



**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 320-42002-1**

*Naval Air Station Willow Grove
Willow Grove, Pennsylvania*

August 2019

N00158_000783
WILLOW_GROVE_NAS
SSIC 5000-33c

**LABORATORY DATA PACKAGE, 320-42002-1, NAWC WARMINSTER NAS
WILLOW GROVE PA**

08/30/2018

TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-42002-1

Job Description: WE04

For:

Tetra Tech, Inc.

234 Mall Boulevard

Suite 260

King of Prussia, PA 19406

Attention: Andy Frebowitz



Approved for release.
David R. Alltucker
Project Manager I
8/30/2018 8:53 AM

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Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: WE04

TestAmerica Job ID: 320-42002-1

Qualifiers

LCMS

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

Glossary

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

Job Narrative
320-42002-1

Receipt

The samples were received on 8/10/2018 9:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.6° C.

LCMS

Method(s) 537: 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) WGNA-080918-RW-3145 (320-42002-1), WGNA-080918-FRB-3145 (320-42002-2), WGNA-080918-RW-0683 (320-42002-3), WGNA-080918-FRB-0683 (320-42002-4), WGNA-080918-RW-0443 (320-42002-5), WGNA-080918-FRB-0443 (320-42002-6), NAWC-080918-RW-269 (320-42002-7), NAWC-080918-FRB-269 (320-42002-8), NAWC-080918-RW-117 (320-42002-9), NAWC-080918-FRB-117 (320-42002-10), WGNA-080918-RW-4846 (320-42002-11), WGNA-080918-FRB-4846 (320-42002-12), WGNA-080918-RW-4850 (320-42002-13), WGNA-080918-FRB-4850 (320-42002-14), WGNA-080918-RW-0626 (320-42002-15) and WGNA-080918-FRB-0626 (320-42002-16) in preparation batch 320-241537

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: WE04

TestAmerica Job ID: 320-42002-1

Client Sample ID: WGNA-080918-RW-3145

Lab Sample ID: 320-42002-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	12	J	36	6.2	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	15	J	18	2.5	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.9	J	27	5.0	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.3	J	9.1	1.7	ng/L	1		537	Total/NA
Perfluorobutanesulfonic acid (PFBS)	15	J	82	15	ng/L	1		537	Total/NA

Client Sample ID: WGNA-080918-FRB-3145

Lab Sample ID: 320-42002-2

No Detections.

Client Sample ID: WGNA-080918-RW-0683

Lab Sample ID: 320-42002-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	25	J M	35	5.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	27		17	2.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	7.9	J	8.6	1.6	ng/L	1		537	Total/NA

Client Sample ID: WGNA-080918-FRB-0683

Lab Sample ID: 320-42002-4

No Detections.

Client Sample ID: WGNA-080918-RW-0443

Lab Sample ID: 320-42002-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	19	J	35	5.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	19	M	17	2.4	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.5	J	26	4.8	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.4	J	8.7	1.7	ng/L	1		537	Total/NA
Perfluorobutanesulfonic acid (PFBS)	26	J	78	14	ng/L	1		537	Total/NA

Client Sample ID: WGNA-080918-FRB-0443

Lab Sample ID: 320-42002-6

No Detections.

Client Sample ID: NAWC-080918-RW-269

Lab Sample ID: 320-42002-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	22	J	35	5.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	22		17	2.4	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	12	J	26	4.8	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	7.2	J	8.7	1.7	ng/L	1		537	Total/NA

Client Sample ID: NAWC-080918-FRB-269

Lab Sample ID: 320-42002-8

No Detections.

Client Sample ID: NAWC-080918-RW-117

Lab Sample ID: 320-42002-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	53		34	5.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	29		17	2.4	ng/L	1		537	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: WE04

TestAmerica Job ID: 320-42002-1

Client Sample ID: NAWC-080918-RW-117 (Continued)

Lab Sample ID: 320-42002-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	20	J	26	4.7	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.6	J	8.5	1.6	ng/L	1		537	Total/NA

Client Sample ID: NAWC-080918-FRB-117

Lab Sample ID: 320-42002-10

No Detections.

Client Sample ID: WGNA-080918-RW-4846

Lab Sample ID: 320-42002-11

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	6.6	J M	34	5.7	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	5.4	J	17	2.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.7	J M	8.4	1.6	ng/L	1		537	Total/NA

Client Sample ID: WGNA-080918-FRB-4846

Lab Sample ID: 320-42002-12

No Detections.

Client Sample ID: WGNA-080918-RW-4850

Lab Sample ID: 320-42002-13

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	170		36	6.1	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	21	M	18	2.5	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	110		27	4.9	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	12		8.9	1.7	ng/L	1		537	Total/NA
Perfluorobutanesulfonic acid (PFBS)	26	J	80	14	ng/L	1		537	Total/NA

Client Sample ID: WGNA-080918-FRB-4850

Lab Sample ID: 320-42002-14

No Detections.

Client Sample ID: WGNA-080918-RW-0626

Lab Sample ID: 320-42002-15

No Detections.

Client Sample ID: WGNA-080918-FRB-0626

Lab Sample ID: 320-42002-16

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: WE04

TestAmerica Job ID: 320-42002-1

Client Sample ID: WGNA-080918-RW-3145

Lab Sample ID: 320-42002-1

Date Collected: 08/09/18 07:25

Matrix: Water

Date Received: 08/10/18 09:50

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	12	J	36	6.2	ng/L		08/23/18 07:20	08/26/18 23:58	1
Perfluorooctanoic acid (PFOA)	15	J	18	2.5	ng/L		08/23/18 07:20	08/26/18 23:58	1
Perfluorononanoic acid (PFNA)	18	U	22	7.3	ng/L		08/23/18 07:20	08/26/18 23:58	1
Perfluorohexanesulfonic acid (PFHxS)	9.9	J	27	5.0	ng/L		08/23/18 07:20	08/26/18 23:58	1
Perfluoroheptanoic acid (PFHpA)	6.3	J	9.1	1.7	ng/L		08/23/18 07:20	08/26/18 23:58	1
Perfluorobutanesulfonic acid (PFBS)	15	J	82	15	ng/L		08/23/18 07:20	08/26/18 23:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	110		70 - 130				08/23/18 07:20	08/26/18 23:58	1
13C2 PFDA	109		70 - 130				08/23/18 07:20	08/26/18 23:58	1

Client Sample ID: WGNA-080918-FRB-3145

Lab Sample ID: 320-42002-2

Date Collected: 08/09/18 07:20

Matrix: Water

Date Received: 08/10/18 09:50

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	6.0	ng/L		08/23/18 07:20	08/27/18 00:02	1
Perfluorooctanoic acid (PFOA)	7.1	U	18	2.5	ng/L		08/23/18 07:20	08/27/18 00:02	1
Perfluorononanoic acid (PFNA)	18	U	21	7.1	ng/L		08/23/18 07:20	08/27/18 00:02	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	4.9	ng/L		08/23/18 07:20	08/27/18 00:02	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	1.7	ng/L		08/23/18 07:20	08/27/18 00:02	1
Perfluorobutanesulfonic acid (PFBS)	32	U	80	14	ng/L		08/23/18 07:20	08/27/18 00:02	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	104		70 - 130				08/23/18 07:20	08/27/18 00:02	1
13C2 PFDA	108		70 - 130				08/23/18 07:20	08/27/18 00:02	1

Client Sample ID: WGNA-080918-RW-0683

Lab Sample ID: 320-42002-3

Date Collected: 08/09/18 08:10

Matrix: Water

Date Received: 08/10/18 09:50

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	25	J M	35	5.9	ng/L		08/23/18 07:20	08/27/18 00:07	1
Perfluorooctanoic acid (PFOA)	27		17	2.4	ng/L		08/23/18 07:20	08/27/18 00:07	1
Perfluorononanoic acid (PFNA)	17	U	21	6.9	ng/L		08/23/18 07:20	08/27/18 00:07	1
Perfluorohexanesulfonic acid (PFHxS)	10	U	26	4.7	ng/L		08/23/18 07:20	08/27/18 00:07	1
Perfluoroheptanoic acid (PFHpA)	7.9	J	8.6	1.6	ng/L		08/23/18 07:20	08/27/18 00:07	1
Perfluorobutanesulfonic acid (PFBS)	31	U	78	14	ng/L		08/23/18 07:20	08/27/18 00:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	113		70 - 130				08/23/18 07:20	08/27/18 00:07	1
13C2 PFDA	111		70 - 130				08/23/18 07:20	08/27/18 00:07	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: WE04

TestAmerica Job ID: 320-42002-1

Client Sample ID: WGNA-080918-FRB-0683

Lab Sample ID: 320-42002-4

Date Collected: 08/09/18 08:05

Matrix: Water

Date Received: 08/10/18 09:50

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	36	6.0	ng/L		08/23/18 07:20	08/27/18 00:12	1
Perfluorooctanoic acid (PFOA)	7.1	U	18	2.5	ng/L		08/23/18 07:20	08/27/18 00:12	1
Perfluorononanoic acid (PFNA)	18	U	21	7.1	ng/L		08/23/18 07:20	08/27/18 00:12	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	4.9	ng/L		08/23/18 07:20	08/27/18 00:12	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	8.9	1.7	ng/L		08/23/18 07:20	08/27/18 00:12	1
Perfluorobutanesulfonic acid (PFBS)	32	U	80	14	ng/L		08/23/18 07:20	08/27/18 00:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	109		70 - 130				08/23/18 07:20	08/27/18 00:12	1
13C2 PFDA	110		70 - 130				08/23/18 07:20	08/27/18 00:12	1

Client Sample ID: WGNA-080918-RW-0443

Lab Sample ID: 320-42002-5

Date Collected: 08/09/18 08:40

Matrix: Water

Date Received: 08/10/18 09:50

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	19	J	35	5.9	ng/L		08/23/18 07:20	08/27/18 00:16	1
Perfluorooctanoic acid (PFOA)	19	M	17	2.4	ng/L		08/23/18 07:20	08/27/18 00:16	1
Perfluorononanoic acid (PFNA)	17	U	21	7.0	ng/L		08/23/18 07:20	08/27/18 00:16	1
Perfluorohexanesulfonic acid (PFHxS)	5.5	J	26	4.8	ng/L		08/23/18 07:20	08/27/18 00:16	1
Perfluoroheptanoic acid (PFHpA)	8.4	J	8.7	1.7	ng/L		08/23/18 07:20	08/27/18 00:16	1
Perfluorobutanesulfonic acid (PFBS)	26	J	78	14	ng/L		08/23/18 07:20	08/27/18 00:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	111		70 - 130				08/23/18 07:20	08/27/18 00:16	1
13C2 PFDA	113		70 - 130				08/23/18 07:20	08/27/18 00:16	1

Client Sample ID: WGNA-080918-FRB-0443

Lab Sample ID: 320-42002-6

Date Collected: 08/09/18 08:35

Matrix: Water

Date Received: 08/10/18 09:50

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	5.9	ng/L		08/23/18 07:20	08/27/18 00:21	1
Perfluorooctanoic acid (PFOA)	7.0	U	17	2.4	ng/L		08/23/18 07:20	08/27/18 00:21	1
Perfluorononanoic acid (PFNA)	17	U	21	7.0	ng/L		08/23/18 07:20	08/27/18 00:21	1
Perfluorohexanesulfonic acid (PFHxS)	10	U	26	4.8	ng/L		08/23/18 07:20	08/27/18 00:21	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	1.7	ng/L		08/23/18 07:20	08/27/18 00:21	1
Perfluorobutanesulfonic acid (PFBS)	31	U	78	14	ng/L		08/23/18 07:20	08/27/18 00:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	111		70 - 130				08/23/18 07:20	08/27/18 00:21	1
13C2 PFDA	109		70 - 130				08/23/18 07:20	08/27/18 00:21	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: WE04

TestAmerica Job ID: 320-42002-1

Client Sample ID: NAWC-080918-RW-269

Lab Sample ID: 320-42002-7

Date Collected: 08/09/18 09:10

Matrix: Water

Date Received: 08/10/18 09:50

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	22	J	35	5.9	ng/L		08/23/18 07:20	08/27/18 00:26	1
Perfluorooctanoic acid (PFOA)	22		17	2.4	ng/L		08/23/18 07:20	08/27/18 00:26	1
Perfluorononanoic acid (PFNA)	17	U	21	7.0	ng/L		08/23/18 07:20	08/27/18 00:26	1
Perfluorohexanesulfonic acid (PFHxS)	12	J	26	4.8	ng/L		08/23/18 07:20	08/27/18 00:26	1
Perfluoroheptanoic acid (PFHpA)	7.2	J	8.7	1.7	ng/L		08/23/18 07:20	08/27/18 00:26	1
Perfluorobutanesulfonic acid (PFBS)	31	U	78	14	ng/L		08/23/18 07:20	08/27/18 00:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	109		70 - 130				08/23/18 07:20	08/27/18 00:26	1
13C2 PFDA	109		70 - 130				08/23/18 07:20	08/27/18 00:26	1

Client Sample ID: NAWC-080918-FRB-269

Lab Sample ID: 320-42002-8

Date Collected: 08/09/18 09:05

Matrix: Water

Date Received: 08/10/18 09:50

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	36	6.1	ng/L		08/23/18 07:20	08/27/18 00:40	1
Perfluorooctanoic acid (PFOA)	7.2	U	18	2.5	ng/L		08/23/18 07:20	08/27/18 00:40	1
Perfluorononanoic acid (PFNA)	18	U	22	7.2	ng/L		08/23/18 07:20	08/27/18 00:40	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	4.9	ng/L		08/23/18 07:20	08/27/18 00:40	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	1.7	ng/L		08/23/18 07:20	08/27/18 00:40	1
Perfluorobutanesulfonic acid (PFBS)	32	U	81	14	ng/L		08/23/18 07:20	08/27/18 00:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	110		70 - 130				08/23/18 07:20	08/27/18 00:40	1
13C2 PFDA	112		70 - 130				08/23/18 07:20	08/27/18 00:40	1

Client Sample ID: NAWC-080918-RW-117

Lab Sample ID: 320-42002-9

Date Collected: 08/09/18 09:40

Matrix: Water

Date Received: 08/10/18 09:50

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	53		34	5.8	ng/L		08/23/18 07:20	08/28/18 23:36	1
Perfluorooctanoic acid (PFOA)	29		17	2.4	ng/L		08/23/18 07:20	08/28/18 23:36	1
Perfluorononanoic acid (PFNA)	17	U	20	6.8	ng/L		08/23/18 07:20	08/28/18 23:36	1
Perfluorohexanesulfonic acid (PFHxS)	20	J	26	4.7	ng/L		08/23/18 07:20	08/28/18 23:36	1
Perfluoroheptanoic acid (PFHpA)	6.6	J	8.5	1.6	ng/L		08/23/18 07:20	08/28/18 23:36	1
Perfluorobutanesulfonic acid (PFBS)	31	U	77	14	ng/L		08/23/18 07:20	08/28/18 23:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		70 - 130				08/23/18 07:20	08/28/18 23:36	1
13C2 PFDA	104		70 - 130				08/23/18 07:20	08/28/18 23:36	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: WE04

TestAmerica Job ID: 320-42002-1

Client Sample ID: NAWC-080918-FRB-117

Lab Sample ID: 320-42002-10

Date Collected: 08/09/18 09:35

Matrix: Water

Date Received: 08/10/18 09:50

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	37	6.2	ng/L		08/23/18 07:20	08/27/18 00:49	1
Perfluorooctanoic acid (PFOA)	7.3	U	18	2.6	ng/L		08/23/18 07:20	08/27/18 00:49	1
Perfluorononanoic acid (PFNA)	18	U	22	7.3	ng/L		08/23/18 07:20	08/27/18 00:49	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	5.0	ng/L		08/23/18 07:20	08/27/18 00:49	1
Perfluoroheptanoic acid (PFHpA)	3.7	U	9.1	1.7	ng/L		08/23/18 07:20	08/27/18 00:49	1
Perfluorobutanesulfonic acid (PFBS)	33	U	82	15	ng/L		08/23/18 07:20	08/27/18 00:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	110		70 - 130	08/23/18 07:20	08/27/18 00:49	1
13C2 PFDA	106		70 - 130	08/23/18 07:20	08/27/18 00:49	1

Client Sample ID: WGNA-080918-RW-4846

Lab Sample ID: 320-42002-11

Date Collected: 08/09/18 10:10

Matrix: Water

Date Received: 08/10/18 09:50

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	6.6	J M	34	5.7	ng/L		08/23/18 07:20	08/27/18 00:54	1
Perfluorooctanoic acid (PFOA)	5.4	J	17	2.4	ng/L		08/23/18 07:20	08/27/18 00:54	1
Perfluorononanoic acid (PFNA)	17	U	20	6.8	ng/L		08/23/18 07:20	08/27/18 00:54	1
Perfluorohexanesulfonic acid (PFHxS)	10	U M	25	4.6	ng/L		08/23/18 07:20	08/27/18 00:54	1
Perfluoroheptanoic acid (PFHpA)	1.7	J M	8.4	1.6	ng/L		08/23/18 07:20	08/27/18 00:54	1
Perfluorobutanesulfonic acid (PFBS)	30	U M	76	14	ng/L		08/23/18 07:20	08/27/18 00:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	105		70 - 130	08/23/18 07:20	08/27/18 00:54	1
13C2 PFDA	109		70 - 130	08/23/18 07:20	08/27/18 00:54	1

Client Sample ID: WGNA-080918-FRB-4846

Lab Sample ID: 320-42002-12

Date Collected: 08/09/18 10:05

Matrix: Water

Date Received: 08/10/18 09:50

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	6.0	ng/L		08/23/18 07:20	08/27/18 00:58	1
Perfluorooctanoic acid (PFOA)	7.0	U	18	2.5	ng/L		08/23/18 07:20	08/27/18 00:58	1
Perfluorononanoic acid (PFNA)	18	U	21	7.0	ng/L		08/23/18 07:20	08/27/18 00:58	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	26	4.8	ng/L		08/23/18 07:20	08/27/18 00:58	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	1.7	ng/L		08/23/18 07:20	08/27/18 00:58	1
Perfluorobutanesulfonic acid (PFBS)	32	U	79	14	ng/L		08/23/18 07:20	08/27/18 00:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	111		70 - 130	08/23/18 07:20	08/27/18 00:58	1
13C2 PFDA	108		70 - 130	08/23/18 07:20	08/27/18 00:58	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: WE04

TestAmerica Job ID: 320-42002-1

Client Sample ID: WGNA-080918-RW-4850

Lab Sample ID: 320-42002-13

Date Collected: 08/09/18 11:10

Matrix: Water

Date Received: 08/10/18 09:50

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	170		36	6.1	ng/L		08/23/18 07:20	08/27/18 01:03	1
Perfluorooctanoic acid (PFOA)	21	M	18	2.5	ng/L		08/23/18 07:20	08/27/18 01:03	1
Perfluorononanoic acid (PFNA)	18	U	21	7.2	ng/L		08/23/18 07:20	08/27/18 01:03	1
Perfluorohexanesulfonic acid (PFHxS)	110		27	4.9	ng/L		08/23/18 07:20	08/27/18 01:03	1
Perfluoroheptanoic acid (PFHpA)	12		8.9	1.7	ng/L		08/23/18 07:20	08/27/18 01:03	1
Perfluorobutanesulfonic acid (PFBS)	26	J	80	14	ng/L		08/23/18 07:20	08/27/18 01:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	111		70 - 130				08/23/18 07:20	08/27/18 01:03	1
13C2 PFDA	113		70 - 130				08/23/18 07:20	08/27/18 01:03	1

Client Sample ID: WGNA-080918-FRB-4850

Lab Sample ID: 320-42002-14

Date Collected: 08/09/18 11:05

Matrix: Water

Date Received: 08/10/18 09:50

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	36	6.0	ng/L		08/23/18 07:20	08/27/18 01:08	1
Perfluorooctanoic acid (PFOA)	7.1	U	18	2.5	ng/L		08/23/18 07:20	08/27/18 01:08	1
Perfluorononanoic acid (PFNA)	18	U	21	7.1	ng/L		08/23/18 07:20	08/27/18 01:08	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	4.9	ng/L		08/23/18 07:20	08/27/18 01:08	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	8.9	1.7	ng/L		08/23/18 07:20	08/27/18 01:08	1
Perfluorobutanesulfonic acid (PFBS)	32	U	80	14	ng/L		08/23/18 07:20	08/27/18 01:08	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	105		70 - 130				08/23/18 07:20	08/27/18 01:08	1
13C2 PFDA	107		70 - 130				08/23/18 07:20	08/27/18 01:08	1

Client Sample ID: WGNA-080918-RW-0626

Lab Sample ID: 320-42002-15

Date Collected: 08/09/18 12:10

Matrix: Water

Date Received: 08/10/18 09:50

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	36	6.2	ng/L		08/23/18 07:20	08/27/18 01:13	1
Perfluorooctanoic acid (PFOA)	7.2	U	18	2.5	ng/L		08/23/18 07:20	08/27/18 01:13	1
Perfluorononanoic acid (PFNA)	18	U	22	7.2	ng/L		08/23/18 07:20	08/27/18 01:13	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	5.0	ng/L		08/23/18 07:20	08/27/18 01:13	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	1.7	ng/L		08/23/18 07:20	08/27/18 01:13	1
Perfluorobutanesulfonic acid (PFBS)	33	U	81	15	ng/L		08/23/18 07:20	08/27/18 01:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	108		70 - 130				08/23/18 07:20	08/27/18 01:13	1
13C2 PFDA	111		70 - 130				08/23/18 07:20	08/27/18 01:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: WE04

TestAmerica Job ID: 320-42002-1

Client Sample ID: WGNA-080918-FRB-0626

Lab Sample ID: 320-42002-16

Date Collected: 08/09/18 12:05

Matrix: Water

Date Received: 08/10/18 09:50

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	6.0	ng/L		08/23/18 07:20	08/27/18 01:17	1
Perfluorooctanoic acid (PFOA)	7.0	U	18	2.5	ng/L		08/23/18 07:20	08/27/18 01:17	1
Perfluorononanoic acid (PFNA)	18	U	21	7.0	ng/L		08/23/18 07:20	08/27/18 01:17	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	26	4.8	ng/L		08/23/18 07:20	08/27/18 01:17	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	1.7	ng/L		08/23/18 07:20	08/27/18 01:17	1
Perfluorobutanesulfonic acid (PFBS)	32	U	79	14	ng/L		08/23/18 07:20	08/27/18 01:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
¹³ C2 PFHxA	108		70 - 130	08/23/18 07:20	08/27/18 01:17	1
¹³ C2 PFDA	104		70 - 130	08/23/18 07:20	08/27/18 01:17	1

Default Detection Limits

Client: Tetra Tech, Inc.
Project/Site: WE04

TestAmerica Job ID: 320-42002-1

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: WE04

TestAmerica Job ID: 320-42002-1

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)
320-42002-1	WGNA-080918-RW-3145	110	109
320-42002-2	WGNA-080918-FRB-3145	104	108
320-42002-3	WGNA-080918-RW-0683	113	111
320-42002-4	WGNA-080918-FRB-0683	109	110
320-42002-5	WGNA-080918-RW-0443	111	113
320-42002-6	WGNA-080918-FRB-0443	111	109
320-42002-7	NAWC-080918-RW-269	109	109
320-42002-8	NAWC-080918-FRB-269	110	112
320-42002-9	NAWC-080918-RW-117	100	104
320-42002-10	NAWC-080918-FRB-117	110	106
320-42002-11	WGNA-080918-RW-4846	105	109
320-42002-12	WGNA-080918-FRB-4846	111	108
320-42002-13	WGNA-080918-RW-4850	111	113
320-42002-14	WGNA-080918-FRB-4850	105	107
320-42002-15	WGNA-080918-RW-0626	108	111
320-42002-16	WGNA-080918-FRB-0626	108	104
LLCS 320-241537/2-A	Lab Control Sample	113	114
LLCSD 320-241537/3-A	Lab Control Sample Dup	110	109
MB 320-241537/1-A	Method Blank	104	110

Surrogate Legend

PFHxA = 13C2 PFHxA

PFDA = 13C2 PFDA

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: WE04

TestAmerica Job ID: 320-42002-1

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

Lab Sample ID: MB 320-241537/1-A
Matrix: Water
Analysis Batch: 242153

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 241537

Analyte	MB	MB	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		08/23/18 07:20	08/26/18 23:44	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		08/23/18 07:20	08/26/18 23:44	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		08/23/18 07:20	08/26/18 23:44	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		08/23/18 07:20	08/26/18 23:44	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		08/23/18 07:20	08/26/18 23:44	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		08/23/18 07:20	08/26/18 23:44	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	104		70 - 130	08/23/18 07:20	08/26/18 23:44	1
13C2 PFDA	110		70 - 130	08/23/18 07:20	08/26/18 23:44	1

Lab Sample ID: LLCS 320-241537/2-A
Matrix: Water
Analysis Batch: 242153

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 241537

Analyte	Spike Added	LLCS	LLCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Perfluorooctanesulfonic acid (PFOS)	40.2	43.0		ng/L		107	50 - 150
Perfluorooctanoic acid (PFOA)	20.0	20.4		ng/L		102	50 - 150
Perfluorononanoic acid (PFNA)	20.0	18.9	J	ng/L		94	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	30.3	33.1		ng/L		109	50 - 150
Perfluoroheptanoic acid (PFHpA)	10.0	10.2		ng/L		102	50 - 150
Perfluorobutanesulfonic acid (PFBS)	90.2	105		ng/L		117	50 - 150

Surrogate	LLCS	LLCS	Limits
	%Recovery	Qualifier	
13C2 PFHxA	113		70 - 130
13C2 PFDA	114		70 - 130

Lab Sample ID: LLCSD 320-241537/3-A
Matrix: Water
Analysis Batch: 242153

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 241537

Analyte	Spike Added	LLCSD	LLCSD	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
		Result	Qualifier						
Perfluorooctanesulfonic acid (PFOS)	40.2	45.1		ng/L		112	50 - 150	5	50
Perfluorooctanoic acid (PFOA)	20.0	20.6		ng/L		103	50 - 150	1	50
Perfluorononanoic acid (PFNA)	20.0	19.4	J	ng/L		97	50 - 150	3	50
Perfluorohexanesulfonic acid (PFHxS)	30.3	34.9		ng/L		115	50 - 150	5	50
Perfluoroheptanoic acid (PFHpA)	10.0	11.3		ng/L		113	50 - 150	10	50
Perfluorobutanesulfonic acid (PFBS)	90.2	115		ng/L		127	50 - 150	8	50

Surrogate	LLCSD	LLCSD	Limits
	%Recovery	Qualifier	
13C2 PFHxA	110		70 - 130
13C2 PFDA	109		70 - 130

TestAmerica Sacramento

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: WE04

TestAmerica Job ID: 320-42002-1

LCMS

Prep Batch: 241537

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-42002-1	WGNA-080918-RW-3145	Total/NA	Water	537	
320-42002-2	WGNA-080918-FRB-3145	Total/NA	Water	537	
320-42002-3	WGNA-080918-RW-0683	Total/NA	Water	537	
320-42002-4	WGNA-080918-FRB-0683	Total/NA	Water	537	
320-42002-5	WGNA-080918-RW-0443	Total/NA	Water	537	
320-42002-6	WGNA-080918-FRB-0443	Total/NA	Water	537	
320-42002-7	NAWC-080918-RW-269	Total/NA	Water	537	
320-42002-8	NAWC-080918-FRB-269	Total/NA	Water	537	
320-42002-9	NAWC-080918-RW-117	Total/NA	Water	537	
320-42002-10	NAWC-080918-FRB-117	Total/NA	Water	537	
320-42002-11	WGNA-080918-RW-4846	Total/NA	Water	537	
320-42002-12	WGNA-080918-FRB-4846	Total/NA	Water	537	
320-42002-13	WGNA-080918-RW-4850	Total/NA	Water	537	
320-42002-14	WGNA-080918-FRB-4850	Total/NA	Water	537	
320-42002-15	WGNA-080918-RW-0626	Total/NA	Water	537	
320-42002-16	WGNA-080918-FRB-0626	Total/NA	Water	537	
MB 320-241537/1-A	Method Blank	Total/NA	Water	537	
LLCS 320-241537/2-A	Lab Control Sample	Total/NA	Water	537	
LLCSD 320-241537/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 242153

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-42002-1	WGNA-080918-RW-3145	Total/NA	Water	537	241537
320-42002-2	WGNA-080918-FRB-3145	Total/NA	Water	537	241537
320-42002-3	WGNA-080918-RW-0683	Total/NA	Water	537	241537
320-42002-4	WGNA-080918-FRB-0683	Total/NA	Water	537	241537
320-42002-5	WGNA-080918-RW-0443	Total/NA	Water	537	241537
320-42002-6	WGNA-080918-FRB-0443	Total/NA	Water	537	241537
320-42002-7	NAWC-080918-RW-269	Total/NA	Water	537	241537
MB 320-241537/1-A	Method Blank	Total/NA	Water	537	241537
LLCS 320-241537/2-A	Lab Control Sample	Total/NA	Water	537	241537
LLCSD 320-241537/3-A	Lab Control Sample Dup	Total/NA	Water	537	241537

Analysis Batch: 242156

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-42002-8	NAWC-080918-FRB-269	Total/NA	Water	537	241537
320-42002-10	NAWC-080918-FRB-117	Total/NA	Water	537	241537
320-42002-11	WGNA-080918-RW-4846	Total/NA	Water	537	241537
320-42002-12	WGNA-080918-FRB-4846	Total/NA	Water	537	241537
320-42002-13	WGNA-080918-RW-4850	Total/NA	Water	537	241537
320-42002-14	WGNA-080918-FRB-4850	Total/NA	Water	537	241537
320-42002-15	WGNA-080918-RW-0626	Total/NA	Water	537	241537
320-42002-16	WGNA-080918-FRB-0626	Total/NA	Water	537	241537

Analysis Batch: 242684

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-42002-9	NAWC-080918-RW-117	Total/NA	Water	537	241537

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: WE04

TestAmerica Job ID: 320-42002-1

Client Sample ID: WGNA-080918-RW-3145

Date Collected: 08/09/18 07:25

Date Received: 08/10/18 09:50

Lab Sample ID: 320-42002-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242153	08/26/18 23:58	JRB	TAL SAC

Client Sample ID: WGNA-080918-FRB-3145

Date Collected: 08/09/18 07:20

Date Received: 08/10/18 09:50

Lab Sample ID: 320-42002-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242153	08/27/18 00:02	JRB	TAL SAC

Client Sample ID: WGNA-080918-RW-0683

Date Collected: 08/09/18 08:10

Date Received: 08/10/18 09:50

Lab Sample ID: 320-42002-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242153	08/27/18 00:07	JRB	TAL SAC

Client Sample ID: WGNA-080918-FRB-0683

Date Collected: 08/09/18 08:05

Date Received: 08/10/18 09:50

Lab Sample ID: 320-42002-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242153	08/27/18 00:12	JRB	TAL SAC

Client Sample ID: WGNA-080918-RW-0443

Date Collected: 08/09/18 08:40

Date Received: 08/10/18 09:50

Lab Sample ID: 320-42002-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242153	08/27/18 00:16	JRB	TAL SAC

Client Sample ID: WGNA-080918-FRB-0443

Date Collected: 08/09/18 08:35

Date Received: 08/10/18 09:50

Lab Sample ID: 320-42002-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242153	08/27/18 00:21	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: WE04

TestAmerica Job ID: 320-42002-1

Client Sample ID: NAWC-080918-RW-269

Lab Sample ID: 320-42002-7

Date Collected: 08/09/18 09:10

Matrix: Water

Date Received: 08/10/18 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242153	08/27/18 00:26	JRB	TAL SAC

Client Sample ID: NAWC-080918-FRB-269

Lab Sample ID: 320-42002-8

Date Collected: 08/09/18 09:05

Matrix: Water

Date Received: 08/10/18 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242156	08/27/18 00:40	JRB	TAL SAC

Client Sample ID: NAWC-080918-RW-117

Lab Sample ID: 320-42002-9

Date Collected: 08/09/18 09:40

Matrix: Water

Date Received: 08/10/18 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242684	08/28/18 23:36	JRB	TAL SAC

Client Sample ID: NAWC-080918-FRB-117

Lab Sample ID: 320-42002-10

Date Collected: 08/09/18 09:35

Matrix: Water

Date Received: 08/10/18 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242156	08/27/18 00:49	JRB	TAL SAC

Client Sample ID: WGNA-080918-RW-4846

Lab Sample ID: 320-42002-11

Date Collected: 08/09/18 10:10

Matrix: Water

Date Received: 08/10/18 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242156	08/27/18 00:54	JRB	TAL SAC

Client Sample ID: WGNA-080918-FRB-4846

Lab Sample ID: 320-42002-12

Date Collected: 08/09/18 10:05

Matrix: Water

Date Received: 08/10/18 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242156	08/27/18 00:58	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: WE04

TestAmerica Job ID: 320-42002-1

Client Sample ID: WGNA-080918-RW-4850

Lab Sample ID: 320-42002-13

Date Collected: 08/09/18 11:10

Matrix: Water

Date Received: 08/10/18 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242156	08/27/18 01:03	JRB	TAL SAC

Client Sample ID: WGNA-080918-FRB-4850

Lab Sample ID: 320-42002-14

Date Collected: 08/09/18 11:05

Matrix: Water

Date Received: 08/10/18 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242156	08/27/18 01:08	JRB	TAL SAC

Client Sample ID: WGNA-080918-RW-0626

Lab Sample ID: 320-42002-15

Date Collected: 08/09/18 12:10

Matrix: Water

Date Received: 08/10/18 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242156	08/27/18 01:13	JRB	TAL SAC

Client Sample ID: WGNA-080918-FRB-0626

Lab Sample ID: 320-42002-16

Date Collected: 08/09/18 12:05

Matrix: Water

Date Received: 08/10/18 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242156	08/27/18 01:17	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: WE04

TestAmerica Job ID: 320-42002-1

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
ANAB	DoD ELAP		L2468	01-20-21
Arizona	State Program	9	AZ0708	08-11-19
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-19
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-19
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-19
Kansas	NELAP	7	E-10375	10-31-18
Louisiana	NELAP	6	30612	06-30-19
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-19
New Hampshire	NELAP	1	2997	04-18-19
New Jersey	NELAP	2	CA005	06-30-19
New York	NELAP	2	11666	03-31-19
Oregon	NELAP	10	4040	01-29-19
Pennsylvania	NELAP	3	68-01272	03-31-19
Texas	NELAP	6	T104704399	05-31-19
US Fish & Wildlife	Federal		LE148388-0	07-31-19
USDA	Federal		P330-18-00239	01-17-21
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-19
Vermont	State Program	1	VT-4040	04-30-19
Virginia	NELAP	3	460278	03-14-19
Washington	State Program	10	C581	05-05-19
West Virginia (DW)	State Program	3	9930C	12-31-18
Wyoming	State Program	8	8TMS-L	01-28-19

Method Summary

Client: Tetra Tech, Inc.
Project/Site: WE04

TestAmerica Job ID: 320-42002-1

Method	Method Description	Protocol	Laboratory
537	Perfluorinated Alkyl Acids (LC/MS)	EPA	TAL SAC
537	Extraction of Perfluorinated Alkyl Acids	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: WE04

TestAmerica Job ID: 320-42002-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-42002-1	WGNA-080918-RW-3145	Water	08/09/18 07:25	08/10/18 09:50
320-42002-2	WGNA-080918-FRB-3145	Water	08/09/18 07:20	08/10/18 09:50
320-42002-3	WGNA-080918-RW-0683	Water	08/09/18 08:10	08/10/18 09:50
320-42002-4	WGNA-080918-FRB-0683	Water	08/09/18 08:05	08/10/18 09:50
320-42002-5	WGNA-080918-RW-0443	Water	08/09/18 08:40	08/10/18 09:50
320-42002-6	WGNA-080918-FRB-0443	Water	08/09/18 08:35	08/10/18 09:50
320-42002-7	NAWC-080918-RW-269	Water	08/09/18 09:10	08/10/18 09:50
320-42002-8	NAWC-080918-FRB-269	Water	08/09/18 09:05	08/10/18 09:50
320-42002-9	NAWC-080918-RW-117	Water	08/09/18 09:40	08/10/18 09:50
320-42002-10	NAWC-080918-FRB-117	Water	08/09/18 09:35	08/10/18 09:50
320-42002-11	WGNA-080918-RW-4846	Water	08/09/18 10:10	08/10/18 09:50
320-42002-12	WGNA-080918-FRB-4846	Water	08/09/18 10:05	08/10/18 09:50
320-42002-13	WGNA-080918-RW-4850	Water	08/09/18 11:10	08/10/18 09:50
320-42002-14	WGNA-080918-FRB-4850	Water	08/09/18 11:05	08/10/18 09:50
320-42002-15	WGNA-080918-RW-0626	Water	08/09/18 12:10	08/10/18 09:50
320-42002-16	WGNA-080918-FRB-0626	Water	08/09/18 12:05	08/10/18 09:50

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 240166

Lab Sample ID: IC 320-240166/2 Client Sample ID: _____

Date Analyzed: 08/15/18 18:21 Lab File ID: 2018.08.15_537CURVE_003.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.65	Baseline	roycea	08/15/18 18:53

Lab Sample ID: CCVL 320-240166/9 Client Sample ID: _____

Date Analyzed: 08/15/18 18:53 Lab File ID: 2018.08.15_537CURVE_010.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.65	Baseline	roycea	08/15/18 19:08

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 242153

Lab Sample ID: 320-42002-3 Client Sample ID: WGNA-080918-RW-0683

Date Analyzed: 08/27/18 00:07 Lab File ID: 2018.08.26_537C_012.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.07	Incomplete Integration	barnettj	08/27/18 14:36

Lab Sample ID: 320-42002-5 Client Sample ID: WGNA-080918-RW-0443

Date Analyzed: 08/27/18 00:16 Lab File ID: 2018.08.26_537C_014.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.81	Incomplete Integration	barnettj	08/27/18 14:36

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 242156

Lab Sample ID: 320-42002-11 Client Sample ID: WGNA-080918-RW-4846

Date Analyzed: 08/27/18 00:54 Lab File ID: 2018.08.26_537C_022.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.37	Missed Peak	barnettj	08/27/18 14:39
Perfluoroheptanoic acid (PFHpA)	1.63	Missed Peak	barnettj	08/27/18 14:39
Perfluorohexanesulfonic acid (PFHxS)	1.63	Missed Peak	barnettj	08/27/18 14:38
Perfluorooctanesulfonic acid (PFOS)	2.07	Peak assignment corrected	barnettj	08/27/18 14:38

Lab Sample ID: 320-42002-13 Client Sample ID: WGNA-080918-RW-4850

Date Analyzed: 08/27/18 01:03 Lab File ID: 2018.08.26_537C_024.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.81	Incomplete Integration	barnettj	08/27/18 14:40

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-42002-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-ICV_00032	08/15/18	06/23/18	MeOH/H2O, Lot 197626	10 mL	LC537-IS_00074	1000 uL	13C2-PFOA	10 ng/mL
.LC537-IS_00074	12/16/18	06/16/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	28.68 ng/mL
..LCM2PFOA_00010	02/12/21	Wellington Laboratories, Lot M2PFOA0216			LCMPFOS_00024	180 uL	13C4 PFOS	0.1 ug/mL
..LCMPFOS_00024	05/19/22	Wellington Laboratories, Lot MPFOS517			(Purchased Reagent)		13C2-PFOA	0.2868 ug/mL
LC537-ICV_00032	08/15/18	06/23/18	MeOH/H2O, Lot 197626	10 mL	LC537-SU_00072	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_00072	12/16/18	06/16/18	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.: 320-42002-1

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_00080	02/02/19	08/15/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00024	180 uL	13C4 PFOS	0.2868 ug/mL
.LCM2PFOA_00010	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LCMPFOS_00024	05/19/22	Wellington Laboratories, Lot MPFOS517			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-L1_00022	09/30/18	04/02/18	MeOH/H2O, Lot 090285	5 mL	LC537-IS_00065	500 uL	13C2-PFOA	10 ng/mL
					LC537-MSP_00033	60 uL	13C4 PFOS	28.68 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	
							Perfluoroheptanoic acid (PFHpA)	0.96 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	3.003 ng/mL
							Perfluorononanoic acid (PFNA)	1.98 ng/mL
							Perfluorooctanoic acid (PFOA)	1.98 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	3.95328 ng/mL
					LC537-SU_00064	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-IS_00065	10/02/18	04/02/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00024	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00010	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00024	05/19/22	Wellington Laboratories, Lot MPFOS517			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-MSP_00033	09/30/18	03/30/18	Methanol, Lot 104453	30 mL	LCPFBSA_00002	509 uL	Perfluorobutanesulfonic acid (PFBS)	749.927 ng/mL
					LCPFHpA_00009	48 uL	Perfluoroheptanoic acid (PFHpA)	80 ng/mL
					LCPFHxS-br_00005	165 uL	Perfluorohexanesulfonic acid (PFHxS)	250.25 ng/mL
					LCPFNA_00009	99 uL	Perfluorononanoic acid (PFNA)	165 ng/mL
					LCPFOA_00010	99 uL	Perfluorooctanoic acid (PFOA)	165 ng/mL
					LCPFOS-br_00005	213 uL	Perfluorooctanesulfonic acid (PFOS)	329.44 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-42002-1

SDG No.: _____

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-42002-1

SDG No.: _____

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-42002-1

SDG No.: _____

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-42002-1

SDG No.: _____

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-42002-1

SDG No.: _____

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1

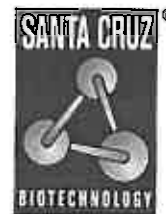
SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFOS-br_00005	01/12/22		Wellington Laboratories, Lot brPFOSK0117		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
LC537-SU_00077	01/05/19	08/15/18	Methanol, Lot 104453	30000 uL	LCMPFDA 00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA 00015	60 uL	13C2 PFHxA	0.1 ug/mL
.LCMPFDA 00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFHxA 00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL

Reagent

LC537_PFB2_00002

P: 6.8.17 SW



CERTIFICATE OF ANALYSIS

The Power to Question

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

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

Reagent

LC537_PFHpA2_00002

Certificate of analysis

R: 6.13.17 SW

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

PFHpA

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

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Reagent

LC537_PFHxS2_00002

n: 6-E-17SKV

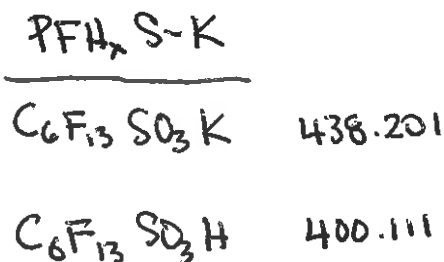


The Future is Custom

CERTIFICATE OF ANALYSIS

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

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



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

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

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

Reagent

LC537_PFN2_00002

P: 6.14.17 SKW

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

Certificate of Analysis

Product Name:
Perfluorononanoic acid - 97%

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



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

Michael Grady, Manager
Quality Control
Milwaukee, WI US

PFNA

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

Reagent

LC537_PFOA2_00002

Certificate of analysis

P: 6/9/17 SW

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

PFOA

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

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

Order our products online www.alfa.com

ThermoFisher
SCIENTIFIC

Reagent

LC537_PFOs2_00002

N: 6.14.17 SKV

Certificate of Analysis

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

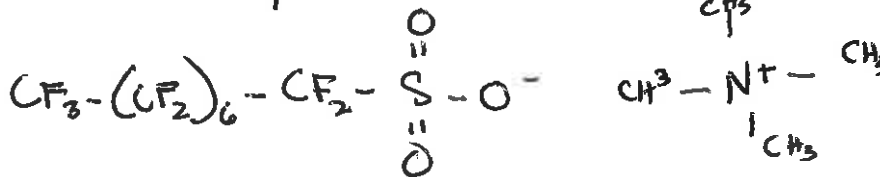
TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE TO OFF WHITE	OFF-WHITE
APPEARANCE (FORM)	POWDER OR POWDER WITH CHUNK(S)	POWDER
CARBON CONTENT	29.77 % - 31.29 %	29.97 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS

Claudia Geitner

Dr. Claudia Geitner
 Manager Quality Control
 Buchs, Switzerland

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

Purity & MW correction = 77.87%



	$C_{17}F_{17}SO_3 + H$	$C_8H_{20}N$
C = 12.011	96.088	96.088
F = 18.998	322.966	—
S = 32.066	32.066	—
O = 16.999	47.997	—
H = 1.008	1.008	20.460
N = 14.007	—	14.007
	<hr/>	<hr/>
	500.125	130.255

Reagent

LCM2PFOA_00010

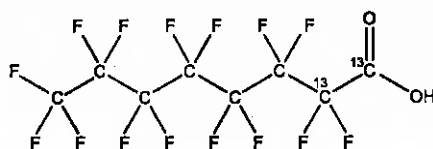


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈HF₁₆O₂
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:

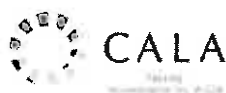
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

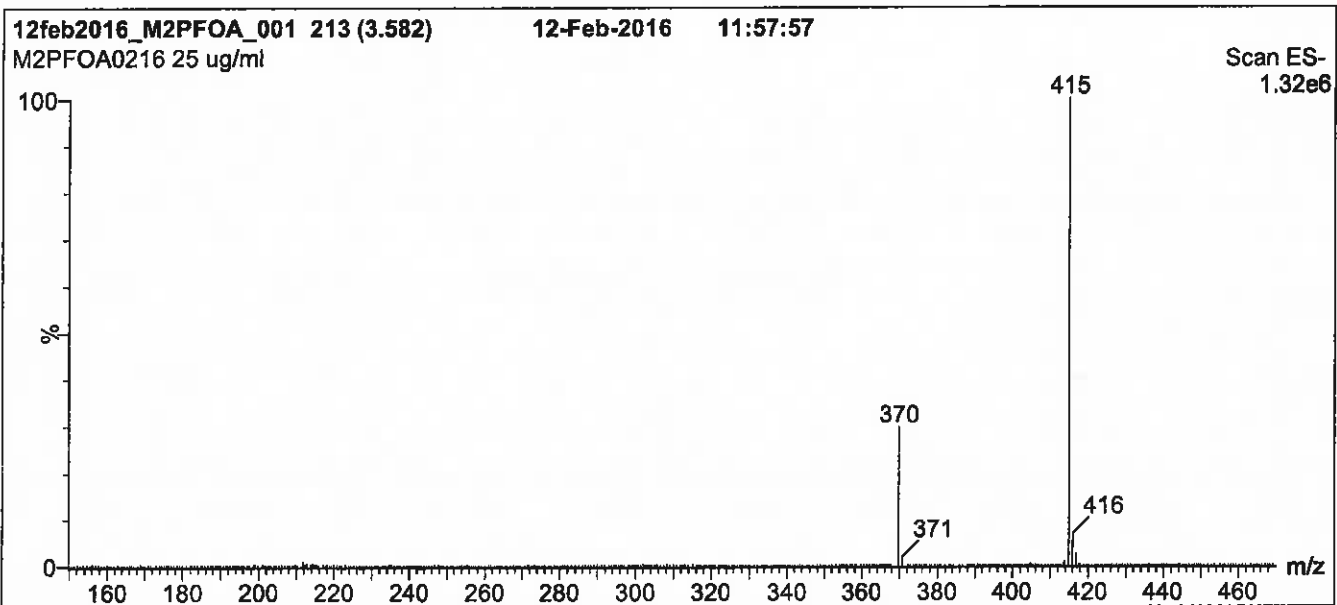
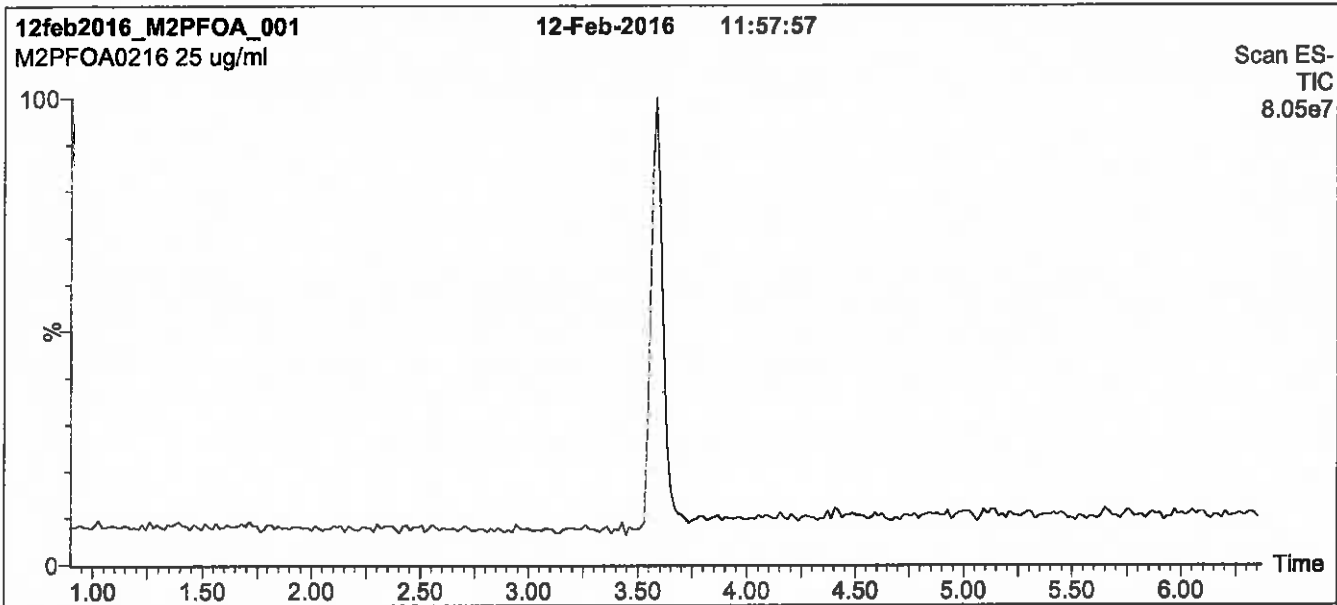
QUALITY MANAGEMENT:

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

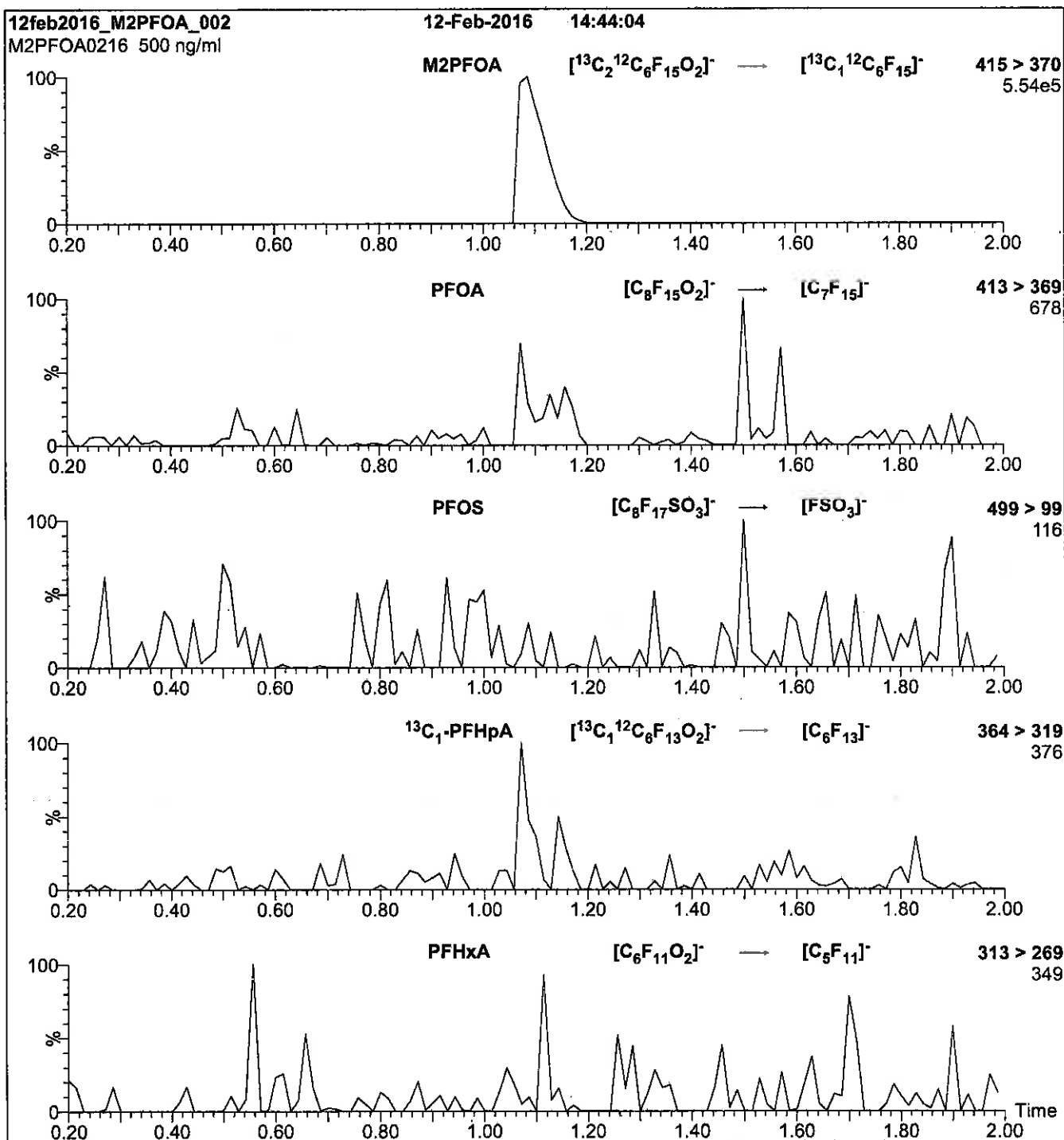
Flow: 300 μ l/min

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% H_2O

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

MS Parameters

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

Reagent

LCMPFDA_00012

R: SBC 12/21/16



814255

ID: LCMFDA_00012

Exp: 09/30/21 Prpd: SBC

13C2-Perfluorodecanoic a

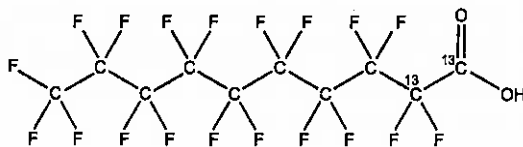


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE:
CAS #: Not available



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

MOLECULAR WEIGHT: 516.07
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/30/2016
EXPIRY DATE: (mm/dd/yyyy) 09/30/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chrftim
Date: 10/07/2016
(mm/dd/yyyy)

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

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.

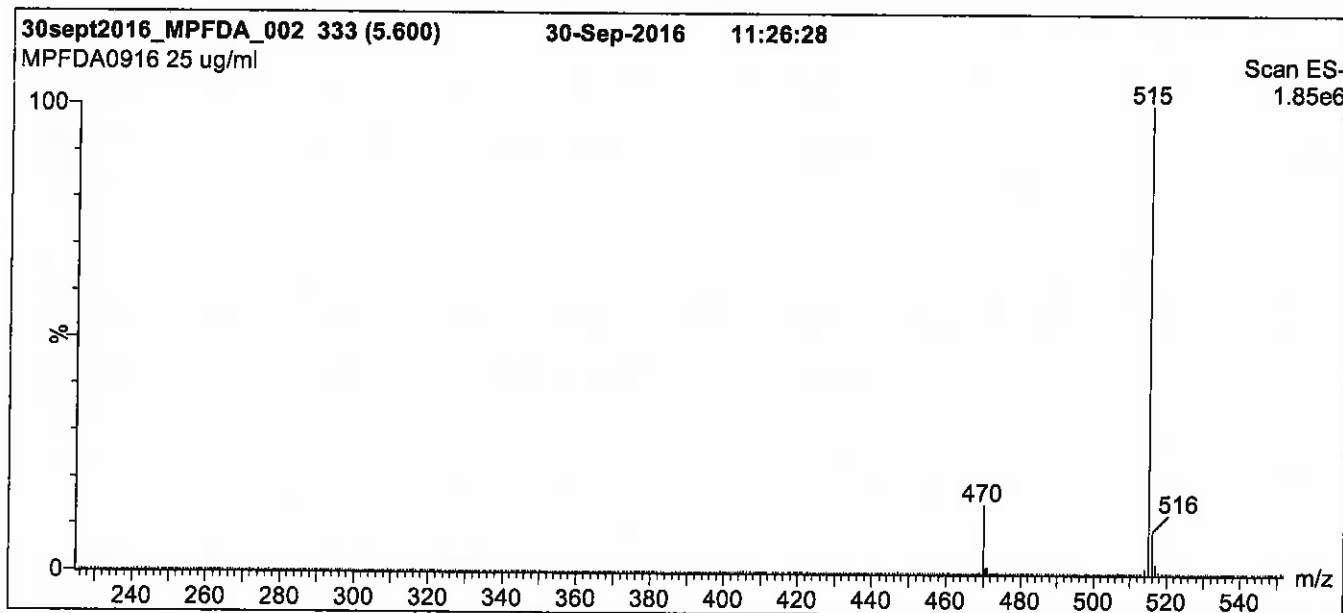
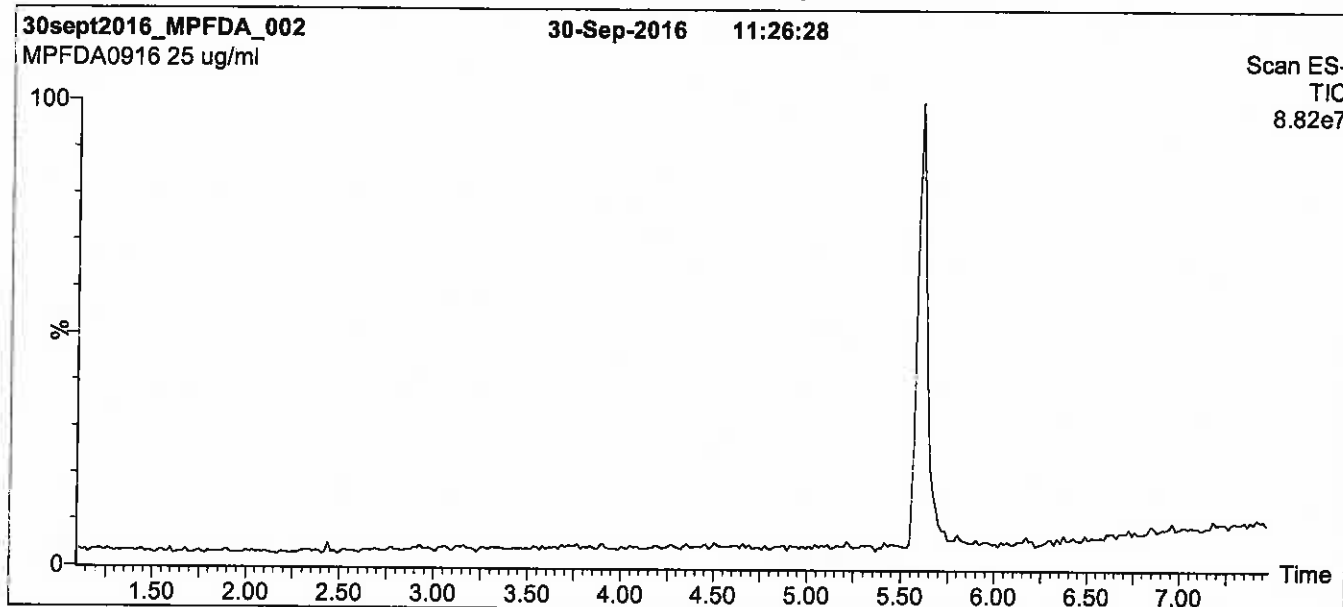
QUALITY MANAGEMENT:

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

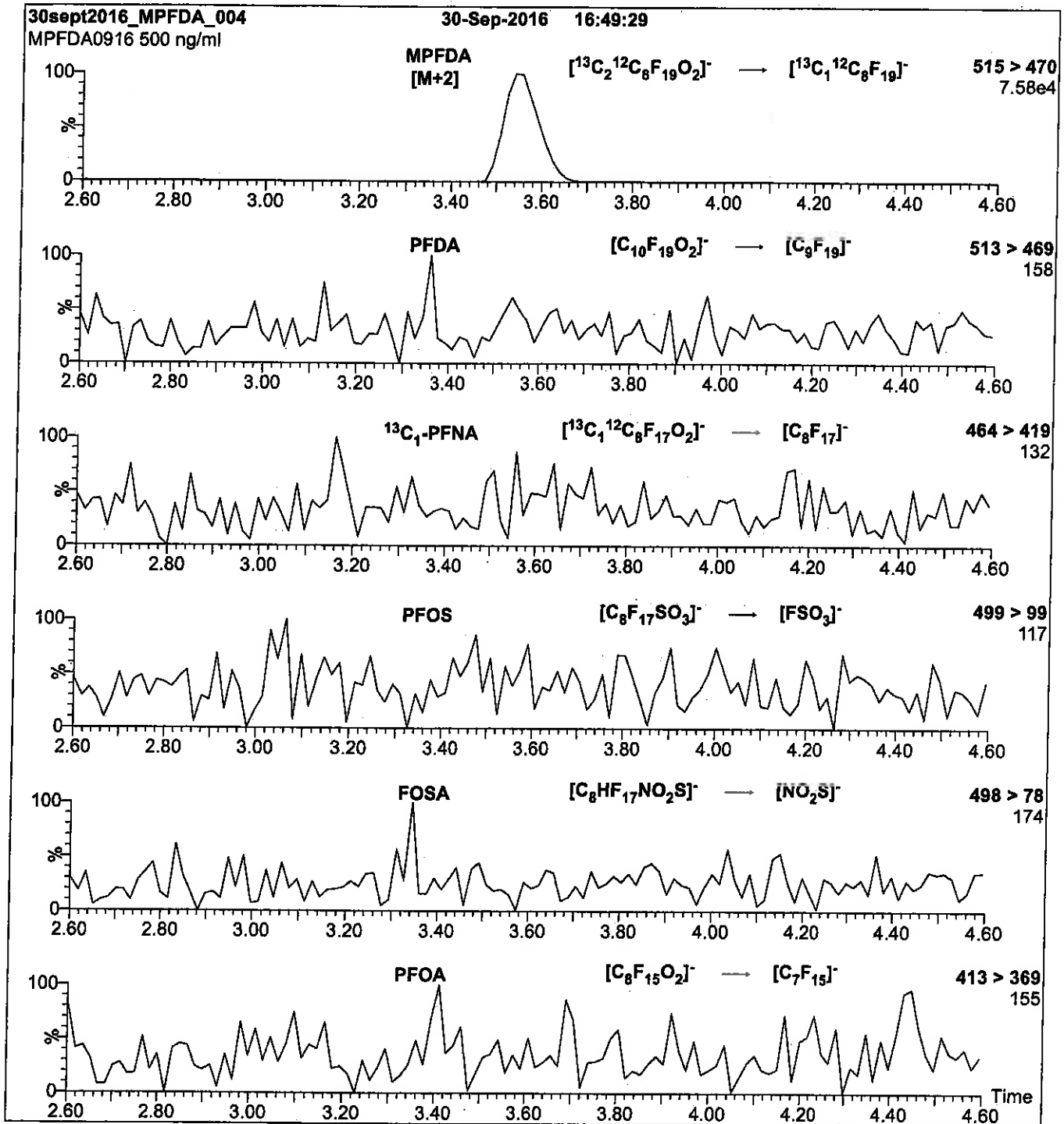
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

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: 5/17/17 SKJ

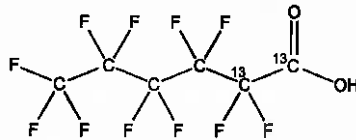


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE: **CAS #:** Not available



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


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 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:

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HAZARDS:

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

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EXPIRY DATE / PERIOD OF VALIDITY:

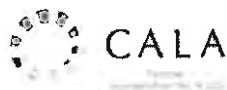
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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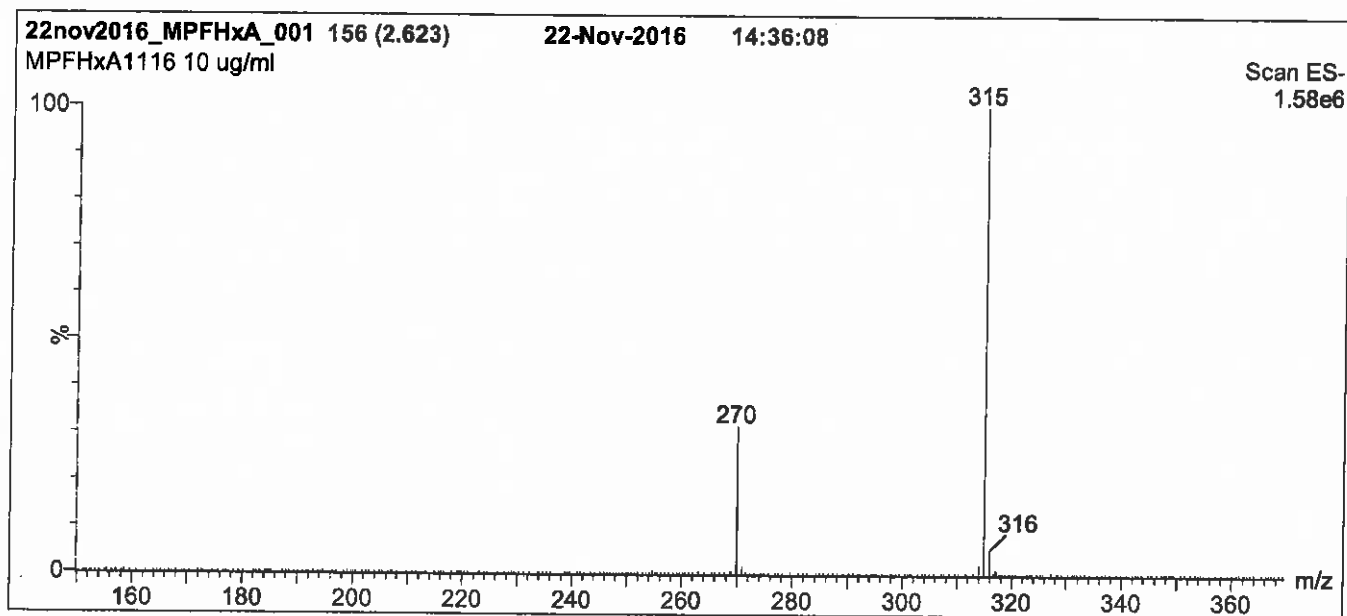
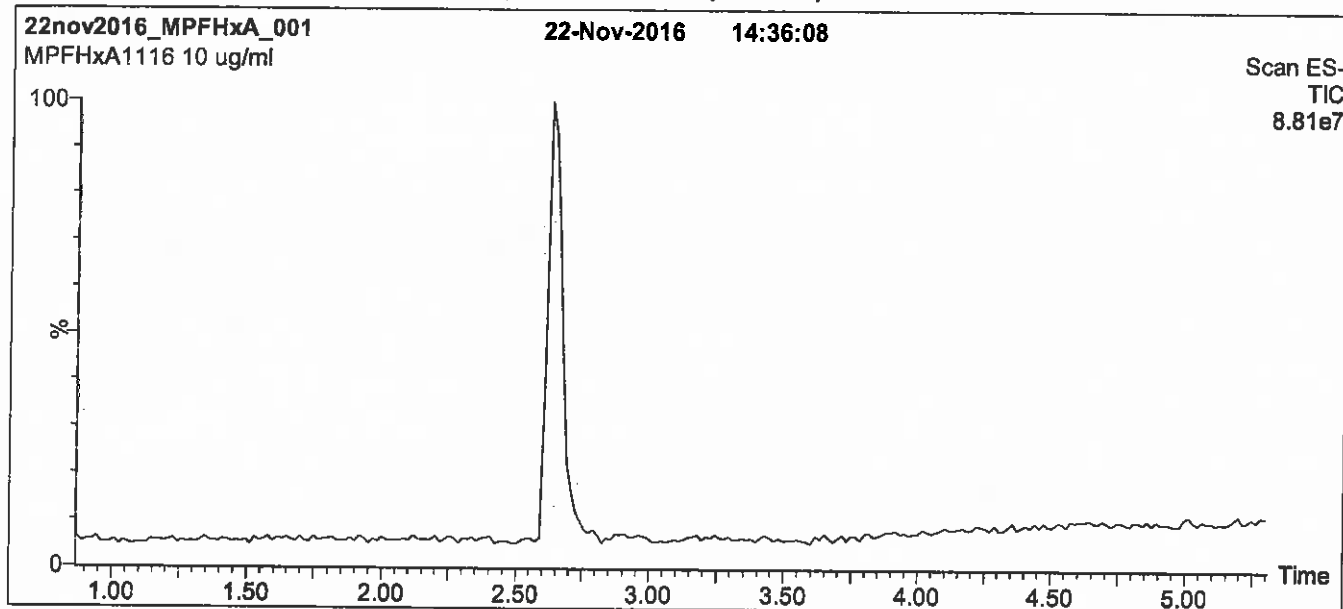
QUALITY MANAGEMENT:

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



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



Conditions for Figure 1:

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

Chromatographic Conditions

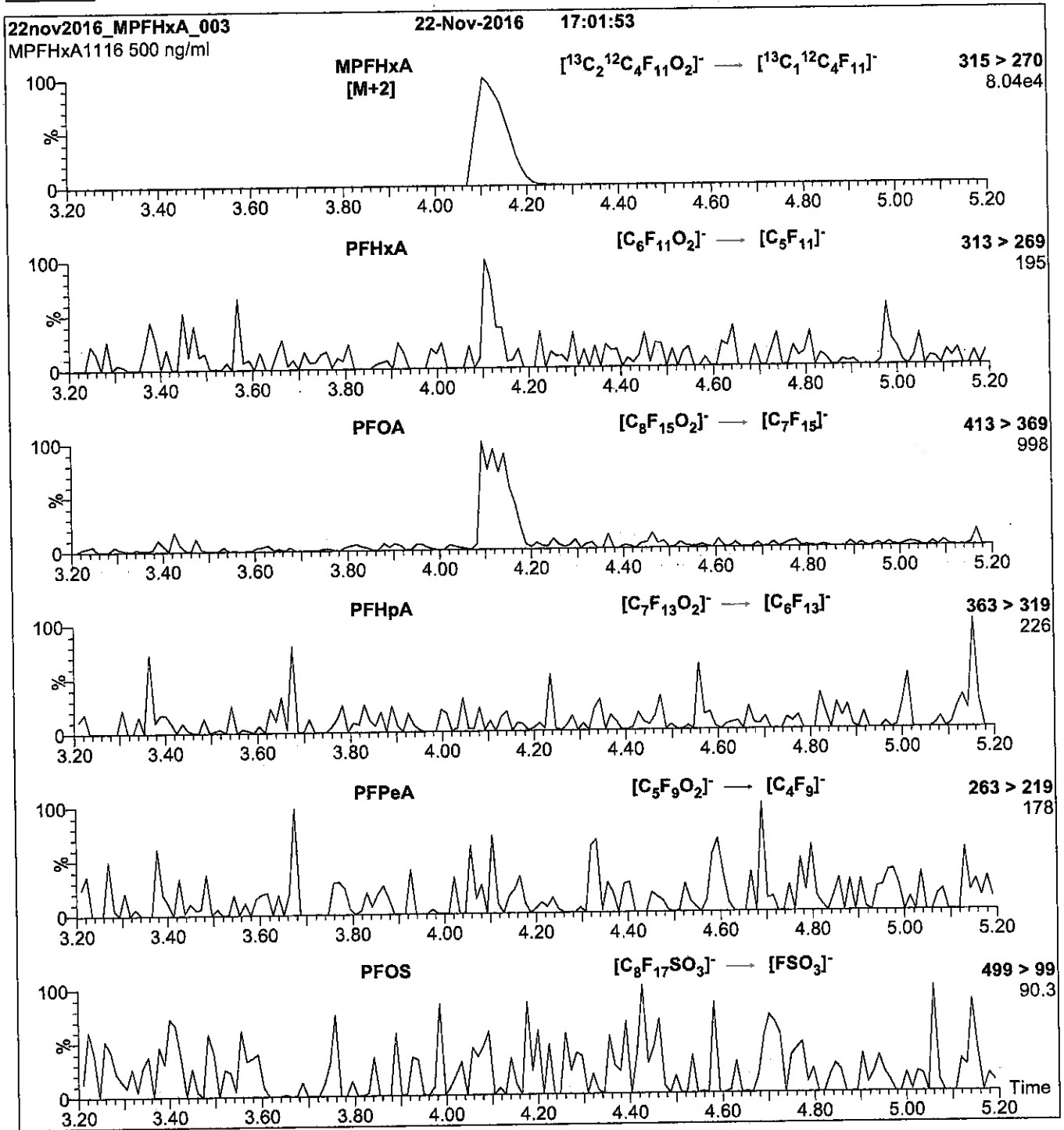
Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions over 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

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

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



Conditions for Figure 2:

Injection: Direct loop injection
 10 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) = 3.46e-3
 Collision Energy (eV) = 10

Reagent

LCMPFOS_00024

r: 8/2/17 SKJ

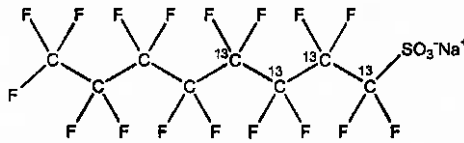


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0517
COMPOUND: Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	¹³ C ₄ ¹² C ₄ F ₁₇ SO ₃ Na	MOLECULAR WEIGHT:	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	SOLVENT(S):	Methanol
CHEMICAL PURITY:	>98%	ISOTOPIC PURITY:	≥99% ¹³ C (1,2,3,4- ¹³ C ₄)
LAST TESTED: (mm/dd/yyyy)	05/19/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/19/2022		
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:** 05/30/2017
 B.G. Chittim, General Manager (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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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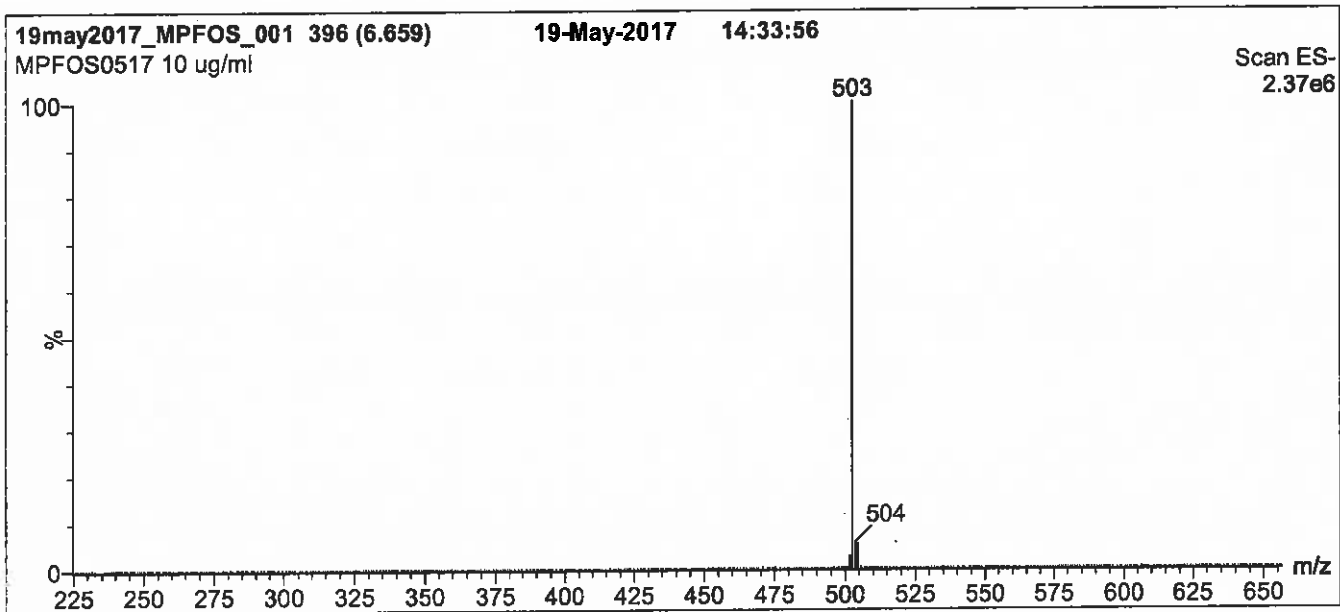
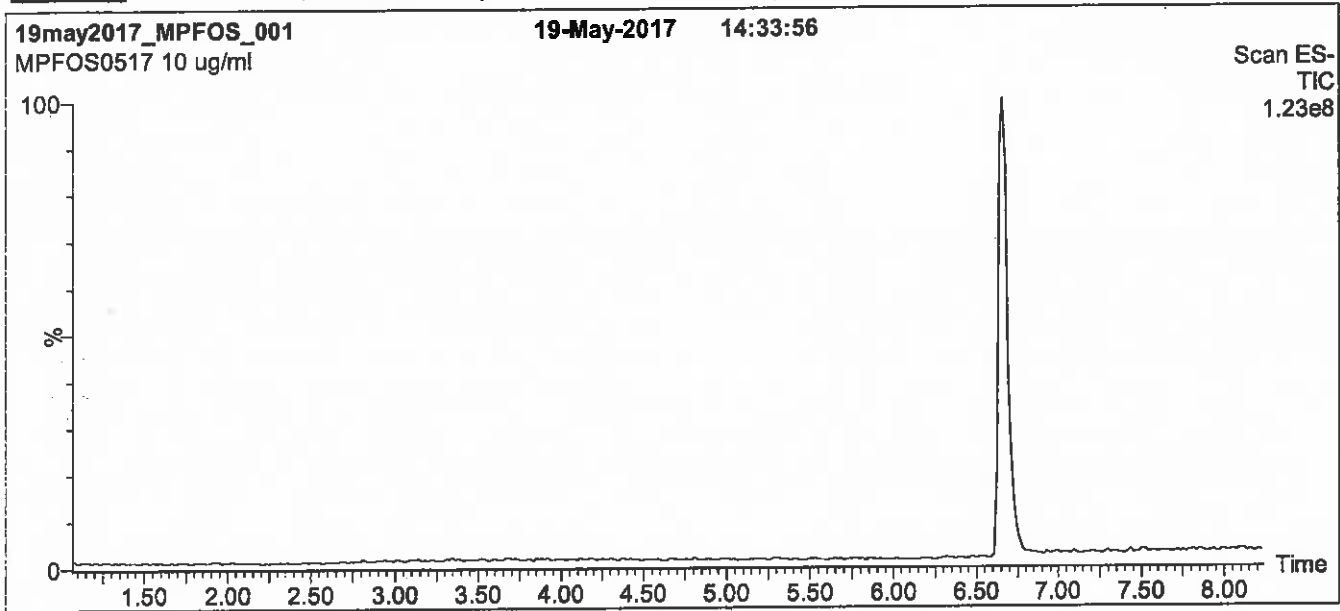
QUALITY MANAGEMENT:

