



**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 320-37172-1**

*Naval Air Warfare Center Warminster
Warminster, Pennsylvania*

August 2019

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WARMINSTER_NAWC
SSIC 5000-33c

LABORATORY DATA PACKAGE, 320-37172-1, NAS WILLOW GROVE NAWC
WARMINSTER PA
03/30/2018
TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-37172-1

Job Description: Warminster: PFAS, NAS JRB Willow Grove

For:
Tetra Tech, Inc.
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Attention: Andy Frebowitz



Approved for release.
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3/30/2018 3:37 PM

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Definitions/Glossary

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

TestAmerica Job ID: 320-37172-1

Qualifiers

LCMS

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

Glossary

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

Job Narrative
320-37172-1

Receipt

The samples were received on 3/16/2018 9:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9° C.

Receipt Exceptions

The container label for the following samples did not match the information listed on the Chain-of-Custody (COC): NAWC-031518-RW-0569 (320-37172-5) and NAWC-031518-FRB-0569 (320-37172-6). Sample label time does not match COC. The times were switched with each other.

LCMS

Method(s) 537: The continuing calibration verification (CCV) has a detection which exceeded the instrument calibration range because it is at the upper level of the calibration curve, as specified in the method. (CCV 320-215653/13) and (CCV 320-215655/13)

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 additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-215177.

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: 320-37172-1

Client Sample ID: WGNA-031518-RW-0617

Lab Sample ID: 320-37172-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	25	J M	40	6.7	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	23		20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.4	J	30	5.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	7.6	J	9.9	1.9	ng/L	1		537	Total/NA
Perfluorobutanesulfonic acid (PFBS)	24	J	89	16	ng/L	1		537	Total/NA

Client Sample ID: WGNA-031518-FRB-0617

Lab Sample ID: 320-37172-2

No Detections.

Client Sample ID: WGNA-031518-RW-0755

Lab Sample ID: 320-37172-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	28	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)	30		30	5.5	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.7	J	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: WGNA-031518-FRB-0755

Lab Sample ID: 320-37172-4

No Detections.

Client Sample ID: NAWC-031518-RW-0569

Lab Sample ID: 320-37172-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	28	J M	39	6.6	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	35		19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.3	J	29	5.3	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	11		9.7	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-031518-FRB-0569

Lab Sample ID: 320-37172-6

No Detections.

Client Sample ID: NAWC-031518-RW-054

Lab Sample ID: 320-37172-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	16	J M	38	6.4	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	20		19	2.6	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.5	J	28	5.2	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.7	J	9.5	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-031518-FRB-054

Lab Sample ID: 320-37172-8

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-37172-1

Client Sample ID: WGNA-031518-RW-0617

Lab Sample ID: 320-37172-1

Date Collected: 03/15/18 09:10

Matrix: Water

Date Received: 03/16/18 09:05

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	6.7	ng/L		03/28/18 10:21	03/30/18 10:33	1
Perfluorooctanoic acid (PFOA)	23		20	2.8	ng/L		03/28/18 10:21	03/30/18 10:33	1
Perfluorononanoic acid (PFNA)	20	U M	24	7.9	ng/L		03/28/18 10:21	03/30/18 10:33	1
Perfluorohexanesulfonic acid (PFHxS)	9.4	J	30	5.4	ng/L		03/28/18 10:21	03/30/18 10:33	1
Perfluoroheptanoic acid (PFHpA)	7.6	J	9.9	1.9	ng/L		03/28/18 10:21	03/30/18 10:33	1
Perfluorobutanesulfonic acid (PFBS)	24	J	89	16	ng/L		03/28/18 10:21	03/30/18 10:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		70 - 130				03/28/18 10:21	03/30/18 10:33	1
13C2 PFDA	87		70 - 130				03/28/18 10:21	03/30/18 10:33	1

Client Sample ID: WGNA-031518-FRB-0617

Lab Sample ID: 320-37172-2

Date Collected: 03/15/18 09:05

Matrix: Water

Date Received: 03/16/18 09:05

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	39	6.6	ng/L		03/28/18 10:21	03/30/18 10:38	1
Perfluorooctanoic acid (PFOA)	7.8	U	19	2.7	ng/L		03/28/18 10:21	03/30/18 10:38	1
Perfluorononanoic acid (PFNA)	19	U	23	7.8	ng/L		03/28/18 10:21	03/30/18 10:38	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.3	ng/L		03/28/18 10:21	03/30/18 10:38	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	1.8	ng/L		03/28/18 10:21	03/30/18 10:38	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L		03/28/18 10:21	03/30/18 10:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		70 - 130				03/28/18 10:21	03/30/18 10:38	1
13C2 PFDA	84		70 - 130				03/28/18 10:21	03/30/18 10:38	1

Client Sample ID: WGNA-031518-RW-0755

Lab Sample ID: 320-37172-3

Date Collected: 03/15/18 10:10

Matrix: Water

Date Received: 03/16/18 09:05

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	28	J M	40	6.8	ng/L		03/28/18 10:21	03/30/18 10:42	1
Perfluorooctanoic acid (PFOA)	23		20	2.8	ng/L		03/28/18 10:21	03/30/18 10:42	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		03/28/18 10:21	03/30/18 10:42	1
Perfluorohexanesulfonic acid (PFHxS)	30		30	5.5	ng/L		03/28/18 10:21	03/30/18 10:42	1
Perfluoroheptanoic acid (PFHpA)	4.7	J	10	1.9	ng/L		03/28/18 10:21	03/30/18 10:42	1
Perfluorobutanesulfonic acid (PFBS)	36	U M	90	16	ng/L		03/28/18 10:21	03/30/18 10:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	84		70 - 130				03/28/18 10:21	03/30/18 10:42	1
13C2 PFDA	81		70 - 130				03/28/18 10:21	03/30/18 10:42	1

Client Sample Results

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

TestAmerica Job ID: 320-37172-1

Client Sample ID: WGNA-031518-FRB-0755

Lab Sample ID: 320-37172-4

Date Collected: 03/15/18 10:05

Matrix: Water

Date Received: 03/16/18 09:05

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		03/28/18 10:21	03/30/18 10:47	1
Perfluorooctanoic acid (PFOA)	7.7	U	19	2.7	ng/L		03/28/18 10:21	03/30/18 10:47	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		03/28/18 10:21	03/30/18 10:47	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.3	ng/L		03/28/18 10:21	03/30/18 10:47	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.6	1.8	ng/L		03/28/18 10:21	03/30/18 10:47	1
Perfluorobutanesulfonic acid (PFBS)	35	U	86	15	ng/L		03/28/18 10:21	03/30/18 10:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		70 - 130	03/28/18 10:21	03/30/18 10:47	1
13C2 PFDA	88		70 - 130	03/28/18 10:21	03/30/18 10:47	1

Client Sample ID: NAWC-031518-RW-0569

Lab Sample ID: 320-37172-5

Date Collected: 03/15/18 10:35

Matrix: Water

Date Received: 03/16/18 09:05

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	28	J M	39	6.6	ng/L		03/28/18 10:21	03/30/18 10:52	1
Perfluorooctanoic acid (PFOA)	35		19	2.7	ng/L		03/28/18 10:21	03/30/18 10:52	1
Perfluorononanoic acid (PFNA)	19	U M	23	7.8	ng/L		03/28/18 10:21	03/30/18 10:52	1
Perfluorohexanesulfonic acid (PFHxS)	7.3	J	29	5.3	ng/L		03/28/18 10:21	03/30/18 10:52	1
Perfluoroheptanoic acid (PFHpA)	11		9.7	1.8	ng/L		03/28/18 10:21	03/30/18 10:52	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L		03/28/18 10:21	03/30/18 10:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		70 - 130	03/28/18 10:21	03/30/18 10:52	1
13C2 PFDA	88		70 - 130	03/28/18 10:21	03/30/18 10:52	1

Client Sample ID: NAWC-031518-FRB-0569

Lab Sample ID: 320-37172-6

Date Collected: 03/15/18 10:40

Matrix: Water

Date Received: 03/16/18 09:05

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		03/28/18 10:21	03/30/18 10:56	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		03/28/18 10:21	03/30/18 10:56	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		03/28/18 10:21	03/30/18 10:56	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		03/28/18 10:21	03/30/18 10:56	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		03/28/18 10:21	03/30/18 10:56	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		03/28/18 10:21	03/30/18 10:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	81		70 - 130	03/28/18 10:21	03/30/18 10:56	1
13C2 PFDA	86		70 - 130	03/28/18 10:21	03/30/18 10:56	1

Client Sample Results

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

TestAmerica Job ID: 320-37172-1

Client Sample ID: NAWC-031518-RW-054

Lab Sample ID: 320-37172-7

Date Collected: 03/15/18 11:10

Matrix: Water

Date Received: 03/16/18 09:05

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	J M	38	6.4	ng/L		03/28/18 10:21	03/30/18 11:01	1
Perfluorooctanoic acid (PFOA)	20		19	2.6	ng/L		03/28/18 10:21	03/30/18 11:01	1
Perfluorononanoic acid (PFNA)	19	U M	23	7.6	ng/L		03/28/18 10:21	03/30/18 11:01	1
Perfluorohexanesulfonic acid (PFHxS)	9.5	J	28	5.2	ng/L		03/28/18 10:21	03/30/18 11:01	1
Perfluoroheptanoic acid (PFHpA)	5.7	J	9.5	1.8	ng/L		03/28/18 10:21	03/30/18 11:01	1
Perfluorobutanesulfonic acid (PFBS)	34	U	85	15	ng/L		03/28/18 10:21	03/30/18 11:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		70 - 130	03/28/18 10:21	03/30/18 11:01	1
13C2 PFDA	86		70 - 130	03/28/18 10:21	03/30/18 11:01	1

Client Sample ID: NAWC-031518-FRB-054

Lab Sample ID: 320-37172-8

Date Collected: 03/15/18 11:05

Matrix: Water

Date Received: 03/16/18 09:05

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		03/28/18 10:21	03/30/18 11:15	1
Perfluorooctanoic acid (PFOA)	7.6	U	19	2.7	ng/L		03/28/18 10:21	03/30/18 11:15	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		03/28/18 10:21	03/30/18 11:15	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	29	5.3	ng/L		03/28/18 10:21	03/30/18 11:15	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	1.8	ng/L		03/28/18 10:21	03/30/18 11:15	1
Perfluorobutanesulfonic acid (PFBS)	34	U	86	15	ng/L		03/28/18 10:21	03/30/18 11:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	85		70 - 130	03/28/18 10:21	03/30/18 11:15	1
13C2 PFDA	86		70 - 130	03/28/18 10:21	03/30/18 11:15	1

Default Detection Limits

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

TestAmerica Job ID: 320-37172-1

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

Prep: 537

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

Surrogate Summary

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

TestAmerica Job ID: 320-37172-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		PFHxA (70-130)	PFDA (70-130)
320-37172-1	WGNA-031518-RW-0617	91	87
320-37172-2	WGNA-031518-FRB-0617	88	84
320-37172-3	WGNA-031518-RW-0755	84	81
320-37172-4	WGNA-031518-FRB-0755	96	88
320-37172-5	NAWC-031518-RW-0569	94	88
320-37172-6	NAWC-031518-FRB-0569	81	86
320-37172-7	NAWC-031518-RW-054	91	86
320-37172-8	NAWC-031518-FRB-054	85	86
LLCS 320-215177/2-A	Lab Control Sample	97	88
LLCSD 320-215177/3-A	Lab Control Sample Dup	91	82
MB 320-215177/1-A	Method Blank	88	87

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: 320-37172-1

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

Lab Sample ID: MB 320-215177/1-A
Matrix: Water
Analysis Batch: 215653

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 215177

Analyte	MB	MB	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		03/28/18 10:21	03/30/18 10:19	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		03/28/18 10:21	03/30/18 10:19	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		03/28/18 10:21	03/30/18 10:19	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		03/28/18 10:21	03/30/18 10:19	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		03/28/18 10:21	03/30/18 10:19	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		03/28/18 10:21	03/30/18 10:19	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	88		70 - 130	03/28/18 10:21	03/30/18 10:19	1
13C2 PFDA	87		70 - 130	03/28/18 10:21	03/30/18 10:19	1

Lab Sample ID: LLCS 320-215177/2-A
Matrix: Water
Analysis Batch: 215653

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 215177

Analyte	Spike Added	LLCS	LLCS	Unit	D	%Rec	Limits
		Result	Qualifier				
Perfluorooctanesulfonic acid (PFOS)	40.2	41.5	M	ng/L		103	50 - 150
Perfluorooctanoic acid (PFOA)	20.1	20.4		ng/L		101	50 - 150
Perfluorononanoic acid (PFNA)	20.0	20.3	J	ng/L		102	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	30.0	30.4		ng/L		101	50 - 150
Perfluoroheptanoic acid (PFHpA)	10.0	10.3		ng/L		103	50 - 150
Perfluorobutanesulfonic acid (PFBS)	90.0	97.8		ng/L		109	50 - 150

Surrogate	LLCS	LLCS	Limits
	%Recovery	Qualifier	
13C2 PFHxA	97		70 - 130
13C2 PFDA	88		70 - 130

Lab Sample ID: LLCSD 320-215177/3-A
Matrix: Water
Analysis Batch: 215653

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 215177

Analyte	Spike Added	LLCSD	LLCSD	Unit	D	%Rec	Limits	RPD	RPD Limit
		Result	Qualifier						
Perfluorooctanesulfonic acid (PFOS)	40.2	41.5	M	ng/L		103	50 - 150	0	50
Perfluorooctanoic acid (PFOA)	20.1	19.1	J	ng/L		95	50 - 150	7	50
Perfluorononanoic acid (PFNA)	20.0	19.0	J	ng/L		95	50 - 150	7	50
Perfluorohexanesulfonic acid (PFHxS)	30.0	31.1		ng/L		104	50 - 150	3	50
Perfluoroheptanoic acid (PFHpA)	10.0	10.5		ng/L		105	50 - 150	2	50
Perfluorobutanesulfonic acid (PFBS)	90.0	99.7		ng/L		111	50 - 150	2	50

Surrogate	LLCSD	LLCSD	Limits
	%Recovery	Qualifier	
13C2 PFHxA	91		70 - 130
13C2 PFDA	82		70 - 130

TestAmerica Sacramento

QC Association Summary

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

TestAmerica Job ID: 320-37172-1

LCMS

Prep Batch: 215177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-37172-1	WGNA-031518-RW-0617	Total/NA	Water	537	
320-37172-2	WGNA-031518-FRB-0617	Total/NA	Water	537	
320-37172-3	WGNA-031518-RW-0755	Total/NA	Water	537	
320-37172-4	WGNA-031518-FRB-0755	Total/NA	Water	537	
320-37172-5	NAWC-031518-RW-0569	Total/NA	Water	537	
320-37172-6	NAWC-031518-FRB-0569	Total/NA	Water	537	
320-37172-7	NAWC-031518-RW-054	Total/NA	Water	537	
320-37172-8	NAWC-031518-FRB-054	Total/NA	Water	537	
MB 320-215177/1-A	Method Blank	Total/NA	Water	537	
LLCS 320-215177/2-A	Lab Control Sample	Total/NA	Water	537	
LLCSD 320-215177/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 215653

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-37172-1	WGNA-031518-RW-0617	Total/NA	Water	537	215177
320-37172-2	WGNA-031518-FRB-0617	Total/NA	Water	537	215177
320-37172-3	WGNA-031518-RW-0755	Total/NA	Water	537	215177
320-37172-4	WGNA-031518-FRB-0755	Total/NA	Water	537	215177
320-37172-5	NAWC-031518-RW-0569	Total/NA	Water	537	215177
320-37172-6	NAWC-031518-FRB-0569	Total/NA	Water	537	215177
320-37172-7	NAWC-031518-RW-054	Total/NA	Water	537	215177
MB 320-215177/1-A	Method Blank	Total/NA	Water	537	215177
LLCS 320-215177/2-A	Lab Control Sample	Total/NA	Water	537	215177
LLCSD 320-215177/3-A	Lab Control Sample Dup	Total/NA	Water	537	215177

Analysis Batch: 215655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-37172-8	NAWC-031518-FRB-054	Total/NA	Water	537	215177

Lab Chronicle

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

TestAmerica Job ID: 320-37172-1

Client Sample ID: WGNA-031518-RW-0617

Date Collected: 03/15/18 09:10

Date Received: 03/16/18 09:05

Lab Sample ID: 320-37172-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			215177	03/28/18 10:21	SK	TAL SAC
Total/NA	Analysis	537		1	215653	03/30/18 10:33	JRB	TAL SAC

Client Sample ID: WGNA-031518-FRB-0617

Date Collected: 03/15/18 09:05

Date Received: 03/16/18 09:05

Lab Sample ID: 320-37172-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			215177	03/28/18 10:21	SK	TAL SAC
Total/NA	Analysis	537		1	215653	03/30/18 10:38	JRB	TAL SAC

Client Sample ID: WGNA-031518-RW-0755

Date Collected: 03/15/18 10:10

Date Received: 03/16/18 09:05

Lab Sample ID: 320-37172-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			215177	03/28/18 10:21	SK	TAL SAC
Total/NA	Analysis	537		1	215653	03/30/18 10:42	JRB	TAL SAC

Client Sample ID: WGNA-031518-FRB-0755

Date Collected: 03/15/18 10:05

Date Received: 03/16/18 09:05

Lab Sample ID: 320-37172-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			215177	03/28/18 10:21	SK	TAL SAC
Total/NA	Analysis	537		1	215653	03/30/18 10:47	JRB	TAL SAC

Client Sample ID: NAWC-031518-RW-0569

Date Collected: 03/15/18 10:35

Date Received: 03/16/18 09:05

Lab Sample ID: 320-37172-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			215177	03/28/18 10:21	SK	TAL SAC
Total/NA	Analysis	537		1	215653	03/30/18 10:52	JRB	TAL SAC

Client Sample ID: NAWC-031518-FRB-0569

Date Collected: 03/15/18 10:40

Date Received: 03/16/18 09:05

Lab Sample ID: 320-37172-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			215177	03/28/18 10:21	SK	TAL SAC
Total/NA	Analysis	537		1	215653	03/30/18 10:56	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-37172-1

Client Sample ID: NAWC-031518-RW-054

Lab Sample ID: 320-37172-7

Date Collected: 03/15/18 11:10

Matrix: Water

Date Received: 03/16/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			215177	03/28/18 10:21	SK	TAL SAC
Total/NA	Analysis	537		1	215653	03/30/18 11:01	JRB	TAL SAC

Client Sample ID: NAWC-031518-FRB-054

Lab Sample ID: 320-37172-8

Date Collected: 03/15/18 11:05

Matrix: Water

Date Received: 03/16/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			215177	03/28/18 10:21	SK	TAL SAC
Total/NA	Analysis	537		1	215655	03/30/18 11:15	JRB	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

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

TestAmerica Job ID: 320-37172-1

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
Arizona	State Program	9	AZ0708	08-11-18
Arkansas DEQ	State Program	6	88-0691	06-17-18
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-18
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-18
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-18 *
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	02-28-19
Virginia	NELAP	3	460278	03-14-19
Washington	State Program	10	C581	05-05-18
West Virginia (DW)	State Program	3	9930C	12-31-18
Wyoming	State Program	8	8TMS-L	01-28-19

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

Method Summary

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

TestAmerica Job ID: 320-37172-1

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: 320-37172-1

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-37172-1	WGNA-031518-RW-0617	Water	03/15/18 09:10	03/16/18 09:05
320-37172-2	WGNA-031518-FRB-0617	Water	03/15/18 09:05	03/16/18 09:05
320-37172-3	WGNA-031518-RW-0755	Water	03/15/18 10:10	03/16/18 09:05
320-37172-4	WGNA-031518-FRB-0755	Water	03/15/18 10:05	03/16/18 09:05
320-37172-5	NAWC-031518-RW-0569	Water	03/15/18 10:35	03/16/18 09:05
320-37172-6	NAWC-031518-FRB-0569	Water	03/15/18 10:40	03/16/18 09:05
320-37172-7	NAWC-031518-RW-054	Water	03/15/18 11:10	03/16/18 09:05
320-37172-8	NAWC-031518-FRB-054	Water	03/15/18 11:05	03/16/18 09:05

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 214409

Lab Sample ID: IC 320-214409/4 Client Sample ID: _____

Date Analyzed: 03/22/18 14:53 Lab File ID: 2018.03.22_537ICAL_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.68	Baseline	roycea	03/22/18 15:17
Perfluorooctanoic acid (PFOA)	1.87	Baseline	roycea	03/22/18 15:18
Perfluorooctanesulfonic acid (PFOS)	2.13	Assign Peak	roycea	03/22/18 15:19

Lab Sample ID: IC 320-214409/5 Client Sample ID: _____

Date Analyzed: 03/22/18 14:57 Lab File ID: 2018.03.22_537ICAL_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.68	Baseline	roycea	03/22/18 15:21
Perfluorooctanoic acid (PFOA)	1.88	Baseline	roycea	03/22/18 15:21
Perfluorooctanesulfonic acid (PFOS)	2.13	Peak assignment corrected	roycea	03/22/18 15:20

Lab Sample ID: IC 320-214409/6 Client Sample ID: _____

Date Analyzed: 03/22/18 15:02 Lab File ID: 2018.03.22_537ICAL_006.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.68	Baseline	roycea	03/22/18 15:23
Perfluorooctanesulfonic acid (PFOS)	2.13	Peak assignment corrected	roycea	03/22/18 15:22

Lab Sample ID: IC 320-214409/7 ICISAV Client Sample ID: _____

Date Analyzed: 03/22/18 15:07 Lab File ID: 2018.03.22_537ICAL_007.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.13	Peak assignment corrected	roycea	03/22/18 15:23

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 214409

Lab Sample ID: IC 320-214409/8 Client Sample ID: _____

Date Analyzed: 03/22/18 15:11 Lab File ID: 2018.03.22_537ICAL_008.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.13	Peak assignment corrected	roycea	03/22/18 15:31

Lab Sample ID: IC 320-214409/9 Client Sample ID: _____

Date Analyzed: 03/22/18 15:16 Lab File ID: 2018.03.22_537ICAL_009.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	barnettj	03/22/18 16:01

Lab Sample ID: CCVL 320-214409/11 Client Sample ID: _____

Date Analyzed: 03/22/18 15:25 Lab File ID: 2018.03.22_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	barnettj	03/22/18 16:07

Lab Sample ID: ICV 320-214409/13 Client Sample ID: _____

Date Analyzed: 03/22/18 15:35 Lab File ID: 2018.03.22_537ICAL_013.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	barnettj	03/22/18 16:08

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 215618

Lab Sample ID: CCVL 320-215618/1 Client Sample ID: _____

Date Analyzed: 03/30/18 02:25 Lab File ID: 2018.03.30_537A_004.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	barnettj	03/30/18 13:12

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 215653

Lab Sample ID: CCV 320-215653/1 CCVIS Client Sample ID: _____

Date Analyzed: 03/30/18 10:10 Lab File ID: 2018.03.30_537AA_014.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	barnettj	03/30/18 13:58

Lab Sample ID: LLCS 320-215177/2-A Client Sample ID: _____

Date Analyzed: 03/30/18 10:24 Lab File ID: 2018.03.30_537AA_017.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	barnettj	03/30/18 13:42

Lab Sample ID: LLCSD 320-215177/3-A Client Sample ID: _____

Date Analyzed: 03/30/18 10:28 Lab File ID: 2018.03.30_537AA_018.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Baseline	barnettj	03/30/18 13:43

Lab Sample ID: 320-37172-1 Client Sample ID: WGNA-031518-RW-0617

Date Analyzed: 03/30/18 10:33 Lab File ID: 2018.03.30_537AA_019.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Baseline	barnettj	03/30/18 13:46
Perfluorononanoic acid (PFNA)	2.13	Split Peak	barnettj	03/30/18 13:46

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 215653

Lab Sample ID: 320-37172-3 Client Sample ID: WGNA-031518-RW-0755

Date Analyzed: 03/30/18 10:42 Lab File ID: 2018.03.30_537AA_021.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.40	Peak assignment corrected	barnettj	03/30/18 13:45
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	barnettj	03/30/18 13:45

Lab Sample ID: 320-37172-5 Client Sample ID: NAWC-031518-RW-0569

Date Analyzed: 03/30/18 10:52 Lab File ID: 2018.03.30_537AA_023.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorononanoic acid (PFNA)	2.12	Split Peak	barnettj	03/30/18 13:45
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	barnettj	03/30/18 13:44

Lab Sample ID: 320-37172-7 Client Sample ID: NAWC-031518-RW-054

Date Analyzed: 03/30/18 11:01 Lab File ID: 2018.03.30_537AA_025.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorononanoic acid (PFNA)	2.12	Missed Peak	barnettj	03/30/18 13:44
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	barnettj	03/30/18 13:43

Lab Sample ID: CCV 320-215653/13 CCVIS Client Sample ID: _____

Date Analyzed: 03/30/18 11:06 Lab File ID: 2018.03.30_537AA_026.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	barnettj	03/30/18 13:43

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 215655

Lab Sample ID: CCV 320-215655/13 CCVIS Client Sample ID: _____

Date Analyzed: 03/30/18 11:06 Lab File ID: 2018.03.30_537AA_026.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	barnettj	03/30/18 13:43

Lab Sample ID: CCV 320-215655/16 CCVIS Client Sample ID: _____

Date Analyzed: 03/30/18 11:20 Lab File ID: 2018.03.30_537AA_029.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	barnettj	03/30/18 13:48

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37172-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-ICV_00030	07/30/18	02/15/18	MeOH/H2O, Lot 067374	10 mL	LC537-IS_00059	1000 uL	13C2-PFOA	10 ng/mL
.LC537-IS_00059	07/30/18	01/30/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	28.68 ng/mL
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			LCMPFOS_00021	180 uL	13C4 PFOS	0.1 ug/mL
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C2-PFOA	0.2868 ug/mL
LC537-ICV_00030	07/30/18	02/15/18	MeOH/H2O, Lot 067374	10 mL	LC537-SU_00059	1000 uL	13C2-PFOA	50 ug/mL
					LC537ICIM2_00001	400 uL	13C4 PFOS	47.8 ug/mL
							13C2 PFDA	10 ng/mL
							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
..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
..LC537ICIM2_00001	08/15/18	02/15/18	Methanol, Lot 090285	10 mL	LC537ICIM_00020	0.5 mL	13C2 PFHxA	50 ug/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-PFHxA2_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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37172-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC537-PFHpa2_00012	08/15/18	02/15/18	Methanol, Lot 09092	23.95 mL	LC537_PFHpa2_00002	0.0479 g	Perfluoroheptanoic acid (PFHpA)	2000 ug/mL
....LC537_PFHpa2_00002	06/13/22	Afla Aesar, Lot 10200390			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	1 g/g
...LC537-PFHxS2_00009	08/15/18	02/15/18	Methanol, Lot 090285	25.87 mL	LC537_PFHxS2_00002	0.0569 g	Perfluorohexanesulfonic acid (PFHxS)	2000.19 ug/mL
....LC537_PFHxS2_00002	06/08/22	Santa Cruz Biotechnology, Lot G2516			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA2_00010	08/15/18	02/15/18	Methanol, Lot 090285	16.58 mL	LC537 PFNA2_00002	0.0333 g	Perfluorononanoic acid (PFNA)	2000.41 ug/mL
....LC537 PFNA2_00002	06/14/22	Aldrich, Lot MKCC0699			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.996 g/g
...LC537-PFOA2_00011	08/15/18	02/15/18	Methanol, Lot 090285	22.96 mL	LC537 PFOA2_00002	0.0464 g	Perfluorooctanoic acid (PFOA)	2000.7 ug/mL
....LC537 PFOA2_00002	06/09/22	Afla Aesar, Lot 10199078			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.99 g/g
...LC537-PFOS2_00011	08/15/18	02/15/18	Methanol, Lot 090285	14.71 mL	LC537_PFOS2_00002	0.0378 g	Perfluorooctanesulfonic acid (PFOS)	2001.01 ug/mL
....LC537_PFOS2_00002	06/14/22	Sigma, Lot BCBQ0108V			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.7787 g/g
LC537-IS_00061	08/27/18	02/27/18	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
					(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)	
							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
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LC537-MSP_00032	04/01/18	01/30/18	Methanol, Lot 141039	40000 uL	LC537SPIM_00026	333.4 uL	13C4 PFOS	47.8 ug/mL
							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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37172-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..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	04/01/18	01/30/18	Methanol, Lot 090285	48.7 mL	LC537_PFOS_00002	0.0974 g	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-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
..LCMPFHxA_00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(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
LC537-SU_00059	2 mL	13C4 PFOS	28.68 ng/mL					
		13C2 PFDA	10 ng/mL					
		13C2 PFHxA	10 ng/mL					

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37172-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
.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		
..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 BCM2579V		(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		

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37172-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
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		
					Perfluorooctanesulfonic acid (PFOS)	20.0854 ng/mL				
					LC537-IS_00059	2 mL	13C2-PFOA	10 ng/mL		
LC537-SU_00059	2 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	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		

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37172-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC537-PFOS_00009	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-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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37172-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
....LC537_PFB_S_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-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
LC537-SU_00059	2 mL	13C4 PFOS	28.68 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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37172-1

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
					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-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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37172-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	80.3416 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 BCM2579V		(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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37172-1

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
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-LSP_00029	04/01/18	01/30/18	Methanol, Lot 090285	40000 uL	LC537SPIM_00026	100 uL	Perfluorobutane Sulfonate (PFBS)	225 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	225 ng/mL
							Perfluoroheptanoic acid (PFHpA)	25.0027 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	75.0184 ng/mL
							Perfluorononanoic acid (PFNA)	50.012 ng/mL
							Perfluorooctanoic acid (PFOA)	50.2723 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	100.419 ng/mL
.LC537SPIM_00026	04/01/18	01/30/18	Methanol, Lot 104453	20000 uL	LC537-PFBS_00009	900 uL	Perfluorobutane Sulfonate (PFBS)	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	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	Perfluorobutane Sulfonate (PFBS)	2 mg/mL
							Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
...LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutane Sulfonate (PFBS)	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-SU_00062	08/27/18	02/27/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					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

3050 Spruce Street, Saint Louis, MO 63103, USA

Website: www.sigmaaldrich.com

Email USA: techserv@sial.com

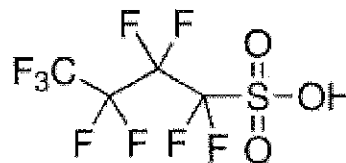
Outside USA: eurtechserv@sial.com

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 %

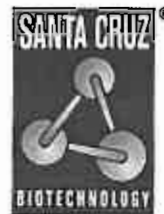
Jamie Gleason, Manager
 Quality Control
 Milwaukee, Wisconsin US

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

F: 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

R: 4/1/15 4V

Certificate of Analysis

Product Name: PERFLUOROHEPTANOIC ACID
 99 %
Product Number: 342041
Batch Number: BCBM2579V
Brand: Aldrich
CAS Number: 375-85-9
Formula: $CF_3(CF_2)_5CO_2H$
Formula Weight: 364.06
Quality Release Date: 06 DEC 2013
Recommended Retest Date: OCT 2018

PFHpA

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

Dr. Claudia Geitner
 Manager Quality Control
 Buchs, Switzerland

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_PFHpA2_00002

Certificate of analysis

r:6.13.17 SW

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

PFHe A

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

This document has been electronically generated and does not require a signature.

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Reagent

LC537_PFHxS_00002

r: 4/1/15 stw

Certificate of Analysis

Product Name: TRIDECAFLUOROHEXANE-1-SULFONIC ACID POTASSIUM SALT
 >= 98.0 % T

Product Number: 50929

Batch Number: BCBL3545V

Brand: Aldrich

CAS Number: 3871-99-6

Formula: C₆F₁₃KO₃S

Formula Weight: 438.20

Quality Release Date: 20 JUN 2013

PFH₁₃S-K

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

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

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

stw 4/1/15

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

Reagent

LC537_PFHxS2_00002

n: 6-8-17 SKJ

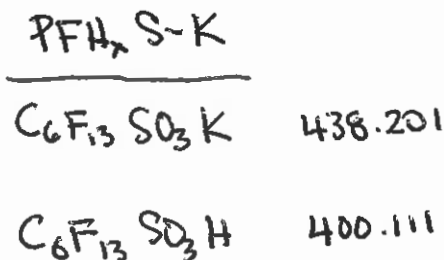


The Future of Science

CERTIFICATE OF ANALYSIS

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

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



MW correction = $\frac{400.11}{438.201} = 0.91307$ PFH₁₃S
 CAS# 355-46-4

Purity $\frac{1}{9}$ MW correction = 90.9%

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

Reagent

LC537_PENA_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 CAS: 375-95-1	Lot: QN44F	

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_PFN2_00002

P: 6.14.17 SKW

3050 Spruce Street, Saint Louis, MO 63103, USA

Website: www.sigmaaldrich.com

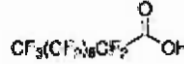
Email USA: techserv@sial.com

Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:
Perfluorononanoic acid - 97%

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



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

Michael Grady, Manager
Quality Control
Milwaukee, WI US

PFNA

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

Reagent

LC537_PFOA_00003

R: 11/30/16 SKV
PFA

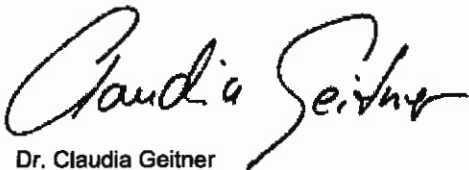
SIGMA-ALDRICH

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

Certificate of Analysis

Product Name: PENTADECAFLUOROOCCTANOIC 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 %)	≥ 98.0%	100.0%
IDENTIFICATION (LC-MS)	IDENTITY CONFORMS	CONFORMS



Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

Reagent

LC537_PFOA2_00002

Certificate of analysis

P: 6/21/17 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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Order our products online www.alfa.com

ThermoFisher
SCIENTIFIC

Reagent

LC537_PFO5_00003

n: 11/30/16 SV
PFOS

SIGMA-ALDRICH

CERTIFICATE OF ANALYSIS

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

Seelze, 22.04.2014/524107/14/08646

Order-No.:

Customer-No.:

Order-Code:

Quantity:

Production Date: 17.Apr.2014

Expiry Date: 17.Apr.2019

Article/Product: 33829

Batch : SZBE107XV

Heptadecafluorooctanesulfonic acid potassium salt OEKANAL[®]

Reference Material (RM)

1. General Information

Formula: C₈F₁₇KO₃S

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

Usage : PFOS

Molar mass: 538.22 g/Mole

Recomm. storage temp.: roomtemp.

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

2. Batch Analysis

Identity

Assay (LC-MS)

Date of Analysis

complying

98 %

22.Apr.2014

3. Advice and Remarks

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

Sigma-Aldrich Laborchemikalien GmbH
Quality Management SA-LC

Reagent

LC537_PFOs2_00002

R: 6.14.17 SKV

Certificate of Analysis

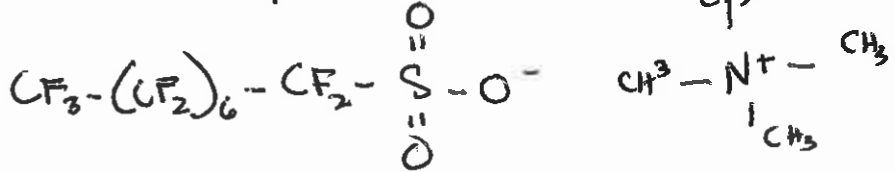
Product Name: HEPTADECAFLUOROOCCTANESULFONIC ACID TETRAETHYLAMMONIUM SALT
 98 %
Product Number: 365289
Batch Number: BCBQ0108V
Brand: Aldrich
CAS Number: 56773-42-3
Formula: $CF_3(CF_2)_6CF_2SO_3N(C_2H_5)_4$
Formula Weight: 629.37
Quality Release Date: 11 JUN 2015

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

Claudia Geitner
 Dr. Claudia Geitner
 Manager Quality Control
 Buchs, Switzerland

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

Purity & MW correction = 77.87%



	$C_{17}F_{17}SO_3^+H$	$C_8H_{20}N$
C = 12.011	96.088	96.088
F = 18.998	322.966	-
S = 32.066	32.066	-
O = 16.000	47.997	20.60
H = 1.008	1.008	14.007
N = 14.007	-	14.007
	<hr/>	<hr/>
	500.125	130.255

Reagent

LCM2PFOA_00007

P: 5/11/17 SKV



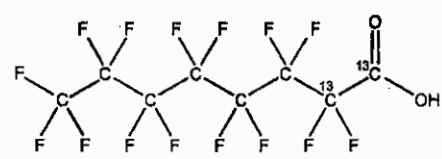
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: M2PFOA0216

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆HF₁₆O₂
CONCENTRATION: 50 ± 2.5 µg/ml

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

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: ≥99% ¹³C
(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:

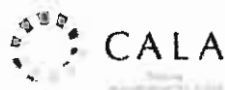
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

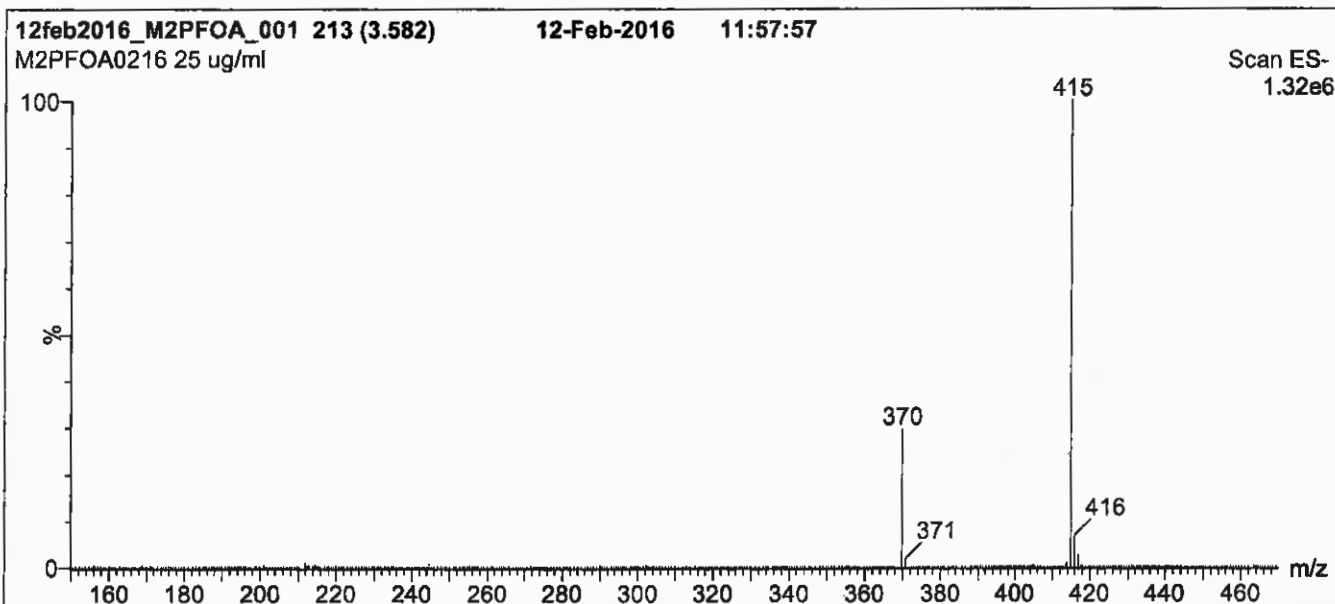
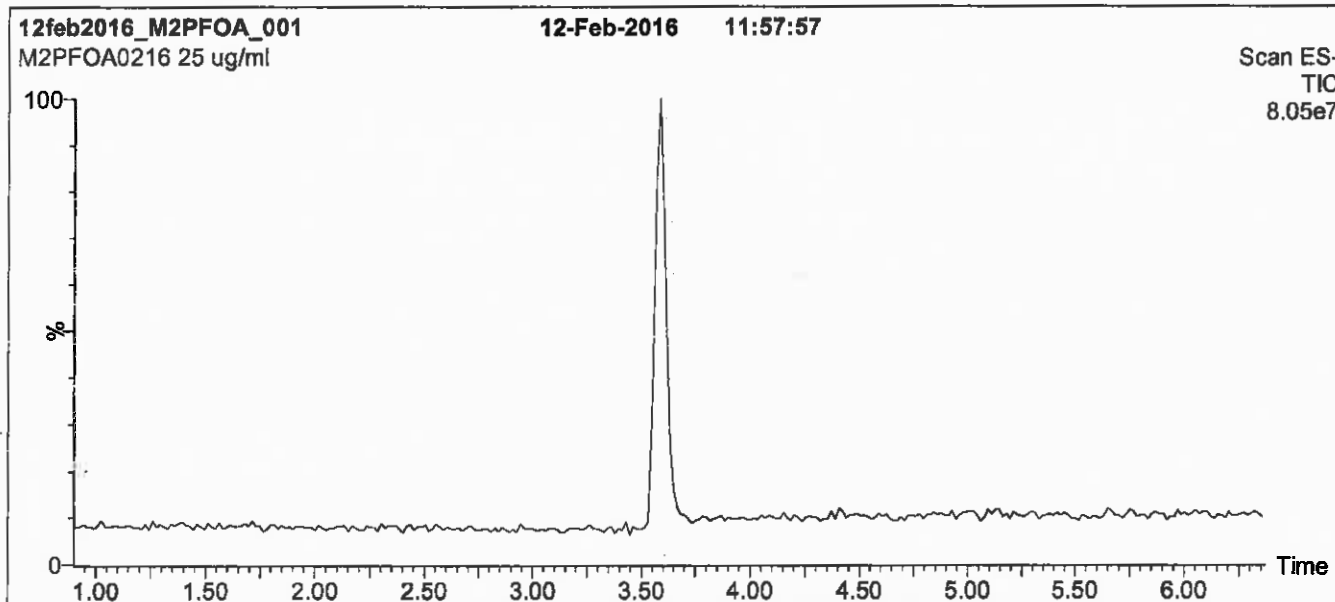
QUALITY MANAGEMENT:

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).



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



Conditions for Figure 1:

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

Chromatographic Conditions

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

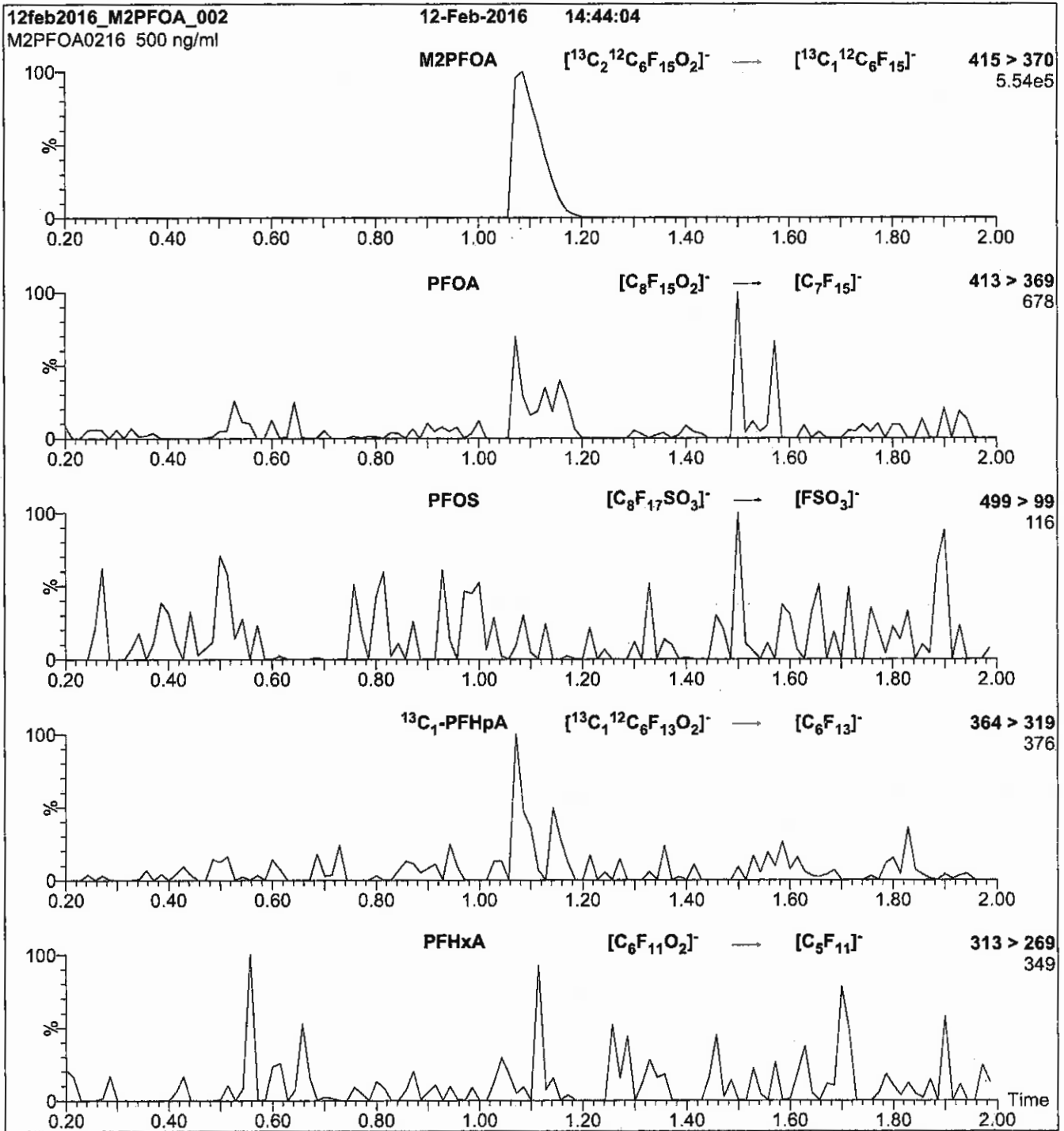
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% MeOH / 20% H₂O

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

MS Parameters

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

Reagent

LCMPFDA_00012

R: SBC 12/21/16



814255

ID: LCMPPFDA_00012

Exp: 09/30/21 Prpd: SBC

13C2-Perfluorodecanoic a



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDA **LOT NUMBER:** MPFDA0916
COMPOUND: Perfluoro-n-[1,2-¹³C₂]decanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈HF₁₉O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 516.07
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

LAST TESTED: (mm/dd/yyyy) 09/30/2016

EXPIRY DATE: (mm/dd/yyyy) 09/30/2021

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chríttim

Date: 10/07/2016
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

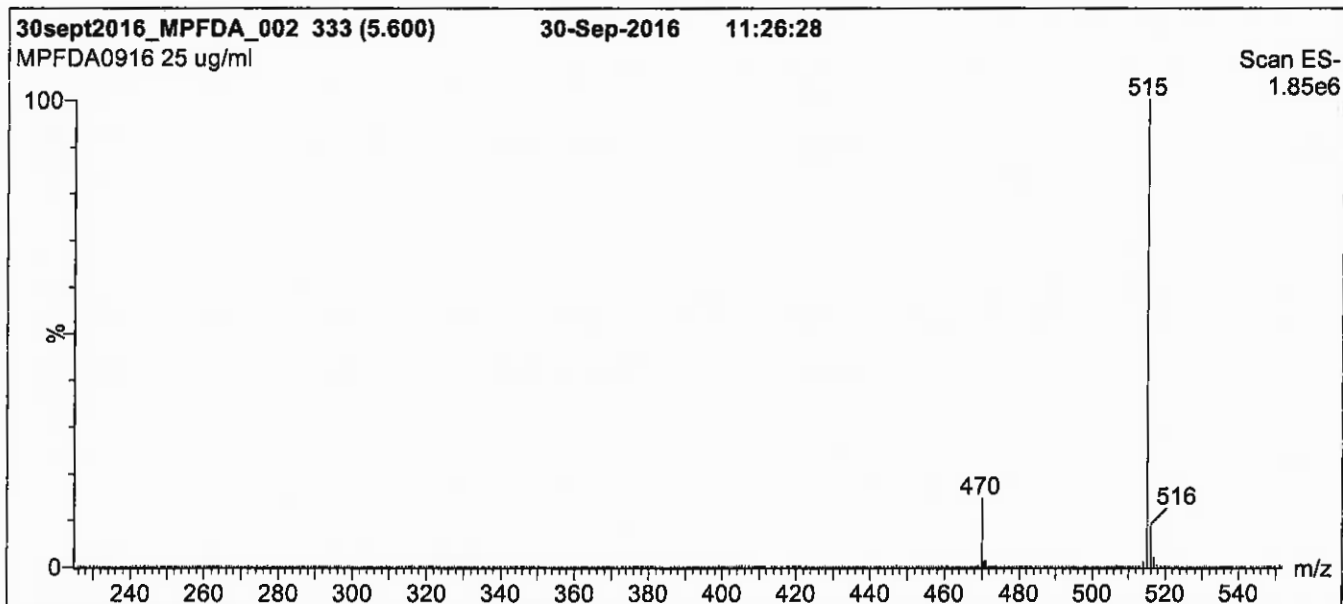
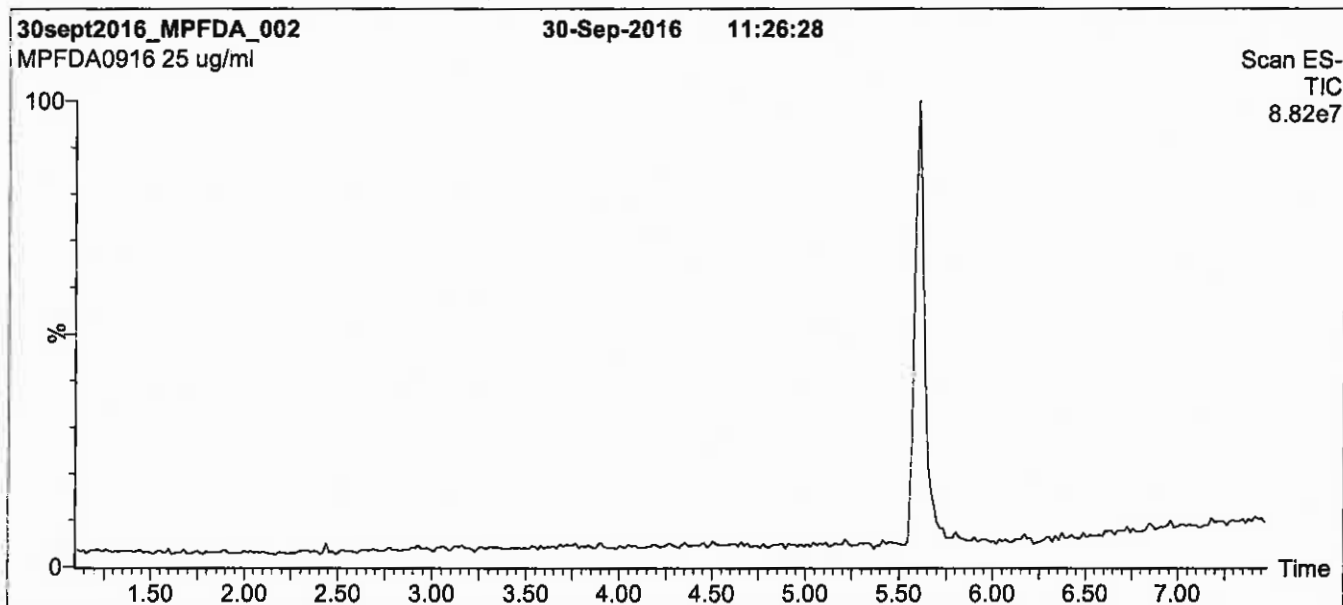
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

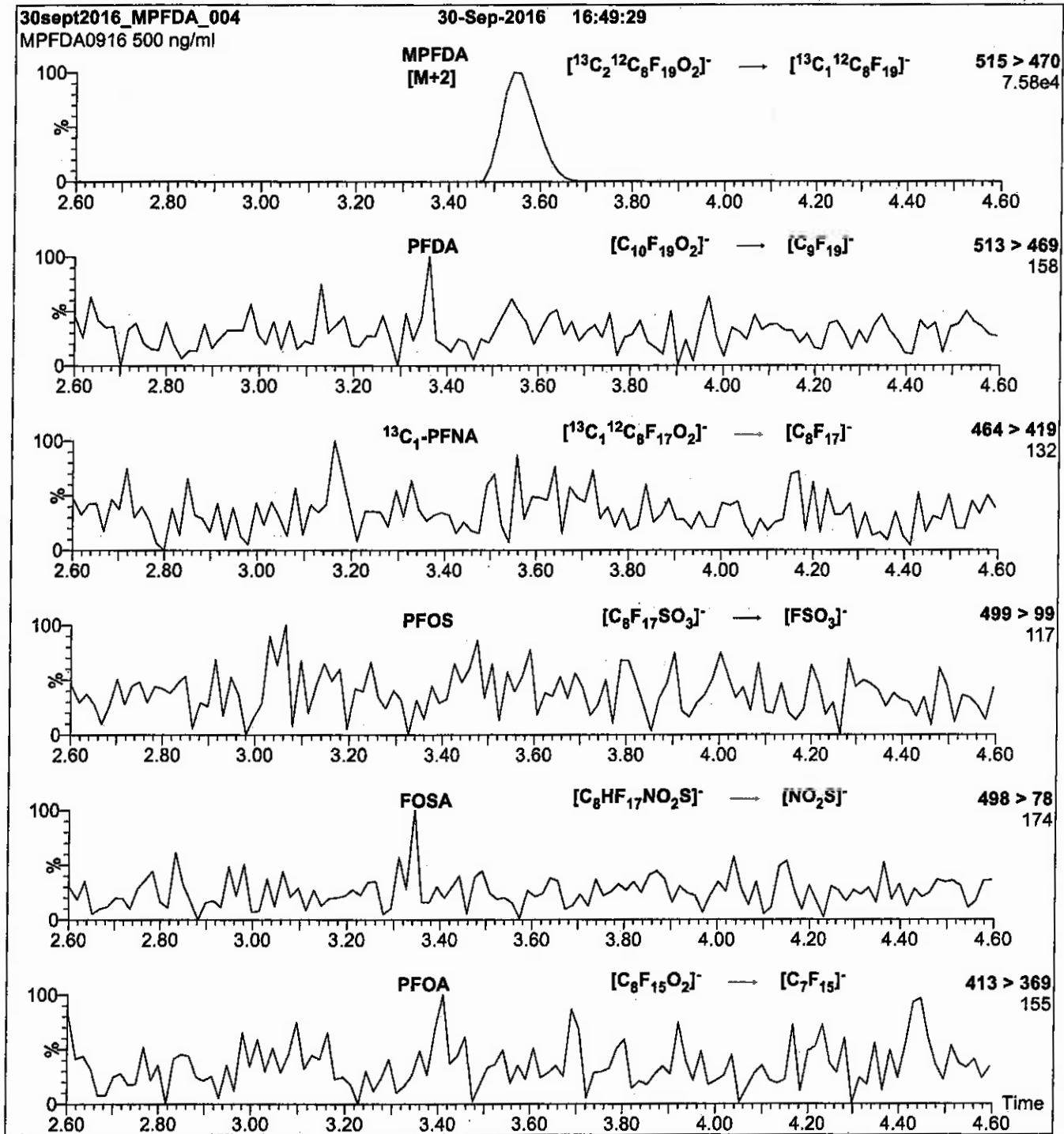
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCMPFHxA_00015

r: 5/10/17 skd



WELLINGTON LABORATORIES

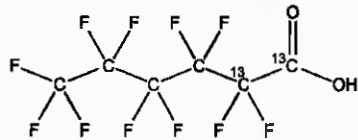
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: MPFHxA1116

STRUCTURE:

CAS #: Not available



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

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

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

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim

Date: 12/13/2016
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

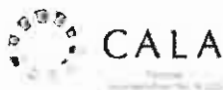
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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

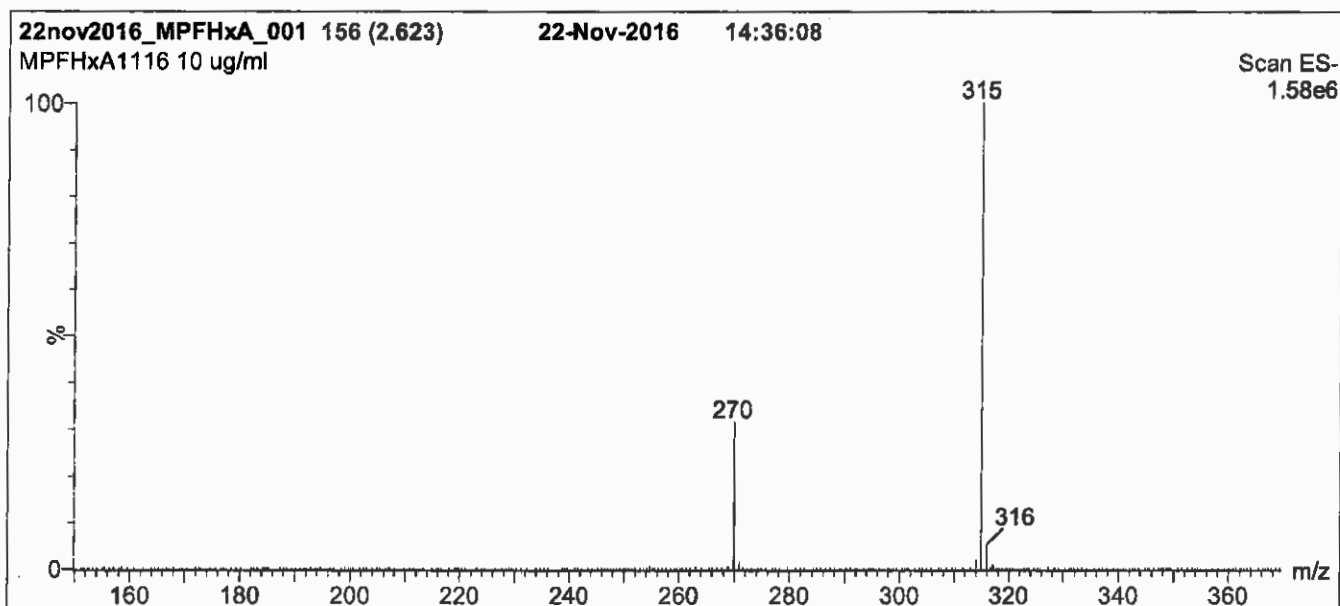
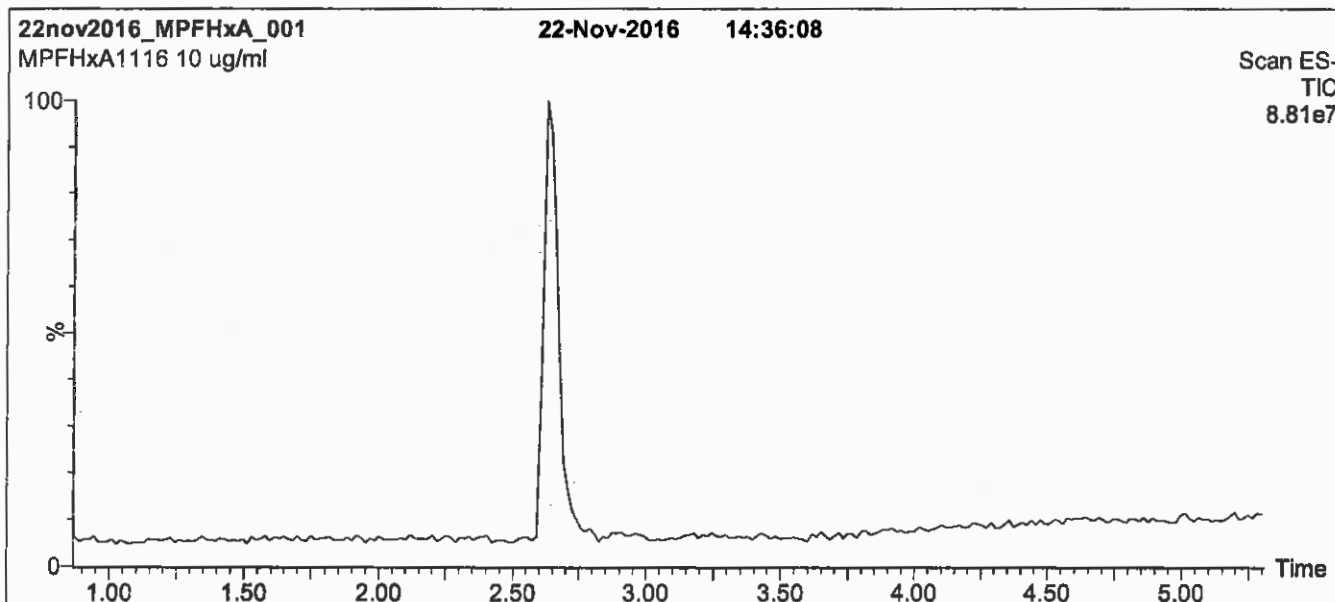
QUALITY MANAGEMENT:

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



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

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

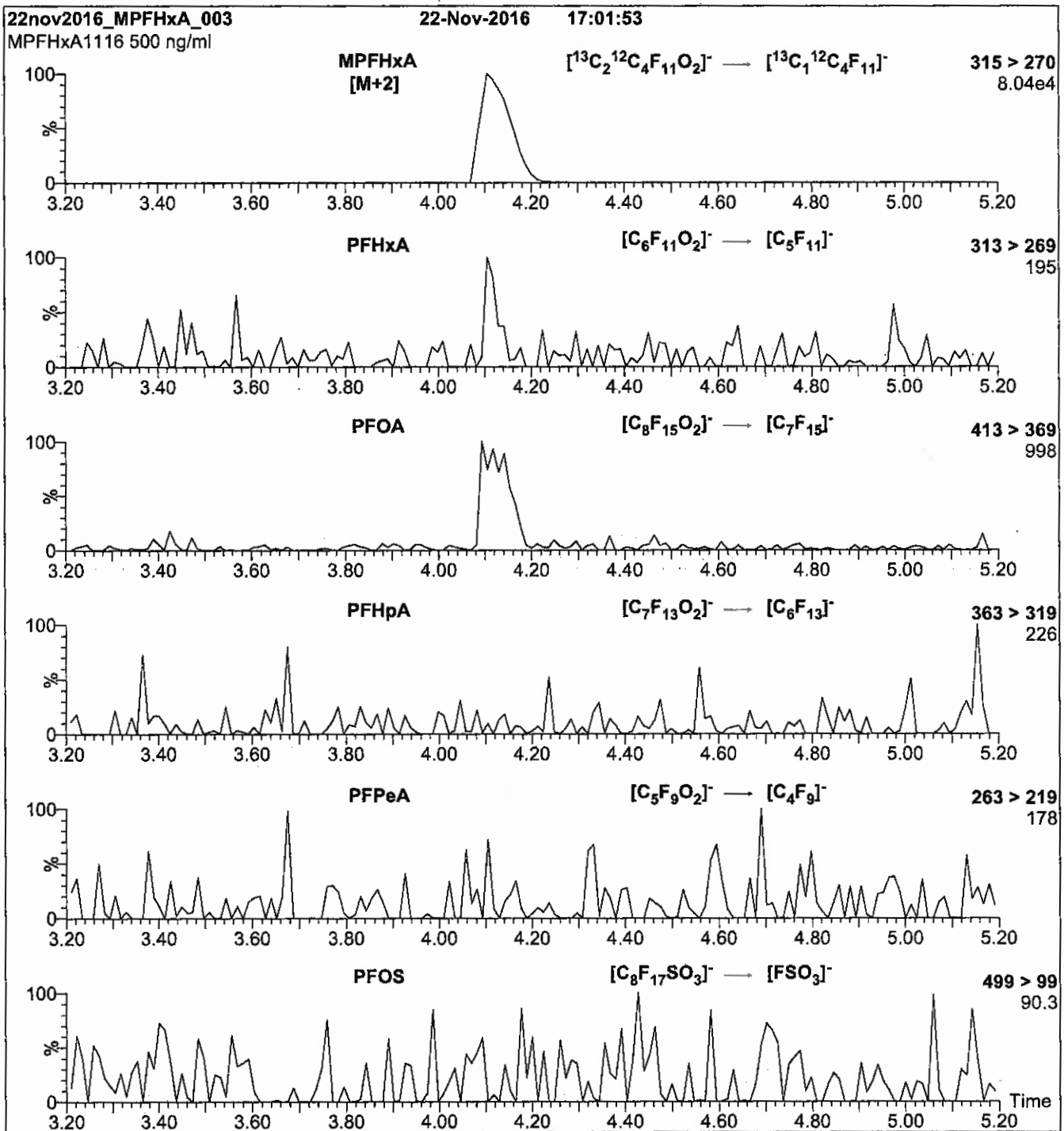
Mobile phase: Gradient
 Start: 40% (80:20 MeOH:ACN) / 60% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 2 min
 before returning to initial conditions over 0.5 min.
 Time: 10 min

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

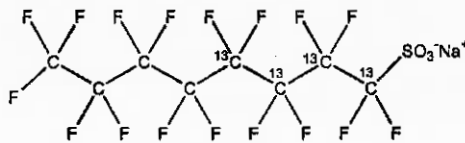
r: 5/6/17 SKV



**WELLINGTON
LABORATORIES**

**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

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



MOLECULAR FORMULA: 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:  Date: 12/14/2016
B.G. Chittim (mm/dd/yyyy)

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

INTENDED USE:

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

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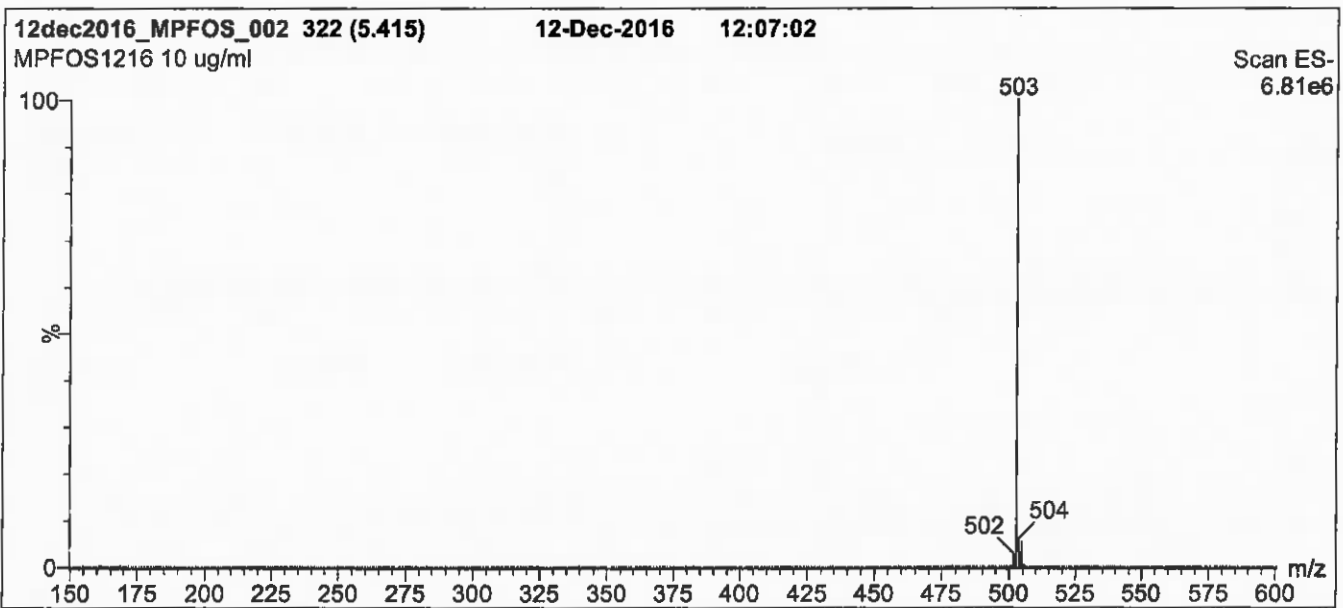
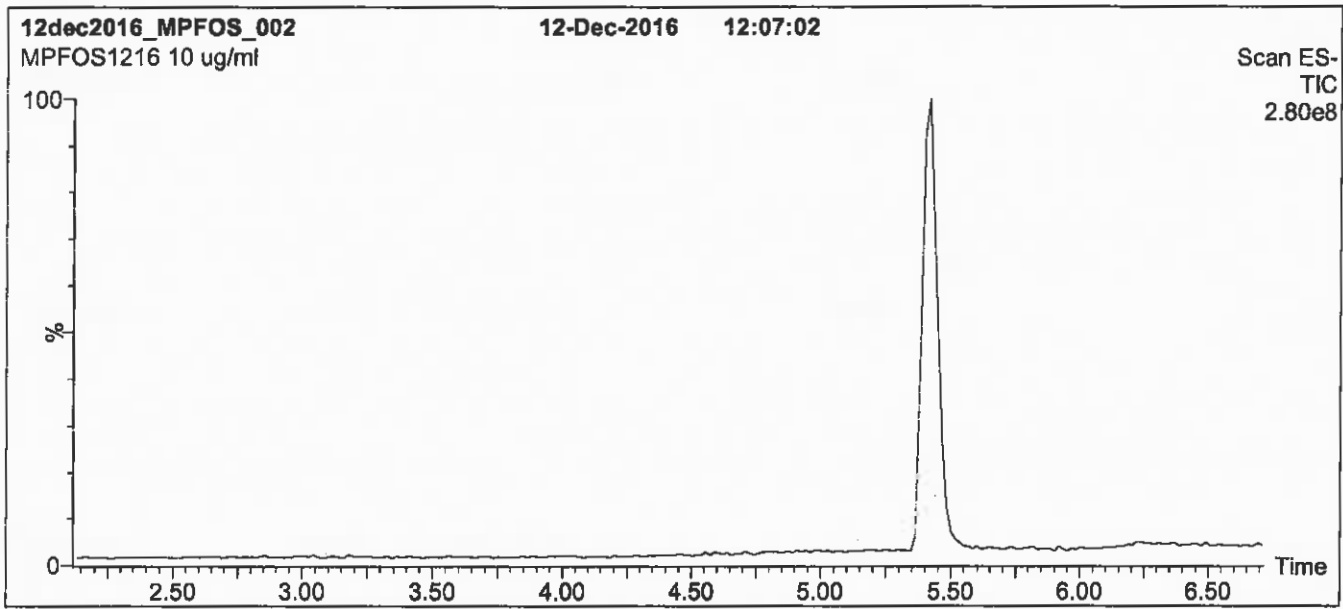
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For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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

