



**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 320-36367-1**

*Naval Air Station Willow Grove
Willow Grove, Pennsylvania*

August 2019

N00158_000731
WILLOW_GROVE_NAS
SSIC 5000-33c

**LABORATORY DATA PACKAGE, 320-36367-1, NAWC WARMINSTER NAS
WILLOW GROVE PA**

03/21/2018
TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-36367-1

Job Description: Warminster: PFAS, NAS JRB Willow Grove

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



Approved for release.
David R Alltucker
Project Manager I
3/21/2018 8:41 AM

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03/21/2018
Revision: 1

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Definitions/Glossary

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

TestAmerica Job ID: 320-36367-1

Qualifiers

LCMS

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job Narrative
320-36367-1

Receipt

The samples were received on 2/23/2018 9:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.8° C.

LCMS

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

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

Organic Prep

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-211553.

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: 320-36367-1

Client Sample ID: WGNA-022218-DUP-28

Lab Sample ID: 320-36367-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	26	J M	39	6.6	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	26		19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	18	J	29	5.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.7	J	9.7	1.9	ng/L	1		537	Total/NA

Client Sample ID: WGNA-022218-RW-0386

Lab Sample ID: 320-36367-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	26	J M	39	6.6	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	25		19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	18	J	29	5.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	7.2	J	9.7	1.8	ng/L	1		537	Total/NA

Client Sample ID: WGNA-022218-FRB-0386

Lab Sample ID: 320-36367-3

No Detections.

Client Sample ID: WGNA-022218-RW-3073

Lab Sample ID: 320-36367-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	34	J M	39	6.6	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	13	J	20	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	17	J	29	5.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.1	J	9.8	1.9	ng/L	1		537	Total/NA
Perfluorobutanesulfonic acid (PFBS)	110		88	16	ng/L	1		537	Total/NA

Client Sample ID: WGNA-022218-FRB-3073

Lab Sample ID: 320-36367-5

No Detections.

Client Sample ID: NAWC-022218-RW-311

Lab Sample ID: 320-36367-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	25	J M	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	23		20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.7	J	30	5.5	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	7.4	J	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-022218-FRB-311

Lab Sample ID: 320-36367-7

No Detections.

Client Sample ID: NAWC-022218-RW-039

Lab Sample ID: 320-36367-8

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	20	J M	38	6.5	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	13	J M	19	2.7	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.5	J	9.6	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: 320-36367-1

Client Sample ID: NAWC-022218-FRB-039

Lab Sample ID: 320-36367-9

No Detections.

Client Sample ID: NAWC-022218-RW-335

Lab Sample ID: 320-36367-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	24	J M	38	6.4	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	24		19	2.6	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.1	J	28	5.2	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.3	J	9.4	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-022218-FRB-335

Lab Sample ID: 320-36367-11

No Detections.

Client Sample ID: NAWC-022218-RW-348

Lab Sample ID: 320-36367-12

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	41	M	38	6.4	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	25		19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.1	J	28	5.2	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.3	J M	9.5	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-022218-FRB-348

Lab Sample ID: 320-36367-13

No Detections.

Client Sample Results

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

TestAmerica Job ID: 320-36367-1

Client Sample ID: WGNA-022218-DUP-28

Date Collected: 02/22/18 07:00

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-1

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	26	J M	39	6.6	ng/L	—	03/07/18 07:07	03/12/18 21:33	1
Perfluorooctanoic acid (PFOA)	26		19	2.7	ng/L		03/07/18 07:07	03/12/18 21:33	1
Perfluorononanoic acid (PFNA)	19	U	23	7.8	ng/L		03/07/18 07:07	03/12/18 21:33	1
Perfluorohexanesulfonic acid (PFHxS)	18	J	29	5.4	ng/L		03/07/18 07:07	03/12/18 21:33	1
Perfluoroheptanoic acid (PFHpA)	6.7	J	9.7	1.9	ng/L		03/07/18 07:07	03/12/18 21:33	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		03/07/18 07:07	03/12/18 21:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		70 - 130				03/07/18 07:07	03/12/18 21:33	1
13C2 PFDA	116		70 - 130				03/07/18 07:07	03/12/18 21:33	1

Client Sample ID: WGNA-022218-RW-0386

Date Collected: 02/22/18 09:10

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-2

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	26	J M	39	6.6	ng/L	—	03/07/18 07:07	03/12/18 21:37	1
Perfluorooctanoic acid (PFOA)	25		19	2.7	ng/L		03/07/18 07:07	03/12/18 21:37	1
Perfluorononanoic acid (PFNA)	19	U	23	7.8	ng/L		03/07/18 07:07	03/12/18 21:37	1
Perfluorohexanesulfonic acid (PFHxS)	18	J	29	5.4	ng/L		03/07/18 07:07	03/12/18 21:37	1
Perfluoroheptanoic acid (PFHpA)	7.2	J	9.7	1.8	ng/L		03/07/18 07:07	03/12/18 21:37	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		03/07/18 07:07	03/12/18 21:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		70 - 130				03/07/18 07:07	03/12/18 21:37	1
13C2 PFDA	122		70 - 130				03/07/18 07:07	03/12/18 21:37	1

Client Sample ID: WGNA-022218-FRB-0386

Date Collected: 02/22/18 09:05

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-3

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	38	6.5	ng/L	—	03/07/18 07:07	03/12/18 21:42	1
Perfluorooctanoic acid (PFOA)	7.6	U	19	2.7	ng/L		03/07/18 07:07	03/12/18 21:42	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		03/07/18 07:07	03/12/18 21:42	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	29	5.2	ng/L		03/07/18 07:07	03/12/18 21:42	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	1.8	ng/L		03/07/18 07:07	03/12/18 21:42	1
Perfluorobutanesulfonic acid (PFBS)	34	U	86	15	ng/L		03/07/18 07:07	03/12/18 21:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		70 - 130				03/07/18 07:07	03/12/18 21:42	1
13C2 PFDA	110		70 - 130				03/07/18 07:07	03/12/18 21:42	1

Client Sample Results

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

TestAmerica Job ID: 320-36367-1

Client Sample ID: WGNA-022218-RW-3073

Date Collected: 02/22/18 09:40

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-4

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	34	J M	39	6.6	ng/L	—	03/07/18 07:07	03/12/18 21:47	1
Perfluorooctanoic acid (PFOA)	13	J	20	2.7	ng/L	—	03/07/18 07:07	03/12/18 21:47	1
Perfluorononanoic acid (PFNA)	20	U	23	7.8	ng/L	—	03/07/18 07:07	03/12/18 21:47	1
Perfluorohexanesulfonic acid (PFHxS)	17	J	29	5.4	ng/L	—	03/07/18 07:07	03/12/18 21:47	1
Perfluoroheptanoic acid (PFHpA)	8.1	J	9.8	1.9	ng/L	—	03/07/18 07:07	03/12/18 21:47	1
Perfluorobutanesulfonic acid (PFBS)	110		88	16	ng/L	—	03/07/18 07:07	03/12/18 21:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		70 - 130				03/07/18 07:07	03/12/18 21:47	1
13C2 PFDA	111		70 - 130				03/07/18 07:07	03/12/18 21:47	1

Client Sample ID: WGNA-022218-FRB-3073

Date Collected: 02/22/18 09:35

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-5

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	39	6.6	ng/L	—	03/07/18 07:07	03/12/18 21:51	1
Perfluorooctanoic acid (PFOA)	7.7	U	19	2.7	ng/L	—	03/07/18 07:07	03/12/18 21:51	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L	—	03/07/18 07:07	03/12/18 21:51	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.3	ng/L	—	03/07/18 07:07	03/12/18 21:51	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	1.8	ng/L	—	03/07/18 07:07	03/12/18 21:51	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L	—	03/07/18 07:07	03/12/18 21:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		70 - 130				03/07/18 07:07	03/12/18 21:51	1
13C2 PFDA	114		70 - 130				03/07/18 07:07	03/12/18 21:51	1

Client Sample ID: NAWC-022218-RW-311

Date Collected: 02/22/18 10:40

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-6

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	25	J M	40	6.8	ng/L	—	03/07/18 07:07	03/12/18 21:56	1
Perfluorooctanoic acid (PFOA)	23		20	2.8	ng/L	—	03/07/18 07:07	03/12/18 21:56	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L	—	03/07/18 07:07	03/12/18 21:56	1
Perfluorohexanesulfonic acid (PFHxS)	5.7	J	30	5.5	ng/L	—	03/07/18 07:07	03/12/18 21:56	1
Perfluoroheptanoic acid (PFHpA)	7.4	J	10	1.9	ng/L	—	03/07/18 07:07	03/12/18 21:56	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L	—	03/07/18 07:07	03/12/18 21:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	87		70 - 130				03/07/18 07:07	03/12/18 21:56	1
13C2 PFDA	115		70 - 130				03/07/18 07:07	03/12/18 21:56	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-36367-1

Client Sample ID: NAWC-022218-FRB-311

Date Collected: 02/22/18 10:35

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-7

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	39	6.6	ng/L		03/07/18 07:07	03/12/18 22:01	1
Perfluorooctanoic acid (PFOA)	7.7	U	19	2.7	ng/L		03/07/18 07:07	03/12/18 22:01	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		03/07/18 07:07	03/12/18 22:01	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.3	ng/L		03/07/18 07:07	03/12/18 22:01	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.6	1.8	ng/L		03/07/18 07:07	03/12/18 22:01	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L		03/07/18 07:07	03/12/18 22:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		70 - 130	03/07/18 07:07	03/12/18 22:01	1
13C2 PFDA	124		70 - 130	03/07/18 07:07	03/12/18 22:01	1

Client Sample ID: NAWC-022218-RW-039

Date Collected: 02/22/18 11:10

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-8

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	6.5	ng/L		03/07/18 07:07	03/12/18 22:15	1
Perfluorooctanoic acid (PFOA)	13	J M	19	2.7	ng/L		03/07/18 07:07	03/12/18 22:15	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		03/07/18 07:07	03/12/18 22:15	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.3	ng/L		03/07/18 07:07	03/12/18 22:15	1
Perfluoroheptanoic acid (PFHpA)	3.5	J	9.6	1.8	ng/L		03/07/18 07:07	03/12/18 22:15	1
Perfluorobutanesulfonic acid (PFBS)	35	U M	86	15	ng/L		03/07/18 07:07	03/12/18 22:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		70 - 130	03/07/18 07:07	03/12/18 22:15	1
13C2 PFDA	130		70 - 130	03/07/18 07:07	03/12/18 22:15	1

Client Sample ID: NAWC-022218-FRB-039

Date Collected: 02/22/18 11:05

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-9

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	39	6.6	ng/L		03/07/18 07:07	03/12/18 22:19	1
Perfluorooctanoic acid (PFOA)	7.7	U	19	2.7	ng/L		03/07/18 07:07	03/12/18 22:19	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		03/07/18 07:07	03/12/18 22:19	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.3	ng/L		03/07/18 07:07	03/12/18 22:19	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	1.8	ng/L		03/07/18 07:07	03/12/18 22:19	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L		03/07/18 07:07	03/12/18 22:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		70 - 130	03/07/18 07:07	03/12/18 22:19	1
13C2 PFDA	119		70 - 130	03/07/18 07:07	03/12/18 22:19	1

Client Sample Results

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

TestAmerica Job ID: 320-36367-1

Client Sample ID: NAWC-022218-RW-335

Lab Sample ID: 320-36367-10

Date Collected: 02/22/18 12:10

Matrix: Water

Date Received: 02/23/18 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	24	J M	38	6.4	ng/L		03/07/18 07:07	03/12/18 22:24	1
Perfluorooctanoic acid (PFOA)	24		19	2.6	ng/L		03/07/18 07:07	03/12/18 22:24	1
Perfluorononanoic acid (PFNA)	19	U	23	7.5	ng/L		03/07/18 07:07	03/12/18 22:24	1
Perfluorohexanesulfonic acid (PFHxS)	8.1	J	28	5.2	ng/L		03/07/18 07:07	03/12/18 22:24	1
Perfluoroheptanoic acid (PFHpA)	8.3	J	9.4	1.8	ng/L		03/07/18 07:07	03/12/18 22:24	1
Perfluorobutanesulfonic acid (PFBS)	34	U	85	15	ng/L		03/07/18 07:07	03/12/18 22:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		70 - 130				03/07/18 07:07	03/12/18 22:24	1
13C2 PFDA	128		70 - 130				03/07/18 07:07	03/12/18 22:24	1

Client Sample ID: NAWC-022218-FRB-335

Lab Sample ID: 320-36367-11

Date Collected: 02/22/18 12:05

Matrix: Water

Date Received: 02/23/18 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	38	6.5	ng/L		03/07/18 07:07	03/12/18 22:29	1
Perfluorooctanoic acid (PFOA)	7.6	U	19	2.7	ng/L		03/07/18 07:07	03/12/18 22:29	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		03/07/18 07:07	03/12/18 22:29	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	29	5.2	ng/L		03/07/18 07:07	03/12/18 22:29	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	1.8	ng/L		03/07/18 07:07	03/12/18 22:29	1
Perfluorobutanesulfonic acid (PFBS)	34	U	86	15	ng/L		03/07/18 07:07	03/12/18 22:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		70 - 130				03/07/18 07:07	03/12/18 22:29	1
13C2 PFDA	114		70 - 130				03/07/18 07:07	03/12/18 22:29	1

Client Sample ID: NAWC-022218-RW-348

Lab Sample ID: 320-36367-12

Date Collected: 02/22/18 12:40

Matrix: Water

Date Received: 02/23/18 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	41	M	38	6.4	ng/L		03/07/18 07:07	03/12/18 22:33	1
Perfluorooctanoic acid (PFOA)	25		19	2.7	ng/L		03/07/18 07:07	03/12/18 22:33	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		03/07/18 07:07	03/12/18 22:33	1
Perfluorohexanesulfonic acid (PFHxS)	9.1	J	28	5.2	ng/L		03/07/18 07:07	03/12/18 22:33	1
Perfluoroheptanoic acid (PFHpA)	6.3	J M	9.5	1.8	ng/L		03/07/18 07:07	03/12/18 22:33	1
Perfluorobutanesulfonic acid (PFBS)	34	U	85	15	ng/L		03/07/18 07:07	03/12/18 22:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	81		70 - 130				03/07/18 07:07	03/12/18 22:33	1
13C2 PFDA	120		70 - 130				03/07/18 07:07	03/12/18 22:33	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-36367-1

Client Sample ID: NAWC-022218-FRB-348

Lab Sample ID: 320-36367-13

Date Collected: 02/22/18 12:35

Matrix: Water

Date Received: 02/23/18 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	38	6.5	ng/L		03/07/18 07:07	03/12/18 22:38	1
Perfluorooctanoic acid (PFOA)	7.7	U	19	2.7	ng/L		03/07/18 07:07	03/12/18 22:38	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		03/07/18 07:07	03/12/18 22:38	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	29	5.3	ng/L		03/07/18 07:07	03/12/18 22:38	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.6	1.8	ng/L		03/07/18 07:07	03/12/18 22:38	1
Perfluorobutanesulfonic acid (PFBS)	34	U	86	15	ng/L		03/07/18 07:07	03/12/18 22:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		70 - 130	03/07/18 07:07	03/12/18 22:38	1
13C2 PFDA	116		70 - 130	03/07/18 07:07	03/12/18 22:38	1

Default Detection Limits

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-36367-1

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: 320-36367-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	PFHxA (70-130)	PFDA (70-130)
320-36367-1	WGNA-022218-DUP-28	86	116
320-36367-2	WGNA-022218-RW-0386	93	122
320-36367-3	WGNA-022218-FRB-0386	94	110
320-36367-4	WGNA-022218-RW-3073	86	111
320-36367-5	WGNA-022218-FRB-3073	94	114
320-36367-6	NAWC-022218-RW-311	87	115
320-36367-7	NAWC-022218-FRB-311	93	124
320-36367-8	NAWC-022218-RW-039	92	130
320-36367-9	NAWC-022218-FRB-039	93	119
320-36367-10	NAWC-022218-RW-335	96	128
320-36367-11	NAWC-022218-FRB-335	90	114
320-36367-12	NAWC-022218-RW-348	81	120
320-36367-13	NAWC-022218-FRB-348	95	116
LCS 320-211553/2-A	Lab Control Sample	94	116
LCSD 320-211553/3-A	Lab Control Sample Dup	92	114
MB 320-211553/1-A	Method Blank	91	108

Surrogate Legend

PFHxA = 13C2 PFHxA

PFDA = 13C2 PFDA

QC Sample Results

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

TestAmerica Job ID: 320-36367-1

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

Lab Sample ID: MB 320-211553/1-A

Matrix: Water

Analysis Batch: 212591

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 211553

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		03/07/18 07:07	03/12/18 21:19	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		03/07/18 07:07	03/12/18 21:19	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		03/07/18 07:07	03/12/18 21:19	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		03/07/18 07:07	03/12/18 21:19	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		03/07/18 07:07	03/12/18 21:19	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		03/07/18 07:07	03/12/18 21:19	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		70 - 130	03/07/18 07:07	03/12/18 21:19	1
13C2 PFDA	108		70 - 130	03/07/18 07:07	03/12/18 21:19	1

Lab Sample ID: LCS 320-211553/2-A

Matrix: Water

Analysis Batch: 212591

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 211553

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	223	242	M	ng/L		108	70 - 130
Perfluorooctanoic acid (PFOA)	112	117		ng/L		105	70 - 130
Perfluorononanoic acid (PFNA)	111	130		ng/L		117	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	167	178		ng/L		107	70 - 130
Perfluoroheptanoic acid (PFHpA)	55.6	59.7		ng/L		107	70 - 130
Perfluorobutanesulfonic acid (PFBS)	500	446		ng/L		89	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	94		70 - 130
13C2 PFDA	116		70 - 130

Lab Sample ID: LCSD 320-211553/3-A

Matrix: Water

Analysis Batch: 212591

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 211553

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	223	230	M	ng/L		103	70 - 130	5	30
Perfluorooctanoic acid (PFOA)	112	110		ng/L		98	70 - 130	6	30
Perfluorononanoic acid (PFNA)	111	123		ng/L		111	70 - 130	6	30
Perfluorohexanesulfonic acid (PFHxS)	167	168		ng/L		101	70 - 130	6	30
Perfluoroheptanoic acid (PFHpA)	55.6	54.0		ng/L		97	70 - 130	10	30
Perfluorobutanesulfonic acid (PFBS)	500	460		ng/L		92	70 - 130	3	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
13C2 PFHxA	92		70 - 130
13C2 PFDA	114		70 - 130

TestAmerica Sacramento

QC Association Summary

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

TestAmerica Job ID: 320-36367-1

LCMS

Prep Batch: 211553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36367-1	WGNA-022218-DUP-28	Total/NA	Water	537	
320-36367-2	WGNA-022218-RW-0386	Total/NA	Water	537	
320-36367-3	WGNA-022218-FRB-0386	Total/NA	Water	537	
320-36367-4	WGNA-022218-RW-3073	Total/NA	Water	537	
320-36367-5	WGNA-022218-FRB-3073	Total/NA	Water	537	
320-36367-6	NAWC-022218-RW-311	Total/NA	Water	537	
320-36367-7	NAWC-022218-FRB-311	Total/NA	Water	537	
320-36367-8	NAWC-022218-RW-039	Total/NA	Water	537	
320-36367-9	NAWC-022218-FRB-039	Total/NA	Water	537	
320-36367-10	NAWC-022218-RW-335	Total/NA	Water	537	
320-36367-11	NAWC-022218-FRB-335	Total/NA	Water	537	
320-36367-12	NAWC-022218-RW-348	Total/NA	Water	537	
320-36367-13	NAWC-022218-FRB-348	Total/NA	Water	537	
MB 320-211553/1-A	Method Blank	Total/NA	Water	537	
LCS 320-211553/2-A	Lab Control Sample	Total/NA	Water	537	
LCSD 320-211553/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 212591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36367-1	WGNA-022218-DUP-28	Total/NA	Water	537	211553
320-36367-2	WGNA-022218-RW-0386	Total/NA	Water	537	211553
320-36367-3	WGNA-022218-FRB-0386	Total/NA	Water	537	211553
320-36367-4	WGNA-022218-RW-3073	Total/NA	Water	537	211553
320-36367-5	WGNA-022218-FRB-3073	Total/NA	Water	537	211553
320-36367-6	NAWC-022218-RW-311	Total/NA	Water	537	211553
320-36367-7	NAWC-022218-FRB-311	Total/NA	Water	537	211553
MB 320-211553/1-A	Method Blank	Total/NA	Water	537	211553
LCS 320-211553/2-A	Lab Control Sample	Total/NA	Water	537	211553
LCSD 320-211553/3-A	Lab Control Sample Dup	Total/NA	Water	537	211553

Analysis Batch: 212593

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36367-8	NAWC-022218-RW-039	Total/NA	Water	537	211553
320-36367-9	NAWC-022218-FRB-039	Total/NA	Water	537	211553
320-36367-10	NAWC-022218-RW-335	Total/NA	Water	537	211553
320-36367-11	NAWC-022218-FRB-335	Total/NA	Water	537	211553
320-36367-12	NAWC-022218-RW-348	Total/NA	Water	537	211553
320-36367-13	NAWC-022218-FRB-348	Total/NA	Water	537	211553

Lab Chronicle

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

TestAmerica Job ID: 320-36367-1

Client Sample ID: WGNA-022218-DUP-28

Date Collected: 02/22/18 07:00

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			211553	03/07/18 07:07	SK	TAL SAC
Total/NA	Analysis	537		1	212591	03/12/18 21:33	JRB	TAL SAC

Client Sample ID: WGNA-022218-RW-0386

Date Collected: 02/22/18 09:10

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			211553	03/07/18 07:07	SK	TAL SAC
Total/NA	Analysis	537		1	212591	03/12/18 21:37	JRB	TAL SAC

Client Sample ID: WGNA-022218-FRB-0386

Date Collected: 02/22/18 09:05

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			211553	03/07/18 07:07	SK	TAL SAC
Total/NA	Analysis	537		1	212591	03/12/18 21:42	JRB	TAL SAC

Client Sample ID: WGNA-022218-RW-3073

Date Collected: 02/22/18 09:40

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			211553	03/07/18 07:07	SK	TAL SAC
Total/NA	Analysis	537		1	212591	03/12/18 21:47	JRB	TAL SAC

Client Sample ID: WGNA-022218-FRB-3073

Date Collected: 02/22/18 09:35

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			211553	03/07/18 07:07	SK	TAL SAC
Total/NA	Analysis	537		1	212591	03/12/18 21:51	JRB	TAL SAC

Client Sample ID: NAWC-022218-RW-311

Date Collected: 02/22/18 10:40

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			211553	03/07/18 07:07	SK	TAL SAC
Total/NA	Analysis	537		1	212591	03/12/18 21:56	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-36367-1

Client Sample ID: NAWC-022218-FRB-311

Date Collected: 02/22/18 10:35

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			211553	03/07/18 07:07	SK	TAL SAC
Total/NA	Analysis	537		1	212591	03/12/18 22:01	JRB	TAL SAC

Client Sample ID: NAWC-022218-RW-039

Date Collected: 02/22/18 11:10

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			211553	03/07/18 07:07	SK	TAL SAC
Total/NA	Analysis	537		1	212593	03/12/18 22:15	JRB	TAL SAC

Client Sample ID: NAWC-022218-FRB-039

Date Collected: 02/22/18 11:05

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			211553	03/07/18 07:07	SK	TAL SAC
Total/NA	Analysis	537		1	212593	03/12/18 22:19	JRB	TAL SAC

Client Sample ID: NAWC-022218-RW-335

Date Collected: 02/22/18 12:10

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			211553	03/07/18 07:07	SK	TAL SAC
Total/NA	Analysis	537		1	212593	03/12/18 22:24	JRB	TAL SAC

Client Sample ID: NAWC-022218-FRB-335

Date Collected: 02/22/18 12:05

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			211553	03/07/18 07:07	SK	TAL SAC
Total/NA	Analysis	537		1	212593	03/12/18 22:29	JRB	TAL SAC

Client Sample ID: NAWC-022218-RW-348

Date Collected: 02/22/18 12:40

Date Received: 02/23/18 09:25

Lab Sample ID: 320-36367-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			211553	03/07/18 07:07	SK	TAL SAC
Total/NA	Analysis	537		1	212593	03/12/18 22:33	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-36367-1

Client Sample ID: NAWC-022218-FRB-348

Lab Sample ID: 320-36367-13

Date Collected: 02/22/18 12:35

Matrix: Water

Date Received: 02/23/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			211553	03/07/18 07:07	SK	TAL SAC
Total/NA	Analysis	537		1	212593	03/12/18 22:38	JRB	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-36367-1

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

Laboratory: TestAmerica Sacramento

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

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

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

TestAmerica Sacramento

Method Summary

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

TestAmerica Job ID: 320-36367-1

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: 320-36367-1

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-36367-1	WGNA-022218-DUP-28	Water	02/22/18 07:00	02/23/18 09:25
320-36367-2	WGNA-022218-RW-0386	Water	02/22/18 09:10	02/23/18 09:25
320-36367-3	WGNA-022218-FRB-0386	Water	02/22/18 09:05	02/23/18 09:25
320-36367-4	WGNA-022218-RW-3073	Water	02/22/18 09:40	02/23/18 09:25
320-36367-5	WGNA-022218-FRB-3073	Water	02/22/18 09:35	02/23/18 09:25
320-36367-6	NAWC-022218-RW-311	Water	02/22/18 10:40	02/23/18 09:25
320-36367-7	NAWC-022218-FRB-311	Water	02/22/18 10:35	02/23/18 09:25
320-36367-8	NAWC-022218-RW-039	Water	02/22/18 11:10	02/23/18 09:25
320-36367-9	NAWC-022218-FRB-039	Water	02/22/18 11:05	02/23/18 09:25
320-36367-10	NAWC-022218-RW-335	Water	02/22/18 12:10	02/23/18 09:25
320-36367-11	NAWC-022218-FRB-335	Water	02/22/18 12:05	02/23/18 09:25
320-36367-12	NAWC-022218-RW-348	Water	02/22/18 12:40	02/23/18 09:25
320-36367-13	NAWC-022218-FRB-348	Water	02/22/18 12:35	02/23/18 09:25

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 208773Lab Sample ID: IC 320-208773/4 Client Sample ID: _____Date Analyzed: 02/16/18 08:55 Lab File ID: 2018.02.016_537ICAL_004.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.66	Assign Peak	roycea	02/16/18 10:26
Perfluorooctanesulfonic acid (PFOS)	2.12	Assign Peak	roycea	02/16/18 10:26

Lab Sample ID: IC 320-208773/5 Client Sample ID: _____Date Analyzed: 02/16/18 09:00 Lab File ID: 2018.02.016_537ICAL_005.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	roycea	02/16/18 10:29

Lab Sample ID: IC 320-208773/6 Client Sample ID: _____Date Analyzed: 02/16/18 09:05 Lab File ID: 2018.02.016_537ICAL_006.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	roycea	02/16/18 10:29

Lab Sample ID: IC 320-208773/7 ICISAV Client Sample ID: _____Date Analyzed: 02/16/18 09:09 Lab File ID: 2018.02.016_537ICAL_007.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	roycea	02/16/18 10:30

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 208773Lab Sample ID: IC 320-208773/8 Client Sample ID: _____Date Analyzed: 02/16/18 09:14 Lab File ID: 2018.02.016_537ICAL_008.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	roycea	02/16/18 10:30

Lab Sample ID: IC 320-208773/9 Client Sample ID: _____Date Analyzed: 02/16/18 09:19 Lab File ID: 2018.02.016_537ICAL_009.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	roycea	02/16/18 10:31

Lab Sample ID: CCVL 320-208773/11 Client Sample ID: _____Date Analyzed: 02/16/18 09:28 Lab File ID: 2018.02.016_537ICAL_011.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	roycea	02/16/18 10:36

Lab Sample ID: ICV 320-208773/13 Client Sample ID: _____Date Analyzed: 02/16/18 09:37 Lab File ID: 2018.02.016_537ICAL_013.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	roycea	02/16/18 10:37

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 212525Lab Sample ID: CCVL 320-212525/1 Client Sample ID: _____Date Analyzed: 03/12/18 16:16 Lab File ID: 2018.03.12_537AA_004.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	barnettj	03/12/18 16:44

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 212591Lab Sample ID: CCV 320-212591/1 CCVIS Client Sample ID: _____Date Analyzed: 03/12/18 21:09 Lab File ID: 2018.03.12_537B_004.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.00	Peak assignment corrected	roycea	03/13/18 09:03

Lab Sample ID: LCS 320-211553/2-A Client Sample ID: _____Date Analyzed: 03/12/18 21:23 Lab File ID: 2018.03.12_537B_007.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.03	Peak assignment corrected	roycea	03/13/18 09:04

Lab Sample ID: LCSD 320-211553/3-A Client Sample ID: _____Date Analyzed: 03/12/18 21:28 Lab File ID: 2018.03.12_537B_008.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.00	Peak assignment corrected	roycea	03/13/18 09:04

Lab Sample ID: 320-36367-1 Client Sample ID: WGNA-022218-DUP-28Date Analyzed: 03/12/18 21:33 Lab File ID: 2018.03.12_537B_009.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.00	Peak assignment corrected	barnettj	03/13/18 10:33

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 212591Lab Sample ID: 320-36367-2 Client Sample ID: WGNA-022218-RW-0386Date Analyzed: 03/12/18 21:37 Lab File ID: 2018.03.12_537B_010.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.02	Missed Peak	barnettj	03/13/18 10:43

Lab Sample ID: 320-36367-4 Client Sample ID: WGNA-022218-RW-3073Date Analyzed: 03/12/18 21:47 Lab File ID: 2018.03.12_537B_012.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.02	Missed Peak	barnettj	03/13/18 10:44

Lab Sample ID: 320-36367-6 Client Sample ID: NAWC-022218-RW-311Date Analyzed: 03/12/18 21:56 Lab File ID: 2018.03.12_537B_014.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.03	Peak assignment corrected	barnettj	03/13/18 10:36

Lab Sample ID: CCV 320-212591/13 CCVIS Client Sample ID: _____Date Analyzed: 03/12/18 22:05 Lab File ID: 2018.03.12_537B_016.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.04	Peak assignment corrected	barnettj	03/13/18 10:32

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 212593Lab Sample ID: CCV 320-212593/13 CCVIS Client Sample ID: _____Date Analyzed: 03/12/18 22:05 Lab File ID: 2018.03.12_537B_016.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.04	Peak assignment corrected	barnettj	03/13/18 10:32

Lab Sample ID: 320-36367-8 Client Sample ID: NAWC-022218-RW-039Date Analyzed: 03/12/18 22:15 Lab File ID: 2018.03.12_537B_018.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.38	Peak assignment corrected	barnettj	03/13/18 10:36
Perfluorooctanoic acid (PFOA)	1.81	Baseline	barnettj	03/13/18 10:37
Perfluorooctanesulfonic acid (PFOS)	2.06	Missed Peak	barnettj	03/13/18 10:38

Lab Sample ID: 320-36367-10 Client Sample ID: NAWC-022218-RW-335Date Analyzed: 03/12/18 22:24 Lab File ID: 2018.03.12_537B_020.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.04	Peak assignment corrected	barnettj	03/13/18 10:38

Lab Sample ID: 320-36367-12 Client Sample ID: NAWC-022218-RW-348Date Analyzed: 03/12/18 22:33 Lab File ID: 2018.03.12_537B_022.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.63	Split Peak	barnettj	03/13/18 10:39
Perfluorooctanesulfonic acid (PFOS)	2.05	Peak assignment corrected	barnettj	03/13/18 10:39

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 212593Lab Sample ID: CCV 320-212593/22 CCVIS Client Sample ID: _____Date Analyzed: 03/12/18 22:47 Lab File ID: 2018.03.12_537B_031.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.01	Peak assignment corrected	barnettj	03/13/18 10:32

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36367-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration							
					Reagent ID	Volume Added									
LC537-HSP_00026	04/01/18	01/30/18	Methanol, Lot 141039	40000 uL	LC537SPIM_00026	555.6 uL	Perfluorobutane Sulfonate	1250.1 ng/mL							
							Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL							
							Perfluoroheptanoic acid (PFHpA)	138.915 ng/mL							
							Perfluorohexanesulfonic acid (PFHxS)	416.802 ng/mL							
							Perfluorononanoic acid (PFNA)	277.867 ng/mL							
							Perfluorooctanoic acid (PFOA)	279.313 ng/mL							
							Perfluorooctanesulfonic acid (PFOS)	557.928 ng/mL							
.LC537SPIM_00026	04/01/18	01/30/18	Methanol, Lot 104453	20000 uL	LC537-PFBS_00009	900 uL	Perfluorobutane Sulfonate	90 ug/mL							
							Perfluorobutanesulfonic acid (PFBS)	90 ug/mL							
							LC537-PFHpA_00016	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0011 ug/mL					
							LC537-PFHxS_00011	300 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0074 ug/mL					
							LC537-PFNA_00014	400 uL	Perfluorononanoic acid (PFNA)	20.0048 ug/mL					
							LC537-PFOA_00015	400 uL	Perfluorooctanoic acid (PFOA)	20.1089 ug/mL					
..LC537-PFOS_00009	04/01/18	01/30/18	Methanol, Lot 090285	48.7 mL	LC537_PFBS_00002	0.0974 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_00016	04/01/18	01/30/18	Methanol, Lot 090285	59.74 mL	LC537_PFHpA_00002	0.1207 g	Perfluoroheptanoic acid (PFHpA)	2.00022 mg/mL
							...LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
..LC537-PFHxS_00011	04/01/18	01/30/18	Methanol, Lot 090285	38.64 mL	LC537_PFHxS_00002	0.085 g	Perfluorohexanesulfonic acid (PFHxS)	2.00049 mg/mL							
...LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g							
..LC537-PFNA_00014	04/01/18	01/30/18	Methanol, Lot 090285	62.58 mL	LC537 PFNA_00002	0.065 g	Perfluorononanoic acid (PFNA)	1000.24 ug/mL							
...LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g							
..LC537-PFOA_00015	07/30/18	01/30/18	Methanol, Lot 090285	31 mL	LC537 PFOA_00003	0.0312 g	Perfluorooctanoic acid (PFOA)	1.00545 mg/mL							
...LC537 PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g							
..LC537-PFOS_00009	07/30/18	01/30/18	Methanol, Lot 090285	36 mL	LC537_PFOS_00003	0.0397 g	Perfluorooctanesulfonic acid (PFOS)	1.00419 mg/mL							
...LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g							
LC537-ICV_00030	07/30/18	02/15/18	MeOH/H2O, Lot 067374	10 mL	LC537-IS_00059	1000 uL	13C2-PFOA	10 ng/mL							
.LC537-IS_00059	07/30/18	01/30/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C4 PFOS	28.68 ng/mL							
							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							

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36367-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-ICV_00030	07/30/18	02/15/18	MeOH/H2O, Lot 067374	10 mL	LC537-SU_00059	1000 uL	13C2 PFDA	10 ng/mL
					LC537ICIM2_00001	400 uL	13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	100.092 ng/mL
							Perfluoroheptanoic acid (PFHpA)	10 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	20.1619 ng/mL
							Perfluorononanoic acid (PFNA)	20.1641 ng/mL
							Perfluorooctanoic acid (PFOA)	20.167 ng/mL
Perfluorooctanesulfonic acid (PFOS)	20.1702 ng/mL							
..LC537-SU_00059	07/30/18	01/30/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LC537ICIM2_00001	08/15/18	02/15/18	Methanol, Lot 090285	10 mL	LC537ICIM_00020	0.5 mL	Perfluorobutanesulfonic acid (PFBS)	2.5023 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.25 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.504047 ug/mL
							Perfluorononanoic acid (PFNA)	0.504103 ug/mL
							Perfluorooctanoic acid (PFOA)	0.504176 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.504255 ug/mL
..LC537ICIM_00020	08/15/18	02/15/18	Methanol, Lot 090285	25 mL	LC537-PFBS2_00009	0.625 mL	Perfluorobutanesulfonic acid (PFBS)	50.0459 ug/mL
					LC537-PFHpA2_00012	0.0625 mL	Perfluoroheptanoic acid (PFHpA)	5 ug/mL
					LC537-PFHxS2_00009	0.126 mL	Perfluorohexanesulfonic acid (PFHxS)	10.0809 ug/mL
					LC537-PFNA2_00010	0.126 mL	Perfluorononanoic acid (PFNA)	10.0821 ug/mL
					LC537-PFOA2_00011	0.126 mL	Perfluorooctanoic acid (PFOA)	10.0835 ug/mL
					LC537-PFOS2_00011	0.126 mL	Perfluorooctanesulfonic acid (PFOS)	10.0851 ug/mL
...LC537-PFBS2_00009	08/15/18	02/15/18	Methanol, Lot 090285	17.1 mL	LC537_PFBS2_00002	0.0343 g	Perfluorobutanesulfonic acid (PFBS)	2001.84 ug/mL
....LC537_PFBS2_00002	09/08/22	Santa Cruz Biotechnology, Lot F0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	0.998 g/g
...LC537-PFHpA2_00012	08/15/18	02/15/18	Methanol, Lot 09092	23.95 mL	LC537_PFHpA2_00002	0.0479 g	Perfluoroheptanoic acid (PFHpA)	2000 ug/mL
....LC537_PFHpA2_00002	06/13/22	Afla Aesar, Lot 10200390			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	1 g/g
...LC537-PFHxS2_00009	08/15/18	02/15/18	Methanol, Lot 090285	25.87 mL	LC537_PFHxS2_00002	0.0569 g	Perfluorohexanesulfonic acid (PFHxS)	2000.19 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
....LC537_PFHxS2_00002	06/08/22	Santa Cruz Biotechnology, Lot G2516			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA2_00010	08/15/18	02/15/18	Methanol, Lot 090285	16.58 mL	LC537_PFNA2_00002	0.0333 g	Perfluorononanoic acid (PFNA)	2000.41 ug/mL
....LC537_PFNA2_00002	06/14/22	Aldrich, Lot MKCC0699			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.996 g/g
...LC537-PFOA2_00011	08/15/18	02/15/18	Methanol, Lot 090285	22.96 mL	LC537_PFOA2_00002	0.0464 g	Perfluorooctanoic acid (PFOA)	2000.7 ug/mL
....LC537_PFOA2_00002	06/09/22	Afla Aesar, Lot 10199078			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.99 g/g
...LC537-PFOS2_00011	08/15/18	02/15/18	Methanol, Lot 090285	14.71 mL	LC537_PFOS2_00002	0.0378 g	Perfluorooctanesulfonic acid (PFOS)	2001.01 ug/mL
....LC537_PFOS2_00002	06/14/22	Sigma, Lot BCBQ0108V			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.7787 g/g
LC537-IS_00062	08/27/18	02/27/18	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-L1_00021	04/01/18	02/15/18	MeOH/H2O, Lot 090285	5 mL	LC537-IS_00059	500 uL	13C2-PFOA	10 ng/mL
					LC537-MSP_00032	60 uL	13C4 PFOS	28.68 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	9.0018 ng/mL
							Perfluoroheptanoic acid (PFHpA)	1.00031 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	3.00134 ng/mL
							Perfluorononanoic acid (PFNA)	2.00088 ng/mL
							Perfluorooctanoic acid (PFOA)	2.01129 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.01756 ng/mL
					LC537-SU_00059	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-IS_00059	07/30/18	01/30/18	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_00032	04/01/18	01/30/18	Methanol, Lot 141039	40000 uL	LC537SPIM_00026	333.4 uL	Perfluorobutanesulfonic acid (PFBS)	750.15 ng/mL
							Perfluoroheptanoic acid (PFHpA)	83.3591 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	250.111 ng/mL
							Perfluorononanoic acid (PFNA)	166.74 ng/mL
							Perfluorooctanoic acid (PFOA)	167.608 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	334.797 ng/mL
..LC537SPIM_00026	04/01/18	01/30/18	Methanol, Lot 104453	20000 uL	LC537-PFBS_00009	900 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00016	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0011 ug/mL
					LC537-PFHxS_00011	300 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0074 ug/mL
					LC537-PFNA_00014	400 uL	Perfluorononanoic acid (PFNA)	20.0048 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36367-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537-PFOA_00015	400 uL	Perfluorooctanoic acid (PFOA)	20.1089 ug/mL
					LC537-PFOS_00009	800 uL	Perfluorooctanesulfonic acid (PFOS)	40.1676 ug/mL
...LC537-PFBS_00009	04/01/18	01/30/18	Methanol, Lot 090285	48.7 mL	LC537_PFBFS_00002	0.0974 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBFS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00016	04/01/18	01/30/18	Methanol, Lot 090285	59.74 mL	LC537_PFHpA_00002	0.1207 g	Perfluoroheptanoic acid (PFHpA)	2.00022 mg/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00011	04/01/18	01/30/18	Methanol, Lot 090285	38.64 mL	LC537_PFHxS_00002	0.085 g	Perfluorohexanesulfonic acid (PFHxS)	2.00049 mg/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00014	04/01/18	01/30/18	Methanol, Lot 090285	62.58 mL	LC537 PFNA_00002	0.065 g	Perfluorononanoic acid (PFNA)	1000.24 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00015	07/30/18	01/30/18	Methanol, Lot 090285	31 mL	LC537 PFOA_00003	0.0312 g	Perfluorooctanoic acid (PFOA)	1.00545 mg/mL
....LC537 PFOA_00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00009	07/30/18	01/30/18	Methanol, Lot 090285	36 mL	LC537_PFOS_00003	0.0397 g	Perfluorooctanesulfonic acid (PFOS)	1.00419 mg/mL
....LC537_PFOS_00003	04/17/19		sigma alrich, Lot SZBE107XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-SU_00059	07/30/18	01/30/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFHxA_00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFDA	50 ug/mL
					(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L2_00021	04/01/18	02/05/18	MeOH/H2O, Lot 090285	20 mL	LC537-HSP_00027	320 uL	Perfluorobutanesulfonic acid (PFBS)	20.0016 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.22264 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	6.66884 ng/mL
							Perfluorononanoic acid (PFNA)	4.44587 ng/mL
							Perfluorooctanoic acid (PFOA)	4.469 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	8.92684 ng/mL
					LC537-IS_00059	2 mL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
							13C2 PFDA	10 ng/mL
.LC537-HSP_00027	04/01/18	01/30/18	Methanol, Lot 141039	40000 uL	LC537SPIM_00026	555.6 uL	13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.915 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.802 ng/mL
							Perfluorononanoic acid (PFNA)	277.867 ng/mL
							Perfluorooctanoic acid (PFOA)	279.313 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36367-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	557.928 ng/mL
..LC537SPIM_00026	04/01/18	01/30/18	Methanol, Lot 104453	20000 uL	LC537-PFBS_00009	900 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00016	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0011 ug/mL
					LC537-PFHxS_00011	300 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0074 ug/mL
					LC537-PFNA_00014	400 uL	Perfluorononanoic acid (PFNA)	20.0048 ug/mL
					LC537-PFOA_00015	400 uL	Perfluorooctanoic acid (PFOA)	20.1089 ug/mL
					LC537-PFOS_00009	800 uL	Perfluorooctanesulfonic acid (PFOS)	40.1676 ug/mL
...LC537-PFBS_00009	04/01/18	01/30/18	Methanol, Lot 090285	48.7 mL	LC537_PFBS_00002	0.0974 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_00016	04/01/18	01/30/18	Methanol, Lot 090285	59.74 mL	LC537_PFHpA_00002	0.1207 g	Perfluoroheptanoic acid (PFHpA)	2.00022 mg/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00011	04/01/18	01/30/18	Methanol, Lot 090285	38.64 mL	LC537_PFHxS_00002	0.085 g	Perfluorohexanesulfonic acid (PFHxS)	2.00049 mg/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00014	04/01/18	01/30/18	Methanol, Lot 090285	62.58 mL	LC537 PFNA_00002	0.065 g	Perfluorononanoic acid (PFNA)	1000.24 ug/mL
....LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00015	07/30/18	01/30/18	Methanol, Lot 090285	31 mL	LC537 PFOA_00003	0.0312 g	Perfluorooctanoic acid (PFOA)	1.00545 mg/mL
....LC537 PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00009	07/30/18	01/30/18	Methanol, Lot 090285	36 mL	LC537_PFOS_00003	0.0397 g	Perfluorooctanesulfonic acid (PFOS)	1.00419 mg/mL
....LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00059	07/30/18	01/30/18	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_00059	07/30/18	01/30/18	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_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	0.1 ug/mL
LC537-L3_00024	04/01/18	02/05/18	MeOH/H2O, Lot 090285	20 mL	LC537-HSP_00027	720 uL	Perfluorobutanesulfonic acid (PFBS)	45.0036 ng/mL
							Perfluoroheptanoic acid (PFHpA)	5.00094 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	15.0049 ng/mL
							Perfluorononanoic acid (PFNA)	10.0032 ng/mL
							Perfluorooctanoic acid (PFOA)	10.0553 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36367-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	20.0854 ng/mL
					LC537-IS_00059	2 mL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00059	2 mL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00027	04/01/18	01/30/18	Methanol, Lot 141039	40000 uL	LC537SPIM_00026	555.6 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.915 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.802 ng/mL
							Perfluorononanoic acid (PFNA)	277.867 ng/mL
							Perfluorooctanoic acid (PFOA)	279.313 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	557.928 ng/mL
..LC537SPIM_00026	04/01/18	01/30/18	Methanol, Lot 104453	20000 uL	LC537-PFBS_00009	900 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00016	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0011 ug/mL
					LC537-PFHxS_00011	300 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0074 ug/mL
					LC537-PFNA_00014	400 uL	Perfluorononanoic acid (PFNA)	20.0048 ug/mL
					LC537-PFOA_00015	400 uL	Perfluorooctanoic acid (PFOA)	20.1089 ug/mL
					LC537-PFOS_00009	800 uL	Perfluorooctanesulfonic acid (PFOS)	40.1676 ug/mL
...LC537-PFBS_00009	04/01/18	01/30/18	Methanol, Lot 090285	48.7 mL	LC537_PFBS_00002	0.0974 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_00016	04/01/18	01/30/18	Methanol, Lot 090285	59.74 mL	LC537_PFHpA_00002	0.1207 g	Perfluoroheptanoic acid (PFHpA)	2.00022 mg/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00011	04/01/18	01/30/18	Methanol, Lot 090285	38.64 mL	LC537_PFHxS_00002	0.085 g	Perfluorohexanesulfonic acid (PFHxS)	2.00049 mg/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00014	04/01/18	01/30/18	Methanol, Lot 090285	62.58 mL	LC537 PFNA_00002	0.065 g	Perfluorononanoic acid (PFNA)	1000.24 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00015	07/30/18	01/30/18	Methanol, Lot 090285	31 mL	LC537 PFOA_00003	0.0312 g	Perfluorooctanoic acid (PFOA)	1.00545 mg/mL
....LC537 PFOA_00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00009	07/30/18	01/30/18	Methanol, Lot 090285	36 mL	LC537_PFOS_00003	0.0397 g	Perfluorooctanesulfonic acid (PFOS)	1.00419 mg/mL
....LC537_PFOS_00003	04/17/19		sigma alrich, Lot SZBE107XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00059	07/30/18	01/30/18	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
							13C4 PFOS	47.8 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36367-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC537-SU_00059	07/30/18	01/30/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L4_00021	04/01/18	02/15/18	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00027	360 uL	Perfluorobutanesulfonic acid (PFBS)	90.0072 ng/mL
							Perfluoroheptanoic acid (PFHpA)	10.0019 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	30.0098 ng/mL
							Perfluorononanoic acid (PFNA)	20.0064 ng/mL
							Perfluorooctanoic acid (PFOA)	20.1105 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	40.1708 ng/mL
					LC537-IS_00059	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00059	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00027	04/01/18	01/30/18	Methanol, Lot 141039	40000 uL	LC537SPIM_00026	555.6 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.915 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.802 ng/mL
							Perfluorononanoic acid (PFNA)	277.867 ng/mL
							Perfluorooctanoic acid (PFOA)	279.313 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	557.928 ng/mL
..LC537SPIM_00026	04/01/18	01/30/18	Methanol, Lot 104453	20000 uL	LC537-PFBS_00009	900 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00016	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0011 ug/mL
					LC537-PFHxS_00011	300 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0074 ug/mL
					LC537-PFNA_00014	400 uL	Perfluorononanoic acid (PFNA)	20.0048 ug/mL
					LC537-PFOA_00015	400 uL	Perfluorooctanoic acid (PFOA)	20.1089 ug/mL
					LC537-PFOS_00009	800 uL	Perfluorooctanesulfonic acid (PFOS)	40.1676 ug/mL
...LC537-PFBS_00009	04/01/18	01/30/18	Methanol, Lot 090285	48.7 mL	LC537_PFBS_00002	0.0974 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_00016	04/01/18	01/30/18	Methanol, Lot 090285	59.74 mL	LC537_PFHpA_00002	0.1207 g	Perfluoroheptanoic acid (PFHpA)	2.00022 mg/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00011	04/01/18	01/30/18	Methanol, Lot 090285	38.64 mL	LC537_PFHxS_00002	0.085 g	Perfluorohexanesulfonic acid (PFHxS)	2.00049 mg/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36367-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC537-PFNA_00014	04/01/18	01/30/18	Methanol, Lot 090285	62.58 mL	LC537 PFNA_00002	0.065 g	Perfluorononanoic acid (PFNA)	1000.24 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00015	07/30/18	01/30/18	Methanol, Lot 090285	31 mL	LC537 PFOA_00003	0.0312 g	Perfluorooctanoic acid (PFOA)	1.00545 mg/mL
....LC537 PFOA_00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00009	07/30/18	01/30/18	Methanol, Lot 090285	36 mL	LC537_PFOS_00003	0.0397 g	Perfluorooctanesulfonic acid (PFOS)	1.00419 mg/mL
....LC537_PFOS_00003	04/17/19		sigma alrich, Lot SZBE107XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00059	07/30/18	01/30/18	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_00059	07/30/18	01/30/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L5_00025	04/01/18	02/05/18	MeOH/H2O, Lot 090285	20 mL	LC537-HSP_00027	2160 uL	Perfluorobutanesulfonic acid (PFBS)	135.011 ng/mL
							Perfluoroheptanoic acid (PFHpA)	15.0028 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.0147 ng/mL
							Perfluorononanoic acid (PFNA)	30.0096 ng/mL
							Perfluorooctanoic acid (PFOA)	30.1658 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	60.2562 ng/mL
					LC537-IS_00059	2 mL	13C2-PFOA	10 ng/mL
.LC537-HSP_00027	04/01/18	01/30/18	Methanol, Lot 141039	40000 uL	LC537SPIM_00026	555.6 uL	13C4 PFOS	28.68 ng/mL
							13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.915 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.802 ng/mL
							Perfluorononanoic acid (PFNA)	277.867 ng/mL
..LC537SPIM_00026	04/01/18	01/30/18	Methanol, Lot 104453	20000 uL	LC537-PFBS_00009	900 uL	Perfluorooctanoic acid (PFOA)	279.313 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	557.928 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
							Perfluoroheptanoic acid (PFHpA)	10.0011 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	30.0074 ug/mL
					LC537-PFNA_00014	400 uL	Perfluorononanoic acid (PFNA)	20.0048 ug/mL
							Perfluorooctanoic acid (PFOA)	20.1089 ug/mL
					LC537-PFOA_00015	400 uL	Perfluorooctanoic acid (PFOA)	

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537-PFOS_00009	800 uL	Perfluorooctanesulfonic acid (PFOS)	40.1676 ug/mL
...LC537-PFBS_00009	04/01/18	01/30/18	Methanol, Lot 090285	48.7 mL	LC537_PFBS_00002	0.0974 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_00016	04/01/18	01/30/18	Methanol, Lot 090285	59.74 mL	LC537_PFHpA_00002	0.1207 g	Perfluoroheptanoic acid (PFHpA)	2.00022 mg/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00011	04/01/18	01/30/18	Methanol, Lot 090285	38.64 mL	LC537_PFHxS_00002	0.085 g	Perfluorohexanesulfonic acid (PFHxS)	2.00049 mg/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00014	04/01/18	01/30/18	Methanol, Lot 090285	62.58 mL	LC537 PFNA_00002	0.065 g	Perfluorononanoic acid (PFNA)	1000.24 ug/mL
....LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00015	07/30/18	01/30/18	Methanol, Lot 090285	31 mL	LC537_PFOA_00003	0.0312 g	Perfluorooctanoic acid (PFOA)	1.00545 mg/mL
....LC537_PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00009	07/30/18	01/30/18	Methanol, Lot 090285	36 mL	LC537_PFOS_00003	0.0397 g	Perfluorooctanesulfonic acid (PFOS)	1.00419 mg/mL
....LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00059	07/30/18	01/30/18	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)		13C2-PFOA	50 ug/mL
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00059	07/30/18	01/30/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L6_00021	04/01/18	02/15/18	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00027	720 uL	Perfluorobutanesulfonic acid (PFBS)	180.014 ng/mL
							Perfluoroheptanoic acid (PFHpA)	20.0038 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	60.0196 ng/mL
							Perfluorononanoic acid (PFNA)	40.0128 ng/mL
							Perfluorooctanoic acid (PFOA)	40.221 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	80.3416 ng/mL
					LC537-IS_00059	500 uL	13C2-PFOA	10 ng/mL
.LC537-HSP_00027	04/01/18	01/30/18	Methanol, Lot 141039	40000 uL	LC537SPIM_00026	555.6 uL	13C4 PFOS	28.68 ng/mL
							13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.915 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36367-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexanesulfonic acid (PFHxS)	416.802 ng/mL
							Perfluorononanoic acid (PFNA)	277.867 ng/mL
							Perfluorooctanoic acid (PFOA)	279.313 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	557.928 ng/mL
..LC537SPIM_00026	04/01/18	01/30/18	Methanol, Lot 104453	20000 uL	LC537-PFBS_00009	900 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00016	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0011 ug/mL
					LC537-PFHxS_00011	300 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0074 ug/mL
					LC537-PFNA_00014	400 uL	Perfluorononanoic acid (PFNA)	20.0048 ug/mL
					LC537-PFOA_00015	400 uL	Perfluorooctanoic acid (PFOA)	20.1089 ug/mL
					LC537-PFOS_00009	800 uL	Perfluorooctanesulfonic acid (PFOS)	40.1676 ug/mL
...LC537-PFBS_00009	04/01/18	01/30/18	Methanol, Lot 090285	48.7 mL	LC537_PFBS_00002	0.0974 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_00016	04/01/18	01/30/18	Methanol, Lot 090285	59.74 mL	LC537_PFHpA_00002	0.1207 g	Perfluoroheptanoic acid (PFHpA)	2.00022 mg/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00011	04/01/18	01/30/18	Methanol, Lot 090285	38.64 mL	LC537_PFHxS_00002	0.085 g	Perfluorohexanesulfonic acid (PFHxS)	2.00049 mg/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00014	04/01/18	01/30/18	Methanol, Lot 090285	62.58 mL	LC537 PFNA_00002	0.065 g	Perfluorononanoic acid (PFNA)	1000.24 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00015	07/30/18	01/30/18	Methanol, Lot 090285	31 mL	LC537 PFOA_00003	0.0312 g	Perfluorooctanoic acid (PFOA)	1.00545 mg/mL
....LC537 PFOA_00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00009	07/30/18	01/30/18	Methanol, Lot 090285	36 mL	LC537_PFOS_00003	0.0397 g	Perfluorooctanesulfonic acid (PFOS)	1.00419 mg/mL
....LC537_PFOS_00003	04/17/19		sigma alrich, Lot SZBE107XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00059	07/30/18	01/30/18	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_00059	07/30/18	01/30/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-SU_00063	08/27/18	02/27/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
.LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFHxA_00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL

Reagent

LC537_PFB_00002

4/1/15 SPV

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sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103, USA

Website: www.sigmaaldrich.com

Email USA: techserv@sial.com

Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:

Nonafluorobutane-1-sulfonic acid - 97%

Product Number:

562629

Batch Number:

MKBP8842V

Brand:

ALDRICH

CAS Number:

375-73-5

MDL Number:

MFCD01320794

Formula:

C₄HF₉O₃S

Formula Weight:

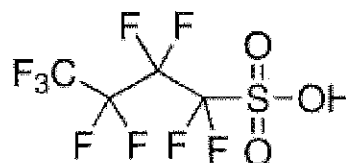
300.10 g/mol

Storage Temperature:

Store at 2 - 8 °C

Quality Release Date:

11 OCT 2013



PFBS

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

Jamie Gleason

Jamie Gleason, Manager

Quality Control

Milwaukee, Wisconsin US

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

Reagent

LC537_PFB2_00002

11.6.8.17 SW



CERTIFICATE OF ANALYSIS

The Power to Question

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

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

Reagent

LC537_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 Geithner
Manager Quality Control
Buchs, Switzerland

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Reagent

LC537_PFHpA2_00002

Certificate of analysis

r:6.13.17 SW

PFHe A

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

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

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Reagent

LC537_PFHxS_00002

r: 4/11/15 stw

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

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

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

stw 4/11/15

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Reagent

LC537_PFHxS2_00002

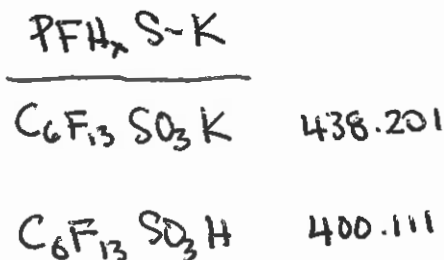


The Future is Now

CERTIFICATE OF ANALYSIS

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

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



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

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

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

Reagent

LC537_PFNA_00002

R: 4/1/15 SKV



Certificate of Analysis

Apr 2, 2015 (JST)

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

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

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

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

Customer service:

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

PFNA

Reagent

LC537_PFNA2_00002

11.6.14.17 SKW

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:

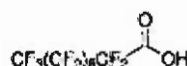
C₉H₁₇O₂

Formula Weight:

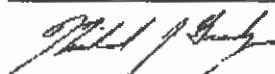
464.08 g/mol

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

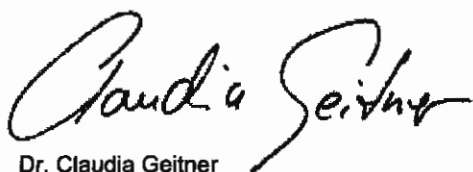
SIGMA-ALDRICH

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

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Reagent

LC537_PFOA2_00002

Certificate of analysis

17: 6/9/17 SW

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

PFOA

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

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Reagent

LC537_PFOS_00003

n: 11/30/16 SV
PFOS

SIGMA-ALDRICH

CERTIFICATE OF ANALYSIS

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

Seelze, 22.04.2014/524107/14/08646

Order-No.:

Customer-No.:

Order-Code:

Quantity:

Production Date: 17.Apr.2014

Expiry Date: 17.Apr.2019

Article/Product: 33829

Batch : SZBE107XV

Heptadecafluorooctanesulfonic acid potassium salt OEKANAL®

Reference Material (RM)

1. General Information

Formula: C₈F₁₇KO₃S

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

Usage : PFOS

Molar mass: 538.22 g/Mole

Recomm. storage temp.: roomtemp.

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

2. Batch Analysis

Identity

Assay (LC-MS)

Date of Analysis

complying

98 %

22.Apr.2014

3. Advice and Remarks

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

Sigma-Aldrich Laborchemikalien GmbH
Quality Management SA-LC

Reagent

LC537_PFOS2_00002

1: 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

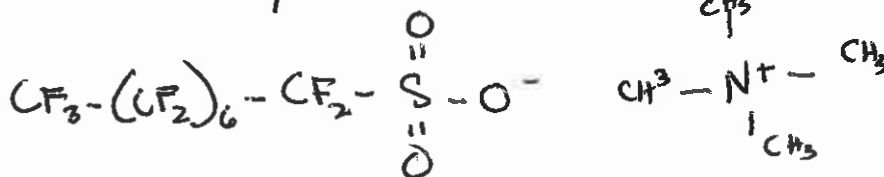
TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE TO OFF WHITE	OFF-WHITE
APPEARANCE (FORM)	POWDER OR POWDER WITH CHUNK(S)	POWDER
CARBON CONTENT	29.77 % - 31.29 %	29.97 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS

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_00007



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

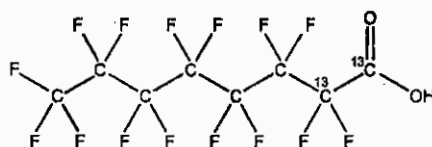
M2PFOA

LOT NUMBER:

M2PFOA0216

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

Not available

**MOLECULAR FORMULA:**¹³C₂¹²C₆H₁₅O₂**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:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

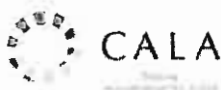
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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

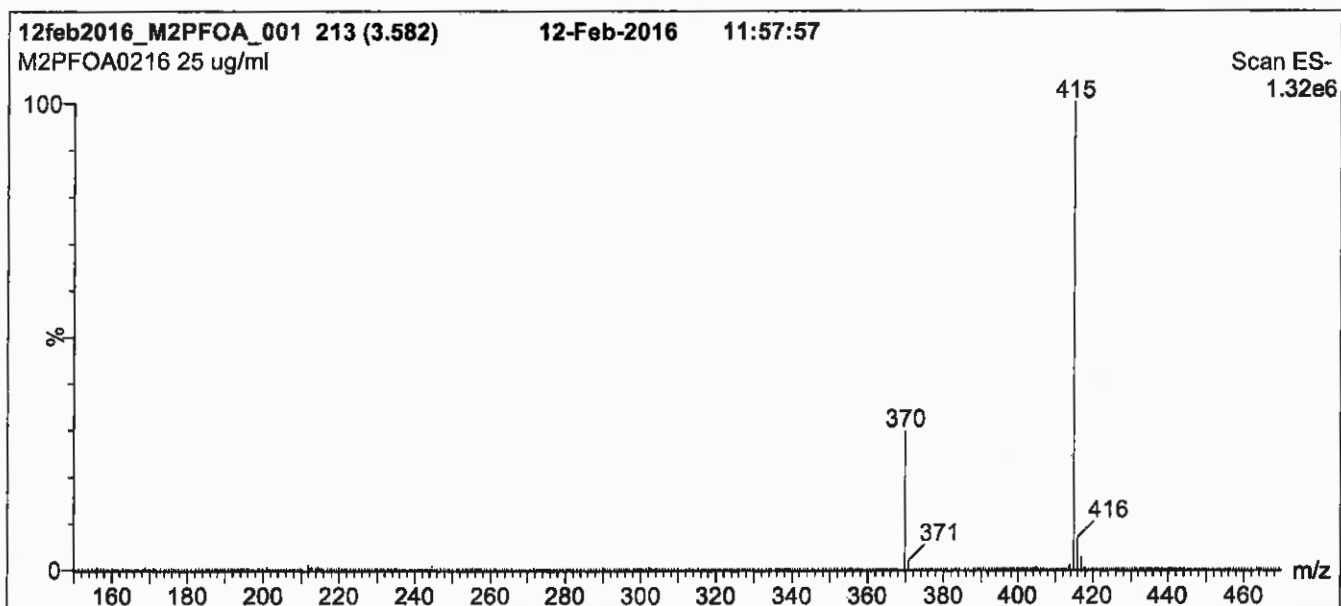
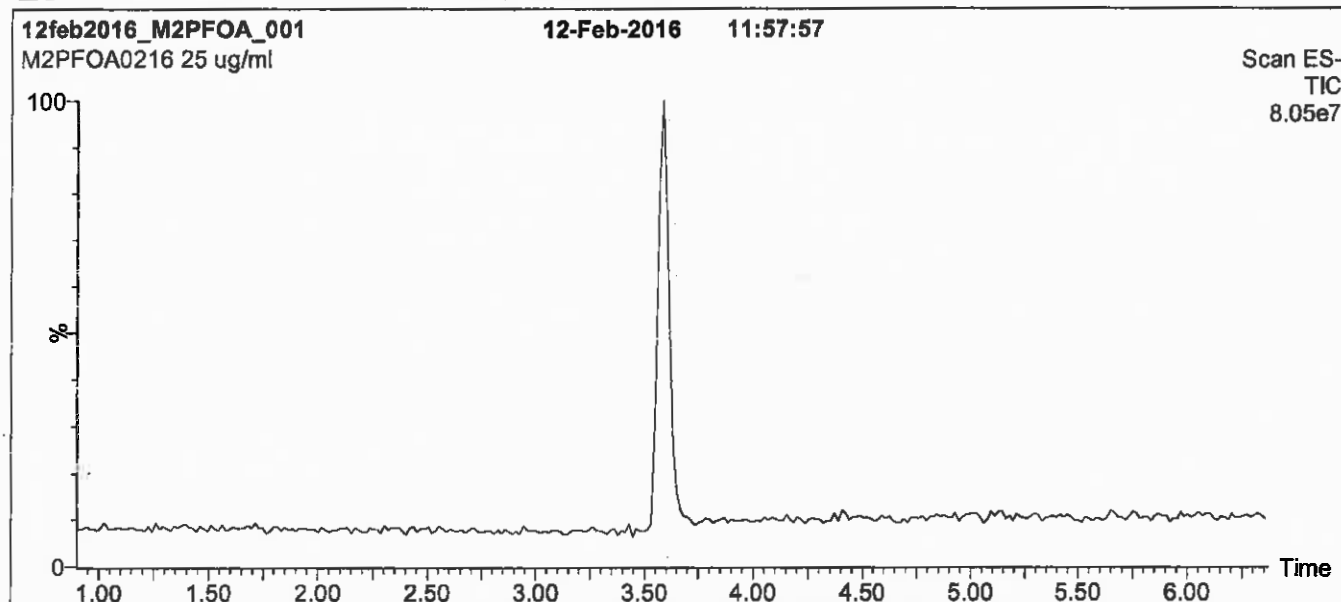
QUALITY MANAGEMENT:

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



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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)

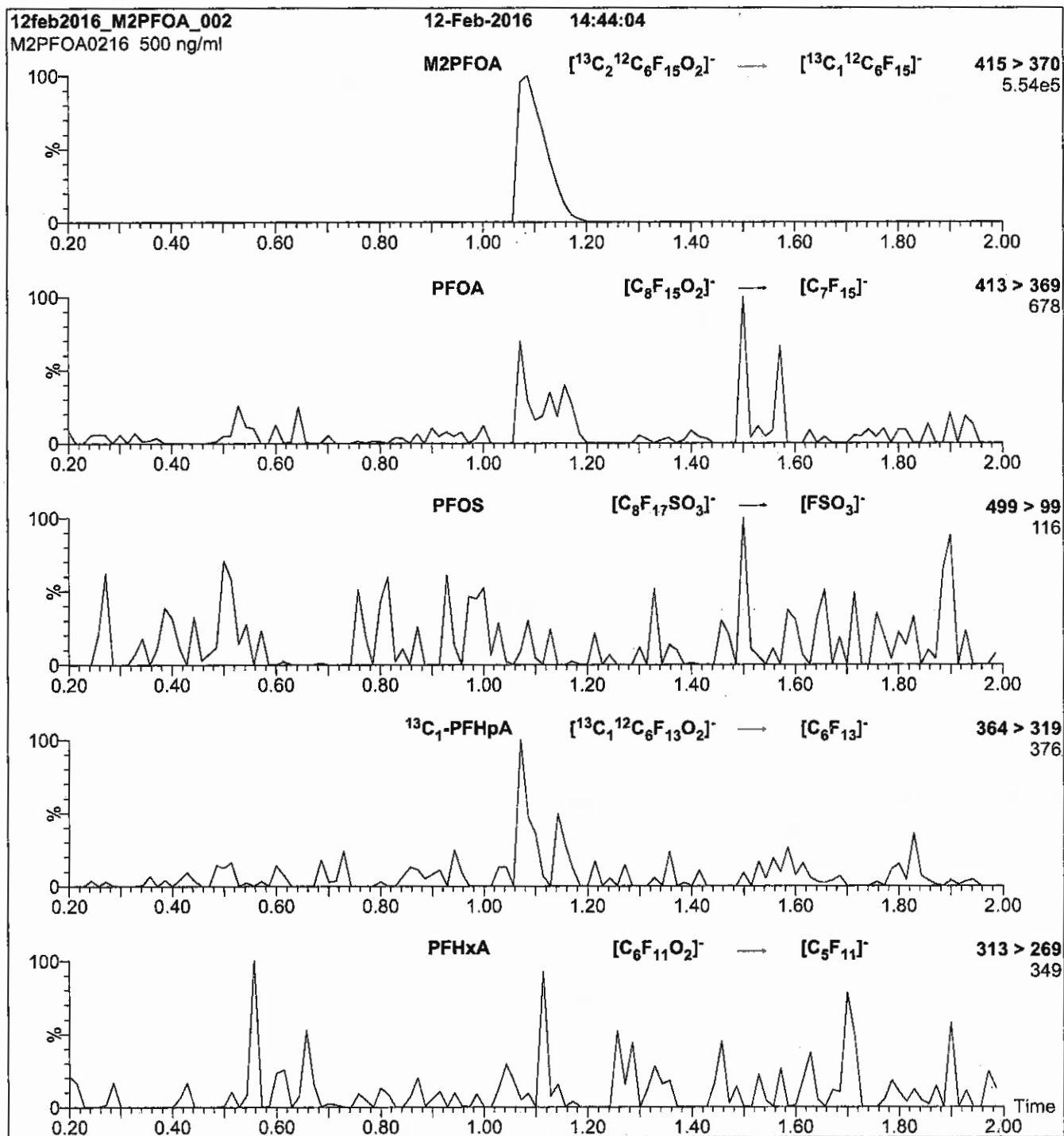
Capillary Voltage (kV) = 3.00

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



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CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

MPFDA

LOT NUMBER:

MPFDA0916

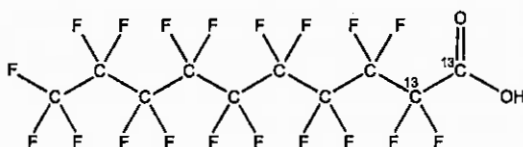
COMPOUND:

Perfluoro-n-[1,2-¹³C₂]decanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₈HF₁₉O₂

MOLECULAR WEIGHT:

516.07

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

09/30/2016

(1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy)

09/30/2021

RECOMMENDED STORAGE:

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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 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)

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EXPIRY DATE / PERIOD OF VALIDITY:

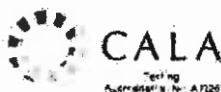
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LIMITED WARRANTY:

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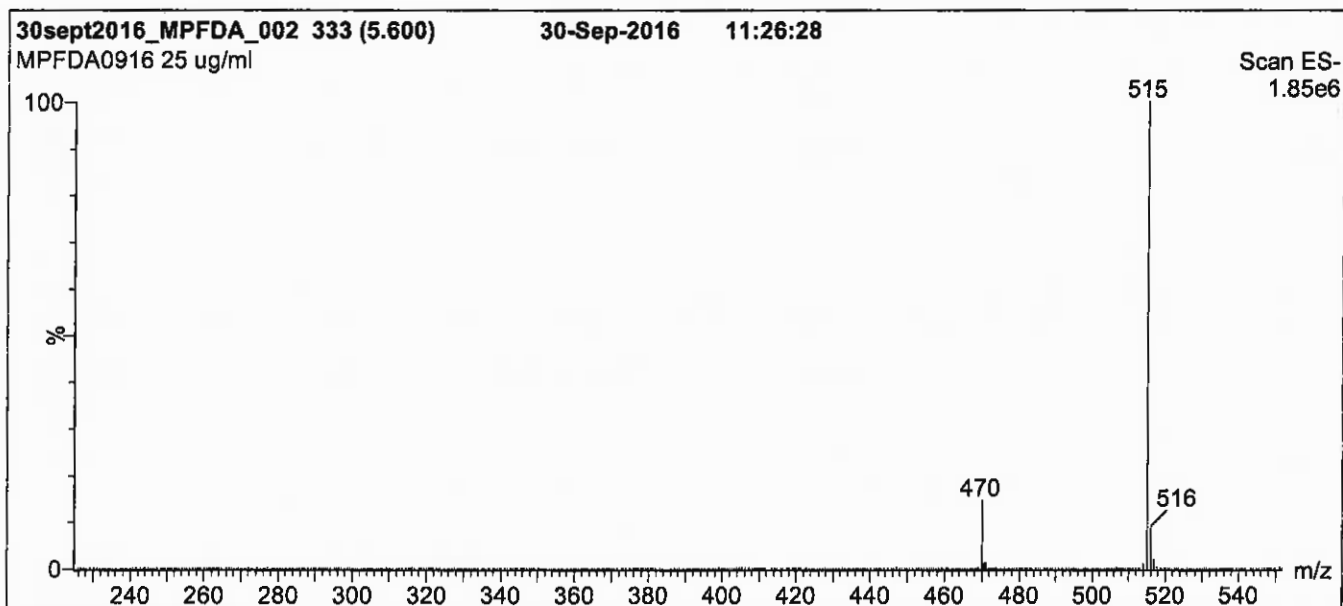
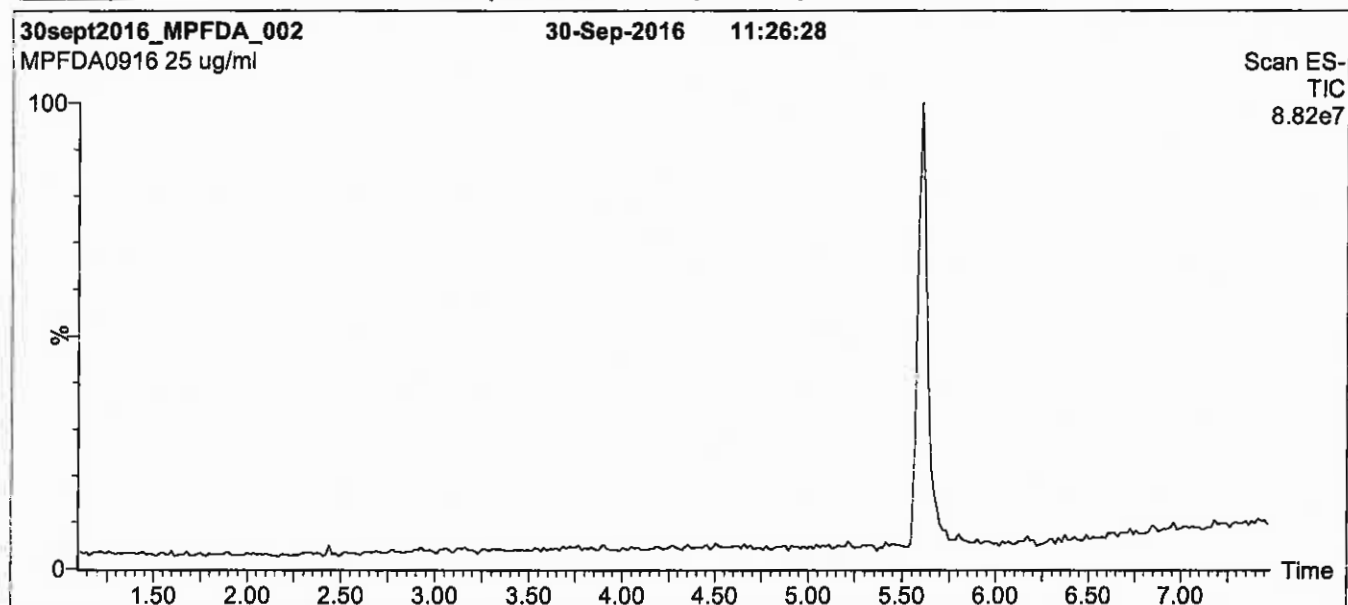
QUALITY MANAGEMENT:

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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

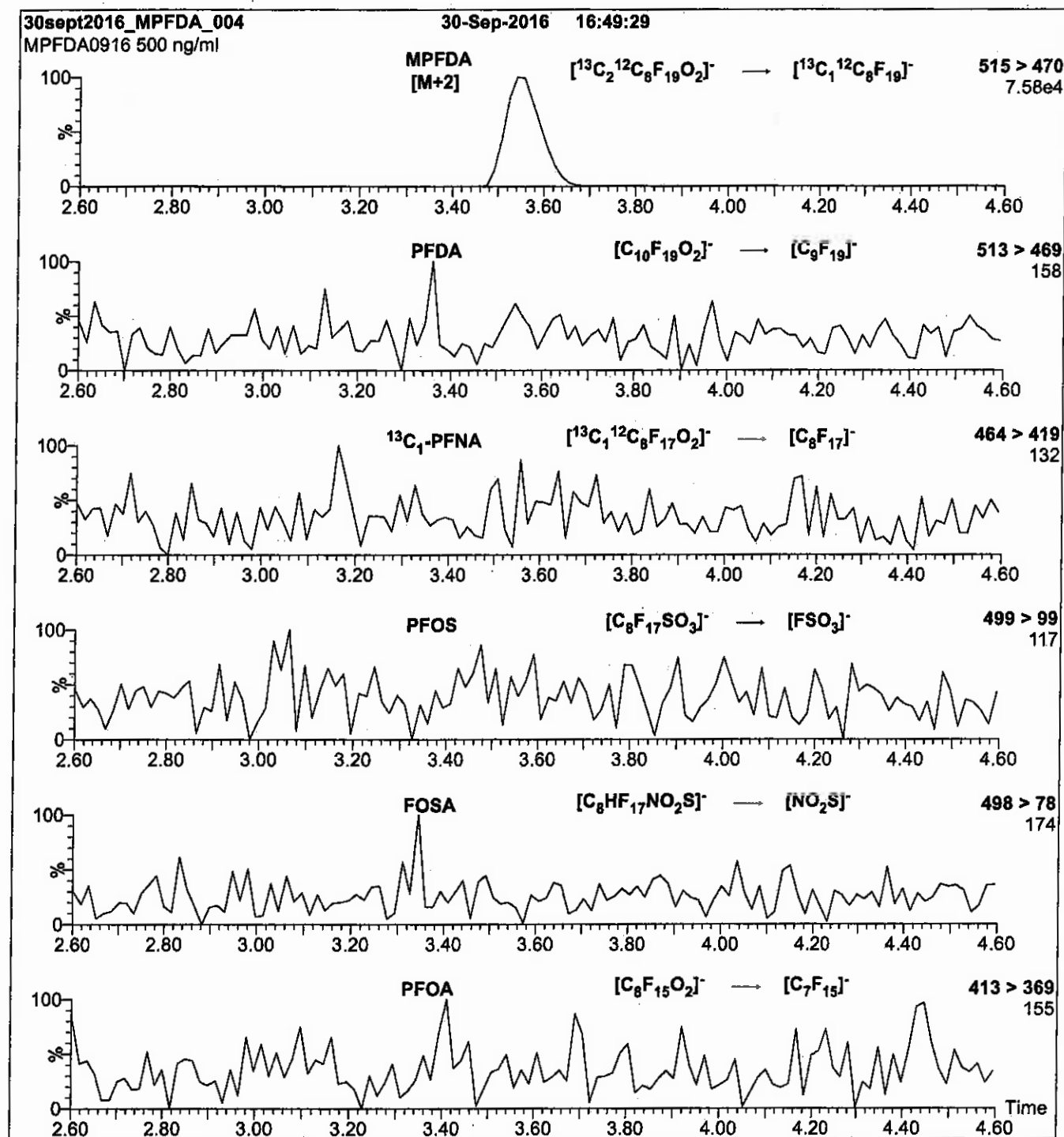
Flow: 300 μ l/min

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_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)

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

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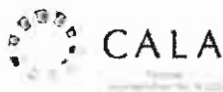
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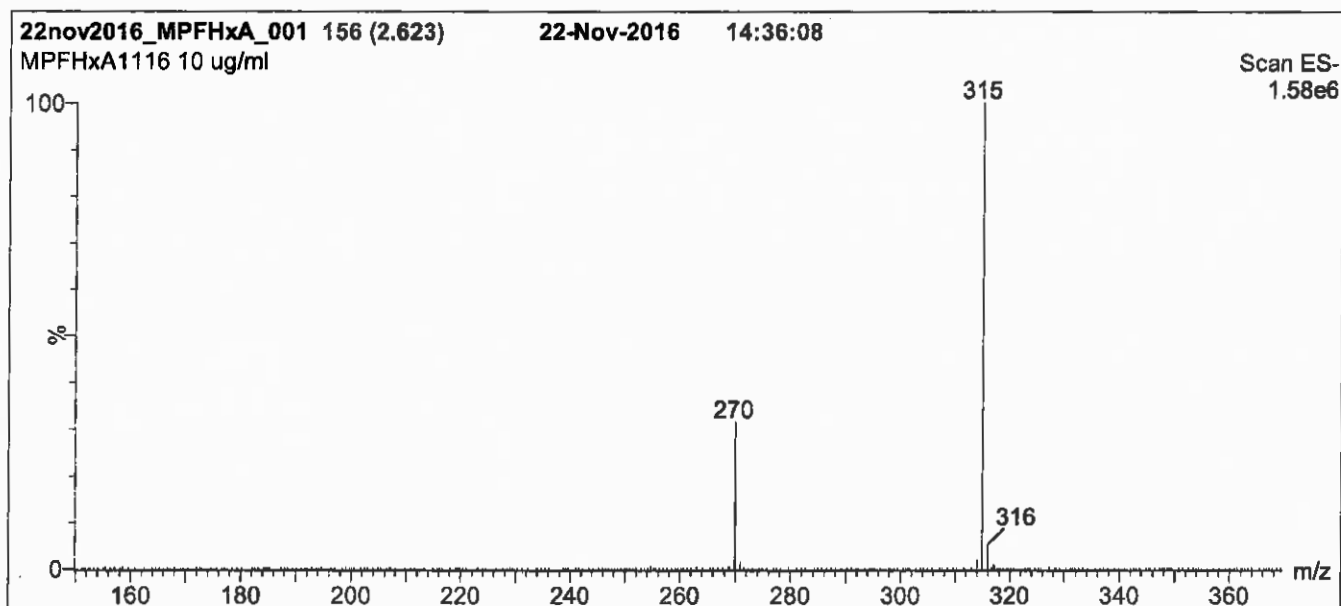
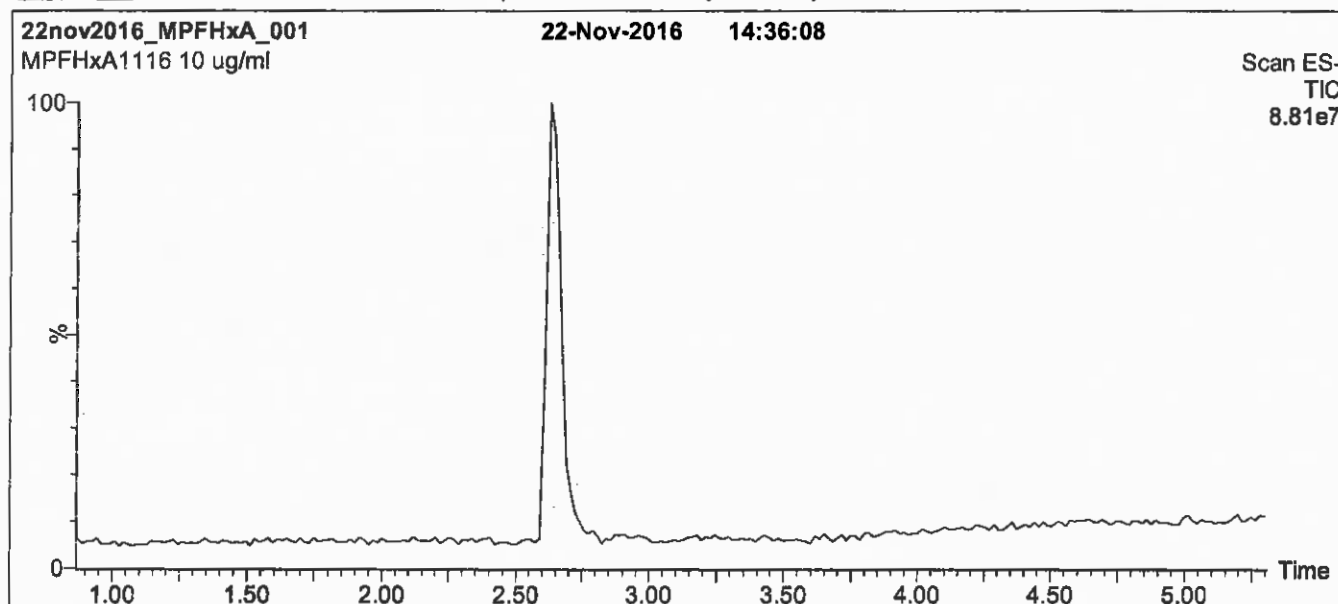
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Figure 1: MPFHxA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