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



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Figure 1: 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 μm, 2.1 x 100 mm

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

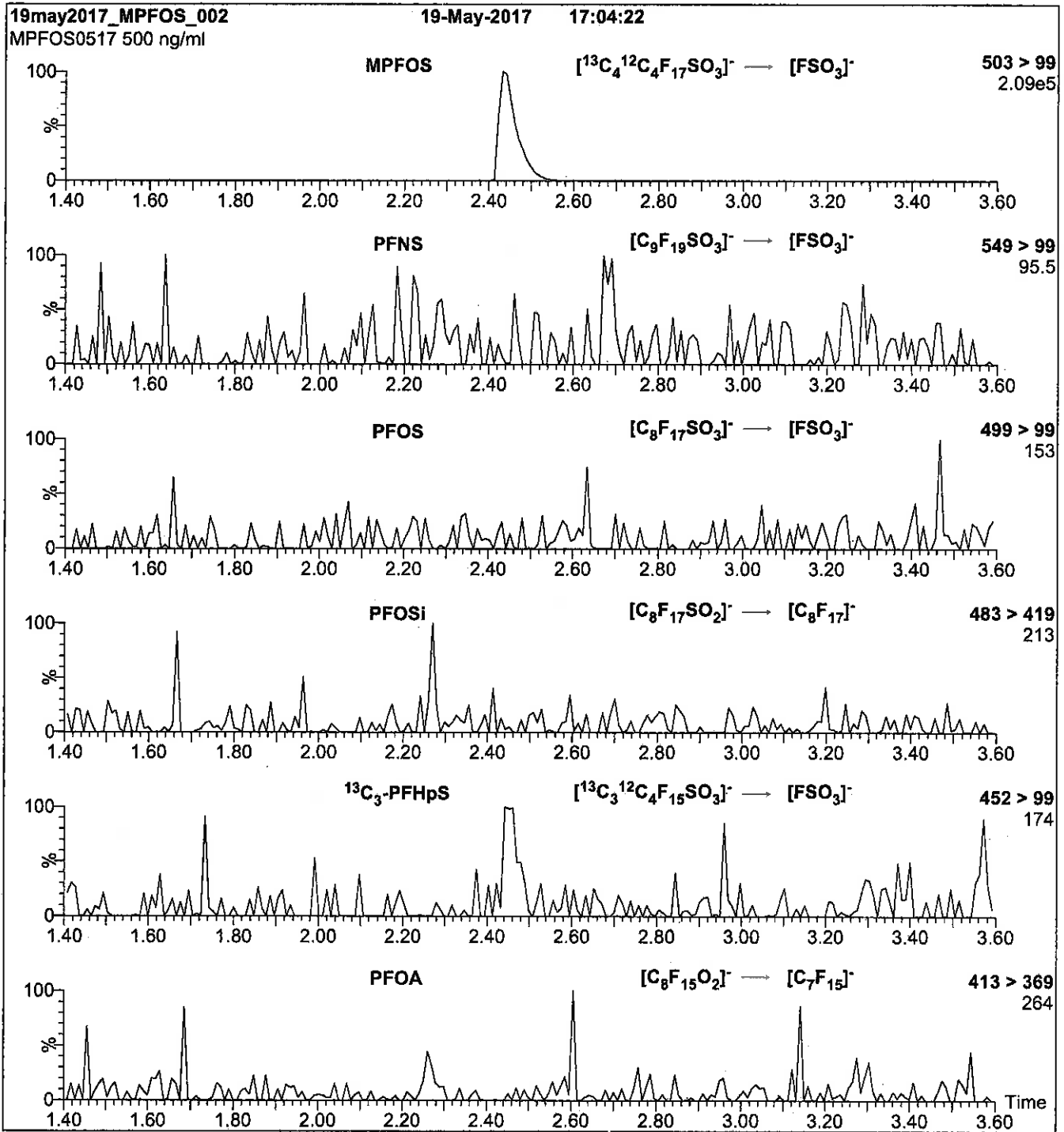
Flow: 300 μl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

Reagent

LCPFBSA_00002

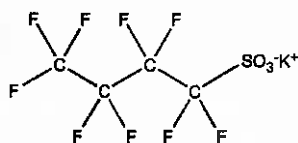
n: 12/17 SKW



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFBS **LOT NUMBER:** LPFBS1116
COMPOUND: Potassium perfluoro-1-butanesulfonate
STRUCTURE: **CAS #:** 29420-49-3



MOLECULAR FORMULA: C₄F₉SO₃K **MOLECULAR WEIGHT:** 338.19
CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt) **SOLVENT(S):** Methanol
44.2 ± 2.2 µg/ml (PFBS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/02/2016
EXPIRY DATE: (mm/dd/yyyy) 12/02/2021
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 12/05/2016
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:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

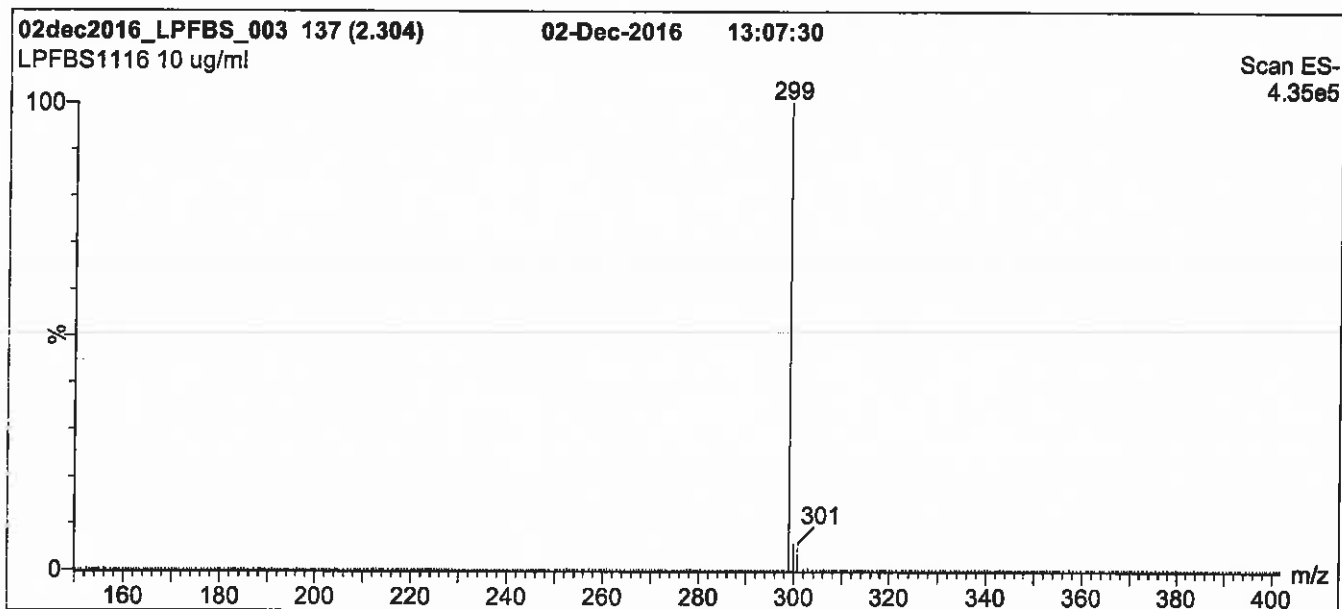
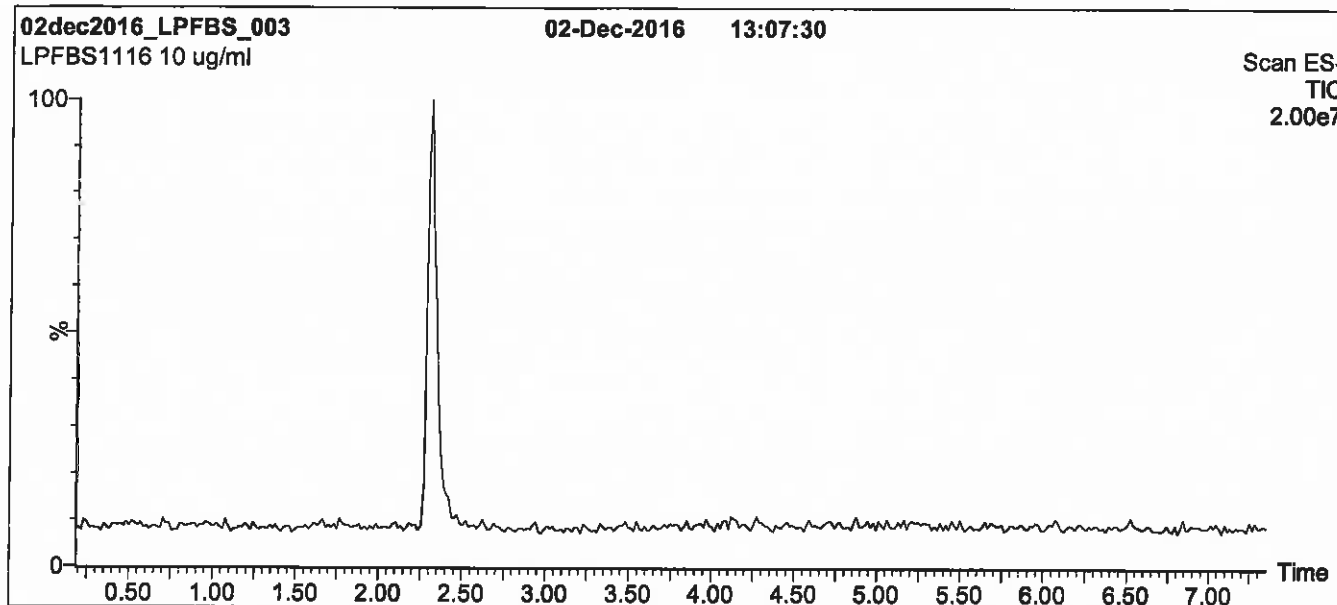
QUALITY MANAGEMENT:

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



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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

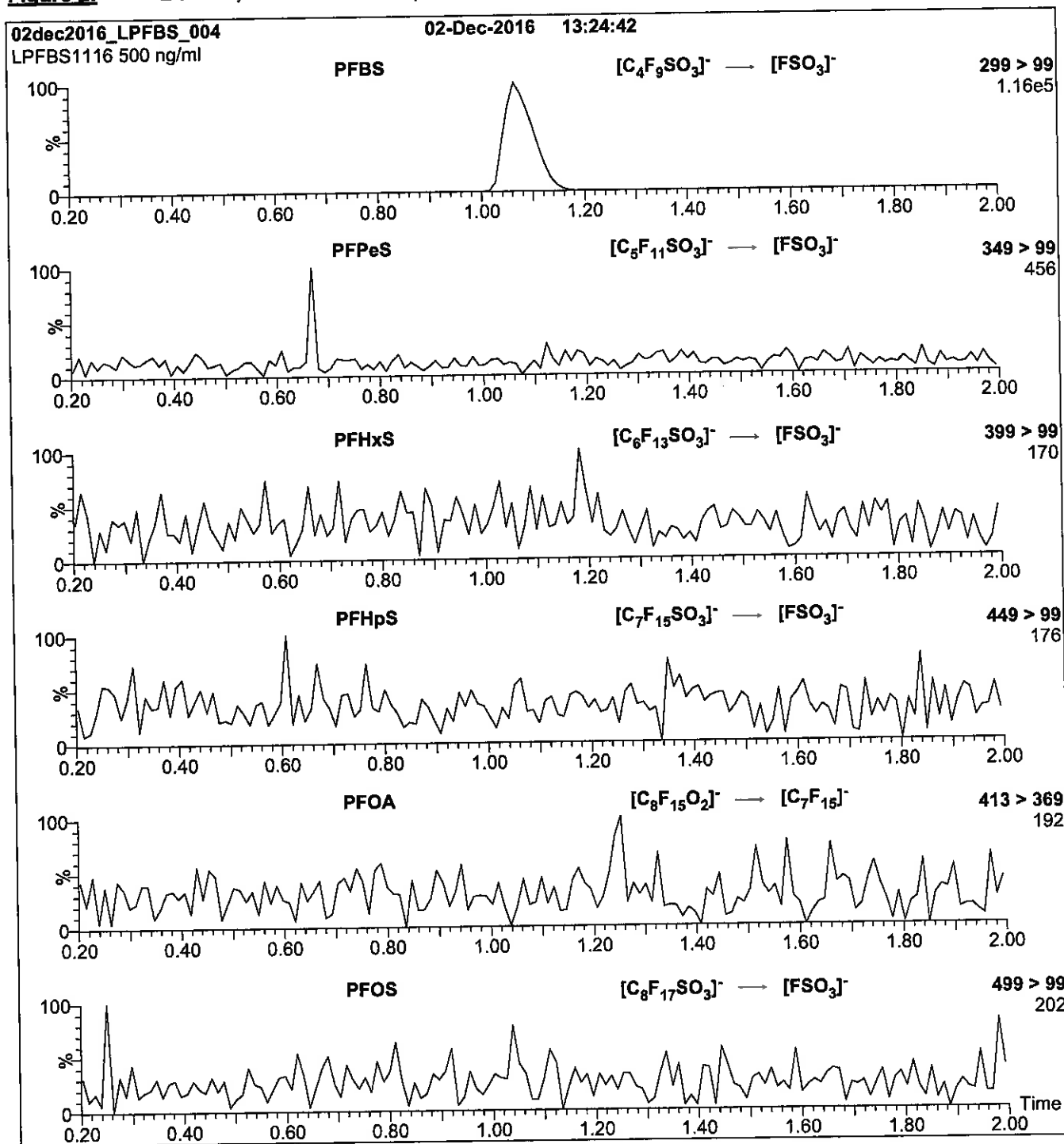
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFHpA_00009

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

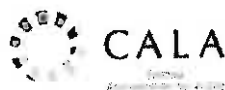
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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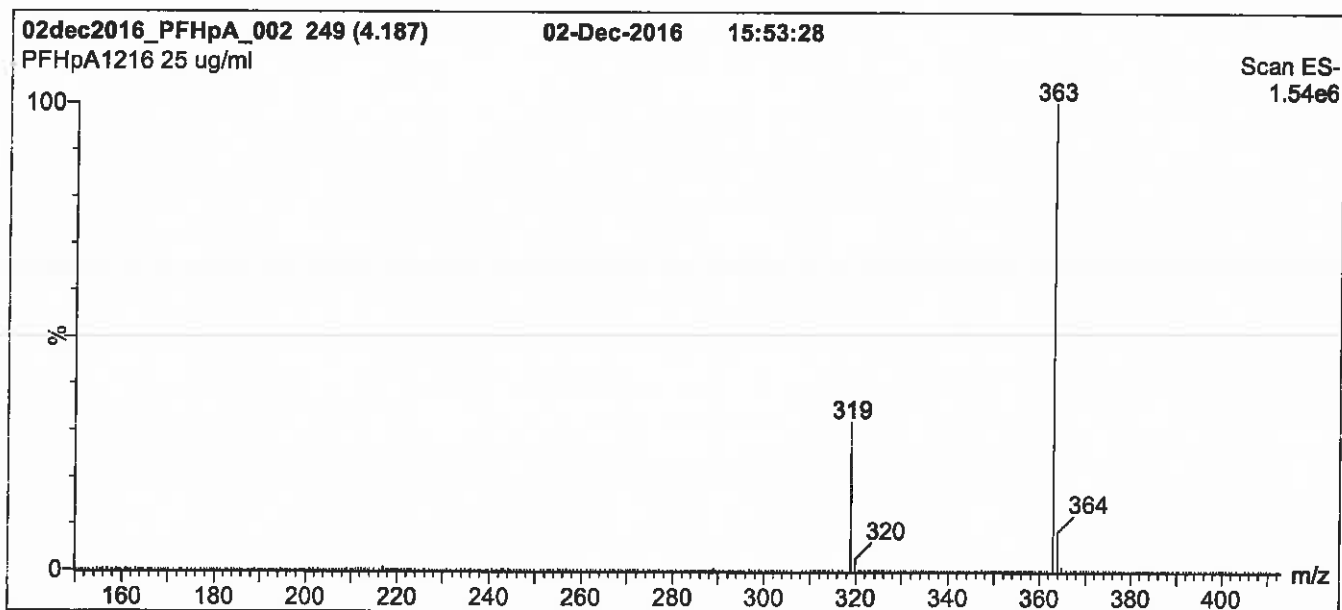
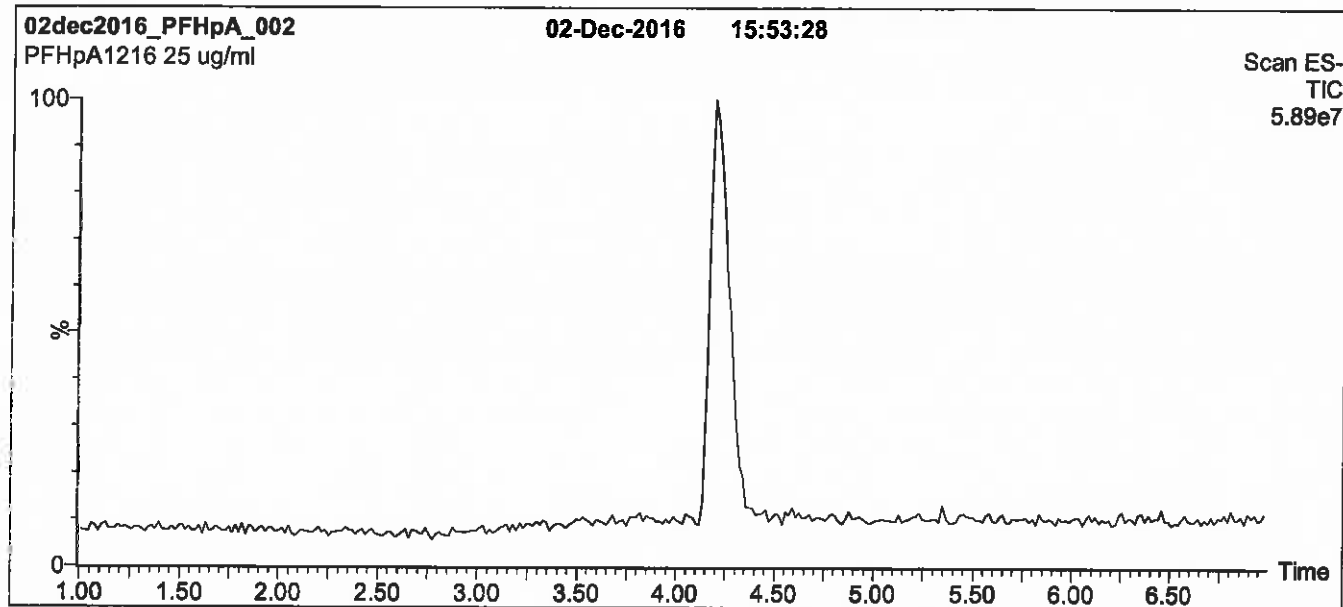
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

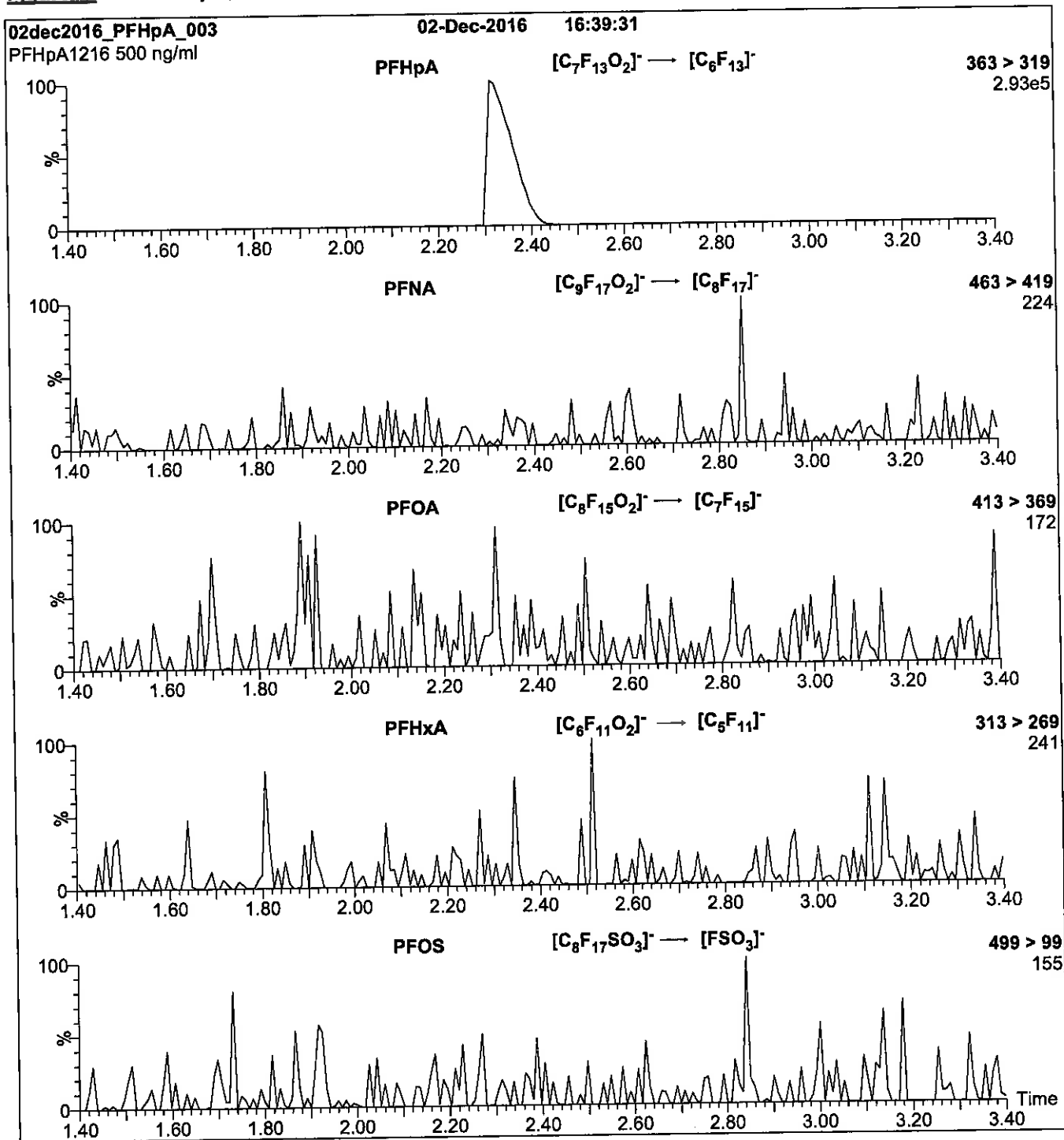
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFHxS-br_00005

P: 10/2017 SKV



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate
Solution/Mixture of Linear and
Branched Isomers

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

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

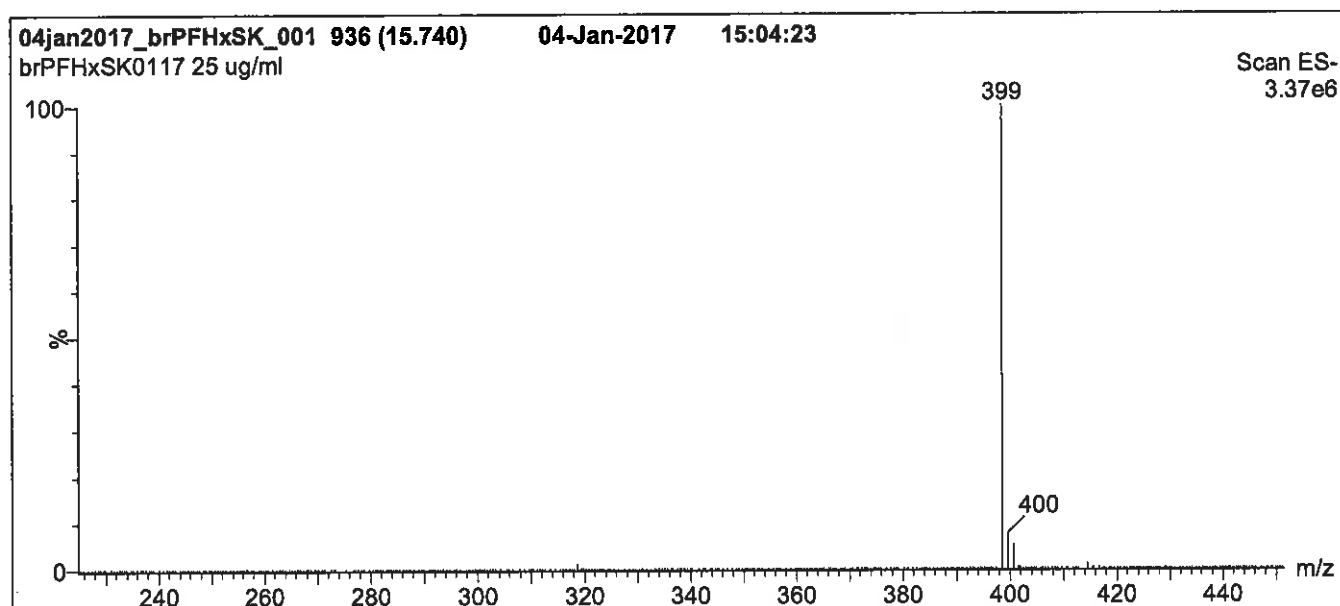
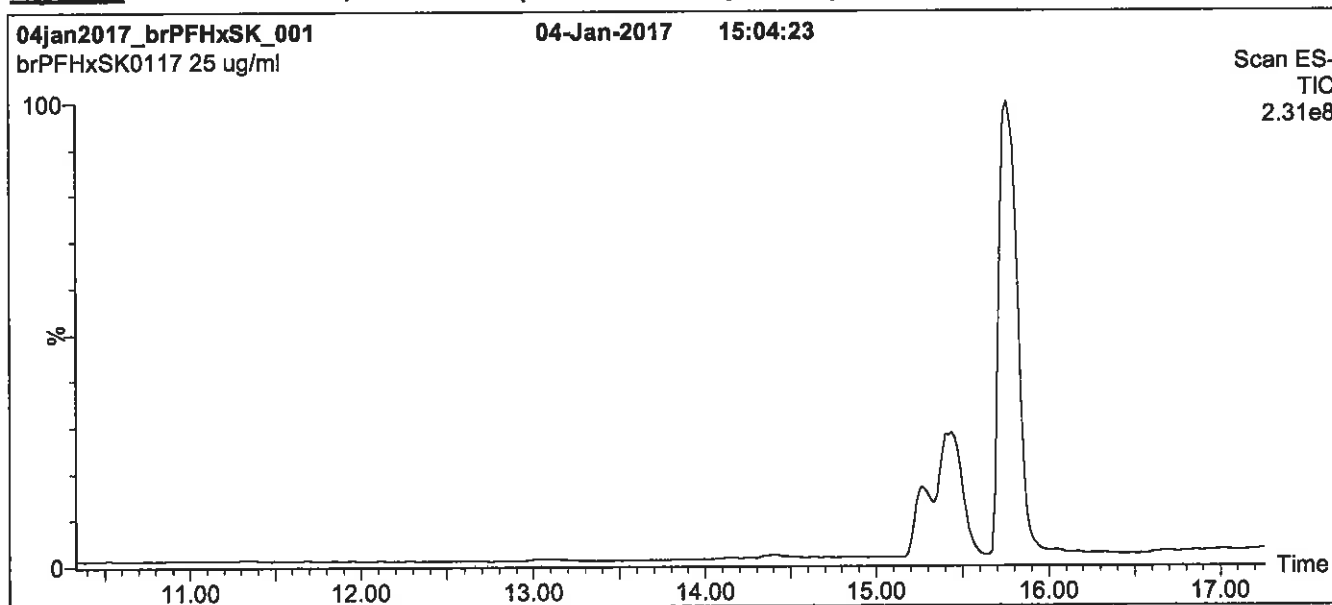
Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	Potassium perfluoro-1-hexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}(\text{SO}_3^-\text{K}^+) \\ \\ \text{CF}_3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

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

Certified By: 
 B.G. Chittim

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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

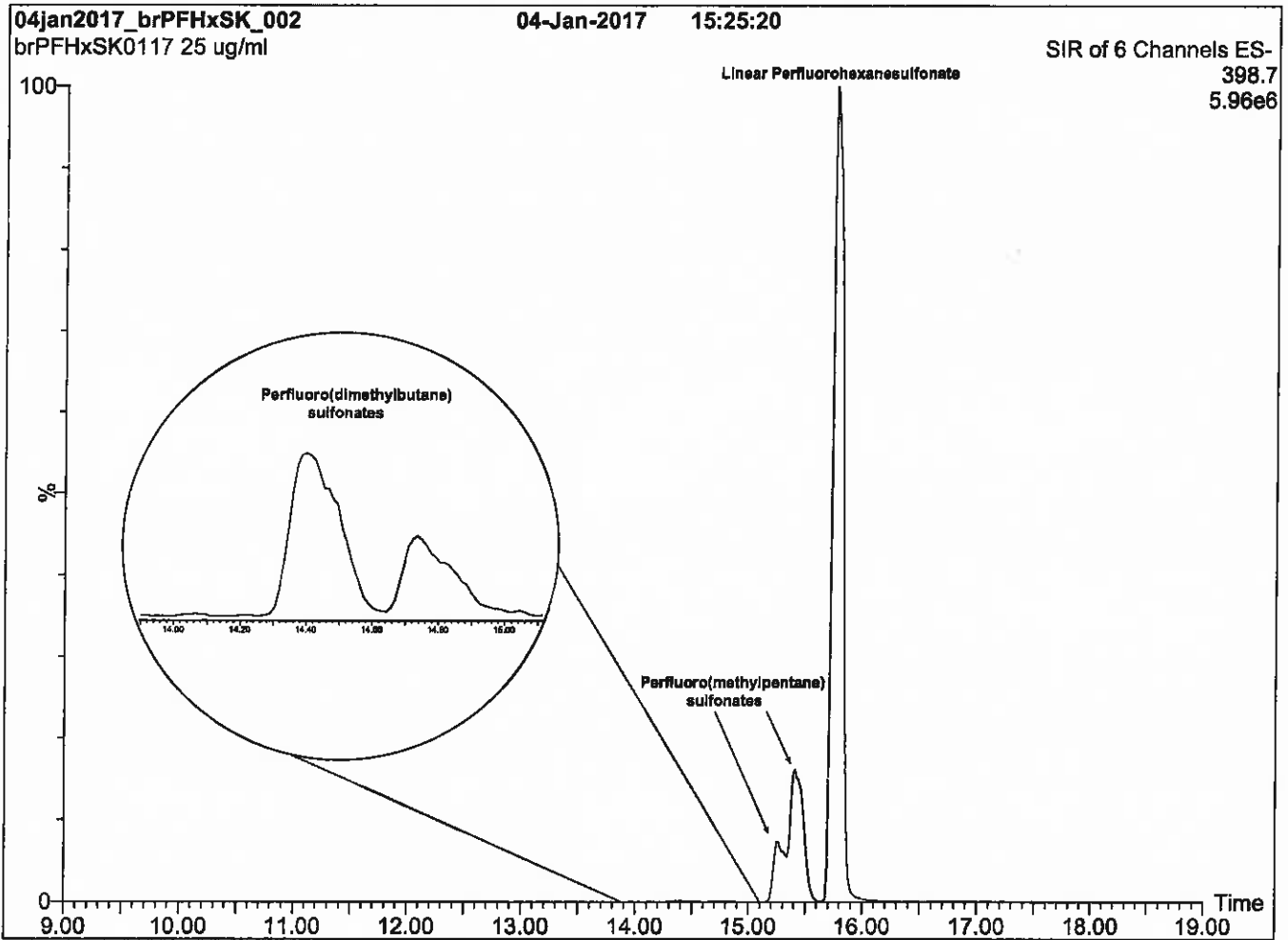
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

Chromatographic Conditions

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

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

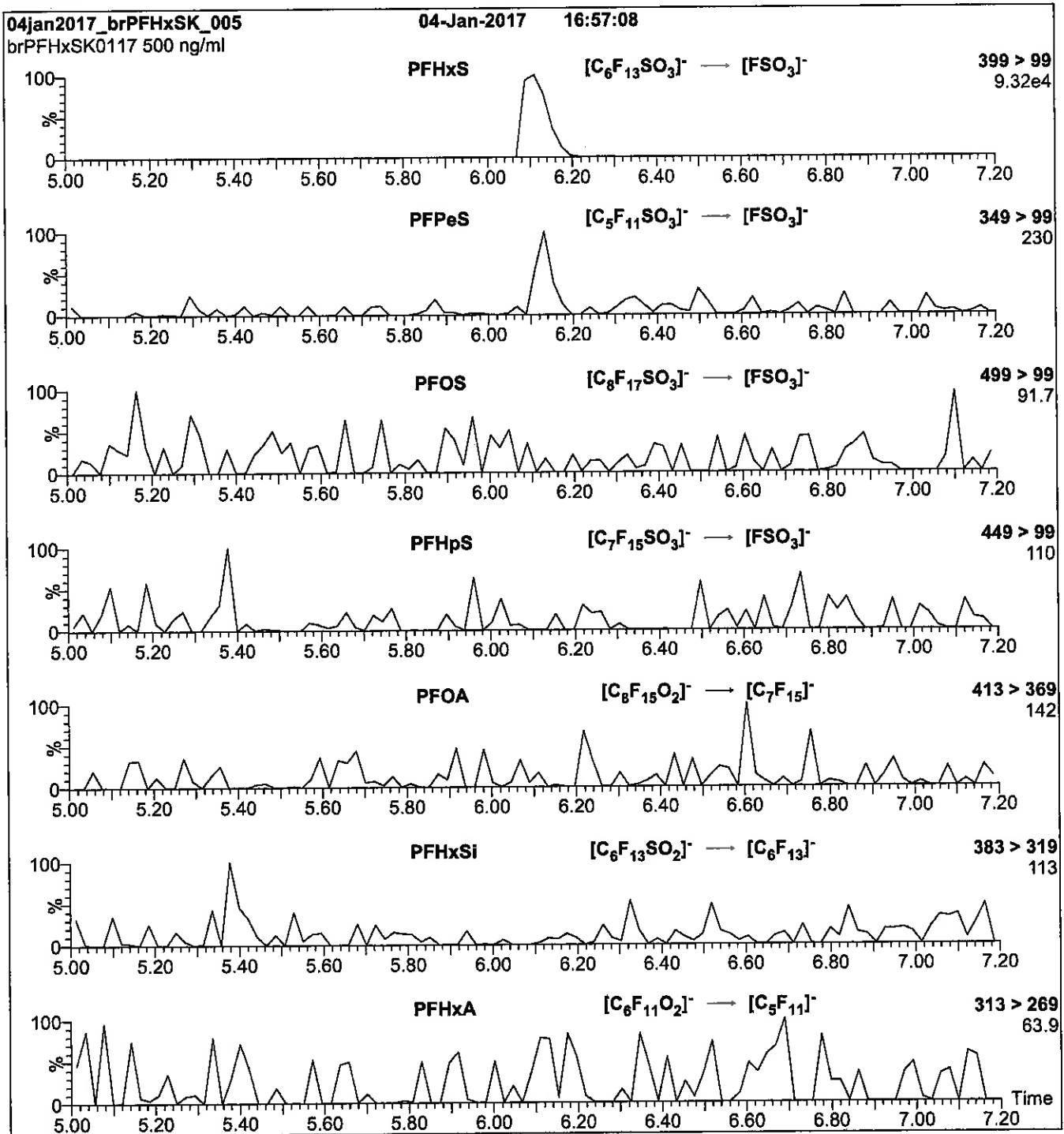
Flow: 300 μ l/min

MS Parameters

Experiment: SIR (6 channels)

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

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



Conditions for Figure 3:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFNA_00009

r: 9/2/17 skv

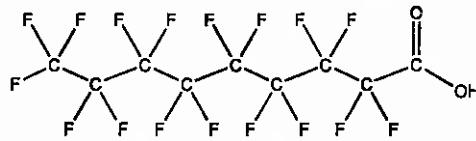


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFNA **LOT NUMBER:** PFNA0717
COMPOUND: Perfluoro-n-nonanoic acid

STRUCTURE: **CAS #:** 375-95-1



MOLECULAR FORMULA: $C_9HF_{17}O_2$ **MOLECULAR WEIGHT:** 464.08
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/20/2017
EXPIRY DATE: (mm/dd/yyyy) 07/20/2022
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-octanoic acid (PFOA), < 0.1% of perfluoro-n-heptanoic acid (PFHpA), and < 0.1% of perfluoro-n-undecanoic acid (PFUdA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 07/24/2017
B.G. Chittim, General Manager (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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

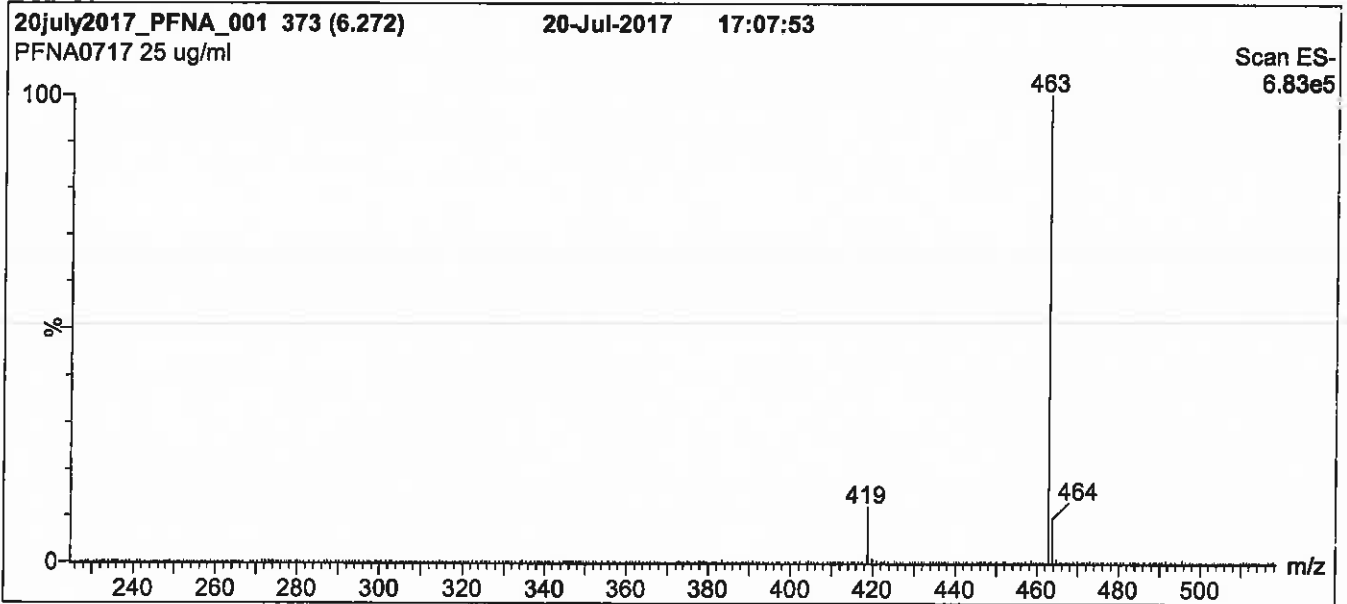
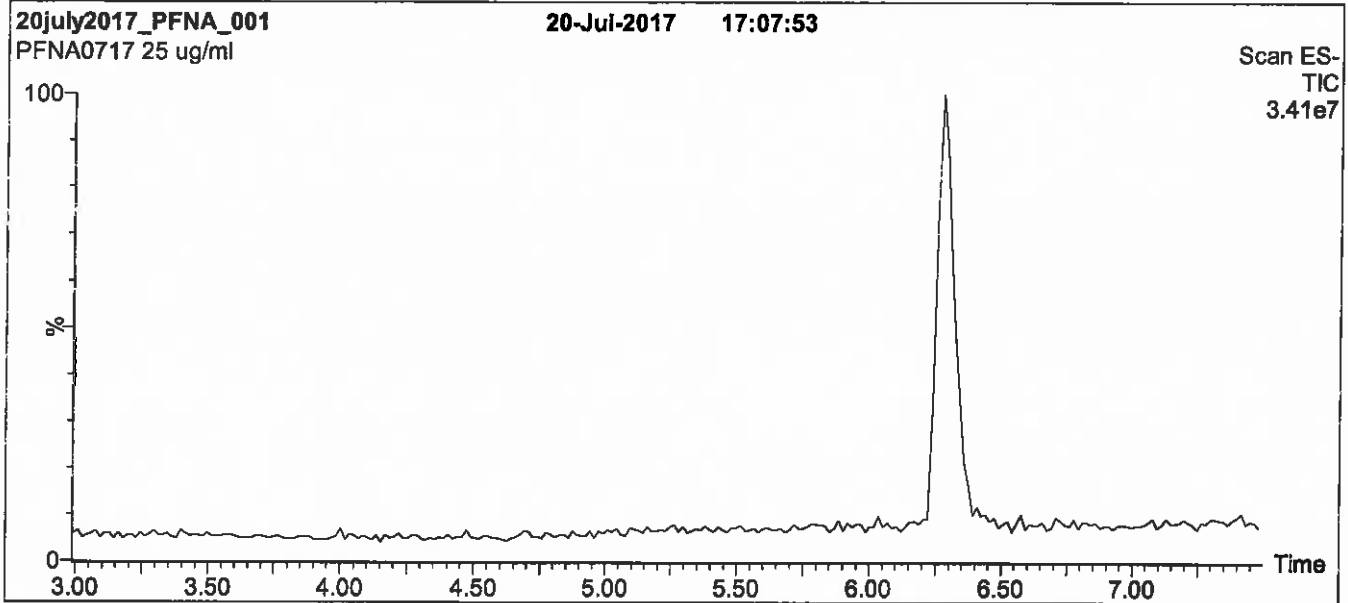
QUALITY MANAGEMENT:

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



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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

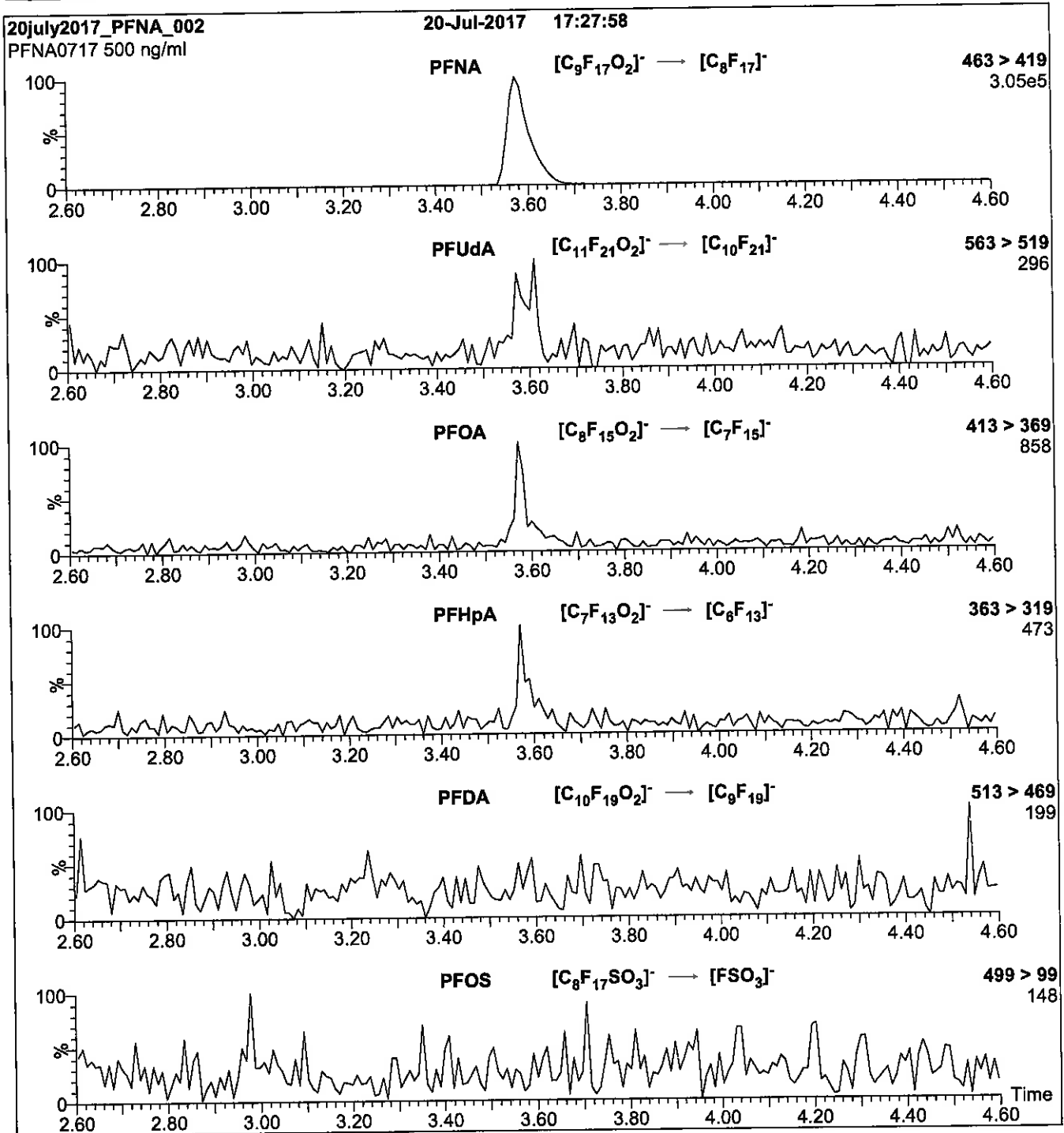
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFOA_00010

P: 10/2017 SKV



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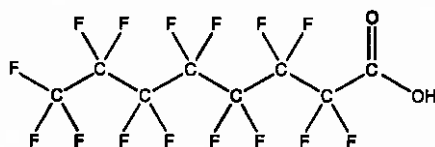
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFOA
COMPOUND: Perfluoro-n-octanoic acid

LOT NUMBER: PFOA0917

STRUCTURE:

CAS #: 335-67-1



MOLECULAR FORMULA: $C_8HF_{15}O_2$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$

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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 09/28/2017
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

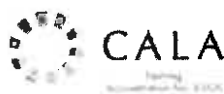
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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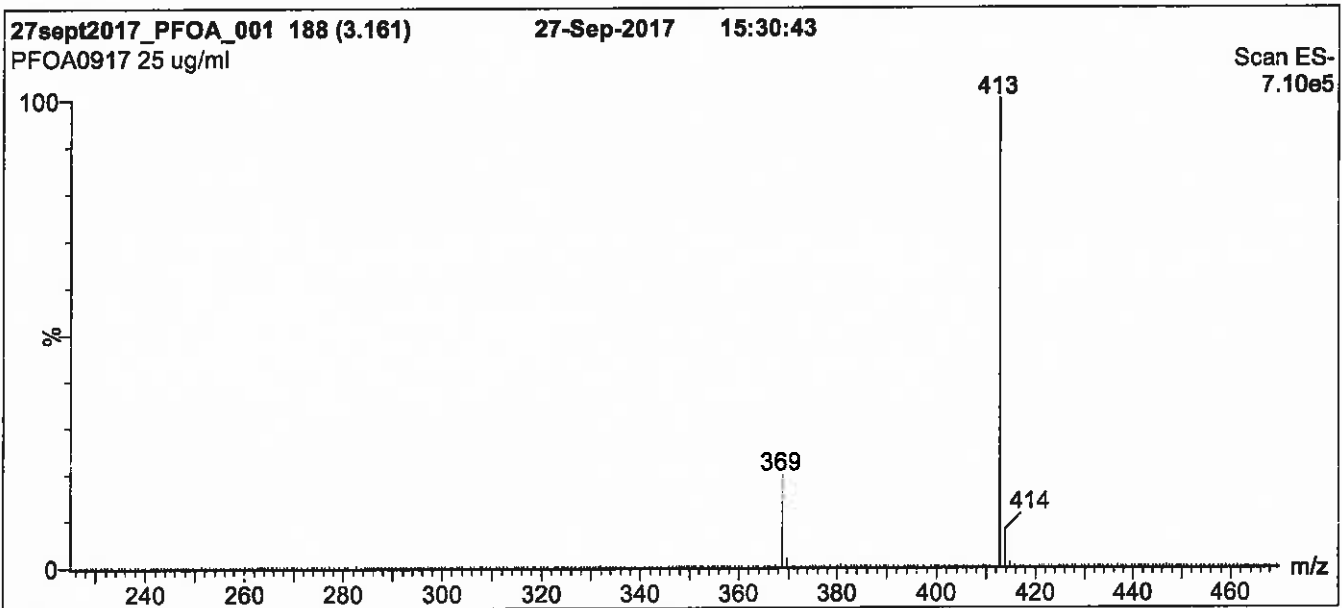
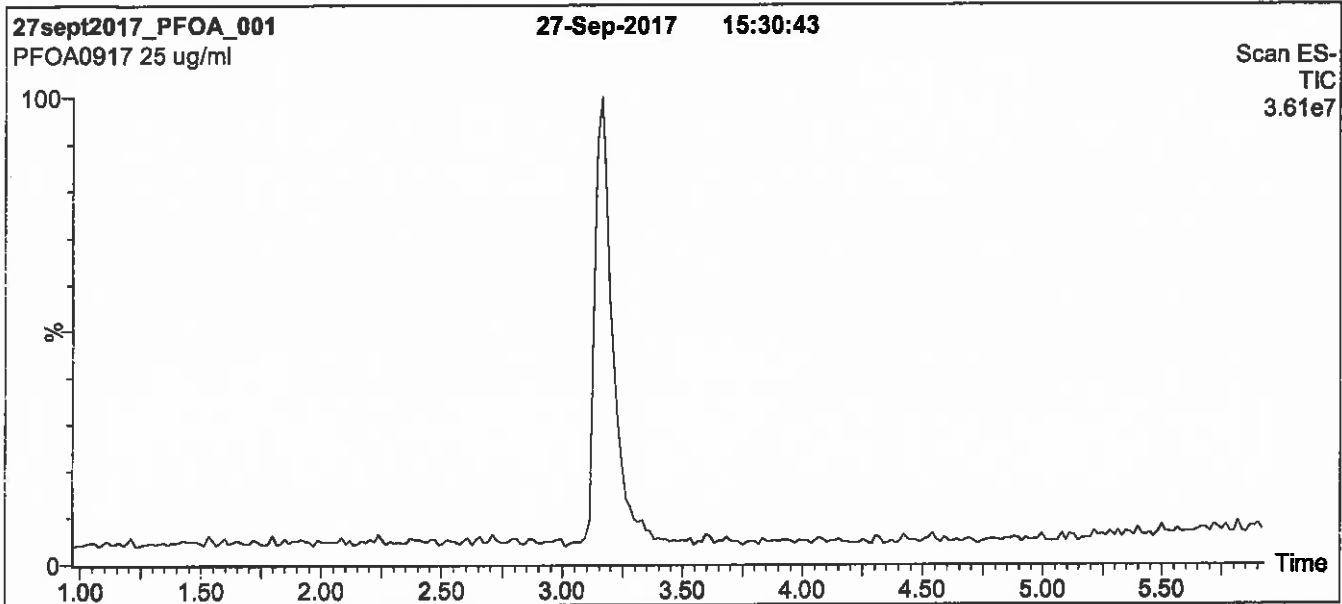
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

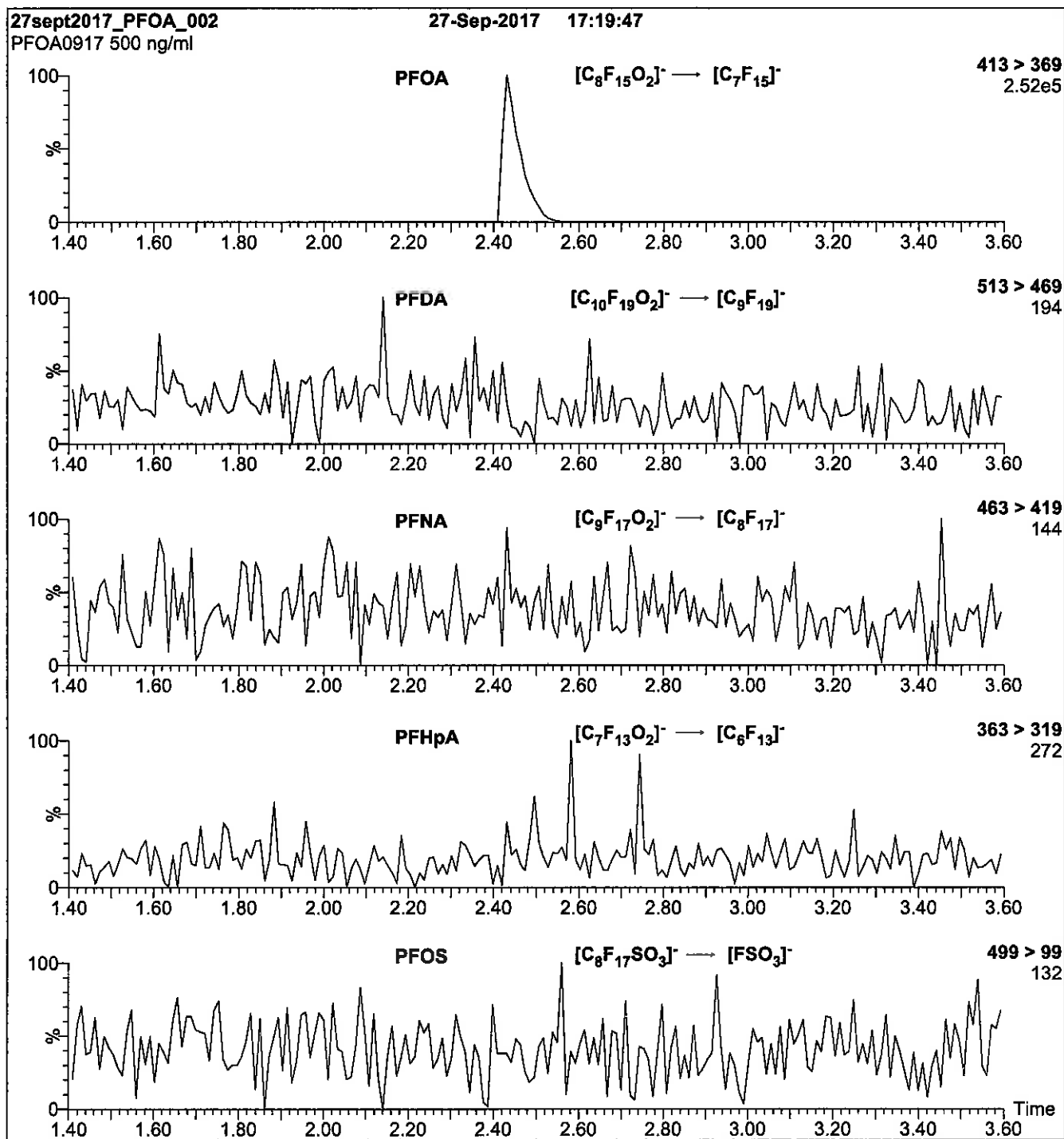
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFOS-br_00005

P: 10/2017 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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INTENDED USE:

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HAZARDS:

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HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

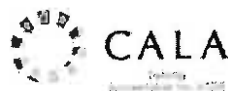
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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

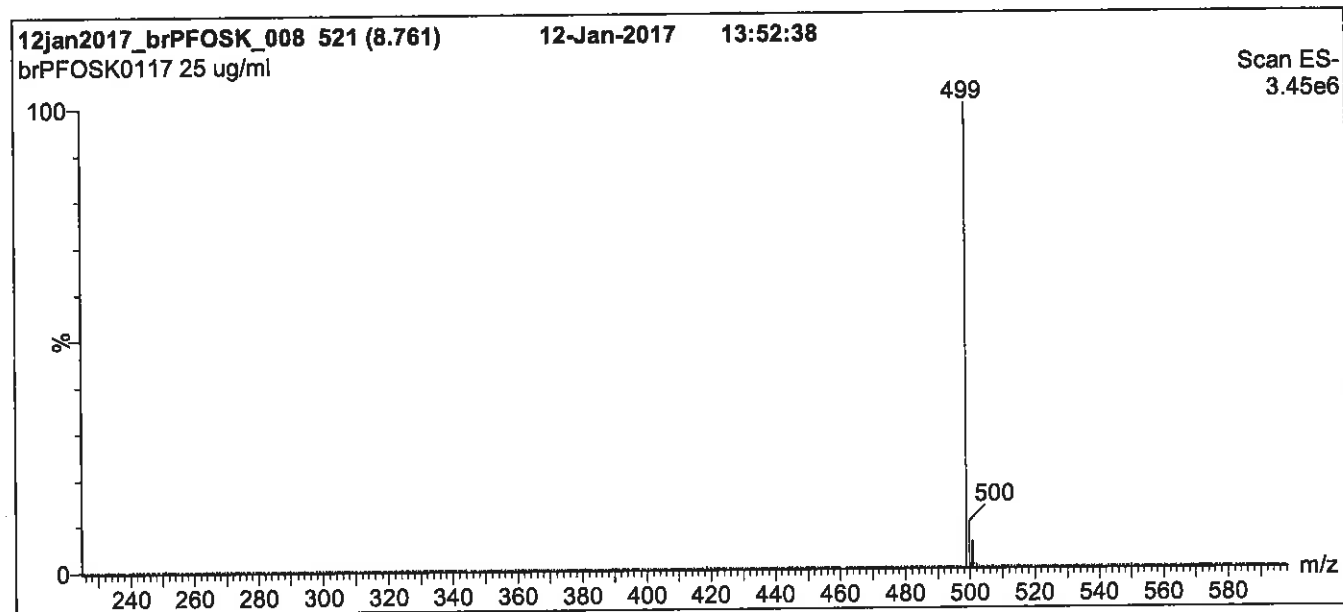
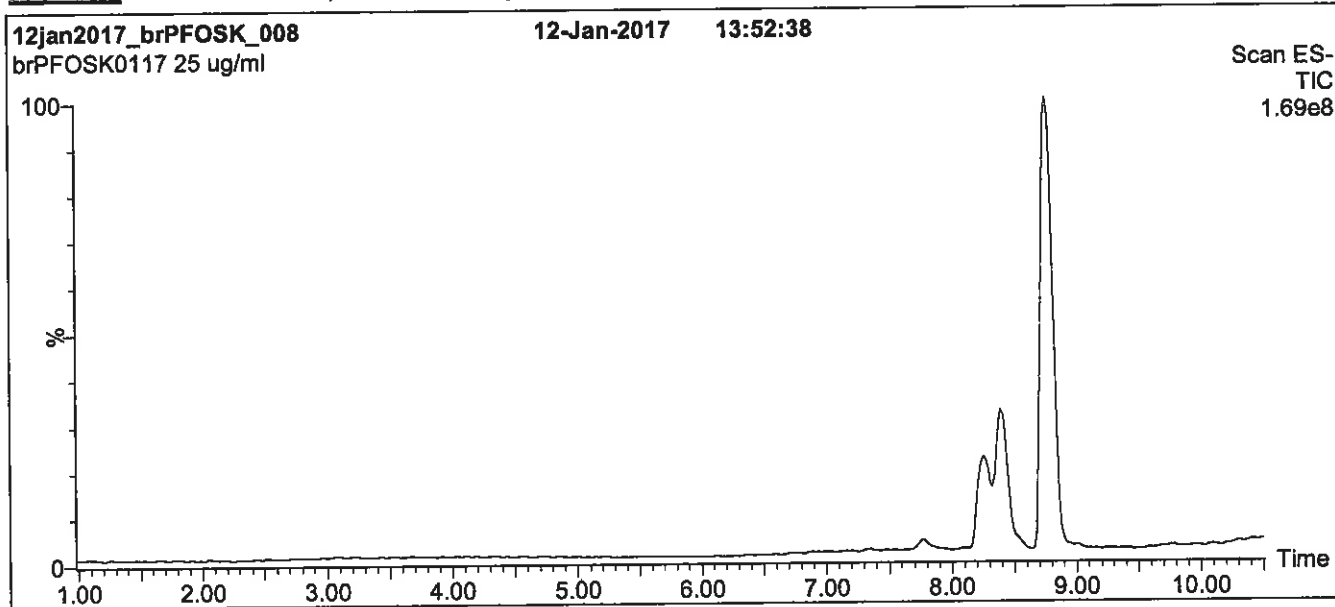
Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	Potassium perfluoro-1-octanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate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

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

Certified By: 
 B.G. Chittim

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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

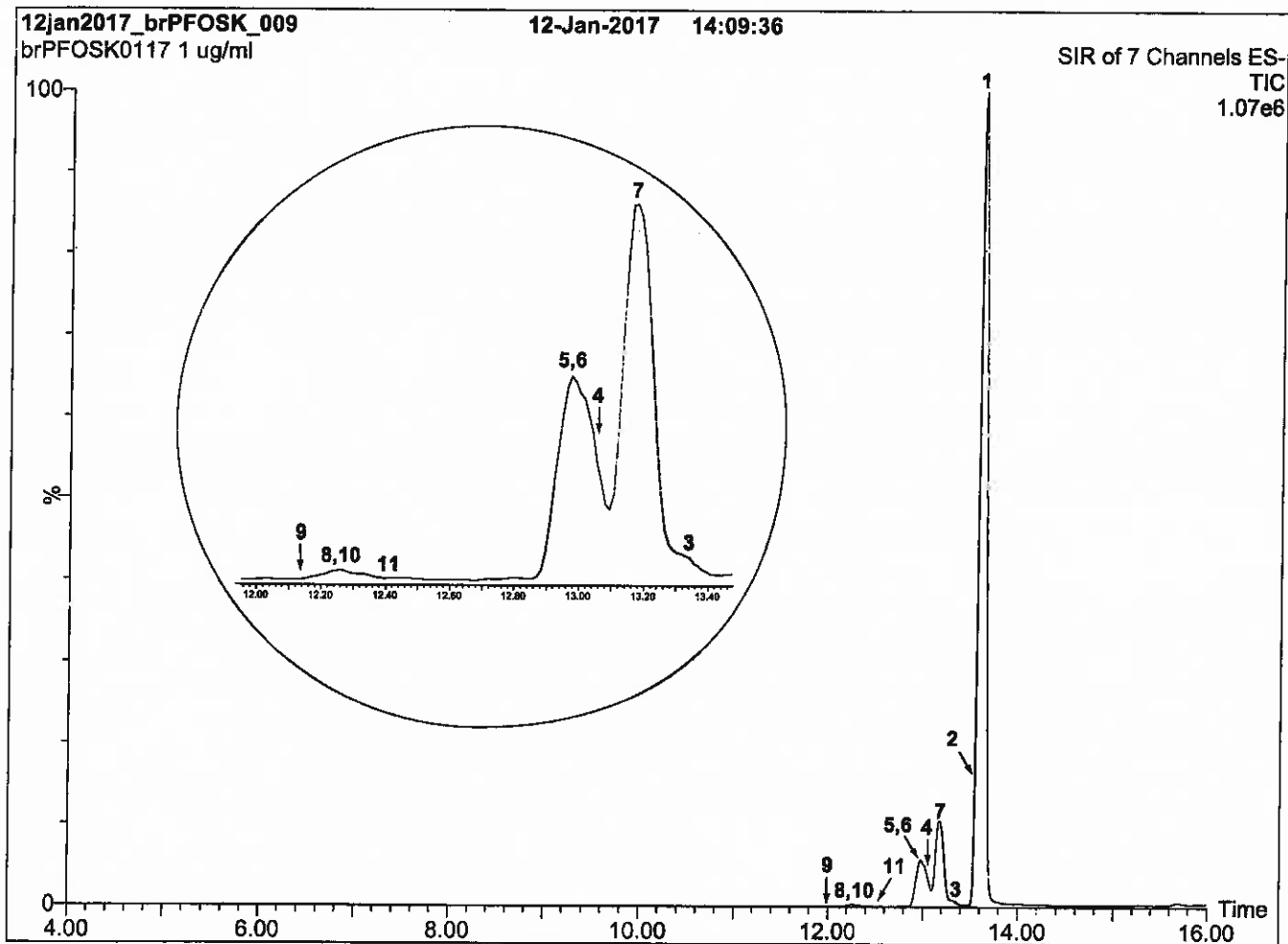
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

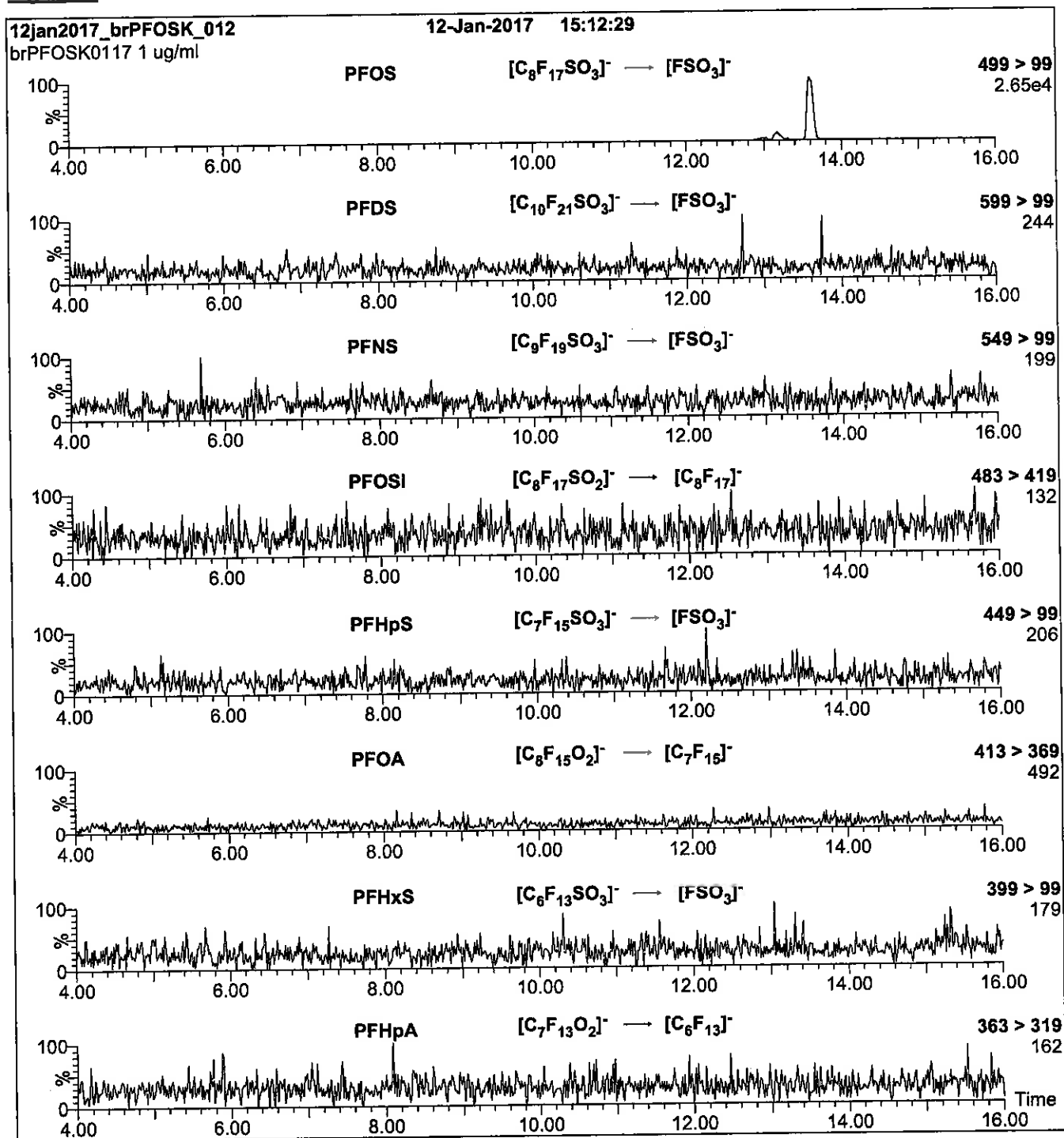
Chromatographic Conditions:

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

MS Conditions:

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

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



Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 μ l/min

MS Parameters

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

Method 537 DOD

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

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-42002-1

SDG No.: _____

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-080918-RW-3145	320-42002-1	110	109
WGNA-080918-FRB-3145	320-42002-2	104	108
WGNA-080918-RW-0683	320-42002-3	113	111
WGNA-080918-FRB-0683	320-42002-4	109	110
WGNA-080918-RW-0443	320-42002-5	111	113
WGNA-080918-FRB-0443	320-42002-6	111	109
NAWC-080918-RW-269	320-42002-7	109	109
NAWC-080918-FRB-269	320-42002-8	110	112
NAWC-080918-RW-117	320-42002-9	100	104
NAWC-080918-FRB-117	320-42002-10	110	106
WGNA-080918-RW-4846	320-42002-11	105	109
WGNA-080918-FRB-4846	320-42002-12	111	108
WGNA-080918-RW-4850	320-42002-13	111	113
WGNA-080918-FRB-4850	320-42002-14	105	107
WGNA-080918-RW-0626	320-42002-15	108	111
WGNA-080918-FRB-0626	320-42002-16	108	104
	MB 320-241537/1-A	104	110
	LLCS 320-241537/2-A	113	114
	LLCSD 320-241537/3-A	110	109

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.: 320-42002-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2018.08.26_537C_008.d

Lab ID: LLCS 320-241537/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LLCS CONCENTRATION (ng/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	40.2	43.0	107	50-150	
Perfluorooctanoic acid (PFOA)	20.0	20.4	102	50-150	
Perfluorononanoic acid (PFNA)	20.0	18.9 J	94	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.3	33.1	109	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	10.2	102	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.2	105	117	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.: 320-42002-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2018.08.26_537C_009.d

Lab ID: LLCSD 320-241537/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LLCSD CONCENTRATION (ng/L)	LLCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	40.2	45.1	112	5	50	50-150	
Perfluorooctanoic acid (PFOA)	20.0	20.6	103	1	50	50-150	
Perfluorononanoic acid (PFNA)	20.0	19.4 J	97	3	50	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.3	34.9	115	5	50	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	11.3	113	10	50	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.2	115	127	8	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.: 320-42002-1
 SDG No.: _____
 Lab File ID: 2018.08.26_537C_007.d Lab Sample ID: MB 320-241537/1-A
 Matrix: Water Date Extracted: 08/23/2018 07:20
 Instrument ID: A8_N Date Analyzed: 08/26/2018 23:44
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-241537/2-A	2018.08.26_537C 008.d	08/26/2018 23:48
	LLCSD 320-241537/3-A	2018.08.26_537C 009.d	08/26/2018 23:53
WGNA-080918-RW-3145	320-42002-1	2018.08.26_537C 010.d	08/26/2018 23:58
WGNA-080918-FRB-3145	320-42002-2	2018.08.26_537C 011.d	08/27/2018 00:02
WGNA-080918-RW-0683	320-42002-3	2018.08.26_537C 012.d	08/27/2018 00:07
WGNA-080918-FRB-0683	320-42002-4	2018.08.26_537C 013.d	08/27/2018 00:12
WGNA-080918-RW-0443	320-42002-5	2018.08.26_537C 014.d	08/27/2018 00:16
WGNA-080918-FRB-0443	320-42002-6	2018.08.26_537C 015.d	08/27/2018 00:21
NAWC-080918-RW-269	320-42002-7	2018.08.26_537C 016.d	08/27/2018 00:26
NAWC-080918-FRB-269	320-42002-8	2018.08.26_537C 019.d	08/27/2018 00:40
NAWC-080918-FRB-117	320-42002-10	2018.08.26_537C 021.d	08/27/2018 00:49
WGNA-080918-RW-4846	320-42002-11	2018.08.26_537C 022.d	08/27/2018 00:54
WGNA-080918-FRB-4846	320-42002-12	2018.08.26_537C 023.d	08/27/2018 00:58
WGNA-080918-RW-4850	320-42002-13	2018.08.26_537C 024.d	08/27/2018 01:03
WGNA-080918-FRB-4850	320-42002-14	2018.08.26_537C 025.d	08/27/2018 01:08
WGNA-080918-RW-0626	320-42002-15	2018.08.26_537C 026.d	08/27/2018 01:13
WGNA-080918-FRB-0626	320-42002-16	2018.08.26_537C 027.d	08/27/2018 01:17
NAWC-080918-RW-117	320-42002-9	2018.08.28_537A 006.d	08/28/2018 23:36

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/15/2018 18:44
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	999840	1.85	2469394	2.11		
UPPER LIMIT	1499760	2.35	3704091	2.61		
LOWER LIMIT	499920	1.35	1234697	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCVL 320-240166/9	1006603	1.84	2388436	2.10		
ICV 320-240166/11	1022273	1.84	2551643	2.10		
CCVL 320-242153/1	956576	1.81	2465858	2.07		
CCV 320-242153/2 CCVIS	846614	1.82	2153988	2.07		
MB 320-241537/1-A	1043498	1.82	2632697	2.07		
LLCS 320-241537/2-A	1063967	1.81	2653479	2.07		
LLCSD 320-241537/3-A	1061847	1.81	2615789	2.06		
320-42002-1	WGNA-080918-RW-3145	1092761	1.81	2677043	2.07	
320-42002-2	WGNA-080918-FRB-3145	1067225	1.81	2581052	2.06	
320-42002-3	WGNA-080918-RW-0683	1074775	1.81	2703674	2.07	
320-42002-4	WGNA-080918-FRB-0683	1108168	1.81	2718911	2.06	
320-42002-5	WGNA-080918-RW-0443	1082033	1.81	2595616	2.07	
320-42002-6	WGNA-080918-FRB-0443	983360	1.81	2416892	2.07	
320-42002-7	NAWC-080918-RW-269	1138388	1.81	2719447	2.07	
CCV 320-242153/14 CCVIS	802241	1.81	2163583	2.07		
CCV 320-242156/14 CCVIS	802241	1.81	2163583	2.07		
320-42002-8	NAWC-080918-FRB-269	1099847	1.81	2831201	2.07	
320-42002-10	NAWC-080918-FRB-117	1089017	1.81	2708943	2.06	
320-42002-11	WGNA-080918-RW-4846	892460	1.82	2179421	2.07	
320-42002-12	WGNA-080918-FRB-4846	1067437	1.81	2663669	2.06	
320-42002-13	WGNA-080918-RW-4850	977186	1.81	2453714	2.06	
320-42002-14	WGNA-080918-FRB-4850	1069465	1.81	2582799	2.07	
320-42002-15	WGNA-080918-RW-0626	1087470	1.82	2740798	2.07	
320-42002-16	WGNA-080918-FRB-0626	984460	1.81	2397883	2.07	
CCV 320-242156/26 CCVIS	836144	1.81	2142935	2.06		
CCVL 320-242684/1	1111468	1.84	2737262	2.09		
CCV 320-242684/2 CCVIS	904879	1.84	2320915	2.10		
320-42002-9	NAWC-080918-RW-117	1186370	1.83	2873335	2.09	