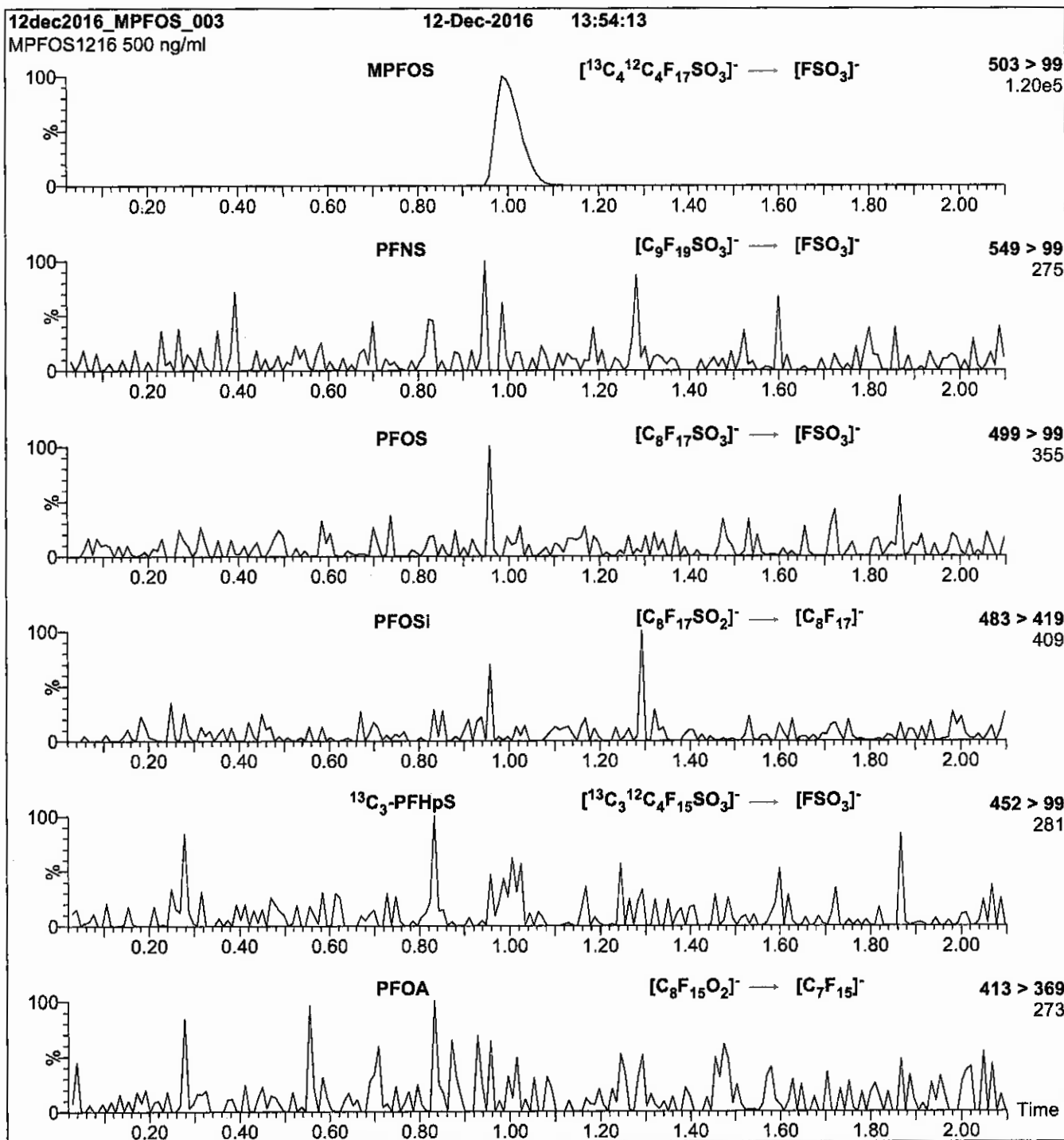
Flow: 300 μ l/min

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.: 320-37172-1

SDG No.: _____

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-031518-RW-061 7	320-37172-1	91	87
WGNA-031518-FRB-06 17	320-37172-2	88	84
WGNA-031518-RW-075 5	320-37172-3	84	81
WGNA-031518-FRB-07 55	320-37172-4	96	88
NAWC-031518-RW-056 9	320-37172-5	94	88
NAWC-031518-FRB-05 69	320-37172-6	81	86
NAWC-031518-RW-054	320-37172-7	91	86
NAWC-031518-FRB-05 4	320-37172-8	85	86
	MB 320-215177/1-A	88	87
	LLCS 320-215177/2-A	97	88
	LLCSD 320-215177/3-A	91	82

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM III
LCMS LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2018.03.30_537AA_017.d

Lab ID: LLCS 320-215177/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LLCS CONCENTRATION (ng/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	40.2	41.5	103	50-150	M
Perfluorooctanoic acid (PFOA)	20.1	20.4	101	50-150	
Perfluorononanoic acid (PFNA)	20.0	20.3 J	102	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.0	30.4	101	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	10.3	103	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.0	97.8	109	50-150	

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL CONTROL STANDARD DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2018.03.30_537AA_018.d

Lab ID: LLCSD 320-215177/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LLCSD CONCENTRATION (ng/L)	LLCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	40.2	41.5	103	0	50	50-150	M
Perfluorooctanoic acid (PFOA)	20.1	19.1 J	95	7	50	50-150	
Perfluorononanoic acid (PFNA)	20.0	19.0 J	95	7	50	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.0	31.1	104	3	50	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	10.5	105	2	50	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.0	99.7	111	2	50	50-150	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Lab File ID: 2018.03.30_537AA_016.d Lab Sample ID: MB 320-215177/1-A
 Matrix: Water Date Extracted: 03/28/2018 10:21
 Instrument ID: A8_N Date Analyzed: 03/30/2018 10:19
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-215177/2-A	2018.03.30_537AA_017.d	03/30/2018 10:24
	LLCSD 320-215177/3-A	2018.03.30_537AA_018.d	03/30/2018 10:28
WGNA-031518-RW-0617	320-37172-1	2018.03.30_537AA_019.d	03/30/2018 10:33
WGNA-031518-FRB-0617	320-37172-2	2018.03.30_537AA_020.d	03/30/2018 10:38
WGNA-031518-RW-0755	320-37172-3	2018.03.30_537AA_021.d	03/30/2018 10:42
WGNA-031518-FRB-0755	320-37172-4	2018.03.30_537AA_022.d	03/30/2018 10:47
NAWC-031518-RW-0569	320-37172-5	2018.03.30_537AA_023.d	03/30/2018 10:52
NAWC-031518-FRB-0569	320-37172-6	2018.03.30_537AA_024.d	03/30/2018 10:56
NAWC-031518-RW-054	320-37172-7	2018.03.30_537AA_025.d	03/30/2018 11:01
NAWC-031518-FRB-054	320-37172-8	2018.03.30_537AA_028.d	03/30/2018 11:15

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 03/22/2018 14:53
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 03/22/2018 15:16
 Calibration ID: 38271

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	1135154	1.88	2676273	2.13		
UPPER LIMIT	1702731	2.38	4014410	2.63		
LOWER LIMIT	567577	1.38	1338137	1.63		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCVL 320-214409/11	1124949	1.87	2668897	2.12		
ICV 320-214409/13	1113554	1.87	2591357	2.12		
CCVL 320-215618/1	1160358	1.87	2610607	2.12		
CCV 320-215653/1 CCVIS	1053878	1.88	2528431	2.12		
MB 320-215177/1-A	1136918	1.87	2690122	2.12		
LLCS 320-215177/2-A	1200640	1.88	2843468	2.12		
LLCSD 320-215177/3-A	1173871	1.88	2660115	2.12		
320-37172-1	WGNA-031518-RW-0617	1147339	1.87	2723654	2.12	
320-37172-2	WGNA-031518-FRB-0617	1134191	1.87	2623862	2.12	
320-37172-3	WGNA-031518-RW-0755	1134982	1.87	2559924	2.12	
320-37172-4	WGNA-031518-FRB-0755	1192820	1.87	2769780	2.12	
320-37172-5	NAWC-031518-RW-0569	1099620	1.87	2671072	2.12	
320-37172-6	NAWC-031518-FRB-0569	1133887	1.87	2560850	2.12	
320-37172-7	NAWC-031518-RW-054	1114148	1.87	2725458	2.12	
CCV 320-215653/13 CCVIS	1026108	1.87	2364007	2.12		
CCV 320-215655/13 CCVIS	1026108	1.87	2364007	2.12		
320-37172-8	NAWC-031518-FRB-054	1132528	1.87	2589452	2.12	
CCV 320-215655/16 CCVIS	1013337	1.87	2424984	2.12		

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Sample No.: CCV 320-215653/1 Date Analyzed: 03/30/2018 10:10
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.30_537AA_01 Heated Purge: (Y/N) N
 Calibration ID: 38271

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1053878	1.88	2528431	2.12		
UPPER LIMIT	1475429	2.38	3539803	2.62		
LOWER LIMIT	737715	1.38	1769902	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-215177/1-A		1136918	1.87	2690122	2.12	
LLCS 320-215177/2-A		1200640	1.88	2843468	2.12	
LLCSD 320-215177/3-A		1173871	1.88	2660115	2.12	
320-37172-1	WGNA-031518-RW-0617	1147339	1.87	2723654	2.12	
320-37172-2	WGNA-031518-FRB-0617	1134191	1.87	2623862	2.12	
320-37172-3	WGNA-031518-RW-0755	1134982	1.87	2559924	2.12	
320-37172-4	WGNA-031518-FRB-0755	1192820	1.87	2769780	2.12	
320-37172-5	NAWC-031518-RW-0569	1099620	1.87	2671072	2.12	
320-37172-6	NAWC-031518-FRB-0569	1133887	1.87	2560850	2.12	
320-37172-7	NAWC-031518-RW-054	1114148	1.87	2725458	2.12	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Sample No.: CCV 320-215653/13 Date Analyzed: 03/30/2018 11:06
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.30_537AA_02 Heated Purge: (Y/N) N
 Calibration ID: 38271

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1026108	1.87	2364007	2.12		
UPPER LIMIT	1436551	2.37	3309610	2.62		
LOWER LIMIT	718276	1.37	1654805	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-215177/1-A		1136918	1.87	2690122	2.12	
LLCS 320-215177/2-A		1200640	1.88	2843468	2.12	
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FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Sample No.: CCV 320-215655/13 Date Analyzed: 03/30/2018 11:06
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.30_537AA_02 Heated Purge: (Y/N) N
 Calibration ID: 38271

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1026108	1.87	2364007	2.12		
UPPER LIMIT	1436551	2.37	3309610	2.62		
LOWER LIMIT	718276	1.37	1654805	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-37172-8	NAWC-031518-FRB-054		1132528	1.87	2589452	2.12

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 PFOS = 13C4 PFOS

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Sample No.: CCV 320-215655/16 Date Analyzed: 03/30/2018 11:20
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.30_537AA_02 Heated Purge: (Y/N) N
 Calibration ID: 38271

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1013337	1.87	2424984	2.12		
UPPER LIMIT	1418672	2.37	3394978	2.62		
LOWER LIMIT	709336	1.37	1697489	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-37172-8	NAWC-031518-FRB-054		1132528	1.87	2589452	2.12

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

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

Column used to flag values outside QC limits

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: WGNA-031518-RW-0617 Lab Sample ID: 320-37172-1
 Matrix: Water Lab File ID: 2018.03.30_537AA_019.d
 Analysis Method: 537 Date Collected: 03/15/2018 09:10
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 252.7(mL) Date Analyzed: 03/30/2018 10:33
 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.: 215653 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	25	J M	40	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	23		20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.4	J	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.6	J	9.9	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	24	J	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	87		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_019.d
 Lims ID: 320-37172-A-1-A
 Client ID: WGNA-031518-RW-0617
 Sample Type: Client
 Inject. Date: 30-Mar-2018 10:33:30 ALS Bottle#: 9 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37172-a-1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:47:07

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	1.396	0.0	1.000	557457	6.18		144	
298.90 > 99.00	1.396	1.396	0.0	1.000	407279		1.37(0.00-0.00)	263	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.525	0.0	1.000	1070153	9.07		9908	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	215833	1.91		21.1	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.677	0.0	1.000	350499	2.37		141	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.882	-0.008		1147339	10.0		6256	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.882	0.0	1.000	646570	5.83		63.8	
413.00 > 169.00	1.874	1.882	-0.008	0.996	360868		1.79(0.00-0.00)	229	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.124	0.0	1.000	566837	6.41		133	Ma
499.00 > 99.00	2.124	2.124	0.0	1.000	101584		5.58(0.00-0.00)	171	M
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.124	0.0		2723654	28.7		2396	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.132	0.0	1.000	85371	1.02		8.9	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.284	-0.008	1.000	846579	8.72		6768	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

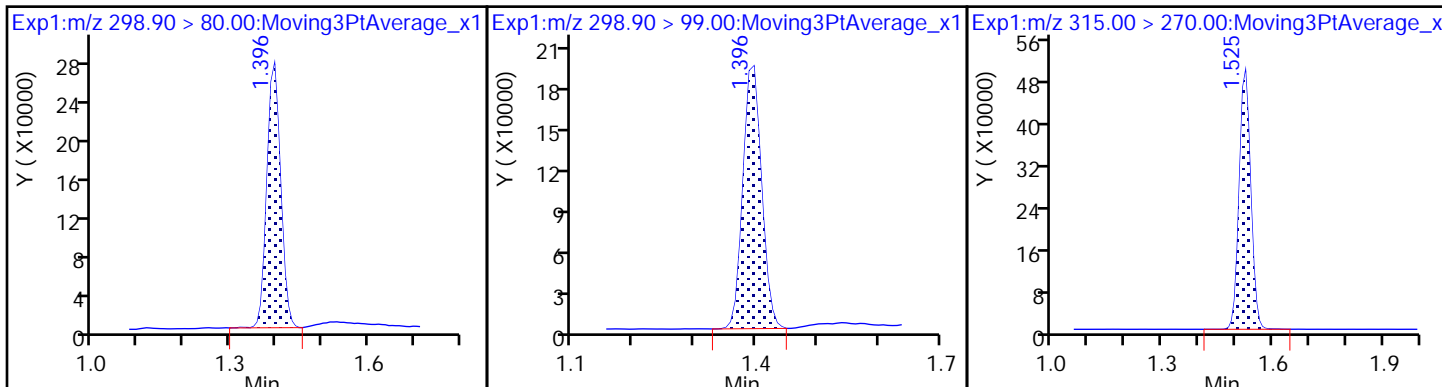
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_019.d
Injection Date: 30-Mar-2018 10:33:30 Instrument ID: A8_N
Lims ID: 320-37172-A-1-A Lab Sample ID: 320-37172-1
Client ID: WGNA-031518-RW-0617
Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

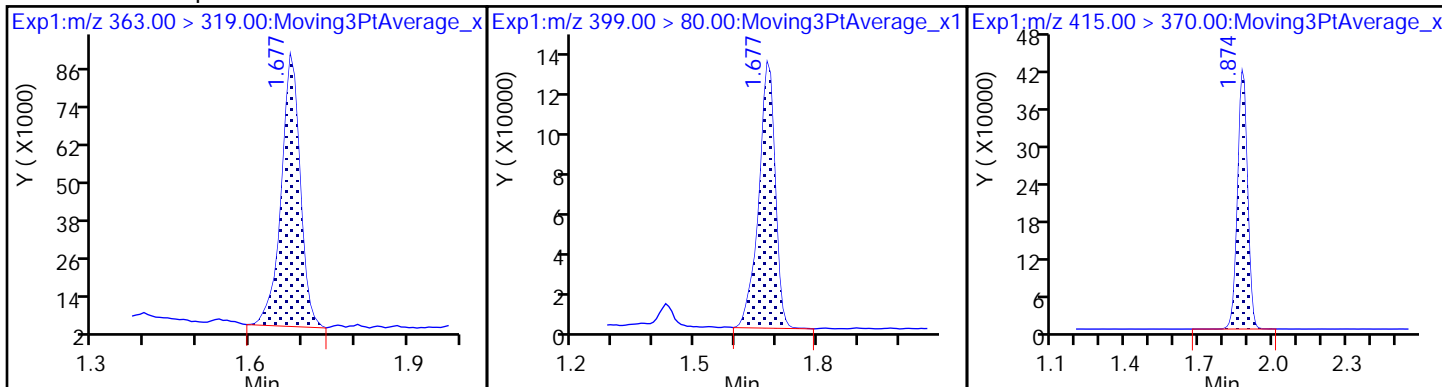
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

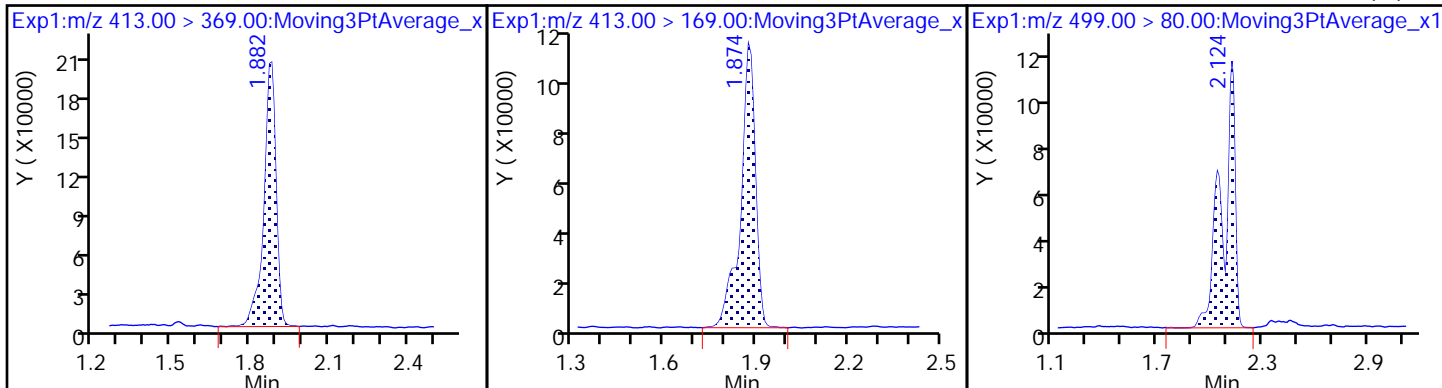
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

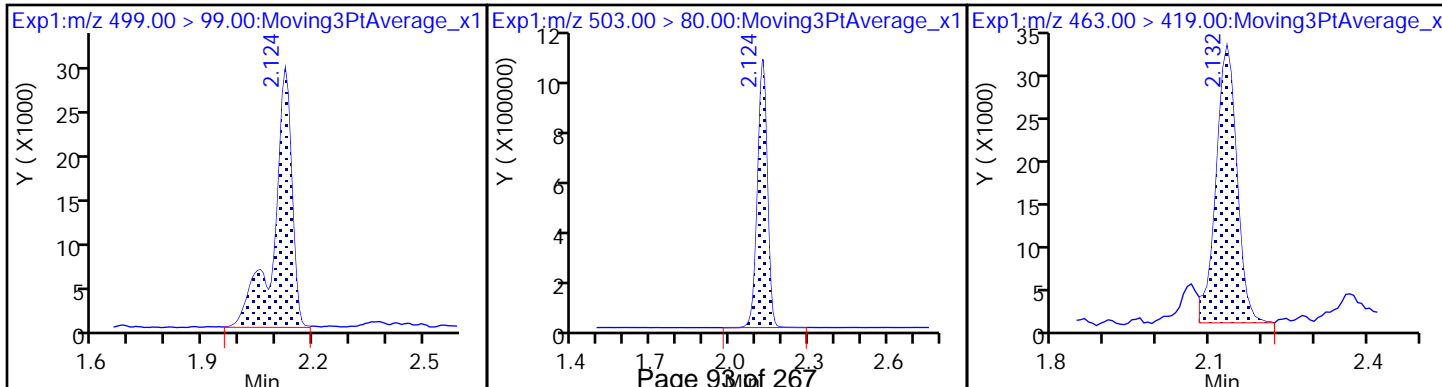
8 Perfluorooctane sulfonic acid (M)



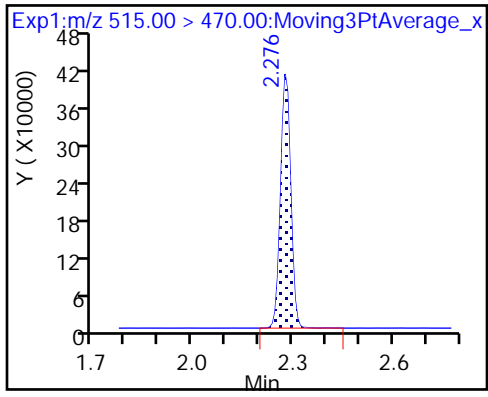
8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_019.d
 Lims ID: 320-37172-A-1-A
 Client ID: WGNA-031518-RW-0617
 Sample Type: Client
 Inject. Date: 30-Mar-2018 10:33:30 ALS Bottle#: 9 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37172-a-1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:47:07

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.07	90.71
\$ 10 13C2 PFDA	10.0	8.72	87.16

TestAmerica Sacramento

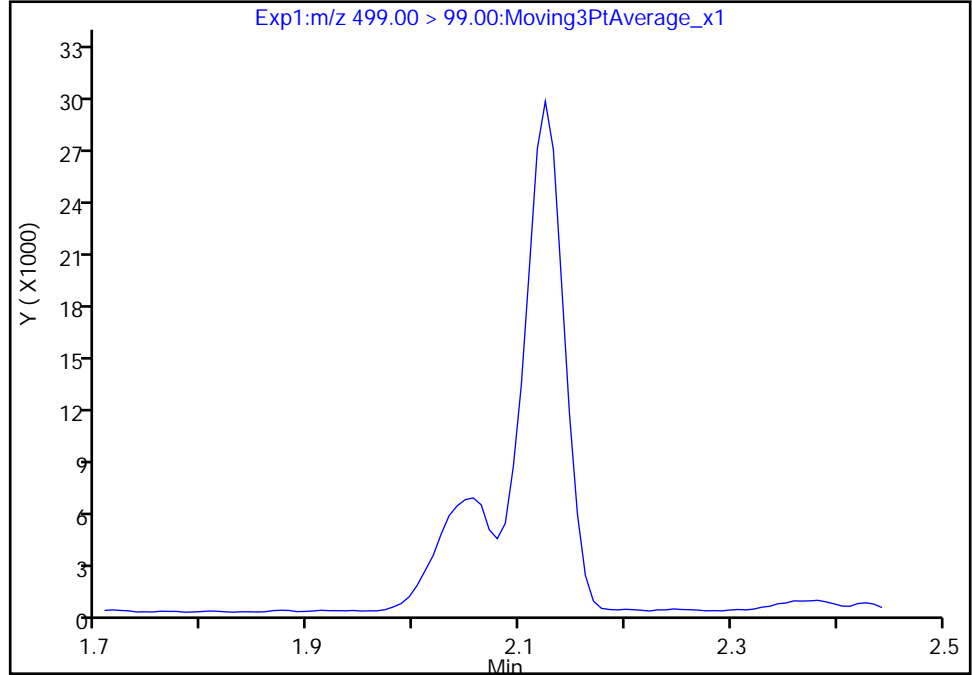
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_019.d
Injection Date: 30-Mar-2018 10:33:30 Instrument ID: A8_N
Lims ID: 320-37172-A-1-A Lab Sample ID: 320-37172-1
Client ID: WGNA-031518-RW-0617
Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

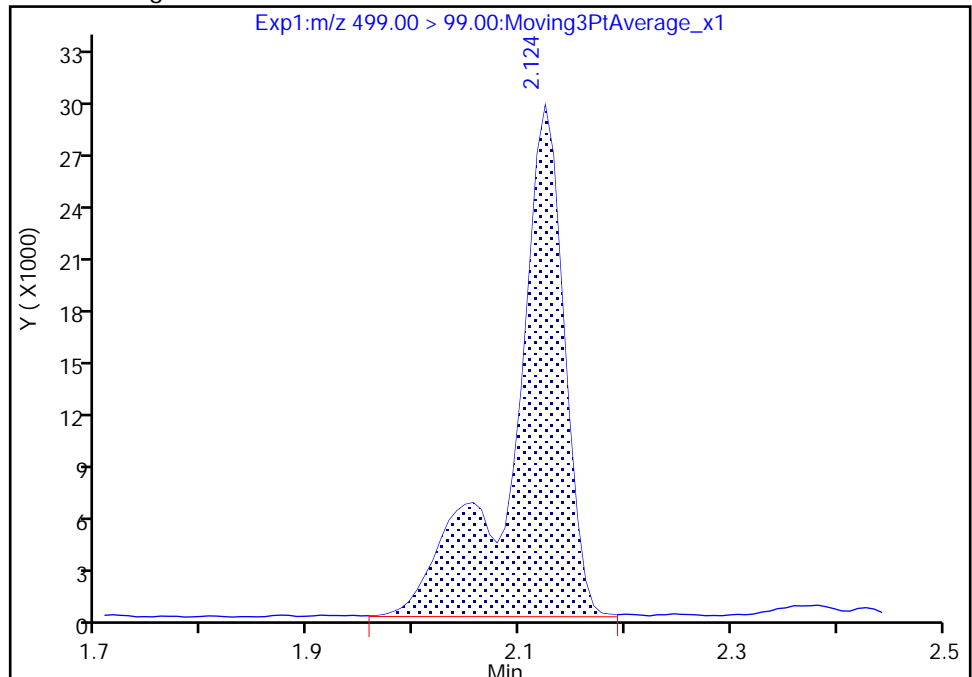
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 101584
Amount: 6.410819
Amount Units: ng/ml



Reviewer: barnettj, 30-Mar-2018 13:46:35
Audit Action: Manually Integrated

TestAmerica Sacramento

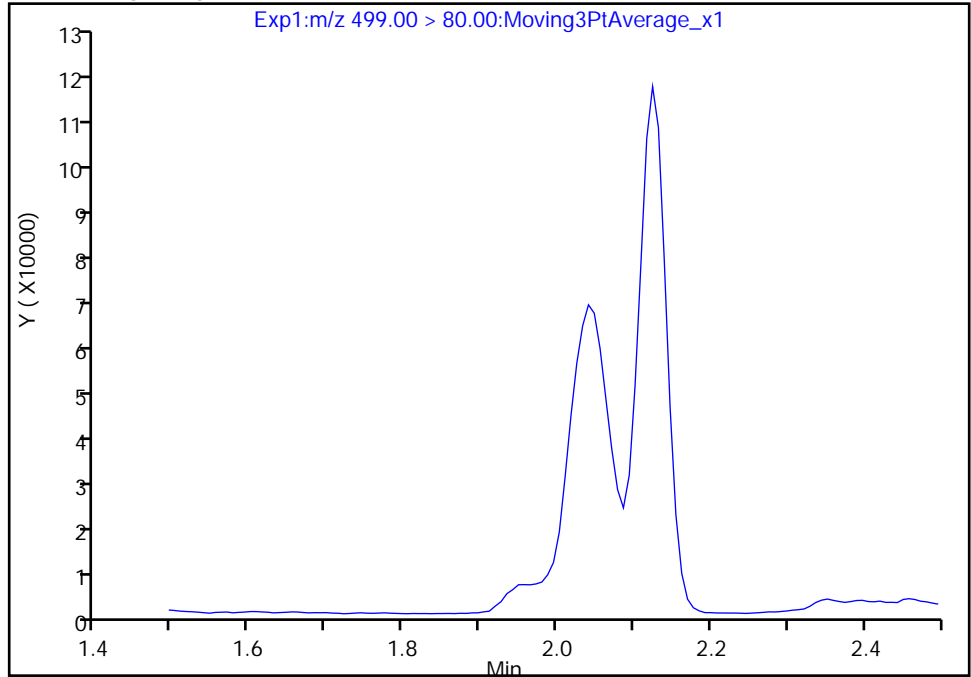
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_019.d
Injection Date: 30-Mar-2018 10:33:30 Instrument ID: A8_N
Lims ID: 320-37172-A-1-A Lab Sample ID: 320-37172-1
Client ID: WGNA-031518-RW-0617
Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 6
Injection Vol: 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

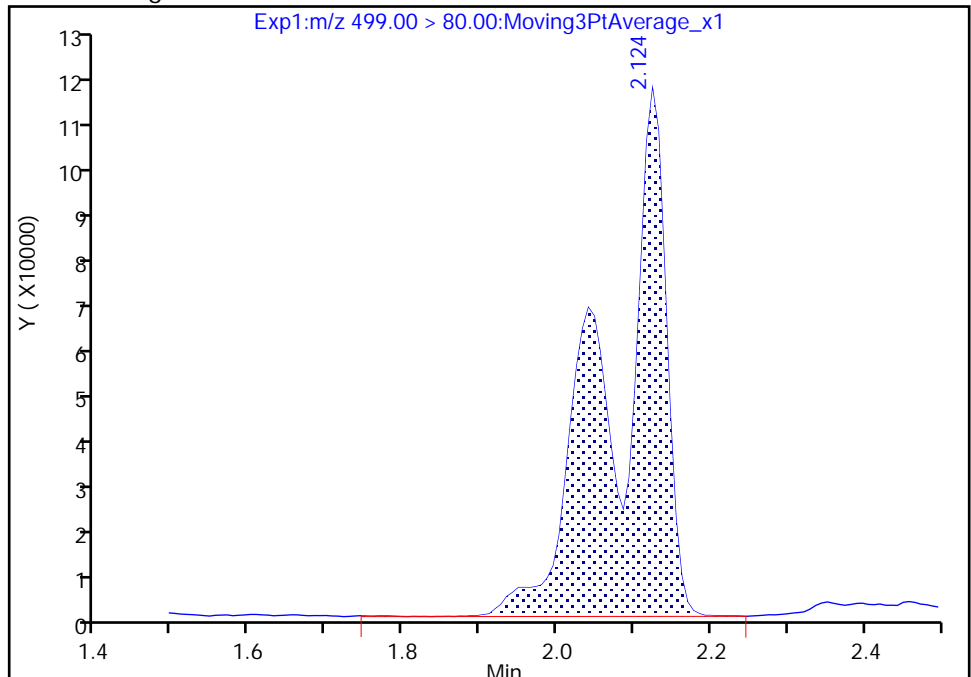
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 566837
Amount: 6.410819
Amount Units: ng/ml



TestAmerica Sacramento

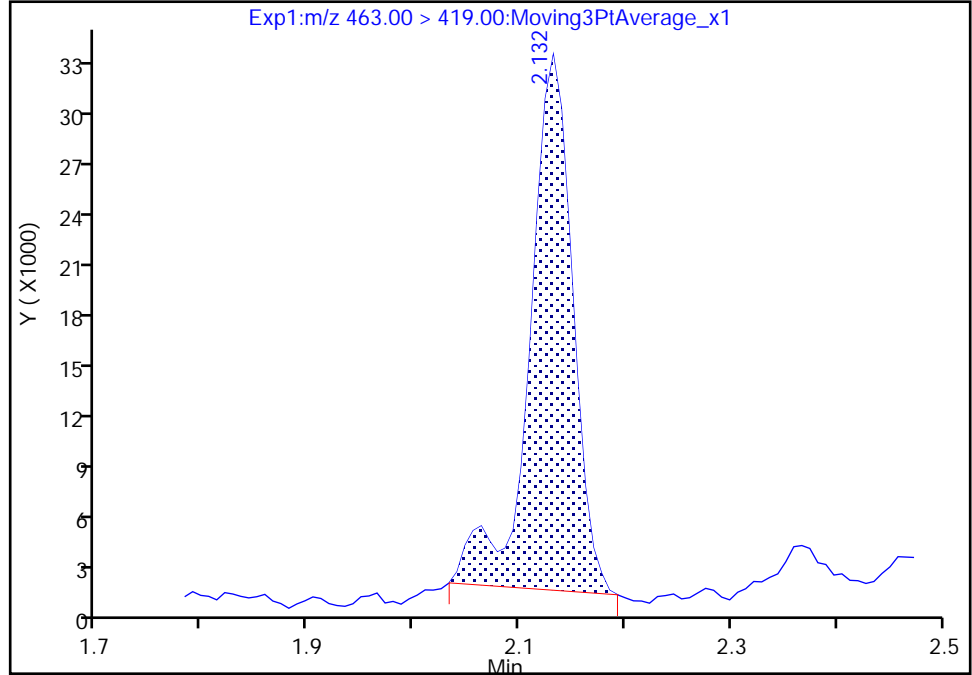
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_019.d
Injection Date: 30-Mar-2018 10:33:30 Instrument ID: A8_N
Lims ID: 320-37172-A-1-A Lab Sample ID: 320-37172-1
Client ID: WGNA-031518-RW-0617
Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

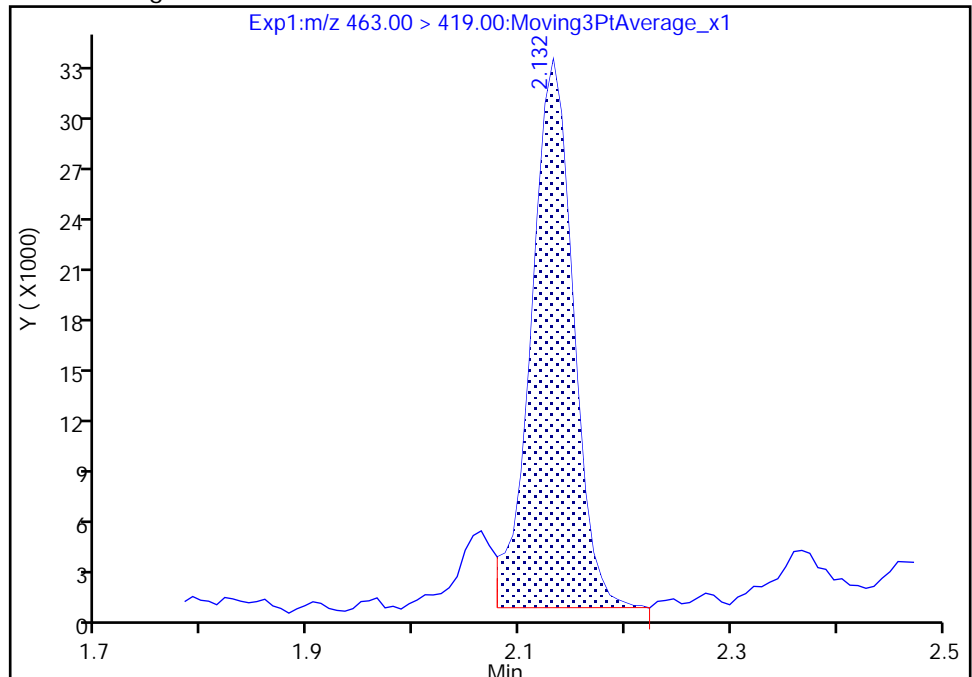
RT: 2.13
Area: 86117
Amount: 1.033004
Amount Units: ng/ml

Processing Integration Results



RT: 2.13
Area: 85371
Amount: 1.024055
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Mar-2018 13:46:57
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: WGNA-031518-FRB-0617 Lab Sample ID: 320-37172-2
 Matrix: Water Lab File ID: 2018.03.30_537AA_020.d
 Analysis Method: 537 Date Collected: 03/15/2018 09:05
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 257.2 (mL) Date Analyzed: 03/30/2018 10:38
 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.: 215653 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
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	88		70-130
STL00996	13C2 PFDA	84		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_020.d
 Lims ID: 320-37172-A-2-A
 Client ID: WGNA-031518-FRB-0617
 Sample Type: Client
 Inject. Date: 30-Mar-2018 10:38:11 ALS Bottle#: 10 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37172-a-2-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK016

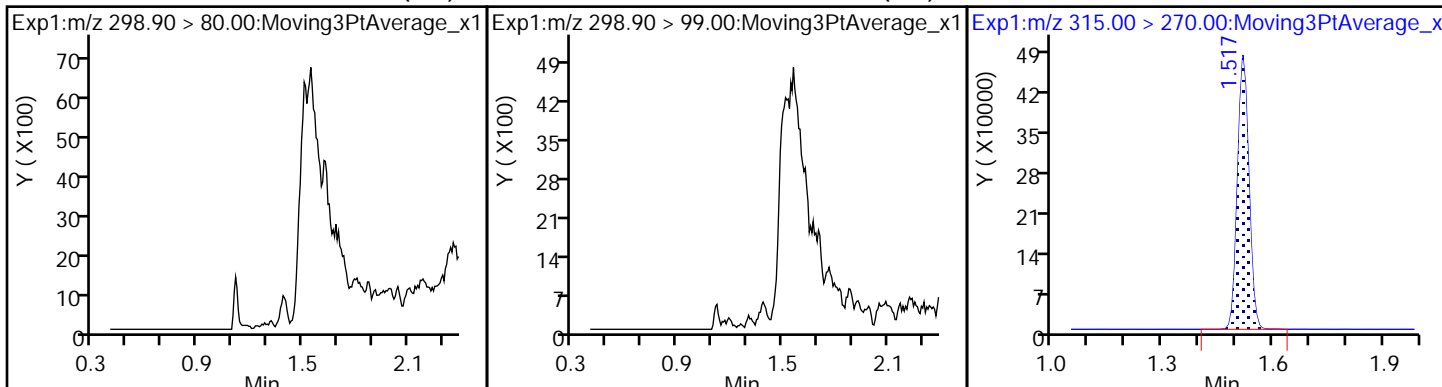
First Level Reviewer: barnettj Date: 30-Mar-2018 13:47:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.517	1.525	-0.008	1.000	1031946	8.85	9249	
* 6 13C2-PFOA	415.00 > 370.00	1.874	1.882	-0.008		1134191	10.0	7440	
* 7 13C4 PFOS	503.00 > 80.00	2.117	2.124	-0.007		2623862	28.7	3536	
\$ 10 13C2 PFDA	515.00 > 470.00	2.276	2.284	-0.008	1.000	809110	8.43	5974	

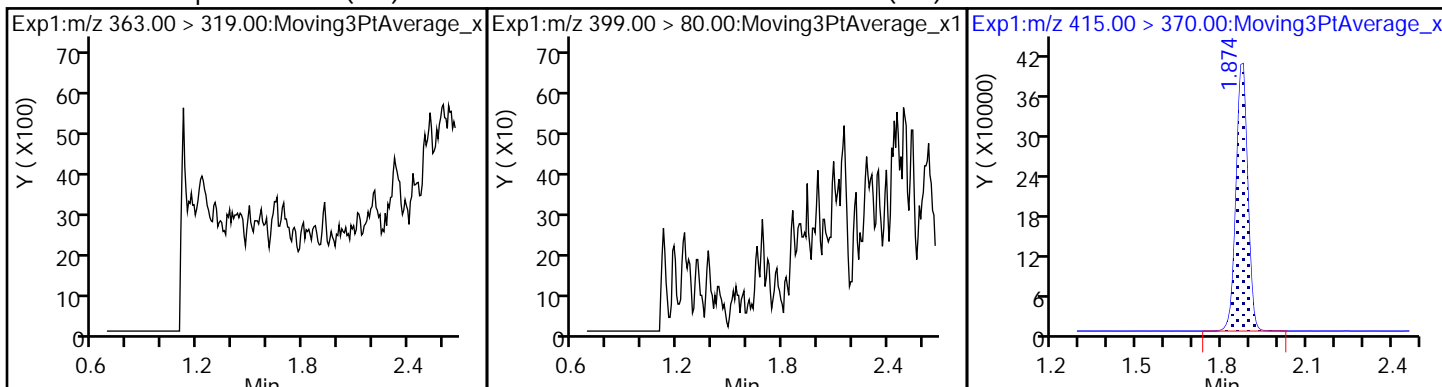
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_020.d
Injection Date: 30-Mar-2018 10:38:11 Instrument ID: A8_N
Lims ID: 320-37172-A-2-A Lab Sample ID: 320-37172-2
Client ID: WGNA-031518-FRB-0617
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

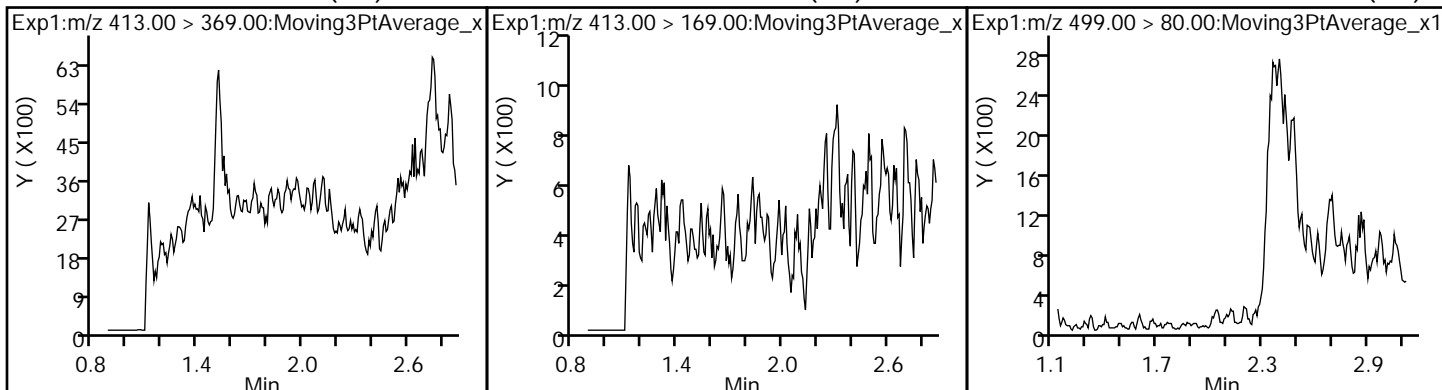
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



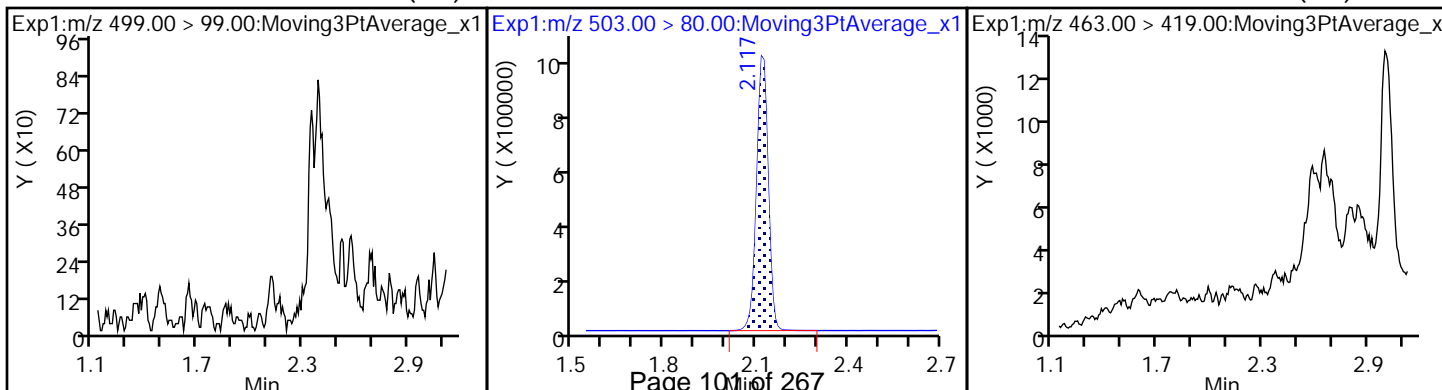
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



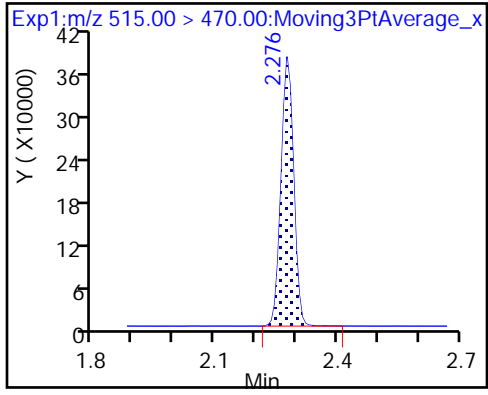
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



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



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_020.d
 Lims ID: 320-37172-A-2-A
 Client ID: WGNA-031518-FRB-0617
 Sample Type: Client
 Inject. Date: 30-Mar-2018 10:38:11 ALS Bottle#: 10 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37172-a-2-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:47:13

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.85	88.48
\$ 10 13C2 PFDA	10.0	8.43	84.27

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: WGNA-031518-RW-0755 Lab Sample ID: 320-37172-3
 Matrix: Water Lab File ID: 2018.03.30_537AA_021.d
 Analysis Method: 537 Date Collected: 03/15/2018 10:10
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 250.7(mL) Date Analyzed: 03/30/2018 10:42
 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.: 215653 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	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)	30		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.7	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U M	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	81		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_021.d
 Lims ID: 320-37172-A-3-A
 Client ID: WGNA-031518-RW-0755
 Sample Type: Client
 Inject. Date: 30-Mar-2018 10:42:53 ALS Bottle#: 11 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37172-a-3-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:46:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.396	0.0	1.000	109104	1.29		29.0	M
298.90 > 99.00	1.388	1.396	-0.008	0.995	80420		1.36(0.00-0.00)	54.7	M
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.525	0.0	1.000	979803	8.40		8279	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	132590	1.19		14.5	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.677	0.0	1.000	1046079	7.54		596	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.882	-0.008		1134982	10.0		7071	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.882	-0.008	1.000	623468	5.69		64.0	
413.00 > 169.00	1.874	1.882	-0.008	1.000	365247		1.71(0.00-0.00)	209	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.124	0.0	1.000	589960	7.10		170	a
499.00 > 99.00	2.124	2.124	0.0	1.000	121239		4.87(0.00-0.00)	232	a
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.124	0.0		2559924	28.7		2551	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.284	-0.008	1.000	775839	8.07		5782	

QC Flag Legend

Review Flags

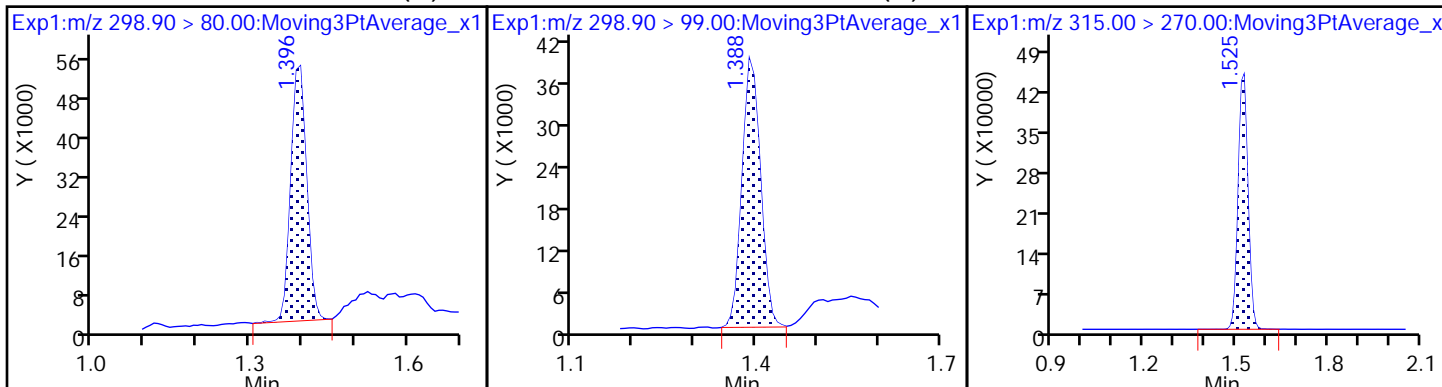
M - Manually Integrated

a - User Assigned ID

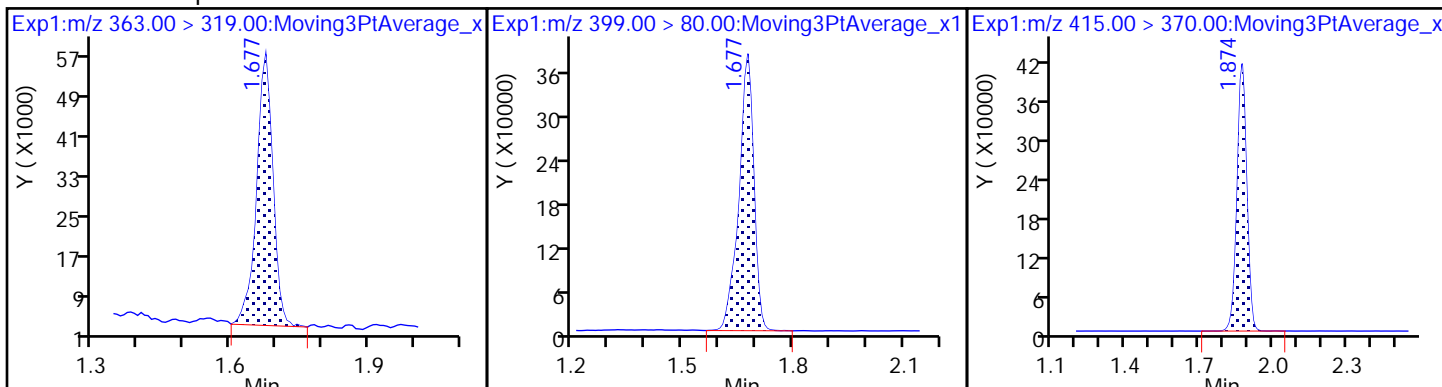
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_021.d
Injection Date: 30-Mar-2018 10:42:53 Instrument ID: A8_N
Lims ID: 320-37172-A-3-A Lab Sample ID: 320-37172-3
Client ID: WGNA-031518-RW-0755
Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

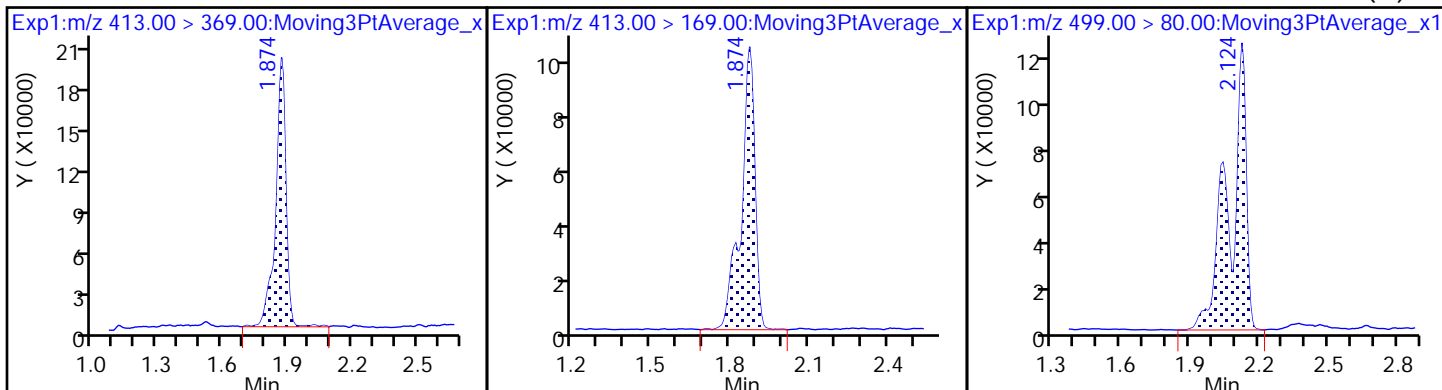
1 Perfluorobutanesulfonic acid (M) 1 Perfluorobutanesulfonic acid (M) \$ 2 13C2 PFHxA



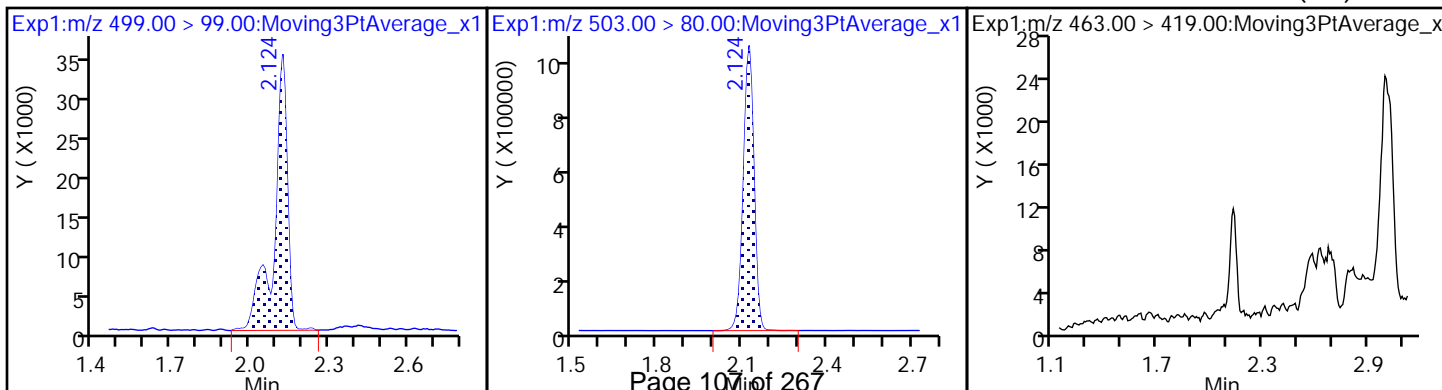
4 Perfluoroheptanoic acid 3 Perfluorohexanesulfonic acid * 6 13C2-PFOA



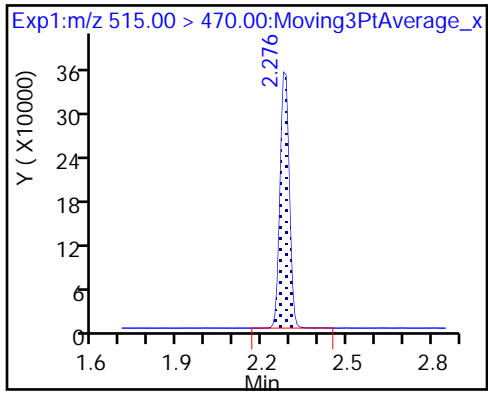
5 Perfluorooctanoic acid 5 Perfluorooctanoic acid 8 Perfluorooctane sulfonic acid (M)



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



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_021.d
 Lims ID: 320-37172-A-3-A
 Client ID: WGNA-031518-RW-0755
 Sample Type: Client
 Inject. Date: 30-Mar-2018 10:42:53 ALS Bottle#: 11 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37172-a-3-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:46:02

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.40	83.95
\$ 10 13C2 PFDA	10.0	8.07	80.74

TestAmerica Sacramento

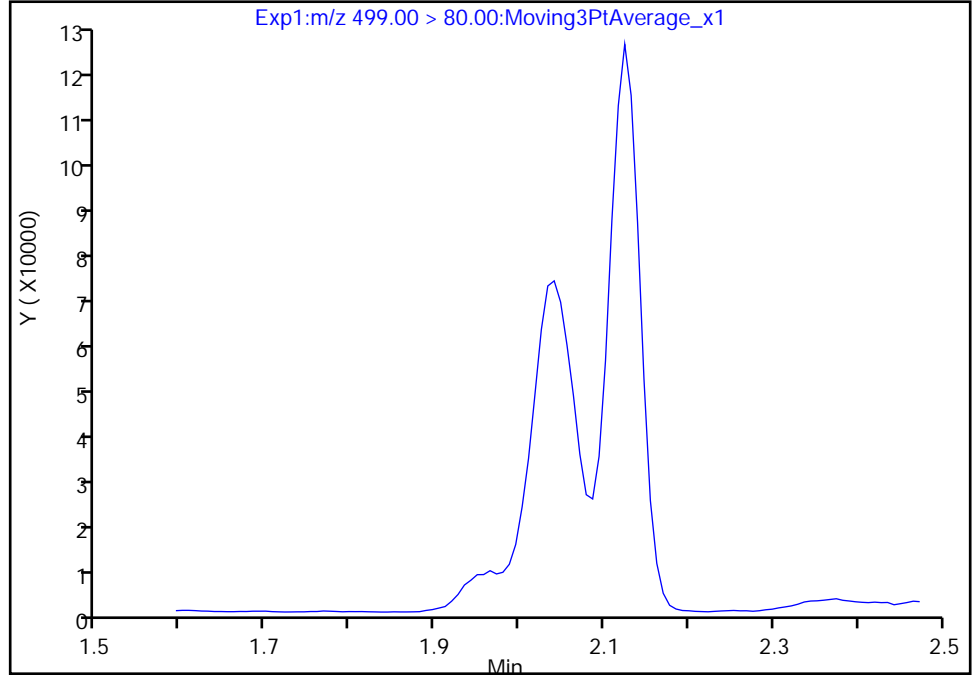
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_021.d
Injection Date: 30-Mar-2018 10:42:53 Instrument ID: A8_N
Lims ID: 320-37172-A-3-A Lab Sample ID: 320-37172-3
Client ID: WGNA-031518-RW-0755
Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

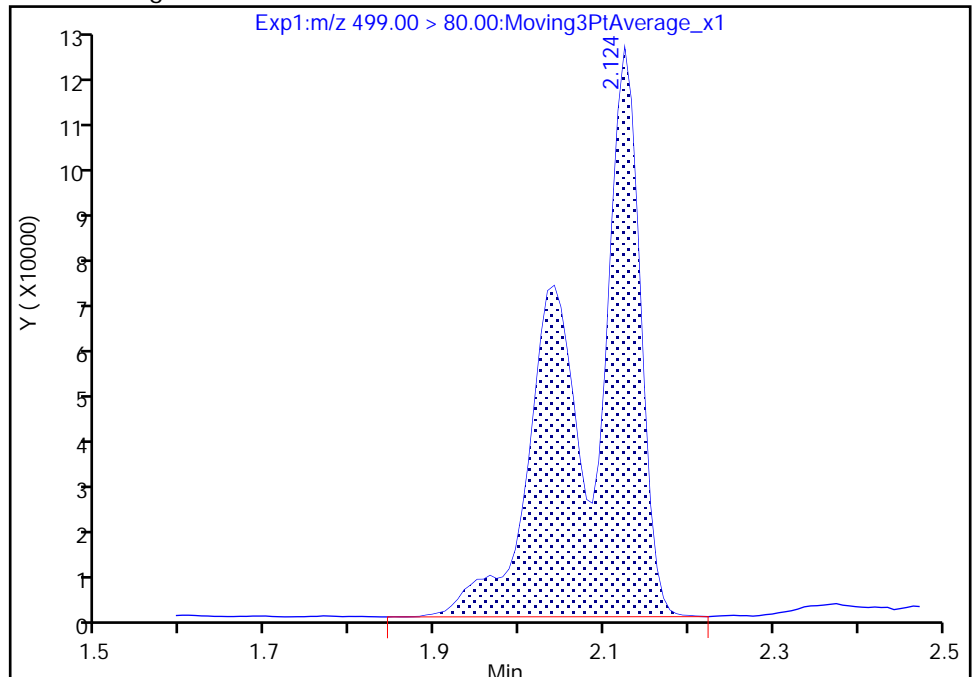
Not Detected
Expected RT: 2.12

Processing Integration Results



RT: 2.12
Area: 589960
Amount: 7.099091
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

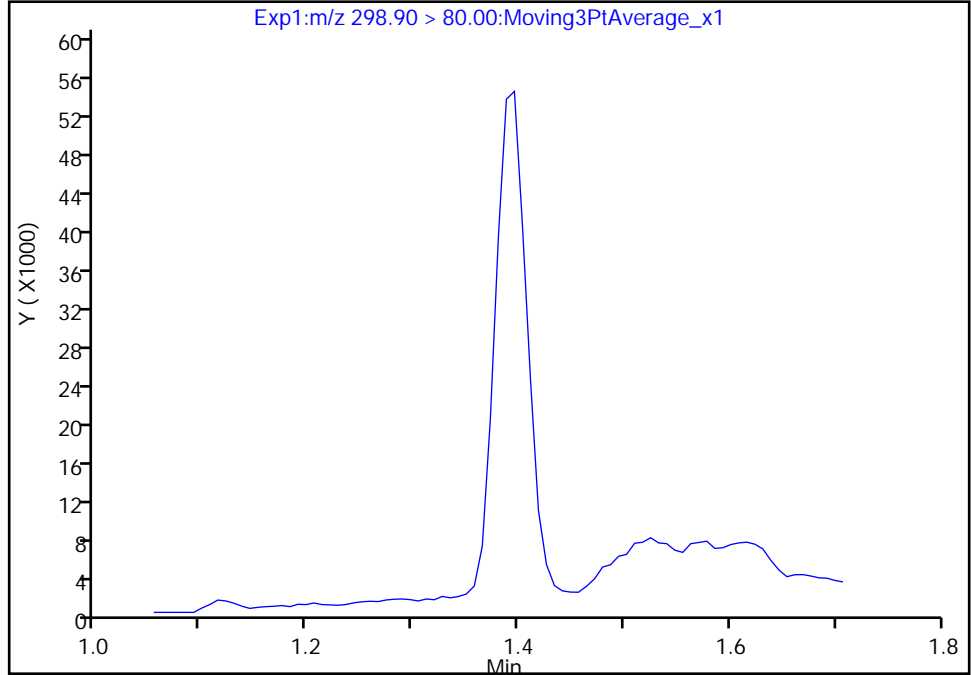
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_021.d
Injection Date: 30-Mar-2018 10:42:53 Instrument ID: A8_N
Lims ID: 320-37172-A-3-A Lab Sample ID: 320-37172-3
Client ID: WGNA-031518-RW-0755
Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 8
Injection Vol: 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

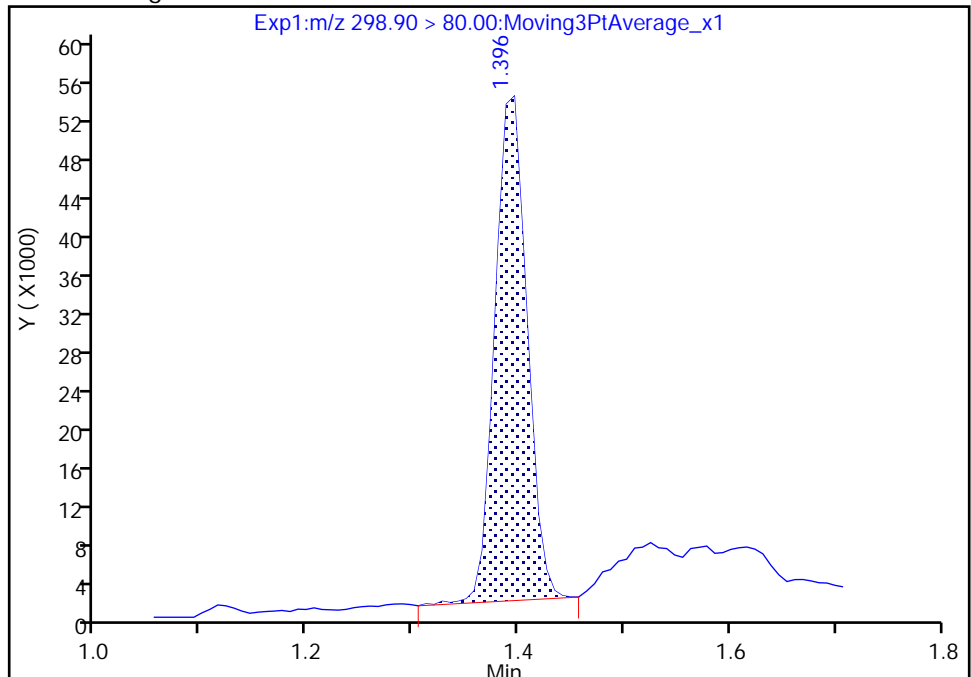
Not Detected
Expected RT: 1.40

Processing Integration Results



Manual Integration Results

RT: 1.40
Area: 109104
Amount: 1.286121
Amount Units: ng/ml



Reviewer: barnettj, 30-Mar-2018 13:45:39
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

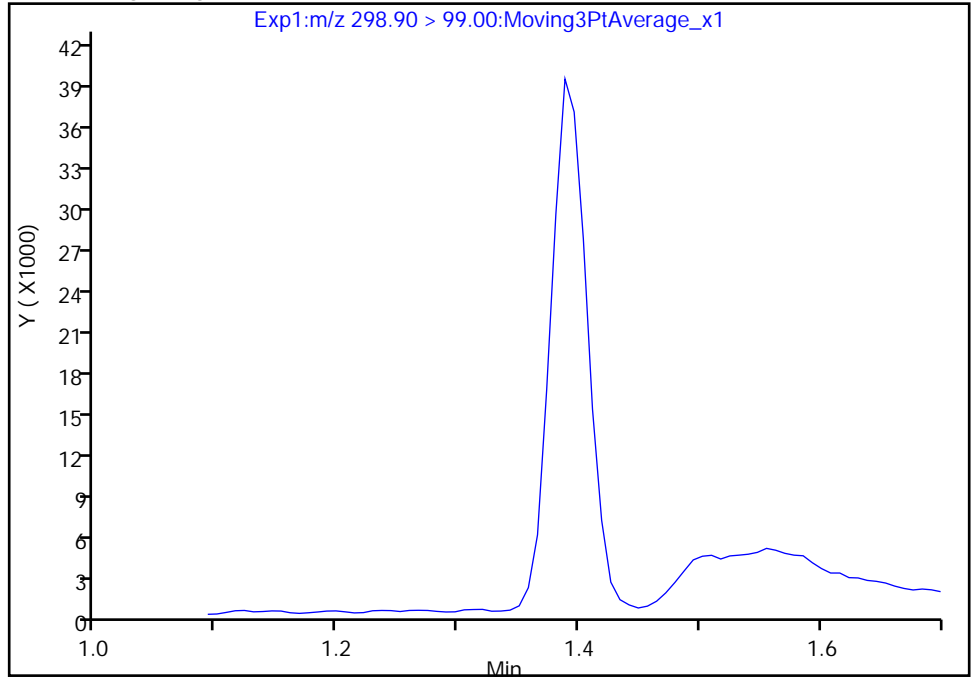
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_021.d
Injection Date: 30-Mar-2018 10:42:53 Instrument ID: A8_N
Lims ID: 320-37172-A-3-A Lab Sample ID: 320-37172-3
Client ID: WGNA-031518-RW-0755
Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 8
Injection Vol: 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

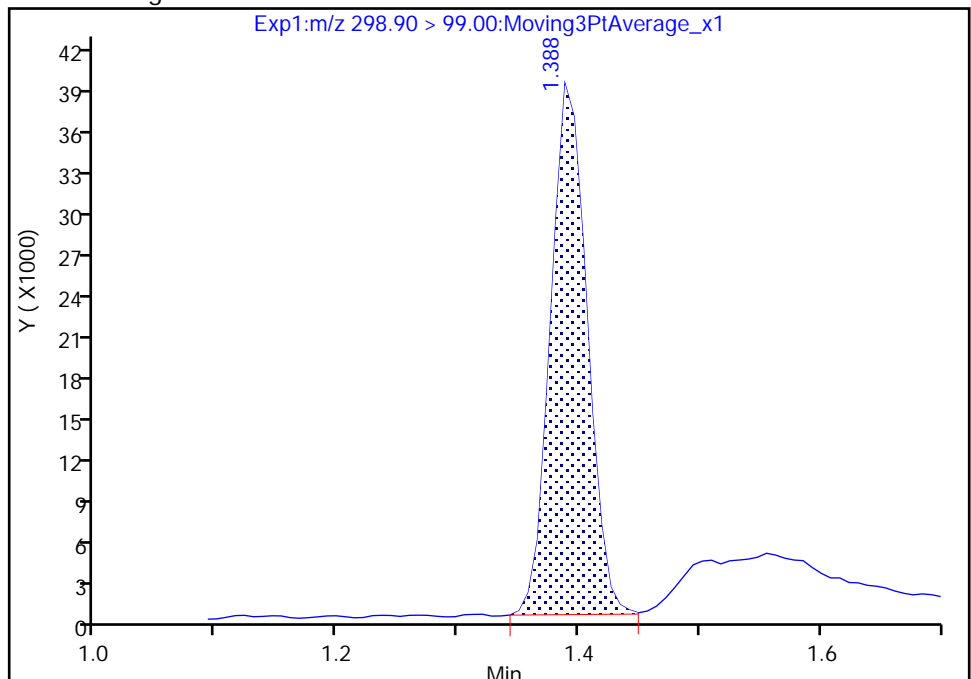
Not Detected
Expected RT: 1.40

Processing Integration Results



Manual Integration Results

RT: 1.39
Area: 80420
Amount: 1.286121
Amount Units: ng/ml



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: WGNA-031518-FRB-0755 Lab Sample ID: 320-37172-4
 Matrix: Water Lab File ID: 2018.03.30_537AA_022.d
 Analysis Method: 537 Date Collected: 03/15/2018 10:05
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 260.6(mL) Date Analyzed: 03/30/2018 10:47
 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.: 215653 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)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	86	35	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	88		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_022.d
 Lims ID: 320-37172-A-4-A
 Client ID: WGNA-031518-FRB-0755
 Sample Type: Client
 Inject. Date: 30-Mar-2018 10:47:33 ALS Bottle#: 12 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37172-a-4-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d

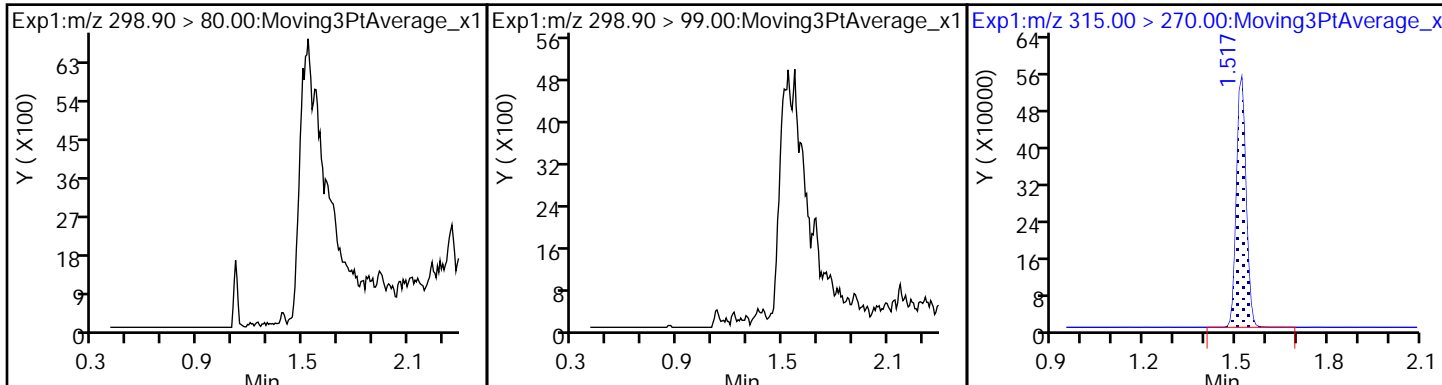
Column 1 : Det: EXP1
 Process Host: XAWRK016

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.517	1.525	-0.008	1.000	1171938	9.55	10940	
* 6 13C2-PFOA	415.00 > 370.00	1.866	1.882	-0.016		1192820	10.0	7341	
* 7 13C4 PFOS	503.00 > 80.00	2.117	2.124	-0.007		2769780	28.7	3868	
\$ 10 13C2 PFDA	515.00 > 470.00	2.276	2.284	-0.008	1.000	889322	8.81	6057	

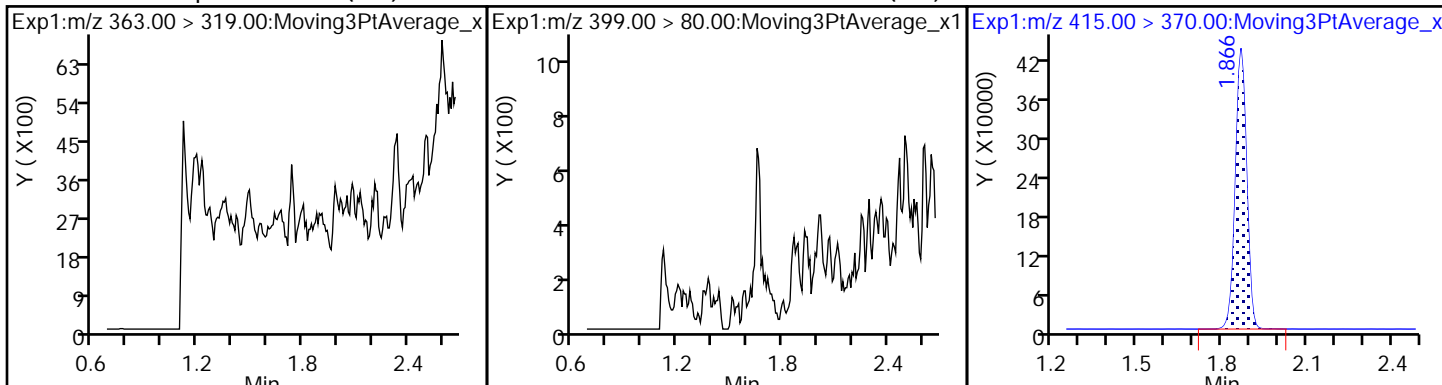
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_022.d
Injection Date: 30-Mar-2018 10:47:33 Instrument ID: A8_N
Lims ID: 320-37172-A-4-A Lab Sample ID: 320-37172-4
Client ID: WGNA-031518-FRB-0755
Operator ID: SACINSTLCMS01 ALS Bottle#: 12 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

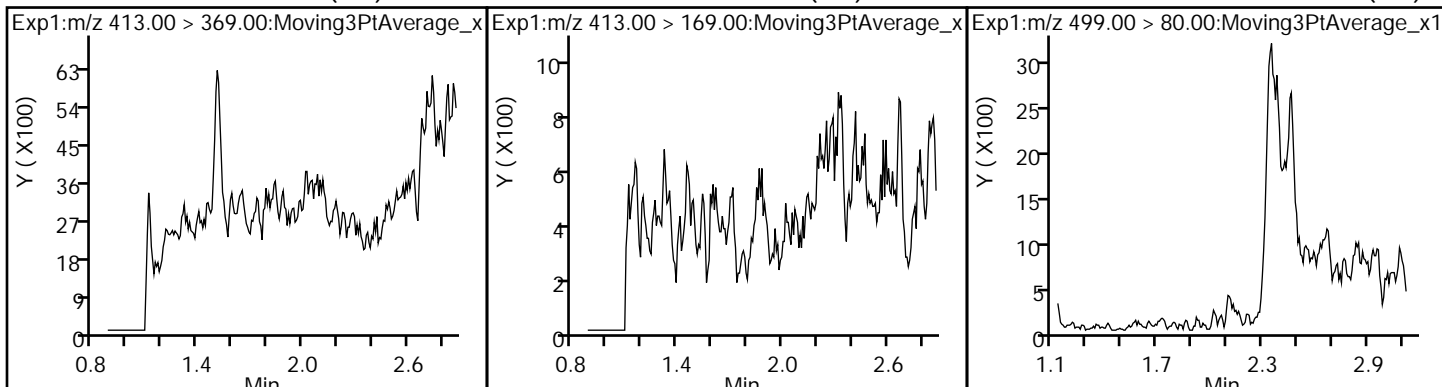
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