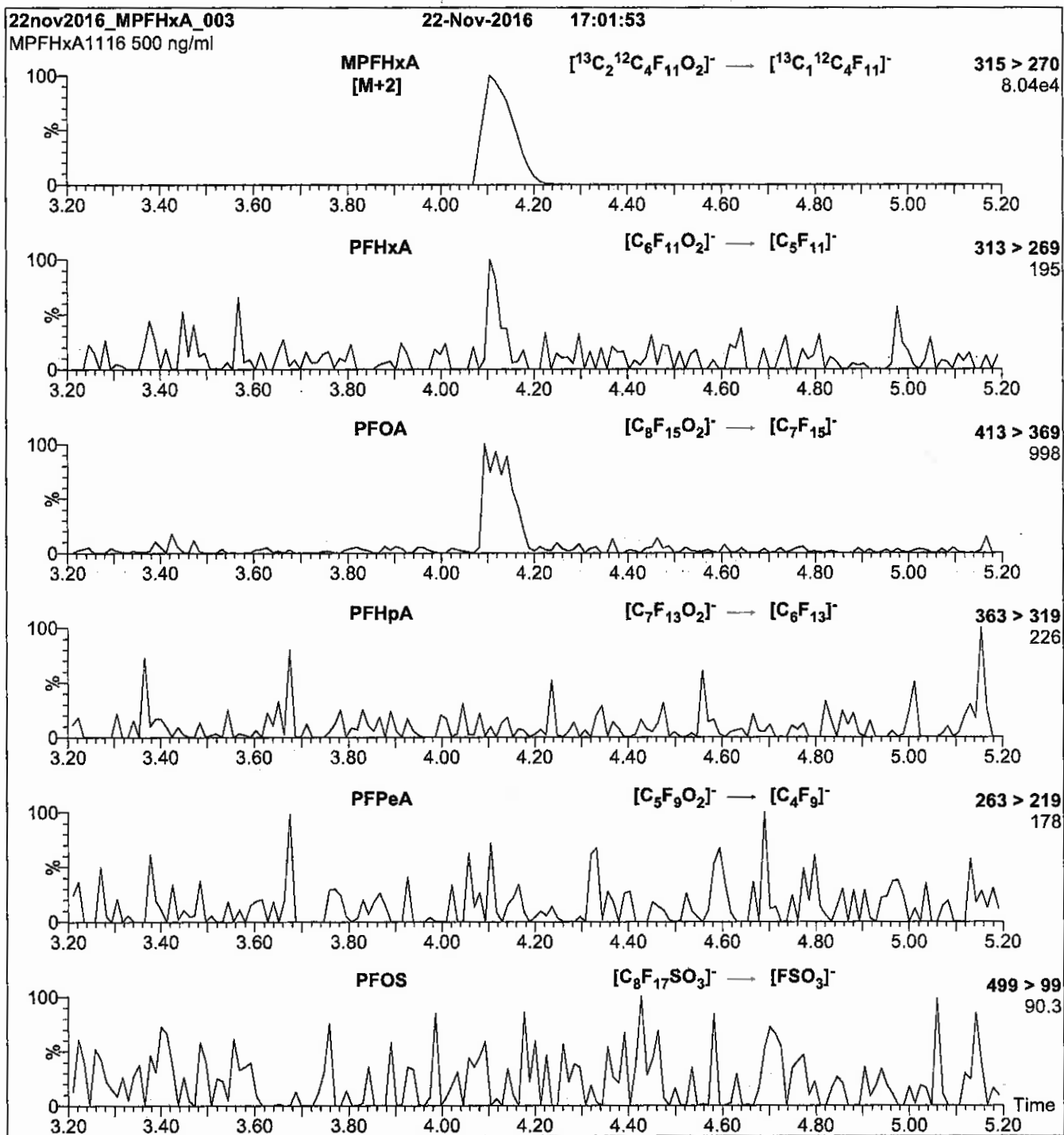
Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions over 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

Reagent

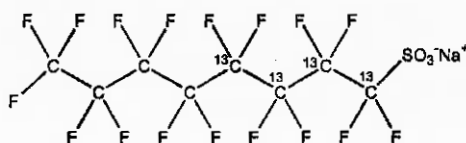
LCMPFOS_00021



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS1216
COMPOUND: Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₄¹²C₄F₁₇SO₃Na **MOLECULAR WEIGHT:** 526.08
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 47.8 ± 2.4 µg/ml (MPFOS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 12/12/2016 (1,2,3,4-¹³C₄)
EXPIRY DATE: (mm/dd/yyyy) 12/12/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/14/2016

(mm/dd/yyyy)

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

LIMITED WARRANTY:

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

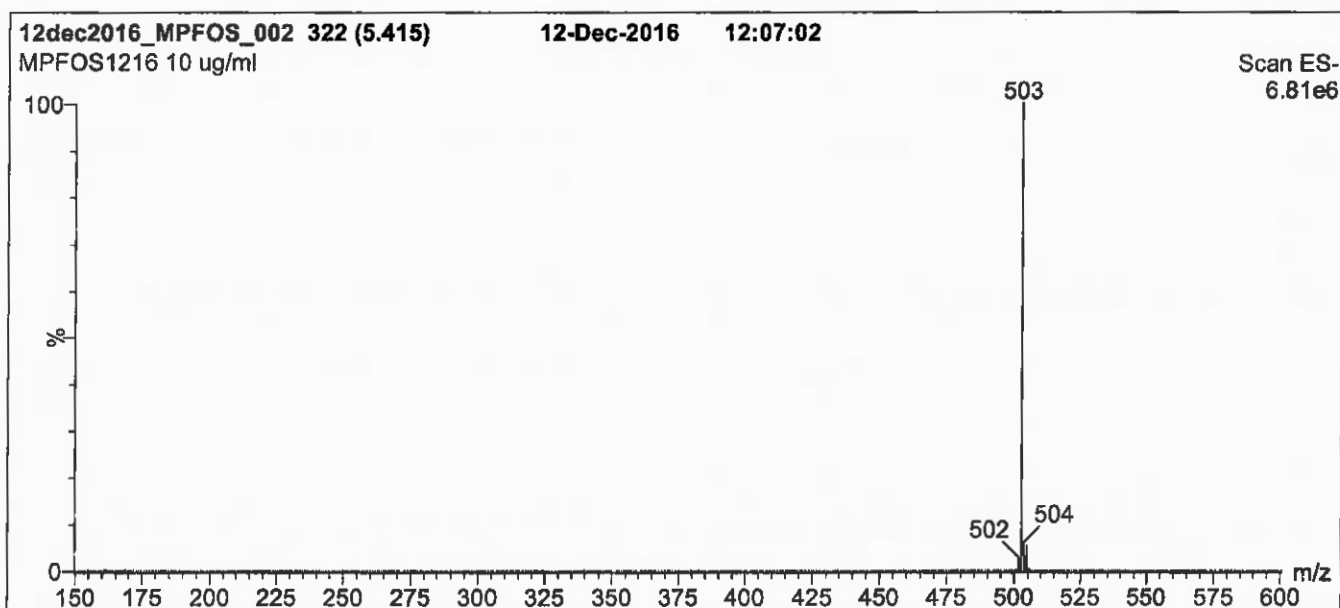
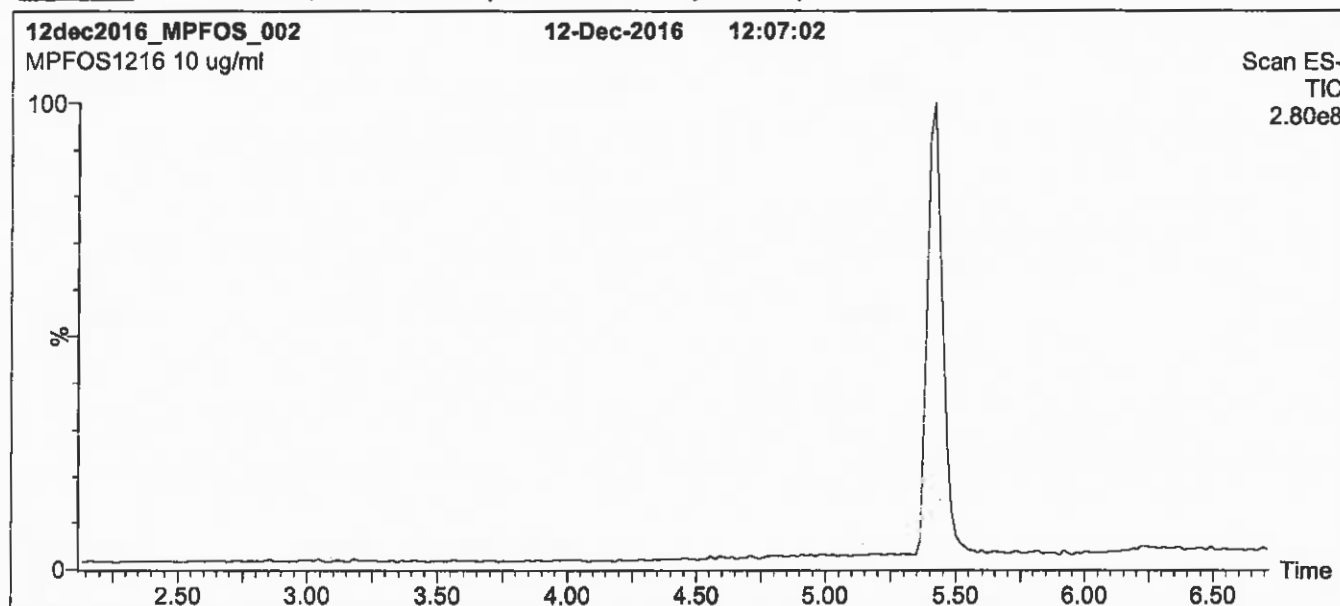
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient

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

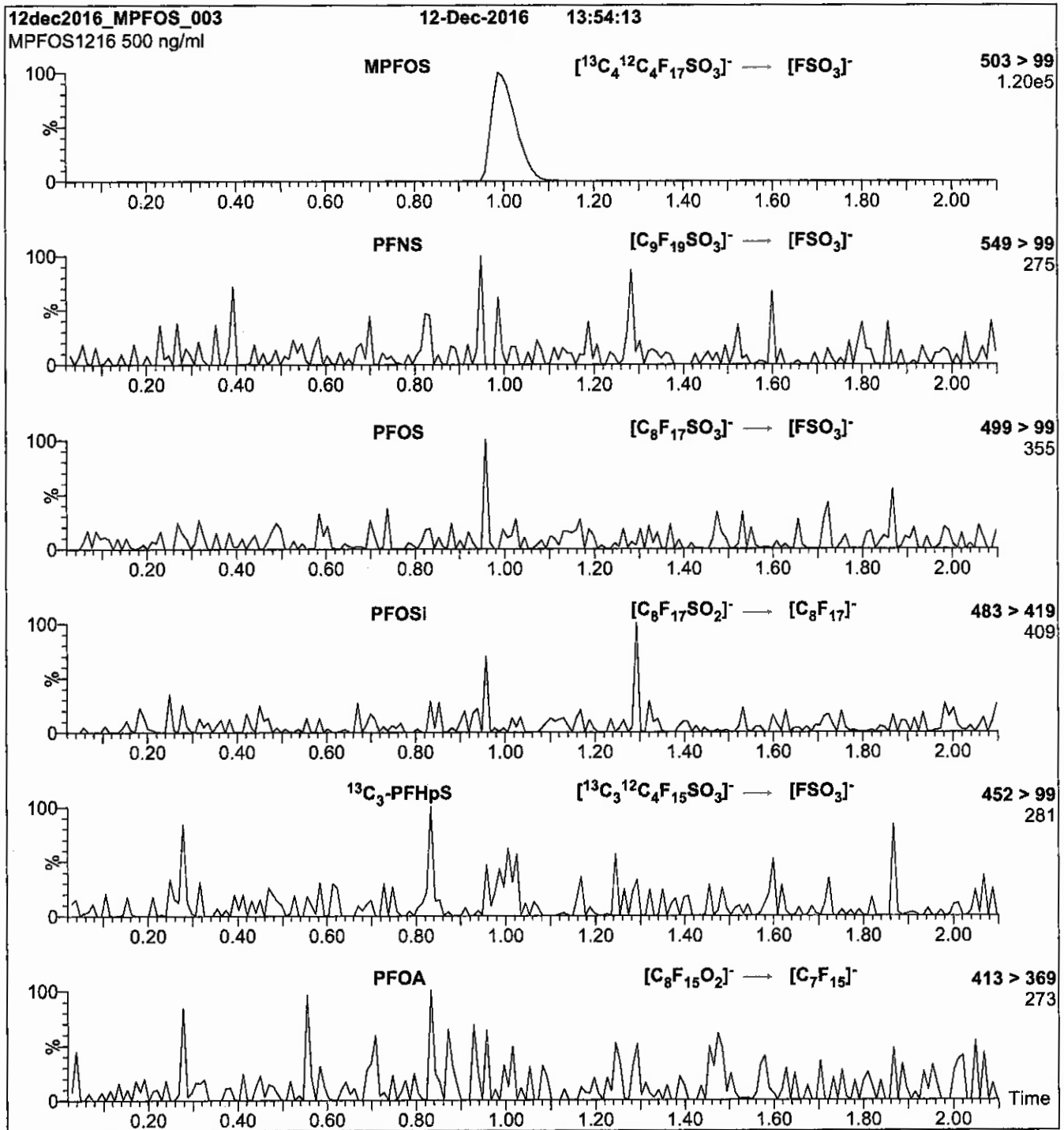
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

Method 537 DOD

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

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-022218-DUP-28	320-36367-1	86	116
WGNA-022218-RW-038 6	320-36367-2	93	122
WGNA-022218-FRB-03 86	320-36367-3	94	110
WGNA-022218-RW-307 3	320-36367-4	86	111
WGNA-022218-FRB-30 73	320-36367-5	94	114
NAWC-022218-RW-311	320-36367-6	87	115
NAWC-022218-FRB-31 1	320-36367-7	93	124
NAWC-022218-RW-039	320-36367-8	92	130
NAWC-022218-FRB-03 9	320-36367-9	93	119
NAWC-022218-RW-335	320-36367-10	96	128
NAWC-022218-FRB-33 5	320-36367-11	90	114
NAWC-022218-RW-348	320-36367-12	81	120
NAWC-022218-FRB-34 8	320-36367-13	95	116
	MB 320-211553/1-A	91	108
	LCS 320-211553/2-A	94	116
	LCSD 320-211553/3-A	92	114

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.: 320-36367-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.03.12_537B_007.d
 Lab ID: LCS 320-211553/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	223	242	108	70-130	M
Perfluorooctanoic acid (PFOA)	112	117	105	70-130	
Perfluorononanoic acid (PFNA)	111	130	117	70-130	
Perfluorohexanesulfonic acid (PFHxS)	167	178	107	70-130	
Perfluoroheptanoic acid (PFHpA)	55.6	59.7	107	70-130	
Perfluorobutanesulfonic acid (PFBS)	500	446	89	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.: 320-36367-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.03.12_537B_008.d
 Lab ID: LCSD 320-211553/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	223	230	103	5	30	70-130	M
Perfluorooctanoic acid (PFOA)	112	110	98	6	30	70-130	
Perfluorononanoic acid (PFNA)	111	123	111	6	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	167	168	101	6	30	70-130	
Perfluoroheptanoic acid (PFHpA)	55.6	54.0	97	10	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	500	460	92	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.: 320-36367-1
 SDG No.: _____
 Lab File ID: 2018.03.12_537B_006.d Lab Sample ID: MB 320-211553/1-A
 Matrix: Water Date Extracted: 03/07/2018 07:07
 Instrument ID: A8_N Date Analyzed: 03/12/2018 21:19
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-211553/2-A	2018.03.12_537B 007.d	03/12/2018 21:23
	LCSD 320-211553/3-A	2018.03.12_537B 008.d	03/12/2018 21:28
WGNA-022218-DUP-28	320-36367-1	2018.03.12_537B 009.d	03/12/2018 21:33
WGNA-022218-RW-0386	320-36367-2	2018.03.12_537B 010.d	03/12/2018 21:37
WGNA-022218-FRB-0386	320-36367-3	2018.03.12_537B 011.d	03/12/2018 21:42
WGNA-022218-RW-3073	320-36367-4	2018.03.12_537B 012.d	03/12/2018 21:47
WGNA-022218-FRB-3073	320-36367-5	2018.03.12_537B 013.d	03/12/2018 21:51
NAWC-022218-RW-311	320-36367-6	2018.03.12_537B 014.d	03/12/2018 21:56
NAWC-022218-FRB-311	320-36367-7	2018.03.12_537B 015.d	03/12/2018 22:01
NAWC-022218-RW-039	320-36367-8	2018.03.12_537B 018.d	03/12/2018 22:15
NAWC-022218-FRB-039	320-36367-9	2018.03.12_537B 019.d	03/12/2018 22:19
NAWC-022218-RW-335	320-36367-10	2018.03.12_537B 020.d	03/12/2018 22:24
NAWC-022218-FRB-335	320-36367-11	2018.03.12_537B 021.d	03/12/2018 22:29
NAWC-022218-RW-348	320-36367-12	2018.03.12_537B 022.d	03/12/2018 22:33
NAWC-022218-FRB-348	320-36367-13	2018.03.12_537B 023.d	03/12/2018 22:38

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 02/16/2018 09:19
 Calibration ID: 37889

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		937117	1.86	2726868	2.11		
UPPER LIMIT		1405676	2.36	4090302	2.61		
LOWER LIMIT		468559	1.36	1363434	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-208773/11		955394	1.87	2663428	2.12		
ICV 320-208773/13		890238	1.85	2703377	2.11		
CCVL 320-212525/1		839914	1.86	2407064	2.11		
CCV 320-212591/1 CCVIS		882198	1.78	2704833	2.00		
MB 320-211553/1-A		744966	1.78	2282045	2.00		
LCS 320-211553/2-A		741995	1.80	2268693	2.03		
LCSD 320-211553/3-A		750275	1.79	2246677	2.00		
320-36367-1	WGNA-022218-DUP-28	733007	1.78	2221457	2.00		
320-36367-2	WGNA-022218-RW-0386	718983	1.79	2232407	2.02		
320-36367-3	WGNA-022218-FRB-0386	768515	1.80	2517392	1.95		
320-36367-4	WGNA-022218-RW-3073	749722	1.80	2260506	2.02		
320-36367-5	WGNA-022218-FRB-3073	741350	1.81	2173853	2.04		
320-36367-6	NAWC-022218-RW-311	729043	1.80	2165173	2.03		
320-36367-7	NAWC-022218-FRB-311	801734	1.78	2417027	2.00		
CCV 320-212591/13 CCVIS		793520	1.80	2503639	2.04		
CCV 320-212593/13 CCVIS		793520	1.80	2503639	2.04		
320-36367-8	NAWC-022218-RW-039	740581	1.81	2195955	2.06		
320-36367-9	NAWC-022218-FRB-039	809611	1.78	2358808	2.00		
320-36367-10	NAWC-022218-RW-335	800763	1.80	2493942	2.04		
320-36367-11	NAWC-022218-FRB-335	813381	1.80	2390850	2.04		
320-36367-12	NAWC-022218-RW-348	758650	1.81	2247902	2.05		
320-36367-13	NAWC-022218-FRB-348	814628	1.74	2602265	1.88		
CCV 320-212593/22 CCVIS		746221	1.79	2395162	2.01		

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.: 320-36367-1
 SDG No.: _____
 Sample No.: CCV 320-212591/1 Date Analyzed: 03/12/2018 21:09
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.12_537B_004 Heated Purge: (Y/N) N
 Calibration ID: 37889

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		882198	1.78	2704833	2.00		
UPPER LIMIT		1235077	2.28	3786766	2.50		
LOWER LIMIT		617539	1.28	1893383	1.50		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-211553/1-A		744966	1.78	2282045	2.00		
LCS 320-211553/2-A		741995	1.80	2268693	2.03		
LCSD 320-211553/3-A		750275	1.79	2246677	2.00		
320-36367-1	WGNA-022218-DUP-28	733007	1.78	2221457	2.00		
320-36367-2	WGNA-022218-RW-0386	718983	1.79	2232407	2.02		
320-36367-3	WGNA-022218-FRB-0386	768515	1.80	2517392	1.95		
320-36367-4	WGNA-022218-RW-3073	749722	1.80	2260506	2.02		
320-36367-5	WGNA-022218-FRB-3073	741350	1.81	2173853	2.04		
320-36367-6	NAWC-022218-RW-311	729043	1.80	2165173	2.03		
320-36367-7	NAWC-022218-FRB-311	801734	1.78	2417027	2.00		

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.: 320-36367-1
 SDG No.: _____
 Sample No.: CCV 320-212591/13 Date Analyzed: 03/12/2018 22:05
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.12_537B_016 Heated Purge: (Y/N) N
 Calibration ID: 37889

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		793520	1.80	2503639	2.04		
UPPER LIMIT		1110928	2.30	3505095	2.54		
LOWER LIMIT		555464	1.30	1752547	1.54		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-211553/1-A		744966	1.78	2282045	2.00		
LCS 320-211553/2-A		741995	1.80	2268693	2.03		
LCSD 320-211553/3-A		750275	1.79	2246677	2.00		
320-36367-1	WGNA-022218-DUP-28	733007	1.78	2221457	2.00		
320-36367-2	WGNA-022218-RW-0386	718983	1.79	2232407	2.02		
320-36367-3	WGNA-022218-FRB-0386	768515	1.80	2517392	1.95		
320-36367-4	WGNA-022218-RW-3073	749722	1.80	2260506	2.02		
320-36367-5	WGNA-022218-FRB-3073	741350	1.81	2173853	2.04		
320-36367-6	NAWC-022218-RW-311	729043	1.80	2165173	2.03		
320-36367-7	NAWC-022218-FRB-311	801734	1.78	2417027	2.00		

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.: 320-36367-1
 SDG No.: _____
 Sample No.: CCV 320-212593/13 Date Analyzed: 03/12/2018 22:05
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.12_537B_016 Heated Purge: (Y/N) N
 Calibration ID: 37889

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	793520	1.80	2503639	2.04		
UPPER LIMIT	1110928	2.30	3505095	2.54		
LOWER LIMIT	555464	1.30	1752547	1.54		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-36367-8	NAWC-022218-RW-039	740581	1.81	2195955	2.06	
320-36367-9	NAWC-022218-FRB-039	809611	1.78	2358808	2.00	
320-36367-10	NAWC-022218-RW-335	800763	1.80	2493942	2.04	
320-36367-11	NAWC-022218-FRB-335	813381	1.80	2390850	2.04	
320-36367-12	NAWC-022218-RW-348	758650	1.81	2247902	2.05	
320-36367-13	NAWC-022218-FRB-348	814628	1.74	2602265	1.88	

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.: 320-36367-1
 SDG No.: _____
 Sample No.: CCV 320-212593/22 Date Analyzed: 03/12/2018 22:47
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.12_537B_031 Heated Purge: (Y/N) N
 Calibration ID: 37889

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		746221	1.79	2395162	2.01		
UPPER LIMIT		1044709	2.29	3353227	2.51		
LOWER LIMIT		522355	1.29	1676613	1.51		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-36367-8	NAWC-022218-RW-039	740581	1.81	2195955	2.06		
320-36367-9	NAWC-022218-FRB-039	809611	1.78	2358808	2.00		
320-36367-10	NAWC-022218-RW-335	800763	1.80	2493942	2.04		
320-36367-11	NAWC-022218-FRB-335	813381	1.80	2390850	2.04		
320-36367-12	NAWC-022218-RW-348	758650	1.81	2247902	2.05		
320-36367-13	NAWC-022218-FRB-348	814628	1.74	2602265	1.88		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

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

Column used to flag values outside QC limits

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-022218-DUP-28</u>	Lab Sample ID: <u>320-36367-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_009.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 07:00</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>256.7(mL)</u>	Date Analyzed: <u>03/12/2018 21:33</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>212591</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	26	J M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	26		19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	18	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.7	J	9.7	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	116		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_009.d
 Lims ID: 320-36367-A-1-A
 Client ID: WGNA-022218-DUP-28
 Sample Type: Client
 Inject. Date: 12-Mar-2018 21:33:05 ALS Bottle#: 26 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-36367-a-1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:34:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	372046	3.67		57.5	
298.90 > 99.00	1.381	1.381	0.0	1.000	255021		1.46(0.00-0.00)	130	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.495	1.495	0.0	1.000	693094	8.60		9288	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.624	0.0	1.000	570671	4.58		182	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.624	0.0	1.000	122670	1.72		12.8	
* 6 13C2-PFOA									
415.00 > 370.00	1.783	1.783	0.0		733007	10.0		7600	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.783	1.783	0.0	1.000	465195	6.60		10.4	
413.00 > 169.00	1.783	1.783	0.0	1.000	268544		1.73(0.00-0.00)	148	
* 7 13C4 PFOS									
503.00 > 80.00	2.003	1.995	0.008		2221457	28.7		515	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.003	2.011	-0.008	1.000	498049	6.80		31.8	a
499.00 > 99.00	2.003	2.011	-0.008	1.000	85825		5.80(0.00-0.00)	33.2	a
\$ 10 13C2 PFDA									
515.00 > 470.00	2.215	2.215	0.0	1.000	445579	11.6		4645	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_009.d

Injection Date: 12-Mar-2018 21:33:05

Instrument ID: A8_N

Lims ID: 320-36367-A-1-A

Lab Sample ID: 320-36367-1

Client ID: WGNA-022218-DUP-28

Operator ID: SACINSTLCMS01

ALS Bottle#: 26

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

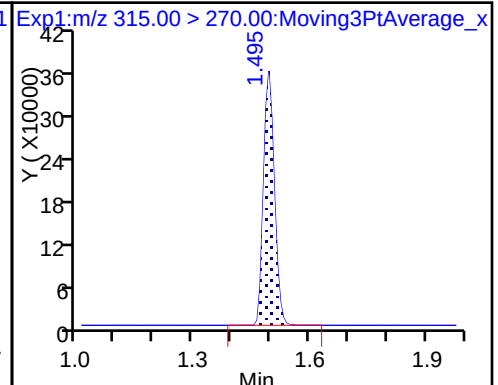
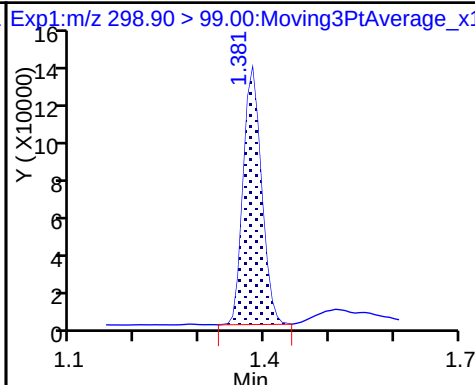
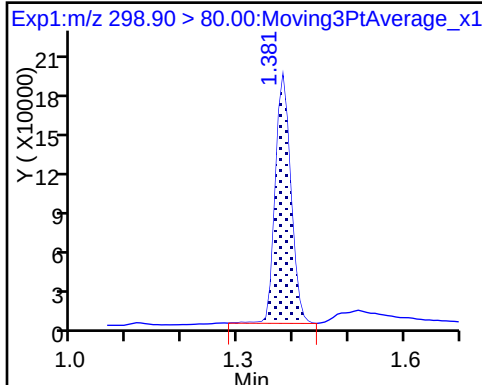
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

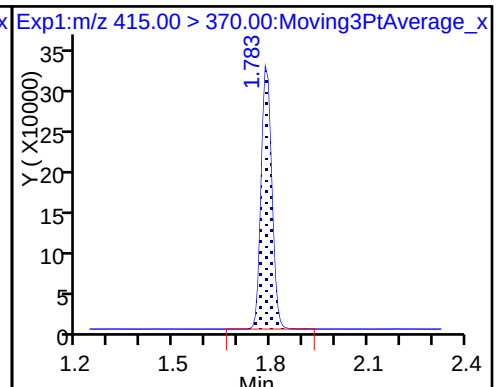
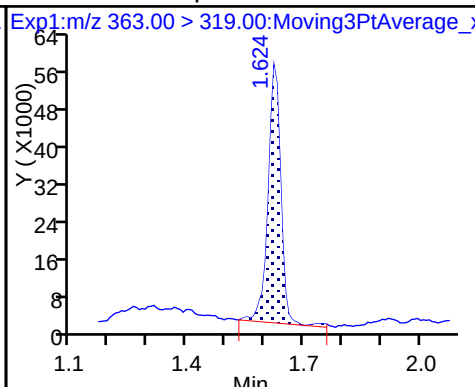
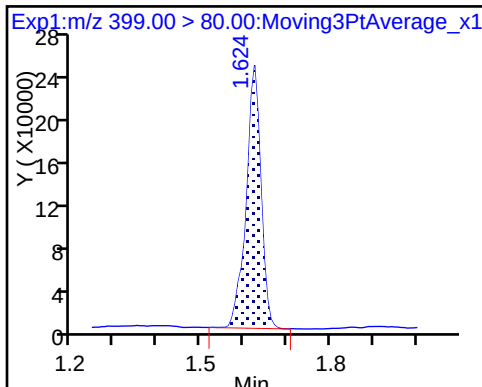
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

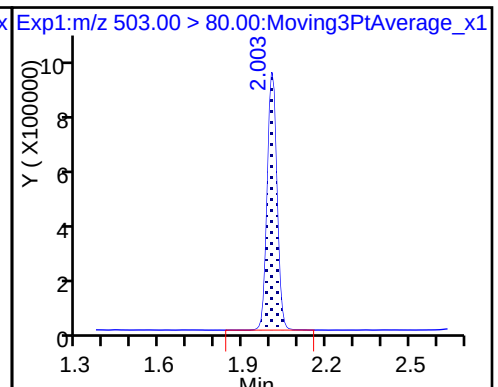
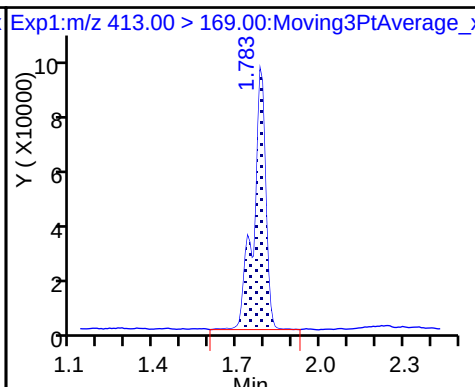
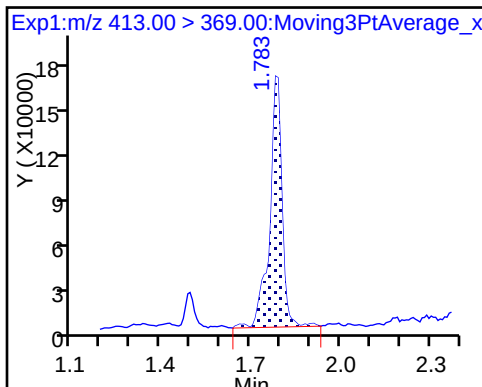
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

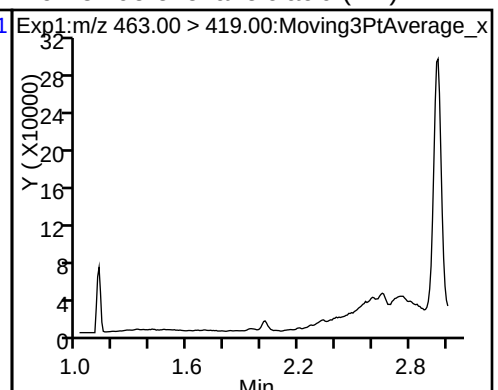
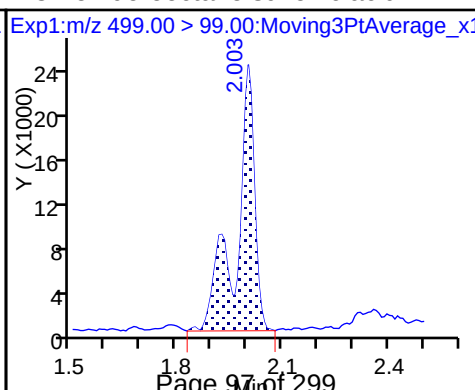
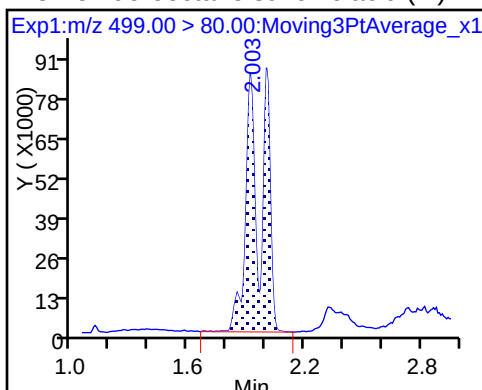
* 7 13C4 PFOS



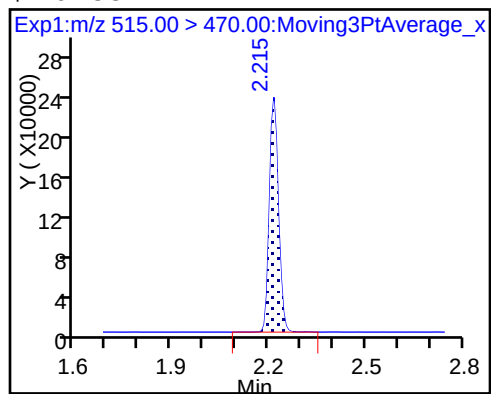
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_009.d
Lims ID: 320-36367-A-1-A
Client ID: WGNA-022218-DUP-28
Sample Type: Client
Inject. Date: 12-Mar-2018 21:33:05 ALS Bottle#: 26 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36367-a-1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:34:02

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.60	85.97
\$ 10 13C2 PFDA	10.0	11.6	115.95

TestAmerica Sacramento

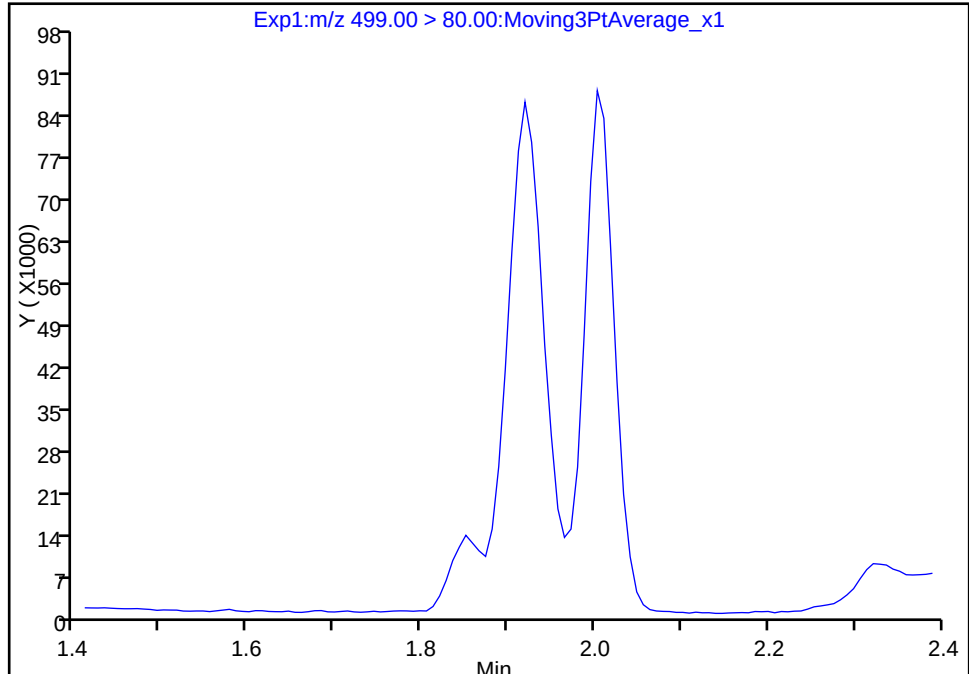
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_009.d				
Injection Date:	12-Mar-2018 21:33:05	Instrument ID:	A8_N		
Lims ID:	320-36367-A-1-A	Lab Sample ID:	320-36367-1		
Client ID:	WGNA-022218-DUP-28				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	26	Worklist Smp#:	6
Injection 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

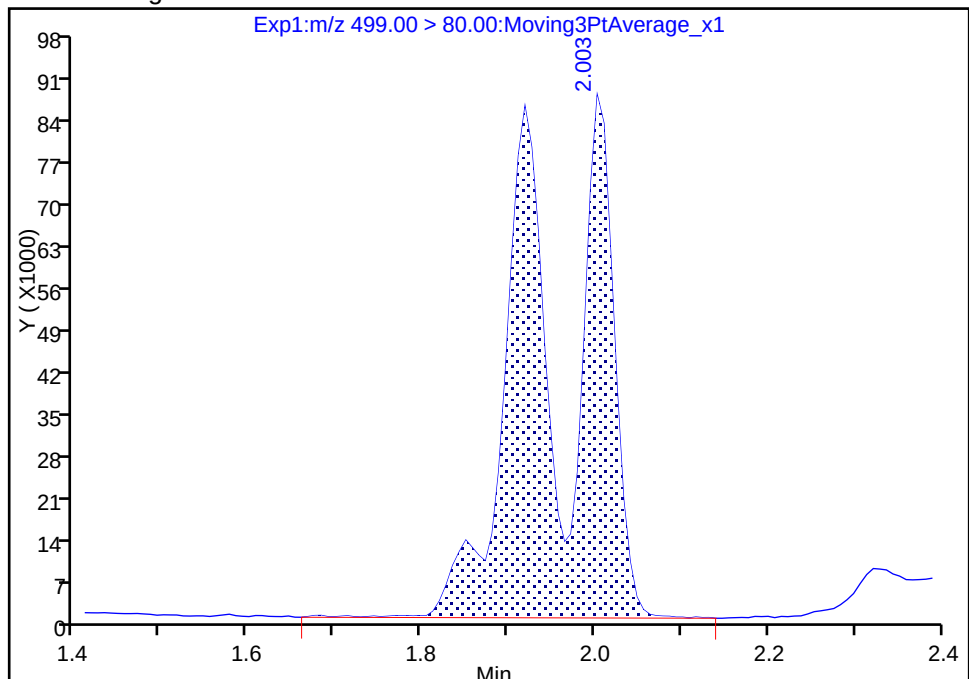
Signal: 1

Not Detected
Expected RT: 2.01

Processing Integration Results



Manual Integration Results



RT: 2.00
Area: 498049
Amount: 6.800404
Amount Units: ng/ml

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-022218-RW-0386</u>	Lab Sample ID: <u>320-36367-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_010.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 09:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>256.8 (mL)</u>	Date Analyzed: <u>03/12/2018 21:37</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>212591</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	26	J M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	25		19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	18	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.2	J	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	122		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_010.d
 Lims ID: 320-36367-A-2-A
 Client ID: WGNA-022218-RW-0386
 Sample Type: Client
 Inject. Date: 12-Mar-2018 21:37:45 ALS Bottle#: 27 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-36367-a-2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:34:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.373	1.381	-0.008	1.000	396955	3.89		60.5	
298.90 > 99.00	1.373	1.381	-0.008	1.000	288314		1.38(0.00-0.00)	156	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.495	-0.008	1.000	734304	9.29		9393	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.624	0.0	1.000	572996	4.57		179	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.624	0.0	1.000	128706	1.84		18.7	
* 6 13C2-PFOA									
415.00 > 370.00	1.791	1.783	0.008		718983	10.0		6442	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.791	1.783	0.008	1.000	449927	6.50		10.3	
413.00 > 169.00	1.791	1.783	0.008	1.000	261181		1.72(0.00-0.00)	145	
* 7 13C4 PFOS									
503.00 > 80.00	2.018	1.995	0.023		2232407	28.7		556	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.018	2.011	0.007	1.000	493647	6.71		27.2	Ma
499.00 > 99.00	2.018	2.011	0.007	1.000	84570		5.84(0.00-0.00)	30.4	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.223	2.215	0.008	1.000	459225	12.2		4488	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_010.d

Injection Date: 12-Mar-2018 21:37:45

Instrument ID: A8_N

Lims ID: 320-36367-A-2-A

Lab Sample ID: 320-36367-2

Client ID: WGNA-022218-RW-0386

Operator ID: SACINSTLCMS01

ALS Bottle#: 27

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

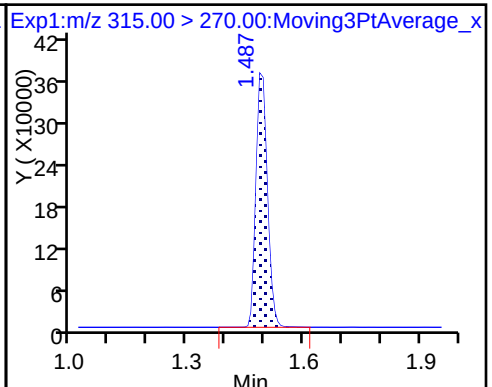
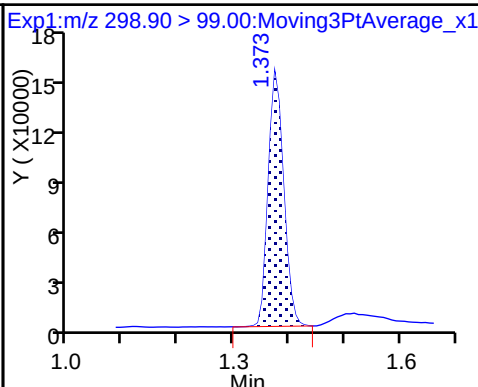
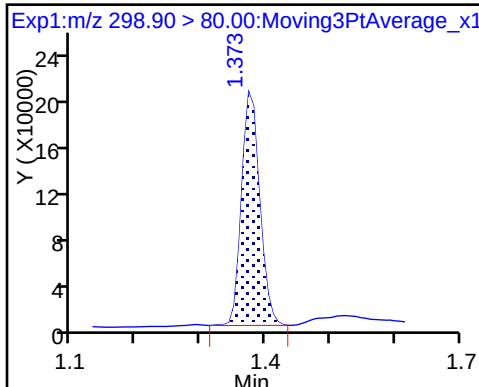
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

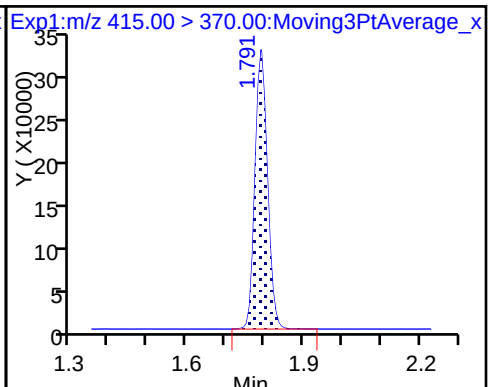
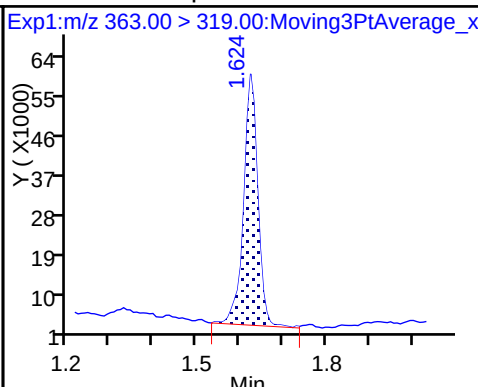
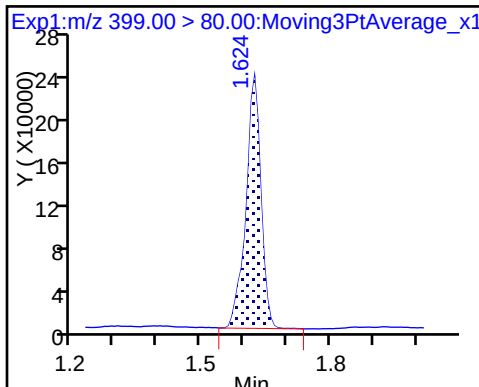
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

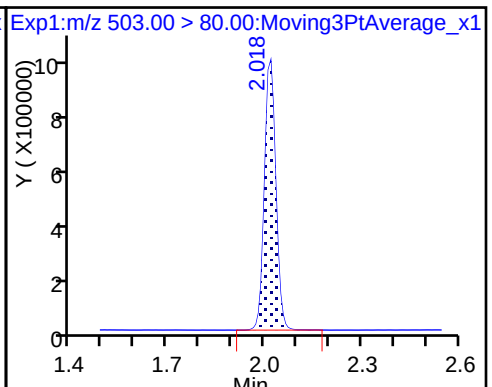
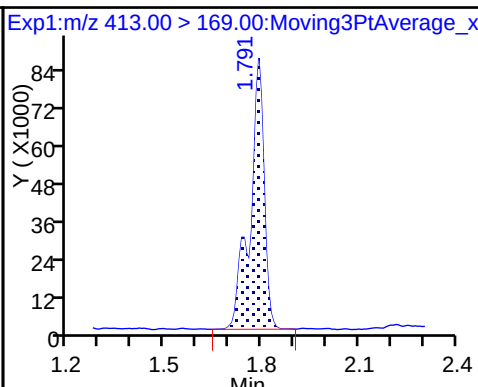
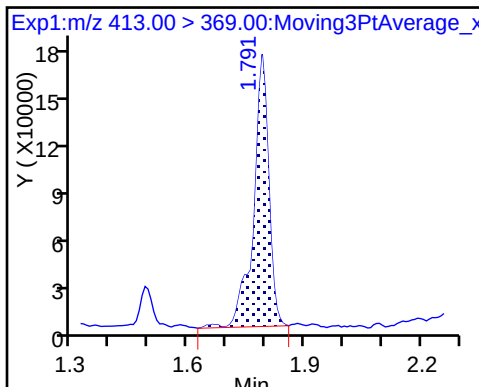
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

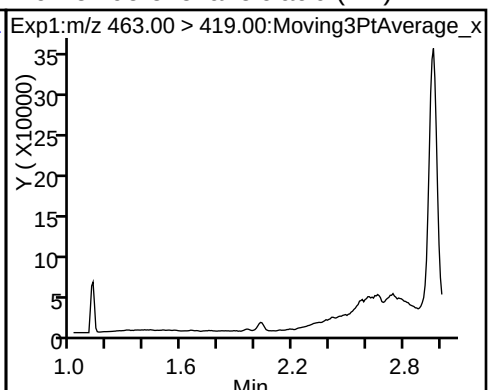
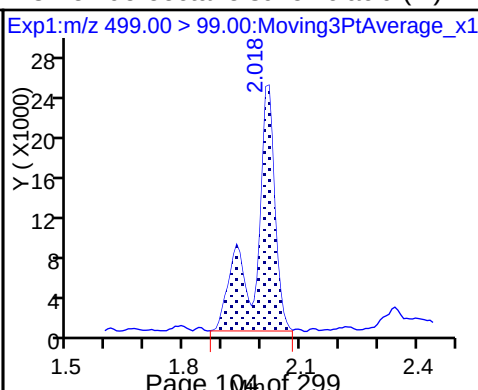
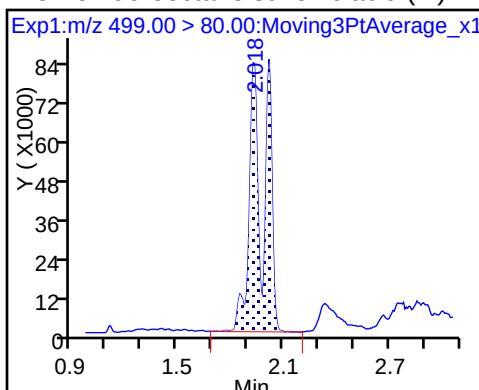
* 7 13C4 PFOS



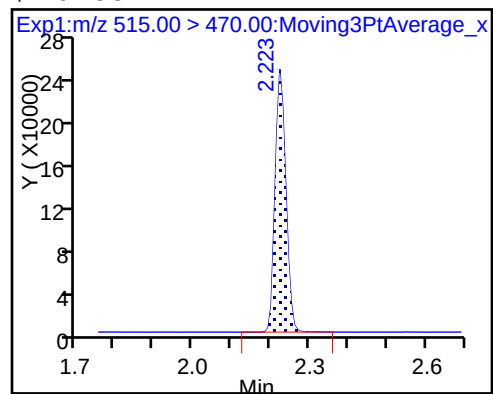
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_010.d
Lims ID: 320-36367-A-2-A
Client ID: WGNA-022218-RW-0386
Sample Type: Client
Inject. Date: 12-Mar-2018 21:37:45 ALS Bottle#: 27 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36367-a-2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:34:46

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.29	92.86
\$ 10 13C2 PFDA	10.0	12.2	121.83

TestAmerica Sacramento

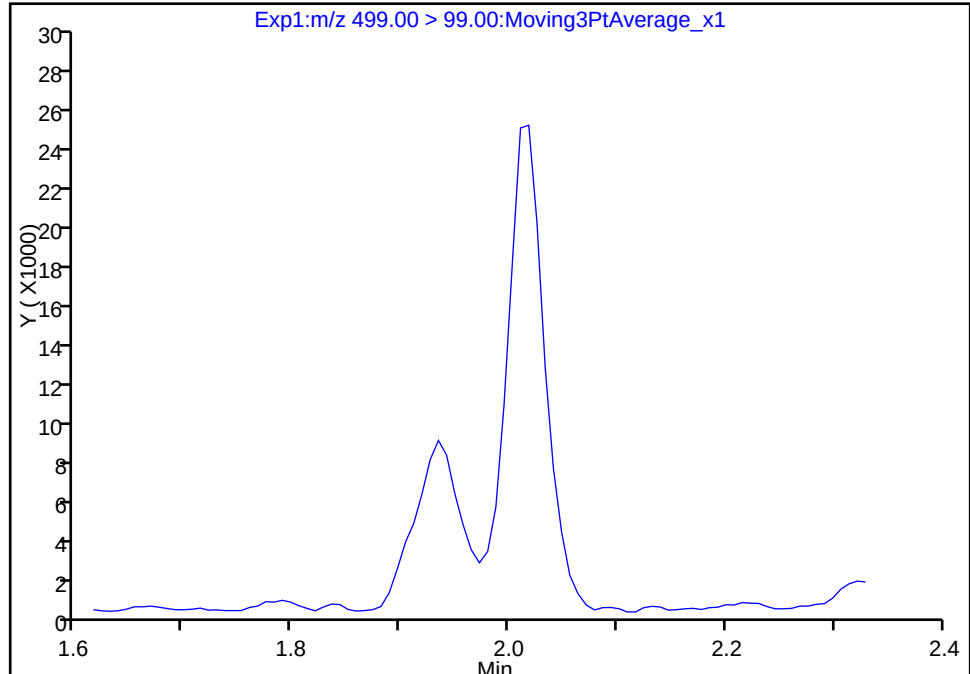
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_010.d				
Injection Date:	12-Mar-2018 21:37:45	Instrument ID:	A8_N		
Lims ID:	320-36367-A-2-A	Lab Sample ID:	320-36367-2		
Client ID:	WGNA-022218-RW-0386				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	27	Worklist Smp#:	7
Injection 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

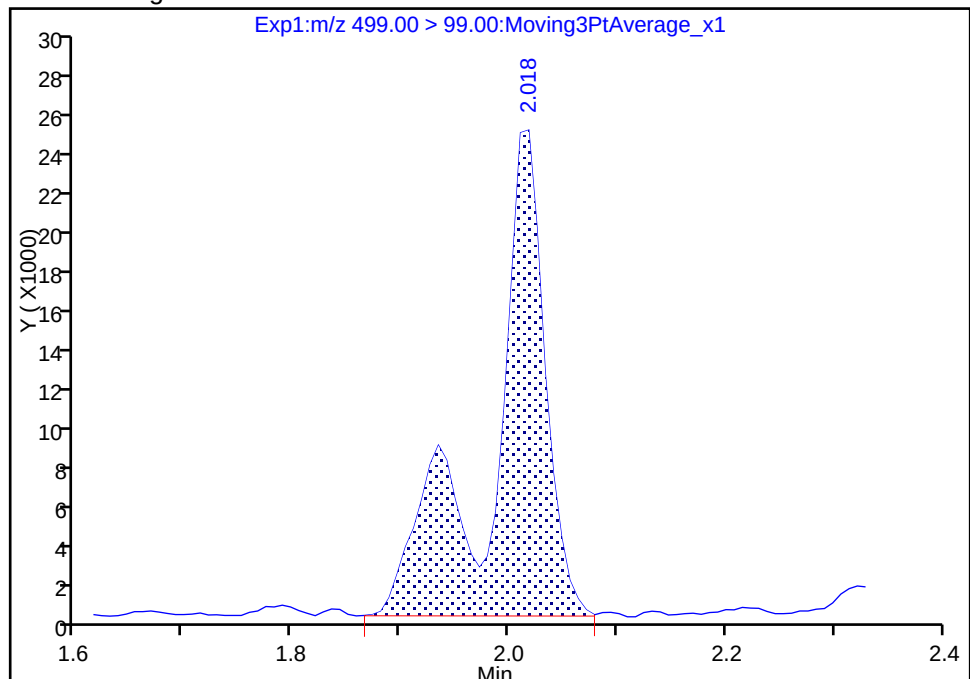
Signal: 2

Not Detected
Expected RT: 2.01

Processing Integration Results



Manual Integration Results

RT: 2.02
Area: 84570
Amount: 6.707237
Amount Units: ng/ml

Reviewer: barnettj, 13-Mar-2018 10:43:11

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

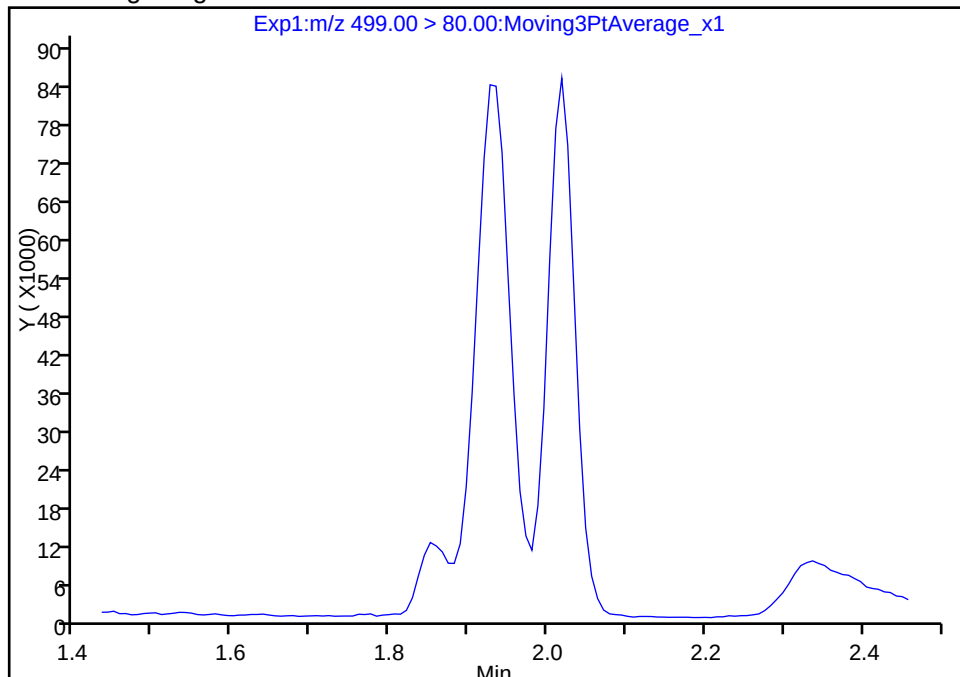
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_010.d
Injection Date: 12-Mar-2018 21:37:45 Instrument ID: A8_N
Lims ID: 320-36367-A-2-A Lab Sample ID: 320-36367-2
Client ID: WGNA-022218-RW-0386
Operator ID: SACINSTLCMS01 ALS Bottle#: 27 Worklist Smp#: 7
Injection Vol: 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

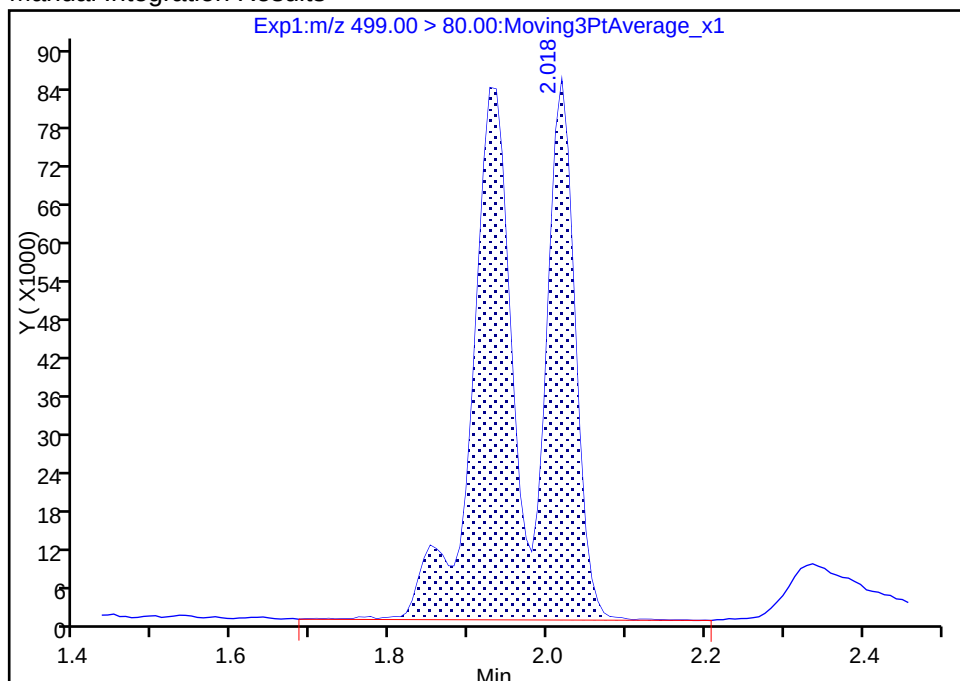
Not Detected
Expected RT: 2.01

Processing Integration Results



Manual Integration Results

RT: 2.02
Area: 493647
Amount: 6.707237
Amount Units: ng/ml



Reviewer: barnettj, 13-Mar-2018 10:43:11

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Client Sample ID: WGNA-022218-FRB-0386 Lab Sample ID: 320-36367-3

Matrix: Water Lab File ID: 2018.03.12_537B_011.d

Analysis Method: 537 Date Collected: 02/22/2018 09:05

Extraction Method: 537 Date Extracted: 03/07/2018 07:07

Sample wt/vol: 262.5 (mL) Date Analyzed: 03/12/2018 21:42

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.: 212591 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	110		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_011.d
 Lims ID: 320-36367-A-3-A
 Client ID: WGNA-022218-FRB-0386
 Sample Type: Client
 Inject. Date: 12-Mar-2018 21:42:25 ALS Bottle#: 28 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-36367-a-3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:35:09

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

315.00 > 270.00 1.517 1.495 0.022 1.000 793460 9.39 11350

* 6 13C2-PFOA

415.00 > 370.00 1.798 1.783 0.015 768515 10.0 7453

* 7 13C4 PFOS

503.00 > 80.00 1.950 1.995 -0.045 2517392 28.7 815

\$ 10 13C2 PFDA

515.00 > 470.00 2.140 2.215 -0.075 1.000 443562 11.0 4183

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_011.d

Injection Date: 12-Mar-2018 21:42:25

Instrument ID: A8_N

Lims ID: 320-36367-A-3-A

Lab Sample ID: 320-36367-3

Client ID: WGNA-022218-FRB-0386

Operator ID: SACINSTLCMS01

ALS Bottle#: 28

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

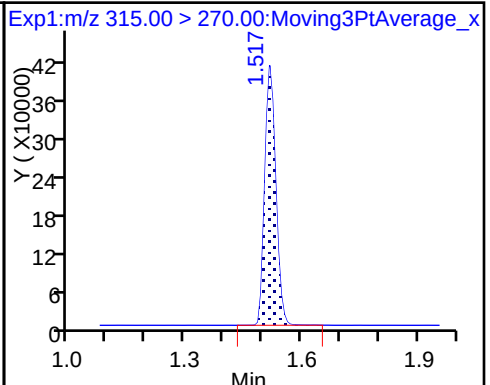
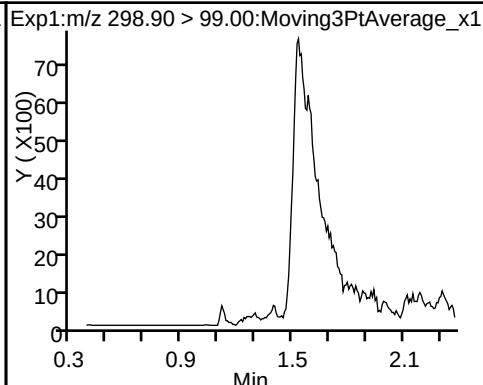
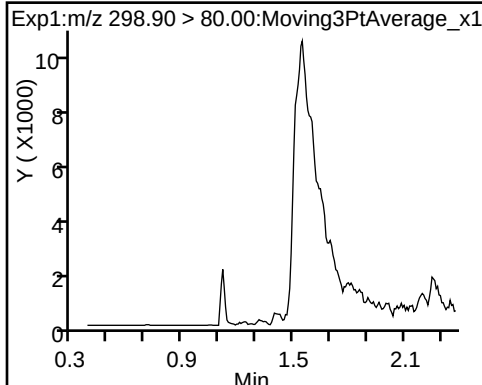
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

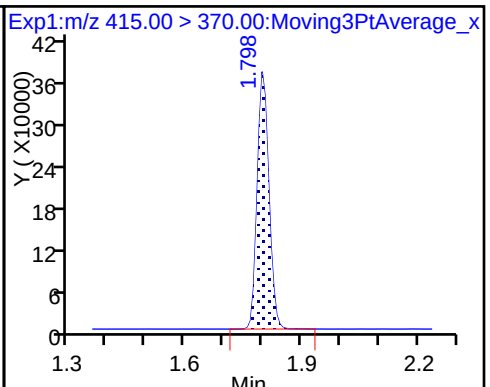
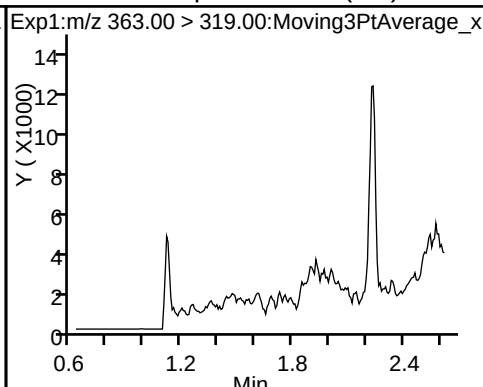
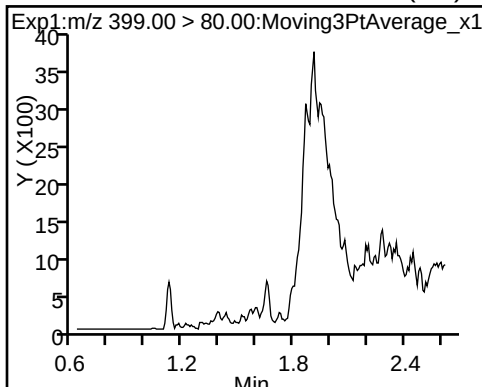
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

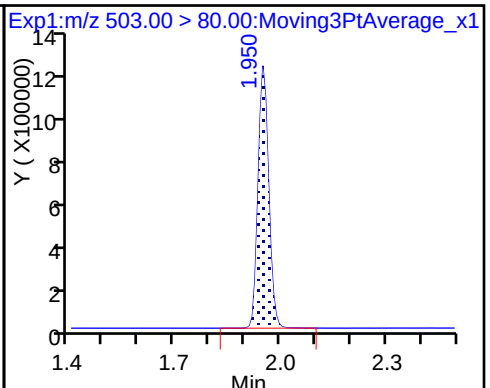
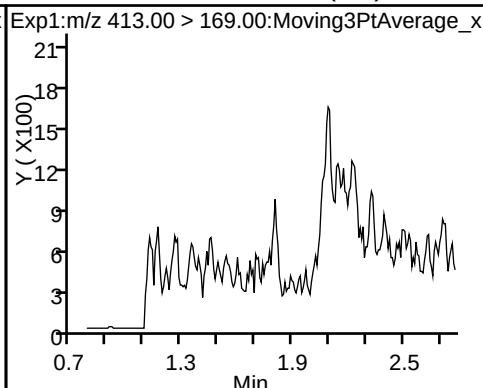
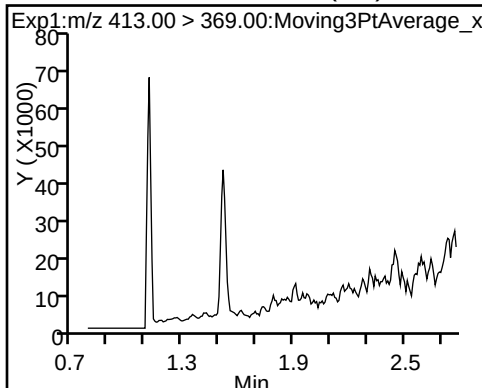
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

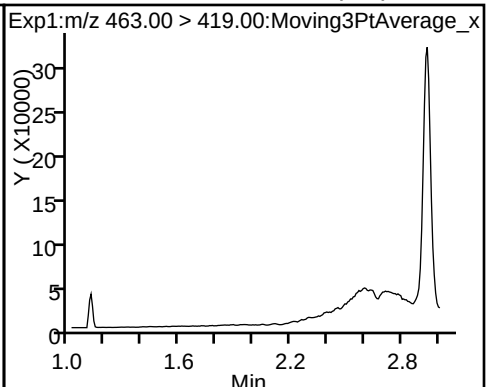
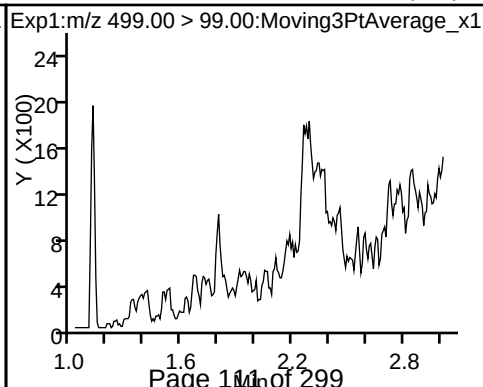
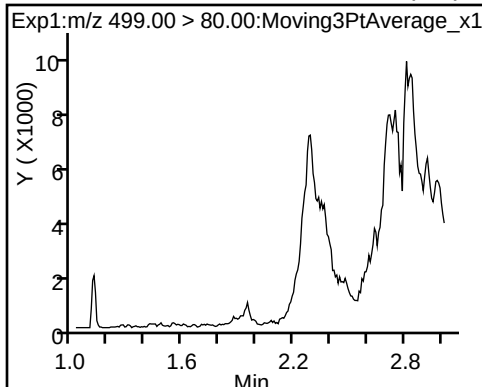
* 7 13C4 PFOS



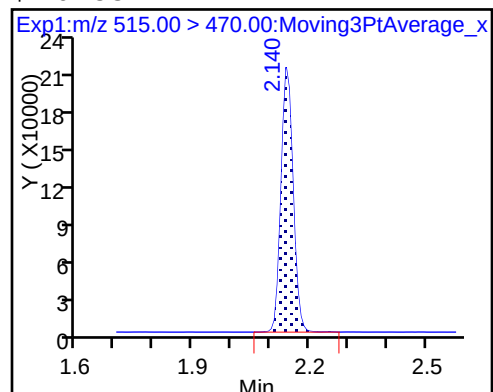
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_011.d
Lims ID: 320-36367-A-3-A
Client ID: WGNA-022218-FRB-0386
Sample Type: Client
Inject. Date: 12-Mar-2018 21:42:25 ALS Bottle#: 28 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36367-a-3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:35:09

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.39	93.87
\$ 10 13C2 PFDA	10.0	11.0	110.09

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: WGNA-022218-RW-3073 Lab Sample ID: 320-36367-4
 Matrix: Water Lab File ID: 2018.03.12_537B_012.d
 Analysis Method: 537 Date Collected: 02/22/2018 09:40
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 256.3(mL) Date Analyzed: 03/12/2018 21:47
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212591 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	34	J M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	17	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.1	J	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	110		88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	111		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_012.d
 Lims ID: 320-36367-A-4-A
 Client ID: WGNA-022218-RW-3073
 Sample Type: Client
 Inject. Date: 12-Mar-2018 21:47:05 ALS Bottle#: 29 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-36367-a-4-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:35:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	2834019	28.6		419	
298.90 > 99.00	1.381	1.381	0.0	1.000	2109290		1.34(0.00-0.00)	1050	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.495	1.495	0.0	1.000	709394	8.60		8588	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.624	0.007	1.000	559954	4.41		161	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.624	0.007	1.000	151139	2.08		23.6	
* 6 13C2-PFOA									
415.00 > 370.00	1.798	1.783	0.015		749722	10.0		7282	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.798	1.783	0.015	1.000	235832	3.27		6.4	
413.00 > 169.00	1.798	1.783	0.015	1.000	131384		1.79(0.00-0.00)	80.0	
* 7 13C4 PFOS									
503.00 > 80.00	2.018	1.995	0.023		2260506	28.7		570	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.018	2.011	0.007	1.000	644517	8.65		59.7	Ma
499.00 > 99.00	2.018	2.011	0.007	1.000	135288		4.76(0.00-0.00)	57.9	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.223	2.215	0.008	1.000	437400	11.1		4161	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_012.d

Injection Date: 12-Mar-2018 21:47:05

Instrument ID: A8_N

Lims ID: 320-36367-A-4-A

Lab Sample ID: 320-36367-4

Client ID: WGNA-022218-RW-3073

Operator ID: SACINSTLCMS01

ALS Bottle#: 29

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

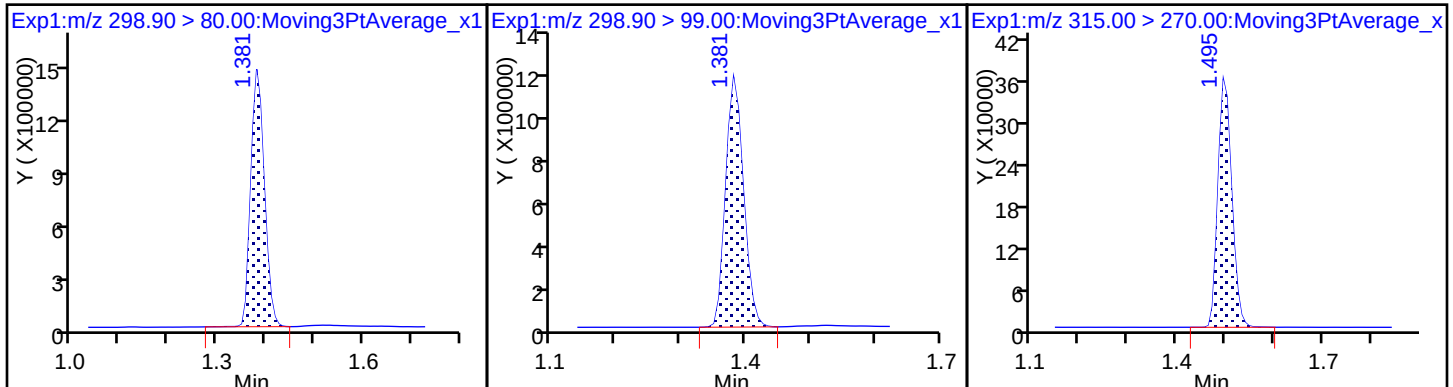
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

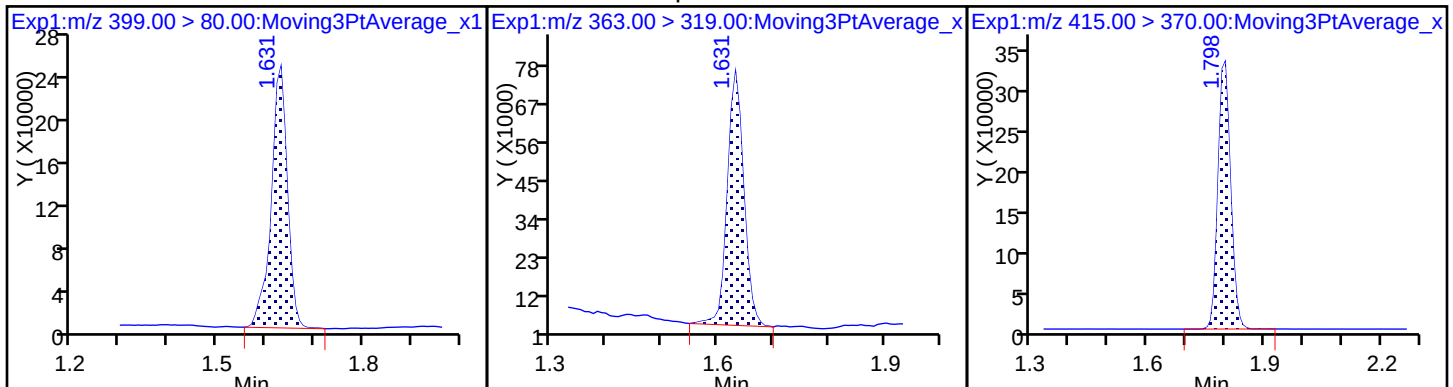
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

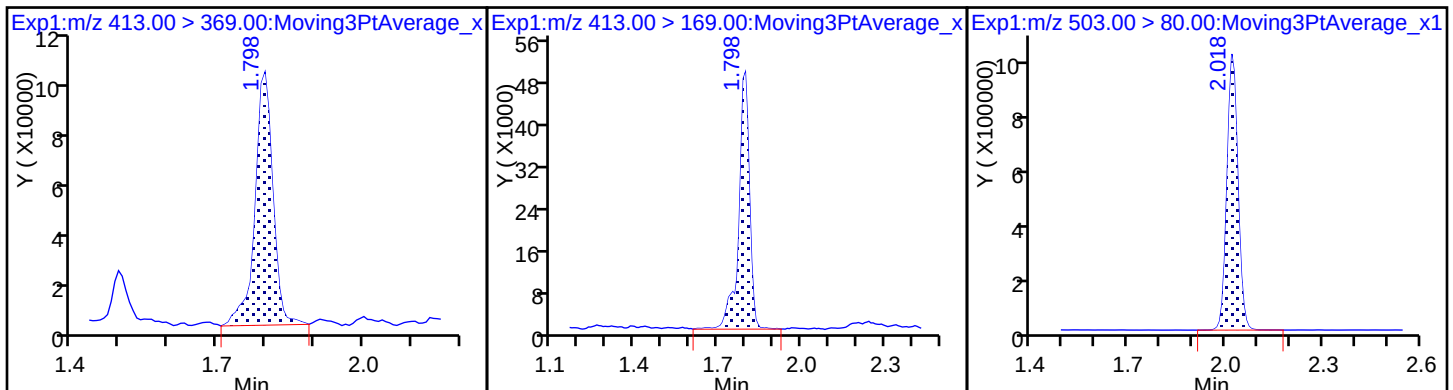
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

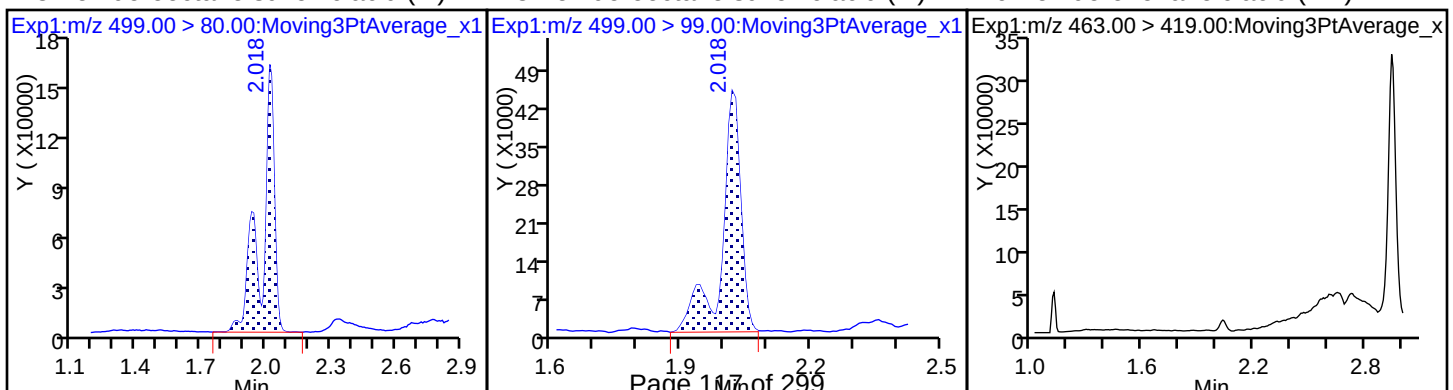
* 7 13C4 PFOS



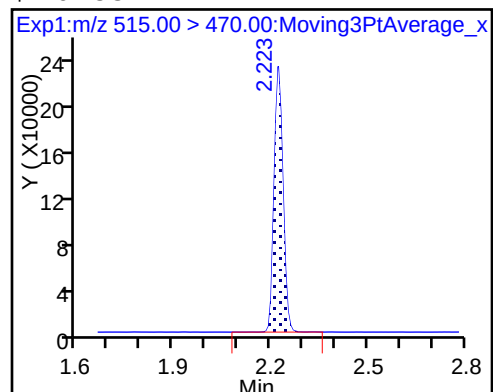
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_012.d
Lims ID: 320-36367-A-4-A
Client ID: WGNA-022218-RW-3073
Sample Type: Client
Inject. Date: 12-Mar-2018 21:47:05 ALS Bottle#: 29 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36367-a-4-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:35:58

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.60	86.03
\$ 10 13C2 PFDA	10.0	11.1	111.28

TestAmerica Sacramento

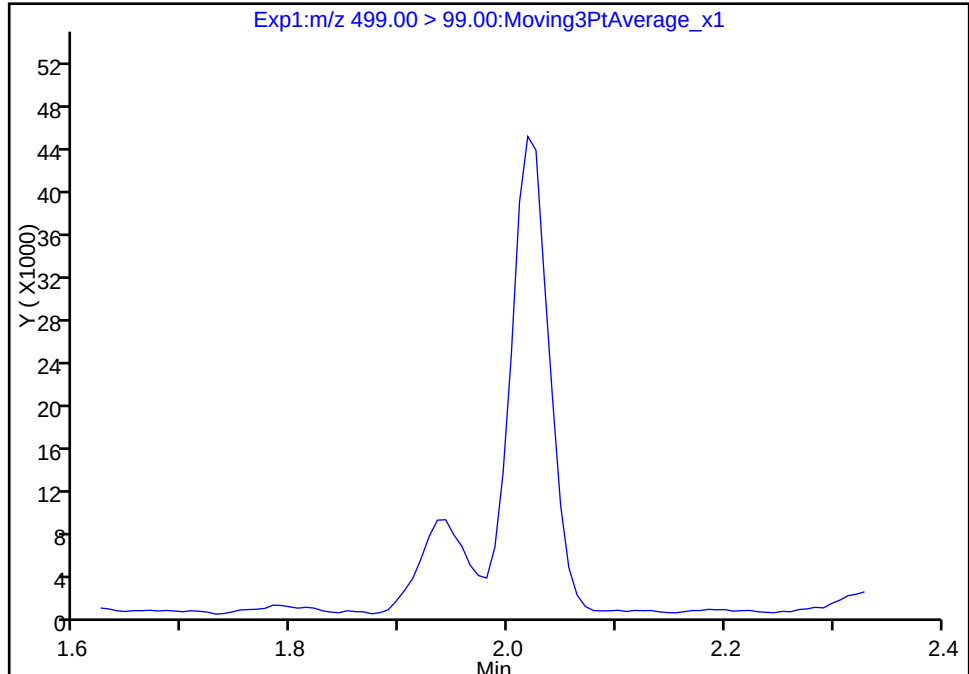
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_012.d				
Injection Date:	12-Mar-2018 21:47:05	Instrument ID:	A8_N		
Lims ID:	320-36367-A-4-A	Lab Sample ID:	320-36367-4		
Client ID:	WGNA-022218-RW-3073				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