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3 (mm) Calibration End Date: 08/15/2018 18:44
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	999840	1.85	2469394	2.11		
UPPER LIMIT	1499760	2.35	3704091	2.61		
LOWER LIMIT	499920	1.35	1234697	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCV 320-242684/8 CCVIS		930267	1.83	2345437	2.09	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Sample No.: CCV 320-242153/2 Date Analyzed: 08/26/2018 23:34
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.26_537C_005 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	846614	1.82	2153988	2.07		
UPPER LIMIT	1185260	2.32	3015583	2.57		
LOWER LIMIT	592630	1.32	1507792	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-241537/1-A		1043498	1.82	2632697	2.07	
LLCS 320-241537/2-A		1063967	1.81	2653479	2.07	
LLCSD 320-241537/3-A		1061847	1.81	2615789	2.06	
320-42002-1	WGNA-080918-RW-3145	1092761	1.81	2677043	2.07	
320-42002-2	WGNA-080918-FRB-3145	1067225	1.81	2581052	2.06	
320-42002-3	WGNA-080918-RW-0683	1074775	1.81	2703674	2.07	
320-42002-4	WGNA-080918-FRB-0683	1108168	1.81	2718911	2.06	
320-42002-5	WGNA-080918-RW-0443	1082033	1.81	2595616	2.07	
320-42002-6	WGNA-080918-FRB-0443	983360	1.81	2416892	2.07	
320-42002-7	NAWC-080918-RW-269	1138388	1.81	2719447	2.07	

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.: 320-42002-1
 SDG No.: _____
 Sample No.: CCV 320-242153/14 Date Analyzed: 08/27/2018 00:30
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.26_537C_017 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	802241	1.81	2163583	2.07		
UPPER LIMIT	1123137	2.31	3029016	2.57		
LOWER LIMIT	561569	1.31	1514508	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-241537/1-A		1043498	1.82	2632697	2.07	
LLCS 320-241537/2-A		1063967	1.81	2653479	2.07	
LLCSD 320-241537/3-A		1061847	1.81	2615789	2.06	
320-42002-1	WGNA-080918-RW-3145	1092761	1.81	2677043	2.07	
320-42002-2	WGNA-080918-FRB-3145	1067225	1.81	2581052	2.06	
320-42002-3	WGNA-080918-RW-0683	1074775	1.81	2703674	2.07	
320-42002-4	WGNA-080918-FRB-0683	1108168	1.81	2718911	2.06	
320-42002-5	WGNA-080918-RW-0443	1082033	1.81	2595616	2.07	
320-42002-6	WGNA-080918-FRB-0443	983360	1.81	2416892	2.07	
320-42002-7	NAWC-080918-RW-269	1138388	1.81	2719447	2.07	

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.: 320-42002-1
 SDG No.: _____
 Sample No.: CCV 320-242156/14 Date Analyzed: 08/27/2018 00:30
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.26_537C_017 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	802241	1.81	2163583	2.07		
UPPER LIMIT	1123137	2.31	3029016	2.57		
LOWER LIMIT	561569	1.31	1514508	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-42002-8	NAWC-080918-FRB-269	1099847	1.81	2831201	2.07	
320-42002-10	NAWC-080918-FRB-117	1089017	1.81	2708943	2.06	
320-42002-11	WGNA-080918-RW-4846	892460	1.82	2179421	2.07	
320-42002-12	WGNA-080918-FRB-4846	1067437	1.81	2663669	2.06	
320-42002-13	WGNA-080918-RW-4850	977186	1.81	2453714	2.06	
320-42002-14	WGNA-080918-FRB-4850	1069465	1.81	2582799	2.07	
320-42002-15	WGNA-080918-RW-0626	1087470	1.82	2740798	2.07	
320-42002-16	WGNA-080918-FRB-0626	984460	1.81	2397883	2.07	

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.: 320-42002-1
 SDG No.: _____
 Sample No.: CCV 320-242156/26 Date Analyzed: 08/27/2018 01:27
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.26_537C_029 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	836144	1.81	2142935	2.06		
UPPER LIMIT	1170602	2.31	3000109	2.56		
LOWER LIMIT	585301	1.31	1500055	1.56		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-42002-8	NAWC-080918-FRB-269	1099847	1.81	2831201	2.07	
320-42002-10	NAWC-080918-FRB-117	1089017	1.81	2708943	2.06	
320-42002-11	WGNA-080918-RW-4846	892460	1.82	2179421	2.07	
320-42002-12	WGNA-080918-FRB-4846	1067437	1.81	2663669	2.06	
320-42002-13	WGNA-080918-RW-4850	977186	1.81	2453714	2.06	
320-42002-14	WGNA-080918-FRB-4850	1069465	1.81	2582799	2.07	
320-42002-15	WGNA-080918-RW-0626	1087470	1.82	2740798	2.07	
320-42002-16	WGNA-080918-FRB-0626	984460	1.81	2397883	2.07	

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.: 320-42002-1
 SDG No.: _____
 Sample No.: CCV 320-242684/2 Date Analyzed: 08/28/2018 23:27
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.28_537A_004 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	904879	1.84	2320915	2.10		
UPPER LIMIT	1266831	2.34	3249281	2.60		
LOWER LIMIT	633415	1.34	1624641	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-42002-9	NAWC-080918-RW-117		1186370	1.83	2873335	2.09

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.: 320-42002-1
 SDG No.: _____
 Sample No.: CCV 320-242684/8 Date Analyzed: 08/28/2018 23:55
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.28_537A_010 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	930267	1.83	2345437	2.09		
UPPER LIMIT	1302374	2.33	3283612	2.59		
LOWER LIMIT	651187	1.33	1641806	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-42002-9	NAWC-080918-RW-117		1186370	1.83	2873335	2.09

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.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-3145 Lab Sample ID: 320-42002-1
 Matrix: Water Lab File ID: 2018.08.26_537C_010.d
 Analysis Method: 537 Date Collected: 08/09/2018 07:25
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 275.5 (mL) Date Analyzed: 08/26/2018 23:58
 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.: 242153 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	18	7.3	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.9	J	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.3	J	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	15	J	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	110		70-130
STL00996	13C2 PFDA	109		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_010.d
 Lims ID: 320-42002-B-1-A
 Client ID: WGNA-080918-RW-3145
 Sample Type: Client
 Inject. Date: 26-Aug-2018 23:58:08 ALS Bottle#: 4 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-b-1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:35:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	452527	4.24		933	
298.90 > 99.00	1.366	1.366	0.0	1.000	304240		1.49(0.00-0.00)	729	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	1248121	11.0		11282	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	421722	2.73		246	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	200947	1.74		39.6	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.821	-0.008		1092761	10.0		9156	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.821	-0.008	1.000	487518	4.09		60.1	
413.00 > 169.00	1.813	1.821	-0.008	1.000	284534		1.71(0.00-0.00)	769	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2677043	28.7		5090	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	344826	3.42		307	
499.00 > 99.00	2.071	2.109	-0.038	1.000	63362		5.44(0.00-0.00)	124	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	939759	10.9		5276	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_010.d

Injection Date: 26-Aug-2018 23:58:08

Instrument ID: A8_N

Lims ID: 320-42002-B-1-A

Lab Sample ID: 320-42002-1

Client ID: WGNA-080918-RW-3145

Operator ID: SACINSTLCMS01

ALS Bottle#: 4

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

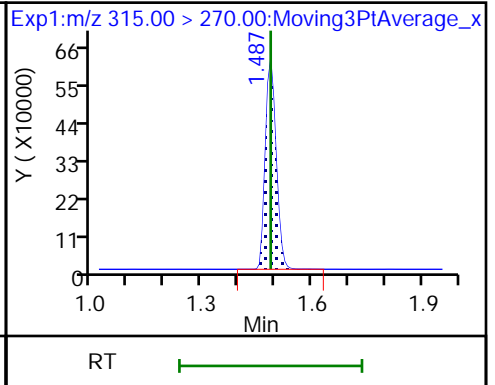
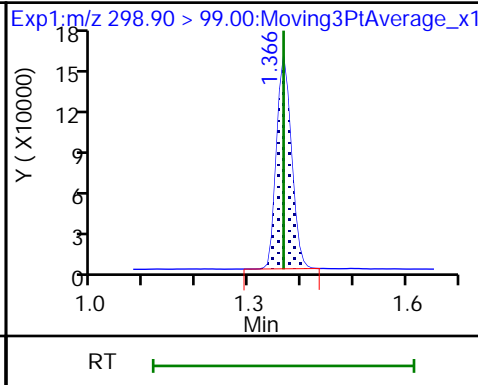
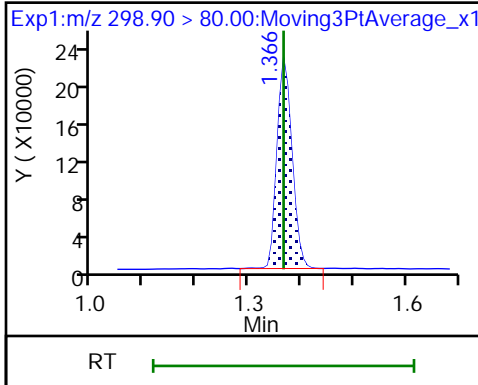
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

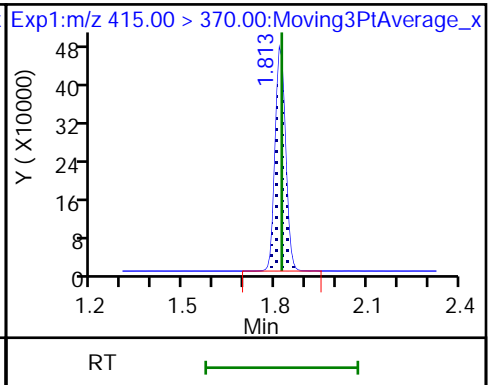
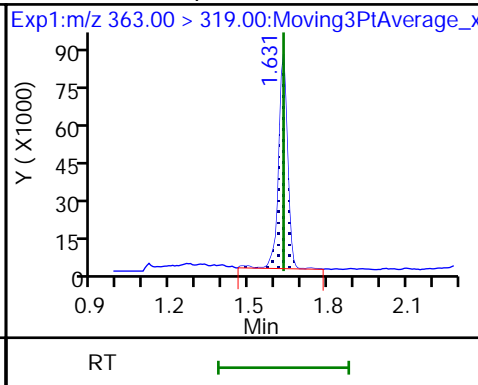
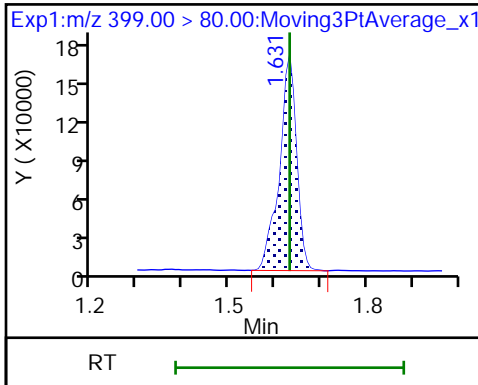
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

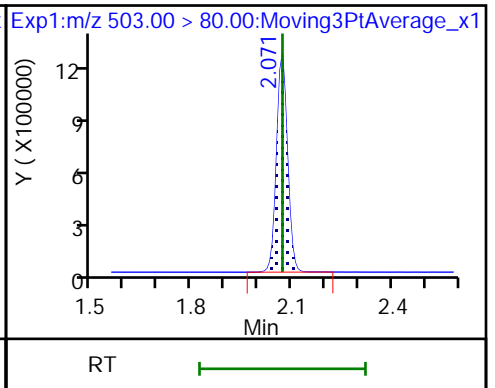
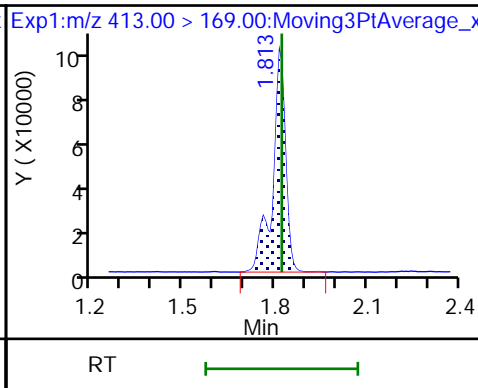
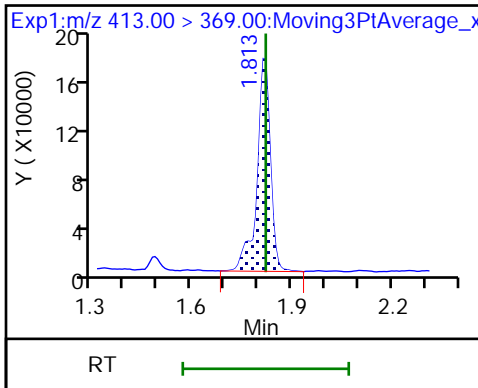
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

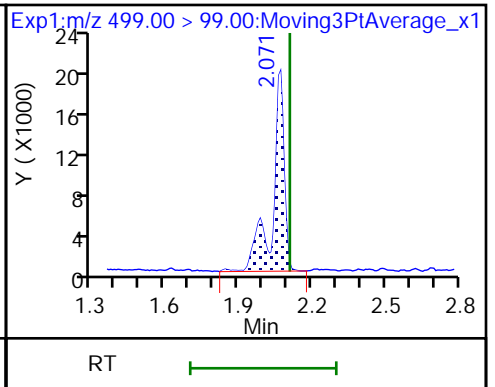
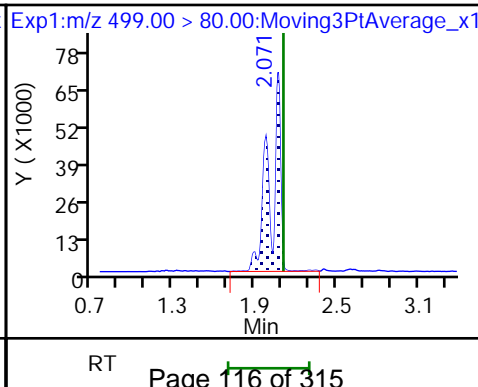
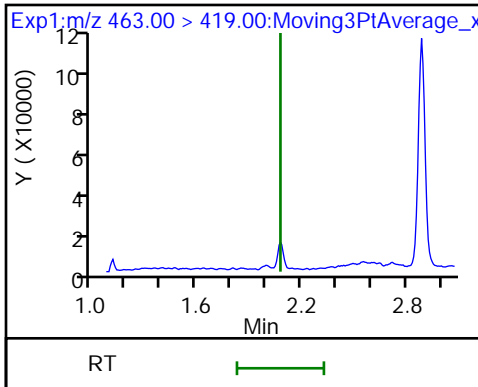
* 7 13C4 PFOS



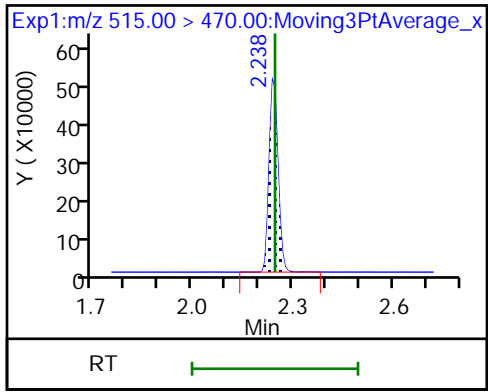
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_010.d
 Lims ID: 320-42002-B-1-A
 Client ID: WGNA-080918-RW-3145
 Sample Type: Client
 Inject. Date: 26-Aug-2018 23:58:08 ALS Bottle#: 4 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-b-1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:35:46

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.0	109.89
\$ 10 13C2 PFDA	10.0	10.9	108.57

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-3145 Lab Sample ID: 320-42002-2
 Matrix: Water Lab File ID: 2018.08.26_537C_011.d
 Analysis Method: 537 Date Collected: 08/09/2018 07:20
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 282.9(mL) Date Analyzed: 08/27/2018 00:02
 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.: 242153 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.1	U	18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	108		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_011.d
 Lims ID: 320-42002-A-2-A
 Client ID: WGNA-080918-FRB-3145
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:02:49 ALS Bottle#: 5 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-2-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.479	1.487	-0.008	1.000	1154533	10.4	10529	
* 6 13C2-PFOA	415.00 > 370.00	1.813	1.821	-0.008		1067225	10.0	8045	
* 7 13C4 PFOS	503.00 > 80.00	2.064	2.071	-0.007		2581052	28.7	7946	
\$ 10 13C2 PFDA	515.00 > 470.00	2.238	2.246	-0.008	1.000	909490	10.8	5312	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_011.d

Injection Date: 27-Aug-2018 00:02:49

Instrument ID: A8_N

Lims ID: 320-42002-A-2-A

Lab Sample ID: 320-42002-2

Client ID: WGNA-080918-FRB-3145

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

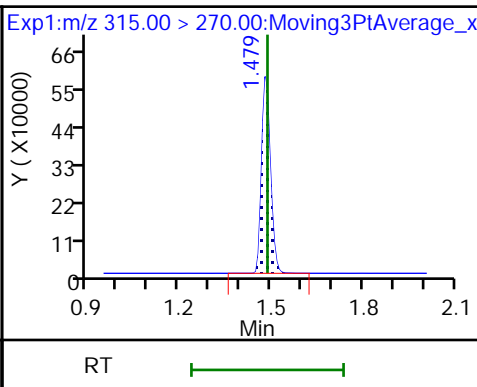
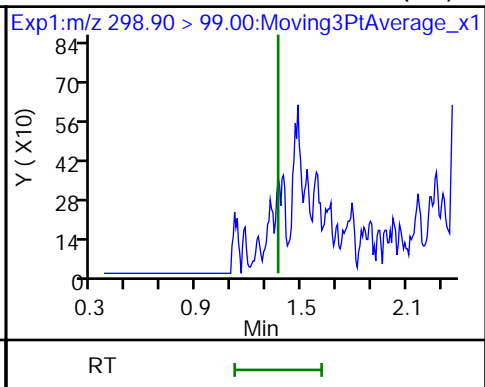
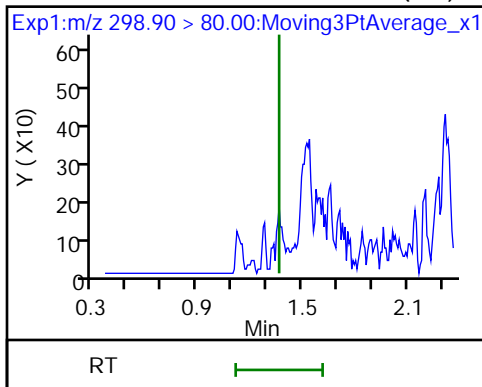
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

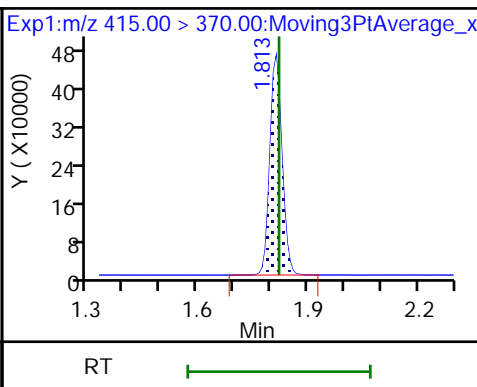
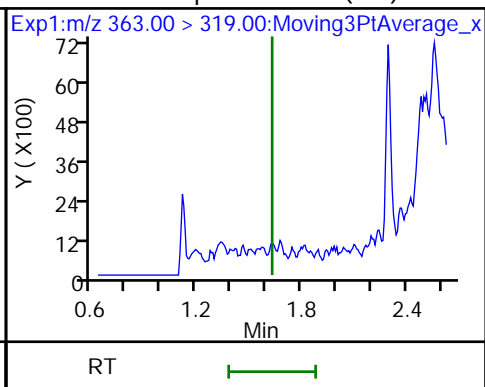
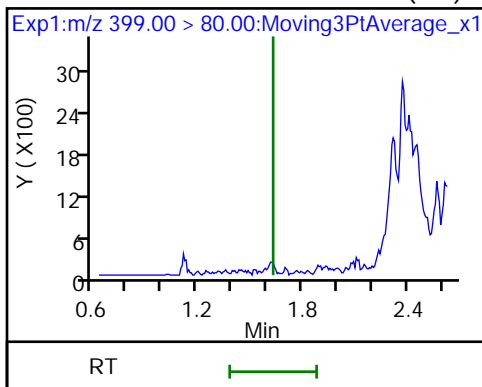
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

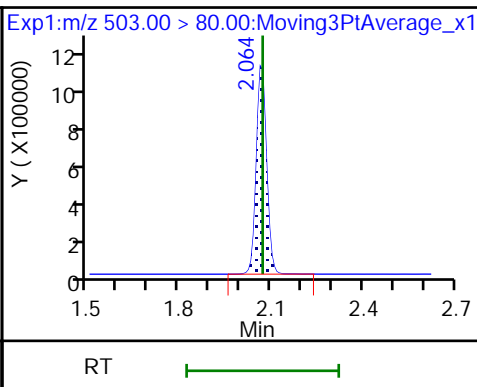
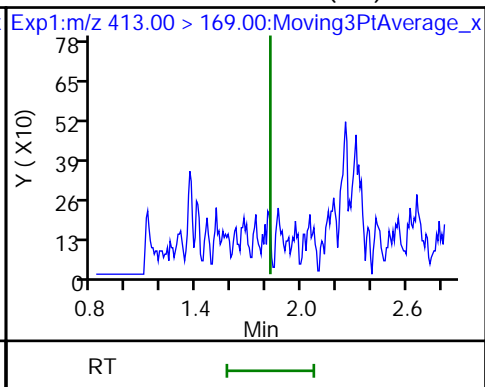
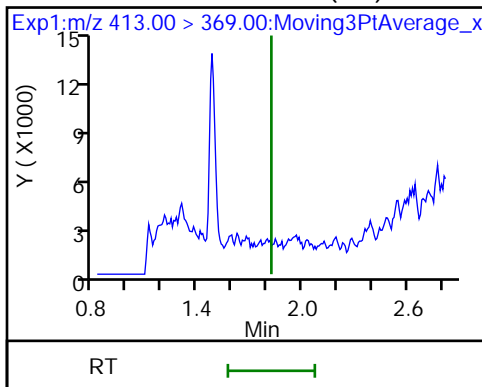
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

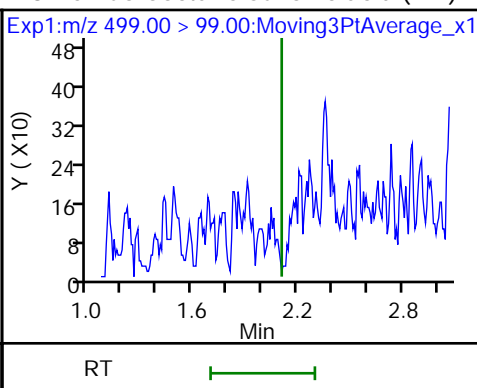
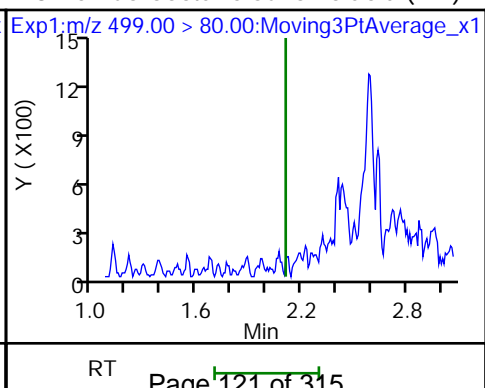
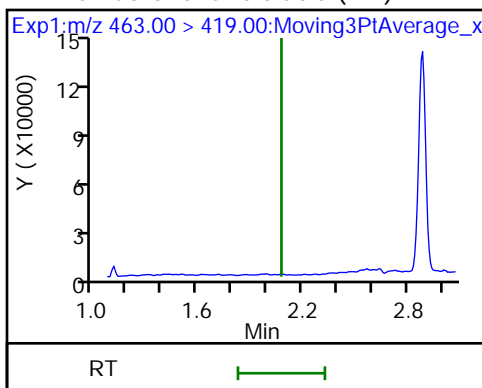
* 7 13C4 PFOS



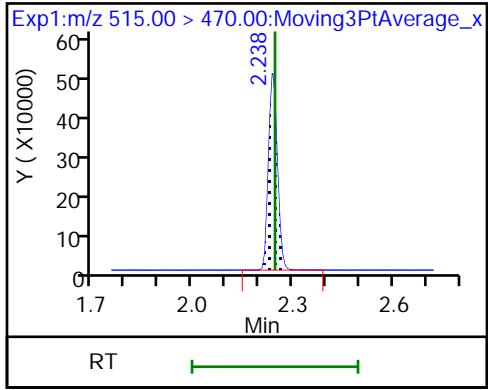
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_011.d
 Lims ID: 320-42002-A-2-A
 Client ID: WGNA-080918-FRB-3145
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:02:49 ALS Bottle#: 5 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-2-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.4	104.08
\$ 10 13C2 PFDA	10.0	10.8	107.58

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-0683 Lab Sample ID: 320-42002-3
 Matrix: Water Lab File ID: 2018.08.26_537C_012.d
 Analysis Method: 537 Date Collected: 08/09/2018 08:10
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 289.6(mL) Date Analyzed: 08/27/2018 00:07
 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.: 242153 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	25	J M	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	27		17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.9	J	8.6	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	113		70-130
STL00996	13C2 PFDA	111		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_012.d
 Lims ID: 320-42002-A-3-A
 Client ID: WGNA-080918-RW-0683
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:07:30 ALS Bottle#: 6 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-3-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:36:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	175165	1.62		133	
298.90 > 99.00	1.366	1.366	0.0	1.000	121222		1.44(0.00-0.00)	265	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	1257304	11.3		11816	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	208156	1.33		66.1	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	258880	2.28		37.5	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.821	-0.008		1074775	10.0		7752	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.821	1.821	0.0	1.000	905815	7.74		96.6	
413.00 > 169.00	1.813	1.821	-0.008	0.996	512370		1.77(0.00-0.00)	1293	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2703674	28.7		2468	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	60471	0.6826		5.0	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	746173	7.33		298	M
499.00 > 99.00	2.071	2.109	-0.038	1.000	125652		5.94(0.00-0.00)	164	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.246	2.246	0.0	1.000	942639	11.1		4551	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_012.d

Injection Date: 27-Aug-2018 00:07:30

Instrument ID: A8_N

Lims ID: 320-42002-A-3-A

Lab Sample ID: 320-42002-3

Client ID: WGNA-080918-RW-0683

Operator ID: SACINSTLCMS01

ALS Bottle#: 6

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

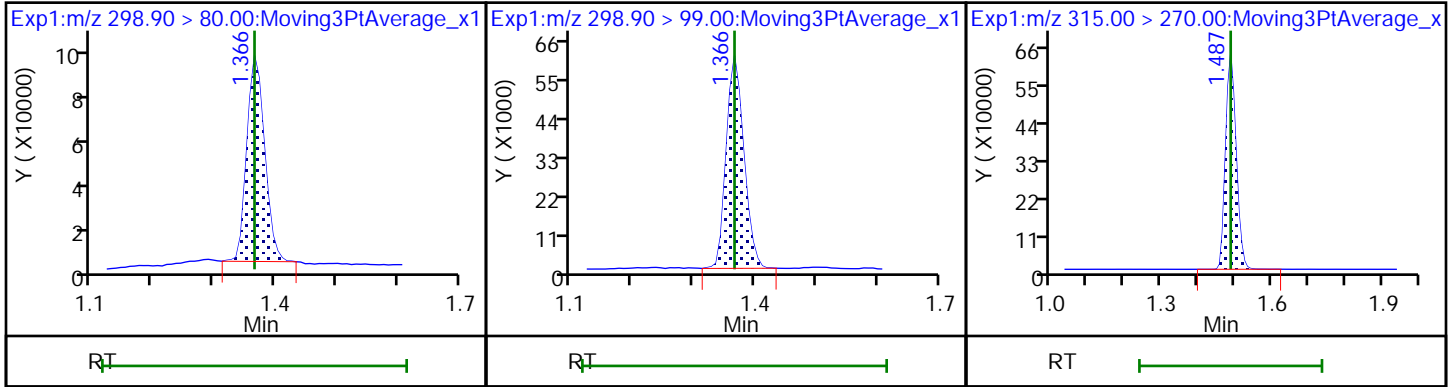
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

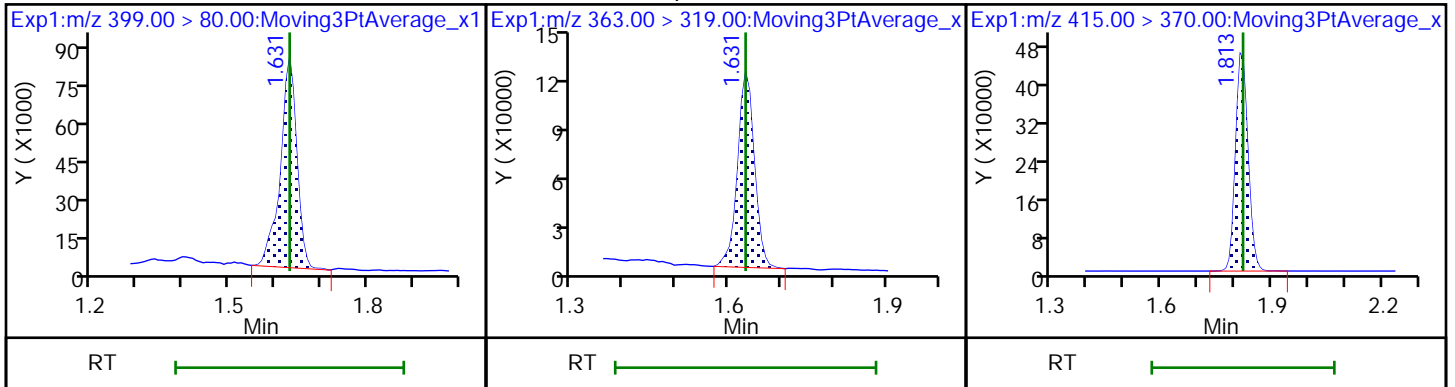
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

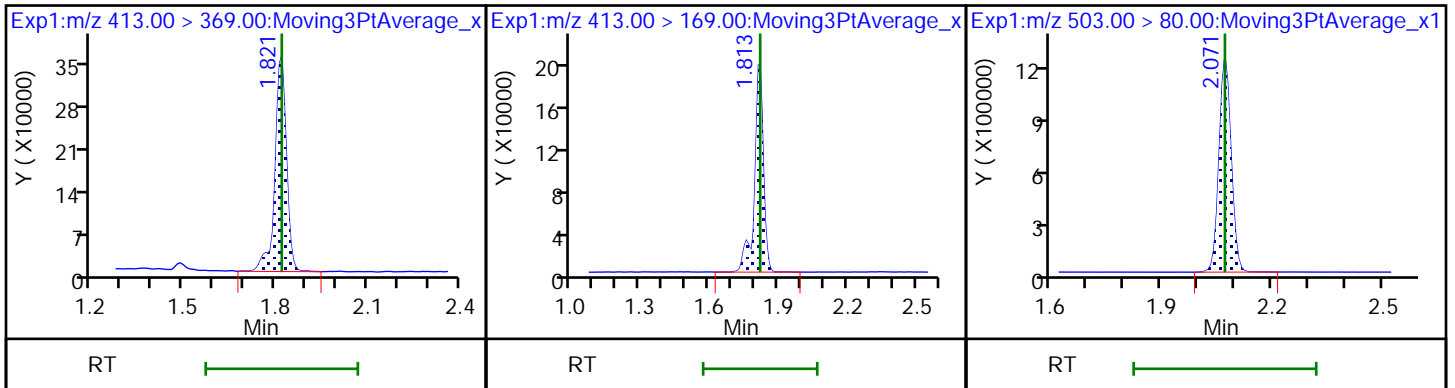
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

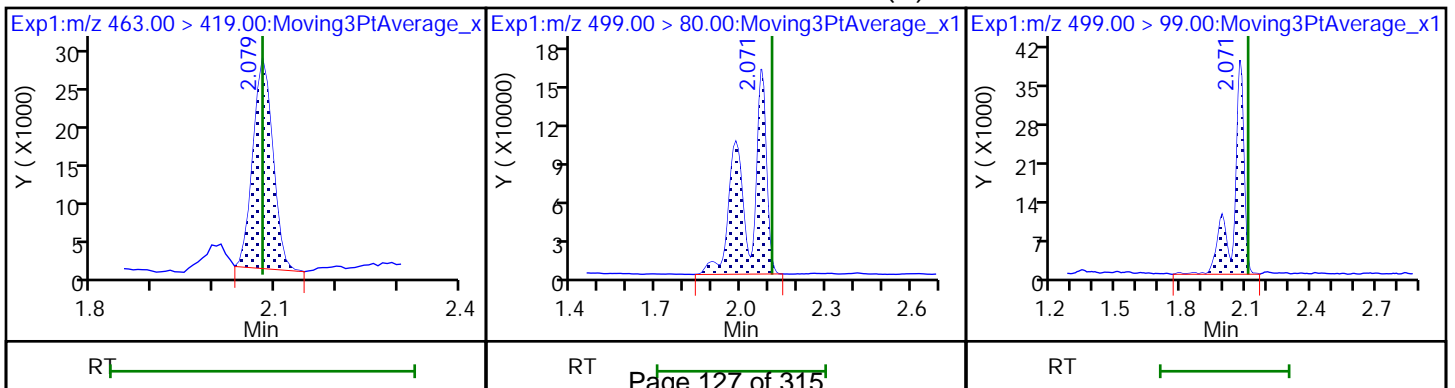
* 7 13C4 PFOS



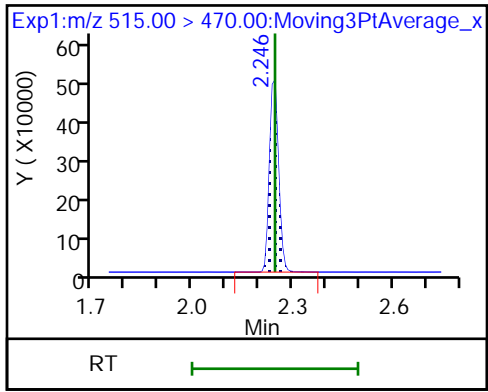
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_012.d
 Lims ID: 320-42002-A-3-A
 Client ID: WGNA-080918-RW-0683
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:07:30 ALS Bottle#: 6 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-3-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:36:30

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.3	112.55
\$ 10 13C2 PFDA	10.0	11.1	110.72

TestAmerica Sacramento

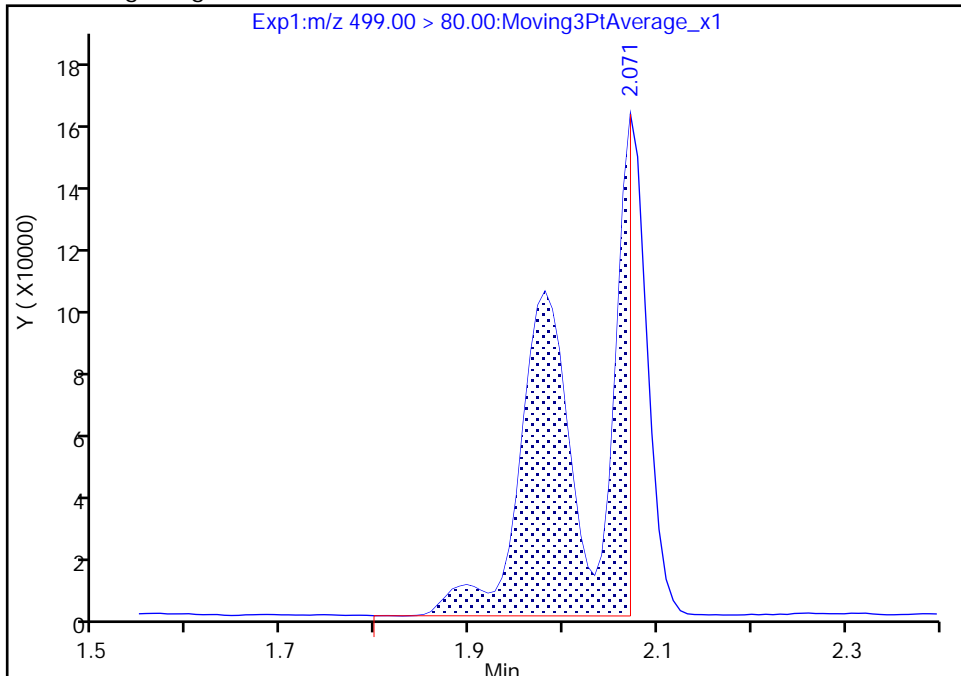
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Injection Date: 27-Aug-2018 00:07:30 Instrument ID: A8_N
Lims ID: 320-42002-A-3-A Lab Sample ID: 320-42002-3
Client ID: WGNA-080918-RW-0683
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

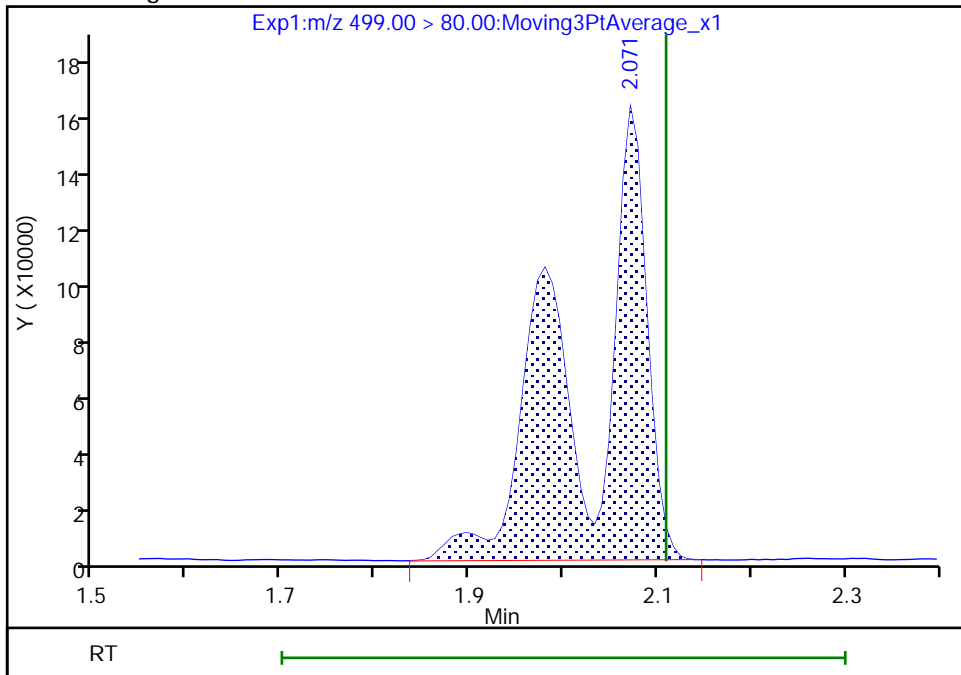
RT: 2.07
Area: 550239
Amount: 5.402909
Amount Units: ng/ml

Processing Integration Results



RT: 2.07
Area: 746173
Amount: 7.326826
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 27-Aug-2018 14:36:17
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration
Page 130 of 315

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-0683 Lab Sample ID: 320-42002-4
 Matrix: Water Lab File ID: 2018.08.26_537C_013.d
 Analysis Method: 537 Date Collected: 08/09/2018 08:05
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 281.6(mL) Date Analyzed: 08/27/2018 00:12
 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.: 242153 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	109		70-130
STL00996	13C2 PFDA	110		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_013.d
 Lims ID: 320-42002-A-4-A
 Client ID: WGNA-080918-FRB-0683
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:12:11 ALS Bottle#: 7 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-4-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.479	1.487	-0.008	1.000	1253099	10.9	12237	
* 6 13C2-PFOA	415.00 > 370.00	1.813	1.821	-0.008		1108168	10.0	8401	
* 7 13C4 PFOS	503.00 > 80.00	2.064	2.071	-0.007		2718911	28.7	7075	
\$ 10 13C2 PFDA	515.00 > 470.00	2.238	2.246	-0.008	1.000	969836	11.0	5206	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_013.d

Injection Date: 27-Aug-2018 00:12:11

Instrument ID: A8_N

Lims ID: 320-42002-A-4-A

Lab Sample ID: 320-42002-4

Client ID: WGNA-080918-FRB-0683

Operator ID: SACINSTLCMS01

ALS Bottle#: 7

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

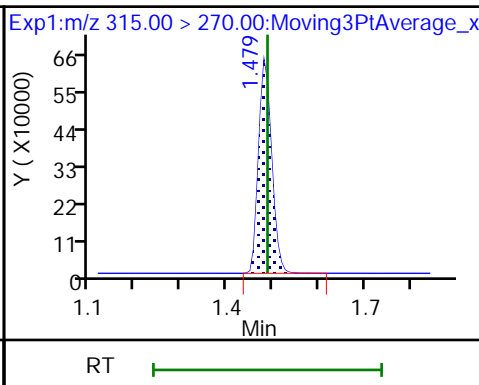
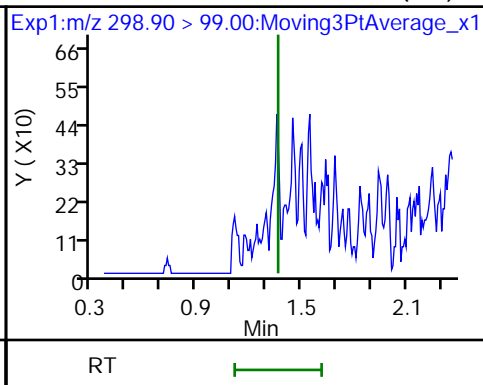
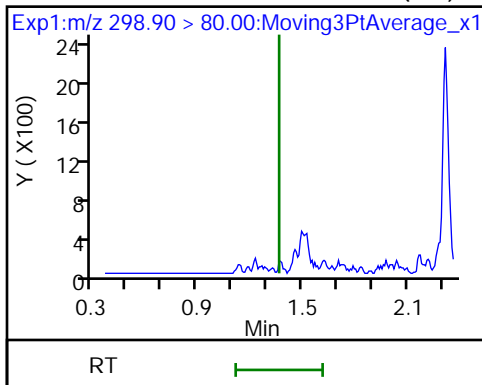
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

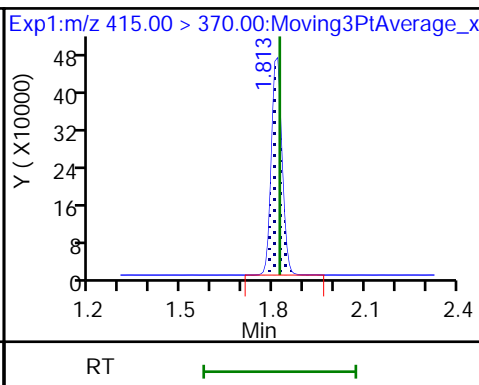
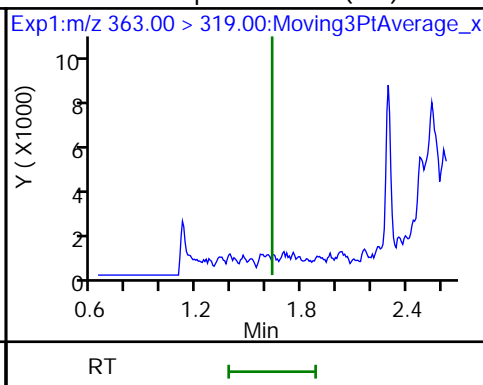
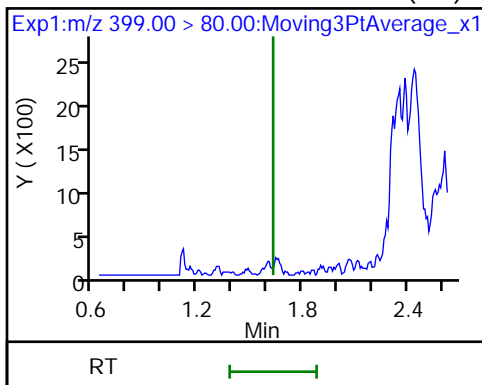
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

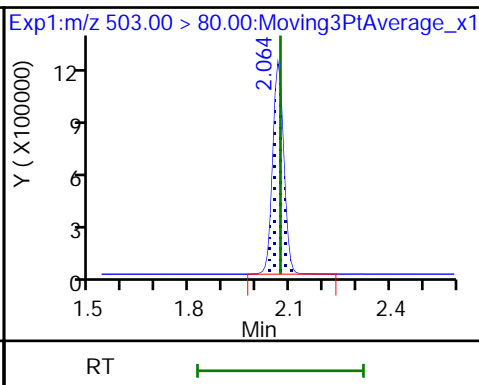
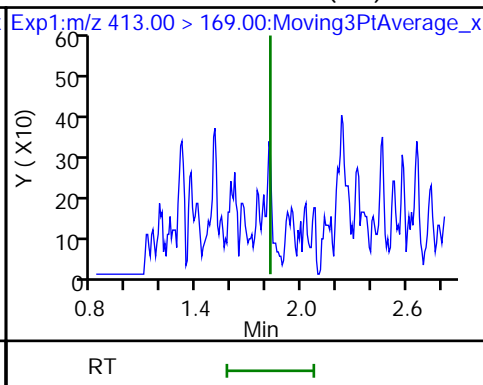
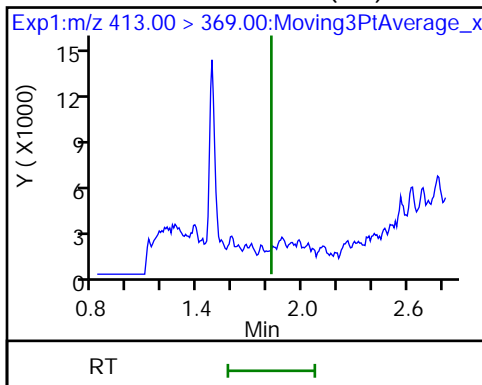
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

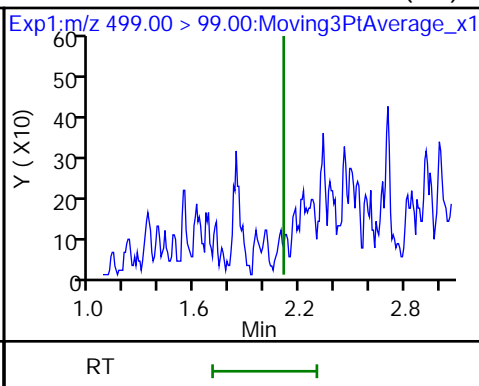
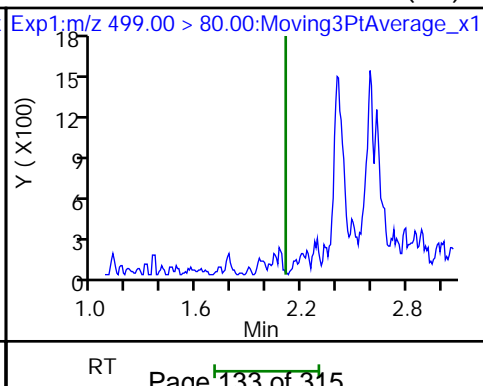
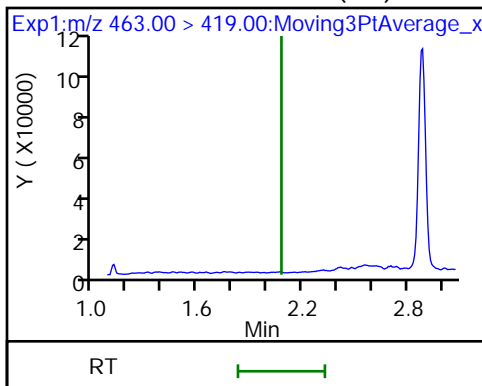
* 7 13C4 PFOS



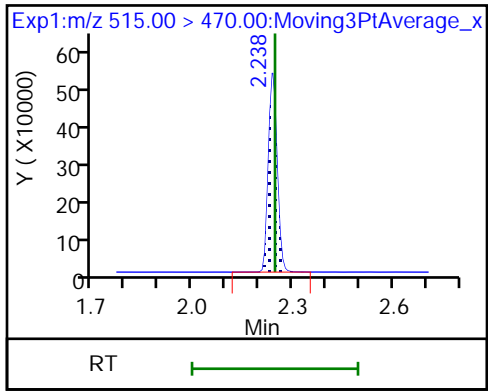
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_013.d
 Lims ID: 320-42002-A-4-A
 Client ID: WGNA-080918-FRB-0683
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:12:11 ALS Bottle#: 7 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-4-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.9	108.79
\$ 10 13C2 PFDA	10.0	11.0	110.48

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-0443 Lab Sample ID: 320-42002-5
 Matrix: Water Lab File ID: 2018.08.26_537C_014.d
 Analysis Method: 537 Date Collected: 08/09/2018 08:40
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 287.3(mL) Date Analyzed: 08/27/2018 00:16
 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.: 242153 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	19	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	19	M	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.5	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.4	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	26	J	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	111		70-130
STL00996	13C2 PFDA	113		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_014.d
 Lims ID: 320-42002-A-5-A
 Client ID: WGNA-080918-RW-0443
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:16:52 ALS Bottle#: 8 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-5-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:37:10

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	763410	7.37		1106	
298.90 > 99.00	1.366	1.366	0.0	1.000	523442		1.46(0.00-0.00)	1196	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	1251239	11.1		12753	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	238398	1.59		108	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	276055	2.41		46.9	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.821	-0.008		1082033	10.0		9630	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.821	-0.008	1.000	632872	5.37		76.8	M
413.00 > 169.00	1.813	1.821	-0.008	1.000	363161		1.74(0.00-0.00)	942	M
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2595616	28.7		3164	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	57005	0.6391		4.6	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	546383	5.59		320	
499.00 > 99.00	2.064	2.109	-0.045	0.996	105475		5.18(0.00-0.00)	169	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	964444	11.3		5086	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_014.d

Injection Date: 27-Aug-2018 00:16:52

Instrument ID: A8_N

Lims ID: 320-42002-A-5-A

Lab Sample ID: 320-42002-5

Client ID: WGNA-080918-RW-0443

Operator ID: SACINSTLCMS01

ALS Bottle#: 8

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

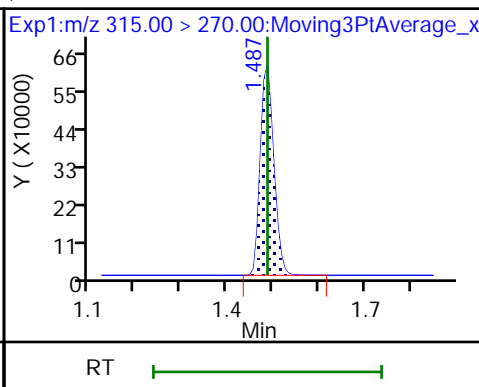
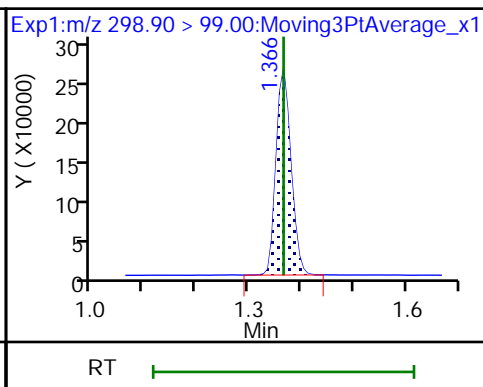
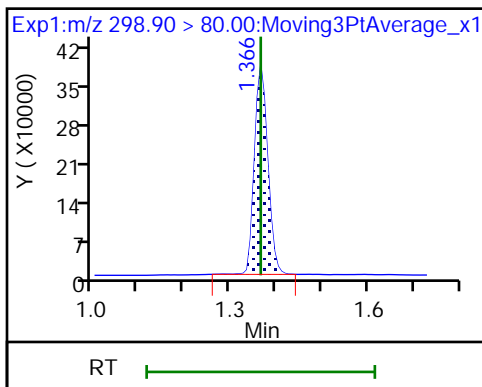
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

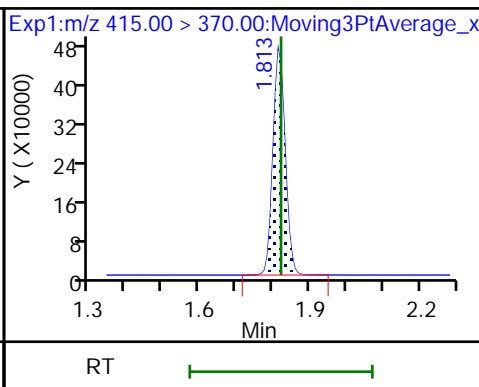
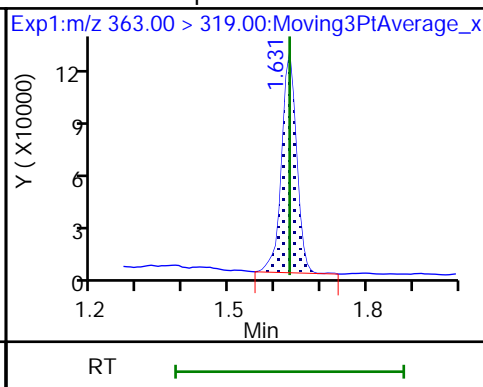
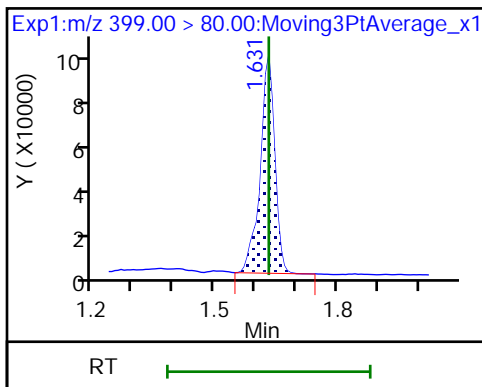
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

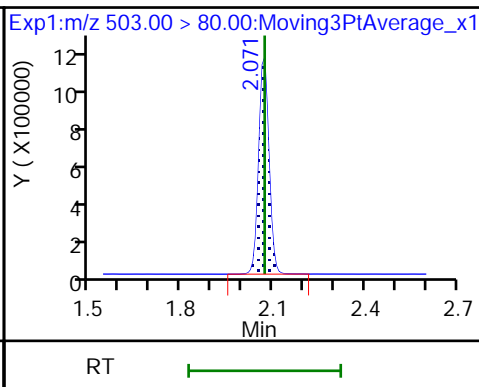
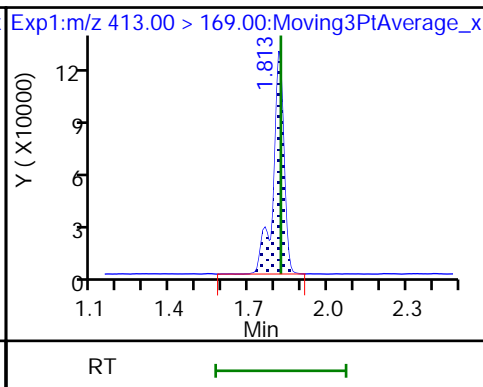
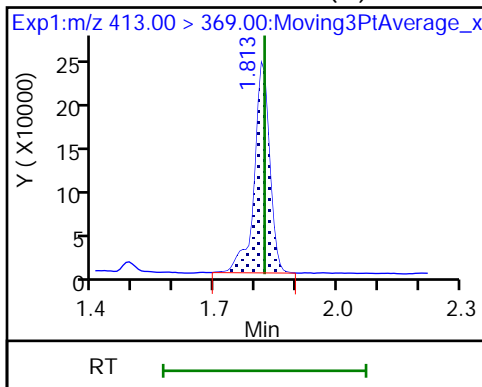
* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid

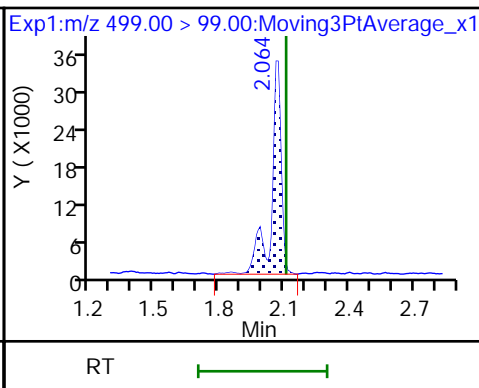
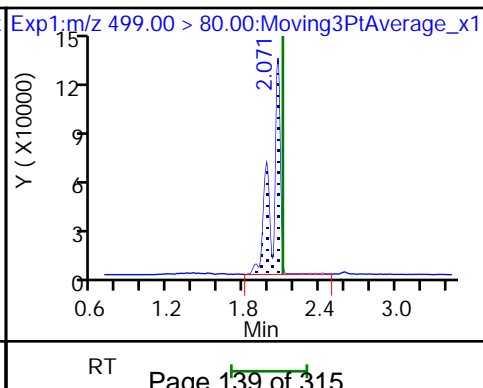
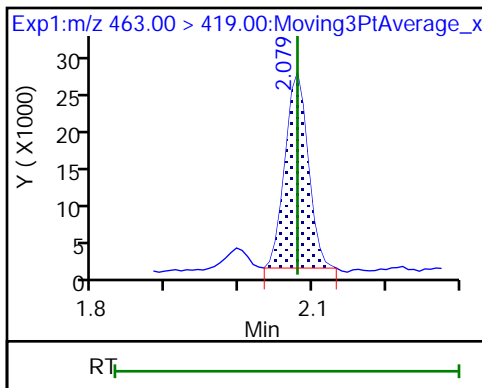
* 7 13C4 PFOS



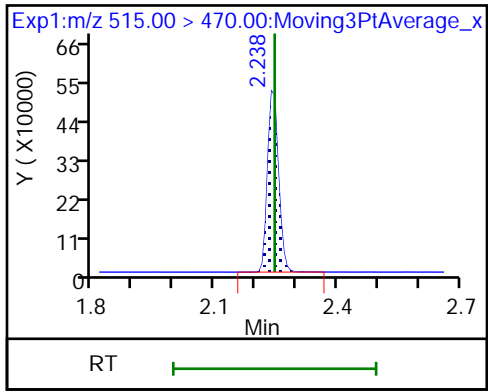
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_014.d
 Lims ID: 320-42002-A-5-A
 Client ID: WGNA-080918-RW-0443
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:16:52 ALS Bottle#: 8 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-5-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:37:10

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.1	111.25
\$ 10 13C2 PFDA	10.0	11.3	112.52

TestAmerica Sacramento

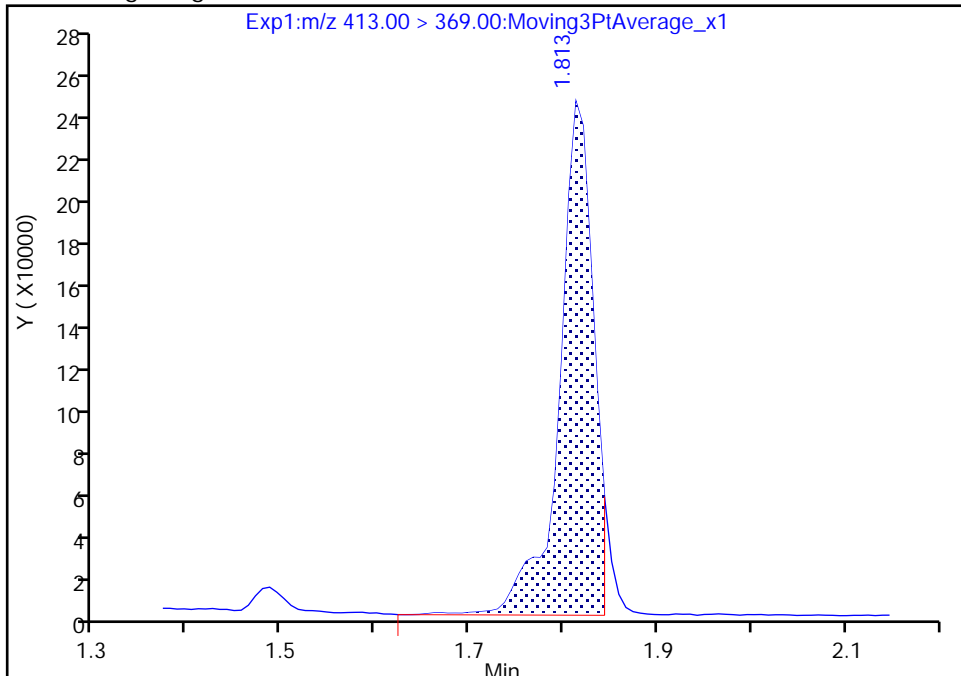
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Lims ID: 320-42002-A-5-A Lab Sample ID: 320-42002-5
Client ID: WGNA-080918-RW-0443
Operator ID: SACINSTLCMS01 ALS Bottle#: 8 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

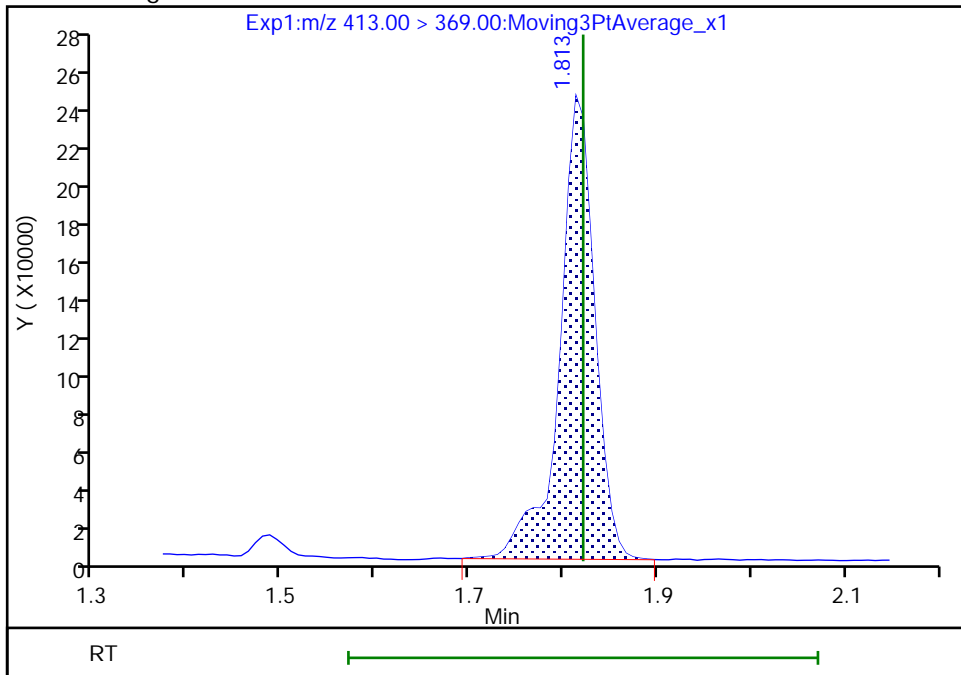
RT: 1.81
Area: 608577
Amount: 5.162134
Amount Units: ng/ml

Processing Integration Results



RT: 1.81
Area: 632872
Amount: 5.368211
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 27-Aug-2018 14:36:56
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration
Page 142 of 315

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-0443 Lab Sample ID: 320-42002-6
 Matrix: Water Lab File ID: 2018.08.26_537C_015.d
 Analysis Method: 537 Date Collected: 08/09/2018 08:35
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 287.7(mL) Date Analyzed: 08/27/2018 00:21
 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.: 242153 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	111		70-130
STL00996	13C2 PFDA	109		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_015.d
 Lims ID: 320-42002-A-6-A
 Client ID: WGNA-080918-FRB-0443
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:21:34 ALS Bottle#: 9 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-6-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.487	1.487	0.0	1.000	1135682	11.1	12498	
* 6 13C2-PFOA	415.00 > 370.00	1.813	1.821	-0.008		983360	10.0	6754	
* 7 13C4 PFOS	503.00 > 80.00	2.071	2.071	0.0		2416892	28.7	6060	
\$ 10 13C2 PFDA	515.00 > 470.00	2.246	2.246	0.0	1.000	852141	10.9	4735	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_015.d

Injection Date: 27-Aug-2018 00:21:34

Instrument ID: A8_N

Lims ID: 320-42002-A-6-A

Lab Sample ID: 320-42002-6

Client ID: WGNA-080918-FRB-0443

Operator ID: SACINSTLCMS01

ALS Bottle#: 9

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

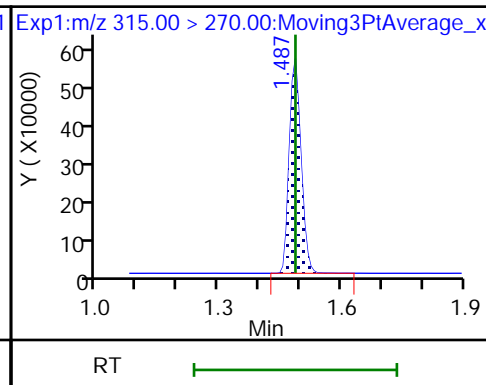
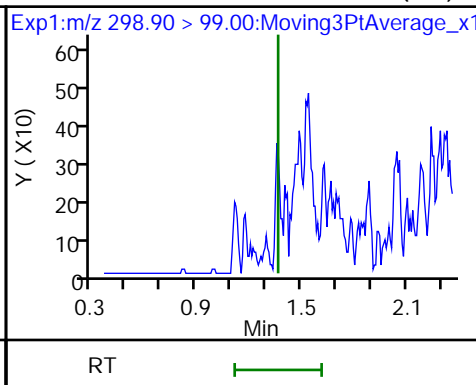
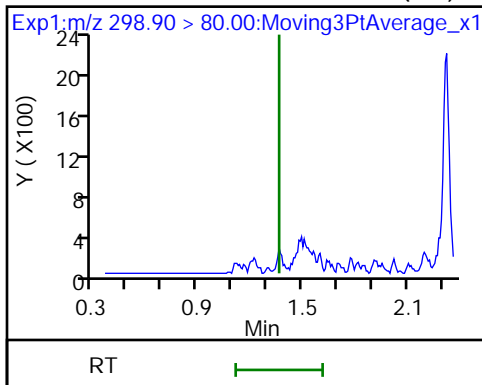
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

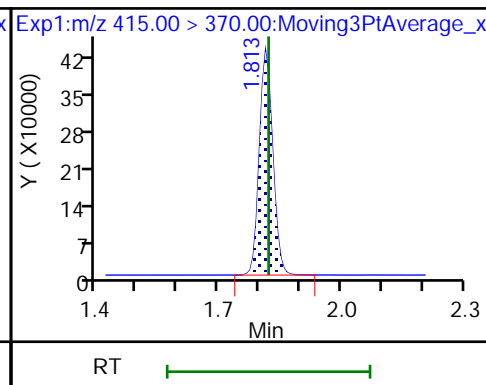
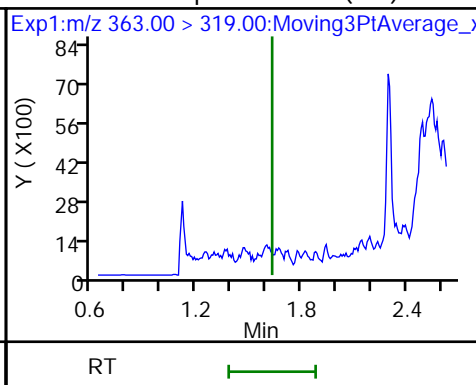
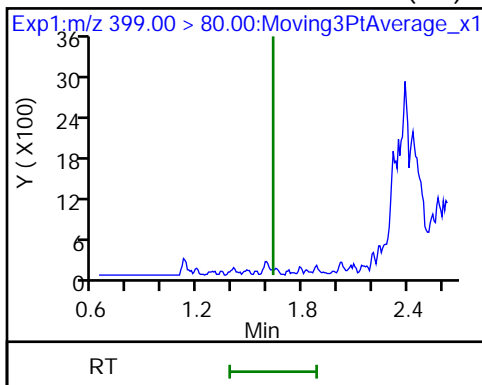
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

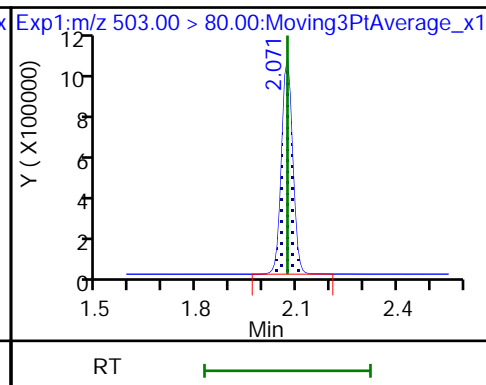
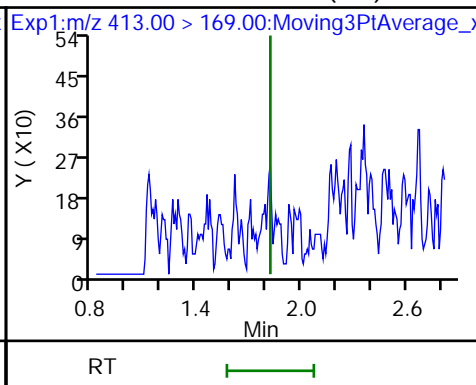
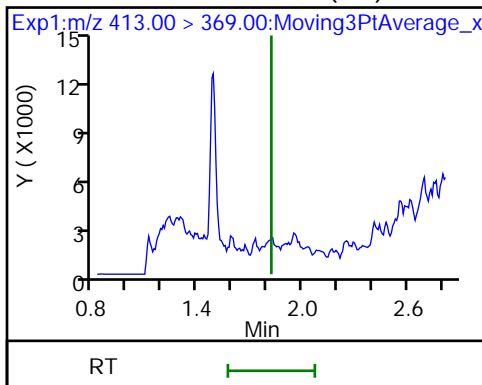
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

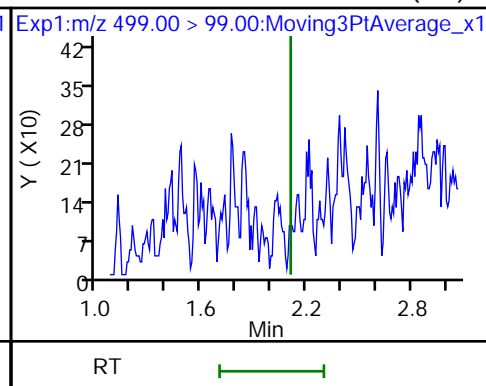
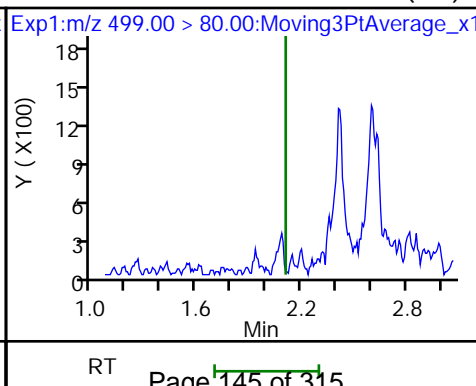
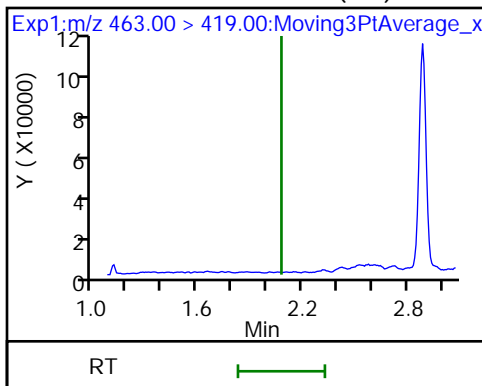
* 7 13C4 PFOS



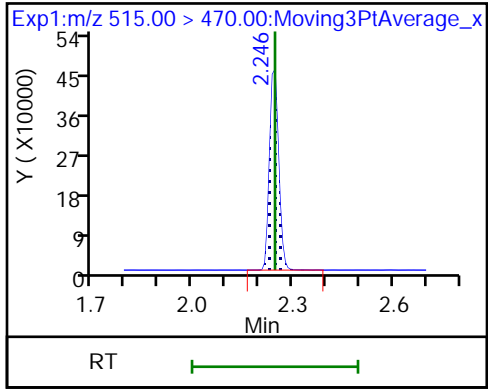
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_015.d
 Lims ID: 320-42002-A-6-A
 Client ID: WGNA-080918-FRB-0443
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:21:34 ALS Bottle#: 9 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-6-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.1	111.11
\$ 10 13C2 PFDA	10.0	10.9	109.40

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: NAWC-080918-RW-269 Lab Sample ID: 320-42002-7
 Matrix: Water Lab File ID: 2018.08.26_537C_016.d
 Analysis Method: 537 Date Collected: 08/09/2018 09:10
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 287.7(mL) Date Analyzed: 08/27/2018 00:26
 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.: 242153 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	22	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	22		17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.2	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_016.d
 Lims ID: 320-42002-A-7-A
 Client ID: NAWC-080918-RW-269
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:26:15 ALS Bottle#: 10 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-7-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:37:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	372710	3.43		367	
298.90 > 99.00	1.358	1.366	-0.008	0.994	247785		1.50(0.00-0.00)	536	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	1284297	10.9		12902	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	525303	3.34		195	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	249823	2.08		38.6	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.821	-0.008		1138388	10.0		9650	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.821	-0.008	1.000	777053	6.26		87.3	
413.00 > 169.00	1.813	1.821	-0.008	1.000	456866		1.70(0.00-0.00)	1155	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2719447	28.7		2419	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	43434	0.4629		3.7	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	635447	6.20		290	
499.00 > 99.00	2.071	2.109	-0.038	1.000	116458		5.46(0.00-0.00)	169	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	981086	10.9		5986	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_016.d

Injection Date: 27-Aug-2018 00:26:15

Instrument ID: A8_N

Lims ID: 320-42002-A-7-A

Lab Sample ID: 320-42002-7

Client ID: NAWC-080918-RW-269

Operator ID: SACINSTLCMS01

ALS Bottle#: 10

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

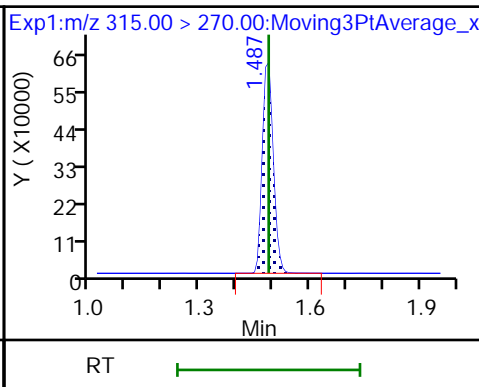
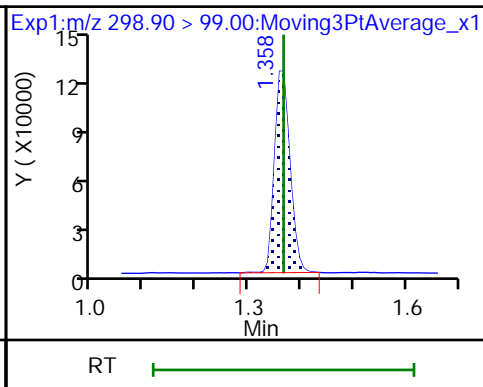
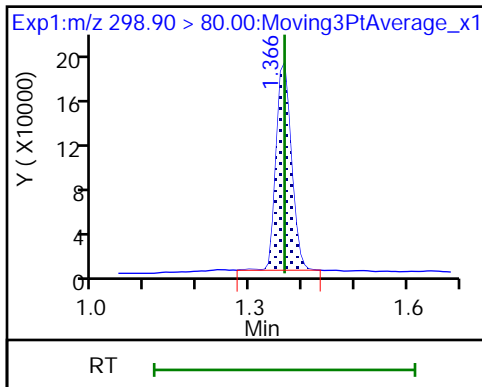
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