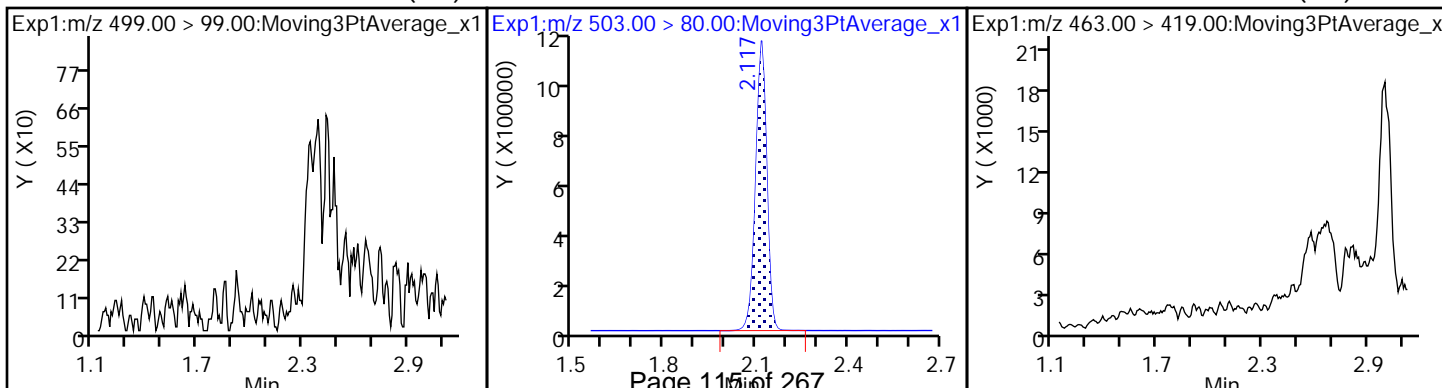
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



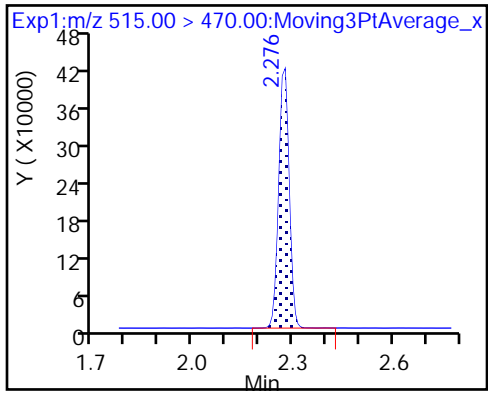
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



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



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_022.d
 Lims ID: 320-37172-A-4-A
 Client ID: WGNA-031518-FRB-0755
 Sample Type: Client
 Inject. Date: 30-Mar-2018 10:47:33 ALS Bottle#: 12 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37172-a-4-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK016

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.55	95.55
\$ 10 13C2 PFDA	10.0	8.81	88.07

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: NAWC-031518-RW-0569 Lab Sample ID: 320-37172-5
 Matrix: Water Lab File ID: 2018.03.30_537AA_023.d
 Analysis Method: 537 Date Collected: 03/15/2018 10:35
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 257.7(mL) Date Analyzed: 03/30/2018 10:52
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 215653 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	J M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	35		19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U M	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.3	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	11		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	88		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_023.d
 Lims ID: 320-37172-A-5-A
 Client ID: NAWC-031518-RW-0569
 Sample Type: Client
 Inject. Date: 30-Mar-2018 10:52:16 ALS Bottle#: 13 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37172-a-5-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:45:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.396	-0.008	1.000	224403	2.54		52.8	
298.90 > 99.00	1.388	1.396	-0.008	1.000	161355		1.39(0.00-0.00)	105	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.525	-0.008	1.000	1065197	9.42		10279	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.677	-0.008	1.000	299659	2.77		27.2	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.677	-0.008	1.000	270922	1.87		106	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.882	-0.016		1099620	10.0		6735	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.882	-0.016	1.000	962676	9.06		86.2	
413.00 > 169.00	1.866	1.882	-0.016	1.000	578980		1.66(0.00-0.00)	342	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.124	-0.007	1.000	624027	7.20		102	a
499.00 > 99.00	2.117	2.124	-0.007	1.000	99902		6.25(0.00-0.00)	115	a
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.124	-0.007		2671072	28.7		1791	
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.132	-0.008	1.000	81479	1.02		7.8	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.284	-0.016	1.000	818001	8.79		6858	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

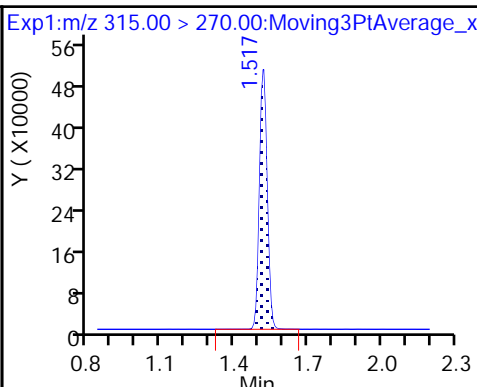
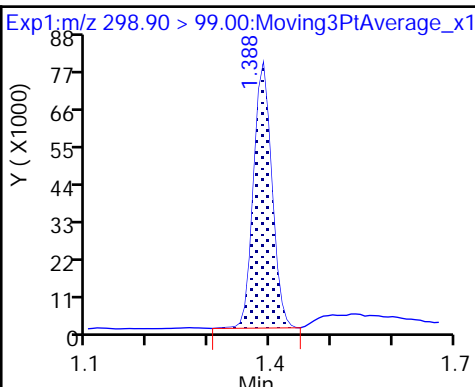
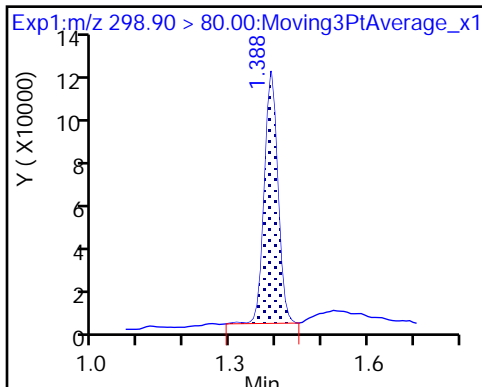
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_023.d
Injection Date: 30-Mar-2018 10:52:16 Instrument ID: A8_N
Lims ID: 320-37172-A-5-A Lab Sample ID: 320-37172-5
Client ID: NAWC-031518-RW-0569
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

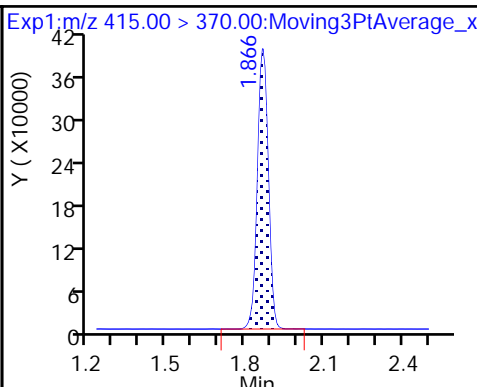
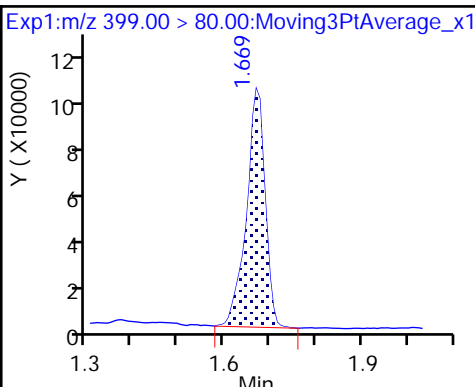
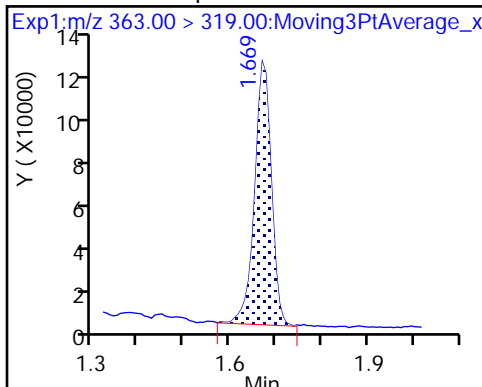
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

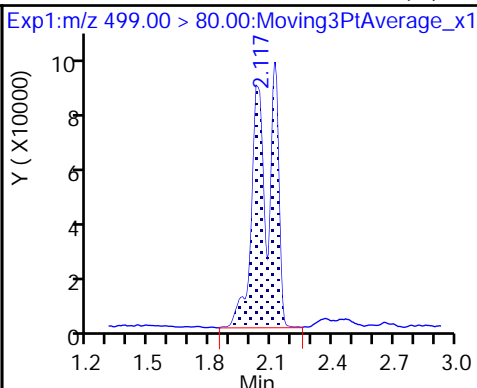
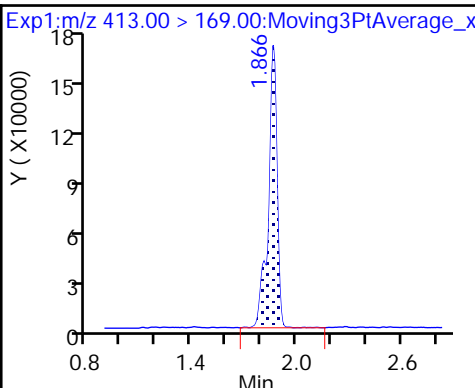
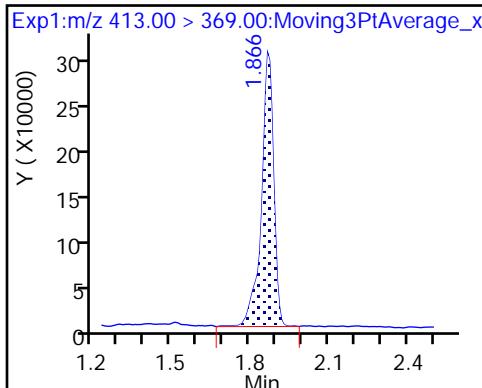
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

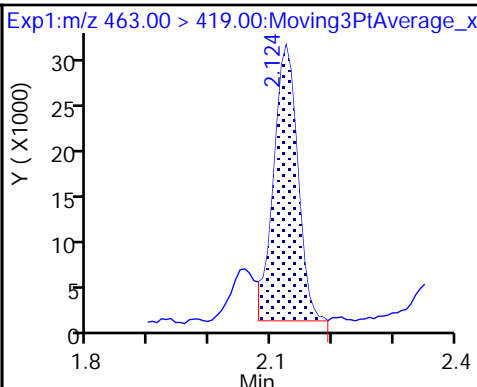
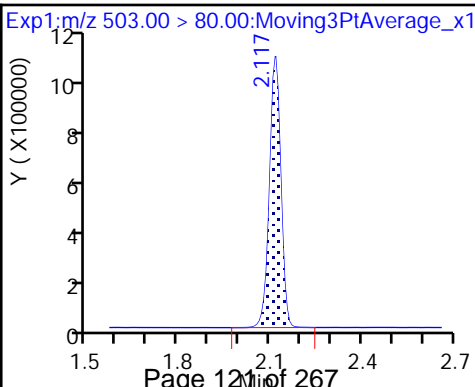
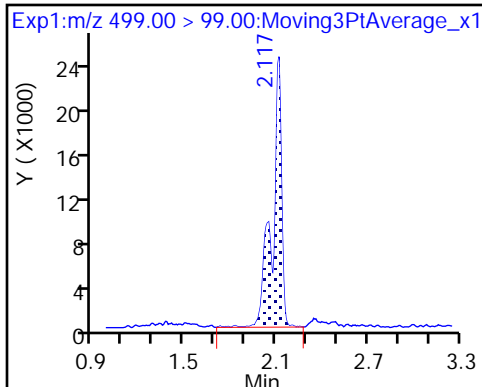
8 Perfluorooctane sulfonic acid (M)



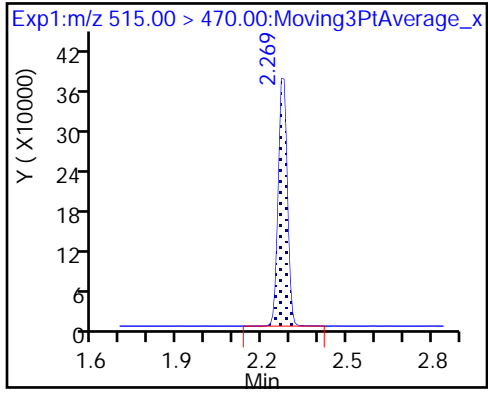
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_023.d
 Lims ID: 320-37172-A-5-A
 Client ID: NAWC-031518-RW-0569
 Sample Type: Client
 Inject. Date: 30-Mar-2018 10:52:16 ALS Bottle#: 13 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37172-a-5-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:45:20

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.42	94.21
\$ 10 13C2 PFDA	10.0	8.79	87.87

TestAmerica Sacramento

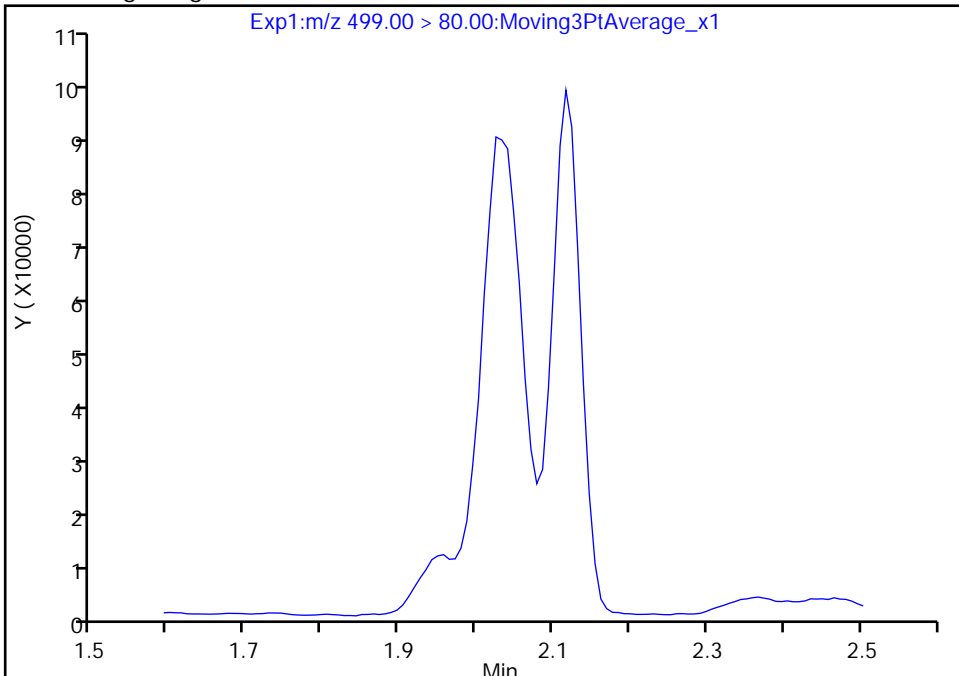
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_023.d
Injection Date: 30-Mar-2018 10:52:16 Instrument ID: A8_N
Lims ID: 320-37172-A-5-A Lab Sample ID: 320-37172-5
Client ID: NAWC-031518-RW-0569
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

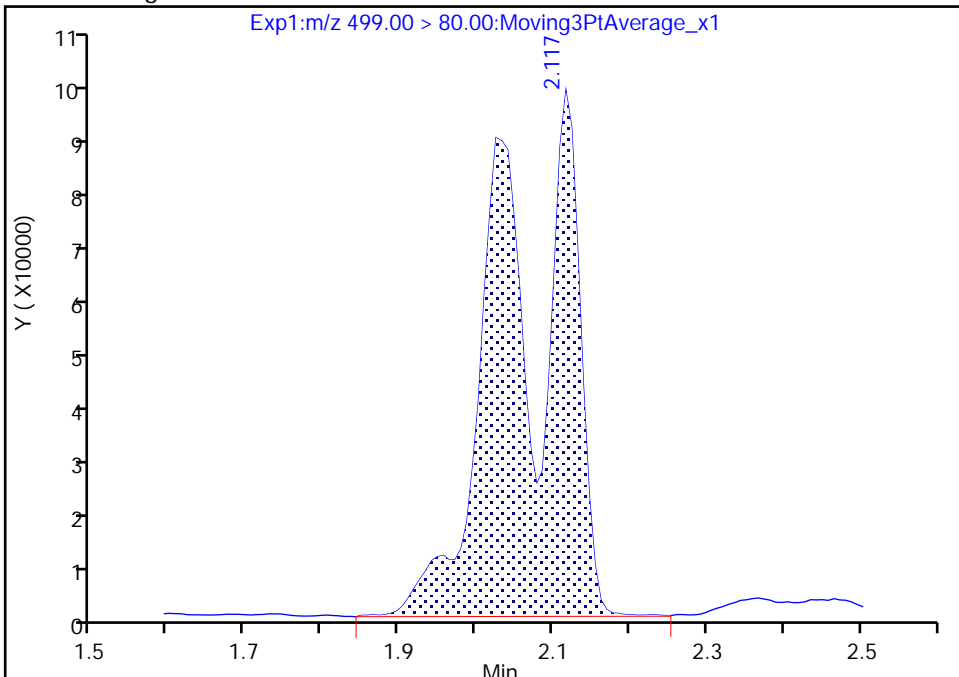
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 624027
Amount: 7.196562
Amount Units: ng/ml



Reviewer: barnettj, 30-Mar-2018 13:44:40
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

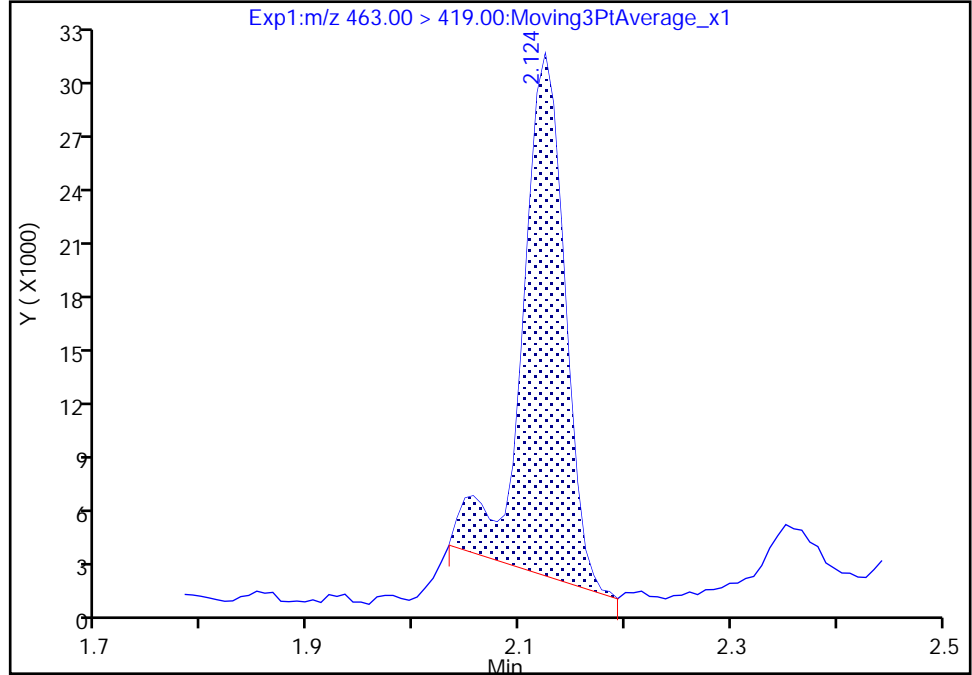
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_023.d
Injection Date: 30-Mar-2018 10:52:16 Instrument ID: A8_N
Lims ID: 320-37172-A-5-A Lab Sample ID: 320-37172-5
Client ID: NAWC-031518-RW-0569
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

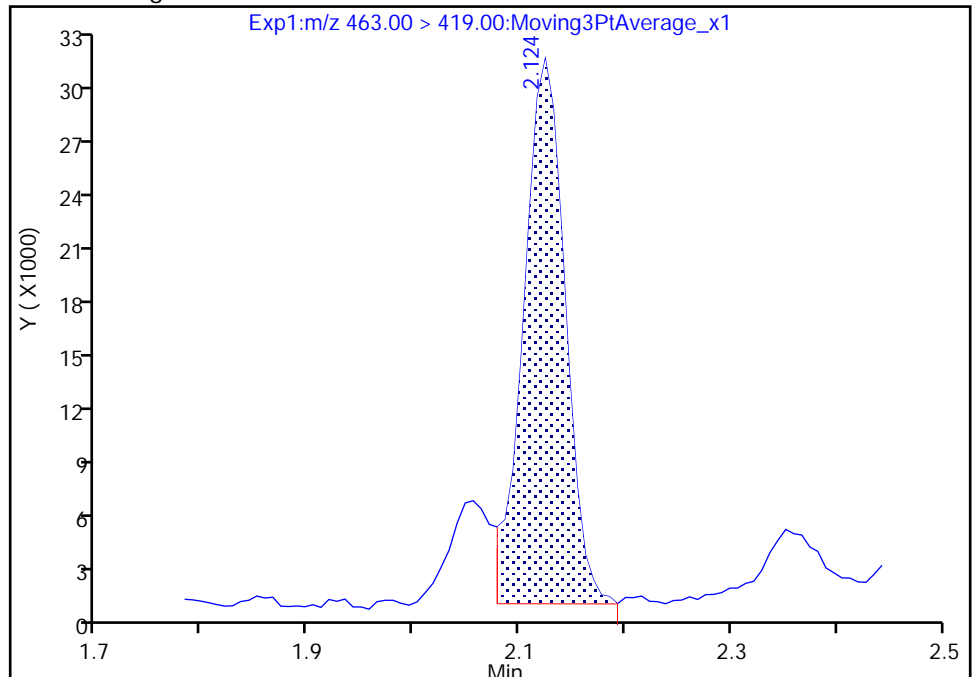
RT: 2.12
Area: 80436
Amount: 1.006729
Amount Units: ng/ml

Processing Integration Results



RT: 2.12
Area: 81479
Amount: 1.019783
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Mar-2018 13:45:13
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: NAWC-031518-FRB-0569 Lab Sample ID: 320-37172-6
 Matrix: Water Lab File ID: 2018.03.30_537AA_024.d
 Analysis Method: 537 Date Collected: 03/15/2018 10:40
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 250.9(mL) Date Analyzed: 03/30/2018 10:56
 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.: 215653 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	81		70-130
STL00996	13C2 PFDA	86		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_024.d
 Lims ID: 320-37172-A-6-A
 Client ID: NAWC-031518-FRB-0569
 Sample Type: Client
 Inject. Date: 30-Mar-2018 10:56:57 ALS Bottle#: 14 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37172-a-6-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d

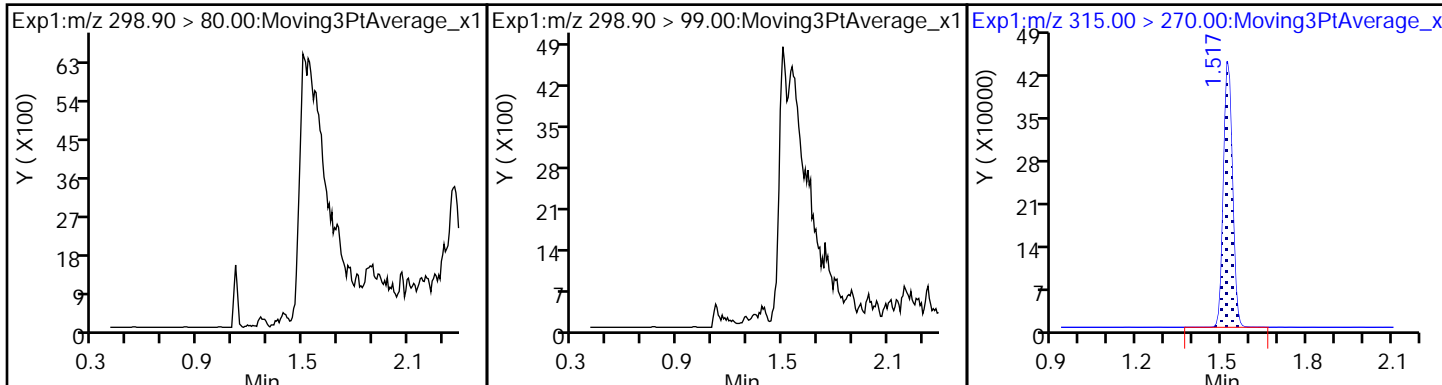
Column 1 : Det: EXP1
 Process Host: XAWRK016

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.517	1.525	-0.008	1.000	949964	8.15	9349	
* 6 13C2-PFOA	415.00 > 370.00	1.866	1.882	-0.016		1133887	10.0	7111	
* 7 13C4 PFOS	503.00 > 80.00	2.117	2.124	-0.007		2560850	28.7	3363	
\$ 10 13C2 PFDA	515.00 > 470.00	2.276	2.284	-0.008	1.000	824186	8.59	6566	

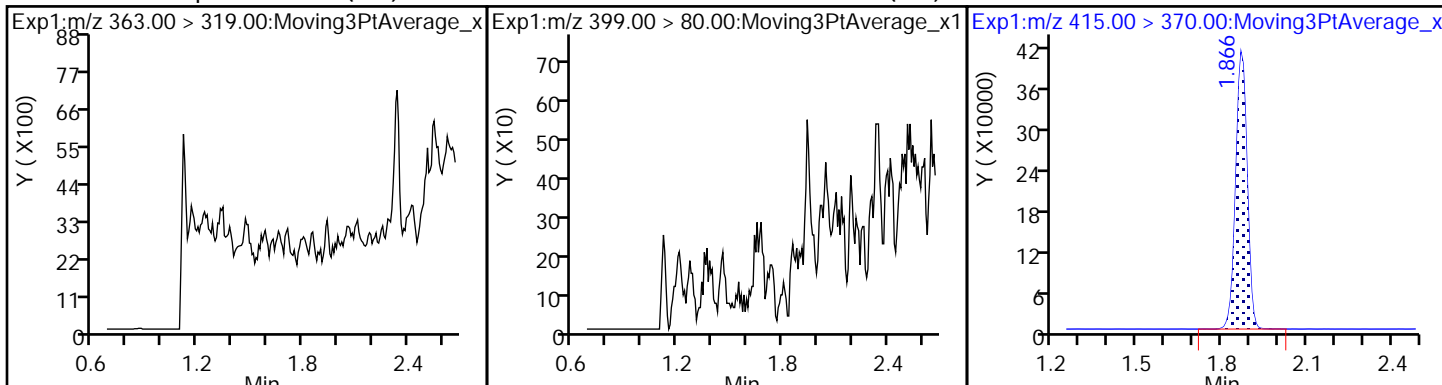
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_024.d
Injection Date: 30-Mar-2018 10:56:57 Instrument ID: A8_N
Lims ID: 320-37172-A-6-A Lab Sample ID: 320-37172-6
Client ID: NAWC-031518-FRB-0569
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

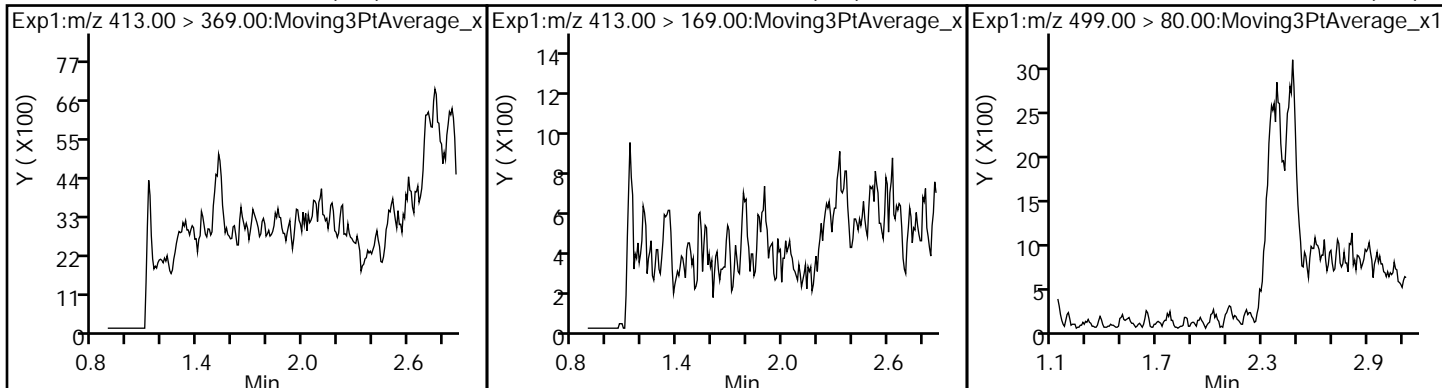
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



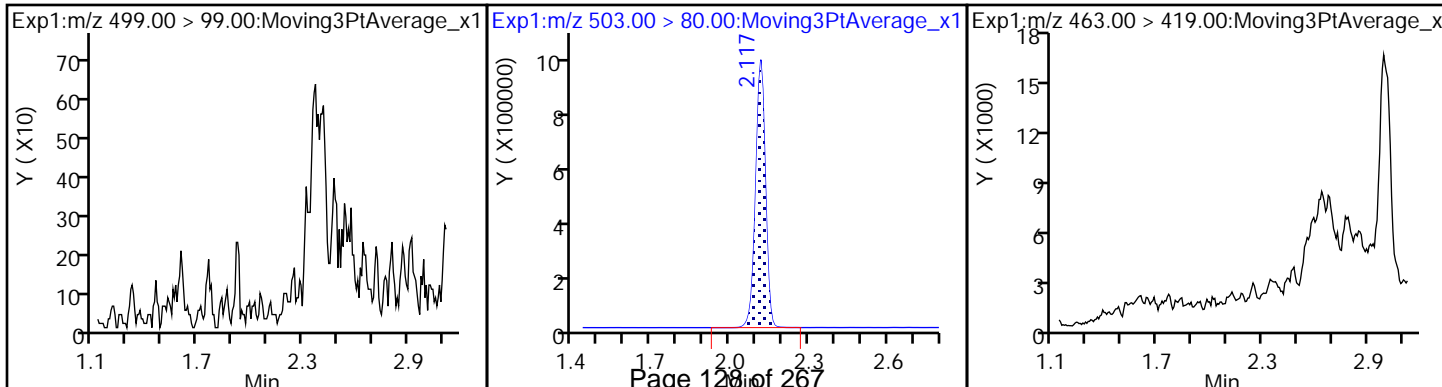
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



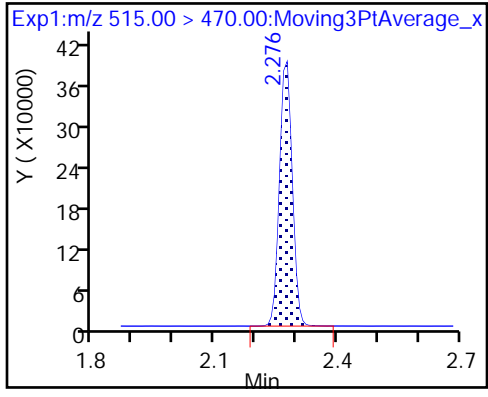
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



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



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_024.d
 Lims ID: 320-37172-A-6-A
 Client ID: NAWC-031518-FRB-0569
 Sample Type: Client
 Inject. Date: 30-Mar-2018 10:56:57 ALS Bottle#: 14 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37172-a-6-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK016

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.15	81.48
\$ 10 13C2 PFDA	10.0	8.59	85.86

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: NAWC-031518-RW-054 Lab Sample ID: 320-37172-7
 Matrix: Water Lab File ID: 2018.03.30_537AA_025.d
 Analysis Method: 537 Date Collected: 03/15/2018 11:10
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 264.3(mL) Date Analyzed: 03/30/2018 11:01
 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.: 215653 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	J M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	20		19	7.6	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U M	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.5	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.7	J	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	91		70-130
STL00996	13C2 PFDA	86		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_025.d
 Lims ID: 320-37172-A-7-A
 Client ID: NAWC-031518-RW-054
 Sample Type: Client
 Inject. Date: 30-Mar-2018 11:01:38 ALS Bottle#: 15 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37172-a-7-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:44:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.396	-0.008	1.000	184967	2.05		54.2	
298.90 > 99.00	1.388	1.396	-0.008	1.000	132765		1.39(0.00-0.00)	82.8	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.525	-0.008	1.000	1047348	9.14		11671	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.677	-0.008	1.000	164613	1.50		15.8	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.677	-0.008	1.000	372206	2.52		230	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.882	-0.016		1114148	10.0		6665	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.882	-0.016	1.000	569457	5.29		55.9	
413.00 > 169.00	1.866	1.882	-0.016	1.000	332010		1.72(0.00-0.00)	201	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.124	-0.007	1.000	380346	4.30		101	a
499.00 > 99.00	2.117	2.124	-0.007	1.000	67117		5.67(0.00-0.00)	95.1	a
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.124	-0.007		2725458	28.7		2689	
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.132	-0.008	1.000	55491	0.6855		5.3	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.284	-0.008	1.000	814977	8.64		6379	

QC Flag Legend

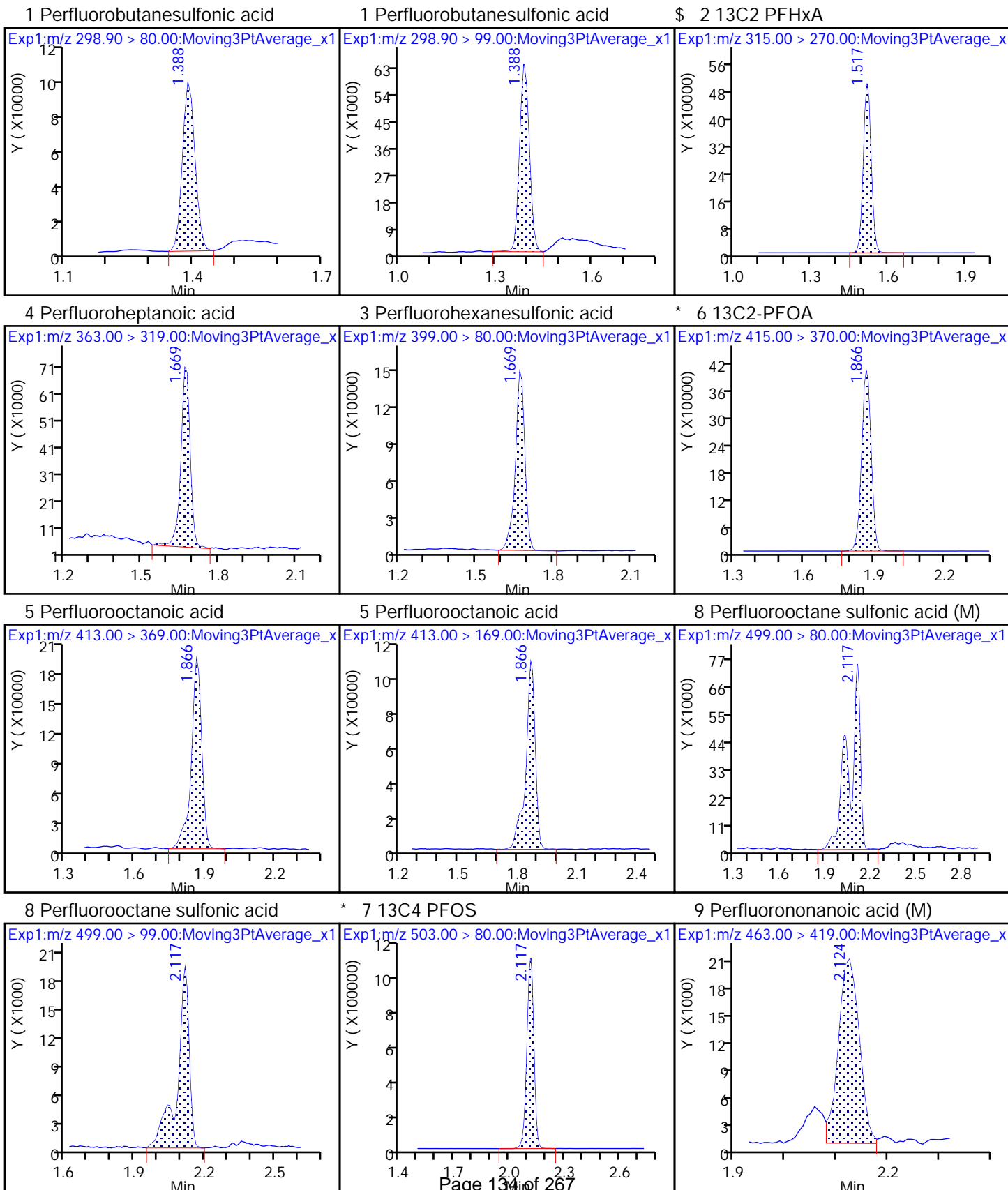
Review Flags

M - Manually Integrated

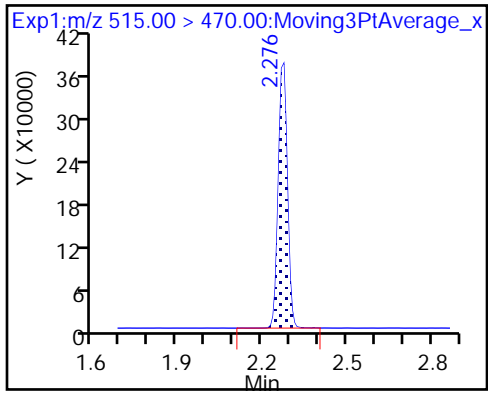
a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_025.d
Injection Date: 30-Mar-2018 11:01:38 Instrument ID: A8_N
Lims ID: 320-37172-A-7-A Lab Sample ID: 320-37172-7
Client ID: NAWC-031518-RW-054
Operator ID: SACINSTLCMS01 ALS Bottle#: 15 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_025.d
 Lims ID: 320-37172-A-7-A
 Client ID: NAWC-031518-RW-054
 Sample Type: Client
 Inject. Date: 30-Mar-2018 11:01:38 ALS Bottle#: 15 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37172-a-7-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:44:29

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.14	91.42
\$ 10 13C2 PFDA	10.0	8.64	86.40

TestAmerica Sacramento

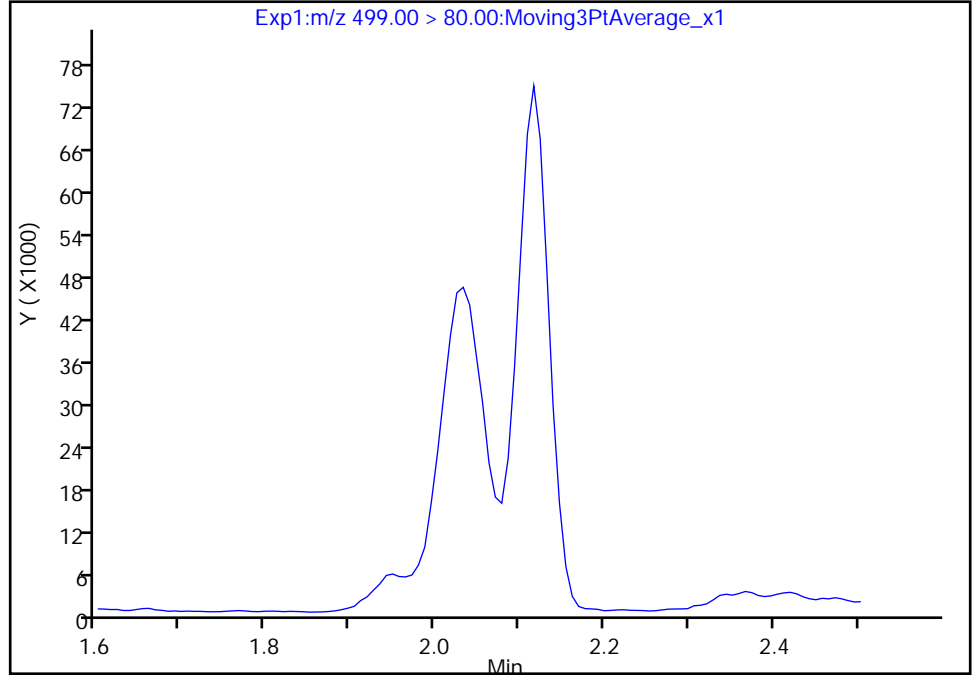
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_025.d
Injection Date: 30-Mar-2018 11:01:38 Instrument ID: A8_N
Lims ID: 320-37172-A-7-A Lab Sample ID: 320-37172-7
Client ID: NAWC-031518-RW-054
Operator ID: SACINSTLCMS01 ALS Bottle#: 15 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

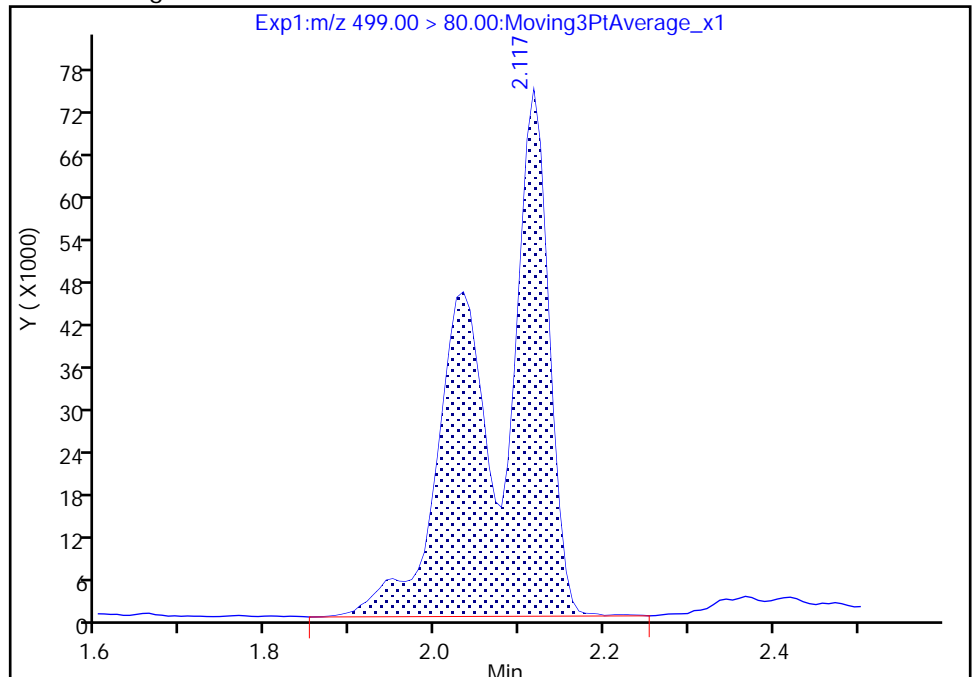
Not Detected
Expected RT: 2.12

Processing Integration Results



RT: 2.12
Area: 380346
Amount: 4.298794
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Mar-2018 13:43:52
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

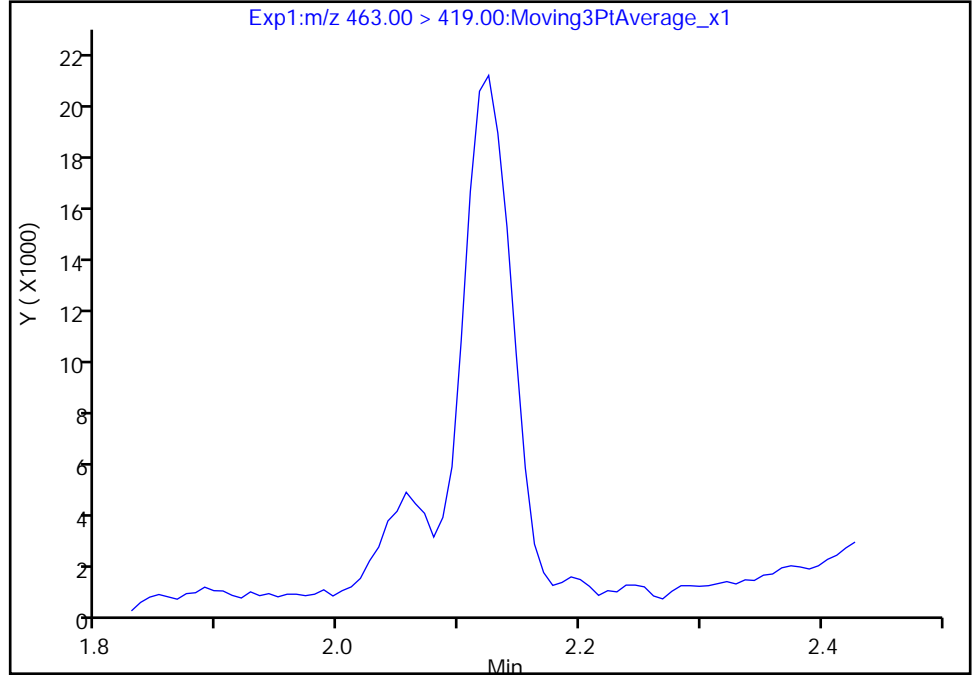
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_025.d
Injection Date: 30-Mar-2018 11:01:38 Instrument ID: A8_N
Lims ID: 320-37172-A-7-A Lab Sample ID: 320-37172-7
Client ID: NAWC-031518-RW-054
Operator ID: SACINSTLCMS01 ALS Bottle#: 15 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

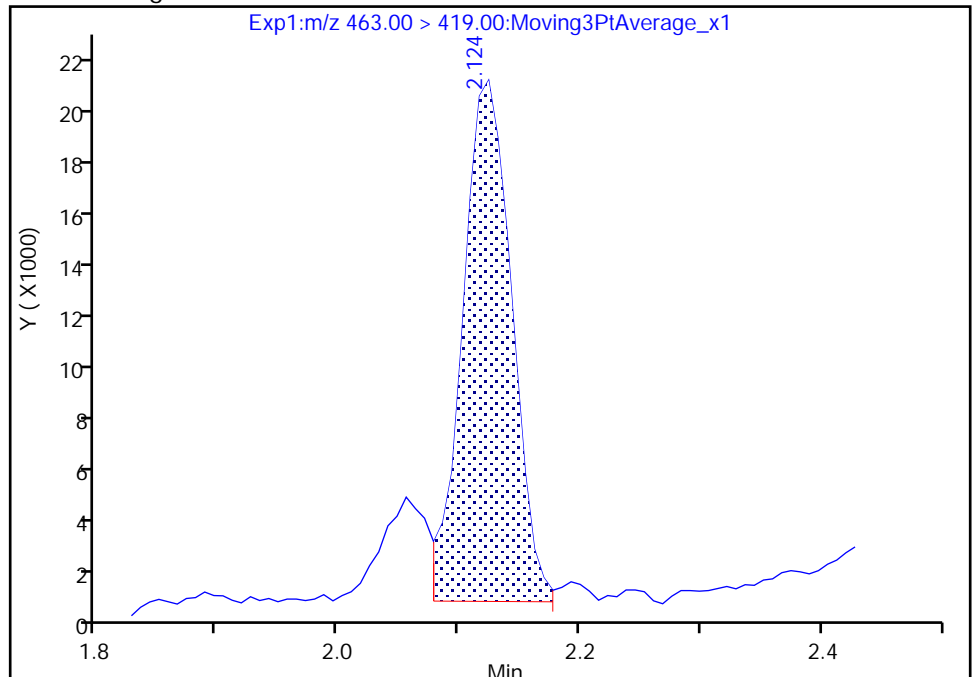
Signal: 1

Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results



RT: 2.12
Area: 55491
Amount: 0.685464
Amount Units: ng/ml

Reviewer: barnettj, 30-Mar-2018 13:44:19
Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: NAWC-031518-FRB-054 Lab Sample ID: 320-37172-8
 Matrix: Water Lab File ID: 2018.03.30_537AA_028.d
 Analysis Method: 537 Date Collected: 03/15/2018 11:05
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 261.9(mL) Date Analyzed: 03/30/2018 11:15
 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.: 215655 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	5.3
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	85		70-130
STL00996	13C2 PFDA	86		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_028.d
 Lims ID: 320-37172-A-8-A
 Client ID: NAWC-031518-FRB-054
 Sample Type: Client
 Inject. Date: 30-Mar-2018 11:15:38 ALS Bottle#: 16 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37172-a-8-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:59:05 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d

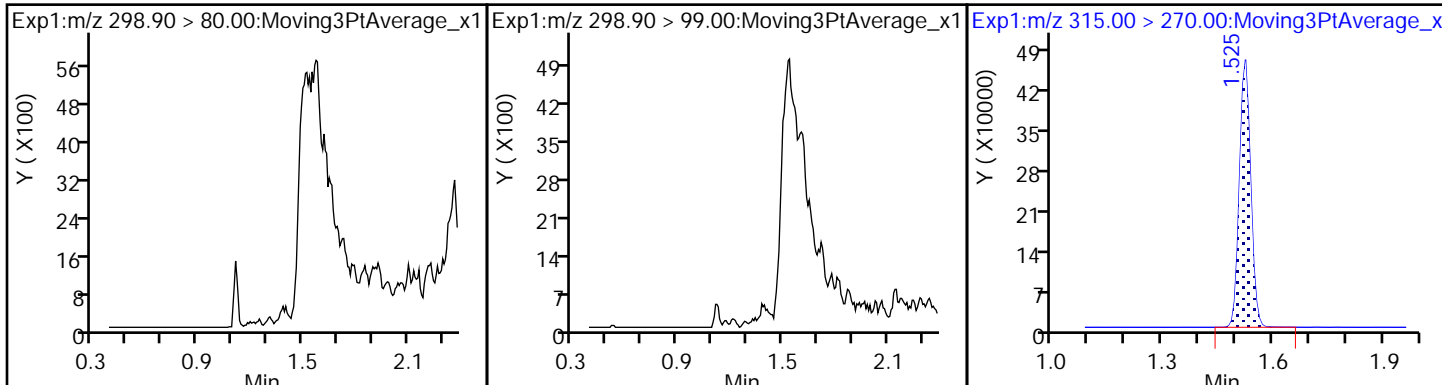
Column 1 : Det: EXP1
 Process Host: XAWRK016

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.525	1.517	0.008	1.000	988078	8.48	9603	
* 6 13C2-PFOA	415.00 > 370.00	1.874	1.866	0.008		1132528	10.0	6259	
* 7 13C4 PFOS	503.00 > 80.00	2.124	2.117	0.007		2589452	28.7	3485	
\$ 10 13C2 PFDA	515.00 > 470.00	2.276	2.276	0.0	1.000	820404	8.56	6591	

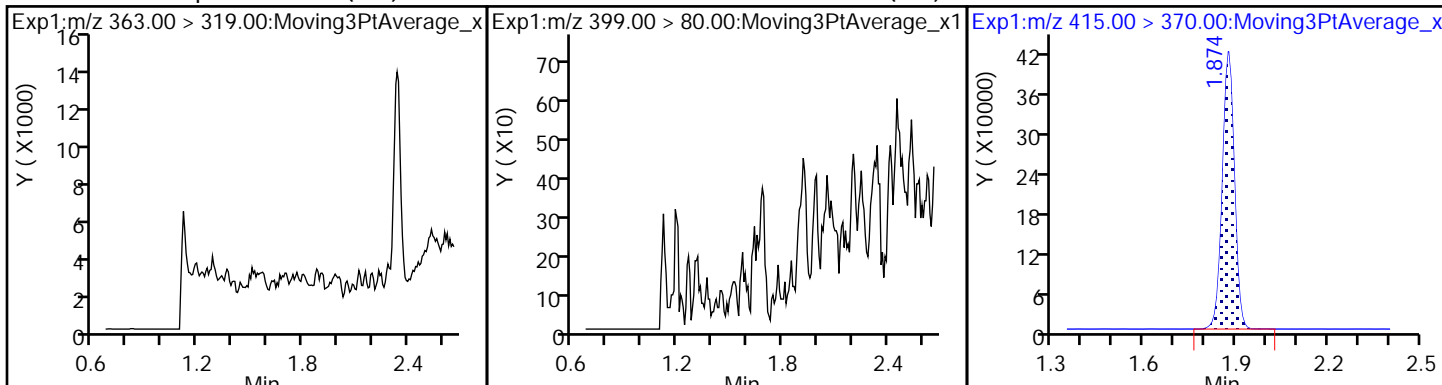
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_028.d
Injection Date: 30-Mar-2018 11:15:38 Instrument ID: A8_N
Lims ID: 320-37172-A-8-A Lab Sample ID: 320-37172-8
Client ID: NAWC-031518-FRB-054
Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

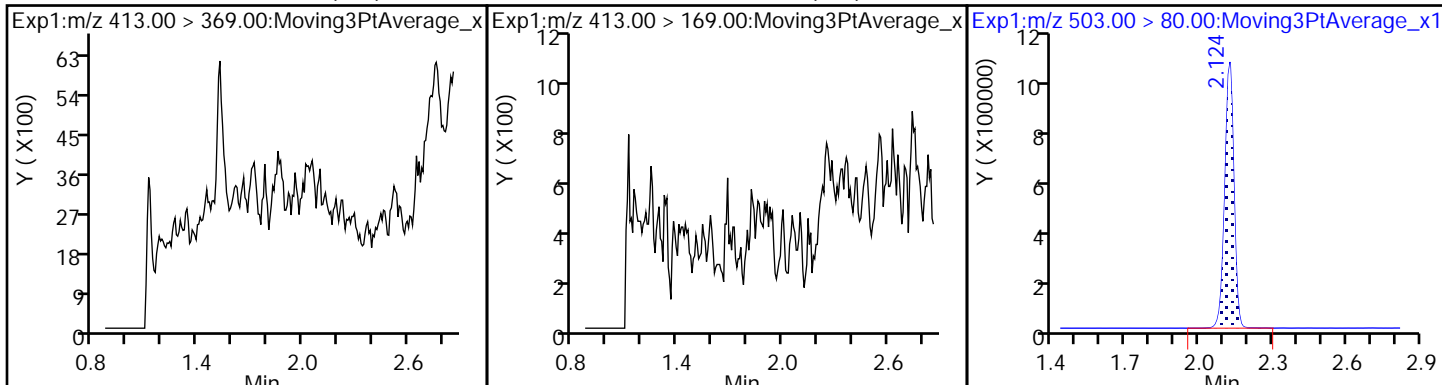
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



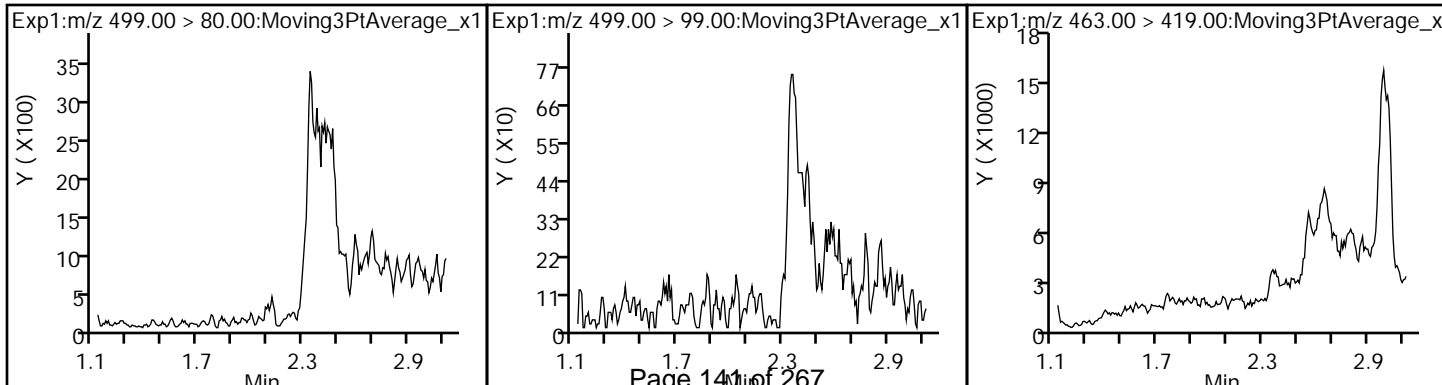
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



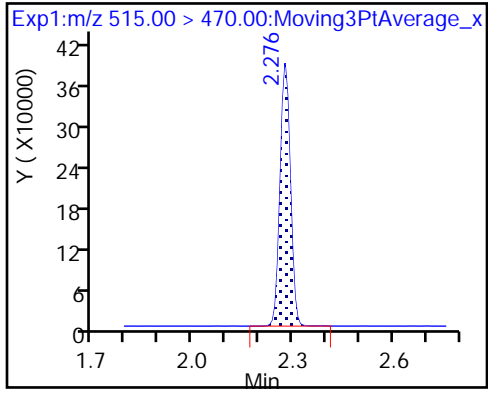
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) * 7 13C4 PFOS



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\20180330-56050.b\2018.03.30_537AA_028.d
 Lims ID: 320-37172-A-8-A
 Client ID: NAWC-031518-FRB-054
 Sample Type: Client
 Inject. Date: 30-Mar-2018 11:15:38 ALS Bottle#: 16 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37172-a-8-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:59:05 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK016

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.48	84.85
\$ 10 13C2 PFDA	10.0	8.56	85.57

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

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1 Analy Batch No.: 214409

SDG No.: _____

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

Calibration Start Date: 03/22/2018 14:53 Calibration End Date: 03/22/2018 15:16 Calibration ID: 38271

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-214409/4	2018.03.22_537ICAL_004.d
Level 2	IC 320-214409/5	2018.03.22_537ICAL_005.d
Level 3	IC 320-214409/6	2018.03.22_537ICAL_006.d
Level 4	IC 320-214409/7	2018.03.22_537ICAL_007.d
Level 5	IC 320-214409/8	2018.03.22_537ICAL_008.d
Level 6	IC 320-214409/9	2018.03.22_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)	0.9228 ++++	0.9814	1.0233	0.9496	0.8750	Ave		0.9504			5.9		30.0				
Perfluoroheptanoic acid (PFHpA)	0.9563 0.9830	1.0069	0.9814	1.0007	0.9818	Ave		0.9850			1.8		30.0				
Perfluorohexanesulfonic acid (PFHxS)	1.4834 1.5253	1.5335	1.6094	1.5943	1.5814	Ave		1.5546			3.1		30.0				
Perfluorooctanoic acid (PFOA)	0.9018 0.9905	0.9485	0.9598	1.0006	0.9943	Ave		0.9659			3.9		30.0				
Perfluorooctanesulfonic acid (PFOS)	0.8712 0.9390	0.9308	0.9384	0.9647	0.9421	Ave		0.9310			3.4		30.0				
Perfluorononanoic acid (PFNA)	0.6586 0.7466	0.7314	0.7293	0.7533	0.7403	Ave		0.7266			4.8		30.0				
13C2 PFHxA	0.9719 1.1086	0.9969	1.0249	1.0236	1.0436	Ave		1.0283			4.5		30.0				
13C2 PFDA	0.8190 0.8921	0.8318	0.8286	0.8353	0.8726	Ave		0.8466			3.4		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.: 320-37172-1 Analy Batch No.: 214409

SDG No.: _____

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

Calibration Start Date: 03/22/2018 14:53 Calibration End Date: 03/22/2018 15:16 Calibration ID: 38271

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-214409/4	2018.03.22_537ICAL_004.d
Level 2	IC 320-214409/5	2018.03.22_537ICAL_005.d
Level 3	IC 320-214409/6	2018.03.22_537ICAL_006.d
Level 4	IC 320-214409/7	2018.03.22_537ICAL_007.d
Level 5	IC 320-214409/8	2018.03.22_537ICAL_008.d
Level 6	IC 320-214409/9	2018.03.22_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	Ave	796972 +++++	1844935	4174655	7866195	10901700	9.00 +++++	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	113714 2227166	257474	561923	1097097	1617482	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	427157 8696268	961162	2189176	4403638	6568926	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	215607 4512279	487639	1104922	2205621	3293471	2.01 40.2	4.47	10.1	20.1	30.2
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	335816 7166468	780931	1708604	3566785	5238684	4.02 80.3	8.93	20.1	40.2	60.3
Perfluorononanoic acid (PFNA)	13PF OA	Ave	156653 3383462	374107	835301	1652004	2439501	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PF OA	Ave	1155395 1255631	1146847	1173423	1122030	1145956	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	973562 1010441	956972	948738	915618	958136	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD

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

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1 Analy Batch No.: 214409

SDG No.: _____

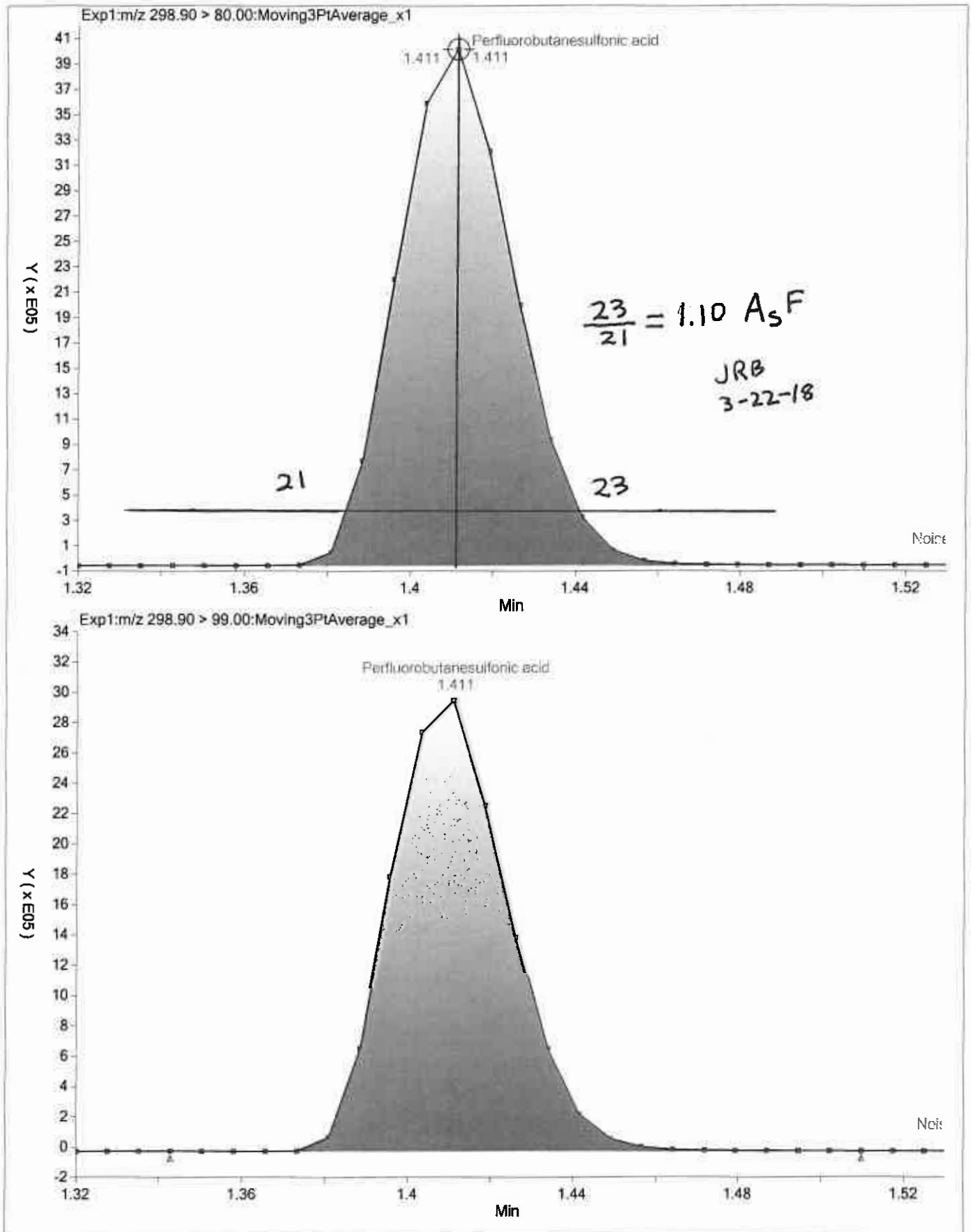
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

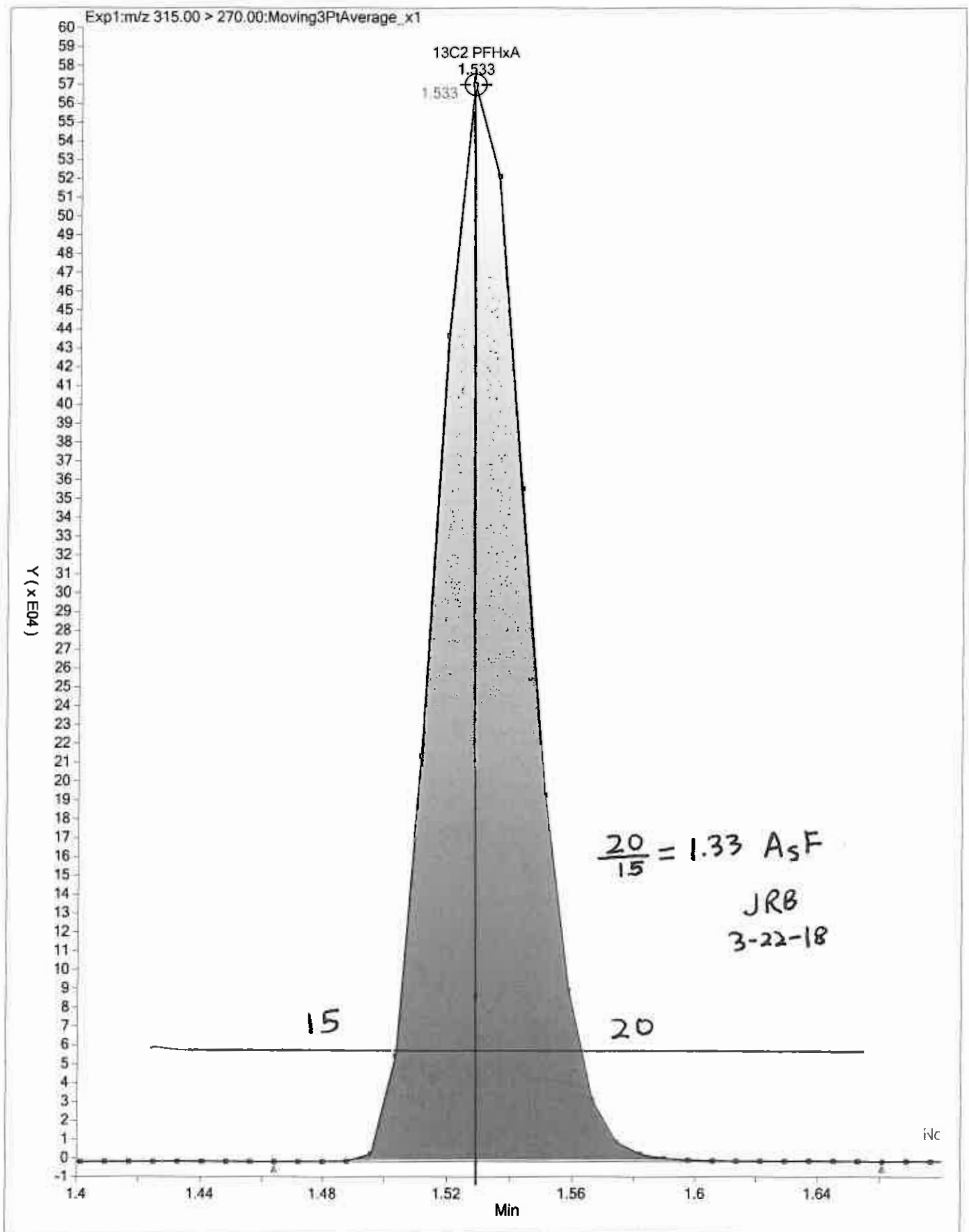
Calibration Start Date: 03/22/2018 14:53 Calibration End Date: 03/22/2018 15:16 Calibration ID: 38271

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-214409/4	2018.03.22_537ICAL_004.d
Level 2	IC 320-214409/5	2018.03.22_537ICAL_005.d
Level 3	IC 320-214409/6	2018.03.22_537ICAL_006.d
Level 4	IC 320-214409/7	2018.03.22_537ICAL_007.d
Level 5	IC 320-214409/8	2018.03.22_537ICAL_008.d
Level 6	IC 320-214409/9	2018.03.22_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)	-2.9	3.3	7.7	-0.1	-7.9	+++++	50	30	30	30	30	
Perfluoroheptanoic acid (PFHpA)	-2.9	2.2	-0.4	1.6	-0.3	-0.2	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-4.6	-1.4	3.5	2.6	1.7	-1.9	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-6.6	-1.8	-0.6	3.6	2.9	2.5	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-6.4	0.0	0.8	3.6	1.2	0.9	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-9.4	0.7	0.4	3.7	1.9	2.8	50	30	30	30	30	30
13C2 PFHxA	-5.5	-3.1	-0.3	-0.4	1.5	7.8	30	30	30	30	30	30
13C2 PFDA	-3.3	-1.7	-2.1	-1.3	3.1	5.4	30	30	30	30	30	30





TestAmerica Laboratories
Istd/Surrogate Recovery Report

Worklist Name: 22MAR2018_537_ICAL Worklist Num: 55711
 Instrument: A8_N Method: 537_A8_N
 Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b
 Limit Group: LC 537 ICAL
 Analysis Type: SemiVOA
 Inj Volume: 2.00 Inj Vol Units: ul

Lims Batch: 214409
 CCV IS Mode: Select Ical Level, Cal Level: 3
 Non-Cal IS Mode: Last Ccal Sample

\$ 2 13C2 PFHxA
 \$ 10 13C2 PFDA

Lab ID	Inj Date	\$ 2	\$ 10	* 6 13C2-PFOA	° 7 13C4 PFOS
	IS Std			880660 1.79	2535541 2.01
# 1 RB	22-Mar-2018 14:39:08			1154808 131.1 1.88	2643467 104.3 2.13
# 2 RB	22-Mar-2018 14:43:48			1139531 129.4 1.88	2543992 100.3 2.13
# 3 RB	22-Mar-2018 14:48:28			1140370 129.5 1.88	2690037 106.1 2.13
	IS Std				
# 4 IC L1	22-Mar-2018 14:53:07	94.52 1.53	96.74 2.29	1188768> 100.0* 1.87	2751643> 100.0* 2.12
# 5 IC L2	22-Mar-2018 14:57:47	96.95 1.54	98.26 2.29	1150433> 96.8* 1.88	2695592> 98.0* 2.13
# 6 IC L3	22-Mar-2018 15:02:27	99.67 1.53	97.88 2.29	1144932> 96.3* 1.88	2599868> 94.5* 2.12
# 7 IC L4	22-Mar-2018 15:07:07	99.55 1.53	98.67 2.29	1096109> 92.2* 1.88	2639658> 95.9* 2.13
# 8 IC L5	22-Mar-2018 15:11:47	101.50 1.53	103.10 2.29	1098074> 92.4* 1.87	2646569> 96.2* 2.13
# 9 IC L6	22-Mar-2018 15:16:28	107.80 1.53	105.40 2.29	1132608> 95.3* 1.87	2724308> 99.0* 2.12
	IS Std			1144932 1.88	2599868 2.12
#10 RB	22-Mar-2018 15:21:08			1355787 118.4 1.87	3128040 120.3 2.12
	IS Std			1096109 1.88	2639658 2.13
#11 CCVL	22-Mar-2018 15:25:48	103.00 1.53	95.72 2.28	1124949 102.6 1.87	2668897 101.1 2.12
	IS Std			1124949 1.67	2668897 2.12
#12 RB	22-Mar-2018 15:30:29			1180542 104.9 1.87	2712290 101.6 2.12
	IS Std			1096109 1.88	2639658 2.13
#13 ICV	22-Mar-2018 15:35:09	100.60 1.53	97.74 2.28	1113554 101.6 1.87	2591357 98.2 2.12
	IS Std				
#14 RB	22-Mar-2018 15:39:50				

13C2 - PFOA

$$RPD = \frac{1188768 - 1096109}{\left(\frac{1188768 + 1096109}{2}\right)} \times 100 = 8.11$$

13C4 - PFOS

$$RPD = \frac{2751643 - 2599868}{\left(\frac{2751643 + 2599868}{2}\right)} \times 100 = 5.67$$