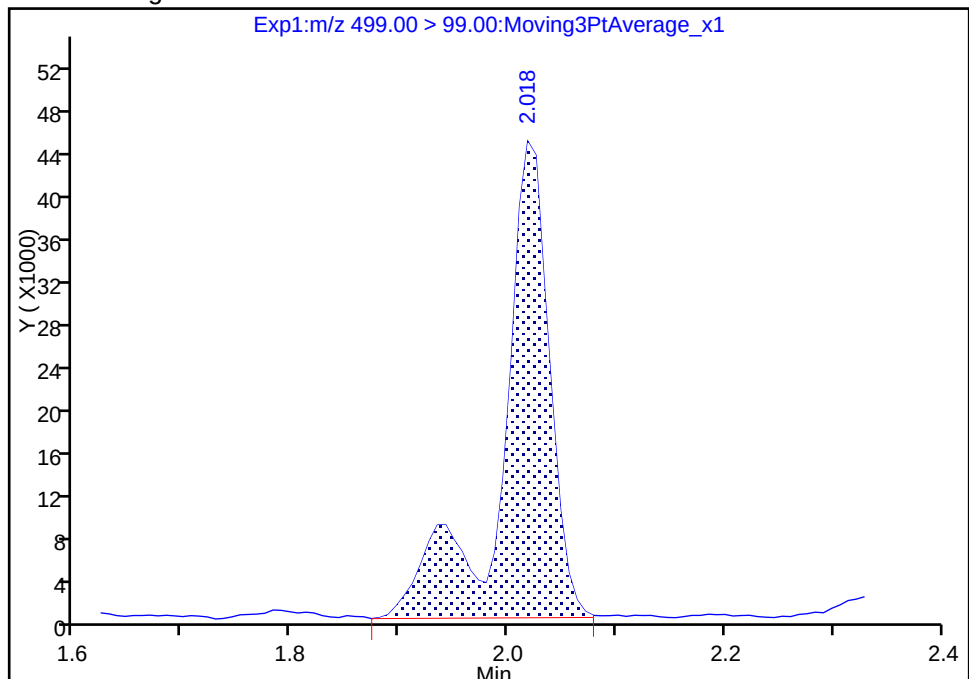
Signal: 2

Not Detected
Expected RT: 2.01

Processing Integration Results

RT: 2.02
Area: 135288
Amount: 8.648270
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 13-Mar-2018 10:44:49

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

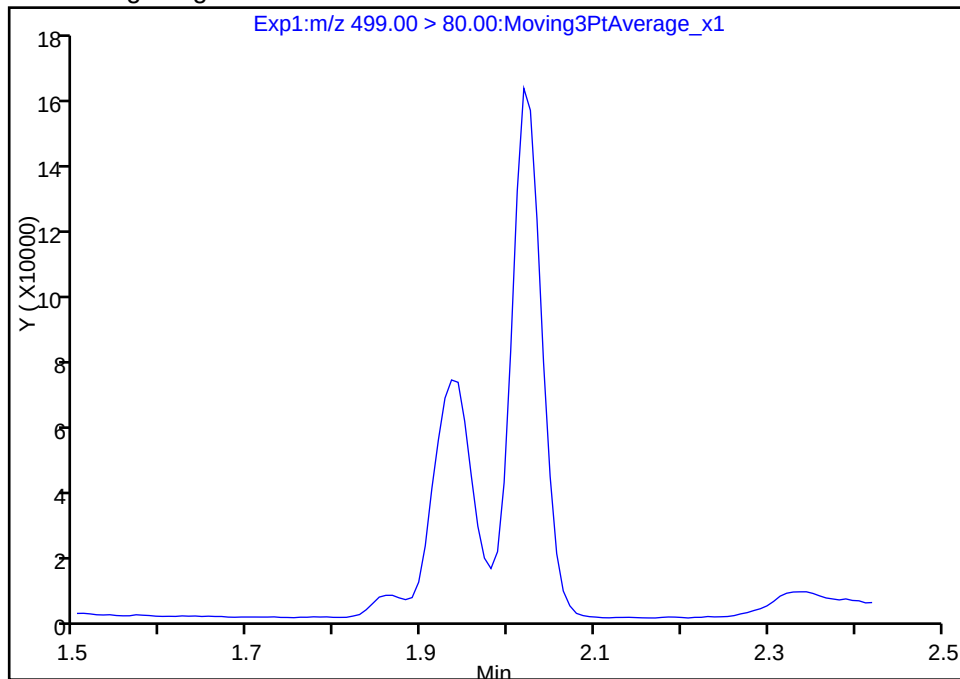
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Injection Date: 12-Mar-2018 21:47:05 Instrument ID: A8_N
Lims ID: 320-36367-A-4-A Lab Sample ID: 320-36367-4
Client ID: WGNA-022218-RW-3073
Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

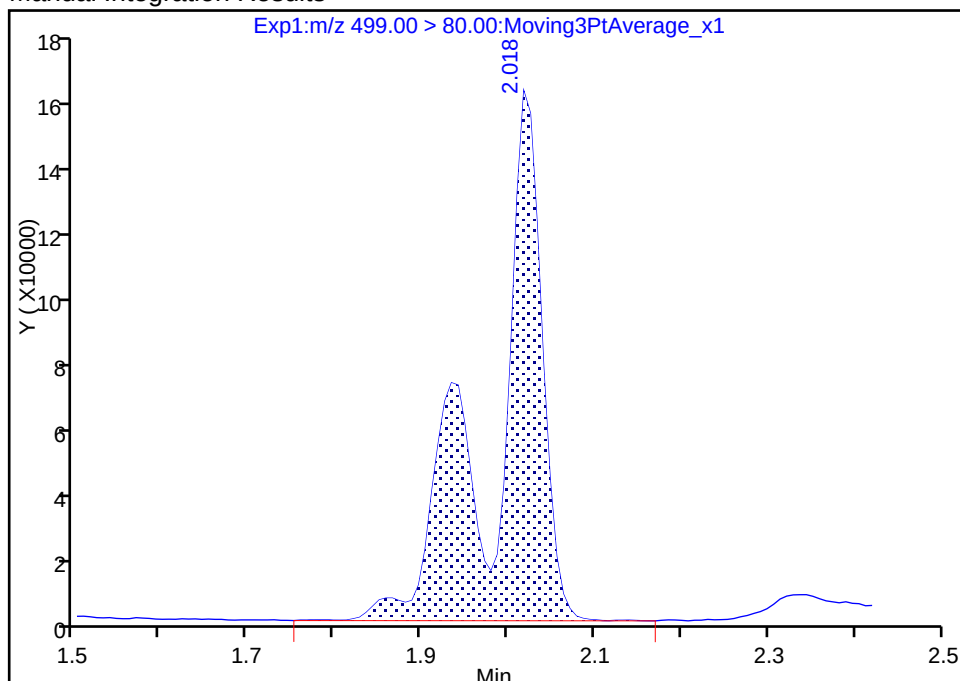
Not Detected
Expected RT: 2.01

Processing Integration Results



Manual Integration Results

RT: 2.02
Area: 644517
Amount: 8.648270
Amount Units: ng/ml



Reviewer: barnettj, 13-Mar-2018 10:44:49

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: WGNA-022218-FRB-3073 Lab Sample ID: 320-36367-5
 Matrix: Water Lab File ID: 2018.03.12_537B_013.d
 Analysis Method: 537 Date Collected: 02/22/2018 09:35
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 258.7(mL) Date Analyzed: 03/12/2018 21:51
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212591 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_013.d
 Lims ID: 320-36367-A-5-A
 Client ID: WGNA-022218-FRB-3073
 Sample Type: Client
 Inject. Date: 12-Mar-2018 21:51:45 ALS Bottle#: 30 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-36367-a-5-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:36:09

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

315.00 > 270.00 1.495 1.495 0.0 1.000 769031 9.43 10172

* 6 13C2-PFOA

415.00 > 370.00 1.806 1.783 0.023 741350 10.0 6403

* 7 13C4 PFOS

503.00 > 80.00 2.041 1.995 0.046 2173853 28.7 622

\$ 10 13C2 PFDA

515.00 > 470.00 2.238 2.215 0.023 1.000 444120 11.4 3946

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_013.d

Injection Date: 12-Mar-2018 21:51:45

Instrument ID: A8_N

Lims ID: 320-36367-A-5-A

Lab Sample ID: 320-36367-5

Client ID: WGNA-022218-FRB-3073

Operator ID: SACINSTLCMS01

ALS Bottle#: 30

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

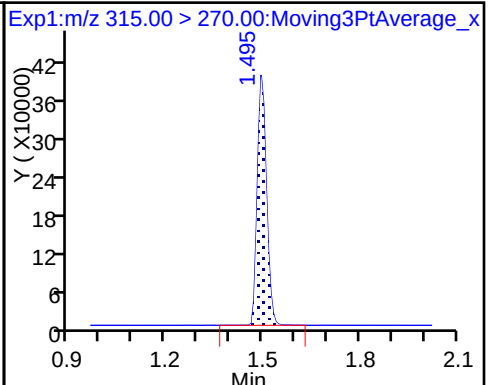
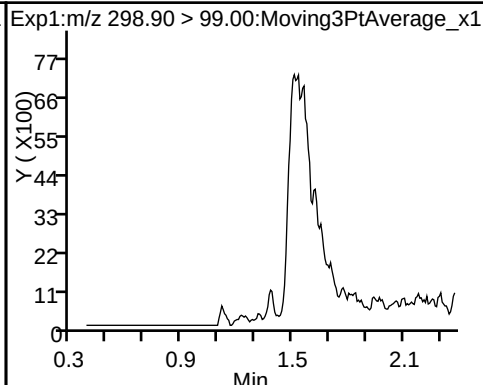
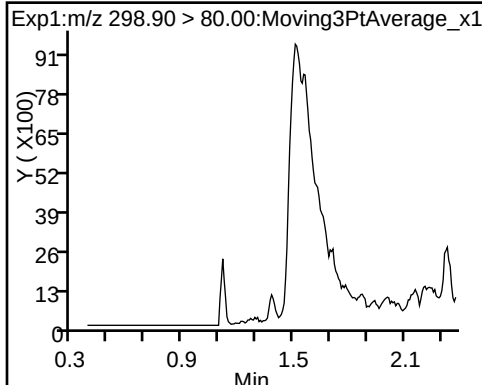
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

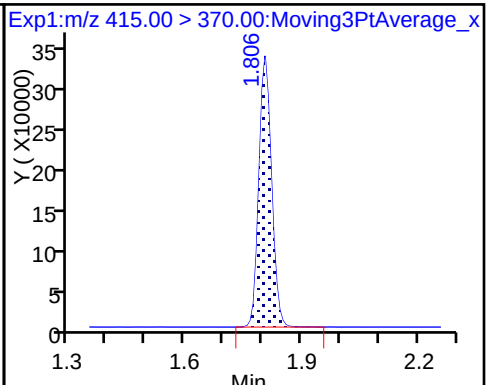
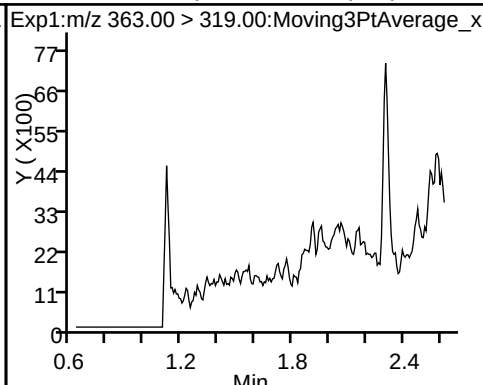
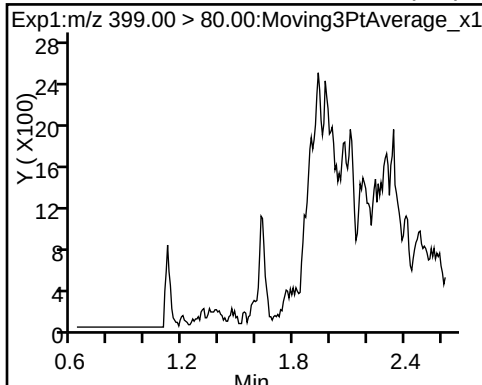
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

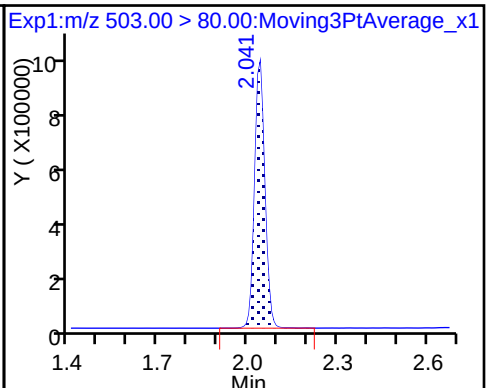
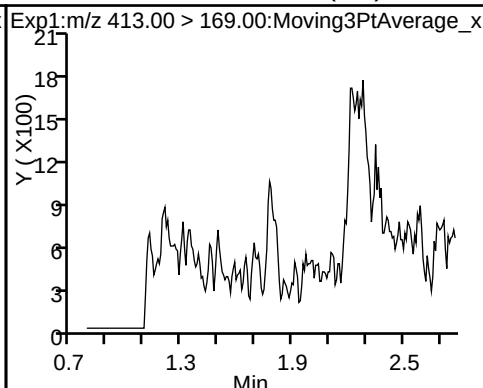
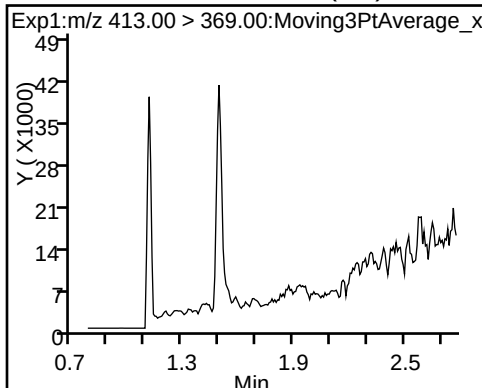
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

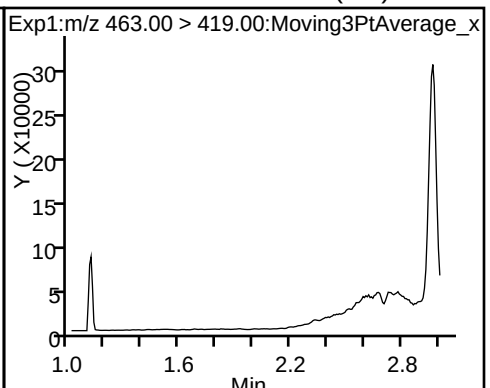
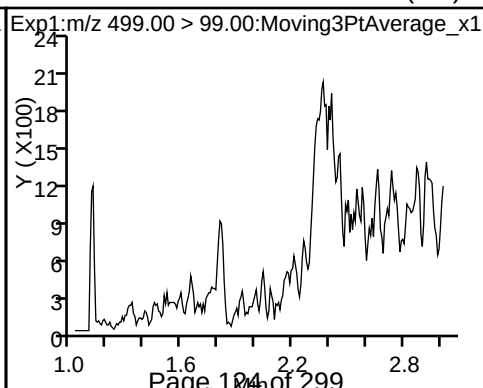
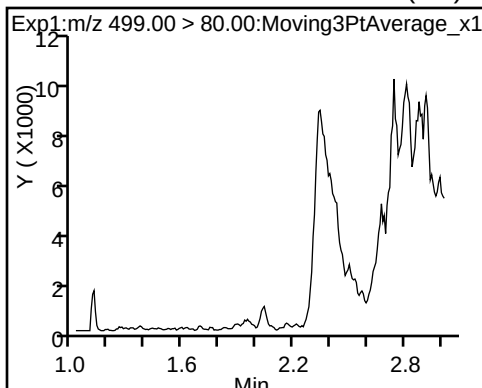
* 7 13C4 PFOS



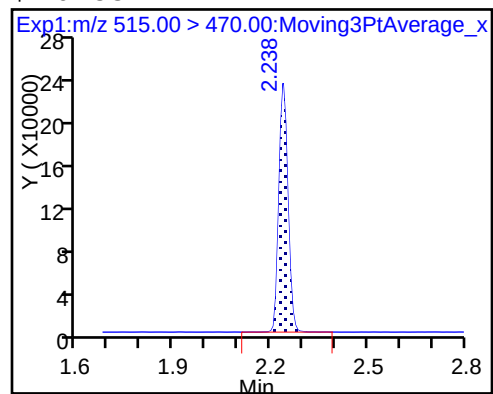
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_013.d
Lims ID: 320-36367-A-5-A
Client ID: WGNA-022218-FRB-3073
Sample Type: Client
Inject. Date: 12-Mar-2018 21:51:45 ALS Bottle#: 30 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36367-a-5-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:36:09

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.43	94.31
\$ 10 13C2 PFDA	10.0	11.4	114.27

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: NAWC-022218-RW-311 Lab Sample ID: 320-36367-6
 Matrix: Water Lab File ID: 2018.03.12_537B_014.d
 Analysis Method: 537 Date Collected: 02/22/2018 10:40
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 250.6(mL) Date Analyzed: 03/12/2018 21:56
 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.: 212591 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	25	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	23		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.7	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.4	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	115		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_014.d
 Lims ID: 320-36367-A-6-A
 Client ID: NAWC-022218-RW-311
 Sample Type: Client
 Inject. Date: 12-Mar-2018 21:56:25 ALS Bottle#: 31 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-36367-a-6-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:36:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.373	1.381	-0.008	1.000	208891	2.11		31.3	
298.90 > 99.00	1.373	1.381	-0.008	1.000	160025		1.31(0.00-0.00)	86.2	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.495	-0.008	1.000	700506	8.74		11625	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.624	0.0	1.000	173330	1.43		51.2	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.624	0.0	1.000	131024	1.85		15.6	
* 6 13C2-PFOA									
415.00 > 370.00	1.798	1.783	0.015		729043	10.0		6428	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.798	1.783	0.015	1.000	406079	5.79		10.3	
413.00 > 169.00	1.798	1.783	0.015	1.000	237695		1.71(0.00-0.00)	150	
* 7 13C4 PFOS									
503.00 > 80.00	2.033	1.995	0.038		2165173	28.7		508	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.033	2.011	0.022	1.000	452939	6.35		38.5	a
499.00 > 99.00	2.033	2.011	0.022	1.000	78762		5.75(0.00-0.00)	29.1	a
\$ 10 13C2 PFDA									
515.00 > 470.00	2.231	2.215	0.016	1.000	441218	11.5		3785	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_014.d

Injection Date: 12-Mar-2018 21:56:25

Instrument ID: A8_N

Lims ID: 320-36367-A-6-A

Lab Sample ID: 320-36367-6

Client ID: NAWC-022218-RW-311

Operator ID: SACINSTLCMS01

ALS Bottle#: 31

Worklist Smp#: 11

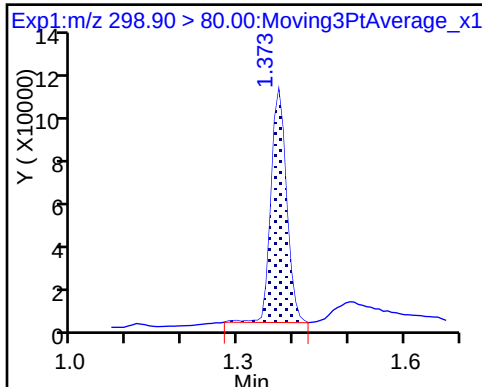
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

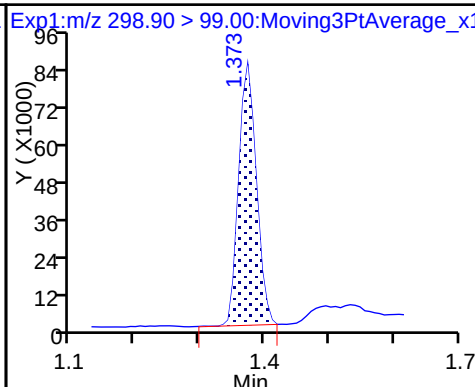
Method: 537_A8_N

Limit Group: LC 537 ICAL

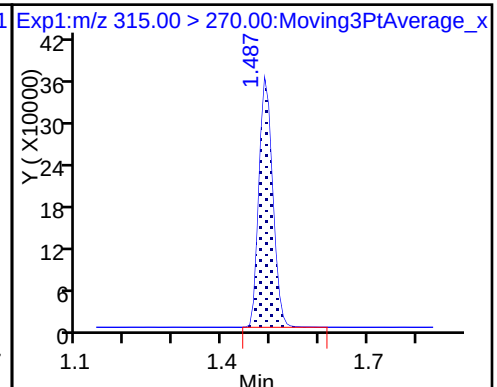
1 Perfluorobutanesulfonic acid



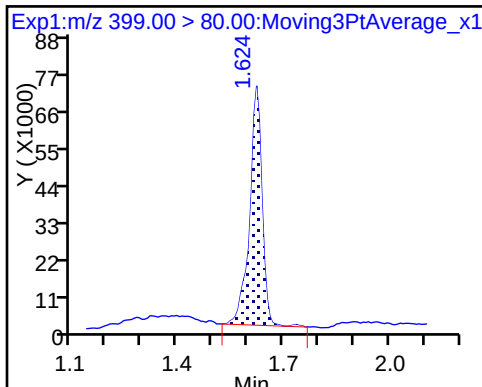
1 Perfluorobutanesulfonic acid



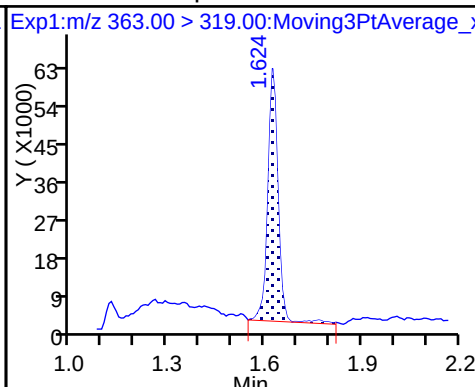
\$ 2 13C2 PFHxA



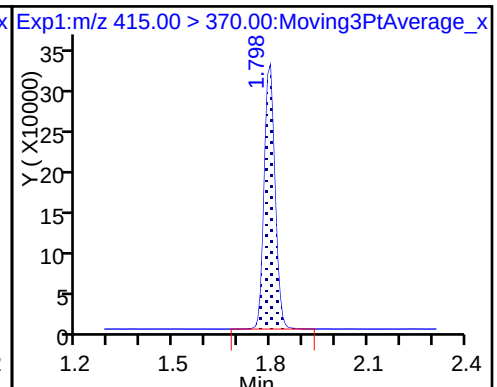
3 Perfluorohexanesulfonic acid



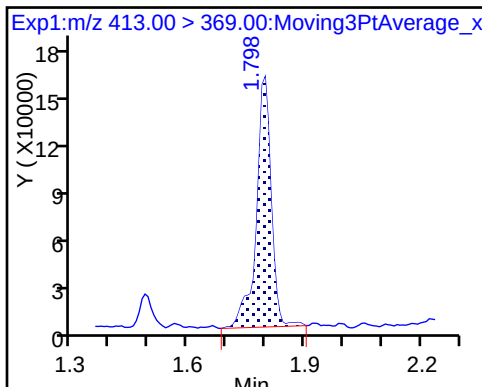
4 Perfluoroheptanoic acid



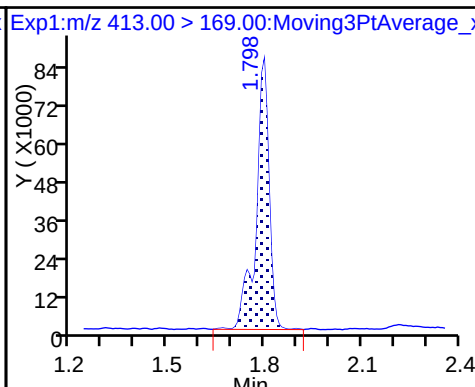
* 6 13C2-PFOA



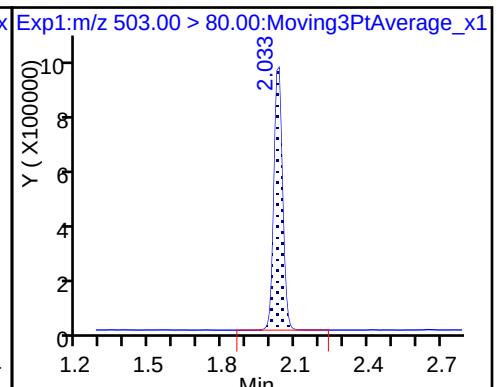
5 Perfluorooctanoic acid



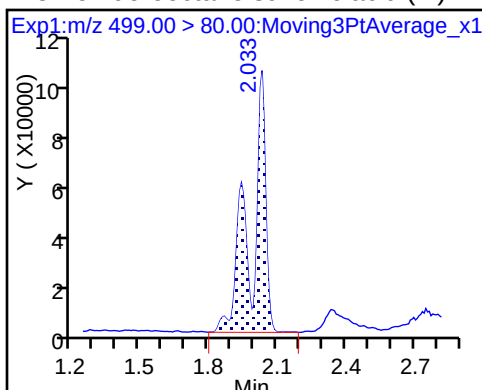
5 Perfluorooctanoic acid



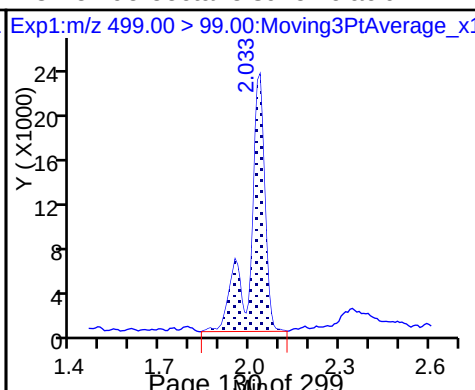
* 7 13C4 PFOS



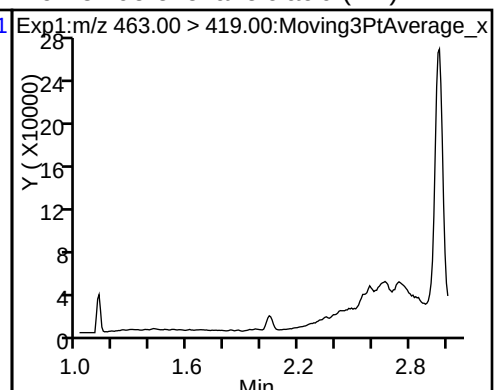
8 Perfluorooctane sulfonic acid (M)



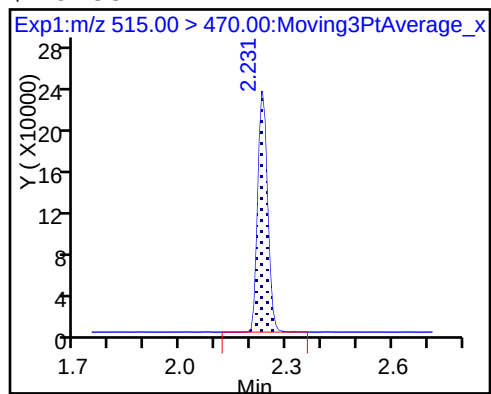
8 Perfluorooctane sulfonic acid



9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_014.d
Lims ID: 320-36367-A-6-A
Client ID: NAWC-022218-RW-311
Sample Type: Client
Inject. Date: 12-Mar-2018 21:56:25 ALS Bottle#: 31 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36367-a-6-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:36:35

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.74	87.36
\$ 10 13C2 PFDA	10.0	11.5	115.44

TestAmerica Sacramento

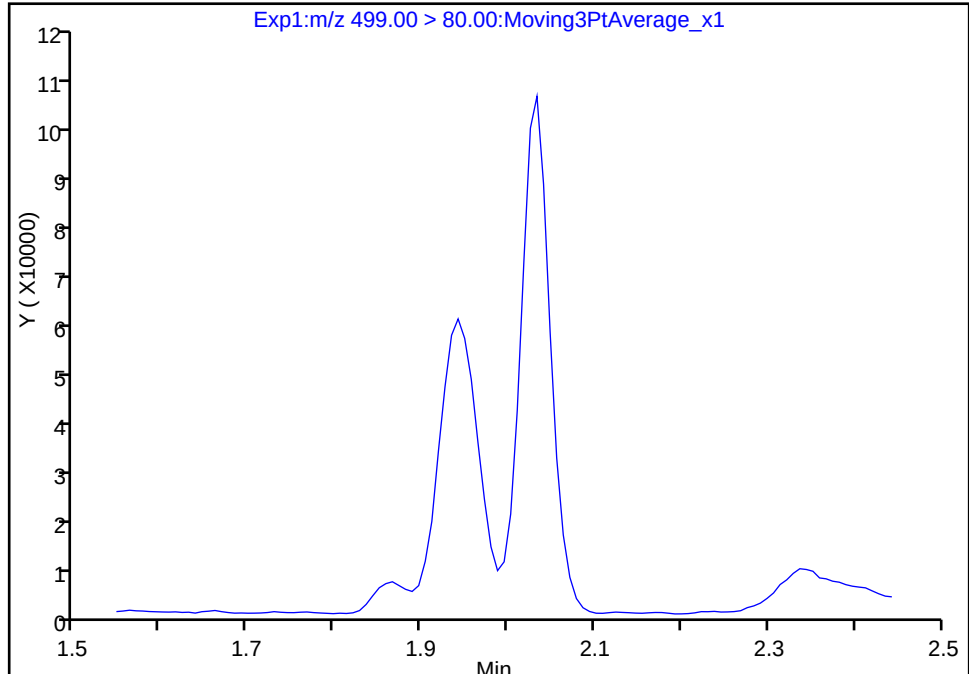
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_014.d				
Injection Date:	12-Mar-2018 21:56:25	Instrument ID:	A8_N		
Lims ID:	320-36367-A-6-A	Lab Sample ID:	320-36367-6		
Client ID:	NAWC-022218-RW-311				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	31	Worklist Smp#:	11
Injection 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

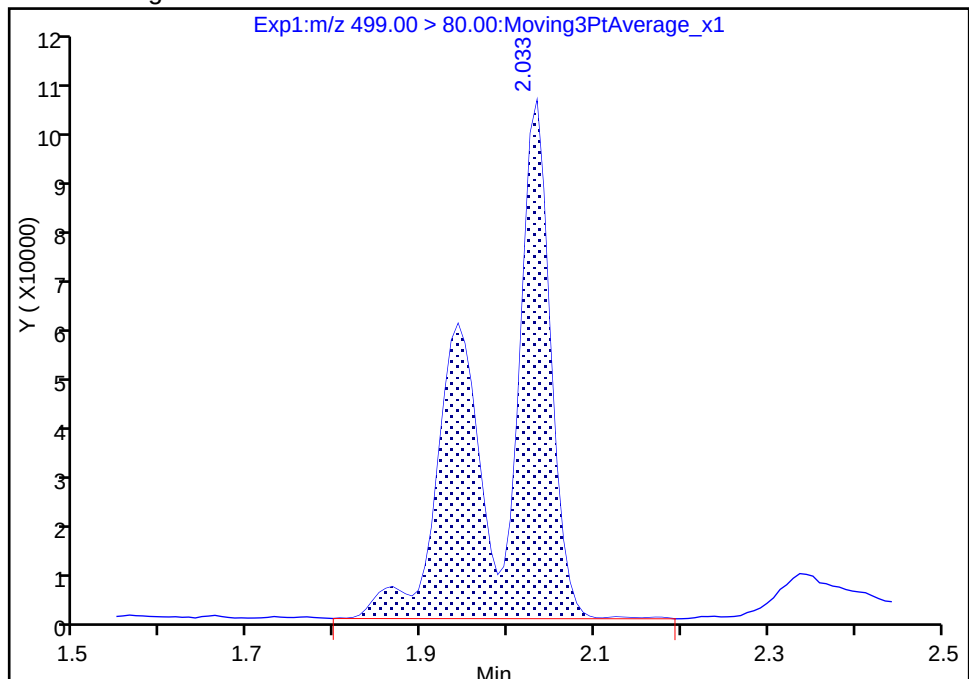
Signal: 1

Not Detected
Expected RT: 2.01

Processing Integration Results



Manual Integration Results

RT: 2.03
Area: 452939
Amount: 6.345234
Amount Units: ng/ml

Reviewer: barnettj, 13-Mar-2018 10:36:16

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-022218-FRB-311</u>	Lab Sample ID: <u>320-36367-7</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_015.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 10:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>259.1 (mL)</u>	Date Analyzed: <u>03/12/2018 22:01</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>212591</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.6	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	124		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_015.d
 Lims ID: 320-36367-A-7-A
 Client ID: NAWC-022218-FRB-311
 Sample Type: Client
 Inject. Date: 12-Mar-2018 22:01:06 ALS Bottle#: 32 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-36367-a-7-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK003

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.495	-0.008	1.000	816484	9.26		10819	
* 6 13C2-PFOA									
415.00 > 370.00	1.775	1.783	-0.008		801734	10.0		6919	
* 7 13C4 PFOS									
503.00 > 80.00	2.003	1.995	0.008		2417027	28.7		642	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.215	2.215	0.0	1.000	521025	12.4		4680	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_015.d

Injection Date: 12-Mar-2018 22:01:06

Instrument ID: A8_N

Lims ID: 320-36367-A-7-A

Lab Sample ID: 320-36367-7

Client ID: NAWC-022218-FRB-311

Operator ID: SACINSTLCMS01

ALS Bottle#: 32

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

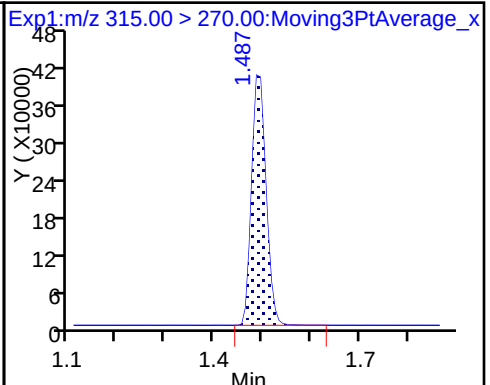
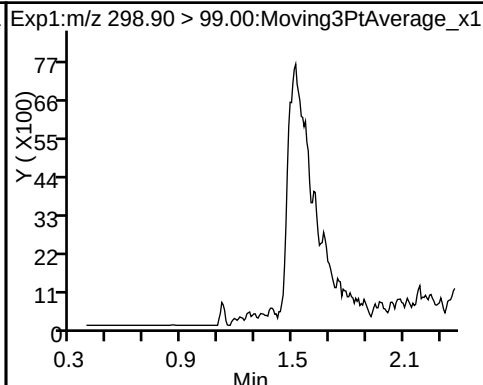
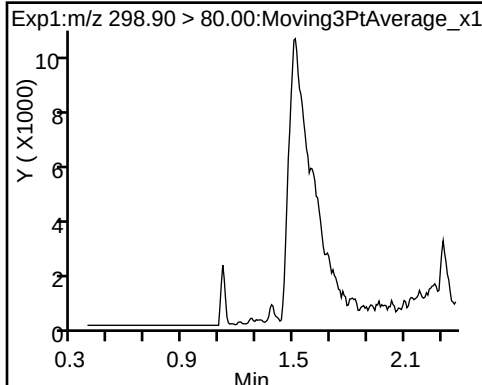
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

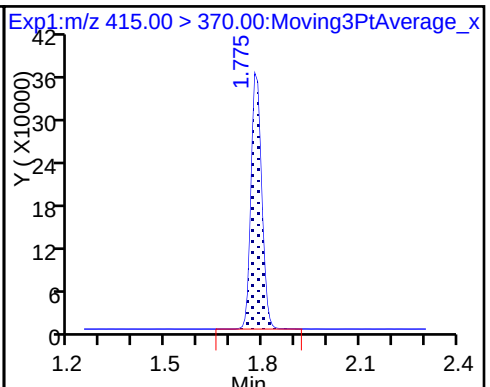
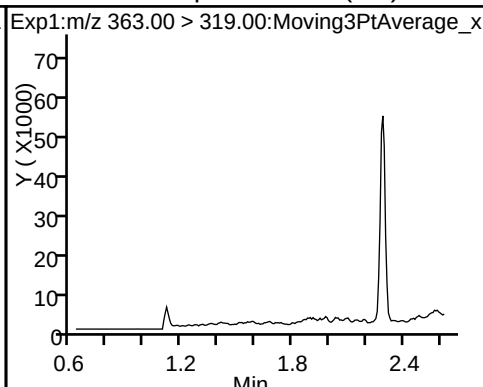
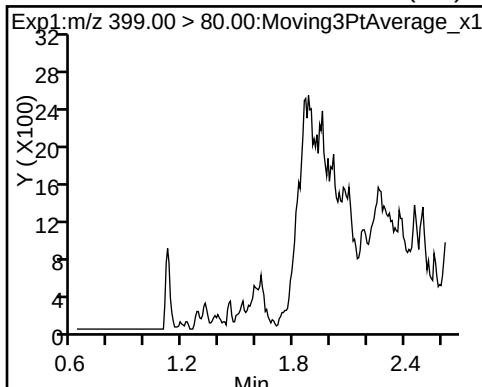
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

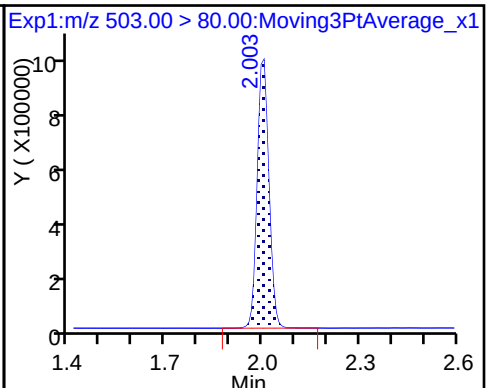
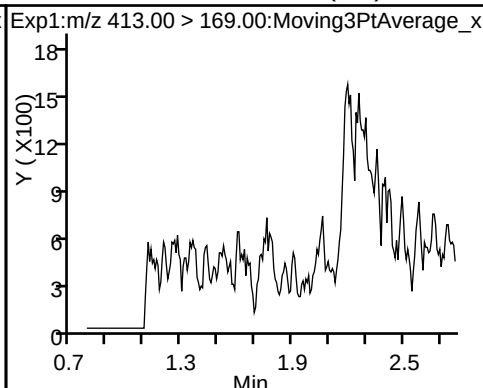
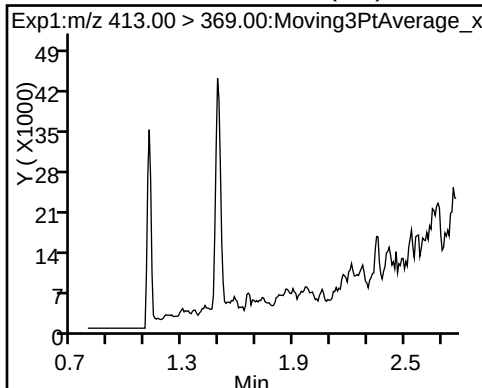
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

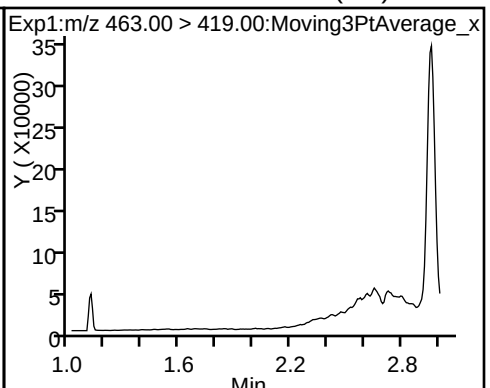
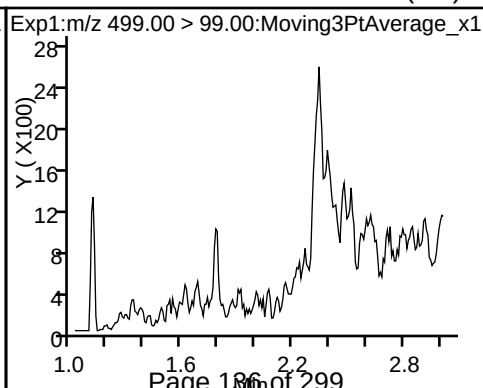
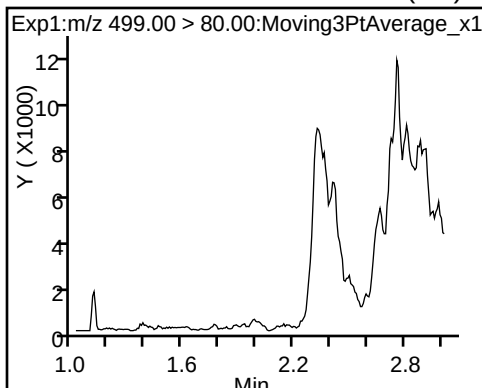
* 7 13C4 PFOS



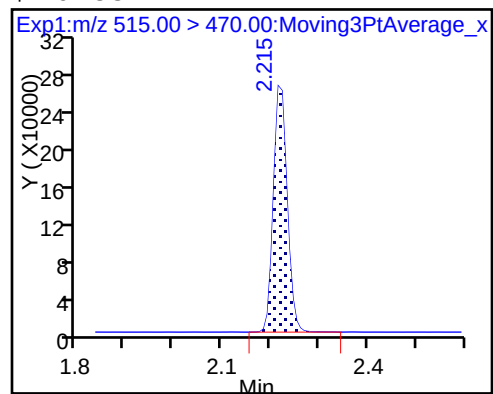
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_015.d
Lims ID: 320-36367-A-7-A
Client ID: NAWC-022218-FRB-311
Sample Type: Client
Inject. Date: 12-Mar-2018 22:01:06 ALS Bottle#: 32 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36367-a-7-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK003

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.26	92.59
\$ 10 13C2 PFDA	10.0	12.4	123.96

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-022218-RW-039</u>	Lab Sample ID: <u>320-36367-8</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_018.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 11:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>260.8 (mL)</u>	Date Analyzed: <u>03/12/2018 22:15</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>212593</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J M	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	13	J M	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U M	86	35	15

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_018.d
 Lims ID: 320-36367-A-8-A
 Client ID: NAWC-022218-RW-039
 Sample Type: Client
 Inject. Date: 12-Mar-2018 22:15:08 ALS Bottle#: 33 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-36367-a-8-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:42 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:38:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.358	0.023	1.000	92851	0.9214		12.1	
298.90 > 99.00	1.373	1.358	0.015	0.995	73858		1.26(0.00-0.00)	39.2	M
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.495	1.487	0.008	1.000	746578	9.17		9809	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.639	1.624	0.015	1.000	97022	0.7872		26.4	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.639	1.624	0.015	1.000	66212	0.9206		8.5	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.798	0.015		740581	10.0		6101	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.798	0.015	1.000	236120	3.31		6.0	M
413.00 > 169.00	1.813	1.798	0.015	1.000	136783		1.73(0.00-0.00)	85.7	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.056	2.011	0.045	1.000	371322	5.13		30.6	Ma
499.00 > 99.00	2.056	2.011	0.045	1.000	61730		6.02(0.00-0.00)	26.8	M
* 7 13C4 PFOS									
503.00 > 80.00	2.056	2.041	0.015		2195955	28.7		467	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.246	2.238	0.008	1.000	505725	13.0		4805	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_018.d

Injection Date: 12-Mar-2018 22:15:08

Instrument ID: A8_N

Lims ID: 320-36367-A-8-A

Lab Sample ID: 320-36367-8

Client ID: NAWC-022218-RW-039

Operator ID: SACINSTLCMS01

ALS Bottle#: 33

Worklist Smp#: 15

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

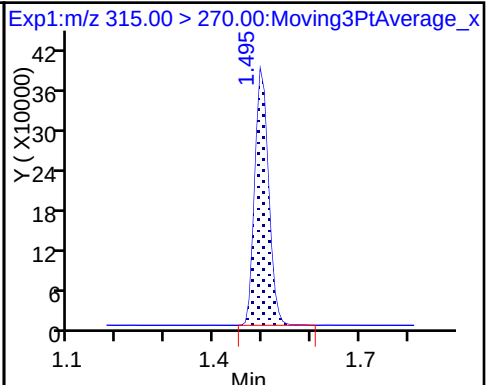
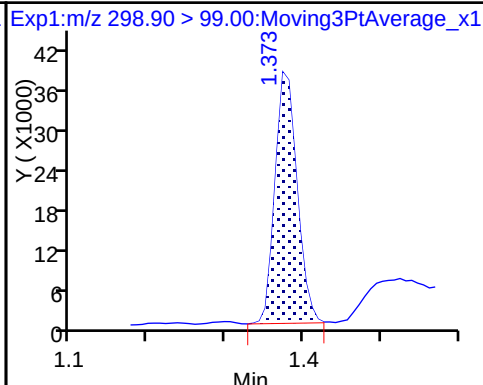
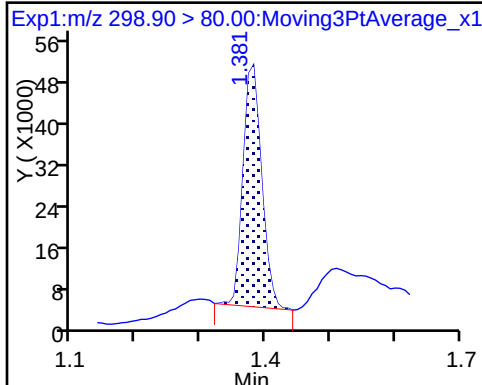
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (M)

1 Perfluorobutanesulfonic acid (M)

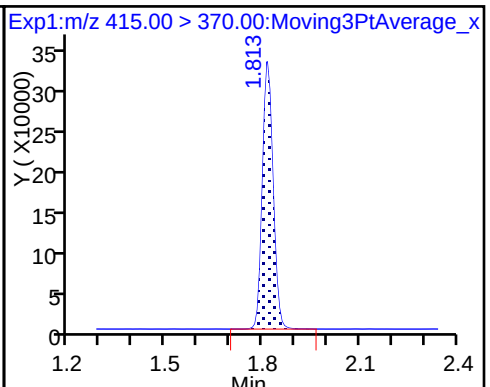
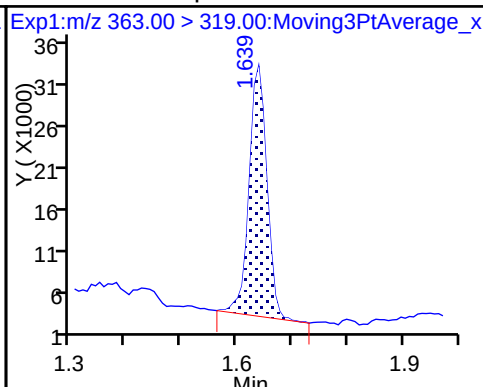
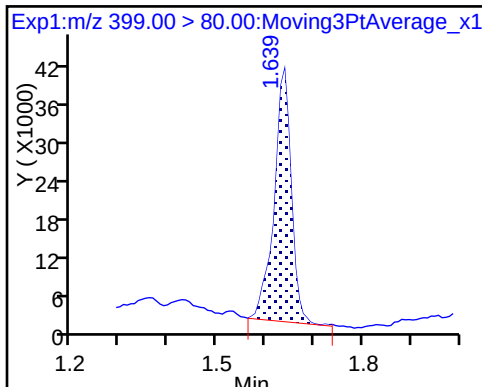
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

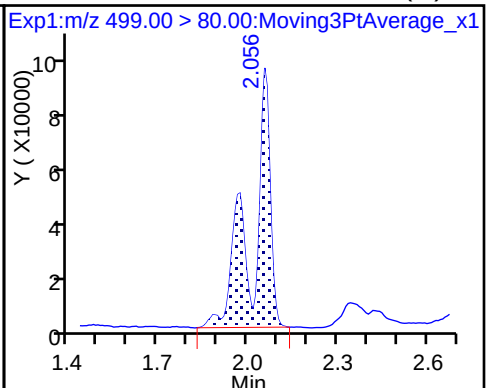
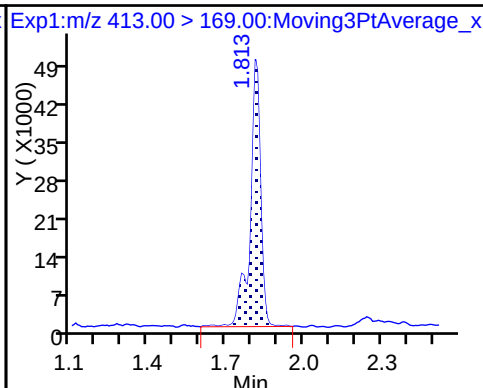
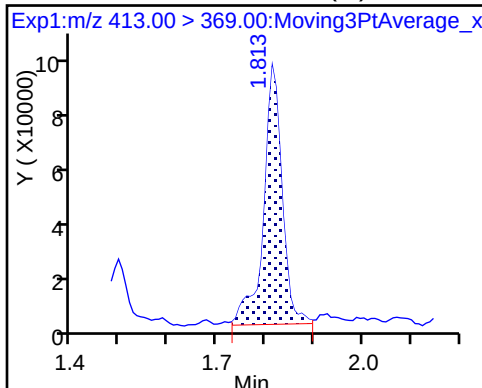
* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid

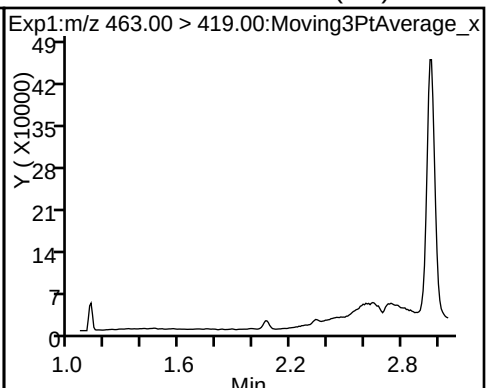
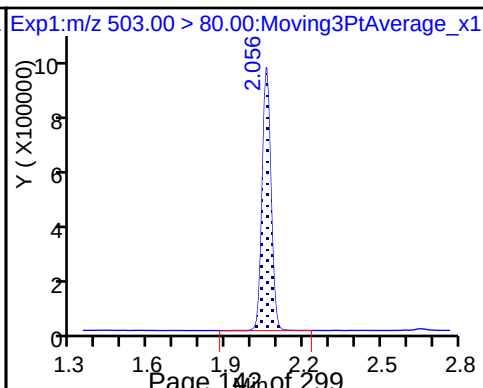
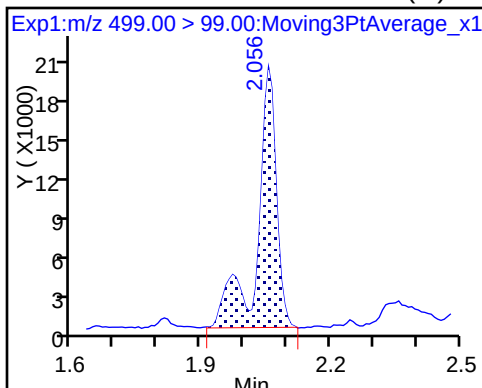
8 Perfluorooctane sulfonic acid (M)



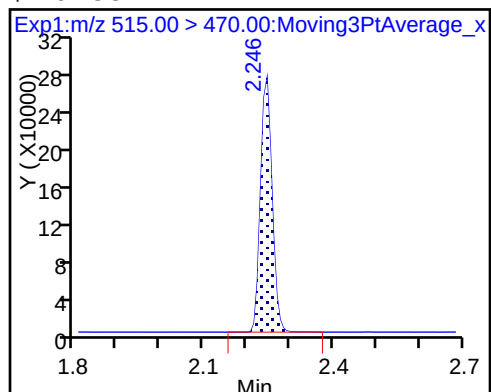
8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_018.d
Lims ID: 320-36367-A-8-A
Client ID: NAWC-022218-RW-039
Sample Type: Client
Inject. Date: 12-Mar-2018 22:15:08 ALS Bottle#: 33 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36367-a-8-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Mar-2018 10:45:42 Calib Date: 16-Feb-2018 09:19:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:38:29

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.17	91.65
\$ 10 13C2 PFDA	10.0	13.0	130.25

TestAmerica Sacramento

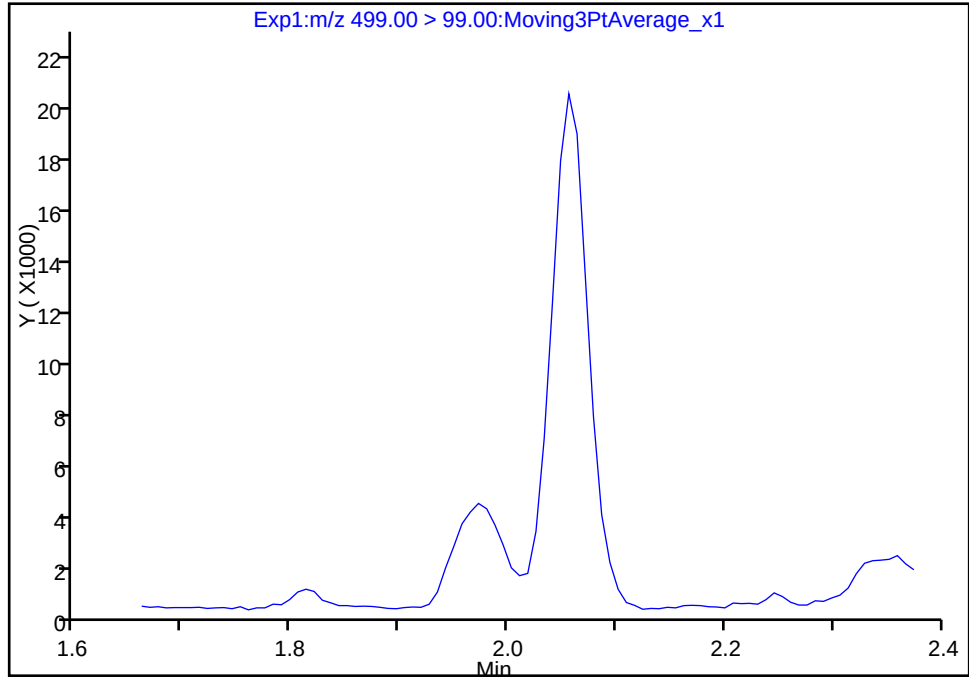
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_018.d
Injection Date: 12-Mar-2018 22:15:08 Instrument ID: A8_N
Lims ID: 320-36367-A-8-A Lab Sample ID: 320-36367-8
Client ID: NAWC-022218-RW-039
Operator ID: SACINSTLCMS01 ALS Bottle#: 33 Worklist Smp#: 15
Injection Vol: 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

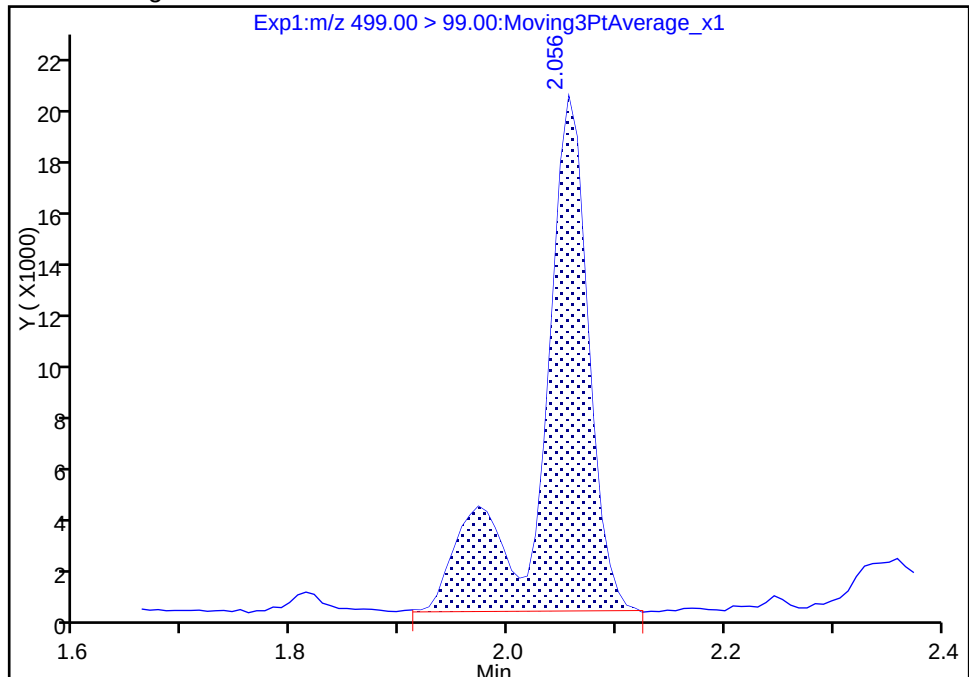
Signal: 2

Not Detected
Expected RT: 2.01

Processing Integration Results



Manual Integration Results



RT: 2.06
Area: 61730
Amount: 5.128942
Amount Units: ng/ml

Reviewer: barnettj, 13-Mar-2018 10:38:19
Audit Action: Manually Integrated

Audit Reason: Missed Peak
Page 145 of 299

TestAmerica Sacramento

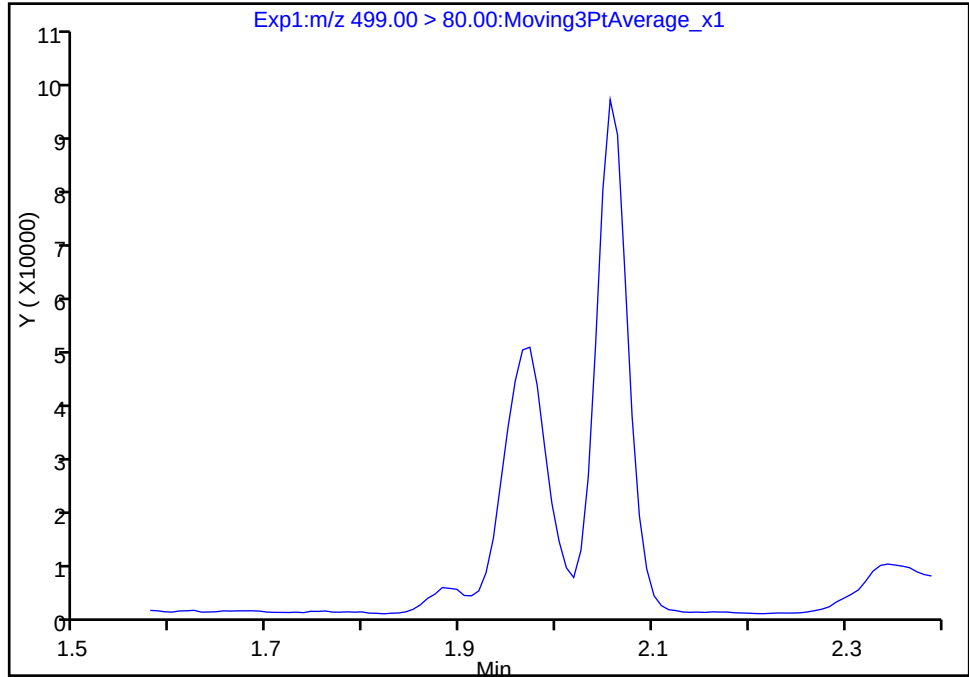
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_018.d
Injection Date: 12-Mar-2018 22:15:08 Instrument ID: A8_N
Lims ID: 320-36367-A-8-A Lab Sample ID: 320-36367-8
Client ID: NAWC-022218-RW-039
Operator ID: SACINSTLCMS01 ALS Bottle#: 33 Worklist Smp#: 15
Injection Vol: 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

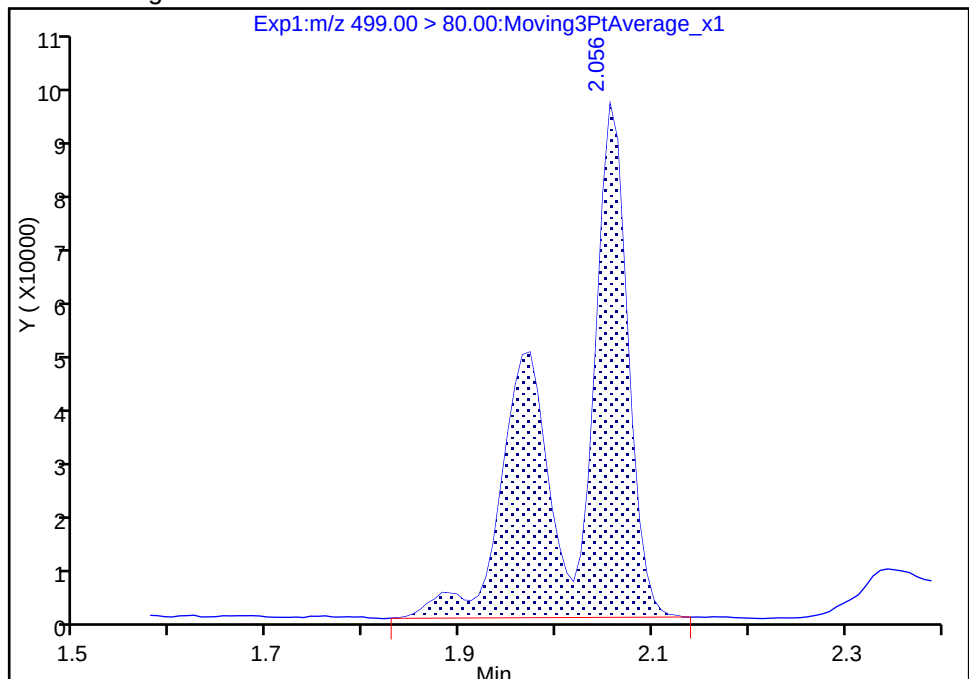
Not Detected
Expected RT: 2.01

Processing Integration Results



Manual Integration Results

RT: 2.06
Area: 371322
Amount: 5.128942
Amount Units: ng/ml



Reviewer: barnettj, 13-Mar-2018 10:38:19

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

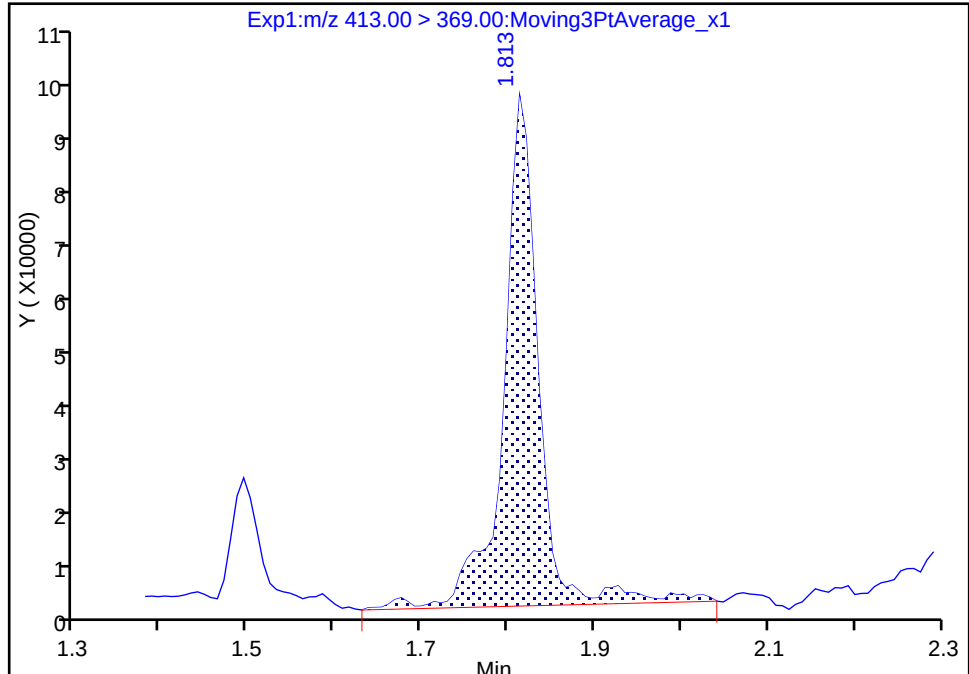
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_018.d				
Injection Date:	12-Mar-2018 22:15:08	Instrument ID:	A8_N		
Lims ID:	320-36367-A-8-A	Lab Sample ID:	320-36367-8		
Client ID:	NAWC-022218-RW-039				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	15
Injection 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

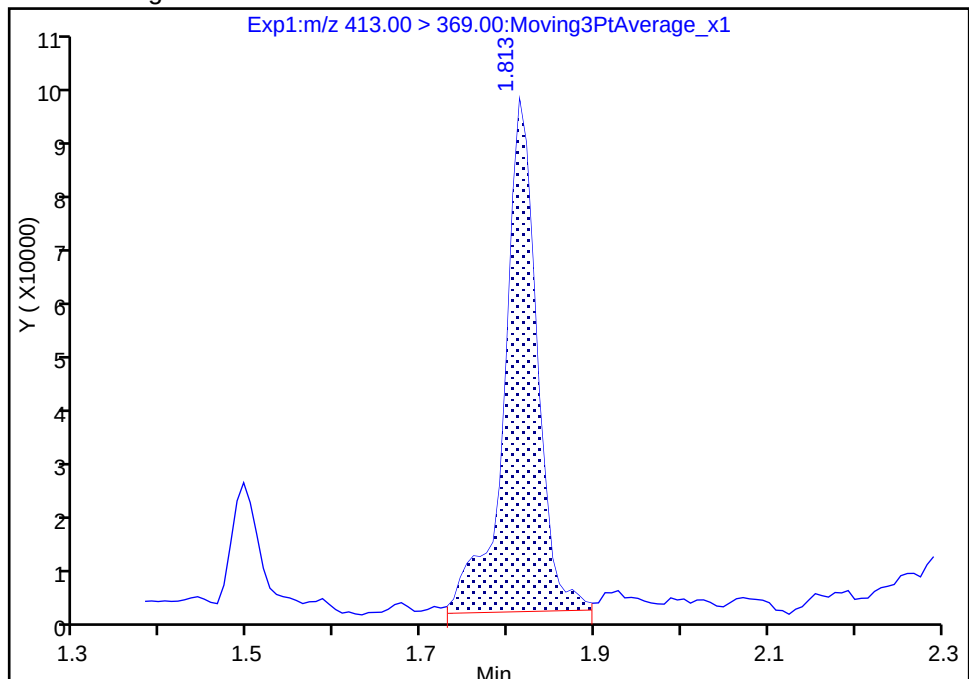
RT: 1.81
Area: 251929
Amount: 3.536029
Amount Units: ng/ml

Processing Integration Results



RT: 1.81
Area: 236120
Amount: 3.314137
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 13-Mar-2018 10:37:33

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

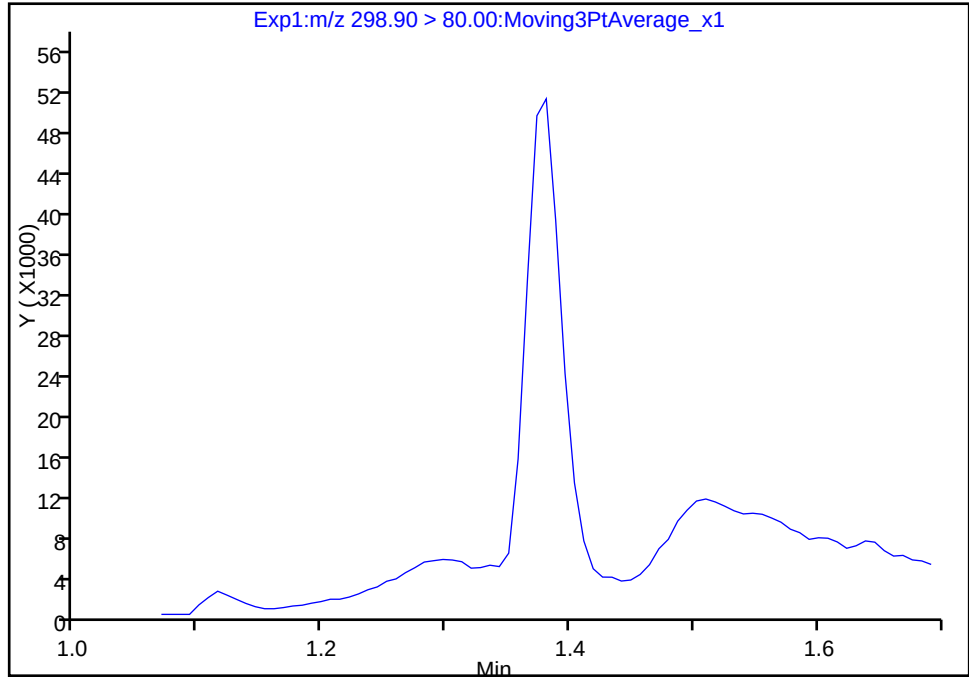
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_018.d
Injection Date: 12-Mar-2018 22:15:08 Instrument ID: A8_N
Lims ID: 320-36367-A-8-A Lab Sample ID: 320-36367-8
Client ID: NAWC-022218-RW-039
Operator ID: SACINSTLCMS01 ALS Bottle#: 33 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

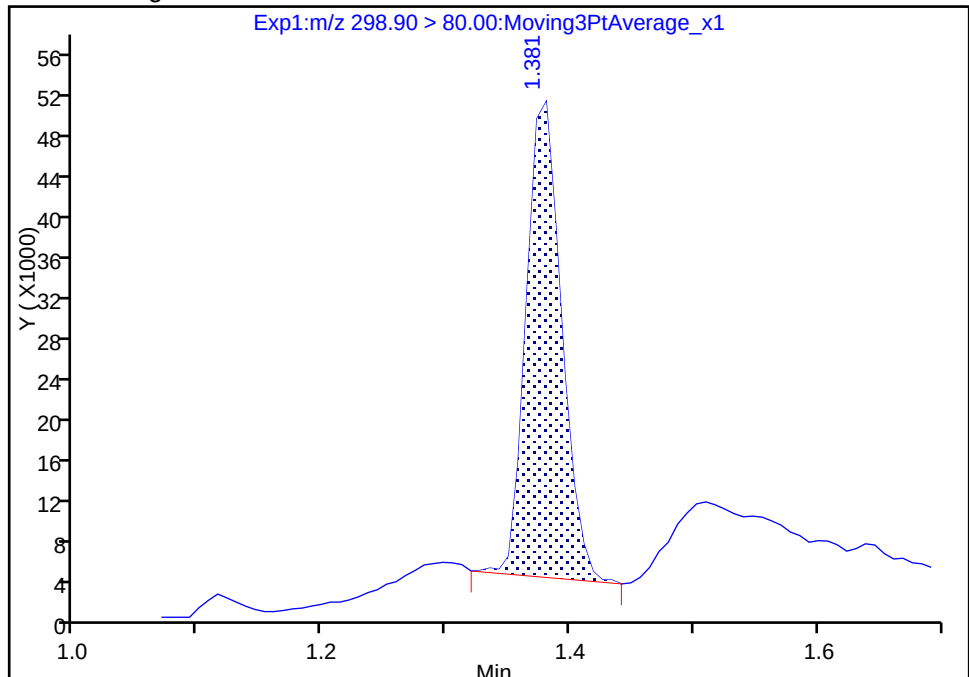
Not Detected
Expected RT: 1.36

Processing Integration Results



RT: 1.38
Area: 92851
Amount: 0.921434
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 13-Mar-2018 10:36:51
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

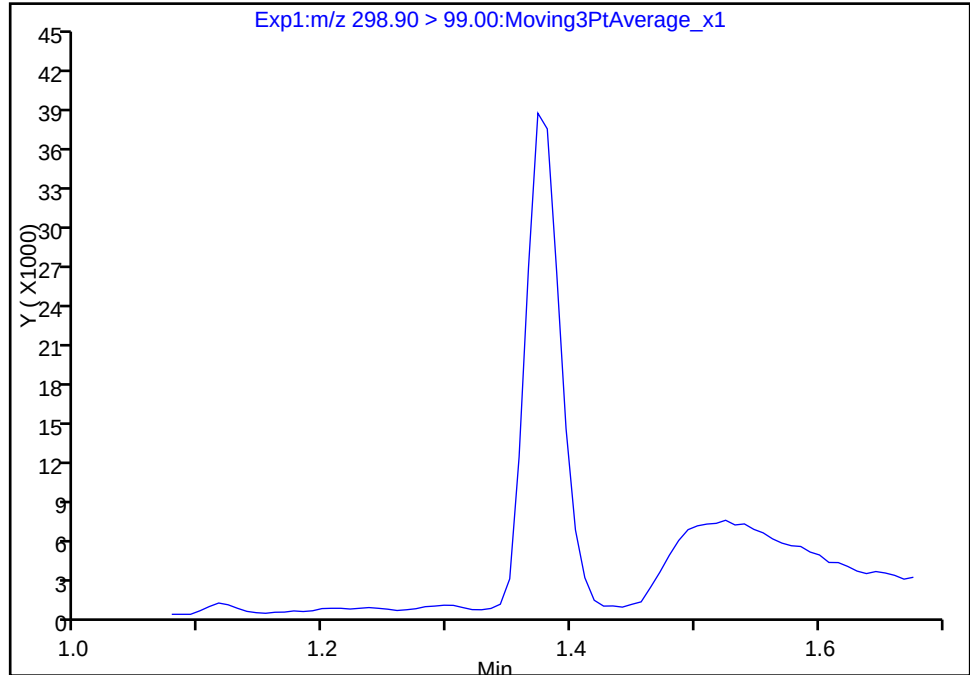
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_018.d
Injection Date: 12-Mar-2018 22:15:08 Instrument ID: A8_N
Lims ID: 320-36367-A-8-A Lab Sample ID: 320-36367-8
Client ID: NAWC-022218-RW-039
Operator ID: SACINSTLCMS01 ALS Bottle#: 33 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

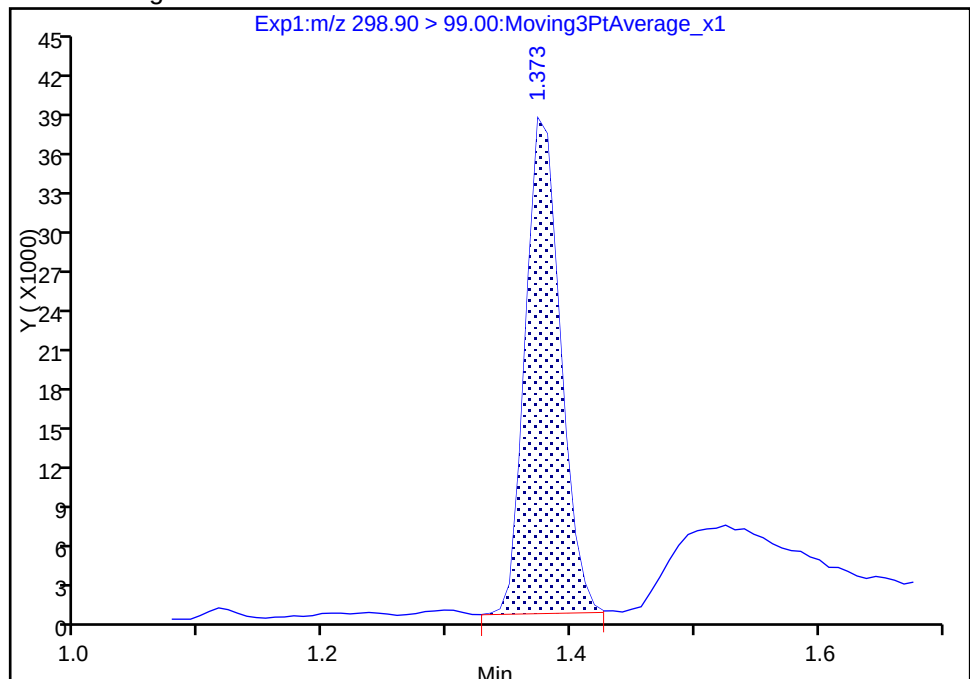
Not Detected
Expected RT: 1.36

Processing Integration Results



Manual Integration Results

RT: 1.37
Area: 73858
Amount: 0.921434
Amount Units: ng/ml



Reviewer: barnettj, 13-Mar-2018 10:37:03

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: NAWC-022218-FRB-039 Lab Sample ID: 320-36367-9
 Matrix: Water Lab File ID: 2018.03.12_537B_019.d
 Analysis Method: 537 Date Collected: 02/22/2018 11:05
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 258.3 (mL) Date Analyzed: 03/12/2018 22:19
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212593 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	119		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_019.d
 Lims ID: 320-36367-A-9-A
 Client ID: NAWC-022218-FRB-039
 Sample Type: Client
 Inject. Date: 12-Mar-2018 22:19:49 ALS Bottle#: 34 Worklist Smp#: 16
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-36367-a-9-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:42 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK003

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.495	1.487	0.008	1.000	831857	9.34		11782	
* 6 13C2-PFOA									
415.00 > 370.00	1.783	1.798	-0.015		809611	10.0		7871	
* 7 13C4 PFOS									
503.00 > 80.00	2.003	2.041	-0.038		2358808	28.7		627	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.215	2.238	-0.023	1.000	504174	11.9		5173	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_019.d

Injection Date: 12-Mar-2018 22:19:49

Instrument ID: A8_N

Lims ID: 320-36367-A-9-A

Lab Sample ID: 320-36367-9

Client ID: NAWC-022218-FRB-039

Operator ID: SACINSTLCMS01

ALS Bottle#: 34

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

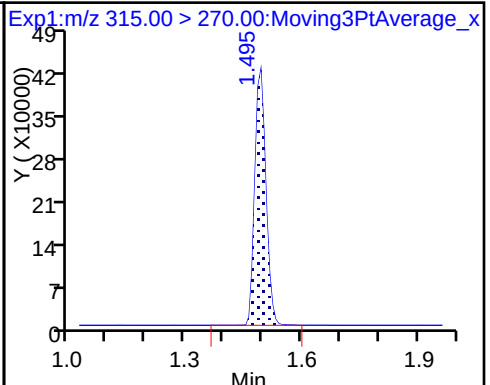
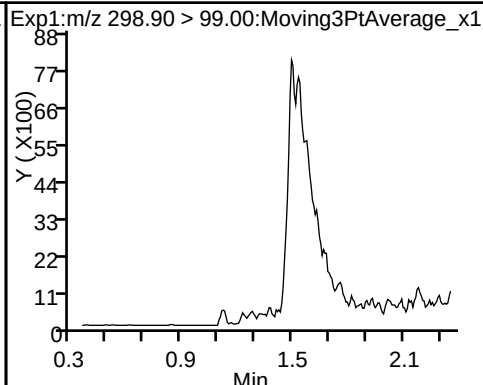
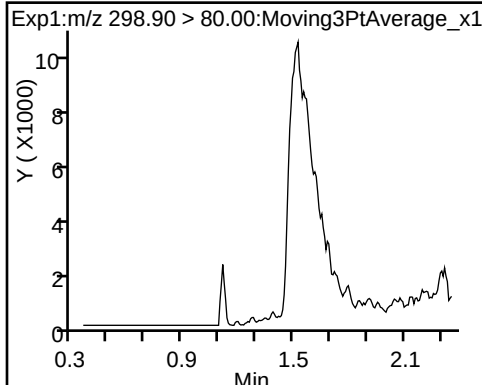
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

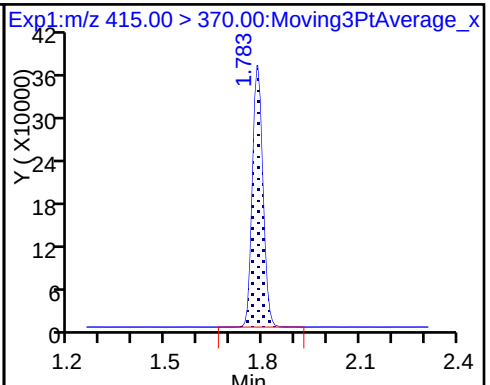
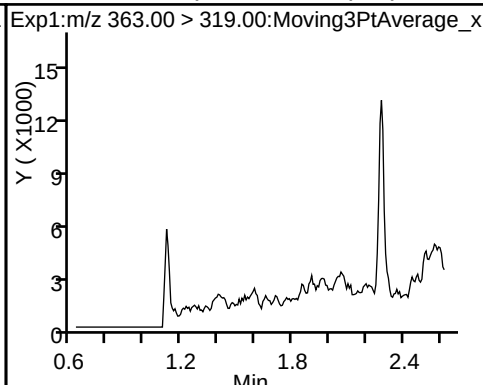
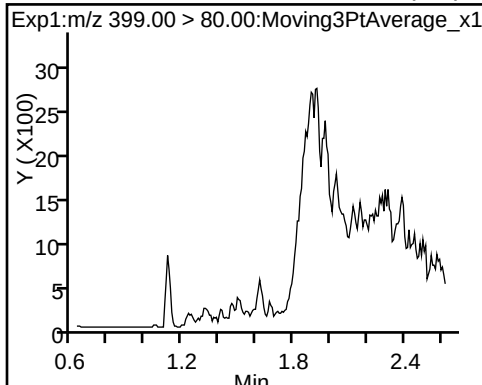
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

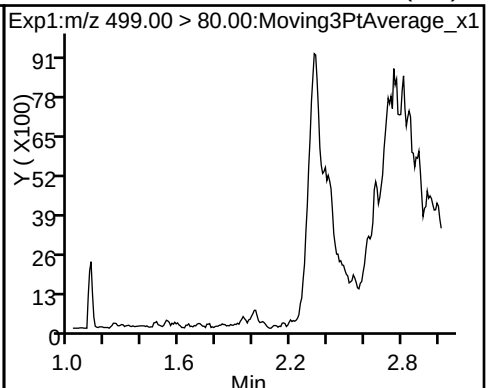
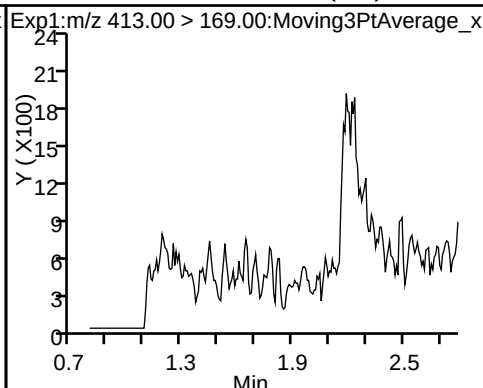
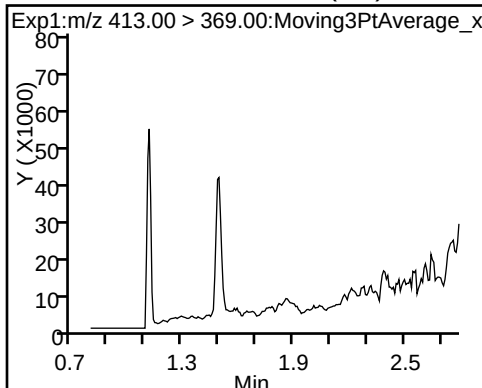
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

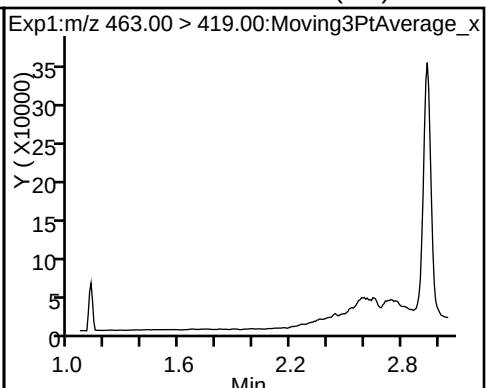
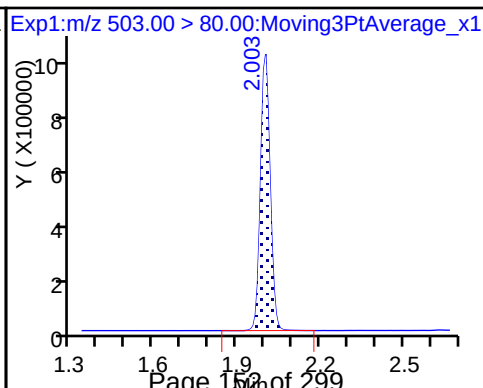
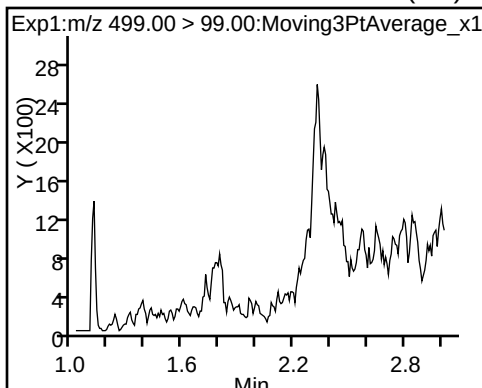
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