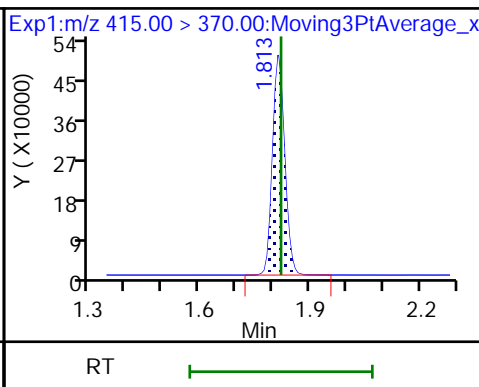
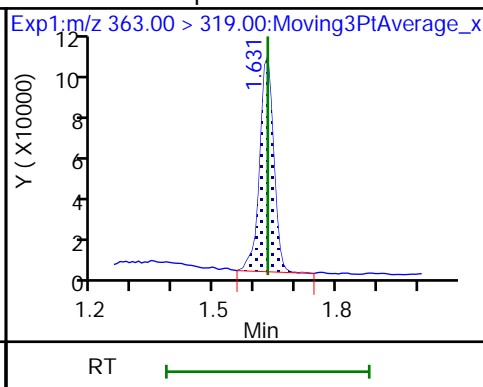
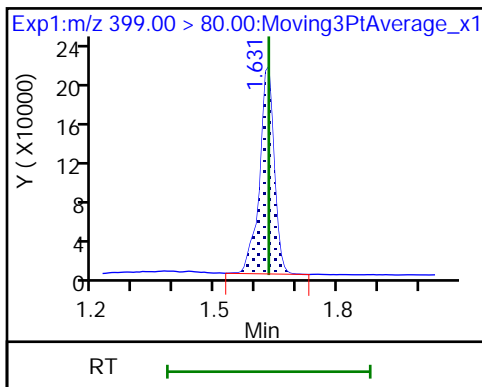
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

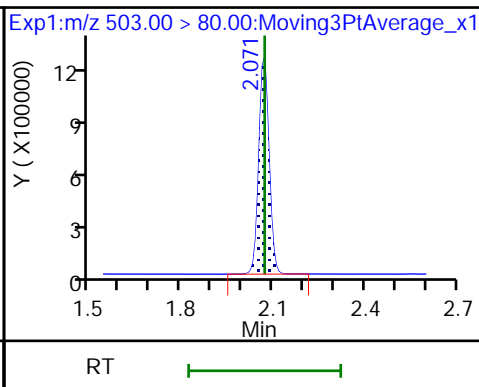
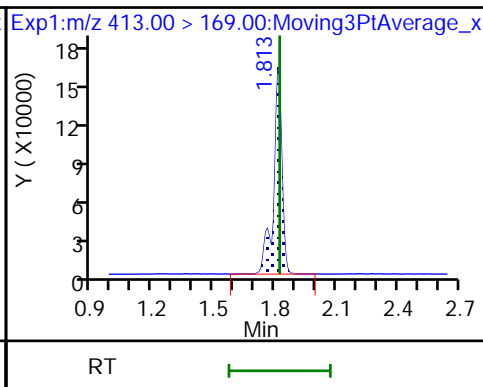
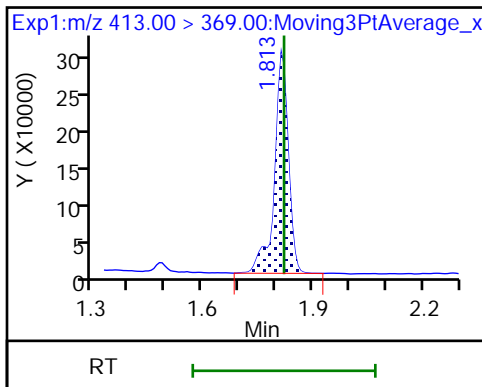
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

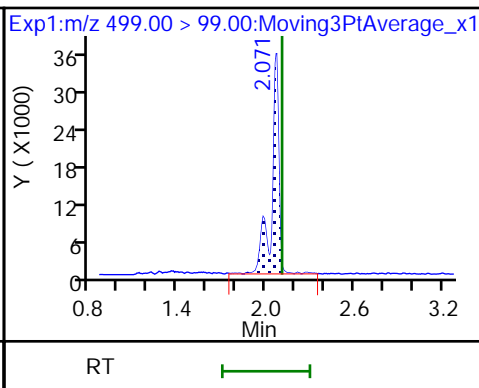
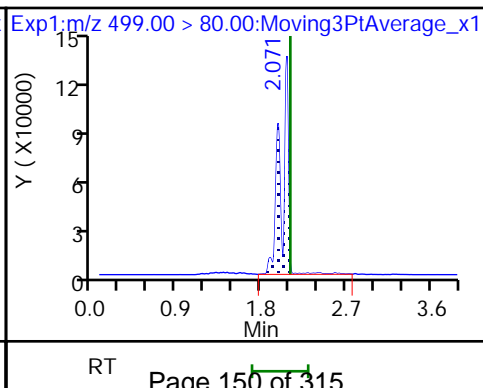
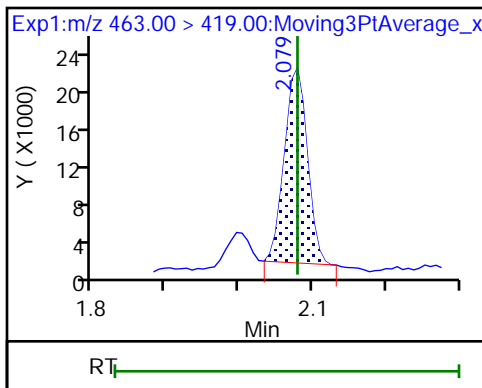
* 7 13C4 PFOS



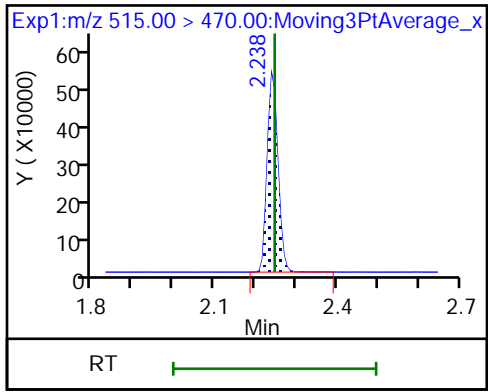
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_016.d
 Lims ID: 320-42002-A-7-A
 Client ID: NAWC-080918-RW-269
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:26:15 ALS Bottle#: 10 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-7-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:37:40

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.9	108.54
\$ 10 13C2 PFDA	10.0	10.9	108.80

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: NAWC-080918-FRB-269 Lab Sample ID: 320-42002-8
 Matrix: Water Lab File ID: 2018.08.26_537C_019.d
 Analysis Method: 537 Date Collected: 08/09/2018 09:05
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 278.5 (mL) Date Analyzed: 08/27/2018 00:40
 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.: 242156 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	110		70-130
STL00996	13C2 PFDA	112		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_019.d
 Lims ID: 320-42002-A-8-A
 Client ID: NAWC-080918-FRB-269
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:40:15 ALS Bottle#: 11 Worklist Smp#: 16
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-8-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.487	1.487	0.0	1.000	1253265	11.0	12599	
* 6 13C2-PFOA	415.00 > 370.00	1.813	1.813	0.0		1099847	10.0	9295	
* 7 13C4 PFOS	503.00 > 80.00	2.071	2.071	0.0		2831201	28.7	7236	
\$ 10 13C2 PFDA	515.00 > 470.00	2.246	2.238	0.008	1.000	972822	11.2	5096	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_019.d

Injection Date: 27-Aug-2018 00:40:15

Instrument ID: A8_N

Lims ID: 320-42002-A-8-A

Lab Sample ID: 320-42002-8

Client ID: NAWC-080918-FRB-269

Operator ID: SACINSTLCMS01

ALS Bottle#: 11

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

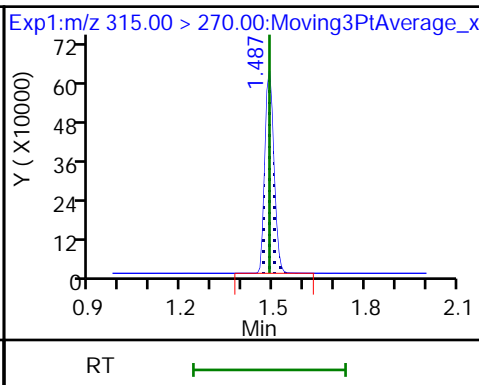
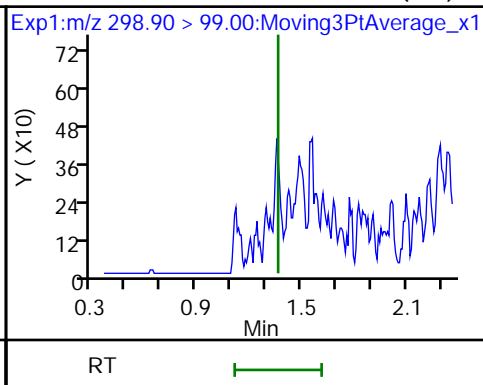
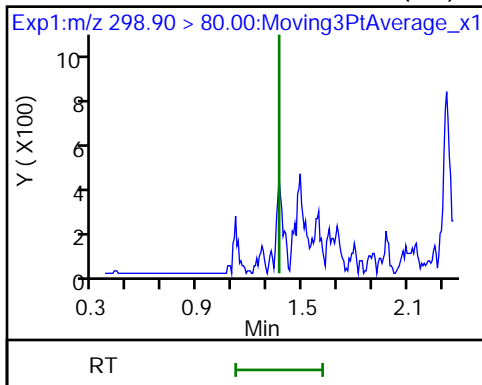
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

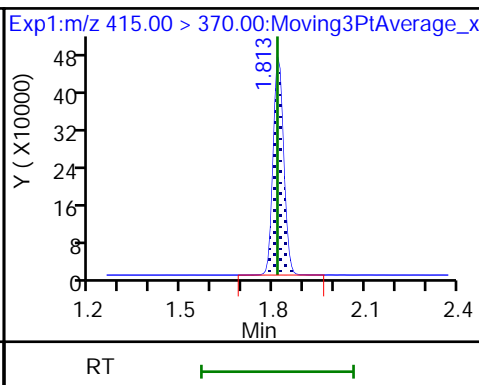
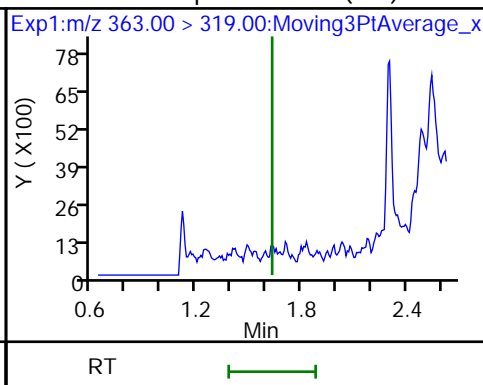
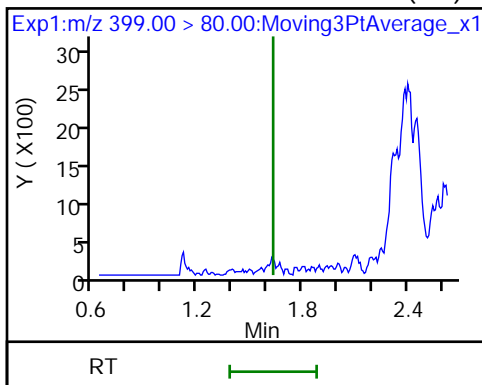
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

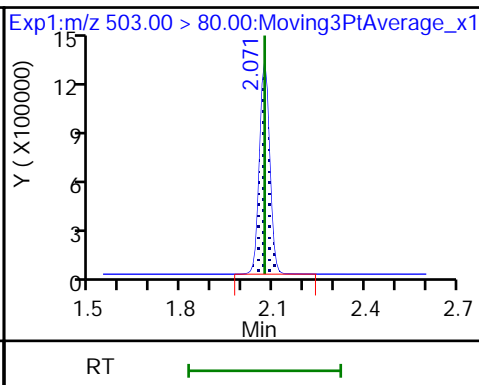
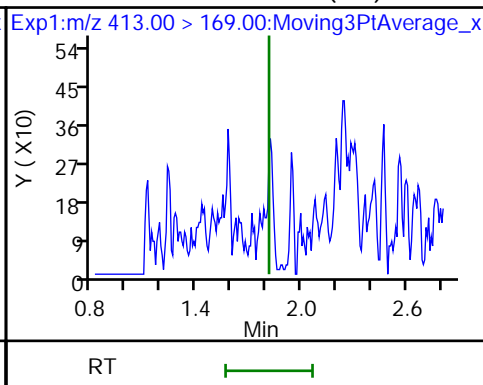
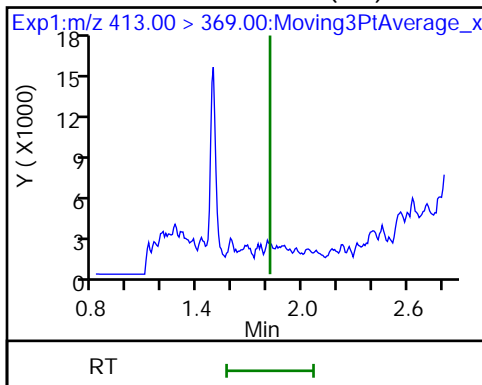
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

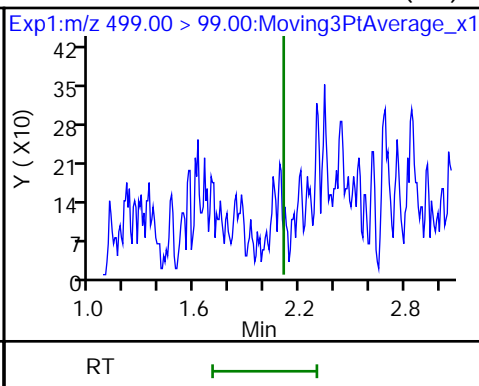
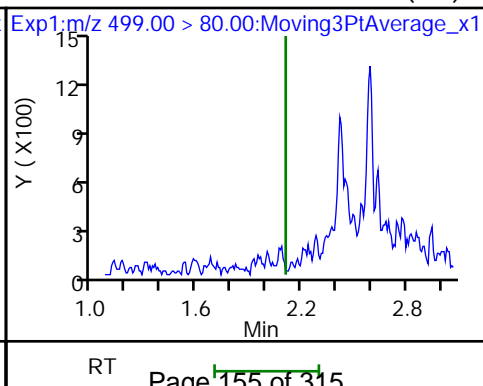
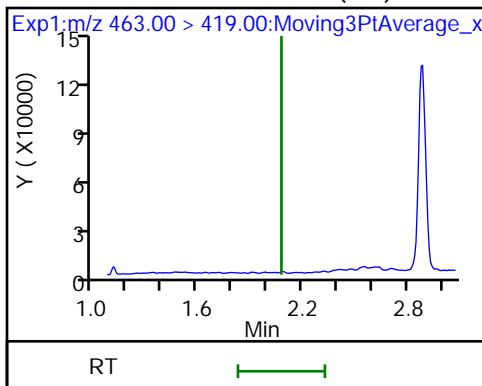
* 7 13C4 PFOS



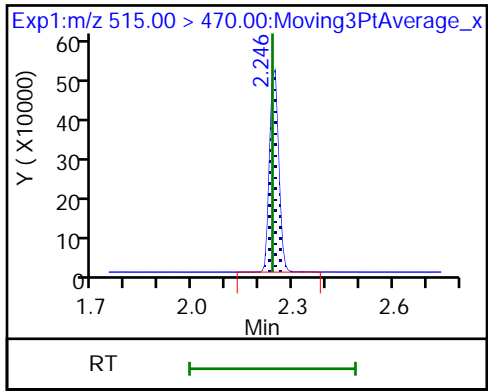
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_019.d
 Lims ID: 320-42002-A-8-A
 Client ID: NAWC-080918-FRB-269
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:40:15 ALS Bottle#: 11 Worklist Smp#: 16
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-8-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.0	109.63
\$ 10 13C2 PFDA	10.0	11.2	111.66

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: NAWC-080918-RW-117 Lab Sample ID: 320-42002-9
 Matrix: Water Lab File ID: 2018.08.28_537A_006.d
 Analysis Method: 537 Date Collected: 08/09/2018 09:40
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 292.8(mL) Date Analyzed: 08/28/2018 23:36
 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.: 242684 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	53		34	14	5.8
335-67-1	Perfluorooctanoic acid (PFOA)	29		17	6.8	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	20	17	6.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	20	J	26	10	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.6	J	8.5	3.4	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	77	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	104		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_006.d
 Lims ID: 320-42002-A-9-A
 Client ID: NAWC-080918-RW-117
 Sample Type: Client
 Inject. Date: 28-Aug-2018 23:36:25 ALS Bottle#: 2 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-9-a (241537)
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 29-Aug-2018 10:28:37 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK010

First Level Reviewer: barnettj Date: 29-Aug-2018 10:15:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.373	-0.007	1.000	119491	1.04		103	
298.90 > 99.00	1.366	1.373	-0.007	1.000	77554		1.54(0.00-0.00)	240	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.495	-0.008	1.000	1235862	10.0		9582	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.639	1.639	0.0	1.000	987347	5.95		409	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.639	1.639	0.0	1.000	242904	1.94		46.1	
* 6 13C2-PFOA									
415.00 > 370.00	1.828	1.828	0.0		1186370	10.0		8400	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.828	1.828	0.0	1.000	1106016	8.56		137	
413.00 > 169.00	1.828	1.828	0.0	1.000	623226		1.77(0.00-0.00)	1460	
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.086	0.0		2873335	28.7		3887	
9 Perfluorononanoic acid									
463.00 > 419.00	2.102	2.094	0.008	1.000	147877	1.51		15.3	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.086	2.109	-0.023	1.000	1685585	15.6		1503	
499.00 > 99.00	2.086	2.109	-0.023	1.000	358422		4.70(0.00-0.00)	951	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	974975	10.4		5795	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_006.d

Injection Date: 28-Aug-2018 23:36:25

Instrument ID: A8_N

Lims ID: 320-42002-A-9-A

Lab Sample ID: 320-42002-9

Client ID: NAWC-080918-RW-117

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

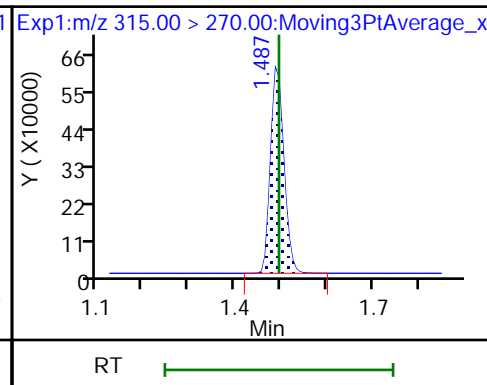
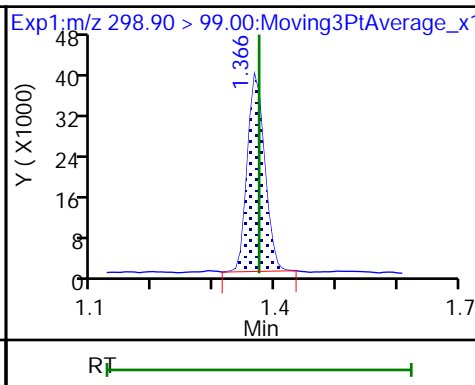
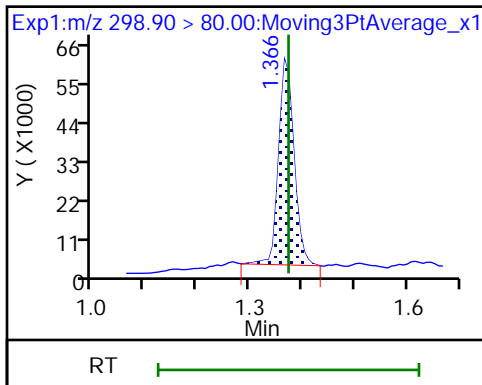
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

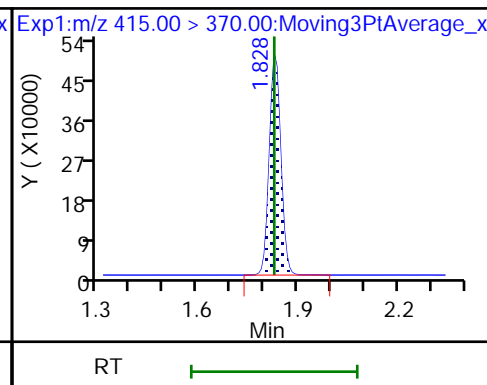
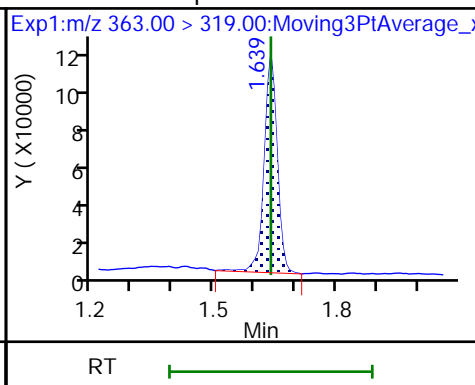
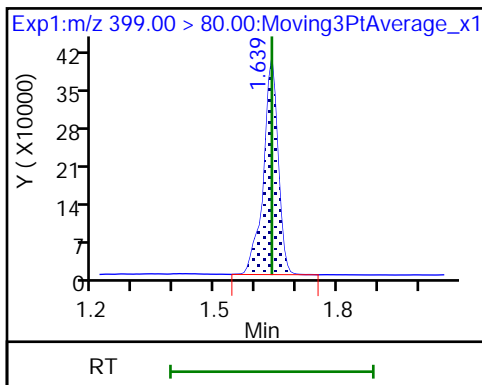
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

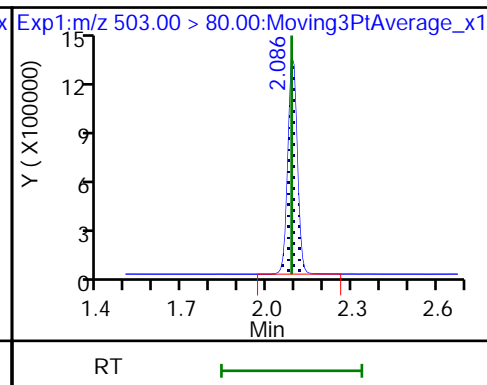
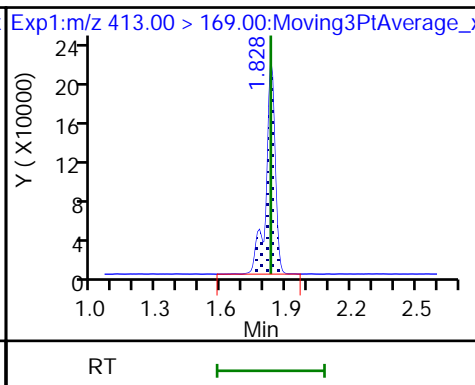
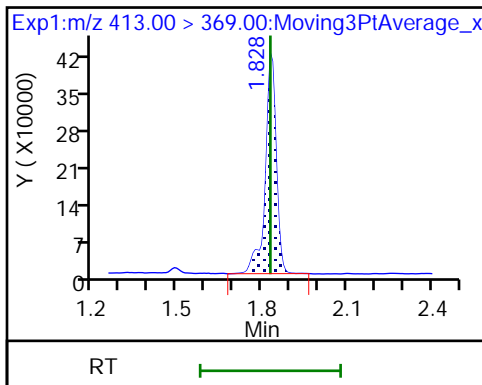
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

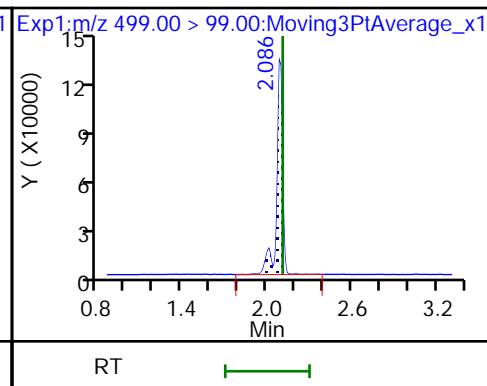
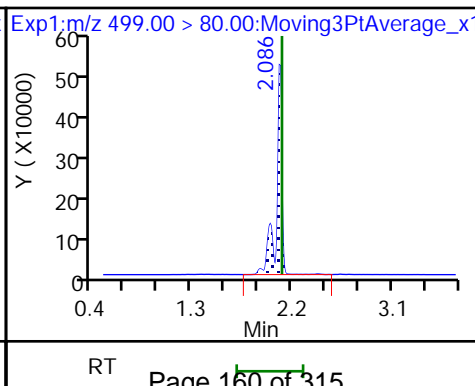
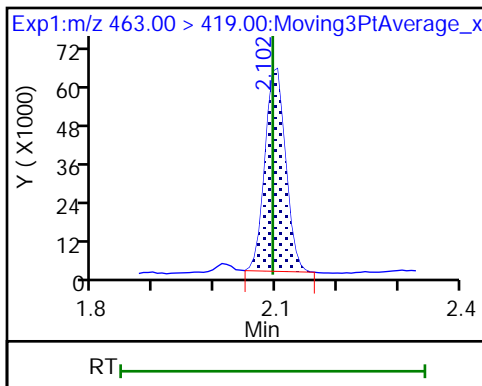
* 7 13C4 PFOS



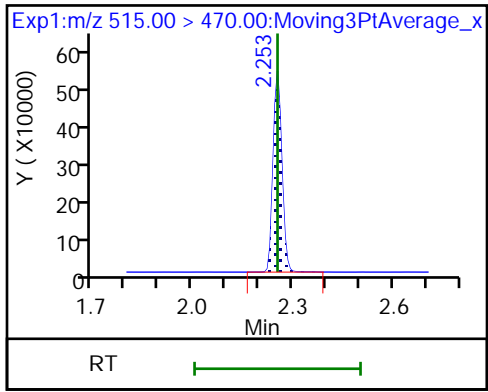
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_006.d
 Lims ID: 320-42002-A-9-A
 Client ID: NAWC-080918-RW-117
 Sample Type: Client
 Inject. Date: 28-Aug-2018 23:36:25 ALS Bottle#: 2 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-9-a (241537)
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 29-Aug-2018 10:28:37 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK010

First Level Reviewer: barnettj Date: 29-Aug-2018 10:15:57

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.0	100.22
\$ 10 13C2 PFDA	10.0	10.4	103.75

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: NAWC-080918-FRB-117 Lab Sample ID: 320-42002-10
 Matrix: Water Lab File ID: 2018.08.26_537C_021.d
 Analysis Method: 537 Date Collected: 08/09/2018 09:35
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 273.7(mL) Date Analyzed: 08/27/2018 00:49
 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.: 242156 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	U	18	7.3	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.1	3.7	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	110		70-130
STL00996	13C2 PFDA	106		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_021.d
 Lims ID: 320-42002-A-10-A
 Client ID: NAWC-080918-FRB-117
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:49:37 ALS Bottle#: 13 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-10-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.479	1.487	-0.008	1.000	1247995	11.0	12830	
* 6 13C2-PFOA	415.00 > 370.00	1.813	1.813	0.0		1089017	10.0	9000	
* 7 13C4 PFOS	503.00 > 80.00	2.064	2.071	-0.007		2708943	28.7	7234	
\$ 10 13C2 PFDA	515.00 > 470.00	2.238	2.238	0.0	1.000	913409	10.6	4706	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_021.d

Injection Date: 27-Aug-2018 00:49:37

Instrument ID: A8_N

Lims ID: 320-42002-A-10-A

Lab Sample ID: 320-42002-10

Client ID: NAWC-080918-FRB-117

Operator ID: SACINSTLCMS01

ALS Bottle#: 13

Worklist Smp#: 18

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

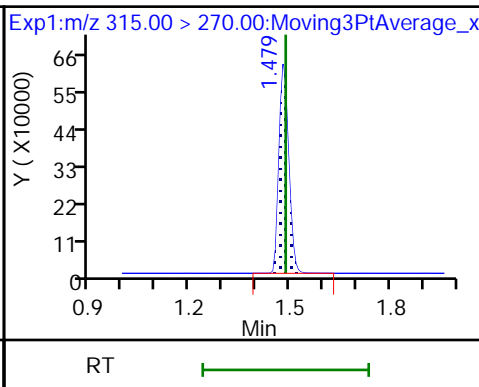
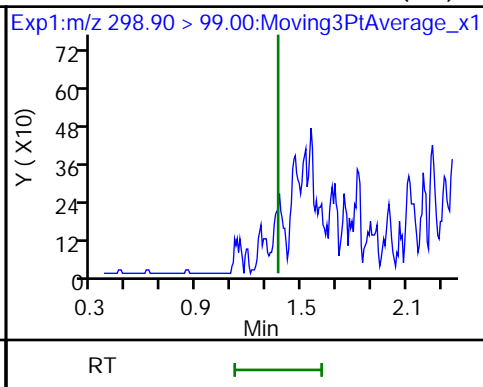
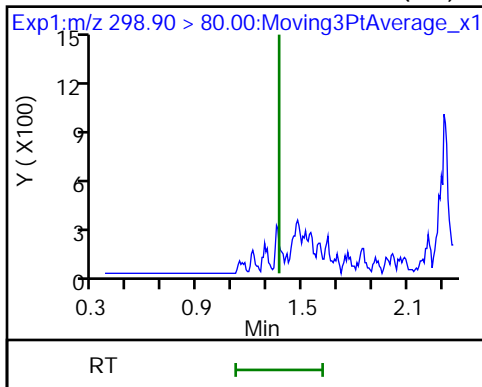
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

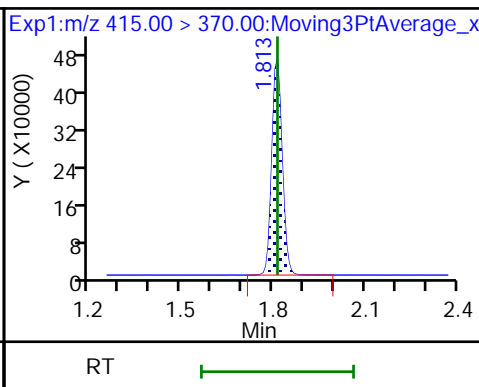
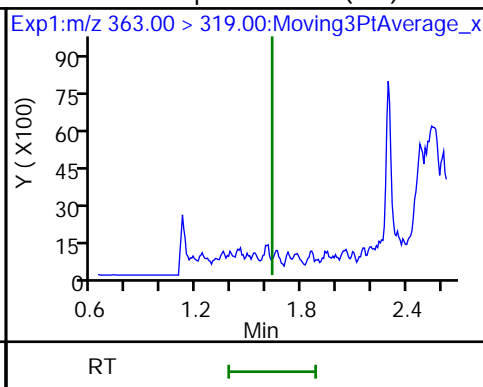
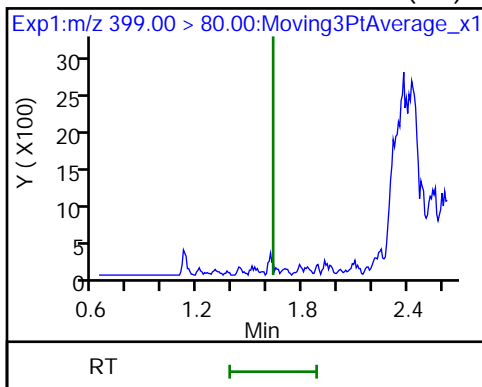
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

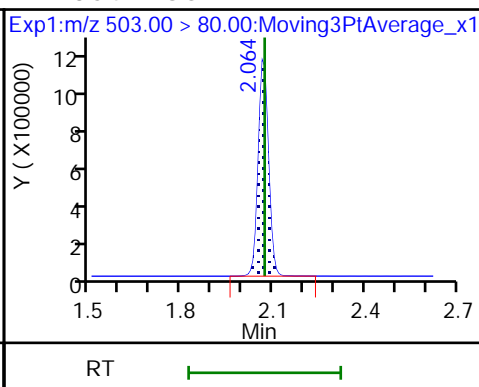
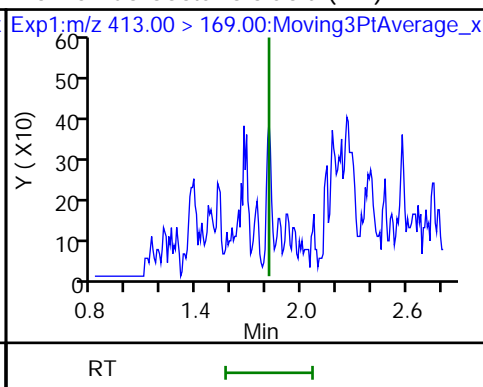
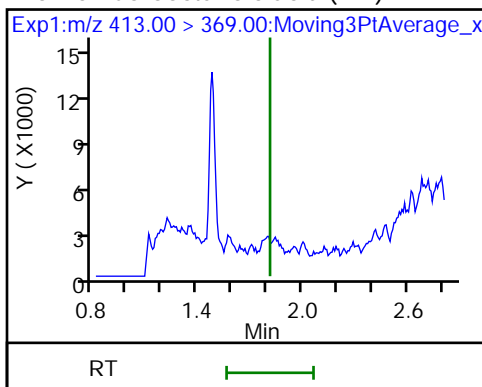
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

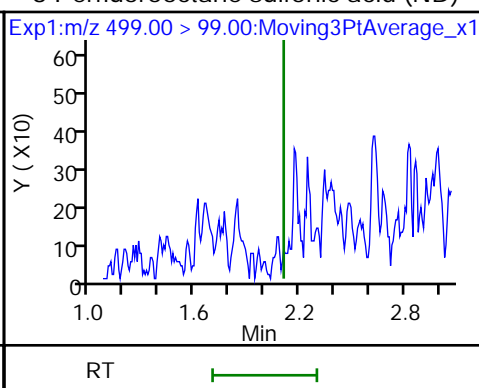
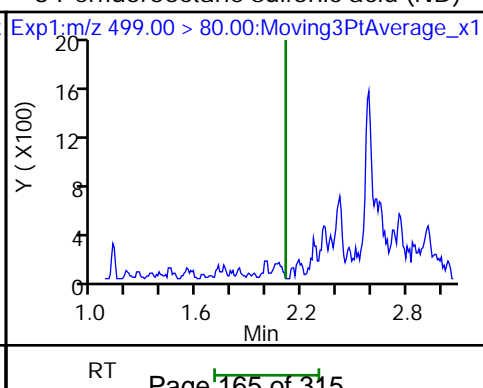
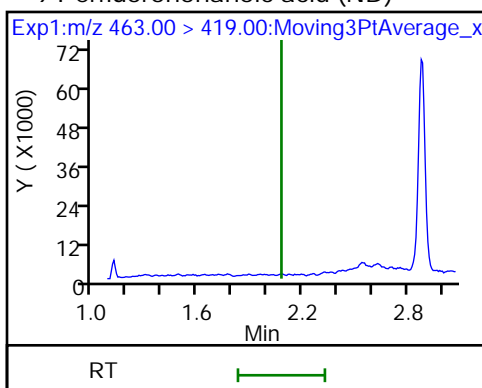
* 7 13C4 PFOS



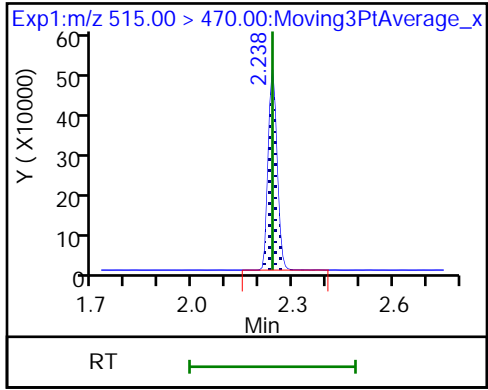
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_021.d
 Lims ID: 320-42002-A-10-A
 Client ID: NAWC-080918-FRB-117
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:49:37 ALS Bottle#: 13 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-10-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.0	110.25
\$ 10 13C2 PFDA	10.0	10.6	105.89

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-4846 Lab Sample ID: 320-42002-11
 Matrix: Water Lab File ID: 2018.08.26_537C_022.d
 Analysis Method: 537 Date Collected: 08/09/2018 10:10
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 296.2 (mL) Date Analyzed: 08/27/2018 00:54
 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.: 242156 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	6.6	J M	34	14	5.7
335-67-1	Perfluorooctanoic acid (PFOA)	5.4	J	17	6.8	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	20	17	6.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U M	25	10	4.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.7	J M	8.4	3.4	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	30	U M	76	30	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	105		70-130
STL00996	13C2 PFDA	109		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_022.d
 Lims ID: 320-42002-A-11-A
 Client ID: WGNA-080918-RW-4846
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:54:19 ALS Bottle#: 14 Worklist Smp#: 19
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-11-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:39:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									M
298.90 > 80.00	1.366	1.366	0.0	1.000	59589	0.6850		86.3	
298.90 > 99.00	1.366	1.366	0.0	1.000	35764		1.67(0.00-0.00)	76.8	M
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	970850	10.5		10556	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	1.631	1.631	0.0	1.000	99058	0.7871		45.4	M
4 Perfluoroheptanoic acid									M
363.00 > 319.00	1.631	1.631	0.0	1.000	47804	0.5065		7.6	M
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.813	0.008		892460	10.0		6621	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.821	1.813	0.008	1.000	155657	1.60		18.1	
413.00 > 169.00	1.821	1.813	0.008	1.000	89869		1.73(0.00-0.00)	228	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2179421	28.7		2984	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.071	2.109	-0.038	1.000	160428	1.95		72.3	
499.00 > 99.00	2.071	2.109	-0.038	1.000	23928		6.70(0.00-0.00)	36.1	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	772617	10.9		4155	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_022.d

Injection Date: 27-Aug-2018 00:54:19

Instrument ID: A8_N

Lims ID: 320-42002-A-11-A

Lab Sample ID: 320-42002-11

Client ID: WGNA-080918-RW-4846

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 19

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

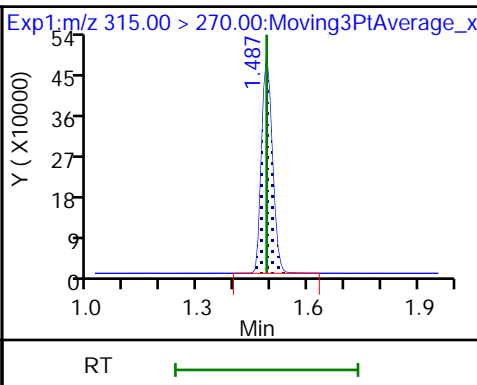
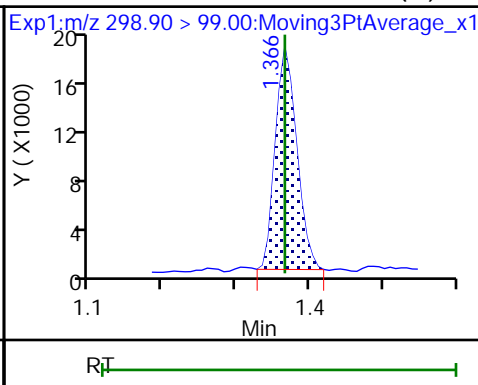
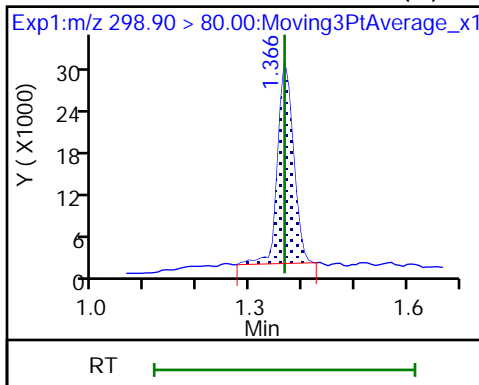
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (M)

1 Perfluorobutanesulfonic acid (M)

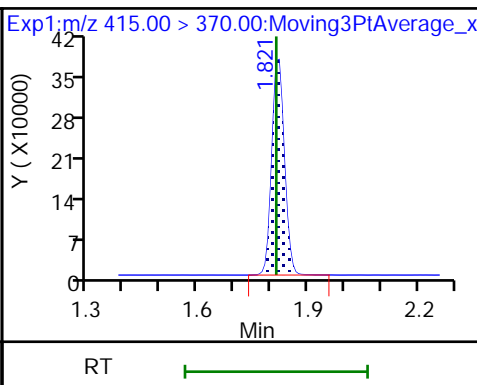
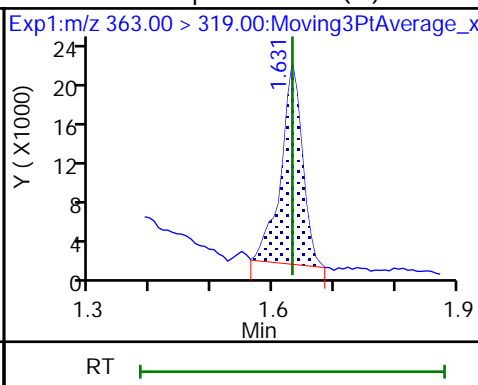
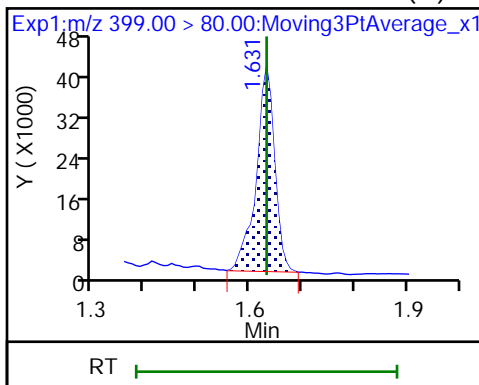
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (M)

4 Perfluoroheptanoic acid (M)

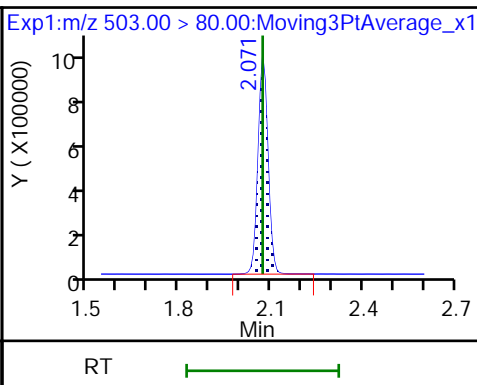
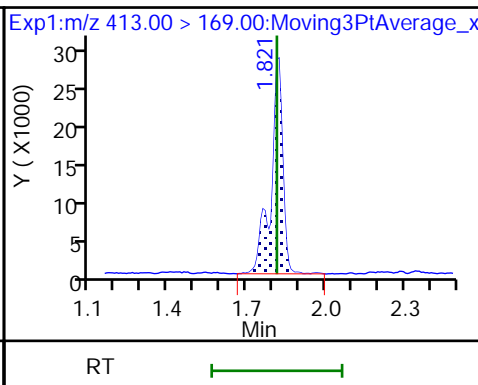
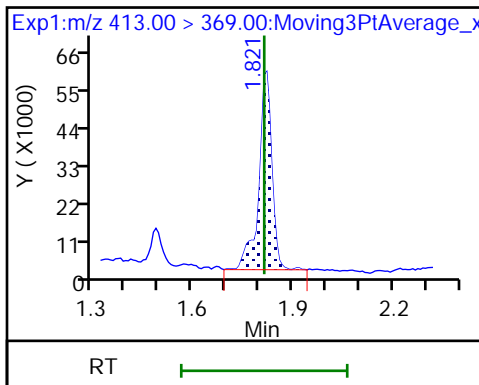
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

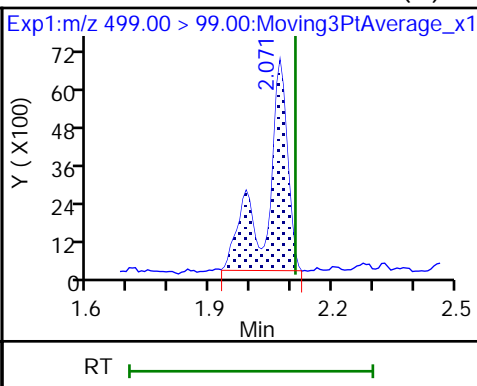
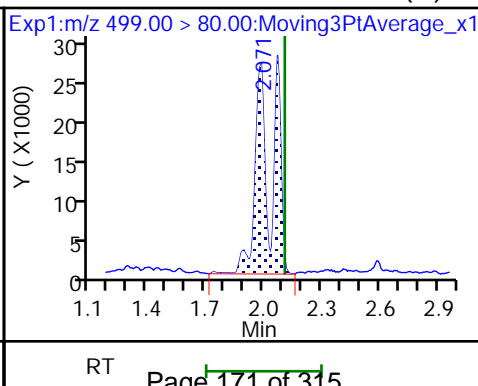
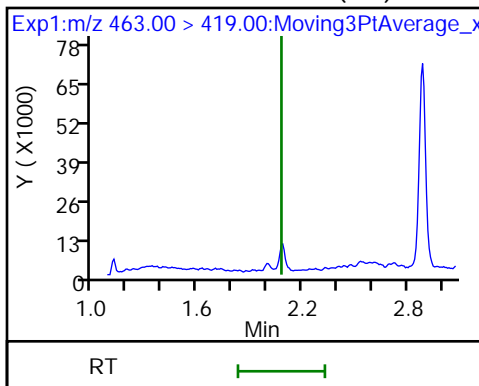
* 7 13C4 PFOS



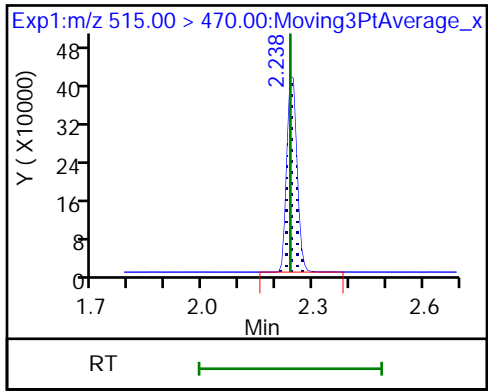
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_022.d
 Lims ID: 320-42002-A-11-A
 Client ID: WGNA-080918-RW-4846
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:54:19 ALS Bottle#: 14 Worklist Smp#: 19
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-11-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:39:34

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.5	104.66
\$ 10 13C2 PFDA	10.0	10.9	109.29

TestAmerica Sacramento

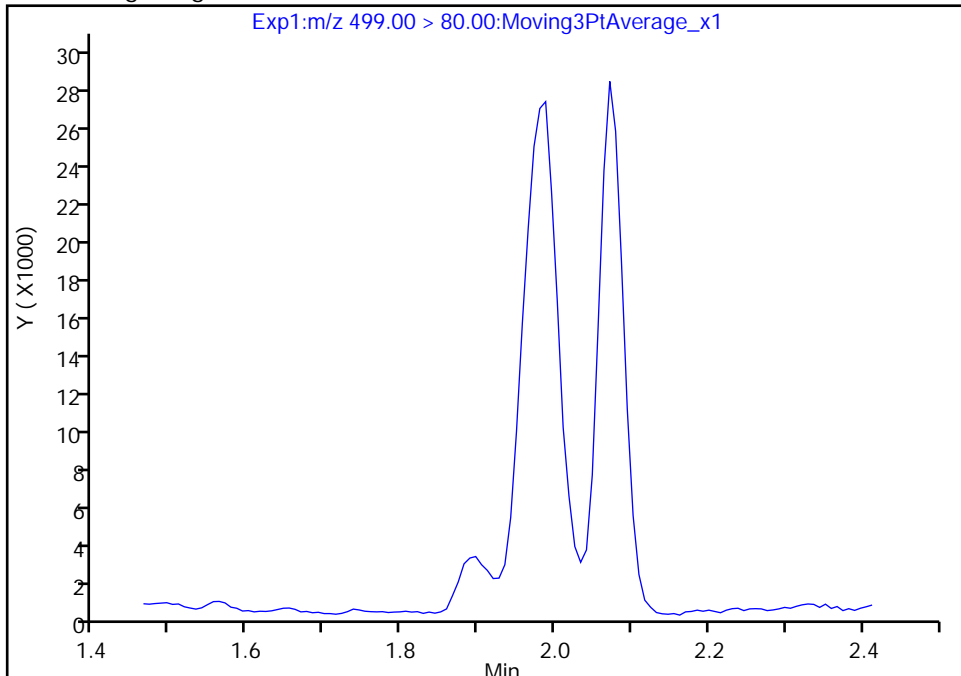
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Injection Date: 27-Aug-2018 00:54:19 Instrument ID: A8_N
Lims ID: 320-42002-A-11-A Lab Sample ID: 320-42002-11
Client ID: WGNA-080918-RW-4846
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

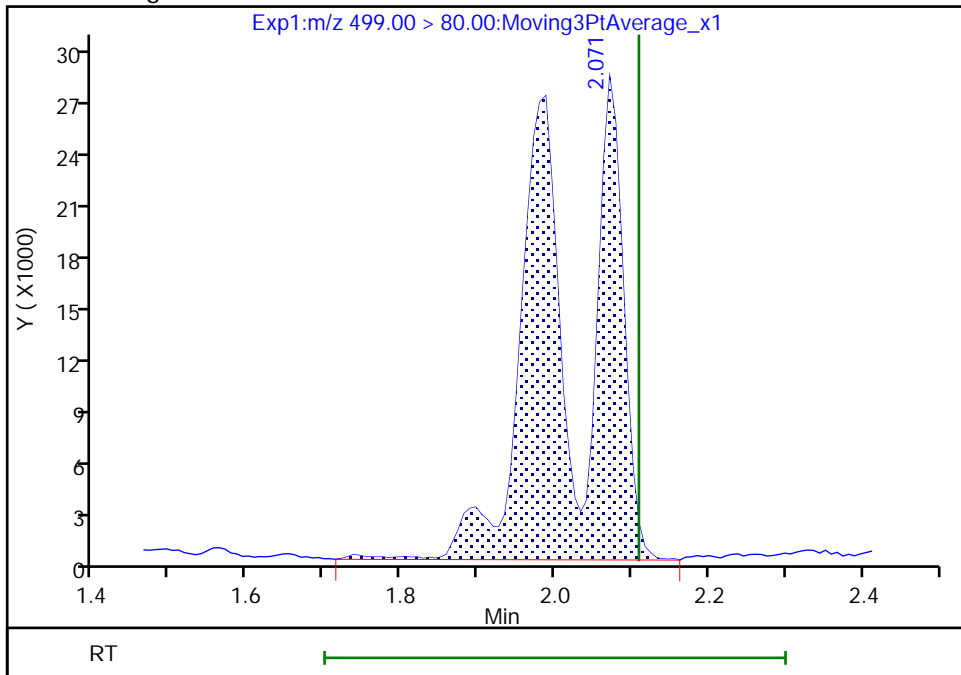
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.07
Area: 160428
Amount: 1.954203
Amount Units: ng/ml



TestAmerica Sacramento

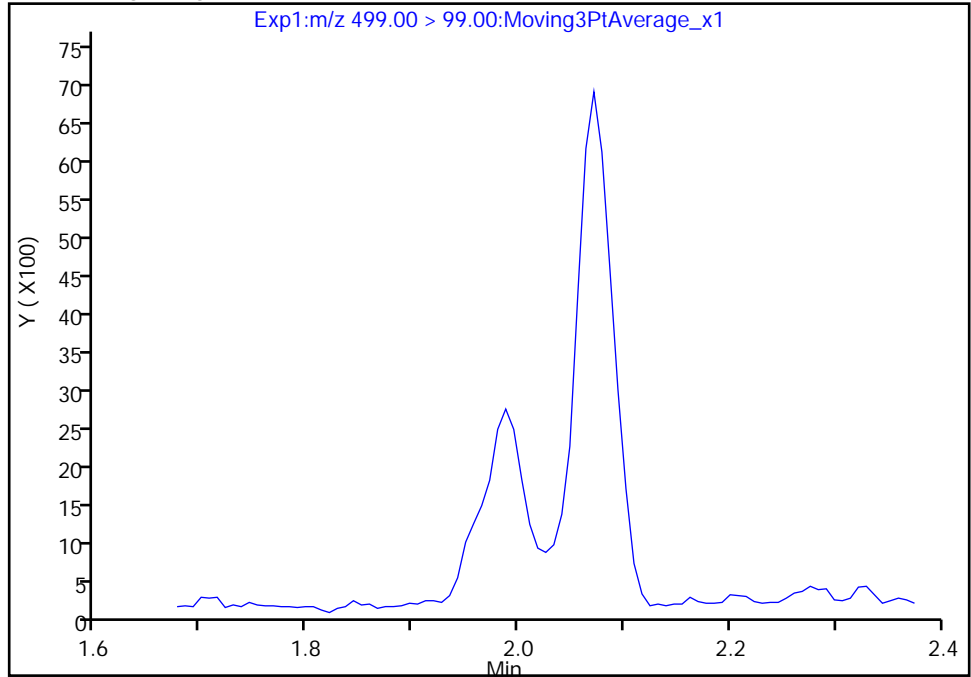
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Injection Date: 27-Aug-2018 00:54:19 Instrument ID: A8_N
Lims ID: 320-42002-A-11-A Lab Sample ID: 320-42002-11
Client ID: WGNA-080918-RW-4846
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

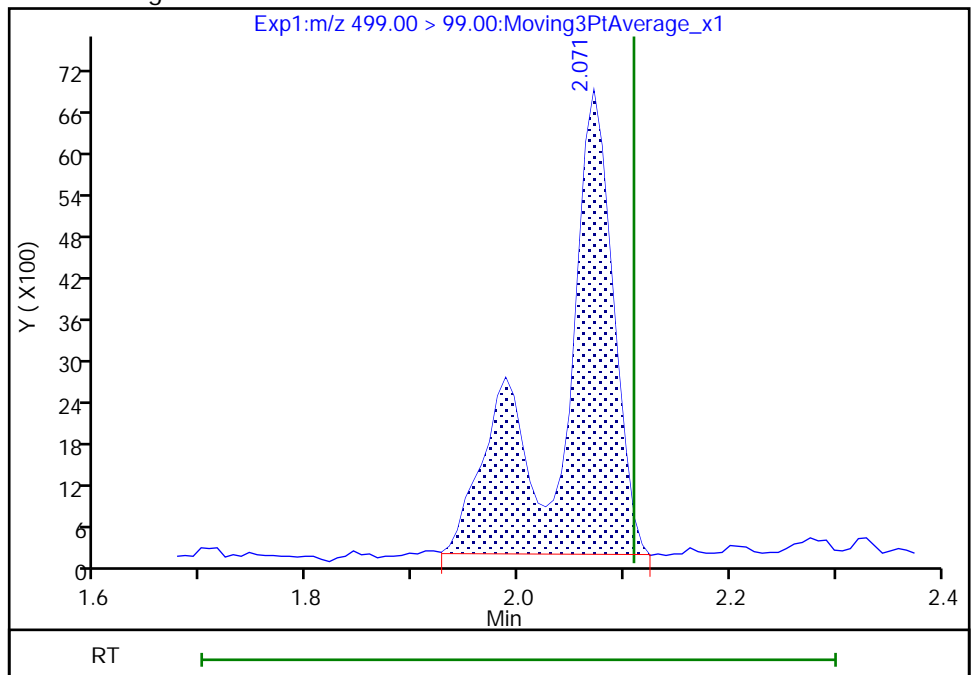
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.07
Area: 23928
Amount: 1.954203
Amount Units: ng/ml



Reviewer: barnettj, 27-Aug-2018 14:38:46

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

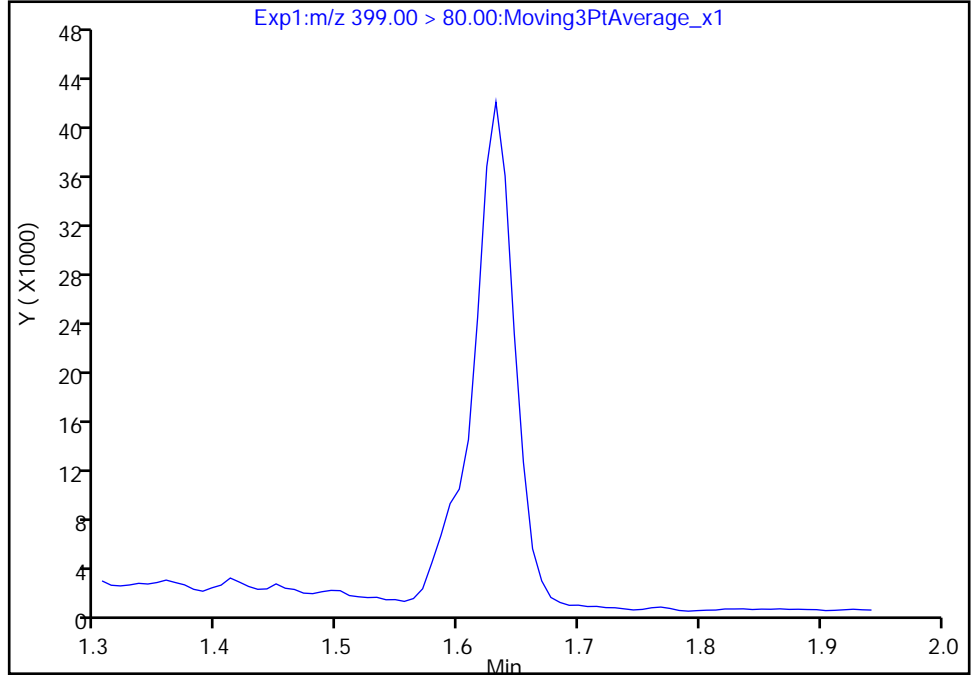
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Injection Date: 27-Aug-2018 00:54:19 Instrument ID: A8_N
Lims ID: 320-42002-A-11-A Lab Sample ID: 320-42002-11
Client ID: WGNA-080918-RW-4846
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

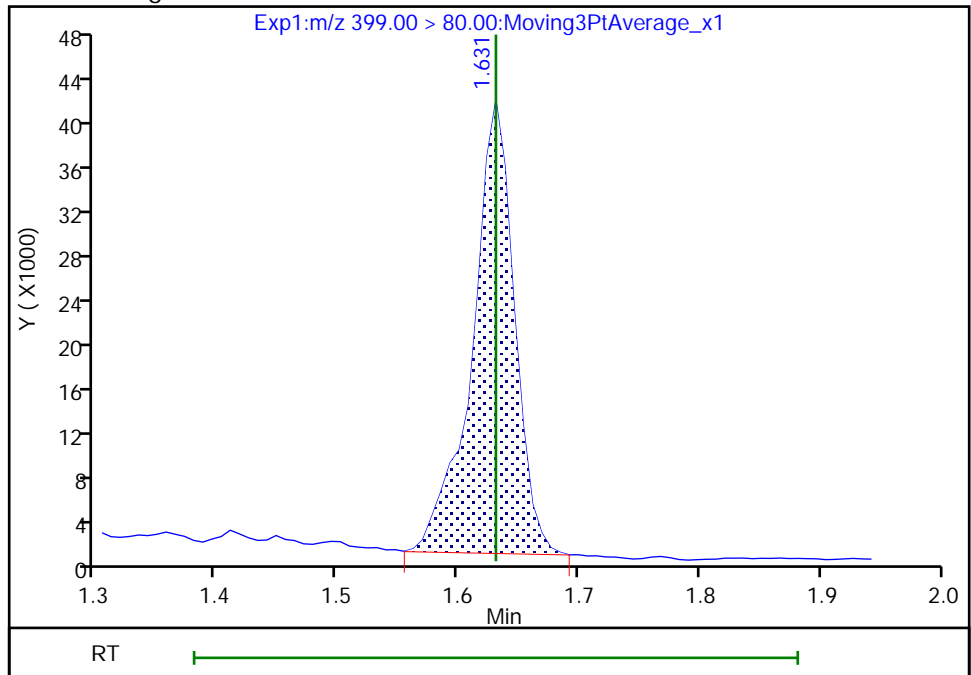
Not Detected
Expected RT: 1.63

Processing Integration Results



Manual Integration Results

RT: 1.63
Area: 99058
Amount: 0.787055
Amount Units: ng/ml



Reviewer: barnettj, 27-Aug-2018 14:38:58
Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

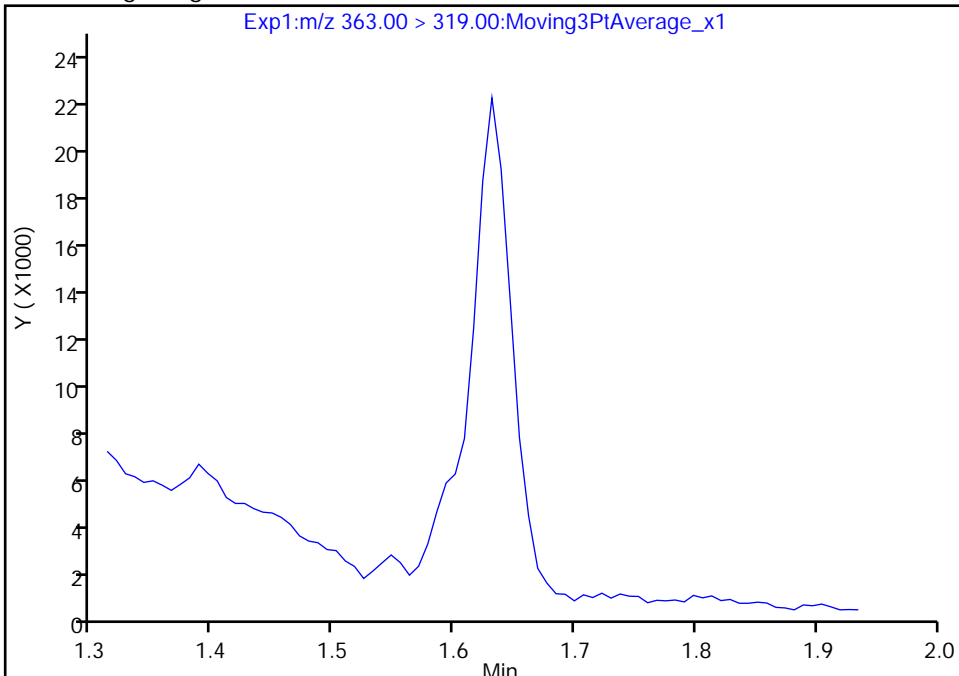
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Injection Date: 27-Aug-2018 00:54:19 Instrument ID: A8_N
Lims ID: 320-42002-A-11-A Lab Sample ID: 320-42002-11
Client ID: WGNA-080918-RW-4846
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

4 Perfluoroheptanoic acid, CAS: 375-85-9

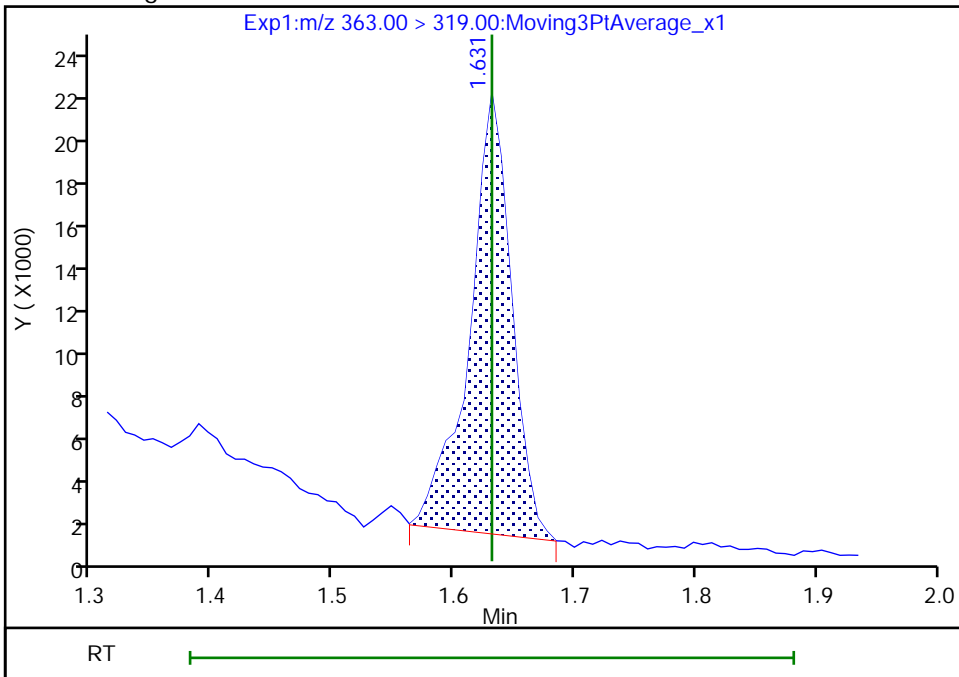
Signal: 1

Not Detected
Expected RT: 1.63

Processing Integration Results



Manual Integration Results



RT: 1.63
Area: 47804
Amount: 0.506513
Amount Units: ng/ml

Reviewer: barnettj, 27-Aug-2018 14:39:07
Audit Action: Manually Integrated

Audit Reason: Missed Peak
Page 177 of 315

TestAmerica Sacramento

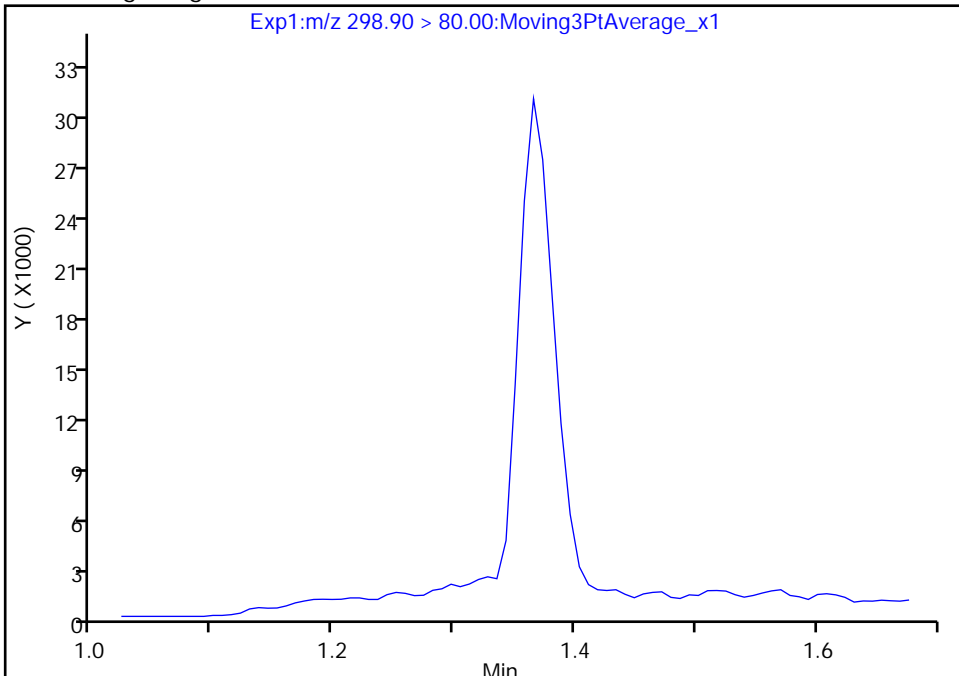
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Injection Date: 27-Aug-2018 00:54:19 Instrument ID: A8_N
Lims ID: 320-42002-A-11-A Lab Sample ID: 320-42002-11
Client ID: WGNA-080918-RW-4846
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

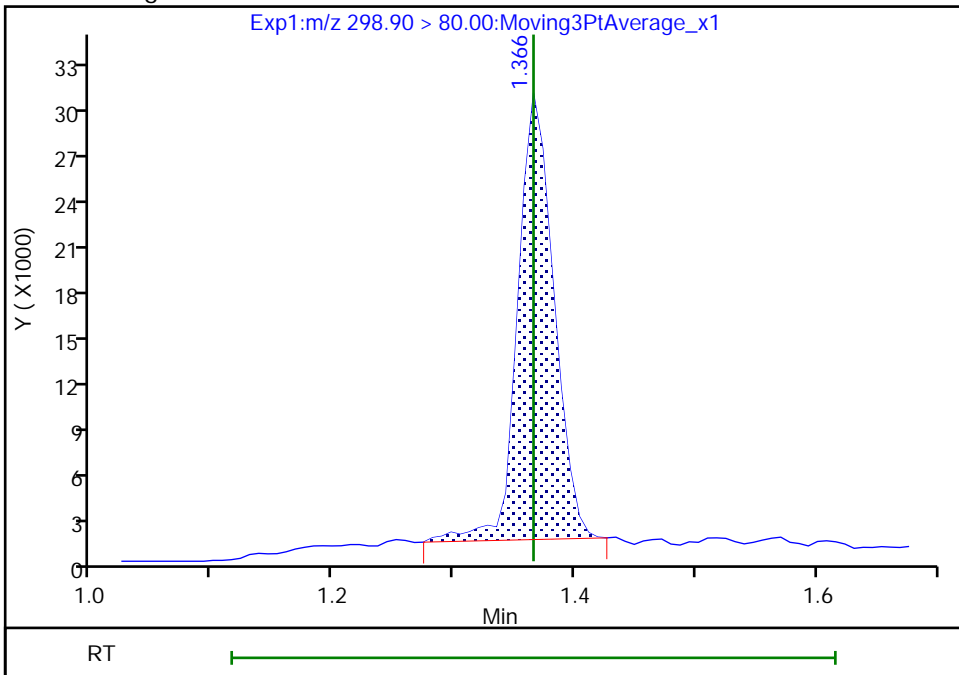
Not Detected
Expected RT: 1.37

Processing Integration Results



Manual Integration Results

RT: 1.37
Area: 59589
Amount: 0.685024
Amount Units: ng/ml



Reviewer: barnettj, 27-Aug-2018 14:39:17
Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

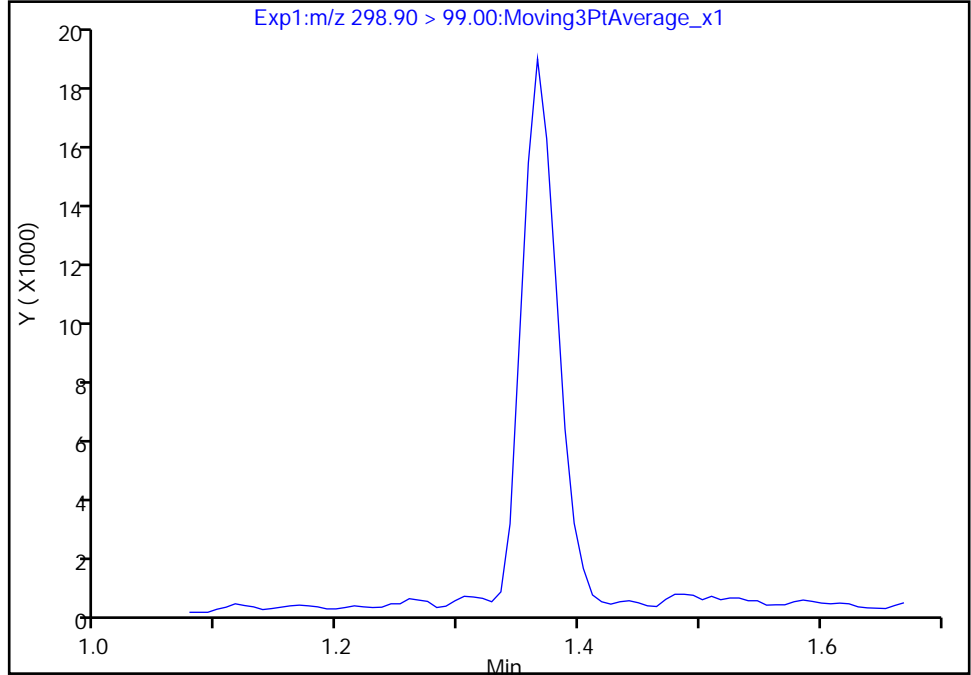
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Injection Date: 27-Aug-2018 00:54:19 Instrument ID: A8_N
Lims ID: 320-42002-A-11-A Lab Sample ID: 320-42002-11
Client ID: WGNA-080918-RW-4846
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

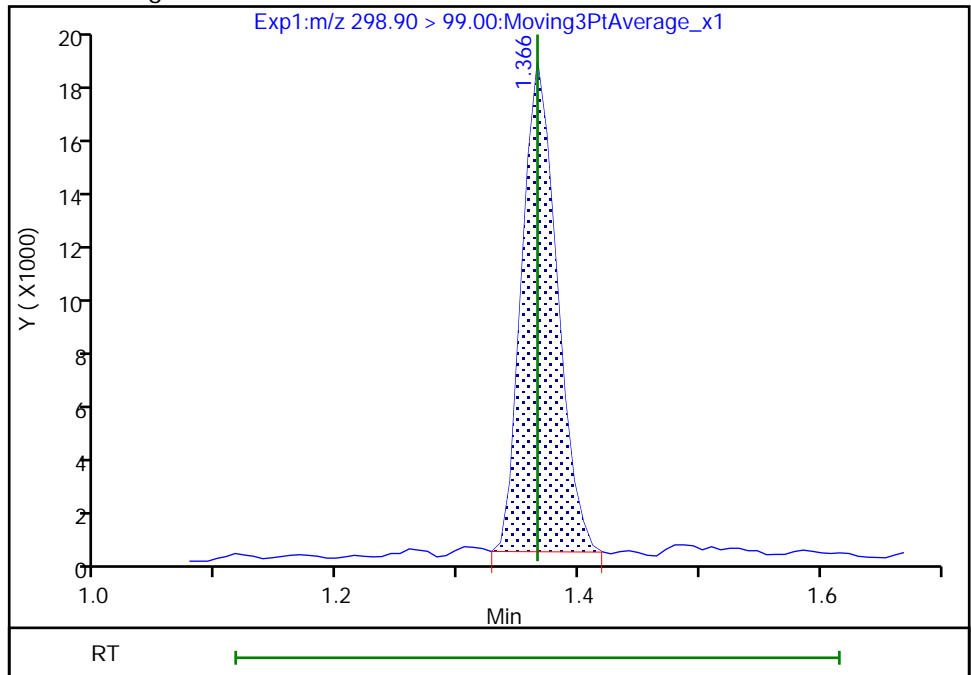
Not Detected
Expected RT: 1.37

Processing Integration Results



Manual Integration Results

RT: 1.37
Area: 35764
Amount: 0.685024
Amount Units: ng/ml



Reviewer: barnettj, 27-Aug-2018 14:39:27

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-4846 Lab Sample ID: 320-42002-12
 Matrix: Water Lab File ID: 2018.08.26_537C_023.d
 Analysis Method: 537 Date Collected: 08/09/2018 10:05
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 283.9(mL) Date Analyzed: 08/27/2018 00:58
 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.: 242156 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	111		70-130
STL00996	13C2 PFDA	108		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_023.d
 Lims ID: 320-42002-A-12-A
 Client ID: WGNA-080918-FRB-4846
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:58:59 ALS Bottle#: 15 Worklist Smp#: 20
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-12-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.479	1.487	-0.008	1.000	1235639	11.1	12362	
* 6 13C2-PFOA	415.00 > 370.00	1.806	1.813	-0.007		1067437	10.0	8406	
* 7 13C4 PFOS	503.00 > 80.00	2.064	2.071	-0.007		2663669	28.7	6702	
\$ 10 13C2 PFDA	515.00 > 470.00	2.238	2.238	0.0	1.000	915420	10.8	5334	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_023.d

Injection Date: 27-Aug-2018 00:58:59

Instrument ID: A8_N

Lims ID: 320-42002-A-12-A

Lab Sample ID: 320-42002-12

Client ID: WGNA-080918-FRB-4846

Operator ID: SACINSTLCMS01

ALS Bottle#: 15

Worklist Smp#: 20

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

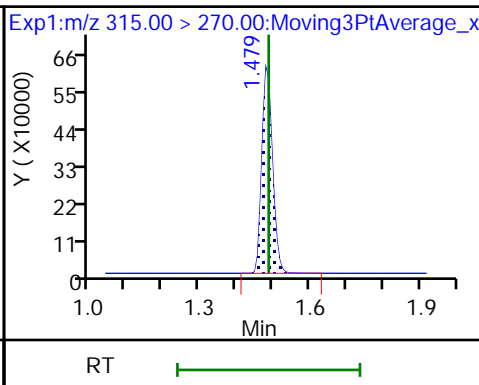
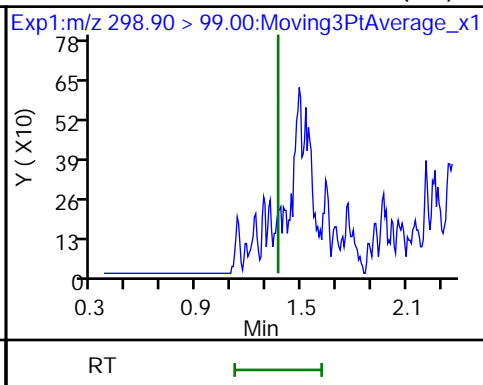
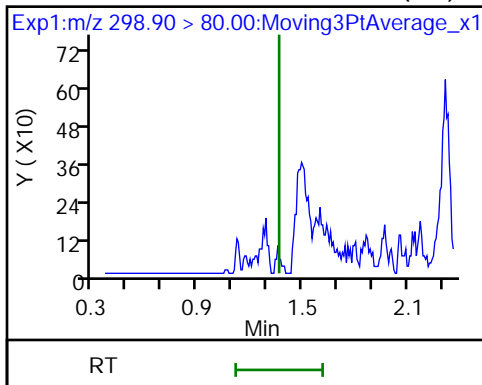
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