JRB

3-22-18

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_004.d
 Lims ID: IC L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 22-Mar-2018 14:53:07 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\20180322-55711.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Mar-2018 11:11:17 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK008

First Level Reviewer: roycea Date: 22-Mar-2018 15:20:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.410	-0.006	1.000	796972	8.74		321	
298.90 > 99.00	1.404	1.410	-0.006	1.000	599936		1.33(0.00-0.00)	1354	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.534	-0.001	1.000	1155395	9.45		11985	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.684	0.0	1.000	113714	0.9711		30.3	M
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.684	0.0	1.000	427157	2.86		577	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.878	-0.004		1188768	10.0		8447	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.879	-0.005	1.000	215607	1.88		23.7	M
413.00 > 169.00	1.874	1.879	-0.005	1.000	115508		1.87(0.00-0.00)	103	M
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.132	2.124	0.008	1.000	335816	3.76		198	M
499.00 > 99.00	2.124	2.124	0.0	0.996	73456		4.57(0.00-0.00)	169	M
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.128	-0.004		2751643	28.7		3734	
9 Perfluorononanoic acid									
463.00 > 419.00	2.140	2.140	0.0	1.000	156653	1.81		25.2	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.291	0.0	1.000	973562	9.67		7533	

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\20180322-55711.b\2018.03.22_537ICAL_004.d

Injection Date: 22-Mar-2018 14:53:07

Instrument ID: A8_N

Lims ID: IC L1

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 1

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

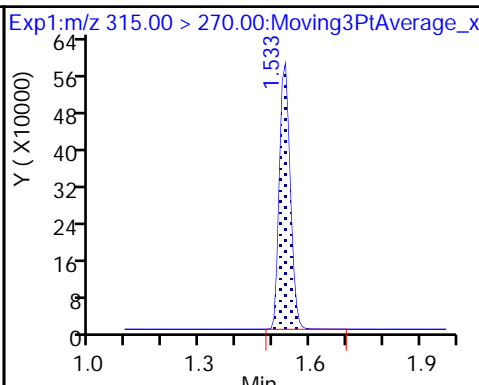
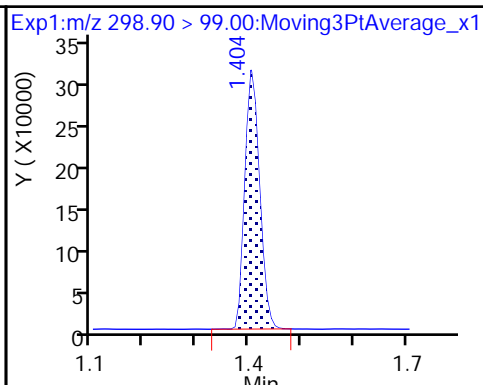
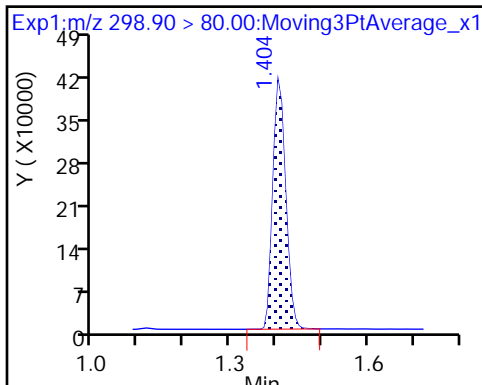
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

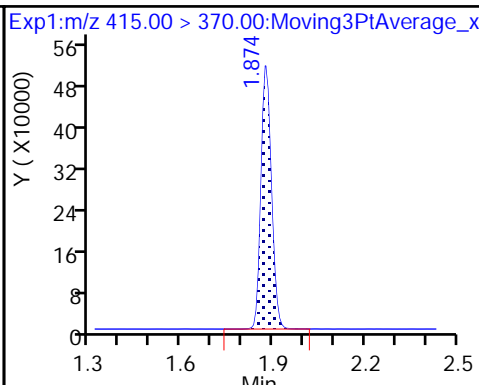
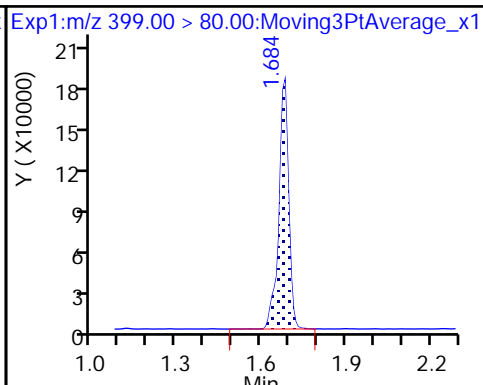
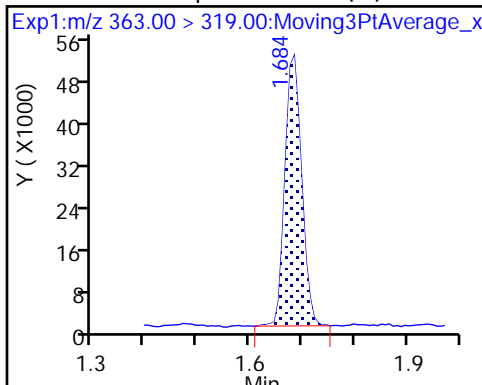
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (M)

3 Perfluorohexanesulfonic acid

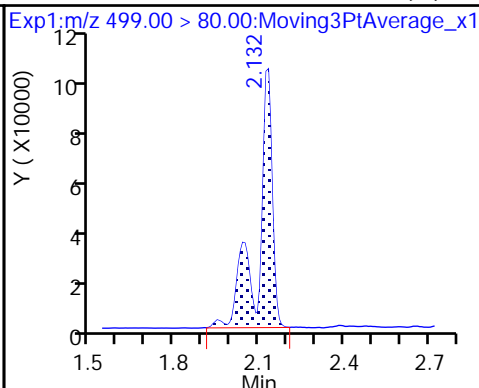
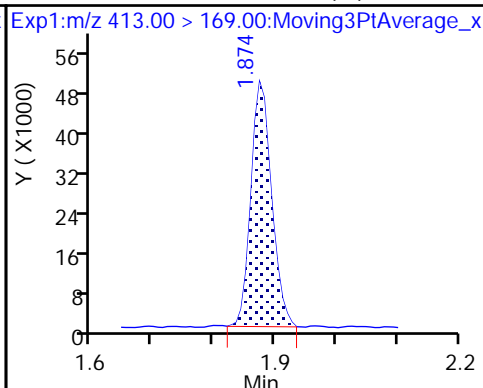
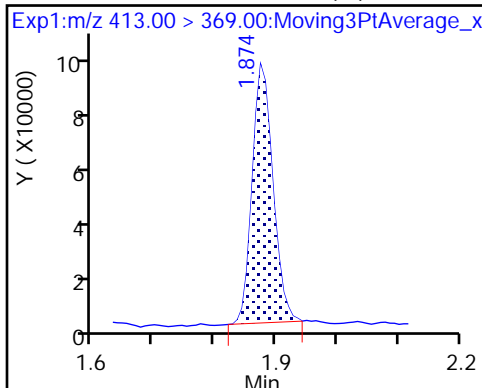
* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid (M)

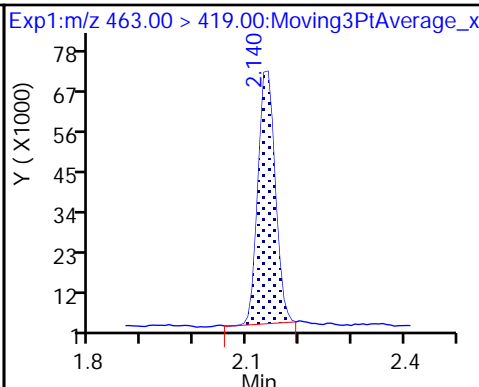
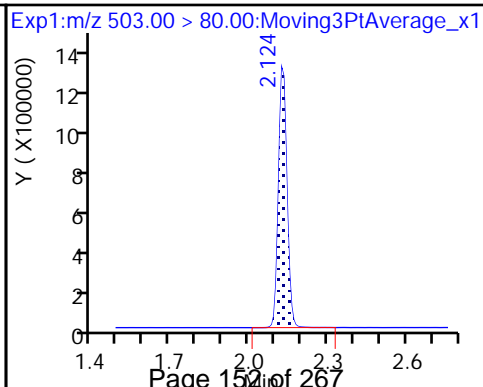
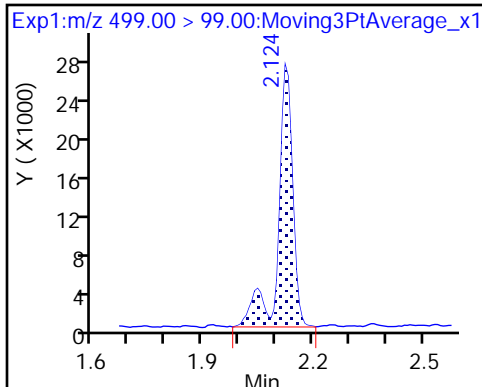
8 Perfluorooctane sulfonic acid (M)



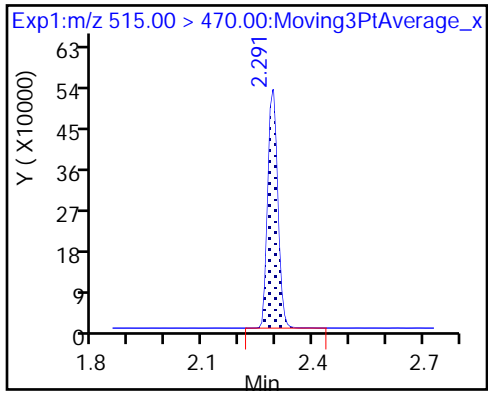
8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

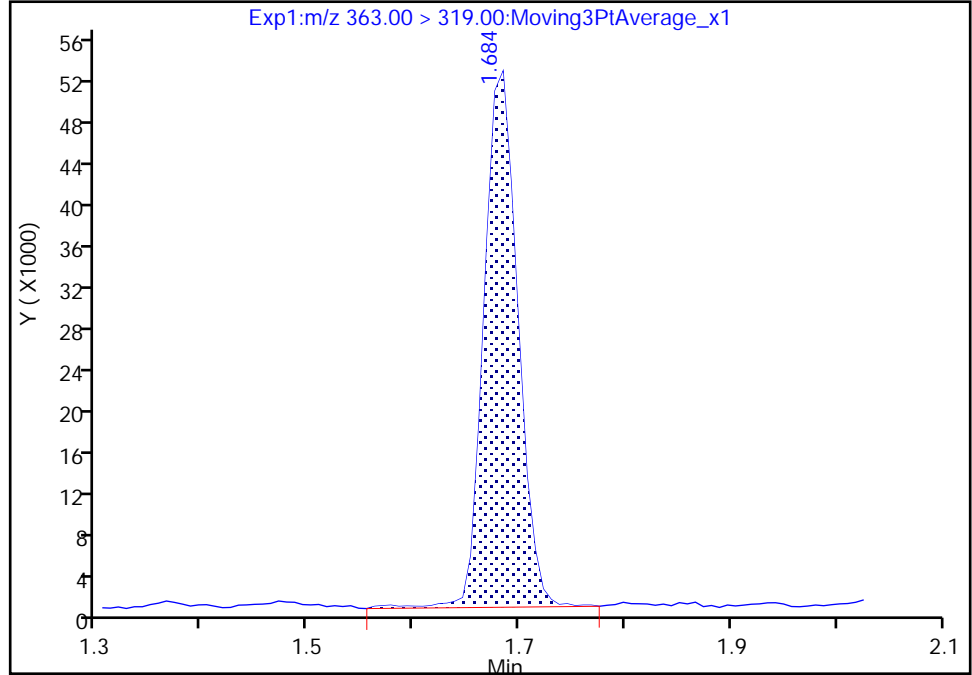
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_004.d
Injection Date: 22-Mar-2018 14:53:07 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

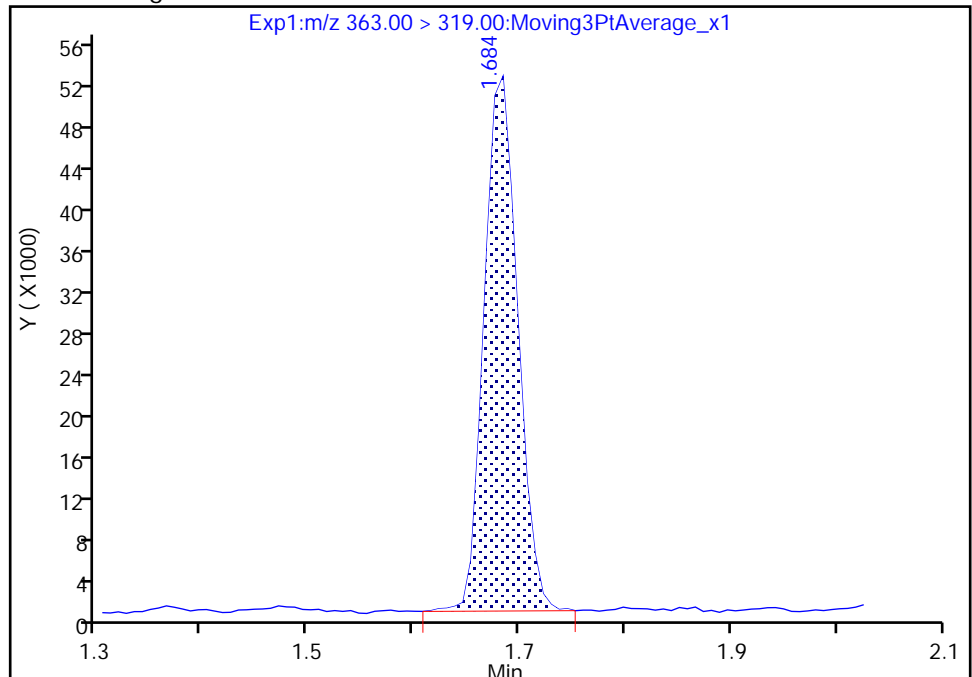
RT: 1.68
Area: 115376
Amount: 0.973622
Amount Units: ng/ml

Processing Integration Results



RT: 1.68
Area: 113714
Amount: 0.971110
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

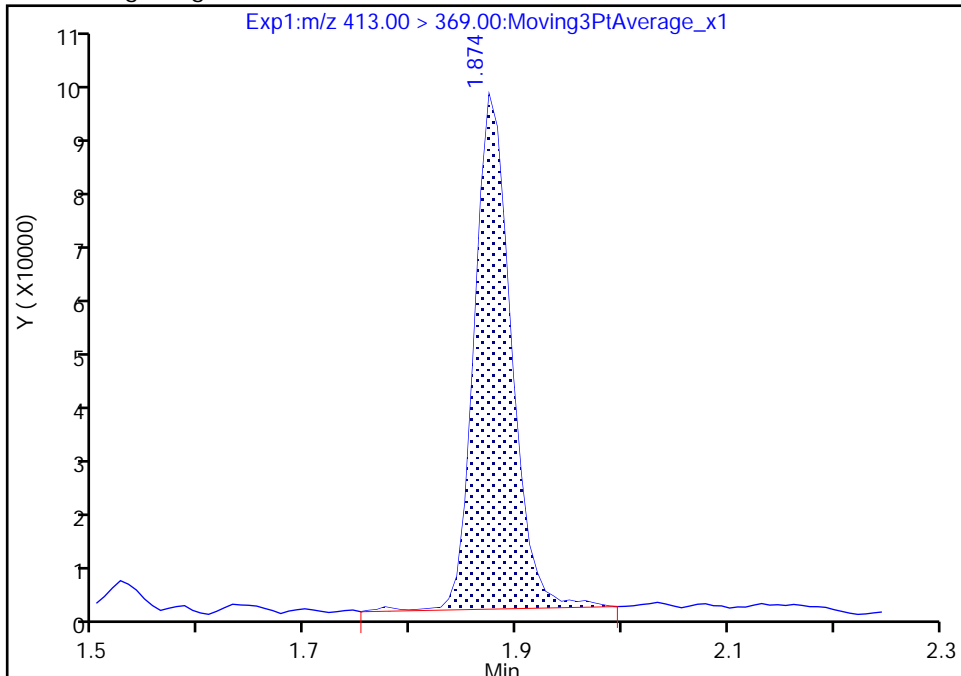
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_004.d
Injection Date: 22-Mar-2018 14:53:07 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

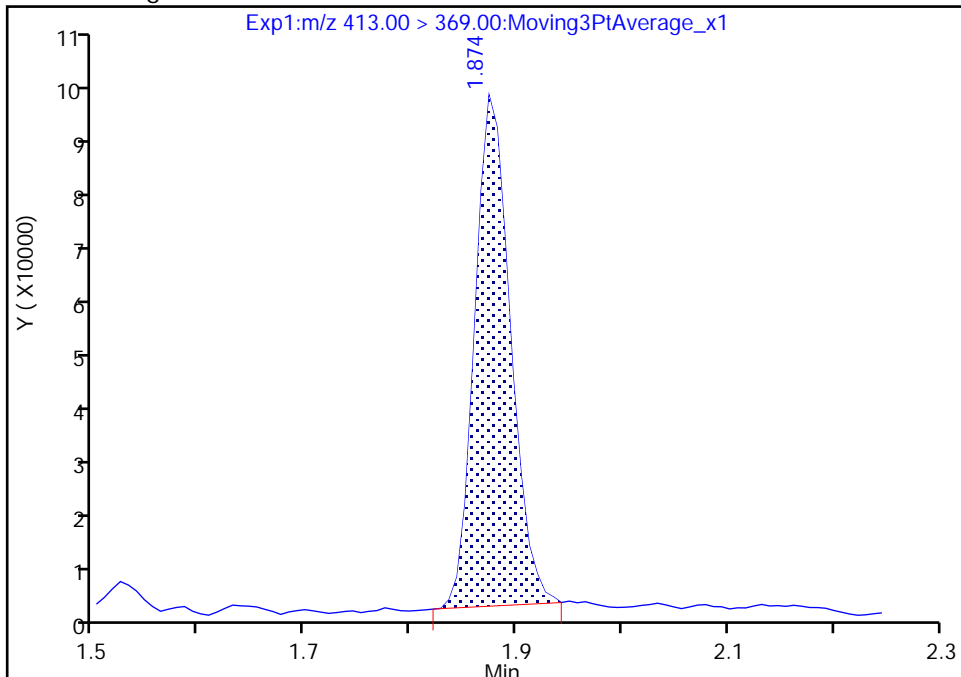
RT: 1.87
Area: 224600
Amount: 1.955807
Amount Units: ng/ml

Processing Integration Results



RT: 1.87
Area: 215607
Amount: 1.877742
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 22-Mar-2018 15:18:10
Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

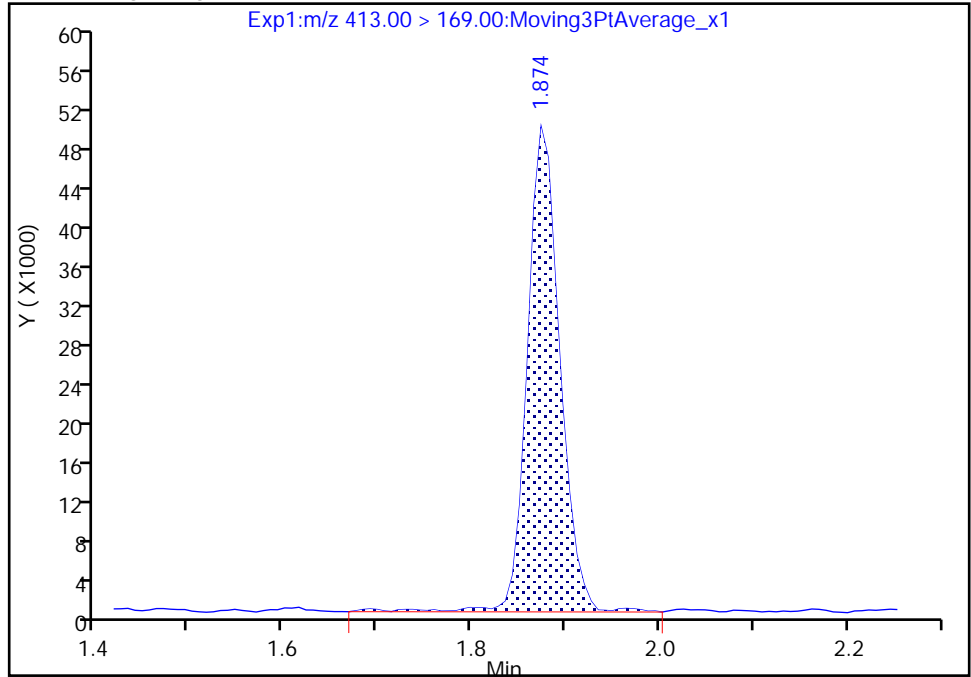
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_004.d
Injection Date: 22-Mar-2018 14:53:07 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

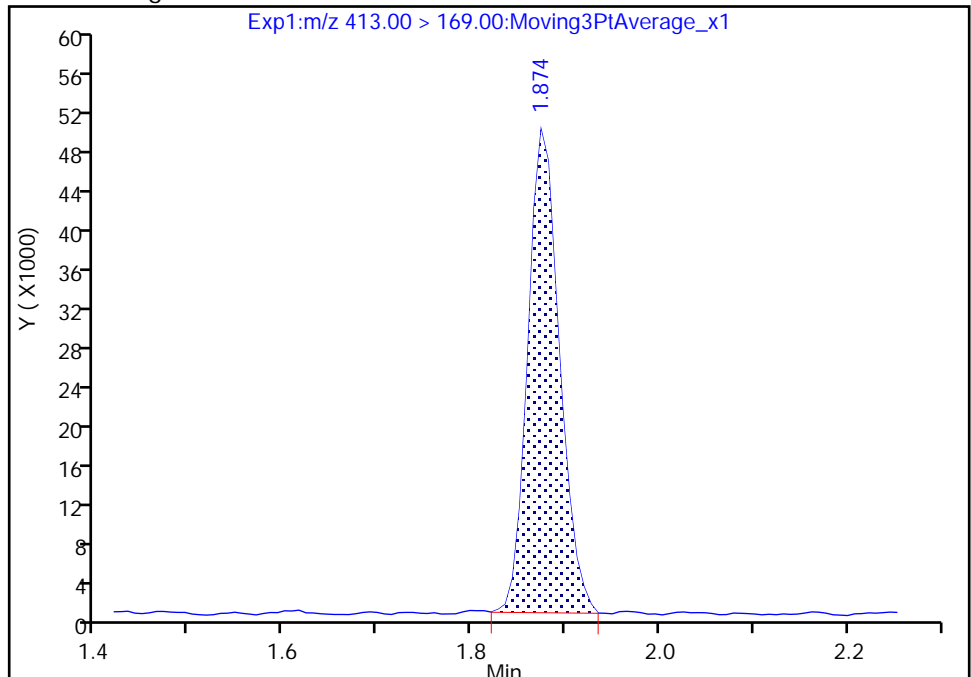
RT: 1.87
Area: 119534
Amount: 1.955807
Amount Units: ng/ml

Processing Integration Results



RT: 1.87
Area: 115508
Amount: 1.877742
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 22-Mar-2018 15:19:01

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

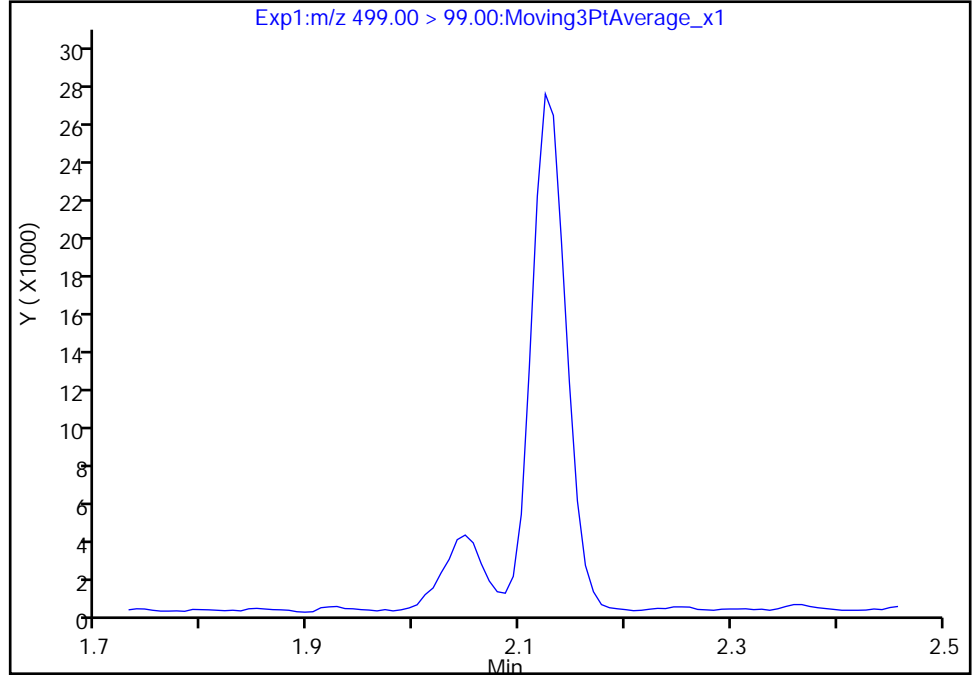
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_004.d
Injection Date: 22-Mar-2018 14:53:07 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

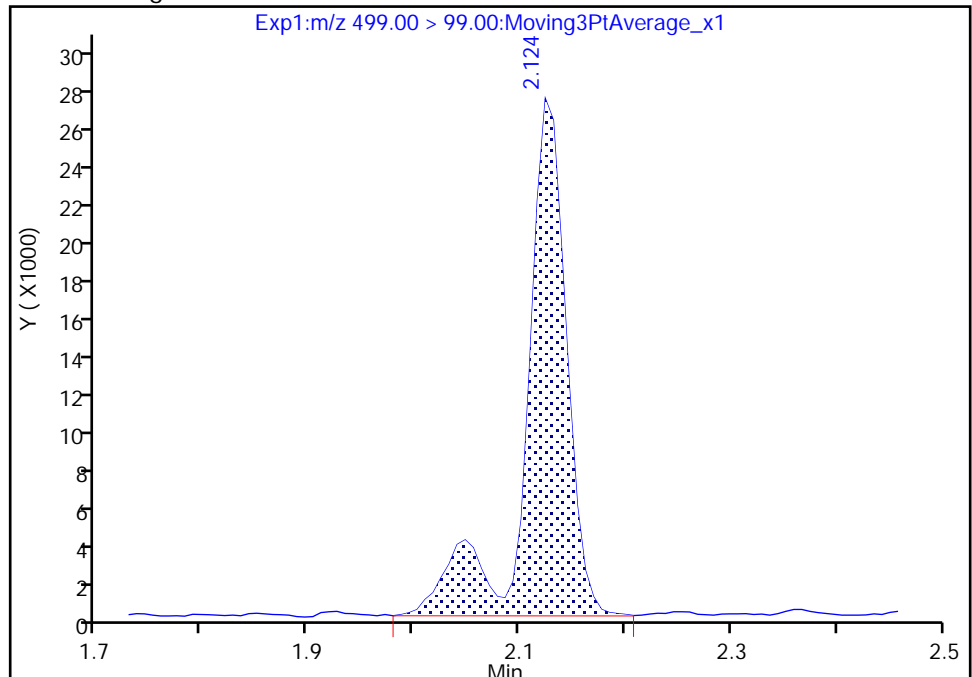
Signal: 2

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results



RT: 2.12
Area: 73456
Amount: 3.759383
Amount Units: ng/ml

Reviewer: roycea, 22-Mar-2018 15:19:15
Audit Action: Manually Integrated

Audit Reason: Assign Peak
Page 157 of 267

TestAmerica Sacramento

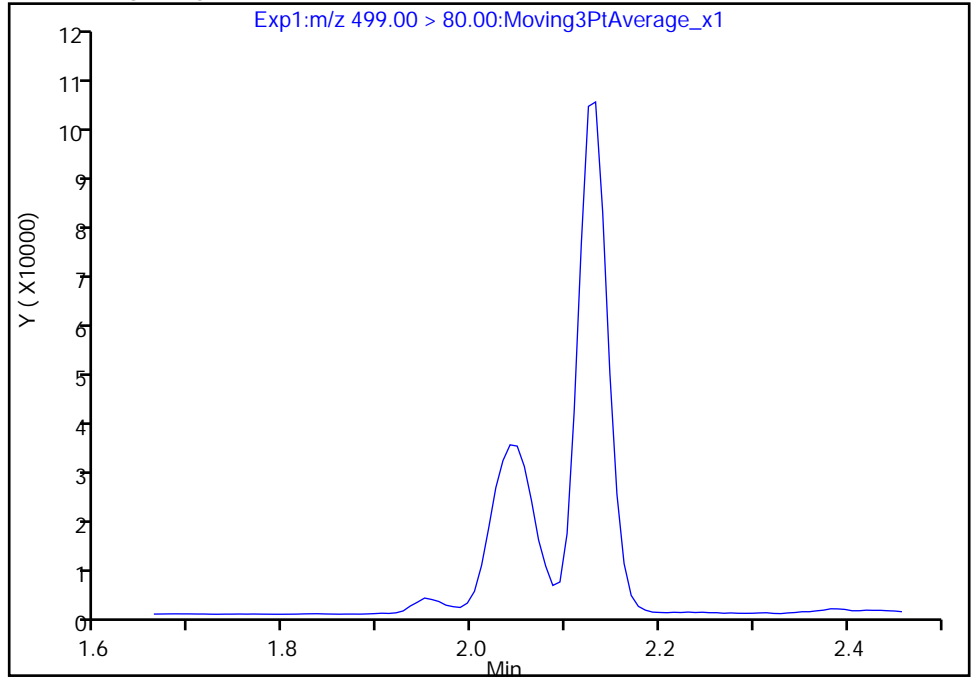
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_004.d
Injection Date: 22-Mar-2018 14:53:07 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

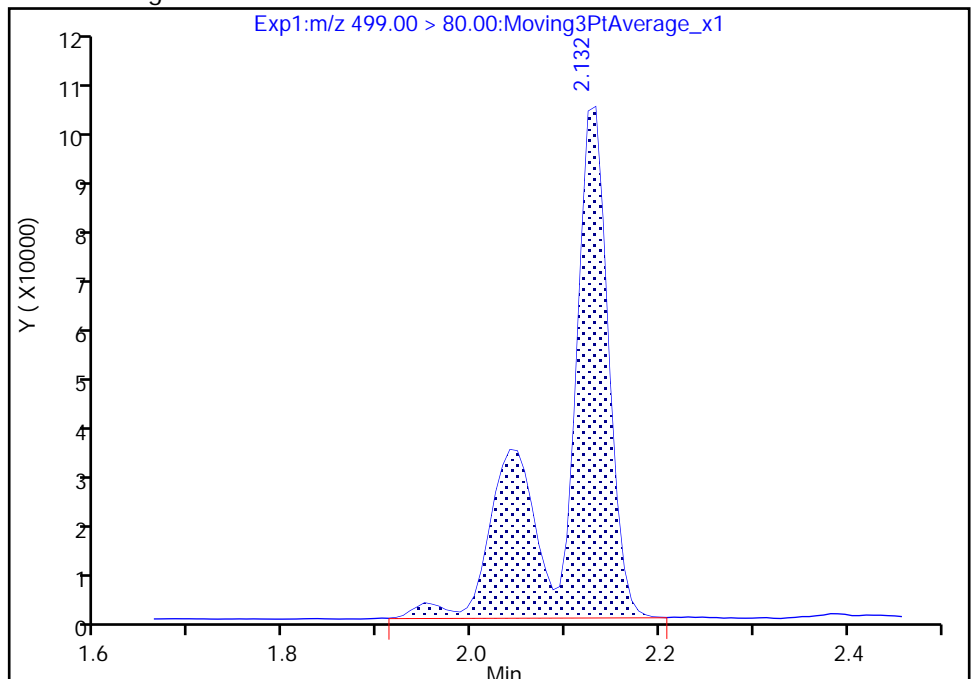
Not Detected
Expected RT: 2.12

Processing Integration Results



RT: 2.13
Area: 335816
Amount: 3.759383
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 22-Mar-2018 15:19:30

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_005.d
 Lims ID: IC L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 22-Mar-2018 14:57:47 ALS Bottle#: 2 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L2_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Mar-2018 11:11:18 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK008

First Level Reviewer: roycea Date: 22-Mar-2018 15:22:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.410	0.001	1.000	1844935	20.7		747	
298.90 > 99.00	1.411	1.410	0.001	1.000	1398518		1.32(0.00-0.00)	3187	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.534	0.006	1.000	1146847	9.69		11481	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.684	0.0	1.000	961162	6.58		1387	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.684	0.0	1.000	257474	2.27		72.7	M
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.878	0.004		1150433	10.0		8835	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.879	0.003	1.000	487639	4.39		54.4	M
413.00 > 169.00	1.882	1.879	0.003	1.000	263401		1.85(0.00-0.00)	229	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.132	2.124	0.008	1.000	780931	8.92		466	a
499.00 > 99.00	2.132	2.124	0.008	1.000	171633		4.55(0.00-0.00)	422	a
* 7 13C4 PFOS									
503.00 > 80.00	2.132	2.128	0.004		2695592	28.7		3506	
9 Perfluorononanoic acid									
463.00 > 419.00	2.140	2.140	0.0	1.000	374107	4.48		63.6	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.291	0.0	1.000	956972	9.83		8050	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

Reagents:

LC537-L2_00021

Amount Added: 1.00

Units: mL

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_005.d

Injection Date: 22-Mar-2018 14:57:47

Instrument ID: A8_N

Lims ID: IC L2

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

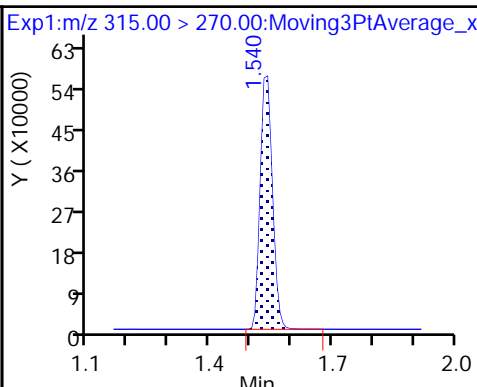
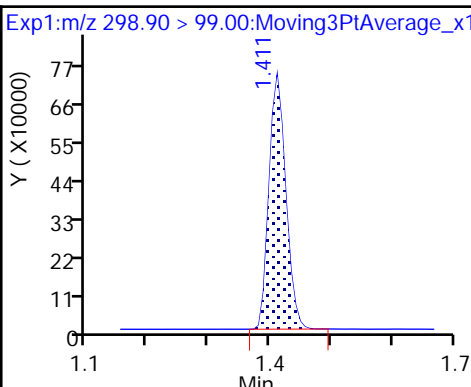
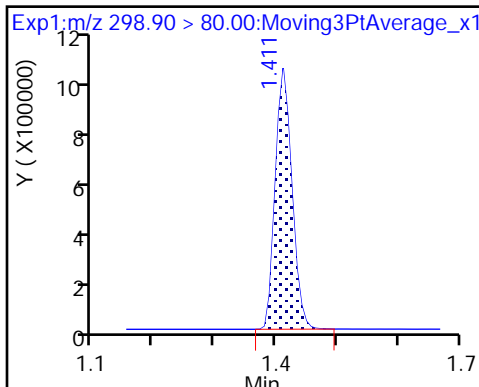
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

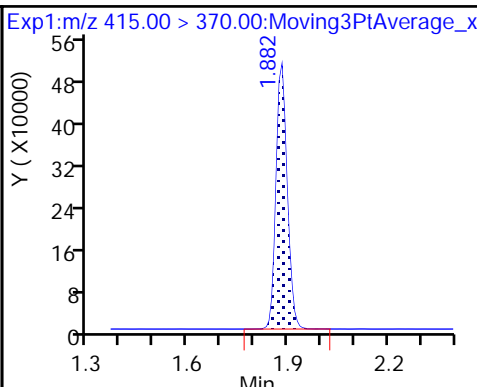
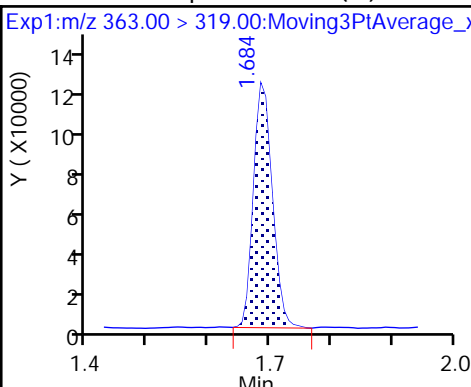
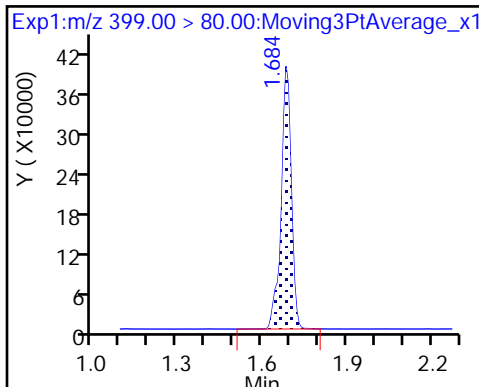
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid (M)

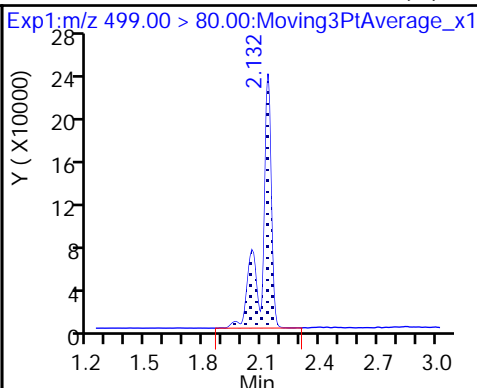
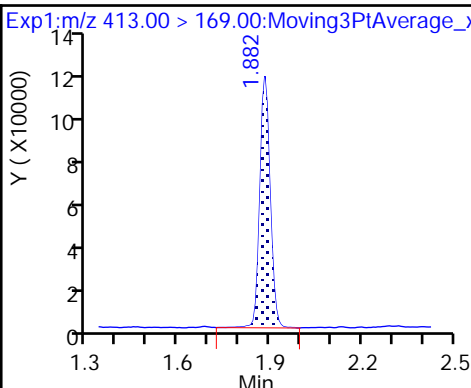
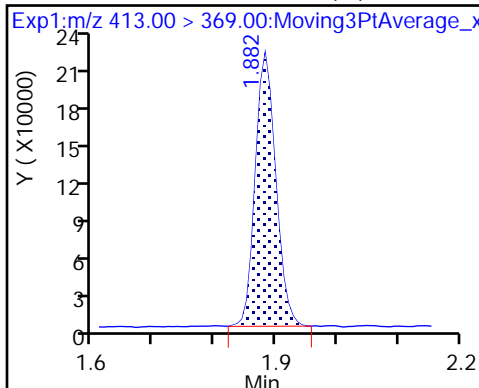
* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid

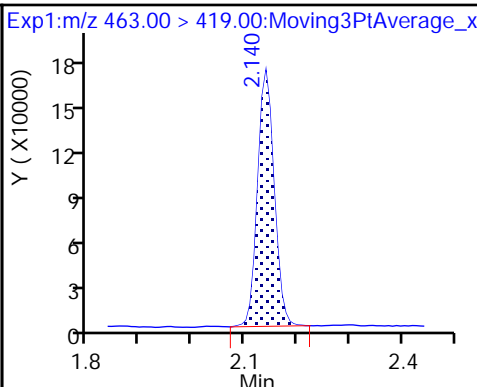
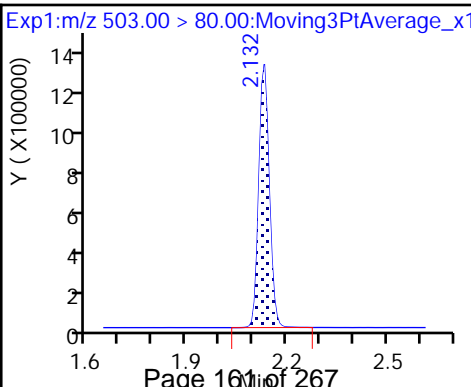
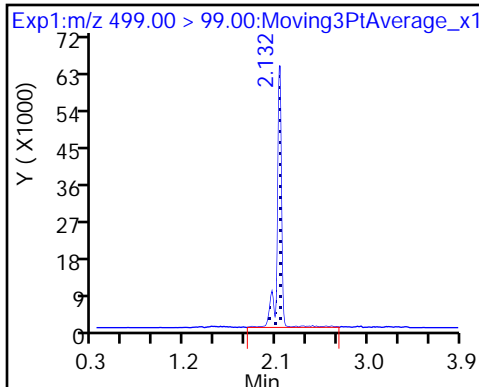
8 Perfluorooctane sulfonic acid (M)



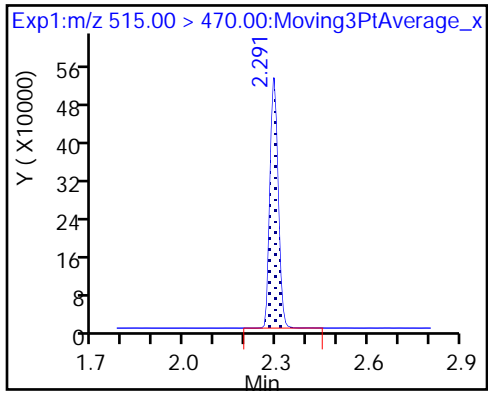
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

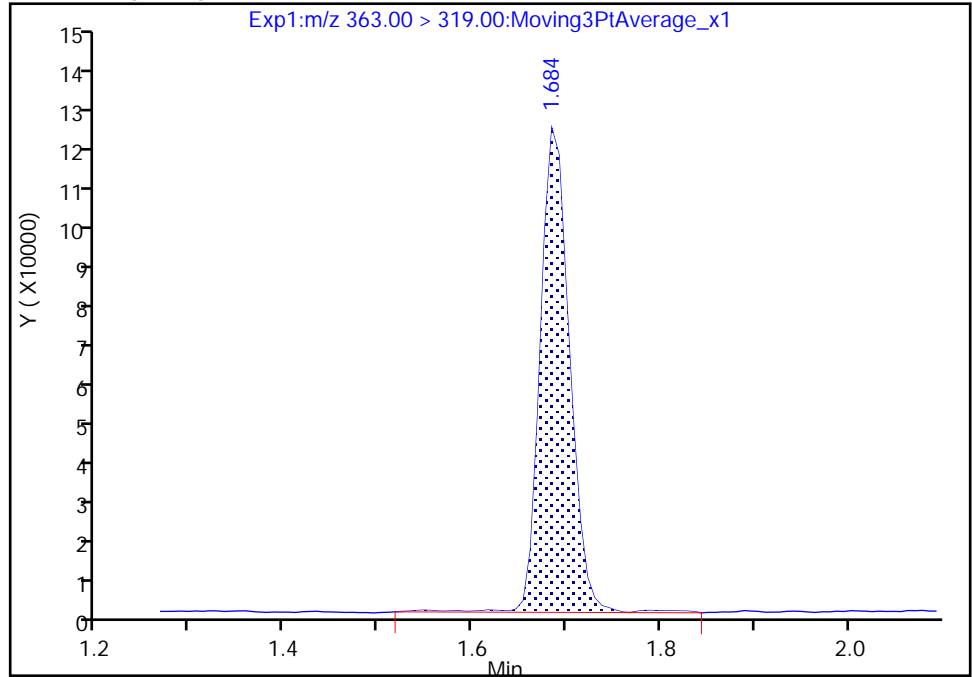
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_005.d
Injection Date: 22-Mar-2018 14:57:47 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

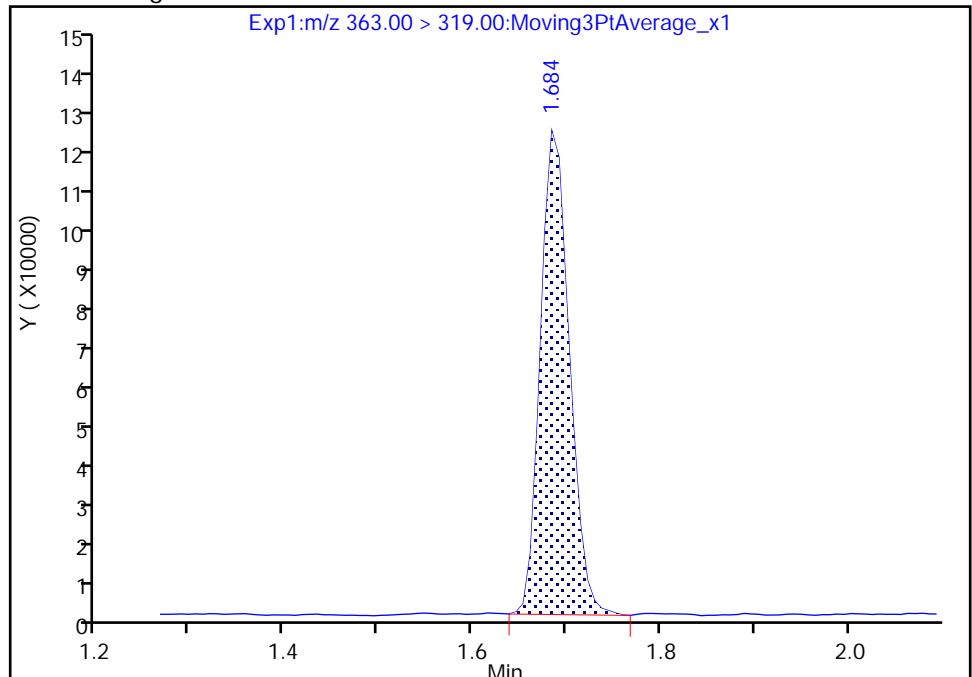
RT: 1.68
Area: 262263
Amount: 2.294947
Amount Units: ng/ml

Processing Integration Results



RT: 1.68
Area: 257474
Amount: 2.272080
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 22-Mar-2018 15:21:34
Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

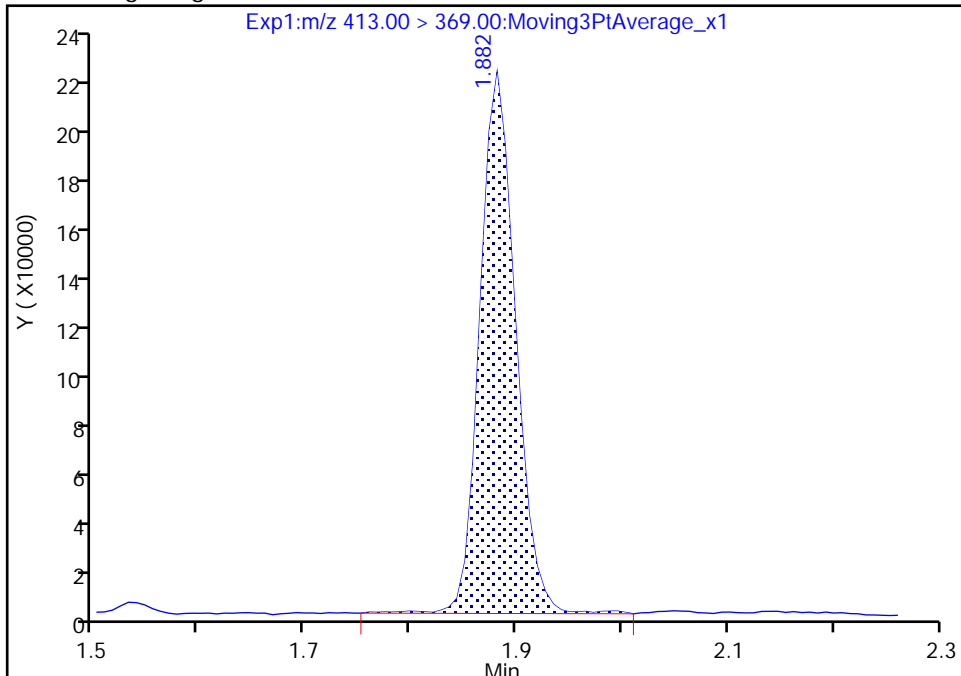
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_005.d
Injection Date: 22-Mar-2018 14:57:47 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

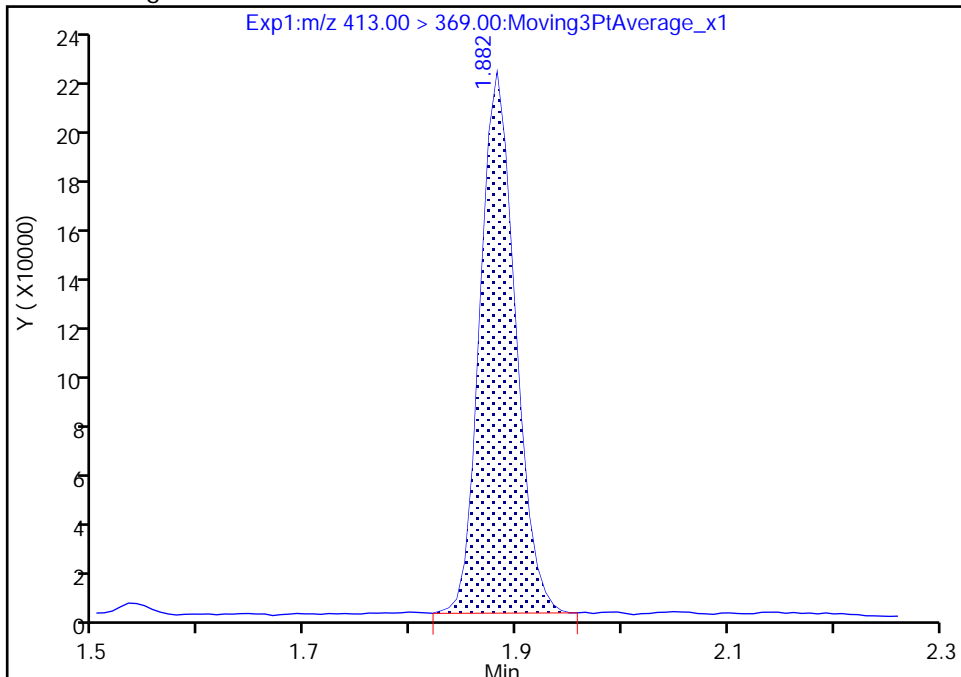
RT: 1.88
Area: 495814
Amount: 4.505249
Amount Units: ng/ml

Processing Integration Results



RT: 1.88
Area: 487639
Amount: 4.388410
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 22-Mar-2018 15:21:50
Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

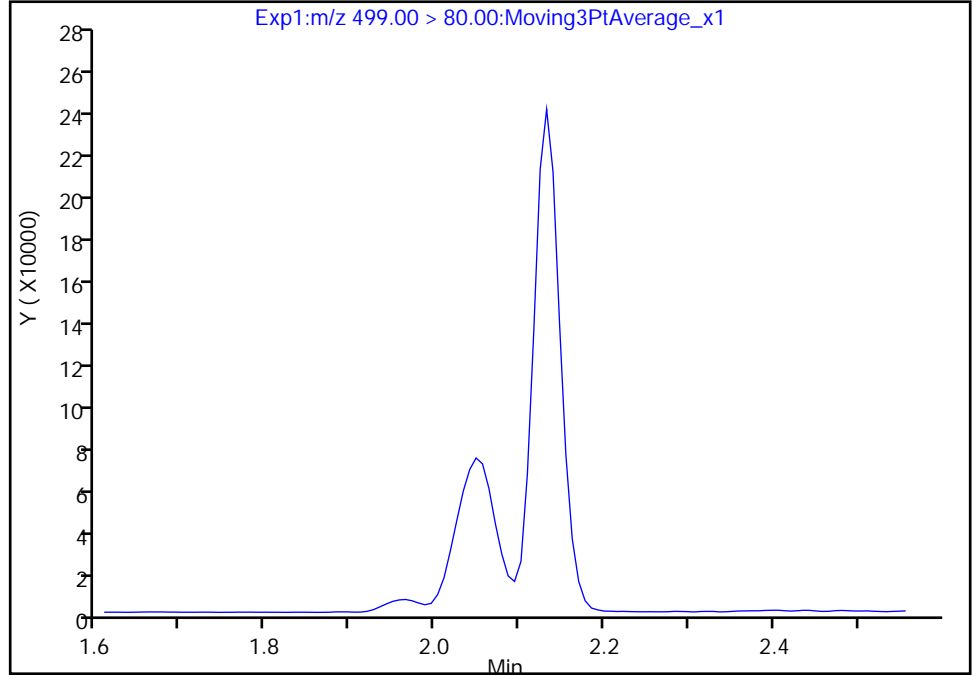
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_005.d
Injection Date: 22-Mar-2018 14:57:47 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

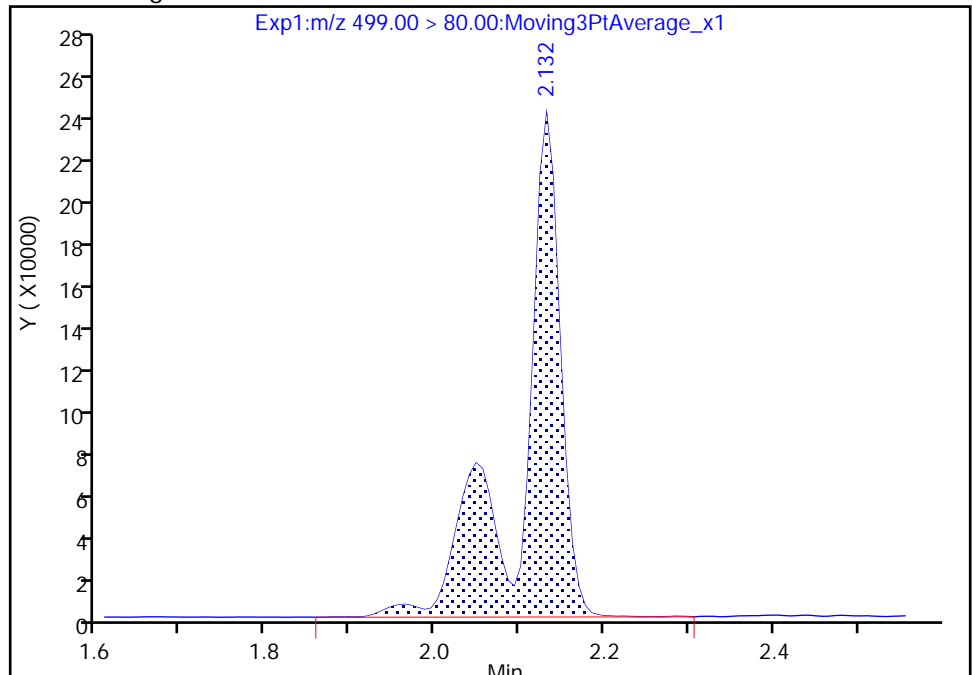
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 780931
Amount: 8.924128
Amount Units: ng/ml



Reviewer: roycea, 22-Mar-2018 15:20:33
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_006.d
 Lims ID: IC L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 22-Mar-2018 15:02:27 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\20180322-55711.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Mar-2018 11:11:20 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK008

First Level Reviewer: roycea Date: 22-Mar-2018 15:23:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.410	0.001	1.000	4174655	48.5		1678	
298.90 > 99.00	1.411	1.410	0.001	1.000	3207194		1.30(0.00-0.00)	6813	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.534	-0.001	1.000	1173423	9.97		11146	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.684	0.0	1.000	561923	4.98		163	M
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.684	0.0	1.000	2189176	15.5		2937	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.878	0.004		1144932	10.0		7653	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.879	0.003	1.000	1104922	10.0		120	
413.00 > 169.00	1.882	1.879	0.003	1.000	574479		1.92(0.00-0.00)	472	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.132	2.124	0.008	1.000	1708604	20.2		998	a
499.00 > 99.00	2.124	2.124	0.0	0.996	360244		4.74(0.00-0.00)	966	a
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.128	-0.004		2599868	28.7		3614	
9 Perfluorononanoic acid									
463.00 > 419.00	2.140	2.140	0.0	1.000	835301	10.0		148	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.291	0.0	1.000	948738	9.79		8867	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

Reagents:

LC537-L3_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_006.d

Injection Date: 22-Mar-2018 15:02:27

Instrument ID: A8_N

Lims ID: IC L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

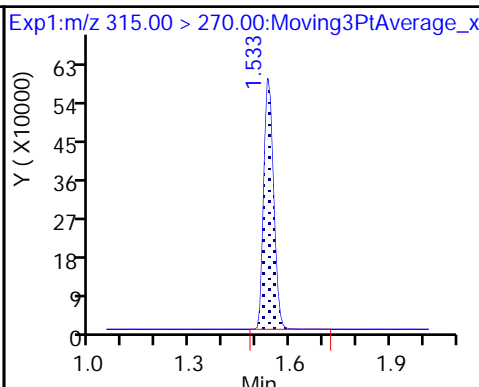
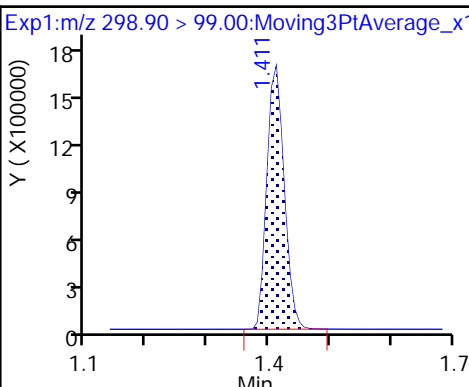
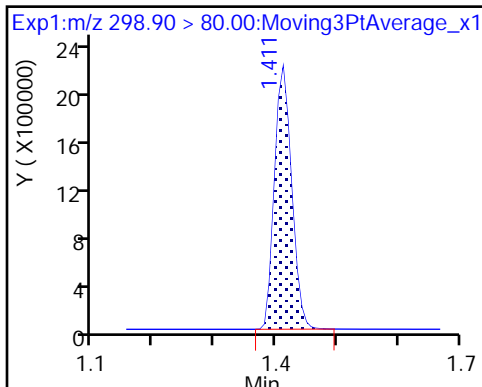
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

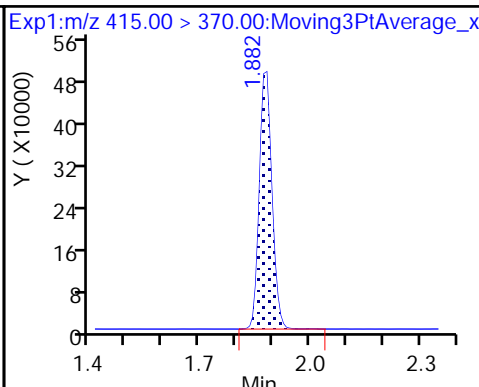
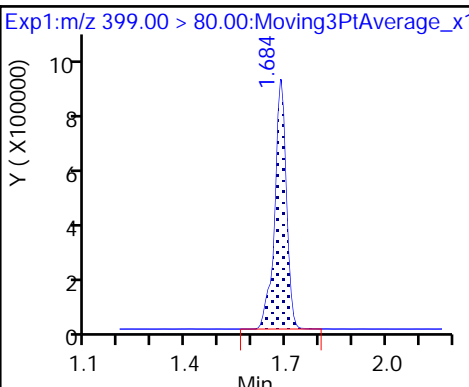
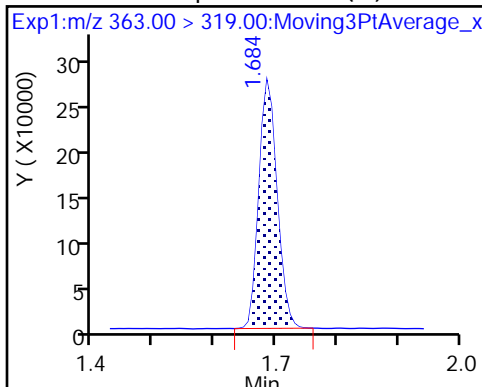
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (M)

3 Perfluorohexanesulfonic acid

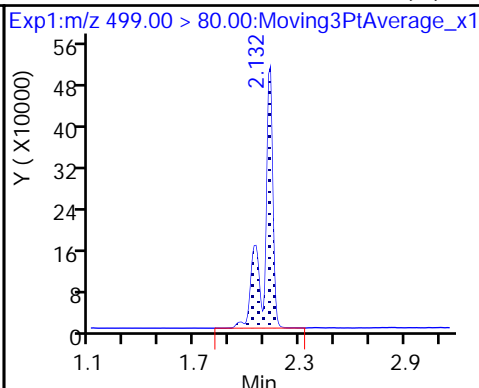
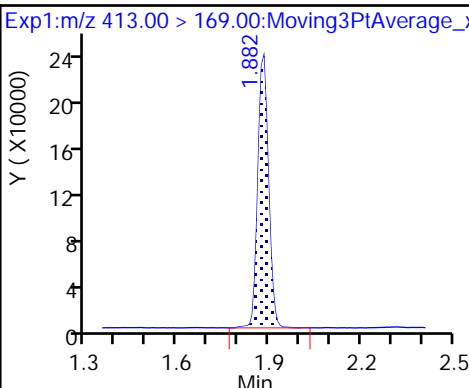
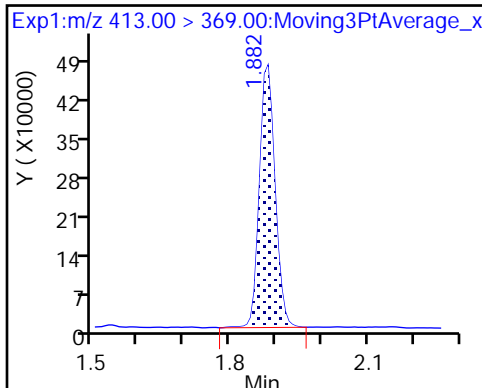
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

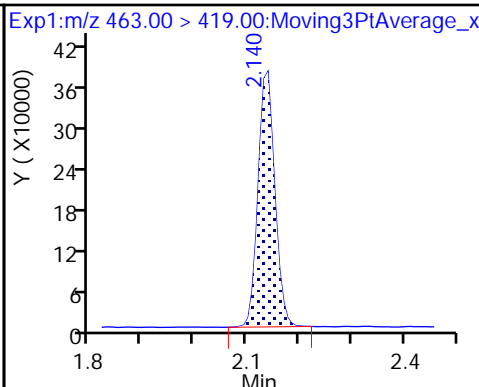
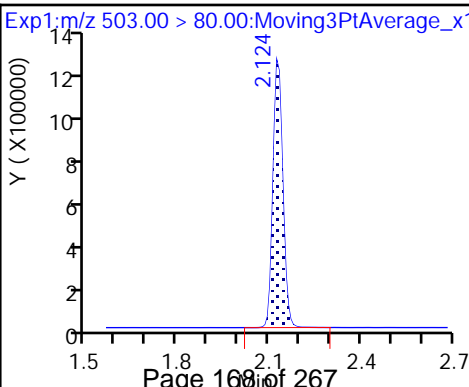
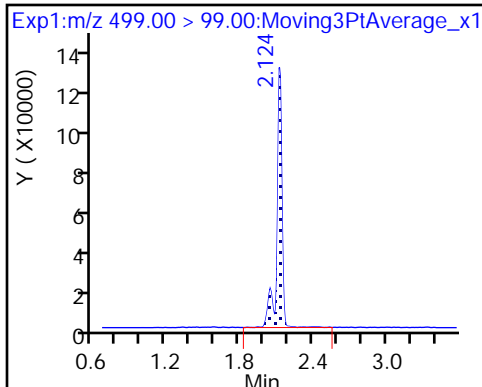
8 Perfluorooctane sulfonic acid (M)



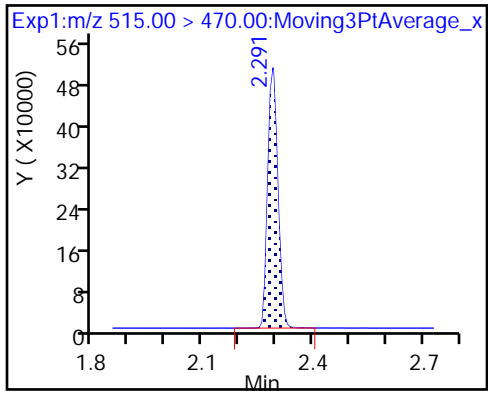
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

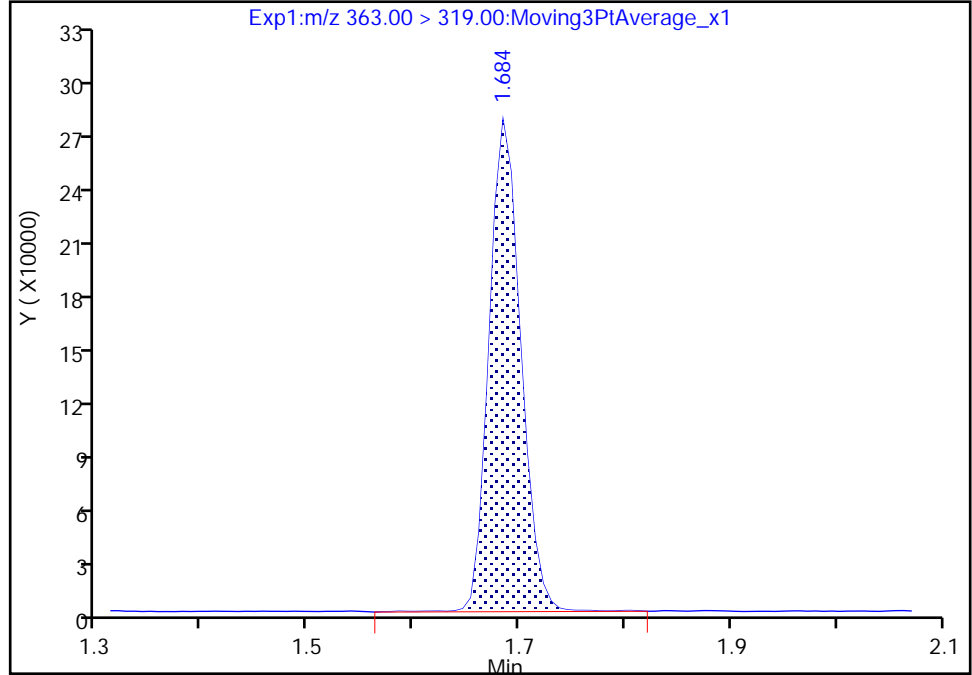
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_006.d
Injection Date: 22-Mar-2018 15:02:27 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

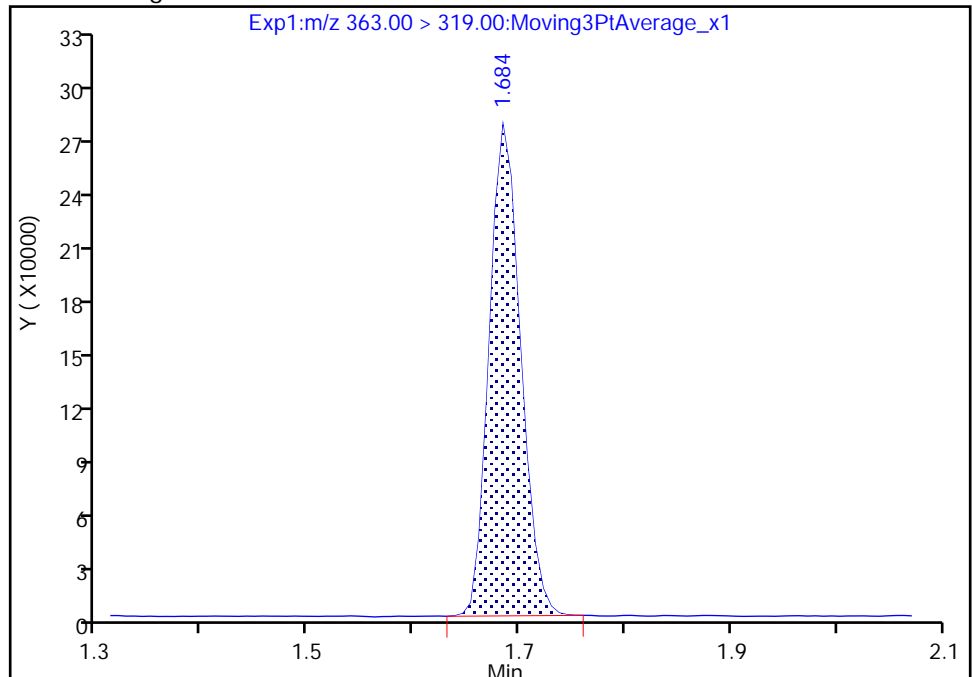
RT: 1.68
Area: 567279
Amount: 5.011480
Amount Units: ng/ml

Processing Integration Results



RT: 1.68
Area: 561923
Amount: 4.982516
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 22-Mar-2018 15:23:14
Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

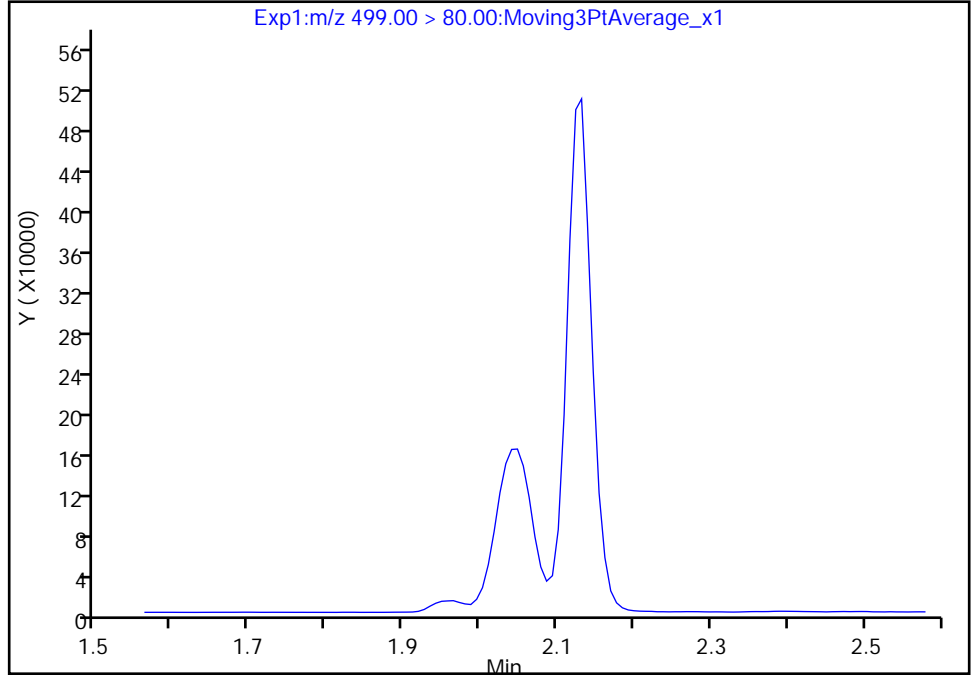
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_006.d
Injection Date: 22-Mar-2018 15:02:27 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

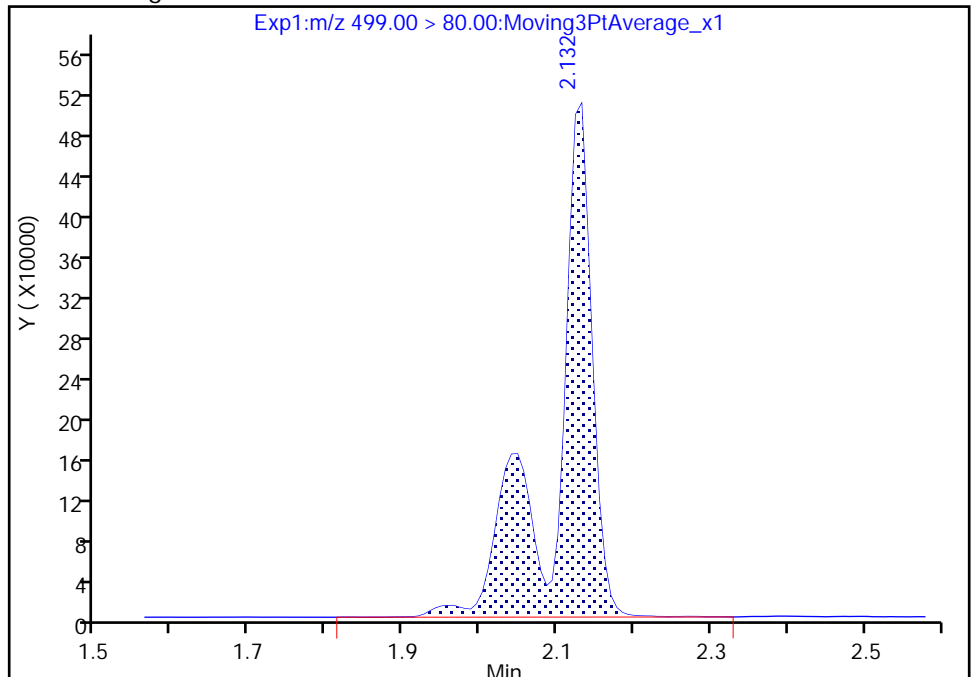
Not Detected
Expected RT: 2.12

Processing Integration Results



RT: 2.13
Area: 1708604
Amount: 20.244050
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 22-Mar-2018 15:22:49
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_007.d
 Lims ID: IC L4
 Client ID:
 Sample Type: ICISAV Calib Level: 4
 Inject. Date: 22-Mar-2018 15:07:07 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\20180322-55711.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Mar-2018 11:11:21 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK008