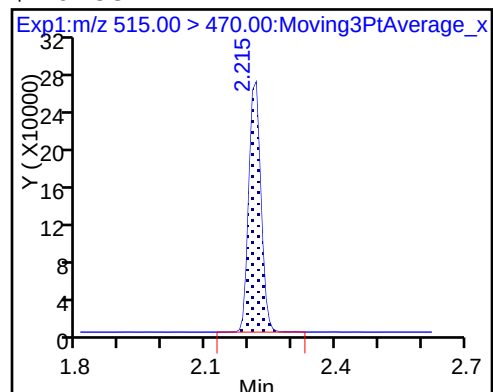


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_019.d
Lims ID: 320-36367-A-9-A
Client ID: NAWC-022218-FRB-039
Sample Type: Client
Inject. Date: 12-Mar-2018 22:19:49 ALS Bottle#: 34 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36367-a-9-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Mar-2018 10:45:42 Calib Date: 16-Feb-2018 09:19:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK003

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.34	93.42
\$ 10 13C2 PFDA	10.0	11.9	118.78

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-022218-RW-335</u>	Lab Sample ID: <u>320-36367-10</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_020.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 12:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>265.9(mL)</u>	Date Analyzed: <u>03/12/2018 22:24</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>212593</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	24		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.1	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.3	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	128		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_020.d
 Lims ID: 320-36367-A-10-A
 Client ID: NAWC-022218-RW-335
 Sample Type: Client
 Inject. Date: 12-Mar-2018 22:24:31 ALS Bottle#: 35 Worklist Smp#: 17
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-36367-a-10-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:42 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:38:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.358	0.008	1.000	86864	0.7588		12.5	
298.90 > 99.00	1.366	1.358	0.008	1.000	66865		1.30(0.00-0.00)	33.0	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	847859	9.63		11822	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.624	0.0	1.000	302345	2.16		99.7	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.624	0.0	1.000	171898	2.21		25.3	
* 6 13C2-PFOA									
415.00 > 370.00	1.798	1.798	0.0		800763	10.0		6185	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.806	1.798	0.008	1.000	490526	6.37		11.7	
413.00 > 169.00	1.806	1.798	0.008	1.000	273048		1.80(0.00-0.00)	166	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.041	2.011	0.030	1.000	520287	6.33		36.9	a
499.00 > 99.00	2.041	2.011	0.030	1.000	90053		5.78(0.00-0.00)	32.8	a
* 7 13C4 PFOS									
503.00 > 80.00	2.041	2.041	0.0		2493942	28.7		668	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	537337	12.8		5499	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_020.d

Injection Date: 12-Mar-2018 22:24:31

Instrument ID: A8_N

Lims ID: 320-36367-A-10-A

Lab Sample ID: 320-36367-10

Client ID: NAWC-022218-RW-335

Operator ID: SACINSTLCMS01

ALS Bottle#: 35

Worklist Smp#: 17

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

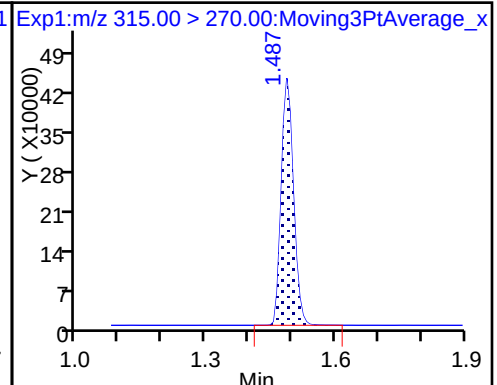
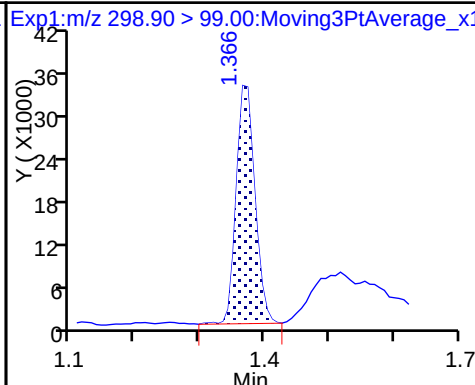
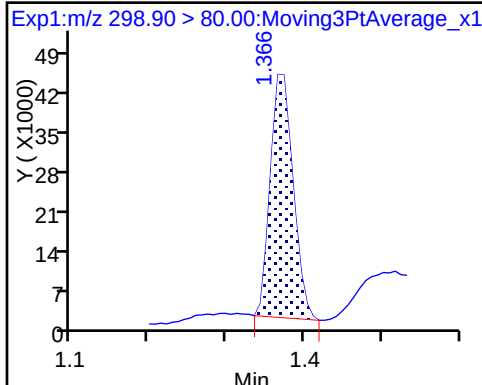
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

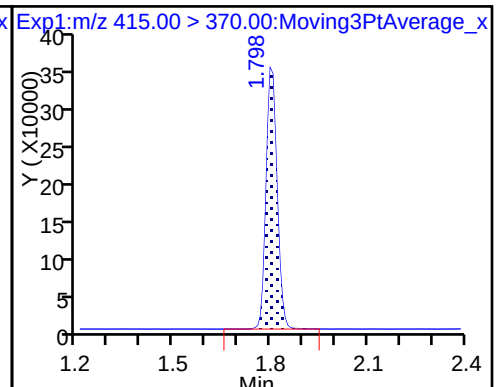
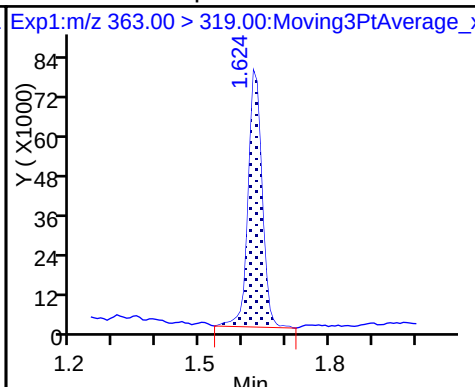
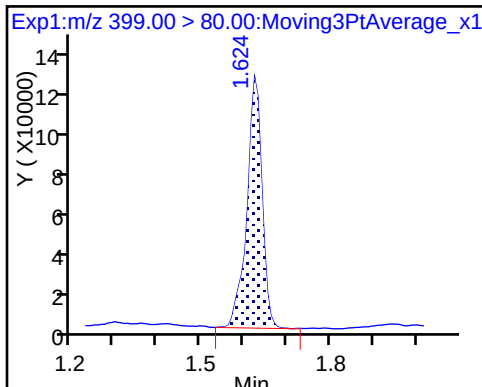
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

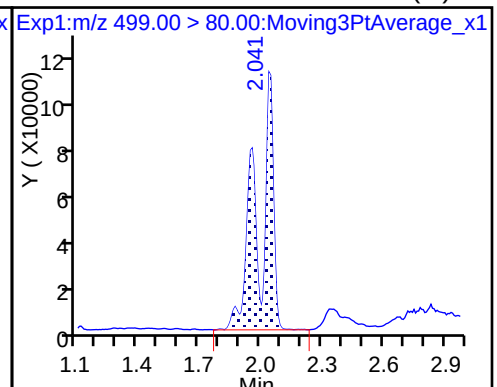
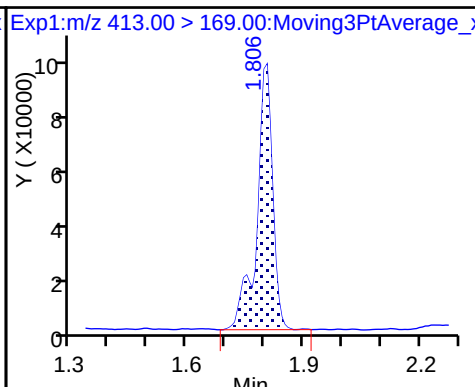
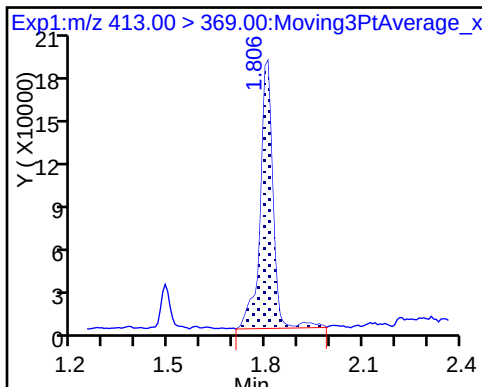
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

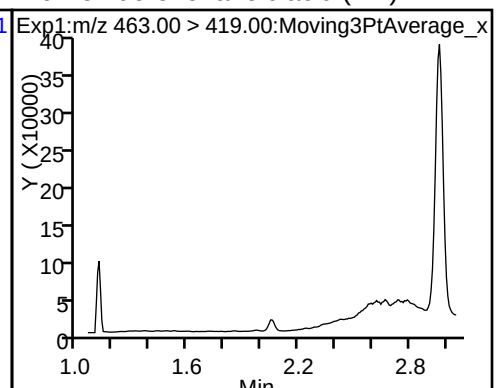
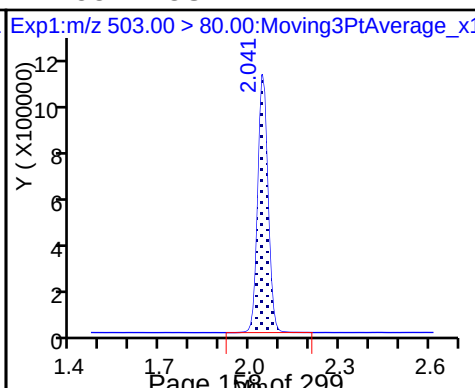
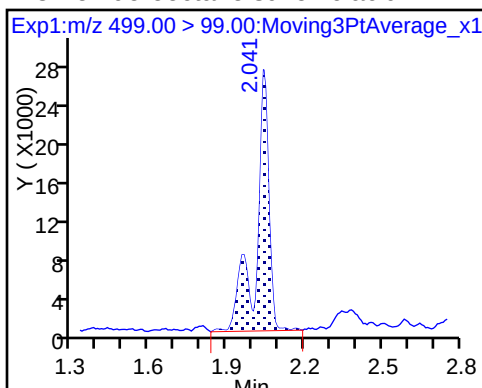
8 Perfluorooctane sulfonic acid (M)



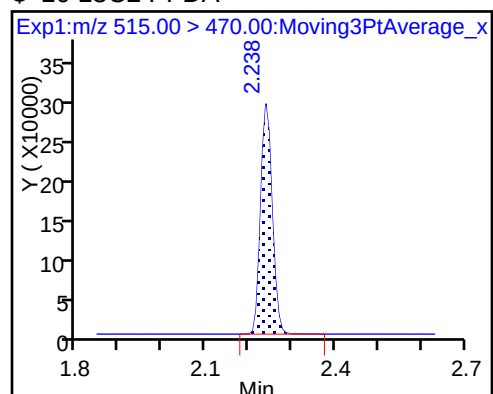
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_020.d
Lims ID: 320-36367-A-10-A
Client ID: NAWC-022218-RW-335
Sample Type: Client
Inject. Date: 12-Mar-2018 22:24:31 ALS Bottle#: 35 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36367-a-10-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Mar-2018 10:45:42 Calib Date: 16-Feb-2018 09:19:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:38:58

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.63	96.27
\$ 10 13C2 PFDA	10.0	12.8	127.99

TestAmerica Sacramento

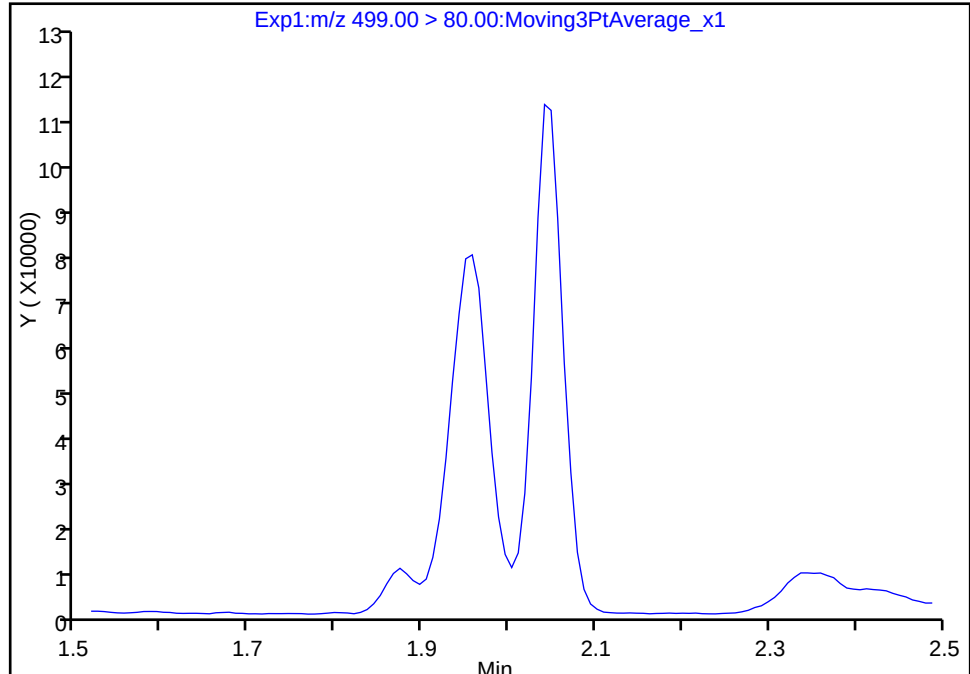
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_020.d				
Injection Date:	12-Mar-2018 22:24:31	Instrument ID:	A8_N		
Lims ID:	320-36367-A-10-A	Lab Sample ID:	320-36367-10		
Client ID:	NAWC-022218-RW-335				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	35	Worklist Smp#:	17
Injection 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

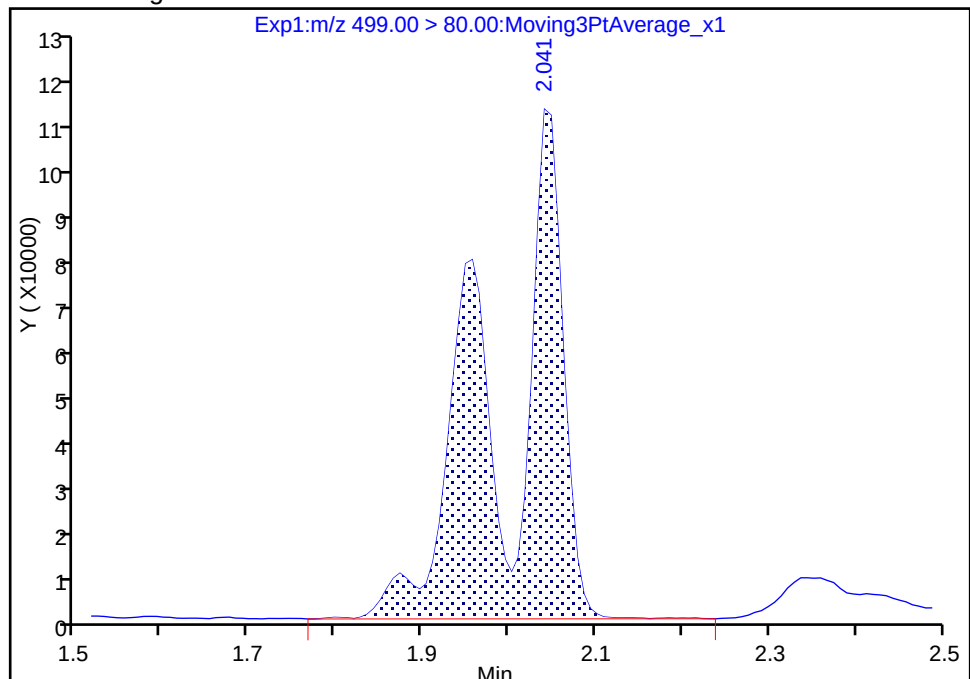
Signal: 1

Not Detected
Expected RT: 2.01

Processing Integration Results



Manual Integration Results

RT: 2.04
Area: 520287
Amount: 6.327865
Amount Units: ng/ml

Reviewer: barnettj, 13-Mar-2018 10:38:42

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: NAWC-022218-FRB-335 Lab Sample ID: 320-36367-11
 Matrix: Water Lab File ID: 2018.03.12_537B_021.d
 Analysis Method: 537 Date Collected: 02/22/2018 12:05
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 262.3(mL) Date Analyzed: 03/12/2018 22:29
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212593 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	114		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_021.d
 Lims ID: 320-36367-A-11-A
 Client ID: NAWC-022218-FRB-335
 Sample Type: Client
 Inject. Date: 12-Mar-2018 22:29:11 ALS Bottle#: 36 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-36367-a-11-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:42 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK003

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	807879	9.03		10040	
* 6 13C2-PFOA									
415.00 > 370.00	1.798	1.798	0.0		813381	10.0		6967	
* 7 13C4 PFOS									
503.00 > 80.00	2.041	2.041	0.0		2390850	28.7		682	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	488243	11.4		5234	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_021.d

Injection Date: 12-Mar-2018 22:29:11

Instrument ID: A8_N

Lims ID: 320-36367-A-11-A

Lab Sample ID: 320-36367-11

Client ID: NAWC-022218-FRB-335

Operator ID: SACINSTLCMS01

ALS Bottle#: 36

Worklist Smp#: 18

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

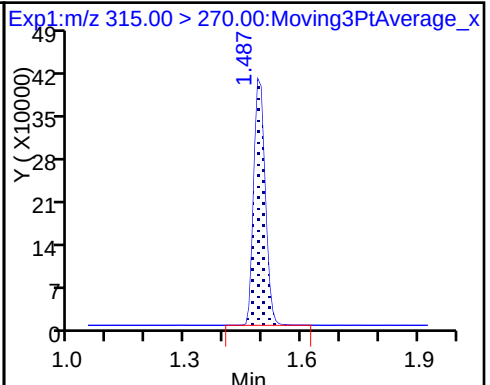
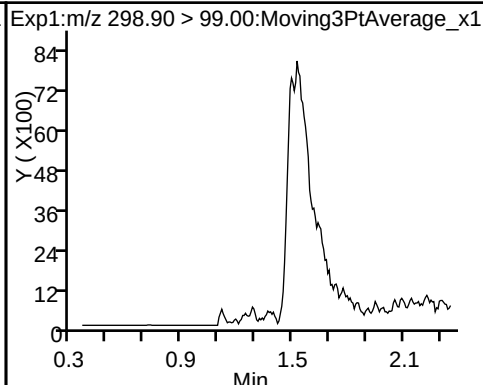
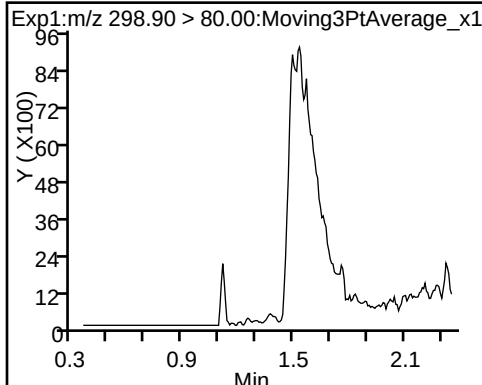
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

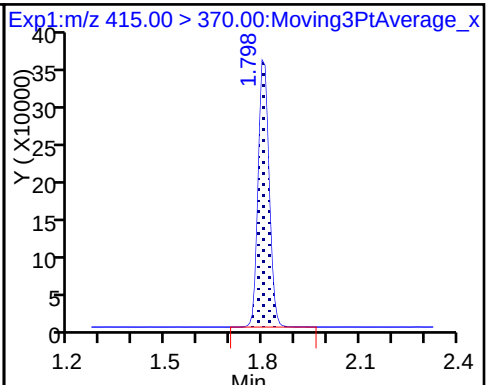
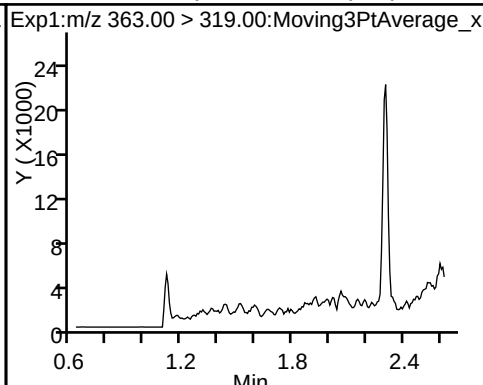
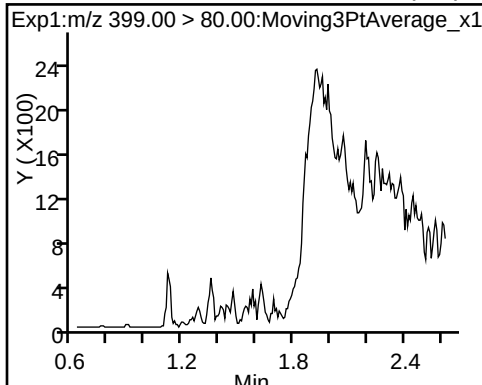
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

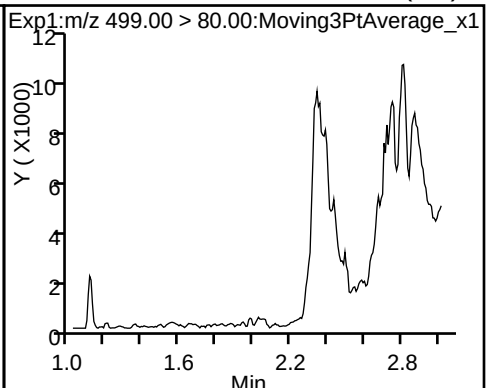
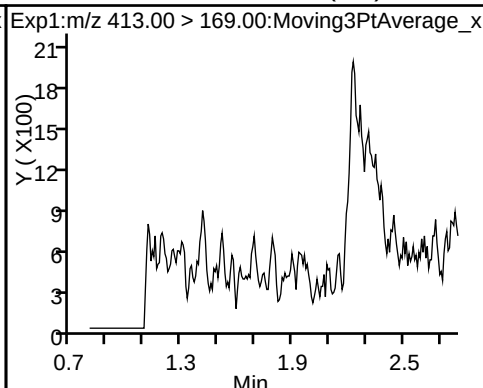
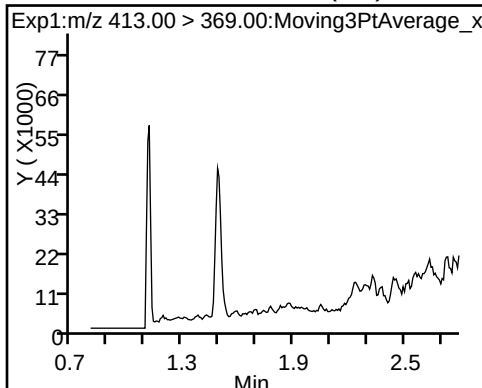
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

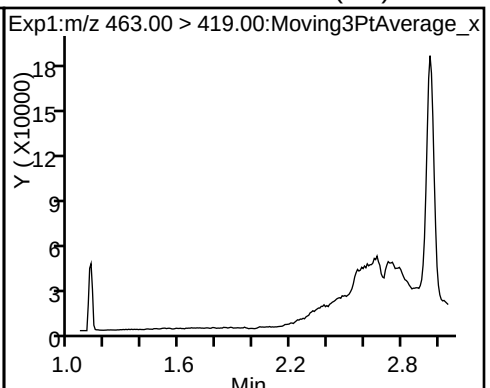
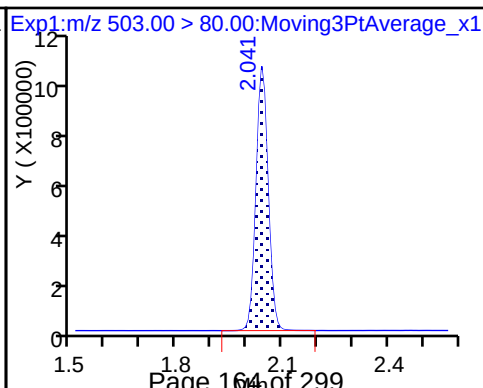
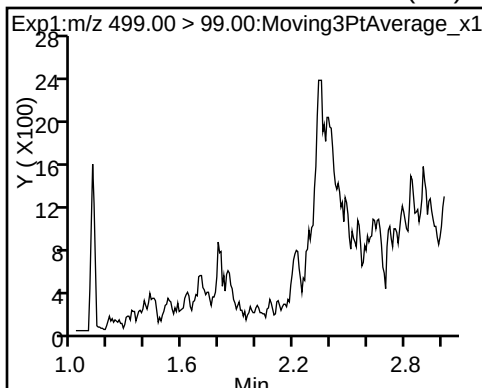
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

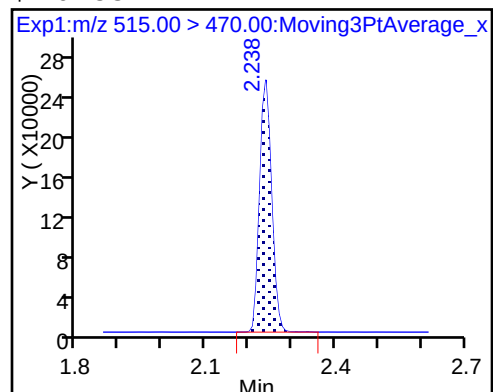


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_021.d
Lims ID: 320-36367-A-11-A
Client ID: NAWC-022218-FRB-335
Sample Type: Client
Inject. Date: 12-Mar-2018 22:29:11 ALS Bottle#: 36 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36367-a-11-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Mar-2018 10:45:42 Calib Date: 16-Feb-2018 09:19:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK003

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.03	90.30
\$ 10 13C2 PFDA	10.0	11.4	114.50

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-022218-RW-348</u>	Lab Sample ID: <u>320-36367-12</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_022.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 12:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>263.9(mL)</u>	Date Analyzed: <u>03/12/2018 22:33</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>212593</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	41	M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	25		19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.1	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.3	J M	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	120		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_022.d
 Lims ID: 320-36367-A-12-A
 Client ID: NAWC-022218-RW-348
 Sample Type: Client
 Inject. Date: 12-Mar-2018 22:33:52 ALS Bottle#: 37 Worklist Smp#: 19
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-36367-a-12-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:42 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:40:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.373	1.358	0.015	1.000	149854	1.45		21.5	
298.90 > 99.00	1.373	1.358	0.015	1.000	108134		1.39(0.00-0.00)	55.5	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.495	1.487	0.008	1.000	678599	8.13		8617	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.624	0.007	1.000	304317	2.41		91.1	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.624	0.007	1.000	122669	1.67		18.5	M
* 6 13C2-PFOA									
415.00 > 370.00	1.806	1.798	0.008		758650	10.0		6942	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.806	1.798	0.008	1.000	482441	6.61		11.3	
413.00 > 169.00	1.806	1.798	0.008	1.000	254539		1.90(0.00-0.00)	142	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.048	2.011	0.037	1.000	793872	10.7		81.2	a
499.00 > 99.00	2.048	2.011	0.037	1.000	157310		5.05(0.00-0.00)	74.2	a
* 7 13C4 PFOS									
503.00 > 80.00	2.048	2.041	0.007		2247902	28.7		510	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	478742	12.0		4986	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_022.d

Injection Date: 12-Mar-2018 22:33:52

Instrument ID: A8_N

Lims ID: 320-36367-A-12-A

Lab Sample ID: 320-36367-12

Client ID: NAWC-022218-RW-348

Operator ID: SACINSTLCMS01

ALS Bottle#: 37

Worklist Smp#: 19

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

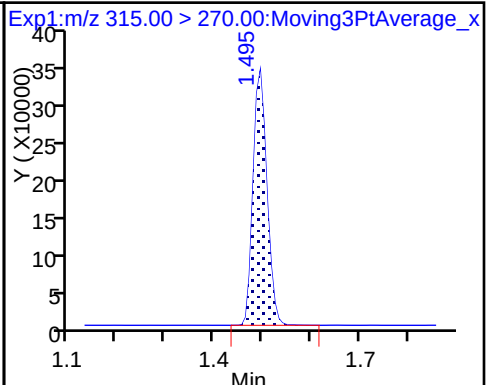
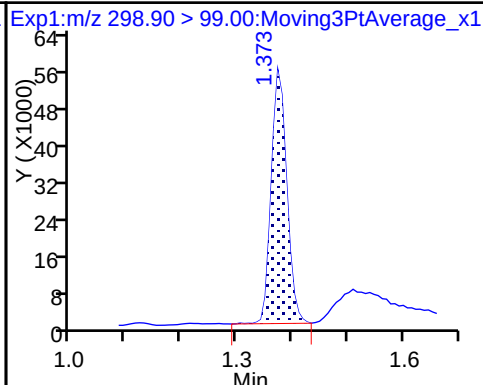
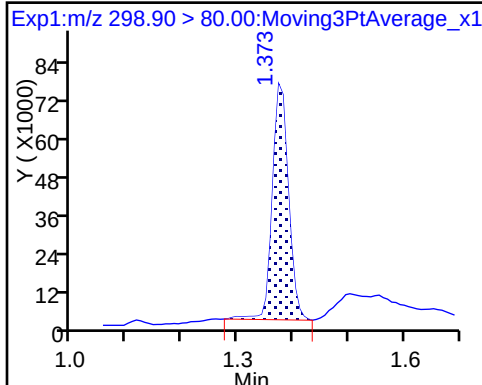
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

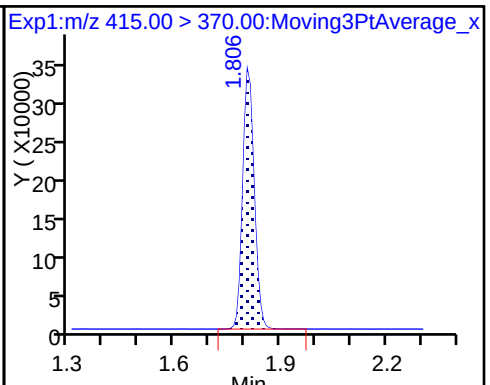
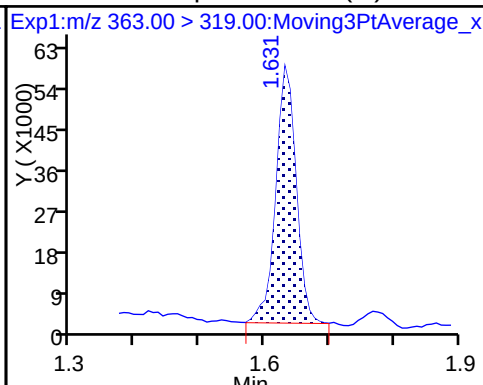
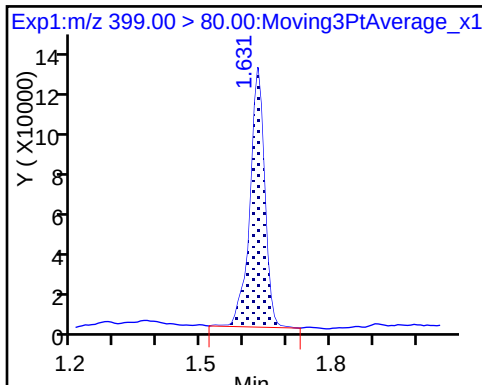
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid (M)

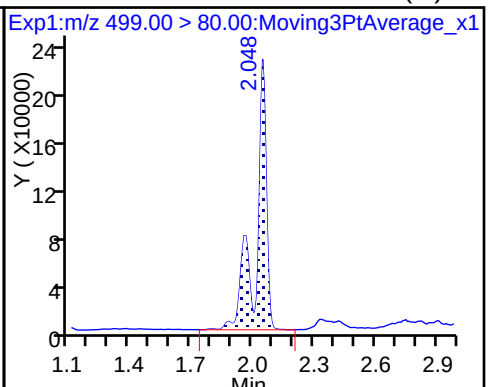
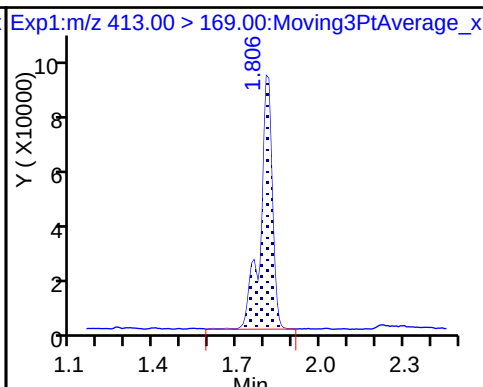
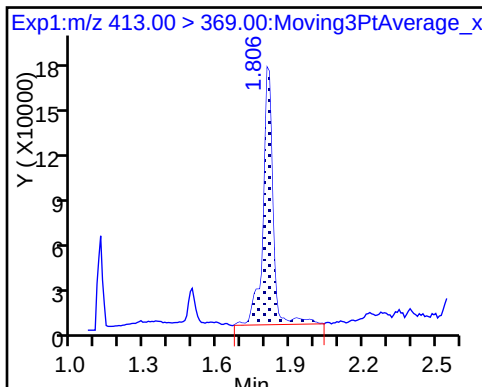
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

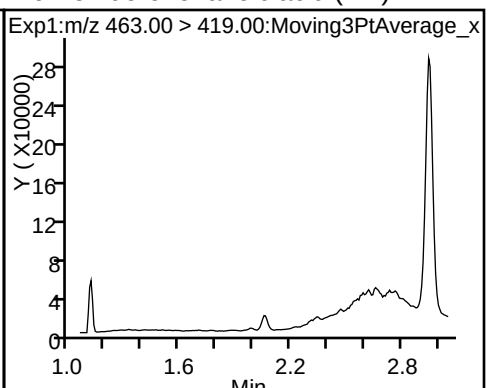
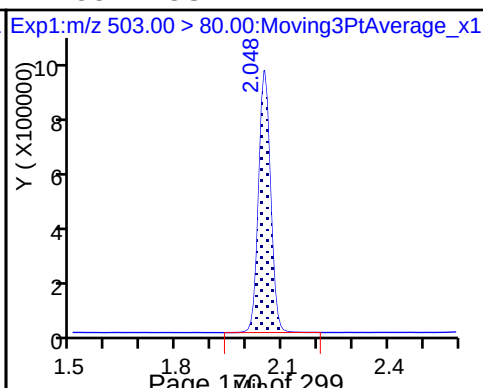
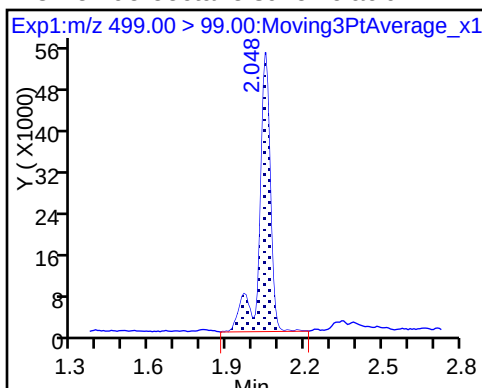
8 Perfluorooctane sulfonic acid (M)



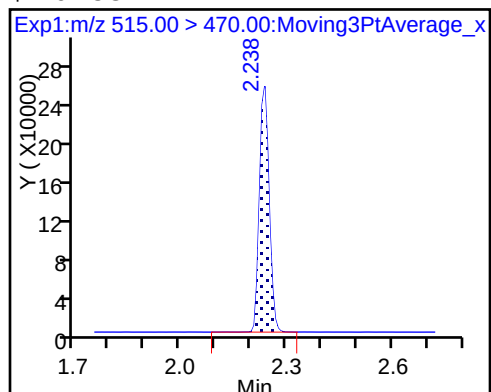
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_022.d
Lims ID: 320-36367-A-12-A
Client ID: NAWC-022218-RW-348
Sample Type: Client
Inject. Date: 12-Mar-2018 22:33:52 ALS Bottle#: 37 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36367-a-12-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Mar-2018 10:45:42 Calib Date: 16-Feb-2018 09:19:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:40:04

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.13	81.32
\$ 10 13C2 PFDA	10.0	12.0	120.37

TestAmerica Sacramento

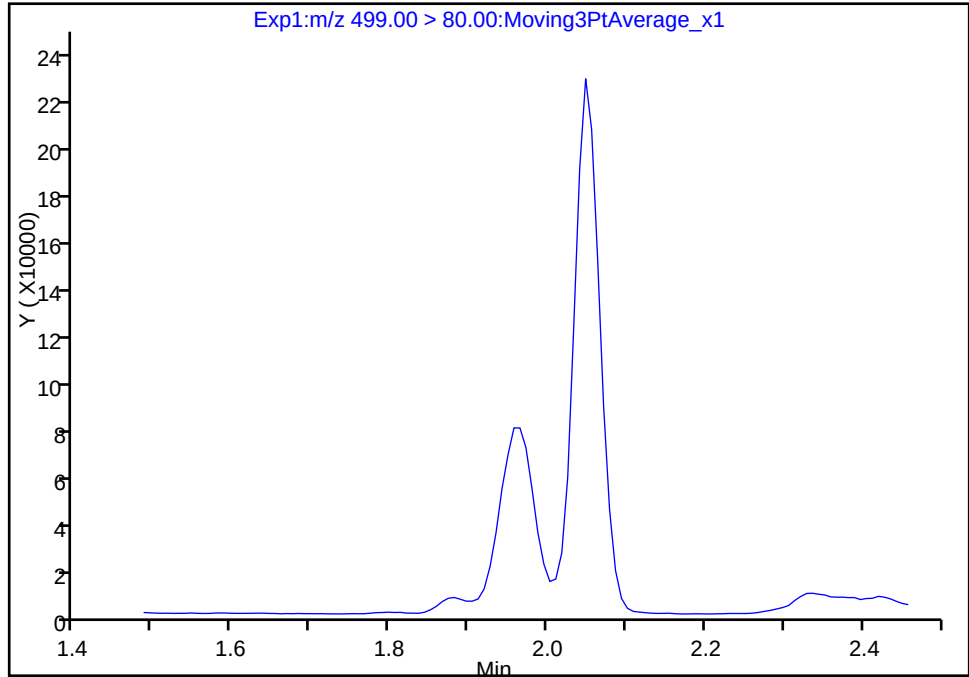
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_022.d				
Injection Date:	12-Mar-2018 22:33:52	Instrument ID:	A8_N		
Lims ID:	320-36367-A-12-A	Lab Sample ID:	320-36367-12		
Client ID:	NAWC-022218-RW-348				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	37	Worklist Smp#:	19
Injection 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

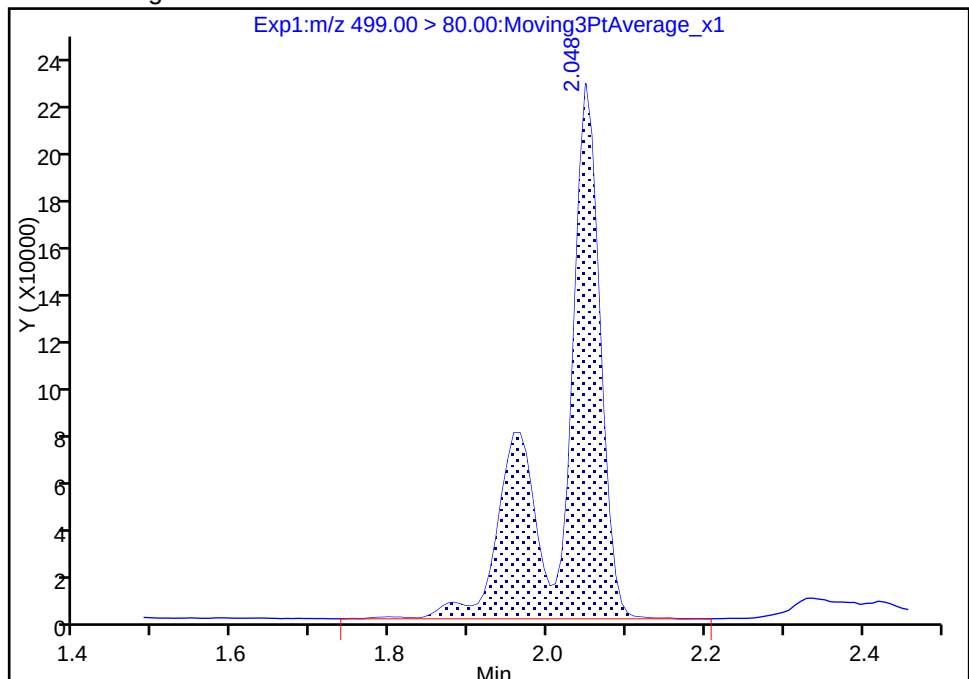
Signal: 1

Not Detected
Expected RT: 2.01

Processing Integration Results



Manual Integration Results

RT: 2.05
Area: 793872
Amount: 10.712076
Amount Units: ng/ml

Reviewer: barnettj, 13-Mar-2018 10:39:09

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

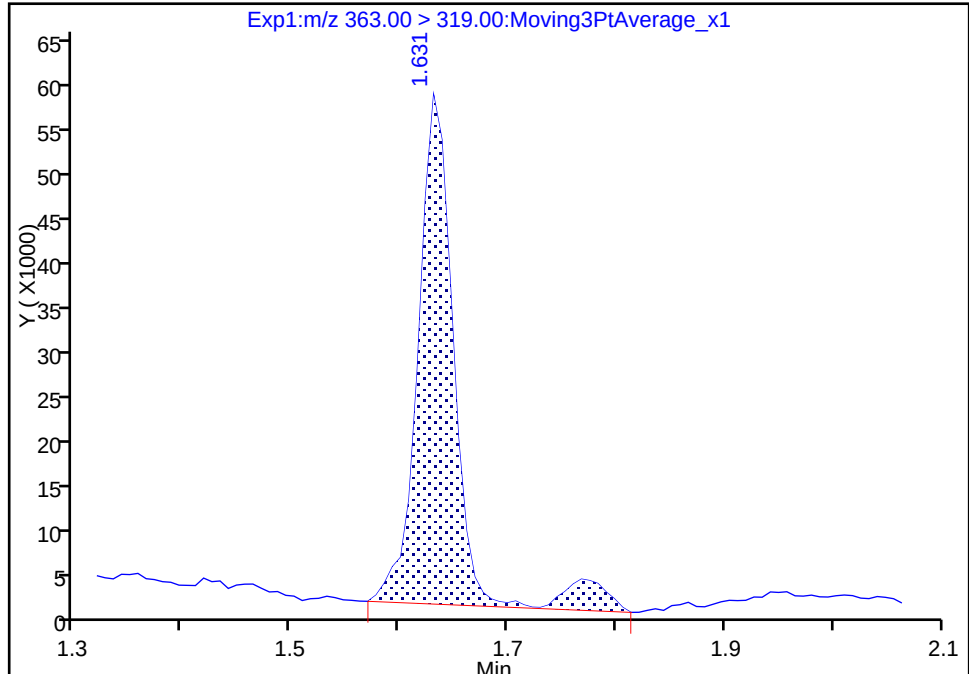
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Injection Date: 12-Mar-2018 22:33:52 Instrument ID: A8_N
Lims ID: 320-36367-A-12-A Lab Sample ID: 320-36367-12
Client ID: NAWC-022218-RW-348
Operator ID: SACINSTLCMS01 ALS Bottle#: 37 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

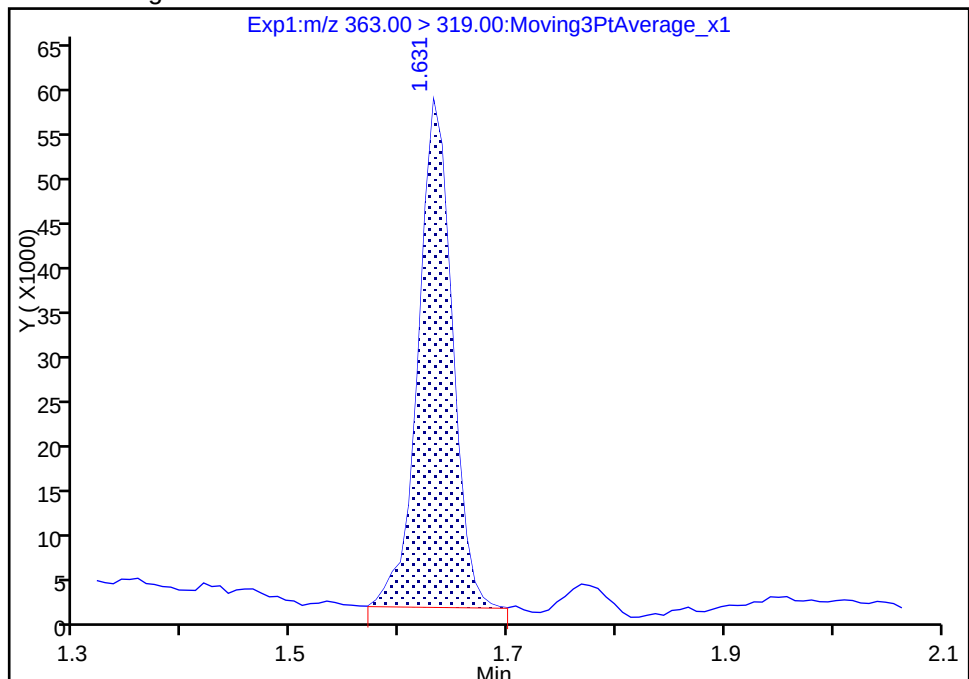
RT: 1.63
Area: 134163
Amount: 1.821010
Amount Units: ng/ml

Processing Integration Results



RT: 1.63
Area: 122669
Amount: 1.665001
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 13-Mar-2018 10:39:42

Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: NAWC-022218-FRB-348 Lab Sample ID: 320-36367-13
 Matrix: Water Lab File ID: 2018.03.12_537B_023.d
 Analysis Method: 537 Date Collected: 02/22/2018 12:35
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 261.3(mL) Date Analyzed: 03/12/2018 22:38
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212593 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	116		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_023.d
 Lims ID: 320-36367-A-13-A
 Client ID: NAWC-022218-FRB-348
 Sample Type: Client
 Inject. Date: 12-Mar-2018 22:38:32 ALS Bottle#: 38 Worklist Smp#: 20
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-36367-a-13-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:42 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK003

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.487	0.015	1.000	852500	9.51		10427	
* 6 13C2-PFOA									
415.00 > 370.00	1.737	1.798	-0.061		814628	10.0		7899	
* 7 13C4 PFOS									
503.00 > 80.00	1.882	2.041	-0.159		2602265	28.7		802	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.094	2.238	-0.144	1.000	494245	11.6		4756	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_023.d

Injection Date: 12-Mar-2018 22:38:32

Instrument ID: A8_N

Lims ID: 320-36367-A-13-A

Lab Sample ID: 320-36367-13

Client ID: NAWC-022218-FRB-348

Operator ID: SACINSTLCMS01

ALS Bottle#: 38

Worklist Smp#: 20

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

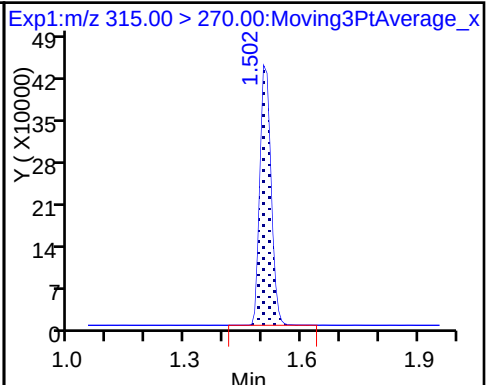
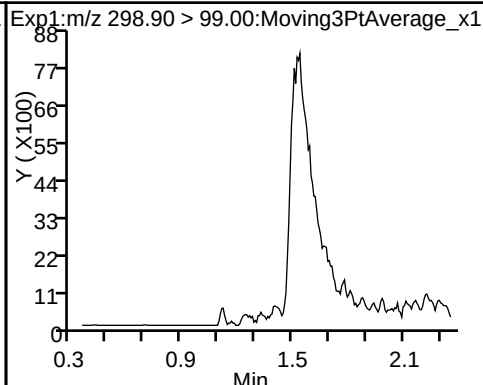
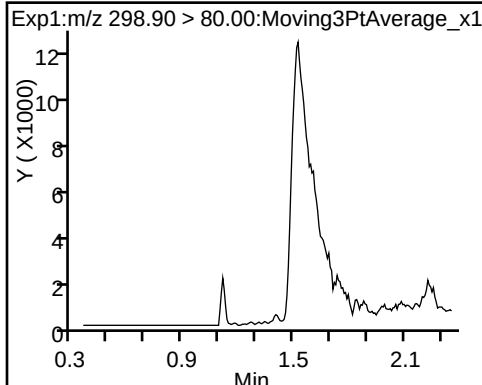
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

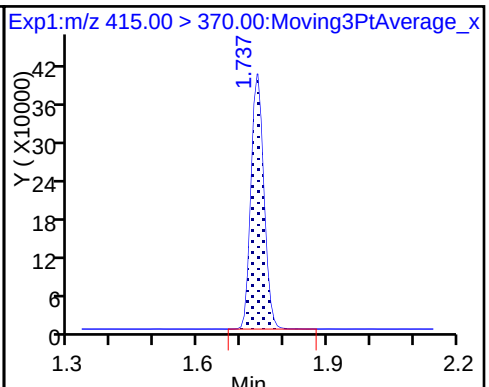
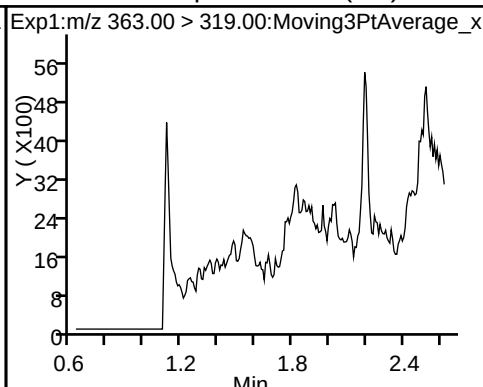
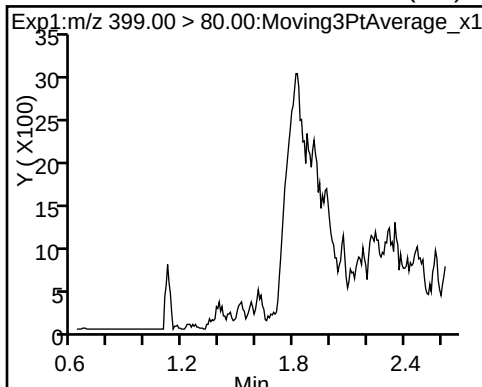
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

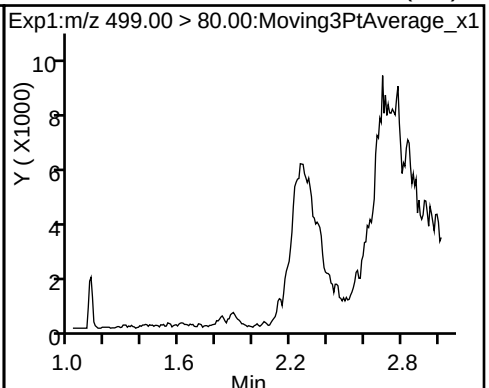
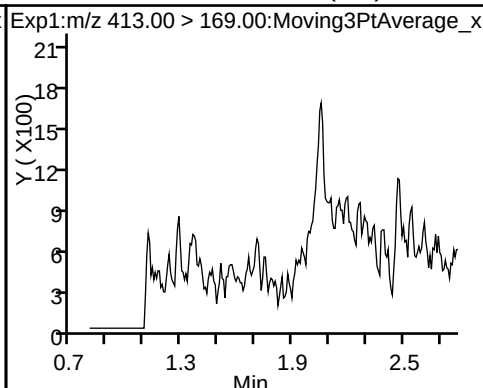
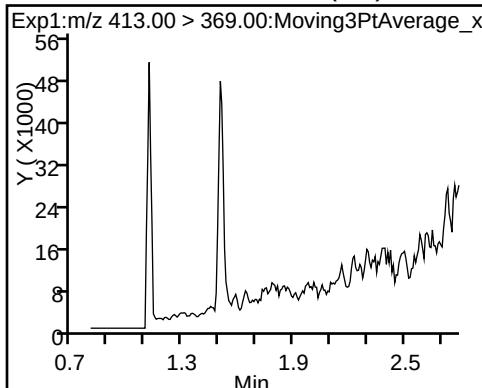
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

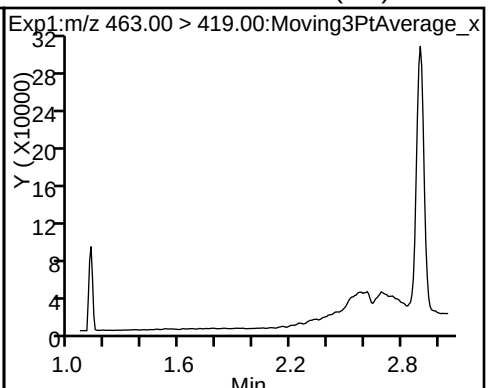
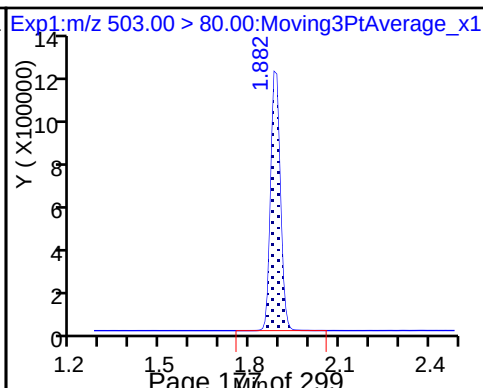
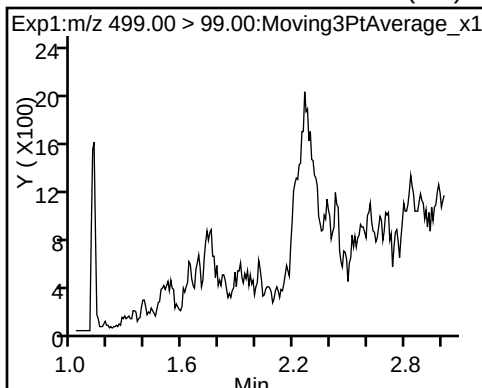
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

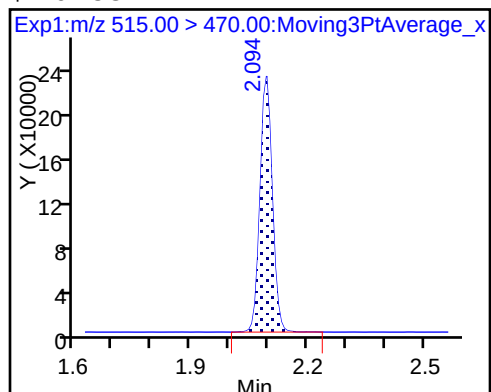


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_023.d
Lims ID: 320-36367-A-13-A
Client ID: NAWC-022218-FRB-348
Sample Type: Client
Inject. Date: 12-Mar-2018 22:38:32 ALS Bottle#: 38 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-36367-a-13-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Mar-2018 10:45:42 Calib Date: 16-Feb-2018 09:19:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 :

Det: EXP1

Process Host: XAWRK003

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.51	95.14
\$ 10 13C2 PFDA	10.0	11.6	115.73

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

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1 Analy Batch No.: 208773

SDG No.: _____

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

Calibration Start Date: 02/16/2018 08:55 Calibration End Date: 02/16/2018 09:19 Calibration ID: 37889

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-208773/4	2018.02.016_537ICAL_004.d
Level 2	IC 320-208773/5	2018.02.016_537ICAL_005.d
Level 3	IC 320-208773/6	2018.02.016_537ICAL_006.d
Level 4	IC 320-208773/7	2018.02.016_537ICAL_007.d
Level 5	IC 320-208773/8	2018.02.016_537ICAL_008.d
Level 6	IC 320-208773/9	2018.02.016_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)	1.1922 0.9350	1.2685	1.2630	1.1053	1.0403	QuaF		1.3180	-0.002120						1.0000		0.9600
Perfluorohexanesulfonic acid (PFHxS)	1.5376 1.6019	1.6461	1.6181	1.5963	1.6585	Ave		1.6098				2.7		30.0			
Perfluoroheptanoic acid (PFHpA)	0.9596 0.9834	0.9488	0.9462	1.0388	0.9501	Ave		0.9711				3.7		30.0			
Perfluorooctanoic acid (PFOA)	0.9118 0.9514	1.0053	0.9624	0.9616	0.9798	Ave		0.9620				3.2		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.9021 0.9430	0.9481	0.9569	0.9539	0.9692	Ave		0.9455				2.4		30.0			
Perfluorononanoic acid (PFNA)	0.6417 0.6193	0.5823	0.5991	0.6537	0.5962	Ave		0.6154				4.5		30.0			
13C2 PFHxA	1.1327 1.1621	1.0418	1.0430	1.1541	1.0657	Ave		1.0999				5.1		30.0			
13C2 PFDA	0.5790 0.5388	0.4974	0.4674	0.5464	0.5166	Ave		0.5243				7.5		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.: 320-36367-1 Analy Batch No.: 208773

SDG No.: _____

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

Calibration Start Date: 02/16/2018 08:55 Calibration End Date: 02/16/2018 09:19 Calibration ID: 37889

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-208773/4	2018.02.016_537ICAL_004.d
Level 2	IC 320-208773/5	2018.02.016_537ICAL_005.d
Level 3	IC 320-208773/6	2018.02.016_537ICAL_006.d
Level 4	IC 320-208773/7	2018.02.016_537ICAL_007.d
Level 5	IC 320-208773/8	2018.02.016_537ICAL_008.d
Level 6	IC 320-208773/9	2018.02.016_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	1004877 16112512	2401851	5386060	9625497	13334361	9.00 180	20.0	45.0	90.0	135
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	432087 9203547	1039145	2300670	4635169	7088297	3.00 60.0	6.67	15.0	30.0	45.0
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	89434 1755879	208408	467875	919334	1334846	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	170858 3415564	443975	956930	1711070	2767901	2.01 40.2	4.47	10.1	20.1	30.2
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	339345 7252490	801200	1821248	3707450	5544581	4.02 80.3	8.93	20.1	40.2	60.3
Perfluorononanoic acid (PFNA)	13PF OA	Ave	119635 2211715	255853	592583	1157180	1675602	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PF OA	Ave	1055358 1037300	1029524	1031304	1021204	998008	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	539488 480980	491558	462142	483499	483740	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.: 320-36367-1 Analy Batch No.: 208773

SDG No.: _____

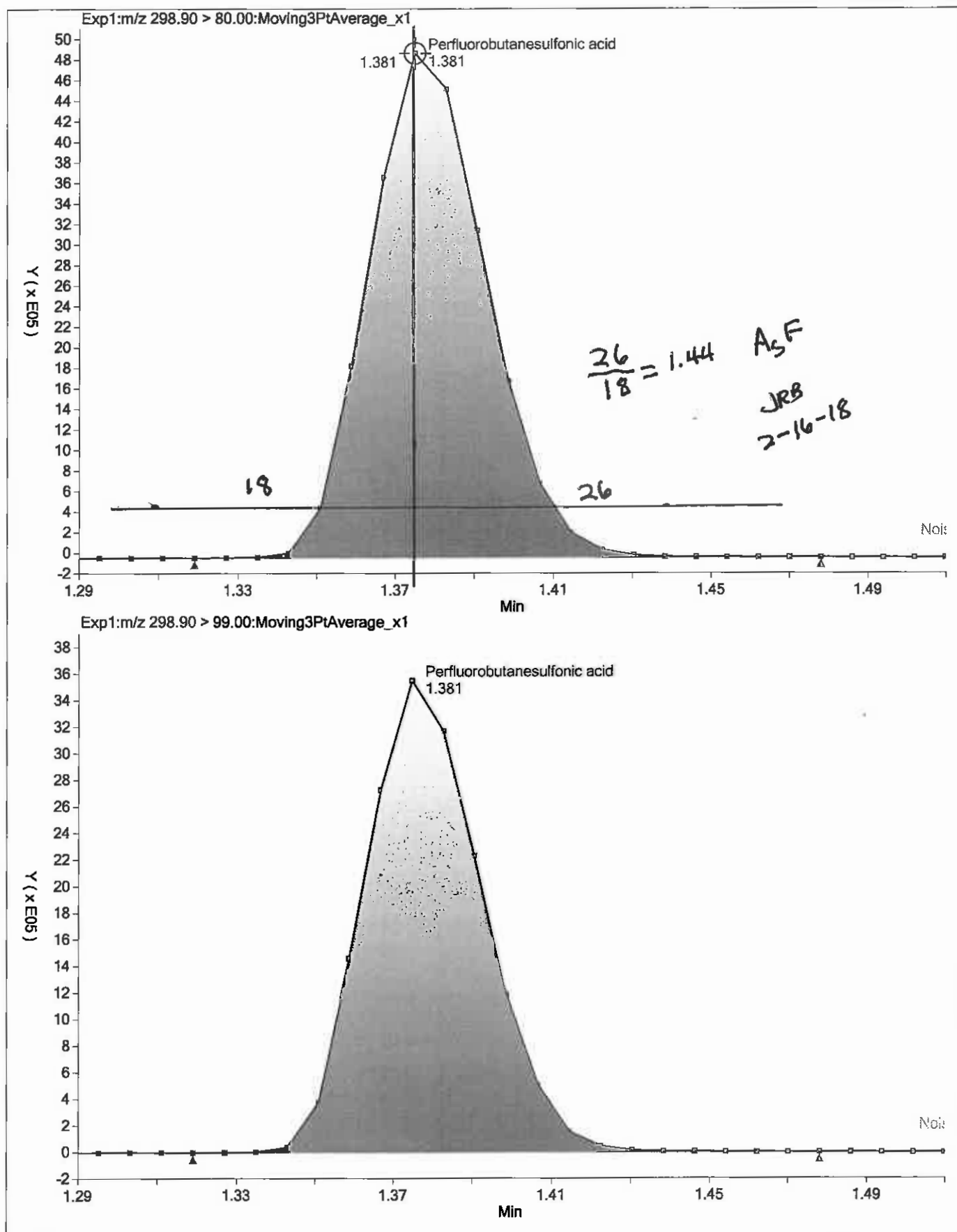
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

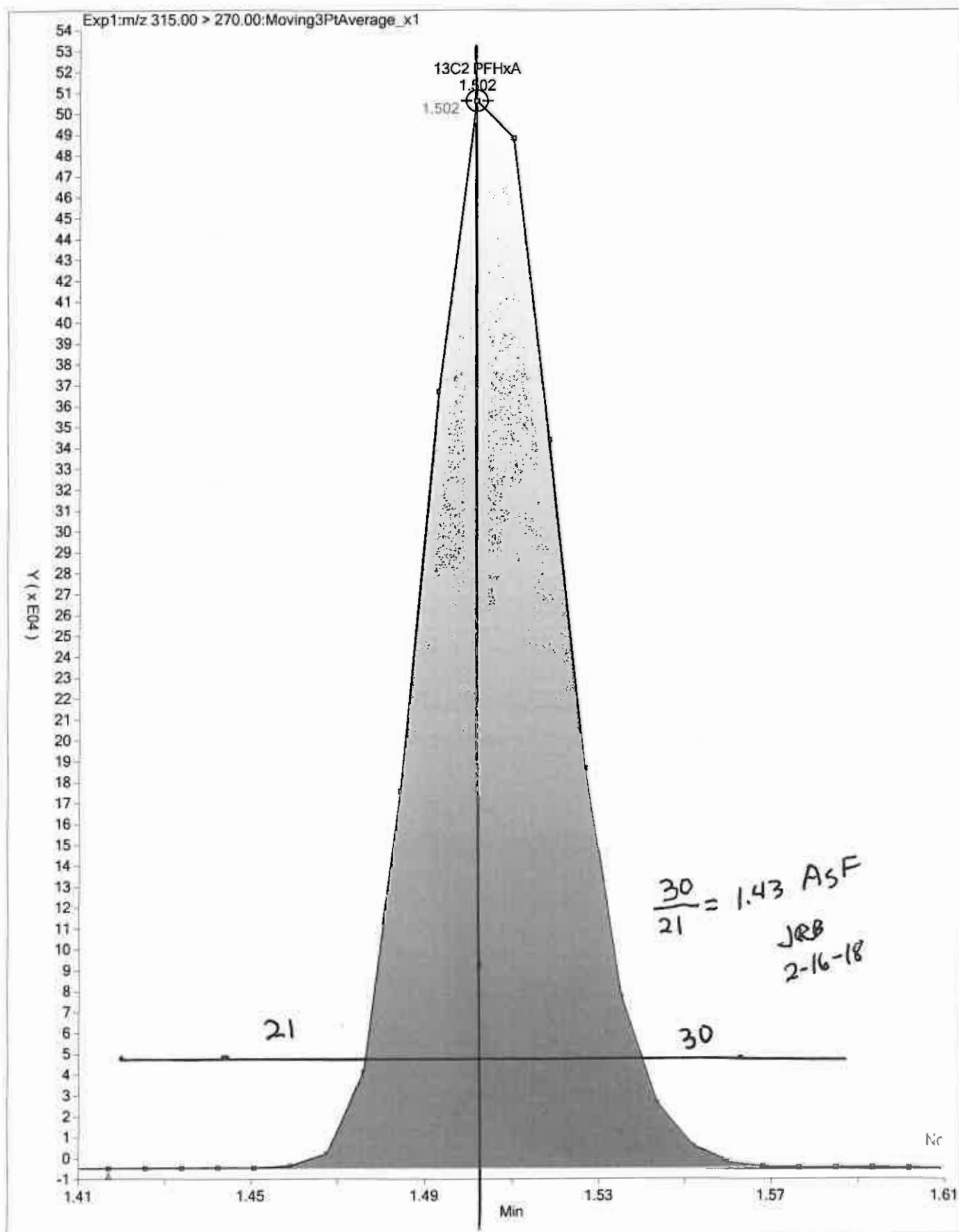
Calibration Start Date: 02/16/2018 08:55 Calibration End Date: 02/16/2018 09:19 Calibration ID: 37889

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-208773/4	2018.02.016_537ICAL_004.d
Level 2	IC 320-208773/5	2018.02.016_537ICAL_005.d
Level 3	IC 320-208773/6	2018.02.016_537ICAL_006.d
Level 4	IC 320-208773/7	2018.02.016_537ICAL_007.d
Level 5	IC 320-208773/8	2018.02.016_537ICAL_008.d
Level 6	IC 320-208773/9	2018.02.016_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)	-8.3	-0.6	3.6	-2.3	1.1	-0.3	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-4.5	2.3	0.5	-0.8	3.0	-0.5	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	-1.2	-2.3	-2.6	7.0	-2.2	1.3	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-5.2	4.5	0.0	0.0	1.8	-1.1	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-4.6	0.3	1.2	0.9	2.5	-0.3	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	4.3	-5.4	-2.6	6.2	-3.1	0.6	50	30	30	30	30	30
13C2 PFHxA	3.0	-5.3	-5.2	4.9	-3.1	5.7	30	30	30	30	30	30
13C2 PFDA	10.4	-5.1	-10.9	4.2	-1.5	2.8	30	30	30	30	30	30





TestAmerica Laboratories
Istd/Surrogate Recovery Report

Worklist Name: 16FEB2018_537_ICAL

Worklist Num: 54164

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b

Limit Group: LC 537 ICAI

Analysis Type: SemiVOA

Inj Volume: 2.00

Inj Vol Units: ul

Lims Batch: 208773

CCV IS Mode: Select Ical Level, Cal Level: 3

Non-Cal IS Mode: Last Ccal Sample

\$ 2 13C2 PFHxA

\$ 10 13C2 PFDA

Lab ID	Ini Date	\$ 2	\$ 10	* 6 13C2-PFOA	* 7 13C4 PFOS
IS Std				3628037 1.81	9733097 2.06
# 1 RB	16-Feb-2018 08:41:23			1076886< 1.97	2716766< 2.19
				29.7*	27.9*
# 2 RB	16-Feb-2018 08:46:06			1019457< 1.89	2755286< 2.14
				28.1*	28.3*
# 3 RB	16-Feb-2018 08:50:50			1105032< 1.87	2805992< 2.13
				30.5*	28.8*
IS Std					
# 4 IC L1	16-Feb-2018 08:55:33	1.51	2.28	931713> 1.87	2685321> 2.12
		103.00	110.40	100.0*	100.0*
# 5 IC L2	16-Feb-2018 09:00:16	1.51	2.28	988244> 1.87	2714895> 2.12
		94.72	94.88	106.1*	101.1*
# 6 IC L3	16-Feb-2018 09:05:01	1.50	2.27	988820> 1.86	2717621> 2.12
		94.82	89.15	106.1*	101.2*
# 7 IC L4	16-Feb-2018 09:09:42	1.50	2.27	884854> 1.85	2774986> 2.11
		104.90	104.20	95.0*	103.3*
# 8 IC L5	16-Feb-2018 09:14:23	1.50	2.26	936458> 1.85	2722967> 2.11
		96.89	98.53	100.5*	101.4*
# 9 IC L6	16-Feb-2018 09:19:04	1.50	2.27	892615> 1.86	2745419> 2.11
		105.70	102.80	95.8*	102.2*
IS Std				988820 1.86	2717621 2.12
#10 RB	16-Feb-2018 09:23:44			878108 1.85	2705714 2.11
				88.8	99.6
IS Std				884854 1.85	2774986 2.11
#11 CCVL	16-Feb-2018 09:28:24	1.51	2.27	955394 1.87	2663428 2.12
		94.27	95.61	108.0	96.0
IS Std				955394 1.87	2663428 2.12
#12 RB	16-Feb-2018 09:33:05			966669 1.86	2704283 2.11
				101.2	101.5
IS Std				884854 1.85	2774986 2.11
#13 ICV	16-Feb-2018 09:37:44	1.50	2.26	890238 1.85	2703377 2.11
		102.30	102.00	100.6	97.4
IS Std					
#14 RB	16-Feb-2018 09:42:24				

13C2-PFOA

$$RPD = \frac{988820 - 884854}{\frac{(988820 + 884854)}{2}} \times 100 = 11.1$$

13C4-PFOS

$$RPD = \frac{2774986 - 2685321}{\frac{(2774986 + 2685321)}{2}} \times 100 = 3.28$$

JRB

2-16-18

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_004.d
 Lims ID: IC L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 16-Feb-2018 08:55:33 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\20180216-54164.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Feb-2018 10:55:29 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK013

First Level Reviewer: roycea

Date: 16-Feb-2018 10:27:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	1004877	8.25		5011	
298.90 > 99.00	1.381	1.381	0.0	1.000	703519		1.43(0.00-0.00)	3183	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.505	0.005	1.000	1055358	10.3		16680	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.656	0.006	1.000	432087	2.87		1230	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.658	0.004	1.000	89434	0.9884		25.8	M
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.859	0.007		931713	10.0		9317	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.860	0.006	1.000	170858	1.91		8.2	
413.00 > 169.00	1.866	1.860	0.006	1.000	97793		1.75(0.00-0.00)	20.1	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.109	0.015	1.000	339345	3.83		616	a
499.00 > 99.00	2.124	2.109	0.015	1.000	75172		4.51(0.00-0.00)	93.5	a
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.114	0.010		2685321	28.7		10079	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.122	0.010	1.000	119635	2.09		13.5	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.270	0.006	1.000	539488	11.0		5616	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

Reagents:

LC537-L1_00021

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_004.d

Injection Date: 16-Feb-2018 08:55:33

Instrument ID: A8_N

Lims ID: IC L1

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 1

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

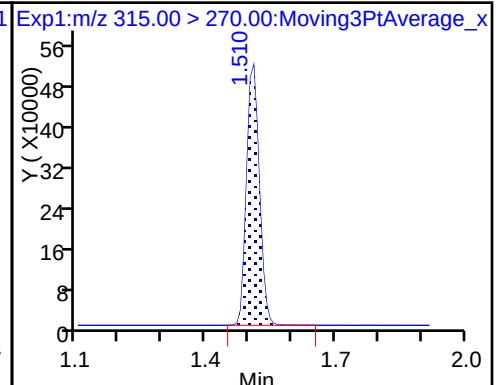
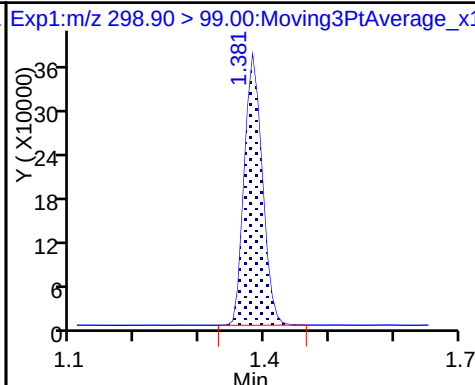
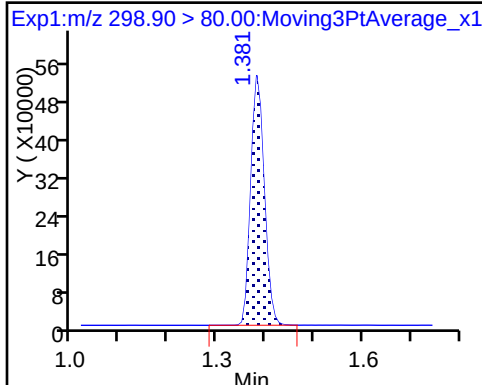
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

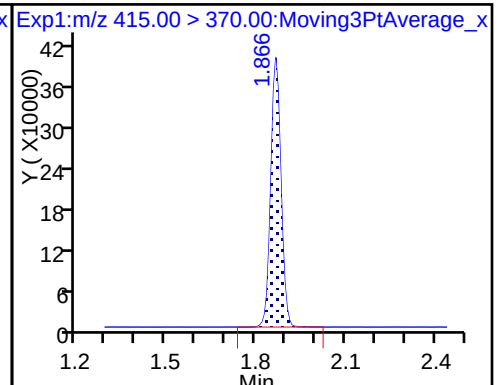
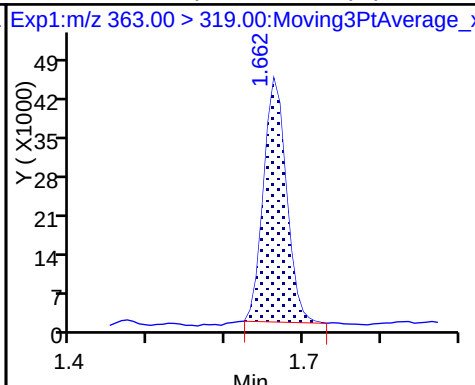
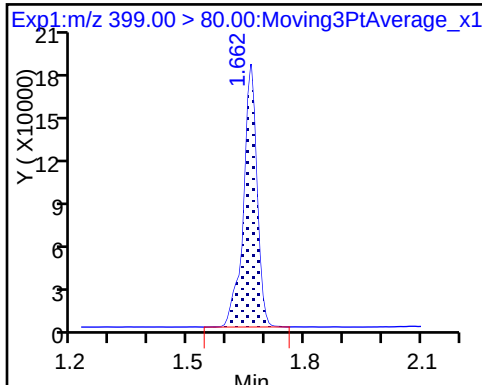
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid (M)

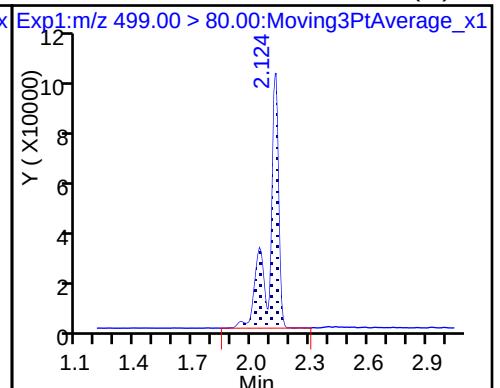
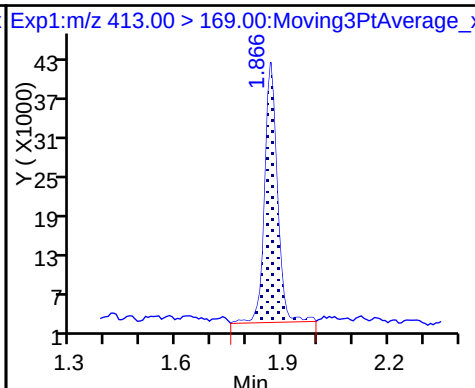
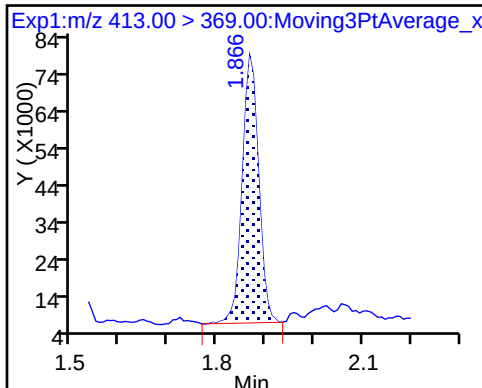
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

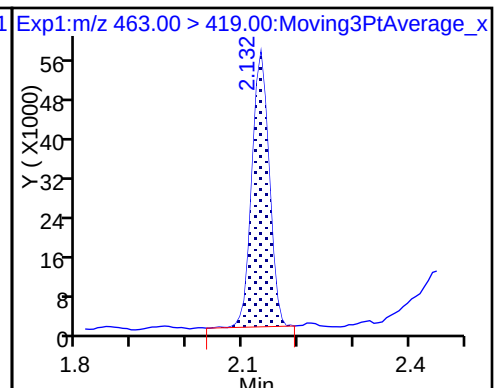
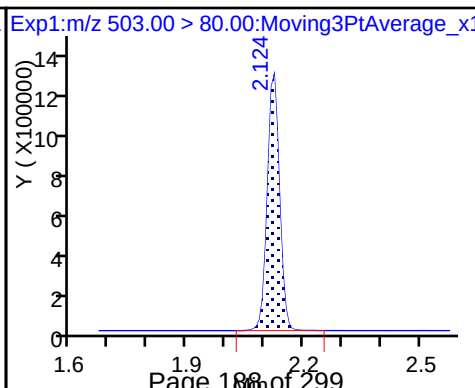
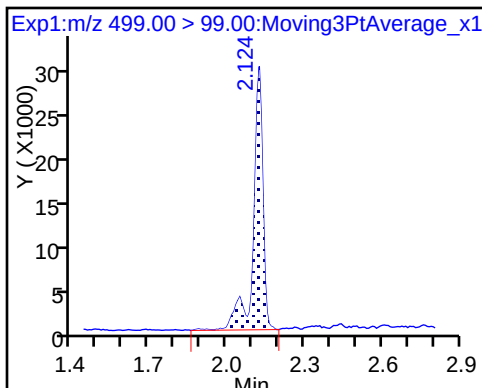
8 Perfluorooctane sulfonic acid (M)



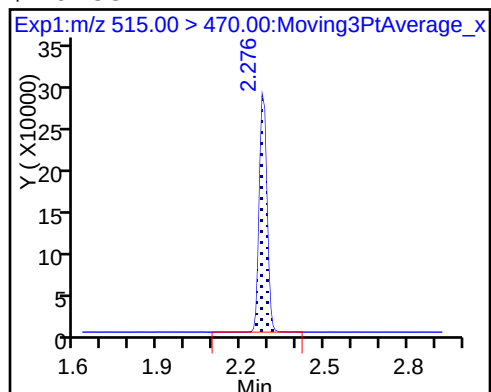
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



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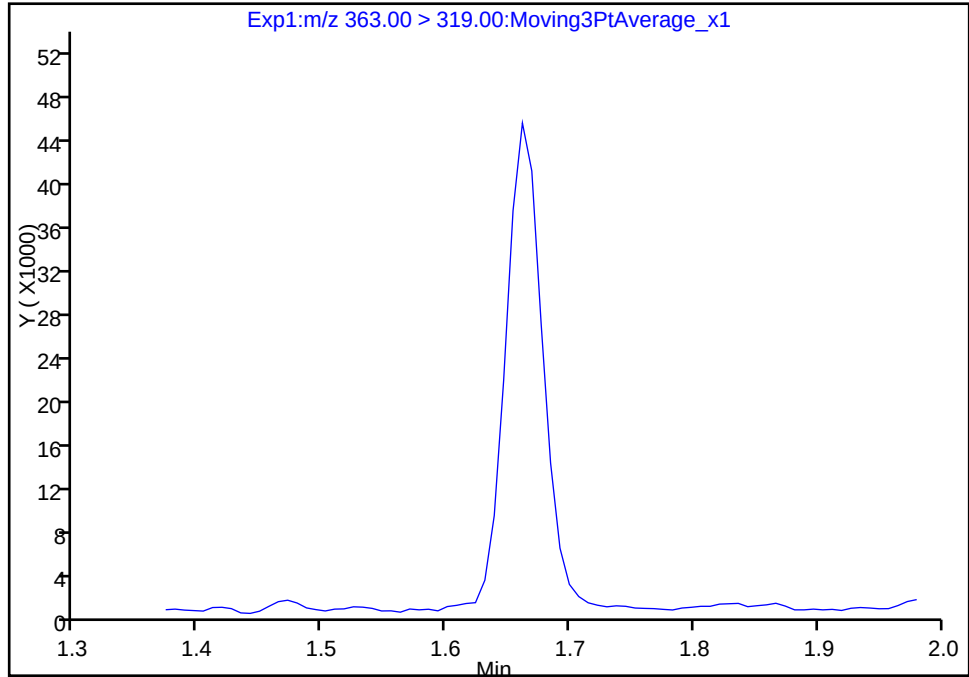
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_004.d
Injection Date: 16-Feb-2018 08:55:33 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

