminiC18 3x100 3(mm)
320-32464-9		10/31/2017 19:10	1	2017.10.31_537C 025.d	GeminiC18 3x100 3(mm)
320-32464-10		10/31/2017 19:15	1	2017.10.31_537C 026.d	GeminiC18 3x100 3(mm)
320-32464-11		10/31/2017 19:20	1	2017.10.31_537C 027.d	GeminiC18 3x100 3(mm)
320-32464-12		10/31/2017 19:24	1	2017.10.31_537C 028.d	GeminiC18 3x100 3(mm)
320-32464-13		10/31/2017 19:29	1	2017.10.31_537C 029.d	GeminiC18 3x100 3(mm)
CCV 320-192281/30 CCVIS		10/31/2017 19:34	1	2017.10.31_537C 030.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-32464-1

SDG No.: _____

Batch Number: 191138 Batch Start Date: 10/25/17 16:24 Batch Analyst: Reed, Jonathan EBatch Method: 537 Batch End Date: 10/27/17 20:54

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00051
MB 320-191138/1		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
LCS 320-191138/2		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
LCSD 320-191138/3		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
320-32464-A-1	WGNA-101617-RW-3 283	537, 537	T	294.03 g	27.90 g	266.1 mL	1.00 mL	7 SU	100 uL
320-32464-A-2	WGNA-101617-FRB-3283	537, 537	T	304.22 g	27.43 g	276.8 mL	1.00 mL	7 SU	100 uL
320-32464-A-3	WGNA-101617-RW-1 50	537, 537	T	315.53 g	27.69 g	287.8 mL	1.00 mL	7 SU	100 uL
320-32464-A-4	WGNA-101617-FRB-150	537, 537	T	307.01 g	27.57 g	279.4 mL	1.00 mL	7 SU	100 uL
320-32464-A-5	WGNA-101617-RW-3 382	537, 537	T	302.14 g	28.03 g	274.1 mL	1.00 mL	7 SU	100 uL
320-32464-A-6	WGNA-101617-FRB-3382	537, 537	T	299.84 g	27.96 g	271.9 mL	1.00 mL	7 SU	100 uL
320-32464-A-7	WGNA-101617-RW-3 991	537, 537	T	316.39 g	27.87 g	288.5 mL	1.00 mL	7 SU	100 uL
320-32464-A-8	WGNA-101617-FRB-3991	537, 537	T	314.71 g	27.74 g	287 mL	1.00 mL	7 SU	100 uL
320-32464-A-9	WGNA-101617-RW-0 85	537, 537	T	296.09 g	28.32 g	267.8 mL	1.00 mL	7 SU	100 uL
320-32464-A-10	WGNA-101617-FRB-085	537, 537	T	302.93 g	27.98 g	275 mL	1.00 mL	7 SU	100 uL
320-32464-A-11	WGNA-101617-RW-4 834	537, 537	T	312.99 g	28.08 g	284.9 mL	1.00 mL	7 SU	100 uL
320-32464-A-12	WGNA-101617-FRB-4834	537, 537	T	306.47 g	27.80 g	278.7 mL	1.00 mL	7 SU	100 uL
320-32464-A-13	WGNA-101617-DUP1 1	537, 537	T	309.62 g	28.01 g	281.6 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00026	LC537-SU 00050	AnalysisComment			
MB 320-191138/1		537, 537			100 uL	Chlorine: ND			
LCS 320-191138/2		537, 537		100 uL	100 uL	Chlorine: ND			
LCSD 320-191138/3		537, 537		100 uL	100 uL	Chlorine: ND			
320-32464-A-1	WGNA-101617-RW-3 283	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.: 320-32464-1

SDG No.: _____

Batch Number: 191138 Batch Start Date: 10/25/17 16:24 Batch Analyst: Reed, Jonathan EBatch Method: 537 Batch End Date: 10/27/17 20:54

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00026	LC537-SU 00050	AnalysisComment			
320-32464-A-2	WGNA-101617-FRB-3283	537, 537	T		100 uL	Clorine: ND			
320-32464-A-3	WGNA-101617-RW-150	537, 537	T		100 uL	Clorine: ND			
320-32464-A-4	WGNA-101617-FRB-150	537, 537	T		100 uL	Clorine: ND			
320-32464-A-5	WGNA-101617-RW-3382	537, 537	T		100 uL	Clorine: ND			
320-32464-A-6	WGNA-101617-FRB-3382	537, 537	T		100 uL	Clorine: ND			
320-32464-A-7	WGNA-101617-RW-3991	537, 537	T		100 uL	Clorine: ND			
320-32464-A-8	WGNA-101617-FRB-3991	537, 537	T		100 uL	Clorine: ND			
320-32464-A-9	WGNA-101617-RW-085	537, 537	T		100 uL	Clorine: ND			
320-32464-A-10	WGNA-101617-FRB-085	537, 537	T		100 uL	Clorine: ND			
320-32464-A-11	WGNA-101617-RW-4834	537, 537	T		100 uL	Clorine: ND			
320-32464-A-12	WGNA-101617-FRB-4834	537, 537	T		100 uL	Clorine: ND			
320-32464-A-13	WGNA-101617-DUP11	537, 537	T		100 uL	Clorine: 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.: 320-32464-1

SDG No.: _____

Batch Number: 191138 Batch Start Date: 10/25/17 16:24 Batch Analyst: Reed, Jonathan EBatch Method: 537 Batch End Date: 10/27/17 20:54