First Level Reviewer: barnettj Date: 23-Mar-2018 11:10:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.410	0.001	1.000	7866195	89.9		2956	
298.90 > 99.00	1.411	1.410	0.001	1.000	5825212		1.35(0.00-0.00)	10820	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.534	-0.001	1.000	1122030	9.96		13090	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.684	0.0	1.000	4403638	30.8		5669	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.684	0.0	1.000	1097097	10.2		303	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.878	0.004		1096109	10.0		7354	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.879	0.003	1.000	2205621	20.8		247	
413.00 > 169.00	1.882	1.879	0.003	1.000	1126563		1.96(0.00-0.00)	990	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.132	2.124	0.008	1.000	3566785	41.6		2045	a
499.00 > 99.00	2.132	2.124	0.008	1.000	718017		4.97(0.00-0.00)	1685	a
* 7 13C4 PFOS									
503.00 > 80.00	2.132	2.128	0.004		2639658	28.7		3477	
9 Perfluorononanoic acid									
463.00 > 419.00	2.140	2.140	0.0	1.000	1652004	20.7		283	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.291	0.0	1.000	915618	9.87		8125	

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\20180322-55711.b\2018.03.22_537ICAL_007.d

Injection Date: 22-Mar-2018 15:07:07

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

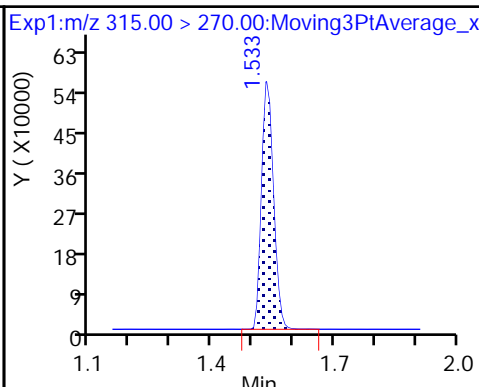
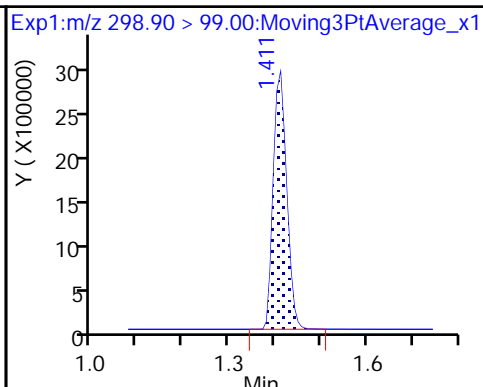
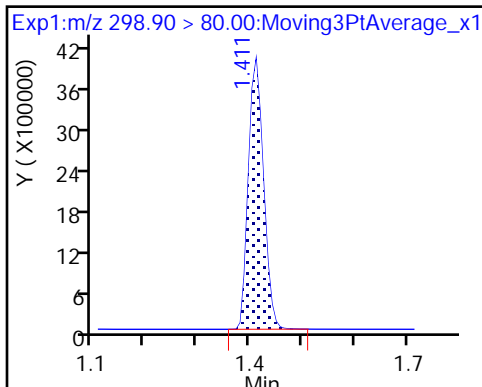
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

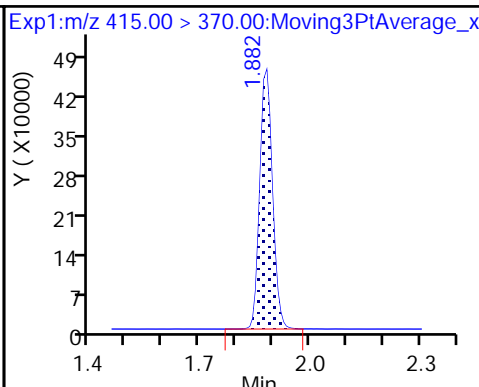
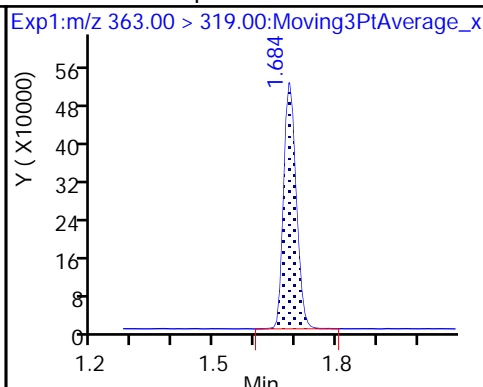
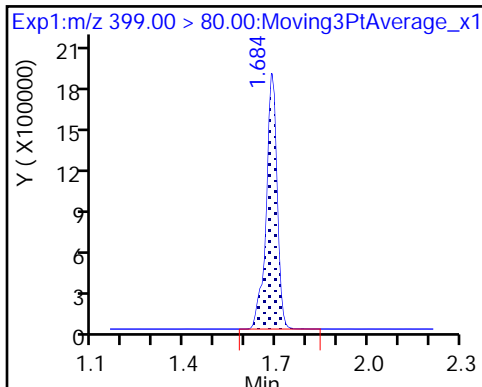
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

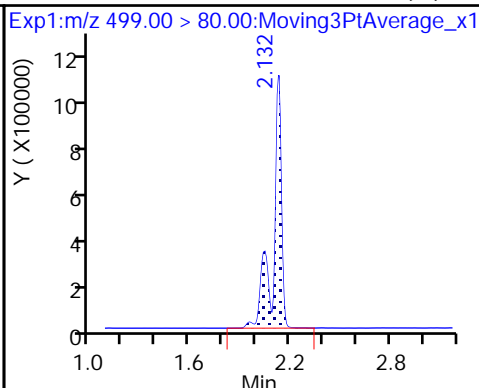
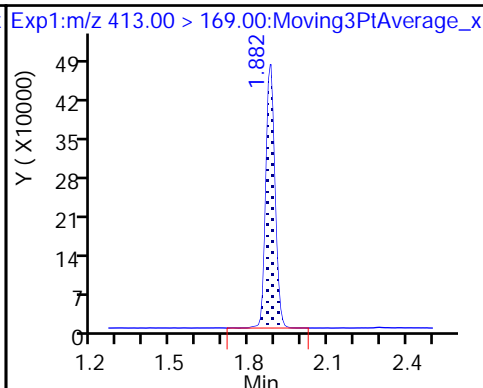
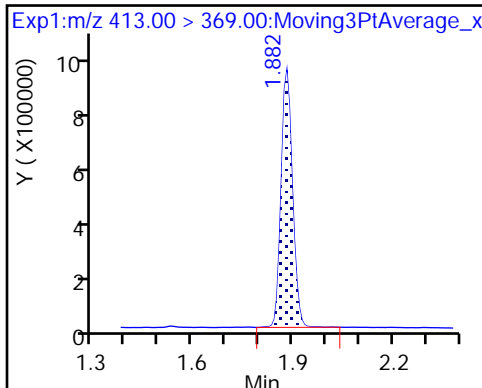
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

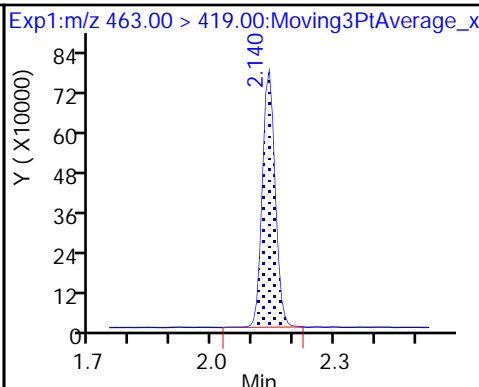
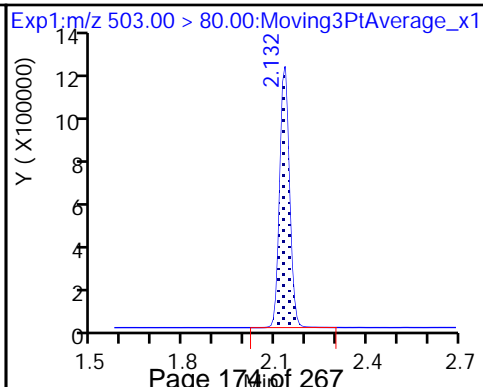
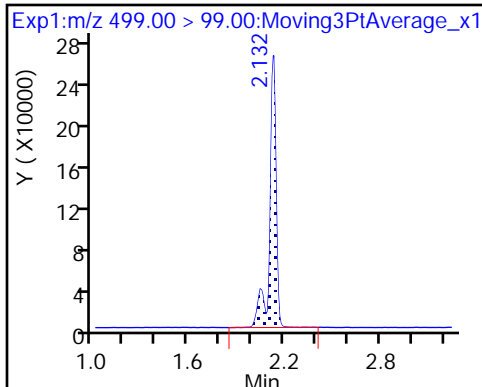
8 Perfluorooctane sulfonic acid (M)



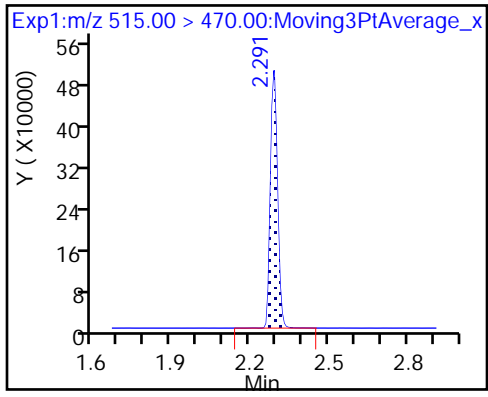
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

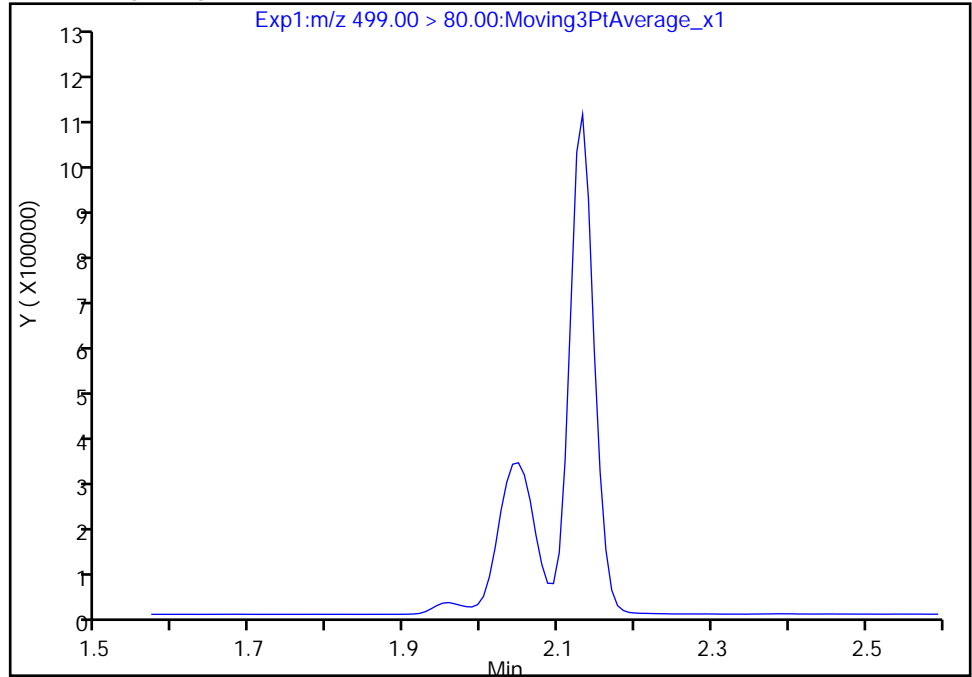
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Injection Date: 22-Mar-2018 15:07:07 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

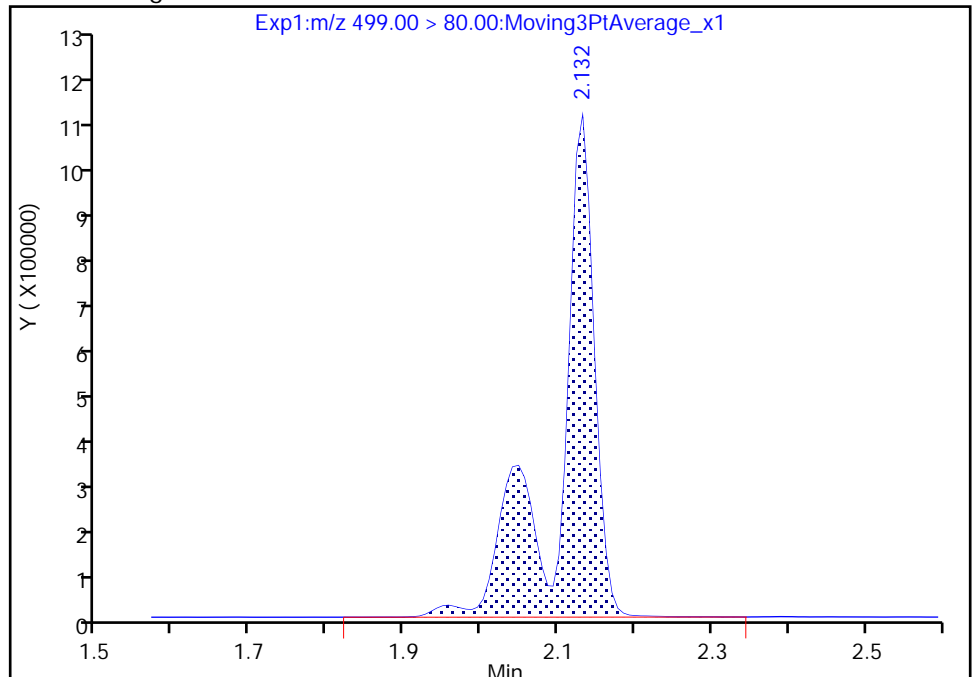
Not Detected
Expected RT: 2.12

Processing Integration Results



RT: 2.13
Area: 3566785
Amount: 41.623303
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 22-Mar-2018 15:23:47
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_008.d
 Lims ID: IC L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 22-Mar-2018 15:11:47 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\20180322-55711.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Mar-2018 11:11:22 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK008

First Level Reviewer: roycea Date: 22-Mar-2018 15:31:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.410	0.001	1.000	10901700	124.3		3754	
298.90 > 99.00	1.404	1.410	-0.006	0.995	8669904		1.26(0.00-0.00)	12993	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.534	-0.001	1.000	1145956	10.1		12417	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.684	0.0	1.000	1617482	15.0		462	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.684	0.0	1.000	6568926	45.8		8157	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.878	-0.004		1098074	10.0		7010	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.879	0.003	1.000	3293471	31.1		363	
413.00 > 169.00	1.882	1.879	0.003	1.000	1725910		1.91(0.00-0.00)	1498	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.132	2.124	0.008	1.000	5238684	61.0		2745	a
499.00 > 99.00	2.132	2.124	0.008	1.000	1109413		4.72(0.00-0.00)	2482	a
* 7 13C4 PFOS									
503.00 > 80.00	2.132	2.128	0.004		2646569	28.7		3637	
9 Perfluorononanoic acid									
463.00 > 419.00	2.140	2.140	0.0	1.000	2439501	30.6		403	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.291	0.0	1.000	958136	10.3		7820	

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\20180322-55711.b\2018.03.22_537ICAL_008.d

Injection Date: 22-Mar-2018 15:11:47

Instrument ID: A8_N

Lims ID: IC L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

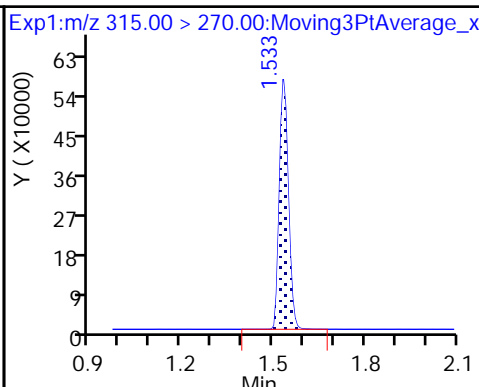
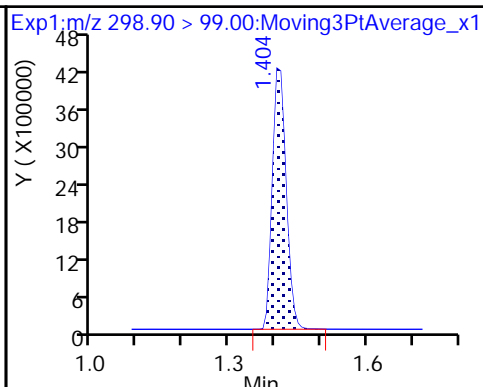
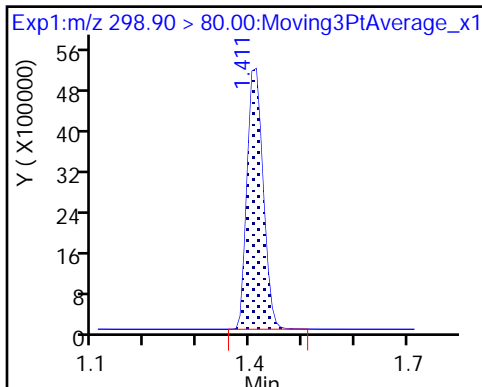
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

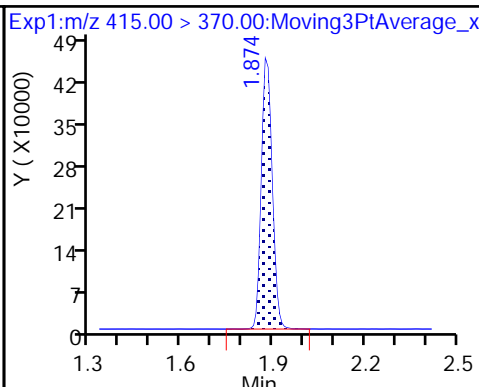
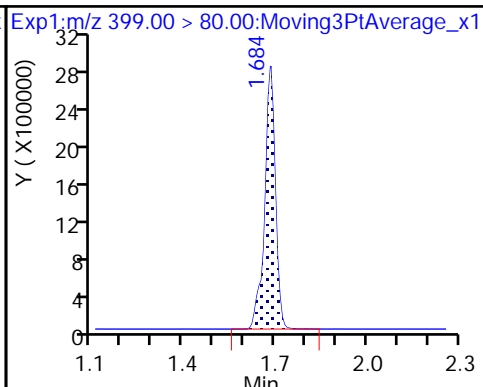
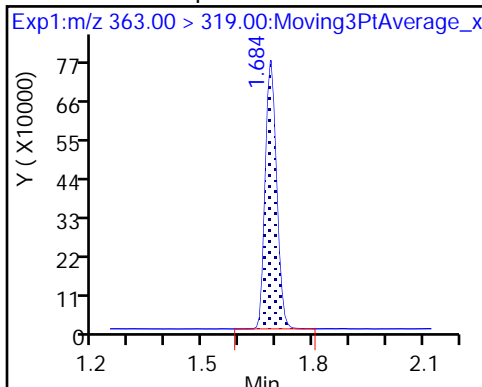
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

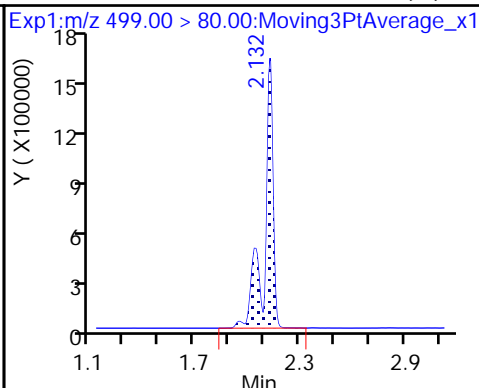
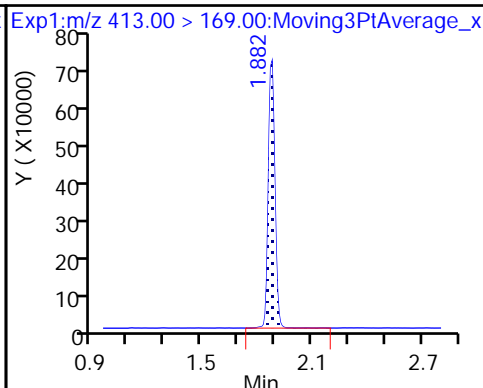
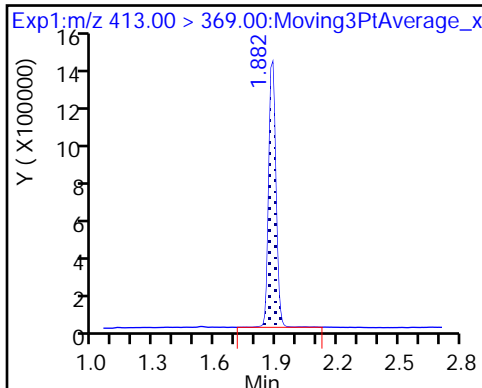
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

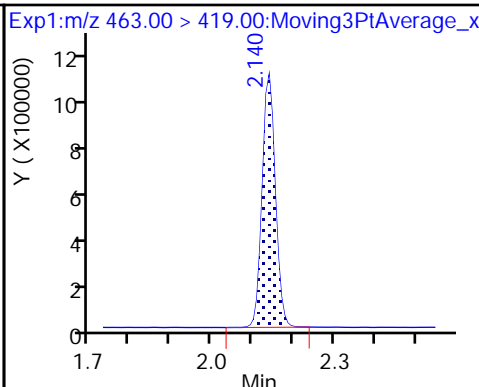
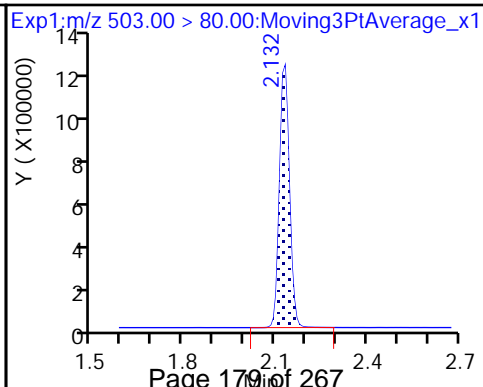
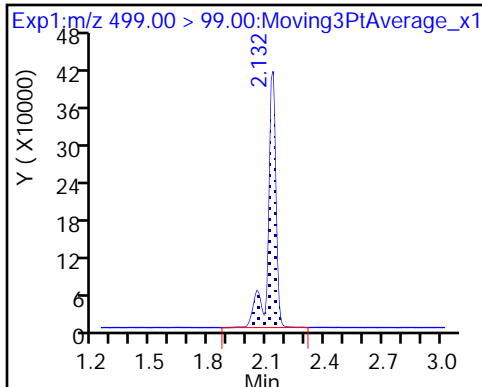
8 Perfluorooctane sulfonic acid (M)



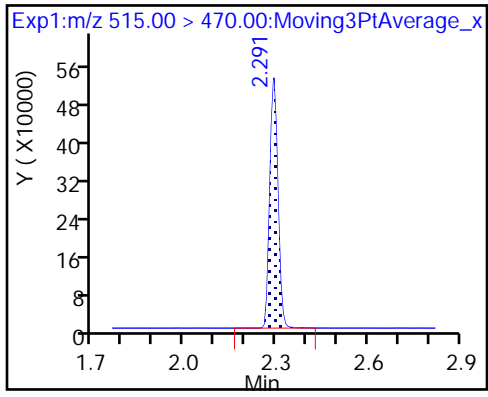
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

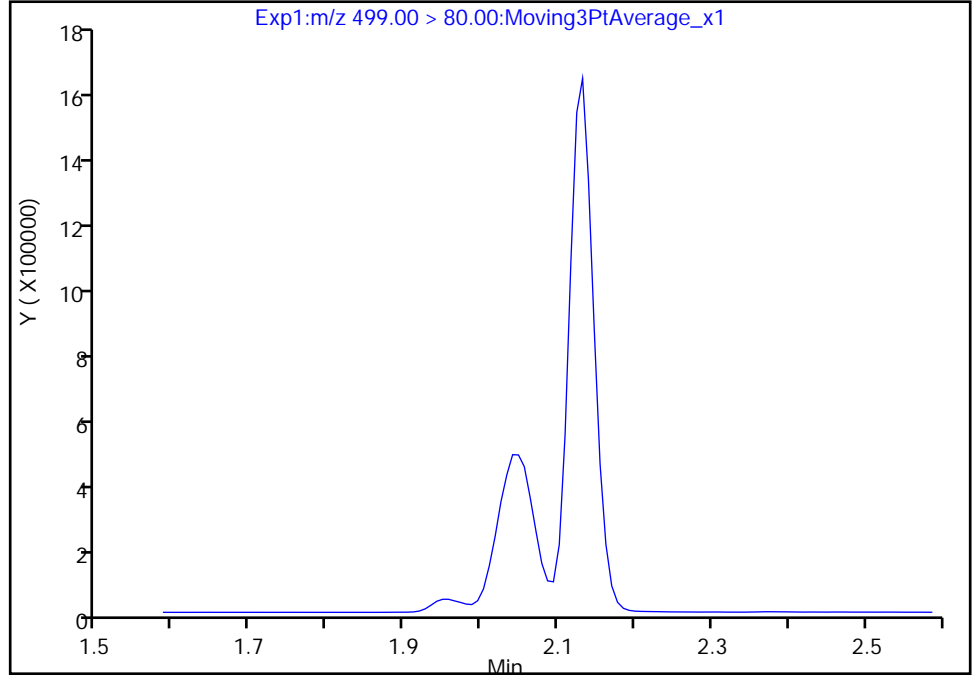
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Injection Date: 22-Mar-2018 15:11:47 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

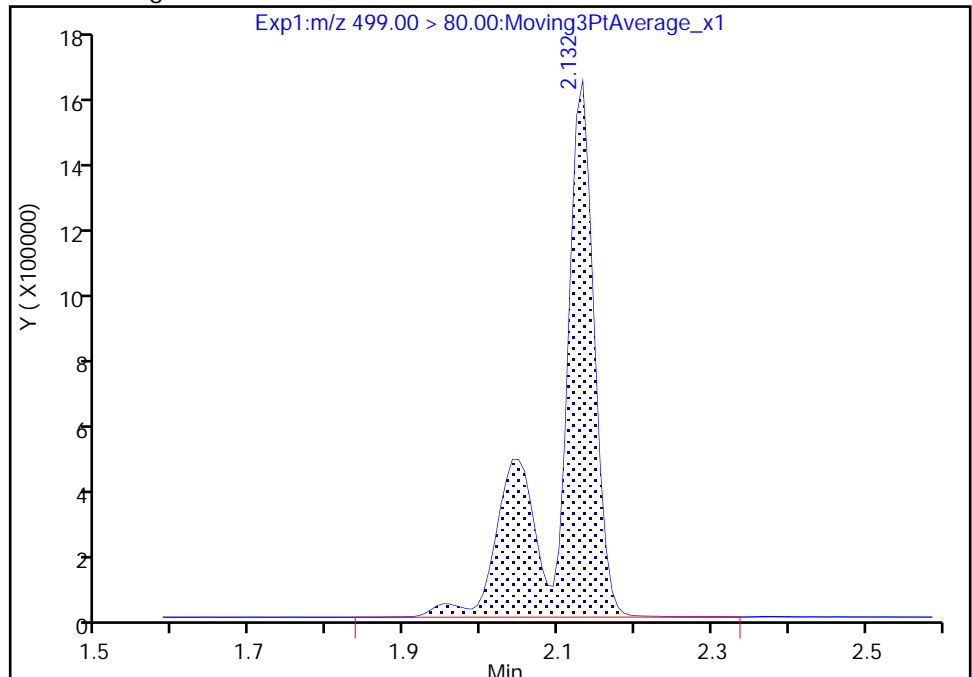
Not Detected
Expected RT: 2.12

Processing Integration Results



RT: 2.13
Area: 5238684
Amount: 60.974220
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 22-Mar-2018 15:31:02
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Lims ID: IC L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 22-Mar-2018 15:16:28 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\20180322-55711.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Mar-2018 11:11:23 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK008

First Level Reviewer: barnettj Date: 22-Mar-2018 16:07:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.410	0.001	1.000	13838555	153.3		4294	
298.90 > 99.00	1.404	1.410	-0.006	0.995	11276028		1.23(0.00-0.00)	15928	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.534	-0.001	1.000	1255631	10.8		13212	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.684	0.0	1.000	8696268	58.9		9486	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.684	0.0	1.000	2227166	20.0		626	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.878	-0.004		1132608	10.0		7277	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.879	-0.005	1.000	4512279	41.2		497	
413.00 > 169.00	1.874	1.879	-0.005	1.000	2394058		1.88(0.00-0.00)	2061	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.124	0.0	1.000	7166468	81.0		3905	a
499.00 > 99.00	2.124	2.124	0.0	1.000	1491573		4.80(0.00-0.00)	3445	a
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.128	-0.004		2724308	28.7		3199	
9 Perfluorononanoic acid									
463.00 > 419.00	2.140	2.140	0.0	1.000	3383462	41.1		546	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.291	0.0	1.000	1010441	10.5		7529	

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\20180322-55711.b\2018.03.22_537ICAL_009.d

Injection Date: 22-Mar-2018 15:16:28

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

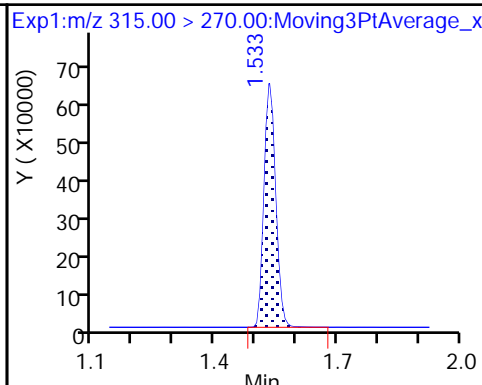
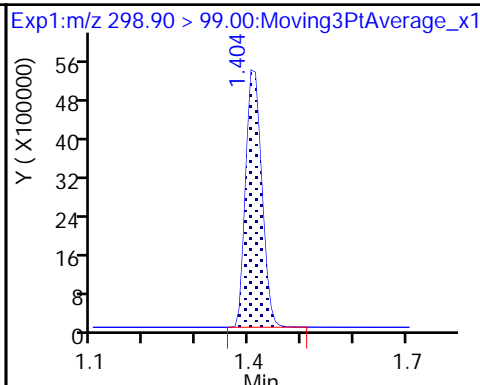
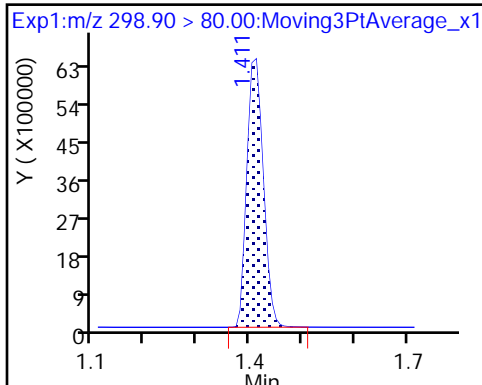
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

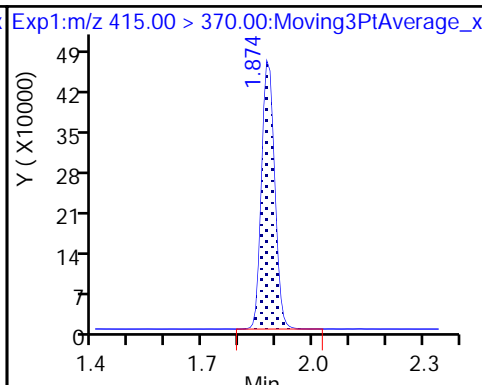
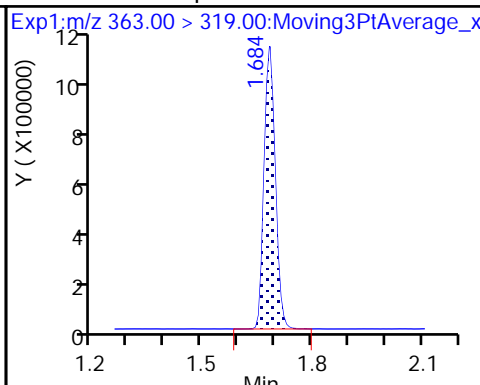
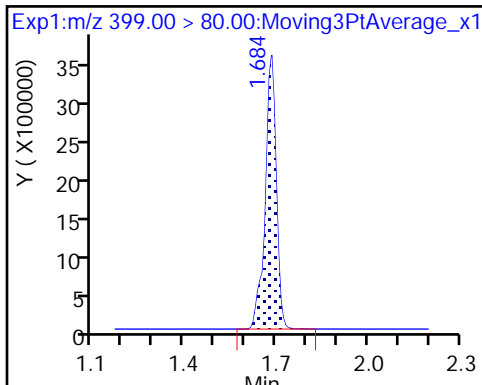
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

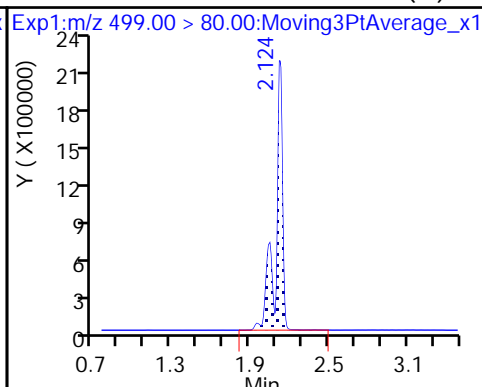
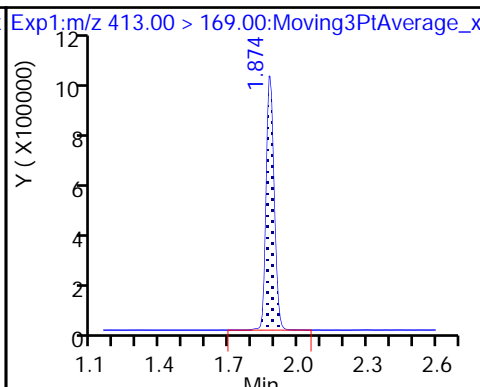
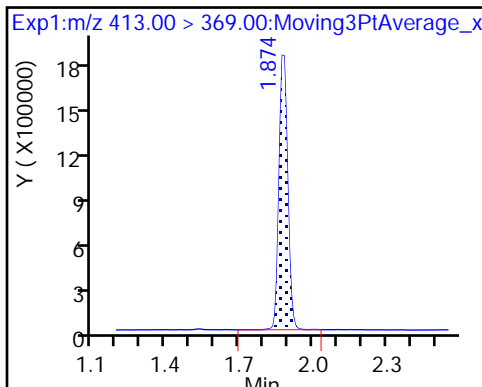
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

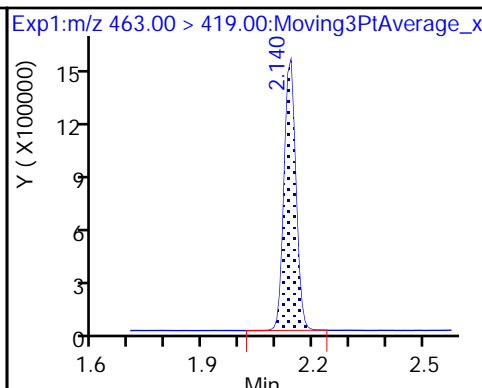
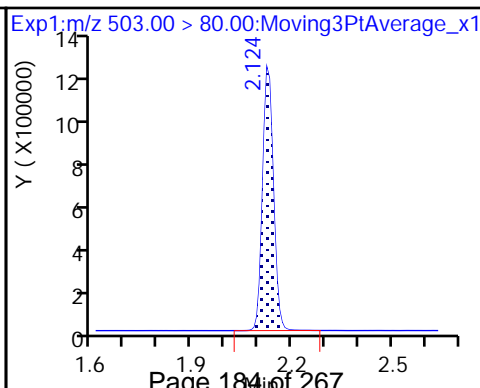
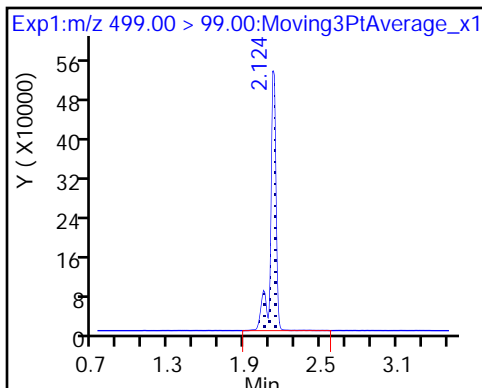
8 Perfluorooctane sulfonic acid (M)



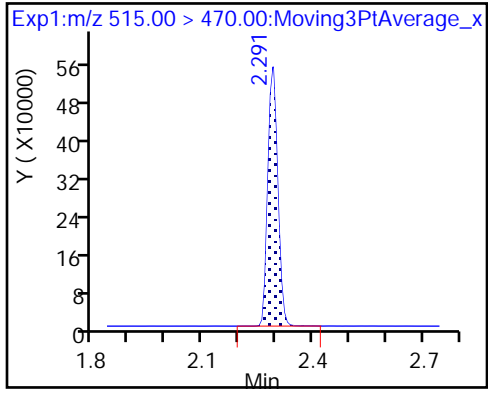
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

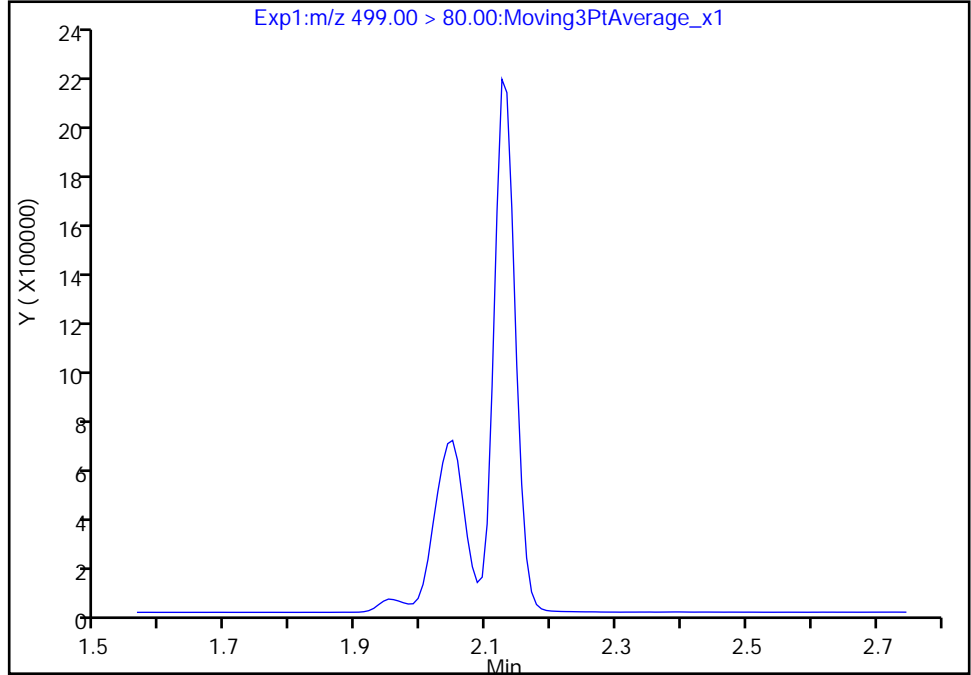
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
Injection Date: 22-Mar-2018 15:16:28 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

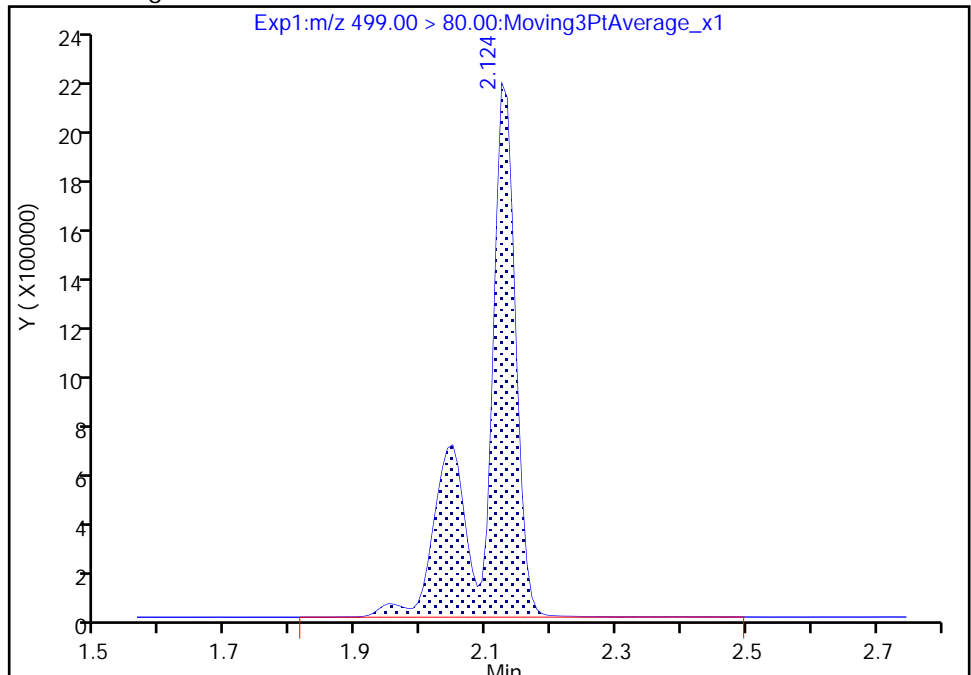
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 7166468
Amount: 81.031940
Amount Units: ng/ml



Reviewer: barnettj, 22-Mar-2018 16:01:23
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-214409/11 Calibration Date: 03/22/2018 15:25
 Instrument ID: A8_N Calib Start Date: 03/22/2018 14:53
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/22/2018 15:16
 Lab File ID: 2018.03.22_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)	Ave	0.9504	1.016		21.4	20.0	6.9	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9850	1.032		2.33	2.22	4.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.555	1.662		7.13	6.67	6.9	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9659	0.9767		4.52	4.47	1.1	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9310	0.9593		9.20	8.93	3.0	50.0
Perfluorononanoic acid (PFNA)	Ave	0.7266	0.7728		4.73	4.45	6.4	50.0
13C2 PFHxA	Ave	1.028	1.059		10.3	10.0	3.0	30.0
13C2 PFDA	Ave	0.8466	0.8103		9.57	10.0	-4.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_011.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 22-Mar-2018 15:25:48 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\20180322-55711.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Mar-2018 11:11:26 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK008

First Level Reviewer: barnettj Date: 22-Mar-2018 16:08:12

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.410	-0.006	1.000	1890734	21.4		720	
298.90 > 99.00	1.404	1.410	-0.006	1.000	1461613		1.29(0.00-0.00)	3386	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.534	-0.001	1.000	1191352	10.3		13512	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.684	0.0	1.000	258140	2.33		66.1	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.684	0.0	1.000	1031109	7.13		1425	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.878	-0.004		1124949	10.0		7314	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.879	-0.005	1.000	491007	4.52		55.9	
413.00 > 169.00	1.874	1.879	-0.005	1.000	250663		1.96(0.00-0.00)	222	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.124	0.0	1.000	796928	9.20		496	a
499.00 > 99.00	2.124	2.124	0.0	1.000	177514		4.49(0.00-0.00)	415	a
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.128	-0.004		2668897	28.7		3362	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.140	-0.008	1.000	386488	4.73		66.2	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.291	-0.007	1.000	911587	9.57		6728	

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\20180322-55711.b\2018.03.22_537ICAL_011.d

Injection Date: 22-Mar-2018 15:25:48

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

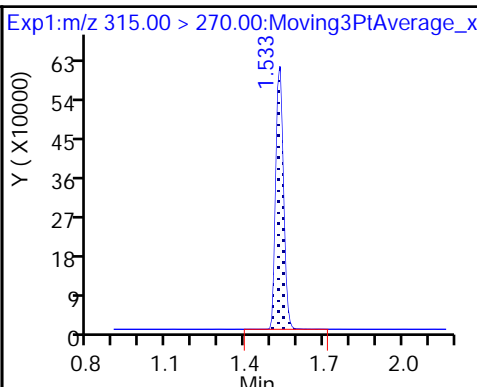
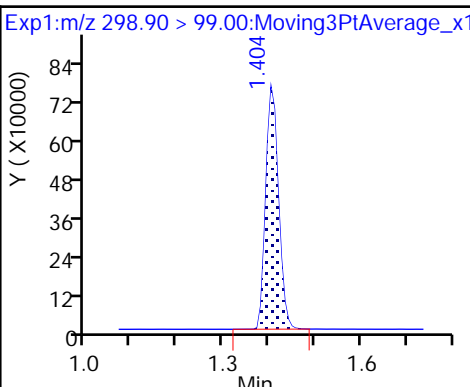
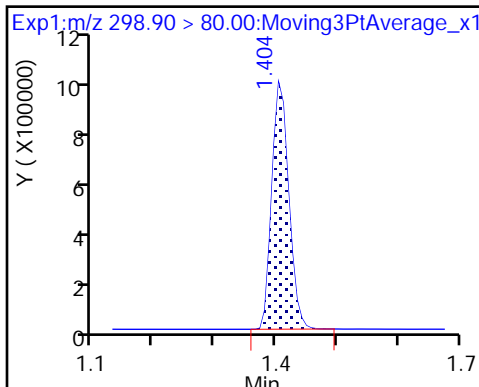
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

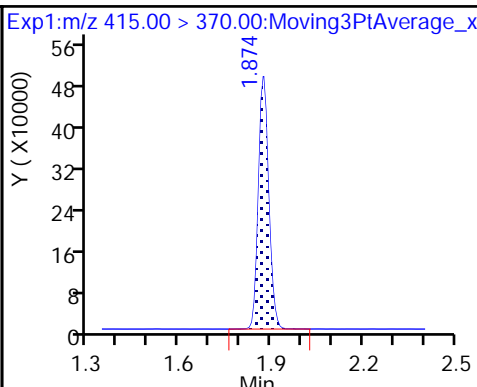
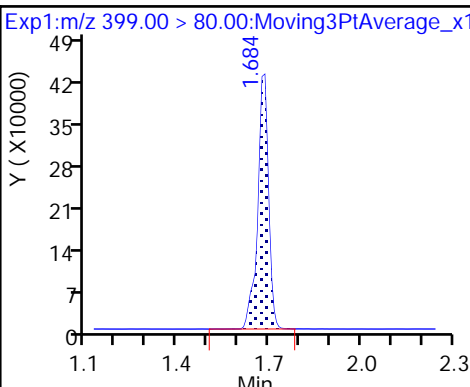
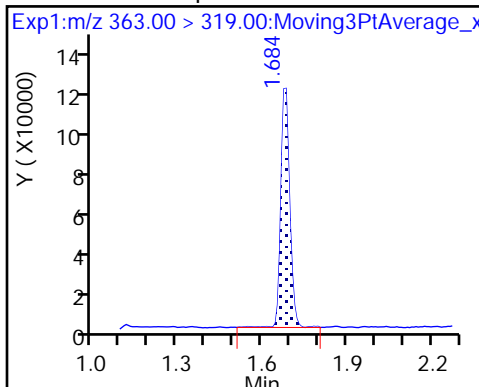
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

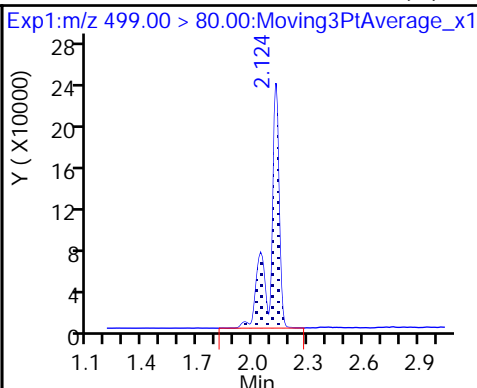
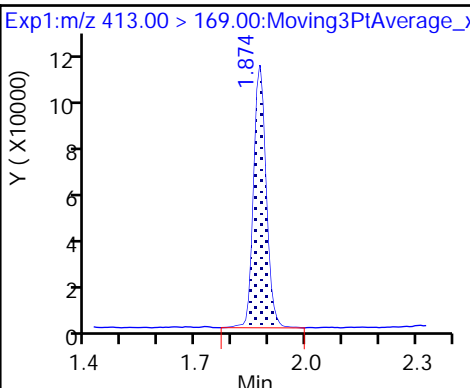
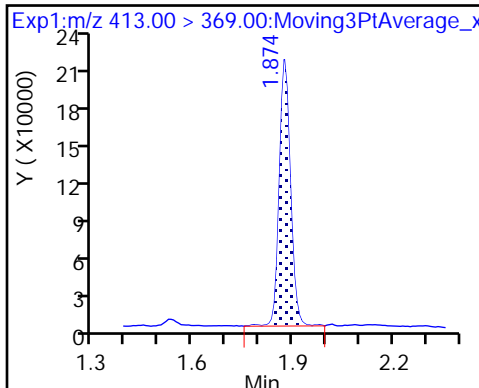
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

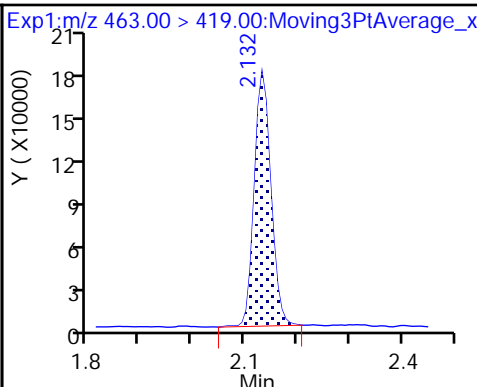
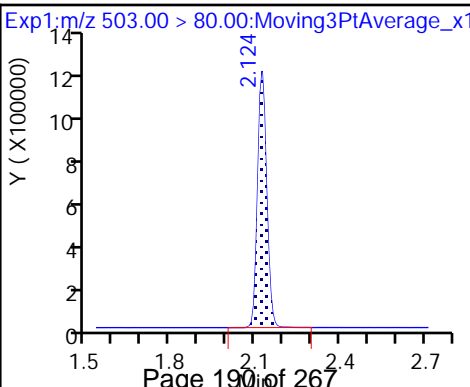
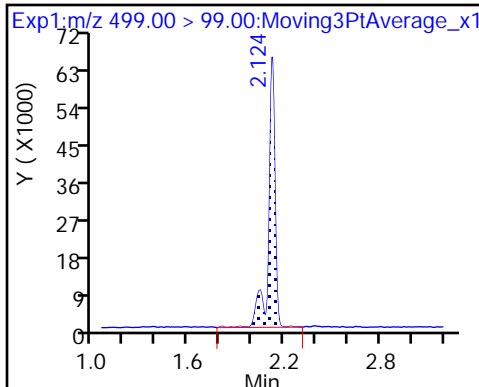
8 Perfluorooctane sulfonic acid (M)



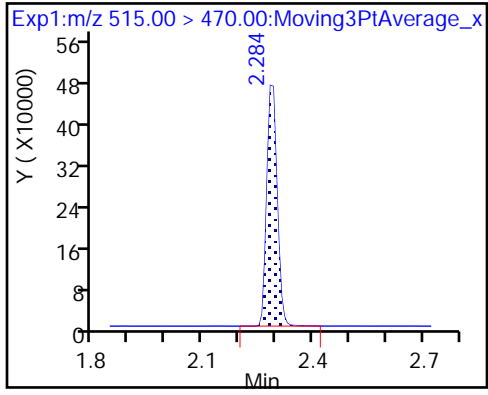
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

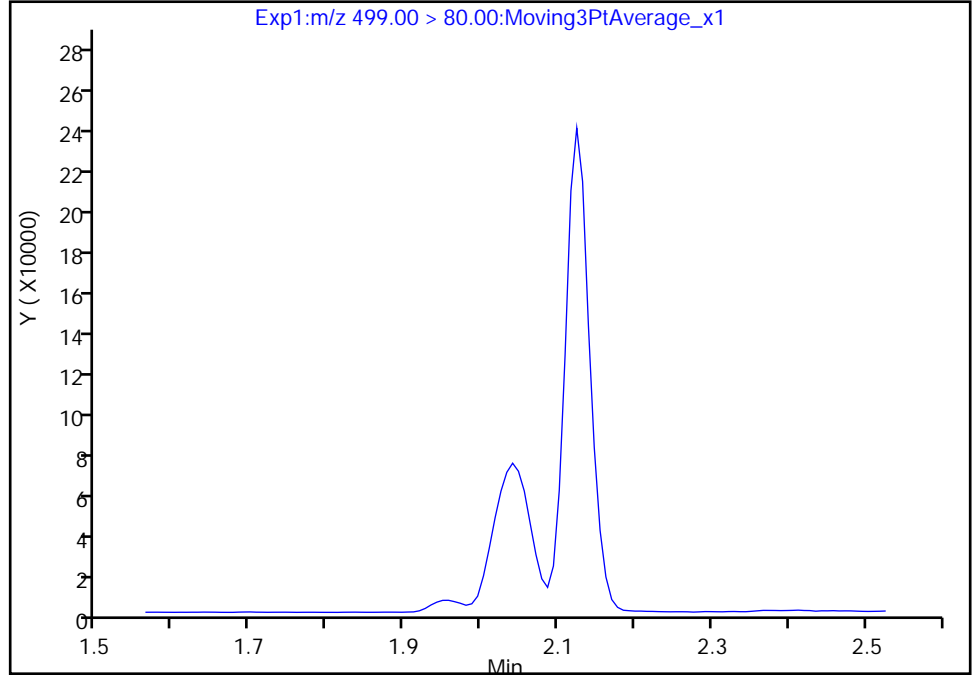
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_011.d
Injection Date: 22-Mar-2018 15:25:48 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

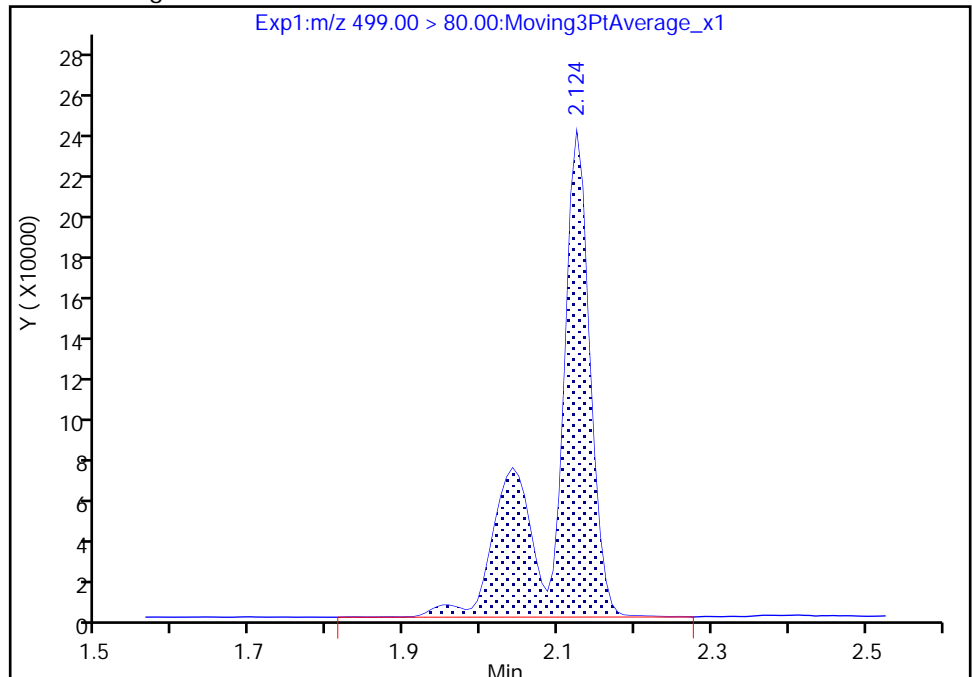
Not Detected
Expected RT: 2.12

Processing Integration Results



RT: 2.12
Area: 796928
Amount: 9.198024
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 22-Mar-2018 16:07:57
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Lab Sample ID: ICV 320-214409/13 Calibration Date: 03/22/2018 15:35
 Instrument ID: A8_N Calib Start Date: 03/22/2018 14:53
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/22/2018 15:16
 Lab File ID: 2018.03.22_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)	Ave	0.9504	0.9521		103	100	0.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9850	1.009		10.2	10.0	2.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.555	1.659		21.5	20.2	6.7	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9659	0.9076		18.9	20.2	-6.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9310	0.9726		21.1	20.2	4.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.7266	0.7677		21.3	20.2	5.7	30.0
13C2 PFHxA	Ave	1.028	1.034		10.1	10.0	0.6	30.0
13C2 PFDA	Ave	0.8466	0.8275		9.77	10.0	-2.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_013.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 22-Mar-2018 15:35:09 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\20180322-55711.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 22-Mar-2018 16:24:59 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK020

First Level Reviewer: barnettj Date: 22-Mar-2018 16:08:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.410	-0.006	1.000	8610749	103.1		3104	
298.90 > 99.00	1.404	1.410	-0.006	1.000	6663795		1.29(0.00-0.00)	11582	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.534	-0.001	1.000	1151620	10.1		13336	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.684	-0.007	1.000	3022652	21.5		4035	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.684	-0.007	1.000	1123897	10.2		297	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.878	-0.004		1113554	10.0		7161	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.879	-0.005	1.000	2038123	18.9		228	
413.00 > 169.00	1.874	1.879	-0.005	1.000	1100456		1.85(0.00-0.00)	986	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.124	0.0	1.000	1772456	21.1		946	a
499.00 > 99.00	2.124	2.124	0.0	1.000	360320		4.92(0.00-0.00)	866	a
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.128	-0.004		2591357	28.7		3236	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.140	-0.008	1.000	1723776	21.3		288	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.291	-0.007	1.000	921414	9.77		7123	

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\20180322-55711.b\2018.03.22_537ICAL_013.d

Injection Date: 22-Mar-2018 15:35:09

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

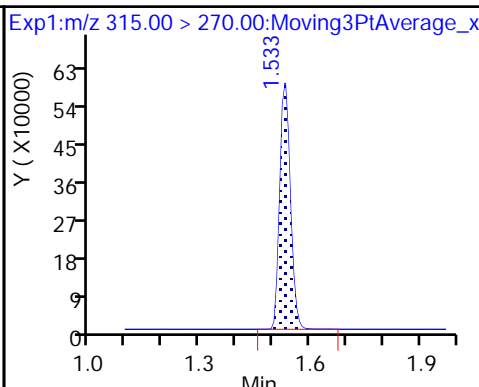
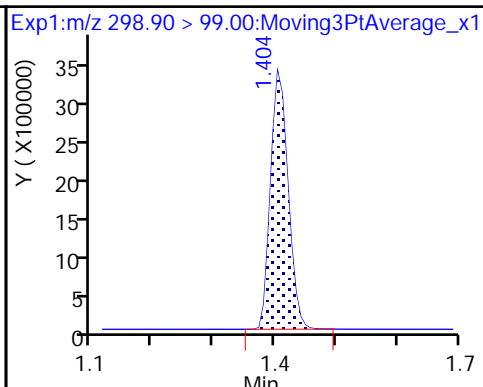
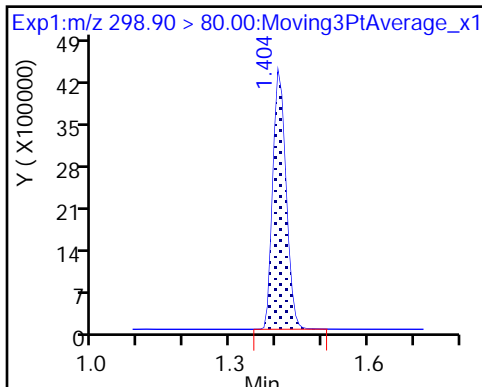
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

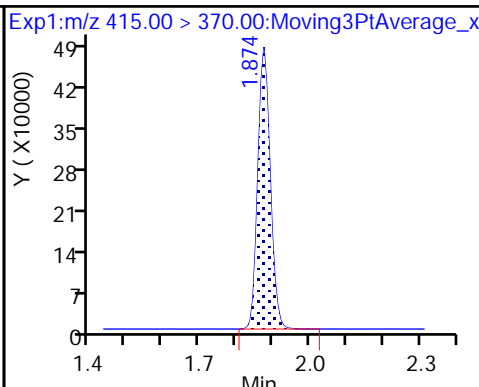
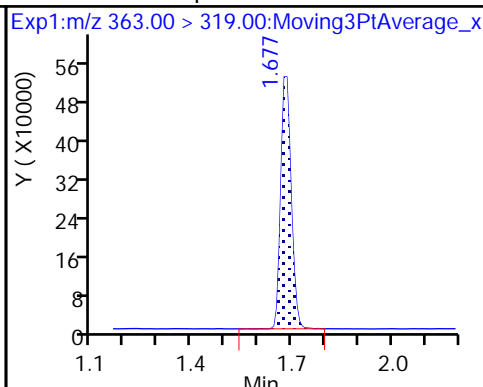
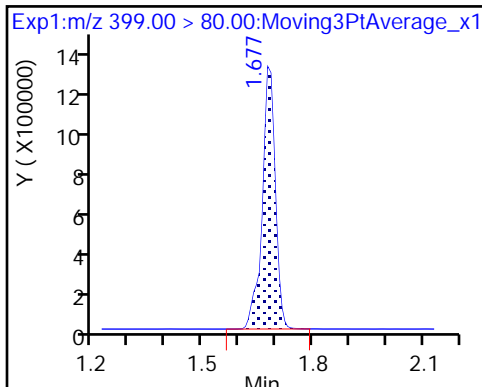
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

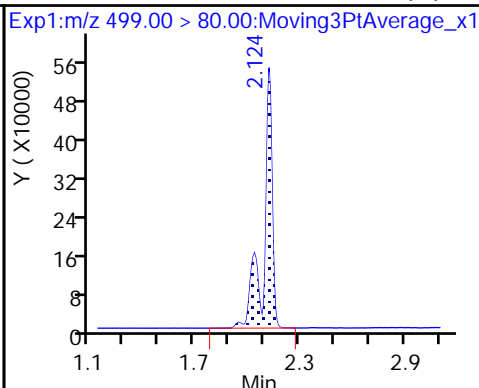
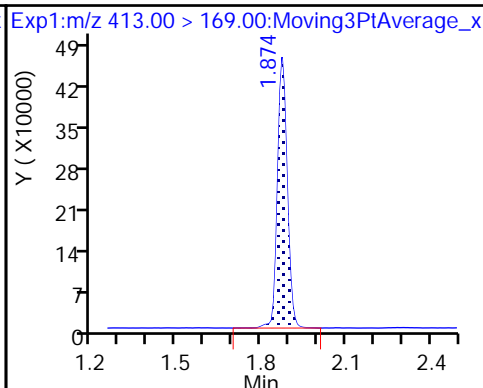
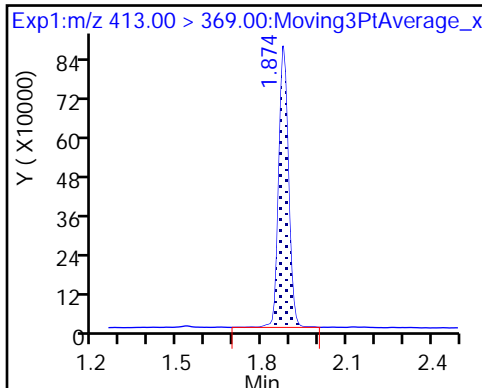
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

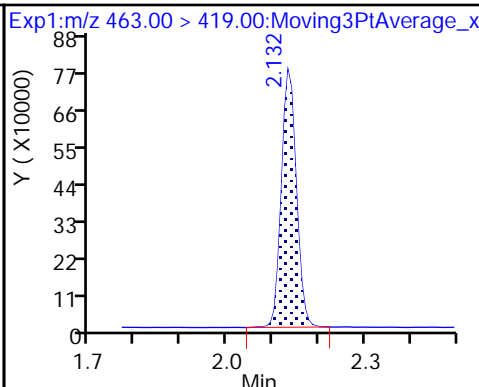
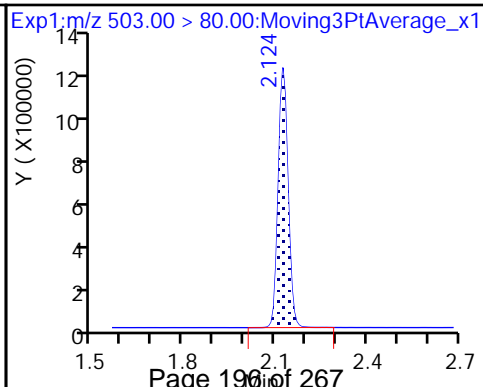
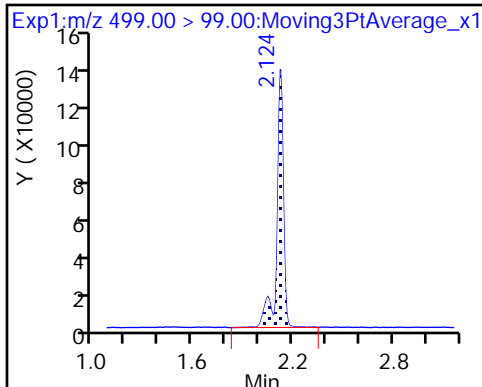
8 Perfluorooctane sulfonic acid (M)



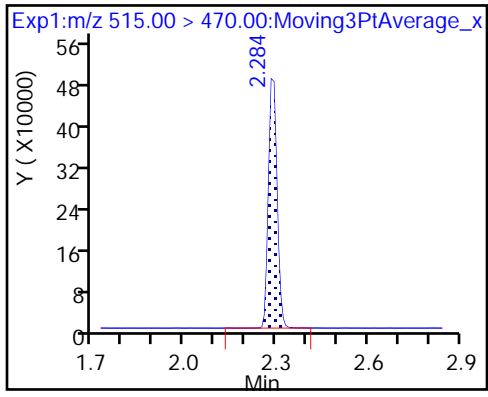
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

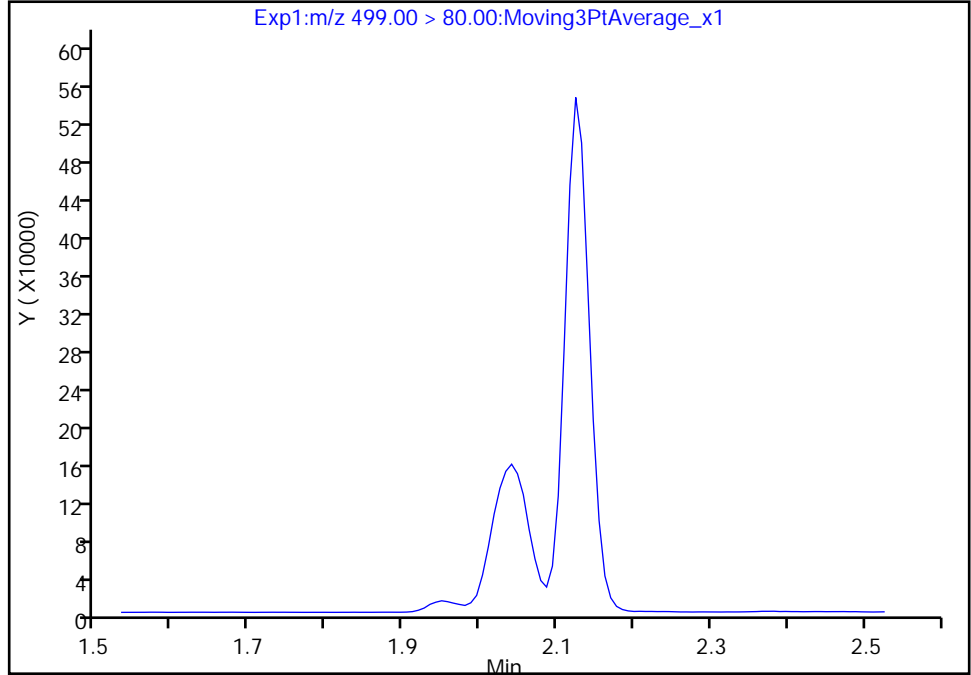
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_013.d
Injection Date: 22-Mar-2018 15:35:09 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

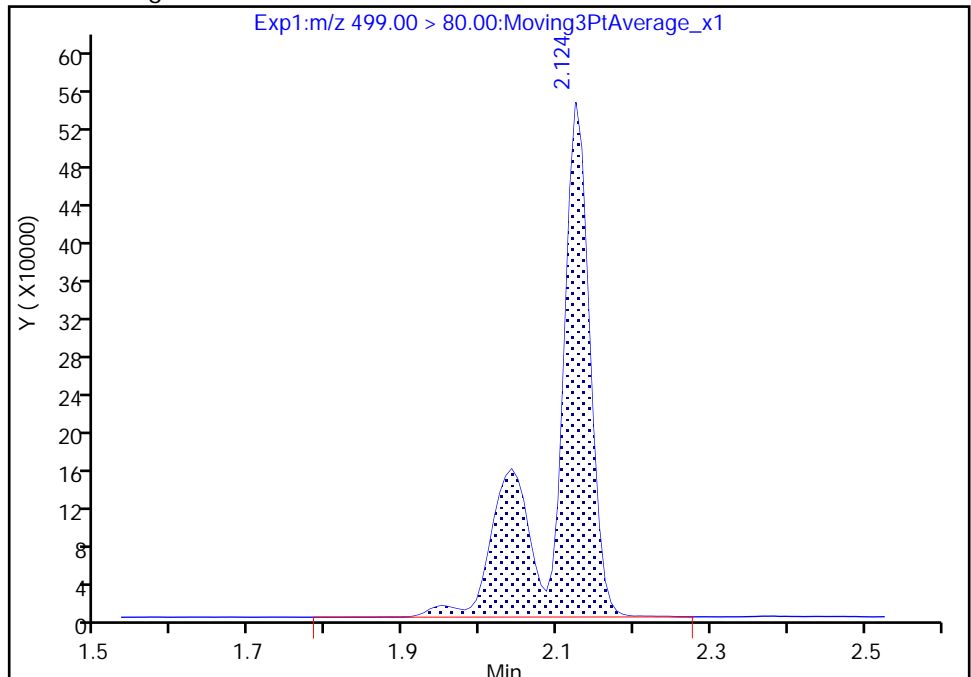
Not Detected
Expected RT: 2.12

Processing Integration Results



RT: 2.12
Area: 1772456
Amount: 21.069561
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 22-Mar-2018 16:08:20
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-215618/1 Calibration Date: 03/30/2018 02:25
 Instrument ID: A8_N Calib Start Date: 03/22/2018 14:53
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/22/2018 15:16
 Lab File ID: 2018.03.30_537A_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.9504	0.995		20.9	20.0	4.7	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9850	0.9745		2.20	2.22	-1.1	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.555	1.633		7.00	6.67	5.0	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9659	0.9776		4.52	4.47	1.2	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9310	0.9343		8.96	8.93	0.4	50.0
Perfluorononanoic acid (PFNA)	Ave	0.7266	0.6836		4.18	4.45	-5.9	50.0
13C2 PFHxA	Ave	1.028	0.9732		9.46	10.0	-5.4	30.0
13C2 PFDA	Ave	0.8466	0.7587		8.96	10.0	-10.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56041.b\2018.03.30_537A_004.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 30-Mar-2018 02:25:35 ALS Bottle#: 2 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCVL
 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\20180330-56041.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:14:30 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:12:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.396	-0.008	1.000	1812278	20.9		1167	
298.90 > 99.00	1.388	1.396	-0.008	1.000	1419829		1.28(0.00-0.00)	1178	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	1129283	9.46		8948	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	251326	2.20		25.7	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.677	0.0	1.000	991235	7.00		815	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.874	0.0		1160358	10.0		7402	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.874	0.0	1.000	506934	4.52		55.0	
413.00 > 169.00	1.874	1.874	0.0	1.000	261471		1.94(0.00-0.00)	198	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.117	0.0		2610607	28.7		6656	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.117	0.0	1.000	759203	8.96		441	a
499.00 > 99.00	2.124	2.117	0.007	1.004	164721		4.61(0.00-0.00)	392	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.124	0.0	1.000	352634	4.18		42.7	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	880408	8.96		5341	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L2_00021