4 Perfluoroheptanoic acid, CAS: 375-85-9

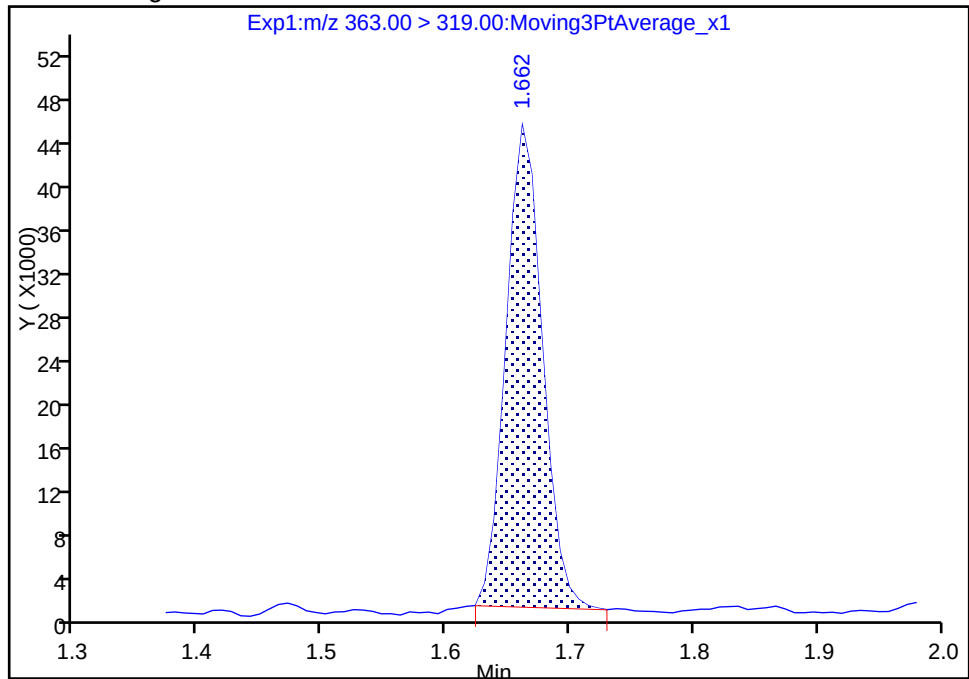
Signal: 1

Not Detected
Expected RT: 1.66

Processing Integration Results



Manual Integration Results



RT: 1.66
Area: 89434
Amount: 0.988420
Amount Units: ng/ml

Reviewer: roycea, 16-Feb-2018 10:26:41

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

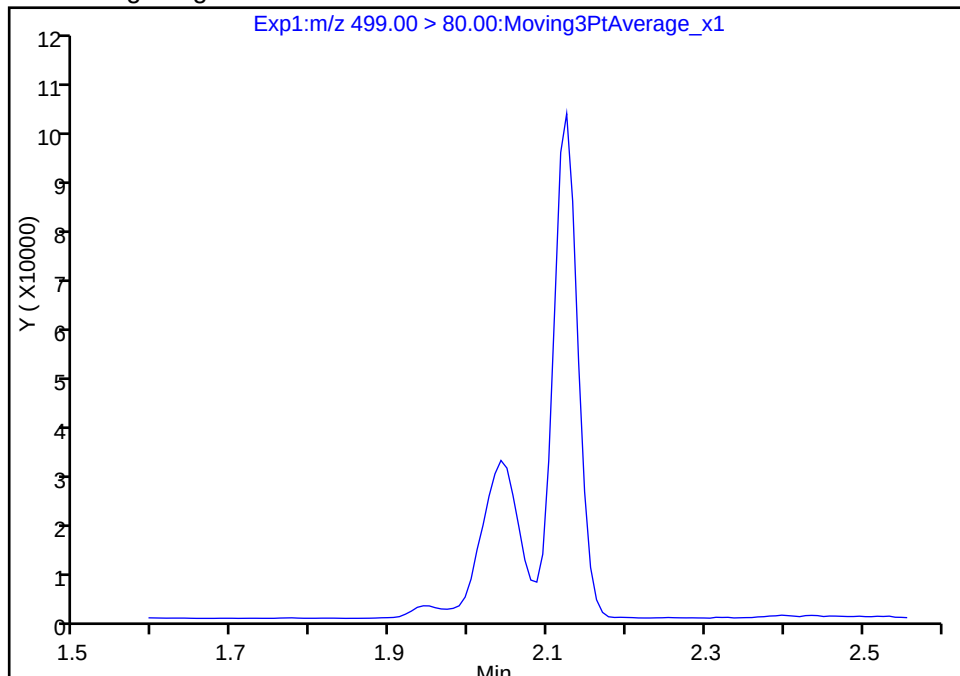
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_004.d
Injection Date: 16-Feb-2018 08:55:33 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

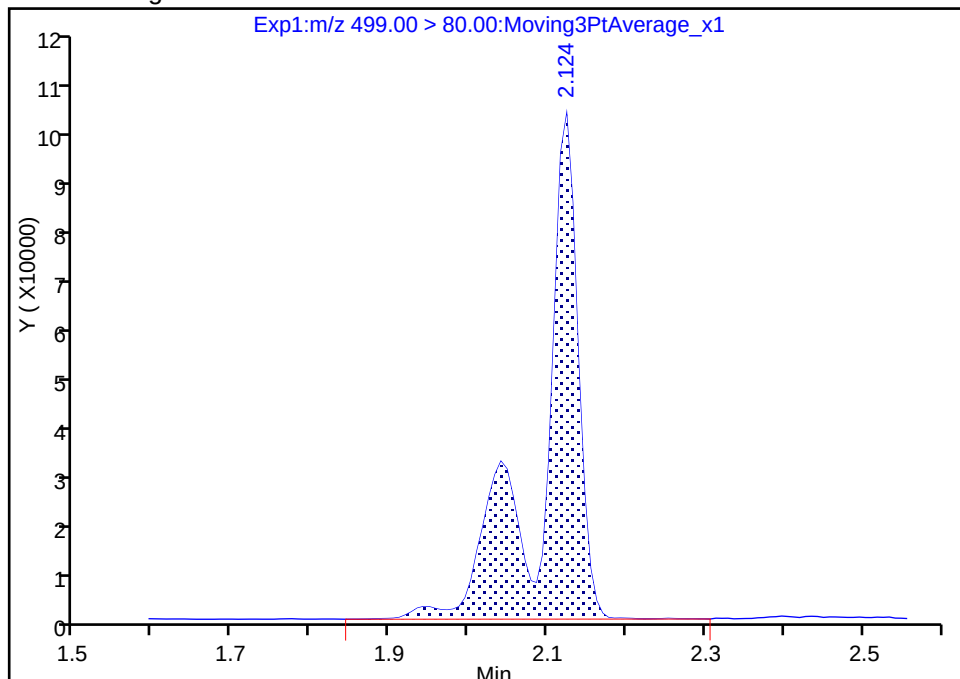
Not Detected
Expected RT: 2.11

Processing Integration Results



RT: 2.12
Area: 339345
Amount: 3.833062
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 16-Feb-2018 10:26:57

Audit Action: Assigned Compound ID

Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_005.d
 Lims ID: IC L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 16-Feb-2018 09:00:16 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\20180216-54164.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Feb-2018 10:55:30 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK013

First Level Reviewer: roycea

Date: 16-Feb-2018 10:29:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	2401851	19.9		11847	
298.90 > 99.00	1.381	1.381	0.0	1.000	1648571		1.46(0.00-0.00)	6533	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.505	0.005	1.000	1029524	9.47		13087	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.656	0.006	1.000	1039145	6.82		2484	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.658	0.004	1.000	208408	2.17		62.0	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.859	0.007		988244	10.0		9787	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.860	0.006	1.000	443975	4.67		19.7	
413.00 > 169.00	1.866	1.860	0.006	1.000	241410		1.84(0.00-0.00)	47.8	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.109	0.008	1.000	801200	8.95		1624	a
499.00 > 99.00	2.117	2.109	0.008	1.000	172636		4.64(0.00-0.00)	228	a
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.114	0.003		2714895	28.7		10005	
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.122	0.002	1.000	255853	4.21		29.7	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.270	0.006	1.000	491558	9.49		5500	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L2_00021

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_005.d

Injection Date: 16-Feb-2018 09:00:16

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

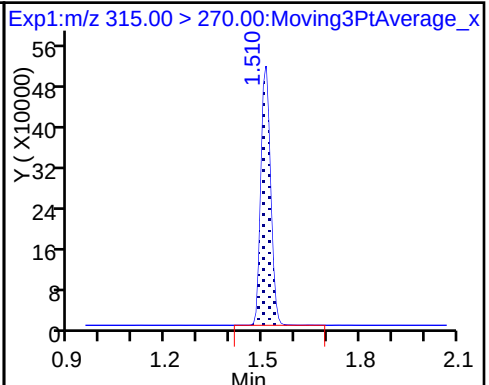
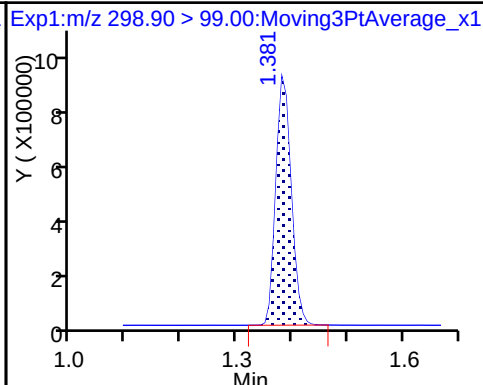
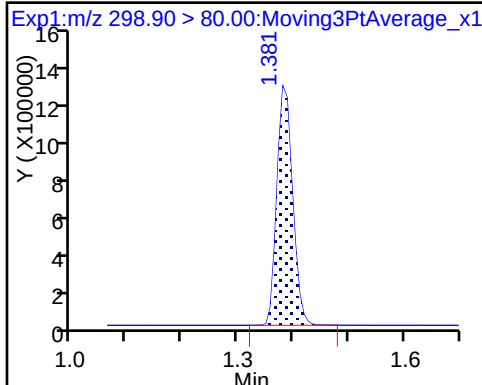
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

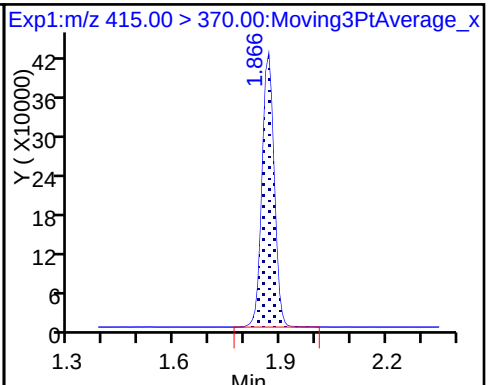
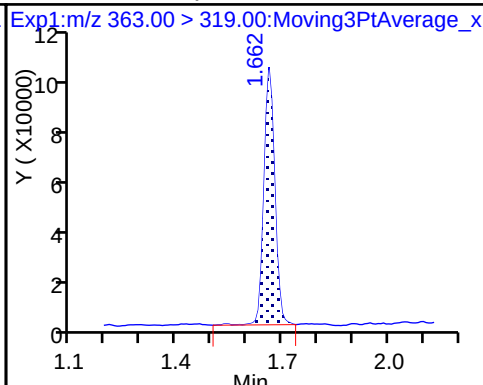
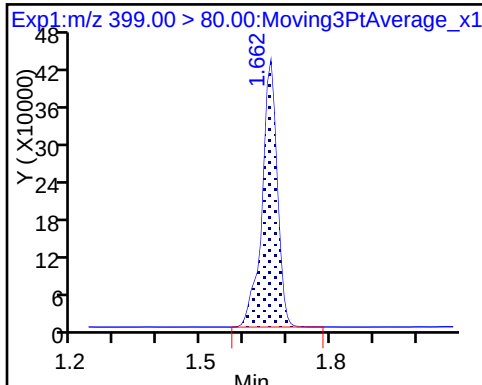
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

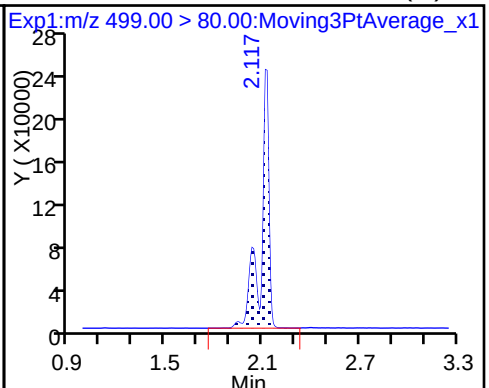
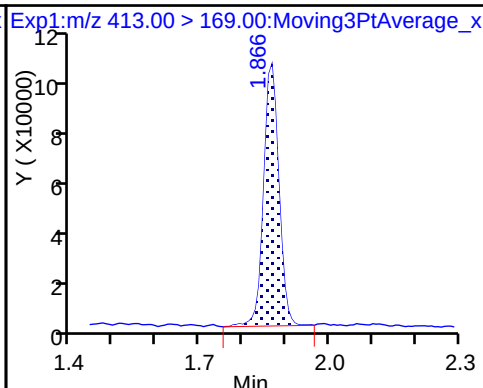
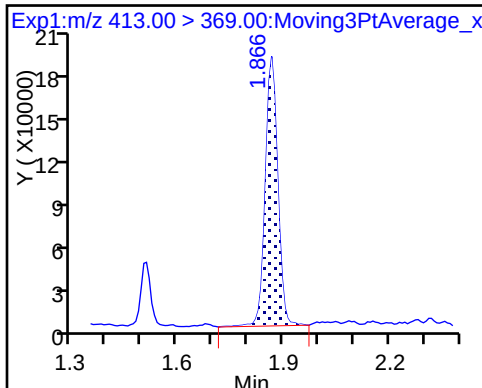
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

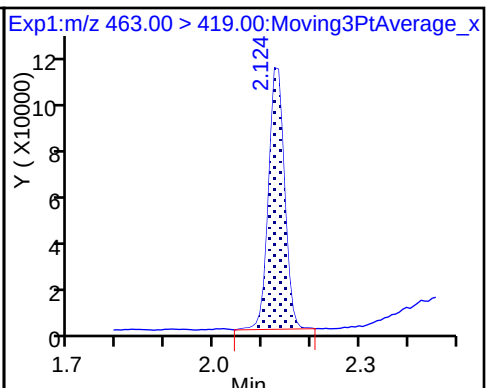
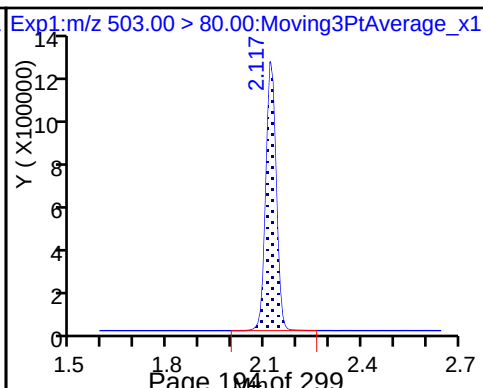
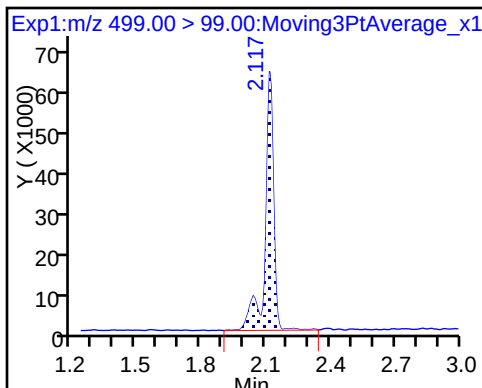
8 Perfluorooctane sulfonic acid (M)



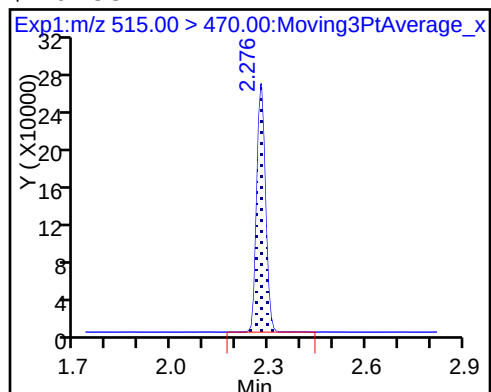
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

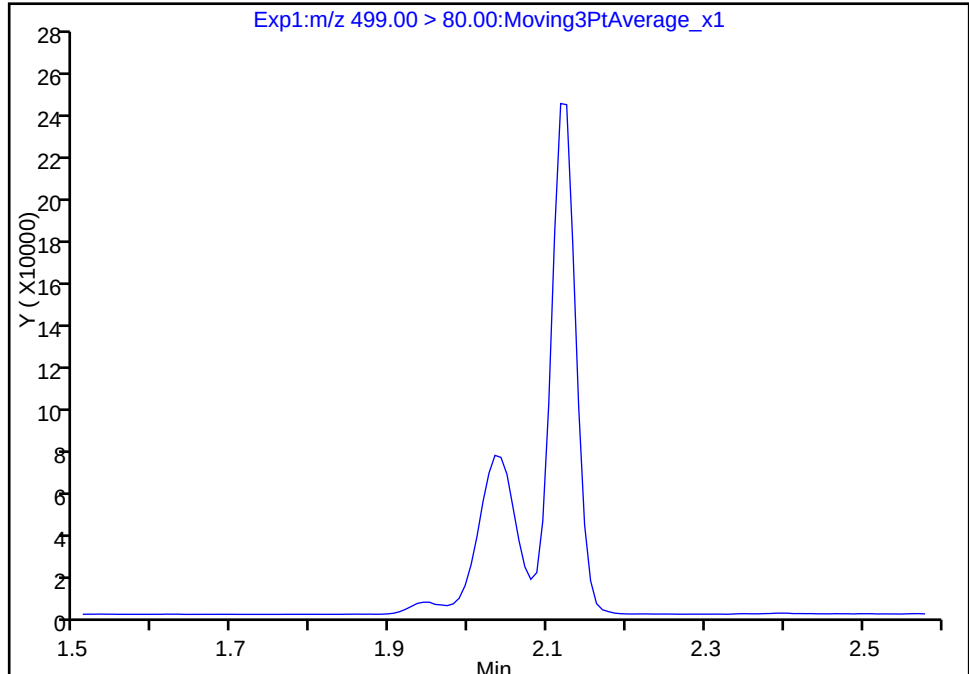
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_005.d
Injection Date: 16-Feb-2018 09:00:16 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

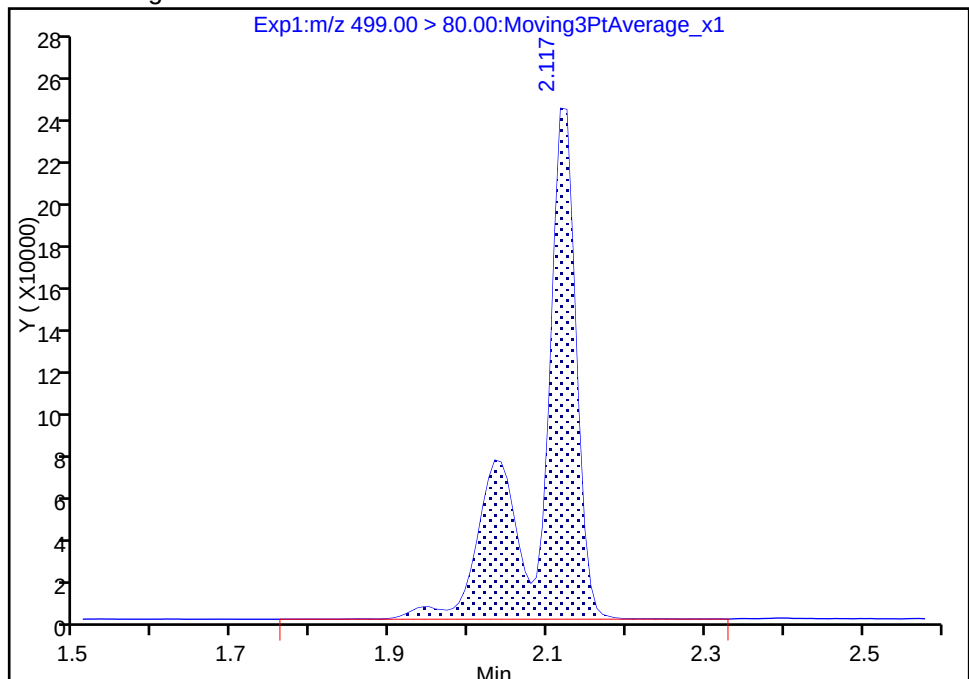
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 801200
Amount: 8.951348
Amount Units: ng/ml



Reviewer: roycea, 16-Feb-2018 10:29:26

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_006.d
 Lims ID: IC L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 16-Feb-2018 09:05:01 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\20180216-54164.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Feb-2018 10:55:31 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK013

First Level Reviewer: roycea

Date: 16-Feb-2018 10:30:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	5386060	46.6		24881	
298.90 > 99.00	1.381	1.381	0.0	1.000	3691119		1.46(0.00-0.00)	13454	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1031304	9.48		13749	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.656	-0.002	1.000	2300670	15.1		5477	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.658	0.004	1.000	467875	4.87		141	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.859	0.0		988820	10.0		11038	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.860	-0.001	1.000	956930	10.1		43.8	
413.00 > 169.00	1.859	1.860	-0.001	1.000	520439		1.84(0.00-0.00)	103	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.109	0.008	1.000	1821248	20.3		3507	a
499.00 > 99.00	2.117	2.109	0.008	1.000	390582		4.66(0.00-0.00)	507	a
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.114	0.003		2717621	28.7		11170	
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.122	0.002	1.000	592583	9.74		77.0	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.270	-0.002	1.000	462142	8.91		5257	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L3_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_006.d

Injection Date: 16-Feb-2018 09:05:01

Instrument ID: A8_N

Lims ID: IC L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

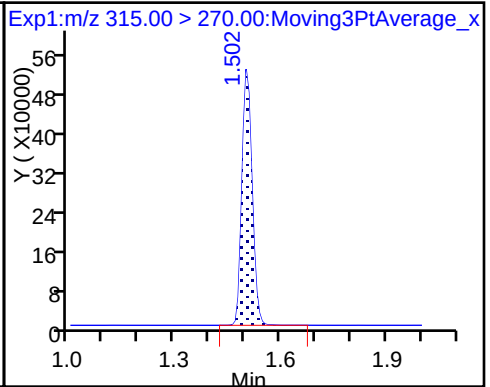
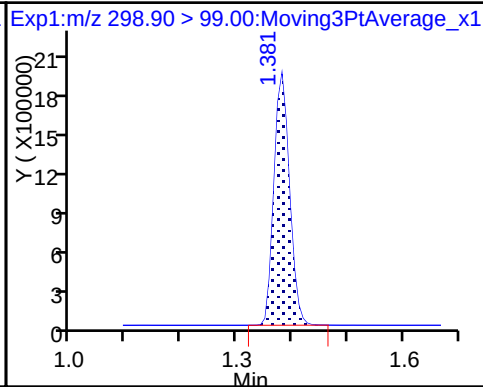
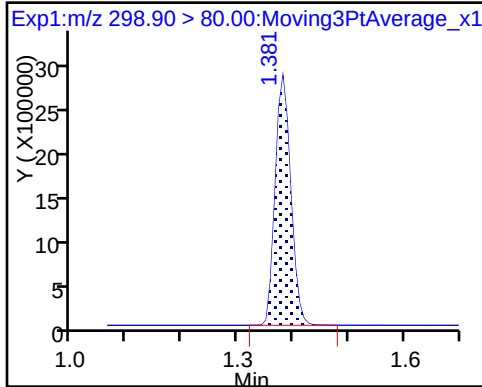
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

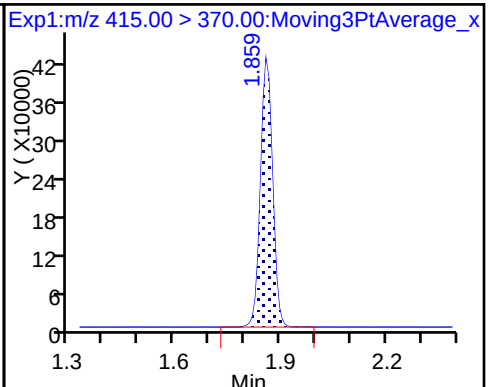
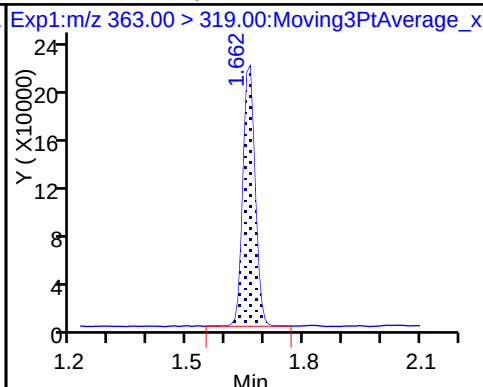
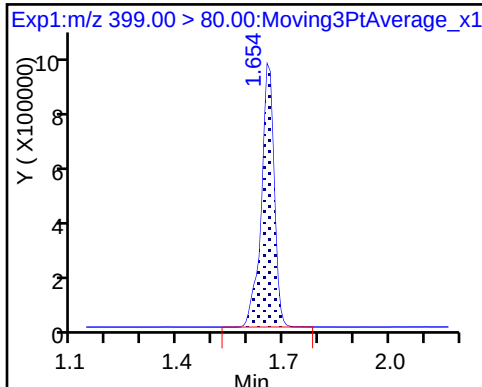
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

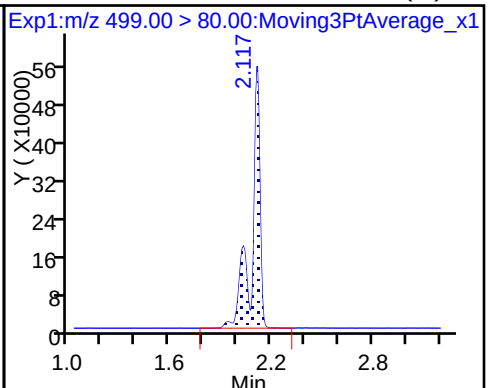
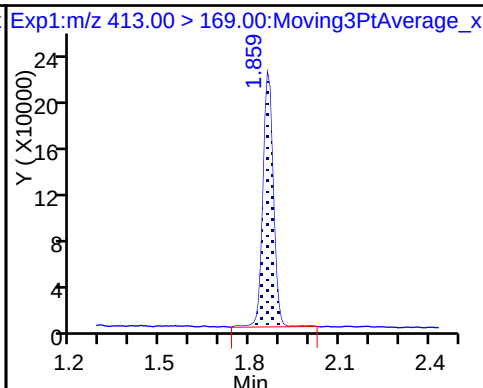
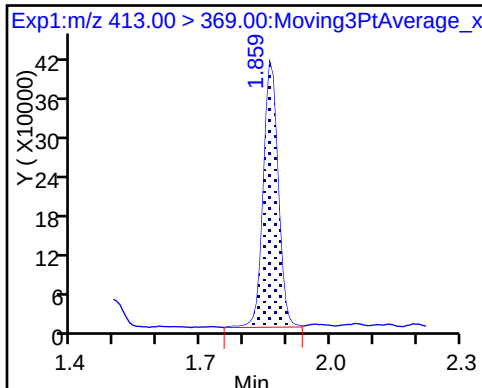
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

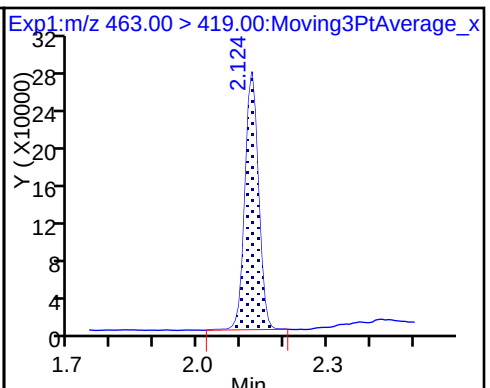
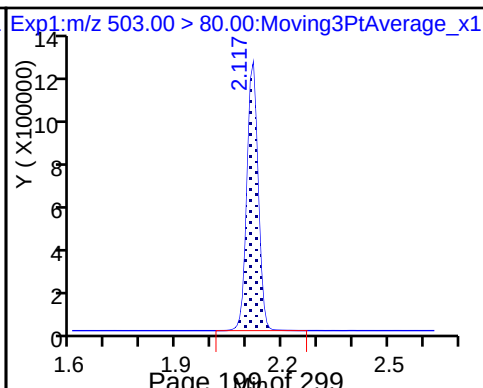
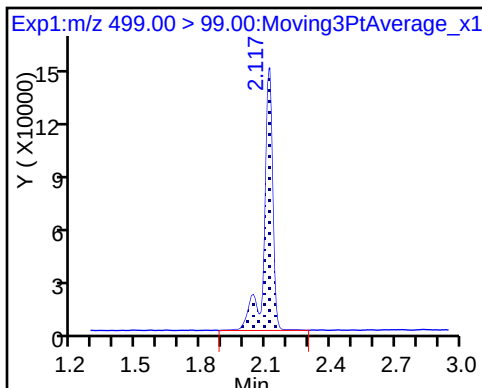
8 Perfluorooctane sulfonic acid (M)



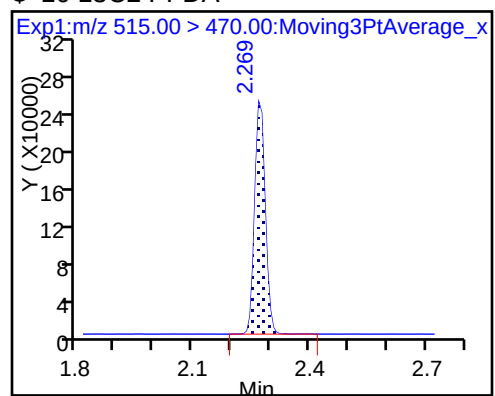
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_006.d
Injection Date: 16-Feb-2018 09:05:01 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

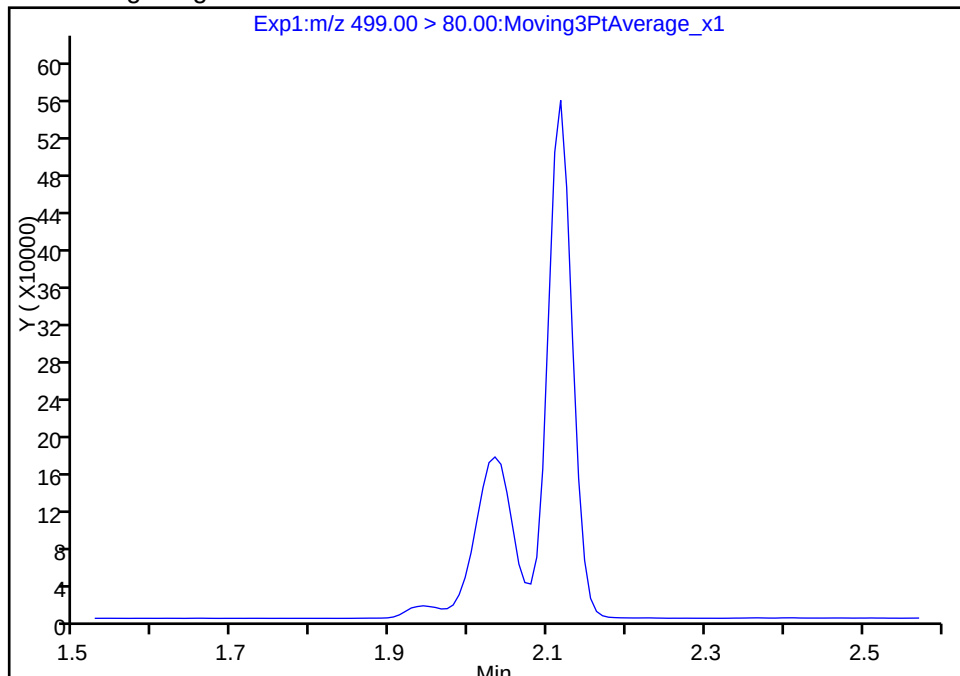
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

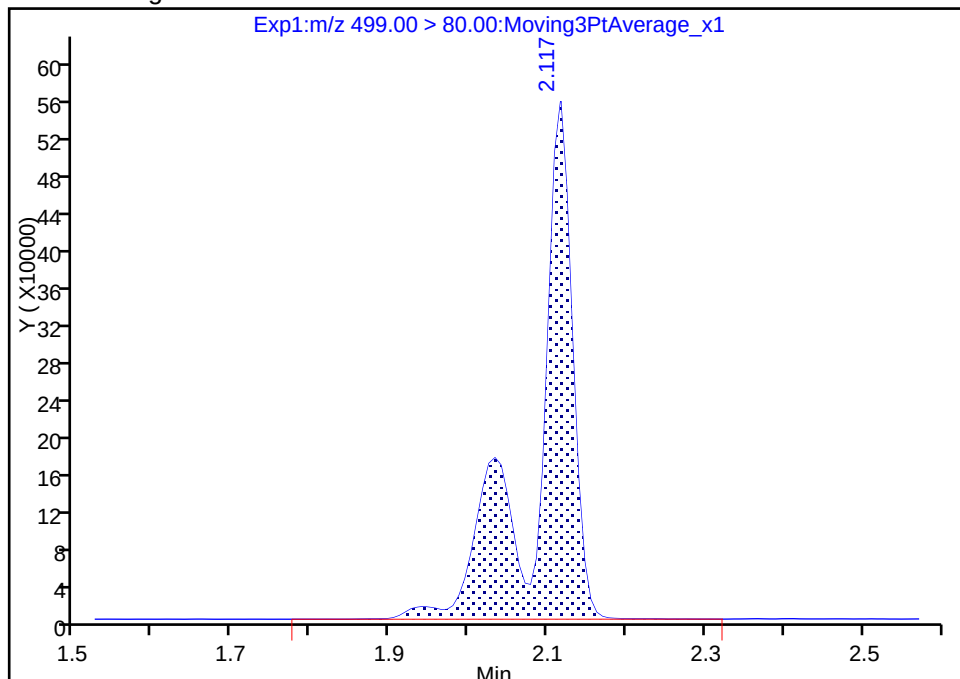
Not Detected

Expected RT: 2.11

Processing Integration Results



Manual Integration Results



RT: 2.12
Area: 1821248
Amount: 20.327349
Amount Units: ng/ml

Reviewer: roycea, 16-Feb-2018 10:29:49

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_007.d
 Lims ID: IC L4
 Client ID:
 Sample Type: ICISAV Calib Level: 4
 Inject. Date: 16-Feb-2018 09:09:42 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\20180216-54164.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Feb-2018 10:55:32 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK013

First Level Reviewer: roycea

Date: 16-Feb-2018 10:30:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	9625497	87.9		31459	
298.90 > 99.00	1.381	1.381	0.0	1.000	6951294		1.38(0.00-0.00)	19310	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1021204	10.5		12876	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.656	-0.002	1.000	4635169	29.8		9685	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.658	-0.004	1.000	919334	10.7		269	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.859	-0.008		884854	10.0		8810	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.860	-0.001	1.000	1711070	20.1		75.8	
413.00 > 169.00	1.859	1.860	-0.001	1.000	935401		1.83(0.00-0.00)	172	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	3707450	40.5		7539	a
499.00 > 99.00	2.109	2.109	0.0	1.000	789268		4.70(0.00-0.00)	1168	a
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.114	-0.005		2774986	28.7		12601	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.122	-0.005	1.000	1157180	21.3		175	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.270	-0.002	1.000	483499	10.4		5556	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L4_00021

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_007.d

Injection Date: 16-Feb-2018 09:09:42

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

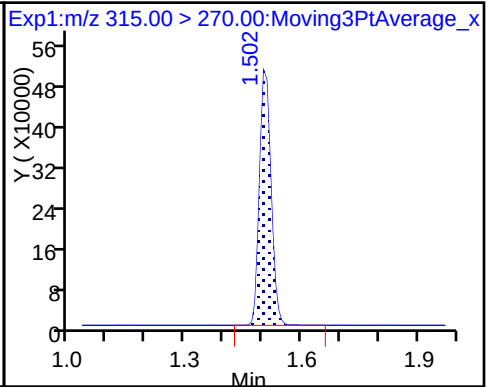
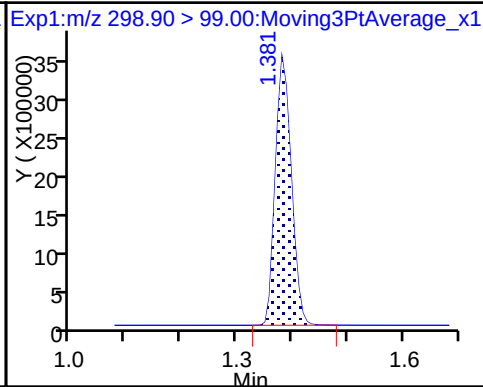
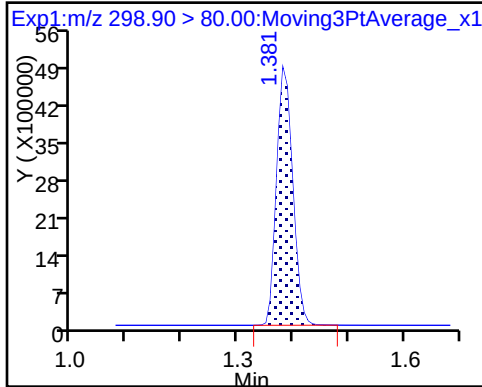
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

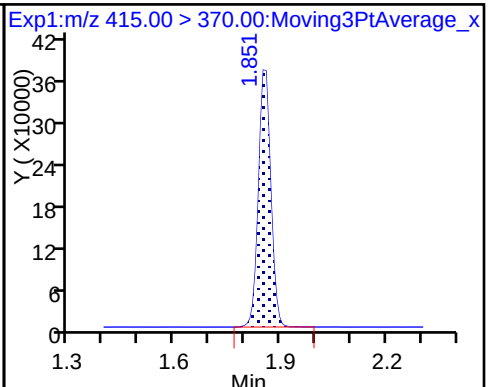
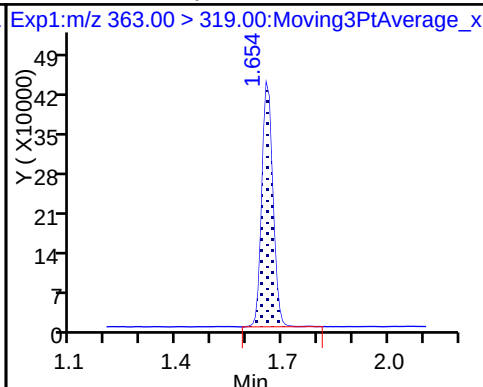
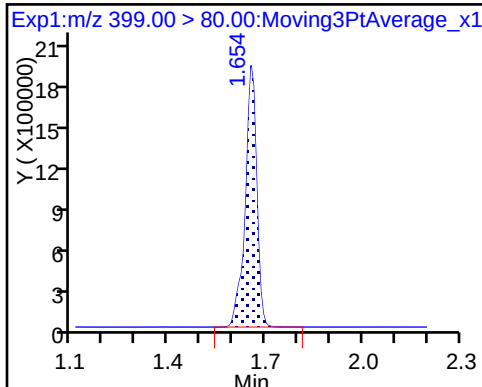
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

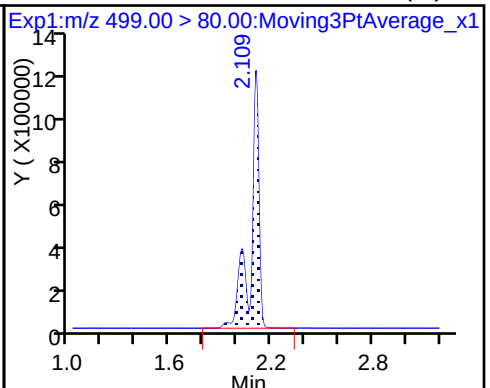
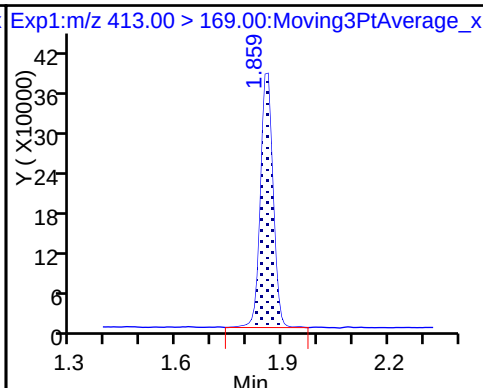
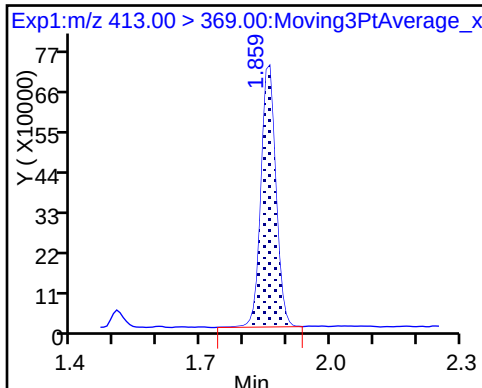
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

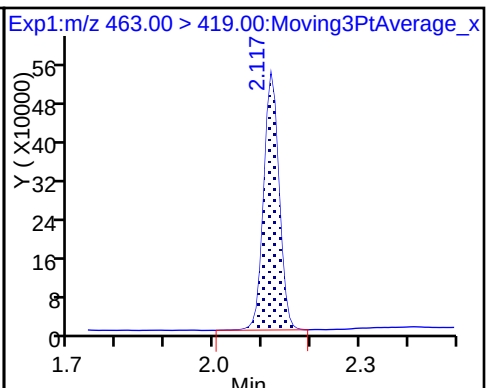
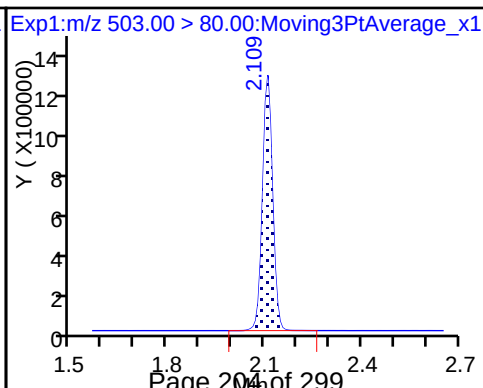
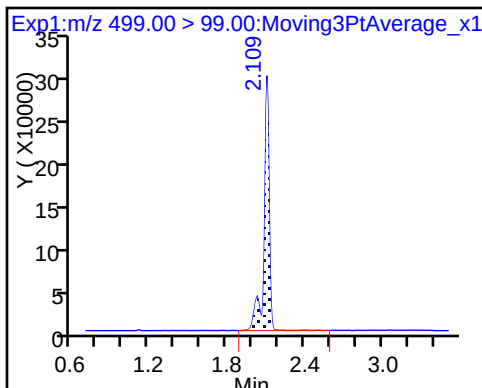
8 Perfluorooctane sulfonic acid (M)



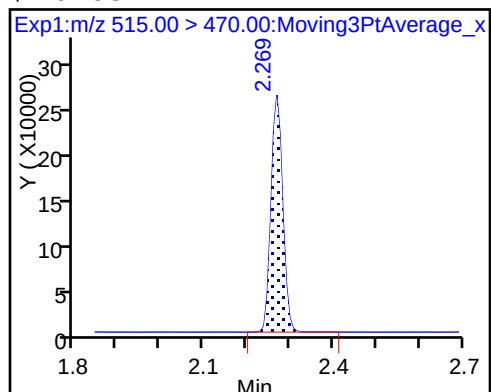
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

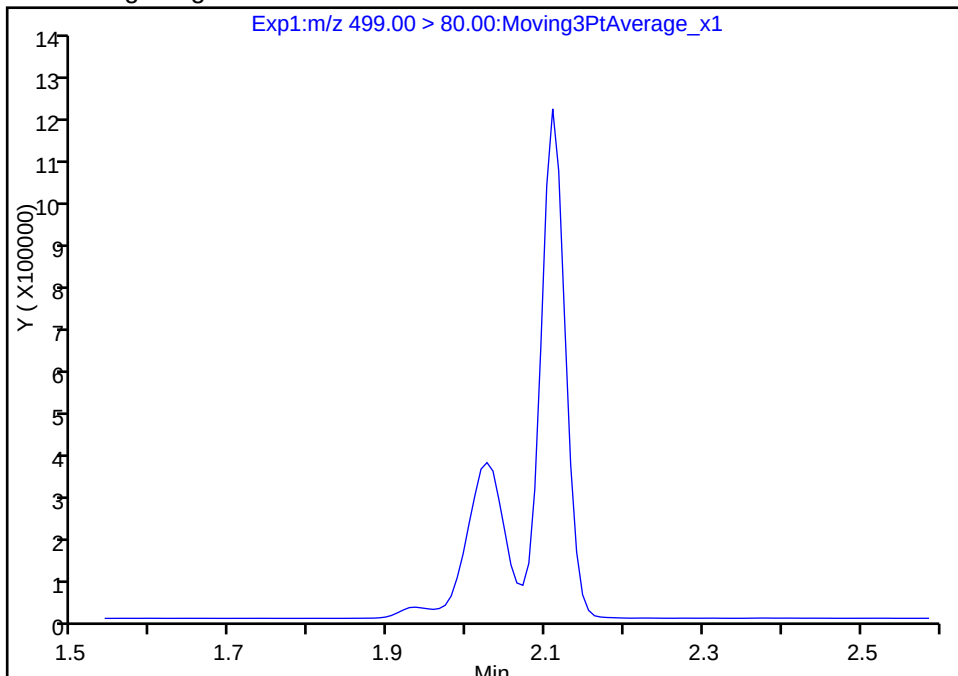
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_007.d
Injection Date: 16-Feb-2018 09:09:42 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

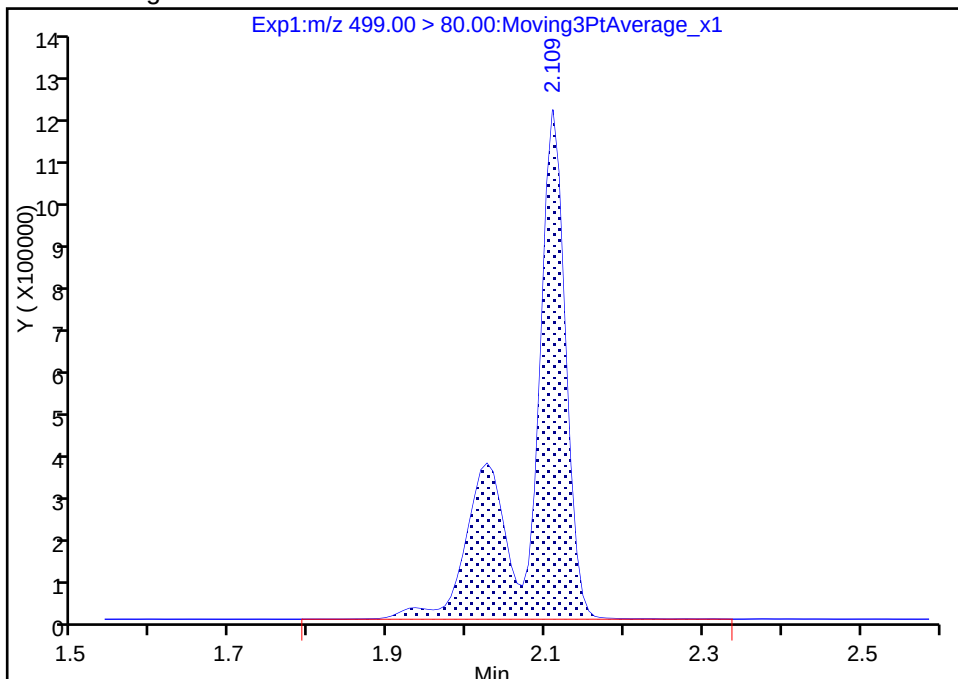
Signal: 1

Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results



RT: 2.11
Area: 3707450
Amount: 40.524256
Amount Units: ng/ml

Reviewer: roycea, 16-Feb-2018 10:30:18

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_008.d
 Lims ID: IC L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 16-Feb-2018 09:14:23 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\20180216-54164.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Feb-2018 10:55:33 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK013

First Level Reviewer: roycea

Date: 16-Feb-2018 10:31:06

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	13334361	136.5		33692	
298.90 > 99.00	1.381	1.381	0.0	1.000	9982883		1.34(0.00-0.00)	24528	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	998008	9.69		16387	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.656	-0.002	1.000	7088297	46.4		14215	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.658	-0.004	1.000	1334846	14.7		427	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.859	-0.008		936458	10.0		9383	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.860	-0.009	1.000	2767901	30.7		125	
413.00 > 169.00	1.851	1.860	-0.009	1.000	1502671		1.84(0.00-0.00)	280	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	5544581	61.8		11632	a
499.00 > 99.00	2.109	2.109	0.0	1.000	1138506		4.87(0.00-0.00)	1480	a
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.114	-0.005		2722967	28.7		9525	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.122	-0.005	1.000	1675602	29.1		264	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.270	-0.009	1.000	483740	9.85		5874	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00025

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_008.d

Injection Date: 16-Feb-2018 09:14:23

Instrument ID: A8_N

Lims ID: IC L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

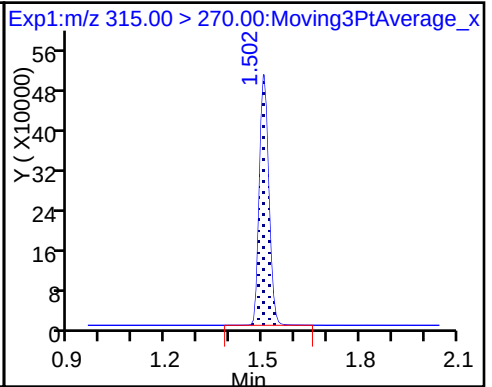
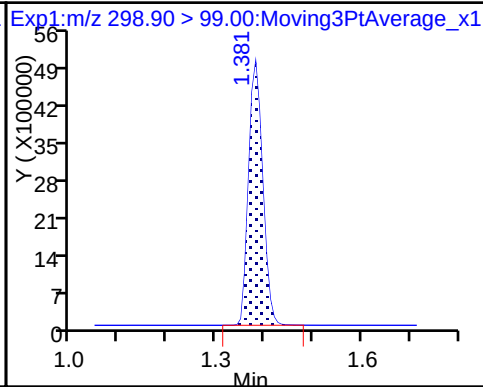
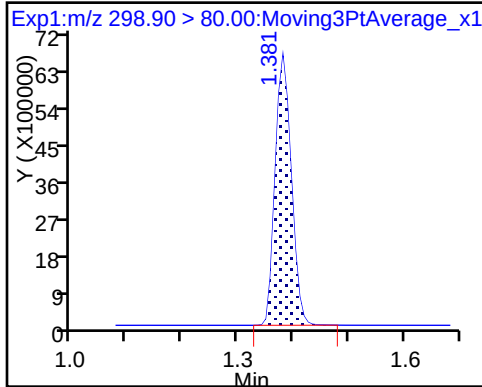
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

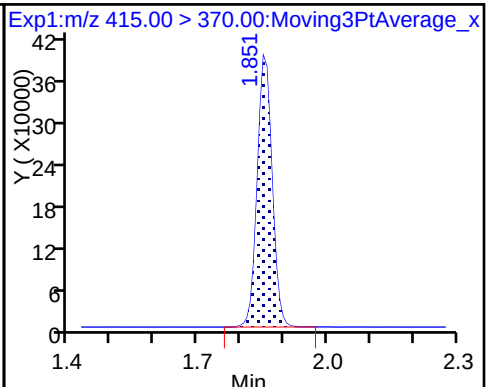
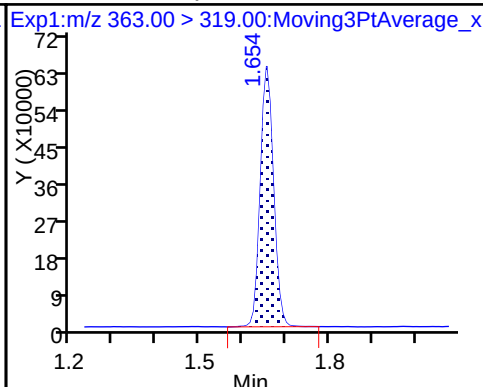
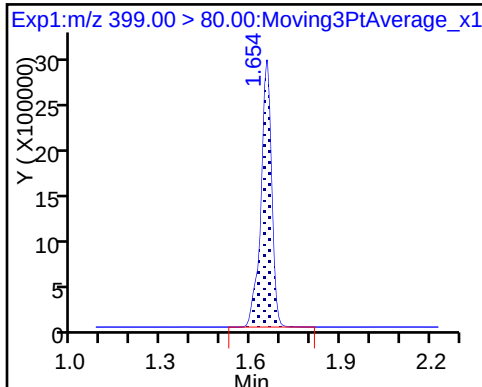
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

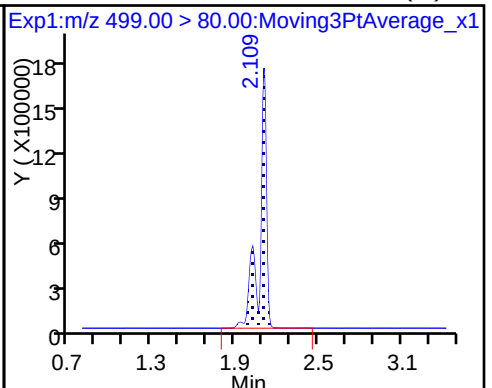
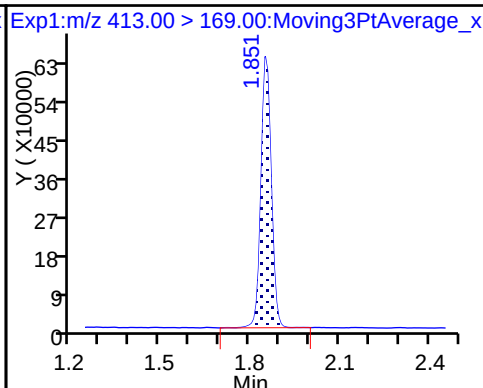
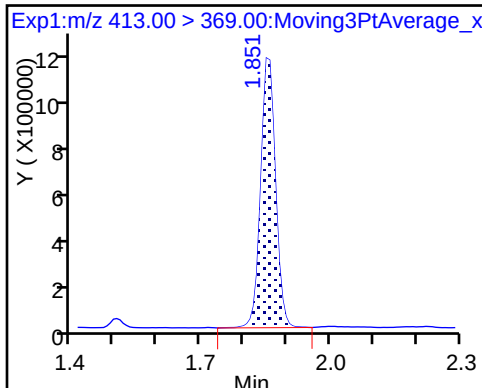
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

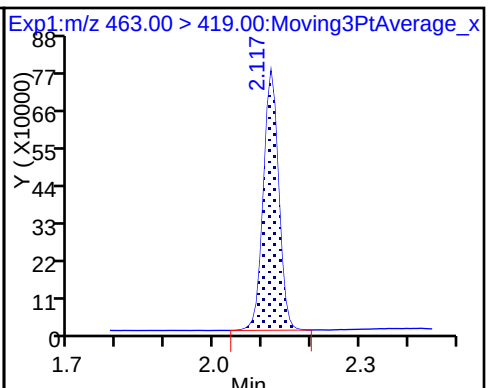
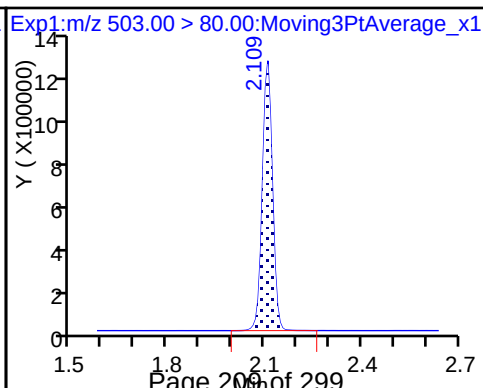
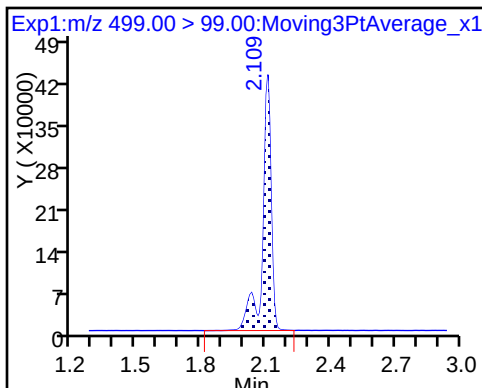
8 Perfluorooctane sulfonic acid (M)



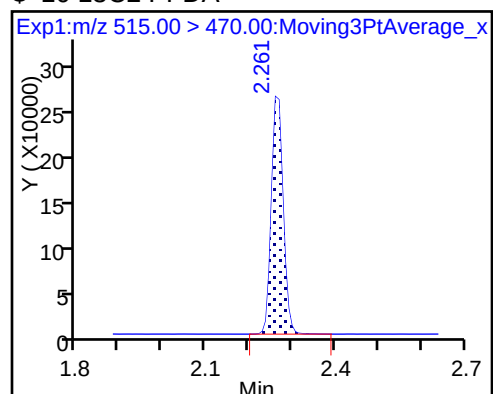
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

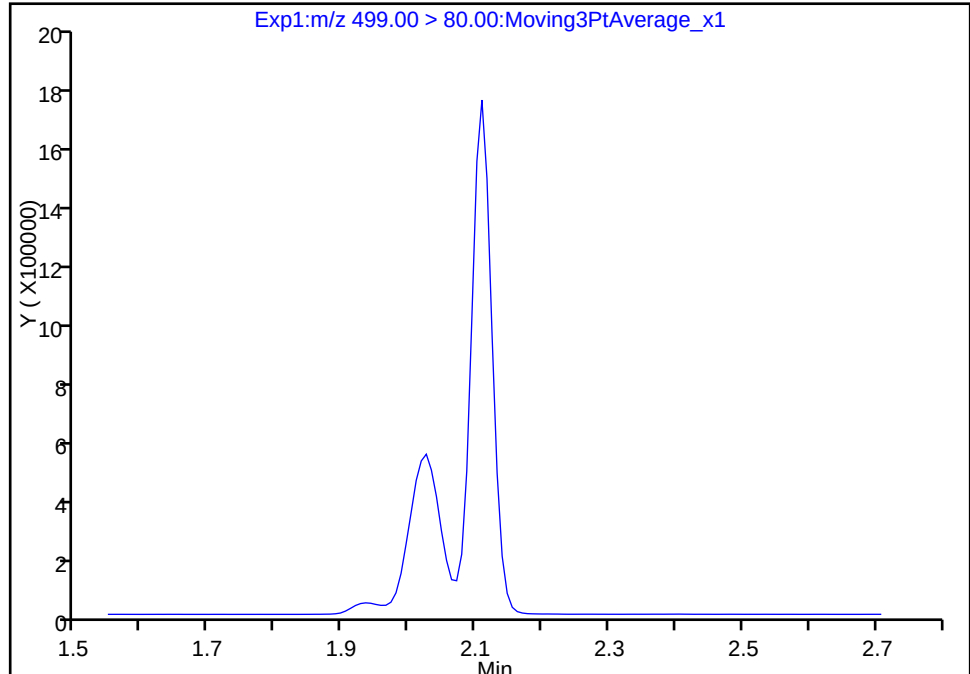
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_008.d
Injection Date: 16-Feb-2018 09:14:23 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

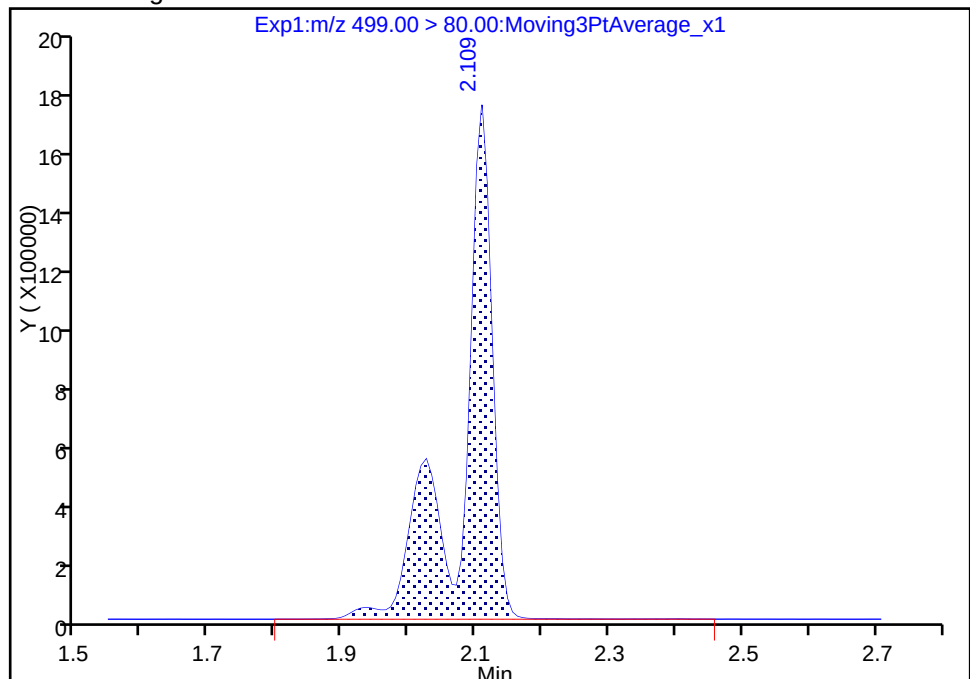
Not Detected
Expected RT: 2.11

Processing Integration Results



RT: 2.11
Area: 5544581
Amount: 61.762790
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 16-Feb-2018 10:30:47

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Lims ID: IC L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 16-Feb-2018 09:19:04 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\20180216-54164.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Feb-2018 10:55:34 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK013

First Level Reviewer: roycea

Date: 16-Feb-2018 10:31:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	16112512	179.6		29614	
298.90 > 99.00	1.381	1.381	0.0	1.000	12540779		1.28(0.00-0.00)	25956	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1037300	10.6		12797	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.656	-0.002	1.000	9203547	59.7		15723	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.658	-0.004	1.000	1755879	20.3		523	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.859	0.0		892615	10.0		10354	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.860	-0.001	1.000	3415564	39.8		147	
413.00 > 169.00	1.859	1.860	-0.001	1.000	1839701		1.86(0.00-0.00)	325	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	7252490	80.1		13357	a
499.00 > 99.00	2.109	2.109	0.0	1.000	1559390		4.65(0.00-0.00)	2143	a
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.114	-0.005		2745419	28.7		10250	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.122	-0.005	1.000	2211715	40.3		388	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.270	-0.002	1.000	480980	10.3		5555	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L6_00021

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Injection Date: 16-Feb-2018 09:19:04

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

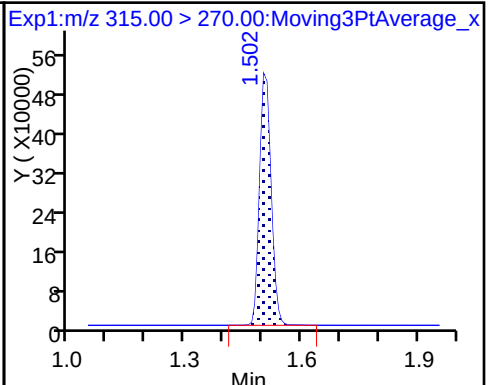
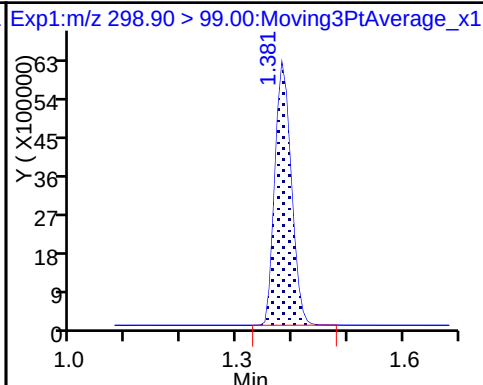
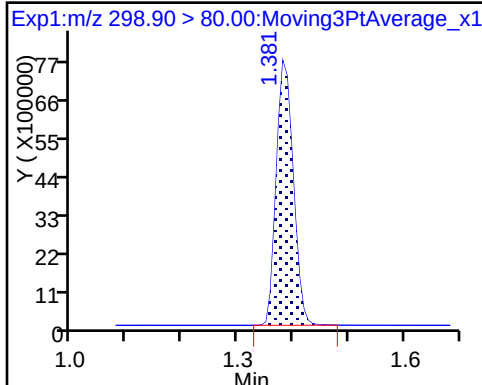
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

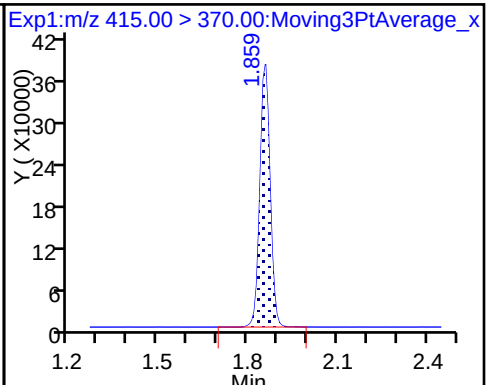
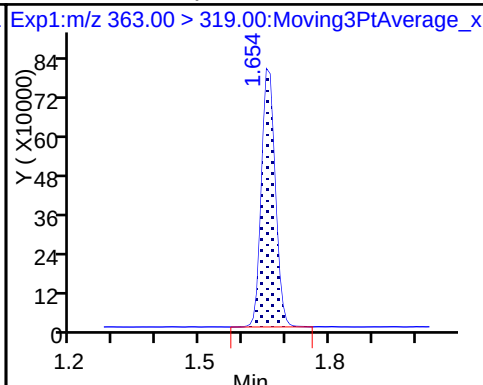
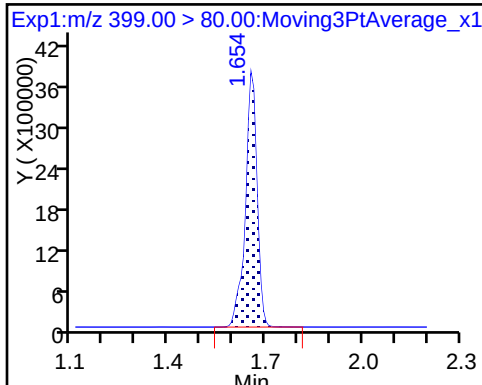
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

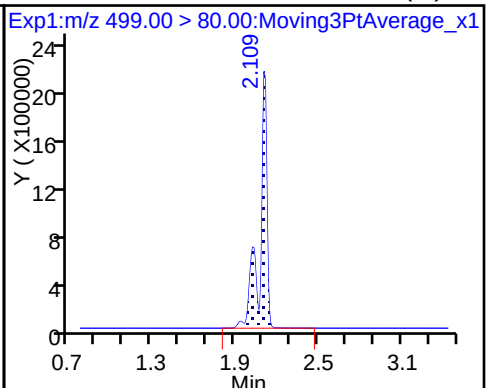
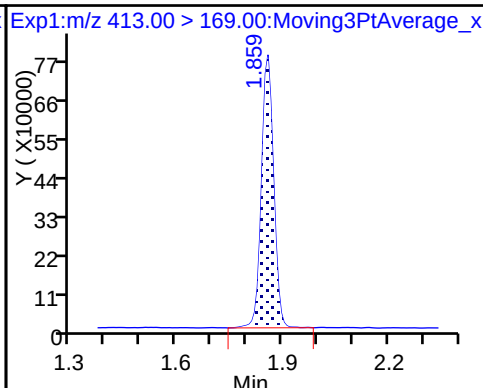
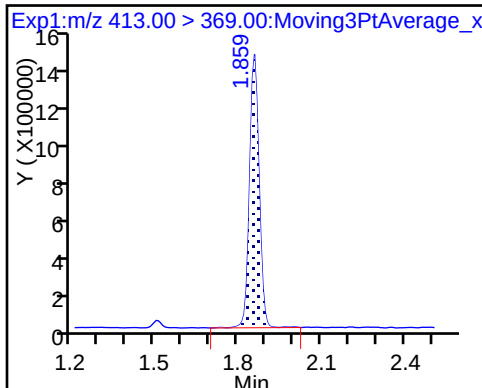
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

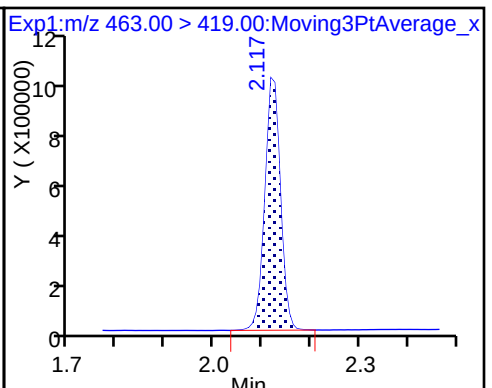
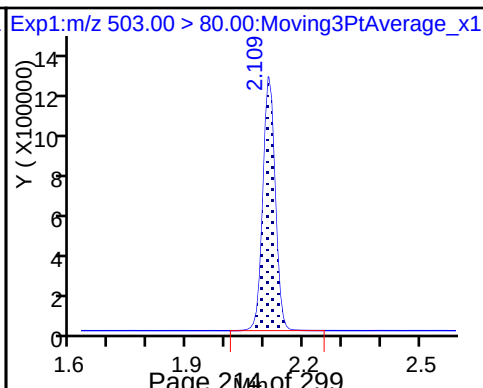
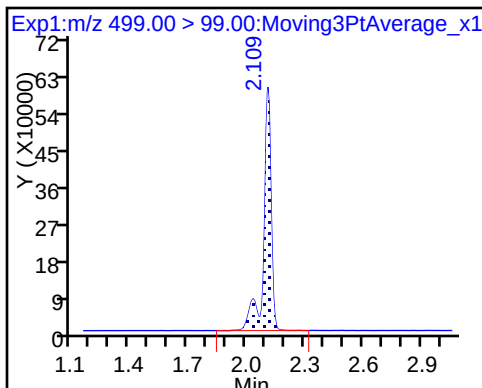
8 Perfluorooctane sulfonic acid (M)



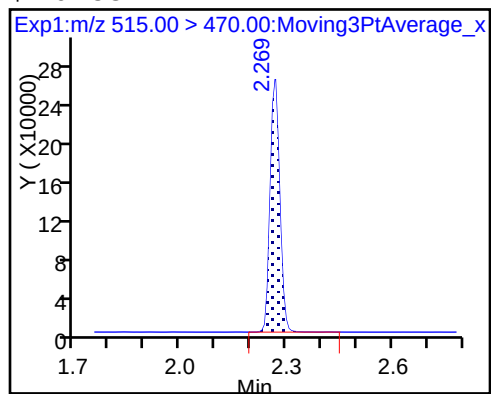
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

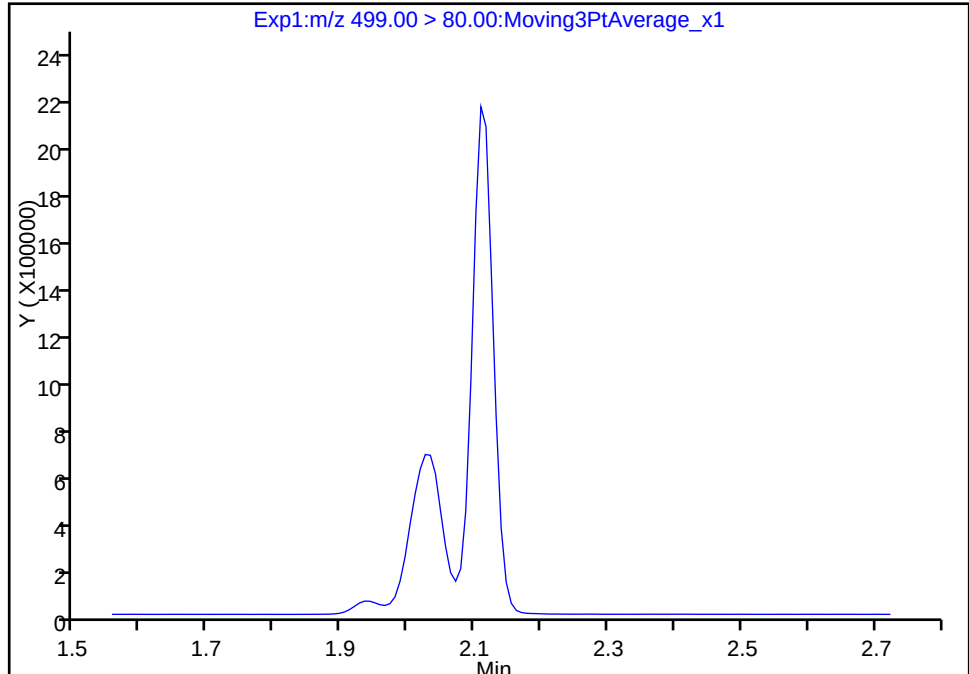
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
Injection Date: 16-Feb-2018 09:19:04 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

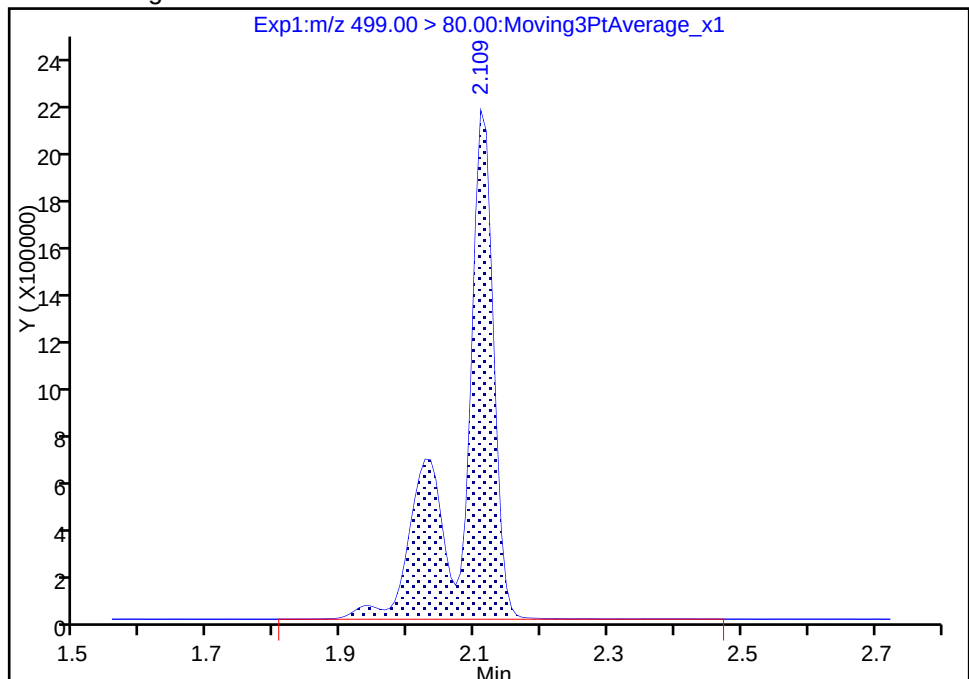
Not Detected
Expected RT: 2.11

Processing Integration Results



RT: 2.11
Area: 7252490
Amount: 80.127031
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 16-Feb-2018 10:31:12

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-208773/11 Calibration Date: 02/16/2018 09:28
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.02.016_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		1.238		19.4	20.0	-3.0	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.9284		2.12	2.22	-4.4	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.706		7.07	6.67	6.0	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9302		4.32	4.47	-3.3	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9736		9.19	8.93	3.0	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.5986		4.32	4.45	-2.7	50.0
13C2 PFHxA	Ave	1.100	1.037		9.43	10.0	-5.7	30.0
13C2 PFDA	Ave	0.5243	0.5013		9.56	10.0	-4.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_011.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 16-Feb-2018 09:28:24 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\20180216-54164.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Feb-2018 10:55:36 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK013

First Level Reviewer: roycea

Date: 16-Feb-2018 10:36:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.381	0.007	1.000	2300149	19.4		12090	
298.90 > 99.00	1.388	1.381	0.007	1.000	1585029		1.45(0.00-0.00)	6015	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.505	0.005	1.000	990640	9.43		13893	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.656	0.006	1.000	1056475	7.07		2665	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.658	0.004	1.000	197137	2.12		57.0	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.859	0.007		955394	10.0		10789	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.860	0.006	1.000	397164	4.32		16.3	
413.00 > 169.00	1.866	1.860	0.006	1.000	222384		1.79(0.00-0.00)	35.2	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.109	0.008	1.000	807120	9.19		1576	a
499.00 > 99.00	2.117	2.109	0.008	1.000	176184		4.58(0.00-0.00)	256	a
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.114	0.003		2663428	28.7		10092	
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.122	0.002	1.000	254268	4.32		47.5	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.270	-0.002	1.000	478905	9.56		4880	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L2_00021

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_011.d

Injection Date: 16-Feb-2018 09:28:24

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

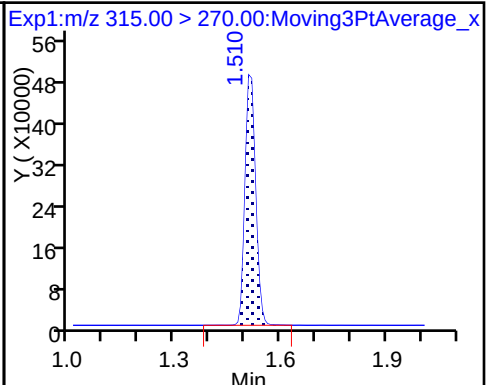
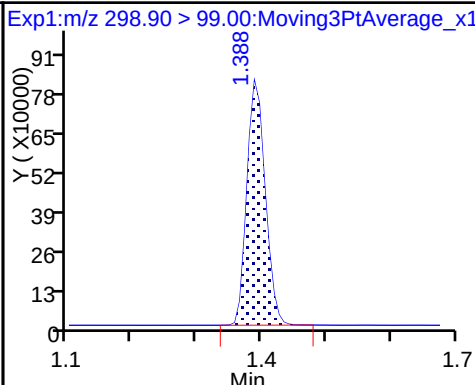
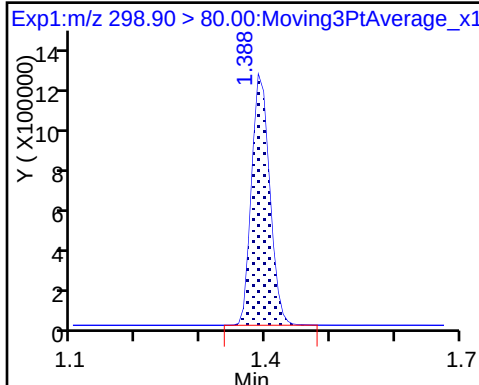
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

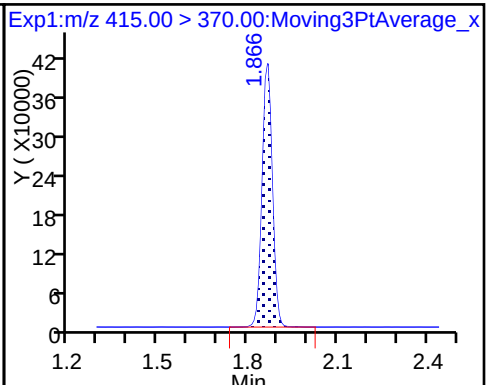
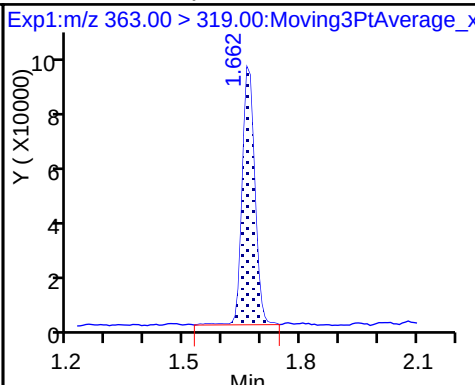
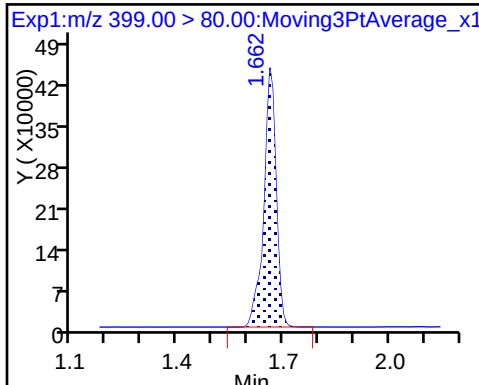
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

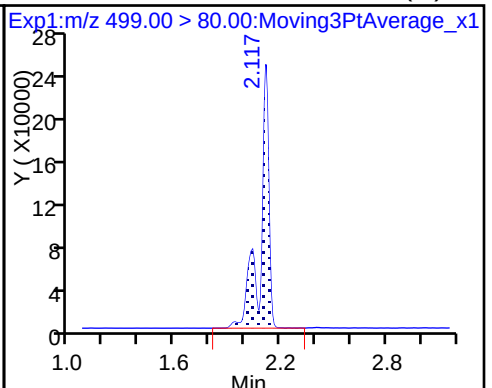
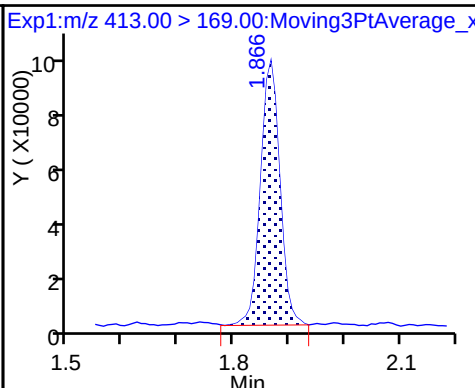
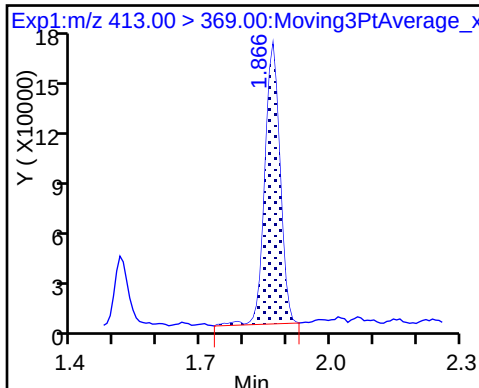
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

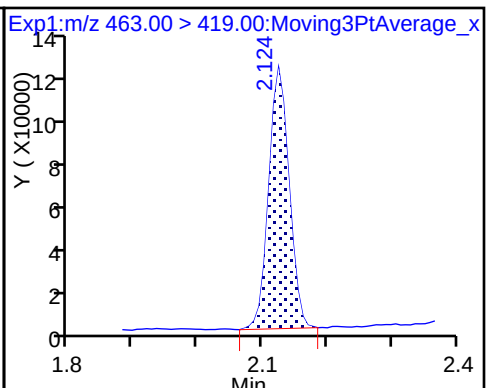
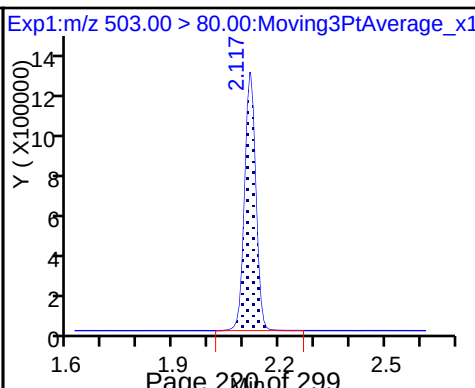
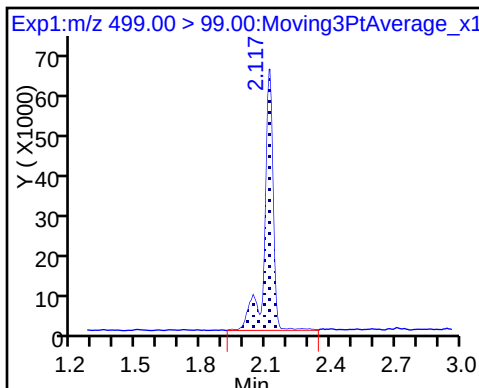
8 Perfluorooctane sulfonic acid (M)