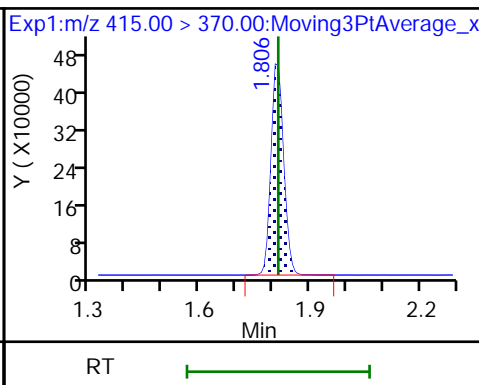
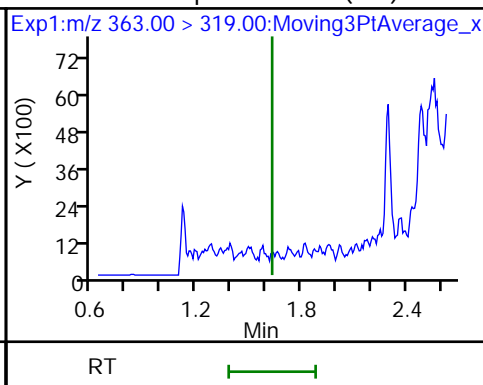
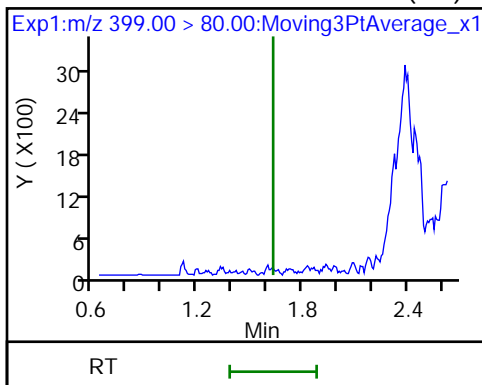
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

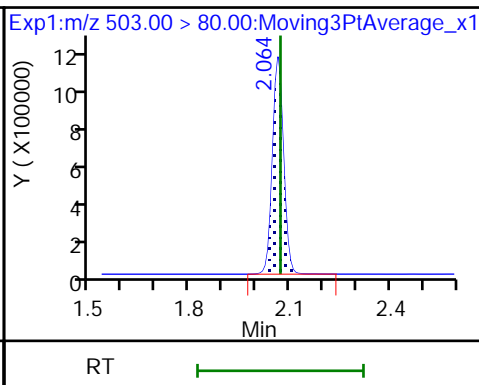
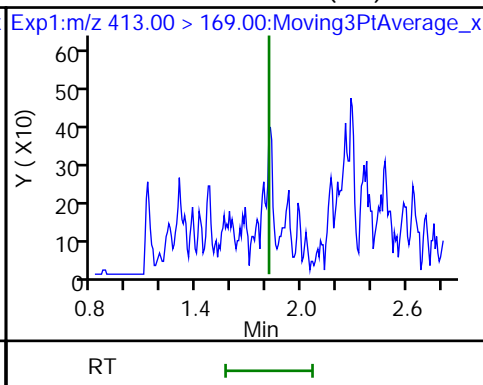
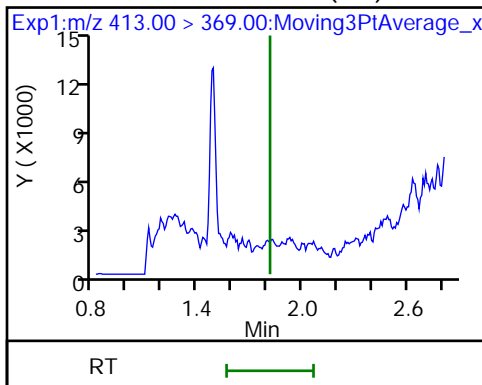
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

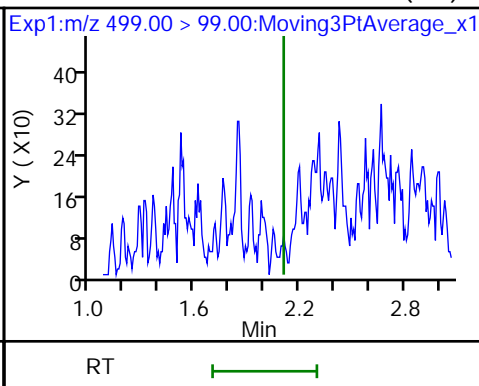
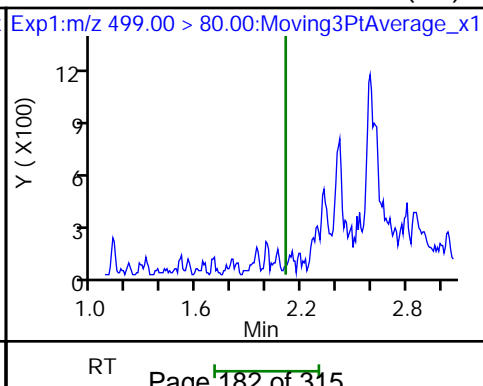
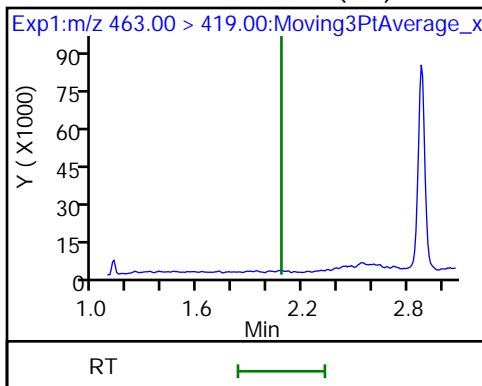
* 7 13C4 PFOS



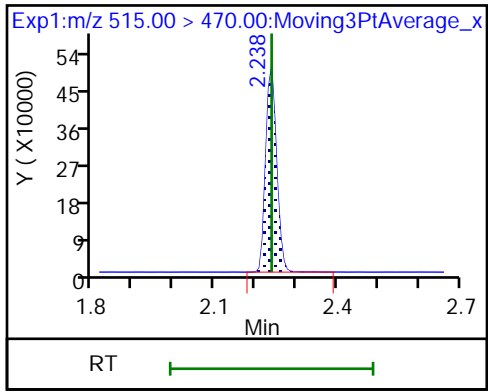
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_023.d
 Lims ID: 320-42002-A-12-A
 Client ID: WGNA-080918-FRB-4846
 Sample Type: Client
 Inject. Date: 27-Aug-2018 00:58:59 ALS Bottle#: 15 Worklist Smp#: 20
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-12-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.1	111.37
\$ 10 13C2 PFDA	10.0	10.8	108.26

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-4850 Lab Sample ID: 320-42002-13
 Matrix: Water Lab File ID: 2018.08.26_537C_024.d
 Analysis Method: 537 Date Collected: 08/09/2018 11:10
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 279.7(mL) Date Analyzed: 08/27/2018 01:03
 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.: 242156 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	170		36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	21	M	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	110		27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	12		8.9	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	26	J	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	111		70-130
STL00996	13C2 PFDA	113		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_024.d
 Lims ID: 320-42002-A-13-A
 Client ID: WGNA-080918-RW-4850
 Sample Type: Client
 Inject. Date: 27-Aug-2018 01:03:42 ALS Bottle#: 16 Worklist Smp#: 21
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-13-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:40:18

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	718463	7.34		758	
298.90 > 99.00	1.366	1.366	0.0	1.000	480251		1.50(0.00-0.00)	1113	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	1130989	11.1		10650	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	4476000	31.6		2238	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	348789	3.38		68.1	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		977186	10.0		7799	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.813	0.0	1.000	614141	5.77		79.4	M
413.00 > 169.00	1.813	1.813	0.0	1.000	348509		1.76(0.00-0.00)	899	M
* 7 13C4 PFOS									
503.00 > 80.00	2.064	2.071	-0.007		2453714	28.7		2821	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	49609	0.6159		4.4	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	4503842	48.7		3406	
499.00 > 99.00	2.064	2.109	-0.045	0.996	952731		4.73(0.00-0.00)	1763	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	873171	11.3		4707	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_024.d

Injection Date: 27-Aug-2018 01:03:42

Instrument ID: A8_N

Lims ID: 320-42002-A-13-A

Lab Sample ID: 320-42002-13

Client ID: WGNA-080918-RW-4850

Operator ID: SACINSTLCMS01

ALS Bottle#: 16

Worklist Smp#: 21

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

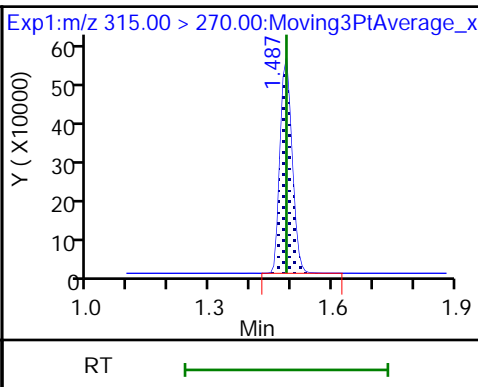
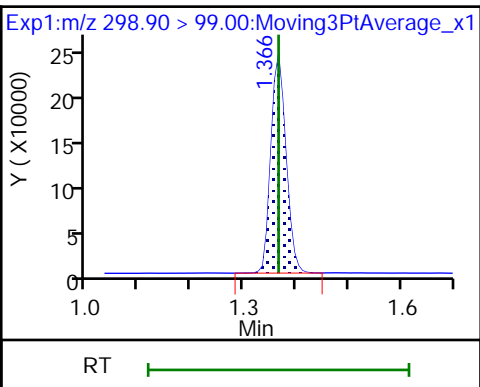
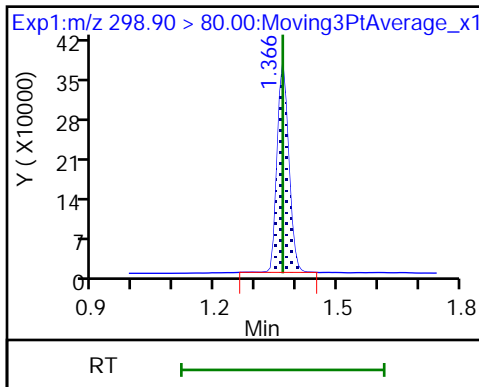
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

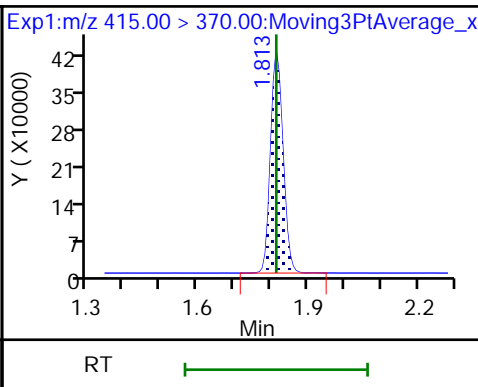
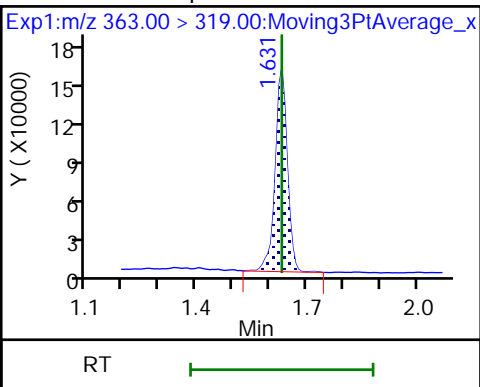
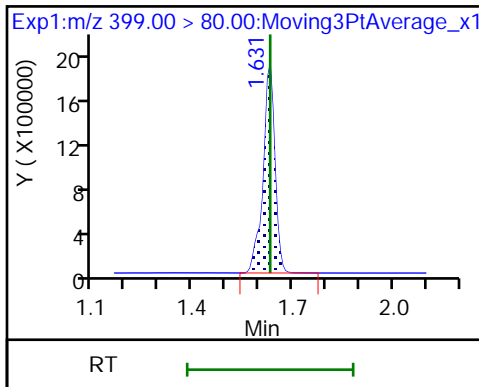
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

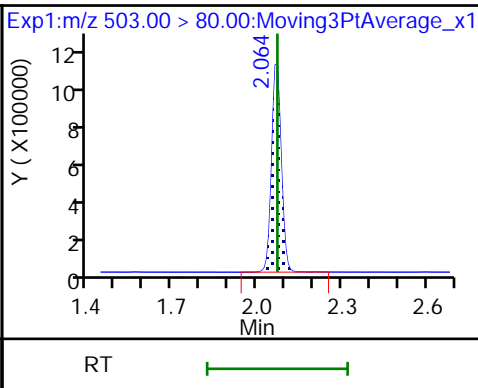
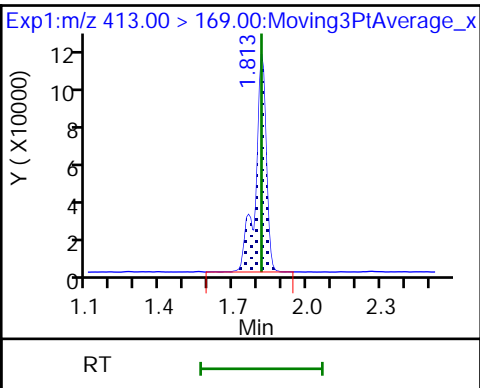
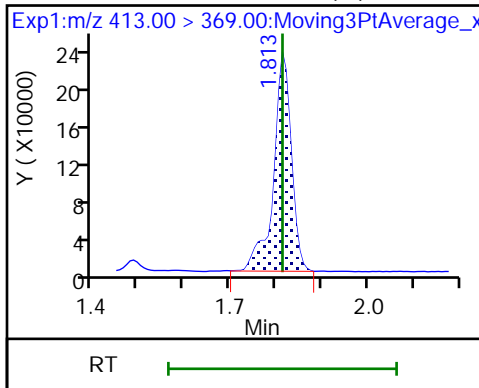
* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid

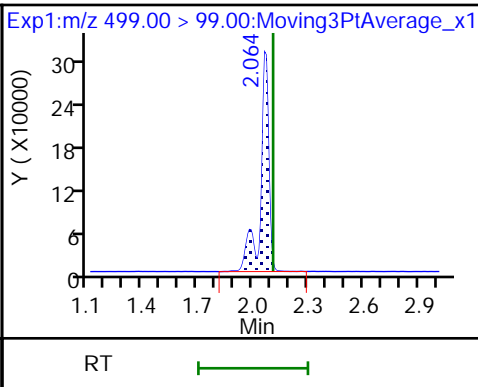
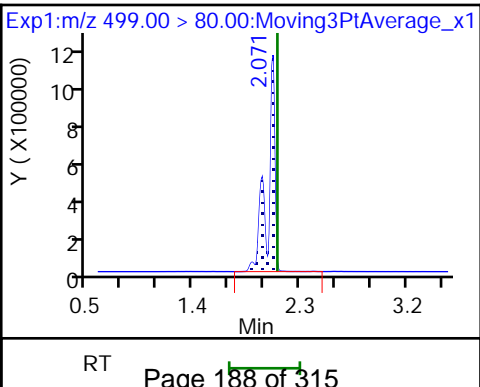
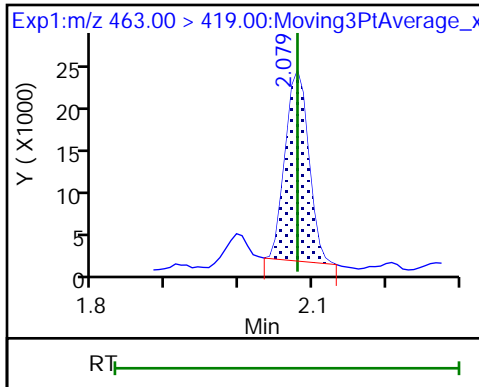
* 7 13C4 PFOS



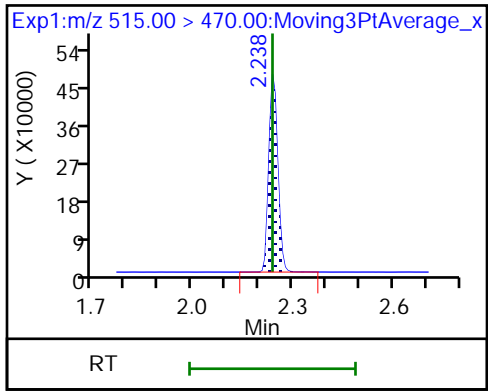
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_024.d
 Lims ID: 320-42002-A-13-A
 Client ID: WGNA-080918-RW-4850
 Sample Type: Client
 Inject. Date: 27-Aug-2018 01:03:42 ALS Bottle#: 16 Worklist Smp#: 21
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-13-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:40:18

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.1	111.35
\$ 10 13C2 PFDA	10.0	11.3	112.81

TestAmerica Sacramento

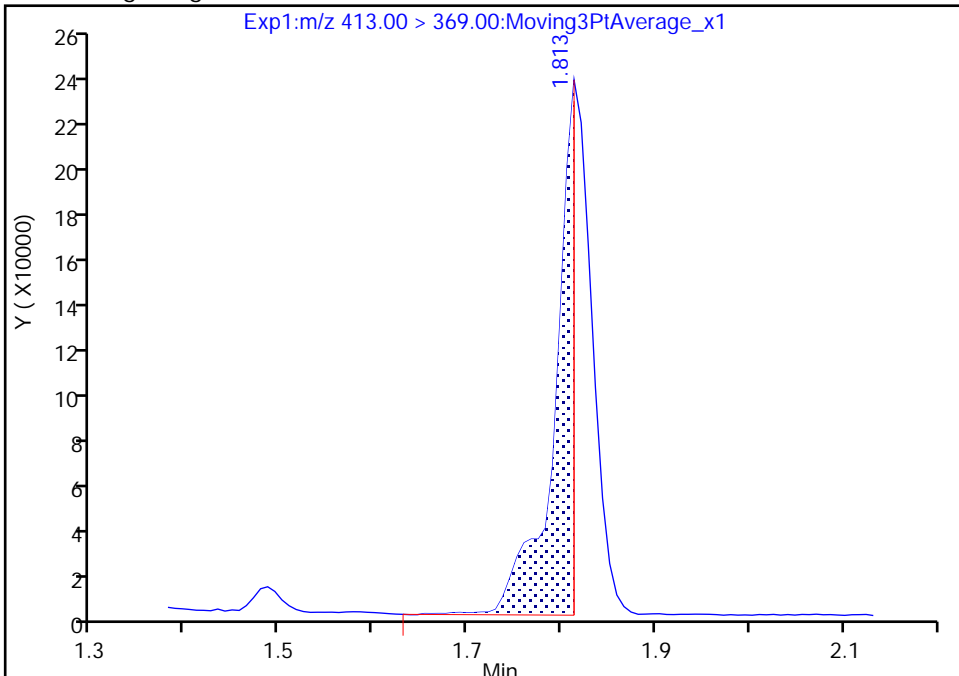
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Injection Date: 27-Aug-2018 01:03:42 Instrument ID: A8_N
Lims ID: 320-42002-A-13-A Lab Sample ID: 320-42002-13
Client ID: WGNA-080918-RW-4850
Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

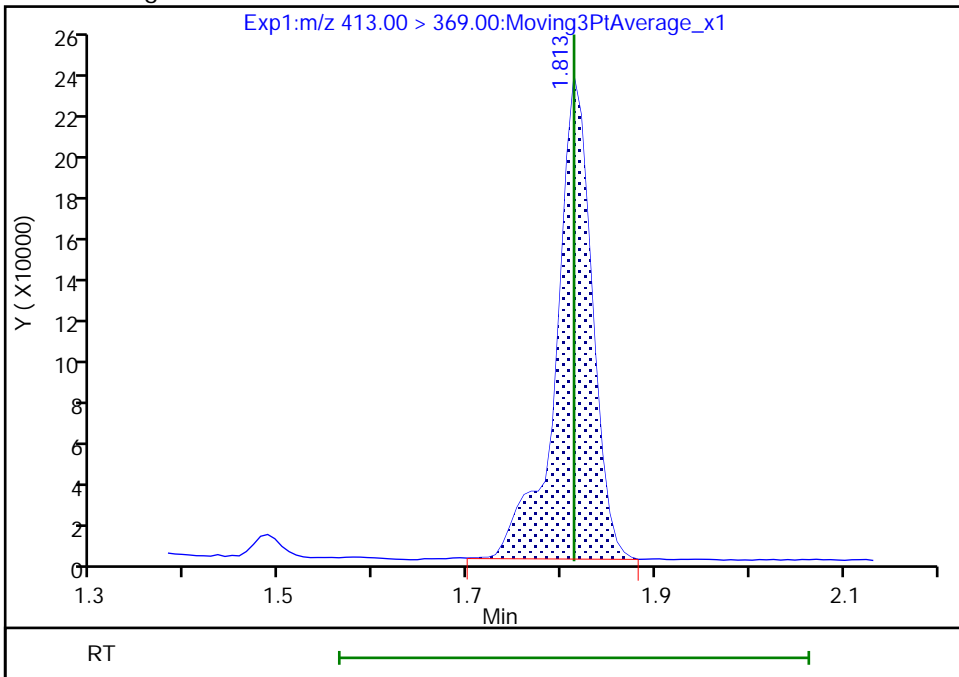
RT: 1.81
Area: 314468
Amount: 2.953612
Amount Units: ng/ml

Processing Integration Results



RT: 1.81
Area: 614141
Amount: 5.768263
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 27-Aug-2018 14:40:05
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration
Page 191 of 315

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-4850 Lab Sample ID: 320-42002-14
 Matrix: Water Lab File ID: 2018.08.26_537C_025.d
 Analysis Method: 537 Date Collected: 08/09/2018 11:05
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 281.6(mL) Date Analyzed: 08/27/2018 01:08
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 242156 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	105		70-130
STL00996	13C2 PFDA	107		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_025.d
 Lims ID: 320-42002-A-14-A
 Client ID: WGNA-080918-FRB-4850
 Sample Type: Client
 Inject. Date: 27-Aug-2018 01:08:22 ALS Bottle#: 17 Worklist Smp#: 22
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-14-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.487	1.487	0.0	1.000	1168659	10.5	14213	
* 6 13C2-PFOA	415.00 > 370.00	1.813	1.813	0.0		1069465	10.0	8024	
* 7 13C4 PFOS	503.00 > 80.00	2.071	2.071	0.0		2582799	28.7	6610	
\$ 10 13C2 PFDA	515.00 > 470.00	2.238	2.238	0.0	1.000	903727	10.7	5846	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_025.d

Injection Date: 27-Aug-2018 01:08:22

Instrument ID: A8_N

Lims ID: 320-42002-A-14-A

Lab Sample ID: 320-42002-14

Client ID: WGNA-080918-FRB-4850

Operator ID: SACINSTLCMS01

ALS Bottle#: 17

Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

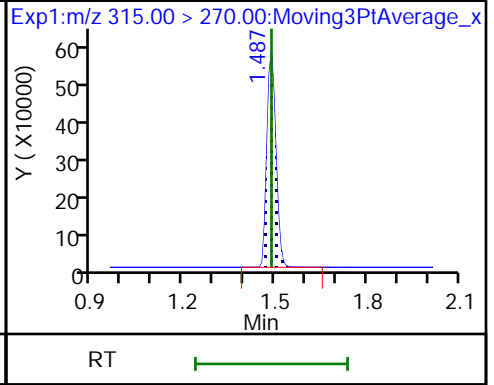
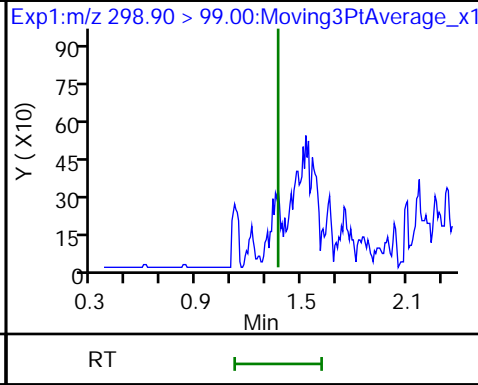
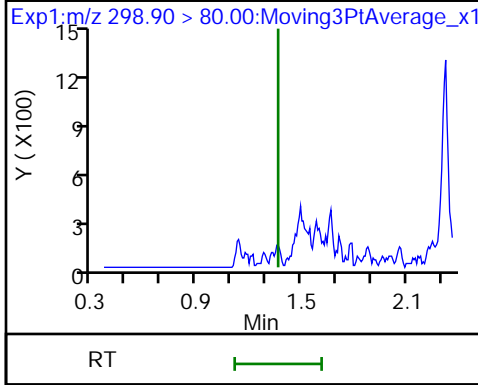
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

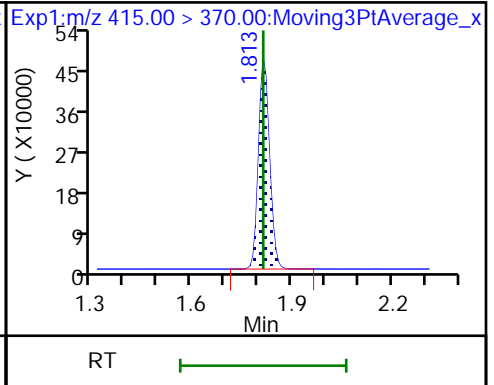
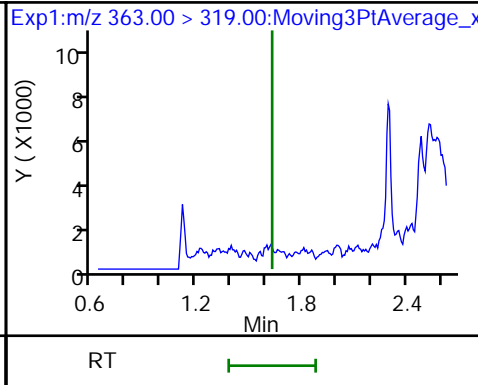
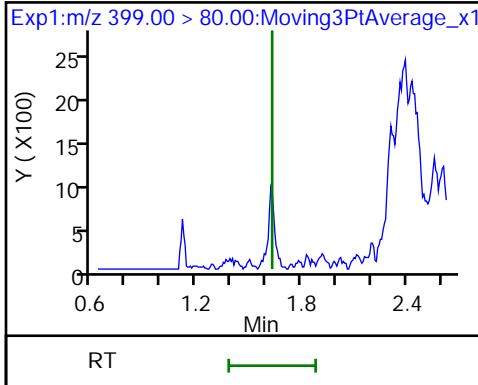
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

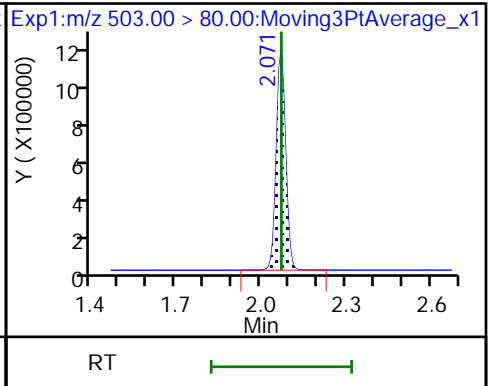
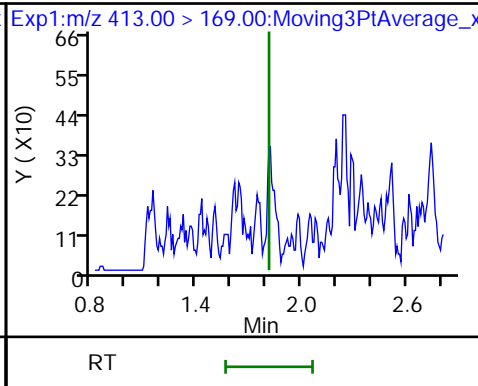
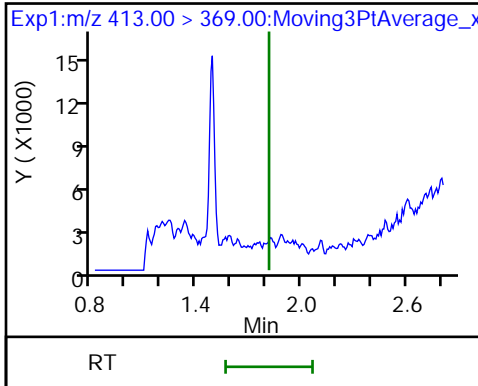
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

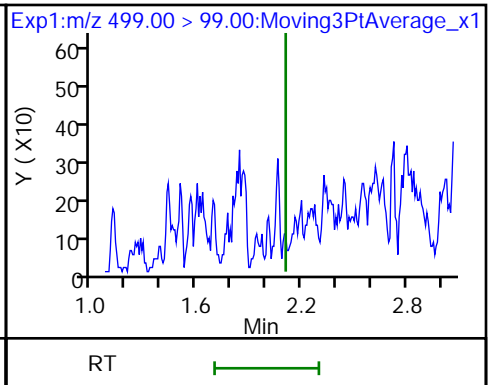
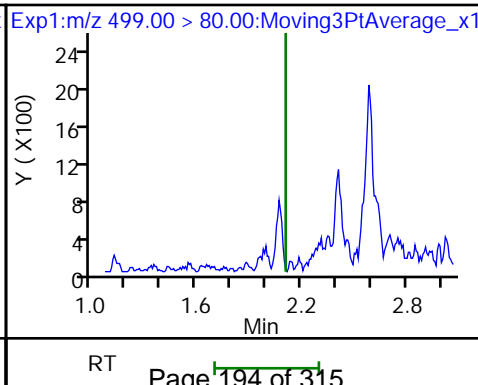
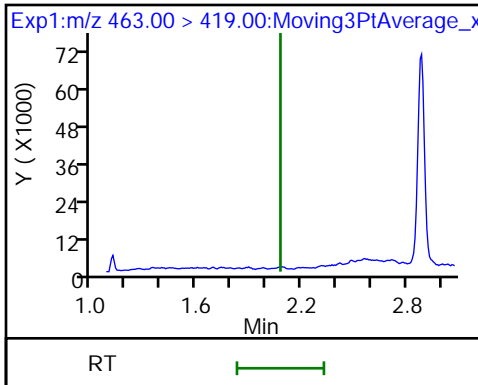
* 7 13C4 PFOS



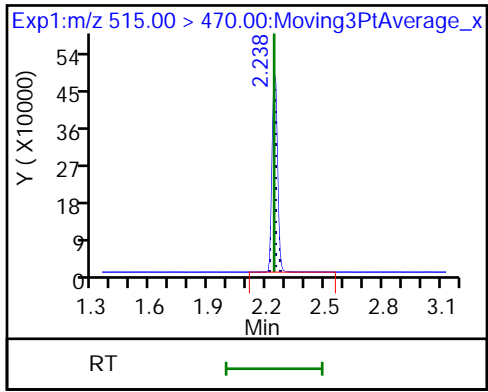
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_025.d
 Lims ID: 320-42002-A-14-A
 Client ID: WGNA-080918-FRB-4850
 Sample Type: Client
 Inject. Date: 27-Aug-2018 01:08:22 ALS Bottle#: 17 Worklist Smp#: 22
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-14-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.5	105.13
\$ 10 13C2 PFDA	10.0	10.7	106.68

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-0626 Lab Sample ID: 320-42002-15
 Matrix: Water Lab File ID: 2018.08.26_537C_026.d
 Analysis Method: 537 Date Collected: 08/09/2018 12:10
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 276.1(mL) Date Analyzed: 08/27/2018 01:13
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 242156 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	81	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	108		70-130
STL00996	13C2 PFDA	111		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_026.d
 Lims ID: 320-42002-A-15-A
 Client ID: WGNA-080918-RW-0626
 Sample Type: Client
 Inject. Date: 27-Aug-2018 01:13:03 ALS Bottle#: 18 Worklist Smp#: 23
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-15-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:40:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.487	1.487	0.0	1.000	1216737	10.8	13345	
* 6 13C2-PFOA	415.00 > 370.00	1.821	1.813	0.008	1.000	1087470	10.0	8277	
5 Perfluorooctanoic acid	413.00 > 369.00	1.821	1.813	0.008	1.000	62222	0.5251	7.2	
	413.00 > 169.00	1.821	1.813	0.008	1.000	36325	1.71(0.00-0.00)	77.9	
* 7 13C4 PFOS	503.00 > 80.00	2.071	2.071	0.0	1.000	2740798	28.7	5296	
\$ 10 13C2 PFDA	515.00 > 470.00	2.246	2.238	0.008	1.000	955221	11.1	5157	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_026.d

Injection Date: 27-Aug-2018 01:13:03

Instrument ID: A8_N

Lims ID: 320-42002-A-15-A

Lab Sample ID: 320-42002-15

Client ID: WGNA-080918-RW-0626

Operator ID: SACINSTLCMS01

ALS Bottle#: 18

Worklist Smp#: 23

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

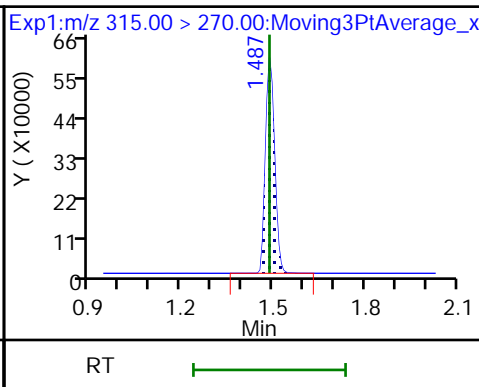
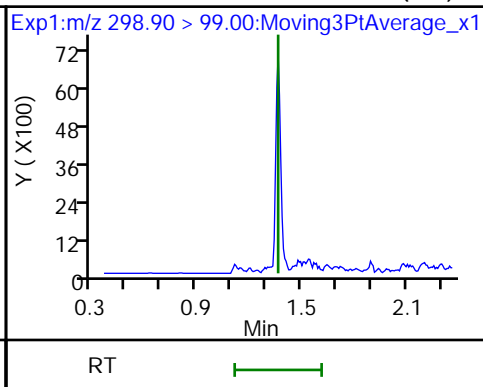
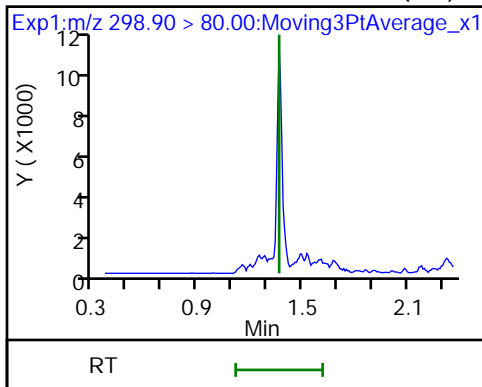
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

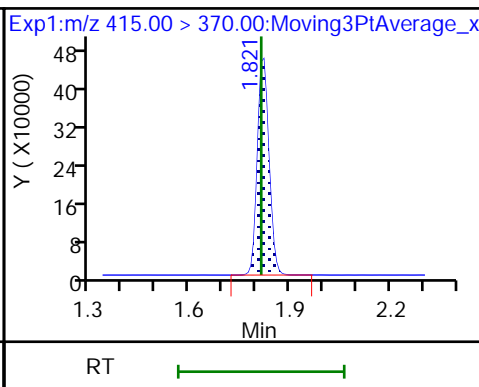
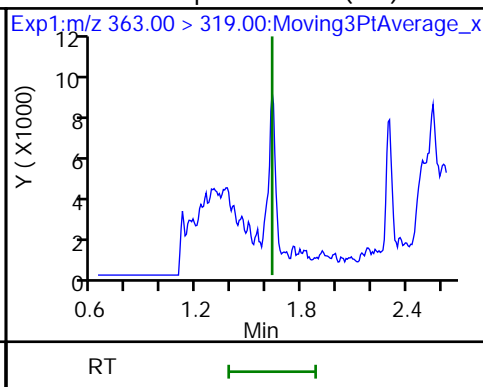
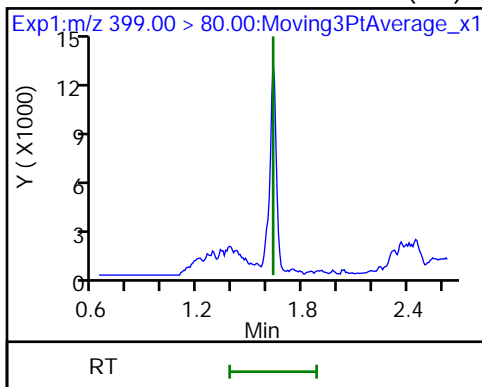
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

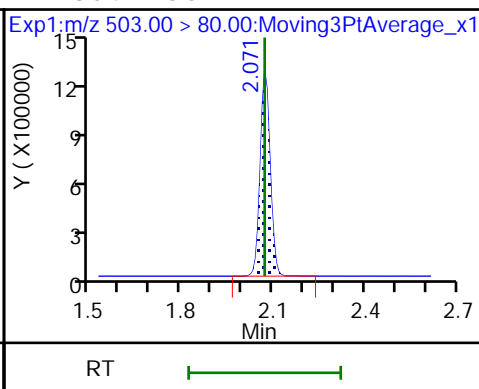
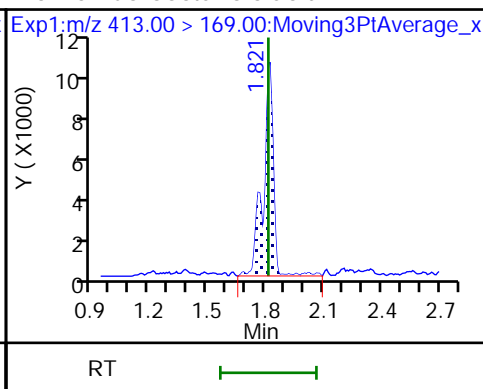
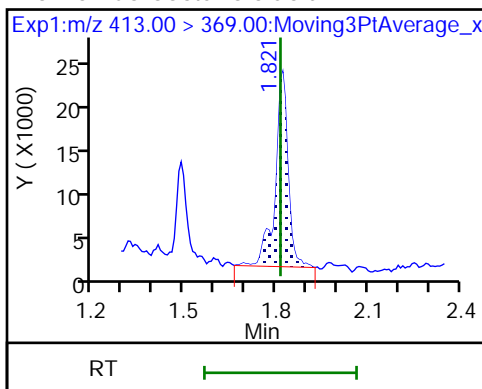
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

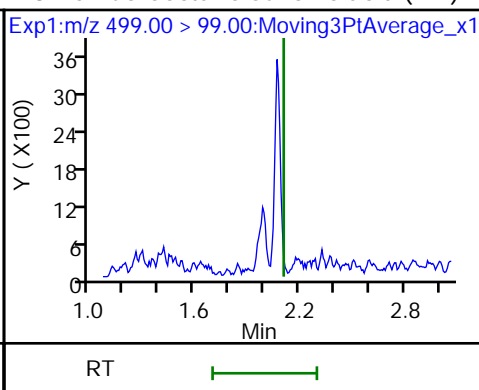
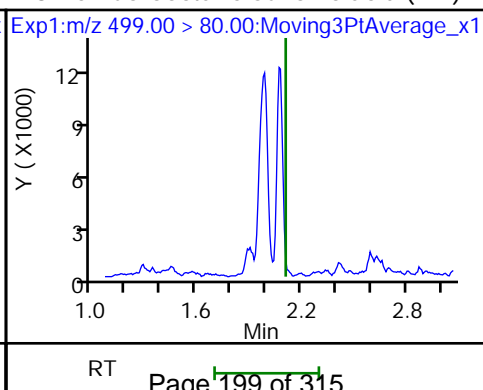
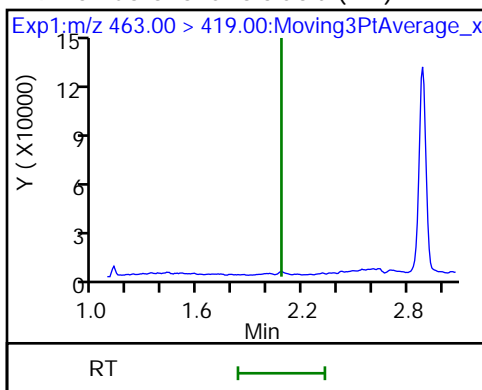
* 7 13C4 PFOS



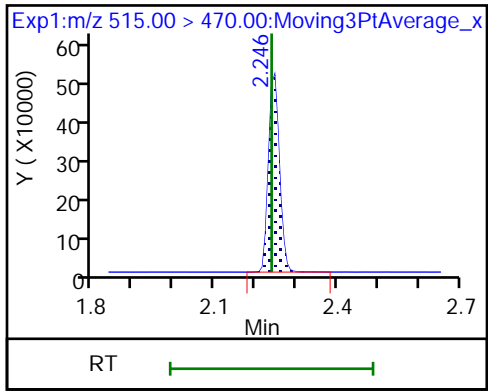
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_026.d
 Lims ID: 320-42002-A-15-A
 Client ID: WGNA-080918-RW-0626
 Sample Type: Client
 Inject. Date: 27-Aug-2018 01:13:03 ALS Bottle#: 18 Worklist Smp#: 23
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-15-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:40:46

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.8	107.65
\$ 10 13C2 PFDA	10.0	11.1	110.89

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-0626 Lab Sample ID: 320-42002-16
 Matrix: Water Lab File ID: 2018.08.26_537C_027.d
 Analysis Method: 537 Date Collected: 08/09/2018 12:05
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 284.4 (mL) Date Analyzed: 08/27/2018 01:17
 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.: 242156 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	108		70-130
STL00996	13C2 PFDA	104		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_027.d
 Lims ID: 320-42002-A-16-A
 Client ID: WGNA-080918-FRB-0626
 Sample Type: Client
 Inject. Date: 27-Aug-2018 01:17:43 ALS Bottle#: 19 Worklist Smp#: 24
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-16-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.487	1.487	0.0	1.000	1106624	10.8	11868	
* 6 13C2-PFOA	415.00 > 370.00	1.813	1.813	0.0		984460	10.0	8476	
* 7 13C4 PFOS	503.00 > 80.00	2.071	2.071	0.0		2397883	28.7	6809	
\$ 10 13C2 PFDA	515.00 > 470.00	2.238	2.238	0.0	1.000	809333	10.4	4408	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_027.d

Injection Date: 27-Aug-2018 01:17:43

Instrument ID: A8_N

Lims ID: 320-42002-A-16-A

Lab Sample ID: 320-42002-16

Client ID: WGNA-080918-FRB-0626

Operator ID: SACINSTLCMS01

ALS Bottle#: 19

Worklist Smp#: 24

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

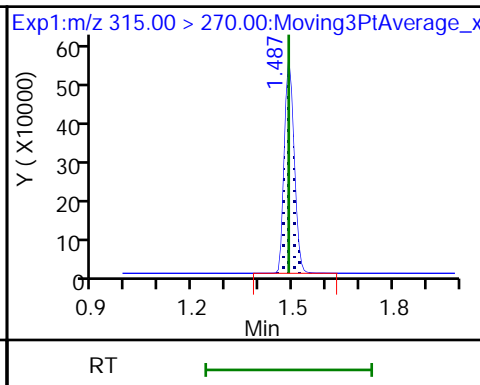
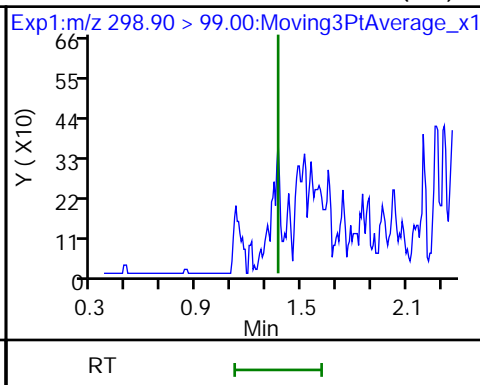
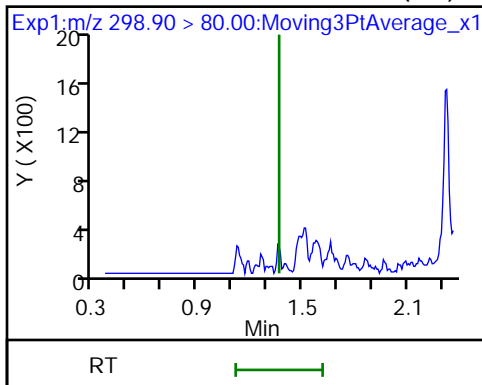
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

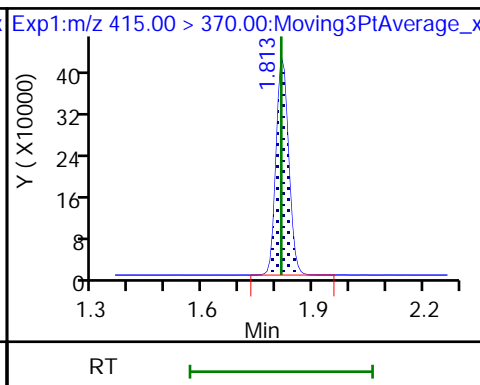
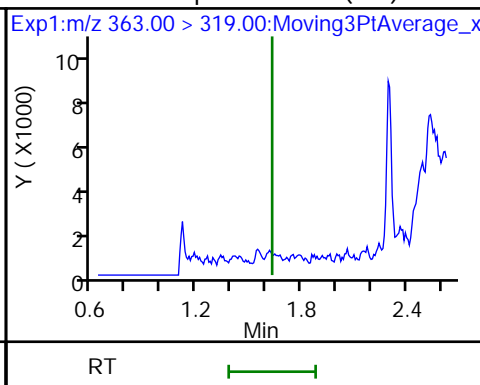
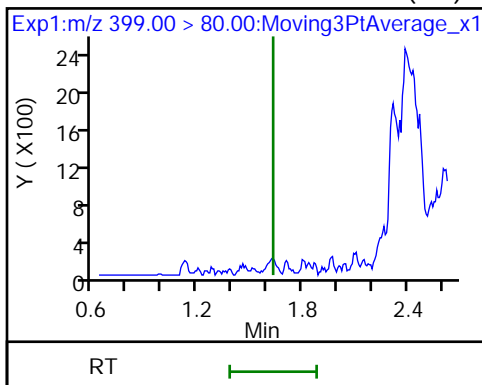
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

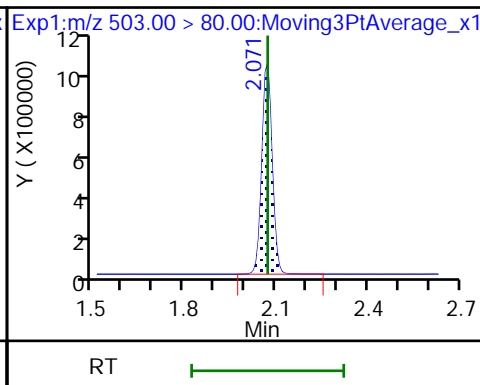
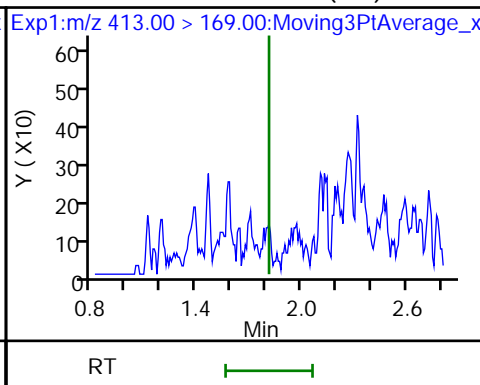
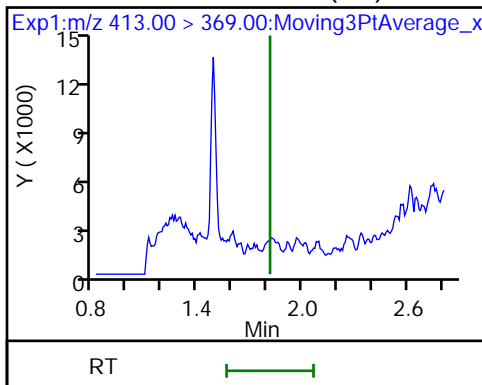
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

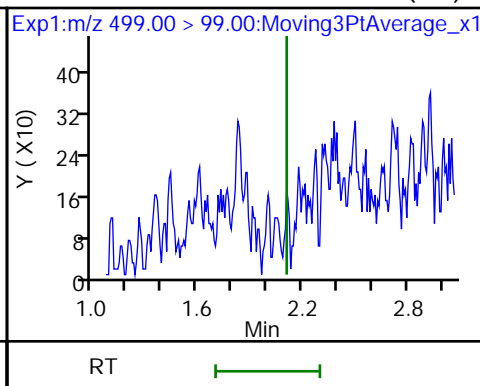
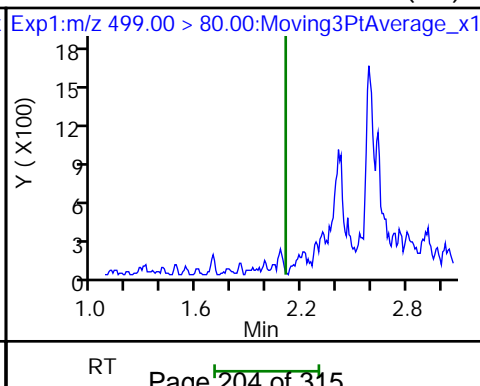
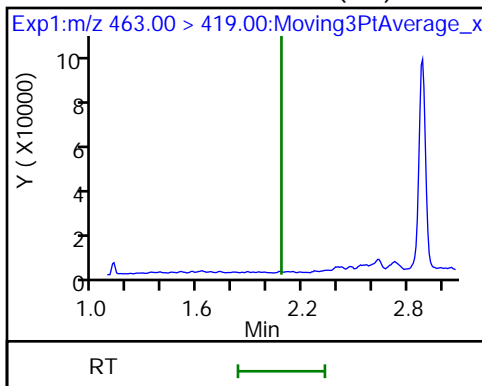
* 7 13C4 PFOS



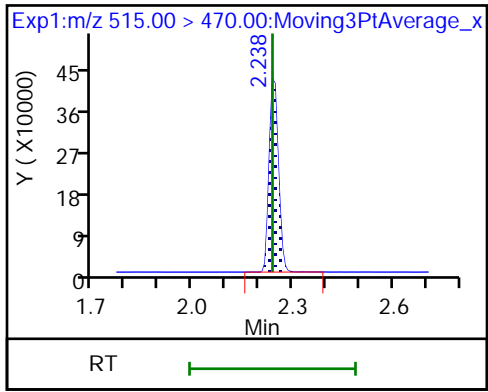
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_027.d
 Lims ID: 320-42002-A-16-A
 Client ID: WGNA-080918-FRB-0626
 Sample Type: Client
 Inject. Date: 27-Aug-2018 01:17:43 ALS Bottle#: 19 Worklist Smp#: 24
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42002-a-16-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.8	108.15
\$ 10 13C2 PFDA	10.0	10.4	103.79

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

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1 Analy Batch No.: 240166

SDG No.: _____

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

Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	1.2479 0.9705	1.1886	1.2616	1.1091	1.0906	Ave		1.1447			9.6		30.0				
Perfluoroheptanoic acid (PFHpA)	1.0855 1.0407	1.0364	1.0489	1.0876	1.0460	Ave		1.0575			2.2		30.0				
Perfluorohexanesulfonic acid (PFHxS)	1.6492 1.6115	1.6167	1.6890	1.6380	1.7330	Ave		1.6562			2.8		30.0				
Perfluorooctanoic acid (PFOA)	1.0954 1.0842	1.0529	1.0915	1.1075	1.1058	Ave		1.0895			1.8		30.0				
Perfluorooctanesulfonic acid (PFOS)	1.0830 1.0982	1.0386	1.0683	1.0853	1.1084	Ave		1.0803			2.3		30.0				
Perfluorononanoic acid (PFNA)	0.8630 0.8350	0.7990	0.7881	0.8431	0.8177	Ave		0.8243			3.4		30.0				
13C2 PFHxA	1.0723 1.0545	1.0111	1.0024	1.0515	1.0447	Ave		1.0394			2.6		30.0				
13C2 PFDA	0.7972 0.7976	0.7443	0.7670	0.8351	0.8115	Ave		0.7921			4.1		30.0				

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1 Analy Batch No.: 240166

SDG No.: _____

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

Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.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	998954 15136483	2070355	4549188	9386038	11785636	9.00 180	20.0	45.0	90.1	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	106948 1986691	233189	488515	1105731	1440874	0.960 19.4	2.16	4.86	9.72	14.6
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	440547 8441814	945775	2045536	4655795	6289862	3.00 60.5	6.72	15.1	30.2	45.4
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	222587 4216218	482587	1035552	2293687	3102767	1.98 39.6	4.40	9.90	19.8	29.7
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	380845 7518443	794113	1690983	4031609	5257770	3.95 79.1	8.79	19.8	39.5	59.3
Perfluorononanoic acid (PFNA)	13PF OA	Ave	175370 3246932	366204	747749	1746006	2294540	1.98 39.6	4.40	9.90	19.8	29.7
13C2 PFHxA	13PF OA	Ave	1100508 1035478	1053216	960623	1099800	987004	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	818198 783206	775306	735076	873467	766710	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.: 320-42002-1 Analy Batch No.: 240166

SDG No.: _____

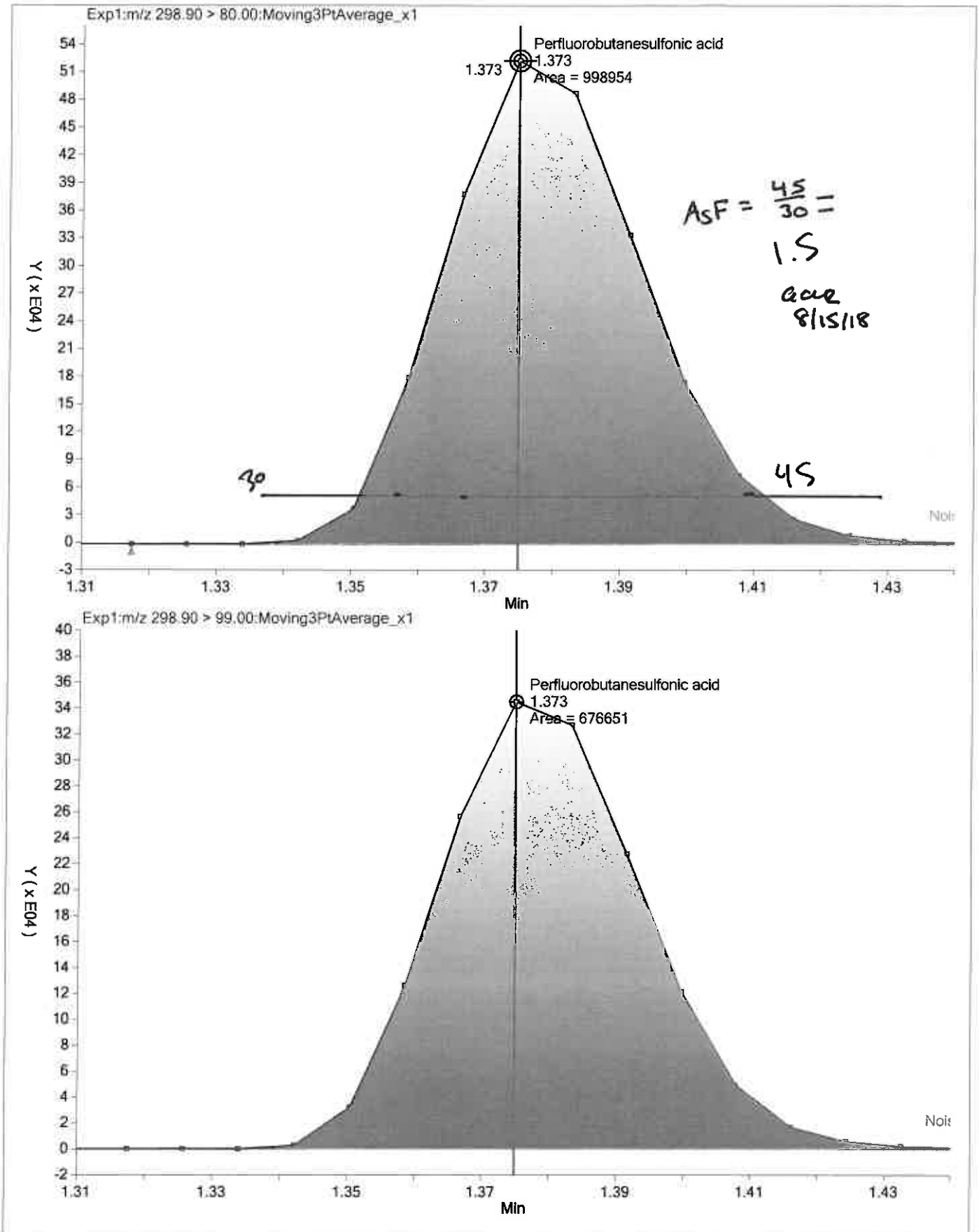
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

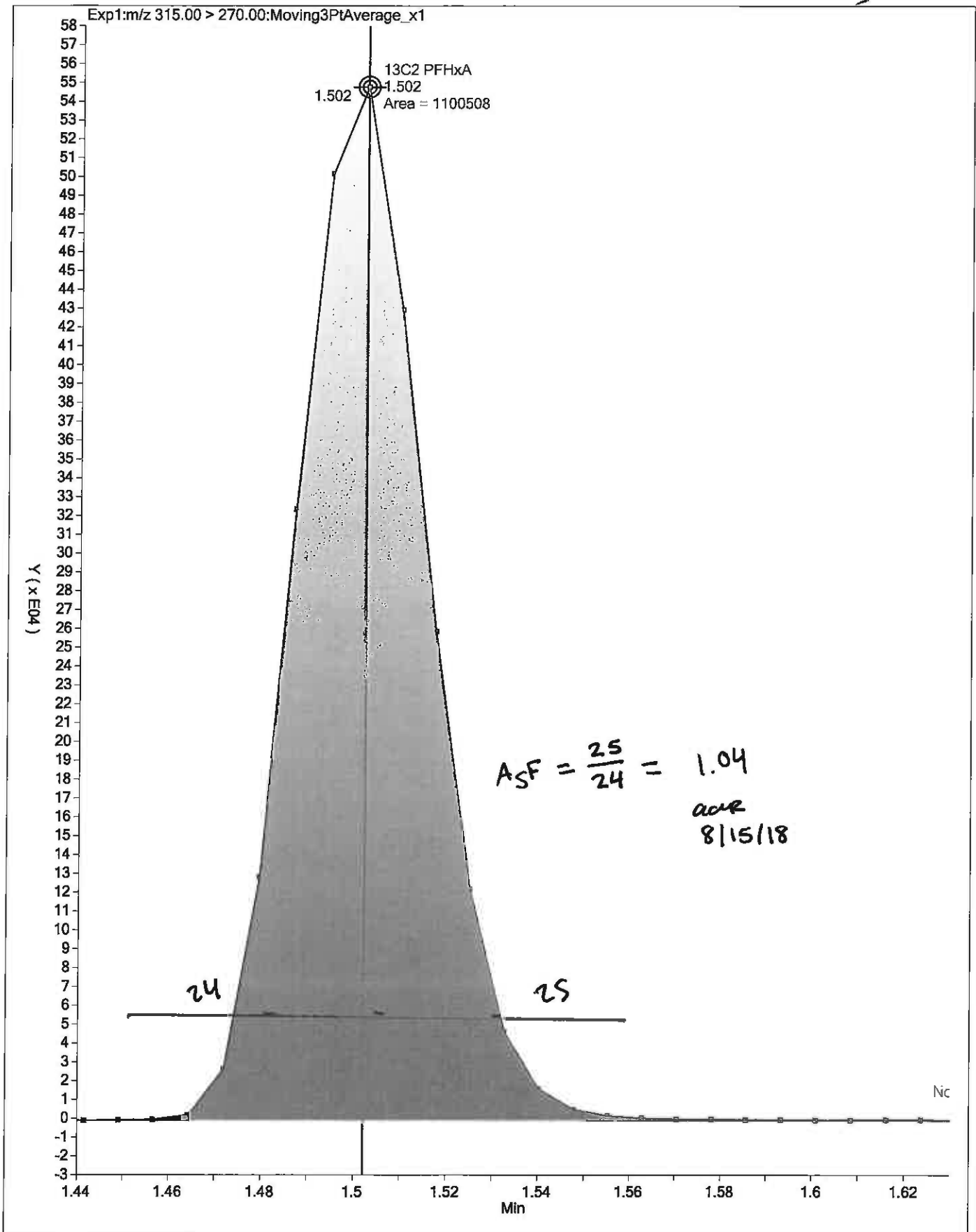
Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.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)	9.0	3.8	10.2	-3.1	-4.7	-15.2	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	2.6	-2.0	-0.8	2.8	-1.1	-1.6	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-0.4	-2.4	2.0	-1.1	4.6	-2.7	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	0.5	-3.4	0.2	1.7	1.5	-0.5	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	0.2	-3.9	-1.1	0.5	2.6	1.7	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	4.7	-3.1	-4.4	2.3	-0.8	1.3	50	30	30	30	30	30
13C2 PFHxA	3.2	-2.7	-3.6	1.2	0.5	1.4	30	30	30	30	30	30
13C2 PFDA	0.6	-6.0	-3.2	5.4	2.4	0.7	30	30	30	30	30	30





TestAmerica Laboratories
Istd/Surrogate Recovery Report

Worklist Name: 15AUG2018_537_ICAL Worklist Num: 62769
 Instrument: A8_N Method: 537_A8_N
 Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b
 Limit Group: LC 537 ICAL
 Analysis Type: SemiVOA
 Inj Volume: 2.00 Inj Vol Units: ul

Lims Batch: 240166
 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
# 1 RB	15-Aug-2018 18:16:30			1167019 1.78	2601656 2.01
				1133890 97.2	2646770 101.7
# 2 IC L1	15-Aug-2018 18:21:09	1.50	2.27	1026304> 100.0*	2551191> 100.0*
# 3 IC L2	15-Aug-2018 18:25:50	1.50	2.28	1041660> 101.5*	2496049> 97.8*
# 4 IC L3	15-Aug-2018 18:30:31	1.51	2.27	958352> 93.4*	2296598> 90.0*
# 5 IC L4	15-Aug-2018 18:35:11	1.50	2.28	1045953> 101.9*	2694948> 105.6*
# 6 IC L5	15-Aug-2018 18:39:51	1.51	2.27	944777> 92.1*	2294155> 89.9*
# 7 IC L6	15-Aug-2018 18:44:32	1.50	2.27	981996> 95.7*	2483425> 97.3*
# 8 RB	15-Aug-2018 18:49:12			1059425 110.5	2535393 110.4
# 9 CCVL	15-Aug-2018 18:53:52	1.50	2.27	1006603 96.2	2388436 88.6
# 10 ICB	15-Aug-2018 18:58:33			1042675 103.6	2354282 98.6
# 11 ICV	15-Aug-2018 19:03:12	1.50	2.26	1022273 97.7	2551643 94.7

13C2 PFOA

$$RPD = \frac{1045953 - 944777}{\left(\frac{1045953 + 944777}{2}\right)} \times 100 = 10.2\%$$

13C4 PFOS

$$RPD = \frac{2694948 - 2294155}{\left(\frac{2694948 + 2294155}{2}\right)} \times 100 = 16.1\%$$

acc
8/16/18

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_003.d
 Lims ID: IC L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 15-Aug-2018 18:21:09 ALS Bottle#: 1 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L1_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Aug-2018 08:51:49 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 18:54:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.373	1.381	-0.008	1.000	998954	9.81		2568	
298.90 > 99.00	1.373	1.381	-0.008	1.000	676651		1.48(0.00-0.00)	998	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1100508	10.3		9954	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	106948	0.9854		20.4	M
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	440547	2.99		282	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.850	0.001	1.000	222587	1.99		30.5	
413.00 > 169.00	1.851	1.850	0.001	1.000	121100		1.84(0.00-0.00)	269	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.850	0.001		1026304	10.0		6456	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		2551191	28.7		5861	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	380845	3.96		606	
499.00 > 99.00	2.109	2.109	0.0	1.000	83364		4.57(0.00-0.00)	134	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	175370	2.07		29.0	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.271	-0.003	1.000	818198	10.1		6270	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L1_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_003.d

Injection Date: 15-Aug-2018 18:21:09

Instrument ID: A8_N

Lims ID: IC L1

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 1

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

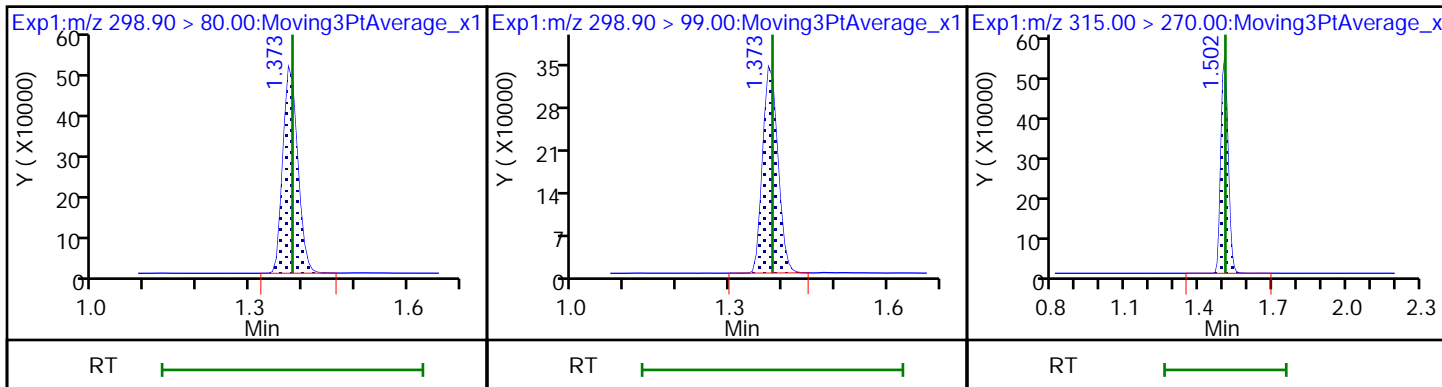
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

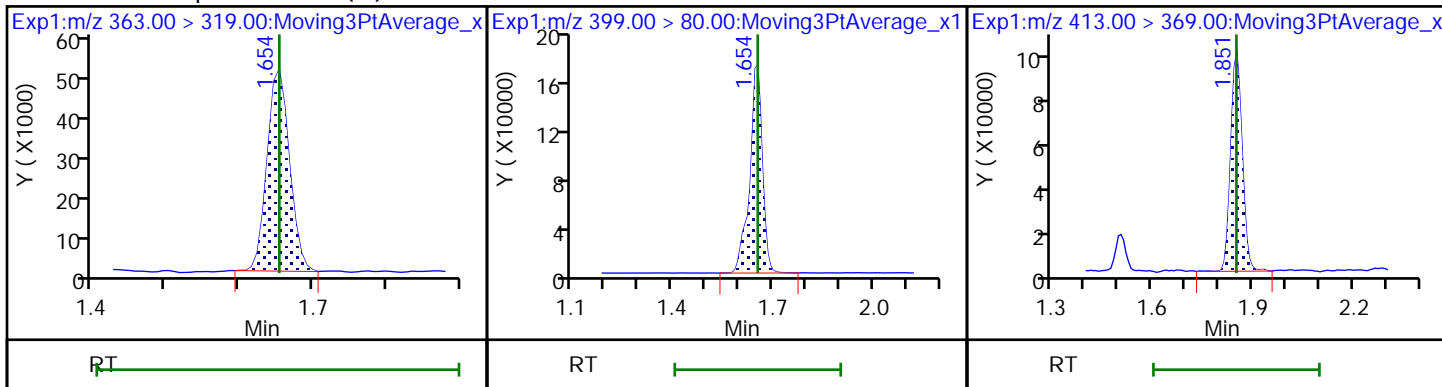
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (M)

3 Perfluorohexanesulfonic acid

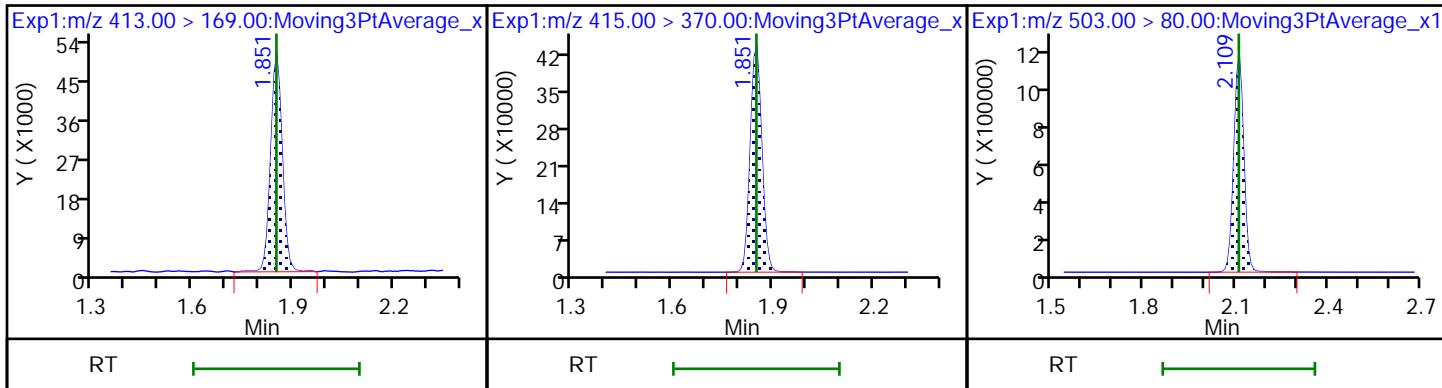
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

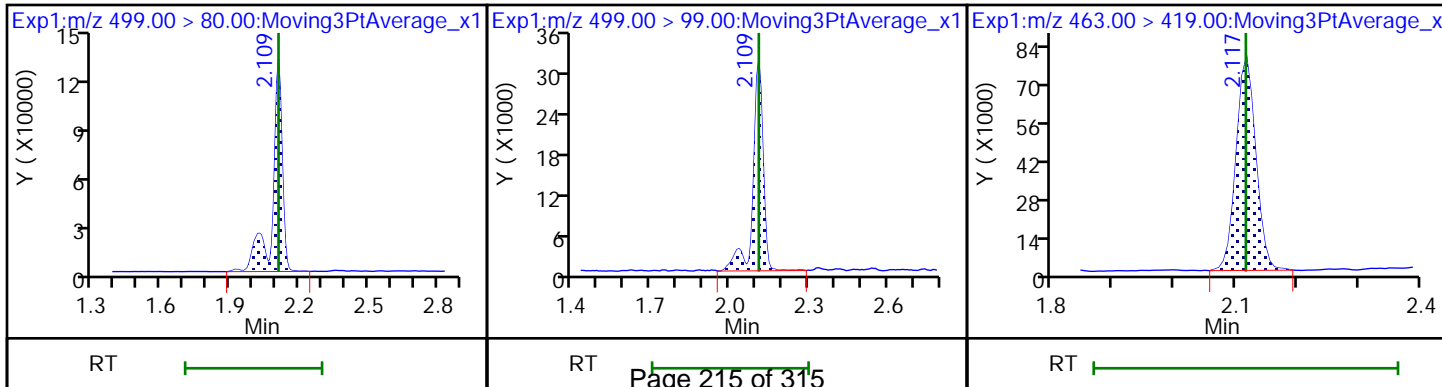
* 7 13C4 PFOS



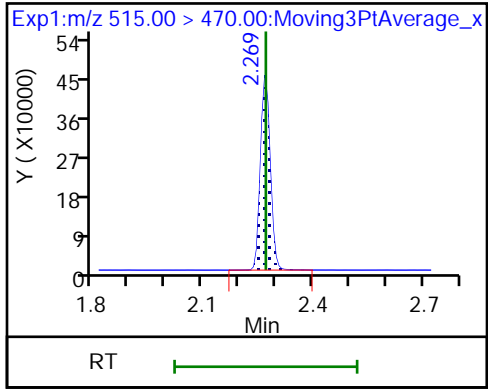
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

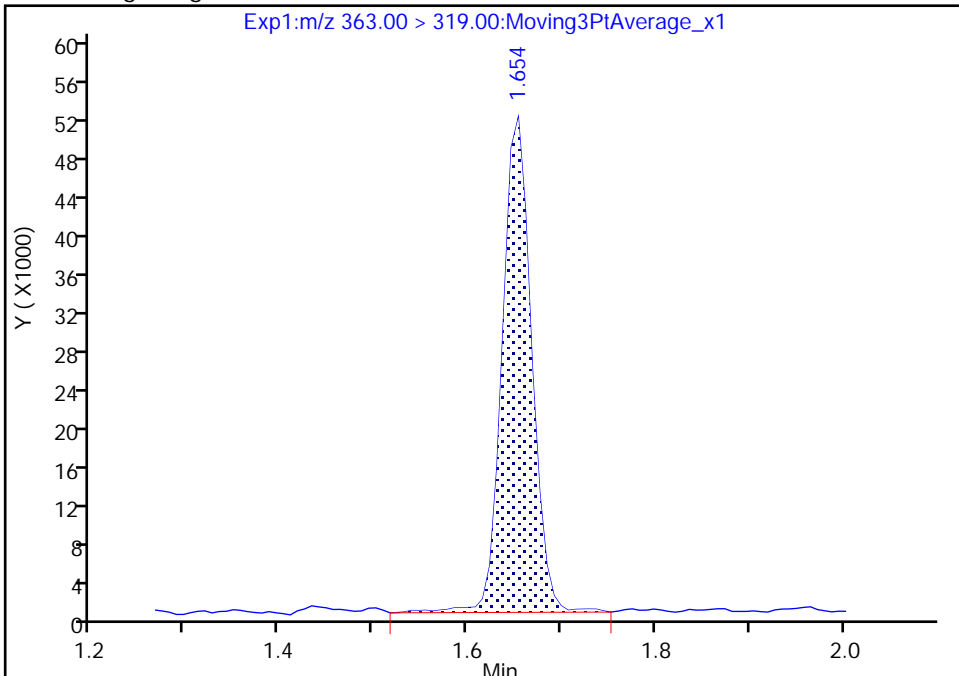
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_003.d
Injection Date: 15-Aug-2018 18:21:09 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

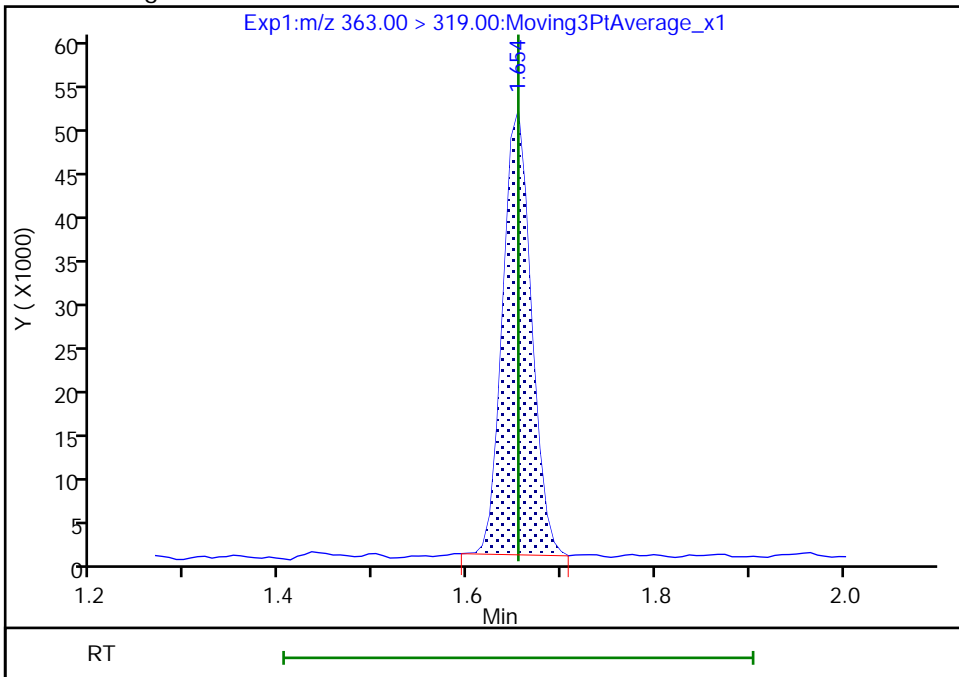
RT: 1.65
Area: 110830
Amount: 1.021059
Amount Units: ng/ml