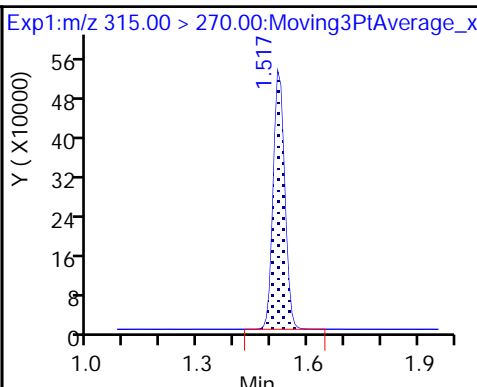
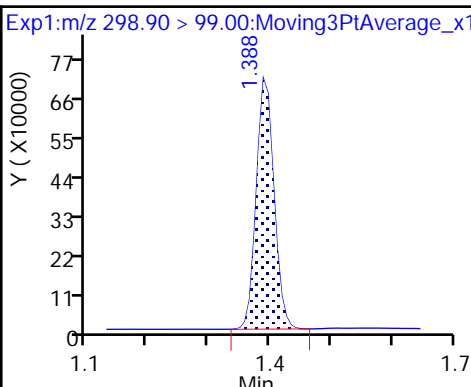
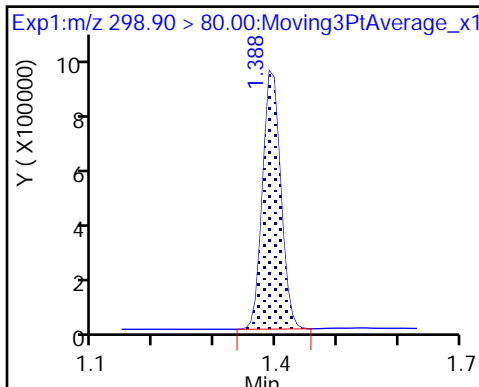
Amount Added: 1.00

Units: mL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

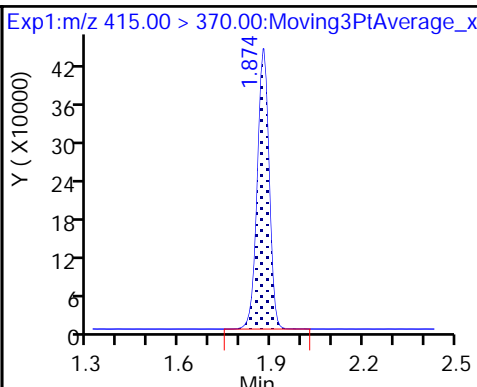
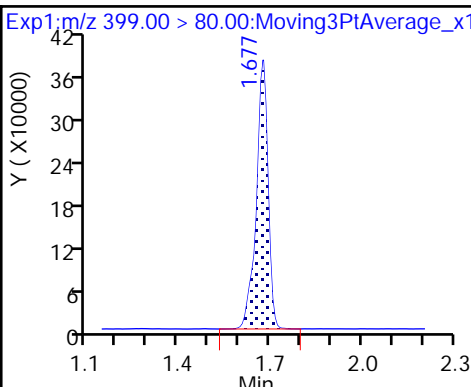
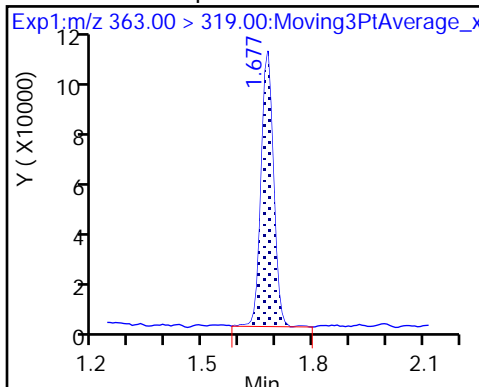
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

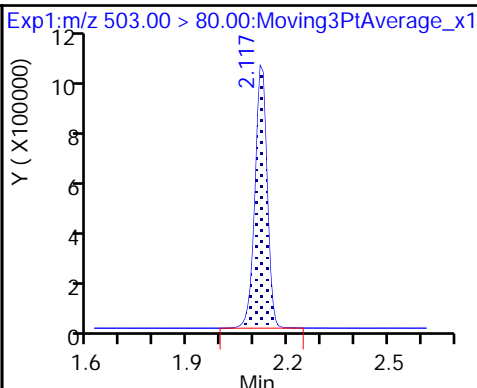
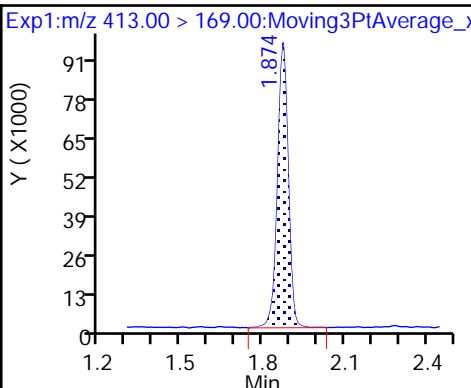
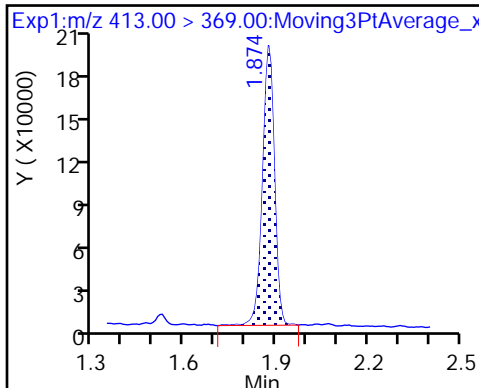
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

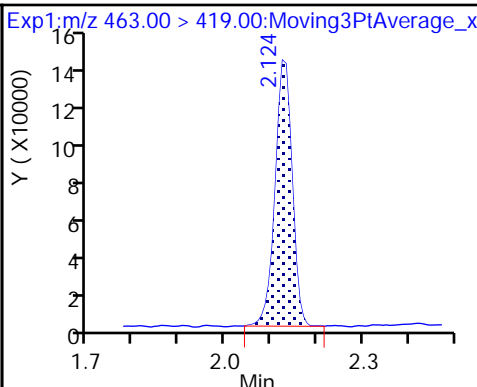
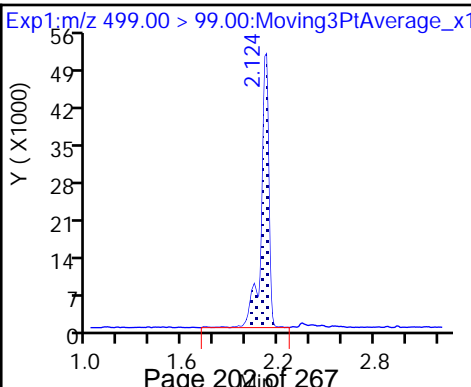
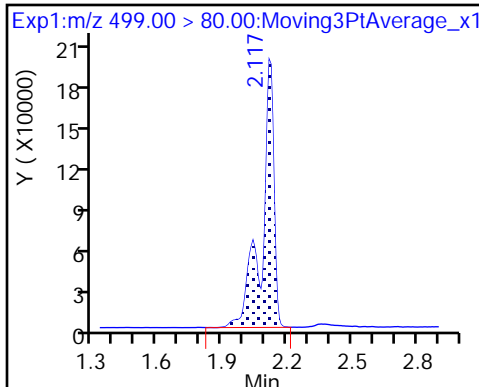
* 7 13C4 PFOS



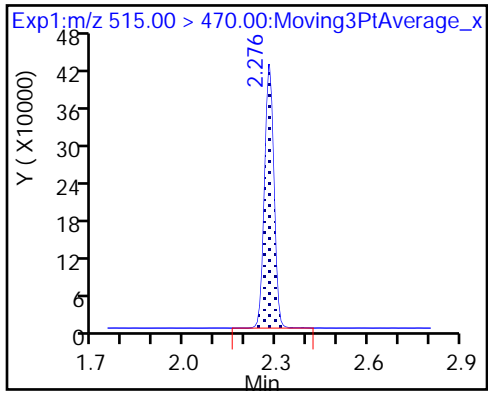
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

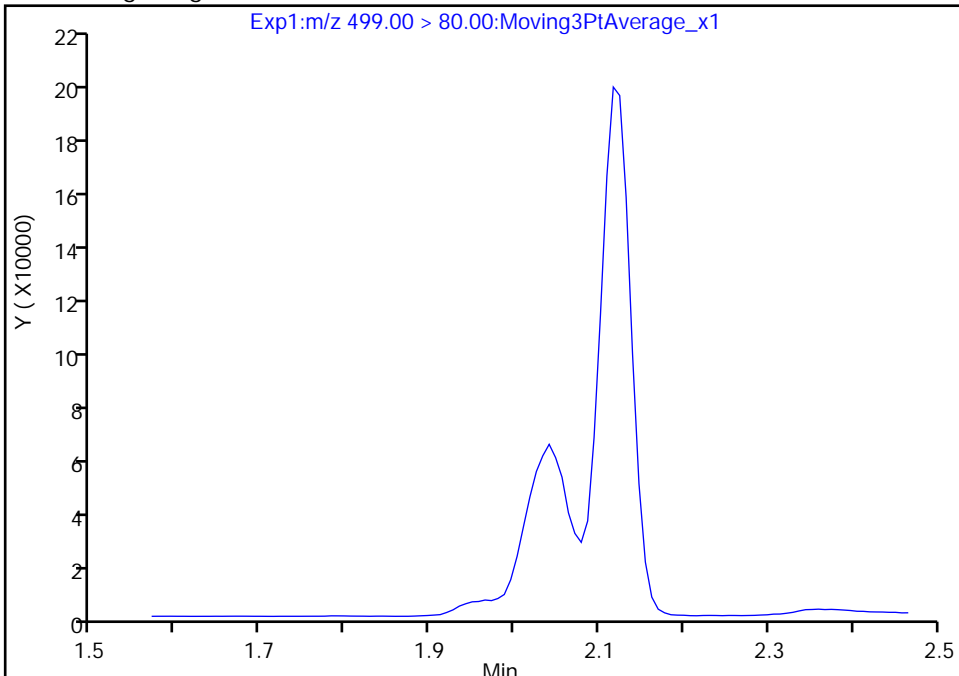
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56041.b\2018.03.30_537A_004.d
Injection Date: 30-Mar-2018 02:25:35 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

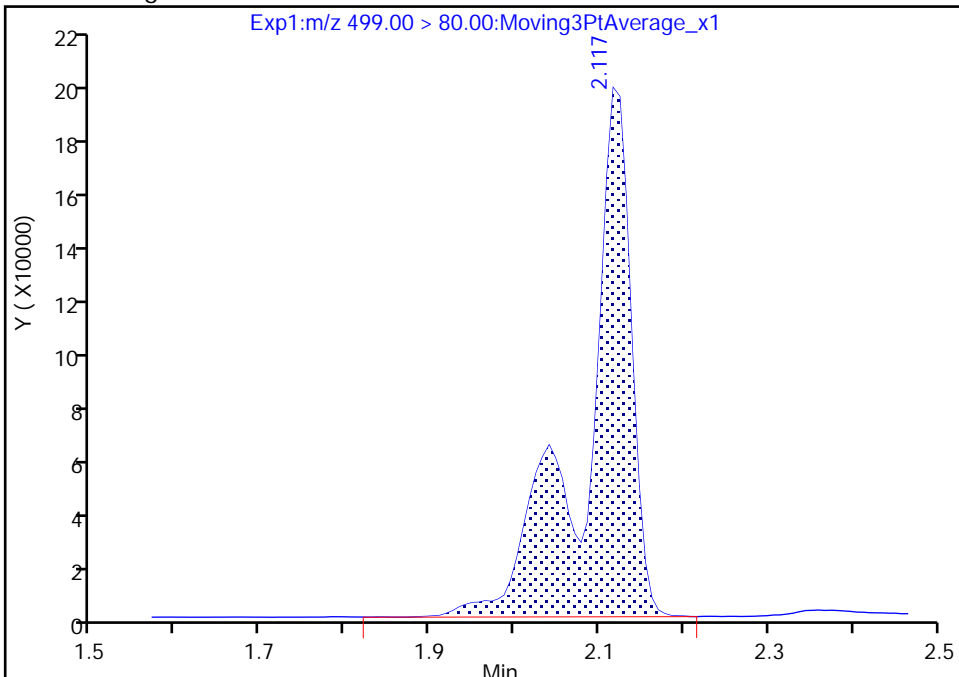
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 759203
Amount: 8.958261
Amount Units: ng/ml



Reviewer: barnettj, 30-Mar-2018 13:12:25
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Lab Sample ID: CCV 320-215653/1 Calibration Date: 03/30/2018 10:10
 Instrument ID: A8_N Calib Start Date: 03/22/2018 14:53
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/22/2018 15:16
 Lab File ID: 2018.03.30_537AA_014.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.9504	0.9642		45.7	45.0	1.5	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9850	1.025		5.20	5.00	4.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.555	1.553		15.0	15.0	-0.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9659	0.9750		10.2	10.1	0.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9310	0.9299		20.1	20.1	-0.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.7266	0.7065		9.73	10.0	-2.8	30.0
13C2 PFHxA	Ave	1.028	1.036		10.1	10.0	0.7	30.0
13C2 PFDA	Ave	0.8466	0.7446		8.80	10.0	-12.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_014.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 30-Mar-2018 10:10:06 ALS Bottle#: 3 Worklist Smp#: 1
 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\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:58:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.396	0.0	1.000	3825585	45.7		1190	
298.90 > 99.00	1.396	1.396	0.0	1.000	2945848		1.30(0.00-0.00)	2071	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.525	0.0	1.000	1091689	10.1		10437	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	540321	5.20		67.7	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.677	0.0	1.000	2054320	15.0		2534	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.882	0.0		1053878	10.0		6581	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.882	0.0	1.000	1033236	10.2		135	
413.00 > 169.00	1.882	1.882	0.0	1.000	556949		1.86(0.00-0.00)	410	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.124	0.0	1.000	1646537	20.1		667	a
499.00 > 99.00	2.124	2.124	0.0	1.000	360108		4.57(0.00-0.00)	828	a
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.124	0.0		2528431	28.7		3804	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.132	0.0	1.000	744785	9.73		111	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.284	0.0	1.000	784691	8.80		6259	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L3_00024

Amount Added: 1.00

Units: mL

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_014.d

Injection Date: 30-Mar-2018 10:10:06

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

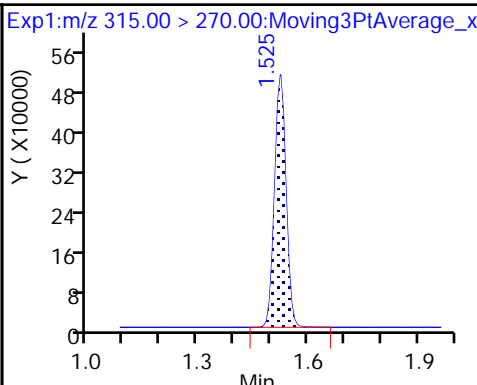
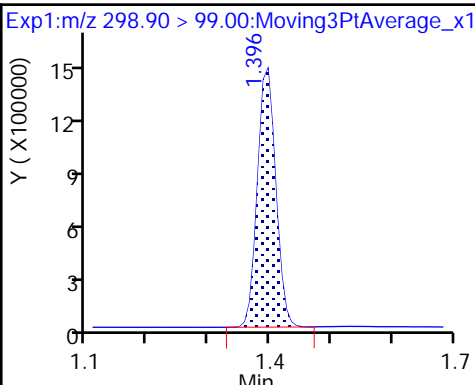
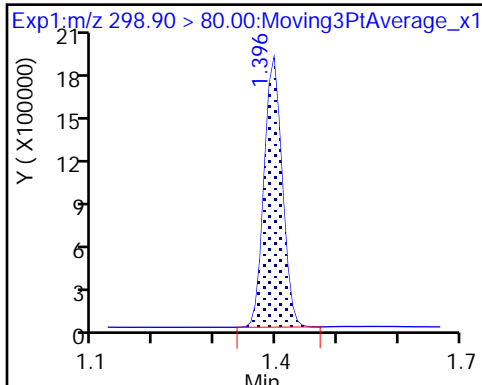
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

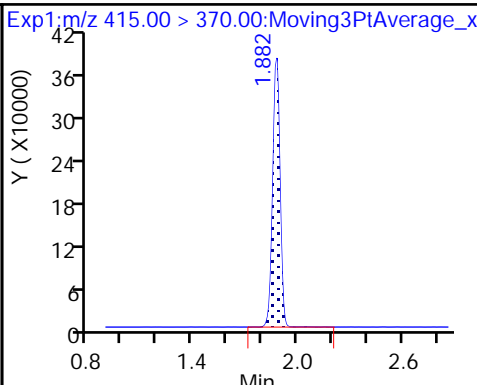
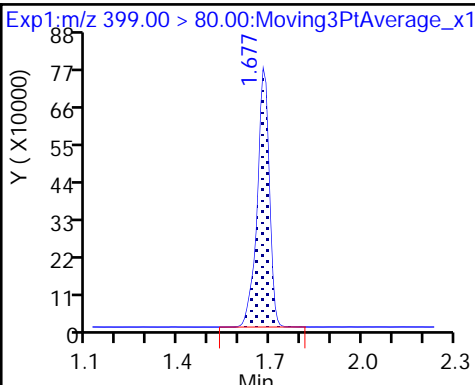
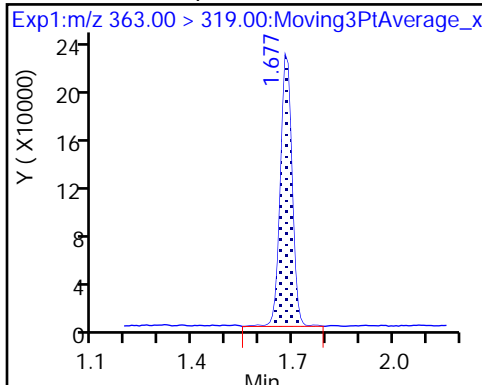
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

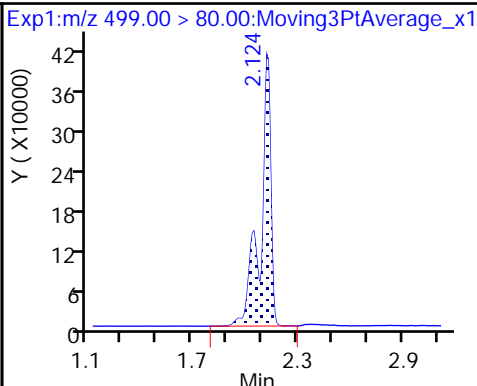
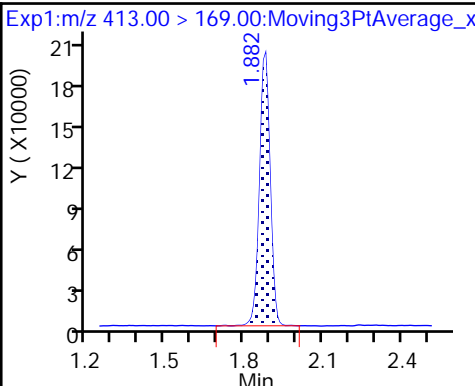
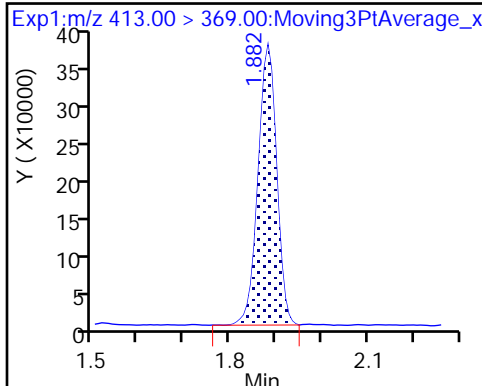
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

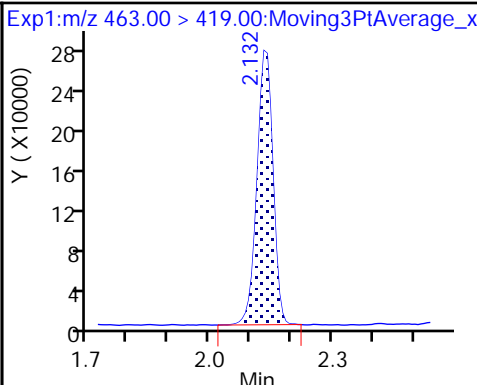
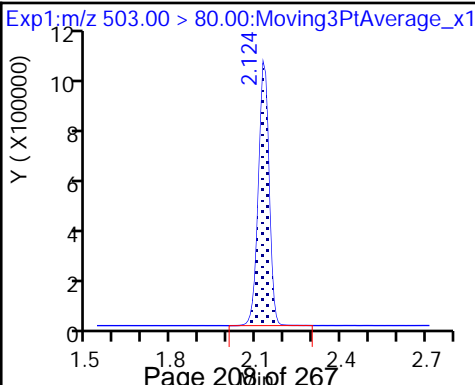
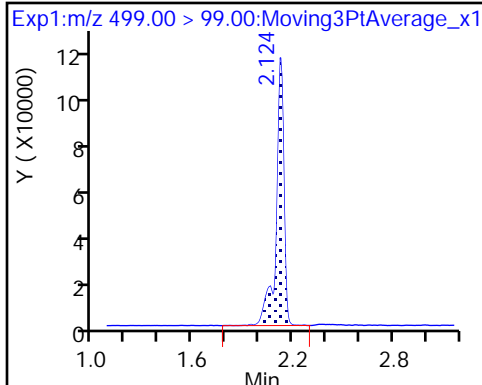
8 Perfluorooctane sulfonic acid (M)



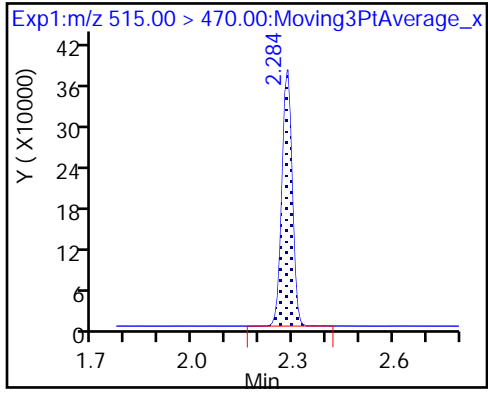
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

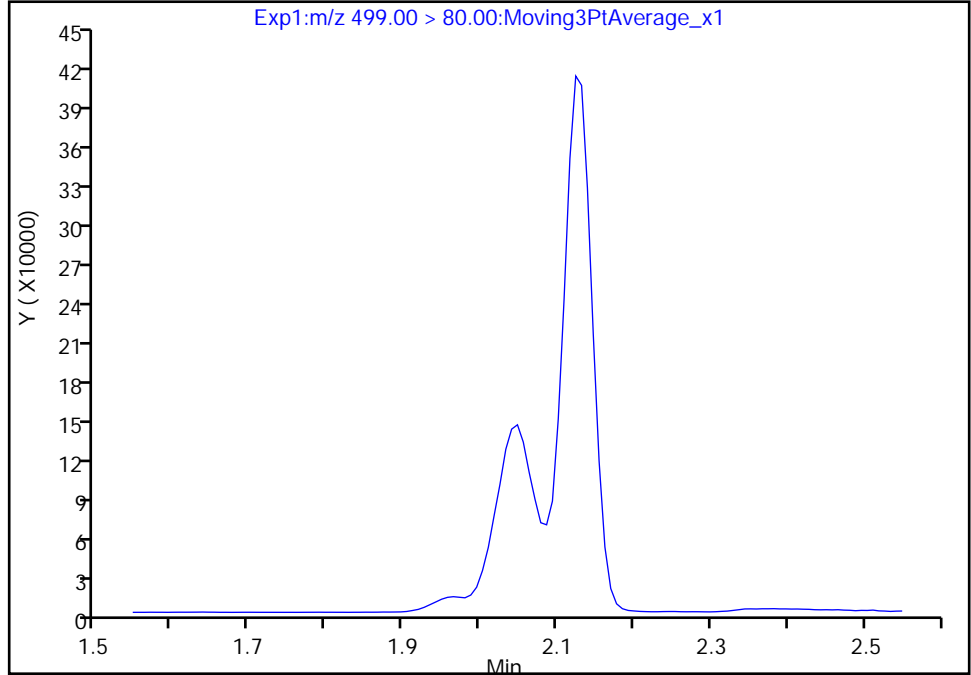
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_014.d
Injection Date: 30-Mar-2018 10:10:06 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

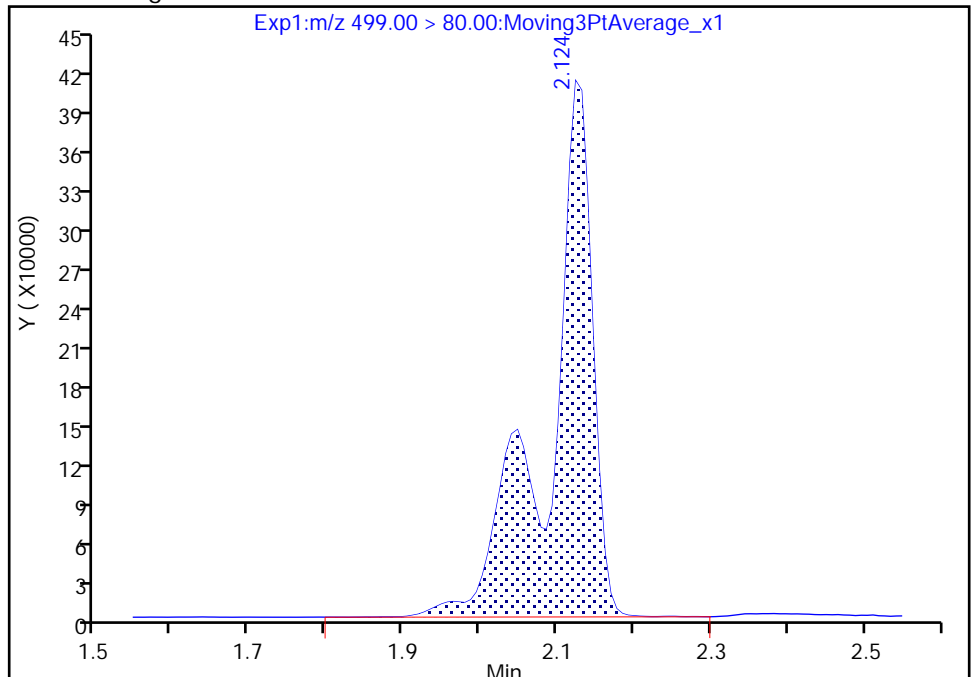
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 1646537
Amount: 20.059849
Amount Units: ng/ml



Reviewer: barnettj, 30-Mar-2018 13:58:12
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Lab Sample ID: CCV 320-215653/13 Calibration Date: 03/30/2018 11:06
 Instrument ID: A8_N Calib Start Date: 03/22/2018 14:53
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/22/2018 15:16
 Lab File ID: 2018.03.30_537AA_026.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.9504	0.9533		135	135	0.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9850	0.9488		14.5	15.0	-3.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.555	1.623		47.0	45.0	4.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9659	0.9744		30.4	30.2	0.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9310	0.9754		63.1	60.3	4.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.7266	0.6781		28.0	30.0	-6.7	30.0
13C2 PFHxA	Ave	1.028	1.014		9.86	10.0	-1.4	30.0
13C2 PFDA	Ave	0.8466	0.7562		8.93	10.0	-10.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Lab Sample ID: CCV 320-215655/13 Calibration Date: 03/30/2018 11:06
 Instrument ID: A8_N Calib Start Date: 03/22/2018 14:53
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/22/2018 15:16
 Lab File ID: 2018.03.30_537AA_026.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.9504	0.9533		135	135	0.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9850	0.9488		14.5	15.0	-3.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.555	1.623		47.0	45.0	4.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9659	0.9744		30.4	30.2	0.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9310	0.9754		63.1	60.3	4.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.7266	0.6781		28.0	30.0	-6.7	30.0
13C2 PFHxA	Ave	1.028	1.014		9.86	10.0	-1.4	30.0
13C2 PFDA	Ave	0.8466	0.7562		8.93	10.0	-10.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_026.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 30-Mar-2018 11:06:19 ALS Bottle#: 5 Worklist Smp#: 13
 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\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:59:05 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:43:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.388	0.0	1.000	10608487	135.4		3608	E
298.90 > 99.00	1.388	1.388	0.0	1.000	8188466		1.30(0.00-0.00)	5183	E
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	1040005	9.86		10429	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.669	0.0	1.000	1460675	14.5		174	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.669	0.0	1.000	6020692	47.0		6813	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.866	0.0		1026108	10.0		5894	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.866	0.0	1.000	3016048	30.4		371	
413.00 > 169.00	1.866	1.866	0.0	1.000	1608486		1.88(0.00-0.00)	1226	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.124	-0.007	1.000	4844342	63.1		2970	a
499.00 > 99.00	2.117	2.124	-0.007	1.000	1044998		4.64(0.00-0.00)	3632	a
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.117	0.0		2364007	28.7		3224	
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.124	0.0	1.000	2088171	28.0		284	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	775912	8.93		5706	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00025

Amount Added: 1.00

Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_026.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 30-Mar-2018 11:06:19 ALS Bottle#: 5 Worklist Smp#: 13
 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\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:59:05 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:43:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.388	0.0	1.000	10608487	135.4		3608	E
298.90 > 99.00	1.388	1.388	0.0	1.000	8188466		1.30(0.00-0.00)	5183	E
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	1040005	9.86		10429	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.669	0.0	1.000	1460675	14.5		174	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.669	0.0	1.000	6020692	47.0		6813	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.866	0.0		1026108	10.0		5894	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.866	0.0	1.000	3016048	30.4		371	
413.00 > 169.00	1.866	1.866	0.0	1.000	1608486		1.88(0.00-0.00)	1226	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.124	-0.007	1.000	4844342	63.1		2970	a
499.00 > 99.00	2.117	2.124	-0.007	1.000	1044998		4.64(0.00-0.00)	3632	a
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.117	0.0		2364007	28.7		3224	
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.124	0.0	1.000	2088171	28.0		284	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	775912	8.93		5706	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00025

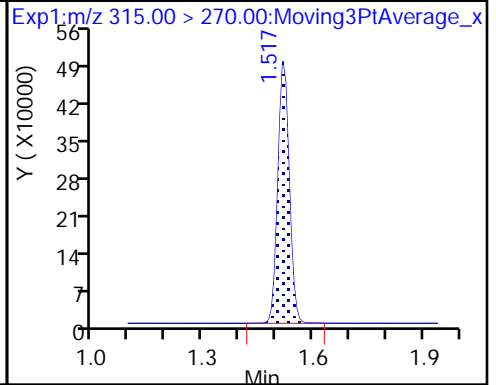
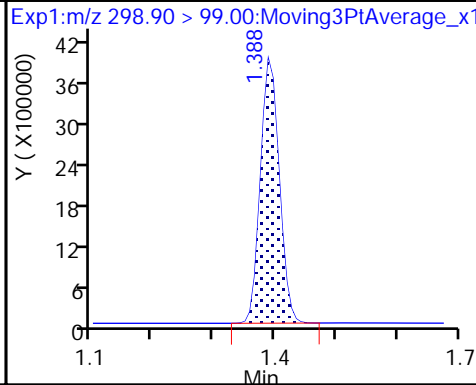
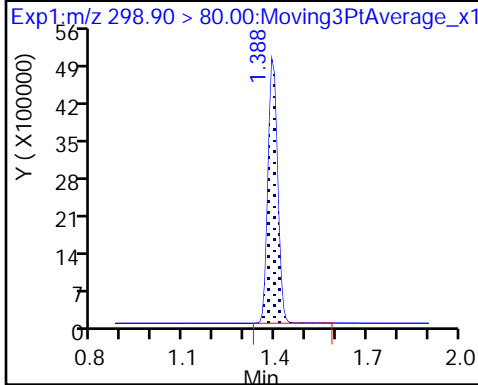
Amount Added: 1.00

Units: mL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

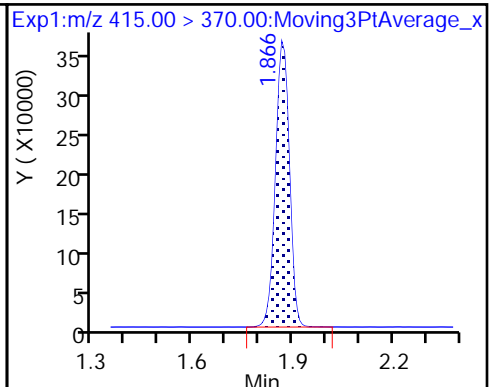
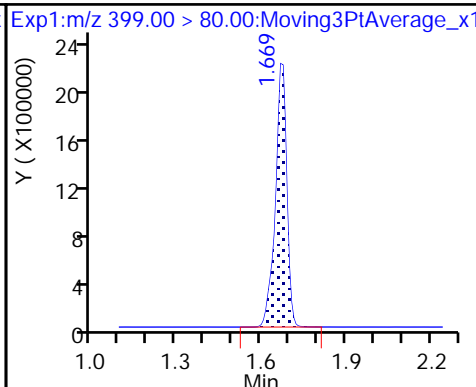
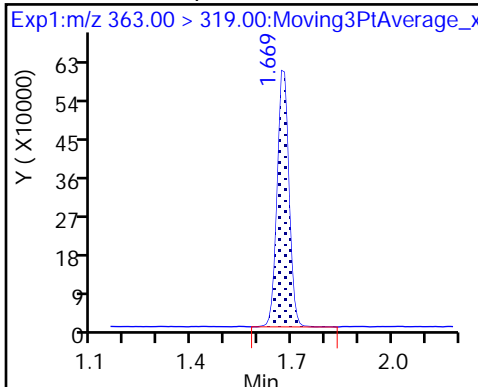
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

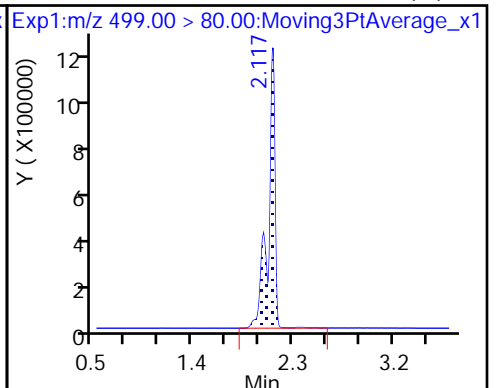
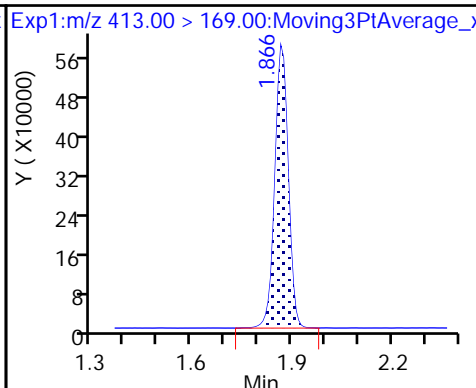
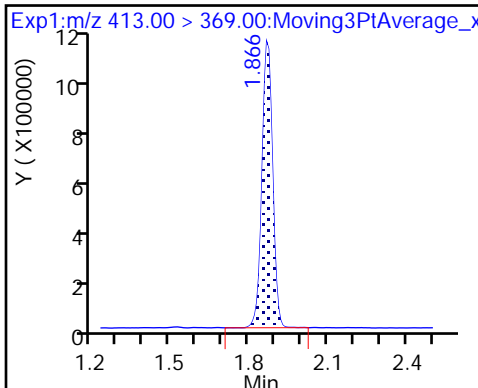
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

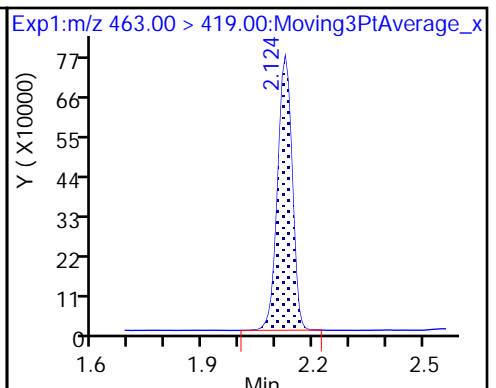
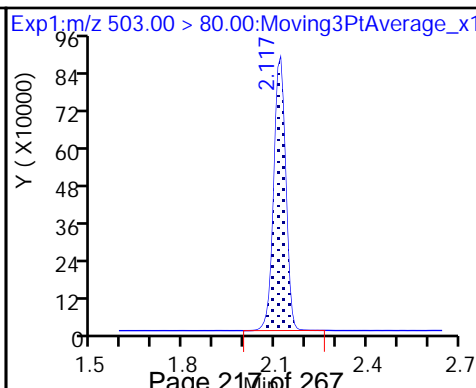
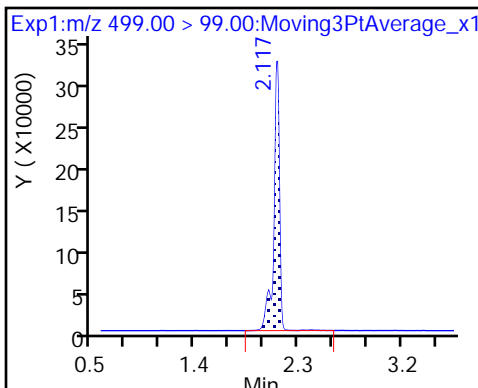
8 Perfluorooctane sulfonic acid (M)



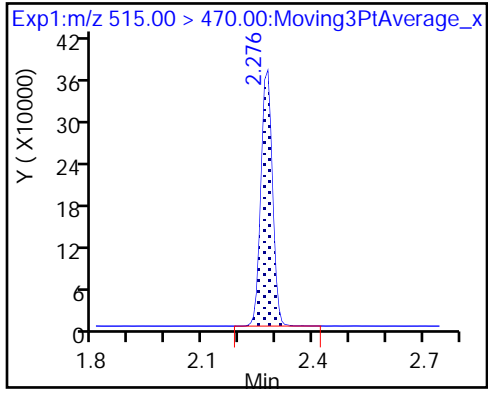
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_026.d

Injection Date: 30-Mar-2018 11:06:19

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

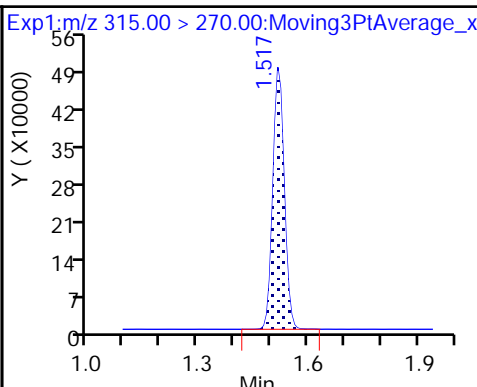
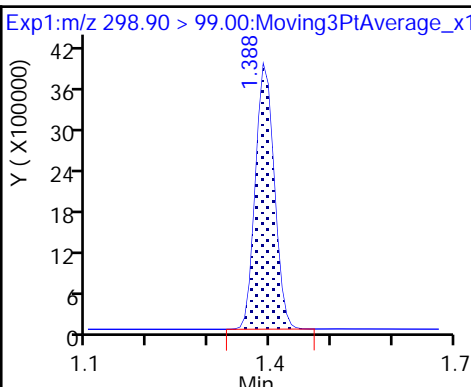
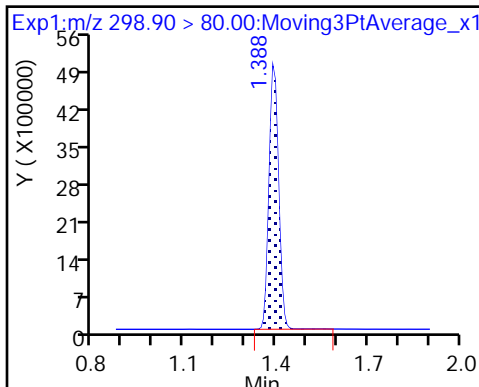
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

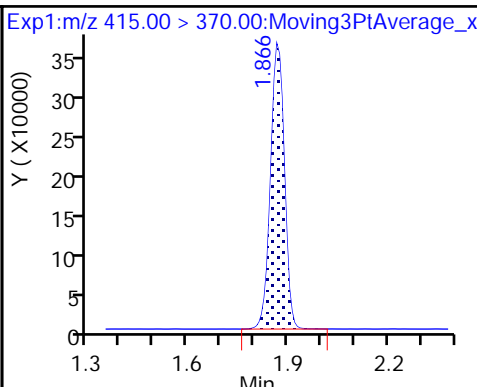
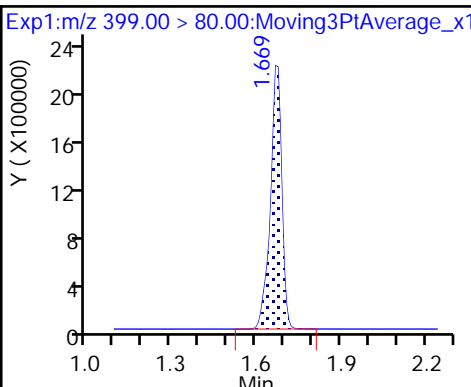
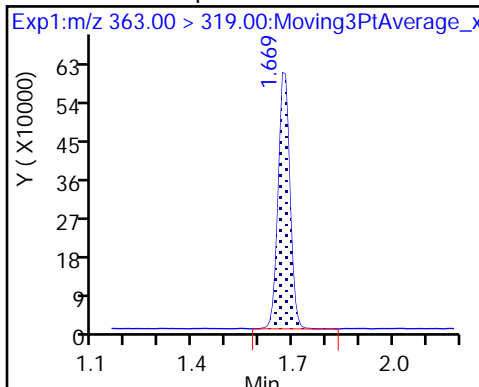
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

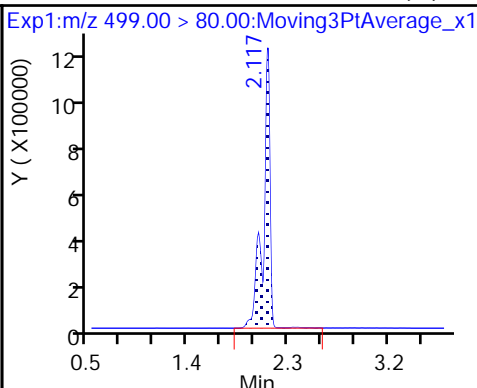
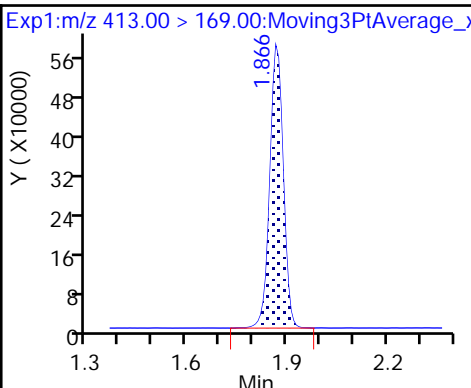
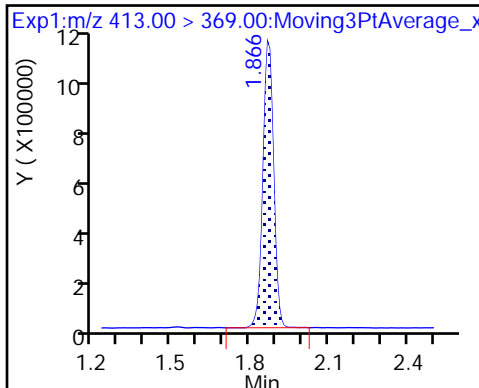
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

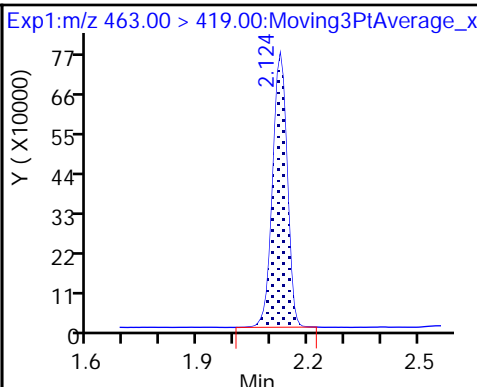
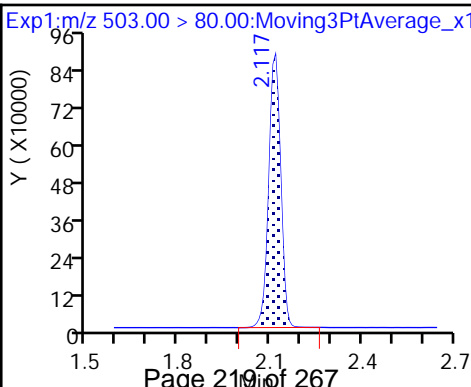
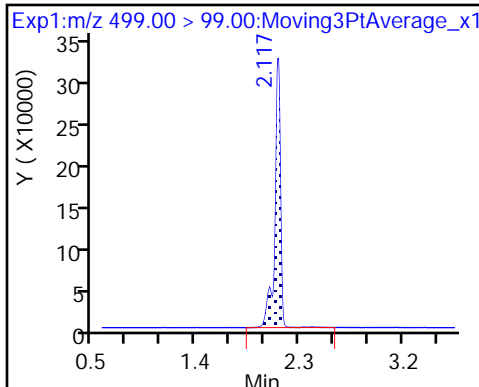
8 Perfluorooctane sulfonic acid (M)



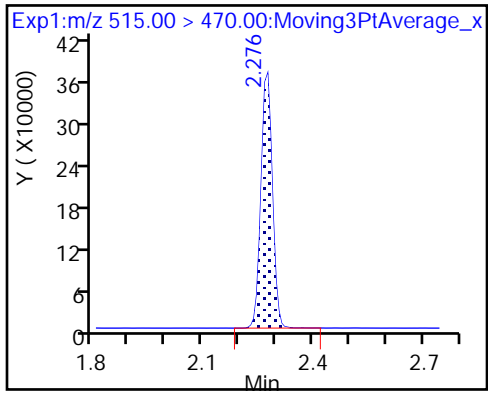
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

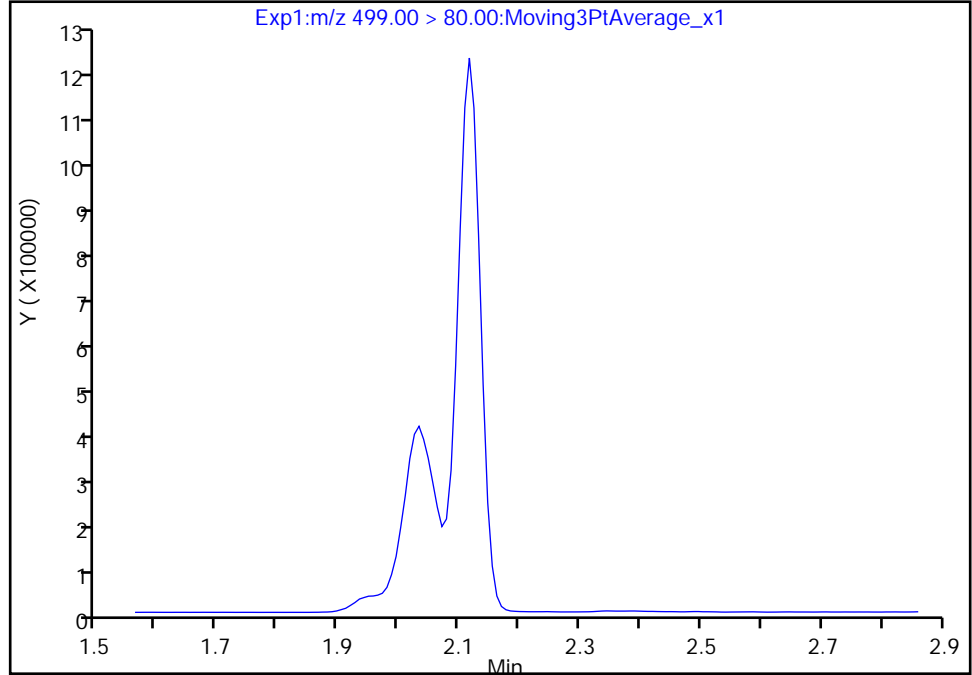
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_026.d
Injection Date: 30-Mar-2018 11:06:19 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

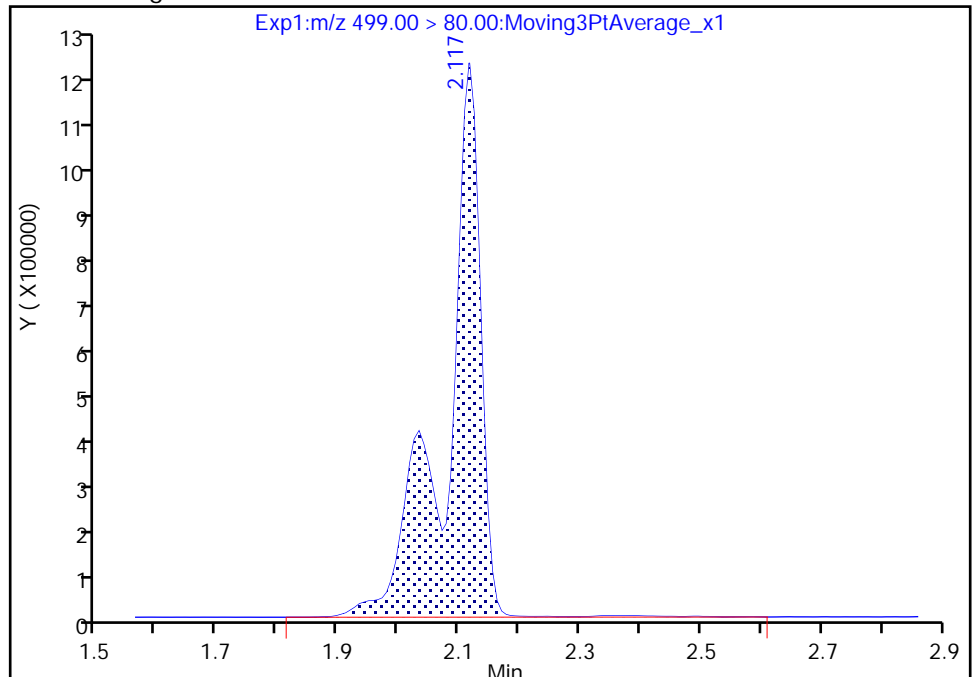
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 4844342
Amount: 63.123826
Amount Units: ng/ml



Reviewer: barnettj, 30-Mar-2018 13:43:28
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

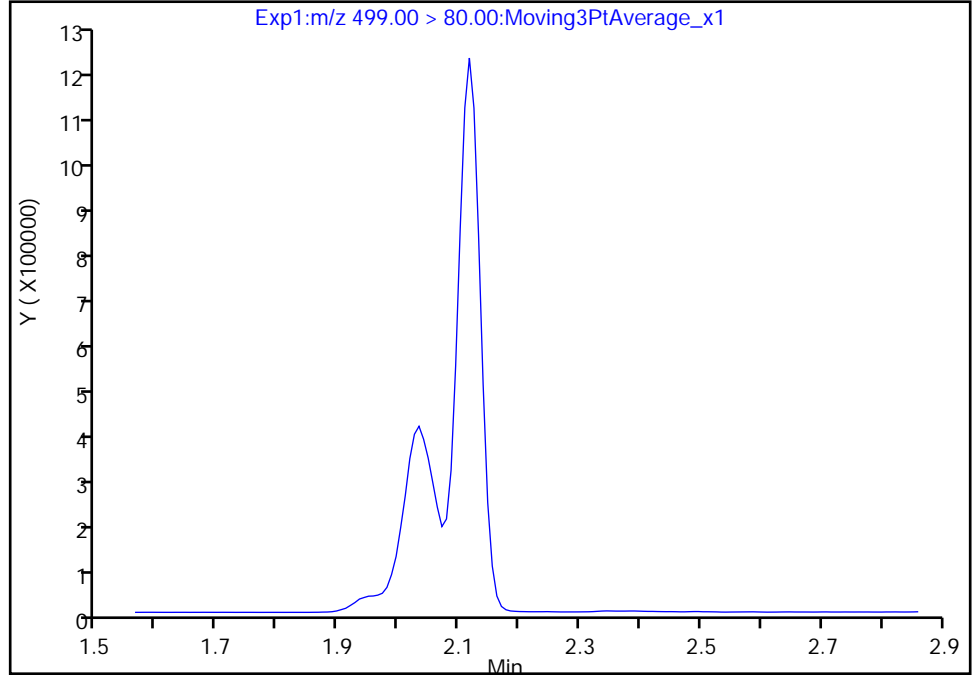
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_026.d
Injection Date: 30-Mar-2018 11:06:19 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

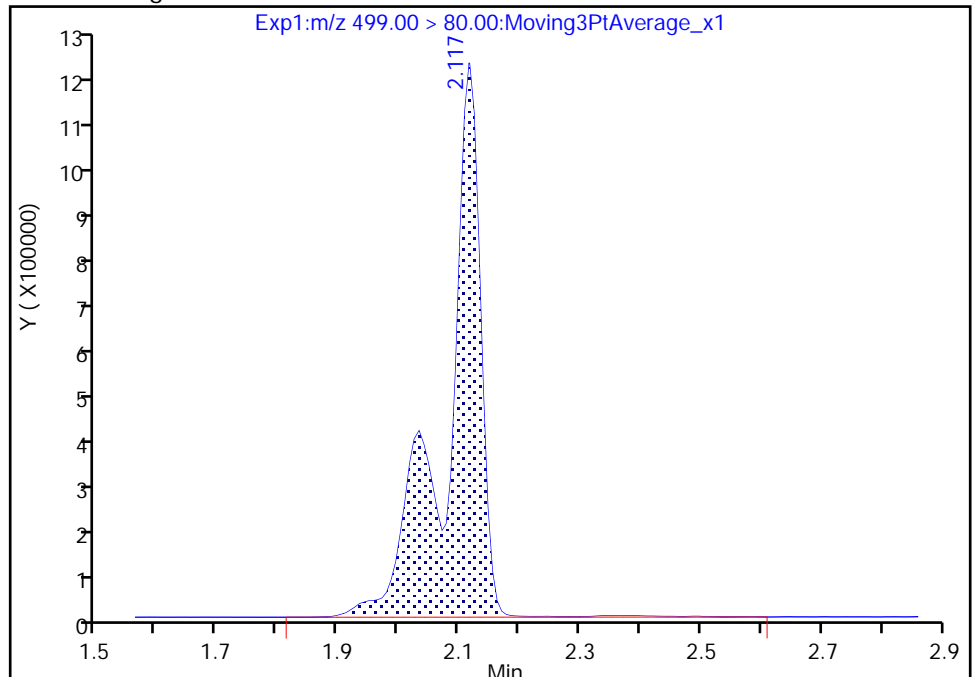
Not Detected
Expected RT: 2.12

Processing Integration Results



RT: 2.12
Area: 4844342
Amount: 63.123826
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Mar-2018 13:43:28
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Lab Sample ID: CCV 320-215655/16 Calibration Date: 03/30/2018 11:20
 Instrument ID: A8_N Calib Start Date: 03/22/2018 14:53
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/22/2018 15:16
 Lab File ID: 2018.03.30_537AA_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.9504	1.016		48.1	45.0	6.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9850	0.9807		4.98	5.00	-0.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.555	1.553		15.0	15.0	-0.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9659	0.9512		9.90	10.1	-1.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9310	0.9569		20.6	20.1	2.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.7266	0.6831		9.40	10.0	-6.0	30.0
13C2 PFHxA	Ave	1.028	1.007		9.79	10.0	-2.1	30.0
13C2 PFDA	Ave	0.8466	0.7535		8.90	10.0	-11.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_029.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 30-Mar-2018 11:20:19 ALS Bottle#: 3 Worklist Smp#: 16
 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\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:59:07 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:48:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.388	0.0	1.000	3867587	48.1		1220	
298.90 > 99.00	1.388	1.388	0.0	1.000	2891703		1.34(0.00-0.00)	1945	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	1020262	9.79		9121	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	496983	4.98		59.3	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.677	0.0	1.000	1970621	15.0		2396	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.874	0.0		1013337	10.0		5987	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.874	0.0	1.000	969186	9.90		118	
413.00 > 169.00	1.874	1.874	0.0	1.000	547499		1.77(0.00-0.00)	402	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.117	0.0		2424984	28.7		3297	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.124	-0.007	1.000	1625018	20.6		704	a
499.00 > 99.00	2.117	2.124	-0.007	1.000	362523		4.48(0.00-0.00)	842	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.124	0.0	1.000	692377	9.40		100	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	763552	8.90		5914	

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\20180330-56050.b\2018.03.30_537AA_029.d

Injection Date: 30-Mar-2018 11:20:19

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

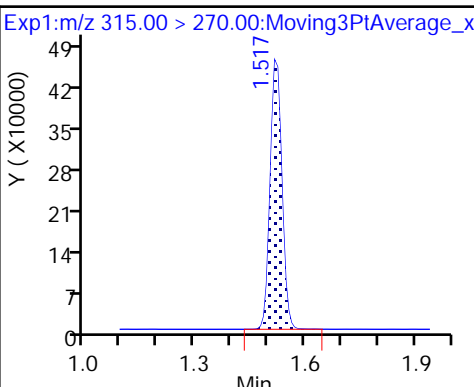
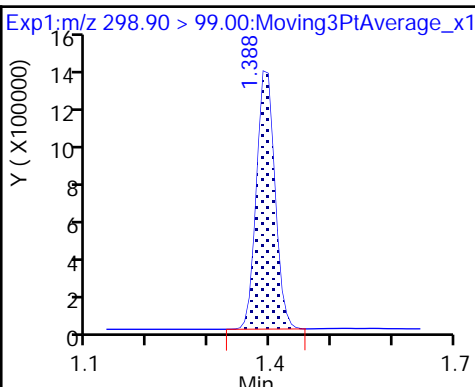
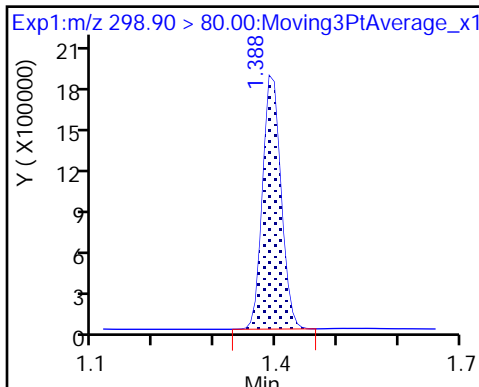
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

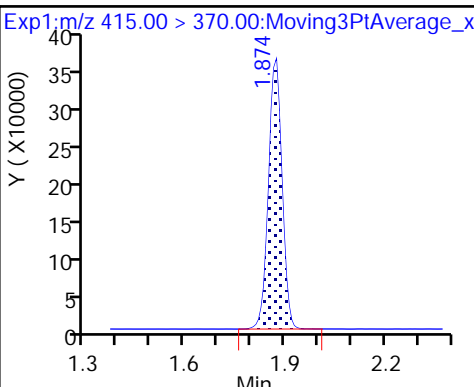
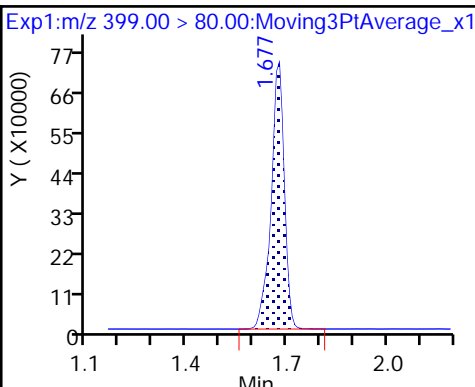
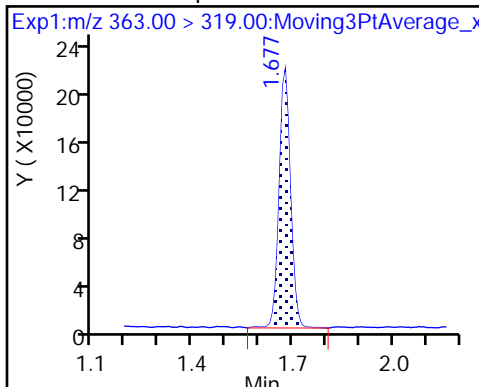
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

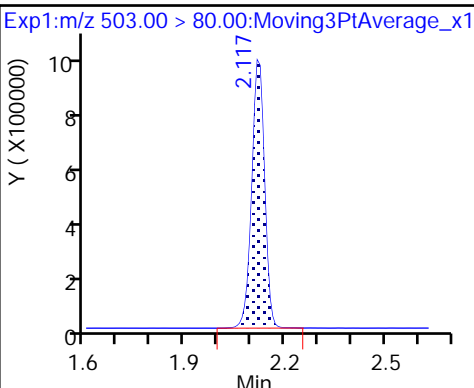
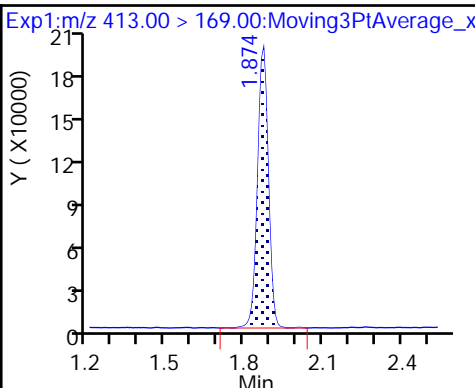
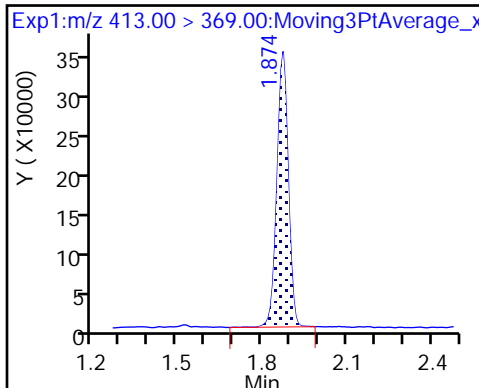
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

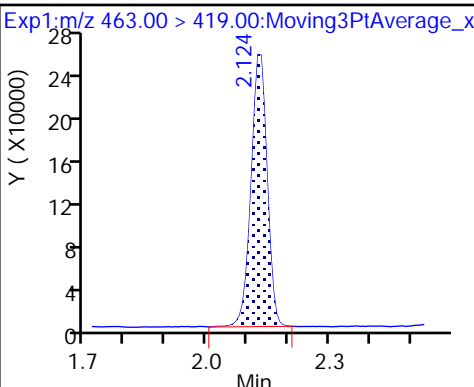
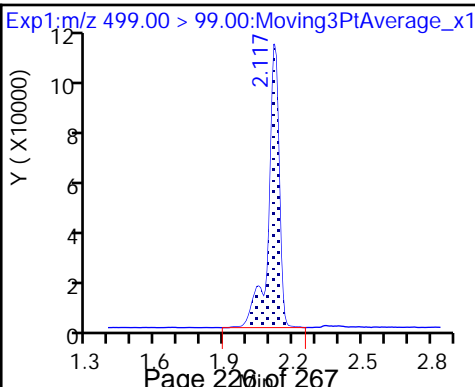
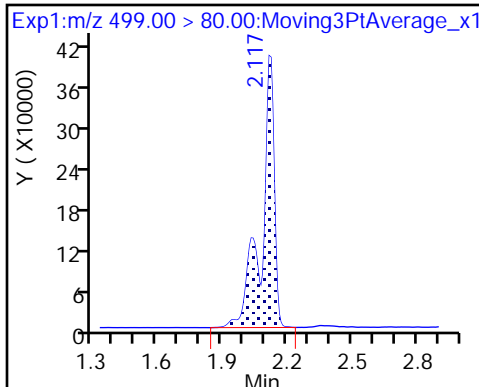
* 7 13C4 PFOS



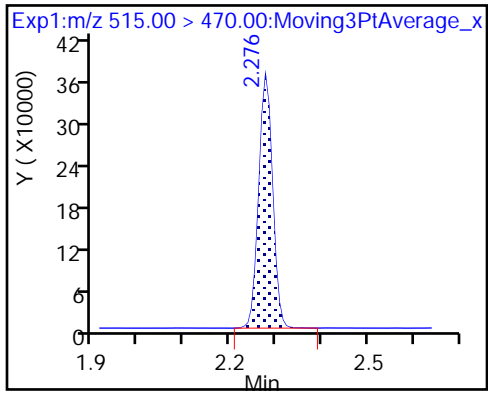
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

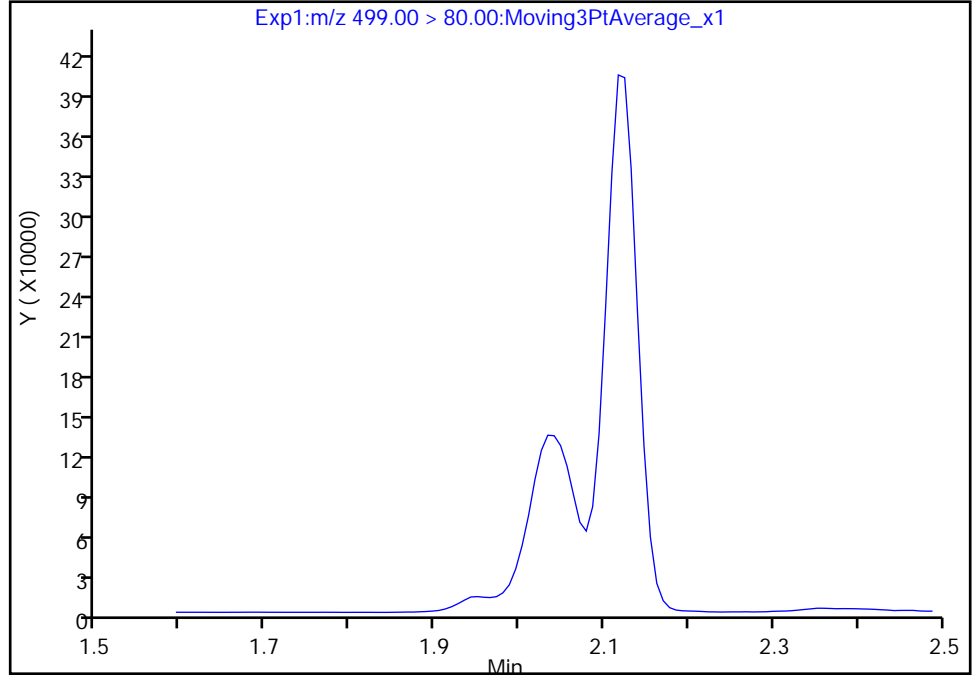
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Injection Date: 30-Mar-2018 11:20:19 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

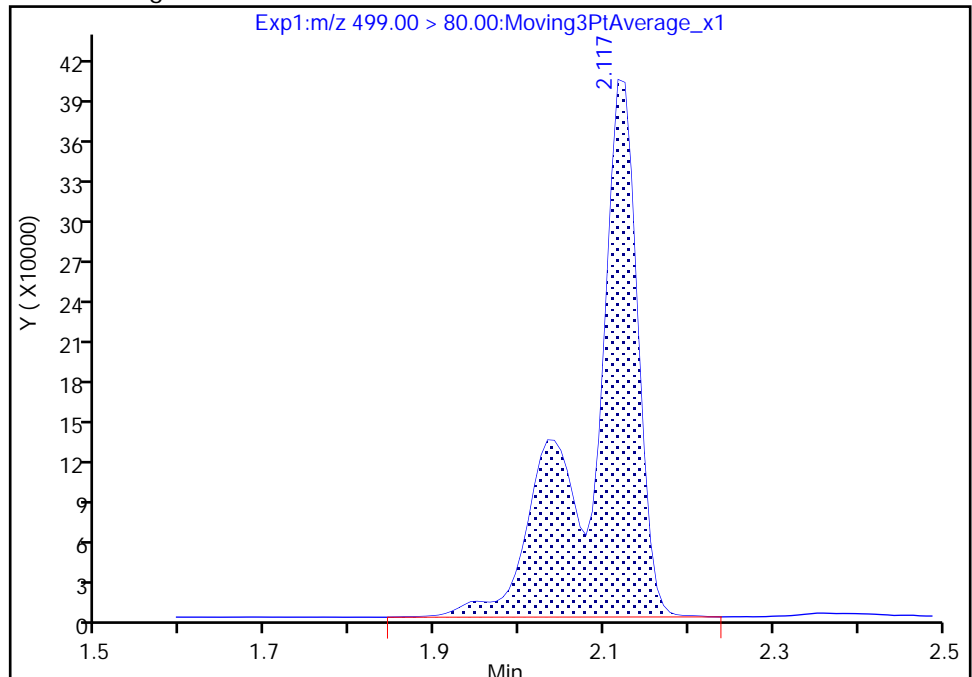
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 1625018
Amount: 20.642228
Amount Units: ng/ml



Reviewer: barnettj, 30-Mar-2018 13:48:26
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-215177/1-A
 Matrix: Water Lab File ID: 2018.03.30_537AA_016.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 250 (mL) Date Analyzed: 03/30/2018 10:19
 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.: 215653 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	88		70-130
STL00996	13C2 PFDA	87		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_016.d
 Lims ID: MB 320-215177/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 30-Mar-2018 10:19:25 ALS Bottle#: 6 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-215177/1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK016

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.517	1.525	-0.008	1.000	1029518	8.81	11543	
* 6 13C2-PFOA	415.00 > 370.00	1.874	1.882	-0.008		1136918	10.0	8243	
* 7 13C4 PFOS	503.00 > 80.00	2.117	2.124	-0.007		2690122	28.7	3866	
\$ 10 13C2 PFDA	515.00 > 470.00	2.276	2.284	-0.008	1.000	835213	8.68	6892	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_016.d

Injection Date: 30-Mar-2018 10:19:25

Instrument ID: A8_N

Lims ID: MB 320-215177/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 6

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

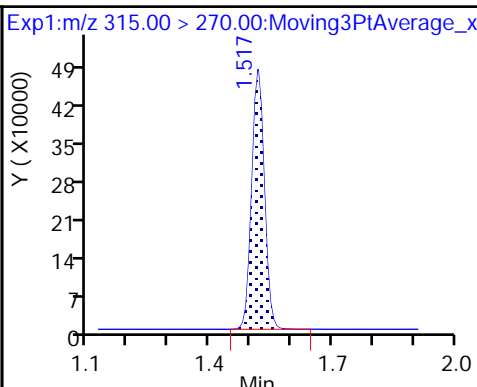
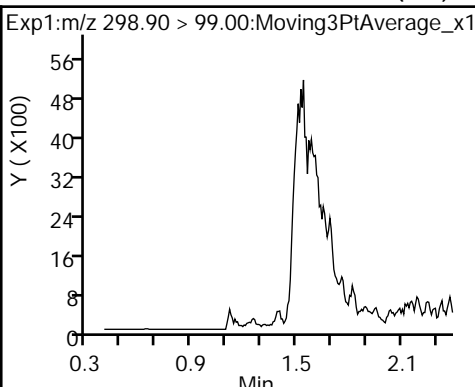
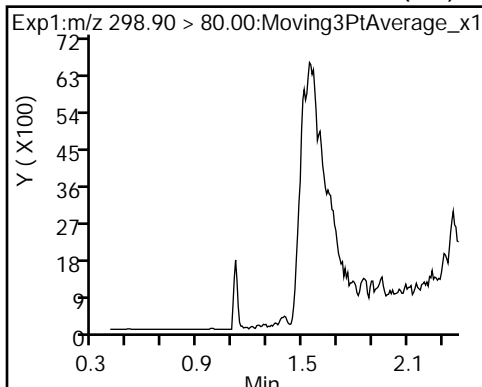
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