Batch Notes	
Analyst ID - Aliquot Step	TQN
Analyst ID - Concentration	CCB/TQN
Analyst ID - Final Volume Step	TQN
Internal Standard ID#	1041860
Manifold ID	3, 10
Methanol ID	1061669
Pipette ID	N32728F
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	6357081-09
Trizma ID	SLBR4303V
Reagent Water ID	10/25/17

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

AB 10/31/17

(To Accompany Samples to Instruments)

Batch Number: 320-191138

Analyst: Reed, Jonathan E

Batch Open: 10/25/2017 4:24:00PM

Method Code: 320-537_Prep-320

Batch End: 10/27/2017 8:54:00PM

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	Dlv Rank	Comments	Output Sample Lab ID
1 MB-320-191138/1 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	Chlorine: ND	
			1.00 mL								
2 LCS-320-191138/2 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	Chlorine: ND	
			1.00 mL								
3 LCSD-320-191138/3 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	Chlorine: ND	
			1.00 mL								
4 320-32464-A-1 (537_DOD5)	N/A (320-32464-1)	294.03 g	266.1 mL	7			10/21/17	16_Days	4	Chlorine: ND	
		27.90 g	1.00 mL								
5 320-32464-A-2 (537_DOD5)	N/A (320-32464-1)	304.22 g	276.8 mL	7			10/21/17	16_Days	4	Chlorine: ND	
		27.43 g	1.00 mL								
6 320-32464-A-3 (537_DOD5)	N/A (320-32464-1)	315.53 g	287.8 mL	7			10/21/17	16_Days	4	Chlorine: ND	
		27.69 g	1.00 mL								
7 320-32464-A-4 (537_DOD5)	N/A (320-32464-1)	307.01 g	279.4 mL	7			10/21/17	16_Days	4	Chlorine: ND	
		27.57 g	1.00 mL								
8 320-32464-A-5 (537_DOD5)	N/A (320-32464-1)	302.14 g	274.1 mL	7			10/21/17	16_Days	4	Chlorine: ND	
		28.03 g	1.00 mL								
9 320-32464-A-6 (537_DOD5)	N/A (320-32464-1)	299.84 g	271.9 mL	7			10/21/17	16_Days	4	Chlorine: ND	
		27.96 g	1.00 mL								
10 320-32464-A-7 (537_DOD5)	N/A (320-32464-1)	316.39 g	288.5 mL	7			10/21/17	16_Days	4	Chlorine: ND	
		27.87 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-191138

Analyst: Reed, Jonathan E

Batch Open: 10/25/2017 4:24:00PM

Method Code: 320-537_Prep-320

Batch End:

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15

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320-32464-A-8 (537_DOD5)	N/A (320-32464-1)	314.71 g	287 mL	7			10/21/17	16_Days	4	Clorine: ND	
		27.74 g	1.00 mL								
320-32464-A-9 (537_DOD5)	N/A (320-32464-1)	296.09 g	267.8 mL	7			10/21/17	16_Days	4	Clorine: ND	
		28.32 g	1.00 mL								
320-32464-A-10 (537_DOD5)	N/A (320-32464-1)	302.93 g	275 mL	7			10/21/17	16_Days	4	Clorine: ND	
		27.98 g	1.00 mL								
320-32464-A-11 (537_DOD5)	N/A (320-32464-1)	312.99 g	284.9 mL	7			10/21/17	16_Days	4	Clorine: ND	
		28.08 g	1.00 mL								
320-32464-A-12 (537_DOD5)	N/A (320-32464-1)	306.47 g	278.7 mL	7			10/21/17	16_Days	4	Clorine: ND	
		27.80 g	1.00 mL								
320-32464-A-13 (537_DOD5)	N/A (320-32464-1)	309.62 g	281.6 mL	7			10/21/17	16_Days	4	Clorine: ND	
		28.01 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-191138

Analyst: Reed, Jonathan E

Batch Open: 10/25/2017 4:24:00PM

Method Code: 320-537_Prep-320

Batch End:

Batch Notes

Manifold ID 3, 10

Trizma ID SLBR4303V

SPE Cartridge ID 6357081-09

Methanol ID 1061669

Reagent Water ID 10/25/17

Internal Standard ID# 1041860

Pipette ID N32728F

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 TON
Witness

Analyst ID - Concentration GERS/TON

Analyst ID - Aliquot Step TON

Analyst ID - Final Volume Step TON

Batch Comment N/A

Comments

PFAS Calibration Calculations:

Initial Calibration 10/31/2017
Instrument A8_N

Perfluorohexanesulfonic acid

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF
3	1038660	6203989	28.7	1.60163	1.6
6.67	2492517	6337478	28.7	1.69230	1.6916
15	5615014	6253426	28.7	1.71800	1.7164
30	10497872	6075693	28.7	1.65297	1.6515
45	14494918	5827765	28.7	1.58629	1.5848
60	19137035	5986294	28.7	1.52914	1.5277
Average				1.63006	1.6287
Standard Deviation				0.0708	
RSD				0.0434	
%RSD				4.34151	4.4

Continuing Calibration 10/31/2017 @ 17:59
A8_N

Perfluorohexanesulfonic acid

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
45	15219351	6200813	28.7	1.5654	-3.888405	1.564	-4

Willow Grove
SDG 320-32464-1

Sample Identification

WGNA-101617-RW-3283

Compound

Perfluorohexanesulfonic acid

Compound Area 821296

Internal Standard Amount (ng) 28.7

Dilution Factor 1

Internal Standard Area 6536909

Average RRF 1.6287

Sample Volume(ml) 266.1

Volume Extract (ml) 1

Injection Volume (μl) 1

Concentration 8.3200 ug/L

ng/L

JAS 11/17/17

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