Processing Integration Results



RT: 1.65
Area: 106948
Amount: 0.985398
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_004.d
 Lims ID: IC L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 15-Aug-2018 18:25:50 ALS Bottle#: 2 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L2_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Aug-2018 08:51:51 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 18:54:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	2070355	20.8		4725	
298.90 > 99.00	1.381	1.381	0.0	1.000	1435059		1.44(0.00-0.00)	2152	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1053216	9.73		8501	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	233189	2.12		44.5	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	945775	6.56		643	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.850	0.001	1.000	482587	4.25		66.7	
413.00 > 169.00	1.851	1.850	0.001	1.000	253282		1.91(0.00-0.00)	550	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.850	0.001		1041660	10.0		6420	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		2496049	28.7		4617	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	794113	8.45		1241	
499.00 > 99.00	2.109	2.109	0.0	1.000	177724		4.47(0.00-0.00)	300	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	366204	4.26		60.0	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.271	0.005	1.000	775306	9.40		5522	

Reagents:

LC537-L2_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_004.d

Injection Date: 15-Aug-2018 18:25:50

Instrument ID: A8_N

Lims ID: IC L2

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

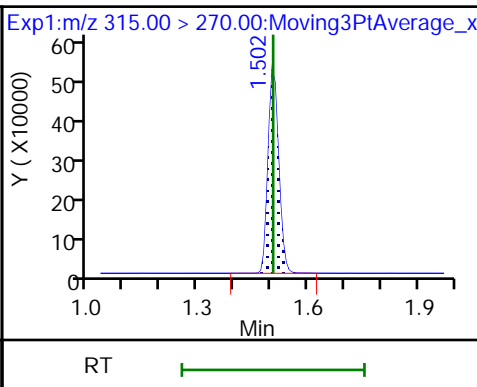
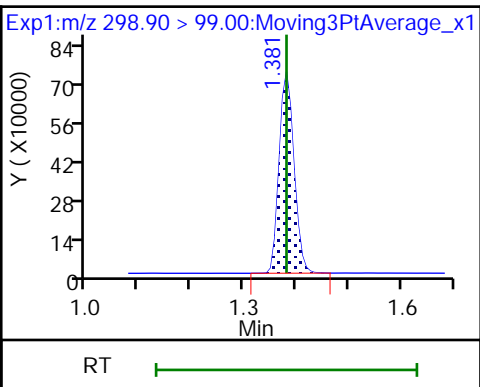
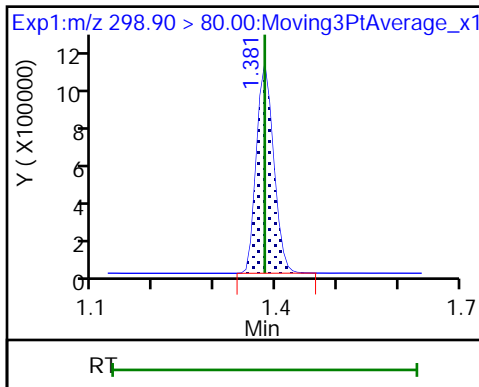
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

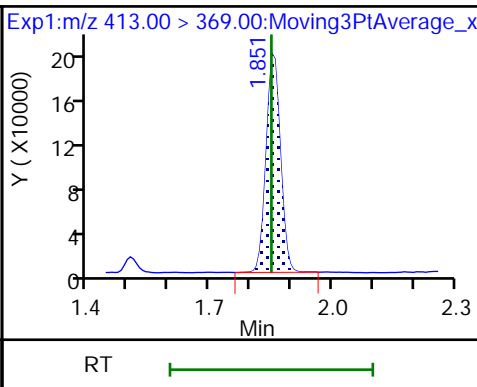
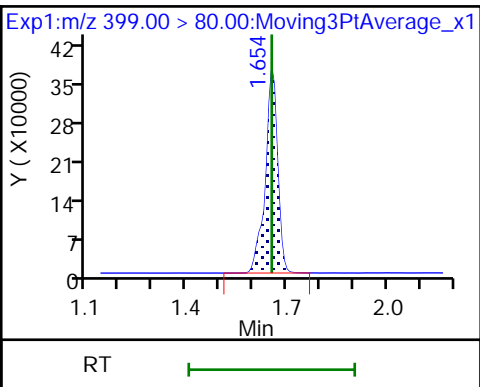
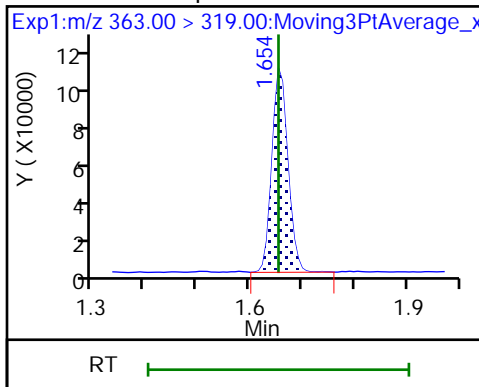
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

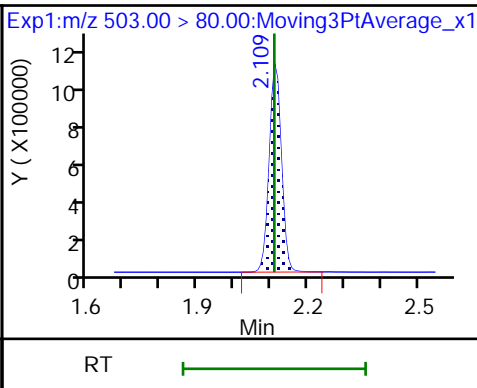
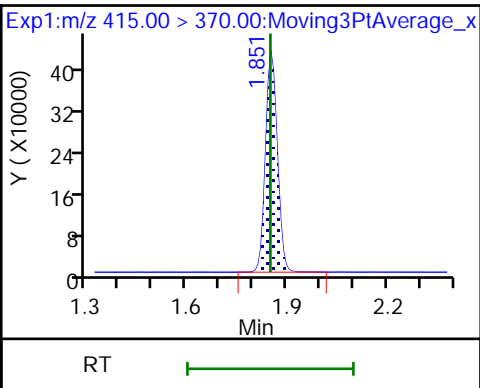
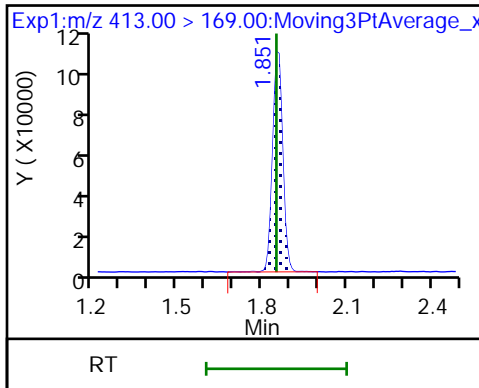
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

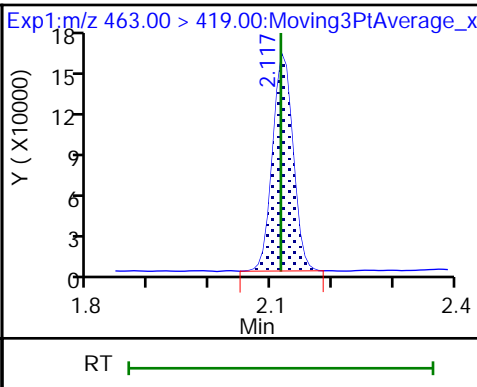
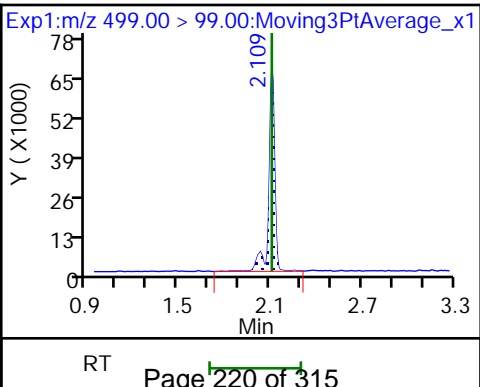
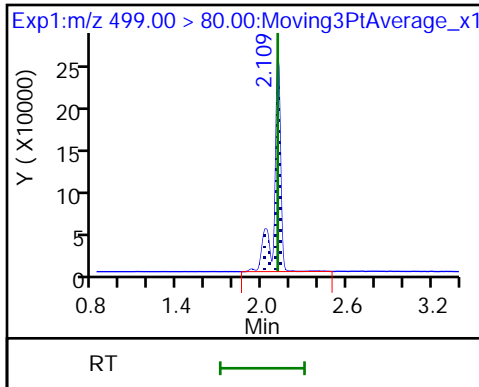
* 7 13C4 PFOS



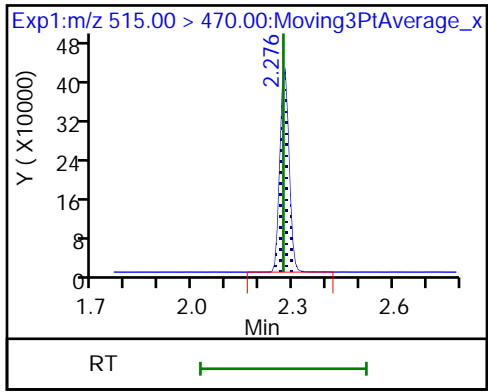
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_005.d
 Lims ID: IC L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 15-Aug-2018 18:30:31 ALS Bottle#: 3 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L3_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Aug-2018 08:51:52 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 18:54:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	4549188	49.6		9553	
298.90 > 99.00	1.381	1.381	0.0	1.000	3023433		1.50(0.00-0.00)	4386	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.505	0.005	1.000	960623	9.64		8278	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	488515	4.82		90.9	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	2045536	15.4		1357	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.850	0.001	1.000	1035552	9.92		136	
413.00 > 169.00	1.851	1.850	0.001	1.000	542050		1.91(0.00-0.00)	1191	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.850	0.001		958352	10.0		6793	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		2296598	28.7		5075	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	1690983	19.5		2539	
499.00 > 99.00	2.109	2.109	0.0	1.000	384764		4.39(0.00-0.00)	662	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	747749	9.47		118	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.271	-0.003	1.000	735076	9.68		5283	

Reagents:

LC537-L3_00025

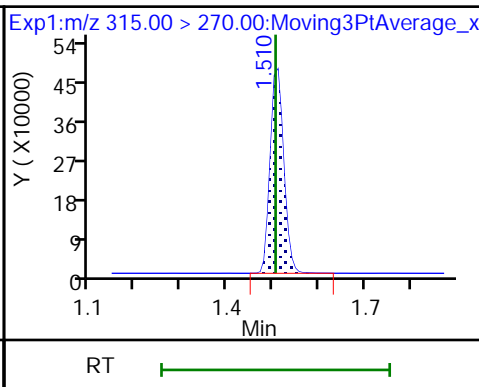
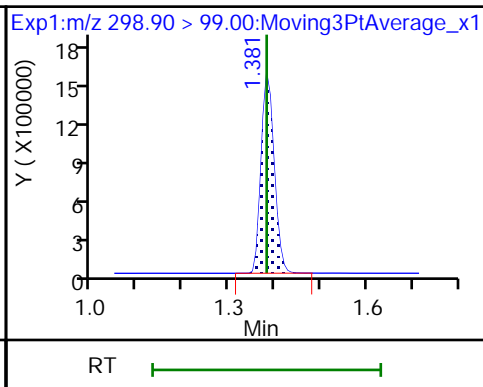
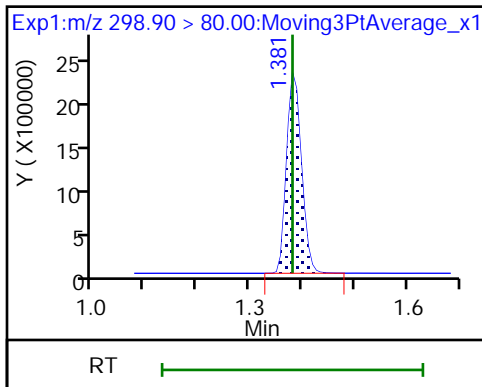
Amount Added: 1.00

Units: mL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

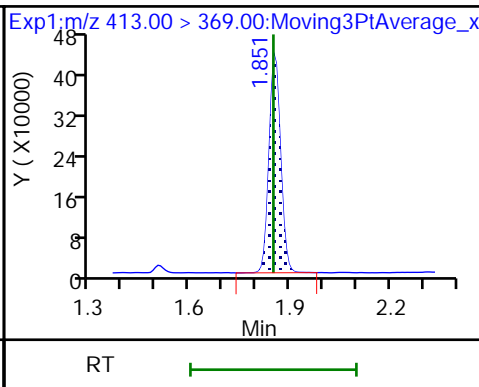
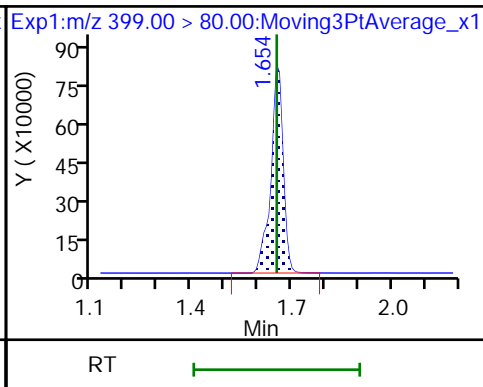
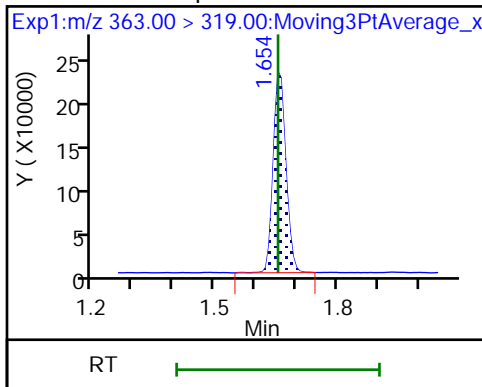
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

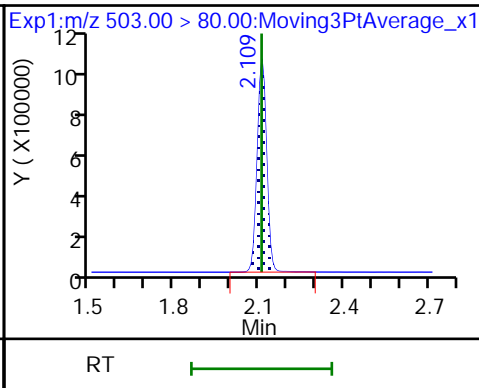
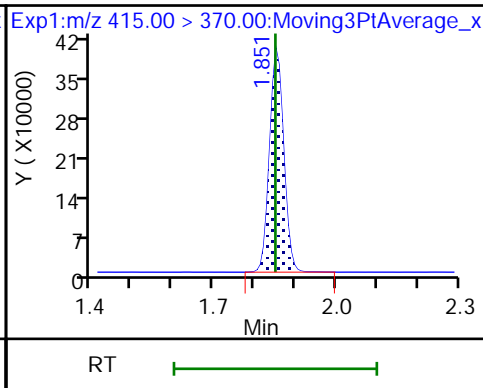
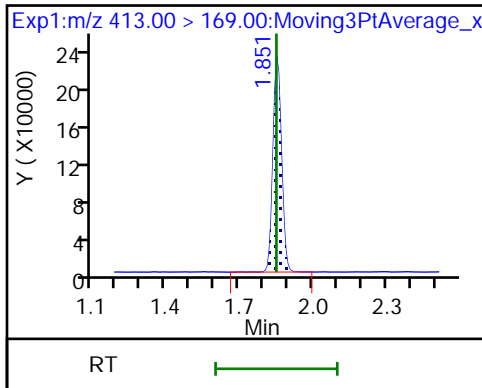
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

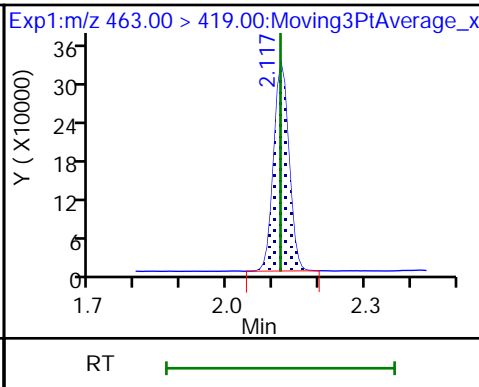
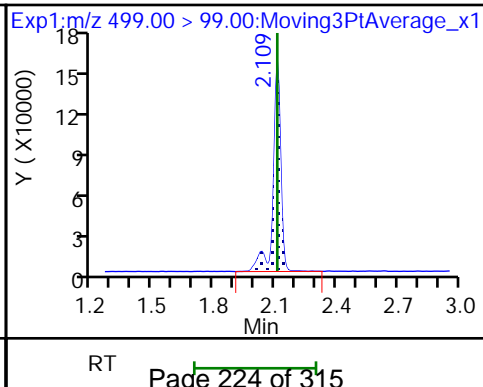
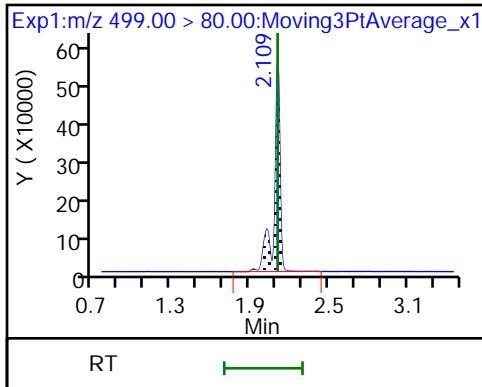
* 7 13C4 PFOS



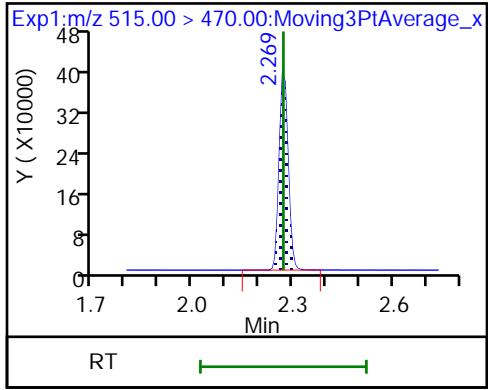
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_006.d
 Lims ID: IC L4
 Client ID:
 Sample Type: ICISAV Calib Level: 4
 Inject. Date: 15-Aug-2018 18:35:11 ALS Bottle#: 4 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L4_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Aug-2018 08:51:53 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK001

First Level Reviewer: roycea Date: 16-Aug-2018 08:51:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	9386038	87.3		13589	
298.90 > 99.00	1.381	1.381	0.0	1.000	6689135		1.40(0.00-0.00)	8057	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1099800	10.1		8908	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	1105731	10.0		214	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	4655795	29.9		2833	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.850	0.001	1.000	2293687	20.1		314	
413.00 > 169.00	1.851	1.850	0.001	1.000	1177353		1.95(0.00-0.00)	2593	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.850	0.001		1045953	10.0		8611	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		2694948	28.7		5789	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	4031609	39.7		5452	
499.00 > 99.00	2.109	2.109	0.0	1.000	879709		4.58(0.00-0.00)	1346	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	1746006	20.3		261	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.271	0.005	1.000	873467	10.5		5675	

Reagents:

LC537-L4_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_006.d

Injection Date: 15-Aug-2018 18:35:11

Instrument ID: A8_N

Lims ID: IC L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 4

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

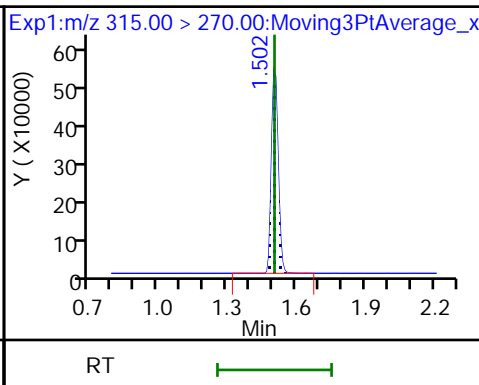
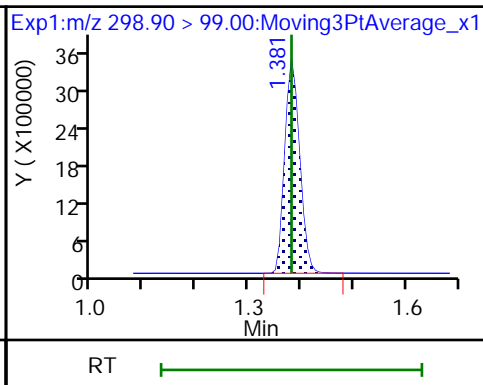
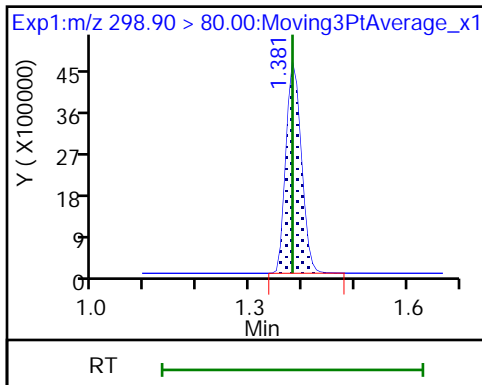
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

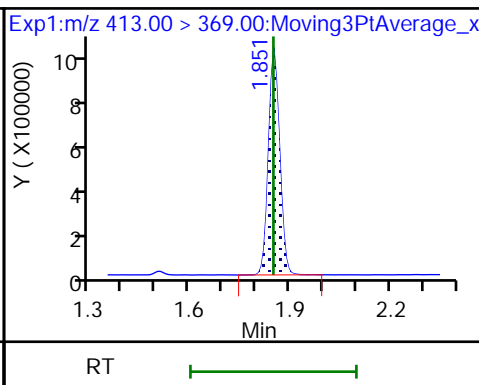
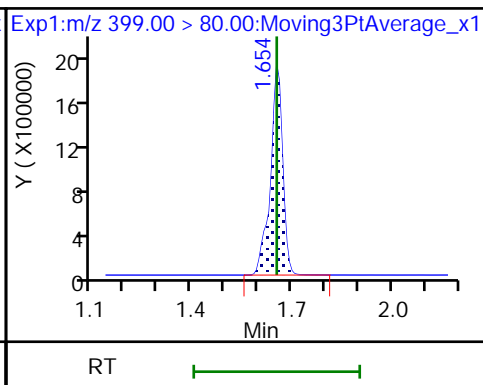
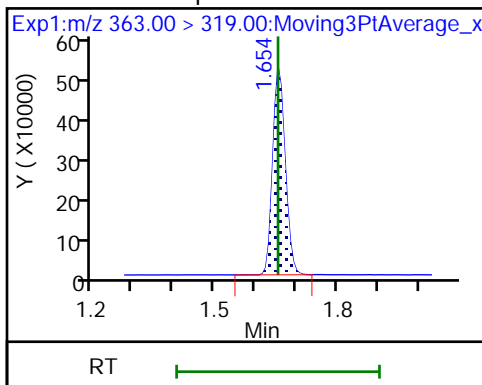
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

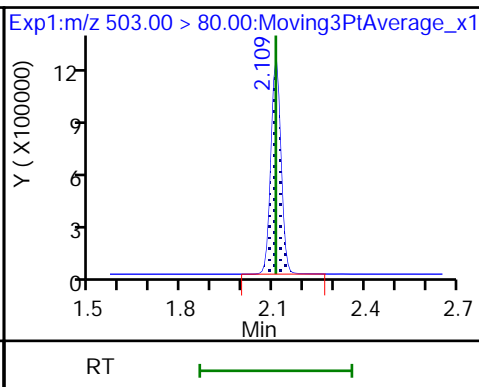
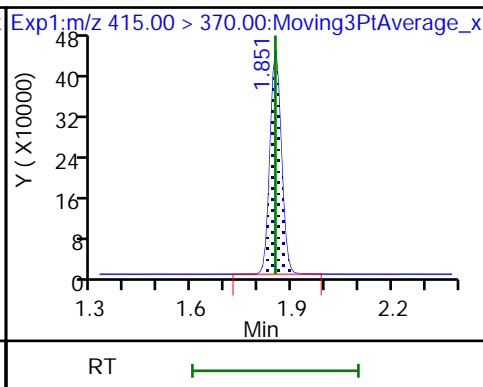
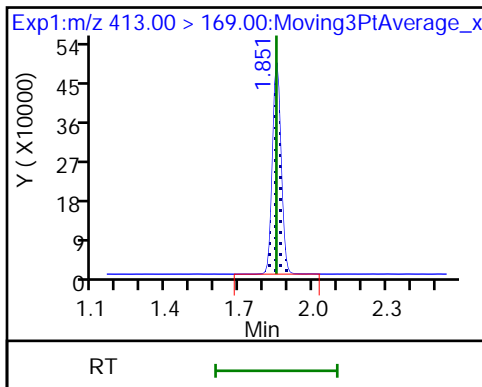
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

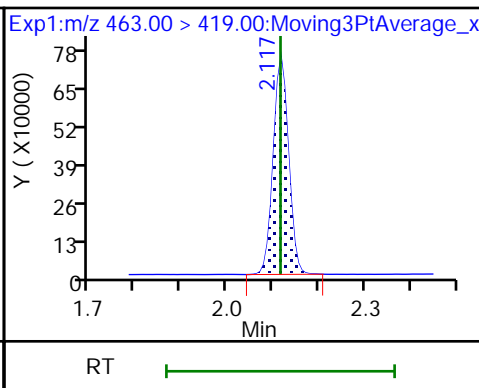
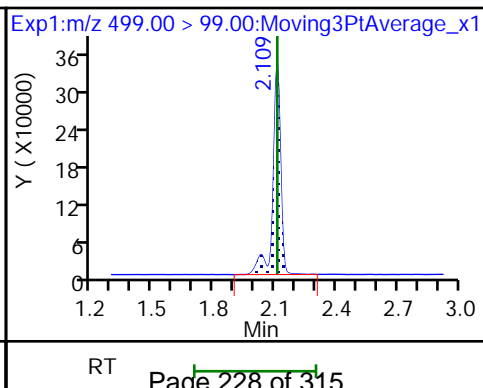
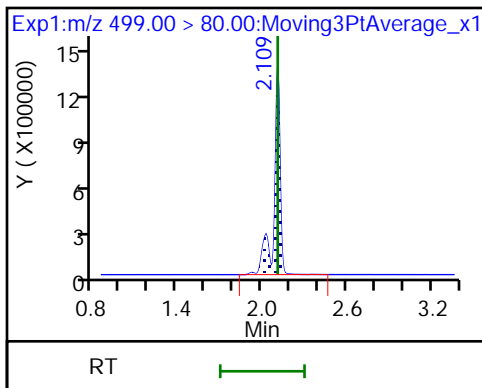
* 7 13C4 PFOS



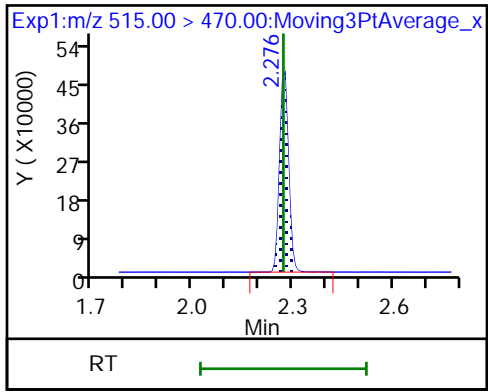
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_007.d
 Lims ID: IC L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 15-Aug-2018 18:39:51 ALS Bottle#: 5 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L5_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Aug-2018 08:51:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 18:55:29

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	1.381	0.007	1.000	11785636	128.7		14701	
298.90 > 99.00	1.388	1.381	0.007	1.000	8762661		1.34(0.00-0.00)	9668	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.505	0.005	1.000	987004	10.1		9370	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	6289862	47.5		3399	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	1440874	14.4		257	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.850	0.001		944777	10.0		7532	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.850	0.001	1.000	3102767	30.1		420	
413.00 > 169.00	1.851	1.850	0.001	1.000	1613623		1.92(0.00-0.00)	3725	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		2294155	28.7		5009	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	5257770	60.8		6360	
499.00 > 99.00	2.109	2.109	0.0	1.000	1128903		4.66(0.00-0.00)	1721	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	2294540	29.5		331	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.271	-0.003	1.000	766710	10.2		5627	

Reagents:

LC537-L5_00026

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_007.d

Injection Date: 15-Aug-2018 18:39:51

Instrument ID: A8_N

Lims ID: IC L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

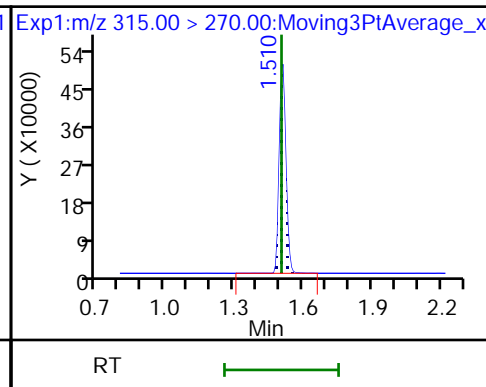
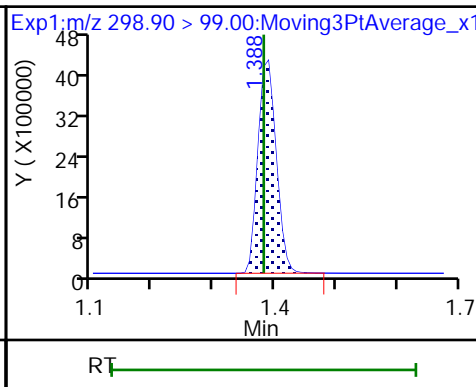
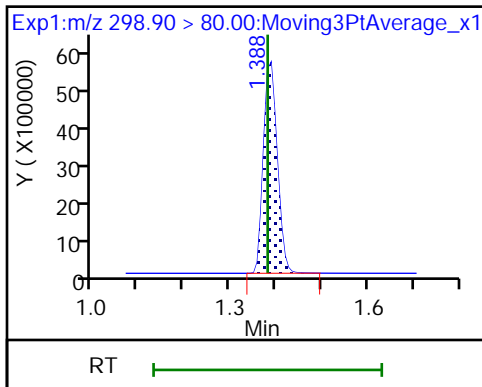
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

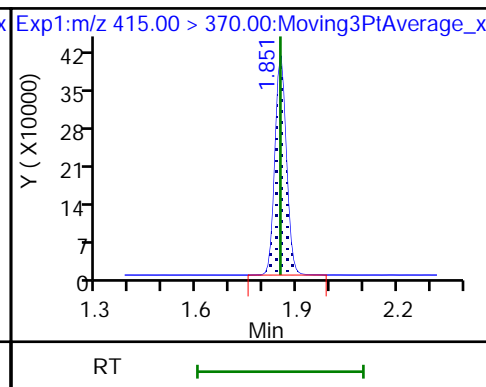
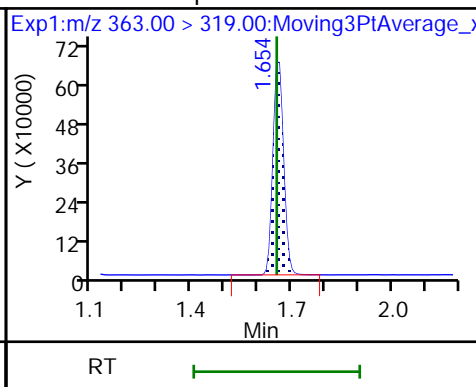
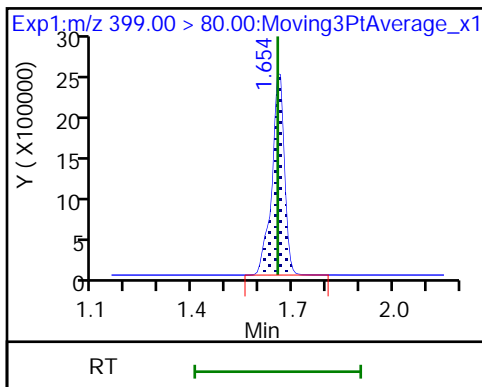
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

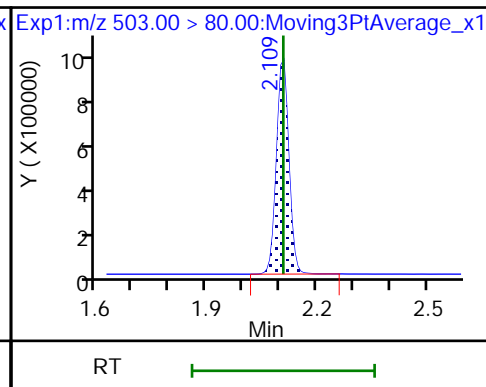
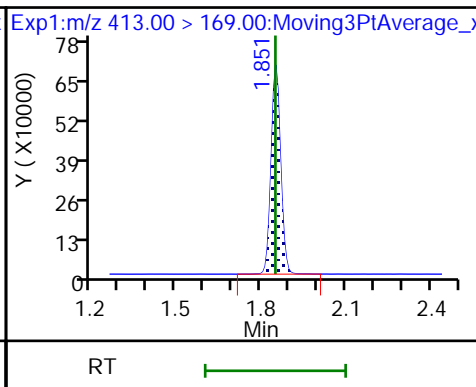
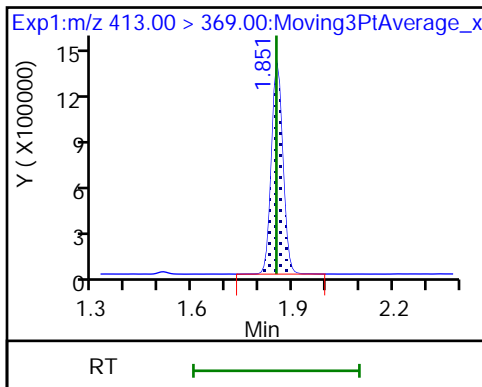
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

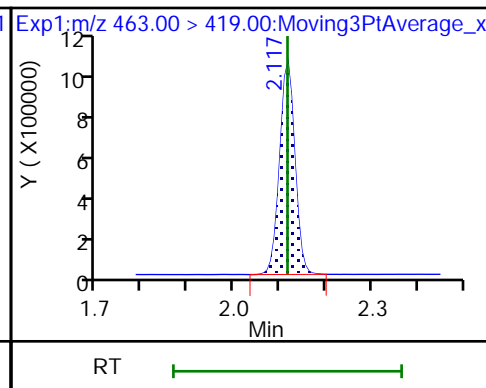
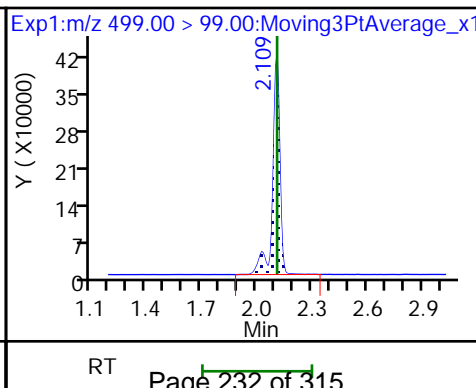
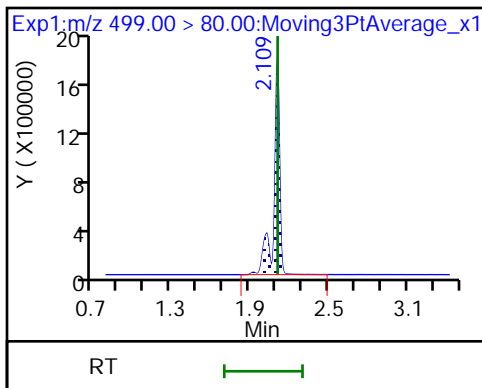
* 7 13C4 PFOS



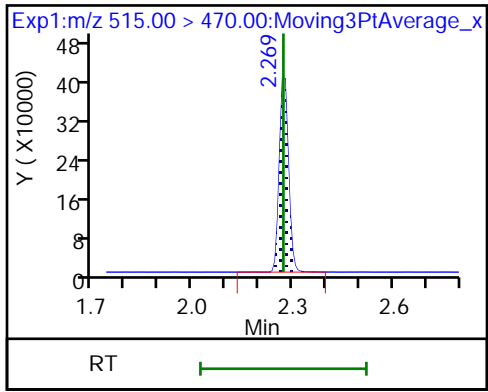
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Lims ID: IC L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 15-Aug-2018 18:44:32 ALS Bottle#: 6 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L6_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Aug-2018 08:51:54 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 18:55:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	15136483	152.7		15082	
298.90 > 99.00	1.381	1.381	0.0	1.000	11077712		1.37(0.00-0.00)	11444	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1035478	10.1		10037	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	1986691	19.1		353	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	8441814	58.9		4544	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.850	-0.006	1.000	4216218	39.4		560	
413.00 > 169.00	1.844	1.850	-0.006	1.000	2187034		1.93(0.00-0.00)	4711	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.850	-0.006		981996	10.0		8690	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.108	-0.006		2483425	28.7		5512	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	7518443	80.4		8718	
499.00 > 99.00	2.102	2.109	-0.007	1.000	1595089		4.71(0.00-0.00)	2315	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	3246932	40.1		449	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.271	-0.003	1.000	783206	10.1		6018	

Reagents:

LC537-L6_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Injection Date: 15-Aug-2018 18:44:32

Instrument ID: A8_N

Lims ID: IC L6

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 6

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

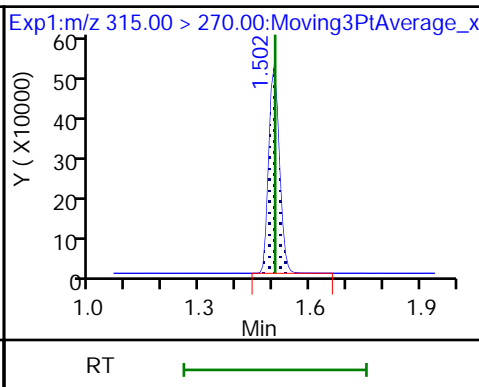
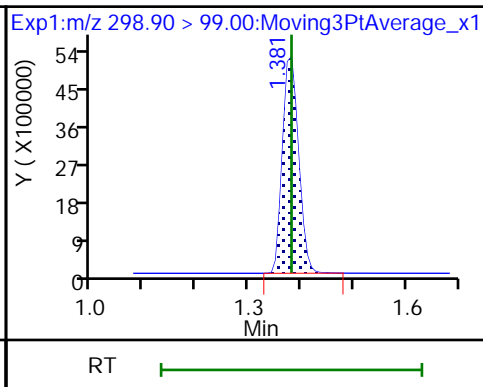
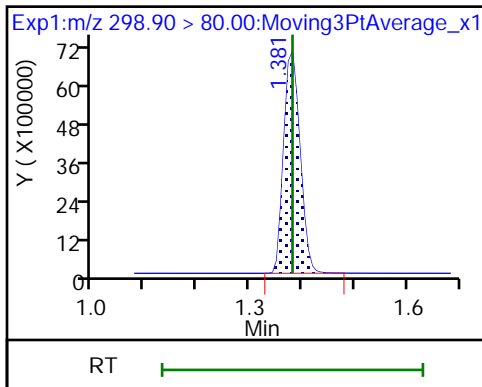
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

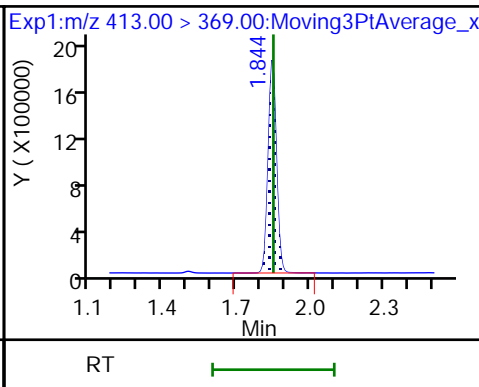
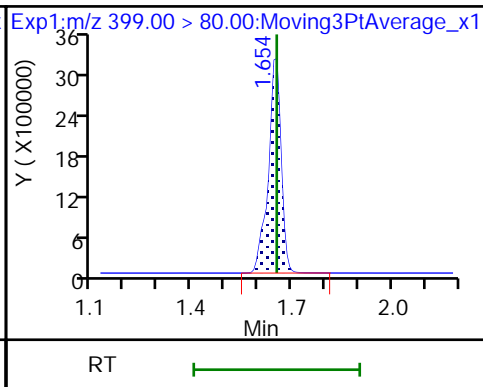
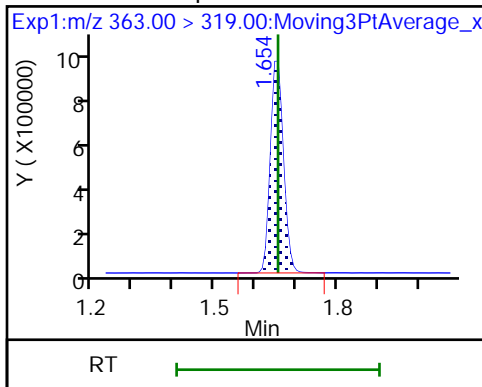
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

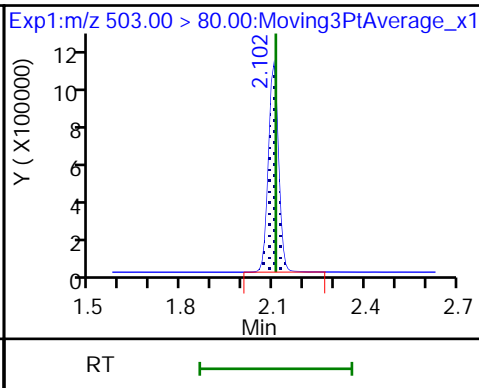
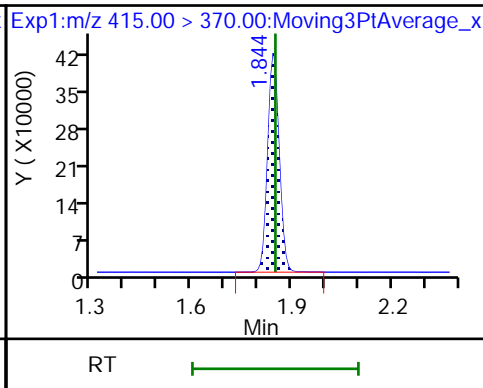
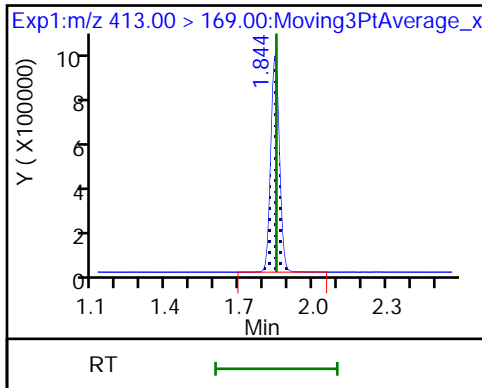
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

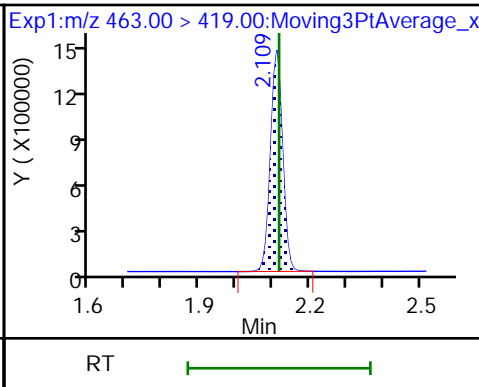
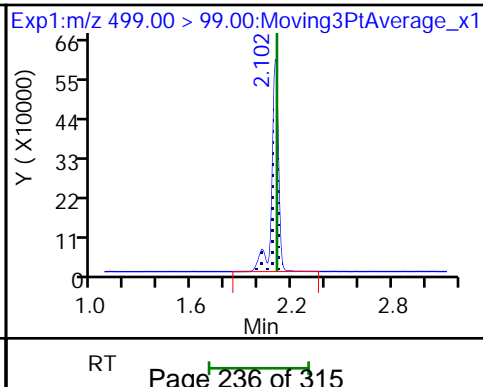
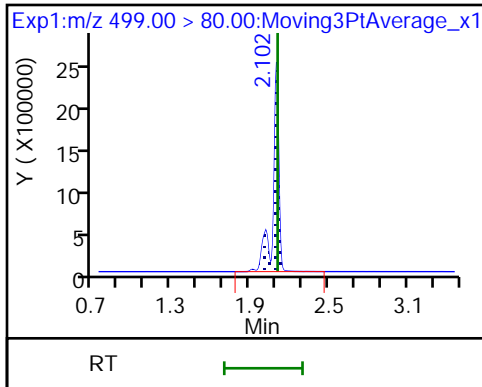
* 7 13C4 PFOS



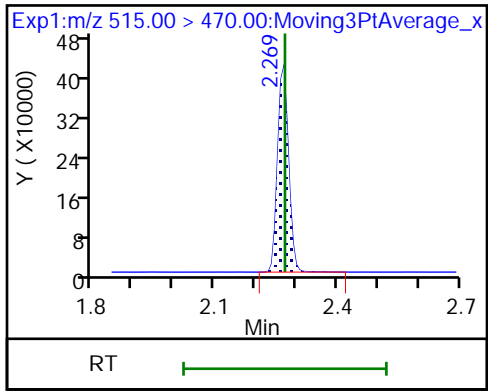
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



Calibration

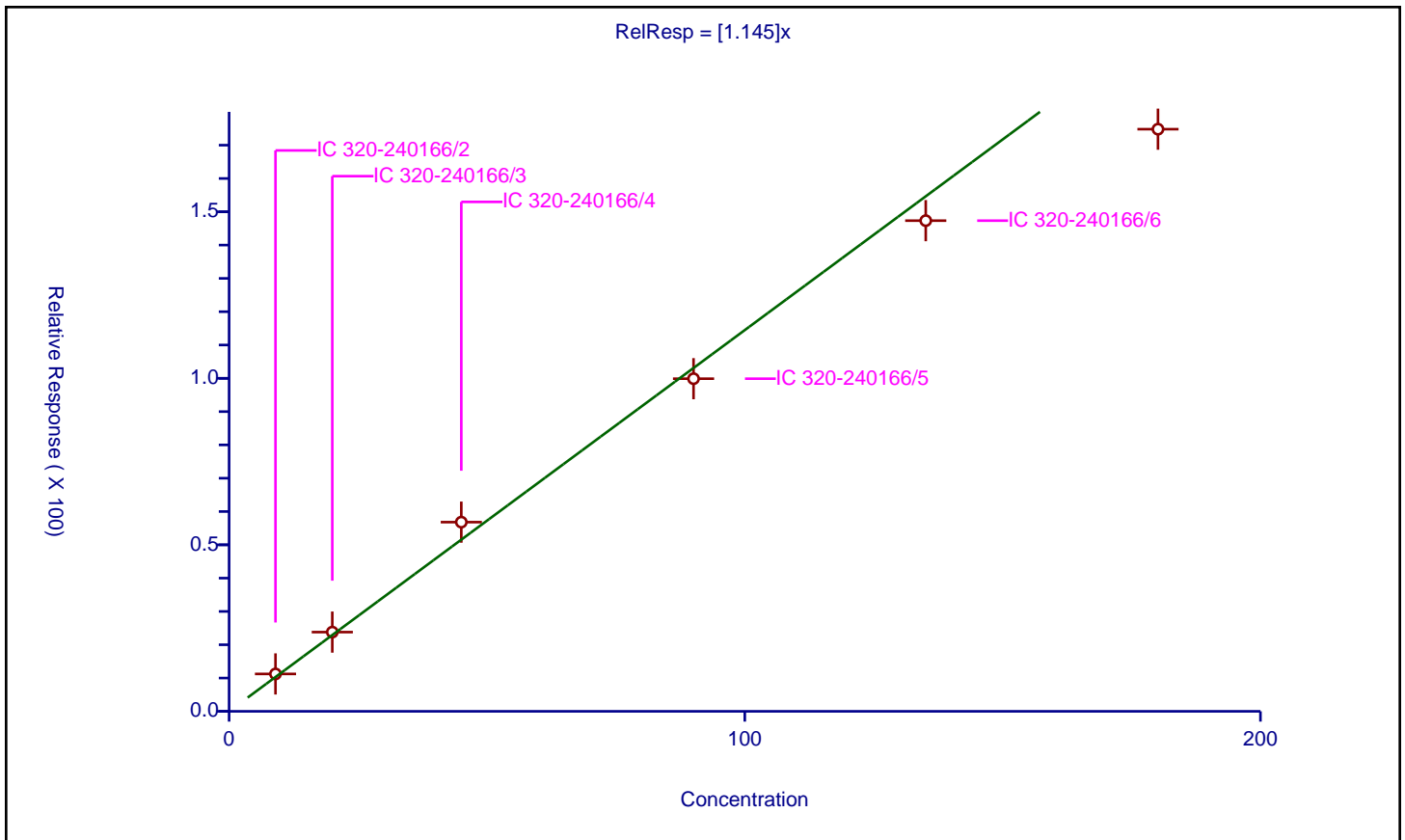
/ Perfluorobutanesulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.145

Error Coefficients	
Standard Error:	9820000
Relative Standard Error:	9.6
Correlation Coefficient:	0.987
Coefficient of Determination (Adjusted):	0.984

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	8.99912	11.230049	28.68	2551191.0	1.247905	Y
2	IC 320-240166/3	20.01376	23.788708	28.68	2496049.0	1.188618	Y
3	IC 320-240166/4	45.03096	56.810426	28.68	2296598.0	1.261586	Y
4	IC 320-240166/5	90.06192	99.887482	28.68	2694948.0	1.109098	Y
5	IC 320-240166/6	135.09288	147.336183	28.68	2294155.0	1.090629	Y
6	IC 320-240166/7	180.12384	174.804688	28.68	2483425.0	0.970469	Y



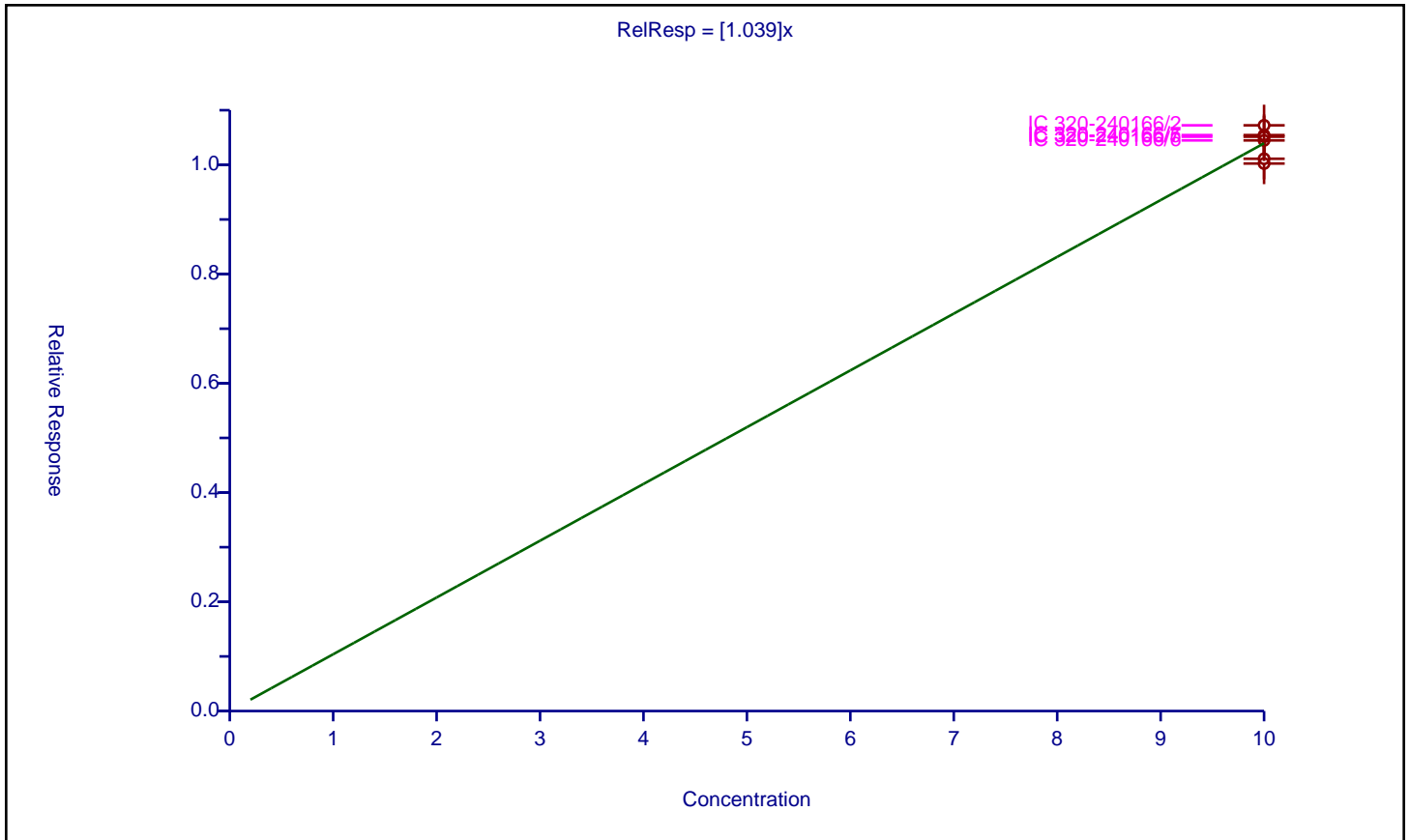
Calibration

/ 13C2 PFHxA

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: ISTD
Response Base: AREA
RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.039
Error Coefficients	
Standard Error:	1140000
Relative Standard Error:	2.6
Correlation Coefficient:	NA
Coefficient of Determination (Adjusted):	0.000000000000000111

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	10.0	10.723022	10.0	1026304.0	1.072302	Y
2	IC 320-240166/3	10.0	10.110938	10.0	1041660.0	1.011094	Y
3	IC 320-240166/4	10.0	10.023697	10.0	958352.0	1.00237	Y
4	IC 320-240166/5	10.0	10.514813	10.0	1045953.0	1.051481	Y
5	IC 320-240166/6	10.0	10.446952	10.0	944777.0	1.044695	Y
6	IC 320-240166/7	10.0	10.544625	10.0	981996.0	1.054463	Y



Calibration

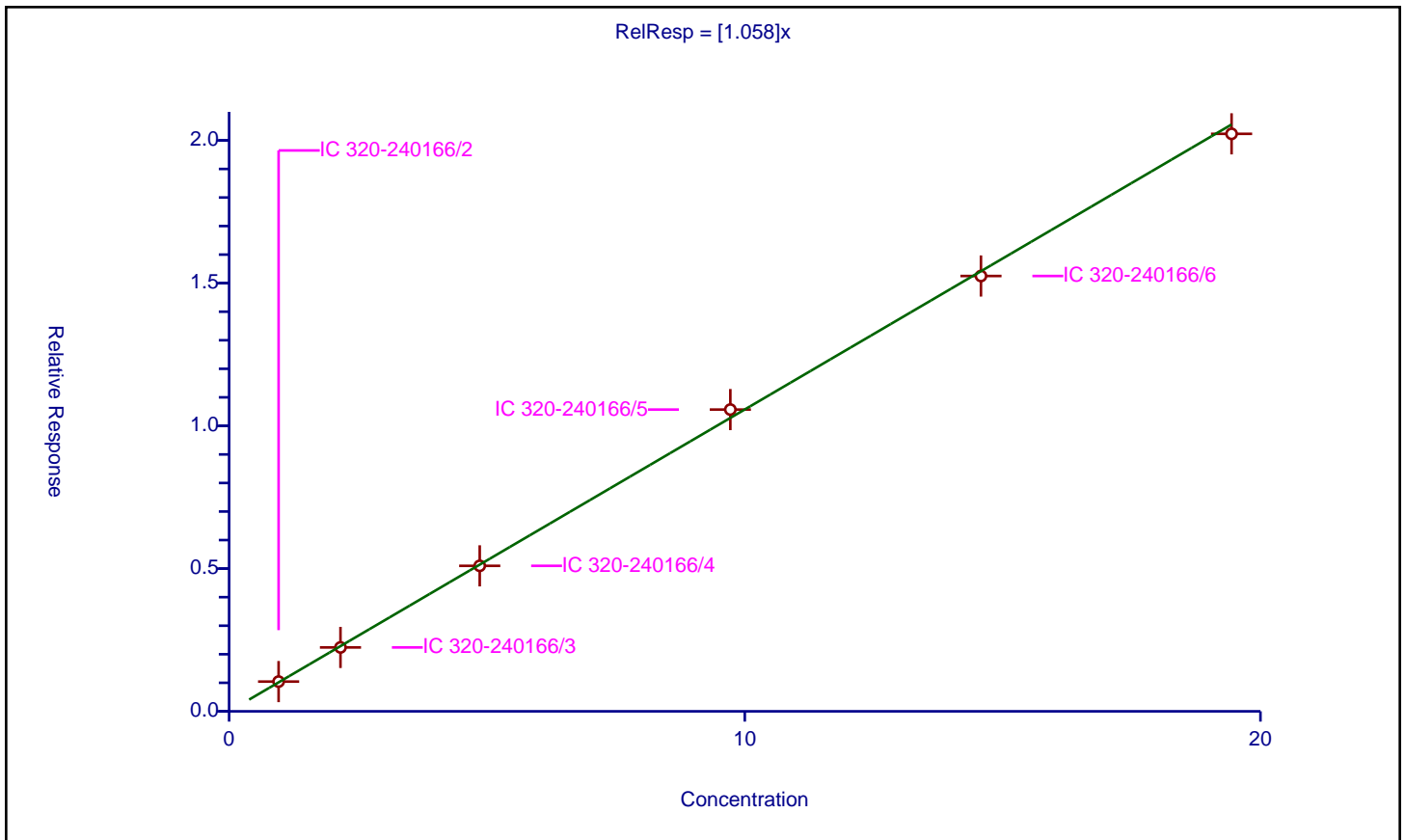
/ Perfluoroheptanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.058

Error Coefficients	
Standard Error:	1230000
Relative Standard Error:	2.2
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	0.96	1.042069	10.0	1026304.0	1.085489	Y
2	IC 320-240166/3	2.16	2.238629	10.0	1041660.0	1.036402	Y
3	IC 320-240166/4	4.86	5.097449	10.0	958352.0	1.048858	Y
4	IC 320-240166/5	9.72	10.571517	10.0	1045953.0	1.087605	Y
5	IC 320-240166/6	14.58	15.250943	10.0	944777.0	1.046018	Y
6	IC 320-240166/7	19.44	20.231152	10.0	981996.0	1.040697	Y



Calibration

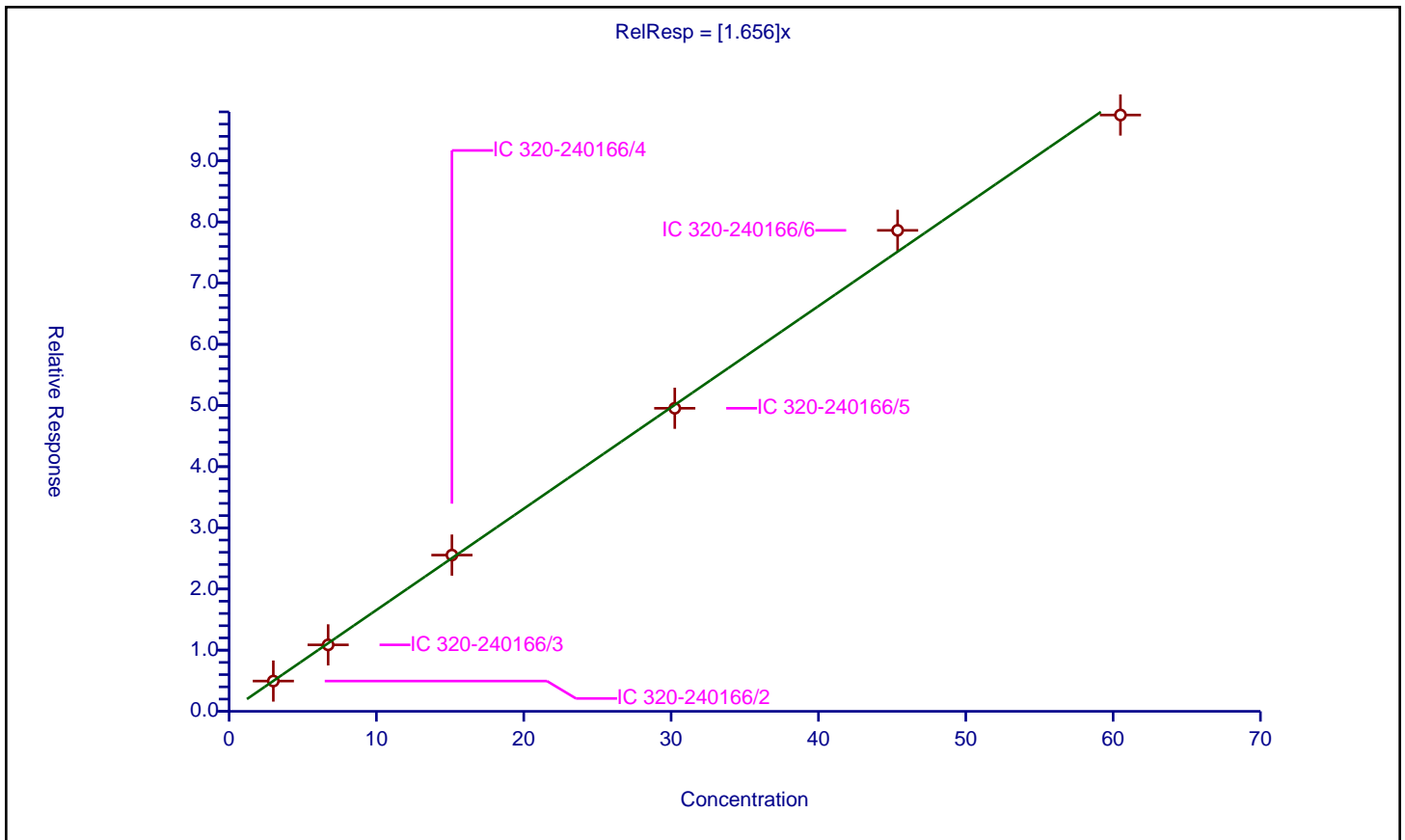
/ Perfluorohexanesulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.656

Error Coefficients	
Standard Error:	5250000
Relative Standard Error:	2.8
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	3.003	4.952545	28.68	2551191.0	1.649199	Y
2	IC 320-240166/3	6.721867	10.867105	28.68	2496049.0	1.61668	Y
3	IC 320-240166/4	15.1242	25.544729	28.68	2296598.0	1.688997	Y
4	IC 320-240166/5	30.2484	49.547598	28.68	2694948.0	1.638024	Y
5	IC 320-240166/6	45.3726	78.631671	28.68	2294155.0	1.733021	Y
6	IC 320-240166/7	60.4968	97.490855	28.68	2483425.0	1.611504	Y



Calibration

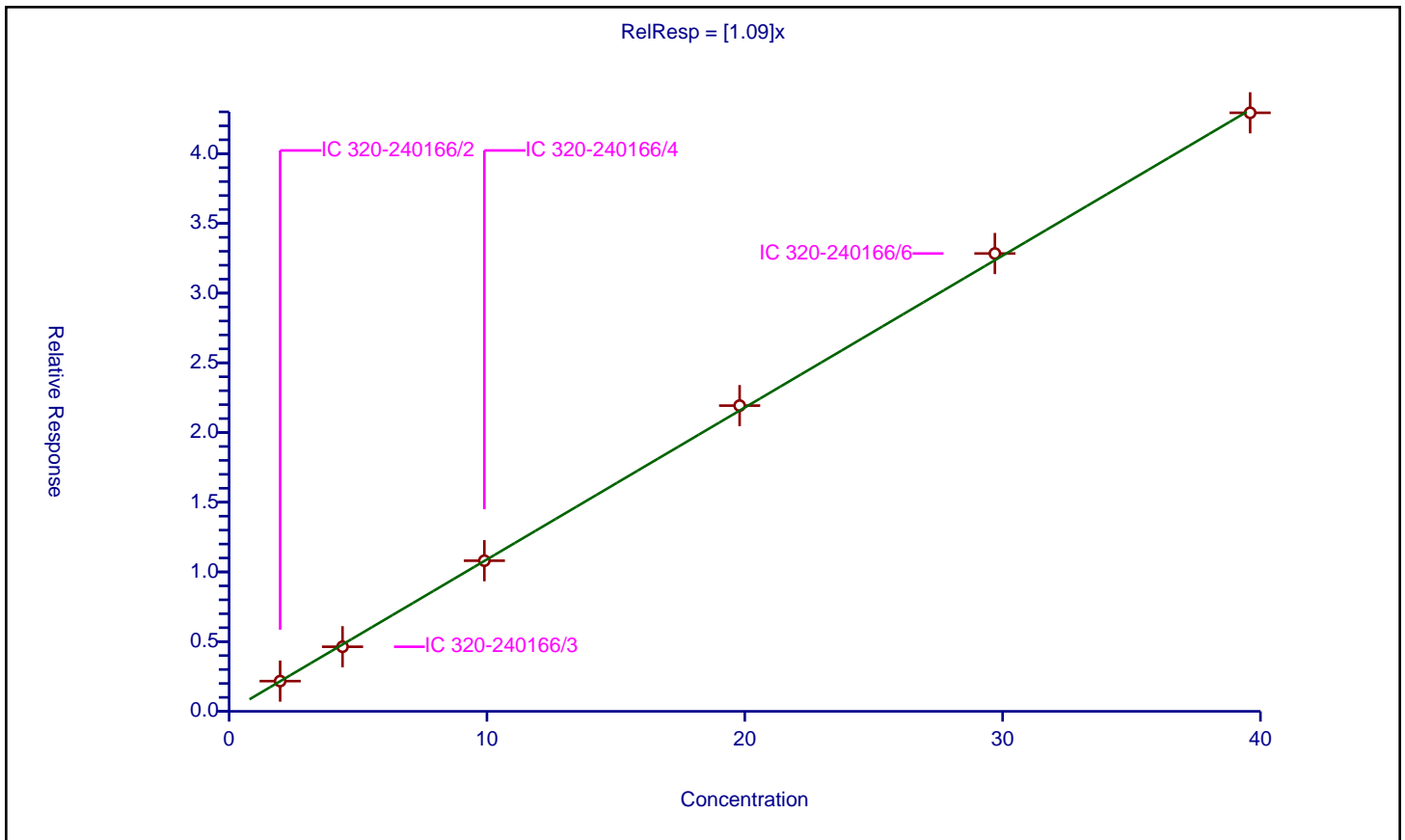
/ Perfluorooctanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.09

Error Coefficients	
Standard Error:	2610000
Relative Standard Error:	1.8
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	1.98	2.168821	10.0	1026304.0	1.095364	Y
2	IC 320-240166/3	4.4	4.632865	10.0	1041660.0	1.052924	Y
3	IC 320-240166/4	9.9	10.80555	10.0	958352.0	1.09147	Y
4	IC 320-240166/5	19.8	21.929159	10.0	1045953.0	1.107533	Y
5	IC 320-240166/6	29.7	32.841263	10.0	944777.0	1.105766	Y
6	IC 320-240166/7	39.6	42.935185	10.0	981996.0	1.084222	Y



Calibration

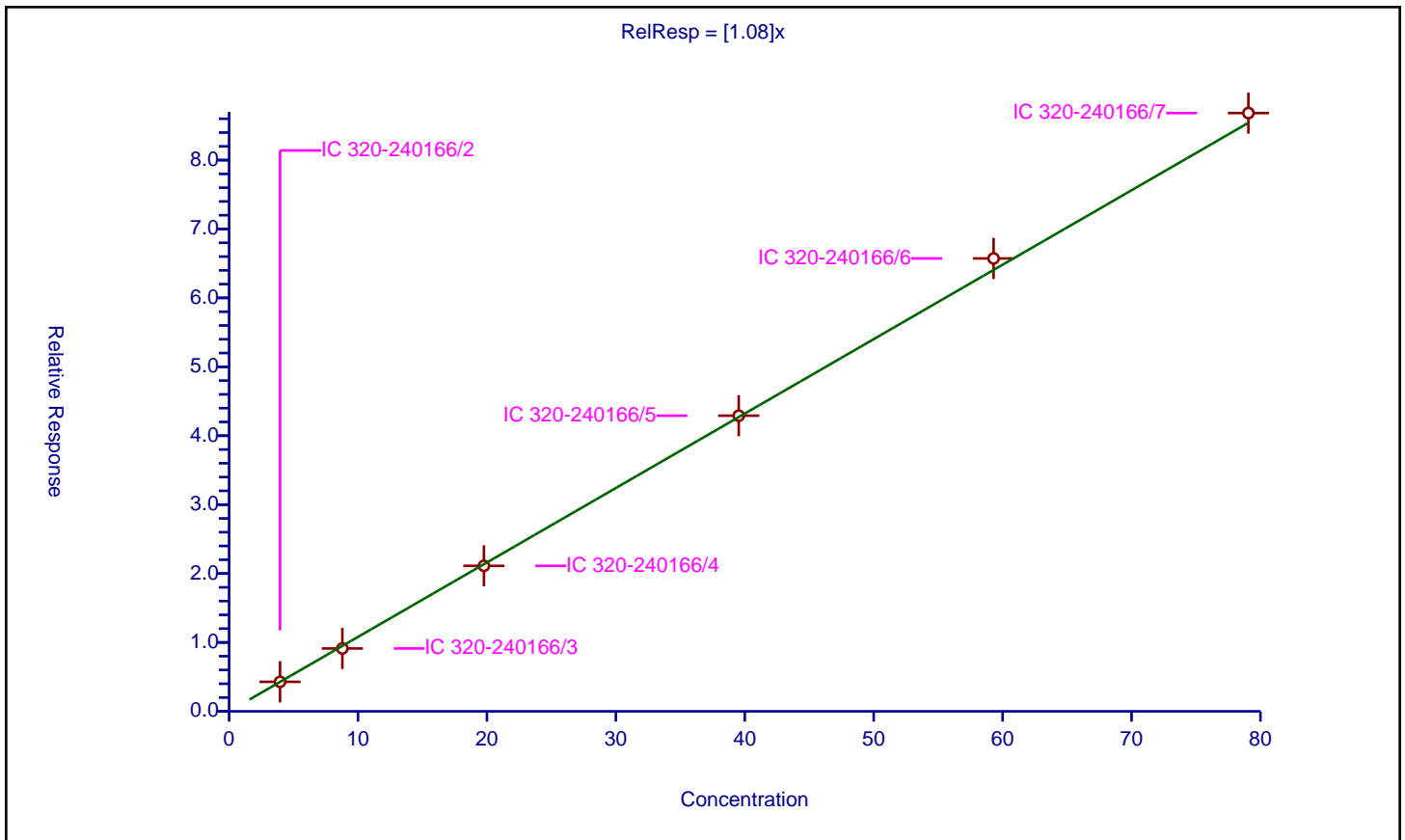
/ Perfluorooctane sulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.08

Error Coefficients	
Standard Error:	4560000
Relative Standard Error:	2.3
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	3.95328	4.281386	28.68	2551191.0	1.082996	Y
2	IC 320-240166/3	8.785067	9.124485	28.68	2496049.0	1.038636	Y
3	IC 320-240166/4	19.7664	21.117058	28.68	2296598.0	1.068331	Y
4	IC 320-240166/5	39.5328	42.904927	28.68	2694948.0	1.085299	Y
5	IC 320-240166/6	59.2992	65.729144	28.68	2294155.0	1.108432	Y
6	IC 320-240166/7	79.0656	86.827243	28.68	2483425.0	1.098167	Y



Calibration

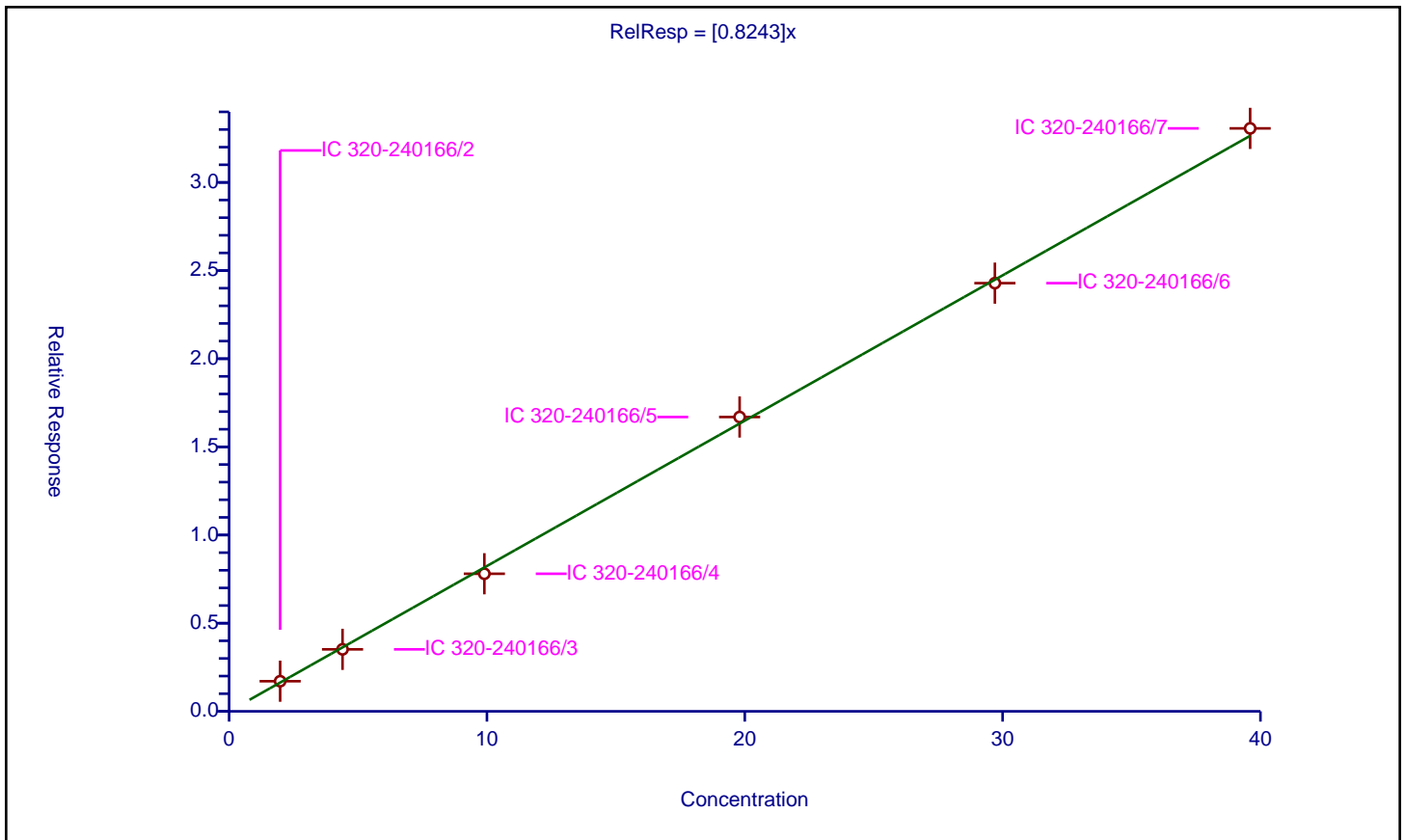
/ Perfluorononanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.8243

Error Coefficients	
Standard Error:	1980000
Relative Standard Error:	3.4
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	1.98	1.708753	10.0	1026304.0	0.863007	Y
2	IC 320-240166/3	4.4	3.515581	10.0	1041660.0	0.798996	Y
3	IC 320-240166/4	9.9	7.802446	10.0	958352.0	0.788126	Y
4	IC 320-240166/5	19.8	16.692968	10.0	1045953.0	0.843079	Y
5	IC 320-240166/6	29.7	24.286578	10.0	944777.0	0.81773	Y
6	IC 320-240166/7	39.6	33.064615	10.0	981996.0	0.834965	Y