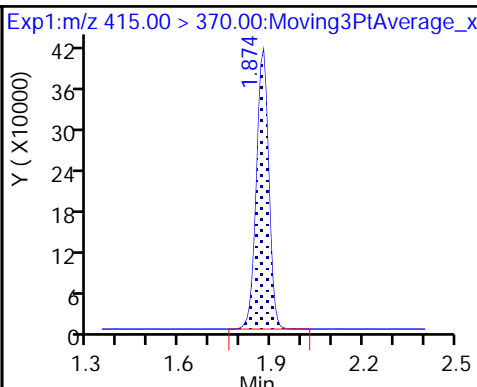
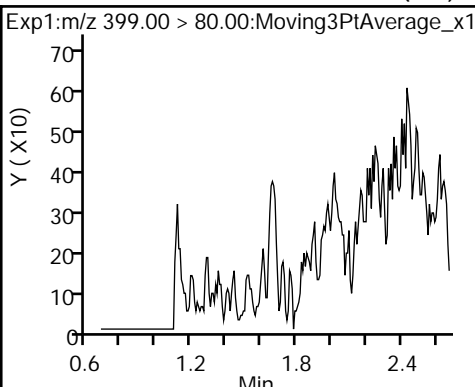
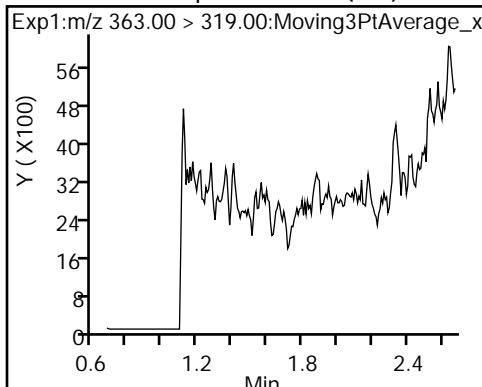
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

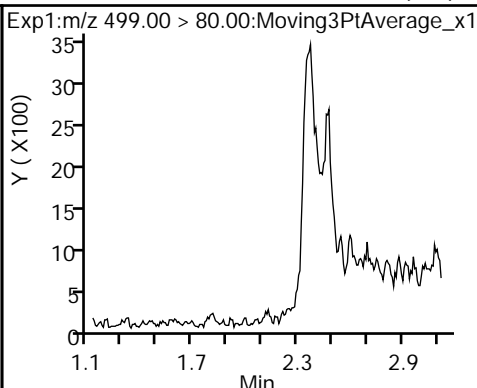
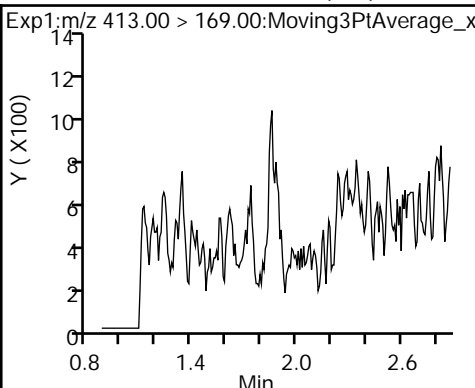
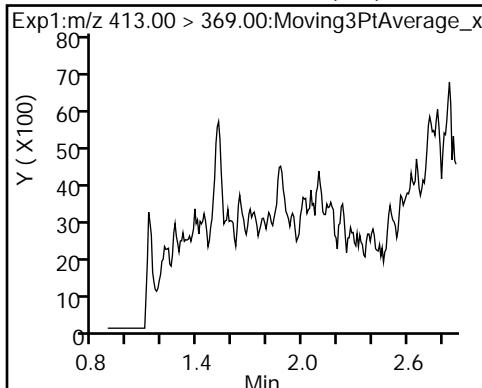
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

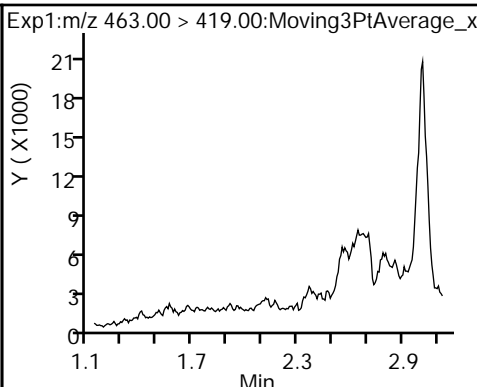
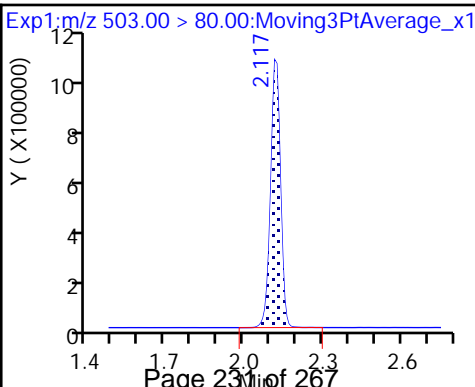
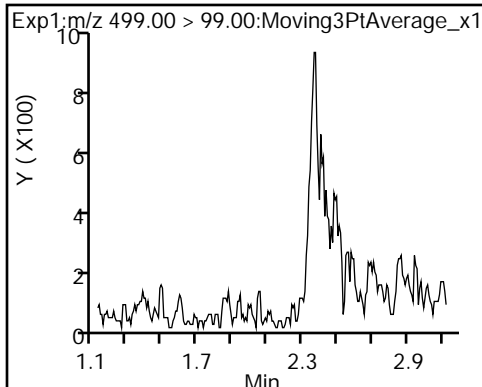
8 Perfluorooctane sulfonic acid (ND)



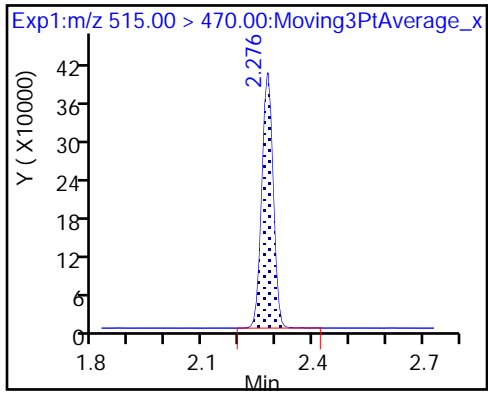
8 Perfluorooctane sulfonic acid (ND)

* 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_016.d
 Lims ID: MB 320-215177/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 30-Mar-2018 10:19:25 ALS Bottle#: 6 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-215177/1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK016

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.81	88.06
\$ 10 13C2 PFDA	10.0	8.68	86.78

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LLCS 320-215177/2-A
 Matrix: Water Lab File ID: 2018.03.30_537AA_017.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 250 (mL) Date Analyzed: 03/30/2018 10:24
 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.: 215653 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	41.5	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	20.4		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20.3	J	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	30.4		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	10.3		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	97.8		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	88		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_017.d
 Lims ID: LLCS 320-215177/2-A
 Client ID:
 Sample Type: LLCS
 Inject. Date: 30-Mar-2018 10:24:07 ALS Bottle#: 7 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: llcs 320-215177/2-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:42:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.396	0.0	1.000	2303600	24.4		708	
298.90 > 99.00	1.396	1.396	0.0	1.000	1591740		1.45(0.00-0.00)	1046	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.525	0.0	1.000	1200090	9.72		12253	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	303457	2.57		35.3	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.677	0.0	1.000	1169503	7.59		1371	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.882	0.0		1200640	10.0		7669	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.882	0.0	1.000	590999	5.10		72.6	
413.00 > 169.00	1.882	1.882	0.0	1.000	305847		1.93(0.00-0.00)	230	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.124	0.0	1.000	958577	10.4		362	a
499.00 > 99.00	2.124	2.124	0.0	1.000	207643		4.62(0.00-0.00)	496	a
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.124	0.0		2843468	28.7		3570	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.132	0.0	1.000	443003	5.08		57.7	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.284	0.0	1.000	892619	8.78		6821	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_017.d

Injection Date: 30-Mar-2018 10:24:07

Instrument ID: A8_N

Lims ID: LLCS 320-215177/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 7

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

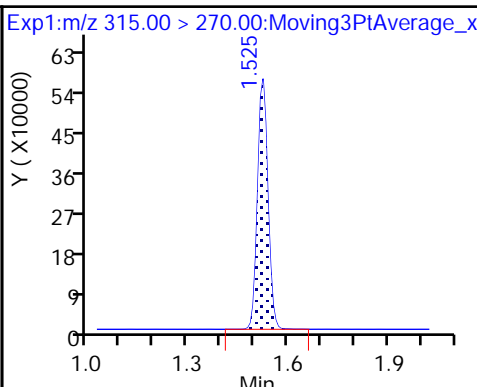
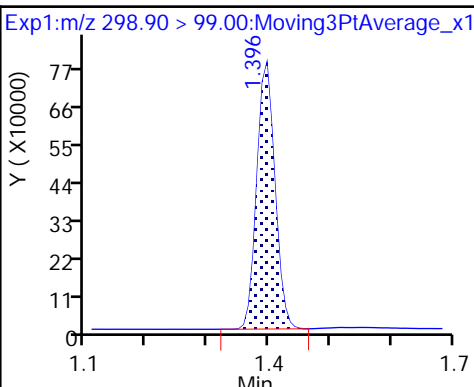
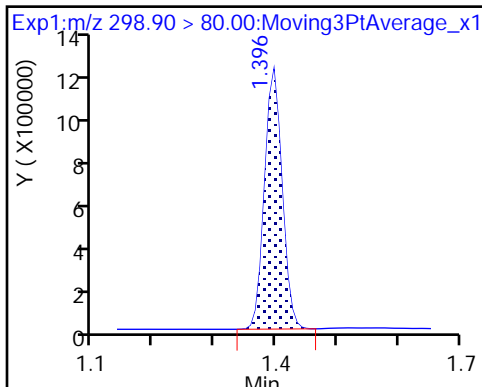
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

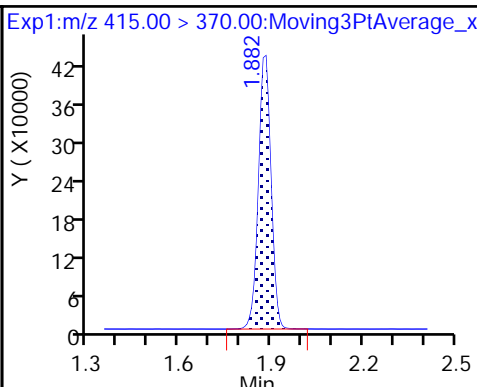
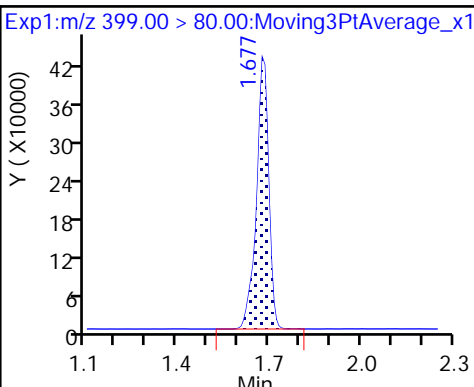
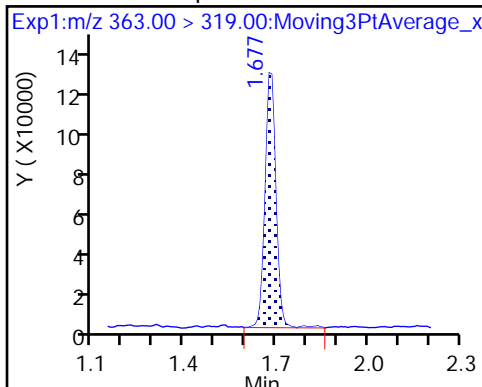
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

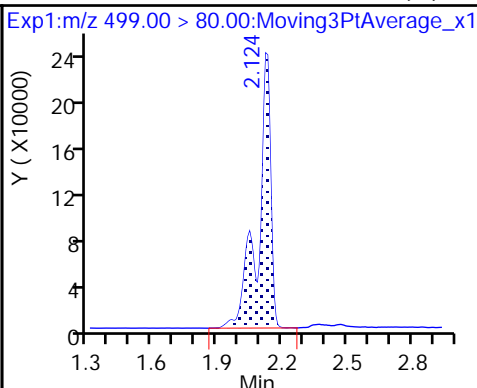
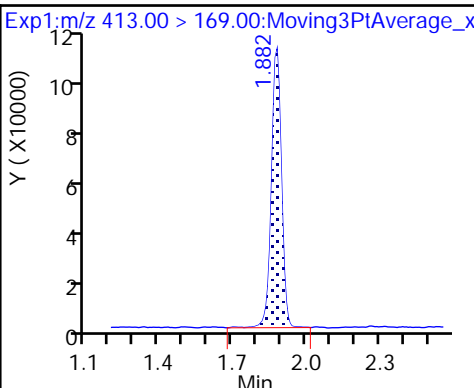
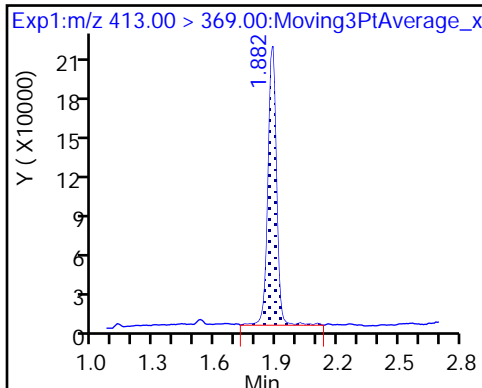
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

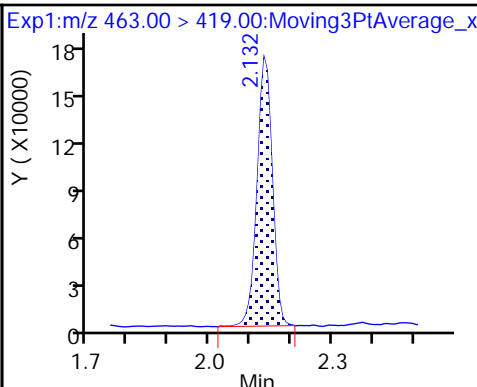
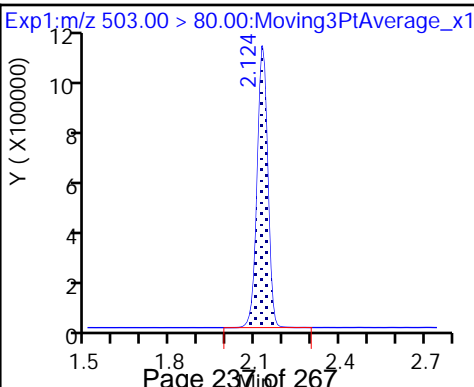
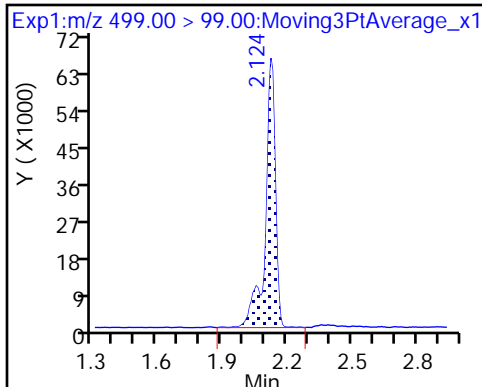
8 Perfluorooctane sulfonic acid (M)



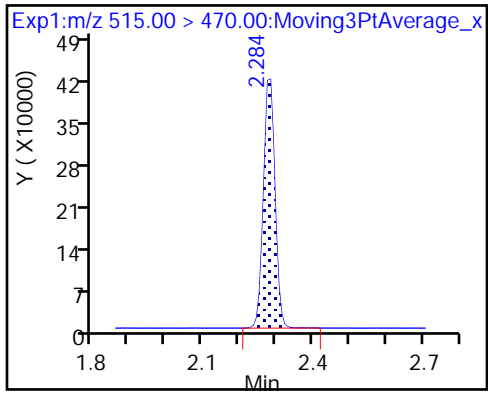
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_017.d
 Lims ID: LLCS 320-215177/2-A
 Client ID:
 Sample Type: LLCS
 Inject. Date: 30-Mar-2018 10:24:07 ALS Bottle#: 7 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: llcs 320-215177/2-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:42:36

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.72	97.21
\$ 10 13C2 PFDA	10.0	8.78	87.82

TestAmerica Sacramento

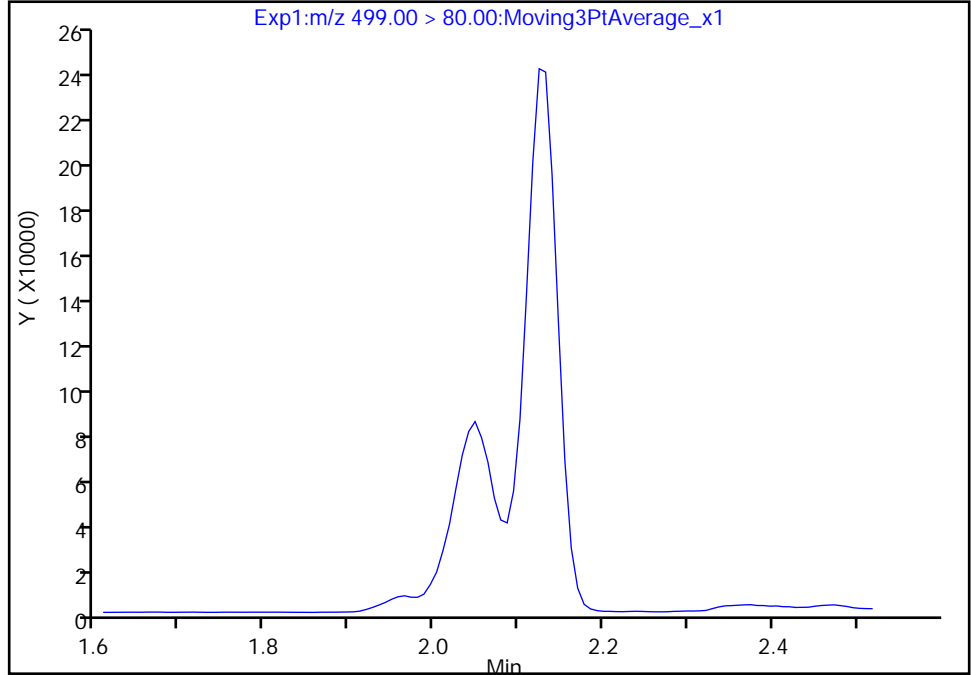
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Injection Date: 30-Mar-2018 10:24:07 Instrument ID: A8_N
Lims ID: LLCS 320-215177/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

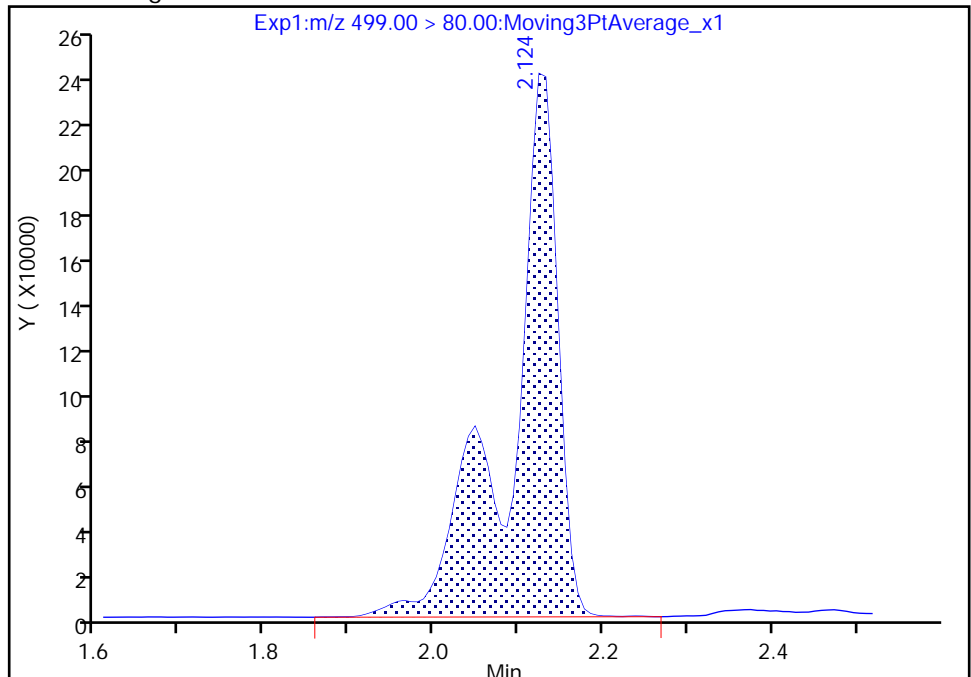
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results



RT: 2.12
Area: 958577
Amount: 10.384508
Amount Units: ng/ml

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LLCSD 320-215177/3-A
 Matrix: Water Lab File ID: 2018.03.30_537AA_018.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 250 (mL) Date Analyzed: 03/30/2018 10:28
 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.: 215653 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	41.5	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	19.1	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	19.0	J	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	31.1		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	10.5		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	99.7		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	82		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_018.d
 Lims ID: LLCSD 320-215177/3-A
 Client ID:
 Sample Type: LLCSD
 Inject. Date: 30-Mar-2018 10:28:48 ALS Bottle#: 8 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: llcsd 320-215177/3-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:43:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.396	1.396	0.0	1.000	2197490	24.9		666	
298.90 > 99.00	1.396	1.396	0.0	1.000	1630286		1.35(0.00-0.00)	1070	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.525	0.0	1.000	1097109	9.09		10396	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	303874	2.63		36.2	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.677	0.007	1.000	1122560	7.79		1201	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.882	0.0		1173871	10.0		6809	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.882	0.0	1.000	540672	4.77		63.7	
413.00 > 169.00	1.882	1.882	0.0	1.000	299116		1.81(0.00-0.00)	216	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.124	0.0	1.000	896804	10.4		378	Ma
499.00 > 99.00	2.124	2.124	0.0	1.000	198638		4.51(0.00-0.00)	495	M
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.124	0.0		2660115	28.7		3678	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.132	0.0	1.000	405330	4.75		48.9	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.284	0.0	1.000	810403	8.15		6182	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_018.d

Injection Date: 30-Mar-2018 10:28:48

Instrument ID: A8_N

Lims ID: LLCSD 320-215177/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 8

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

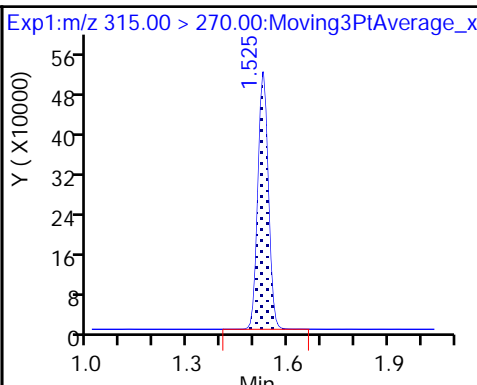
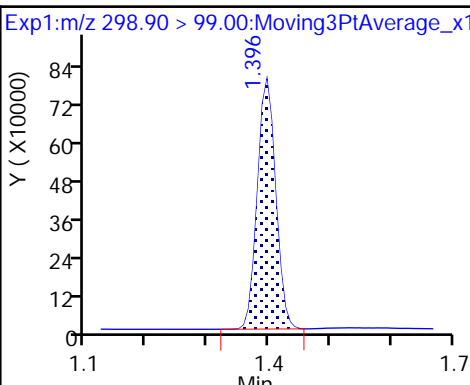
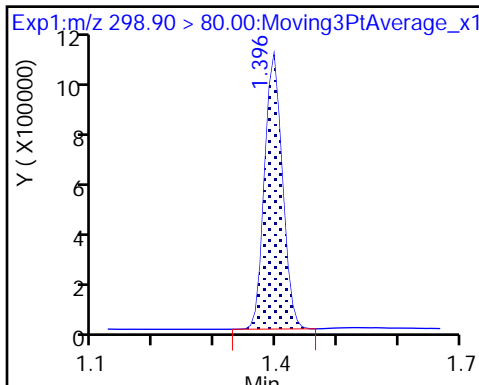
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

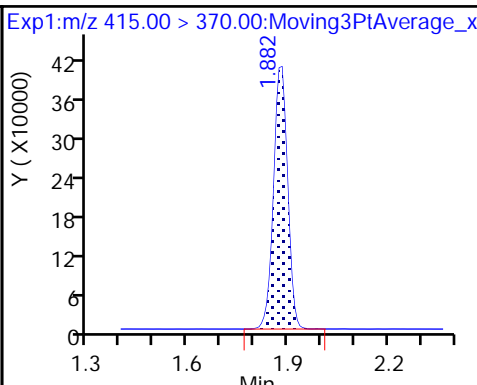
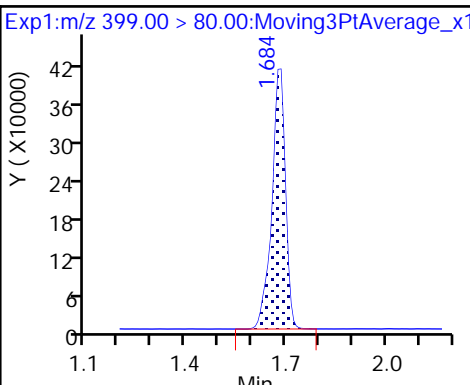
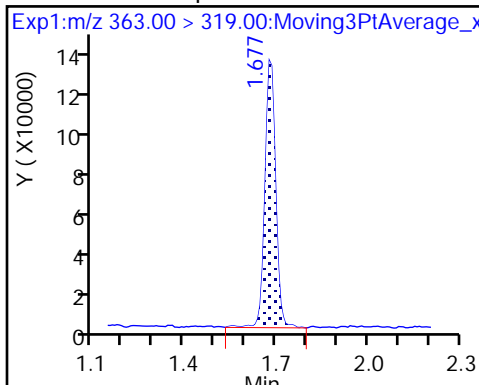
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

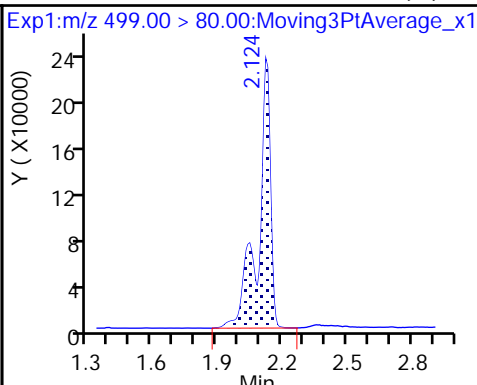
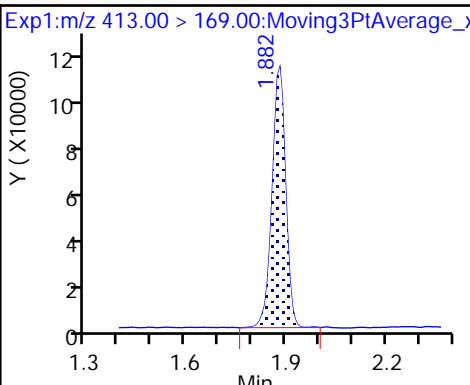
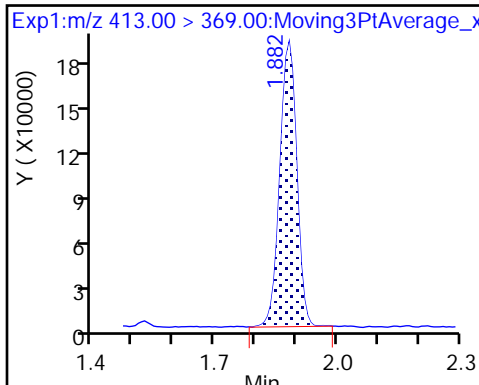
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

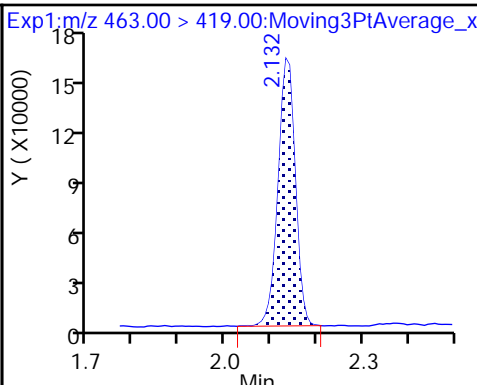
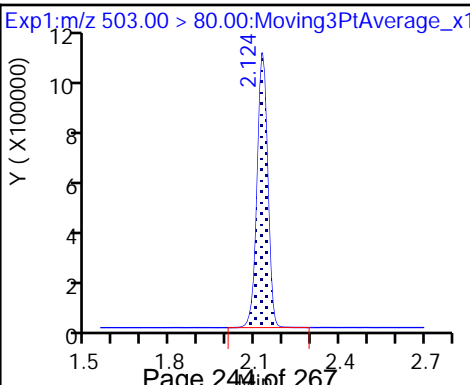
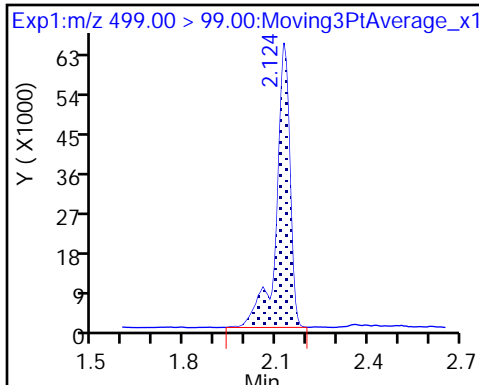
8 Perfluorooctane sulfonic acid (M)



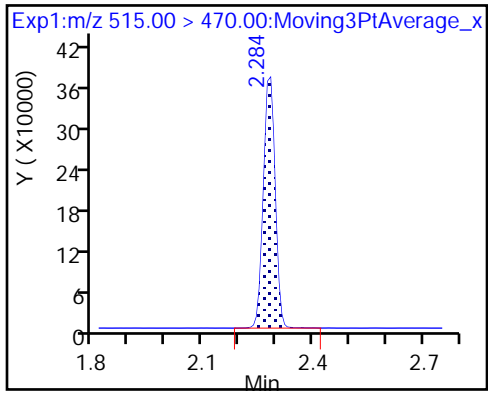
8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_018.d
 Lims ID: LLCSD 320-215177/3-A
 Client ID:
 Sample Type: LLCSD
 Inject. Date: 30-Mar-2018 10:28:48 ALS Bottle#: 8 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: llcsd 320-215177/3-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 30-Mar-2018 13:58:54 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK016

First Level Reviewer: barnettj Date: 30-Mar-2018 13:43:21

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.09	90.89
\$ 10 13C2 PFDA	10.0	8.15	81.55

TestAmerica Sacramento

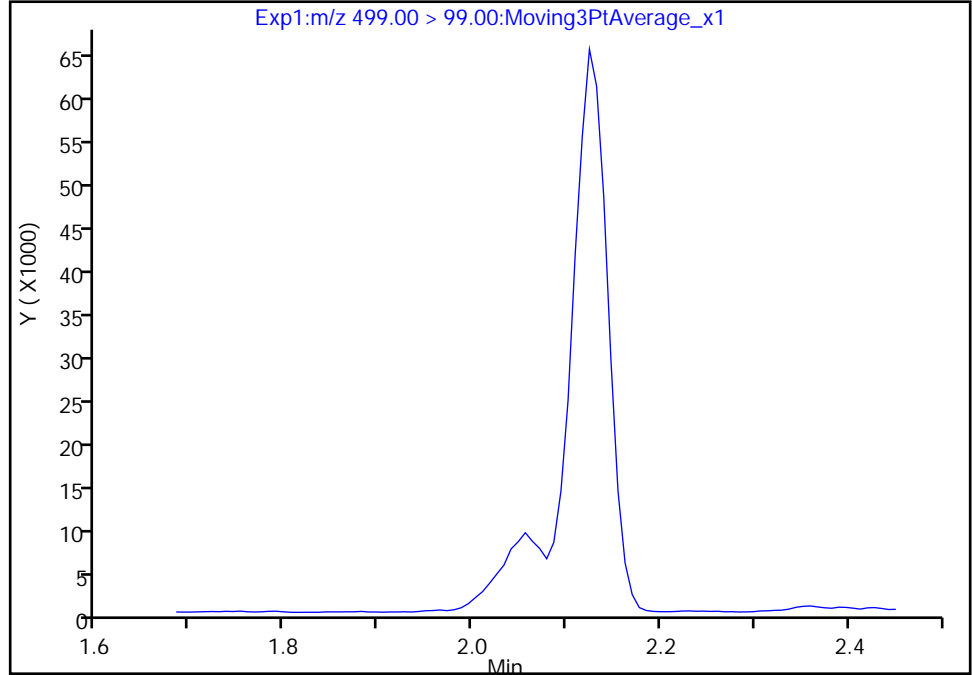
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_018.d
Injection Date: 30-Mar-2018 10:28:48 Instrument ID: A8_N
Lims ID: LLCSD 320-215177/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 8 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

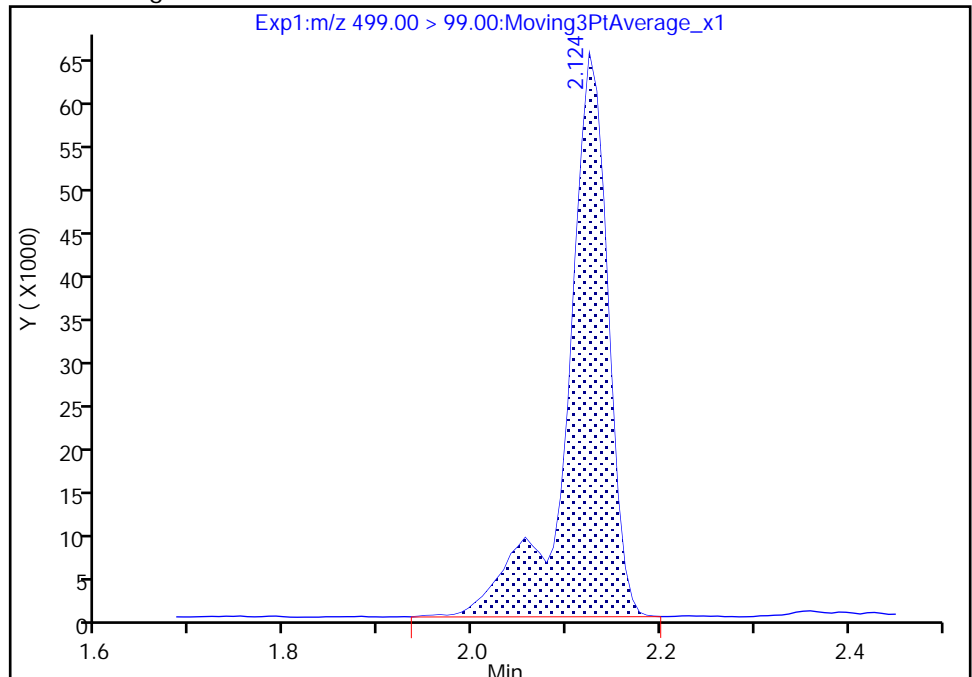
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 198638
Amount: 10.384950
Amount Units: ng/ml



Reviewer: barnettj, 30-Mar-2018 13:43:11
Audit Action: Manually Integrated

TestAmerica Sacramento

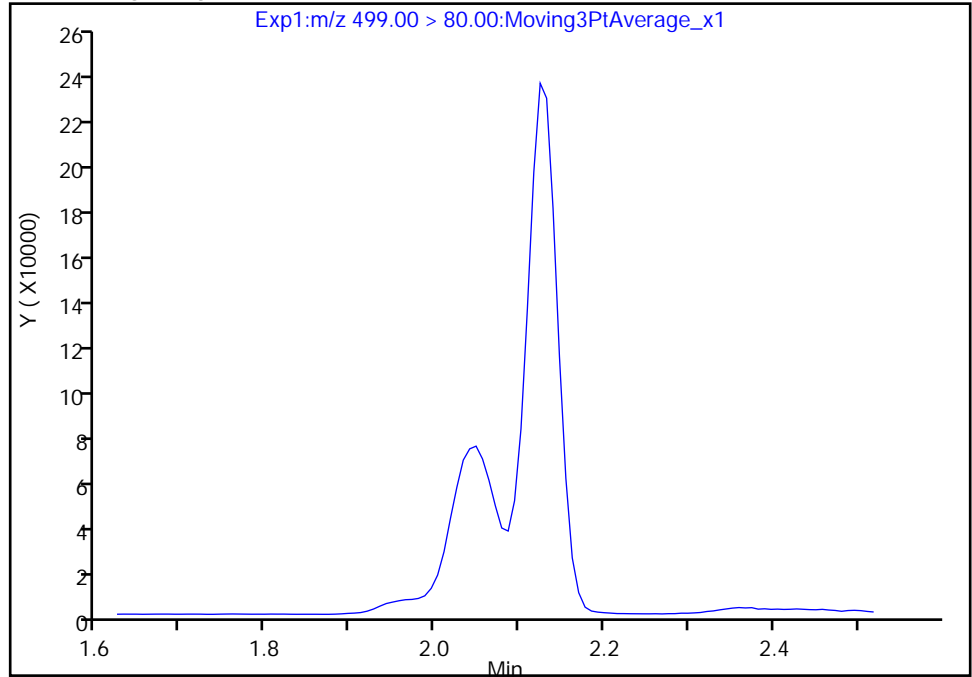
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b\2018.03.30_537AA_018.d
Injection Date: 30-Mar-2018 10:28:48 Instrument ID: A8_N
Lims ID: LLCSD 320-215177/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 8 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

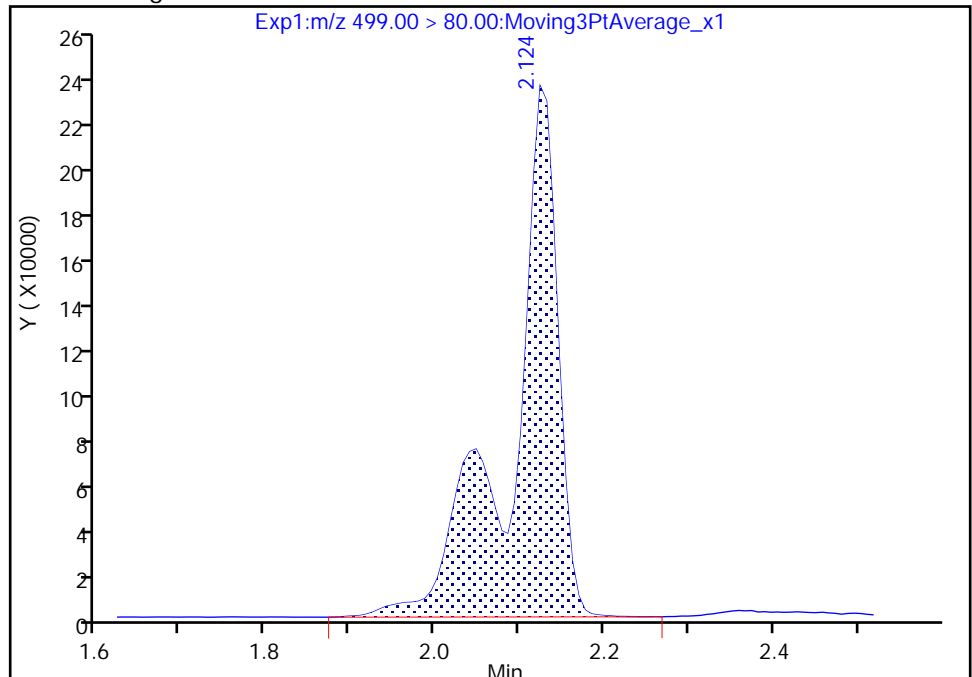
Not Detected
Expected RT: 2.12

Processing Integration Results



RT: 2.12
Area: 896804
Amount: 10.384950
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Mar-2018 13:43:11
Audit Action: Manually Integrated

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Instrument ID: A8_N Start Date: 03/22/2018 14:53

Analysis Batch Number: 214409 End Date: 03/22/2018 15:35

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-214409/4		03/22/2018 14:53	1	2018.03.22_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-214409/5		03/22/2018 14:57	1	2018.03.22_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-214409/6		03/22/2018 15:02	1	2018.03.22_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-214409/7 ICISAV		03/22/2018 15:07	1	2018.03.22_537I CAL 007.d	GeminiC18 3x100 3(mm)
IC 320-214409/8		03/22/2018 15:11	1	2018.03.22_537I CAL 008.d	GeminiC18 3x100 3(mm)
IC 320-214409/9		03/22/2018 15:16	1	2018.03.22_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/22/2018 15:21	1		GeminiC18 3x100 3(mm)
CCVL 320-214409/11		03/22/2018 15:25	1	2018.03.22_537I CAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/22/2018 15:30	1		GeminiC18 3x100 3(mm)
ICV 320-214409/13		03/22/2018 15:35	1	2018.03.22_537I CAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Instrument ID: A8_N Start Date: 03/30/2018 02:25

Analysis Batch Number: 215618 End Date: 03/30/2018 02:58

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-215618/1		03/30/2018 02:25	1	2018.03.30_537A 004.d	GeminiC18 3x100 3(mm)
CCV 320-215618/2 CCVIS		03/30/2018 02:30	1		GeminiC18 3x100 3(mm)
CCV 320-215618/8 CCVIS		03/30/2018 02:58	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Instrument ID: A8_N Start Date: 03/30/2018 10:10

Analysis Batch Number: 215653 End Date: 03/30/2018 11:06

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-215653/1 CCVIS		03/30/2018 10:10	1	2018.03.30_537A A 014.d	GeminiC18 3x100 3(mm)
MB 320-215177/1-A		03/30/2018 10:19	1	2018.03.30_537A A 016.d	GeminiC18 3x100 3(mm)
LLCS 320-215177/2-A		03/30/2018 10:24	1	2018.03.30_537A A 017.d	GeminiC18 3x100 3(mm)
LLCSD 320-215177/3-A		03/30/2018 10:28	1	2018.03.30_537A A 018.d	GeminiC18 3x100 3(mm)
320-37172-1		03/30/2018 10:33	1	2018.03.30_537A A 019.d	GeminiC18 3x100 3(mm)
320-37172-2		03/30/2018 10:38	1	2018.03.30_537A A 020.d	GeminiC18 3x100 3(mm)
320-37172-3		03/30/2018 10:42	1	2018.03.30_537A A 021.d	GeminiC18 3x100 3(mm)
320-37172-4		03/30/2018 10:47	1	2018.03.30_537A A 022.d	GeminiC18 3x100 3(mm)
320-37172-5		03/30/2018 10:52	1	2018.03.30_537A A 023.d	GeminiC18 3x100 3(mm)
320-37172-6		03/30/2018 10:56	1	2018.03.30_537A A 024.d	GeminiC18 3x100 3(mm)
320-37172-7		03/30/2018 11:01	1	2018.03.30_537A A 025.d	GeminiC18 3x100 3(mm)
CCV 320-215653/13 CCVIS		03/30/2018 11:06	1	2018.03.30_537A A 026.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Instrument ID: A8_N Start Date: 03/30/2018 11:06

Analysis Batch Number: 215655 End Date: 03/30/2018 11:20

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-215655/13 CCVIS		03/30/2018 11:06	1	2018.03.30_537A A 026.d	GeminiC18 3x100 3(mm)
320-37172-8		03/30/2018 11:15	1	2018.03.30_537A A 028.d	GeminiC18 3x100 3(mm)
CCV 320-215655/16 CCVIS		03/30/2018 11:20	1	2018.03.30_537A A 029.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Batch Number: 215177 Batch Start Date: 03/28/18 10:21 Batch Analyst: Kouchari, Shamiran

Batch Method: 537 Batch End Date: 03/30/18 09:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00061
MB 320-215177/1		537, 537				250 mL	1.00 mL	7 SU	100 uL
LLCS 320-215177/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
LLCSD 320-215177/3		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-37172-A-1	WGNA-031518-RW-0617	537, 537	T	282.04 g	29.30 g	252.7 mL	1.00 mL	7 SU	100 uL
320-37172-A-2	WGNA-031518-FRB-0617	537, 537	T	287.49 g	30.34 g	257.2 mL	1.00 mL	7 SU	100 uL
320-37172-A-3	WGNA-031518-RW-0755	537, 537	T	278.59 g	27.87 g	250.7 mL	1.00 mL	7 SU	100 uL
320-37172-A-4	WGNA-031518-FRB-0755	537, 537	T	289.59 g	29.02 g	260.6 mL	1.00 mL	7 SU	100 uL
320-37172-A-5	NAWC-031518-RW-0569	537, 537	T	285.76 g	28.10 g	257.7 mL	1.00 mL	7 SU	100 uL
320-37172-A-6	NAWC-031518-FRB-0569	537, 537	T	279.37 g	28.49 g	250.9 mL	1.00 mL	7 SU	100 uL
320-37172-A-7	NAWC-031518-RW-054	537, 537	T	293.02 g	28.72 g	264.3 mL	1.00 mL	7 SU	100 uL
320-37172-A-8	NAWC-031518-FRB-054	537, 537	T	290.54 g	28.62 g	261.9 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00029	LC537-SU 00062	AnalysisComment			
MB 320-215177/1		537, 537			100 uL	Chlorine, ND			
LLCS 320-215177/2		537, 537		100 uL	100 uL	Chlorine, ND			
LLCSD 320-215177/3		537, 537		100 uL	100 uL	Chlorine, ND			
320-37172-A-1	WGNA-031518-RW-0617	537, 537	T		100 uL	Chlorine, ND			
320-37172-A-2	WGNA-031518-FRB-0617	537, 537	T		100 uL	Chlorine, ND			
320-37172-A-3	WGNA-031518-RW-0755	537, 537	T		100 uL	Chlorine, ND			
320-37172-A-4	WGNA-031518-FRB-0755	537, 537	T		100 uL	Chlorine, ND			
320-37172-A-5	NAWC-031518-RW-0569	537, 537	T		100 uL	Chlorine, ND			
320-37172-A-6	NAWC-031518-FRB-0569	537, 537	T		100 uL	Chlorine, ND			

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

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Batch Number: 215177 Batch Start Date: 03/28/18 10:21 Batch Analyst: Kouchari, Shamiran

Batch Method: 537 Batch End Date: 03/30/18 09:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00029	LC537-SU 00062	AnalysisComment			
320-37172-A-7	NAWC-031518-RW-054	537, 537	T		100 uL	Chlorine, ND			
320-37172-A-8	NAWC-031518-FRB-054	537, 537	T		100 uL	Chlorine, ND			

Batch Notes	
Analyst ID - Aliquot Step	SKD
Batch Comment	Client labels match TA label, 03/28/18 SKD
Analyst ID - Concentration	SKD
Analyst ID - Final Volume Step	SKD
Internal Standard ID#	1169779
Manifold ID	7
Methanol ID	1191294
pH Indicator ID	3817
Pipette ID	H14930F, N32728F
Analyst ID - IS Reagent Drop	KMK
Analyst ID - IS Reagent Drop Witness	SKD
Analyst ID - SU Reagent Drop	KMK
Analyst ID - SU Reagent Drop Witness	SKD
Analyst ID - TA Reagent Drop	KMK
Analyst ID - TA Reagent Drop Witness	SKD
SPE Cartridge Lot ID	6390138-01
Trizma ID	SLBR5241V
Reagent Water ID	03/27/18

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: 37172 Instrument ID & Date: A8 3-30-18 ICAL Batch: 214409
 Extraction Batch: 215177 Worklist #: 56050 TALS Batch: 215653, 215655

Review Items	-- Level 1 --			Level 2
	Yes	No	N/A	
Initial Calibration				
1. Is ICAL verified and locked in Chrom & TALS?	✓			✓
2. Is ICV properly linked in TALS?	✓			✓
Continuing Calibration				
1. Low-range CCV injected at start of analytical run? CCV injected after every 10 samples and at the end of the analytical run and alternated between Low-range, Mid-range and High-range?	✓			✓
2. If sequence was not after an ICAL was a low and mid range CCV injected at the start of the analytical run?	✓			✓
3. Native compounds and surrogates in control? Low-range within ±50% of true value Mid and High-range within ±30% of true value	✓			✓
4. Internal Standard areas in control? Areas ≥ 50% of average area of the ICAL and 70-140% of the most recent CCV.	✓			✓
Client Samples & QC Sample Results				
1. Were preparation and analysis done within holding times?	✓			✓
2. Are Chromatograms reviewed and spectra verified?	✓			✓
3. Are positive results within calibration range?	✓			✓
4. Dilutions due to target cpds? _____ Dilutions due to non-targets? _____			✓	
5. All target compounds in MB < 1/3 RL ? (Requires NCM if "no.")	✓			✓
6. Are target constituents in LCS/LCSD within method control limits?	✓			✓
7. Internal Standard areas in control for all samples and QC reported? ±50% from the average area of the ICAL and 70-140% of the most recent CCV	✓			✓
8. Do results (e.g., dilutions/trip blanks) make sense?	✓			✓
9. Are MS/MSD recoveries and RPDs within method control limits?			✓	
10. Are all QC samples properly linked in TALS?	✓			✓
11. All manual integrations appropriate and completely documented?	✓			✓
12. Are nonconformances documented as NCMs?	✓			✓
13. Are all Chrom graphics uploaded?	✓			✓

1st Level Reviewer / Date: JRB 3-30-18 2nd Level Reviewer / Date: CBW 3-30-18

NCM # and Comments: 120763

Instrument ID & Date: A8 3/22/18 Worklist#: 55711

ICAL Batch: 214409, 214410 Calibration ID number: 38271, 38272

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 3-22-18 2nd Level Reviewer / Date: Mway 3/23/18

NCM # and Comments: _____

TestAmerica Laboratories
 Worklist QC Batch Report

Worklist Name: 30MAR2018_537B Worklist Number: 56050
 Instrument Name: A8_N Chrom Method: 537_A8_N
 Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b
 QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 215653
# 1 CCV L3	# 1 CCV L3
# 2 RB	# 2 RB
# 3 MB 320-215177/1-A	# 3 MB 320-215177/1-A
# 4 LLCS 320-215177/2-A	# 4 LLCS 320-215177/2-A
# 5 LLCSD 320-215177/3-A	# 5 LLCSD 320-215177/3-A
# 6 320-37172-A-1-A	# 6 320-37172-A-1-A
# 7 320-37172-A-2-A	# 7 320-37172-A-2-A
# 8 320-37172-A-3-A	# 8 320-37172-A-3-A
# 9 320-37172-A-4-A	# 9 320-37172-A-4-A
#10 320-37172-A-5-A	#10 320-37172-A-5-A
#11 320-37172-A-6-A	#11 320-37172-A-6-A
#12 320-37172-A-7-A	#12 320-37172-A-7-A
#13 CCV L5	#13 CCV L5

QC Batch: 2	LC 537 ICAL Raw Batch: 215655
#13 CCV L5	#13 CCV L5
#14 RB	#14 RB
#15 320-37172-A-8-A	#15 320-37172-A-8-A
#16 CCV L3	#16 CCV L3
#17 RB	#17 RB

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 30MAR2018_537B Worklist Num: 56050
 Instrument: A8_N Method: 537_A8_N
 Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.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
CCV L3	320-0056050-001	CCVIS	30-Mar-2018 10:10:06	2018.03.30_537AA_014.d	3	1.0		sv
RB	320-0056050-002	RB	30-Mar-2018 10:14:46	2018.03.30_537AA_015.d	8	1.0		sv
MB 320-215177/1-A	320-0056050-003	MB	30-Mar-2018 10:19:25	2018.03.30_537AA_016.d	6	1.0		sv
LLCS 320-215177/2-A	320-0056050-004	LLCS	30-Mar-2018 10:24:07	2018.03.30_537AA_017.d	7	1.0		sv
LLCSD 320-215177/3-A	320-0056050-005	LLCSD	30-Mar-2018 10:28:48	2018.03.30_537AA_018.d	8	1.0		sv
320-37172-A-1-A	320-0056050-006	Client	30-Mar-2018 10:33:30	2018.03.30_537AA_019.d	9	1.0	WGNA-031518-RW-0617	sv
320-37172-A-2-A	320-0056050-007	Client	30-Mar-2018 10:38:11	2018.03.30_537AA_020.d	10	1.0	WGNA-031518-FRB-0617	sv
320-37172-A-3-A	320-0056050-008	Client	30-Mar-2018 10:42:53	2018.03.30_537AA_021.d	11	1.0	WGNA-031518-RW-0755	sv
320-37172-A-4-A	320-0056050-009	Client	30-Mar-2018 10:47:33	2018.03.30_537AA_022.d	12	1.0	WGNA-031518-FRB-0755	sv
320-37172-A-5-A	320-0056050-010	Client	30-Mar-2018 10:52:16	2018.03.30_537AA_023.d	13	1.0	NAWC-031518-RW-0569	sv
320-37172-A-6-A	320-0056050-011	Client	30-Mar-2018 10:56:57	2018.03.30_537AA_024.d	14	1.0	NAWC-031518-FRB-0569	sv
320-37172-A-7-A	320-0056050-012	Client	30-Mar-2018 11:01:38	2018.03.30_537AA_025.d	15	1.0	NAWC-031518-RW-054	sv
CCV L5	320-0056050-013	CCVIS	30-Mar-2018 11:06:19	2018.03.30_537AA_026.d	5	1.0		sv
RB	320-0056050-014	RB	30-Mar-2018 11:10:59	2018.03.30_537AA_027.d	8	1.0		sv
320-37172-A-8-A	320-0056050-015	Client	30-Mar-2018 11:15:38	2018.03.30_537AA_028.d	16	1.0	NAWC-031518-FRB-054	sv
CCV L3	320-0056050-016	CCVIS	30-Mar-2018 11:20:19	2018.03.30_537AA_029.d	3	1.0		sv
RB	320-0056050-017	RB	30-Mar-2018 11:24:59	2018.03.30_537AA_030.d	8	1.0		sv

3/30/18
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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-215177

Analyst: Kouchari, Shamiran

Batch Open: 3/28/2018 10:21:00AM

Method Code: 320-537_Prep-320

Batch End: 3/30/2018 9:15:00AM

Extraction of Perfluorinated Alkyl Acids

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-215177/1 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine, ND	
			1.00 mL								
2 LLCS-320-215177/2 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine, ND	
			1.00 mL								
3 LLCSD-320-215177/3 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine, ND	
			1.00 mL								
4 320-37172-A-1 (537_DOD5)	N/A (320-37172-1)	282.04 g	252.7 mL	7			3/20/18	16_Days	4	Chlorine, ND	
		29.30 g	1.00 mL								
5 320-37172-A-2 (537_DOD5)	N/A (320-37172-1)	287.49 g	257.2 mL	7			3/20/18	16_Days	4	Chlorine, ND	
		30.34 g	1.00 mL								
6 320-37172-A-3 (537_DOD5)	N/A (320-37172-1)	278.59 g	250.7 mL	7			3/20/18	16_Days	4	Chlorine, ND	
		27.87 g	1.00 mL								
7 320-37172-A-4 (537_DOD5)	N/A (320-37172-1)	289.59 g	260.6 mL	7			3/20/18	16_Days	4	Chlorine, ND	
		29.02 g	1.00 mL								
8 320-37172-A-5 (537_DOD5)	N/A (320-37172-1)	285.76 g	257.7 mL	7			3/20/18	16_Days	4	Chlorine, ND	
		28.10 g	1.00 mL								
9 320-37172-A-6 (537_DOD5)	N/A (320-37172-1)	279.37 g	250.9 mL	7			3/20/18	16_Days	4	Chlorine, ND	
		28.49 g	1.00 mL								
10 320-37172-A-7 (537_DOD5)	N/A (320-37172-1)	293.02 g	264.3 mL	7			3/20/18	16_Days	4	Chlorine, ND	
		28.72 g	1.00 mL								

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)


Batch Number: 320-215177

Analyst: Kouchari, Shamiran

Batch Open: 3/28/2018 10:21:00AM

Method Code: 320-537_Prep-320

Batch End: 3/30/2018 9:15:00AM

320-37172-A-8 (537_DOD5)	N/A (320-37172-1)	290.54 g	261.9 mL	7			3/20/18	16_Days	4	Chlorine, ND	
		28.62 g	1.00 mL								

Batch Notes

Manifold ID 7

pH Indicator ID 3817

Trizma ID SLBR5241V

SPE Cartridge Lot ID 6390138-01

Methanol ID 1191294

Reagent Water ID 03/27/18

Internal Standard ID# 1169779

Pipette ID H14930F, N32728F

Analyst ID - TA Reagent Drop KMK

Analyst ID - TA Reagent Drop SKD

Witness

Analyst ID - SU Reagent Drop KMK

Analyst ID - SU Reagent Drop SKD

Witness

Analyst ID - IS Reagent Drop KMK

Analyst ID - IS Reagent Drop SKD

Witness

Analyst ID - Concentration SKD

Analyst ID - Aliquot Step SKD

Analyst ID - Final Volume Step SKD

Batch Comment Client labels match TA label, 03/28/18 SKD

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-215177

Analyst: Kouchari, Shamiran

Batch Open: 3/28/2018 10:21:00AM

Method Code: 320-537_Prep-320

Batch End: 3/30/2018 9:15:00AM

Comments

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-215177

Analyst: Kouchari, Shamiran

Batch Open: 3/28/2018 10:21:00AM

Method Code: 320-537_Prep-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-215177/1	LC537-SU_00062	100 uL	1.00 mL	KMK 3-28-18	SKD 3/28/18
LLCS 320-215177/2	LC537-LSP_00029	100 uL	1.00 mL		
LLCS 320-215177/2	LC537-SU_00062	100 uL	1.00 mL		
LLCSD 320-215177/3	LC537-LSP_00029	100 uL	1.00 mL		
LLCSD 320-215177/3	LC537-SU_00062	100 uL	1.00 mL		
320-37172-A-1	LC537-SU_00062	100 uL	1.00 mL		
320-37172-A-2	LC537-SU_00062	100 uL	1.00 mL		
320-37172-A-3	LC537-SU_00062	100 uL	1.00 mL		
320-37172-A-4	LC537-SU_00062	100 uL	1.00 mL		
320-37172-A-5	LC537-SU_00062	100 uL	1.00 mL		
320-37172-A-6	LC537-SU_00062	100 uL	1.00 mL		
320-37172-A-7	LC537-SU_00062	100 uL	1.00 mL		
320-37172-A-8	LC537-SU_00062	100 uL	1.00 mL		

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-215177

Analyst: Kouchari, Shamiran

Batch Open: 3/28/2018 10:21:00AM

Method Code: 320-537_Prep-320

Batch End:

Other Reagents:		
Reagent	Amount/Units	Lot#:

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Preparation Batch Number(s) 215177 Test 537-prep

Earliest Holding Time 3/29/18

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	NA
MS/MSD or MS/DU NCM filed	N/A	NA
NCM for any anomalies filed	N/A	NA
All NCMs include method code, matrix, and prep batch	N/A	NA
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

Date: 3/30/18

2nd Level Reviewer: VPM

Date: 3/30/18

Comments: _____

Shipping and Receiving Documents

TestAmerica Sacramento
 880 Riverside Parkway
 West Sacramento, CA 95605-1500
 phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

TestAmerica
 THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

Regulatory Program: DW NPDES RCRA Other:

Client Contact	Project Manager: Andy Frebowitz	Site Contact: Mary Kay Bond	Date: 3/15/2018	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			Sampler: Mary Kay Bond
King of Prussia, PA 19406	<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS			For Lab Use Only:
610-382-1174	TAT if different from Below 21			Walk-in Client:
610-491-9688	<input type="checkbox"/> 2 weeks			Lab Sampling:
Project Name: WE04	<input type="checkbox"/> 1 week			Job / SDG No.:
Site: WE04	<input type="checkbox"/> 2 days			
P O # 1132358 (through EarthToxics)	<input type="checkbox"/> 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 UCMR3	Sample Specific Notes:
WGNA-031518-RW-0617	3/15/2018	9:10	G	DW	2	N	N	Y	
WGNA-031518-FRB-0617	3/15/2018	9:05	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-031518-RW-0755	3/15/2018	10:10	G	DW	2	N	N	Y	
WGNA-031518-FRB-0755	3/15/2018	10:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-031518-RW-0569	3/15/2018	10:35	G	DW	2	N	N	Y	
NAWC-031518-FRB-0569	3/15/2018	10:40	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-031518-RW-054	3/15/2018	11:10	G	DW	2	N	N	Y	
NAWC-031518-FRB-054	3/15/2018	11:05	G	DW	2	N	N	Y	Field Reagent Blank



320-37172 Chain of Custody

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

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: **7800 8256 4126**

Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:	Cooler Temp. (°C): Obs'd: 1.9c Corr'd:	Therm ID No.: AK2
Relinquished by: Mary Kay Bond	Company: Tetra Tech	Date/Time: 3/15/2018 16:00	Received by: [Signature]
Relinquished by:	Company:	Date/Time:	Received by: [Signature]
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [Signature]

* sample label time does not match COC. Times were switched. RW-0569 time says 1040. **Form No. CA-C-WI-002, Rev. 4.11, dated 1/24/2017**

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-37172-1

Login Number: 37172

List Source: TestAmerica Sacramento

List Number: 1

Creator: Her, David A

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Bottle with RW do not have a Trizma sticker and the FRB does.. pH them
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 <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

"WGNA-031518-RW-0617", "537", "RES", "320-37172-1", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "25", "ng/L", "J M", "6.7", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "252.7", "1.00", "16", ""

"WGNA-031518-RW-0617", "537", "RES", "320-37172-1", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "23", "ng/L", "", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "252.7", "1.00", "7.9", ""

"WGNA-031518-RW-0617", "537", "RES", "320-37172-1", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "9.4", "ng/L", "J", "5.4", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "252.7", "1.00", "12", ""

"WGNA-031518-RW-0617", "537", "RES", "320-37172-1", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "24", "ng/L", "J", "16", "DL", "", "TRG", "", "", "89", "LOQ", "YES", "-99", "", "252.7", "1.00", "36", ""

"WGNA-031518-RW-0617", "537", "RES", "320-37172-1", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "7.6", "ng/L", "J", "1.9", "DL", "", "TRG", "", "", "9.9", "LOQ", "YES", "-99", "", "252.7", "1.00", "4.0", ""

"WGNA-031518-RW-0617", "537", "RES", "320-37172-1", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "20", "ng/L", "U M", "7.9", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "252.7", "1.00", "20", ""

"WGNA-031518-RW-0617", "537", "RES", "320-37172-1", "TALSAC", "STL00993", "13C2
PFHxA", "36", "ng/L", "", "-99", "DL", "", "SURR", "91", "", "-99", "LOQ", "YES", "39.6", "", "252.7", "1.00", "0", ""

"WGNA-031518-RW-0617", "537", "RES", "320-37172-1", "TALSAC", "STL00996", "13C2
PFDA", "34", "ng/L", "", "-99", "DL", "", "SURR", "87", "", "-99", "LOQ", "YES", "39.6", "", "252.7", "1.00", "0", ""

"WGNA-031518-FRB-0617", "537", "RES", "320-37172-2", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "16", "ng/L", "U", "6.6", "DL", "", "TRG", "", "", "39", "LOQ", "YES", "-99", "", "257.2", "1.00", "16", ""

"WGNA-031518-FRB-0617", "537", "RES", "320-37172-2", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "7.8", "ng/L", "U", "2.7", "DL", "", "TRG", "", "", "19", "LOQ", "YES", "-99", "", "257.2", "1.00", "7.8", ""

"WGNA-031518-FRB-0617", "537", "RES", "320-37172-2", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "12", "ng/L", "U", "5.3", "DL", "", "TRG", "", "", "29", "LOQ", "YES", "-99", "", "257.2", "1.00", "12", ""

"WGNA-031518-FRB-0617", "537", "RES", "320-37172-2", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "35", "ng/L", "U", "16", "DL", "", "TRG", "", "", "87", "LOQ", "YES", "-99", "", "257.2", "1.00", "35", ""

"WGNA-031518-FRB-0617", "537", "RES", "320-37172-2", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "3.9", "ng/L", "U", "1.8", "DL", "", "TRG", "", "", "9.7", "LOQ", "YES", "-99", "", "257.2", "1.00", "3.9", ""

"WGNA-031518-FRB-0617", "537", "RES", "320-37172-2", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "19", "ng/L", "U", "7.8", "DL", "", "TRG", "", "", "23", "LOQ", "YES", "-99", "", "257.2", "1.00", "19", ""

"WGNA-031518-FRB-0617", "537", "RES", "320-37172-2", "TALSAC", "STL00993", "13C2
PFHxA", "34", "ng/L", "", "-99", "DL", "", "SURR", "88", "", "-99", "LOQ", "YES", "38.9", "", "257.2", "1.00", "0", ""

"WGNA-031518-FRB-0617", "537", "RES", "320-37172-2", "TALSAC", "STL00996", "13C2
PFDA", "33", "ng/L", "", "-99", "DL", "", "SURR", "84", "", "-99", "LOQ", "YES", "38.9", "", "257.2", "1.00", "0", ""

"WGNA-031518-RW-0755", "537", "RES", "320-37172-3", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "28", "ng/L", "J M", "6.8", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "250.7", "1.00", "16", ""

"WGNA-031518-RW-0755", "537", "RES", "320-37172-3", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "23", "ng/L", "", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "250.7", "1.00", "8.0", ""

"WGNA-031518-RW-0755", "537", "RES", "320-37172-3", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "30", "ng/L", "", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "250.7", "1.00", "12", ""

"WGNA-031518-RW-0755", "537", "RES", "320-37172-3", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "36", "ng/L", "U M", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "250.7", "1.00", "36", ""

"WGNA-031518-RW-0755", "537", "RES", "320-37172-3", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "4.7", "ng/L", "J", "1.9", "DL", "", "TRG", "", "", "10", "LOQ", "YES", "-99", "", "250.7", "1.00", "4.0", ""

"WGNA-031518-RW-0755", "537", "RES", "320-37172-3", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "20", "ng/L", "U", "8.0", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "250.7", "1.00", "20", ""

"WGNA-031518-RW-0755", "537", "RES", "320-37172-3", "TALSAC", "STL00993", "13C2
PFHxA", "33", "ng/L", "", "-99", "DL", "", "SURR", "84", "", "-99", "LOQ", "YES", "39.9", "", "250.7", "1.00", "0", ""

"WGNA-031518-RW-0755", "537", "RES", "320-37172-3", "TALSAC", "STL00996", "13C2
PFDA", "32", "ng/L", "", "-99", "DL", "", "SURR", "81", "", "-99", "LOQ", "YES", "39.9", "", "250.7", "1.00", "0", ""

"WGNA-031518-FRB-0755", "537", "RES", "320-37172-4", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "15", "ng/L", "U", "6.5", "DL", "", "TRG", "", "", "38", "LOQ", "YES", "-99", "", "260.6", "1.00", "15", ""

"WGNA-031518-FRB-0755", "537", "RES", "320-37172-4", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "7.7", "ng/L", "U", "2.7", "DL", "", "TRG", "", "", "19", "LOQ", "YES", "-99", "", "260.6", "1.00", "7.7", ""

"WGNA-031518-FRB-0755", "537", "RES", "320-37172-4", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid

(PFHxS)", "12", "ng/L", "U", "5.3", "DL", "", "TRG", "", "", "29", "LOQ", "YES", "-99", "", "260.6", "1.00", "12", ""
"WGNA-031518-FRB-0755", "537", "RES", "320-37172-4", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "35", "ng/L", "U", "15", "DL", "", "TRG", "", "", "86", "LOQ", "YES", "-99", "", "260.6", "1.00", "35", ""
"WGNA-031518-FRB-0755", "537", "RES", "320-37172-4", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "3.8", "ng/L", "U", "1.8", "DL", "", "TRG", "", "", "9.6", "LOQ", "YES", "-99", "", "260.6", "1.00", "3.8", ""
"WGNA-031518-FRB-0755", "537", "RES", "320-37172-4", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "19", "ng/L", "U", "7.7", "DL", "", "TRG", "", "", "23", "LOQ", "YES", "-99", "", "260.6", "1.00", "19", ""
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"WGNA-031518-FRB-0755", "537", "RES", "320-37172-4", "TALSAC", "STL00996", "13C2
PFDA", "34", "ng/L", "", "-99", "DL", "", "SURR", "88", "", "-99", "LOQ", "YES", "38.4", "", "260.6", "1.00", "0", ""
"NAWC-031518-RW-0569", "537", "RES", "320-37172-5", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "28", "ng/L", "J M", "6.6", "DL", "", "TRG", "", "", "39", "LOQ", "YES", "-99", "", "257.7", "1.00", "16", ""
"NAWC-031518-RW-0569", "537", "RES", "320-37172-5", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "35", "ng/L", "", "2.7", "DL", "", "TRG", "", "", "19", "LOQ", "YES", "-99", "", "257.7", "1.00", "7.8", ""
"NAWC-031518-RW-0569", "537", "RES", "320-37172-5", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
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(PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "250.9", "1.00", "36", ""
"NAWC-031518-FRB-0569", "537", "RES", "320-37172-6", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "4.0", "ng/L", "U", "1.9", "DL", "", "TRG", "", "", "10", "LOQ", "YES", "-99", "", "250.9", "1.00", "4.0", ""
"NAWC-031518-FRB-0569", "537", "RES", "320-37172-6", "TALSAC", "375-95-1", "Perfluorononanoic acid
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"NAWC-031518-FRB-0569", "537", "RES", "320-37172-6", "TALSAC", "STL00993", "13C2
PFHxA", "32", "ng/L", "", "-99", "DL", "", "SURR", "81", "", "-99", "LOQ", "YES", "39.9", "", "250.9", "1.00", "0", ""
"NAWC-031518-FRB-0569", "537", "RES", "320-37172-6", "TALSAC", "STL00996", "13C2
PFDA", "34", "ng/L", "", "-99", "DL", "", "SURR", "86", "", "-99", "LOQ", "YES", "39.9", "", "250.9", "1.00", "0", ""
"NAWC-031518-RW-054", "537", "RES", "320-37172-7", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
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"NAWC-031518-RW-054", "537", "RES", "320-37172-7", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
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"NAWC-031518-RW-054", "537", "RES", "320-37172-7", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "34", "ng/L", "U", "15", "DL", "", "TRG", "", "", "85", "LOQ", "YES", "-99", "", "264.3", "1.00", "34", ""
"NAWC-031518-RW-054", "537", "RES", "320-37172-7", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "5.7", "ng/L", "J", "1.8", "DL", "", "TRG", "", "", "9.5", "LOQ", "YES", "-99", "", "264.3", "1.00", "3.8", ""
"NAWC-031518-RW-054", "537", "RES", "320-37172-7", "TALSAC", "375-95-1", "Perfluorononanoic acid

(PFNA),"19","ng/L","U M","7.6","DL","","TRG","","","23","LOQ","YES",-99","","264.3","1.00","19","","NAWC-031518-RW-054","537","RES","320-37172-7","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","91","","-99","LOQ","YES","37.8","","264.3","1.00","0","","NAWC-031518-RW-054","537","RES","320-37172-7","TALSAC","STL00996","13C2
PFDA","33","ng/L","","-99","DL","","SURR","86","","-99","LOQ","YES","37.8","","264.3","1.00","0","","NAWC-031518-FRB-054","537","RES","320-37172-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","15","ng/L","U","6.5","DL","","TRG","","","38","LOQ","YES",-99","","261.9","1.00","15","","NAWC-031518-FRB-054","537","RES","320-37172-8","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.6","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES",-99","","261.9","1.00","7.6","","NAWC-031518-FRB-054","537","RES","320-37172-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","11","ng/L","U","5.3","DL","","TRG","","","29","LOQ","YES",-99","","261.9","1.00","11","","NAWC-031518-FRB-054","537","RES","320-37172-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","34","ng/L","U","15","DL","","TRG","","","86","LOQ","YES",-99","","261.9","1.00","34","","NAWC-031518-FRB-054","537","RES","320-37172-8","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.8","ng/L","U","1.8","DL","","TRG","","","9.5","LOQ","YES",-99","","261.9","1.00","3.8","","NAWC-031518-FRB-054","537","RES","320-37172-8","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U","7.6","DL","","TRG","","","23","LOQ","YES",-99","","261.9","1.00","19","","NAWC-031518-FRB-054","537","RES","320-37172-8","TALSAC","STL00993","13C2
PFHxA","32","ng/L","","-99","DL","","SURR","85","","-99","LOQ","YES","38.2","","261.9","1.00","0","","NAWC-031518-FRB-054","537","RES","320-37172-8","TALSAC","STL00996","13C2
PFDA","33","ng/L","","-99","DL","","SURR","86","","-99","LOQ","YES","38.2","","261.9","1.00","0","","LLCS 320-215177/2-A","537","RES","LLCS 320-215177/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","41.5","ng/L","M","6.8","DL","","SPK","103","","40","LOQ","YES","40.2","","250","1.00","16","","LLCS 320-215177/2-A","537","RES","LLCS 320-215177/2-A","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","20.4","ng/L","","2.8","DL","","SPK","101","","20","LOQ","YES","20.1","","250","1.00","8.0","","LLCS 320-215177/2-A","537","RES","LLCS 320-215177/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","30.4","ng/L","","5.5","DL","","SPK","101","","30","LOQ","YES","30.0","","250","1.00","12","","LLCS 320-215177/2-A","537","RES","LLCS 320-215177/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","97.8","ng/L","","16","DL","","SPK","109","","90","LOQ","YES","90.0","","250","1.00","36","","LLCS 320-215177/2-A","537","RES","LLCS 320-215177/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","10.3","ng/L","","1.9","DL","","SPK","103","","10","LOQ","YES","10.0","","250","1.00","4.0","","LLCS 320-215177/2-A","537","RES","LLCS 320-215177/2-A","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20.3","ng/L","J","8.0","DL","","SPK","102","","24","LOQ","YES","20.0","","250","1.00","20","","LLCS 320-215177/2-A","537","RES","LLCS 320-215177/2-A","TALSAC","STL00993","13C2
PFHxA","38.9","ng/L","","-99","DL","","SURR","97","","-99","LOQ","YES","40.0","","250","1.00","0","","LLCS 320-215177/2-A","537","RES","LLCS 320-215177/2-A","TALSAC","STL00996","13C2
PFDA","35.1","ng/L","","-99","DL","","SURR","88","","-99","LOQ","YES","40.0","","250","1.00","0","","LLCSD 320-215177/3-A","537","RES","LLCSD 320-215177/3-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","41.5","ng/L","M","6.8","DL","","SPK","103","0","40","LOQ","YES","40.2","LLCS 320-215177/2-A","250","1.00","16","","LLCSD 320-215177/3-A","537","RES","LLCSD 320-215177/3-A","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","19.1","ng/L","J","2.8","DL","","SPK","95","7","20","LOQ","YES","20.1","LLCS 320-215177/2-A","250","1.00","8.0","","LLCSD 320-215177/3-A","537","RES","LLCSD 320-215177/3-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","31.1","ng/L","","5.5","DL","","SPK","104","3","30","LOQ","YES","30.0","LLCS 320-215177/2-A","250","1.00","12","","LLCSD 320-215177/3-A","537","RES","LLCSD 320-215177/3-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","99.7","ng/L","","16","DL","","SPK","111","2","90","LOQ","YES","90.0","LLCS 320-215177/2-A","250","1.00","36","","LLCSD 320-215177/3-A","537","RES","LLCSD 320-215177/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","10.5","ng/L","","1.9","DL","","SPK","105","2","10","LOQ","YES","10.0","LLCS 320-215177/2-A","250","1.00","4.0","","LLCSD 320-215177/3-A","537","RES","LLCSD 320-215177/3-A","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19.0","ng/L","J","8.0","DL","","SPK","95","7","24","LOQ","YES","20.0","LLCS 320-215177/2-

A", "250", "1.00", "20", ""
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A", "250", "1.00", "0", ""
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(PFOS)", "16", "ng/L", "U", "6.8", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "250", "1.00", "16", ""
"MB 320-215177/1-A", "537", "RES", "MB 320-215177/1-A", "TALSAC", "335-67-1", "Perfluorooctanoic acid
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(PFHxS)", "12", "ng/L", "U", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "250", "1.00", "12", ""
"MB 320-215177/1-A", "537", "RES", "MB 320-215177/1-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "250", "1.00", "36", ""
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215653","320-37172-1","03/28/2018 10:21","03/20/2018 08:15",""
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A","LCS","","-99","537","METHOD","RES","03/28/2018 10:21","03/30/2018
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215653","320-37172-1","03/28/2018 10:21","03/20/2018 08:15",""

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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>
NAWC-031518-RW-054	NAWC-031518-FRB-054
WGNA-031518-RW-0569	WGNA-031518-FRB-0569
WGNA-031518-RW-0617	WGNA-031518-FRB-0617
WGNA-031518-RW-0755	WGNA-031518-FRB-0755

Non-detected results were reported to the Limit of Detection (LOD).