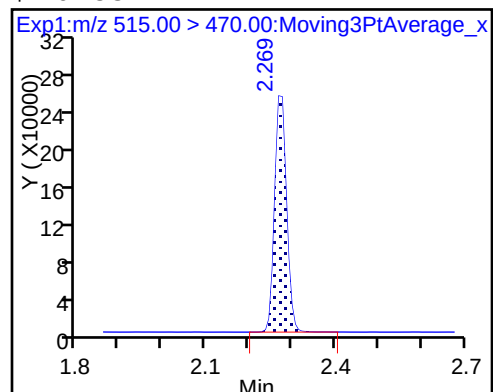
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

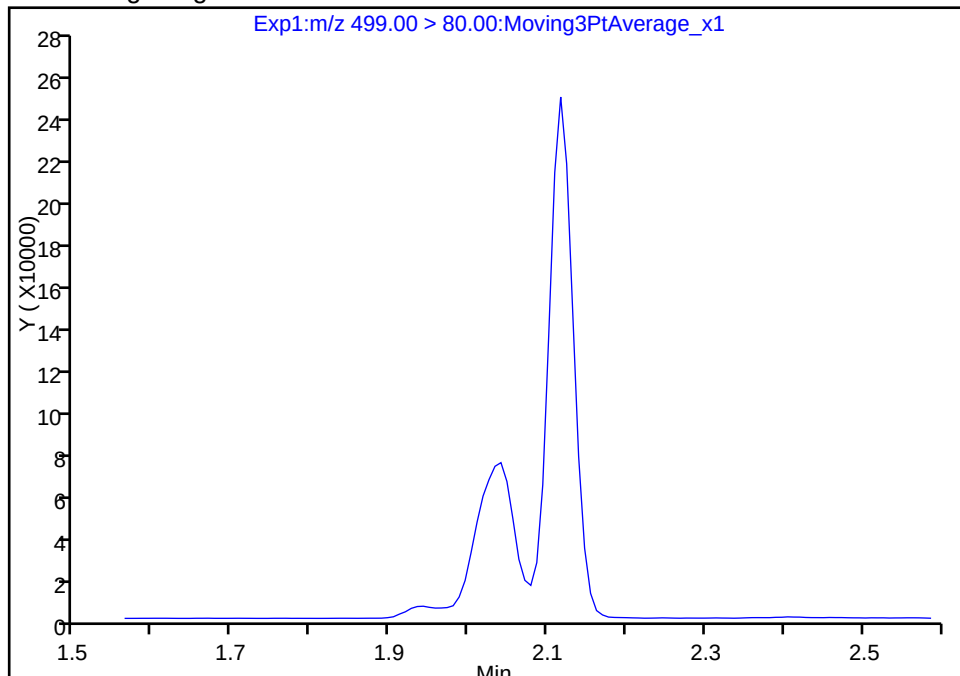
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Injection Date: 16-Feb-2018 09:28:24 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

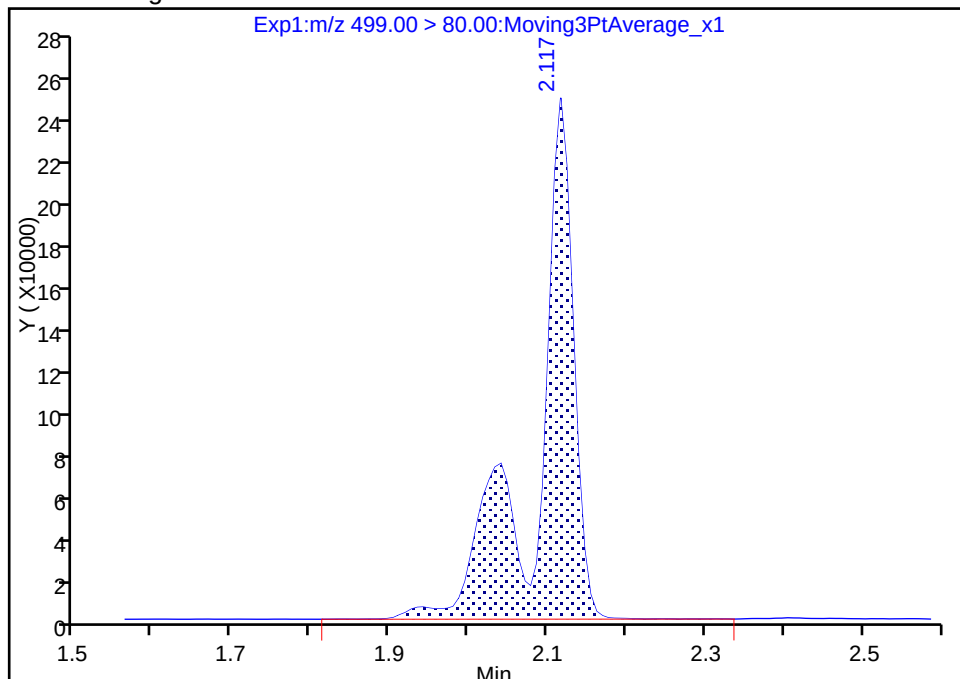
Not Detected
Expected RT: 2.11

Processing Integration Results



RT: 2.12
Area: 807120
Amount: 9.191739
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 16-Feb-2018 10:36:29

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Lab Sample ID: ICV 320-208773/13 Calibration Date: 02/16/2018 09:37
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.02.016_537ICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.108		100	100	0.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.997		10.3	10.0	2.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.686		21.1	20.2	4.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.8998		18.9	20.2	-6.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9852		21.0	20.2	4.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.6774		22.2	20.2	10.1	30.0
13C2 PFHxA	Ave	1.100	1.125		10.2	10.0	2.3	30.0
13C2 PFDA	Ave	0.5243	0.5347		10.2	10.0	2.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_013.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 16-Feb-2018 09:37:44 ALS Bottle#: 7 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: ICV
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist:
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Feb-2018 10:55:38 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK013

First Level Reviewer: roycea

Date: 16-Feb-2018 10:38:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	10449615	100.3		32318	
298.90 > 99.00	1.381	1.381	0.0	1.000	7853681		1.33(0.00-0.00)	23897	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1001724	10.2		14259	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.656	-0.002	1.000	3204604	21.1		7050	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.658	-0.004	1.000	887129	10.3		270	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.859	-0.008		890238	10.0		9142	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.860	-0.009	1.000	1615503	18.9		66.9	
413.00 > 169.00	1.851	1.860	-0.009	1.000	895357		1.80(0.00-0.00)	148	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	1873112	21.0		3471	a
499.00 > 99.00	2.109	2.109	0.0	1.000	375247		4.99(0.00-0.00)	509	a
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.114	-0.005		2703377	28.7		9042	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.122	-0.005	1.000	1215919	22.2		251	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.270	-0.009	1.000	475984	10.2		4647	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-ICV_00030

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_013.d

Injection Date: 16-Feb-2018 09:37:44

Instrument ID: A8_N

Lims ID: ICV

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 7

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

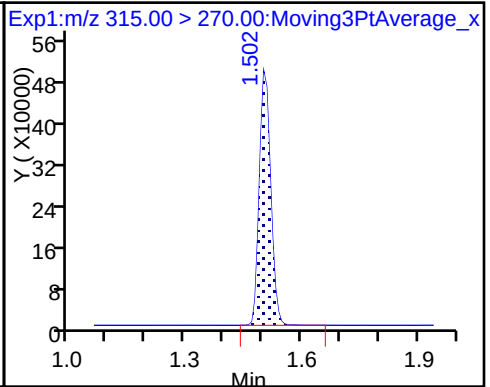
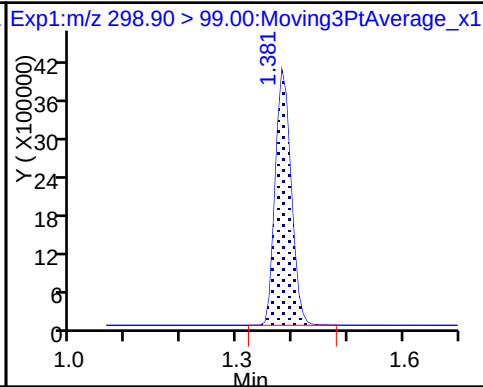
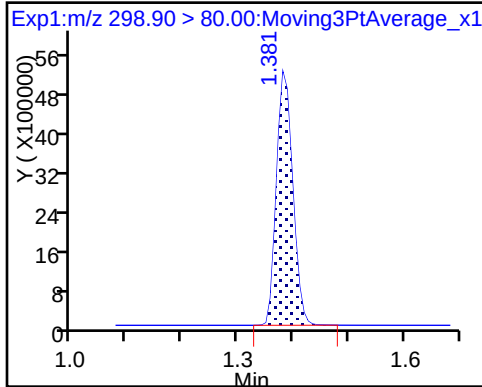
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

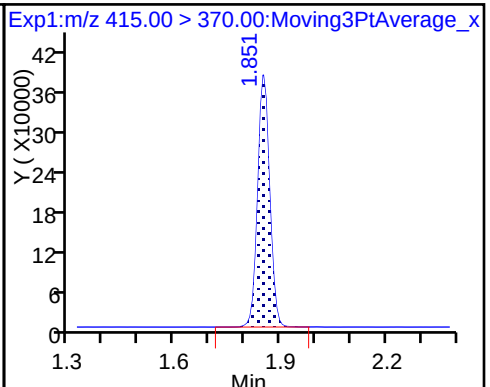
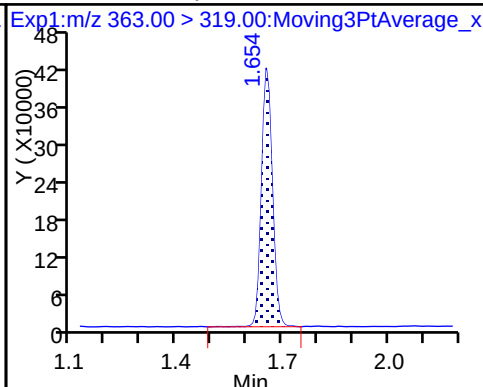
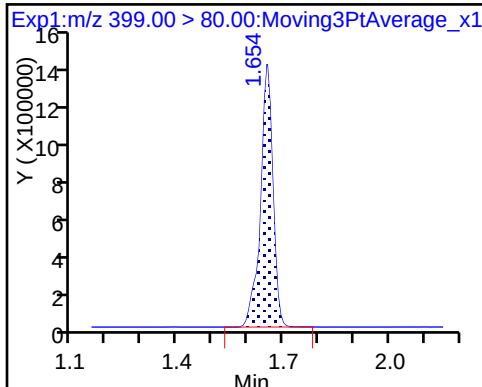
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

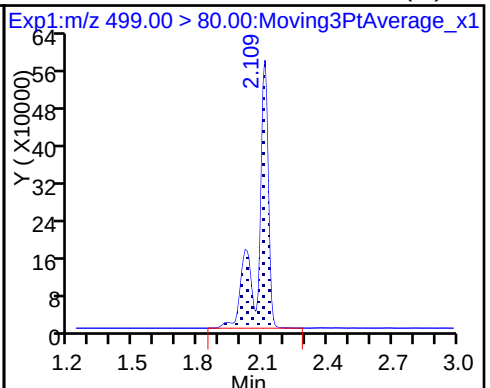
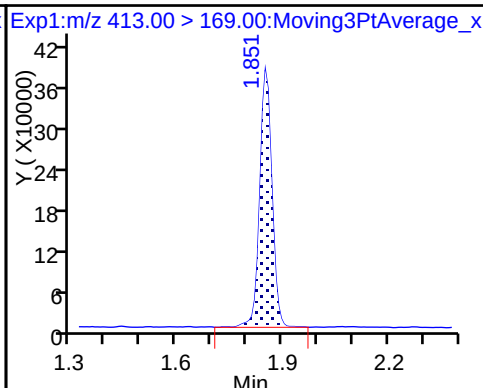
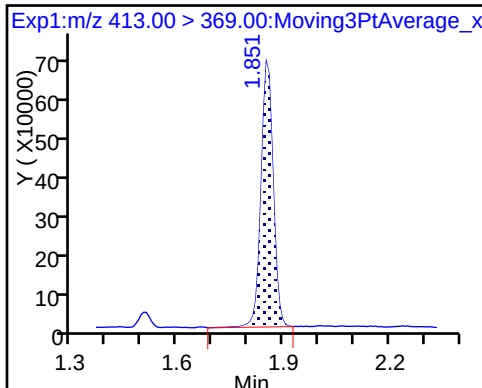
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

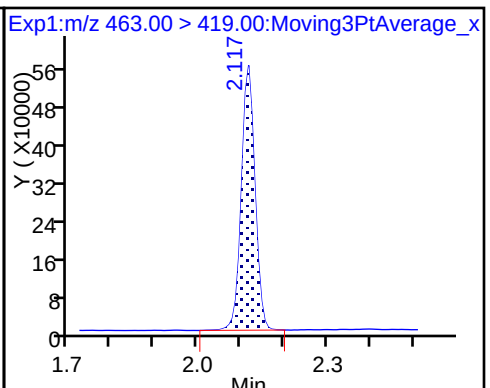
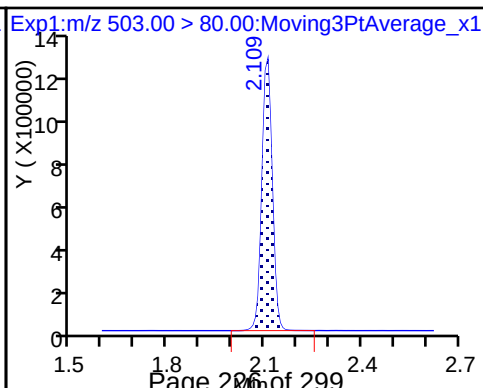
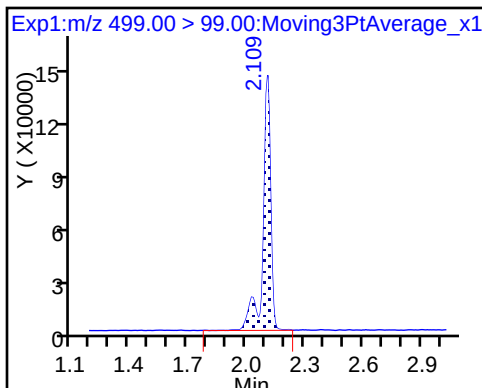
8 Perfluorooctane sulfonic acid (M)



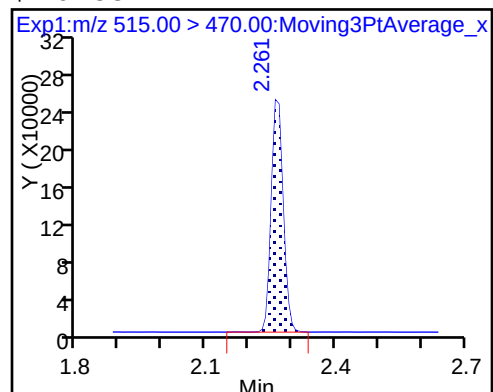
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

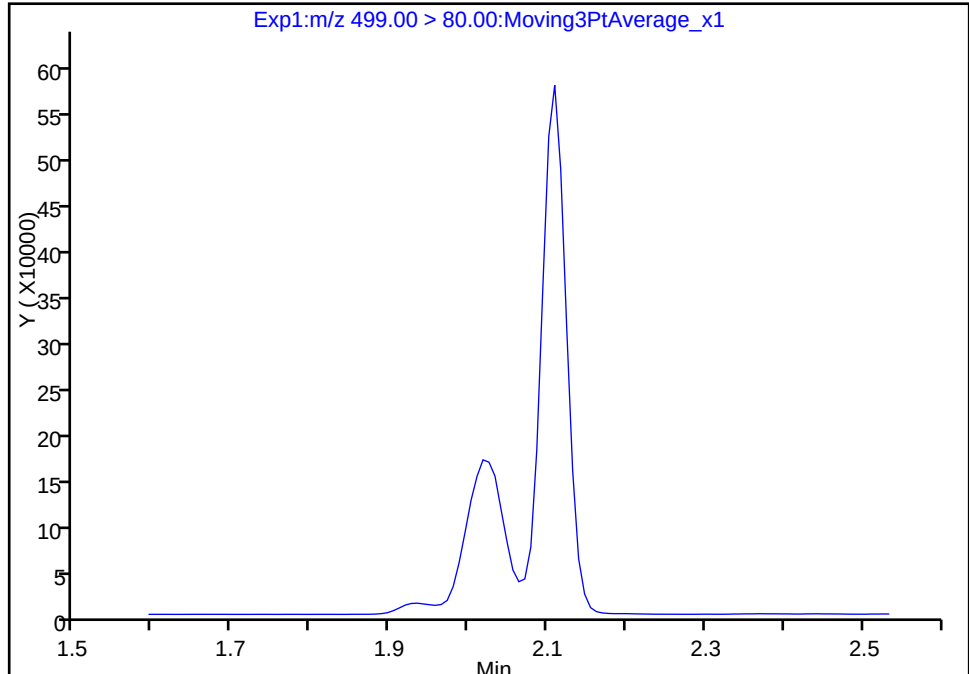
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_013.d
Injection Date: 16-Feb-2018 09:37:44 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

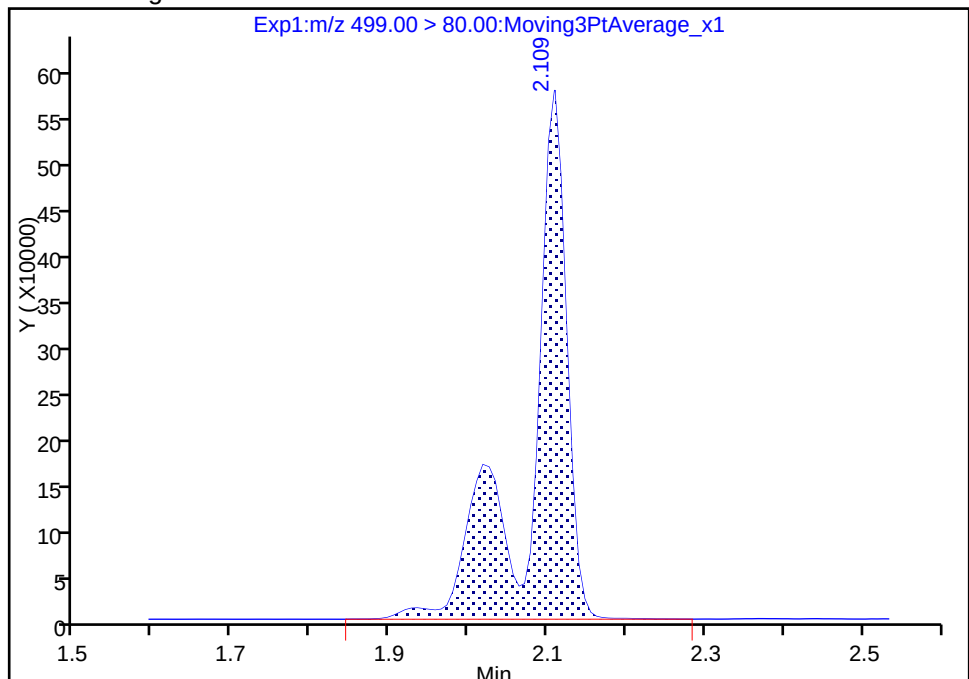
Not Detected
Expected RT: 2.11

Processing Integration Results



RT: 2.11
Area: 1873112
Amount: 21.016369
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 16-Feb-2018 10:37:38

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-212525/1 Calibration Date: 03/12/2018 16:16
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.03.12_537AA_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.063		16.6	20.0	-17.1	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.8604		1.97	2.22	-11.4	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.551		6.42	6.67	-3.7	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9247		4.30	4.47	-3.9	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9648		9.11	8.93	2.0	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.6166		4.45	4.45	0.2	50.0
13C2 PFHxA	Ave	1.100	0.9177		8.34	10.0	-16.6	30.0
13C2 PFDA	Ave	0.5243	0.5102		9.73	10.0	-2.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180312-55198.b\2018.03.12_537AA_004.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 12-Mar-2018 16:16:41 ALS Bottle#: 2 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180312-55198.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 12-Mar-2018 17:03:59 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK030

First Level Reviewer: barnettj

Date: 12-Mar-2018 16:45:12

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.388	0.008	1.000	1784619	16.6		261	
298.90 > 99.00	1.396	1.388	0.008	1.000	1289224		1.38(0.00-0.00)	700	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.510	0.007	1.000	770824	8.34		8951	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.646	0.023	1.000	867857	6.42		428	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.646	0.023	1.000	160620	1.97		35.2	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.821	0.038		839914	10.0		8037	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.821	0.038	1.000	347093	4.30		11.3	
413.00 > 169.00	1.859	1.821	0.038	1.000	189391		1.83(0.00-0.00)	131	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.064	0.045		2407064	28.7		1175	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.064	0.045	1.000	722870	9.11		76.0	a
499.00 > 99.00	2.109	2.064	0.045	1.000	155138		4.66(0.00-0.00)	82.9	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.071	0.046	1.000	230251	4.45		4.1	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.253	0.023	1.000	428517	9.73		4271	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L2_00021

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180312-55198.b\2018.03.12_537AA_004.d

Injection Date: 12-Mar-2018 16:16:41

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

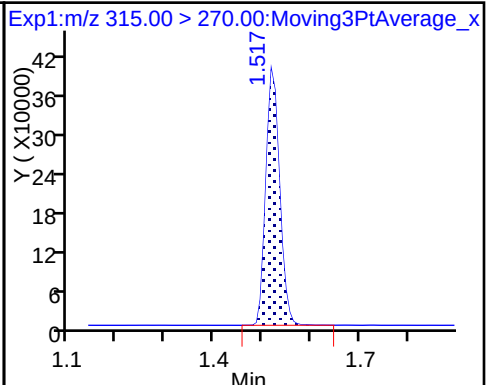
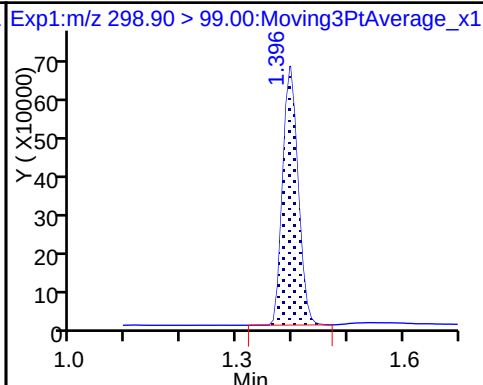
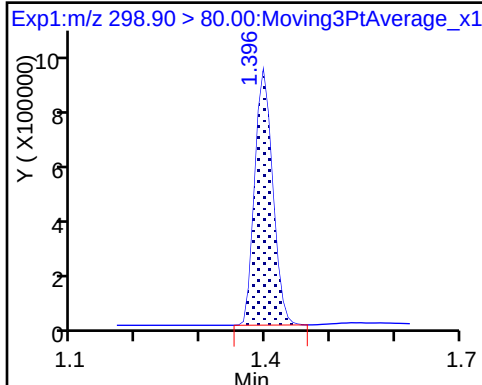
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

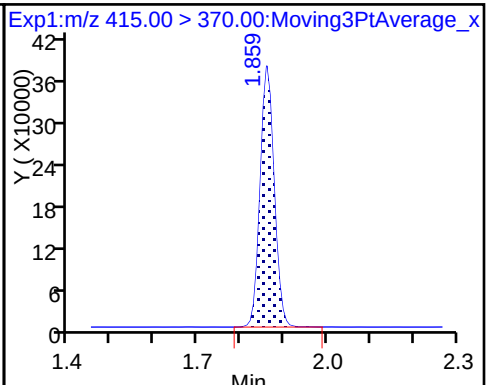
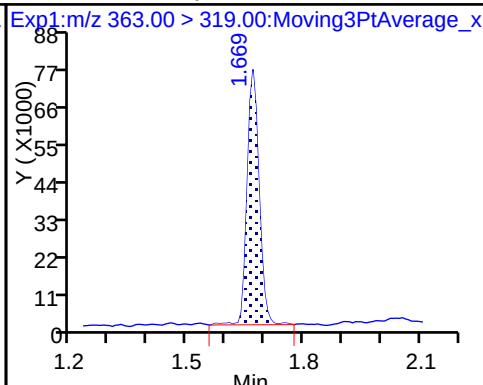
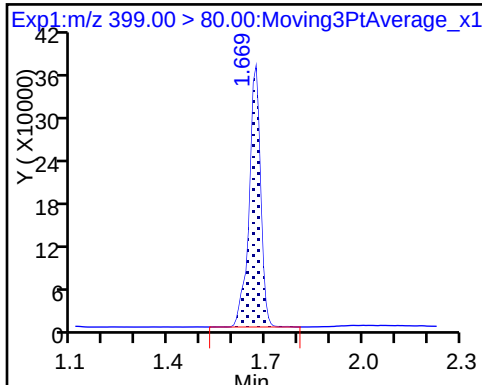
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

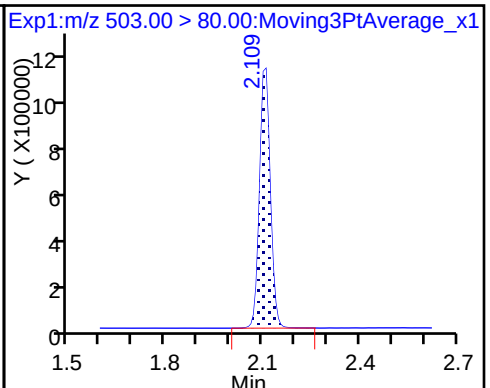
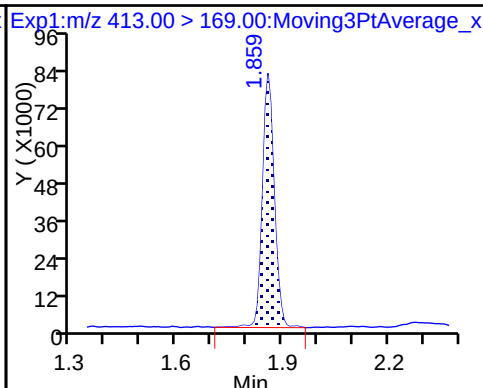
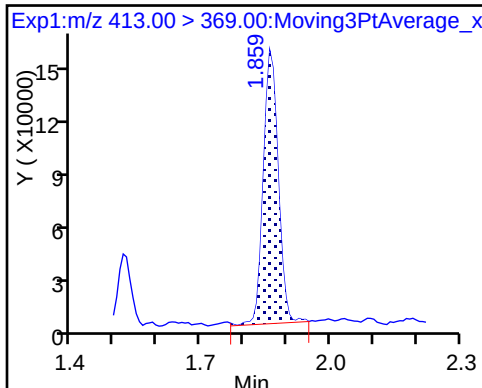
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

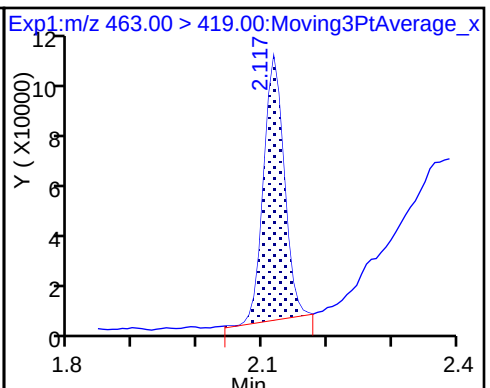
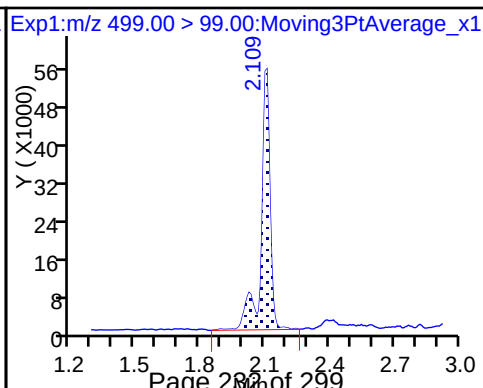
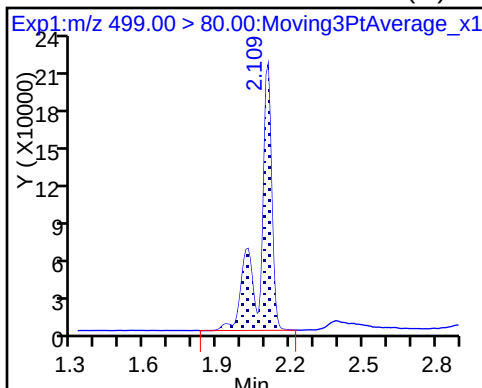
* 7 13C4 PFOS



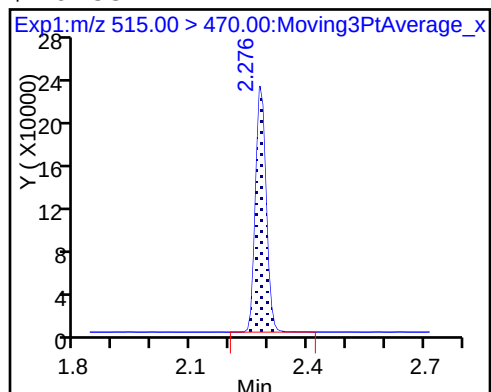
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

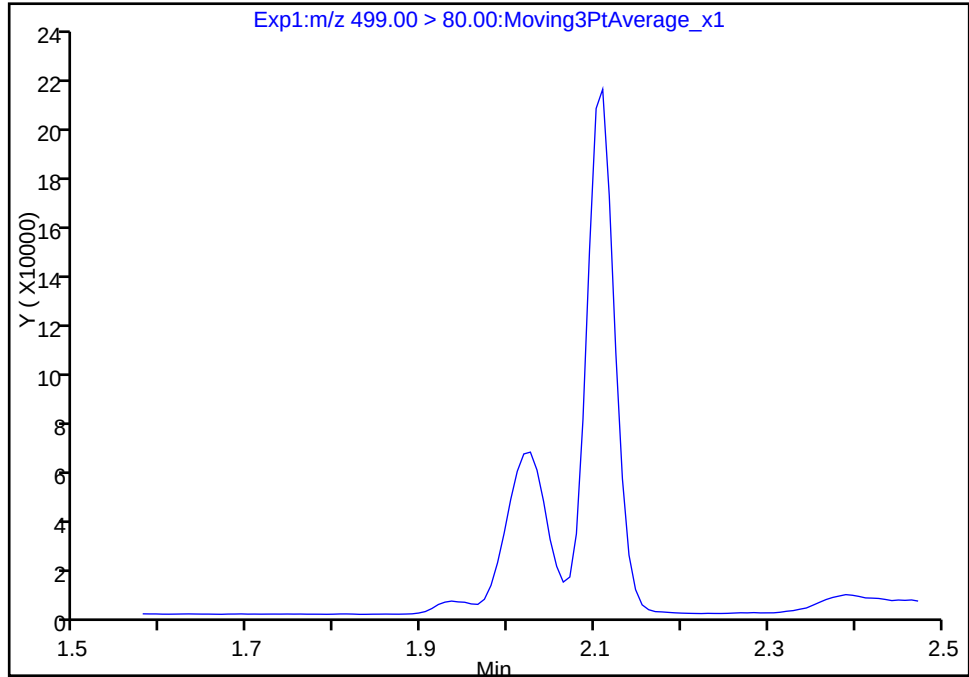
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180312-55198.b\2018.03.12_537AA_004.d
Injection Date: 12-Mar-2018 16:16:41 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

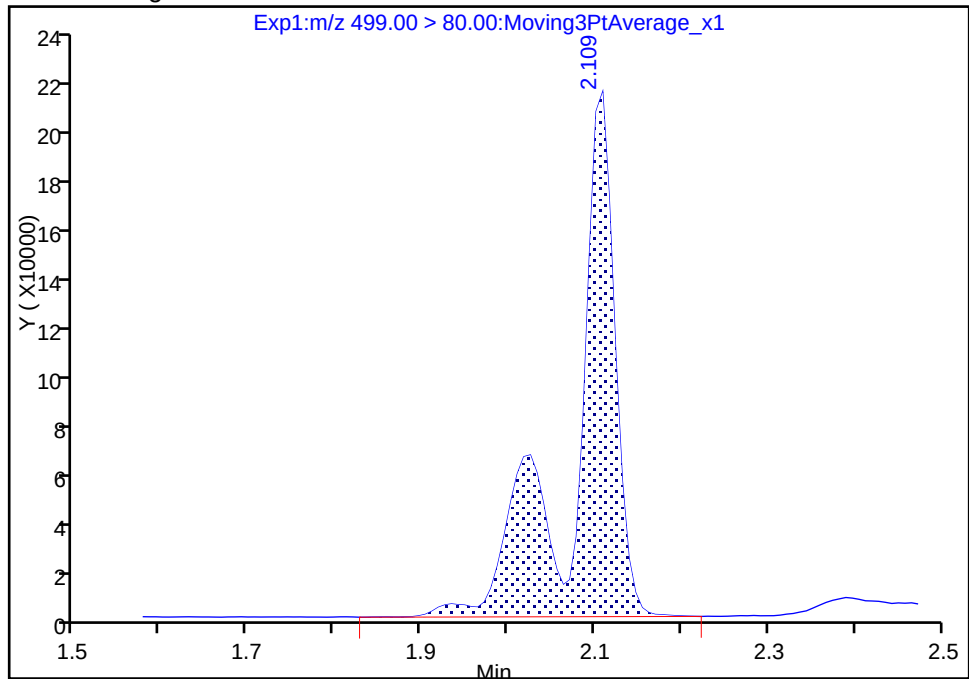
Not Detected
Expected RT: 2.06

Processing Integration Results



RT: 2.11
Area: 722870
Amount: 9.109051
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 12-Mar-2018 16:44:37

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Lab Sample ID: CCV 320-212591/1 Calibration Date: 03/12/2018 21:09
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.03.12_537B_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9169		115	135	-14.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.9103		14.1	15.0	-6.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.561		43.6	45.0	-3.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9550		29.9	30.2	-0.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9684		61.7	60.3	2.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.6859		33.4	30.0	11.5	30.0
13C2 PFHxA	Ave	1.100	1.008		9.17	10.0	-8.3	30.0
13C2 PFDA	Ave	0.5243	0.5631		10.7	10.0	7.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_004.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 12-Mar-2018 21:09:44 ALS Bottle#: 5 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK003

First Level Reviewer: roycea

Date: 13-Mar-2018 09:03:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	11674398	115.3		1974	
298.90 > 99.00	1.381	1.381	0.0	1.000	9114637		1.28(0.00-0.00)	6534	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.495	1.495	0.0	1.000	889667	9.17		10356	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.624	0.0	1.000	6624946	43.6		3295	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.624	0.0	1.000	1204851	14.1		276	
* 6 13C2-PFOA									
415.00 > 370.00	1.783	1.783	0.0		882198	10.0		8402	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.783	1.783	0.0	1.000	2541488	29.9		72.0	
413.00 > 169.00	1.783	1.783	0.0	1.000	1348382		1.88(0.00-0.00)	1060	
* 7 13C4 PFOS									
503.00 > 80.00	1.995	1.995	0.0		2704833	28.7		735	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.003	2.011	-0.008	1.000	5503191	61.7		547	a
499.00 > 99.00	1.995	2.011	-0.016	0.996	1153223		4.77(0.00-0.00)	512	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.011	2.011	0.0	1.000	1815787	33.4		52.9	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.215	2.215	0.0	1.000	496775	10.7		5634	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00025

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_004.d

Injection Date: 12-Mar-2018 21:09:44

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

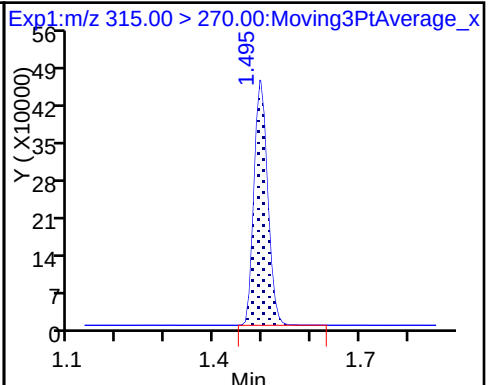
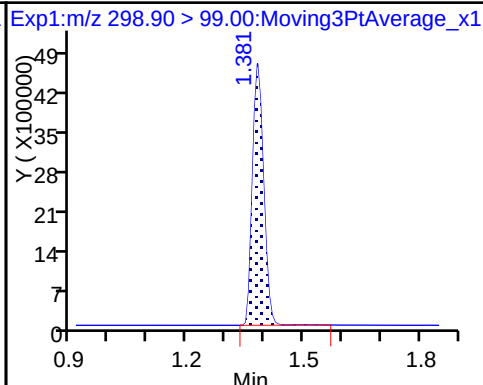
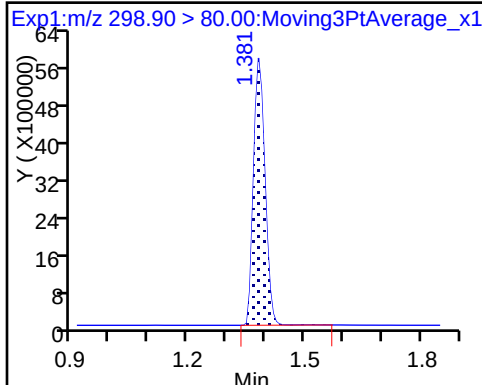
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

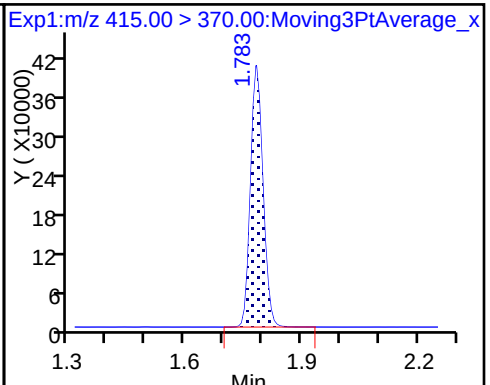
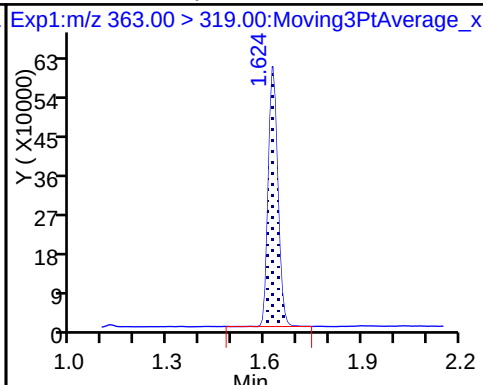
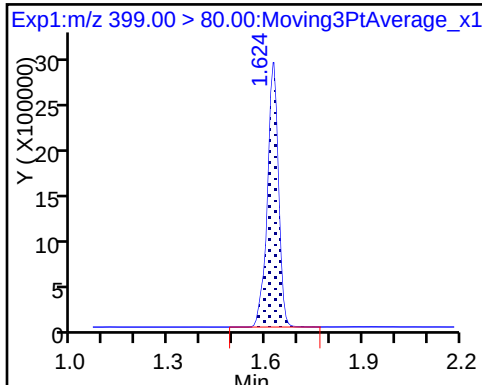
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

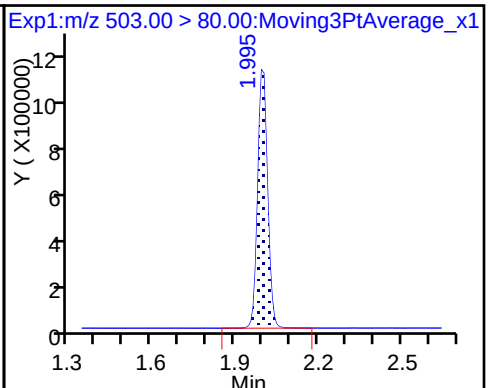
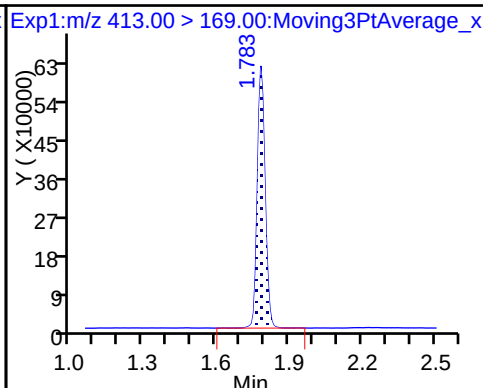
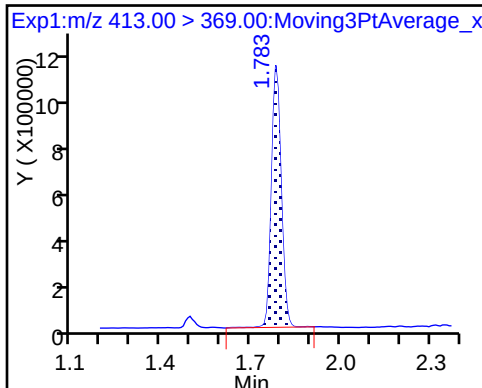
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

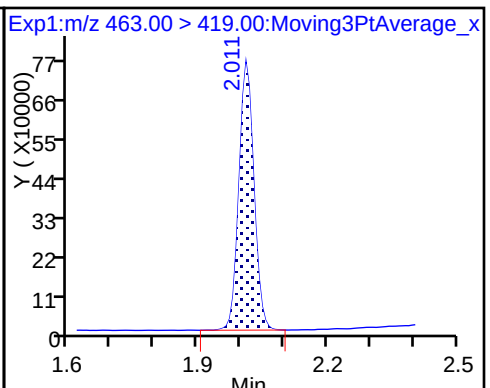
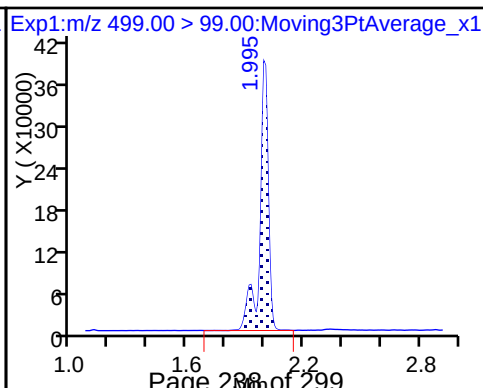
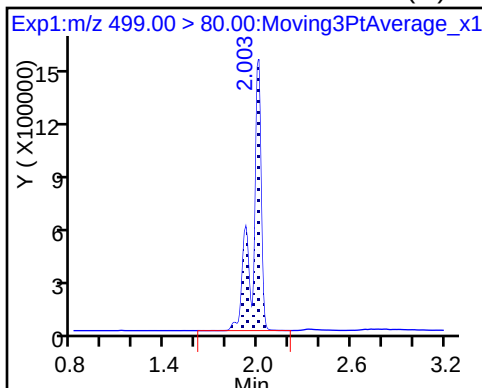
* 7 13C4 PFOS



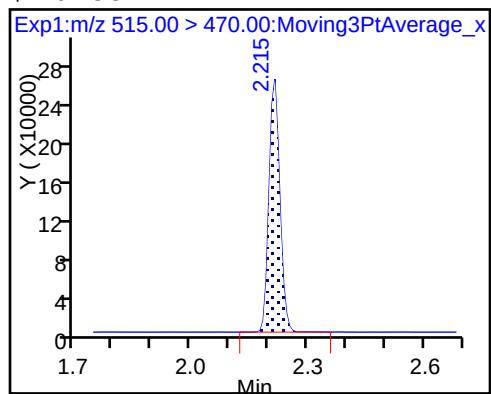
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

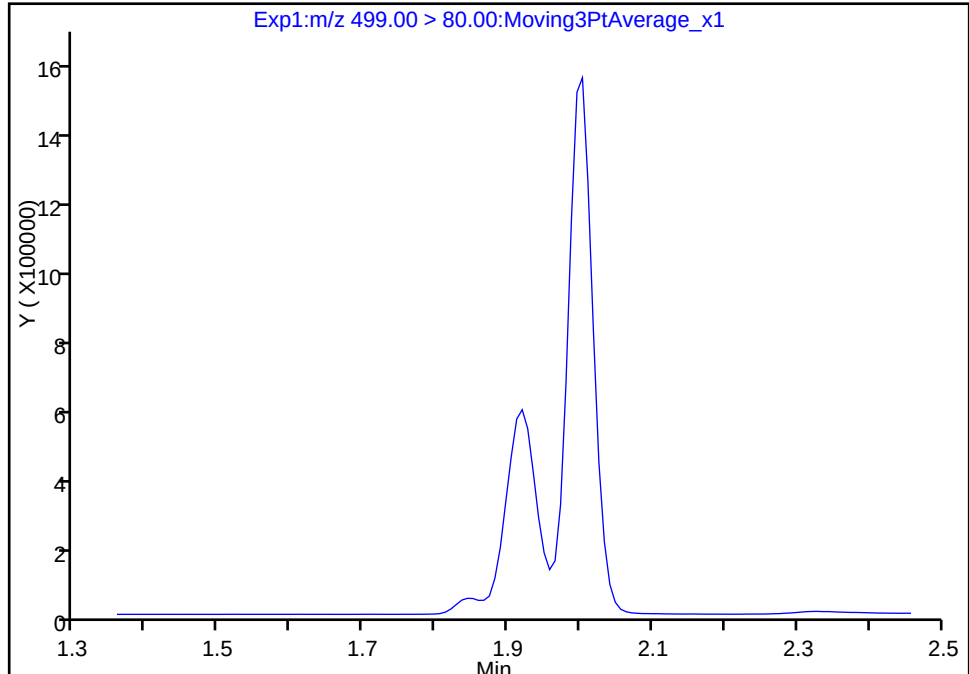
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_004.d
Injection Date: 12-Mar-2018 21:09:44 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

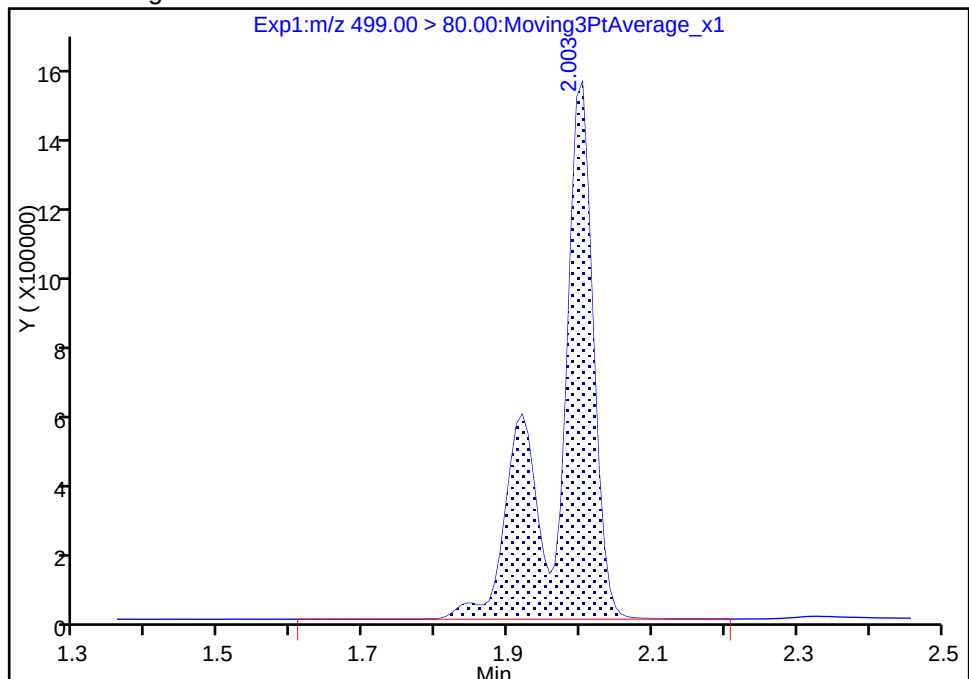
Signal: 1

Not Detected
Expected RT: 2.01

Processing Integration Results



Manual Integration Results



RT: 2.00
Area: 5503191
Amount: 61.712719
Amount Units: ng/ml

Reviewer: roycea, 13-Mar-2018 09:03:29

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Lab Sample ID: CCV 320-212591/13 Calibration Date: 03/12/2018 22:05
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.03.12_537B_016.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.056		38.4	45.0	-14.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.9828		5.06	5.00	1.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.586		14.8	15.0	-1.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9712		10.2	10.1	1.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9577		20.3	20.1	1.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.7280		11.8	10.0	18.3	30.0
13C2 PFHxA	Ave	1.100	1.064		9.67	10.0	-3.3	30.0
13C2 PFDA	Ave	0.5243	0.6292		12.0	10.0	20.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Lab Sample ID: CCV 320-212593/13 Calibration Date: 03/12/2018 22:05
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.03.12_537B_016.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.056		38.4	45.0	-14.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.9828		5.06	5.00	1.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.586		14.8	15.0	-1.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9712		10.2	10.1	1.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9577		20.3	20.1	1.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.7280		11.8	10.0	18.3	30.0
13C2 PFHxA	Ave	1.100	1.064		9.67	10.0	-3.3	30.0
13C2 PFDA	Ave	0.5243	0.6292		12.0	10.0	20.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_016.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 12-Mar-2018 22:05:47 ALS Bottle#: 3 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:42 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:32:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.358	0.0	1.000	4148069	38.4		663	
298.90 > 99.00	1.358	1.358	0.0	1.000	3131817		1.32(0.00-0.00)	1640	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	844300	9.67		9784	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.624	0.0	1.000	2077297	14.8		1087	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.624	0.0	1.000	390008	5.06		84.6	
* 6 13C2-PFOA									
415.00 > 370.00	1.798	1.798	0.0		793520	10.0		7028	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.798	1.798	0.0	1.000	774913	10.2		23.8	
413.00 > 169.00	1.798	1.798	0.0	1.000	405284		1.91(0.00-0.00)	316	
* 7 13C4 PFOS									
503.00 > 80.00	2.041	2.041	0.0		2503639	28.7		707	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.041	2.011	0.030	1.000	1679166	20.3		187	a
499.00 > 99.00	2.041	2.011	0.030	1.000	355556		4.72(0.00-0.00)	175	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.056	2.056	0.0	1.000	577896	11.8		15.5	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	499285	12.0		5053	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L3_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_016.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 12-Mar-2018 22:05:47 ALS Bottle#: 3 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:42 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:32:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.358	0.0	1.000	4148069	38.4		663	
298.90 > 99.00	1.358	1.358	0.0	1.000	3131817		1.32(0.00-0.00)	1640	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	844300	9.67		9784	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.624	0.0	1.000	2077297	14.8		1087	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.624	0.0	1.000	390008	5.06		84.6	
* 6 13C2-PFOA									
415.00 > 370.00	1.798	1.798	0.0		793520	10.0		7028	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.798	1.798	0.0	1.000	774913	10.2		23.8	
413.00 > 169.00	1.798	1.798	0.0	1.000	405284		1.91(0.00-0.00)	316	
* 7 13C4 PFOS									
503.00 > 80.00	2.041	2.041	0.0		2503639	28.7		707	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.041	2.011	0.030	1.000	1679166	20.3		187	a
499.00 > 99.00	2.041	2.011	0.030	1.000	355556		4.72(0.00-0.00)	175	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.056	2.056	0.0	1.000	577896	11.8		15.5	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	499285	12.0		5053	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L3_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_016.d

Injection Date: 12-Mar-2018 22:05:47

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

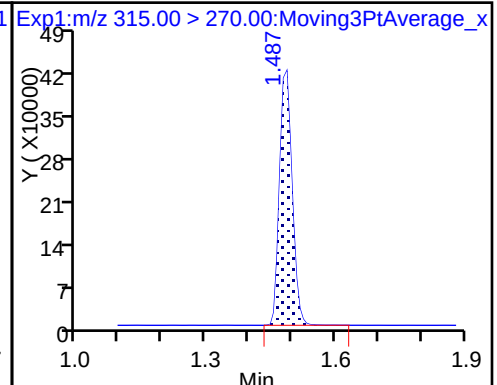
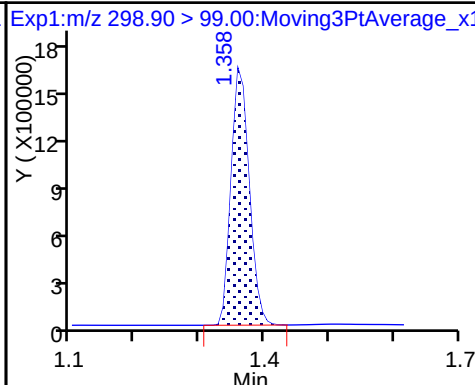
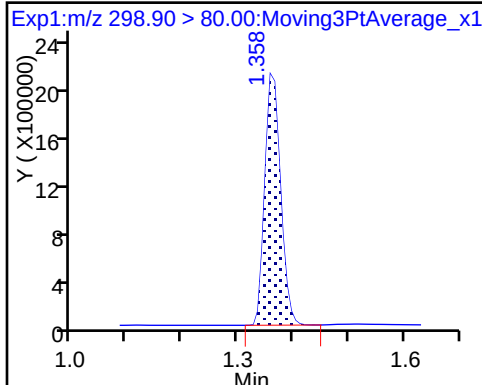
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

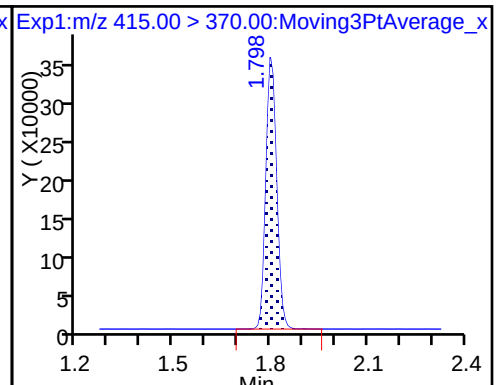
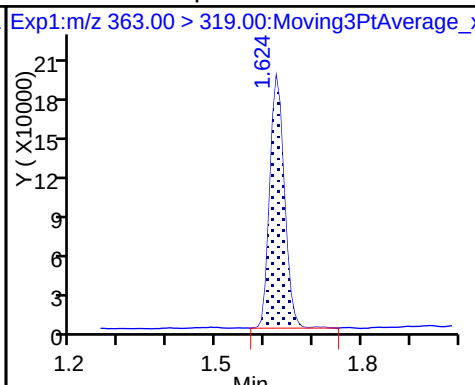
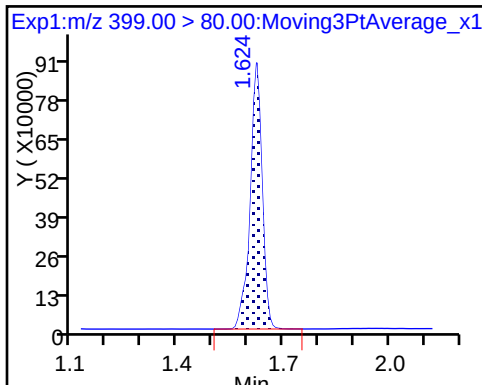
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

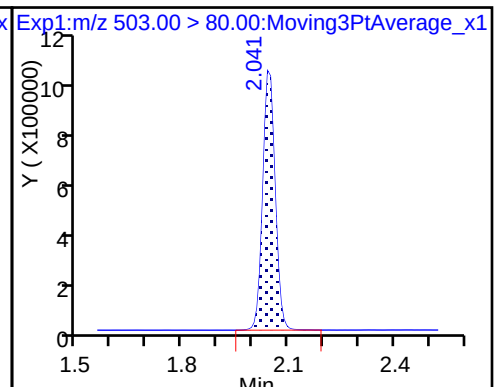
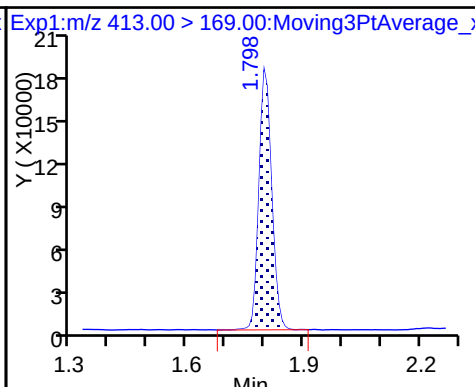
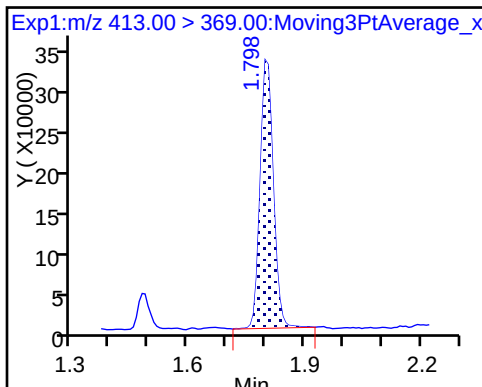
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

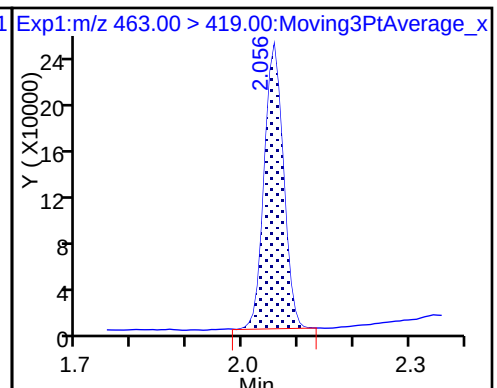
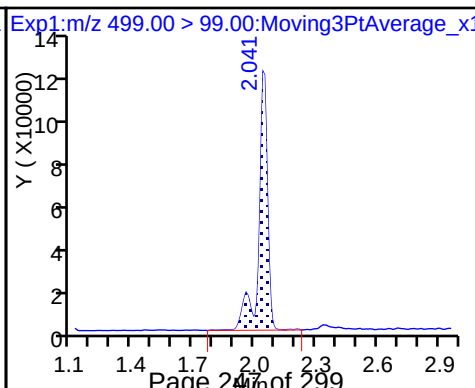
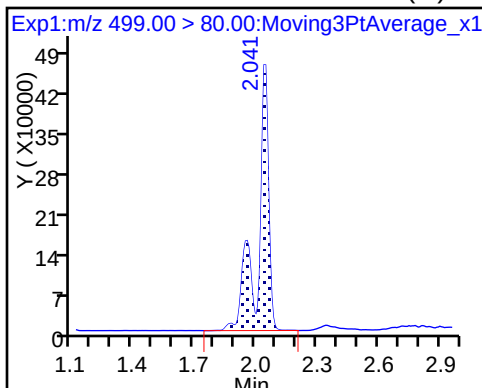
* 7 13C4 PFOS



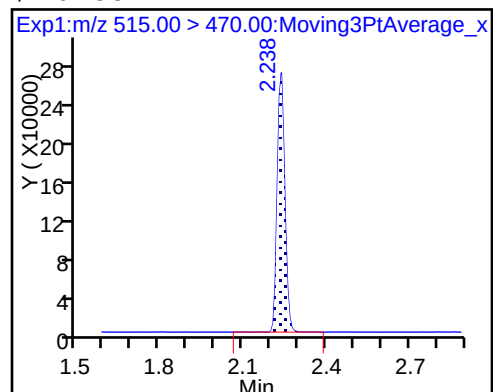
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_016.d

Injection Date: 12-Mar-2018 22:05:47

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

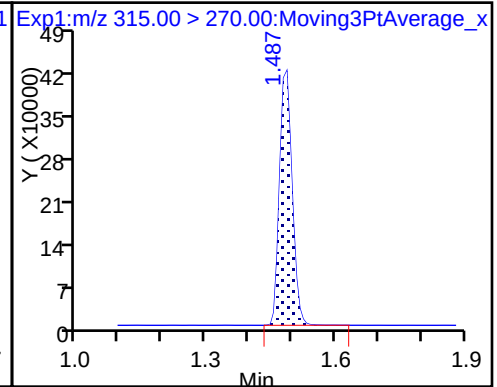
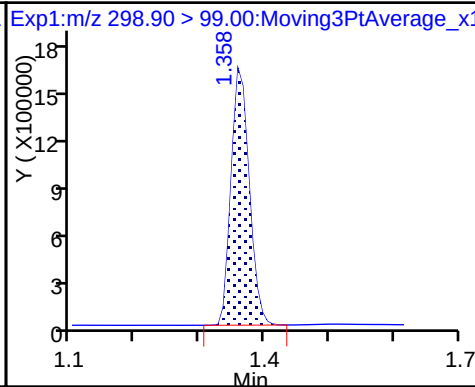
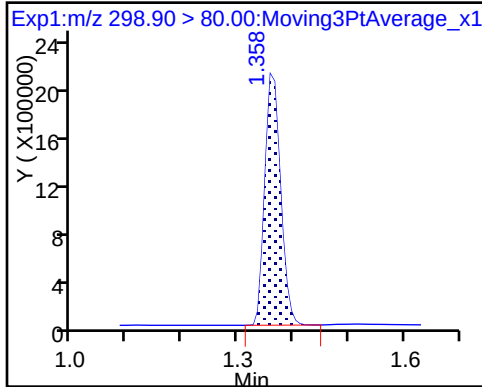
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

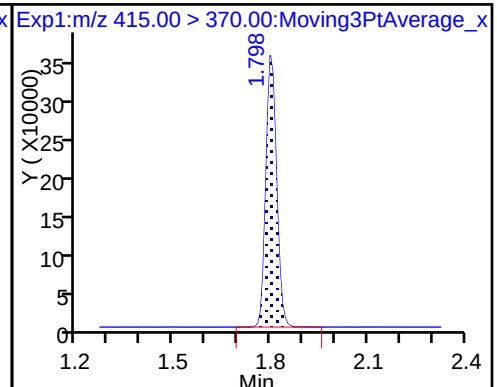
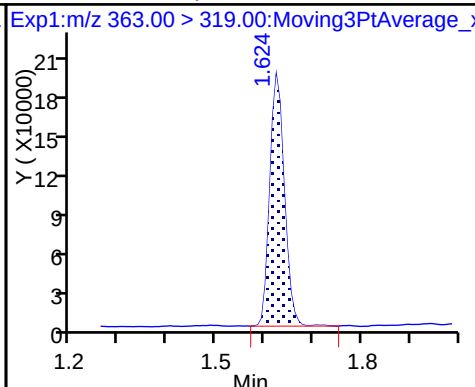
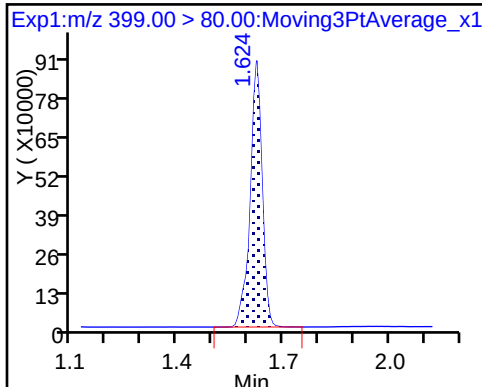
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

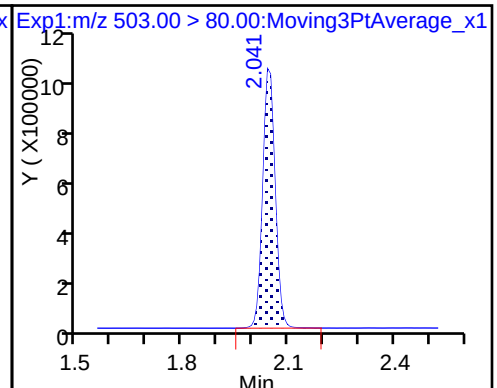
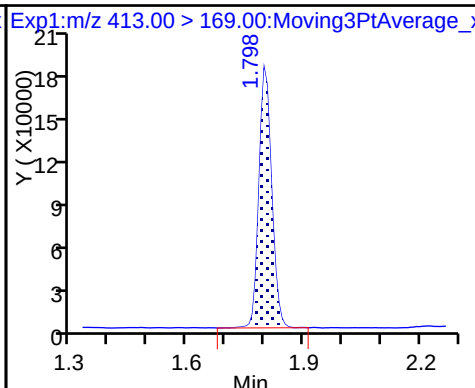
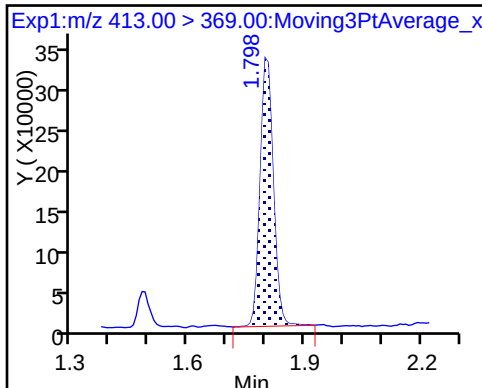
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

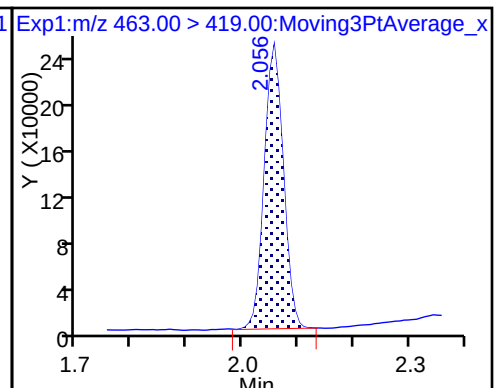
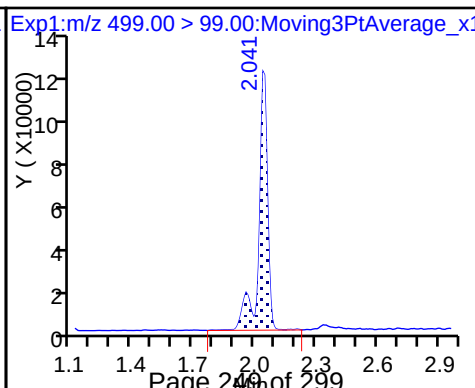
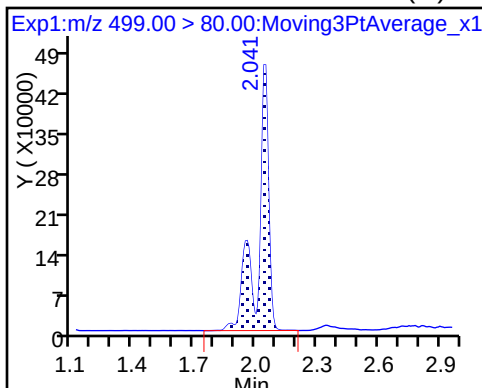
* 7 13C4 PFOS



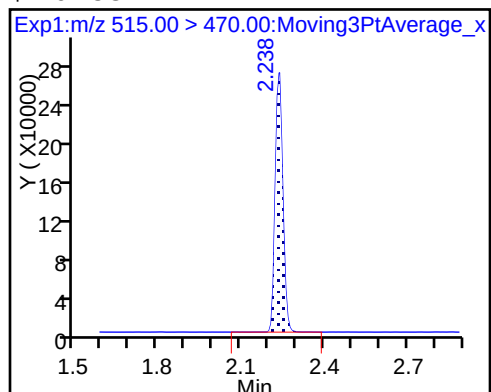
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

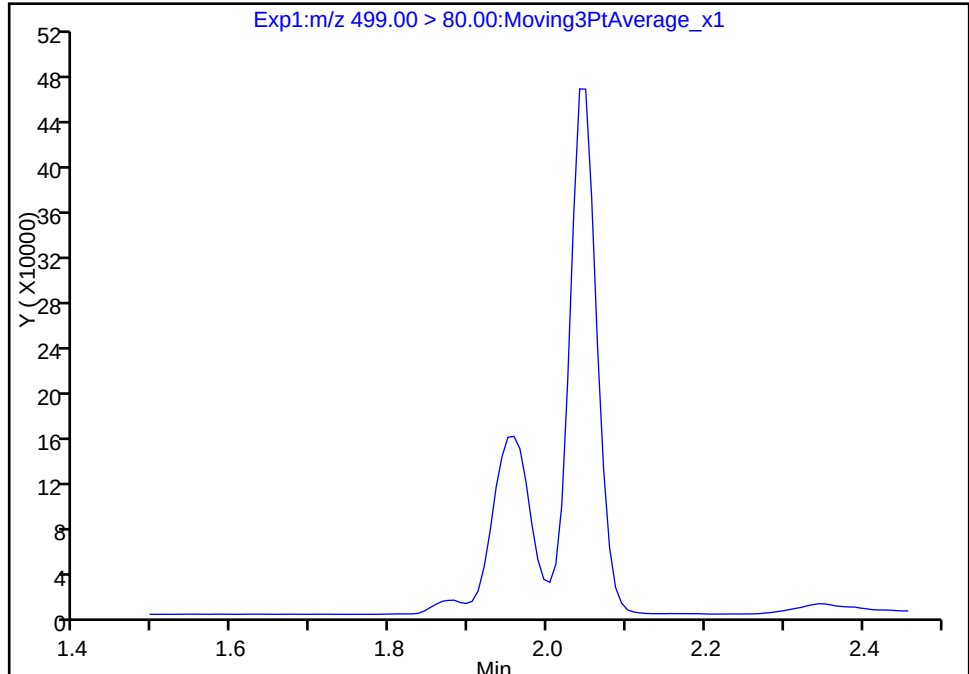
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Injection Date: 12-Mar-2018 22:05:47 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

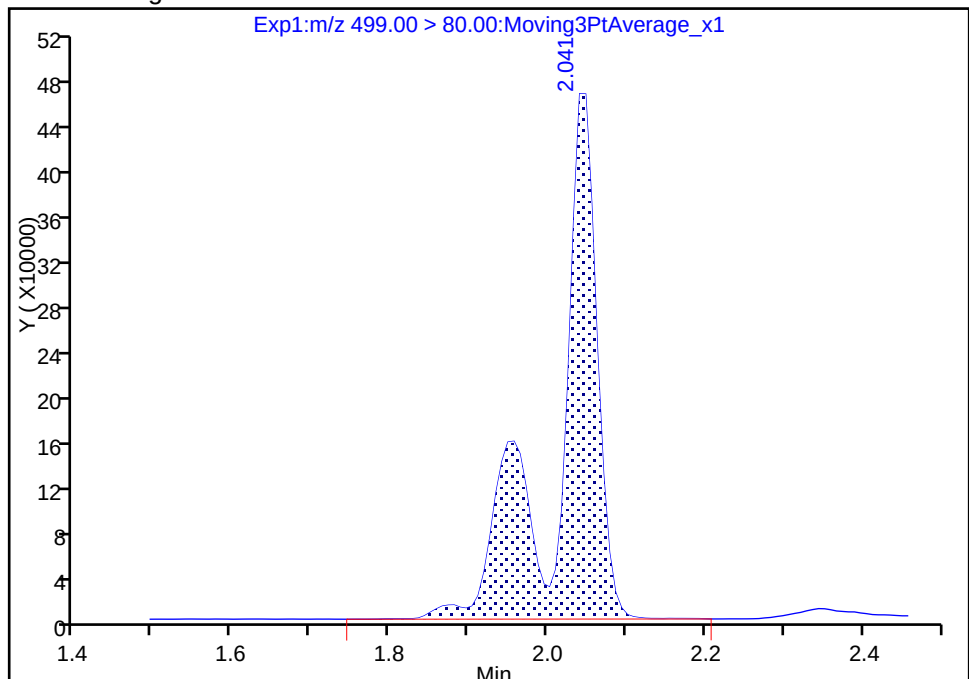
Not Detected
Expected RT: 2.01

Processing Integration Results



RT: 2.04
Area: 1679166
Amount: 20.343350
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 13-Mar-2018 10:32:22

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

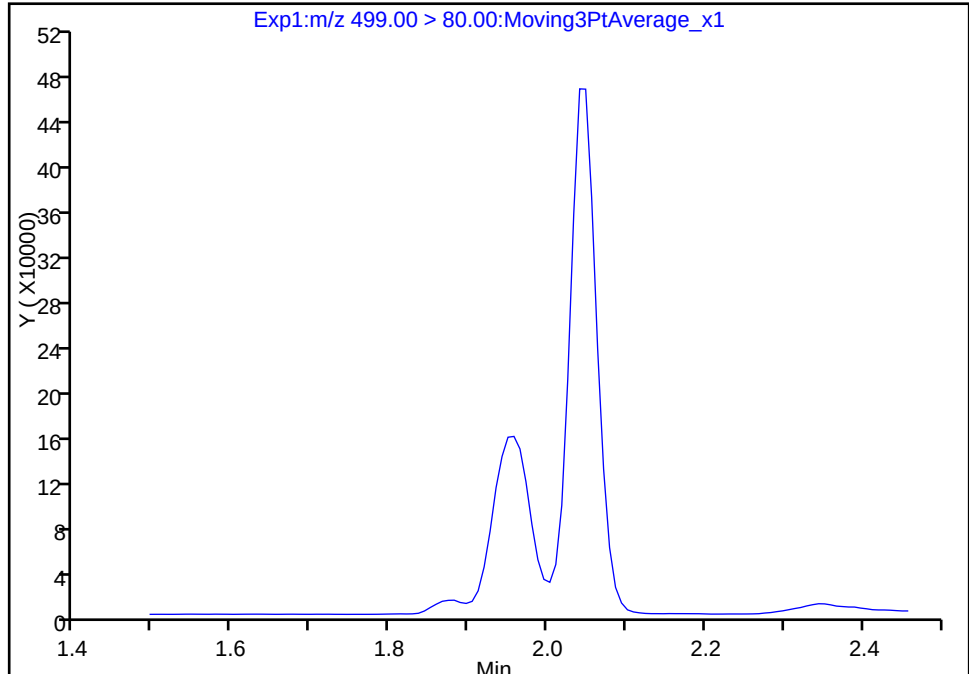
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_016.d
Injection Date: 12-Mar-2018 22:05:47 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

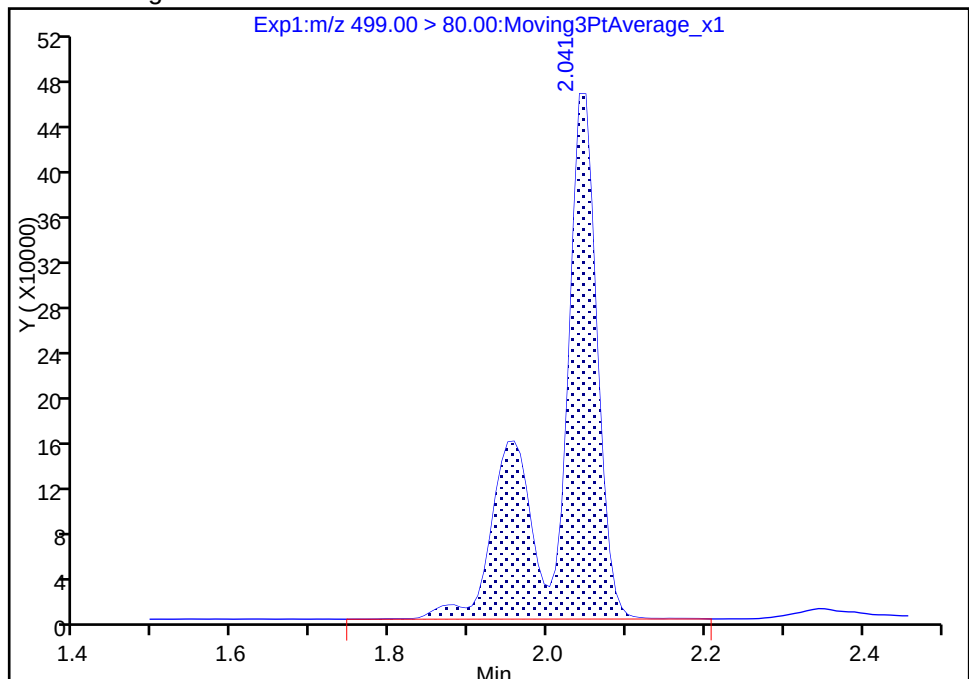
Not Detected
Expected RT: 2.01

Processing Integration Results



RT: 2.04
Area: 1679166
Amount: 20.343350
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 13-Mar-2018 10:32:22

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Lab Sample ID: CCV 320-212593/22 Calibration Date: 03/12/2018 22:47
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.03.12_537B_031.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9387		119	135	-11.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.9691		15.0	15.0	-0.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.572		44.0	45.0	-2.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	1.001		31.4	30.2	4.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9729		62.0	60.3	2.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.7320		35.7	30.0	18.9	30.0
13C2 PFHxA	Ave	1.100	1.059		9.63	10.0	-3.7	30.0
13C2 PFDA	Ave	0.5243	0.5827		11.1	10.0	11.1	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_031.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 12-Mar-2018 22:47:53 ALS Bottle#: 5 Worklist Smp#: 22
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:54 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 13-Mar-2018 10:32:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.373	1.373	0.0	1.000	10584100	118.9		1598	
298.90 > 99.00	1.373	1.373	0.0	1.000	8180037		1.29(0.00-0.00)	3797	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.495	1.495	0.0	1.000	790009	9.63		10543	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.624	0.0	1.000	5908774	44.0		2961	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.624	0.0	1.000	1084910	15.0		227	
* 6 13C2-PFOA									
415.00 > 370.00	1.791	1.791	0.0		746221	10.0		6348	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.791	1.791	0.0	1.000	2253309	31.4		58.3	
413.00 > 169.00	1.791	1.791	0.0	1.000	1167573		1.93(0.00-0.00)	788	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.011	2.011	0.0	1.000	4895645	62.0		532	a
499.00 > 99.00	2.011	2.011	0.0	1.000	1025866		4.77(0.00-0.00)	461	a
* 7 13C4 PFOS									
503.00 > 80.00	2.011	2.011	0.0		2395162	28.7		680	
9 Perfluorononanoic acid									
463.00 > 419.00	2.026	2.026	0.0	1.000	1639145	35.7		41.3	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.215	2.215	0.0	1.000	434833	11.1		4387	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00025

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_031.d

Injection Date: 12-Mar-2018 22:47:53

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

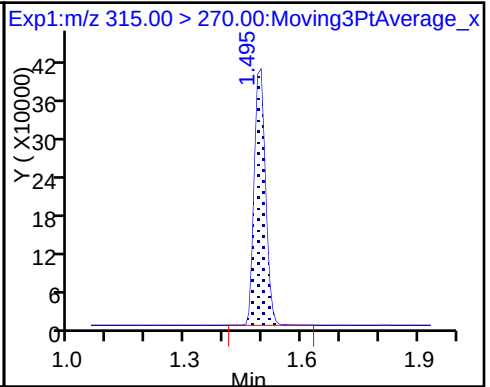
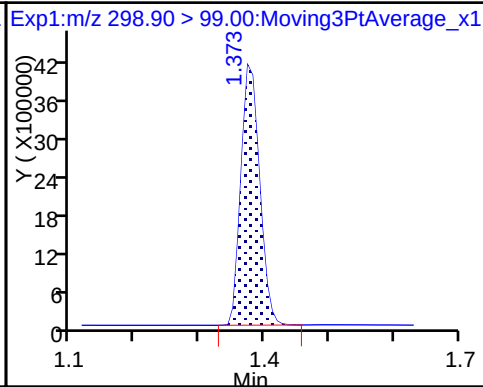
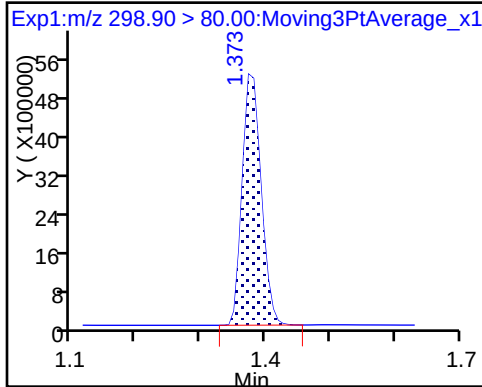
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

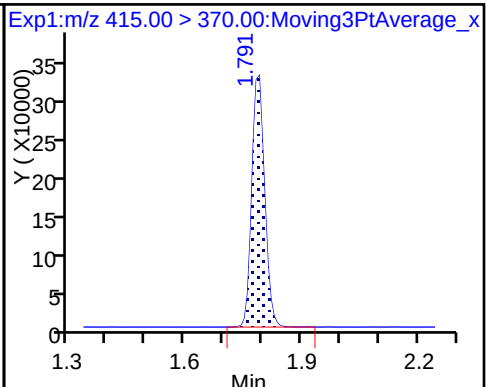
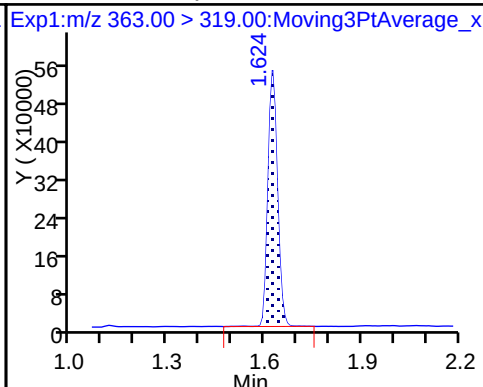
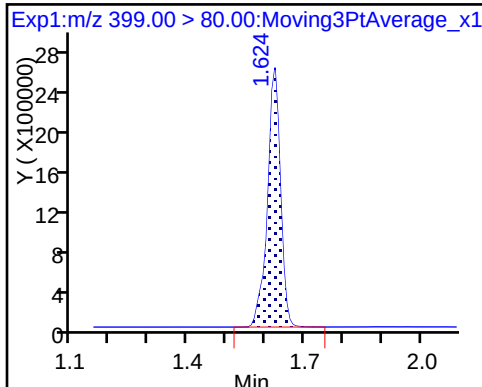
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