Calibration

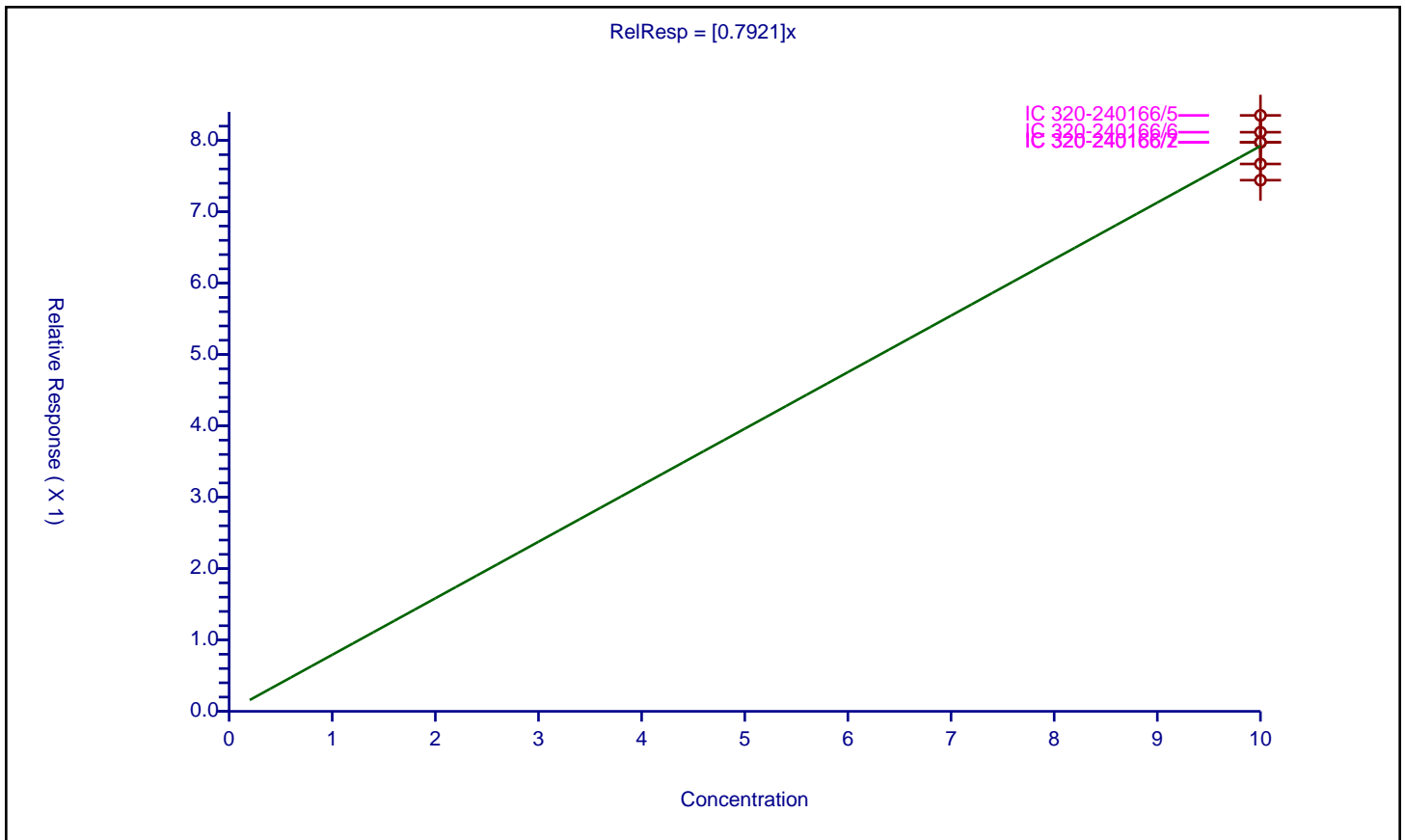
/ 13C2 PFDA

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.7921

Error Coefficients	
Standard Error:	869000
Relative Standard Error:	4.1
Correlation Coefficient:	NA
Coefficient of Determination (Adjusted):	0

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	10.0	7.972277	10.0	1026304.0	0.797228	Y
2	IC 320-240166/3	10.0	7.442985	10.0	1041660.0	0.744299	Y
3	IC 320-240166/4	10.0	7.670209	10.0	958352.0	0.767021	Y
4	IC 320-240166/5	10.0	8.35092	10.0	1045953.0	0.835092	Y
5	IC 320-240166/6	10.0	8.115248	10.0	944777.0	0.811525	Y
6	IC 320-240166/7	10.0	7.975654	10.0	981996.0	0.797565	Y



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-240166/9 Calibration Date: 08/15/2018 18:53
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.15_537CURVE_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.167		20.4	20.0	2.0	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.033		2.11	2.16	-2.4	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.611		6.54	6.72	-2.7	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.020		4.12	4.40	-6.4	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.039		8.45	8.79	-3.8	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8023		4.28	4.40	-2.7	50.0
13C2 PFHxA	Ave	1.039	1.002		9.64	10.0	-3.6	30.0
13C2 PFDA	Ave	0.7921	0.7658		9.67	10.0	-3.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_010.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 15-Aug-2018 18:53:52 ALS Bottle#: 2 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Aug-2018 08:40:39 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 19:08:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	1945320	20.4		4245	
298.90 > 99.00	1.381	1.381	0.0	1.000	1331599		1.46(0.00-0.00)	1955	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1009111	9.64		8281	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	901941	6.54		565	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	224502	2.11		42.5	M
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.850	-0.006		1006603	10.0		8231	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.850	-0.006	1.000	451556	4.12		60.4	
413.00 > 169.00	1.844	1.850	-0.006	1.000	246955		1.83(0.00-0.00)	568	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.108	-0.006		2388436	28.7		5214	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	760165	8.45		1715	
499.00 > 99.00	2.102	2.109	-0.007	1.000	165858		4.58(0.00-0.00)	275	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	355358	4.28		52.6	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.271	-0.003	1.000	770892	9.67		5141	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L2_00022

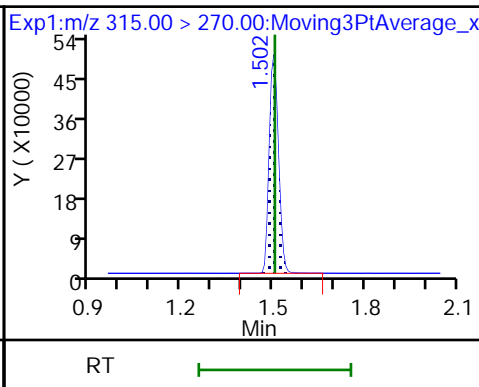
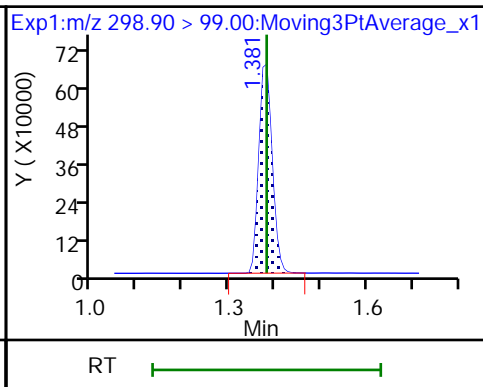
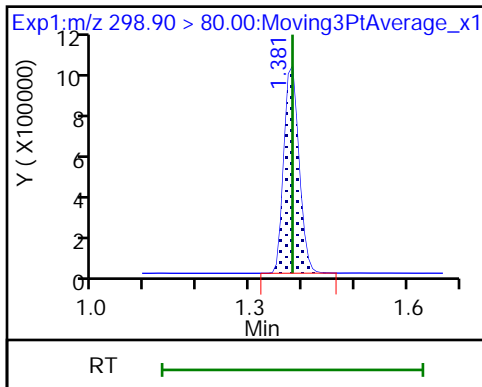
Amount Added: 1.00

Units: mL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

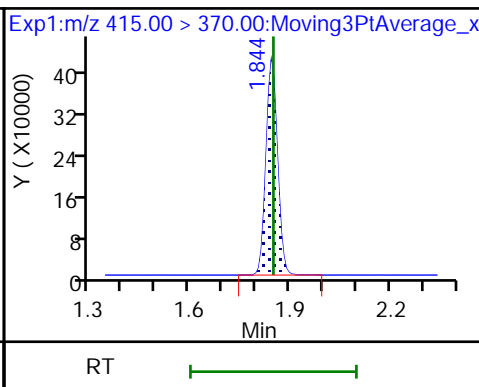
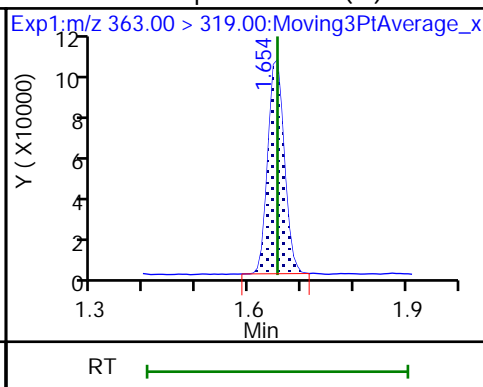
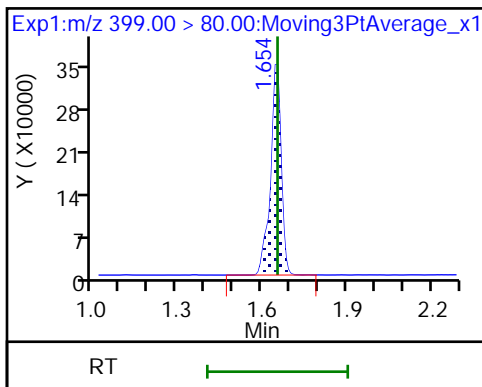
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid (M)

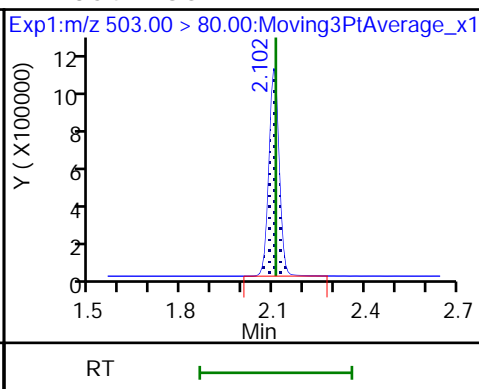
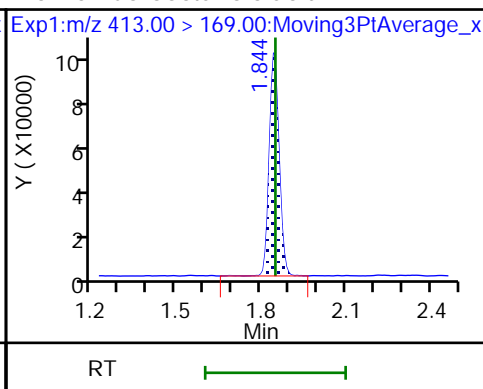
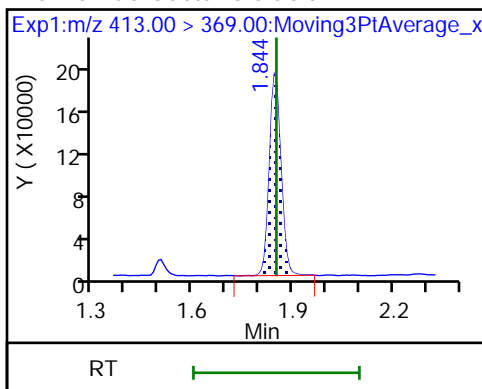
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

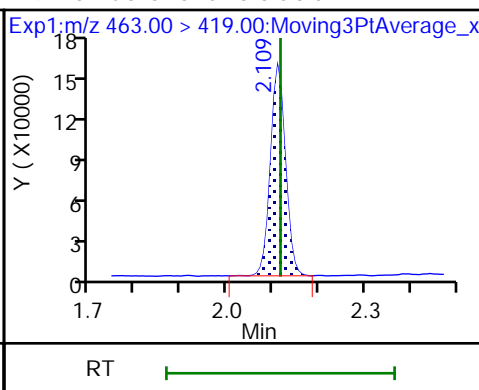
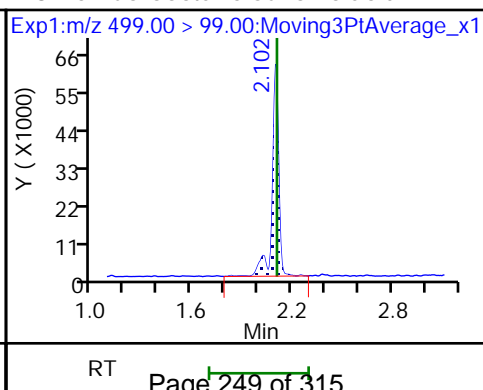
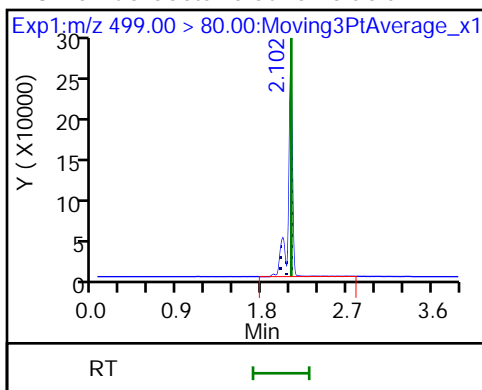
* 7 13C4 PFOS



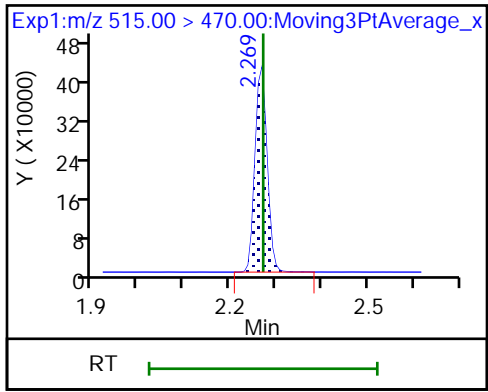
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

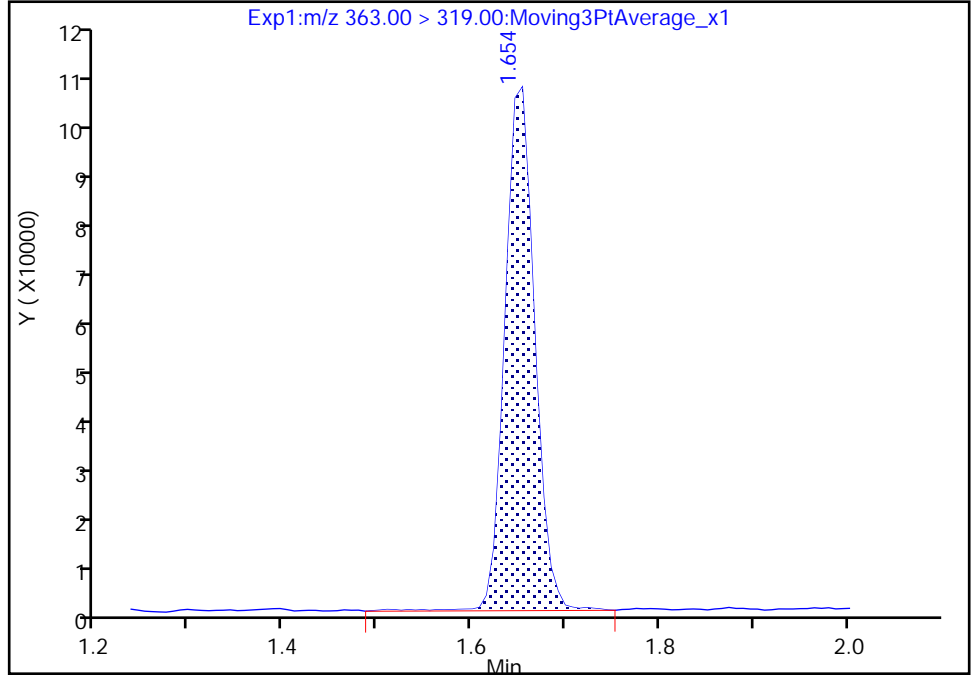
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Injection Date: 15-Aug-2018 18:53:52 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

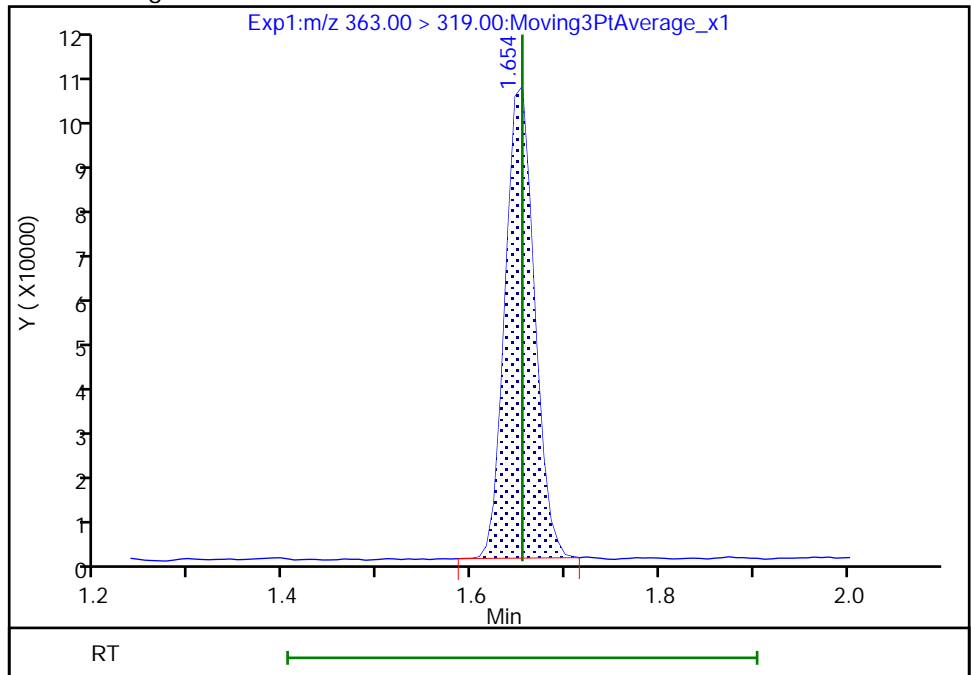
RT: 1.65
Area: 229068
Amount: 2.151895
Amount Units: ng/ml

Processing Integration Results



RT: 1.65
Area: 224502
Amount: 2.109002
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 15-Aug-2018 19:08:41
Audit Action: Manually Integrated

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: ICV 320-240166/11 Calibration Date: 08/15/2018 19:03
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.15_537CURVE_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.005		87.9	100	-12.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	0.9536		9.02	10.0	-9.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.530		18.6	20.2	-7.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	0.8802		16.3	20.2	-19.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	0.9603		17.9	20.2	-11.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7757		19.0	20.2	-5.9	30.0
13C2 PFHxA	Ave	1.039	1.022		9.83	10.0	-1.7	30.0
13C2 PFDA	Ave	0.7921	0.7952		10.0	10.0	0.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_012.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 15-Aug-2018 19:03:12 ALS Bottle#: 7 Worklist Smp#: 11
 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\20180815-62769.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Aug-2018 08:40:40 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 19:11:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	8951923	87.9		13197	
298.90 > 99.00	1.373	1.381	-0.008	0.995	6353811		1.41(0.00-0.00)	8112	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1044443	9.83		9288	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.646	1.654	-0.008	1.000	2744582	18.6		1806	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.646	1.654	-0.008	1.000	974881	9.02		176	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.850	-0.006		1022273	10.0		7889	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.850	-0.006	1.000	1814661	16.3		244	
413.00 > 169.00	1.844	1.850	-0.006	1.000	963434		1.88(0.00-0.00)	2245	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.108	-0.006		2551643	28.7		5068	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	1723342	17.9		2659	
499.00 > 99.00	2.102	2.109	-0.007	1.000	346840		4.97(0.00-0.00)	526	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	1598983	19.0		227	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.271	-0.010	1.000	812885	10.0		5447	

Reagents:

LC537-ICV_00032

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_012.d

Injection Date: 15-Aug-2018 19:03:12

Instrument ID: A8_N

Lims ID: ICV

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 7

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

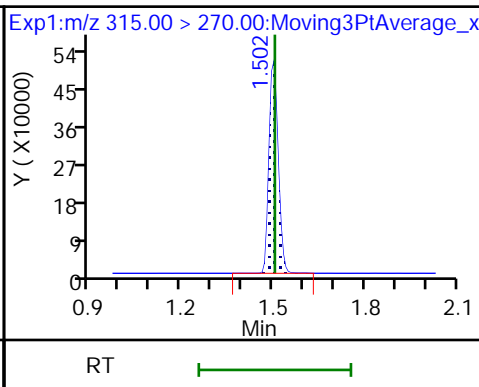
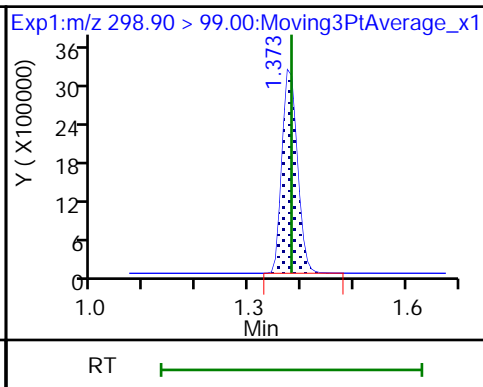
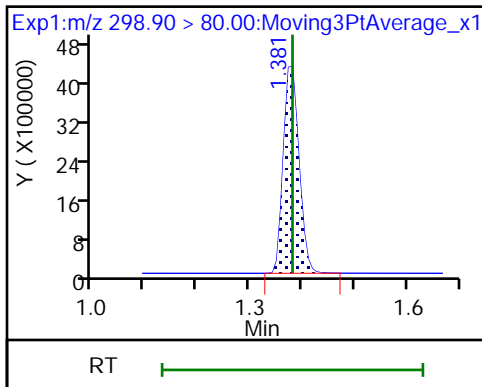
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

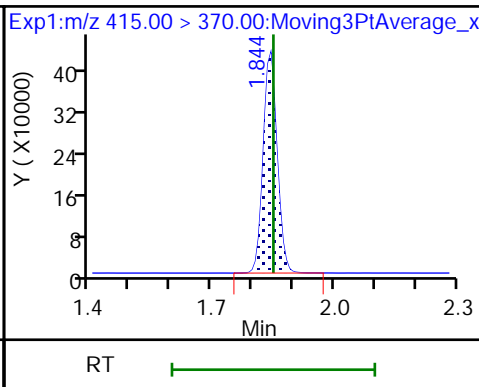
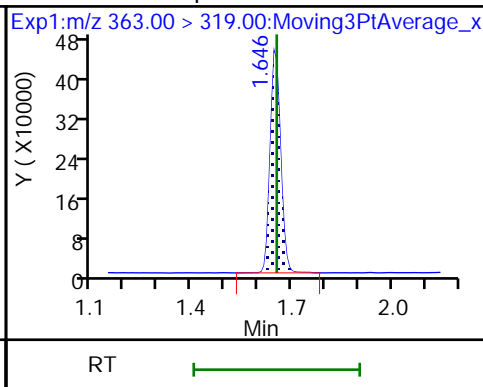
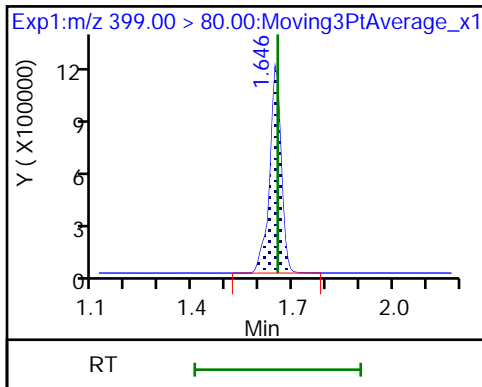
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

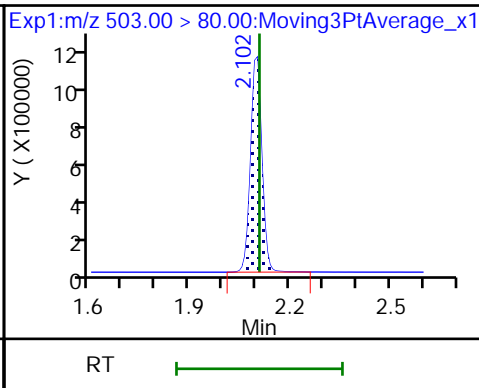
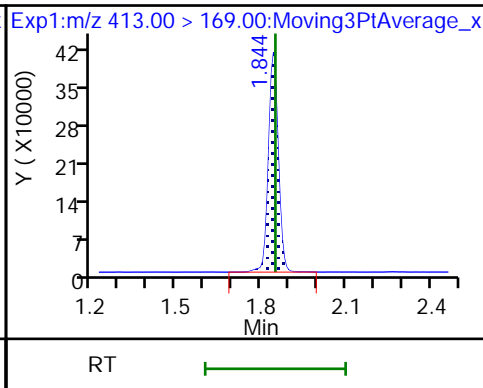
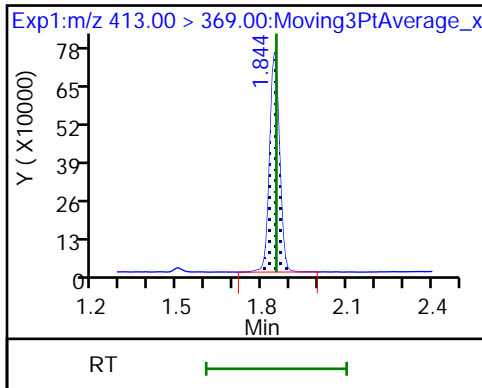
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

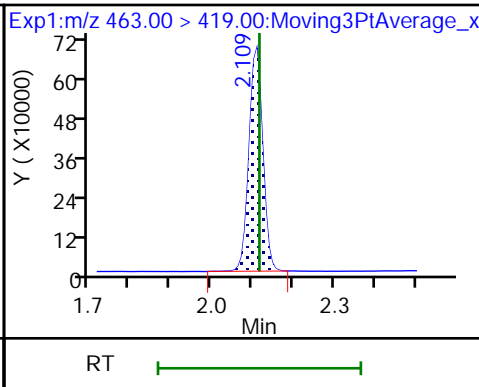
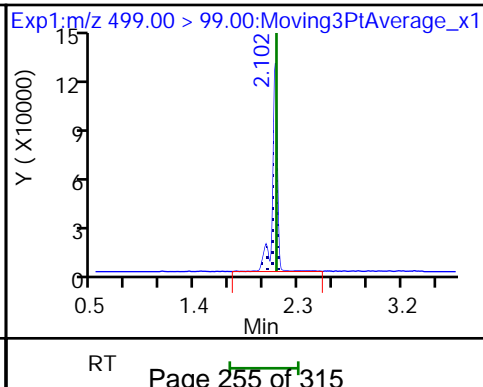
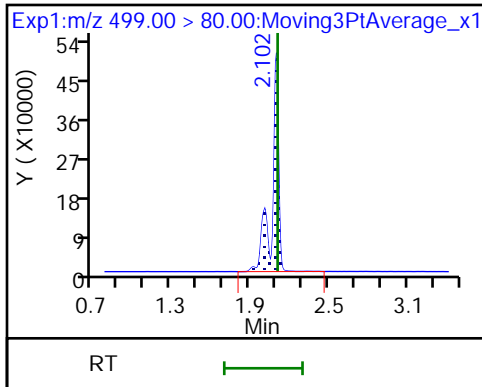
* 7 13C4 PFOS



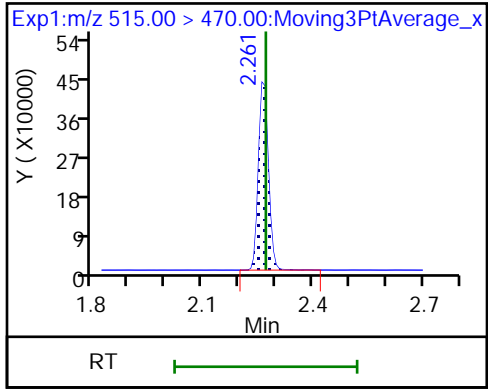
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-242153/1 Calibration Date: 08/26/2018 23:30
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.26_537C_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.183		20.7	20.0	3.3	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.122		2.29	2.16	6.1	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.646		6.68	6.72	-0.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.033		4.17	4.40	-5.2	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.027		8.35	8.79	-4.9	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8082		4.31	4.40	-2.0	50.0
13C2 PFHxA	Ave	1.039	1.105		10.6	10.0	6.3	30.0
13C2 PFDA	Ave	0.7921	0.8820		11.1	10.0	11.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_004.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 26-Aug-2018 23:30:03 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*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:44 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:33:16

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	2034901	20.7		6968	
298.90 > 99.00	1.366	1.366	0.0	1.000	1428021		1.42(0.00-0.00)	3489	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	1057028	10.6		10378	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	951334	6.68		671	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	231878	2.29		56.9	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		956576	10.0		7128	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.821	1.813	0.008	1.000	434606	4.17		66.4	
413.00 > 169.00	1.813	1.813	0.0	0.996	229588		1.89(0.00-0.00)	741	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.064	0.007		2465858	28.7		6765	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.071	0.008	1.000	340154	4.31		50.6	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	775692	8.35		1443	
499.00 > 99.00	2.071	2.109	-0.038	1.000	168910		4.59(0.00-0.00)	547	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.246	2.238	0.008	1.000	843650	11.1		3947	

Reagents:

LC537-L2_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_004.d

Injection Date: 26-Aug-2018 23:30:03

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

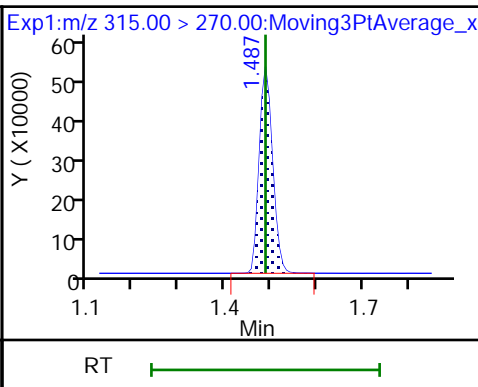
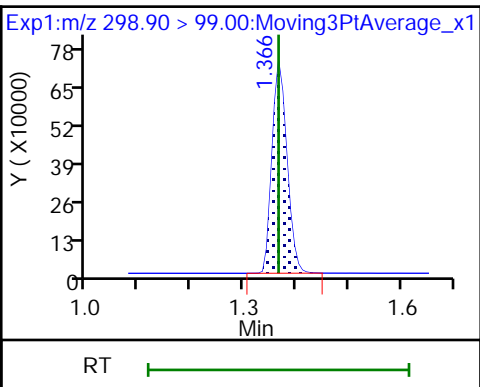
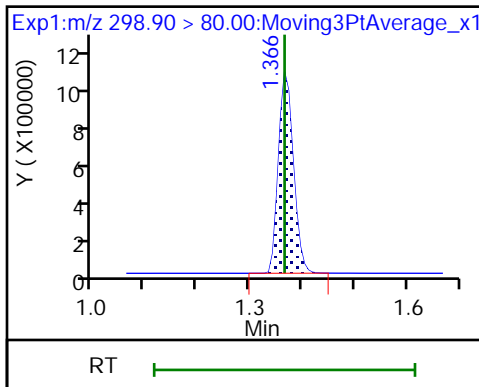
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

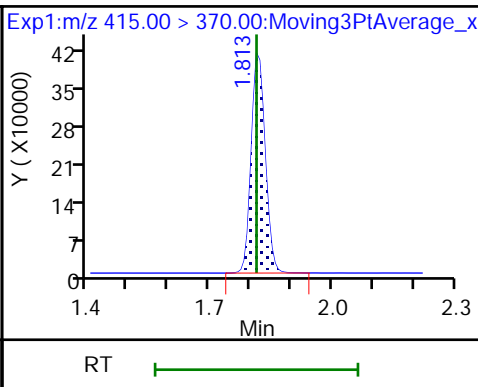
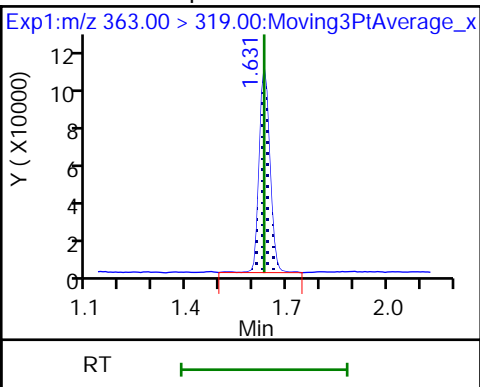
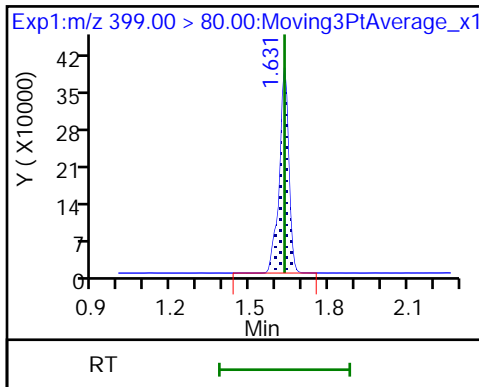
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

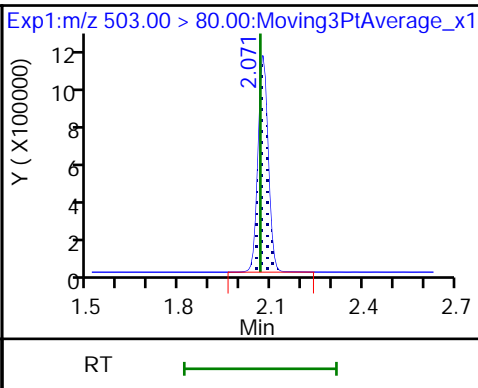
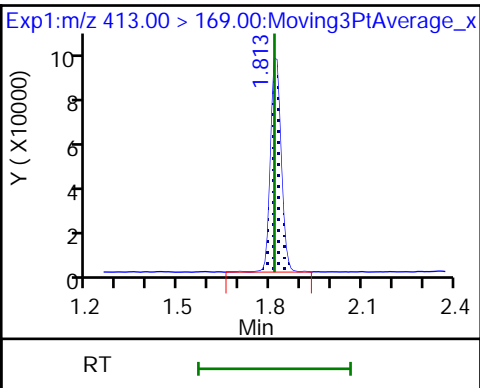
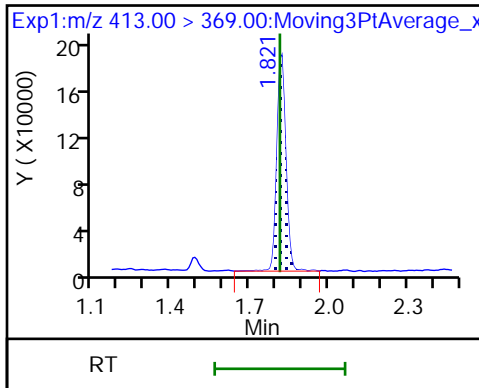
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

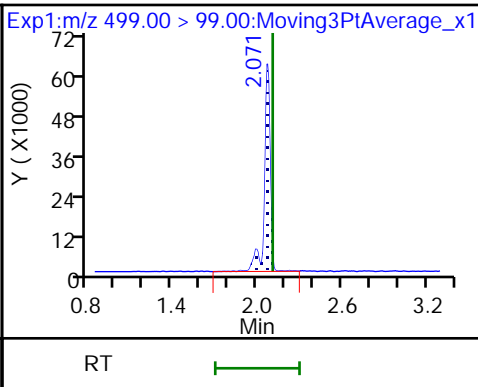
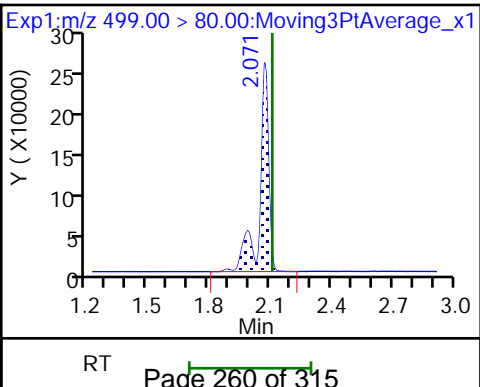
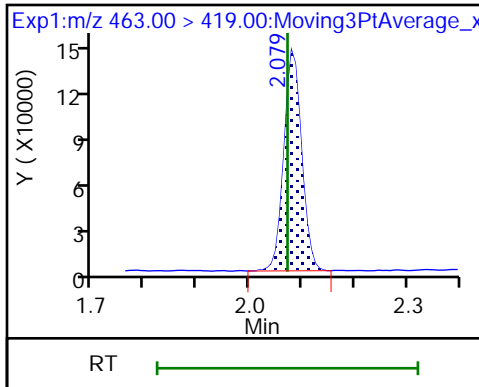
* 7 13C4 PFOS



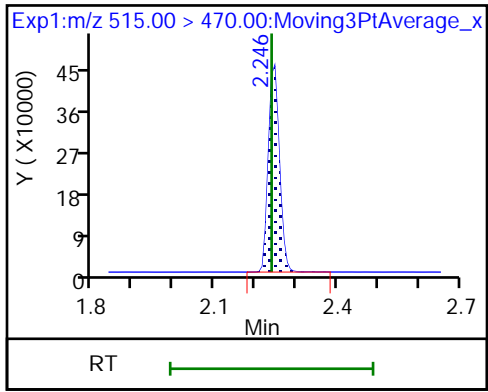
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCV 320-242153/2 Calibration Date: 08/26/2018 23:34
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.26_537C_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.281		50.4	45.0	11.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.133		5.21	4.86	7.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.680		15.3	15.1	1.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.082		9.83	9.90	-0.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.071		19.6	19.8	-0.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7975		9.58	9.90	-3.3	30.0
13C2 PFHxA	Ave	1.039	1.091		10.5	10.0	5.0	30.0
13C2 PFDA	Ave	0.7921	0.8612		10.9	10.0	8.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_005.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 26-Aug-2018 23:34:44 ALS Bottle#: 3 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	4331274	50.4		12691	
298.90 > 99.00	1.366	1.366	0.0	1.000	2942141		1.47(0.00-0.00)	7152	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	923853	10.5		9188	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	1908217	15.3		1374	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	466328	5.21		120	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.821	0.0		846614	10.0		6797	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.821	1.821	0.0	1.000	906601	9.83		142	
413.00 > 169.00	1.821	1.821	0.0	1.000	463490		1.96(0.00-0.00)	1364	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2153988	28.7		6885	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	668382	9.58		101	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	1589677	19.6		2741	
499.00 > 99.00	2.071	2.109	-0.038	1.000	352268		4.51(0.00-0.00)	1136	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.246	2.246	0.0	1.000	729104	10.9		3717	

Reagents:

LC537-L3_00025 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_005.d

Injection Date: 26-Aug-2018 23:34:44

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

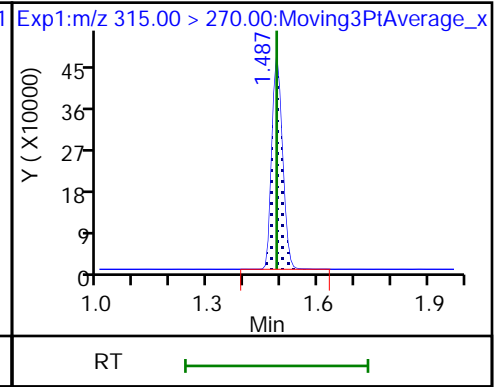
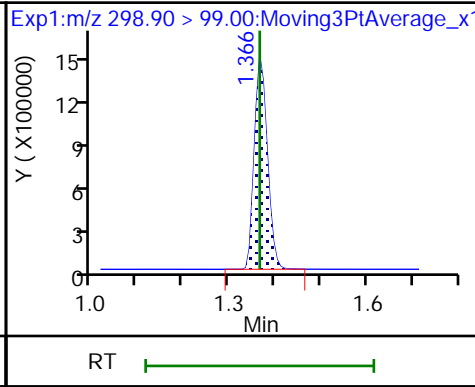
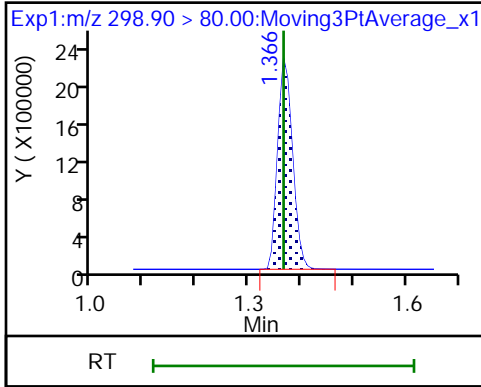
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

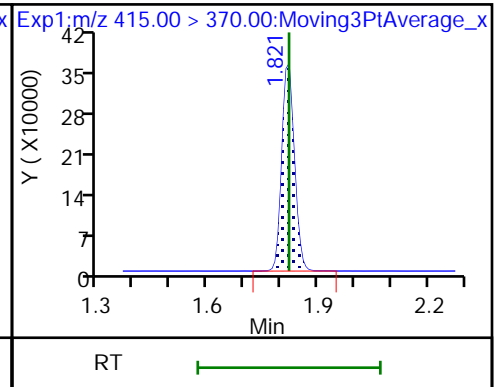
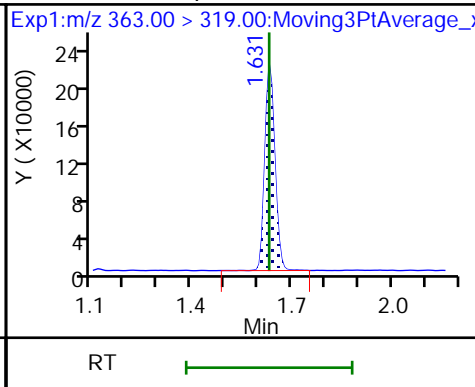
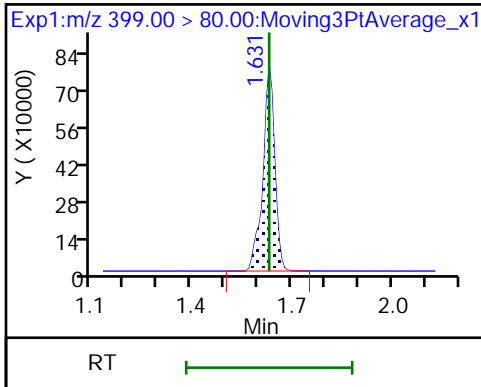
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

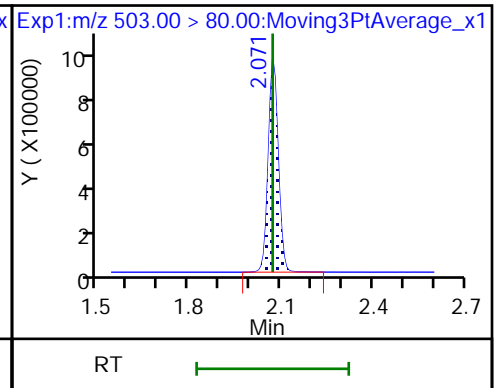
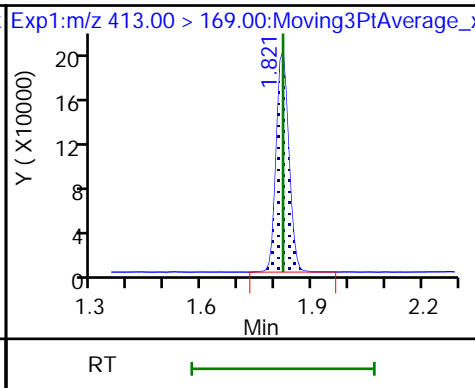
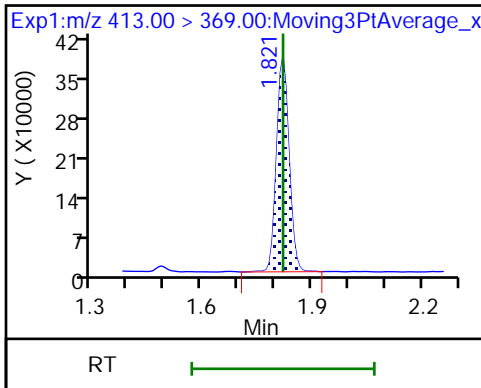
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

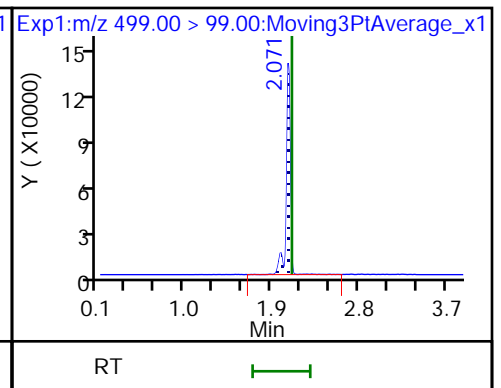
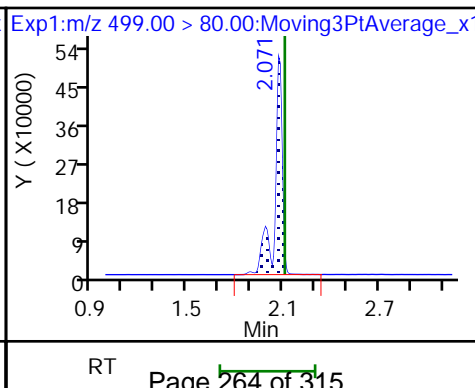
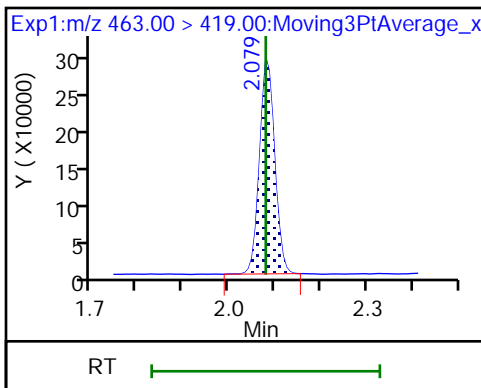
* 7 13C4 PFOS



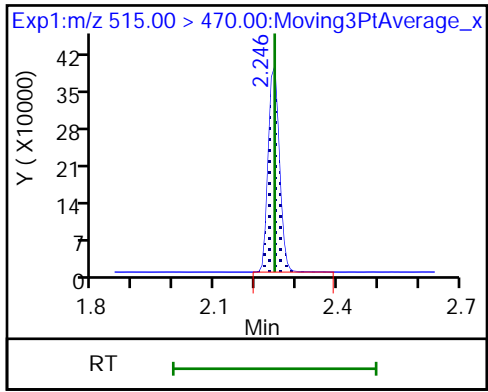
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCV 320-242153/14 Calibration Date: 08/27/2018 00:30
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.26_537C_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.115		132	135	-2.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.095		15.1	14.6	3.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.694		46.4	45.4	2.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.061		28.9	29.7	-2.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.073		58.9	59.3	-0.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8365		30.1	29.7	1.5	30.0
13C2 PFHxA	Ave	1.039	1.148		11.0	10.0	10.4	30.0
13C2 PFDA	Ave	0.7921	0.9021		11.4	10.0	13.9	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCV 320-242156/14 Calibration Date: 08/27/2018 00:30
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.26_537C_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.115		132	135	-2.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.095		15.1	14.6	3.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.694		46.4	45.4	2.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.061		28.9	29.7	-2.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.073		58.9	59.3	-0.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8365		30.1	29.7	1.5	30.0
13C2 PFHxA	Ave	1.039	1.148		11.0	10.0	10.4	30.0
13C2 PFDA	Ave	0.7921	0.9021		11.4	10.0	13.9	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_017.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 27-Aug-2018 00:30:56 ALS Bottle#: 5 Worklist Smp#: 14
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	11367602	131.6		21187	
298.90 > 99.00	1.366	1.366	0.0	1.000	8215143		1.38(0.00-0.00)	15523	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	920949	11.0		10269	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	5798099	46.4		3765	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	1280496	15.1		330	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		802241	10.0		6103	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.813	0.0	1.000	2527639	28.9		394	
413.00 > 169.00	1.813	1.813	0.0	1.000	1354716		1.87(0.00-0.00)	4009	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2163583	28.7		6539	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	1993046	30.1		279	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	4799303	58.9		8042	
499.00 > 99.00	2.071	2.109	-0.038	1.000	1043594		4.60(0.00-0.00)	2976	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	723717	11.4		3625	

Reagents:

LC537-L5_00026 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_017.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 27-Aug-2018 00:30:56 ALS Bottle#: 5 Worklist Smp#: 14
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	11367602	131.6		21187	
298.90 > 99.00	1.366	1.366	0.0	1.000	8215143		1.38(0.00-0.00)	15523	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	920949	11.0		10269	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	5798099	46.4		3765	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	1280496	15.1		330	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		802241	10.0		6103	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.813	0.0	1.000	2527639	28.9		394	
413.00 > 169.00	1.813	1.813	0.0	1.000	1354716		1.87(0.00-0.00)	4009	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2163583	28.7		6539	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	1993046	30.1		279	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	4799303	58.9		8042	
499.00 > 99.00	2.071	2.109	-0.038	1.000	1043594		4.60(0.00-0.00)	2976	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	723717	11.4		3625	

Reagents:

LC537-L5_00026 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_017.d

Injection Date: 27-Aug-2018 00:30:56

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 14

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

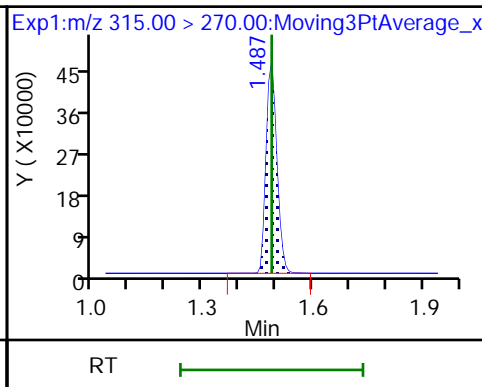
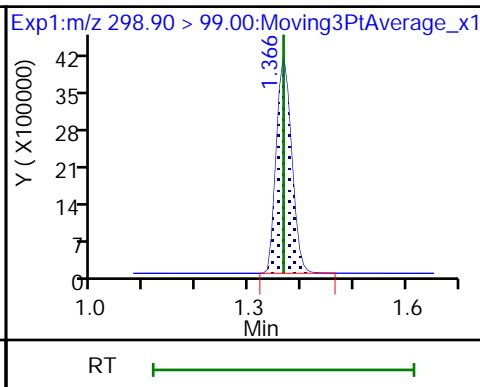
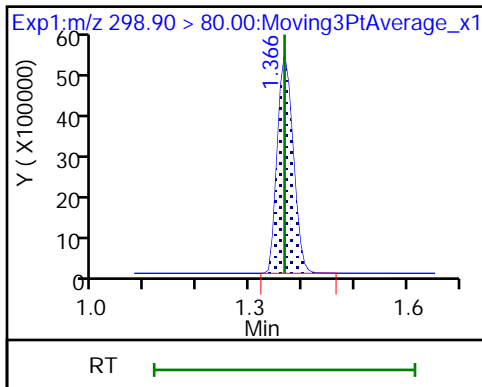
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

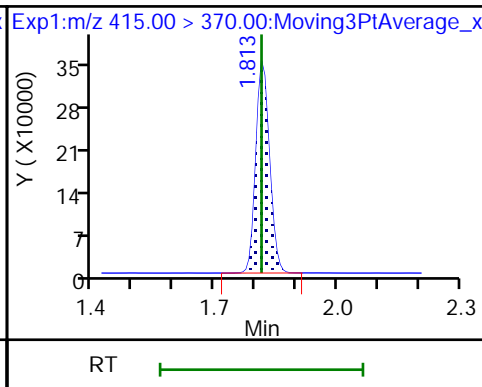
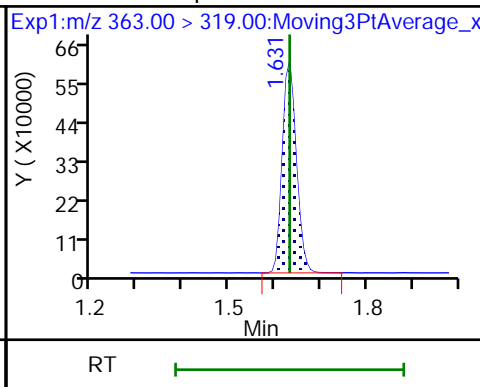
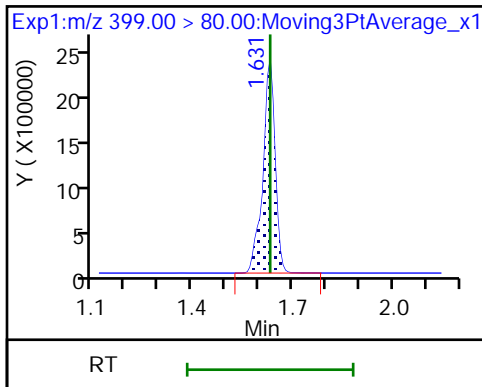
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

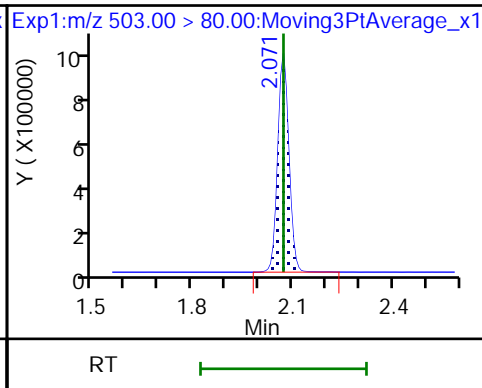
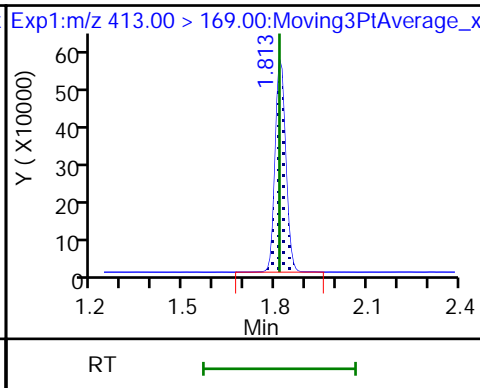
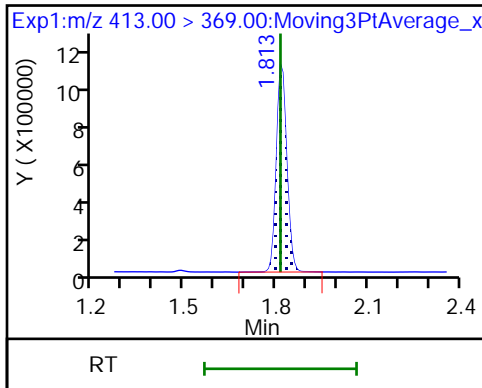
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

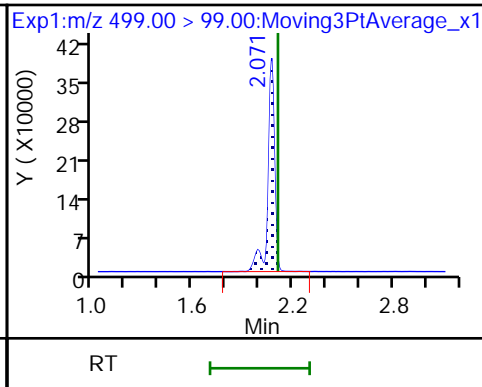
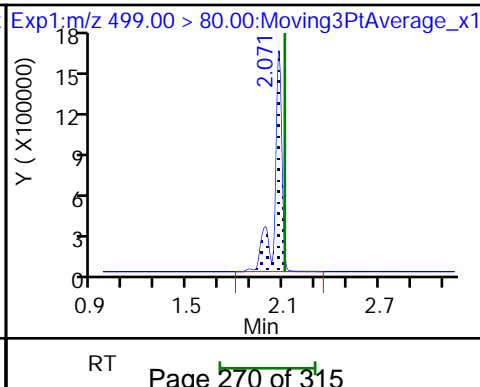
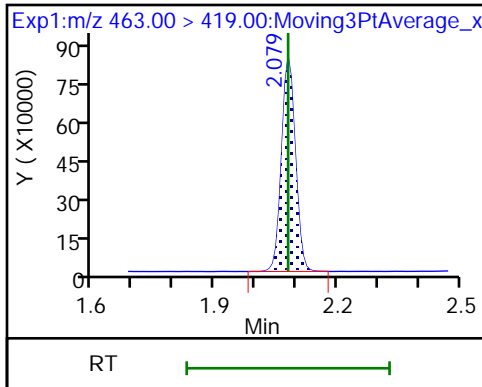
* 7 13C4 PFOS



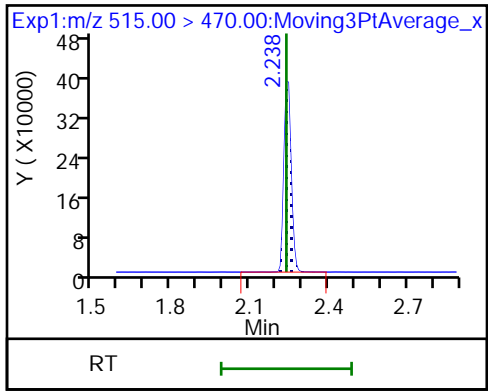
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_017.d

Injection Date: 27-Aug-2018 00:30:56

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 14

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

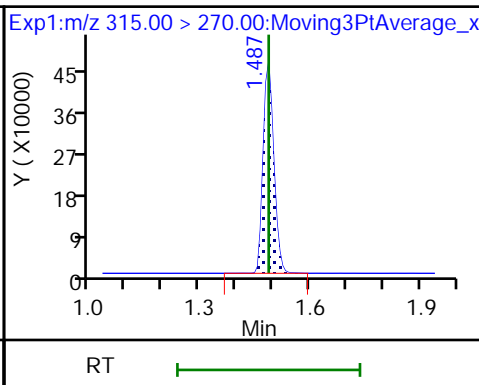
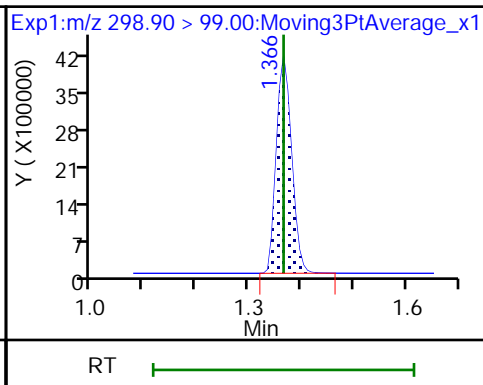
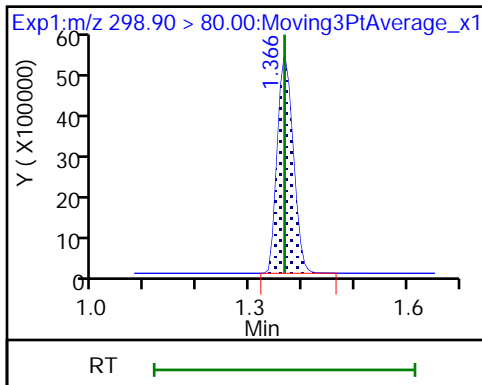
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

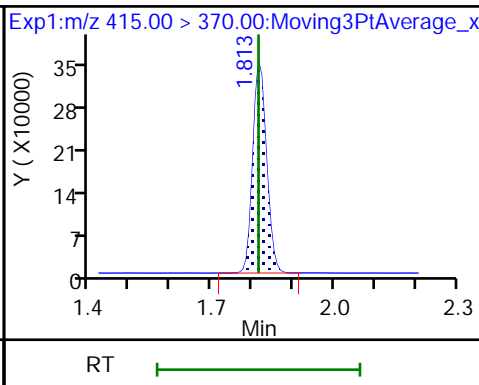
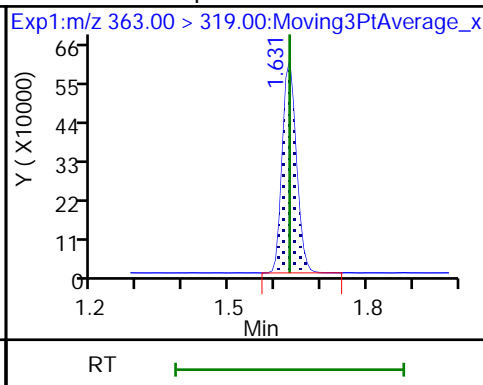
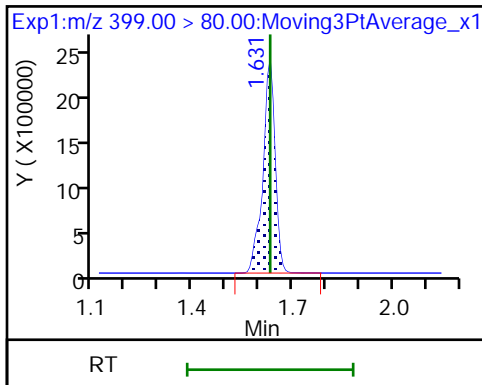
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

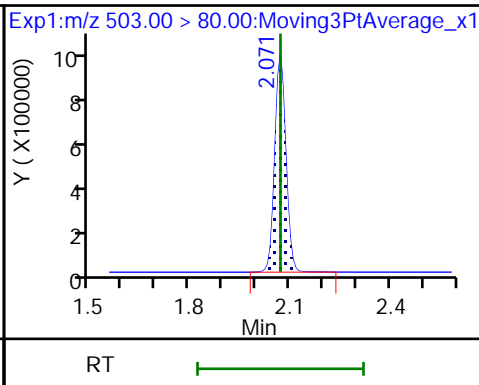
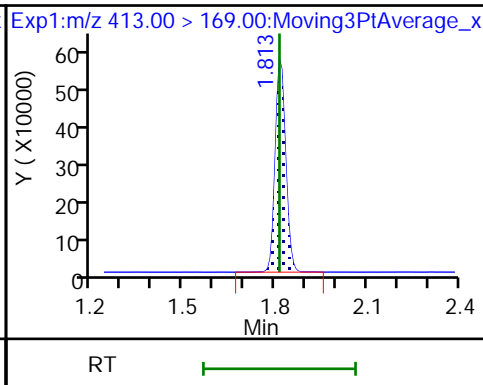
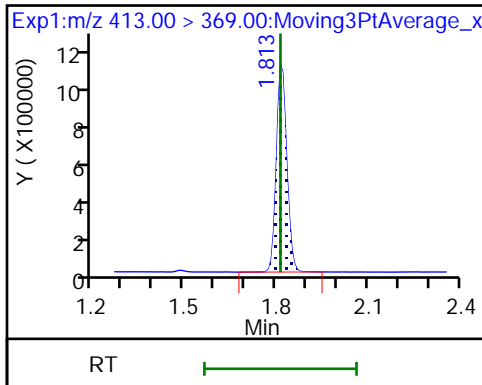
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

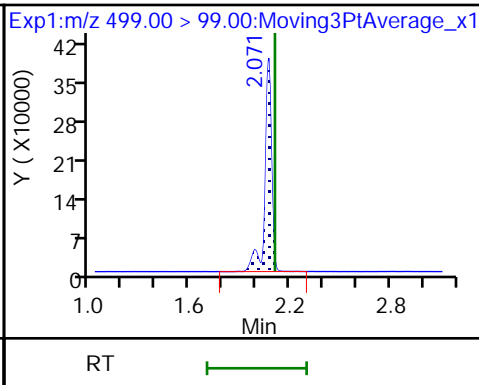
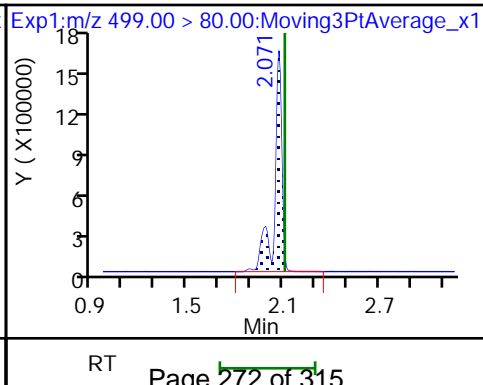
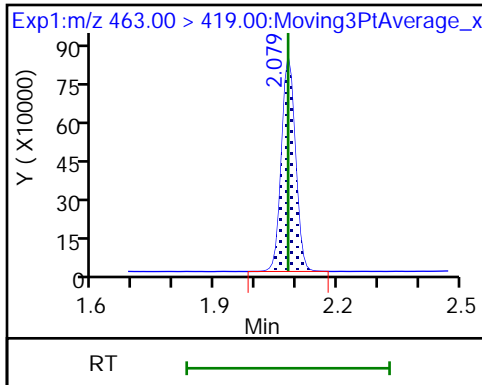
* 7 13C4 PFOS



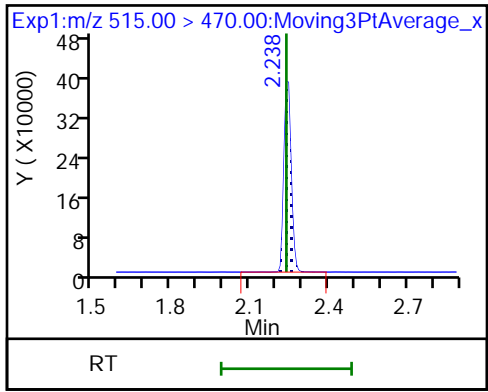
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCV 320-242156/26 Calibration Date: 08/27/2018 01:27
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.26_537C_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.272		50.0	45.0	11.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.092		5.02	4.86	3.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.725		15.7	15.1	4.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.069		9.71	9.90	-1.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.069		19.6	19.8	-1.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7980		9.58	9.90	-3.2	30.0
13C2 PFHxA	Ave	1.039	1.147		11.0	10.0	10.4	30.0
13C2 PFDA	Ave	0.7921	0.8814		11.1	10.0	11.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_029.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 27-Aug-2018 01:27:05 ALS Bottle#: 3 Worklist Smp#: 26
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:58:47 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.358	0.0	1.000	4279833	50.0		13010	
298.90 > 99.00	1.358	1.358	0.0	1.000	2933785		1.46(0.00-0.00)	6008	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.479	0.0	1.000	959412	11.0		10667	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.624	0.0	1.000	1949045	15.7		1422	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.624	0.0	1.000	443590	5.02		111	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		836144	10.0		6148	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.813	0.0	1.000	885035	9.71		143	
413.00 > 169.00	1.813	1.813	0.0	1.000	448866		1.97(0.00-0.00)	1561	
* 7 13C4 PFOS									
503.00 > 80.00	2.064	2.064	0.0		2142935	28.7		5797	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	660568	9.58		92.0	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	1578219	19.6		2957	
499.00 > 99.00	2.071	2.109	-0.038	1.000	350195		4.51(0.00-0.00)	1069	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	736936	11.1		3562	

Reagents:

LC537-L3_00025 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_029.d

Injection Date: 27-Aug-2018 01:27:05

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 26

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

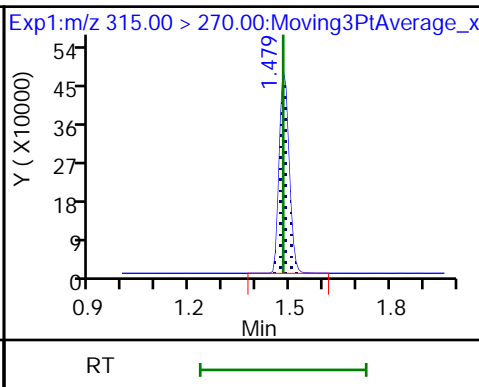
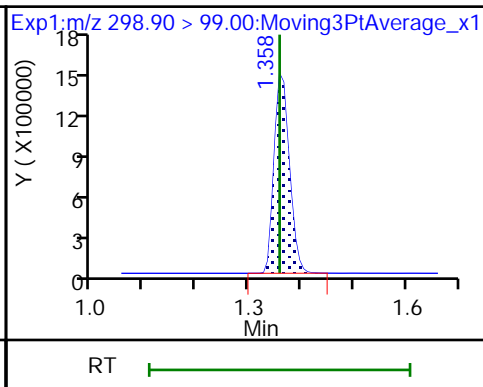
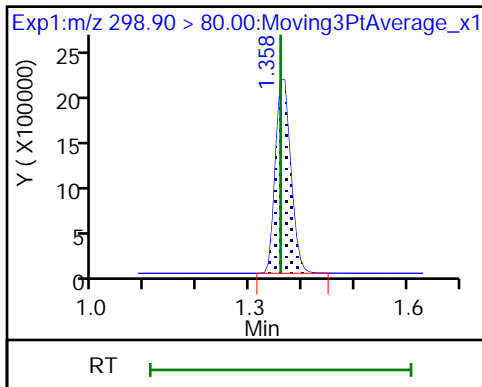
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

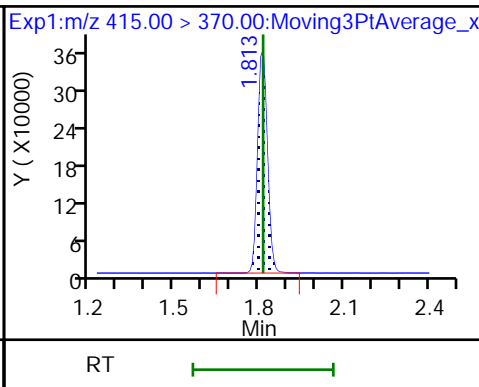
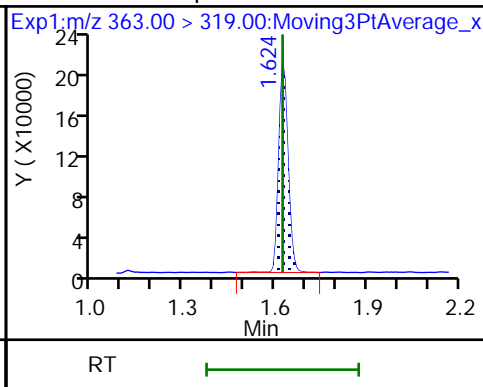
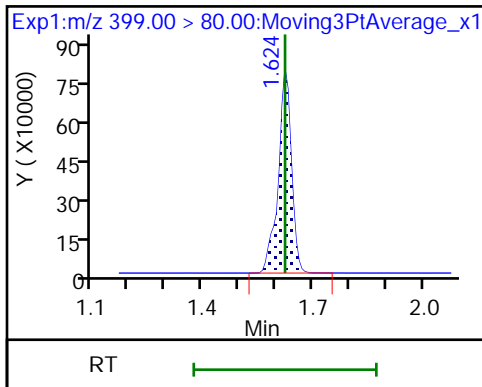
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

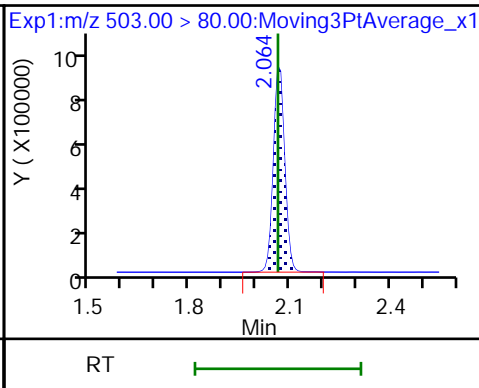
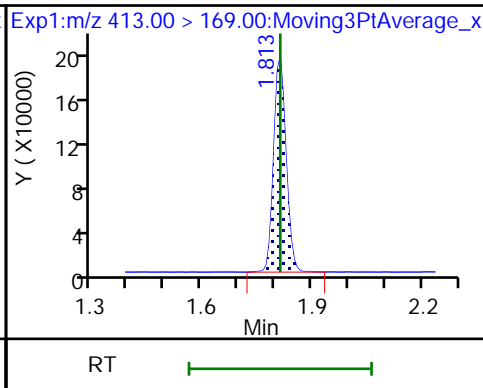
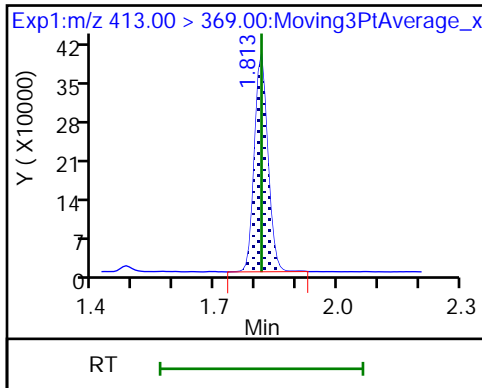
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

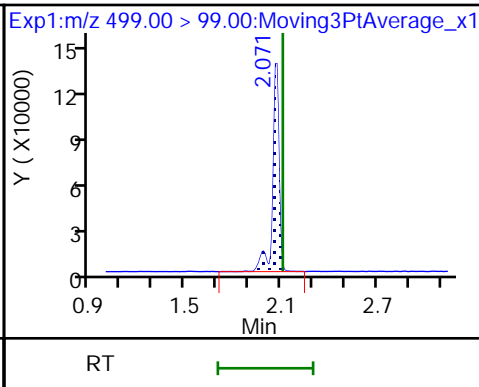
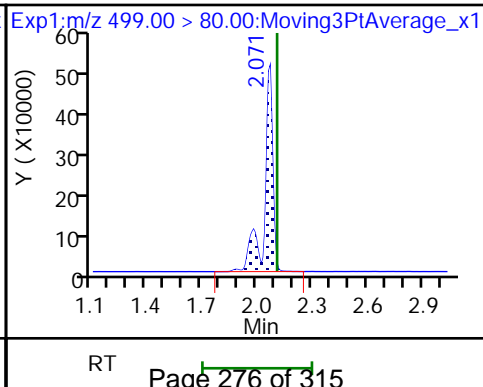
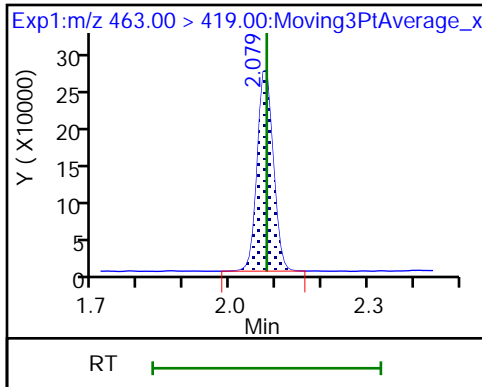
* 7 13C4 PFOS



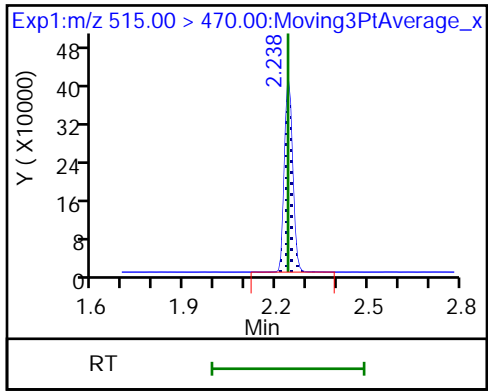
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-242684/1 Calibration Date: 08/28/2018 23:22
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.28_537A_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.171		20.5	20.0	2.3	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.017		2.08	2.16	-3.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.581		6.42	6.72	-4.5	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.003		4.05	4.40	-8.0	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.021		8.30	8.79	-5.5	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7737		4.13	4.40	-6.1	50.0
13C2 PFHxA	Ave	1.039	1.087		10.5	10.0	4.6	30.0
13C2 PFDA	Ave	0.7921	0.8736		11.0	10.0	10.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_003.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 28-Aug-2018 23:22:25 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*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 29-Aug-2018 10:27:00 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK010

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	2235878	20.5		9577	
298.90 > 99.00	1.366	1.366	0.0	1.000	1553855		1.44(0.00-0.00)	5119	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.479	0.008	1.000	1208123	10.5		10184	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.639	1.624	0.015	1.000	1014308	6.42		726	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.639	1.624	0.015	1.000	244226	2.08		71.8	
* 6 13C2-PFOA									
415.00 > 370.00	1.836	1.813	0.023		1111468	10.0		7847	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.836	1.813	0.023	1.000	490374	4.05		71.1	
413.00 > 169.00	1.836	1.813	0.023	1.000	269200		1.82(0.00-0.00)	810	
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.071	0.023		2737262	28.7		8418	
9 Perfluorononanoic acid									
463.00 > 419.00	2.102	2.079	0.023	1.000	378365	4.13		71.1	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.094	2.109	-0.015	1.000	855819	8.30		1709	
499.00 > 99.00	2.094	2.109	-0.015	1.000	182942		4.68(0.00-0.00)	728	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.238	0.015	1.000	971021	11.0		4834	