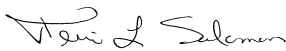
The buffering agent Trizma was added to all drinking water samples.

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

Attachments:

- Appendix A – Qualified Analytical Results
- Appendix B – Results as Reported by the Laboratory
- Appendix C – Support Documentation

Data Qualifier Definitions

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

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

Appendix A

Qualified Analytical Results

Qualifier Codes:

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

PROJ_NO: 08005-WE04 SDG: 320-37172-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-031518-FRB-054			NAWC-031518-RW-054			WGNA-031518-FRB-0569			WGNA-031518-FRB-0617		
	LAB_ID	320-37172-8			320-37172-7			320-37172-6			320-37172-2		
	SAMP_DATE	3/15/2018			3/15/2018			3/15/2018			3/15/2018		
	QC_TYPE	FB			NM			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	7.6	U		20			8	U		7.8	U		
PERFLUOROBUTANESULFONIC ACID	34	U		34	U		36	U		35	U		
PERFLUOROHEPTANOIC ACID	3.8	U		5.7	J	P	4	U		3.9	U		
PERFLUOROHXANESULFONIC ACID	11	U		9.5	J	P	12	U		12	U		
PERFLUORONONANOIC ACID	19	U		19	U		20	U		19	U		
PERFLUOROOCTANE SULFONIC ACID	15	U		16	J	P	16	U		16	U		

PROJ_NO: 08005-WE04 SDG: 320-37172-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	WGNA-031518-FRB-0755			WGNA-031518-RW-0569			WGNA-031518-RW-0617			WGNA-031518-RW-0755		
	LAB_ID	320-37172-4			320-37172-5			320-37172-1			320-37172-3		
	SAMP_DATE	3/15/2018			3/15/2018			3/15/2018			3/15/2018		
	QC_TYPE	FB			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID	7.7	U		35			23			23			
PERFLUOROBUTANESULFONIC ACID	35	U		35	U		24	J	P	36	U		
PERFLUOROHEPTANOIC ACID	3.8	U		11			7.6	J	P	4.7	J	P	
PERFLUOROHXANESULFONIC ACID	12	U		7.3	J	P	9.4	J	P	30			
PERFLUORONONANOIC ACID	19	U		19	U		20	U		20	U		
PERFLUOROOCTANE SULFONIC ACID	15	U		28	J	P	25	J	P	28	J	P	

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: WGNA-031518-RW-0617 Lab Sample ID: 320-37172-1
 Matrix: Water Lab File ID: 2018.03.30_537AA_019.d
 Analysis Method: 537 Date Collected: 03/15/2018 09:10
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 252.7(mL) Date Analyzed: 03/30/2018 10:33
 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.: 215653 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	25	J M	40	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	23		20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.4	J	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.6	J	9.9	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	24	J	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	87		70-130

Amir L. Salaman
04/20/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: WGNA-031518-FRB-0617 Lab Sample ID: 320-37172-2
 Matrix: Water Lab File ID: 2018.03.30_537AA_020.d
 Analysis Method: 537 Date Collected: 03/15/2018 09:05
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 257.2 (mL) Date Analyzed: 03/30/2018 10:38
 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.: 215653 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
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	88		70-130
STL00996	13C2 PFDA	84		70-130

Ali L. Salem
04/20/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: WGNA-031518-RW-0755 Lab Sample ID: 320-37172-3
 Matrix: Water Lab File ID: 2018.03.30_537AA_021.d
 Analysis Method: 537 Date Collected: 03/15/2018 10:10
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 250.7(mL) Date Analyzed: 03/30/2018 10:42
 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.: 215653 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	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)	30		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.7	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U M	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	81		70-130

W. L. Selman
04/20/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: WGNA-031518-FRB-0755 Lab Sample ID: 320-37172-4
 Matrix: Water Lab File ID: 2018.03.30_537AA_022.d
 Analysis Method: 537 Date Collected: 03/15/2018 10:05
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 260.6(mL) Date Analyzed: 03/30/2018 10:47
 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.: 215653 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)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	86	35	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	88		70-130

Ali L. Salem
04/20/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: WGNA
 Client Sample ID: ~~NAWC~~-031518-RW-0569 Lab Sample ID: 320-37172-5
 Matrix: Water Lab File ID: 2018.03.30_537AA_023.d
 Analysis Method: 537 Date Collected: 03/15/2018 10:35
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 257.7(mL) Date Analyzed: 03/30/2018 10:52
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 215653 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	J M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	35		19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U M	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.3	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	11		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	88		70-130

Wesley L. Selmer
04/20/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: ~~NAWC~~ WGNA-031518-FRB-0569 Lab Sample ID: 320-37172-6
 Matrix: Water Lab File ID: 2018.03.30_537AA_024.d
 Analysis Method: 537 Date Collected: 03/15/2018 10:40
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 250.9(mL) Date Analyzed: 03/30/2018 10:56
 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.: 215653 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	81		70-130
STL00996	13C2 PFDA	86		70-130

Wesley L. Selman
04/20/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: NAWC-031518-RW-054 Lab Sample ID: 320-37172-7
 Matrix: Water Lab File ID: 2018.03.30_537AA_025.d
 Analysis Method: 537 Date Collected: 03/15/2018 11:10
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 264.3(mL) Date Analyzed: 03/30/2018 11:01
 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.: 215653 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	J M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	20		19	7.6	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U M	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.5	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.7	J	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	91		70-130
STL00996	13C2 PFDA	86		70-130

Steve L. Salzman
04/20/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: NAWC-031518-FRB-054 Lab Sample ID: 320-37172-8
 Matrix: Water Lab File ID: 2018.03.30_537AA_028.d
 Analysis Method: 537 Date Collected: 03/15/2018 11:05
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 261.9(mL) Date Analyzed: 03/30/2018 11:15
 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.: 215655 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	5.3
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	85		70-130
STL00996	13C2 PFDA	86		70-130

Wesley L. Selman
04/20/2018

Appendix B

Results as Reported by the Laboratory

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: WGNA-031518-RW-0617 Lab Sample ID: 320-37172-1
 Matrix: Water Lab File ID: 2018.03.30_537AA_019.d
 Analysis Method: 537 Date Collected: 03/15/2018 09:10
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 252.7(mL) Date Analyzed: 03/30/2018 10:33
 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.: 215653 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	25	J M	40	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	23		20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.4	J	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.6	J	9.9	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	24	J	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	87		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: WGNA-031518-FRB-0617 Lab Sample ID: 320-37172-2
 Matrix: Water Lab File ID: 2018.03.30_537AA_020.d
 Analysis Method: 537 Date Collected: 03/15/2018 09:05
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 257.2 (mL) Date Analyzed: 03/30/2018 10:38
 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.: 215653 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
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	88		70-130
STL00996	13C2 PFDA	84		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: WGNA-031518-RW-0755 Lab Sample ID: 320-37172-3
 Matrix: Water Lab File ID: 2018.03.30_537AA_021.d
 Analysis Method: 537 Date Collected: 03/15/2018 10:10
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 250.7(mL) Date Analyzed: 03/30/2018 10:42
 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.: 215653 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	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)	30		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.7	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U M	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	81		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: WGNA-031518-FRB-0755 Lab Sample ID: 320-37172-4
 Matrix: Water Lab File ID: 2018.03.30_537AA_022.d
 Analysis Method: 537 Date Collected: 03/15/2018 10:05
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 260.6(mL) Date Analyzed: 03/30/2018 10:47
 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.: 215653 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)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	86	35	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	88		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: WGNA
 Client Sample ID: ~~NAWC~~-031518-RW-0569 Lab Sample ID: 320-37172-5
 Matrix: Water Lab File ID: 2018.03.30_537AA_023.d
 Analysis Method: 537 Date Collected: 03/15/2018 10:35
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 257.7(mL) Date Analyzed: 03/30/2018 10:52
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 215653 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	J M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	35		19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U M	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.3	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	11		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	88		70-130

Ali L. Salem
04/20/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: WGNA
 Client Sample ID: NAWC-031518-FRB-0569 Lab Sample ID: 320-37172-6
 Matrix: Water Lab File ID: 2018.03.30_537AA_024.d
 Analysis Method: 537 Date Collected: 03/15/2018 10:40
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 250.9(mL) Date Analyzed: 03/30/2018 10:56
 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.: 215653 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	81		70-130
STL00996	13C2 PFDA	86		70-130

Wesley L. Selman
04/20/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: NAWC-031518-RW-054 Lab Sample ID: 320-37172-7
 Matrix: Water Lab File ID: 2018.03.30_537AA_025.d
 Analysis Method: 537 Date Collected: 03/15/2018 11:10
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 264.3(mL) Date Analyzed: 03/30/2018 11:01
 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.: 215653 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	J M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	20		19	7.6	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U M	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.5	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.7	J	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	91		70-130
STL00996	13C2 PFDA	86		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: NAWC-031518-FRB-054 Lab Sample ID: 320-37172-8
 Matrix: Water Lab File ID: 2018.03.30_537AA_028.d
 Analysis Method: 537 Date Collected: 03/15/2018 11:05
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 261.9(mL) Date Analyzed: 03/30/2018 11:15
 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.: 215655 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	5.3
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	85		70-130
STL00996	13C2 PFDA	86		70-130

Appendix C

Support Documentation

TestAmerica Sacramento
 880 Riverside Parkway
 West Sacramento, CA 95605-1500
 phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

TestAmerica
 THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

Regulatory Program: DW NPDES RCRA Other:

Client Contact	Project Manager: Andy Frebowitz	Site Contact: Mary Kay Bond	Date: 3/15/2018	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			Sampler: Mary Kay Bond
King of Prussia, PA 19406	<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS			For Lab Use Only:
610-382-1174	TAT if different from Below 21			Walk-in Client: <input type="text"/>
610-491-9688	<input type="checkbox"/> 2 weeks			Lab Sampling: <input type="text"/>
Project Name: WE04	<input type="checkbox"/> 1 week			Job / SDG No.: <input type="text"/>
Site: WE04	<input type="checkbox"/> 2 days			
P O # 1132358 (through EarthToxics)	<input type="checkbox"/> 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 UCMR3	Sample Specific Notes:
WGNA-031518-RW-0617	3/15/2018	9:10	G	DW	2	N	N	Y	
WGNA-031518-FRB-0617	3/15/2018	9:05	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-031518-RW-0755	3/15/2018	10:10	G	DW	2	N	N	Y	
WGNA-031518-FRB-0755	3/15/2018	10:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-031518-RW-0569	3/15/2018	10:35	G	DW	2	N	N	Y	
NAWC-031518-FRB-0569	3/15/2018	10:40	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-031518-RW-054	3/15/2018	11:10	G	DW	2	N	N	Y	
NAWC-031518-FRB-054	3/15/2018	11:05	G	DW	2	N	N	Y	Field Reagent Blank



320-37172 Chain of Custody

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

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: 7800 8256 4126

Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:	Cooler Temp. (°C): Obs'd: 1.9c	Corr'd:	Therm ID No.: A62
Relinquished by: Mary Kay Bond	Company: Tetra Tech	Date/Time: 3/15/2018 16:00	Received by: [Signature]	Company: [Signature]
Relinquished by:	Company:	Date/Time:	Received by:	Company:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:

* sample label time does not match COC. Times were switched. RW-0569 time says 1040. Form No. CA-C-WI-002, Rev. 4.11, dated 1/24/2017

Job Narrative
320-37172-1

Receipt

The samples were received on 3/16/2018 9:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9° C.

Receipt Exceptions

The container label for the following samples did not match the information listed on the Chain-of-Custody (COC): NAWC-031518-RW-0569 (320-37172-5) and NAWC-031518-FRB-0569 (320-37172-6). Sample label time does not match COC. The times were switched with each other.

LCMS

Method(s) 537: The continuing calibration verification (CCV) has a detection which exceeded the instrument calibration range because it is at the upper level of the calibration curve, as specified in the method. (CCV 320-215653/13) and (CCV 320-215655/13)

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 additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-215177.

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: 320-37172-1

Qualifiers

LCMS

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

Glossary

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

Method Summary

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

TestAmerica Job ID: 320-37172-1

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

TestAmerica Job ID: 320-37172-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-37172-1	WGNA-031518-RW-0617	Water	03/15/18 09:10	03/16/18 09:05
320-37172-2	WGNA-031518-FRB-0617	Water	03/15/18 09:05	03/16/18 09:05
320-37172-3	WGNA-031518-RW-0755	Water	03/15/18 10:10	03/16/18 09:05
320-37172-4	WGNA-031518-FRB-0755	Water	03/15/18 10:05	03/16/18 09:05
320-37172-5	NAWC-031518-RW-0569	Water	03/15/18 10:35	03/16/18 09:05
320-37172-6	NAWC-031518-FRB-0569	Water	03/15/18 10:40	03/16/18 09:05
320-37172-7	NAWC-031518-RW-054	Water	03/15/18 11:10	03/16/18 09:05
320-37172-8	NAWC-031518-FRB-054	Water	03/15/18 11:05	03/16/18 09:05

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-37172-1

SDG No.: _____

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-031518-RW-061 7	320-37172-1	91	87
WGNA-031518-FRB-06 17	320-37172-2	88	84
WGNA-031518-RW-075 5	320-37172-3	84	81
WGNA-031518-FRB-07 55	320-37172-4	96	88
NAWC-031518-RW-056 9	320-37172-5	94	88
NAWC-031518-FRB-05 69	320-37172-6	81	86
NAWC-031518-RW-054	320-37172-7	91	86
NAWC-031518-FRB-05 4	320-37172-8	85	86
	MB 320-215177/1-A	88	87
	LLCS 320-215177/2-A	97	88
	LLCSD 320-215177/3-A	91	82

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM III
LCMS LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2018.03.30_537AA_017.d

Lab ID: LLCS 320-215177/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LLCS CONCENTRATION (ng/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	40.2	41.5	103	50-150	M
Perfluorooctanoic acid (PFOA)	20.1	20.4	101	50-150	
Perfluorononanoic acid (PFNA)	20.0	20.3 J	102	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.0	30.4	101	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	10.3	103	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.0	97.8	109	50-150	

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL CONTROL STANDARD DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2018.03.30_537AA_018.d

Lab ID: LLCSD 320-215177/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LLCSD CONCENTRATION (ng/L)	LLCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	40.2	41.5	103	0	50	50-150	M
Perfluorooctanoic acid (PFOA)	20.1	19.1 J	95	7	50	50-150	
Perfluorononanoic acid (PFNA)	20.0	19.0 J	95	7	50	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.0	31.1	104	3	50	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	10.5	105	2	50	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.0	99.7	111	2	50	50-150	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Lab File ID: 2018.03.30_537AA_016.d Lab Sample ID: MB 320-215177/1-A
 Matrix: Water Date Extracted: 03/28/2018 10:21
 Instrument ID: A8_N Date Analyzed: 03/30/2018 10:19
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-215177/2-A	2018.03.30_537AA_017.d	03/30/2018 10:24
	LLCSD 320-215177/3-A	2018.03.30_537AA_018.d	03/30/2018 10:28
WGNA-031518-RW-0617	320-37172-1	2018.03.30_537AA_019.d	03/30/2018 10:33
WGNA-031518-FRB-0617	320-37172-2	2018.03.30_537AA_020.d	03/30/2018 10:38
WGNA-031518-RW-0755	320-37172-3	2018.03.30_537AA_021.d	03/30/2018 10:42
WGNA-031518-FRB-0755	320-37172-4	2018.03.30_537AA_022.d	03/30/2018 10:47
NAWC-031518-RW-0569	320-37172-5	2018.03.30_537AA_023.d	03/30/2018 10:52
NAWC-031518-FRB-0569	320-37172-6	2018.03.30_537AA_024.d	03/30/2018 10:56
NAWC-031518-RW-054	320-37172-7	2018.03.30_537AA_025.d	03/30/2018 11:01
NAWC-031518-FRB-054	320-37172-8	2018.03.30_537AA_028.d	03/30/2018 11:15

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-215177/1-A
 Matrix: Water Lab File ID: 2018.03.30_537AA_016.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 03/28/2018 10:21
 Sample wt/vol: 250 (mL) Date Analyzed: 03/30/2018 10:19
 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.: 215653 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	88		70-130
STL00996	13C2 PFDA	87		70-130

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 03/22/2018 14:53
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 03/22/2018 15:16
 Calibration ID: 38271

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	1135154	1.88	2676273	2.13		
UPPER LIMIT	1702731	2.38	4014410	2.63		
LOWER LIMIT	567577	1.38	1338137	1.63		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCVL 320-214409/11		1124949	1.87	2668897	2.12	
ICV 320-214409/13		1113554	1.87	2591357	2.12	
CCVL 320-215618/1		1160358	1.87	2610607	2.12	
CCV 320-215653/1 CCVIS		1053878	1.88	2528431	2.12	
MB 320-215177/1-A		1136918	1.87	2690122	2.12	
LLCS 320-215177/2-A		1200640	1.88	2843468	2.12	
LLCSD 320-215177/3-A		1173871	1.88	2660115	2.12	
320-37172-1	WGNA-031518-RW-0617	1147339	1.87	2723654	2.12	
320-37172-2	WGNA-031518-FRB-0617	1134191	1.87	2623862	2.12	
320-37172-3	WGNA-031518-RW-0755	1134982	1.87	2559924	2.12	
320-37172-4	WGNA-031518-FRB-0755	1192820	1.87	2769780	2.12	
320-37172-5	NAWC-031518-RW-0569	1099620	1.87	2671072	2.12	
320-37172-6	NAWC-031518-FRB-0569	1133887	1.87	2560850	2.12	
320-37172-7	NAWC-031518-RW-054	1114148	1.87	2725458	2.12	
CCV 320-215653/13 CCVIS		1026108	1.87	2364007	2.12	
CCV 320-215655/13 CCVIS		1026108	1.87	2364007	2.12	
320-37172-8	NAWC-031518-FRB-054	1132528	1.87	2589452	2.12	
CCV 320-215655/16 CCVIS		1013337	1.87	2424984	2.12	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Sample No.: CCV 320-215653/1 Date Analyzed: 03/30/2018 10:10
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.30_537AA_01 Heated Purge: (Y/N) N
 Calibration ID: 38271

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1053878	1.88	2528431	2.12		
UPPER LIMIT	1475429	2.38	3539803	2.62		
LOWER LIMIT	737715	1.38	1769902	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-215177/1-A		1136918	1.87	2690122	2.12	
LLCS 320-215177/2-A		1200640	1.88	2843468	2.12	
LLCSD 320-215177/3-A		1173871	1.88	2660115	2.12	
320-37172-1	WGNA-031518-RW-0617	1147339	1.87	2723654	2.12	
320-37172-2	WGNA-031518-FRB-0617	1134191	1.87	2623862	2.12	
320-37172-3	WGNA-031518-RW-0755	1134982	1.87	2559924	2.12	
320-37172-4	WGNA-031518-FRB-0755	1192820	1.87	2769780	2.12	
320-37172-5	NAWC-031518-RW-0569	1099620	1.87	2671072	2.12	
320-37172-6	NAWC-031518-FRB-0569	1133887	1.87	2560850	2.12	
320-37172-7	NAWC-031518-RW-054	1114148	1.87	2725458	2.12	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Sample No.: CCV 320-215653/13 Date Analyzed: 03/30/2018 11:06
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.30_537AA_02 Heated Purge: (Y/N) N
 Calibration ID: 38271

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1026108	1.87	2364007	2.12		
UPPER LIMIT	1436551	2.37	3309610	2.62		
LOWER LIMIT	718276	1.37	1654805	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-215177/1-A		1136918	1.87	2690122	2.12	
LLCS 320-215177/2-A		1200640	1.88	2843468	2.12	
LLCSD 320-215177/3-A		1173871	1.88	2660115	2.12	
320-37172-1	WGNA-031518-RW-0617	1147339	1.87	2723654	2.12	
320-37172-2	WGNA-031518-FRB-0617	1134191	1.87	2623862	2.12	
320-37172-3	WGNA-031518-RW-0755	1134982	1.87	2559924	2.12	
320-37172-4	WGNA-031518-FRB-0755	1192820	1.87	2769780	2.12	
320-37172-5	NAWC-031518-RW-0569	1099620	1.87	2671072	2.12	
320-37172-6	NAWC-031518-FRB-0569	1133887	1.87	2560850	2.12	
320-37172-7	NAWC-031518-RW-054	1114148	1.87	2725458	2.12	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Sample No.: CCV 320-215655/13 Date Analyzed: 03/30/2018 11:06
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.30_537AA_02 Heated Purge: (Y/N) N
 Calibration ID: 38271

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1026108	1.87	2364007	2.12		
UPPER LIMIT	1436551	2.37	3309610	2.62		
LOWER LIMIT	718276	1.37	1654805	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-37172-8	NAWC-031518-FRB-054		1132528	1.87	2589452	2.12

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

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

Column used to flag values outside QC limits

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

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1 Analy Batch No.: 214409

SDG No.: _____

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

Calibration Start Date: 03/22/2018 14:53 Calibration End Date: 03/22/2018 15:16 Calibration ID: 38271

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-214409/4	2018.03.22_537ICAL_004.d
Level 2	IC 320-214409/5	2018.03.22_537ICAL_005.d
Level 3	IC 320-214409/6	2018.03.22_537ICAL_006.d
Level 4	IC 320-214409/7	2018.03.22_537ICAL_007.d
Level 5	IC 320-214409/8	2018.03.22_537ICAL_008.d
Level 6	IC 320-214409/9	2018.03.22_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)	0.9228 ++++	0.9814	1.0233	0.9496	0.8750	Ave		0.9504			5.9		30.0				
Perfluoroheptanoic acid (PFHpA)	0.9563 0.9830	1.0069	0.9814	1.0007	0.9818	Ave		0.9850			1.8		30.0				
Perfluorohexanesulfonic acid (PFHxS)	1.4834 1.5253	1.5335	1.6094	1.5943	1.5814	Ave		1.5546			3.1		30.0				
Perfluorooctanoic acid (PFOA)	0.9018 0.9905	0.9485	0.9598	1.0006	0.9943	Ave		0.9659			3.9		30.0				
Perfluorooctanesulfonic acid (PFOS)	0.8712 0.9390	0.9308	0.9384	0.9647	0.9421	Ave		0.9310			3.4		30.0				
Perfluorononanoic acid (PFNA)	0.6586 0.7466	0.7314	0.7293	0.7533	0.7403	Ave		0.7266			4.8		30.0				
13C2 PFHxA	0.9719 1.1086	0.9969	1.0249	1.0236	1.0436	Ave		1.0283			4.5		30.0				
13C2 PFDA	0.8190 0.8921	0.8318	0.8286	0.8353	0.8726	Ave		0.8466			3.4		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.: 320-37172-1 Analy Batch No.: 214409

SDG No.: _____

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

Calibration Start Date: 03/22/2018 14:53 Calibration End Date: 03/22/2018 15:16 Calibration ID: 38271

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-214409/4	2018.03.22_537ICAL_004.d
Level 2	IC 320-214409/5	2018.03.22_537ICAL_005.d
Level 3	IC 320-214409/6	2018.03.22_537ICAL_006.d
Level 4	IC 320-214409/7	2018.03.22_537ICAL_007.d
Level 5	IC 320-214409/8	2018.03.22_537ICAL_008.d
Level 6	IC 320-214409/9	2018.03.22_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	Ave	796972 +++++	1844935	4174655	7866195	10901700	9.00 +++++	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	113714 2227166	257474	561923	1097097	1617482	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	427157 8696268	961162	2189176	4403638	6568926	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	215607 4512279	487639	1104922	2205621	3293471	2.01 40.2	4.47	10.1	20.1	30.2
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	335816 7166468	780931	1708604	3566785	5238684	4.02 80.3	8.93	20.1	40.2	60.3
Perfluorononanoic acid (PFNA)	13PF OA	Ave	156653 3383462	374107	835301	1652004	2439501	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PF OA	Ave	1155395 1255631	1146847	1173423	1122030	1145956	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	973562 1010441	956972	948738	915618	958136	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD

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

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1 Analy Batch No.: 214409

SDG No.: _____

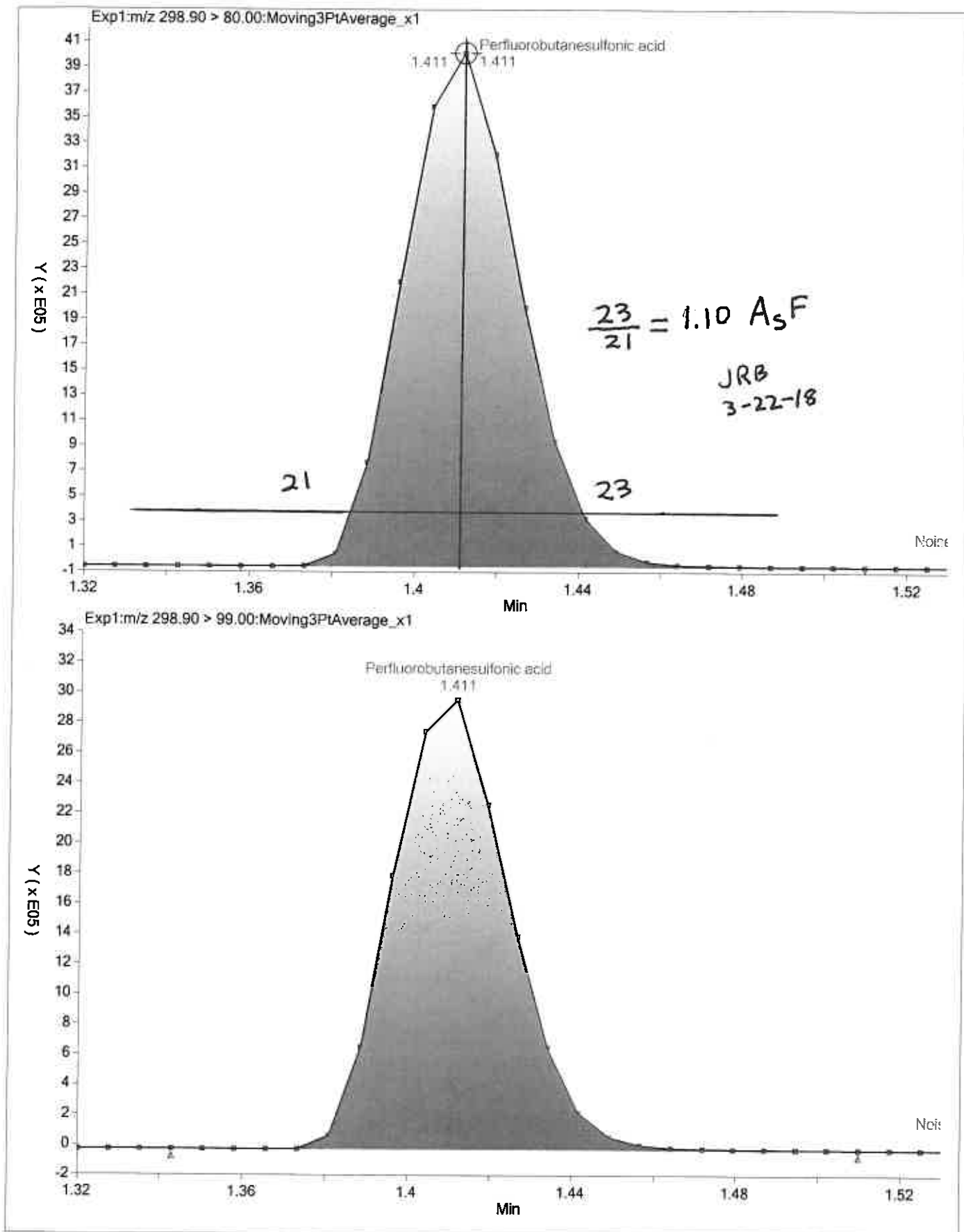
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

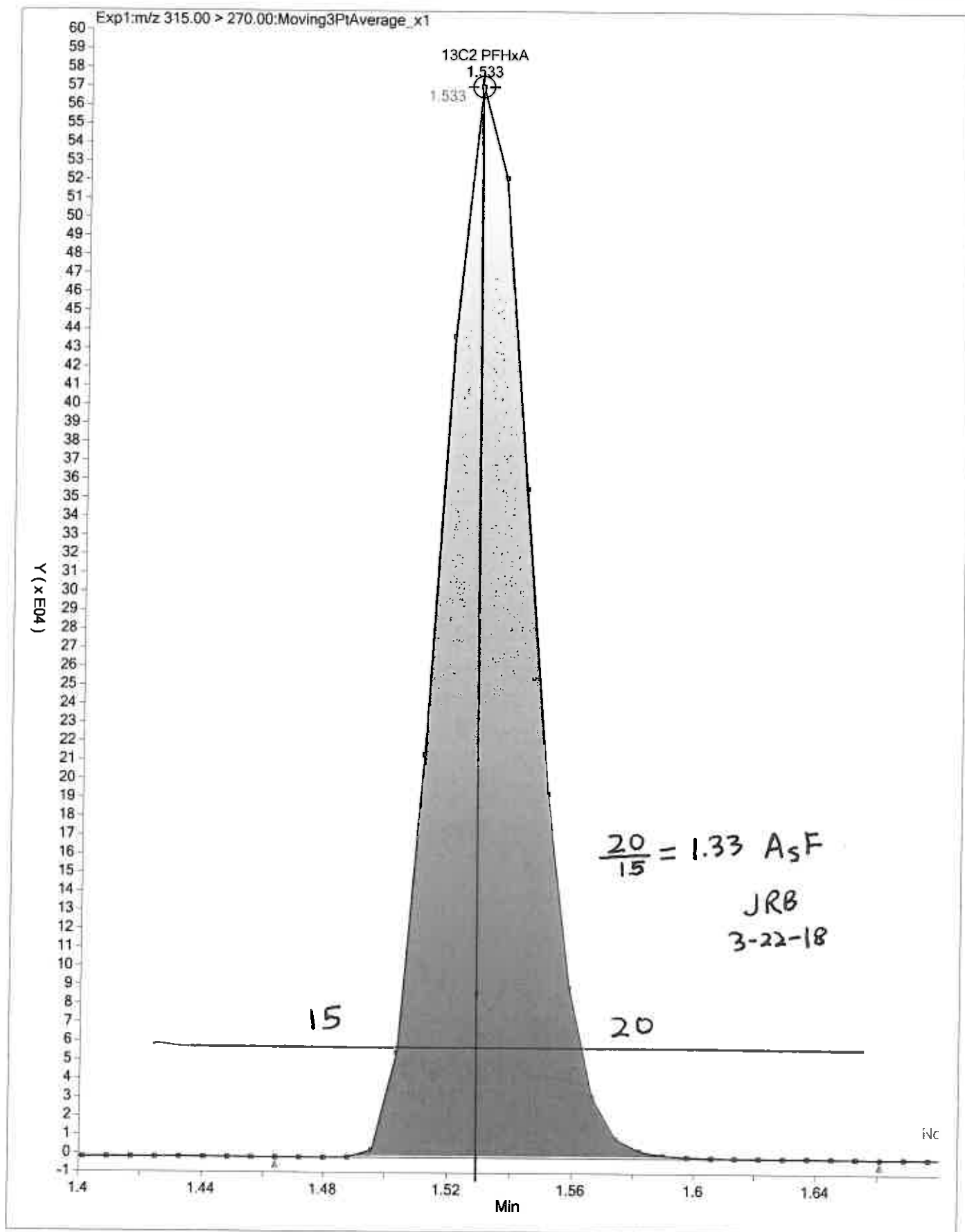
Calibration Start Date: 03/22/2018 14:53 Calibration End Date: 03/22/2018 15:16 Calibration ID: 38271

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-214409/4	2018.03.22_537ICAL_004.d
Level 2	IC 320-214409/5	2018.03.22_537ICAL_005.d
Level 3	IC 320-214409/6	2018.03.22_537ICAL_006.d
Level 4	IC 320-214409/7	2018.03.22_537ICAL_007.d
Level 5	IC 320-214409/8	2018.03.22_537ICAL_008.d
Level 6	IC 320-214409/9	2018.03.22_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)	-2.9	3.3	7.7	-0.1	-7.9	+++++	50	30	30	30	30	
Perfluoroheptanoic acid (PFHpA)	-2.9	2.2	-0.4	1.6	-0.3	-0.2	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-4.6	-1.4	3.5	2.6	1.7	-1.9	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-6.6	-1.8	-0.6	3.6	2.9	2.5	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-6.4	0.0	0.8	3.6	1.2	0.9	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-9.4	0.7	0.4	3.7	1.9	2.8	50	30	30	30	30	30
13C2 PFHxA	-5.5	-3.1	-0.3	-0.4	1.5	7.8	30	30	30	30	30	30
13C2 PFDA	-3.3	-1.7	-2.1	-1.3	3.1	5.4	30	30	30	30	30	30





FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-214409/11 Calibration Date: 03/22/2018 15:25
 Instrument ID: A8_N Calib Start Date: 03/22/2018 14:53
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/22/2018 15:16
 Lab File ID: 2018.03.22_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)	Ave	0.9504	1.016		21.4	20.0	6.9	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9850	1.032		2.33	2.22	4.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.555	1.662		7.13	6.67	6.9	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9659	0.9767		4.52	4.47	1.1	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9310	0.9593		9.20	8.93	3.0	50.0
Perfluorononanoic acid (PFNA)	Ave	0.7266	0.7728		4.73	4.45	6.4	50.0
13C2 PFHxA	Ave	1.028	1.059		10.3	10.0	3.0	30.0
13C2 PFDA	Ave	0.8466	0.8103		9.57	10.0	-4.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Lab Sample ID: ICV 320-214409/13 Calibration Date: 03/22/2018 15:35
 Instrument ID: A8_N Calib Start Date: 03/22/2018 14:53
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/22/2018 15:16
 Lab File ID: 2018.03.22_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)	Ave	0.9504	0.9521		103	100	0.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9850	1.009		10.2	10.0	2.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.555	1.659		21.5	20.2	6.7	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9659	0.9076		18.9	20.2	-6.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9310	0.9726		21.1	20.2	4.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.7266	0.7677		21.3	20.2	5.7	30.0
13C2 PFHxA	Ave	1.028	1.034		10.1	10.0	0.6	30.0
13C2 PFDA	Ave	0.8466	0.8275		9.77	10.0	-2.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-215618/1 Calibration Date: 03/30/2018 02:25
 Instrument ID: A8_N Calib Start Date: 03/22/2018 14:53
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/22/2018 15:16
 Lab File ID: 2018.03.30_537A_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.9504	0.995		20.9	20.0	4.7	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9850	0.9745		2.20	2.22	-1.1	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.555	1.633		7.00	6.67	5.0	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9659	0.9776		4.52	4.47	1.2	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9310	0.9343		8.96	8.93	0.4	50.0
Perfluorononanoic acid (PFNA)	Ave	0.7266	0.6836		4.18	4.45	-5.9	50.0
13C2 PFHxA	Ave	1.028	0.9732		9.46	10.0	-5.4	30.0
13C2 PFDA	Ave	0.8466	0.7587		8.96	10.0	-10.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Lab Sample ID: CCV 320-215653/1 Calibration Date: 03/30/2018 10:10
 Instrument ID: A8_N Calib Start Date: 03/22/2018 14:53
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/22/2018 15:16
 Lab File ID: 2018.03.30_537AA_014.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.9504	0.9642		45.7	45.0	1.5	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9850	1.025		5.20	5.00	4.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.555	1.553		15.0	15.0	-0.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9659	0.9750		10.2	10.1	0.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9310	0.9299		20.1	20.1	-0.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.7266	0.7065		9.73	10.0	-2.8	30.0
13C2 PFHxA	Ave	1.028	1.036		10.1	10.0	0.7	30.0
13C2 PFDA	Ave	0.8466	0.7446		8.80	10.0	-12.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Lab Sample ID: CCV 320-215653/13 Calibration Date: 03/30/2018 11:06
 Instrument ID: A8_N Calib Start Date: 03/22/2018 14:53
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/22/2018 15:16
 Lab File ID: 2018.03.30_537AA_026.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.9504	0.9533		135	135	0.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9850	0.9488		14.5	15.0	-3.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.555	1.623		47.0	45.0	4.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9659	0.9744		30.4	30.2	0.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9310	0.9754		63.1	60.3	4.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.7266	0.6781		28.0	30.0	-6.7	30.0
13C2 PFHxA	Ave	1.028	1.014		9.86	10.0	-1.4	30.0
13C2 PFDA	Ave	0.8466	0.7562		8.93	10.0	-10.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Lab Sample ID: CCV 320-215655/13 Calibration Date: 03/30/2018 11:06
 Instrument ID: A8_N Calib Start Date: 03/22/2018 14:53
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/22/2018 15:16
 Lab File ID: 2018.03.30_537AA_026.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.9504	0.9533		135	135	0.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9850	0.9488		14.5	15.0	-3.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.555	1.623		47.0	45.0	4.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9659	0.9744		30.4	30.2	0.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9310	0.9754		63.1	60.3	4.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.7266	0.6781		28.0	30.0	-6.7	30.0
13C2 PFHxA	Ave	1.028	1.014		9.86	10.0	-1.4	30.0
13C2 PFDA	Ave	0.8466	0.7562		8.93	10.0	-10.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1
 SDG No.: _____
 Lab Sample ID: CCV 320-215655/16 Calibration Date: 03/30/2018 11:20
 Instrument ID: A8_N Calib Start Date: 03/22/2018 14:53
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/22/2018 15:16
 Lab File ID: 2018.03.30_537AA_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.9504	1.016		48.1	45.0	6.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9850	0.9807		4.98	5.00	-0.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.555	1.553		15.0	15.0	-0.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9659	0.9512		9.90	10.1	-1.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9310	0.9569		20.6	20.1	2.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.7266	0.6831		9.40	10.0	-6.0	30.0
13C2 PFHxA	Ave	1.028	1.007		9.79	10.0	-2.1	30.0
13C2 PFDA	Ave	0.8466	0.7535		8.90	10.0	-11.0	30.0

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 30MAR2018_537B Worklist Number: 56050
 Instrument Name: A8_N Chrom Method: 537_A8_N
 Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.b
 QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 215653
# 1 CCV L3	# 1 CCV L3
# 2 RB	# 2 RB
# 3 MB 320-215177/1-A	# 3 MB 320-215177/1-A
# 4 LLCS 320-215177/2-A	# 4 LLCS 320-215177/2-A
# 5 LLCSD 320-215177/3-A	# 5 LLCSD 320-215177/3-A
# 6 320-37172-A-1-A	# 6 320-37172-A-1-A
# 7 320-37172-A-2-A	# 7 320-37172-A-2-A
# 8 320-37172-A-3-A	# 8 320-37172-A-3-A
# 9 320-37172-A-4-A	# 9 320-37172-A-4-A
#10 320-37172-A-5-A	#10 320-37172-A-5-A
#11 320-37172-A-6-A	#11 320-37172-A-6-A
#12 320-37172-A-7-A	#12 320-37172-A-7-A
#13 CCV L5	#13 CCV L5

QC Batch: 2	LC 537 ICAL Raw Batch: 215655
#13 CCV L5	#13 CCV L5
#14 RB	#14 RB
#15 320-37172-A-8-A	#15 320-37172-A-8-A
#16 CCV L3	#16 CCV L3
#17 RB	#17 RB

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 30MAR2018_537B

Worklist Num: 56050

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180330-56050.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
CCV L3	320-0056050-001	CCVIS	30-Mar-2018 10:10:06	2018.03.30_537AA_014.d	3	1.0		sv
RB	320-0056050-002	RB	30-Mar-2018 10:14:46	2018.03.30_537AA_015.d	8	1.0		sv
MB 320-215177/1-A	320-0056050-003	MB	30-Mar-2018 10:19:25	2018.03.30_537AA_016.d	6	1.0		sv
LLCS 320-215177/2-A	320-0056050-004	LLCS	30-Mar-2018 10:24:07	2018.03.30_537AA_017.d	7	1.0		sv
LLCSD 320-215177/3-A	320-0056050-005	LLCSD	30-Mar-2018 10:28:48	2018.03.30_537AA_018.d	8	1.0		sv
320-37172-A-1-A	320-0056050-006	Client	30-Mar-2018 10:33:30	2018.03.30_537AA_019.d	9	1.0	WGNA-031518-RW-0617	sv
320-37172-A-2-A	320-0056050-007	Client	30-Mar-2018 10:38:11	2018.03.30_537AA_020.d	10	1.0	WGNA-031518-FRB-0617	sv
320-37172-A-3-A	320-0056050-008	Client	30-Mar-2018 10:42:53	2018.03.30_537AA_021.d	11	1.0	WGNA-031518-RW-0755	sv
320-37172-A-4-A	320-0056050-009	Client	30-Mar-2018 10:47:33	2018.03.30_537AA_022.d	12	1.0	WGNA-031518-FRB-0755	sv
320-37172-A-5-A	320-0056050-010	Client	30-Mar-2018 10:52:16	2018.03.30_537AA_023.d	13	1.0	NAWC-031518-RW-0569	sv
320-37172-A-6-A	320-0056050-011	Client	30-Mar-2018 10:56:57	2018.03.30_537AA_024.d	14	1.0	NAWC-031518-FRB-0569	sv
320-37172-A-7-A	320-0056050-012	Client	30-Mar-2018 11:01:38	2018.03.30_537AA_025.d	15	1.0	NAWC-031518-RW-054	sv
CCV L5	320-0056050-013	CCVIS	30-Mar-2018 11:06:19	2018.03.30_537AA_026.d	5	1.0		sv
RB	320-0056050-014	RB	30-Mar-2018 11:10:59	2018.03.30_537AA_027.d	8	1.0		sv
320-37172-A-8-A	320-0056050-015	Client	30-Mar-2018 11:15:38	2018.03.30_537AA_028.d	16	1.0	NAWC-031518-FRB-054	sv
CCV L3	320-0056050-016	CCVIS	30-Mar-2018 11:20:19	2018.03.30_537AA_029.d	3	1.0		sv
RB	320-0056050-017	RB	30-Mar-2018 11:24:59	2018.03.30_537AA_030.d	8	1.0		sv

3/30/18
34

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-215177











Analyst: Kouchari, Shamiran

Batch Open: 3/28/2018 10:21:00AM

Method Code: 320-537_Prep-320

Batch End: 3/30/2018 9:15:00AM

Extraction of Perfluorinated Alkyl Acids

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-215177/1 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine, ND	
			1.00 mL								
2 LLCS-320-215177/2 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine, ND	
			1.00 mL								
3 LLCSD-320-215177/3 N/A	N/A		250 mL	7			N/A	N/A	N/A	Chlorine, ND	
			1.00 mL								
4 320-37172-A-1 (537_DOD5)	N/A (320-37172-1)	282.04 g	252.7 mL	7			3/20/18	16_Days	4	Chlorine, ND	
		29.30 g	1.00 mL								
5 320-37172-A-2 (537_DOD5)	N/A (320-37172-1)	287.49 g	257.2 mL	7			3/20/18	16_Days	4	Chlorine, ND	
		30.34 g	1.00 mL								
6 320-37172-A-3 (537_DOD5)	N/A (320-37172-1)	278.59 g	250.7 mL	7			3/20/18	16_Days	4	Chlorine, ND	
		27.87 g	1.00 mL								
7 320-37172-A-4 (537_DOD5)	N/A (320-37172-1)	289.59 g	260.6 mL	7			3/20/18	16_Days	4	Chlorine, ND	
		29.02 g	1.00 mL								
8 320-37172-A-5 (537_DOD5)	N/A (320-37172-1)	285.76 g	257.7 mL	7			3/20/18	16_Days	4	Chlorine, ND	
		28.10 g	1.00 mL								
9 320-37172-A-6 (537_DOD5)	N/A (320-37172-1)	279.37 g	250.9 mL	7			3/20/18	16_Days	4	Chlorine, ND	
		28.49 g	1.00 mL								
10 320-37172-A-7 (537_DOD5)	N/A (320-37172-1)	293.02 g	264.3 mL	7			3/20/18	16_Days	4	Chlorine, ND	
		28.72 g	1.00 mL								

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)


Batch Number: 320-215177

Analyst: Kouchari, Shamiran

Batch Open: 3/28/2018 10:21:00AM

Method Code: 320-537_Prep-320

Batch End: 3/30/2018 9:15:00AM

320-37172-A-8 (537_DOD5)	N/A (320-37172-1)	290.54 g	261.9 mL	7			3/20/18	16_Days	4	Chlorine, ND	
		28.62 g	1.00 mL								

Batch Notes

Manifold ID 7

pH Indicator ID 3817

Trizma ID SLBR5241V

SPE Cartridge Lot ID 6390138-01

Methanol ID 1191294

Reagent Water ID 03/27/18

Internal Standard ID# 1169779

Pipette ID H14930F, N32728F

Analyst ID - TA Reagent Drop KMK

Analyst ID - TA Reagent Drop SKD

Witness

Analyst ID - SU Reagent Drop KMK

Analyst ID - SU Reagent Drop SKD

Witness

Analyst ID - IS Reagent Drop KMK

Analyst ID - IS Reagent Drop SKD

Witness

Analyst ID - Concentration SKD

Analyst ID - Aliquot Step SKD

Analyst ID - Final Volume Step SKD

Batch Comment Client labels match TA label, 03/28/18 SKD

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-215177

Analyst: Kouchari, Shamiran

Batch Open: 3/28/2018 10:21:00AM

Method Code: 320-537_Prep-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-215177/1	LC537-SU_00062	100 uL	1.00 mL	KMK 3-28-18	SKD 3/28/18
LLCS 320-215177/2	LC537-LSP_00029	100 uL	1.00 mL		
LLCS 320-215177/2	LC537-SU_00062	100 uL	1.00 mL		
LLCSD 320-215177/3	LC537-LSP_00029	100 uL	1.00 mL		
LLCSD 320-215177/3	LC537-SU_00062	100 uL	1.00 mL		
320-37172-A-1	LC537-SU_00062	100 uL	1.00 mL		
320-37172-A-2	LC537-SU_00062	100 uL	1.00 mL		
320-37172-A-3	LC537-SU_00062	100 uL	1.00 mL		
320-37172-A-4	LC537-SU_00062	100 uL	1.00 mL		
320-37172-A-5	LC537-SU_00062	100 uL	1.00 mL		
320-37172-A-6	LC537-SU_00062	100 uL	1.00 mL		
320-37172-A-7	LC537-SU_00062	100 uL	1.00 mL		
320-37172-A-8	LC537-SU_00062	100 uL	1.00 mL		

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LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Instrument ID: A8_N Start Date: 03/22/2018 14:53

Analysis Batch Number: 214409 End Date: 03/22/2018 15:35

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-214409/4		03/22/2018 14:53	1	2018.03.22_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-214409/5		03/22/2018 14:57	1	2018.03.22_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-214409/6		03/22/2018 15:02	1	2018.03.22_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-214409/7 ICISAV		03/22/2018 15:07	1	2018.03.22_537I CAL 007.d	GeminiC18 3x100 3(mm)
IC 320-214409/8		03/22/2018 15:11	1	2018.03.22_537I CAL 008.d	GeminiC18 3x100 3(mm)
IC 320-214409/9		03/22/2018 15:16	1	2018.03.22_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/22/2018 15:21	1		GeminiC18 3x100 3(mm)
CCVL 320-214409/11		03/22/2018 15:25	1	2018.03.22_537I CAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/22/2018 15:30	1		GeminiC18 3x100 3(mm)
ICV 320-214409/13		03/22/2018 15:35	1	2018.03.22_537I CAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Instrument ID: A8_N Start Date: 03/30/2018 02:25

Analysis Batch Number: 215618 End Date: 03/30/2018 02:58

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-215618/1		03/30/2018 02:25	1	2018.03.30_537A 004.d	GeminiC18 3x100 3(mm)
CCV 320-215618/2 CCVIS		03/30/2018 02:30	1		GeminiC18 3x100 3(mm)
CCV 320-215618/8 CCVIS		03/30/2018 02:58	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Instrument ID: A8_N Start Date: 03/30/2018 10:10

Analysis Batch Number: 215653 End Date: 03/30/2018 11:06

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-215653/1 CCVIS		03/30/2018 10:10	1	2018.03.30_537A A 014.d	GeminiC18 3x100 3(mm)
MB 320-215177/1-A		03/30/2018 10:19	1	2018.03.30_537A A 016.d	GeminiC18 3x100 3(mm)
LLCS 320-215177/2-A		03/30/2018 10:24	1	2018.03.30_537A A 017.d	GeminiC18 3x100 3(mm)
LLCSD 320-215177/3-A		03/30/2018 10:28	1	2018.03.30_537A A 018.d	GeminiC18 3x100 3(mm)
320-37172-1		03/30/2018 10:33	1	2018.03.30_537A A 019.d	GeminiC18 3x100 3(mm)
320-37172-2		03/30/2018 10:38	1	2018.03.30_537A A 020.d	GeminiC18 3x100 3(mm)
320-37172-3		03/30/2018 10:42	1	2018.03.30_537A A 021.d	GeminiC18 3x100 3(mm)
320-37172-4		03/30/2018 10:47	1	2018.03.30_537A A 022.d	GeminiC18 3x100 3(mm)
320-37172-5		03/30/2018 10:52	1	2018.03.30_537A A 023.d	GeminiC18 3x100 3(mm)
320-37172-6		03/30/2018 10:56	1	2018.03.30_537A A 024.d	GeminiC18 3x100 3(mm)
320-37172-7		03/30/2018 11:01	1	2018.03.30_537A A 025.d	GeminiC18 3x100 3(mm)
CCV 320-215653/13 CCVIS		03/30/2018 11:06	1	2018.03.30_537A A 026.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Instrument ID: A8_N Start Date: 03/30/2018 11:06

Analysis Batch Number: 215655 End Date: 03/30/2018 11:20

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-215655/13 CCVIS		03/30/2018 11:06	1	2018.03.30_537A A 026.d	GeminiC18 3x100 3(mm)
320-37172-8		03/30/2018 11:15	1	2018.03.30_537A A 028.d	GeminiC18 3x100 3(mm)
CCV 320-215655/16 CCVIS		03/30/2018 11:20	1	2018.03.30_537A A 029.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Batch Number: 215177 Batch Start Date: 03/28/18 10:21 Batch Analyst: Kouchari, Shamiran

Batch Method: 537 Batch End Date: 03/30/18 09:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00061
MB 320-215177/1		537, 537				250 mL	1.00 mL	7 SU	100 uL
LLCS 320-215177/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
LLCSD 320-215177/3		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-37172-A-1	WGNA-031518-RW-0617	537, 537	T	282.04 g	29.30 g	252.7 mL	1.00 mL	7 SU	100 uL
320-37172-A-2	WGNA-031518-FRB-0617	537, 537	T	287.49 g	30.34 g	257.2 mL	1.00 mL	7 SU	100 uL
320-37172-A-3	WGNA-031518-RW-0755	537, 537	T	278.59 g	27.87 g	250.7 mL	1.00 mL	7 SU	100 uL
320-37172-A-4	WGNA-031518-FRB-0755	537, 537	T	289.59 g	29.02 g	260.6 mL	1.00 mL	7 SU	100 uL
320-37172-A-5	NAWC-031518-RW-0569	537, 537	T	285.76 g	28.10 g	257.7 mL	1.00 mL	7 SU	100 uL
320-37172-A-6	NAWC-031518-FRB-0569	537, 537	T	279.37 g	28.49 g	250.9 mL	1.00 mL	7 SU	100 uL
320-37172-A-7	NAWC-031518-RW-054	537, 537	T	293.02 g	28.72 g	264.3 mL	1.00 mL	7 SU	100 uL
320-37172-A-8	NAWC-031518-FRB-054	537, 537	T	290.54 g	28.62 g	261.9 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00029	LC537-SU 00062	AnalysisComment			
MB 320-215177/1		537, 537			100 uL	Chlorine, ND			
LLCS 320-215177/2		537, 537		100 uL	100 uL	Chlorine, ND			
LLCSD 320-215177/3		537, 537		100 uL	100 uL	Chlorine, ND			
320-37172-A-1	WGNA-031518-RW-0617	537, 537	T		100 uL	Chlorine, ND			
320-37172-A-2	WGNA-031518-FRB-0617	537, 537	T		100 uL	Chlorine, ND			
320-37172-A-3	WGNA-031518-RW-0755	537, 537	T		100 uL	Chlorine, ND			
320-37172-A-4	WGNA-031518-FRB-0755	537, 537	T		100 uL	Chlorine, ND			
320-37172-A-5	NAWC-031518-RW-0569	537, 537	T		100 uL	Chlorine, ND			
320-37172-A-6	NAWC-031518-FRB-0569	537, 537	T		100 uL	Chlorine, ND			

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

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37172-1

SDG No.: _____

Batch Number: 215177 Batch Start Date: 03/28/18 10:21 Batch Analyst: Kouchari, Shamiran

Batch Method: 537 Batch End Date: 03/30/18 09:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00029	LC537-SU 00062	AnalysisComment			
320-37172-A-7	NAWC-031518-RW-054	537, 537	T		100 uL	Chlorine, ND			
320-37172-A-8	NAWC-031518-FRB-054	537, 537	T		100 uL	Chlorine, ND			

Batch Notes	
Analyst ID - Aliquot Step	SKD
Batch Comment	Client labels match TA label, 03/28/18 SKD
Analyst ID - Concentration	SKD
Analyst ID - Final Volume Step	SKD
Internal Standard ID#	1169779
Manifold ID	7
Methanol ID	1191294
pH Indicator ID	3817
Pipette ID	H14930F, N32728F
Analyst ID - IS Reagent Drop	KMK
Analyst ID - IS Reagent Drop Witness	SKD
Analyst ID - SU Reagent Drop	KMK
Analyst ID - SU Reagent Drop Witness	SKD
Analyst ID - TA Reagent Drop	KMK
Analyst ID - TA Reagent Drop Witness	SKD
SPE Cartridge Lot ID	6390138-01
Trizma ID	SLBR5241V
Reagent Water ID	03/27/18

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.

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_004.d
 Lims ID: IC L1
 Client ID:
 Sample Type: **IC** Calib Level: 1
 Inject. Date: 22-Mar-2018 14:53:07 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\20180322-55711.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 23-Mar-2018 11:11:17 Calib Date: 22-Mar-2018 15:16:28
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK008

First Level Reviewer: roycea Date: 22-Mar-2018 15:20:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.410	-0.006	1.000	796972	8.74		321	
298.90 > 99.00	1.404	1.410	-0.006	1.000	599936		1.33(0.00-0.00)	1354	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.534	-0.001	1.000	1155395	9.45		11985	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.684	0.0	1.000	113714	0.9711		30.3	M
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.684	0.0	1.000	427157	2.86		577	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.878	-0.004		1188768	10.0		8447	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.879	-0.005	1.000	215607	1.88		23.7	M
413.00 > 169.00	1.874	1.879	-0.005	1.000	115508		1.87(0.00-0.00)	103	M
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.132	2.124	0.008	1.000	335816	3.76		198	M
499.00 > 99.00	2.124	2.124	0.0	0.996	73456		4.57(0.00-0.00)	169	M
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.128	-0.004		2751643	28.7		3734	
9 Perfluorononanoic acid									
463.00 > 419.00	2.140	2.140	0.0	1.000	156653	1.81		25.2	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.291	0.0	1.000	973562	9.67		7533	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180322-55711.b\2018.03.22_537ICAL_004.d

Injection Date: 22-Mar-2018 14:53:07

Instrument ID: A8_N

Lims ID: IC L1

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 1

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

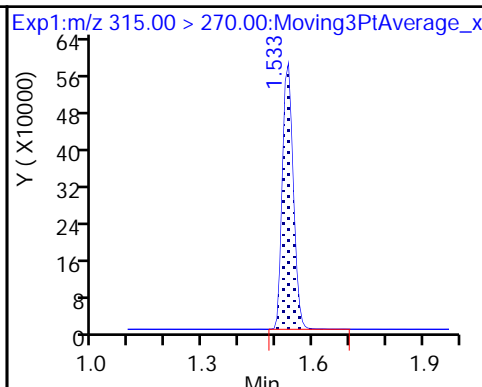
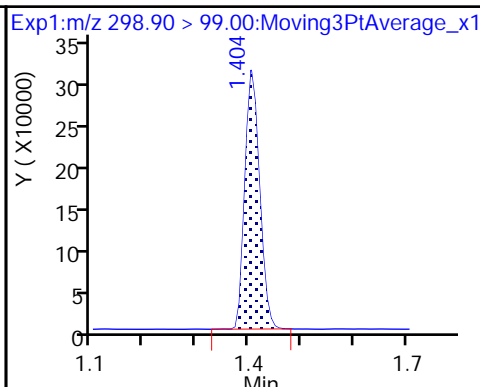
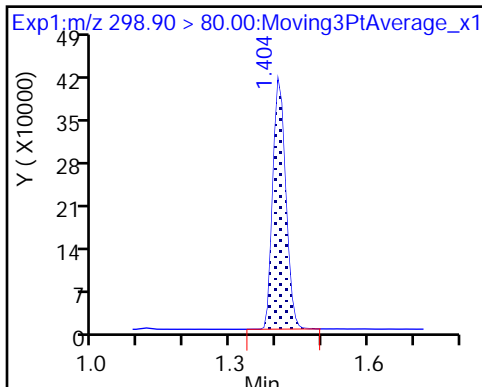
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

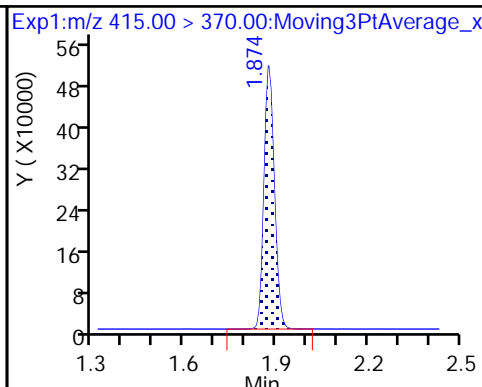
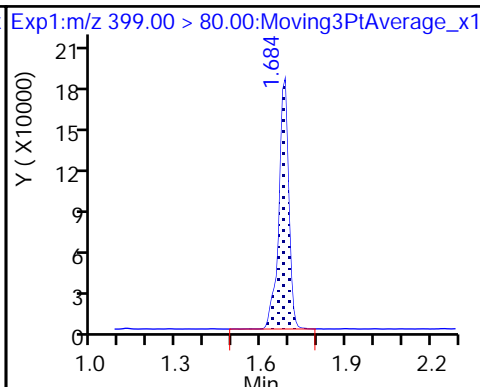
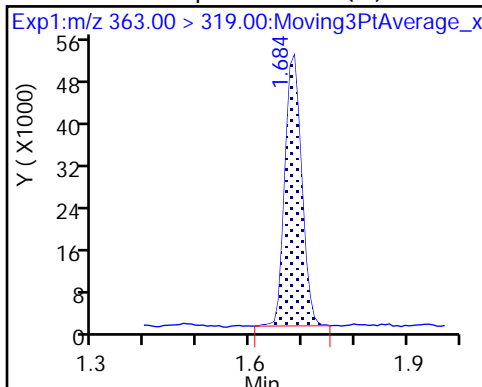
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (M)

3 Perfluorohexanesulfonic acid

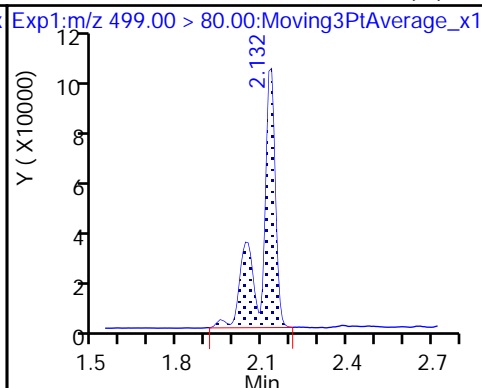
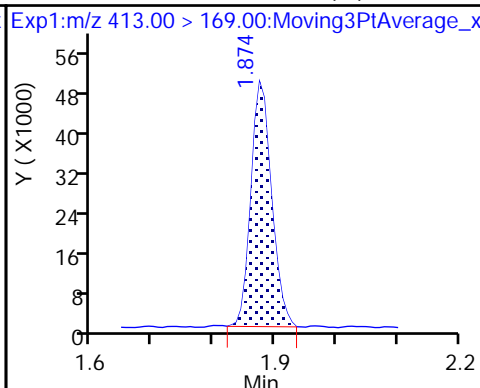
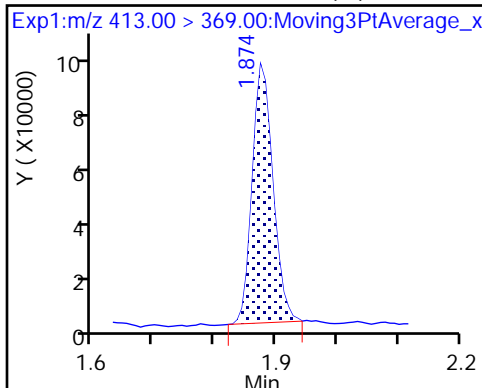
* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid (M)

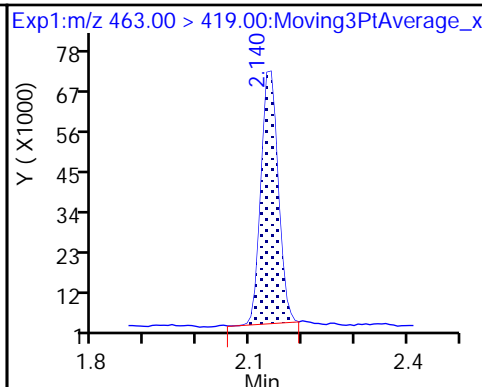
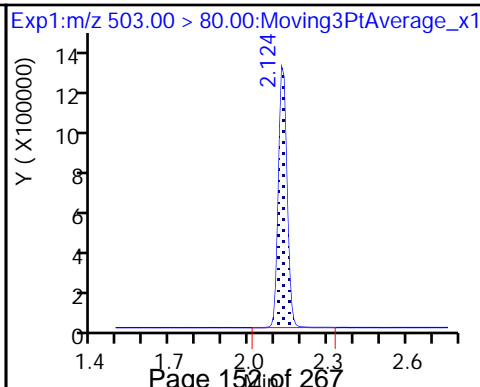
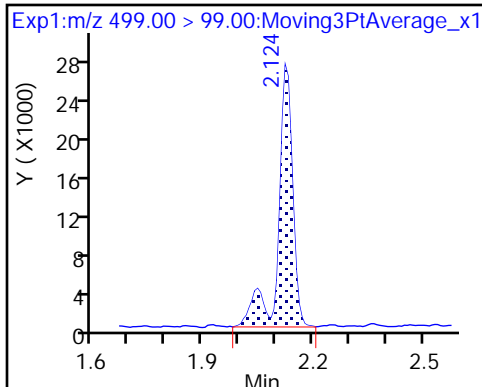
8 Perfluorooctane sulfonic acid (M)



8 Perfluorooctane sulfonic acid (M)

* 7 13C4 PFOS

9 Perfluorononanoic acid



PFAS Calibration Calculations:

Initial Calibration 3/22/2018
 Instrument A8_N

PFOS

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF
4.02	335816	2751643	28.7	0.8713	0.8712
8.93	780931	2695592	28.7	0.9311	0.9308
20.1	1708604	2599868	28.7	0.9384	0.9384
40.2	3566785	2639658	28.7	0.9647	0.9647
60.3	5238684	2646569	28.7	0.9421	0.9421
80.3	7166468	2724305	28.7	0.9402	0.939
Average				0.93129	0.931
Standard Deviation				0.0315	
RSD				0.0338	
%RSD				3.38238	3.4

Continuing Calibration 03/30/2018 @ 10:10

PFOS

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
20.1	1646537	2528431	28.7	0.9298	-0.125057	0.9299	-0.1

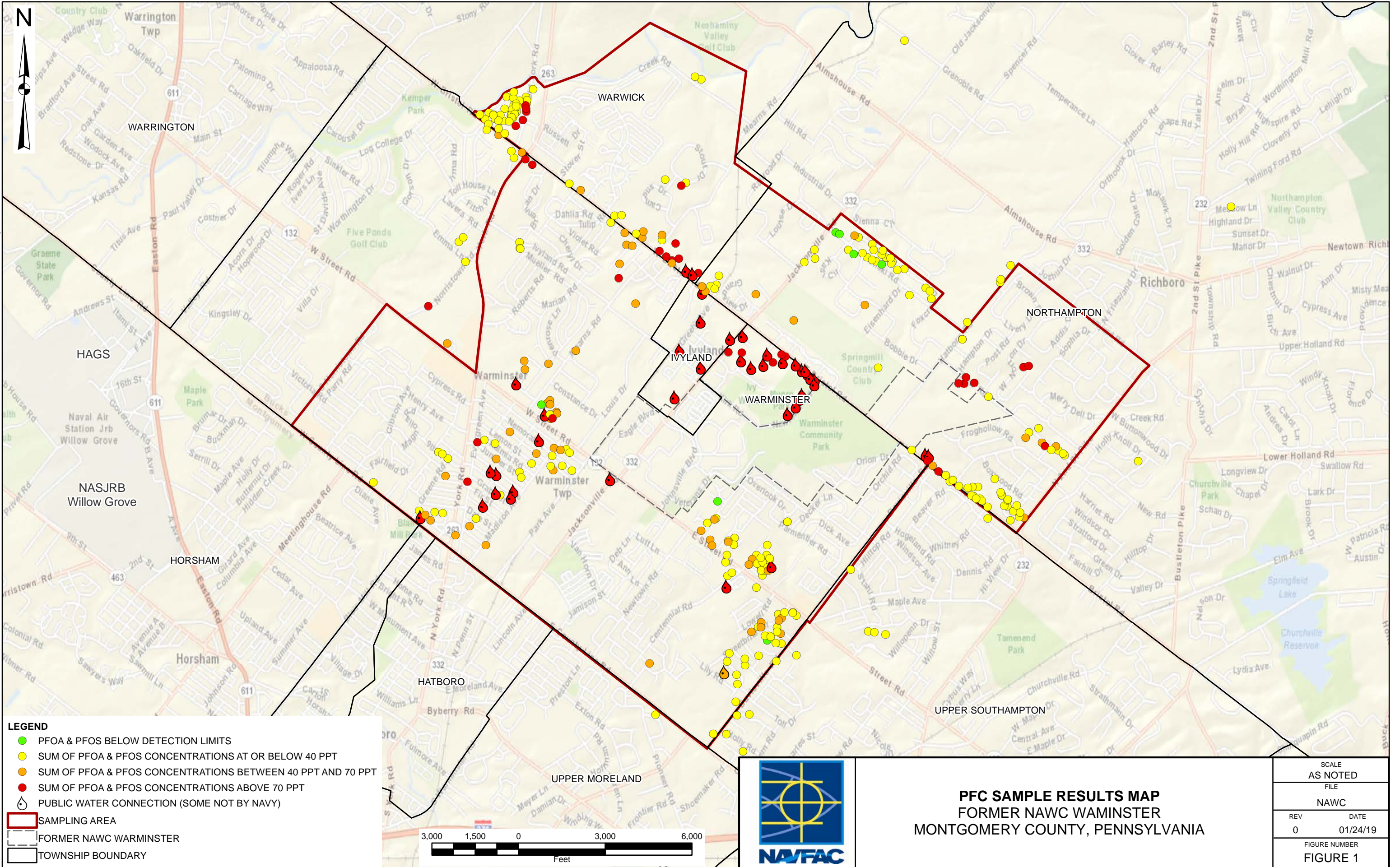
Willow Grove
SDG 320-37172-1

Sample Identification WGNA-031518-RW-0569

Compound Perfluorooctanesulfonic acid

Compound Area	624027
Internal Standard Amount (ng)	28.7
Dilution Factor	1
Internal Standard Area	2671072
Average RRF	0.931
Sample Volume(L)	0.2577
Volume Extract (ml)	1
Injection Volume (μl)	1
Concentration	27.9470 ng/L

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LEGEND

- PFOA & PFOS BELOW DETECTION LIMITS
- SUM OF PFOA & PFOS CONCENTRATIONS AT OR BELOW 40 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS BETWEEN 40 PPT AND 70 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS ABOVE 70 PPT
- 👉 PUBLIC WATER CONNECTION (SOME NOT BY NAVY)
- SAMPLING AREA
- FORMER NAWC WARRINSTER
- TOWNSHIP BOUNDARY



PFC SAMPLE RESULTS MAP
 FORMER NAWC WARRINSTER
 MONTGOMERY COUNTY, PENNSYLVANIA

SCALE AS NOTED	
FILE	
NAWC	
REV 0	DATE 01/24/19
FIGURE NUMBER	
FIGURE 1	