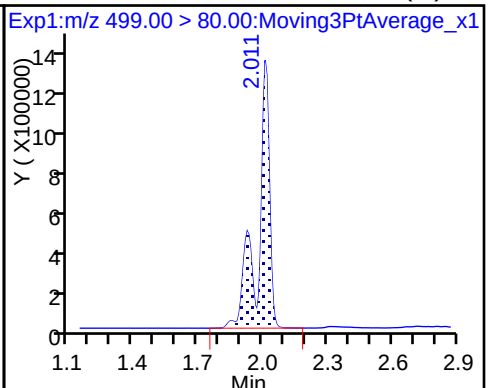
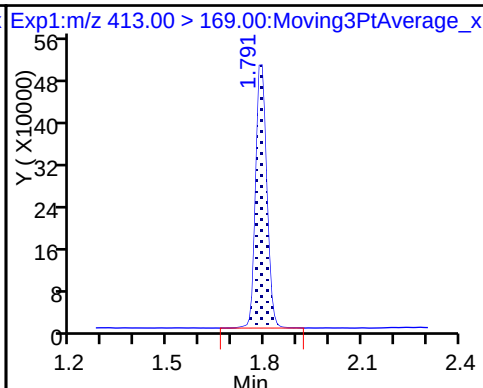
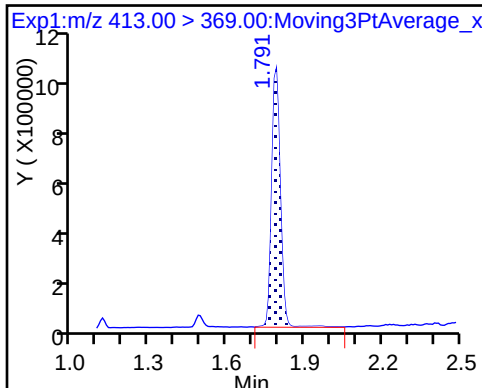
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

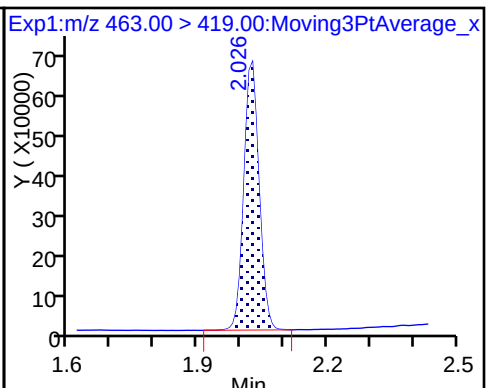
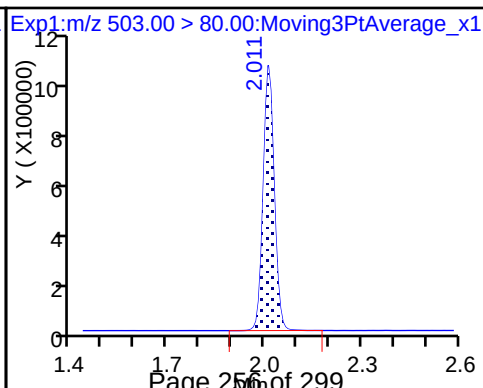
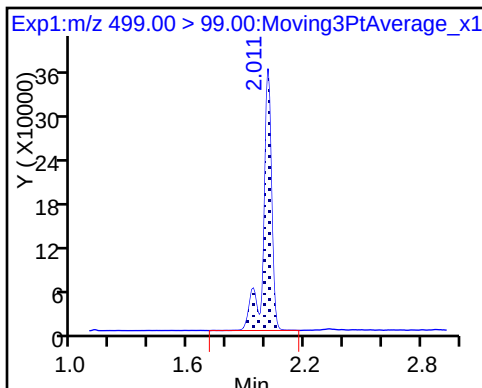
8 Perfluorooctane sulfonic acid (M)



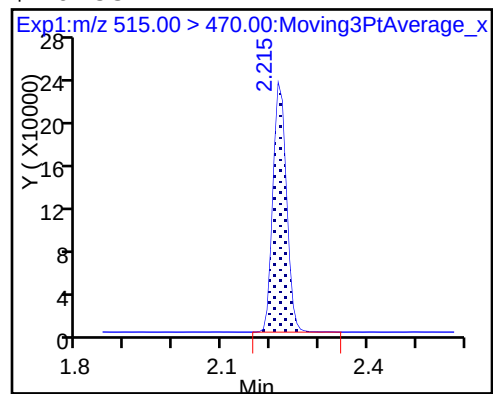
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

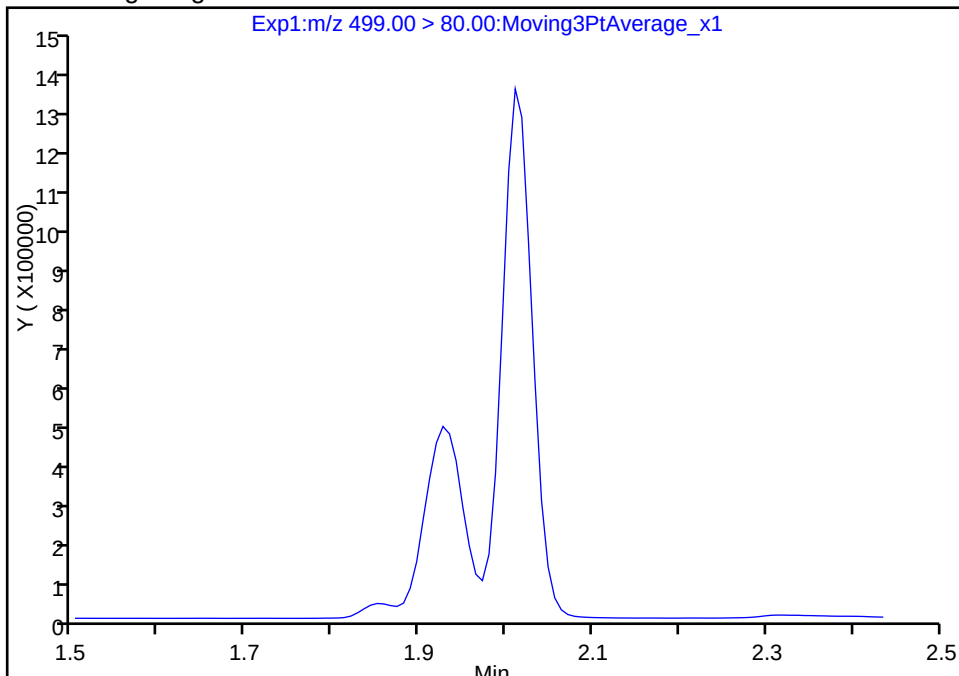
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Injection Date: 12-Mar-2018 22:47:53 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

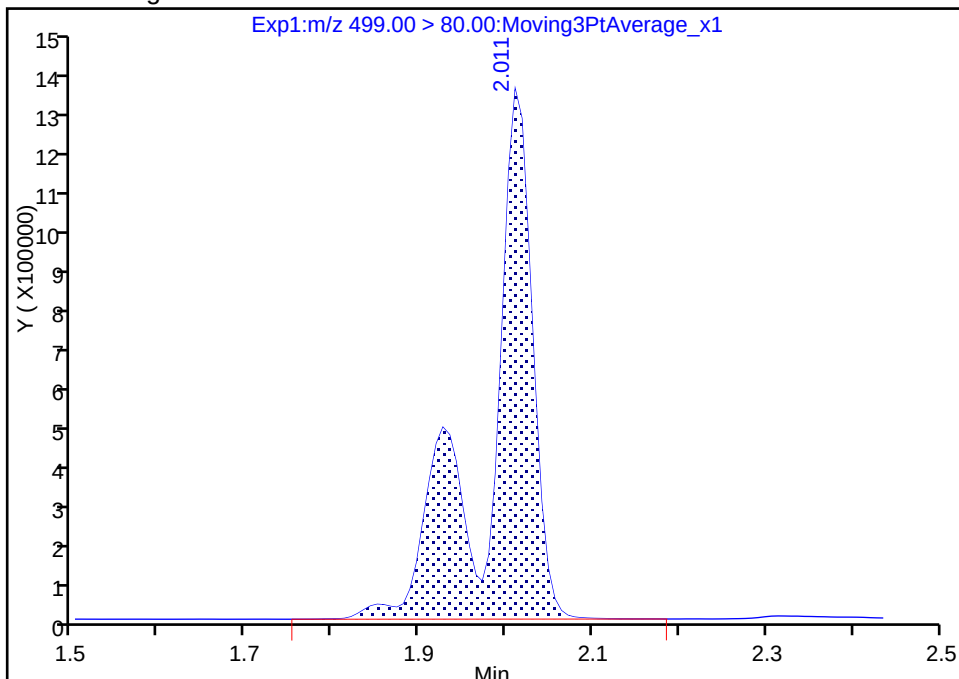
Signal: 1

Not Detected
Expected RT: 2.01

Processing Integration Results



Manual Integration Results



RT: 2.01
Area: 4895645
Amount: 61.997699
Amount Units: ng/ml

Reviewer: barnettj, 13-Mar-2018 10:32:37

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-211553/1-A
 Matrix: Water Lab File ID: 2018.03.12_537B_006.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 250 (mL) Date Analyzed: 03/12/2018 21:19
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212591 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	108		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_006.d
 Lims ID: MB 320-211553/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 12-Mar-2018 21:19:04 ALS Bottle#: 23 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-211553/1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK003

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.495	-0.008	1.000	747707	9.13		9843	
* 6 13C2-PFOA									
415.00 > 370.00	1.783	1.783	0.0		744966	10.0		6244	
* 7 13C4 PFOS									
503.00 > 80.00	2.003	1.995	0.008		2282045	28.7		633	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.215	2.215	0.0	1.000	423448	10.8		4562	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_006.d

Injection Date: 12-Mar-2018 21:19:04

Instrument ID: A8_N

Lims ID: MB 320-211553/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 23

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

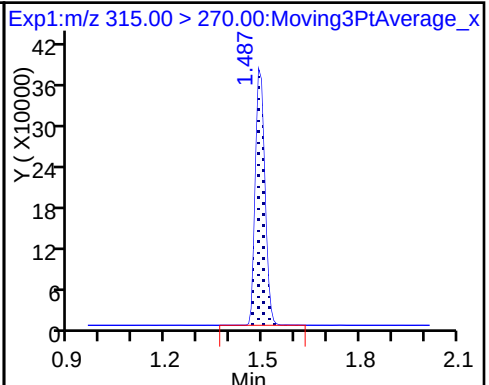
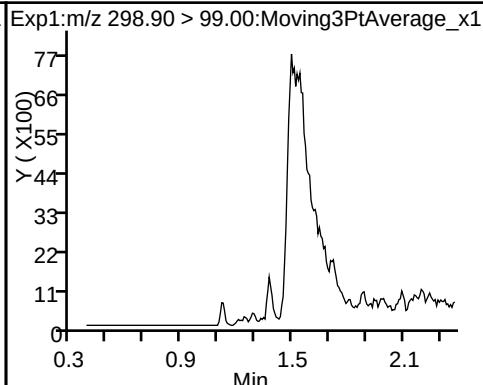
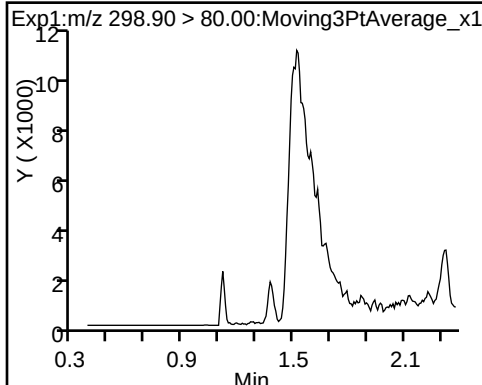
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

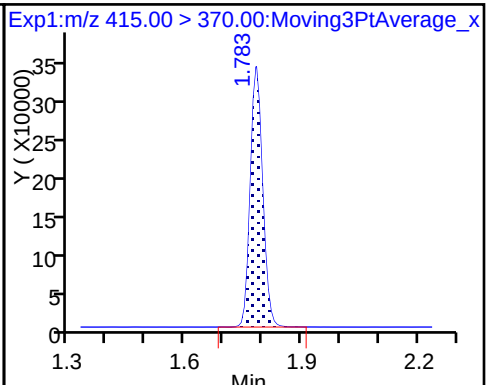
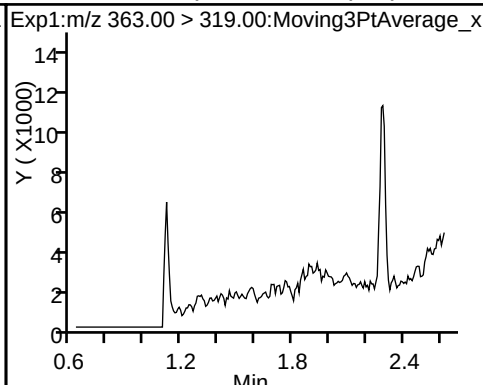
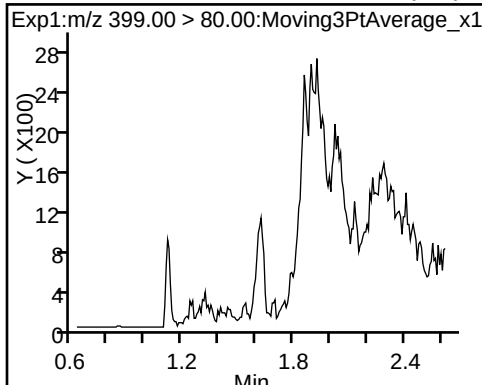
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

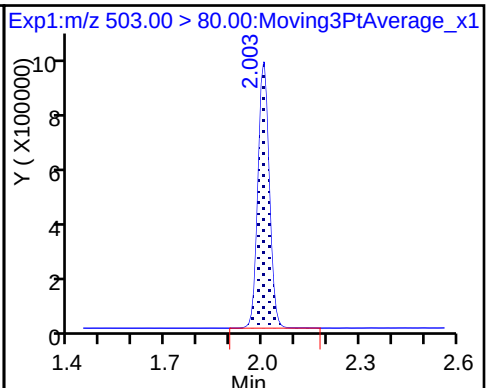
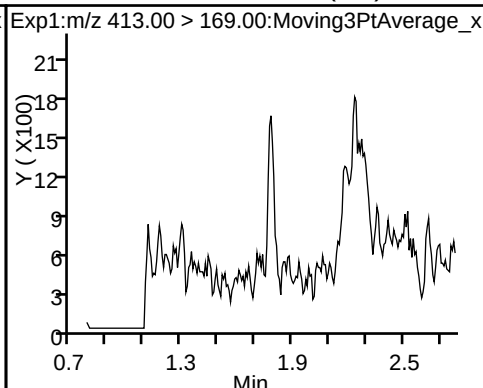
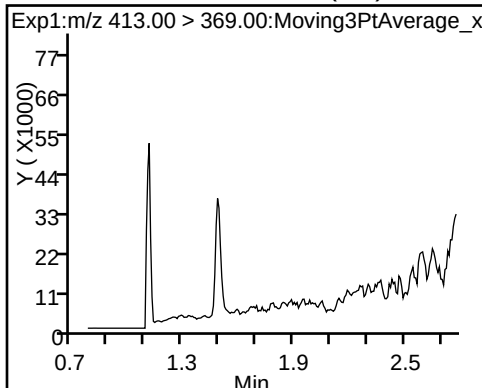
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

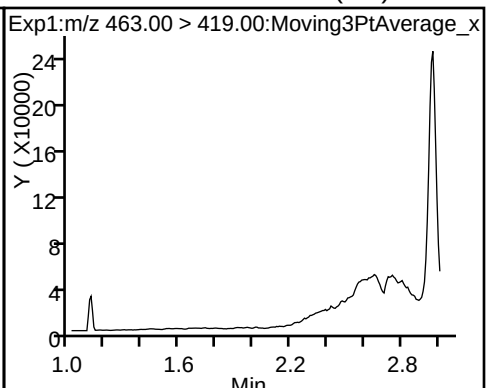
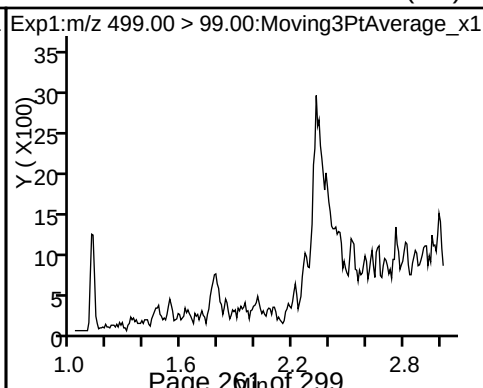
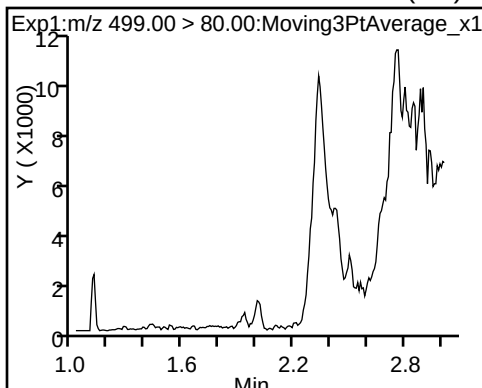
* 7 13C4 PFOS



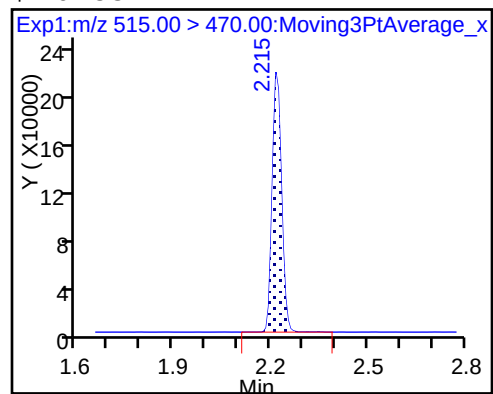
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_006.d
Lims ID: MB 320-211553/1-A
Client ID:
Sample Type: MB
Inject. Date: 12-Mar-2018 21:19:04 ALS Bottle#: 23 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-211553/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1

Process Host: XAWRK003

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.13	91.25
\$ 10 13C2 PFDA	10.0	10.8	108.42

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-211553/2-A
 Matrix: Water Lab File ID: 2018.03.12_537B_007.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 250 (mL) Date Analyzed: 03/12/2018 21:23
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212591 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	242	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	117		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	130		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	178		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	59.7		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	446		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	116		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_007.d
 Lims ID: LCS 320-211553/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 12-Mar-2018 21:23:45 ALS Bottle#: 24 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-211553/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK003

First Level Reviewer: roycea

Date: 13-Mar-2018 09:04:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	9534062	111.4		1381	
298.90 > 99.00	1.381	1.381	0.0	1.000	7366853		1.29(0.00-0.00)	3571	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.495	0.007	1.000	769898	9.43		9427	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.624	0.007	1.000	5660511	44.5		2907	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.624	0.007	1.000	1074893	14.9		209	
* 6 13C2-PFOA									
415.00 > 370.00	1.798	1.783	0.015		741995	10.0		6138	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.798	1.783	0.015	1.000	2083775	29.2		56.4	
413.00 > 169.00	1.798	1.783	0.015	1.000	1087234		1.92(0.00-0.00)	840	
* 7 13C4 PFOS									
503.00 > 80.00	2.026	1.995	0.031		2268693	28.7		638	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.026	2.011	0.015	1.000	4524512	60.5		423	a
499.00 > 99.00	2.026	2.011	0.015	1.000	960867		4.71(0.00-0.00)	455	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.033	2.011	0.022	1.000	1486063	32.5		34.9	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.231	2.215	0.016	1.000	452661	11.6		4643	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_007.d

Injection Date: 12-Mar-2018 21:23:45

Instrument ID: A8_N

Lims ID: LCS 320-211553/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 24

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

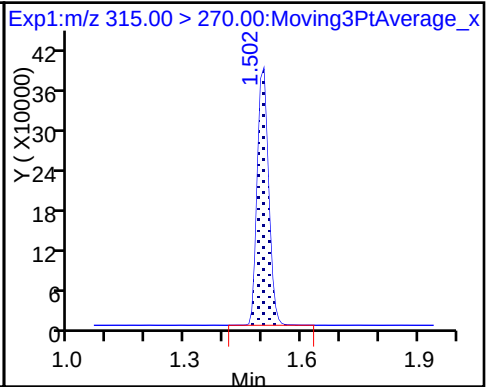
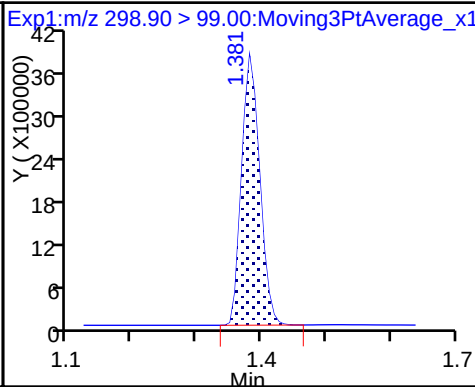
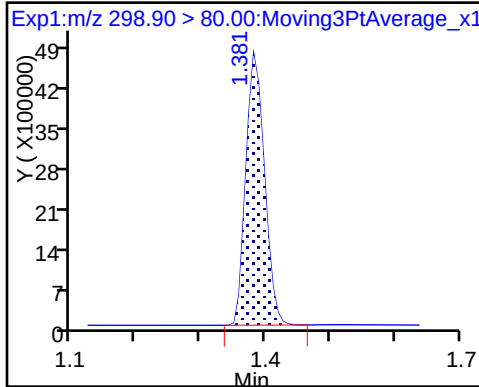
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

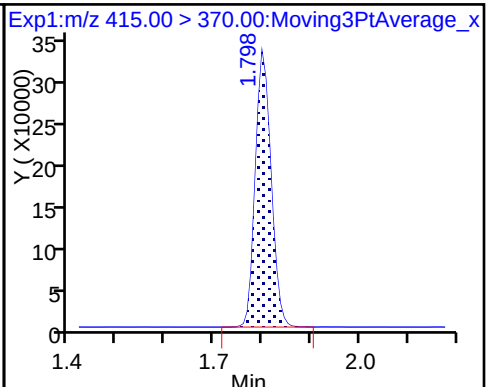
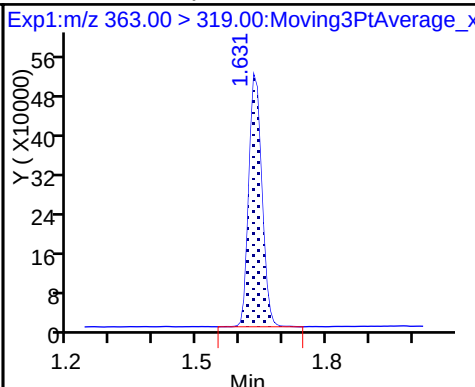
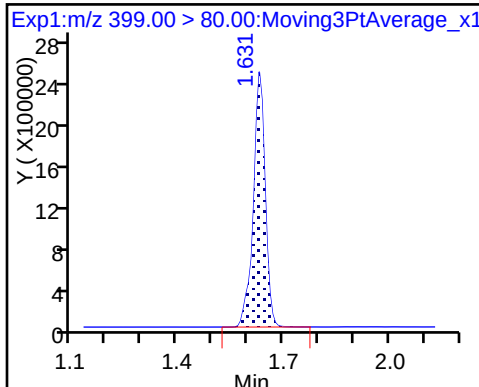
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

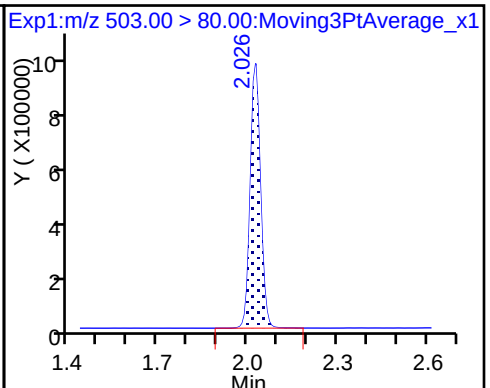
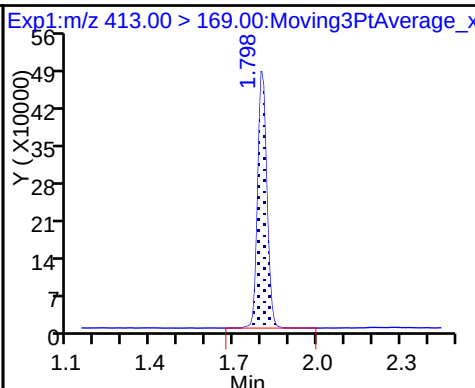
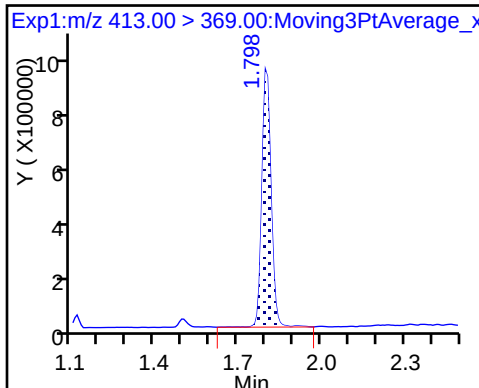
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

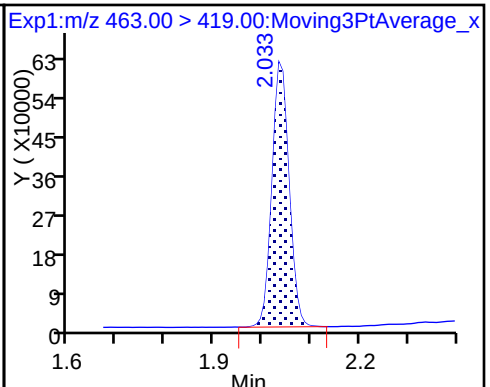
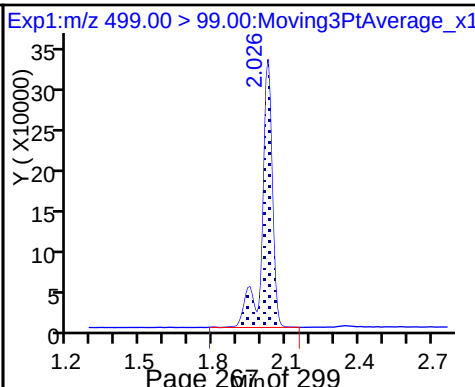
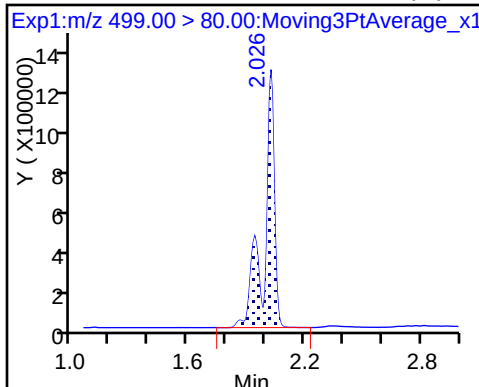
* 7 13C4 PFOS



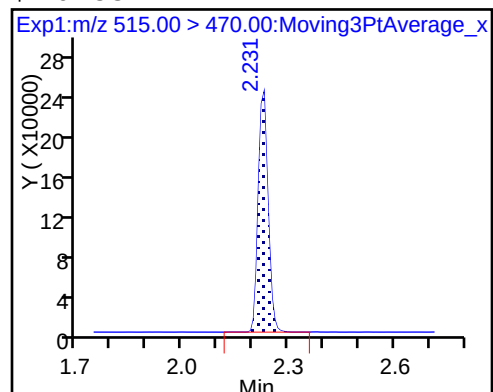
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_007.d
Lims ID: LCS 320-211553/2-A
Client ID:
Sample Type: LCS
Inject. Date: 12-Mar-2018 21:23:45 ALS Bottle#: 24 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-211553/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: roycea

Date: 13-Mar-2018 09:04:23

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.43	94.34
\$ 10 13C2 PFDA	10.0	11.6	116.36

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_007.d

Injection Date: 12-Mar-2018 21:23:45

Instrument ID: A8_N

Lims ID: LCS 320-211553/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 24

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

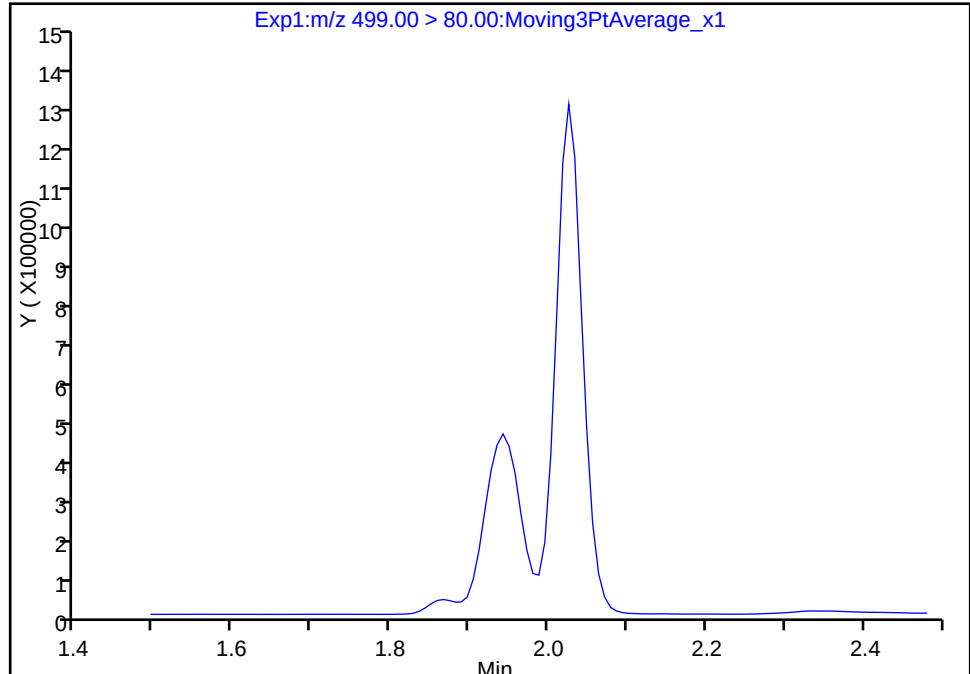
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

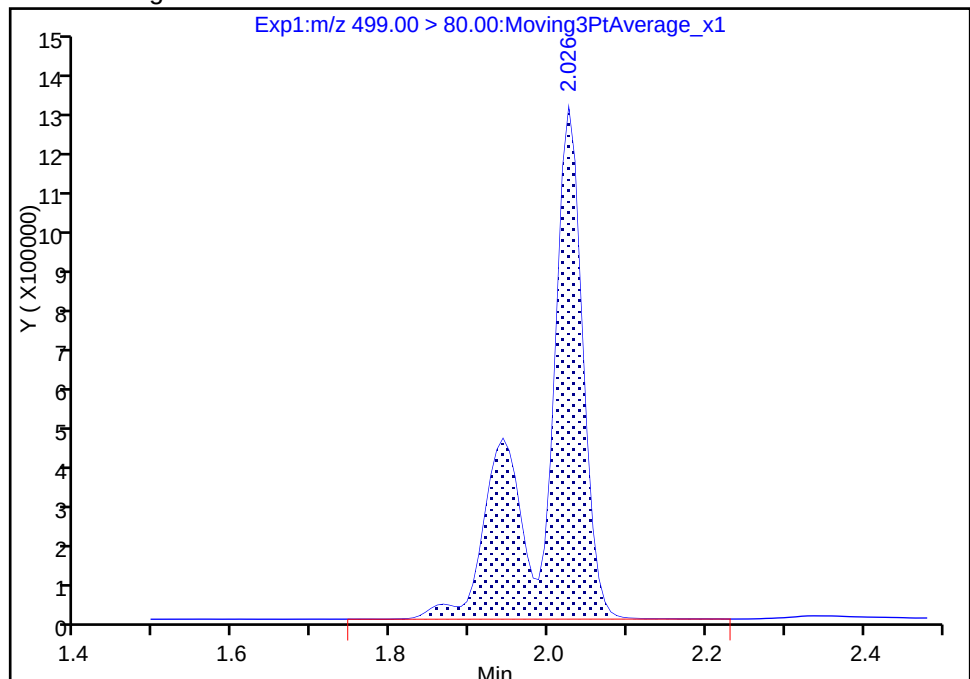
Not Detected

Expected RT: 2.01

Processing Integration Results



Manual Integration Results



RT: 2.03

Area: 4524512

Amount: 60.491808

Amount Units: ng/ml

Reviewer: roycea, 13-Mar-2018 09:04:07

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-211553/3-A
 Matrix: Water Lab File ID: 2018.03.12_537B_008.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 250 (mL) Date Analyzed: 03/12/2018 21:28
 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.: 212591 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	230	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	110		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	123		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	168		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	54.0		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	460		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	114		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_008.d
 Lims ID: LCSD 320-211553/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 12-Mar-2018 21:28:24 ALS Bottle#: 25 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-211553/3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK003

First Level Reviewer: roycea

Date: 13-Mar-2018 09:04:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	9679181	115.0		1377	
298.90 > 99.00	1.381	1.381	0.0	1.000	7433753		1.30(0.00-0.00)	3393	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.495	1.495	0.0	1.000	761395	9.23		9318	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.624	0.0	1.000	5301930	42.0		2521	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.624	0.0	1.000	983913	13.5		184	
* 6 13C2-PFOA									
415.00 > 370.00	1.791	1.783	0.008		750275	10.0		6870	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.791	1.783	0.008	1.000	1978667	27.4		55.1	
413.00 > 169.00	1.791	1.783	0.008	1.000	999541		1.98(0.00-0.00)	757	
* 7 13C4 PFOS									
503.00 > 80.00	2.003	1.995	0.008		2246677	28.7		608	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.003	2.011	-0.008	1.000	4251470	57.4		384	a
499.00 > 99.00	2.003	2.011	-0.008	1.000	872620		4.87(0.00-0.00)	372	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.018	2.011	0.007	1.000	1417868	30.7		27.5	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.215	2.215	0.0	1.000	446667	11.4		4480	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_008.d

Injection Date: 12-Mar-2018 21:28:24

Instrument ID: A8_N

Lims ID: LCSD 320-211553/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 25

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

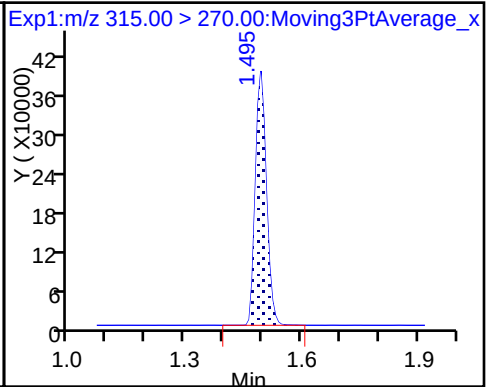
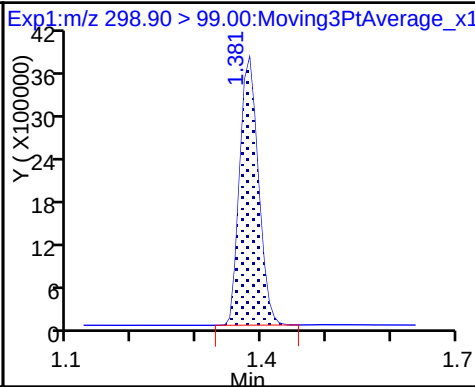
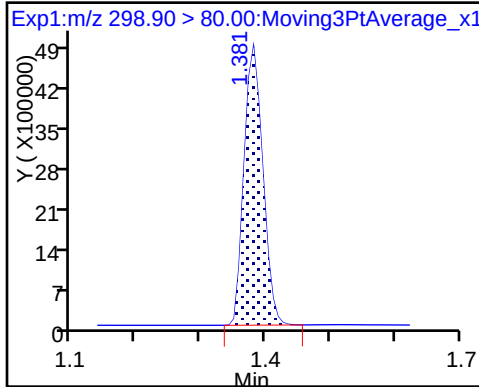
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

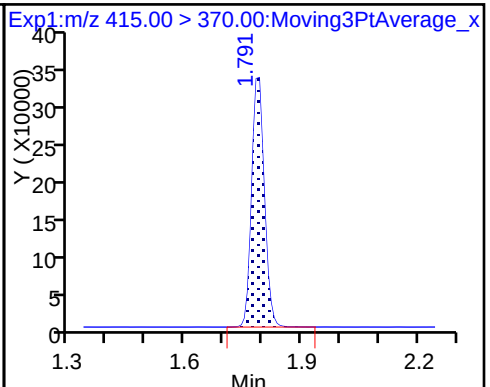
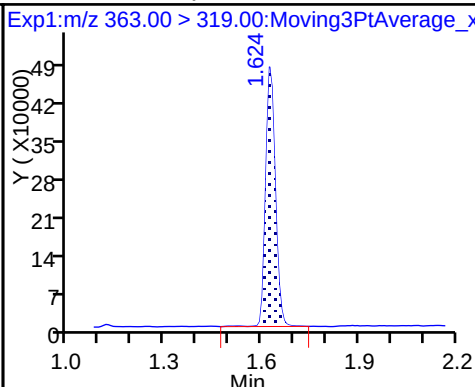
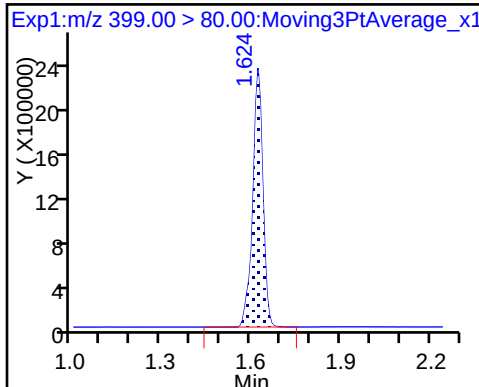
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

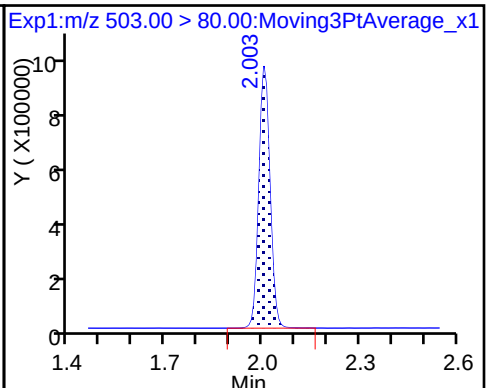
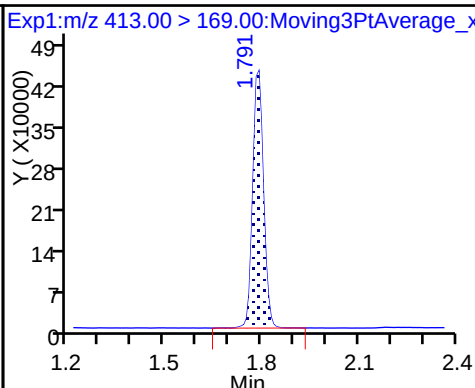
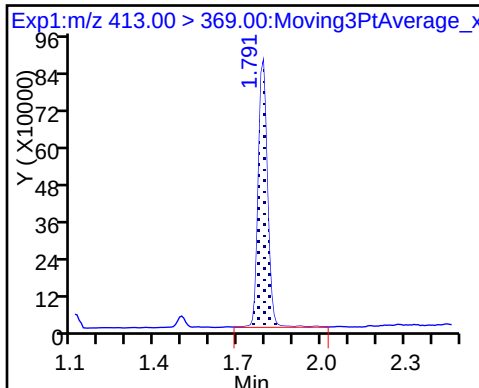
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

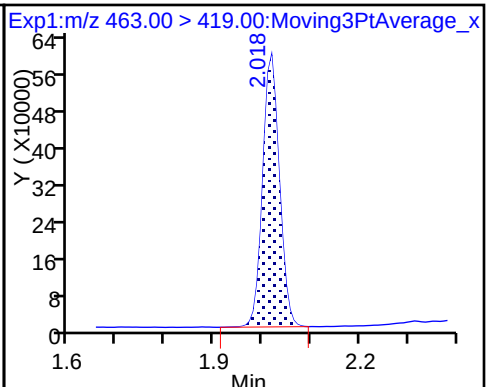
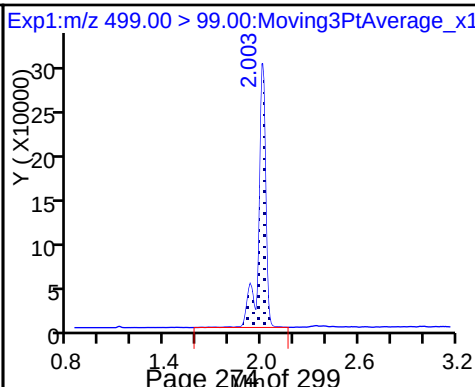
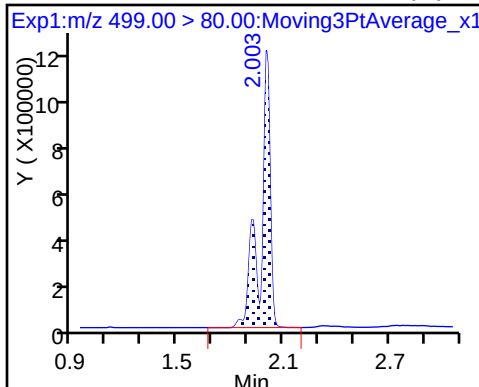
* 7 13C4 PFOS



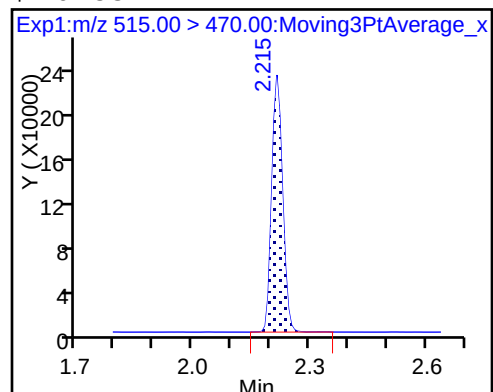
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_008.d
Lims ID: LCSD 320-211553/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 12-Mar-2018 21:28:24 ALS Bottle#: 25 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-211553/3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Mar-2018 10:45:24 Calib Date: 16-Feb-2018 09:19:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
Column 1 : Det: EXP1
Process Host: XAWRK003

First Level Reviewer: roycea

Date: 13-Mar-2018 09:04:41

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.23	92.27
\$ 10 13C2 PFDA	10.0	11.4	113.56

TestAmerica Sacramento

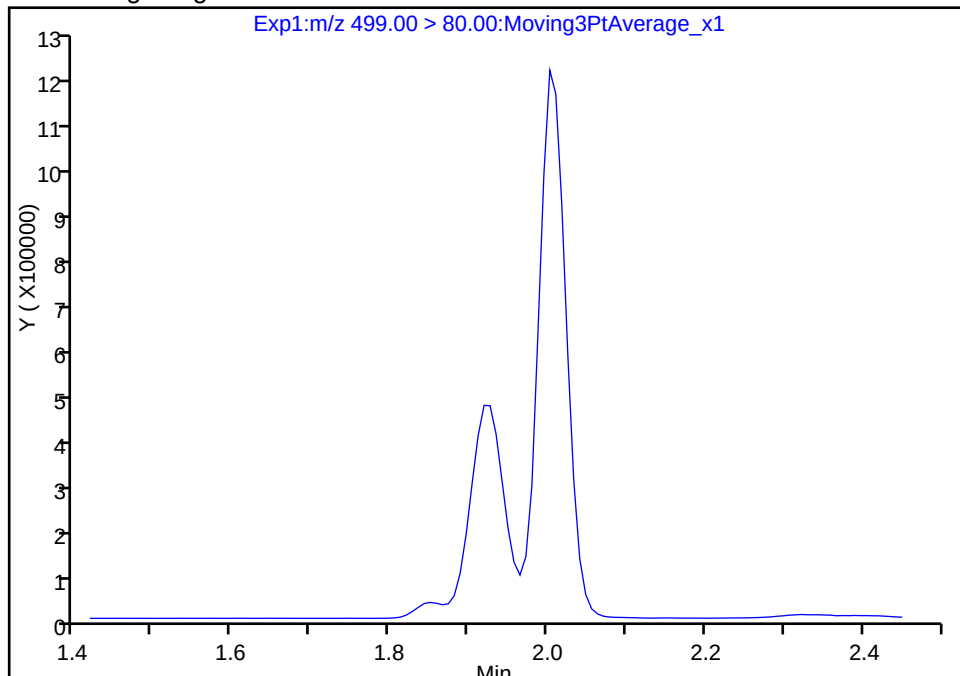
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b\2018.03.12_537B_008.d
Injection Date: 12-Mar-2018 21:28:24 Instrument ID: A8_N
Lims ID: LCSD 320-211553/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 25 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

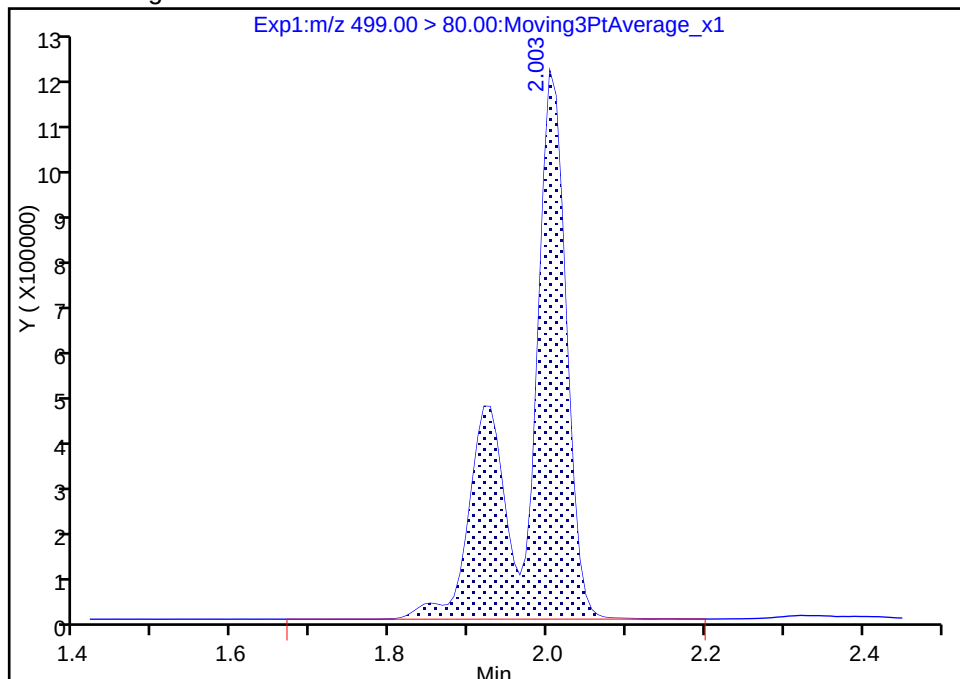
Not Detected
Expected RT: 2.01

Processing Integration Results



Manual Integration Results

RT: 2.00
Area: 4251470
Amount: 57.398300
Amount Units: ng/ml



Reviewer: roycea, 13-Mar-2018 09:04:26

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-36367-1

SDG No.: _____

Instrument ID: A8_NStart Date: 02/16/2018 08:55Analysis Batch Number: 208773End Date: 02/16/2018 09:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-208773/4		02/16/2018 08:55	1	2018.02.016_537 ICAL 004.d	GeminiC18 3x100 3(mm)
IC 320-208773/5		02/16/2018 09:00	1	2018.02.016_537 ICAL 005.d	GeminiC18 3x100 3(mm)
IC 320-208773/6		02/16/2018 09:05	1	2018.02.016_537 ICAL 006.d	GeminiC18 3x100 3(mm)
IC 320-208773/7 ICISAV		02/16/2018 09:09	1	2018.02.016_537 ICAL 007.d	GeminiC18 3x100 3(mm)
IC 320-208773/8		02/16/2018 09:14	1	2018.02.016_537 ICAL 008.d	GeminiC18 3x100 3(mm)
IC 320-208773/9		02/16/2018 09:19	1	2018.02.016_537 ICAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		02/16/2018 09:23	1		GeminiC18 3x100 3(mm)
CCVL 320-208773/11		02/16/2018 09:28	1	2018.02.016_537 ICAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		02/16/2018 09:33	1		GeminiC18 3x100 3(mm)
ICV 320-208773/13		02/16/2018 09:37	1	2018.02.016_537 ICAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Instrument ID: A8_N Start Date: 03/12/2018 16:16Analysis Batch Number: 212525 End Date: 03/12/2018 16:49

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-212525/1		03/12/2018 16:16	1	2018.03.12_537A A 004.d	GeminiC18 3x100 3(mm)
CCV 320-212525/2 CCVIS		03/12/2018 16:21	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/12/2018 16:30	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/12/2018 16:35	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/12/2018 16:40	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/12/2018 16:44	1		GeminiC18 3x100 3(mm)
CCV 320-212525/8 CCVIS		03/12/2018 16:49	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-36367-1

SDG No.: _____

Instrument ID: A8_NStart Date: 03/12/2018 21:09Analysis Batch Number: 212591End Date: 03/12/2018 22:05

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-212591/1 CCVIS		03/12/2018 21:09	1	2018.03.12_537B 004.d	GeminiC18 3x100 3(mm)
MB 320-211553/1-A		03/12/2018 21:19	1	2018.03.12_537B 006.d	GeminiC18 3x100 3(mm)
LCS 320-211553/2-A		03/12/2018 21:23	1	2018.03.12_537B 007.d	GeminiC18 3x100 3(mm)
LCSD 320-211553/3-A		03/12/2018 21:28	1	2018.03.12_537B 008.d	GeminiC18 3x100 3(mm)
320-36367-1		03/12/2018 21:33	1	2018.03.12_537B 009.d	GeminiC18 3x100 3(mm)
320-36367-2		03/12/2018 21:37	1	2018.03.12_537B 010.d	GeminiC18 3x100 3(mm)
320-36367-3		03/12/2018 21:42	1	2018.03.12_537B 011.d	GeminiC18 3x100 3(mm)
320-36367-4		03/12/2018 21:47	1	2018.03.12_537B 012.d	GeminiC18 3x100 3(mm)
320-36367-5		03/12/2018 21:51	1	2018.03.12_537B 013.d	GeminiC18 3x100 3(mm)
320-36367-6		03/12/2018 21:56	1	2018.03.12_537B 014.d	GeminiC18 3x100 3(mm)
320-36367-7		03/12/2018 22:01	1	2018.03.12_537B 015.d	GeminiC18 3x100 3(mm)
CCV 320-212591/13 CCVIS		03/12/2018 22:05	1	2018.03.12_537B 016.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Instrument ID: A8_N Start Date: 03/12/2018 22:05Analysis Batch Number: 212593 End Date: 03/12/2018 22:47

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-212593/13 CCVIS		03/12/2018 22:05	1	2018.03.12_537B 016.d	GeminiC18 3x100 3(mm)
320-36367-8		03/12/2018 22:15	1	2018.03.12_537B 018.d	GeminiC18 3x100 3(mm)
320-36367-9		03/12/2018 22:19	1	2018.03.12_537B 019.d	GeminiC18 3x100 3(mm)
320-36367-10		03/12/2018 22:24	1	2018.03.12_537B 020.d	GeminiC18 3x100 3(mm)
320-36367-11		03/12/2018 22:29	1	2018.03.12_537B 021.d	GeminiC18 3x100 3(mm)
320-36367-12		03/12/2018 22:33	1	2018.03.12_537B 022.d	GeminiC18 3x100 3(mm)
320-36367-13		03/12/2018 22:38	1	2018.03.12_537B 023.d	GeminiC18 3x100 3(mm)
CCV 320-212593/22 CCVIS		03/12/2018 22:47	1	2018.03.12_537B 031.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Batch Number: 211553 Batch Start Date: 03/07/18 07:07 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 03/10/18 12:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-HSP 00026
MB 320-211553/1		537, 537				250 mL	1.00 mL	7 SU	
LCS 320-211553/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCSD 320-211553/3		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-36367-A-1	WGNA-022218-DUP-28	537, 537	T	286.08 g	29.38 g	256.7 mL	1.00 mL	7 SU	
320-36367-A-2	WGNA-022218-RW-0386	537, 537	T	286.18 g	29.39 g	256.8 mL	1.00 mL	7 SU	
320-36367-A-3	WGNA-022218-FRB-0386	537, 537	T	293.16 g	30.63 g	262.5 mL	1.00 mL	7 SU	
320-36367-A-4	WGNA-022218-RW-3073	537, 537	T	285.92 g	29.61 g	256.3 mL	1.00 mL	7 SU	
320-36367-A-5	WGNA-022218-FRB-3073	537, 537	T	287.37 g	28.68 g	258.7 mL	1.00 mL	7 SU	
320-36367-A-6	NAWC-022218-RW-311	537, 537	T	279.81 g	29.17 g	250.6 mL	1.00 mL	7 SU	
320-36367-A-7	NAWC-022218-FRB-311	537, 537	T	287.78 g	28.64 g	259.1 mL	1.00 mL	7 SU	
320-36367-A-8	NAWC-022218-RW-039	537, 537	T	289.35 g	28.51 g	260.8 mL	1.00 mL	7 SU	
320-36367-A-9	NAWC-022218-FRB-039	537, 537	T	287.53 g	29.19 g	258.3 mL	1.00 mL	7 SU	
320-36367-A-10	NAWC-022218-RW-335	537, 537	T	295.09 g	29.15 g	265.9 mL	1.00 mL	7 SU	
320-36367-A-11	NAWC-022218-FRB-335	537, 537	T	291.48 g	29.17 g	262.3 mL	1.00 mL	7 SU	
320-36367-A-12	NAWC-022218-RW-348	537, 537	T	293.05 g	29.16 g	263.9 mL	1.00 mL	7 SU	
320-36367-A-13	NAWC-022218-FRB-348	537, 537	T	290.67 g	29.36 g	261.3 mL	1.00 mL	7 SU	

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00062	LC537-SU 00063	AnalysisComment			
MB 320-211553/1		537, 537		100 uL	100 uL	Chlorine, ND			
LCS 320-211553/2		537, 537		100 uL	100 uL	Chlorine, ND			
LCSD 320-211553/3		537, 537		100 uL	100 uL	Chlorine, ND			
320-36367-A-1	WGNA-022218-DUP-28	537, 537	T	100 uL	100 uL	Chlorine, ND			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Batch Number: 211553 Batch Start Date: 03/07/18 07:07 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 03/10/18 12:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00062	LC537-SU 00063	AnalysisComment			
320-36367-A-2	WGNA-022218-RW-0386	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-3	WGNA-022218-FRB-0386	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-4	WGNA-022218-RW-3073	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-5	WGNA-022218-FRB-3073	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-6	NAWC-022218-RW-311	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-7	NAWC-022218-FRB-311	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-8	NAWC-022218-RW-039	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-9	NAWC-022218-FRB-039	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-10	NAWC-022218-RW-335	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-11	NAWC-022218-FRB-335	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-12	NAWC-022218-RW-348	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-13	NAWC-022218-FRB-348	537, 537	T	100 uL	100 uL	Chlorine, ND			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Batch Number: 211553 Batch Start Date: 03/07/18 07:07 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 03/10/18 12:30

Batch Notes	
Analyst ID - Aliquot Step	SKD
Batch Comment	Client labels match TA labels, 03/07/18 SKD
Analyst ID - Concentration	SKD
Analyst ID - Final Volume Step	SKD
Internal Standard ID#	1169780
Manifold ID	4, 9
Methanol ID	1175202
pH Indicator ID	3817
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	GXL
Analyst ID - SU Reagent Drop	VPM
Analyst ID - SU Reagent Drop Witness	KMK
Analyst ID - TA Reagent Drop	VPM
Analyst ID - TA Reagent Drop Witness	KMK
SPE Cartridge Lot ID	6369499-08
Trizma ID	SLBR4303V
Reagent Water ID	03/03/18

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Job No: 36367 Instrument ID & Date: A8 3-12-18 ICAL Batch: 208773
 Extraction Batch: 211553 Worklist #: 55214 TALS Batch: 212591, 212593

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 3-13-18 2nd Level Reviewer / Date: SW 3/13/18

NCM # and Comments: _____

A8

Instrument ID & Date: 2-16-18 Worklist#: 54164

ICAL Batch: 208773, 208774 Calibration ID number: 37889, 37890

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 2-16-18

2nd Level Reviewer / Date: CBW 2-16-18

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 12MAR2018_537C

Worklist Number: 55214

Instrument Name: A8_N

Chrom Method: 537_A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b

QC Batching: Enabled

Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 212591
# 1 CCV L5	# 1 CCV L5
# 2 RB	# 2 RB
# 3 MB 320-211553/1-A	# 3 MB 320-211553/1-A
# 4 LCS 320-211553/2-A	# 4 LCS 320-211553/2-A
# 5 LCSD 320-211553/3-A	# 5 LCSD 320-211553/3-A
# 6 320-36367-A-1-A	# 6 320-36367-A-1-A
# 7 320-36367-A-2-A	# 7 320-36367-A-2-A
# 8 320-36367-A-3-A	# 8 320-36367-A-3-A
# 9 320-36367-A-4-A	# 9 320-36367-A-4-A
#10 320-36367-A-5-A	#10 320-36367-A-5-A
#11 320-36367-A-6-A	#11 320-36367-A-6-A
#12 320-36367-A-7-A	#12 320-36367-A-7-A
#13 CCV L3	#13 CCV L3

QC Batch: 2	LC 537 ICAL Raw Batch: 212593
#13 CCV L3	#13 CCV L3
#14 RB	#14 RB
#15 320-36367-A-8-A	#15 320-36367-A-8-A
#16 320-36367-A-9-A	#16 320-36367-A-9-A
#17 320-36367-A-10-A	#17 320-36367-A-10-A
#18 320-36367-A-11-A	#18 320-36367-A-11-A
#19 320-36367-A-12-A	#19 320-36367-A-12-A
#20 320-36367-A-13-A	#20 320-36367-A-13-A
#21 537 ADAPTER QC	#21 537 ADAPTER QC
#22 CCV L5	#22 CCV L5
#23 RB	#23 RB

CCV L5 in AB 212525

TestAmerica Laboratories

Worklist Run Log Report

Worklist Name: 12MAR2018_537C

Worklist Num: 55214

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b

Analysis Type: SemiVOA

Creator: Hannigan, Alyssa B

Inj Volume: 2.00

Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCV L5	320-0055214-001	CCVIS	12-Mar-2018 21:09:44	2018.03.12_537B_004.d	5	1.0		sv
RB	320-0055214-002	RB	12-Mar-2018 21:14:24	2018.03.12_537B_005.d	8	1.0		sv
MB 320-211553/1-A	320-0055214-003	MB	12-Mar-2018 21:19:04	2018.03.12_537B_006.d	23	1.0		sv
LCS 320-211553/2-A	320-0055214-004	LCS	12-Mar-2018 21:23:45	2018.03.12_537B_007.d	24	1.0		sv
LCSD 320-211553/3-A	320-0055214-005	LCSD	12-Mar-2018 21:28:24	2018.03.12_537B_008.d	25	1.0		sv
320-36367-A-1-A	320-0055214-006	Client	12-Mar-2018 21:33:05	2018.03.12_537B_009.d	26	1.0	WGNA-022218-DUP-28	sv
320-36367-A-2-A	320-0055214-007	Client	12-Mar-2018 21:37:45	2018.03.12_537B_010.d	27	1.0	WGNA-022218-RW-0386	sv
320-36367-A-3-A	320-0055214-008	Client	12-Mar-2018 21:42:25	2018.03.12_537B_011.d	28	1.0	WGNA-022218-FRB-0386	sv
320-36367-A-4-A	320-0055214-009	Client	12-Mar-2018 21:47:05	2018.03.12_537B_012.d	29	1.0	WGNA-022218-RW-3073	sv
320-36367-A-5-A	320-0055214-010	Client	12-Mar-2018 21:51:45	2018.03.12_537B_013.d	30	1.0	WGNA-022218-FRB-3073	sv
320-36367-A-6-A	320-0055214-011	Client	12-Mar-2018 21:56:25	2018.03.12_537B_014.d	31	1.0	NAWC-022218-RW-311	sv
320-36367-A-7-A	320-0055214-012	Client	12-Mar-2018 22:01:06	2018.03.12_537B_015.d	32	1.0	NAWC-022218-FRB-311	sv
CCV L3	320-0055214-013	CCVIS	12-Mar-2018 22:05:47	2018.03.12_537B_016.d	3	1.0		sv
RB	320-0055214-014	RB	12-Mar-2018 22:10:28	2018.03.12_537B_017.d	8	1.0		sv
320-36367-A-8-A	320-0055214-015	Client	12-Mar-2018 22:15:08	2018.03.12_537B_018.d	33	1.0	NAWC-022218-RW-039	sv
320-36367-A-9-A	320-0055214-016	Client	12-Mar-2018 22:19:49	2018.03.12_537B_019.d	34	1.0	NAWC-022218-FRB-039	sv
320-36367-A-10-A	320-0055214-017	Client	12-Mar-2018 22:24:31	2018.03.12_537B_020.d	35	1.0	NAWC-022218-RW-335	sv
320-36367-A-11-A	320-0055214-018	Client	12-Mar-2018 22:29:11	2018.03.12_537B_021.d	36	1.0	NAWC-022218-FRB-335	sv
320-36367-A-12-A	320-0055214-019	Client	12-Mar-2018 22:33:52	2018.03.12_537B_022.d	37	1.0	NAWC-022218-RW-348	sv
320-36367-A-13-A	320-0055214-020	Client	12-Mar-2018 22:38:32	2018.03.12_537B_023.d	38	1.0	NAWC-022218-FRB-348	sv
537 ADAPTER QC	320-0055214-021	Client	12-Mar-2018 22:43:13	2018.03.12_537B_030.d	41	1.0		sv
CCV L5	320-0055214-022	CCVIS	12-Mar-2018 22:47:53	2018.03.12_537B_031.d	5	1.0		sv
RB	320-0055214-023	RB	12-Mar-2018 22:52:34	2018.03.12_537B_032.d	8	1.0		sv

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 12MAR2018_537A

Worklist Num: 55198

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180312-55198.b

Analysis Type: SemiVOA

Creator: Royce, Amani A

Inj Volume: 2.00

Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCVL	320-0055198-001	CCVL	12-Mar-2018 16:16:41	2018.03.12_537AA_004.d	2	1.0		sv
CCV L5	320-0055198-002	CCVIS	12-Mar-2018 16:21:22	2018.03.12_537AA_005.d	5	1.0		sv
RB	320-0055198-003	RB	12-Mar-2018 16:26:02	2018.03.12_537AA_006.d	8	1.0		sv
MB 320-212004/1-A	320-0055198-004	MB	12-Mar-2018 16:30:40	2018.03.12_537AA_007.d	1	1.0		sv
LCS 320-212004/2-A	320-0055198-005	LCS	12-Mar-2018 16:35:21	2018.03.12_537AA_008.d	2	1.0		sv
LCSD 320-212004/3-A	320-0055198-006	LCSD	12-Mar-2018 16:40:02	2018.03.12_537AA_009.d	3	1.0		sv
320-36607-B-8-A	320-0055198-007	Client	12-Mar-2018 16:44:43	2018.03.12_537AA_010.d	4	1.0	COAM0	sv
CCV L3	320-0055198-008	CCVIS	12-Mar-2018 16:49:23	2018.03.12_537AA_011.d	3	1.0		sv
RB	320-0055198-009	RB	12-Mar-2018 16:54:04	2018.03.12_537AA_012.d	8	1.0		sv
MB 320-211644/1-A	320-0055198-010	MB	12-Mar-2018 16:58:44	2018.03.12_537B_026.d	39	1.0		sv
320-36611-A-3-A	320-0055198-011	Client	12-Mar-2018 17:03:25	2018.03.12_537B_027.d	40	10.0	BW022718-C-STALL-LHWA	sv
CCV L3	320-0055198-012	CCVIS	12-Mar-2018 17:08:05	2018.03.12_537B_028.d	3	1.0		sv
RB	320-0055198-013	RB	12-Mar-2018 17:12:45	2018.03.12_537B_029.d	8	1.0		sv

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-211553 ✓

Analyst: Kouchari, Shamiran

Batch Open: 3/7/2018 7:07:00AM

Method Code: 320-537_Prep-320

Batch End: 3/10/2018 12:30:00PM

Extraction of Perfluorinated Alkyl Acids

3/16

	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-320-211553/1 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine, ND	
				1.00 mL								
2	LCS-320-211553/2 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine, ND	
				1.00 mL								
3	LCSD-320-211553/3 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine, ND	
				1.00 mL								
	320-36367-A-1 (537_DOD5)	N/A (320-36367-1)	286.08 g	256.7 mL	7			2/27/18	16_Days	4	Chlorine, ND	
			29.38 g	1.00 mL								
	320-36367-A-2 (537_DOD5)	N/A (320-36367-1)	286.18 g	256.8 mL	7			2/27/18	16_Days	4	Chlorine, ND	
			29.39 g	1.00 mL								
6	320-36367-A-3 (537_DOD5)	N/A (320-36367-1)	293.16 g	262.5 mL	7			2/27/18	16_Days	4	Chlorine, ND	
			30.63 g	1.00 mL								
7	320-36367-A-4 (537_DOD5)	N/A (320-36367-1)	285.92 g	256.3 mL	7			2/27/18	16_Days	4	Chlorine, ND	
			29.61 g	1.00 mL								
8	320-36367-A-5 (537_DOD5)	N/A (320-36367-1)	287.37 g	258.7 mL	7			2/27/18	16_Days	4	Chlorine, ND	
			28.68 g	1.00 mL								
9	320-36367-A-6 (537_DOD5)	N/A (320-36367-1)	279.81 g	250.6 mL	7			2/27/18	16_Days	4	Chlorine, ND	
			29.17 g	1.00 mL								
10	320-36367-A-7 (537_DOD5)	N/A (320-36367-1)	287.78 g	259.1 mL	7			2/27/18	16_Days	4	Chlorine, ND	
			28.64 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-211553

Analyst: Kouchari, Shamiran

Batch Open: 3/7/2018 7:07:00AM

Method Code: 320-537_Prep-320

Batch End: 3/10/2018 12:30:00PM

11	320-36367-A-8 (537_DOD5)	N/A (320-36367-1)	289.35 g 28.51 g	260.8 mL 1.00 mL	7		2/27/18	16_Days	4	Chlorine, ND	
12	320-36367-A-9 (537_DOD5)	N/A (320-36367-1)	287.53 g 29.19 g	258.3 mL 1.00 mL	7		2/27/18	16_Days	4	Chlorine, ND	
13	320-36367-A-10 (537_DOD5)	N/A (320-36367-1)	295.09 g 29.15 g	265.9 mL 1.00 mL	7		2/27/18	16_Days	4	Chlorine, ND	
14	320-36367-A-11 (537_DOD5)	N/A (320-36367-1)	291.48 g 29.17 g	262.3 mL 1.00 mL	7		2/27/18	16_Days	4	Chlorine, ND	
15	320-36367-A-12 (537_DOD5)	N/A (320-36367-1)	293.05 g 29.16 g	263.9 mL 1.00 mL	7		2/27/18	16_Days	4	Chlorine, ND	
	320-36367-A-13 (537_DOD5)	N/A (320-36367-1)	290.67 g 29.36 g	261.3 mL 1.00 mL	7		2/27/18	16_Days	4	Chlorine, ND	

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-211553

Analyst: Kouchari, Shamiran

Batch Open: 3/7/2018 7:07:00AM

Method Code: 320-537_Prep-320

Batch End: 3/10/2018 12:30:00PM

Batch Notes

Manifold ID 4, 9

pH Indicator ID 3817

Trizma ID SLBR4303V

SPE Cartridge Lot ID 6369499-08

Methanol ID 1175202

Reagent Water ID 03/03/18

Internal Standard ID# 1169780

Pipette ID H14930F

Analyst ID - TA Reagent Drop VPM

Analyst ID - TA Reagent Drop KMK
Witness

Analyst ID - SU Reagent Drop VPM

Analyst ID - SU Reagent Drop KMK
Witness

Analyst ID - IS Reagent Drop JER

Analyst ID - IS Reagent Drop GXL
Witness

Analyst ID - Concentration SKD

Analyst ID - Aliquot Step SKD

Analyst ID - Final Volume Step SKD

Batch Comment Client labels match TA labels, 03/07/18 SKD

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-211553

Analyst: Kouchari, Shamiran

Batch Open: 3/7/2018 7:07:00AM

Method Code: 320-537_Prep-320

Batch End: 3/10/2018 12:30:00PM

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-211553

Analyst: Kouchari, Shamiran

Batch Open: 3/7/2018 7:07:00AM

Method Code: 320-537_Prep-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-211553/1	LC537-SU_00063	100 uL	1.00 mL	VPM 3/7/18	KMK 3-7-18
LCS 320-211553/2	LC537-HSP_00026	100 uL	1.00 mL		
LCS 320-211553/2	LC537-SU_00063	100 uL	1.00 mL		
LCSD 320-211553/3	LC537-HSP_00026	100 uL	1.00 mL		
LCSD 320-211553/3	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-1	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-2	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-3	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-4	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-5	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-6	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-7	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-8	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-9	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-10	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-11	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-12	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-13	LC537-SU_00063	100 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-211553

Analyst: Kouchari, Shamiran

Batch Open: 3/7/2018 7:07:00AM

Method Code: 320-537_Prep-320

Batch End:

Other Reagents:

Reagent

Amount/Units

Lot#:

Sacramento Preparation Data Review Checklist

Preparation Batch Number(s) 211553 Test 537 - prep
 Earliest Holding Time 3/8/18

Batch Information	1 st Level Reviewer	2 nd Level Reviewer
Date and time accurate and entered into TALS correctly	✓	✓
All necessary batch information complete and entered into TALS correctly	✓	✓
BD, FV, and AL initials are transcribed into the batch comment	✓	✓
Sample List Tab	1 st Level Reviewer	2 nd Level Reviewer
Samples identified to the correct method	✓	✓
Holding time violation NCM filed	N/A	N/A
MS/MSD or MS/DU NCM filed	N/A	N/A
NCM for any anomalies filed	N/A	N/A
All NCMs include method code, matrix, and prep batch	N/A	N/A
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: SKD
 2nd Level Reviewer: VPM
 Comments: _____

Date: 3/10/18
 Date: 3/12/18

Shipping and Receiving Documents

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-36367-1

Login Number: 36367

List Source: TestAmerica Sacramento

List Number: 1

Creator: Nelson, Kym D

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	45374, 453735,
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-022218-DUP-28","537","RES","320-36367-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","26","ng/L","J M","6.6","DL","","TRG","","","39","LOQ","YES","-99","","256.7","1.00","16","","
"WGNA-022218-DUP-28","537","RES","320-36367-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","26","ng/L","","2.7","DL","","TRG","","","19","LOQ","YES","-99","","256.7","1.00","7.8","","
"WGNA-022218-DUP-28","537","RES","320-36367-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","18","ng/L","J","5.4","DL","","TRG","","","29","LOQ","YES","-99","","256.7","1.00","12","","
"WGNA-022218-DUP-28","537","RES","320-36367-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","256.7","1.00","35","","
"WGNA-022218-DUP-28","537","RES","320-36367-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","6.7","ng/L","J","1.9","DL","","TRG","","","9.7","LOQ","YES","-99","","256.7","1.00","3.9","","
"WGNA-022218-DUP-28","537","RES","320-36367-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES","-99","","256.7","1.00","19","","
"WGNA-022218-DUP-28","537","RES","320-36367-1","TALSAC","STL00993","13C2 PFHxA","33","ng/L","","-99","DL","","SURRE","86","","-99","LOQ","YES","39.0","","256.7","1.00","0","","
"WGNA-022218-DUP-28","537","RES","320-36367-1","TALSAC","STL00996","13C2 PFDA","45","ng/L","","-99","DL","","SURRE","116","","-99","LOQ","YES","39.0","","256.7","1.00","0","","
"NAWC-022218-RW-335","537","RES","320-36367-10","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","24","ng/L","J M","6.4","DL","","TRG","","","38","LOQ","YES","-99","","265.9","1.00","15","","
"NAWC-022218-RW-335","537","RES","320-36367-10","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","24","ng/L","","2.6","DL","","TRG","","","19","LOQ","YES","-99","","265.9","1.00","7.5","","
"NAWC-022218-RW-335","537","RES","320-36367-10","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","8.1","ng/L","J","5.2","DL","","TRG","","","28","LOQ","YES","-99","","265.9","1.00","11","","
"NAWC-022218-RW-335","537","RES","320-36367-10","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","34","ng/L","U","15","DL","","TRG","","","85","LOQ","YES","-99","","265.9","1.00","34","","
"NAWC-022218-RW-335","537","RES","320-36367-10","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","8.3","ng/L","J","1.8","DL","","TRG","","","9.4","LOQ","YES","-99","","265.9","1.00","3.8","","
"NAWC-022218-RW-335","537","RES","320-36367-10","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U","7.5","DL","","TRG","","","23","LOQ","YES","-99","","265.9","1.00","19","","
"NAWC-022218-RW-335","537","RES","320-36367-10","TALSAC","STL00993","13C2 PFHxA","36","ng/L","","-99","DL","","SURRE","96","","-99","LOQ","YES","37.6","","265.9","1.00","0","","
"NAWC-022218-RW-335","537","RES","320-36367-10","TALSAC","STL00996","13C2 PFDA","48","ng/L","","-99","DL","","SURRE","128","","-99","LOQ","YES","37.6","","265.9","1.00","0","","
"NAWC-022218-FRB-335","537","RES","320-36367-11","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","15","ng/L","U","6.5","DL","","TRG","","","38","LOQ","YES","-99","","262.3","1.00","15","","
"NAWC-022218-FRB-335","537","RES","320-36367-11","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.6","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES","-99","","262.3","1.00","7.6","","
"NAWC-022218-FRB-335","537","RES","320-36367-11","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","11","ng/L","U","5.2","DL","","TRG","","","29","LOQ","YES","-99","","262.3","1.00","11","","
"NAWC-022218-FRB-335","537","RES","320-36367-11","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","34","ng/L","U","15","DL","","TRG","","","86","LOQ","YES","-99","","262.3","1.00","34","","
"NAWC-022218-FRB-335","537","RES","320-36367-11","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.8","ng/L","U","1.8","DL","","TRG","","","9.5","LOQ","YES","-99","","262.3","1.00","3.8","","
"NAWC-022218-FRB-335","537","RES","320-36367-11","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U","7.6","DL","","TRG","","","23","LOQ","YES","-99","","262.3","1.00","19","","
"NAWC-022218-FRB-335","537","RES","320-36367-11","TALSAC","STL00993","13C2 PFHxA","34","ng/L","","-99","DL","","SURRE","90","","-99","LOQ","YES","38.1","","262.3","1.00","0","","
"NAWC-022218-FRB-335","537","RES","320-36367-11","TALSAC","STL00996","13C2 PFDA","44","ng/L","","-99","DL","","SURRE","114","","-99","LOQ","YES","38.1","","262.3","1.00","0","","
"NAWC-022218-RW-348","537","RES","320-36367-12","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","41","ng/L","M","6.4","DL","","TRG","","","38","LOQ","YES","-99","","263.9","1.00","15","","
"NAWC-022218-RW-348","537","RES","320-36367-12","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","25","ng/L","","2.7","DL","","TRG","","","19","LOQ","YES","-99","","263.9","1.00","7.6","","
"NAWC-022218-RW-348","537","RES","320-36367-12","TALSAC","355-46-4","Perfluorohexanesulfonic acid

(PFHxS)","9.1","ng/L","J","5.2","DL","","","TRG","","","28","LOQ","YES",-99","","263.9","1.00","11","","
"NAWC-022218-RW-348","537","RES","320-36367-12","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","","TRG","","","85","LOQ","YES",-99","","263.9","1.00","34","","
"NAWC-022218-RW-348","537","RES","320-36367-12","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","6.3","ng/L","J M","1.8","DL","","","TRG","","","9.5","LOQ","YES",-99","","263.9","1.00","3.8","","
"NAWC-022218-RW-348","537","RES","320-36367-12","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.6","DL","","","TRG","","","23","LOQ","YES",-99","","263.9","1.00","19","","
"NAWC-022218-RW-348","537","RES","320-36367-12","TALSAC","STL00993","13C2
PFHxA","31","ng/L","","","-99","DL","","","SURR","81","","","-99","LOQ","YES","37.9","","263.9","1.00","0","","
"NAWC-022218-RW-348","537","RES","320-36367-12","TALSAC","STL00996","13C2
PFDA","46","ng/L","","","-99","DL","","","SURR","120","","","-99","LOQ","YES","37.9","","263.9","1.00","0","","
"NAWC-022218-FRB-348","537","RES","320-36367-13","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.5","DL","","","TRG","","","38","LOQ","YES",-99","","261.3","1.00","15","","
"NAWC-022218-FRB-348","537","RES","320-36367-13","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.7","ng/L","U","2.7","DL","","","TRG","","","19","LOQ","YES",-99","","261.3","1.00","7.7","","
"NAWC-022218-FRB-348","537","RES","320-36367-13","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.3","DL","","","TRG","","","29","LOQ","YES",-99","","261.3","1.00","11","","
"NAWC-022218-FRB-348","537","RES","320-36367-13","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","","TRG","","","86","LOQ","YES",-99","","261.3","1.00","34","","
"NAWC-022218-FRB-348","537","RES","320-36367-13","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.8","ng/L","U","1.8","DL","","","TRG","","","9.6","LOQ","YES",-99","","261.3","1.00","3.8","","
"NAWC-022218-FRB-348","537","RES","320-36367-13","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.7","DL","","","TRG","","","23","LOQ","YES",-99","","261.3","1.00","19","","
"NAWC-022218-FRB-348","537","RES","320-36367-13","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","","-99","DL","","","SURR","95","","","-99","LOQ","YES","38.3","","261.3","1.00","0","","
"NAWC-022218-FRB-348","537","RES","320-36367-13","TALSAC","STL00996","13C2
PFDA","44","ng/L","","","-99","DL","","","SURR","116","","","-99","LOQ","YES","38.3","","261.3","1.00","0","","
"WGNA-022218-RW-0386","537","RES","320-36367-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","26","ng/L","J M","6.6","DL","","","TRG","","","39","LOQ","YES",-99","","256.8","1.00","16","","
"WGNA-022218-RW-0386","537","RES","320-36367-2","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","25","ng/L","","","2.7","DL","","","TRG","","","19","LOQ","YES",-99","","256.8","1.00","7.8","","
"WGNA-022218-RW-0386","537","RES","320-36367-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","18","ng/L","J","5.4","DL","","","TRG","","","29","LOQ","YES",-99","","256.8","1.00","12","","
"WGNA-022218-RW-0386","537","RES","320-36367-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","16","DL","","","TRG","","","88","LOQ","YES",-99","","256.8","1.00","35","","
"WGNA-022218-RW-0386","537","RES","320-36367-2","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","7.2","ng/L","J","1.8","DL","","","TRG","","","9.7","LOQ","YES",-99","","256.8","1.00","3.9","","
"WGNA-022218-RW-0386","537","RES","320-36367-2","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.8","DL","","","TRG","","","23","LOQ","YES",-99","","256.8","1.00","19","","
"WGNA-022218-RW-0386","537","RES","320-36367-2","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","","-99","DL","","","SURR","93","","","-99","LOQ","YES","38.9","","256.8","1.00","0","","
"WGNA-022218-RW-0386","537","RES","320-36367-2","TALSAC","STL00996","13C2
PFDA","47","ng/L","","","-99","DL","","","SURR","122","","","-99","LOQ","YES","38.9","","256.8","1.00","0","","
"WGNA-022218-FRB-0386","537","RES","320-36367-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.5","DL","","","TRG","","","38","LOQ","YES",-99","","262.5","1.00","15","","
"WGNA-022218-FRB-0386","537","RES","320-36367-3","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.6","ng/L","U","2.7","DL","","","TRG","","","19","LOQ","YES",-99","","262.5","1.00","7.6","","
"WGNA-022218-FRB-0386","537","RES","320-36367-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.2","DL","","","TRG","","","29","LOQ","YES",-99","","262.5","1.00","11","","
"WGNA-022218-FRB-0386","537","RES","320-36367-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","","TRG","","","86","LOQ","YES",-99","","262.5","1.00","34","","
"WGNA-022218-FRB-0386","537","RES","320-36367-3","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.8","ng/L","U","1.8","DL","","","TRG","","","9.5","LOQ","YES",-99","","262.5","1.00","3.8","","
"WGNA-022218-FRB-0386","537","RES","320-36367-3","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA),"19","ng/L","U","7.6","DL","","","TRG","","","23","LOQ","YES","-99","","","262.5","1.00","19","","
"WGNA-022218-FRB-0386","537","RES","320-36367-3","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","","-99","DL","","","SURRE","94","","","-99","LOQ","YES","38.1","","","262.5","1.00","0","","
"WGNA-022218-FRB-0386","537","RES","320-36367-3","TALSAC","STL00996","13C2
PFDA","42","ng/L","","","-99","DL","","","SURRE","110","","","-99","LOQ","YES","38.1","","","262.5","1.00","0","","
"WGNA-022218-RW-3073","537","RES","320-36367-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","34","ng/L","J M","6.6","DL","","","TRG","","","39","LOQ","YES","-99","","","256.3","1.00","16","","
"WGNA-022218-RW-3073","537","RES","320-36367-4","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","13","ng/L","J","2.7","DL","","","TRG","","","20","LOQ","YES","-99","","","256.3","1.00","7.8","","
"WGNA-022218-RW-3073","537","RES","320-36367-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","17","ng/L","J","5.4","DL","","","TRG","","","29","LOQ","YES","-99","","","256.3","1.00","12","","
"WGNA-022218-RW-3073","537","RES","320-36367-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","110","ng/L","","","16","DL","","","TRG","","","88","LOQ","YES","-99","","","256.3","1.00","35","","
"WGNA-022218-RW-3073","537","RES","320-36367-4","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","8.1","ng/L","J","1.9","DL","","","TRG","","","9.8","LOQ","YES","-99","","","256.3","1.00","3.9","","
"WGNA-022218-RW-3073","537","RES","320-36367-4","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","7.8","DL","","","TRG","","","23","LOQ","YES","-99","","","256.3","1.00","20","","
"WGNA-022218-RW-3073","537","RES","320-36367-4","TALSAC","STL00993","13C2
PFHxA","34","ng/L","","","-99","DL","","","SURRE","86","","","-99","LOQ","YES","39.0","","","256.3","1.00","0","","
"WGNA-022218-RW-3073","537","RES","320-36367-4","TALSAC","STL00996","13C2
PFDA","43","ng/L","","","-99","DL","","","SURRE","111","","","-99","LOQ","YES","39.0","","","256.3","1.00","0","","
"WGNA-022218-FRB-3073","537","RES","320-36367-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.6","DL","","","TRG","","","39","LOQ","YES","-99","","","258.7","1.00","15","","
"WGNA-022218-FRB-3073","537","RES","320-36367-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.7","ng/L","U","2.7","DL","","","TRG","","","19","LOQ","YES","-99","","","258.7","1.00","7.7","","
"WGNA-022218-FRB-3073","537","RES","320-36367-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.3","DL","","","TRG","","","29","LOQ","YES","-99","","","258.7","1.00","12","","
"WGNA-022218-FRB-3073","537","RES","320-36367-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","16","DL","","","TRG","","","87","LOQ","YES","-99","","","258.7","1.00","35","","
"WGNA-022218-FRB-3073","537","RES","320-36367-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.9","ng/L","U","1.8","DL","","","TRG","","","9.7","LOQ","YES","-99","","","258.7","1.00","3.9","","
"WGNA-022218-FRB-3073","537","RES","320-36367-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.7","DL","","","TRG","","","23","LOQ","YES","-99","","","258.7","1.00","19","","
"WGNA-022218-FRB-3073","537","RES","320-36367-5","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","","-99","DL","","","SURRE","94","","","-99","LOQ","YES","38.7","","","258.7","1.00","0","","
"WGNA-022218-FRB-3073","537","RES","320-36367-5","TALSAC","STL00996","13C2
PFDA","44","ng/L","","","-99","DL","","","SURRE","114","","","-99","LOQ","YES","38.7","","","258.7","1.00","0","","
"NAWC-022218-RW-311","537","RES","320-36367-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","25","ng/L","J M","6.8","DL","","","TRG","","","40","LOQ","YES","-99","","","250.6","1.00","16","","
"NAWC-022218-RW-311","537","RES","320-36367-6","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","23","ng/L","","","2.8","DL","","","TRG","","","20","LOQ","YES","-99","","","250.6","1.00","8.0","","
"NAWC-022218-RW-311","537","RES","320-36367-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","5.7","ng/L","J","5.5","DL","","","TRG","","","30","LOQ","YES","-99","","","250.6","1.00","12","","
"NAWC-022218-RW-311","537","RES","320-36367-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","","TRG","","","90","LOQ","YES","-99","","","250.6","1.00","36","","
"NAWC-022218-RW-311","537","RES","320-36367-6","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","7.4","ng/L","J","1.9","DL","","","TRG","","","10","LOQ","YES","-99","","","250.6","1.00","4.0","","
"NAWC-022218-RW-311","537","RES","320-36367-6","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","","TRG","","","24","LOQ","YES","-99","","","250.6","1.00","20","","
"NAWC-022218-RW-311","537","RES","320-36367-6","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","","-99","DL","","","SURRE","87","","","-99","LOQ","YES","39.9","","","250.6","1.00","0","","
"NAWC-022218-RW-311","537","RES","320-36367-6","TALSAC","STL00996","13C2
PFDA","46","ng/L","","","-99","DL","","","SURRE","115","","","-99","LOQ","YES","39.9","","","250.6","1.00","0","","
"NAWC-022218-FRB-311","537","RES","320-36367-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS),"15","ng/L","U","6.6","DL","","TRG","","","39","LOQ","YES",-99","","259.1","1.00","15",""
"NAWC-022218-FRB-311","537","RES","320-36367-7","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"7.7","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES",-99","","259.1","1.00","7.7",""
"NAWC-022218-FRB-311","537","RES","320-36367-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"12","ng/L","U","5.3","DL","","TRG","","","29","LOQ","YES",-99","","259.1","1.00","12",""
"NAWC-022218-FRB-311","537","RES","320-36367-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"35","ng/L","U","16","DL","","TRG","","","87","LOQ","YES",-99","","259.1","1.00","35",""
"NAWC-022218-FRB-311","537","RES","320-36367-7","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"3.9","ng/L","U","1.8","DL","","TRG","","","9.6","LOQ","YES",-99","","259.1","1.00","3.9",""
"NAWC-022218-FRB-311","537","RES","320-36367-7","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES",-99","","259.1","1.00","19",""
"NAWC-022218-FRB-311","537","RES","320-36367-7","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","-99","DL","","SURR","93","","-99","LOQ","YES","38.6","","259.1","1.00","0",""
"NAWC-022218-FRB-311","537","RES","320-36367-7","TALSAC","STL00996","13C2
PFDA","48","ng/L","","-99","DL","","SURR","124","","-99","LOQ","YES","38.6","","259.1","1.00","0",""
"NAWC-022218-RW-039","537","RES","320-36367-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"20","ng/L","J M","6.5","DL","","TRG","","","38","LOQ","YES",-99","","260.8","1.00","15",""
"NAWC-022218-RW-039","537","RES","320-36367-8","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"13","ng/L","J M","2.7","DL","","TRG","","","19","LOQ","YES",-99","","260.8","1.00","7.7",""
"NAWC-022218-RW-039","537","RES","320-36367-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"12","ng/L","U","5.3","DL","","TRG","","","29","LOQ","YES",-99","","260.8","1.00","12",""
"NAWC-022218-RW-039","537","RES","320-36367-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"35","ng/L","U M","15","DL","","TRG","","","86","LOQ","YES",-99","","260.8","1.00","35",""
"NAWC-022218-RW-039","537","RES","320-36367-8","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"3.5","ng/L","J","1.8","DL","","TRG","","","9.6","LOQ","YES",-99","","260.8","1.00","3.8",""
"NAWC-022218-RW-039","537","RES","320-36367-8","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES",-99","","260.8","1.00","19",""
"NAWC-022218-RW-039","537","RES","320-36367-8","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","92","","-99","LOQ","YES","38.3","","260.8","1.00","0",""
"NAWC-022218-RW-039","537","RES","320-36367-8","TALSAC","STL00996","13C2
PFDA","50","ng/L","","-99","DL","","SURR","130","","-99","LOQ","YES","38.3","","260.8","1.00","0",""
"NAWC-022218-FRB-039","537","RES","320-36367-9","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"15","ng/L","U","6.6","DL","","TRG","","","39","LOQ","YES",-99","","258.3","1.00","15",""
"NAWC-022218-FRB-039","537","RES","320-36367-9","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"7.7","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES",-99","","258.3","1.00","7.7",""
"NAWC-022218-FRB-039","537","RES","320-36367-9","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"12","ng/L","U","5.3","DL","","TRG","","","29","LOQ","YES",-99","","258.3","1.00","12",""
"NAWC-022218-FRB-039","537","RES","320-36367-9","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"35","ng/L","U","16","DL","","TRG","","","87","LOQ","YES",-99","","258.3","1.00","35",""
"NAWC-022218-FRB-039","537","RES","320-36367-9","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"3.9","ng/L","U","1.8","DL","","TRG","","","9.7","LOQ","YES",-99","","258.3","1.00","3.9",""
"NAWC-022218-FRB-039","537","RES","320-36367-9","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES",-99","","258.3","1.00","19",""
"NAWC-022218-FRB-039","537","RES","320-36367-9","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","-99","DL","","SURR","93","","-99","LOQ","YES","38.7","","258.3","1.00","0",""
"NAWC-022218-FRB-039","537","RES","320-36367-9","TALSAC","STL00996","13C2
PFDA","46","ng/L","","-99","DL","","SURR","119","","-99","LOQ","YES","38.7","","258.3","1.00","0",""
"LCS 320-211553/2-A","537","RES","LCS 320-211553/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"242","ng/L","M","6.8","DL","","SPK","108","","40","LOQ","YES","223","","250","1.00","16",""
"LCS 320-211553/2-A","537","RES","LCS 320-211553/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"117","ng/L","","2.8","DL","","SPK","105","","20","LOQ","YES","112","","250","1.00","8.0",""
"LCS 320-211553/2-A","537","RES","LCS 320-211553/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"178","ng/L","","5.5","DL","","SPK","107","","30","LOQ","YES","167","","250","1.00","12",""
"LCS 320-211553/2-A","537","RES","LCS 320-211553/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)","446","ng/L","","16","DL","","SPK","89","","90","LOQ","YES","500","","250","1.00","36",""
"LCS 320-211553/2-A","537","RES","LCS 320-211553/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","59.7","ng/L","","1.9","DL","","SPK","107","","10","LOQ","YES","55.6","","250","1.00","4.0",""
"LCS 320-211553/2-A","537","RES","LCS 320-211553/2-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","130","ng/L","","8.0","DL","","SPK","117","","24","LOQ","YES","111","","250","1.00","20",""
"LCS 320-211553/2-A","537","RES","LCS 320-211553/2-A","TALSAC","STL00993","13C2
PFHxA","37.7","ng/L","","-99","DL","","SURRE","94","","-99","LOQ","YES","40.0","","250","1.00","0",""
"LCS 320-211553/2-A","537","RES","LCS 320-211553/2-A","TALSAC","STL00996","13C2
PFDA","46.5","ng/L","","-99","DL","","SURRE","116","","-99","LOQ","YES","40.0","","250","1.00","0",""
"LCSD 320-211553/3-A","537","RES","LCSD 320-211553/3-A","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","230","ng/L","M","6.8","DL","","SPK","103","5","40","LOQ","YES","223","LCS 320-211553/2-
A","250","1.00","16",""
"LCSD 320-211553/3-A","537","RES","LCSD 320-211553/3-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","110","ng/L","","2.8","DL","","SPK","98","6","20","LOQ","YES","112","LCS 320-211553/2-
A","250","1.00","8.0",""
"LCSD 320-211553/3-A","537","RES","LCSD 320-211553/3-A","TALSAC","355-46-4","Perfluorohexanesulfonic
acid (PFHxS)","168","ng/L","","5.5","DL","","SPK","101","6","30","LOQ","YES","167","LCS 320-211553/2-
A","250","1.00","12",""
"LCSD 320-211553/3-A","537","RES","LCSD 320-211553/3-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","460","ng/L","","16","DL","","SPK","92","3","90","LOQ","YES","500","LCS 320-211553/2-
A","250","1.00","36",""
"LCSD 320-211553/3-A","537","RES","LCSD 320-211553/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","54.0","ng/L","","1.9","DL","","SPK","97","10","10","LOQ","YES","55.6","LCS 320-211553/2-
A","250","1.00","4.0",""
"LCSD 320-211553/3-A","537","RES","LCSD 320-211553/3-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","123","ng/L","","8.0","DL","","SPK","111","6","24","LOQ","YES","111","LCS 320-211553/2-
A","250","1.00","20",""
"LCSD 320-211553/3-A","537","RES","LCSD 320-211553/3-A","TALSAC","STL00993","13C2
PFHxA","36.9","ng/L","","-99","DL","","SURRE","92","","-99","LOQ","YES","40.0","LCS 320-211553/2-
A","250","1.00","0",""
"LCSD 320-211553/3-A","537","RES","LCSD 320-211553/3-A","TALSAC","STL00996","13C2
PFDA","45.4","ng/L","","-99","DL","","SURRE","114","","-99","LOQ","YES","40.0","LCS 320-211553/2-
A","250","1.00","0",""
"MB 320-211553/1-A","537","RES","MB 320-211553/1-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","250","1.00","16",""
"MB 320-211553/1-A","537","RES","MB 320-211553/1-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","250","1.00","8.0",""
"MB 320-211553/1-A","537","RES","MB 320-211553/1-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","250","1.00","12",""
"MB 320-211553/1-A","537","RES","MB 320-211553/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250","1.00","36",""
"MB 320-211553/1-A","537","RES","MB 320-211553/1-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","250","1.00","4.0",""
"MB 320-211553/1-A","537","RES","MB 320-211553/1-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","250","1.00","20",""
"MB 320-211553/1-A","537","RES","MB 320-211553/1-A","TALSAC","STL00993","13C2
PFHxA","36.5","ng/L","","-99","DL","","SURRE","91","","-99","LOQ","YES","40.0","","250","1.00","0",""
"MB 320-211553/1-A","537","RES","MB 320-211553/1-A","TALSAC","STL00996","13C2
PFDA","43.4","ng/L","","-99","DL","","SURRE","108","","-99","LOQ","YES","40.0","","250","1.00","0",""
"Unknown","Unknown","WGNA-022218-DUP-28","02/22/2018 07:00","AQ","320-36367-
1","FD","","1.80","537","METHOD","RES","03/07/2018 07:07","03/12/2018
21:33","TALSAC","COA","WET","NA","1","NA","NA","","100","320-211553","320-211553","NA","320-
212591","320-36367-1","02/23/2018 09:25","03/13/2018 14:01",""
"Unknown","Unknown","NAWC-022218-RW-335","02/22/2018 12:10","AQ","320-36367-

10","NM","","1.80","537","METHOD","RES","03/07/2018 07:07","03/12/2018
22:24","TALSAC","COA","WET","NA","1","NA","NA","","100","320-211553","320-211553","NA","320-
212593","320-36367-1","02/23/2018 09:25","03/13/2018 14:01",""
"Unknown","Unknown","NAWC-022218-FRB-335","02/22/2018 12:05","AQ","320-36367-
11","FB","","1.80","537","METHOD","RES","03/07/2018 07:07","03/12/2018
22:29","TALSAC","COA","WET","NA","1","NA","NA","","100","320-211553","320-211553","NA","320-
212593","320-36367-1","02/23/2018 09:25","03/13/2018 14:01",""
"Unknown","Unknown","NAWC-022218-RW-348","02/22/2018 12:40","AQ","320-36367-
12","NM","","1.80","537","METHOD","RES","03/07/2018 07:07","03/12/2018
22:33","TALSAC","COA","WET","NA","1","NA","NA","","100","320-211553","320-211553","NA","320-
212593","320-36367-1","02/23/2018 09:25","03/13/2018 14:01",""
"Unknown","Unknown","NAWC-022218-FRB-348","02/22/2018 12:35","AQ","320-36367-
13","FB","","1.80","537","METHOD","RES","03/07/2018 07:07","03/12/2018
22:38","TALSAC","COA","WET","NA","1","NA","NA","","100","320-211553","320-211553","NA","320-
212593","320-36367-1","02/23/2018 09:25","03/13/2018 14:01",""
"Unknown","Unknown","WGNA-022218-RW-0386","02/22/2018 09:10","AQ","320-36367-
2","NM","","1.80","537","METHOD","RES","03/07/2018 07:07","03/12/2018
21:37","TALSAC","COA","WET","NA","1","NA","NA","","100","320-211553","320-211553","NA","320-
212591","320-36367-1","02/23/2018 09:25","03/13/2018 14:01",""
"Unknown","Unknown","WGNA-022218-FRB-0386","02/22/2018 09:05","AQ","320-36367-
3","FB","","1.80","537","METHOD","RES","03/07/2018 07:07","03/12/2018
21:42","TALSAC","COA","WET","NA","1","NA","NA","","100","320-211553","320-211553","NA","320-
212591","320-36367-1","02/23/2018 09:25","03/13/2018 14:01",""
"Unknown","Unknown","WGNA-022218-RW-3073","02/22/2018 09:40","AQ","320-36367-
4","NM","","1.80","537","METHOD","RES","03/07/2018 07:07","03/12/2018
21:47","TALSAC","COA","WET","NA","1","NA","NA","","100","320-211553","320-211553","NA","320-
212591","320-36367-1","02/23/2018 09:25","03/13/2018 14:01",""
"Unknown","Unknown","WGNA-022218-FRB-3073","02/22/2018 09:35","AQ","320-36367-
5","FB","","1.80","537","METHOD","RES","03/07/2018 07:07","03/12/2018
21:51","TALSAC","COA","WET","NA","1","NA","NA","","100","320-211553","320-211553","NA","320-
212591","320-36367-1","02/23/2018 09:25","03/13/2018 14:01",""
"Unknown","Unknown","NAWC-022218-RW-311","02/22/2018 10:40","AQ","320-36367-
6","NM","","1.80","537","METHOD","RES","03/07/2018 07:07","03/12/2018
21:56","TALSAC","COA","WET","NA","1","NA","NA","","100","320-211553","320-211553","NA","320-
212591","320-36367-1","02/23/2018 09:25","03/13/2018 14:01",""
"Unknown","Unknown","NAWC-022218-FRB-311","02/22/2018 10:35","AQ","320-36367-
7","FB","","1.80","537","METHOD","RES","03/07/2018 07:07","03/12/2018
22:01","TALSAC","COA","WET","NA","1","NA","NA","","100","320-211553","320-211553","NA","320-
212591","320-36367-1","02/23/2018 09:25","03/13/2018 14:01",""
"Unknown","Unknown","NAWC-022218-RW-039","02/22/2018 11:10","AQ","320-36367-
8","NM","","1.80","537","METHOD","RES","03/07/2018 07:07","03/12/2018
22:15","TALSAC","COA","WET","NA","1","NA","NA","","100","320-211553","320-211553","NA","320-
212593","320-36367-1","02/23/2018 09:25","03/13/2018 14:01",""
"Unknown","Unknown","NAWC-022218-FRB-039","02/22/2018 11:05","AQ","320-36367-
9","FB","","1.80","537","METHOD","RES","03/07/2018 07:07","03/12/2018
22:19","TALSAC","COA","WET","NA","1","NA","NA","","100","320-211553","320-211553","NA","320-
212593","320-36367-1","02/23/2018 09:25","03/13/2018 14:01",""
"Unknown","Unknown","LCS 320-211553/2-A","","AQ","LCS 320-211553/2-
A","LCS","","-99","537","METHOD","RES","03/07/2018 07:07","03/12/2018
21:23","TALSAC","COA","WET","NA","1","NA","NA","","100","320-211553","320-211553","NA","320-
212591","320-36367-1","03/07/2018 07:07","03/13/2018 14:01",""
"Unknown","Unknown","LCSD 320-211553/3-A","","AQ","LCSD 320-211553/3-
A","LCSD","","-99","537","METHOD","RES","03/07/2018 07:07","03/12/2018
21:28","TALSAC","COA","WET","NA","1","NA","NA","","100","320-211553","320-211553","NA","320-

212591","320-36367-1","03/07/2018 07:07","03/13/2018 14:01",""
"Unknown","Unknown","MB 320-211553/1-A","","AQ","MB 320-211553/1-
A","MB","","-99","537","METHOD","RES","03/07/2018 07:07","03/12/2018
21:19","TALSAC","COA","WET","NA","1","NA","NA","","100","320-211553","320-211553","NA","320-
212591","320-36367-1","03/07/2018 07:07","03/13/2018 14:01",""



INTERNAL CORRESPONDENCE

TO:	A. FREBOWITZ	DATE:	MARCH 21, 2018
FROM:	TERRI L. SOLOMON	COPIES:	DV FILE
SUBJECT:	ORGANIC DATA VALIDATION –POLYFLUOROALKYL SUBSTANCES (PFAS) NAS JRB WILLOW GROVE SAMPLE DELIVERY GROUP (SDG) 320-36367-1		

SAMPLES:	6/Field Reagent Blank (FRB)	
	WGNA-022218-FRB-0386	WGNA-022218-FRB-3073
	NAWC-022218-FRB-311	NAWC-022218-FRB-039
	NAWC-022218-FRB-335	NAWC-022218-FRB-348
	7/Drinking Water	
	WGNA-022218-DUP-28	WGNA-022218-RW-0386
	WGNA-022218-RW-3073	NAWC-022218-RW-311
	NAWC-022218-RW-039	NAWC-022218-RW-335
	NAWC-022218-RW-348	

Overview

The sample set for NAS JRB Willow Grove, SDG 320-36367-1, consisted of seven (7) drinking water samples and six (6) FRB samples. All samples were analyzed for select perfluorinated 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 pair, WGNA-022218-RW-0386 / WGNA-022218-DUP-28, was included in this SDG.

The samples were collected by Tetra Tech on February 22, 2018 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, tune check, initial/continuing calibrations, ion transitions, laboratory method/FRBs, surrogate spike recoveries, laboratory control sample / laboratory control sample duplicate results, extracted internal standard areas and recoveries, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

None.

Minor

None.

Notes

The original case narrative did not confirm that the instrument tune met the Department of Defense Quality Systems Manual (DoD QSM) criteria. The laboratory was contacted and confirmed there were no problems with the instrument tune and the case narrative was amended.

TO: A. FREBOWITZ
SDG: 320-36367-1

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Samples with detections and their associated FRBs are summarized below. No detected results were present in the FRBs.

<u>Sample</u>	<u>Associated FRB</u>
WGNA-022218-DUP-28	WGNA-022218-FRB-0386
WGNA-022218-RW-0386	WGNA-022218-FRB-0386
WGNA-022218-RW-3073	WGNA-022218-FRB-3073
NAWC-022218-RW-311	NAWC-022218-FRB-311
NAWC-022218-RW-039	NAWC-022218-FRB-039
NAWC-022218-RW-335	NAWC-022218-FRB-335
NAWC-022218-RW-348	NAWC-022218-FRB-348

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), US EPA National Functional Guidelines for Organic Data Review (January 2017), and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (July 2013) as applicable. The text of this report has been formulated to address only those areas affecting data quality.



Tetra Tech, Inc.
Terri L. Solomon
Chemist/Data Validator



Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

TO: A. FREBOWITZ
SDG: 320-36367-1

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Attachments:

Appendix A – Qualified Analytical Results

Appendix B – Results as Reported by the Laboratory

Appendix C – Support Documentation

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

Appendix A

Qualified Analytical Results

Qualifier Codes:

- A = Lab Blank Contamination
- B = Field Blank Contamination
- C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
- C01 = GC/MS Tuning Noncompliance
- D = MS/MSD Recovery Noncompliance
- E = LCS/LCSD Recovery Noncompliance
- F = Lab Duplicate Imprecision
- G = Field Duplicate Imprecision
- H = Holding Time Exceedance
- I = ICP Serial Dilution Noncompliance
- J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
- K = ICP Interference - includes ICS % R Noncompliance
- L = Instrument Calibration Range Exceedance
- M = Sample Preservation Noncompliance
- N = Internal Standard Noncompliance
- N01 = Internal Standard Recovery Noncompliance Dioxins
- N02 = Recovery Standard Noncompliance Dioxins
- N03 = Clean-up Standard Noncompliance Dioxins
- O = Poor Instrument Performance (i.e., base-time drifting)
- P = Uncertainty near detection limit ($< 2 \times \text{IDL}$ for inorganics and $< \text{CRQL}$ for organics)
- Q = Other problems (can encompass a number of issues; i.e. chromatography, interferences, etc.)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
- U = RPD between columns/detectors $> 40\%$ for positive results determined via GC/HPLC
- V = Non-linear calibrations; correlation coefficient $r < 0.995$
- W = EMPC result
- X = Signal to noise response drop
- Y = Percent solids $< 30\%$
- Z = Uncertainty at 2 standard deviations is greater than sample activity
- Z1 = Tentatively Identified Compound considered presumptively present
- Z2 = Tentatively Identified Compound column bleed
- Z3 = Tentatively Identified Compound aldol condensate
- Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
- Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

PROJ_NO: 08005-WE04 SDG: 320-36367-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-022218-FRB-039			NAWC-022218-FRB-311			NAWC-022218-FRB-335			NAWC-022218-FRB-348		
	LAB_ID	320-36367-9			320-36367-7			320-36367-11			320-36367-13		
	SAMP_DATE	2/22/2018			2/22/2018			2/22/2018			2/22/2018		
	QC_TYPE	FB			FB			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		7.7	U		7.7	U		7.6	U		7.7	U	
PERFLUOROBUTANESULFONIC ACID		35	U		35	U		34	U		34	U	
PERFLUOROHEPTANOIC ACID		3.9	U		3.9	U		3.8	U		3.8	U	
PERFLUOROHEXANESULFONIC ACID		12	U		12	U		11	U		11	U	
PERFLUORONONANOIC ACID		19	U		19	U		19	U		19	U	
PERFLUOROOCTANE SULFONIC ACID		15	U		15	U		15	U		15	U	

PROJ_NO: 08005-WE04 SDG: 320-36367-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-022218-RW-039			NAWC-022218-RW-311			NAWC-022218-RW-335			NAWC-022218-RW-348		
	LAB_ID	320-36367-8			320-36367-6			320-36367-10			320-36367-12		
	SAMP_DATE	2/22/2018			2/22/2018			2/22/2018			2/22/2018		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		13	J	P	23			24			25		
PERFLUOROBUTANESULFONIC ACID		35	U		36	U		34	U		34	U	
PERFLUOROHEPTANOIC ACID		3.5	J	P	7.4	J	P	8.3	J	P	6.3	J	P
PERFLUOROHXANESULFONIC ACID		12	U		5.7	J	P	8.1	J	P	9.1	J	P
PERFLUORONONANOIC ACID		19	U		20	U		19	U		19	U	
PERFLUOROOCTANE SULFONIC ACID		20	J	P	25	J	P	24	J	P	41		

PROJ_NO: 08005-WE04 SDG: 320-36367-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	WGNA-022218-DUP-28			WGNA-022218-FRB-0386			WGNA-022218-FRB-3073			WGNA-022218-RW-0386		
	LAB_ID	320-36367-1			320-36367-3			320-36367-5			320-36367-2		
	SAMP_DATE	2/22/2018			2/22/2018			2/22/2018			2/22/2018		
	QC_TYPE	FD			FB			FB			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	WGNA-022218-RW-0386											
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		26			7.6 U			7.7 U			25		
PERFLUOROBUTANESULFONIC ACID		35 U			34 U			35 U			35 U		
PERFLUOROHEPTANOIC ACID		6.7 J	P		3.8 U			3.9 U			7.2 J	P	
PERFLUOROHXANESULFONIC ACID		18 J	P		11 U			12 U			18 J	P	
PERFLUORONONANOIC ACID		19 U			19 U			19 U			19 U		
PERFLUOROOCTANE SULFONIC ACID		26 J	P		15 U			15 U			26 J	P	

PROJ_NO: 08005-WE04 SDG: 320-36367-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	WGNA-022218-RW-3073		
	LAB_ID	320-36367-4		
	SAMP_DATE	2/22/2018		
	QC_TYPE	NM		
	UNITS	NG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		13	J	P
PERFLUOROBUTANESULFONIC ACID		110		
PERFLUOROHEPTANOIC ACID		8.1	J	P
PERFLUOROHEXANESULFONIC ACID		17	J	P
PERFLUORONONANOIC ACID		20	U	
PERFLUOROOCTANE SULFONIC ACID		34	J	P

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-022218-DUP-28</u>	Lab Sample ID: <u>320-36367-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_009.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 07:00</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>256.7(mL)</u>	Date Analyzed: <u>03/12/2018 21:33</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>212591</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	26	J M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	26		19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	18	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.7	J	9.7	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	116		70-130

Ali L. Salaman
03/21/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-022218-RW-0386</u>	Lab Sample ID: <u>320-36367-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_010.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 09:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>256.8 (mL)</u>	Date Analyzed: <u>03/12/2018 21:37</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>212591</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	26	J M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	25		19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	18	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.2	J	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	122		70-130

Teri L. Salmen
03/21/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: WGNA-022218-FRB-0386 Lab Sample ID: 320-36367-3
 Matrix: Water Lab File ID: 2018.03.12_537B_011.d
 Analysis Method: 537 Date Collected: 02/22/2018 09:05
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 262.5 (mL) Date Analyzed: 03/12/2018 21:42
 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.: 212591 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	110		70-130

Ami L. Salaman
03/21/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-022218-RW-3073</u>	Lab Sample ID: <u>320-36367-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_012.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 09:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>256.3 (mL)</u>	Date Analyzed: <u>03/12/2018 21:47</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>212591</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	34	J M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	17	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.1	J	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	110		88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	111		70-130

Steve L. Salaman
03/21/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: WGNA-022218-FRB-3073 Lab Sample ID: 320-36367-5
 Matrix: Water Lab File ID: 2018.03.12_537B_013.d
 Analysis Method: 537 Date Collected: 02/22/2018 09:35
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 258.7(mL) Date Analyzed: 03/12/2018 21:51
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212591 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

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

Steve L. Salmeron
03/21/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: NAWC-022218-RW-311 Lab Sample ID: 320-36367-6
 Matrix: Water Lab File ID: 2018.03.12_537B_014.d
 Analysis Method: 537 Date Collected: 02/22/2018 10:40
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 250.6(mL) Date Analyzed: 03/12/2018 21:56
 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.: 212591 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	25	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	23		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.7	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.4	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	115		70-130

Steve L. Salmeron
03/21/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: NAWC-022218-FRB-311 Lab Sample ID: 320-36367-7
 Matrix: Water Lab File ID: 2018.03.12_537B_015.d
 Analysis Method: 537 Date Collected: 02/22/2018 10:35
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 259.1 (mL) Date Analyzed: 03/12/2018 22:01
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212591 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.6	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	124		70-130

Ali L. Salameh
03/21/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: NAWC-022218-RW-039 Lab Sample ID: 320-36367-8
 Matrix: Water Lab File ID: 2018.03.12_537B_018.d
 Analysis Method: 537 Date Collected: 02/22/2018 11:10
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 260.8 (mL) Date Analyzed: 03/12/2018 22:15
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212593 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J M	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	13	J M	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U M	86	35	15

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

Ali L. Salaman
03/21/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: NAWC-022218-FRB-039 Lab Sample ID: 320-36367-9
 Matrix: Water Lab File ID: 2018.03.12_537B_019.d
 Analysis Method: 537 Date Collected: 02/22/2018 11:05
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 258.3 (mL) Date Analyzed: 03/12/2018 22:19
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212593 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	119		70-130

Teri L. Salmen
03/21/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-022218-RW-335</u>	Lab Sample ID: <u>320-36367-10</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_020.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 12:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>265.9(mL)</u>	Date Analyzed: <u>03/12/2018 22:24</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>212593</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	24		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.1	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.3	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	128		70-130

Ami L. Salaman
03/21/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: NAWC-022218-FRB-335 Lab Sample ID: 320-36367-11
 Matrix: Water Lab File ID: 2018.03.12_537B_021.d
 Analysis Method: 537 Date Collected: 02/22/2018 12:05
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 262.3 (mL) Date Analyzed: 03/12/2018 22:29
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212593 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	114		70-130

Steve L. Salaman
03/21/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: NAWC-022218-RW-348 Lab Sample ID: 320-36367-12
 Matrix: Water Lab File ID: 2018.03.12_537B_022.d
 Analysis Method: 537 Date Collected: 02/22/2018 12:40
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 263.9(mL) Date Analyzed: 03/12/2018 22:33
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212593 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	41	M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	25		19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.1	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.3	J M	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	120		70-130

Wesley L. Salomon
03/21/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: NAWC-022218-FRB-348 Lab Sample ID: 320-36367-13
 Matrix: Water Lab File ID: 2018.03.12_537B_023.d
 Analysis Method: 537 Date Collected: 02/22/2018 12:35
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 261.3(mL) Date Analyzed: 03/12/2018 22:38
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212593 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	116		70-130

Wesley L. Salzman

03/21/2018

Appendix B

Results as Reported by the Laboratory

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: WGNA-022218-DUP-28 Lab Sample ID: 320-36367-1
 Matrix: Water Lab File ID: 2018.03.12_537B_009.d
 Analysis Method: 537 Date Collected: 02/22/2018 07:00
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 256.7(mL) Date Analyzed: 03/12/2018 21:33
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212591 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	26	J M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	26		19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	18	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.7	J	9.7	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	116		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-022218-RW-0386</u>	Lab Sample ID: <u>320-36367-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_010.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 09:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>256.8 (mL)</u>	Date Analyzed: <u>03/12/2018 21:37</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>212591</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	26	J M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	25		19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	18	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.2	J	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	122		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: WGNA-022218-FRB-0386 Lab Sample ID: 320-36367-3
 Matrix: Water Lab File ID: 2018.03.12_537B_011.d
 Analysis Method: 537 Date Collected: 02/22/2018 09:05
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 262.5 (mL) Date Analyzed: 03/12/2018 21:42
 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.: 212591 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	110		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-022218-RW-3073</u>	Lab Sample ID: <u>320-36367-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_012.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 09:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>256.3(mL)</u>	Date Analyzed: <u>03/12/2018 21:47</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>212591</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	34	J M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	17	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.1	J	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	110		88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	111		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-022218-FRB-3073</u>	Lab Sample ID: <u>320-36367-5</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_013.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 09:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>258.7(mL)</u>	Date Analyzed: <u>03/12/2018 21:51</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>212591</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: NAWC-022218-RW-311 Lab Sample ID: 320-36367-6
 Matrix: Water Lab File ID: 2018.03.12_537B_014.d
 Analysis Method: 537 Date Collected: 02/22/2018 10:40
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 250.6(mL) Date Analyzed: 03/12/2018 21:56
 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.: 212591 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	25	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	23		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.7	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.4	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	115		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-022218-FRB-311</u>	Lab Sample ID: <u>320-36367-7</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_015.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 10:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>259.1 (mL)</u>	Date Analyzed: <u>03/12/2018 22:01</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>212591</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.6	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	124		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-022218-RW-039</u>	Lab Sample ID: <u>320-36367-8</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_018.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 11:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>260.8 (mL)</u>	Date Analyzed: <u>03/12/2018 22:15</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>212593</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J M	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	13	J M	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U M	86	35	15

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-022218-FRB-039</u>	Lab Sample ID: <u>320-36367-9</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_019.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 11:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>258.3 (mL)</u>	Date Analyzed: <u>03/12/2018 22:19</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>212593</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	119		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: NAWC-022218-RW-335 Lab Sample ID: 320-36367-10
 Matrix: Water Lab File ID: 2018.03.12_537B_020.d
 Analysis Method: 537 Date Collected: 02/22/2018 12:10
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 265.9(mL) Date Analyzed: 03/12/2018 22:24
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212593 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	24		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.1	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.3	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	128		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: NAWC-022218-FRB-335 Lab Sample ID: 320-36367-11
 Matrix: Water Lab File ID: 2018.03.12_537B_021.d
 Analysis Method: 537 Date Collected: 02/22/2018 12:05
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 262.3 (mL) Date Analyzed: 03/12/2018 22:29
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212593 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	114		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-022218-RW-348</u>	Lab Sample ID: <u>320-36367-12</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_022.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 12:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>263.9(mL)</u>	Date Analyzed: <u>03/12/2018 22:33</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>212593</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	41	M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	25		19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.1	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.3	J M	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	120		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36367-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-022218-FRB-348</u>	Lab Sample ID: <u>320-36367-13</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.12_537B_023.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>02/22/2018 12:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>03/07/2018 07:07</u>
Sample wt/vol: <u>261.3 (mL)</u>	Date Analyzed: <u>03/12/2018 22:38</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>212593</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	116		70-130

Appendix C

Support Documentation

ANALYTE	ORIGINAL WGNA- 022218-RW-0386	DUPLICATE WGNA- 022218-DUP-28	RL	RPD	RPD > 50%	ORIGINAL	DUPLICATE SAMPLE	DIFFERENCE >2XRL
						SAMPLE CONC >2xRL		
Perfluorooctanoic acid (PFOA)	25	26	19	3.922	FALSE	FALSE	FALSE	FALSE
Perfluoroheptanoic acid (PFHpA)	7.2	6.7	9.7	7.194	FALSE	FALSE	FALSE	FALSE
Perfluorohexanesulfonic acid (PFHxS)	18	18	29	0.000	FALSE	FALSE	FALSE	FALSE
Perfluorooctanesulfonic acid (PFOS)	26	26	39	0.000	FALSE	FALSE	FALSE	FALSE

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: 2/22/2018		COC No:			
TetraTech		Tel/Fax: 610.382.1170		Lab Contact: Dave Alltucker		Carrier: FedEx		1 of 1 COCs			
234 Mall Boulevard Suite 260		Analysis Turnaround Time		 320-36367 Chain of Custody		Sampler: Mary Kay Bond		or Lab Use Only:			
King of Prussia, PA 19406		☐ CALENDAR DAYS ☐ WORKING DAYS				Talk-in Client:		ab 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-022218-DUP-28	2/22/2018	07:00	G	DW	2	N	N	Y	Duplicate
WGNA-022218-RW-0386	2/22/2018	09:10	G	DW	2	N	N	Y	
WGNA-022218-FRB-0386	2/22/2018	09:05	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-022218-RW-3073	2/22/2018	09:40	G	DW	2	N	N	Y	
WGNA-022218-FRB-3073	2/22/2018	09:35	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-022218-RW-311	2/22/2018	10:40	G	DW	2	N	N	Y	
NAWC-022218-FRB-311	2/22/2018	10:35	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-022218-RW-039	2/22/2018	11:10	G	DW	2	N	N	Y	
NAWC-022218-FRB-039	2/22/2018	11:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-022218-RW-335	2/22/2018	12:10	G	DW	2	N	N	Y	
NAWC-022218-FRB-335	2/22/2018	12:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-022218-RW-348	2/22/2018	12:40	G	DW	2	N	N	Y	
NAWC-022218-FRB-348	2/22/2018	12:35	G	DW	2	N	N	Y	Field Reagent Blank

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other: Trizma

Possible Hazard Identification:
 Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☒ Disposal by Lab ☐ Archive for: _____ Months

Fed Ex Tracking:
 7715 4466 7229

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:	Cooler Temp. (°C): Obs'd: 1.8°C	Corr'd: 1.8°C	Therm ID No.: 1162
Relinquished by: Mary Kay Bond	Company: Tetra Tech	Date/Time: 2/22/2018 18:00	Received by: [Signature]	Company: TA-STAC
Relinquished by:	Company:	Date/Time:	Received by:	Company:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:

Form No. CA-C-WI-002, Rev. 4.11, dated 1/24/2017

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-36367-1

Login Number: 36367

List Source: TestAmerica Sacramento

List Number: 1

Creator: Nelson, Kym D

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	45374, 453735,
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	

Receipt

The samples were received on 2/23/2018 9:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.8° C.

LCMS

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

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

Organic Prep

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-211553.

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

Receipt

The samples were received on 2/23/2018 9:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.8° C.

LCMS

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

Organic Prep

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-211553.

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

Definitions/Glossary

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

TestAmerica Job ID: 320-36367-1

Qualifiers

LCMS

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method Summary

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

TestAmerica Job ID: 320-36367-1

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: 320-36367-1

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-36367-1	WGNA-022218-DUP-28	Water	02/22/18 07:00	02/23/18 09:25
320-36367-2	WGNA-022218-RW-0386	Water	02/22/18 09:10	02/23/18 09:25
320-36367-3	WGNA-022218-FRB-0386	Water	02/22/18 09:05	02/23/18 09:25
320-36367-4	WGNA-022218-RW-3073	Water	02/22/18 09:40	02/23/18 09:25
320-36367-5	WGNA-022218-FRB-3073	Water	02/22/18 09:35	02/23/18 09:25
320-36367-6	NAWC-022218-RW-311	Water	02/22/18 10:40	02/23/18 09:25
320-36367-7	NAWC-022218-FRB-311	Water	02/22/18 10:35	02/23/18 09:25
320-36367-8	NAWC-022218-RW-039	Water	02/22/18 11:10	02/23/18 09:25
320-36367-9	NAWC-022218-FRB-039	Water	02/22/18 11:05	02/23/18 09:25
320-36367-10	NAWC-022218-RW-335	Water	02/22/18 12:10	02/23/18 09:25
320-36367-11	NAWC-022218-FRB-335	Water	02/22/18 12:05	02/23/18 09:25
320-36367-12	NAWC-022218-RW-348	Water	02/22/18 12:40	02/23/18 09:25
320-36367-13	NAWC-022218-FRB-348	Water	02/22/18 12:35	02/23/18 09:25

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-022218-DUP-28	320-36367-1	86	116
WGNA-022218-RW-038 6	320-36367-2	93	122
WGNA-022218-FRB-03 86	320-36367-3	94	110
WGNA-022218-RW-307 3	320-36367-4	86	111
WGNA-022218-FRB-30 73	320-36367-5	94	114
NAWC-022218-RW-311	320-36367-6	87	115
NAWC-022218-FRB-31 1	320-36367-7	93	124
NAWC-022218-RW-039	320-36367-8	92	130
NAWC-022218-FRB-03 9	320-36367-9	93	119
NAWC-022218-RW-335	320-36367-10	96	128
NAWC-022218-FRB-33 5	320-36367-11	90	114
NAWC-022218-RW-348	320-36367-12	81	120
NAWC-022218-FRB-34 8	320-36367-13	95	116
	MB 320-211553/1-A	91	108
	LCS 320-211553/2-A	94	116
	LCSD 320-211553/3-A	92	114

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.: 320-36367-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.03.12_537B_007.d
 Lab ID: LCS 320-211553/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	223	242	108	70-130	M
Perfluorooctanoic acid (PFOA)	112	117	105	70-130	
Perfluorononanoic acid (PFNA)	111	130	117	70-130	
Perfluorohexanesulfonic acid (PFHxS)	167	178	107	70-130	
Perfluoroheptanoic acid (PFHpA)	55.6	59.7	107	70-130	
Perfluorobutanesulfonic acid (PFBS)	500	446	89	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.: 320-36367-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.03.12_537B_008.d
 Lab ID: LCSD 320-211553/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	223	230	103	5	30	70-130	M
Perfluorooctanoic acid (PFOA)	112	110	98	6	30	70-130	
Perfluorononanoic acid (PFNA)	111	123	111	6	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	167	168	101	6	30	70-130	
Perfluoroheptanoic acid (PFHpA)	55.6	54.0	97	10	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	500	460	92	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.: 320-36367-1
 SDG No.: _____
 Lab File ID: 2018.03.12_537B_006.d Lab Sample ID: MB 320-211553/1-A
 Matrix: Water Date Extracted: 03/07/2018 07:07
 Instrument ID: A8_N Date Analyzed: 03/12/2018 21:19
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-211553/2-A	2018.03.12_537B 007.d	03/12/2018 21:23
	LCSD 320-211553/3-A	2018.03.12_537B 008.d	03/12/2018 21:28
WGNA-022218-DUP-28	320-36367-1	2018.03.12_537B 009.d	03/12/2018 21:33
WGNA-022218-RW-0386	320-36367-2	2018.03.12_537B 010.d	03/12/2018 21:37
WGNA-022218-FRB-0386	320-36367-3	2018.03.12_537B 011.d	03/12/2018 21:42
WGNA-022218-RW-3073	320-36367-4	2018.03.12_537B 012.d	03/12/2018 21:47
WGNA-022218-FRB-3073	320-36367-5	2018.03.12_537B 013.d	03/12/2018 21:51
NAWC-022218-RW-311	320-36367-6	2018.03.12_537B 014.d	03/12/2018 21:56
NAWC-022218-FRB-311	320-36367-7	2018.03.12_537B 015.d	03/12/2018 22:01
NAWC-022218-RW-039	320-36367-8	2018.03.12_537B 018.d	03/12/2018 22:15
NAWC-022218-FRB-039	320-36367-9	2018.03.12_537B 019.d	03/12/2018 22:19
NAWC-022218-RW-335	320-36367-10	2018.03.12_537B 020.d	03/12/2018 22:24
NAWC-022218-FRB-335	320-36367-11	2018.03.12_537B 021.d	03/12/2018 22:29
NAWC-022218-RW-348	320-36367-12	2018.03.12_537B 022.d	03/12/2018 22:33
NAWC-022218-FRB-348	320-36367-13	2018.03.12_537B 023.d	03/12/2018 22:38

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-211553/1-A
 Matrix: Water Lab File ID: 2018.03.12_537B_006.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 03/07/2018 07:07
 Sample wt/vol: 250 (mL) Date Analyzed: 03/12/2018 21:19
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212591 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	108		70-130

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 02/16/2018 09:19
 Calibration ID: 37889

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		937117	1.86	2726868	2.11		
UPPER LIMIT		1405676	2.36	4090302	2.61		
LOWER LIMIT		468559	1.36	1363434	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-208773/11		955394	1.87	2663428	2.12		
ICV 320-208773/13		890238	1.85	2703377	2.11		
CCVL 320-212525/1		839914	1.86	2407064	2.11		
CCV 320-212591/1 CCVIS		882198	1.78	2704833	2.00		
MB 320-211553/1-A		744966	1.78	2282045	2.00		
LCS 320-211553/2-A		741995	1.80	2268693	2.03		
LCSD 320-211553/3-A		750275	1.79	2246677	2.00		
320-36367-1	WGNA-022218-DUP-28	733007	1.78	2221457	2.00		
320-36367-2	WGNA-022218-RW-0386	718983	1.79	2232407	2.02		
320-36367-3	WGNA-022218-FRB-0386	768515	1.80	2517392	1.95		
320-36367-4	WGNA-022218-RW-3073	749722	1.80	2260506	2.02		
320-36367-5	WGNA-022218-FRB-3073	741350	1.81	2173853	2.04		
320-36367-6	NAWC-022218-RW-311	729043	1.80	2165173	2.03		
320-36367-7	NAWC-022218-FRB-311	801734	1.78	2417027	2.00		
CCV 320-212591/13 CCVIS		793520	1.80	2503639	2.04		
CCV 320-212593/13 CCVIS		793520	1.80	2503639	2.04		
320-36367-8	NAWC-022218-RW-039	740581	1.81	2195955	2.06		
320-36367-9	NAWC-022218-FRB-039	809611	1.78	2358808	2.00		
320-36367-10	NAWC-022218-RW-335	800763	1.80	2493942	2.04		
320-36367-11	NAWC-022218-FRB-335	813381	1.80	2390850	2.04		
320-36367-12	NAWC-022218-RW-348	758650	1.81	2247902	2.05		
320-36367-13	NAWC-022218-FRB-348	814628	1.74	2602265	1.88		
CCV 320-212593/22 CCVIS		746221	1.79	2395162	2.01		

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.: 320-36367-1
 SDG No.: _____
 Sample No.: CCV 320-212591/1 Date Analyzed: 03/12/2018 21:09
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.12_537B_004 Heated Purge: (Y/N) N
 Calibration ID: 37889

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		882198	1.78	2704833	2.00		
UPPER LIMIT		1235077	2.28	3786766	2.50		
LOWER LIMIT		617539	1.28	1893383	1.50		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-211553/1-A		744966	1.78	2282045	2.00		
LCS 320-211553/2-A		741995	1.80	2268693	2.03		
LCSD 320-211553/3-A		750275	1.79	2246677	2.00		
320-36367-1	WGNA-022218-DUP-28	733007	1.78	2221457	2.00		
320-36367-2	WGNA-022218-RW-0386	718983	1.79	2232407	2.02		
320-36367-3	WGNA-022218-FRB-0386	768515	1.80	2517392	1.95		
320-36367-4	WGNA-022218-RW-3073	749722	1.80	2260506	2.02		
320-36367-5	WGNA-022218-FRB-3073	741350	1.81	2173853	2.04		
320-36367-6	NAWC-022218-RW-311	729043	1.80	2165173	2.03		
320-36367-7	NAWC-022218-FRB-311	801734	1.78	2417027	2.00		

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.: 320-36367-1
 SDG No.: _____
 Sample No.: CCV 320-212591/13 Date Analyzed: 03/12/2018 22:05
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.12_537B_016 Heated Purge: (Y/N) N
 Calibration ID: 37889

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		793520	1.80	2503639	2.04		
UPPER LIMIT		1110928	2.30	3505095	2.54		
LOWER LIMIT		555464	1.30	1752547	1.54		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-211553/1-A		744966	1.78	2282045	2.00		
LCS 320-211553/2-A		741995	1.80	2268693	2.03		
LCSD 320-211553/3-A		750275	1.79	2246677	2.00		
320-36367-1	WGNA-022218-DUP-28	733007	1.78	2221457	2.00		
320-36367-2	WGNA-022218-RW-0386	718983	1.79	2232407	2.02		
320-36367-3	WGNA-022218-FRB-0386	768515	1.80	2517392	1.95		
320-36367-4	WGNA-022218-RW-3073	749722	1.80	2260506	2.02		
320-36367-5	WGNA-022218-FRB-3073	741350	1.81	2173853	2.04		
320-36367-6	NAWC-022218-RW-311	729043	1.80	2165173	2.03		
320-36367-7	NAWC-022218-FRB-311	801734	1.78	2417027	2.00		

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.: 320-36367-1
 SDG No.: _____
 Sample No.: CCV 320-212593/13 Date Analyzed: 03/12/2018 22:05
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.12_537B_016 Heated Purge: (Y/N) N
 Calibration ID: 37889

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	793520	1.80	2503639	2.04		
UPPER LIMIT	1110928	2.30	3505095	2.54		
LOWER LIMIT	555464	1.30	1752547	1.54		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-36367-8	NAWC-022218-RW-039	740581	1.81	2195955	2.06	
320-36367-9	NAWC-022218-FRB-039	809611	1.78	2358808	2.00	
320-36367-10	NAWC-022218-RW-335	800763	1.80	2493942	2.04	
320-36367-11	NAWC-022218-FRB-335	813381	1.80	2390850	2.04	
320-36367-12	NAWC-022218-RW-348	758650	1.81	2247902	2.05	
320-36367-13	NAWC-022218-FRB-348	814628	1.74	2602265	1.88	

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.: 320-36367-1
 SDG No.: _____
 Sample No.: CCV 320-212593/22 Date Analyzed: 03/12/2018 22:47
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.12_537B_031 Heated Purge: (Y/N) N
 Calibration ID: 37889

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	746221	1.79	2395162	2.01		
UPPER LIMIT	1044709	2.29	3353227	2.51		
LOWER LIMIT	522355	1.29	1676613	1.51		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-36367-8	NAWC-022218-RW-039	740581	1.81	2195955	2.06	
320-36367-9	NAWC-022218-FRB-039	809611	1.78	2358808	2.00	
320-36367-10	NAWC-022218-RW-335	800763	1.80	2493942	2.04	
320-36367-11	NAWC-022218-FRB-335	813381	1.80	2390850	2.04	
320-36367-12	NAWC-022218-RW-348	758650	1.81	2247902	2.05	
320-36367-13	NAWC-022218-FRB-348	814628	1.74	2602265	1.88	

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.: 320-36367-1 Analy Batch No.: 208773

SDG No.: _____

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

Calibration Start Date: 02/16/2018 08:55 Calibration End Date: 02/16/2018 09:19 Calibration ID: 37889

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-208773/4	2018.02.016_537ICAL_004.d
Level 2	IC 320-208773/5	2018.02.016_537ICAL_005.d
Level 3	IC 320-208773/6	2018.02.016_537ICAL_006.d
Level 4	IC 320-208773/7	2018.02.016_537ICAL_007.d
Level 5	IC 320-208773/8	2018.02.016_537ICAL_008.d
Level 6	IC 320-208773/9	2018.02.016_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)	1.1922 0.9350	1.2685	1.2630	1.1053	1.0403	QuaF		1.3180	-0.002120						1.0000		0.9600
Perfluorohexanesulfonic acid (PFHxS)	1.5376 1.6019	1.6461	1.6181	1.5963	1.6585	Ave		1.6098				2.7		30.0			
Perfluoroheptanoic acid (PFHpA)	0.9596 0.9834	0.9488	0.9462	1.0388	0.9501	Ave		0.9711				3.7		30.0			
Perfluorooctanoic acid (PFOA)	0.9118 0.9514	1.0053	0.9624	0.9616	0.9798	Ave		0.9620				3.2		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.9021 0.9430	0.9481	0.9569	0.9539	0.9692	Ave		0.9455				2.4		30.0			
Perfluorononanoic acid (PFNA)	0.6417 0.6193	0.5823	0.5991	0.6537	0.5962	Ave		0.6154				4.5		30.0			
13C2 PFHxA	1.1327 1.1621	1.0418	1.0430	1.1541	1.0657	Ave		1.0999				5.1		30.0			
13C2 PFDA	0.5790 0.5388	0.4974	0.4674	0.5464	0.5166	Ave		0.5243				7.5		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.: 320-36367-1 Analy Batch No.: 208773

SDG No.: _____

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

Calibration Start Date: 02/16/2018 08:55 Calibration End Date: 02/16/2018 09:19 Calibration ID: 37889

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-208773/4	2018.02.016_537ICAL_004.d
Level 2	IC 320-208773/5	2018.02.016_537ICAL_005.d
Level 3	IC 320-208773/6	2018.02.016_537ICAL_006.d
Level 4	IC 320-208773/7	2018.02.016_537ICAL_007.d
Level 5	IC 320-208773/8	2018.02.016_537ICAL_008.d
Level 6	IC 320-208773/9	2018.02.016_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	1004877 16112512	2401851	5386060	9625497	13334361	9.00 180	20.0	45.0	90.0	135
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	432087 9203547	1039145	2300670	4635169	7088297	3.00 60.0	6.67	15.0	30.0	45.0
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	89434 1755879	208408	467875	919334	1334846	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	170858 3415564	443975	956930	1711070	2767901	2.01 40.2	4.47	10.1	20.1	30.2
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	339345 7252490	801200	1821248	3707450	5544581	4.02 80.3	8.93	20.1	40.2	60.3
Perfluorononanoic acid (PFNA)	13PF OA	Ave	119635 2211715	255853	592583	1157180	1675602	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PF OA	Ave	1055358 1037300	1029524	1031304	1021204	998008	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	539488 480980	491558	462142	483499	483740	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.: 320-36367-1 Analy Batch No.: 208773

SDG No.: _____

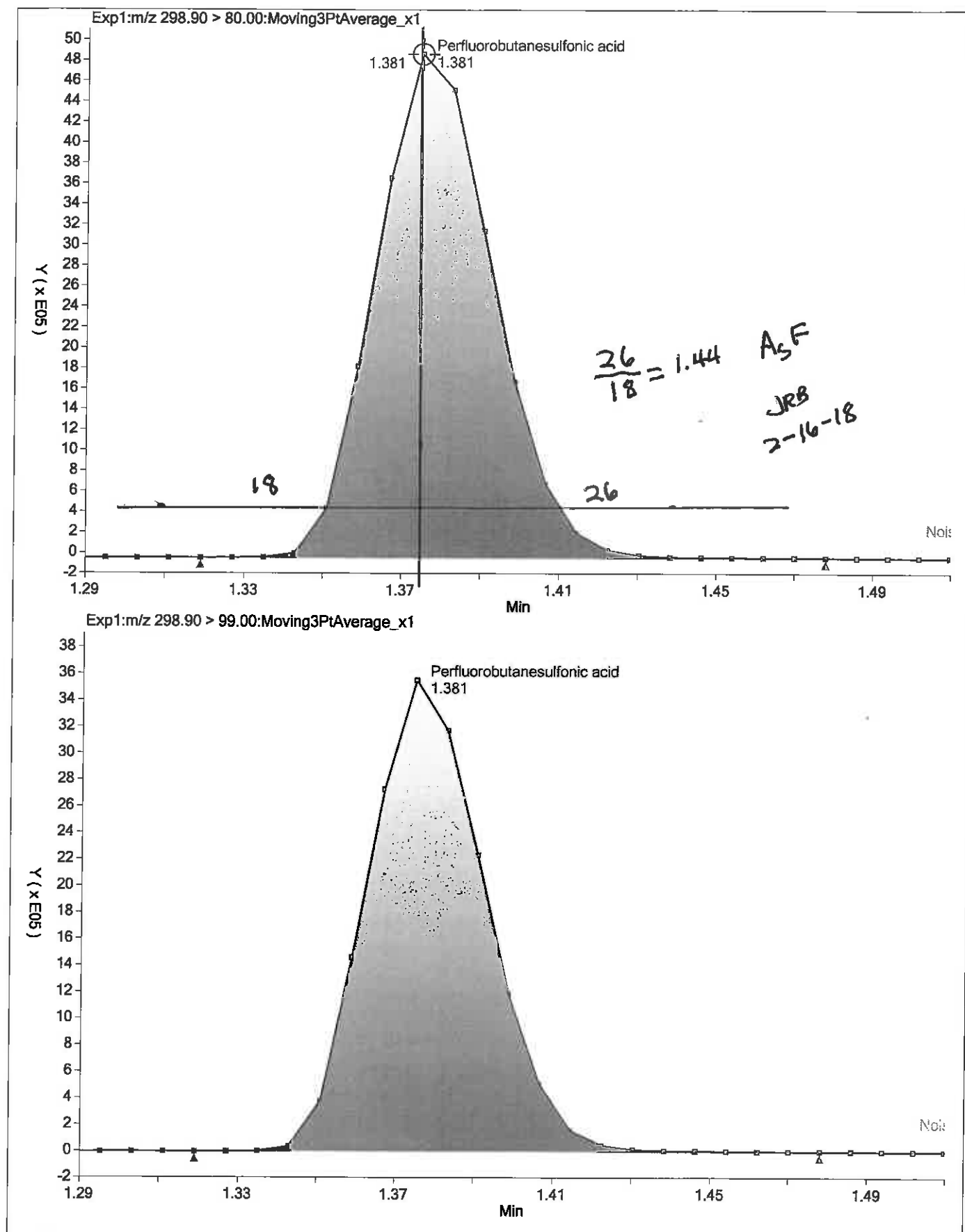
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

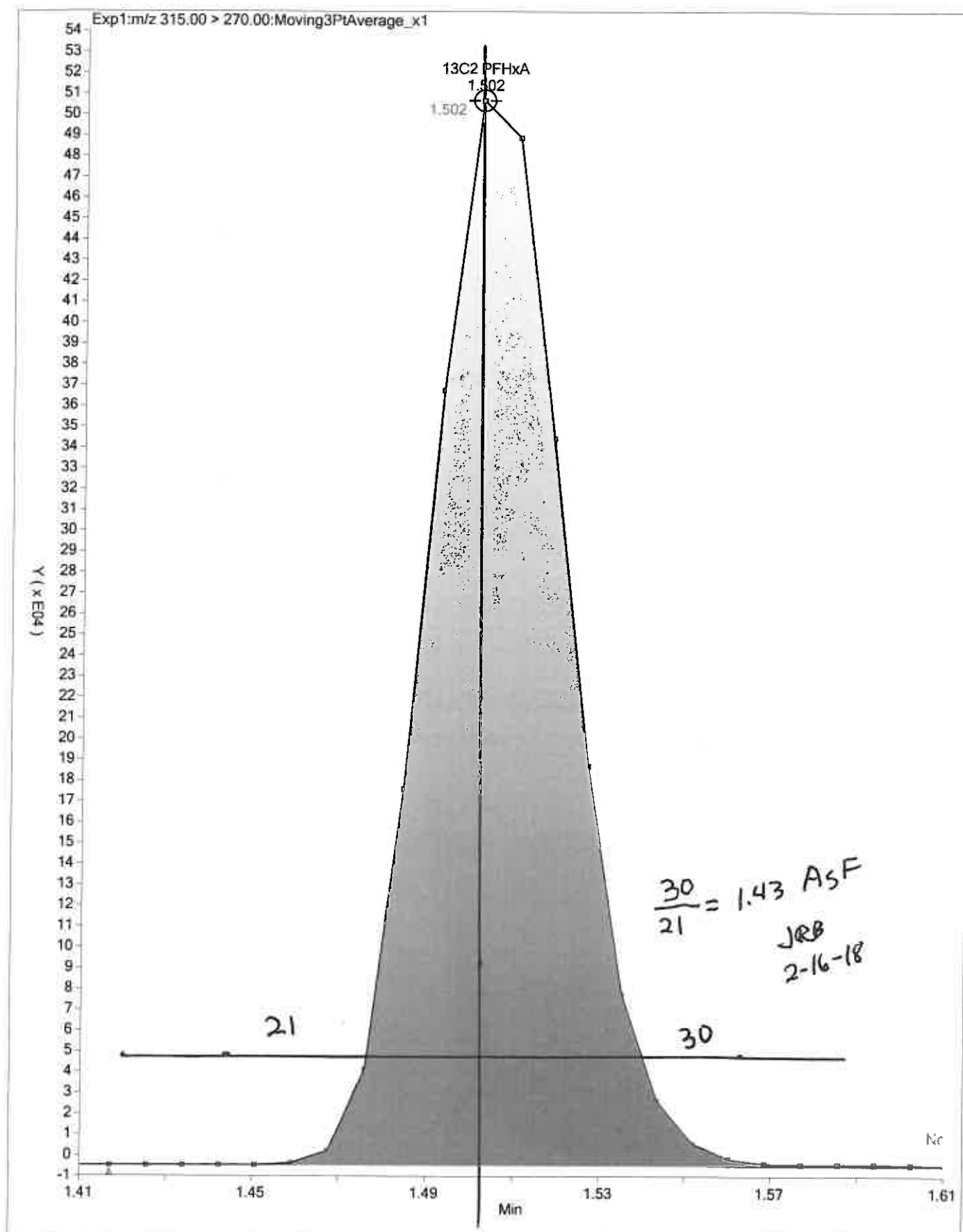
Calibration Start Date: 02/16/2018 08:55 Calibration End Date: 02/16/2018 09:19 Calibration ID: 37889

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-208773/4	2018.02.016_537ICAL_004.d
Level 2	IC 320-208773/5	2018.02.016_537ICAL_005.d
Level 3	IC 320-208773/6	2018.02.016_537ICAL_006.d
Level 4	IC 320-208773/7	2018.02.016_537ICAL_007.d
Level 5	IC 320-208773/8	2018.02.016_537ICAL_008.d
Level 6	IC 320-208773/9	2018.02.016_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)	-8.3	-0.6	3.6	-2.3	1.1	-0.3	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-4.5	2.3	0.5	-0.8	3.0	-0.5	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	-1.2	-2.3	-2.6	7.0	-2.2	1.3	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-5.2	4.5	0.0	0.0	1.8	-1.1	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-4.6	0.3	1.2	0.9	2.5	-0.3	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	4.3	-5.4	-2.6	6.2	-3.1	0.6	50	30	30	30	30	30
13C2 PFHxA	3.0	-5.3	-5.2	4.9	-3.1	5.7	30	30	30	30	30	30
13C2 PFDA	10.4	-5.1	-10.9	4.2	-1.5	2.8	30	30	30	30	30	30





FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-208773/11 Calibration Date: 02/16/2018 09:28
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.02.016_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		1.238		19.4	20.0	-3.0	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.9284		2.12	2.22	-4.4	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.706		7.07	6.67	6.0	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9302		4.32	4.47	-3.3	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9736		9.19	8.93	3.0	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.5986		4.32	4.45	-2.7	50.0
13C2 PFHxA	Ave	1.100	1.037		9.43	10.0	-5.7	30.0
13C2 PFDA	Ave	0.5243	0.5013		9.56	10.0	-4.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Lab Sample ID: ICV 320-208773/13 Calibration Date: 02/16/2018 09:37
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.02.016_537ICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.108		100	100	0.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.997		10.3	10.0	2.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.686		21.1	20.2	4.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.8998		18.9	20.2	-6.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9852		21.0	20.2	4.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.6774		22.2	20.2	10.1	30.0
13C2 PFHxA	Ave	1.100	1.125		10.2	10.0	2.3	30.0
13C2 PFDA	Ave	0.5243	0.5347		10.2	10.0	2.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-212525/1 Calibration Date: 03/12/2018 16:16
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.03.12_537AA_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.063		16.6	20.0	-17.1	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.8604		1.97	2.22	-11.4	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.551		6.42	6.67	-3.7	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9247		4.30	4.47	-3.9	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9648		9.11	8.93	2.0	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.6166		4.45	4.45	0.2	50.0
13C2 PFHxA	Ave	1.100	0.9177		8.34	10.0	-16.6	30.0
13C2 PFDA	Ave	0.5243	0.5102		9.73	10.0	-2.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Lab Sample ID: CCV 320-212591/1 Calibration Date: 03/12/2018 21:09
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.03.12_537B_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9169		115	135	-14.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.9103		14.1	15.0	-6.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.561		43.6	45.0	-3.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9550		29.9	30.2	-0.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9684		61.7	60.3	2.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.6859		33.4	30.0	11.5	30.0
13C2 PFHxA	Ave	1.100	1.008		9.17	10.0	-8.3	30.0
13C2 PFDA	Ave	0.5243	0.5631		10.7	10.0	7.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Lab Sample ID: CCV 320-212591/13 Calibration Date: 03/12/2018 22:05
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.03.12_537B_016.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.056		38.4	45.0	-14.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.9828		5.06	5.00	1.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.586		14.8	15.0	-1.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9712		10.2	10.1	1.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9577		20.3	20.1	1.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.7280		11.8	10.0	18.3	30.0
13C2 PFHxA	Ave	1.100	1.064		9.67	10.0	-3.3	30.0
13C2 PFDA	Ave	0.5243	0.6292		12.0	10.0	20.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Lab Sample ID: CCV 320-212593/13 Calibration Date: 03/12/2018 22:05
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.03.12_537B_016.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.056		38.4	45.0	-14.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.9828		5.06	5.00	1.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.586		14.8	15.0	-1.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9712		10.2	10.1	1.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9577		20.3	20.1	1.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.7280		11.8	10.0	18.3	30.0
13C2 PFHxA	Ave	1.100	1.064		9.67	10.0	-3.3	30.0
13C2 PFDA	Ave	0.5243	0.6292		12.0	10.0	20.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1
 SDG No.: _____
 Lab Sample ID: CCV 320-212593/22 Calibration Date: 03/12/2018 22:47
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.03.12_537B_031.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9387		119	135	-11.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.9691		15.0	15.0	-0.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.572		44.0	45.0	-2.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	1.001		31.4	30.2	4.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9729		62.0	60.3	2.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.7320		35.7	30.0	18.9	30.0
13C2 PFHxA	Ave	1.100	1.059		9.63	10.0	-3.7	30.0
13C2 PFDA	Ave	0.5243	0.5827		11.1	10.0	11.1	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-36367-1

SDG No.: _____

Instrument ID: A8_NStart Date: 02/16/2018 08:55Analysis Batch Number: 208773End Date: 02/16/2018 09:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-208773/4		02/16/2018 08:55	1	2018.02.016_537 ICAL 004.d	GeminiC18 3x100 3(mm)
IC 320-208773/5		02/16/2018 09:00	1	2018.02.016_537 ICAL 005.d	GeminiC18 3x100 3(mm)
IC 320-208773/6		02/16/2018 09:05	1	2018.02.016_537 ICAL 006.d	GeminiC18 3x100 3(mm)
IC 320-208773/7 ICISAV		02/16/2018 09:09	1	2018.02.016_537 ICAL 007.d	GeminiC18 3x100 3(mm)
IC 320-208773/8		02/16/2018 09:14	1	2018.02.016_537 ICAL 008.d	GeminiC18 3x100 3(mm)
IC 320-208773/9		02/16/2018 09:19	1	2018.02.016_537 ICAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		02/16/2018 09:23	1		GeminiC18 3x100 3(mm)
CCVL 320-208773/11		02/16/2018 09:28	1	2018.02.016_537 ICAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		02/16/2018 09:33	1		GeminiC18 3x100 3(mm)
ICV 320-208773/13		02/16/2018 09:37	1	2018.02.016_537 ICAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Instrument ID: A8_N Start Date: 03/12/2018 16:16Analysis Batch Number: 212525 End Date: 03/12/2018 16:49

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-212525/1		03/12/2018 16:16	1	2018.03.12_537A A 004.d	GeminiC18 3x100 3(mm)
CCV 320-212525/2 CCVIS		03/12/2018 16:21	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/12/2018 16:30	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/12/2018 16:35	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/12/2018 16:40	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/12/2018 16:44	1		GeminiC18 3x100 3(mm)
CCV 320-212525/8 CCVIS		03/12/2018 16:49	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-36367-1

SDG No.: _____

Instrument ID: A8_NStart Date: 03/12/2018 21:09Analysis Batch Number: 212591End Date: 03/12/2018 22:05

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-212591/1 CCVIS		03/12/2018 21:09	1	2018.03.12_537B 004.d	GeminiC18 3x100 3(mm)
MB 320-211553/1-A		03/12/2018 21:19	1	2018.03.12_537B 006.d	GeminiC18 3x100 3(mm)
LCS 320-211553/2-A		03/12/2018 21:23	1	2018.03.12_537B 007.d	GeminiC18 3x100 3(mm)
LCSD 320-211553/3-A		03/12/2018 21:28	1	2018.03.12_537B 008.d	GeminiC18 3x100 3(mm)
320-36367-1		03/12/2018 21:33	1	2018.03.12_537B 009.d	GeminiC18 3x100 3(mm)
320-36367-2		03/12/2018 21:37	1	2018.03.12_537B 010.d	GeminiC18 3x100 3(mm)
320-36367-3		03/12/2018 21:42	1	2018.03.12_537B 011.d	GeminiC18 3x100 3(mm)
320-36367-4		03/12/2018 21:47	1	2018.03.12_537B 012.d	GeminiC18 3x100 3(mm)
320-36367-5		03/12/2018 21:51	1	2018.03.12_537B 013.d	GeminiC18 3x100 3(mm)
320-36367-6		03/12/2018 21:56	1	2018.03.12_537B 014.d	GeminiC18 3x100 3(mm)
320-36367-7		03/12/2018 22:01	1	2018.03.12_537B 015.d	GeminiC18 3x100 3(mm)
CCV 320-212591/13 CCVIS		03/12/2018 22:05	1	2018.03.12_537B 016.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Instrument ID: A8_N Start Date: 03/12/2018 22:05Analysis Batch Number: 212593 End Date: 03/12/2018 22:47

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-212593/13 CCVIS		03/12/2018 22:05	1	2018.03.12_537B 016.d	GeminiC18 3x100 3(mm)
320-36367-8		03/12/2018 22:15	1	2018.03.12_537B 018.d	GeminiC18 3x100 3(mm)
320-36367-9		03/12/2018 22:19	1	2018.03.12_537B 019.d	GeminiC18 3x100 3(mm)
320-36367-10		03/12/2018 22:24	1	2018.03.12_537B 020.d	GeminiC18 3x100 3(mm)
320-36367-11		03/12/2018 22:29	1	2018.03.12_537B 021.d	GeminiC18 3x100 3(mm)
320-36367-12		03/12/2018 22:33	1	2018.03.12_537B 022.d	GeminiC18 3x100 3(mm)
320-36367-13		03/12/2018 22:38	1	2018.03.12_537B 023.d	GeminiC18 3x100 3(mm)
CCV 320-212593/22 CCVIS		03/12/2018 22:47	1	2018.03.12_537B 031.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Batch Number: 211553 Batch Start Date: 03/07/18 07:07 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 03/10/18 12:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-HSP 00026
MB 320-211553/1		537, 537				250 mL	1.00 mL	7 SU	
LCS 320-211553/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCSD 320-211553/3		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-36367-A-1	WGNA-022218-DUP-28	537, 537	T	286.08 g	29.38 g	256.7 mL	1.00 mL	7 SU	
320-36367-A-2	WGNA-022218-RW-0386	537, 537	T	286.18 g	29.39 g	256.8 mL	1.00 mL	7 SU	
320-36367-A-3	WGNA-022218-FRB-0386	537, 537	T	293.16 g	30.63 g	262.5 mL	1.00 mL	7 SU	
320-36367-A-4	WGNA-022218-RW-3073	537, 537	T	285.92 g	29.61 g	256.3 mL	1.00 mL	7 SU	
320-36367-A-5	WGNA-022218-FRB-3073	537, 537	T	287.37 g	28.68 g	258.7 mL	1.00 mL	7 SU	
320-36367-A-6	NAWC-022218-RW-311	537, 537	T	279.81 g	29.17 g	250.6 mL	1.00 mL	7 SU	
320-36367-A-7	NAWC-022218-FRB-311	537, 537	T	287.78 g	28.64 g	259.1 mL	1.00 mL	7 SU	
320-36367-A-8	NAWC-022218-RW-039	537, 537	T	289.35 g	28.51 g	260.8 mL	1.00 mL	7 SU	
320-36367-A-9	NAWC-022218-FRB-039	537, 537	T	287.53 g	29.19 g	258.3 mL	1.00 mL	7 SU	
320-36367-A-10	NAWC-022218-RW-335	537, 537	T	295.09 g	29.15 g	265.9 mL	1.00 mL	7 SU	
320-36367-A-11	NAWC-022218-FRB-335	537, 537	T	291.48 g	29.17 g	262.3 mL	1.00 mL	7 SU	
320-36367-A-12	NAWC-022218-RW-348	537, 537	T	293.05 g	29.16 g	263.9 mL	1.00 mL	7 SU	
320-36367-A-13	NAWC-022218-FRB-348	537, 537	T	290.67 g	29.36 g	261.3 mL	1.00 mL	7 SU	

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00062	LC537-SU 00063	AnalysisComment			
MB 320-211553/1		537, 537		100 uL	100 uL	Chlorine, ND			
LCS 320-211553/2		537, 537		100 uL	100 uL	Chlorine, ND			
LCSD 320-211553/3		537, 537		100 uL	100 uL	Chlorine, ND			
320-36367-A-1	WGNA-022218-DUP-28	537, 537	T	100 uL	100 uL	Chlorine, ND			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Batch Number: 211553 Batch Start Date: 03/07/18 07:07 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 03/10/18 12:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00062	LC537-SU 00063	AnalysisComment			
320-36367-A-2	WGNA-022218-RW-0386	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-3	WGNA-022218-FRB-0386	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-4	WGNA-022218-RW-3073	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-5	WGNA-022218-FRB-3073	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-6	NAWC-022218-RW-311	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-7	NAWC-022218-FRB-311	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-8	NAWC-022218-RW-039	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-9	NAWC-022218-FRB-039	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-10	NAWC-022218-RW-335	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-11	NAWC-022218-FRB-335	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-12	NAWC-022218-RW-348	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-36367-A-13	NAWC-022218-FRB-348	537, 537	T	100 uL	100 uL	Chlorine, ND			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36367-1

SDG No.: _____

Batch Number: 211553 Batch Start Date: 03/07/18 07:07 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 03/10/18 12:30

Batch Notes	
Analyst ID - Aliquot Step	SKD
Batch Comment	Client labels match TA labels, 03/07/18 SKD
Analyst ID - Concentration	SKD
Analyst ID - Final Volume Step	SKD
Internal Standard ID#	1169780
Manifold ID	4, 9
Methanol ID	1175202
pH Indicator ID	3817
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	GXL
Analyst ID - SU Reagent Drop	VPM
Analyst ID - SU Reagent Drop Witness	KMK
Analyst ID - TA Reagent Drop	VPM
Analyst ID - TA Reagent Drop Witness	KMK
SPE Cartridge Lot ID	6369499-08
Trizma ID	SLBR4303V
Reagent Water ID	03/03/18

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Job No: 36367 Instrument ID & Date: A8 3-12-18 ICAL Batch: 208773
 Extraction Batch: 211553 Worklist #: 55214 TALS Batch: 212591, 212593

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 3-13-18 2nd Level Reviewer / Date: Qu 3/13/18

NCM # and Comments: _____

A8

Instrument ID & Date: 2-16-18 Worklist#: 54164

ICAL Batch: 208173, 208174 Calibration ID number: 37889, 37890

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 2-16-18

2nd Level Reviewer / Date: CBW 2-16-18

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 12MAR2018_537C

Worklist Number: 55214

Instrument Name: A8_N

Chrom Method: 537_A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180313-55214.b

QC Batching: Enabled

Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 212591
# 1 CCV L5	# 1 CCV L5
# 2 RB	# 2 RB
# 3 MB 320-211553/1-A	# 3 MB 320-211553/1-A
# 4 LCS 320-211553/2-A	# 4 LCS 320-211553/2-A
# 5 LCSD 320-211553/3-A	# 5 LCSD 320-211553/3-A
# 6 320-36367-A-1-A	# 6 320-36367-A-1-A
# 7 320-36367-A-2-A	# 7 320-36367-A-2-A
# 8 320-36367-A-3-A	# 8 320-36367-A-3-A
# 9 320-36367-A-4-A	# 9 320-36367-A-4-A
#10 320-36367-A-5-A	#10 320-36367-A-5-A
#11 320-36367-A-6-A	#11 320-36367-A-6-A
#12 320-36367-A-7-A	#12 320-36367-A-7-A
#13 CCV L3	#13 CCV L3

QC Batch: 2	LC 537 ICAL Raw Batch: 212593
#13 CCV L3	#13 CCV L3
#14 RB	#14 RB
#15 320-36367-A-8-A	#15 320-36367-A-8-A
#16 320-36367-A-9-A	#16 320-36367-A-9-A
#17 320-36367-A-10-A	#17 320-36367-A-10-A
#18 320-36367-A-11-A	#18 320-36367-A-11-A
#19 320-36367-A-12-A	#19 320-36367-A-12-A
#20 320-36367-A-13-A	#20 320-36367-A-13-A
#21 537 ADAPTER QC	#21 537 ADAPTER QC
#22 CCV L5	#22 CCV L5
#23 RB	#23 RB

CCV L in AB 212525

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-211553 ✓

Analyst: Kouchari, Shamiran

Batch Open: 3/7/2018 7:07:00AM

Method Code: 320-537_Prep-320

Batch End: 3/10/2018 12:30:00PM

Extraction of Perfluorinated Alkyl Acids

3/16

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
MB-320-211553/1 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine, ND	
			1.00 mL								
LCS-320-211553/2 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine, ND	
			1.00 mL								
LCSD-320-211553/3 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine, ND	
			1.00 mL								
320-36367-A-1 (537_DOD5)	N/A (320-36367-1)	286.08 g	256.7 mL	7			2/27/18	16_Days	4	Chlorine, ND	
		29.38 g	1.00 mL								
320-36367-A-2 (537_DOD5)	N/A (320-36367-1)	286.18 g	256.8 mL	7			2/27/18	16_Days	4	Chlorine, ND	
		29.39 g	1.00 mL								
320-36367-A-3 (537_DOD5)	N/A (320-36367-1)	293.16 g	262.5 mL	7			2/27/18	16_Days	4	Chlorine, ND	
		30.63 g	1.00 mL								
320-36367-A-4 (537_DOD5)	N/A (320-36367-1)	285.92 g	256.3 mL	7			2/27/18	16_Days	4	Chlorine, ND	
		29.61 g	1.00 mL								
320-36367-A-5 (537_DOD5)	N/A (320-36367-1)	287.37 g	258.7 mL	7			2/27/18	16_Days	4	Chlorine, ND	
		28.68 g	1.00 mL								
320-36367-A-6 (537_DOD5)	N/A (320-36367-1)	279.81 g	250.6 mL	7			2/27/18	16_Days	4	Chlorine, ND	
		29.17 g	1.00 mL								
320-36367-A-7 (537_DOD5)	N/A (320-36367-1)	287.78 g	259.1 mL	7			2/27/18	16_Days	4	Chlorine, ND	
		28.64 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-211553

Analyst: Kouchari, Shamiran

Batch Open: 3/7/2018 7:07:00AM

Method Code: 320-537_Prep-320

Batch End: 3/10/2018 12:30:00PM

11	320-36367-A-8 (537_DOD5)	N/A (320-36367-1)	289.35 g	260.8 mL	7		2/27/18	16_Days	4	Chlorine, ND	
			28.51 g	1.00 mL							
12	320-36367-A-9 (537_DOD5)	N/A (320-36367-1)	287.53 g	258.3 mL	7		2/27/18	16_Days	4	Chlorine, ND	
			29.19 g	1.00 mL							
13	320-36367-A-10 (537_DOD5)	N/A (320-36367-1)	295.09 g	265.9 mL	7		2/27/18	16_Days	4	Chlorine, ND	
			29.15 g	1.00 mL							
14	320-36367-A-11 (537_DOD5)	N/A (320-36367-1)	291.48 g	262.3 mL	7		2/27/18	16_Days	4	Chlorine, ND	
			29.17 g	1.00 mL							
15	320-36367-A-12 (537_DOD5)	N/A (320-36367-1)	293.05 g	263.9 mL	7		2/27/18	16_Days	4	Chlorine, ND	
			29.16 g	1.00 mL							
	320-36367-A-13 (537_DOD5)	N/A (320-36367-1)	290.67 g	261.3 mL	7		2/27/18	16_Days	4	Chlorine, ND	
			29.36 g	1.00 mL							

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-211553

Analyst: Kouchari, Shamiran

Batch Open: 3/7/2018 7:07:00AM

Method Code: 320-537_Prep-320

Batch End: 3/10/2018 12:30:00PM

Batch Notes

Manifold ID 4, 9

pH Indicator ID 3817

Trizma ID SLBR4303V

SPE Cartridge Lot ID 6369499-08

Methanol ID 1175202

Reagent Water ID 03/03/18

Internal Standard ID# 1169780

Pipette ID H14930F

Analyst ID - TA Reagent Drop VPM

Analyst ID - TA Reagent Drop KMK

Witness

Analyst ID - SU Reagent Drop VPM

Analyst ID - SU Reagent Drop KMK

Witness

Analyst ID - IS Reagent Drop JER

Analyst ID - IS Reagent Drop GXL

Witness

Analyst ID - Concentration SKD

Analyst ID - Aliquot Step SKD

Analyst ID - Final Volume Step SKD

Batch Comment Client labels match TA labels, 03/07/18 SKD

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-211553

Analyst: Kouchari, Shamiran

Batch Open: 3/7/2018 7:07:00AM

Method Code: 320-537_Prep-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-211553/1	LC537-SU_00063	100 uL	1.00 mL	VPM 3/7/18	KMK 3-7-18
LCS 320-211553/2	LC537-HSP_00026	100 uL	1.00 mL		
LCS 320-211553/2	LC537-SU_00063	100 uL	1.00 mL		
LCSD 320-211553/3	LC537-HSP_00026	100 uL	1.00 mL		
LCSD 320-211553/3	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-1	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-2	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-3	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-4	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-5	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-6	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-7	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-8	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-9	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-10	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-11	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-12	LC537-SU_00063	100 uL	1.00 mL		
320-36367-A-13	LC537-SU_00063	100 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-211553

Analyst: Kouchari, Shamiran

Batch Open: 3/7/2018 7:07:00AM

Method Code: 320-537_Prep-320

Batch End:

Other Reagents:

Reagent

Amount/Units

Lot#:

Sacramento Preparation Data Review Checklist

Preparation Batch Number(s) 211553 Test 537 - prep
 Earliest Holding Time 3/8/18

Batch Information	1 st Level Reviewer	2 nd Level Reviewer
Date and time accurate and entered into TALS correctly	✓	✓
All necessary batch information complete and entered into TALS correctly	✓	✓
BD, FV, and AL initials are transcribed into the batch comment	✓	✓
Sample List Tab	1 st Level Reviewer	2 nd Level Reviewer
Samples identified to the correct method	✓	✓
Holding time violation NCM filed	N/A	N/A
MS/MSD or MS/DU NCM filed	N/A	N/A
NCM for any anomalies filed	N/A	N/A
All NCMs include method code, matrix, and prep batch	N/A	N/A
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: SKD
 2nd Level Reviewer: VPM
 Comments: _____

Date: 3/10/18
 Date: 3/12/18

PFAS Calibration Calculations:

Initial Calibration 2/16/2018
Instrument A8_N

PFOS

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF
4.02	339345	2685321	28.7	0.90220	0.9021
8.93	801200	2714895	28.7	0.94846	0.9481
20.1	1821248	2717621	28.7	0.95690	0.9569
40.2	3707450	2774986	28.7	0.95383	0.9539
60.3	5544581	2722967	28.7	0.96915	0.9692
80.3	7252490	2745419	28.7	0.94416	0.943
Average				0.94578	0.9455
Standard Deviation				0.0230	
RSD				0.0243	
%RSD				2.43134	2.4

Continuing Calibration 03/12/2018 @ 21:09

PFOS

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
60.3	5503191	2704833	28.7	0.9684	2.41821	0.9684	2.4

Willow Grove
SDG 320-36367-1

Sample Identification

WGNA-022218-DUP-28

Compound

Perfluorooctanesulfonic acid

Compound Area	498049
Internal Standard Amount (ng)	28.7
Dilution Factor	1
Internal Standard Area	2221457
Average RRF	0.9455
Sample Volume(L)	0.2567
Volume Extract (ml)	1
Injection Volume (µl)	1
Concentration	26.5112 ng/L

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