Reagents:

LC537-L2_00022 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_003.d

Injection Date: 28-Aug-2018 23:22:25

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

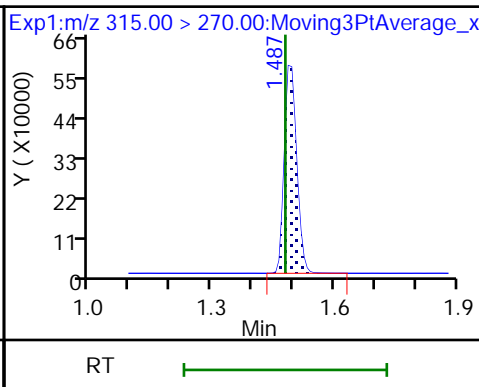
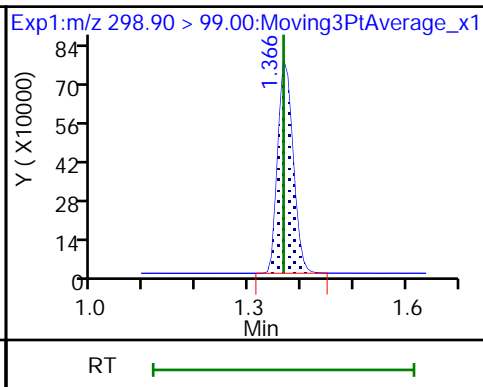
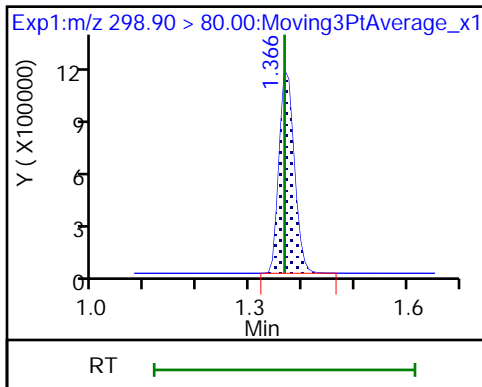
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

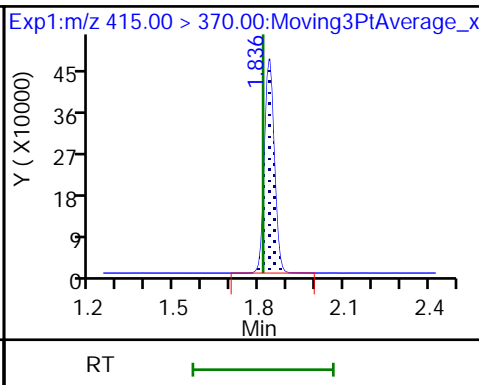
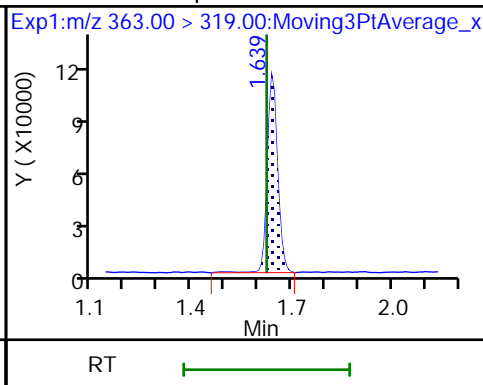
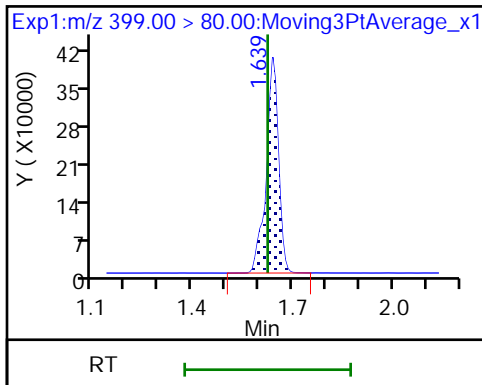
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

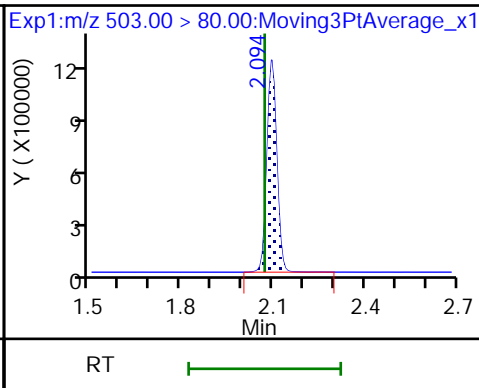
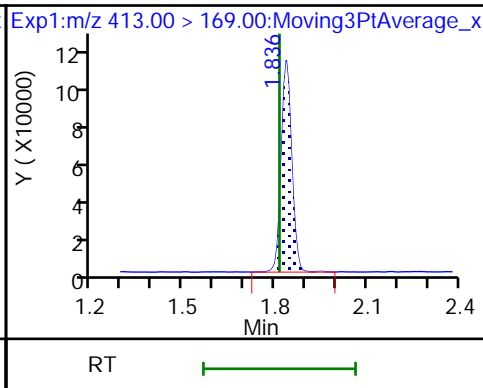
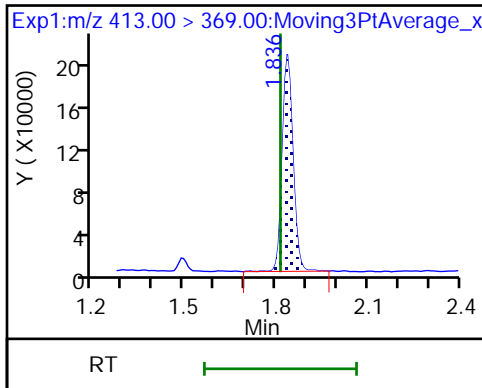
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

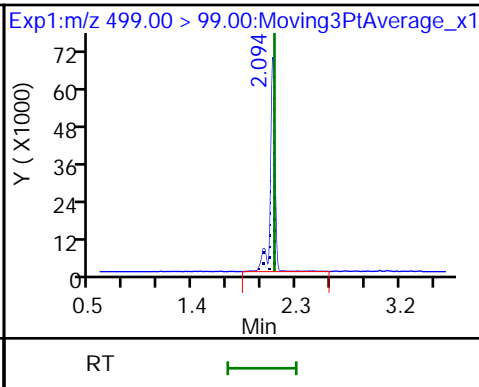
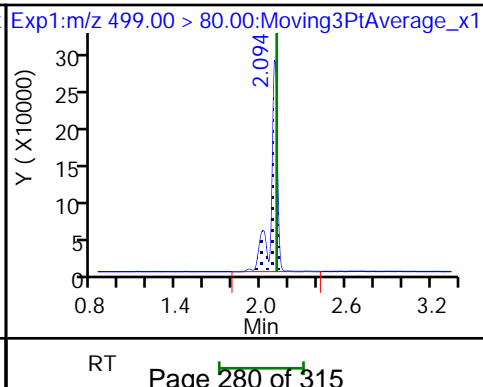
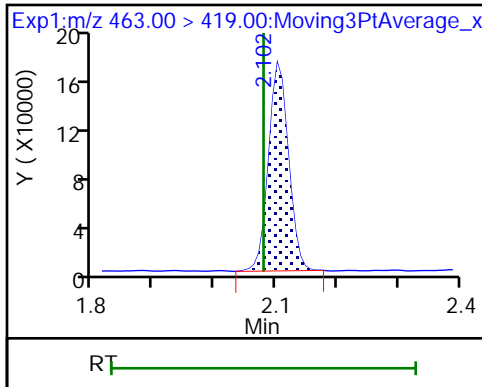
* 7 13C4 PFOS



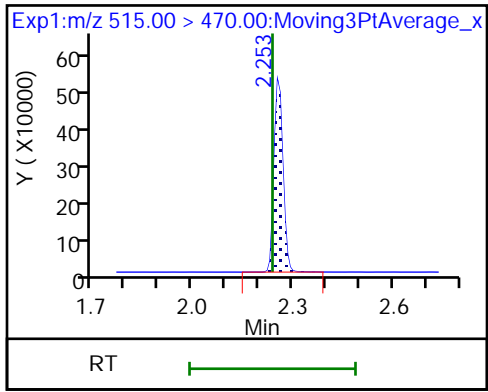
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCV 320-242684/2 Calibration Date: 08/28/2018 23:27
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.28_537A_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.228		48.3	45.0	7.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.121		5.15	4.86	6.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.698		15.5	15.1	2.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.067		9.69	9.90	-2.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.052		19.2	19.8	-2.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8358		10.0	9.90	1.4	30.0
13C2 PFHxA	Ave	1.039	1.107		10.6	10.0	6.5	30.0
13C2 PFDA	Ave	0.7921	0.8761		11.1	10.0	10.6	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_004.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 28-Aug-2018 23:27:06 ALS Bottle#: 3 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 29-Aug-2018 10:27:04 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK010

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.373	1.373	0.0	1.000	4475556	48.3		13825	
298.90 > 99.00	1.373	1.373	0.0	1.000	3047531		1.47(0.00-0.00)	10291	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.495	1.495	0.0	1.000	1001533	10.6		7802	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.646	1.646	0.0	1.000	2078795	15.5		1465	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.646	1.646	0.0	1.000	493095	5.15		147	
* 6 13C2-PFOA									
415.00 > 370.00	1.836	1.836	0.0		904879	10.0		7161	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.844	0.0	1.000	955435	9.69		136	
413.00 > 169.00	1.844	1.844	0.0	1.000	494917		1.93(0.00-0.00)	1442	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2320915	28.7		5762	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.109	0.0	1.000	748766	10.0		136	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	1681989	19.2		3536	
499.00 > 99.00	2.102	2.109	-0.007	1.000	377872		4.45(0.00-0.00)	1557	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.261	0.0	1.000	792779	11.1		3892	

Reagents:

LC537-L3_00025 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_004.d

Injection Date: 28-Aug-2018 23:27:06

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

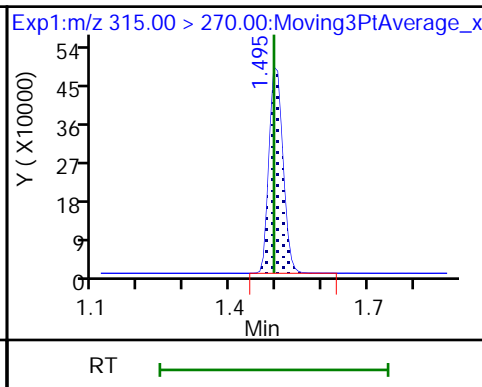
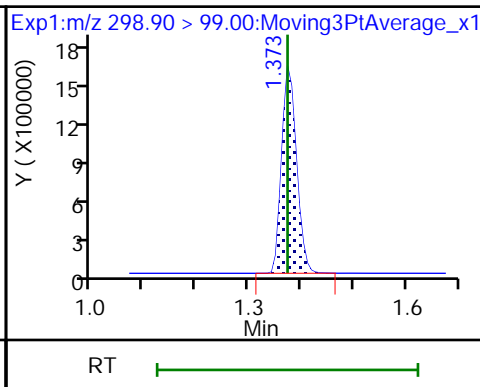
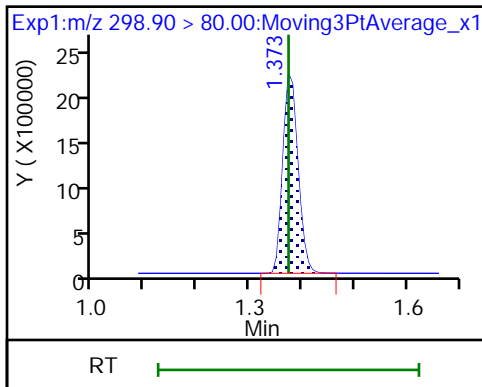
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

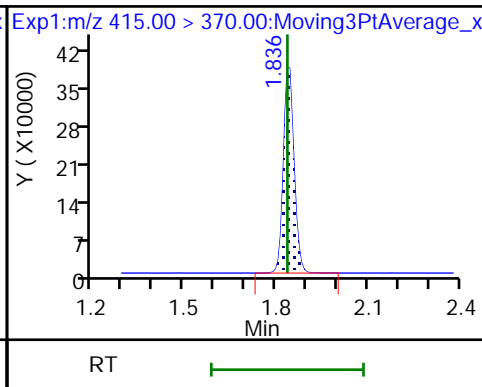
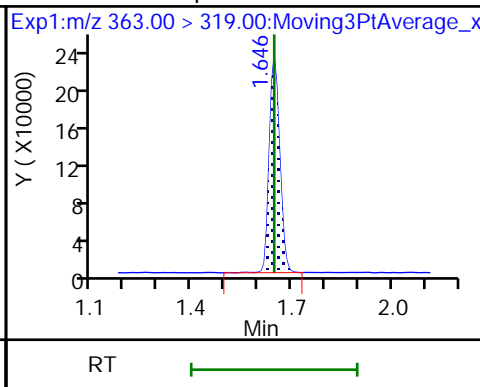
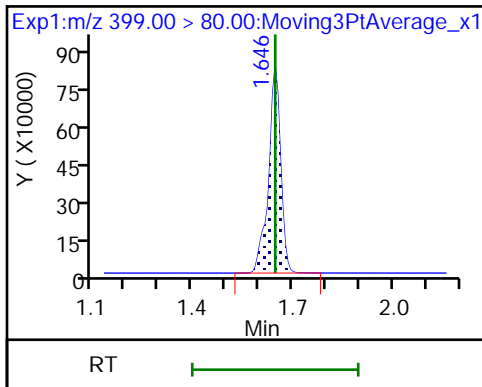
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

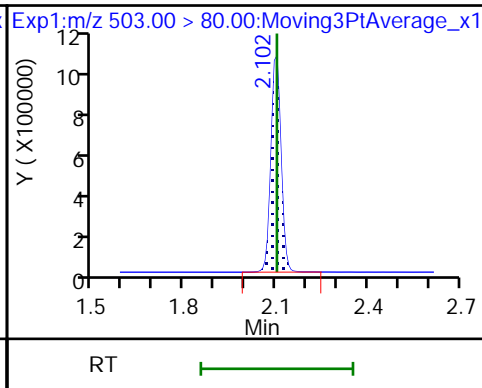
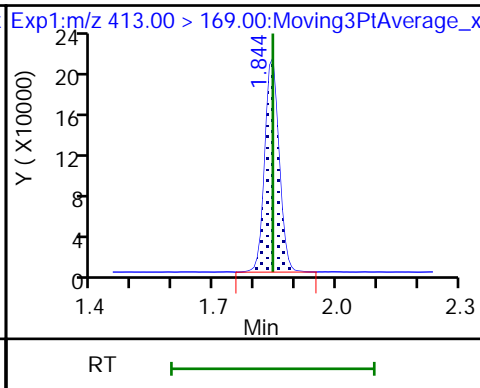
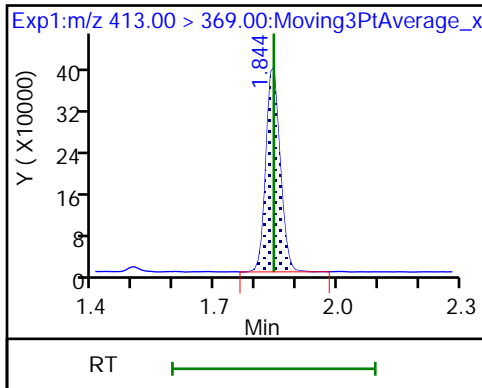
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

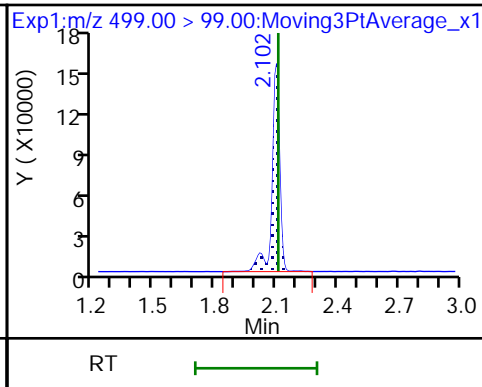
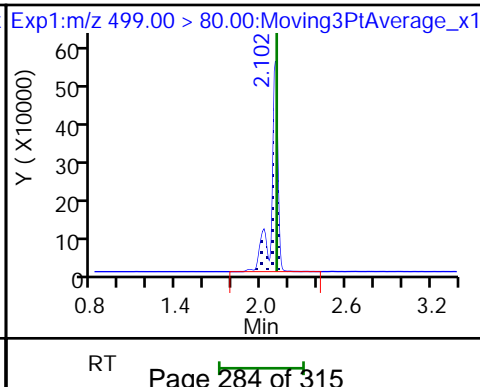
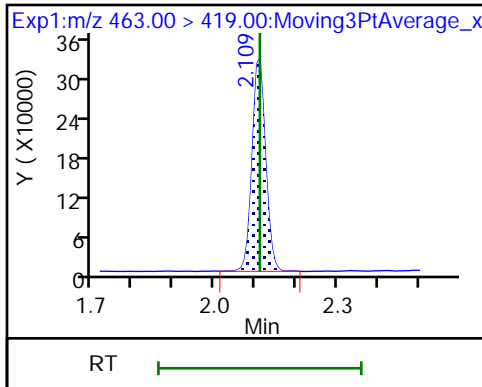
* 7 13C4 PFOS



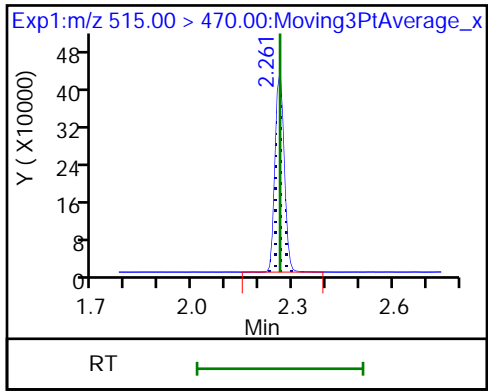
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCV 320-242684/8 Calibration Date: 08/28/2018 23:55
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.28_537A_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.208		47.5	45.0	5.5	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.056		4.85	4.86	-0.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.716		15.7	15.1	3.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.043		9.48	9.90	-4.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.071		19.6	19.8	-0.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7953		9.55	9.90	-3.5	30.0
13C2 PFHxA	Ave	1.039	1.070		10.3	10.0	2.9	30.0
13C2 PFDA	Ave	0.7921	0.8661		10.9	10.0	9.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_010.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 28-Aug-2018 23:55:08 ALS Bottle#: 3 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 29-Aug-2018 10:29:04 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK010

First Level Reviewer: barnettj Date: 29-Aug-2018 10:28:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.373	1.373	0.0	1.000	4447440	47.5		14417	
298.90 > 99.00	1.373	1.373	0.0	1.000	3077527		1.45(0.00-0.00)	9892	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.495	1.495	0.0	1.000	995013	10.3		8792	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.639	1.639	0.0	1.000	2122033	15.7		1349	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.639	1.639	0.0	1.000	477515	4.85		132	
* 6 13C2-PFOA									
415.00 > 370.00	1.828	1.828	0.0		930267	10.0		7396	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.828	1.828	0.0	1.000	960945	9.48		139	
413.00 > 169.00	1.828	1.828	0.0	1.000	514231		1.87(0.00-0.00)	1768	
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.086	0.0		2345437	28.7		6046	
9 Perfluorononanoic acid									
463.00 > 419.00	2.094	2.094	0.0	1.000	732409	9.55		121	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.086	2.109	-0.023	1.000	1731096	19.6		3006	
499.00 > 99.00	2.086	2.109	-0.023	1.000	379718		4.56(0.00-0.00)	1444	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	805729	10.9		3939	

Reagents:

LC537-L3_00025

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_010.d

Injection Date: 28-Aug-2018 23:55:08

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

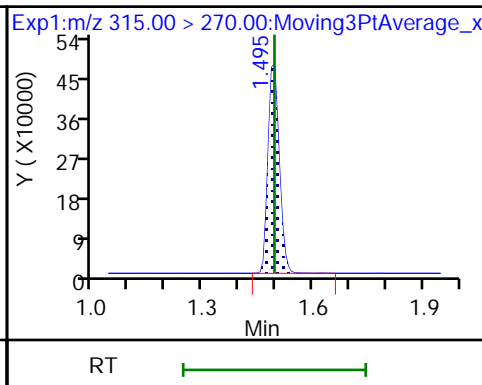
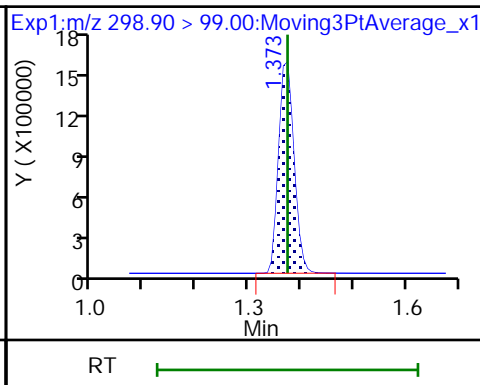
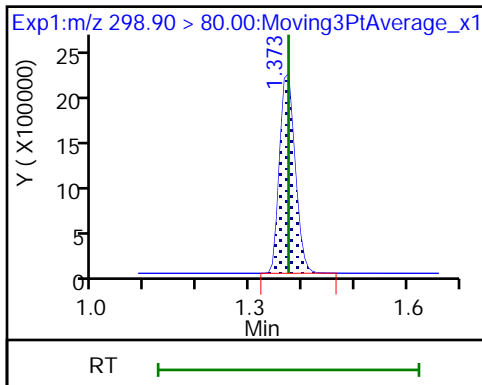
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

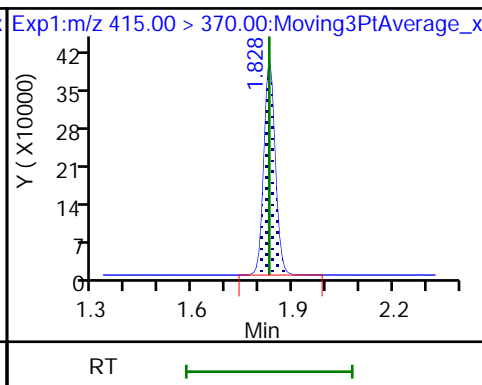
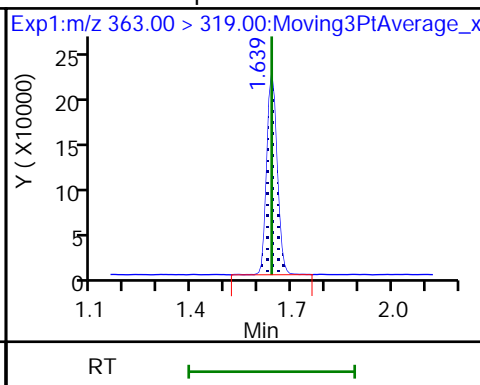
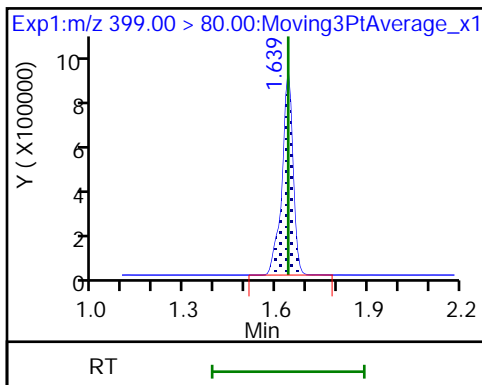
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

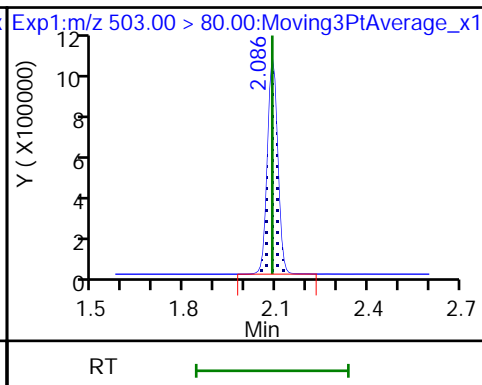
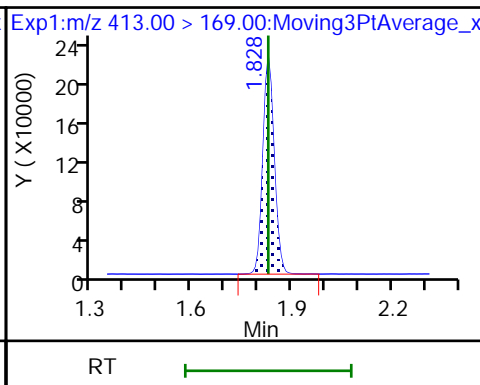
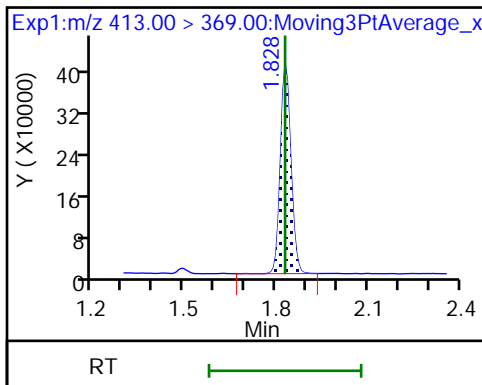
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

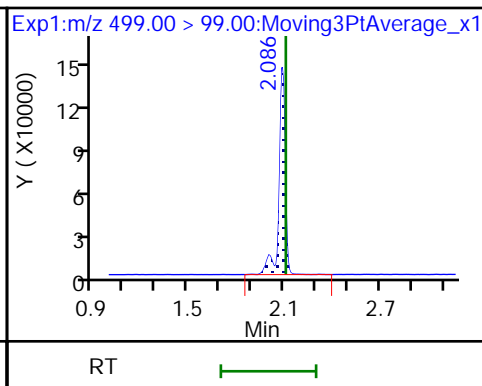
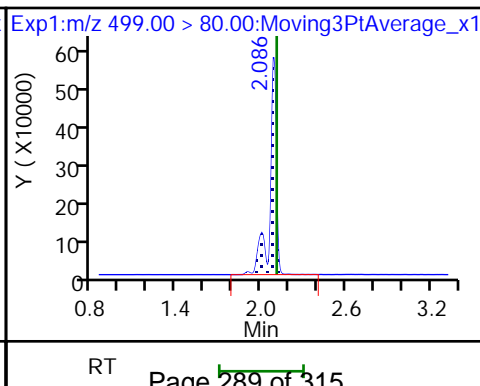
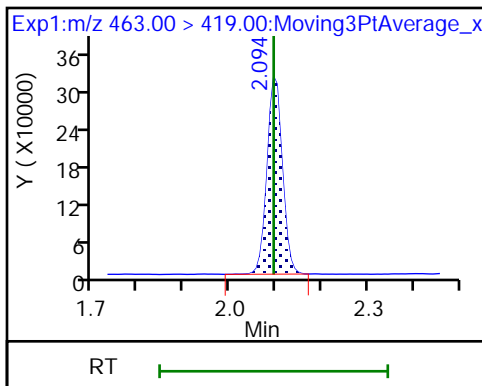
* 7 13C4 PFOS



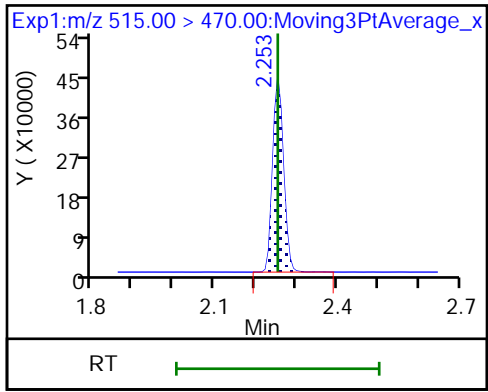
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-241537/1-A
 Matrix: Water Lab File ID: 2018.08.26_537C_007.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 250 (mL) Date Analyzed: 08/26/2018 23:44
 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.: 242153 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	104		70-130
STL00996	13C2 PFDA	110		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_007.d
 Lims ID: MB 320-241537/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 26-Aug-2018 23:44:04 ALS Bottle#: 1 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-241537/1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.487	1.487	0.0	1.000	1131053	10.4	12039	
* 6 13C2-PFOA	415.00 > 370.00	1.821	1.821	0.0		1043498	10.0	7523	
* 7 13C4 PFOS	503.00 > 80.00	2.071	2.071	0.0		2632697	28.7	6690	
\$ 10 13C2 PFDA	515.00 > 470.00	2.246	2.246	0.0	1.000	905382	11.0	4608	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_007.d

Injection Date: 26-Aug-2018 23:44:04

Instrument ID: A8_N

Lims ID: MB 320-241537/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 1

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

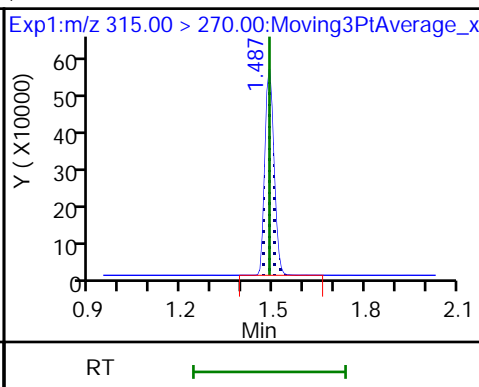
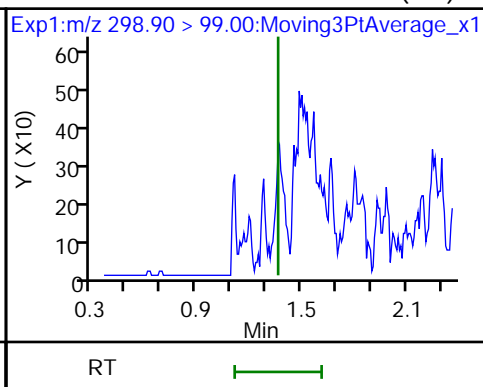
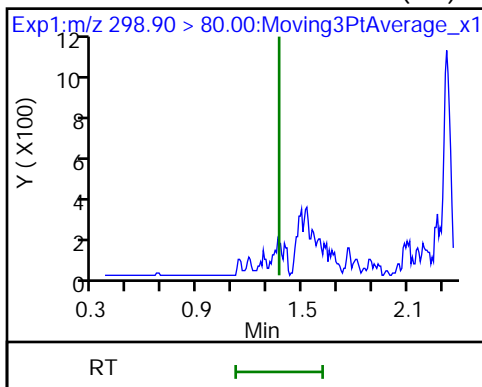
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

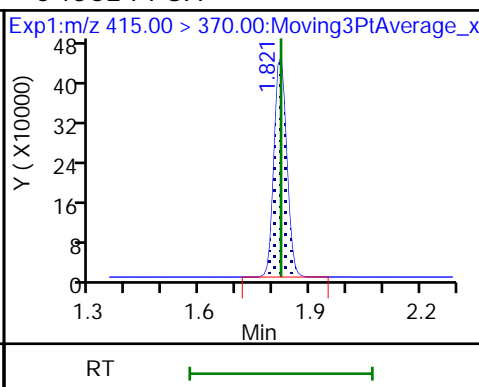
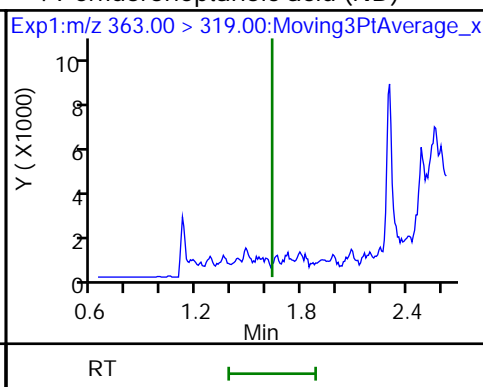
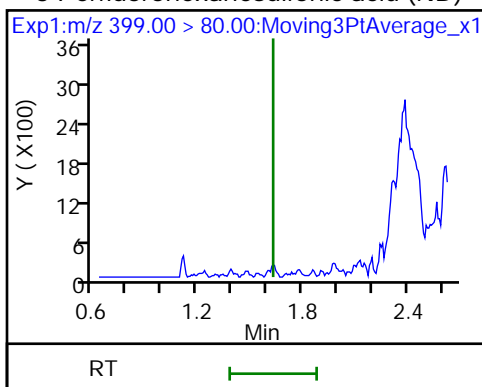
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

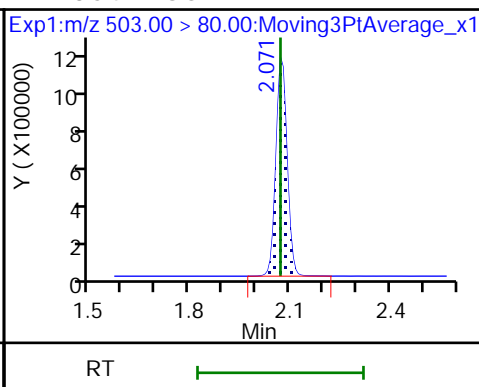
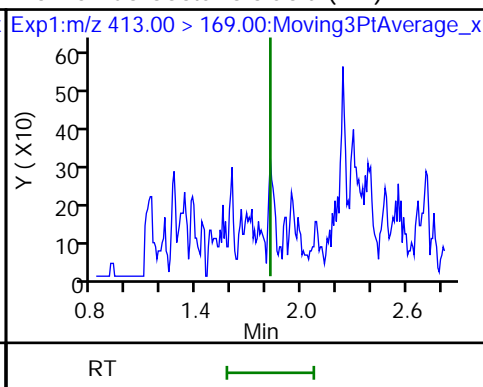
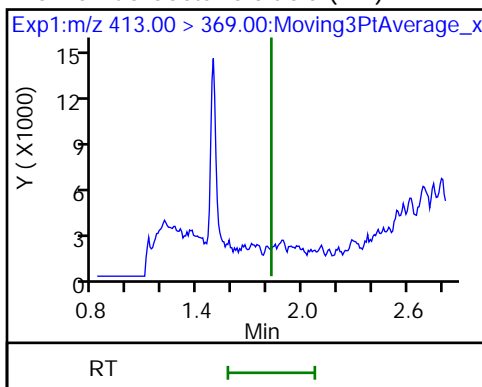
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

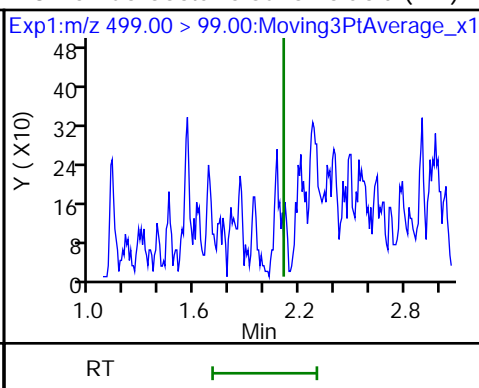
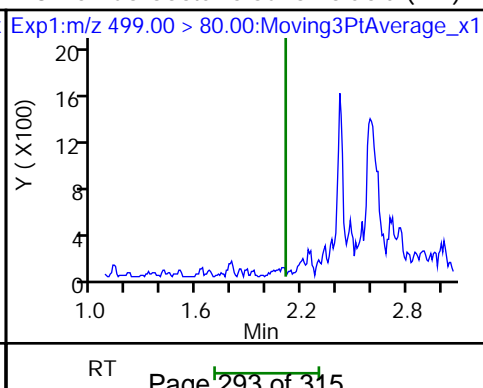
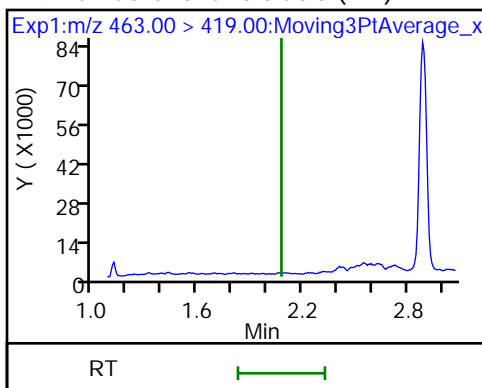
* 7 13C4 PFOS



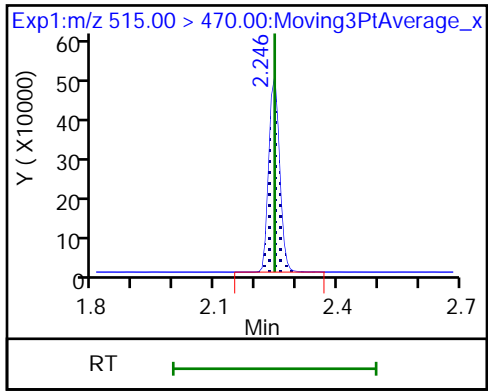
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_007.d
 Lims ID: MB 320-241537/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 26-Aug-2018 23:44:04 ALS Bottle#: 1 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-241537/1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.4	104.28
\$ 10 13C2 PFDA	10.0	11.0	109.53

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LLCS 320-241537/2-A
 Matrix: Water Lab File ID: 2018.08.26_537C_008.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 250 (mL) Date Analyzed: 08/26/2018 23:48
 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.: 242153 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	43.0		40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	20.4		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	18.9	J	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	33.1		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	10.2		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	105		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	113		70-130
STL00996	13C2 PFDA	114		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_008.d
 Lims ID: LLCS 320-241537/2-A
 Client ID:
 Sample Type: LLCS
 Inject. Date: 26-Aug-2018 23:48:46 ALS Bottle#: 2 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: llcs 320-241537/2-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:34:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	2790264	26.3		8428	
298.90 > 99.00	1.366	1.366	0.0	1.000	1949062		1.43(0.00-0.00)	4358	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	1247239	11.3		11825	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	1266183	8.26		1060	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	285629	2.54		78.2	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.821	-0.008		1063967	10.0		8606	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.821	-0.008	1.000	591374	5.10		88.4	
413.00 > 169.00	1.813	1.821	-0.008	1.000	309586		1.91(0.00-0.00)	930	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2653479	28.7		6775	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	413812	4.72		35.5	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	1074658	10.8		1842	
499.00 > 99.00	2.071	2.109	-0.038	1.000	233449		4.60(0.00-0.00)	641	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	964663	11.4		5223	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_008.d

Injection Date: 26-Aug-2018 23:48:46

Instrument ID: A8_N

Lims ID: LLCS 320-241537/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

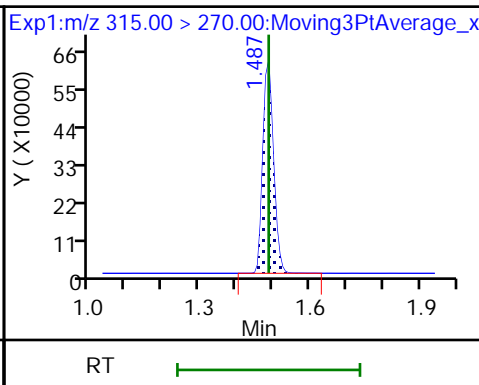
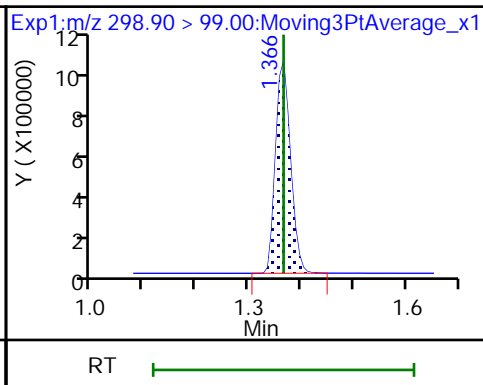
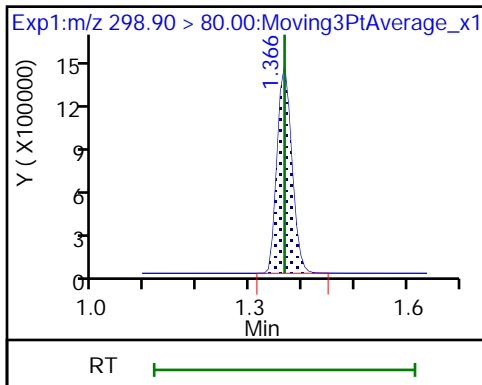
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

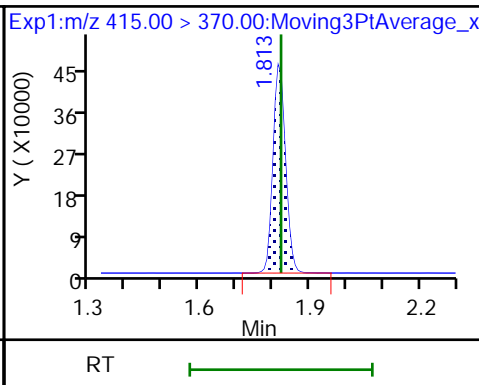
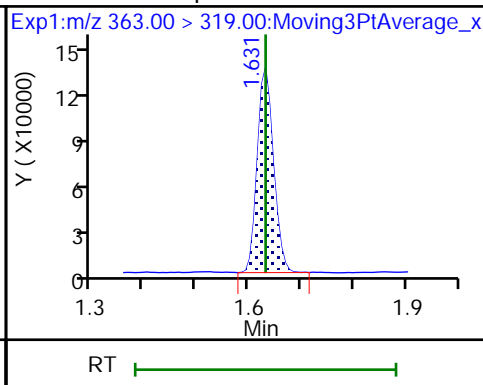
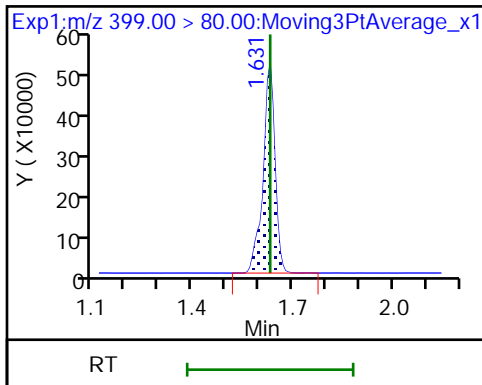
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

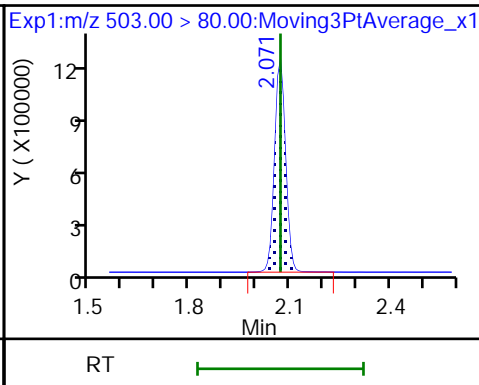
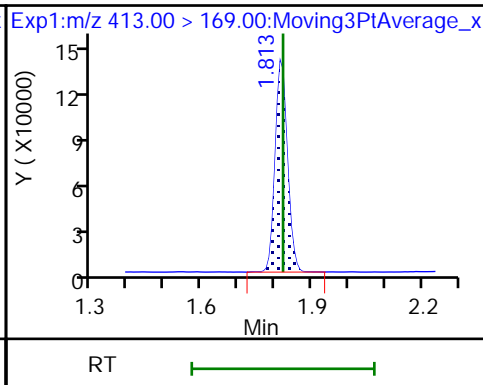
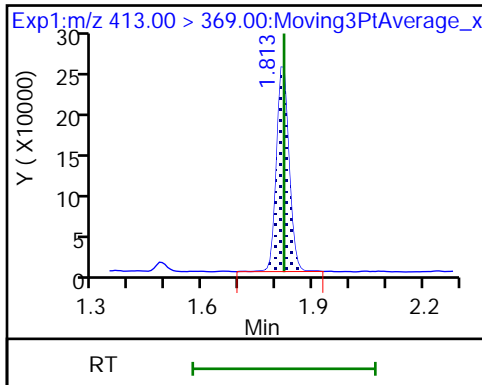
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

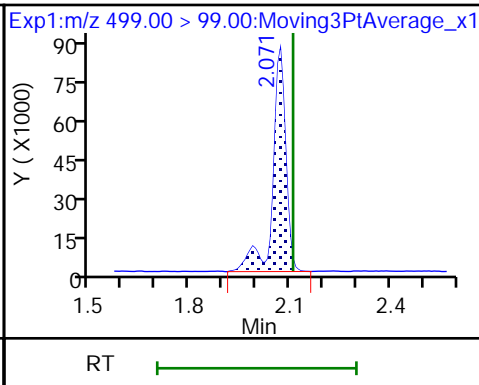
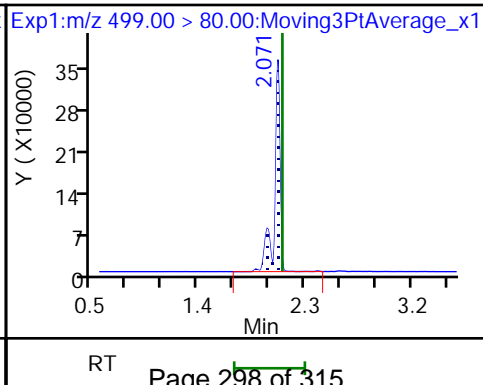
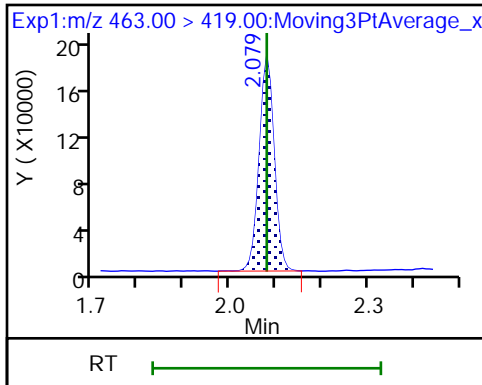
* 7 13C4 PFOS



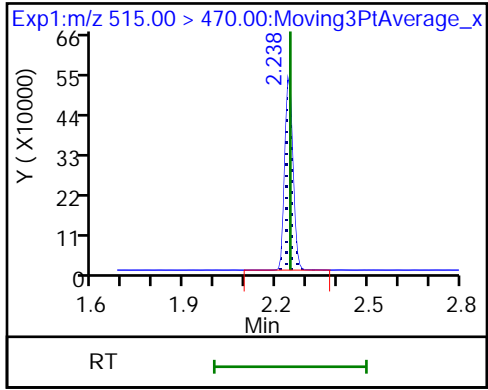
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_008.d
 Lims ID: LLCS 320-241537/2-A
 Client ID:
 Sample Type: LLCS
 Inject. Date: 26-Aug-2018 23:48:46 ALS Bottle#: 2 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: llcs 320-241537/2-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:34:42

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.3	112.78
\$ 10 13C2 PFDA	10.0	11.4	114.46

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LLCSD 320-241537/3-A
 Matrix: Water Lab File ID: 2018.08.26_537C_009.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 250 (mL) Date Analyzed: 08/26/2018 23:53
 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.: 242153 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	45.1		40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	20.6		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	19.4	J	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	34.9		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	11.3		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	115		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	110		70-130
STL00996	13C2 PFDA	109		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_009.d
 Lims ID: LLCSD 320-241537/3-A
 Client ID:
 Sample Type: LLCSD
 Inject. Date: 26-Aug-2018 23:53:27 ALS Bottle#: 3 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: llcsd 320-241537/3-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:35:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.366	-0.008	1.000	2994448	28.7		9139	
298.90 > 99.00	1.358	1.366	-0.008	1.000	2102159		1.42(0.00-0.00)	5093	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.487	-0.008	1.000	1209791	11.0		10923	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.631	-0.007	1.000	1317498	8.72		1042	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.631	-0.007	1.000	316618	2.82		79.0	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.821	-0.008		1061847	10.0		8079	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.821	-0.008	1.000	596692	5.16		90.9	
413.00 > 169.00	1.813	1.821	-0.008	1.000	324418		1.84(0.00-0.00)	1041	
* 7 13C4 PFOS									
503.00 > 80.00	2.064	2.071	-0.007		2615789	28.7		7225	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	425441	4.86		35.8	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	1111402	11.3		3530	
499.00 > 99.00	2.064	2.109	-0.045	0.996	244750		4.54(0.00-0.00)	729	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	919536	10.9		5250	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_009.d

Injection Date: 26-Aug-2018 23:53:27

Instrument ID: A8_N

Lims ID: LLCSD 320-241537/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

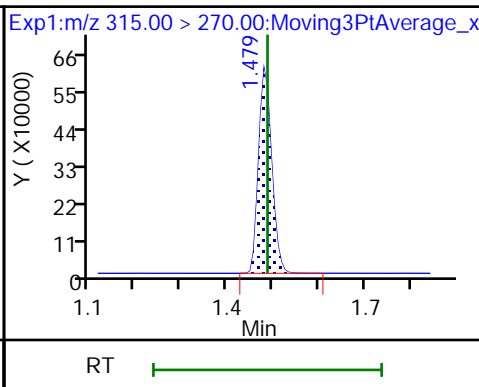
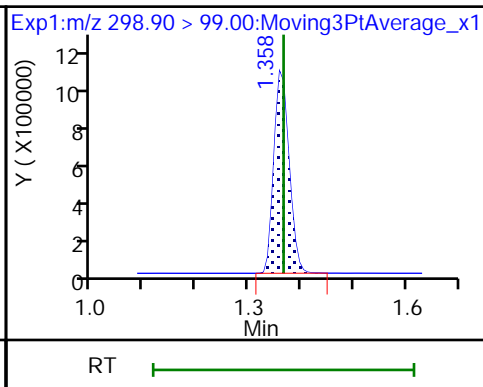
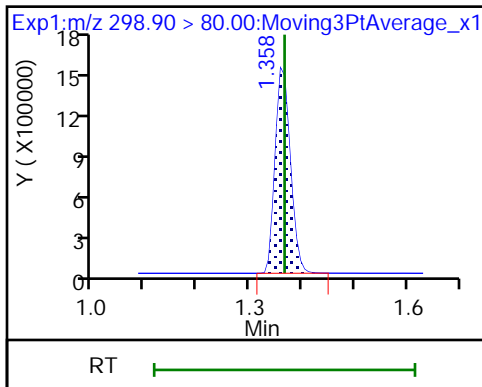
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

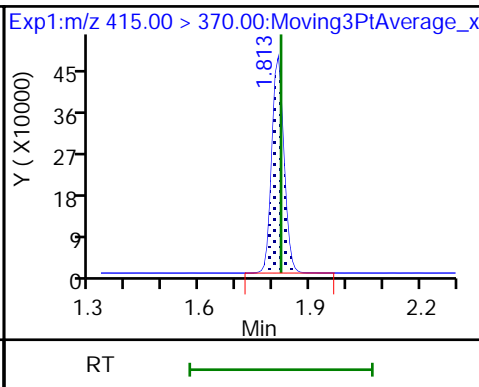
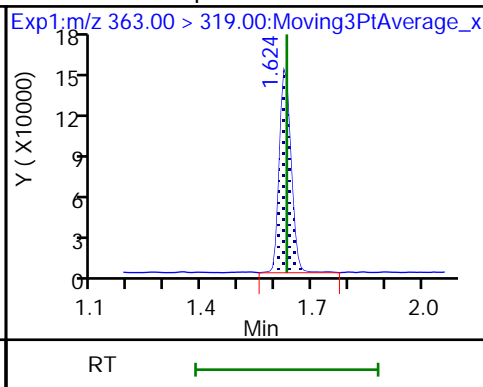
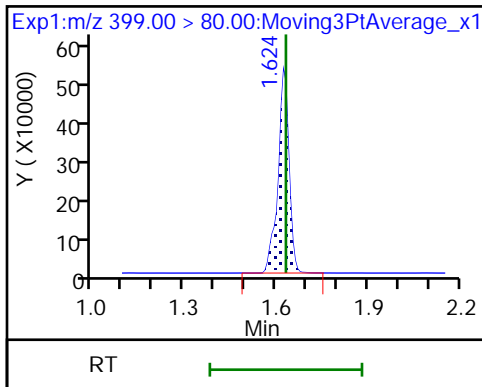
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

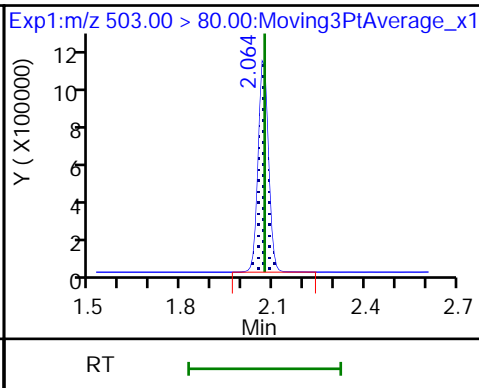
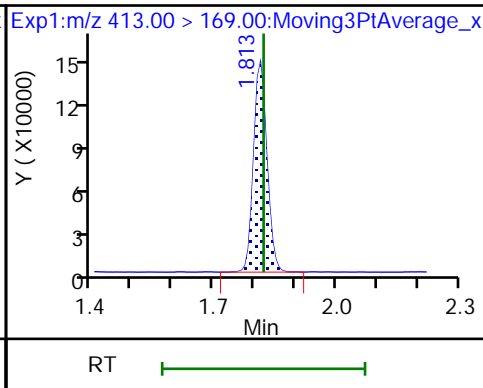
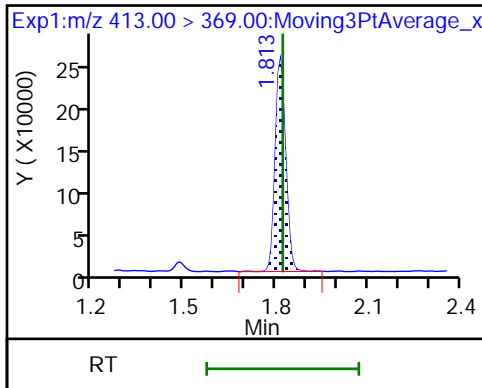
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

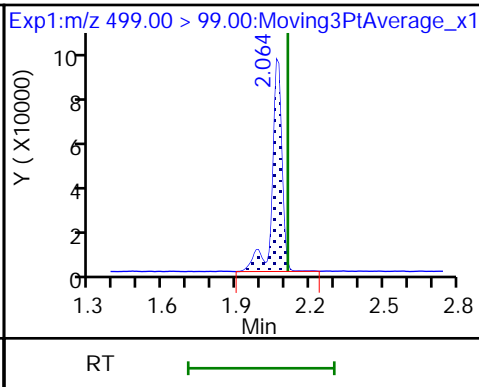
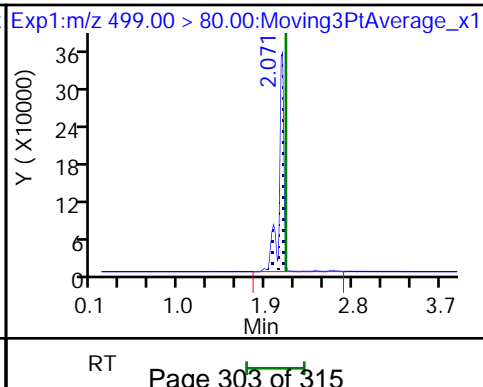
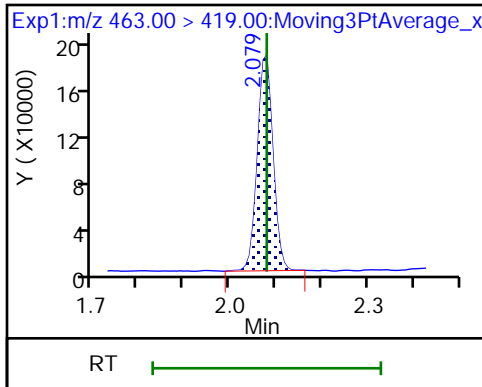
* 7 13C4 PFOS



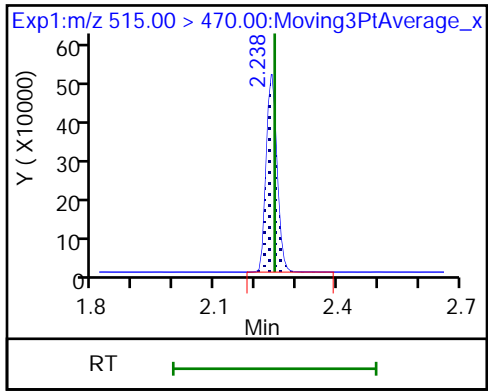
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_009.d
 Lims ID: LLCSD 320-241537/3-A
 Client ID:
 Sample Type: LLCSD
 Inject. Date: 26-Aug-2018 23:53:27 ALS Bottle#: 3 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: llcsd 320-241537/3-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:35:08

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.0	109.61
\$ 10 13C2 PFDA	10.0	10.9	109.32

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/15/2018 18:21

Analysis Batch Number: 240166 End Date: 08/15/2018 19:03

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-240166/2		08/15/2018 18:21	1	2018.08.15_537C URVE 003.d	GeminiC18 3x100 3(mm)
IC 320-240166/3		08/15/2018 18:25	1	2018.08.15_537C URVE 004.d	GeminiC18 3x100 3(mm)
IC 320-240166/4		08/15/2018 18:30	1	2018.08.15_537C URVE 005.d	GeminiC18 3x100 3(mm)
IC 320-240166/5 ICISAV		08/15/2018 18:35	1	2018.08.15_537C URVE 006.d	GeminiC18 3x100 3(mm)
IC 320-240166/6		08/15/2018 18:39	1	2018.08.15_537C URVE 007.d	GeminiC18 3x100 3(mm)
IC 320-240166/7		08/15/2018 18:44	1	2018.08.15_537C URVE 008.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/15/2018 18:49	1		GeminiC18 3x100 3(mm)
CCVL 320-240166/9		08/15/2018 18:53	1	2018.08.15_537C URVE 010.d	GeminiC18 3x100 3(mm)
ICB 320-240166/10		08/15/2018 18:58	1		GeminiC18 3x100 3(mm)
ICV 320-240166/11		08/15/2018 19:03	1	2018.08.15_537C URVE 012.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/26/2018 23:30

Analysis Batch Number: 242153 End Date: 08/27/2018 00:30

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-242153/1		08/26/2018 23:30	1	2018.08.26_537C 004.d	GeminiC18 3x100 3(mm)
CCV 320-242153/2 CCVIS		08/26/2018 23:34	1	2018.08.26_537C 005.d	GeminiC18 3x100 3(mm)
MB 320-241537/1-A		08/26/2018 23:44	1	2018.08.26_537C 007.d	GeminiC18 3x100 3(mm)
LLCS 320-241537/2-A		08/26/2018 23:48	1	2018.08.26_537C 008.d	GeminiC18 3x100 3(mm)
LLCSD 320-241537/3-A		08/26/2018 23:53	1	2018.08.26_537C 009.d	GeminiC18 3x100 3(mm)
320-42002-1		08/26/2018 23:58	1	2018.08.26_537C 010.d	GeminiC18 3x100 3(mm)
320-42002-2		08/27/2018 00:02	1	2018.08.26_537C 011.d	GeminiC18 3x100 3(mm)
320-42002-3		08/27/2018 00:07	1	2018.08.26_537C 012.d	GeminiC18 3x100 3(mm)
320-42002-4		08/27/2018 00:12	1	2018.08.26_537C 013.d	GeminiC18 3x100 3(mm)
320-42002-5		08/27/2018 00:16	1	2018.08.26_537C 014.d	GeminiC18 3x100 3(mm)
320-42002-6		08/27/2018 00:21	1	2018.08.26_537C 015.d	GeminiC18 3x100 3(mm)
320-42002-7		08/27/2018 00:26	1	2018.08.26_537C 016.d	GeminiC18 3x100 3(mm)
CCV 320-242153/14 CCVIS		08/27/2018 00:30	1	2018.08.26_537C 017.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/27/2018 00:30

Analysis Batch Number: 242156 End Date: 08/27/2018 01:27

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-242156/14 CCVIS		08/27/2018 00:30	1	2018.08.26_537C 017.d	GeminiC18 3x100 3(mm)
320-42002-8		08/27/2018 00:40	1	2018.08.26_537C 019.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:44	1		GeminiC18 3x100 3(mm)
320-42002-10		08/27/2018 00:49	1	2018.08.26_537C 021.d	GeminiC18 3x100 3(mm)
320-42002-11		08/27/2018 00:54	1	2018.08.26_537C 022.d	GeminiC18 3x100 3(mm)
320-42002-12		08/27/2018 00:58	1	2018.08.26_537C 023.d	GeminiC18 3x100 3(mm)
320-42002-13		08/27/2018 01:03	1	2018.08.26_537C 024.d	GeminiC18 3x100 3(mm)
320-42002-14		08/27/2018 01:08	1	2018.08.26_537C 025.d	GeminiC18 3x100 3(mm)
320-42002-15		08/27/2018 01:13	1	2018.08.26_537C 026.d	GeminiC18 3x100 3(mm)
320-42002-16		08/27/2018 01:17	1	2018.08.26_537C 027.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 01:22	1		GeminiC18 3x100 3(mm)
CCV 320-242156/26 CCVIS		08/27/2018 01:27	1	2018.08.26_537C 029.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/28/2018 23:22

Analysis Batch Number: 242684 End Date: 08/28/2018 23:55

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-242684/1		08/28/2018 23:22	1	2018.08.28_537A 003.d	GeminiC18 3x100 3(mm)
CCV 320-242684/2 CCVIS		08/28/2018 23:27	1	2018.08.28_537A 004.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:31	1		GeminiC18 3x100 3(mm)
320-42002-9		08/28/2018 23:36	1	2018.08.28_537A 006.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:41	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:45	2		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:50	1		GeminiC18 3x100 3(mm)
CCV 320-242684/8 CCVIS		08/28/2018 23:55	1	2018.08.28_537A 010.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1

SDG No.: _____

Batch Number: 241537 Batch Start Date: 08/23/18 07:20 Batch Analyst: Arauz, Horacio J

Batch Method: 537 Batch End Date: 08/24/18 15:50

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00080
MB 320-241537/1		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
LLCS 320-241537/2		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
LLCSD 320-241537/3		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
320-42002-B-1	WGNA-080918-RW-3 145	537, 537	T	304.57 g	29.05 g	275.5 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-2	WGNA-080918-FRB- 3145	537, 537	T	310.269 g	27.41 g	282.9 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-3	WGNA-080918-RW-0 683	537, 537	T	318.93 g	29.37 g	289.6 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-4	WGNA-080918-FRB- 0683	537, 537	T	308.86 g	27.27 g	281.6 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-5	WGNA-080918-RW-0 443	537, 537	T	315.93 g	28.62 g	287.3 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-6	WGNA-080918-FRB- 0443	537, 537	T	315.47 g	27.78 g	287.7 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-7	NAWC-080918-RW-2 69	537, 537	T	316.86 g	29.14 g	287.7 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-8	NAWC-080918-FRB- 269	537, 537	T	306.95 g	28.46 g	278.5 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-9	NAWC-080918-RW-1 17	537, 537	T	323.08 g	30.30 g	292.8 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-10	NAWC-080918-FRB- 117	537, 537	T	301.97 g	28.27 g	273.7 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-11	WGNA-080918-RW-4 846	537, 537	T	324.79 g	28.61 g	296.2 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-12	WGNA-080918-FRB- 4846	537, 537	T	311.73 g	27.86 g	283.9 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-13	WGNA-080918-RW-4 850	537, 537	T	307.88 g	28.16 g	279.7 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-14	WGNA-080918-FRB- 4850	537, 537	T	309.66 g	28.09 g	281.6 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-15	WGNA-080918-RW-0 626	537, 537	T	304.01 g	27.96 g	276.1 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-16	WGNA-080918-FRB- 0626	537, 537	T	311.97 g	27.53 g	284.4 mL	1.00 mL	7.0 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00077	AnalysisComment			
MB 320-241537/1		537, 537			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.: 320-42002-1

SDG No.: _____

Batch Number: 241537 Batch Start Date: 08/23/18 07:20 Batch Analyst: Arauz, Horacio J

Batch Method: 537 Batch End Date: 08/24/18 15:50

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00077	AnalysisComment			
LLCS 320-241537/2		537, 537		100 uL	100 uL	Chlorine ND			
LLCSD 320-241537/3		537, 537		100 uL	100 uL	Chlorine ND			
320-42002-B-1	WGNA-080918-RW-3 145	537, 537	T		100 uL	Chlorine ND			
320-42002-A-2	WGNA-080918-FRB- 3145	537, 537	T		100 uL	Chlorine ND			
320-42002-A-3	WGNA-080918-RW-0 683	537, 537	T		100 uL	Chlorine ND			
320-42002-A-4	WGNA-080918-FRB- 0683	537, 537	T		100 uL	Chlorine ND			
320-42002-A-5	WGNA-080918-RW-0 443	537, 537	T		100 uL	Chlorine ND			
320-42002-A-6	WGNA-080918-FRB- 0443	537, 537	T		100 uL	Chlorine ND			
320-42002-A-7	NAWC-080918-RW-2 69	537, 537	T		100 uL	Chlorine ND			
320-42002-A-8	NAWC-080918-FRB- 269	537, 537	T		100 uL	Chlorine ND			
320-42002-A-9	NAWC-080918-RW-1 17	537, 537	T		100 uL	Chlorine ND			
320-42002-A-10	NAWC-080918-FRB- 117	537, 537	T		100 uL	Chlorine ND			
320-42002-A-11	WGNA-080918-RW-4 846	537, 537	T		100 uL	Chlorine ND			
320-42002-A-12	WGNA-080918-FRB- 4846	537, 537	T		100 uL	Chlorine ND			
320-42002-A-13	WGNA-080918-RW-4 850	537, 537	T		100 uL	Chlorine ND			
320-42002-A-14	WGNA-080918-FRB- 4850	537, 537	T		100 uL	Chlorine ND			
320-42002-A-15	WGNA-080918-RW-0 626	537, 537	T		100 uL	Chlorine ND			
320-42002-A-16	WGNA-080918-FRB- 0626	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.: 320-42002-1

SDG No.: _____

Batch Number: 241537 Batch Start Date: 08/23/18 07:20 Batch Analyst: Arauz, Horacio J

Batch Method: 537 Batch End Date: 08/24/18 15:50

Batch Notes	
Analyst ID - Aliquot Step	SKD
Batch Comment	Client labels match TA label, HJA 08/22/18
Analyst ID - Concentration	SKD
Analyst ID - Final Volume Step	SKD
Internal Standard ID#	1334015
Manifold ID	1, 3
Methanol ID	1335812
pH Indicator ID	0818
Pipette ID	R40536G
Analyst ID - IS Reagent Drop	SKD
Analyst ID - IS Reagent Drop Witness	VPM
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	SKD
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	SKD
SPE Cartridge Lot ID	6390138-06
Trizma ID	SLBR5241V
Reagent Water ID	08/21/18

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.

Shipping and Receiving Documents

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

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact
 TetraTech
 234 Mall Boulevard Suite 260
 King of Prussia, PA 19406
 610-382-1174
 610-491-9688
 Project Name: WE04
 Site: WE04
 P.O.# 1132358 (through EarthToxics)

Regulatory Program: DW NPDES RCRA Other:
 Project Manager: Andy Frebowitz
 Tel/Fax: 610.382.1170
 Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
 TAT if different from Below 21
 2 weeks
 1 week
 2 days
 1 day

Site Contact: Mary Kay Bond RCRA Other:
 Lab Contact: Dave Alltucker
 Carrier: FedEx
 Date: 8/9/2018
 COC No: 1 of 1 COCs
 Sampler: Mary Kay Bond
 For Lab Use Only:
 Walk-in Client:
 Lab Sampling:
 Job / SDG No.:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)		Sample Specific Notes:
						Performs MS/MSD (Y/N)	Lab Contact: Dave Alltucker	
WGNA-080918-RW-3145	8/9/2018	07:25	G	DW	2	N	Y	Field Reagent Blank
WGNA-080918-FRB-3145	8/9/2018	07:20	G	DW	2	N	Y	Field Reagent Blank
WGNA-080918-RW-0663	8/9/2018	08:10	G	DW	2	N	Y	Field Reagent Blank
WGNA-080918-FRB-0663	8/9/2018	08:05	G	DW	2	N	Y	Field Reagent Blank
WGNA-080918-RW-0443	8/9/2018	08:40	G	DW	2	N	Y	Field Reagent Blank
WGNA-080918-FRB-0443	8/9/2018	08:35	G	DW	2	N	Y	Field Reagent Blank
NAWC-080918-RW-269	8/9/2018	09:10	G	DW	2	N	Y	Field Reagent Blank
NAWC-080918-FRB-269	8/9/2018	09:05	G	DW	2	N	Y	Field Reagent Blank
NAWC-080918-RW-117	8/9/2018	09:40	G	DW	2	N	Y	Field Reagent Blank
NAWC-080918-FRB-117	8/9/2018	09:35	G	DW	2	N	Y	Field Reagent Blank
WGNA-080918-RW-4846	8/9/2018	10:10	G	DW	2	N	Y	Field Reagent Blank
WGNA-080918-FRB-4846	8/9/2018	10:05	G	DW	2	N	Y	Field Reagent Blank
WGNA-080918-RW-4850	8/9/2018	11:10	G	DW	2	N	Y	Field Reagent Blank
WGNA-080918-FRB-4850	8/9/2018	11:05	G	DW	2	N	Y	Field Reagent Blank
WGNA-080918-RW-0626	8/9/2018	12:10	G	DW	2	N	Y	Field Reagent Blank
WGNA-080918-FRB-0626	8/9/2018	12:05	G	DW	2	N	Y	Field Reagent Blank



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

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
 Non-Hazard Flammable Skin Irritant Poison 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

Custody Seal No.: _____
 Relinquished by: *Mary Kay Bond* Company: Tetra Tech Date/Time: 8/9/2018 16:00
 Relinquished by: _____ Company: _____ Date/Time: _____
 Relinquished by: _____ Company: _____ Date/Time: _____

Received by: *[Signature]* Date/Time: 8-10-18 9:50
 Received by: *[Signature]* Date/Time: _____
 Received in Laboratory by: _____ Date/Time: _____

Cooler Temp. (C): Obs'd: 2.6 Therm ID No.: AK-2
 Corrid: 2.6

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-42002-1

Login Number: 42002

List Source: TestAmerica Sacramento

List Number: 1

Creator: Her, David A

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

"WGNA-080918-RW-3145", "537", "RES", "320-42002-1", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "12", "ng/L", "J", "6.2", "DL", "", "TRG", "", "", "36", "LOQ", "YES", "-99", "", "275.5", "1.00", "15", ""

"WGNA-080918-RW-3145", "537", "RES", "320-42002-1", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "15", "ng/L", "J", "2.5", "DL", "", "TRG", "", "", "18", "LOQ", "YES", "-99", "", "275.5", "1.00", "7.3", ""

"WGNA-080918-RW-3145", "537", "RES", "320-42002-1", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "9.9", "ng/L", "J", "5.0", "DL", "", "TRG", "", "", "27", "LOQ", "YES", "-99", "", "275.5", "1.00", "11", ""

"WGNA-080918-RW-3145", "537", "RES", "320-42002-1", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "15", "ng/L", "J", "15", "DL", "", "TRG", "", "", "82", "LOQ", "YES", "-99", "", "275.5", "1.00", "33", ""

"WGNA-080918-RW-3145", "537", "RES", "320-42002-1", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "6.3", "ng/L", "J", "1.7", "DL", "", "TRG", "", "", "9.1", "LOQ", "YES", "-99", "", "275.5", "1.00", "3.6", ""

"WGNA-080918-RW-3145", "537", "RES", "320-42002-1", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "18", "ng/L", "U", "7.3", "DL", "", "TRG", "", "", "22", "LOQ", "YES", "-99", "", "275.5", "1.00", "18", ""

"WGNA-080918-RW-3145", "537", "RES", "320-42002-1", "TALSAC", "STL00993", "13C2
PFHxA", "40", "ng/L", "", "-99", "DL", "", "SURR", "110", "", "-99", "LOQ", "YES", "36.3", "", "275.5", "1.00", "0", ""

"WGNA-080918-RW-3145", "537", "RES", "320-42002-1", "TALSAC", "STL00996", "13C2
PFDA", "39", "ng/L", "", "-99", "DL", "", "SURR", "109", "", "-99", "LOQ", "YES", "36.3", "", "275.5", "1.00", "0", ""

"NAWC-080918-FRB-117", "537", "RES", "320-42002-10", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "15", "ng/L", "U", "6.2", "DL", "", "TRG", "", "", "37", "LOQ", "YES", "-99", "", "273.7", "1.00", "15", ""

"NAWC-080918-FRB-117", "537", "RES", "320-42002-10", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "7.3", "ng/L", "U", "2.6", "DL", "", "TRG", "", "", "18", "LOQ", "YES", "-99", "", "273.7", "1.00", "7.3", ""

"NAWC-080918-FRB-117", "537", "RES", "320-42002-10", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "11", "ng/L", "U", "5.0", "DL", "", "TRG", "", "", "27", "LOQ", "YES", "-99", "", "273.7", "1.00", "11", ""

"NAWC-080918-FRB-117", "537", "RES", "320-42002-10", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "33", "ng/L", "U", "15", "DL", "", "TRG", "", "", "82", "LOQ", "YES", "-99", "", "273.7", "1.00", "33", ""

"NAWC-080918-FRB-117", "537", "RES", "320-42002-10", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "3.7", "ng/L", "U", "1.7", "DL", "", "TRG", "", "", "9.1", "LOQ", "YES", "-99", "", "273.7", "1.00", "3.7", ""

"NAWC-080918-FRB-117", "537", "RES", "320-42002-10", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "18", "ng/L", "U", "7.3", "DL", "", "TRG", "", "", "22", "LOQ", "YES", "-99", "", "273.7", "1.00", "18", ""

"NAWC-080918-FRB-117", "537", "RES", "320-42002-10", "TALSAC", "STL00993", "13C2
PFHxA", "40", "ng/L", "", "-99", "DL", "", "SURR", "110", "", "-99", "LOQ", "YES", "36.5", "", "273.7", "1.00", "0", ""

"NAWC-080918-FRB-117", "537", "RES", "320-42002-10", "TALSAC", "STL00996", "13C2
PFDA", "39", "ng/L", "", "-99", "DL", "", "SURR", "106", "", "-99", "LOQ", "YES", "36.5", "", "273.7", "1.00", "0", ""

"WGNA-080918-RW-4846", "537", "RES", "320-42002-11", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "6.6", "ng/L", "J M", "5.7", "DL", "", "TRG", "", "", "34", "LOQ", "YES", "-99", "", "296.2", "1.00", "14", ""

"WGNA-080918-RW-4846", "537", "RES", "320-42002-11", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "5.4", "ng/L", "J", "2.4", "DL", "", "TRG", "", "", "17", "LOQ", "YES", "-99", "", "296.2", "1.00", "6.8", ""

"WGNA-080918-RW-4846", "537", "RES", "320-42002-11", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "10", "ng/L", "U M", "4.6", "DL", "", "TRG", "", "", "25", "LOQ", "YES", "-99", "", "296.2", "1.00", "10", ""

"WGNA-080918-RW-4846", "537", "RES", "320-42002-11", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "30", "ng/L", "U M", "14", "DL", "", "TRG", "", "", "76", "LOQ", "YES", "-99", "", "296.2", "1.00", "30", ""

"WGNA-080918-RW-4846", "537", "RES", "320-42002-11", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "1.7", "ng/L", "J M", "1.6", "DL", "", "TRG", "", "", "8.4", "LOQ", "YES", "-99", "", "296.2", "1.00", "3.4", ""

"WGNA-080918-RW-4846", "537", "RES", "320-42002-11", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "17", "ng/L", "U", "6.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "296.2", "1.00", "17", ""

"WGNA-080918-RW-4846", "537", "RES", "320-42002-11", "TALSAC", "STL00993", "13C2
PFHxA", "35", "ng/L", "", "-99", "DL", "", "SURR", "105", "", "-99", "LOQ", "YES", "33.8", "", "296.2", "1.00", "0", ""

"WGNA-080918-RW-4846", "537", "RES", "320-42002-11", "TALSAC", "STL00996", "13C2
PFDA", "37", "ng/L", "", "-99", "DL", "", "SURR", "109", "", "-99", "LOQ", "YES", "33.8", "", "296.2", "1.00", "0", ""

"WGNA-080918-FRB-4846", "537", "RES", "320-42002-12", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "14", "ng/L", "U", "6.0", "DL", "", "TRG", "", "", "35", "LOQ", "YES", "-99", "", "283.9", "1.00", "14", ""

"WGNA-080918-FRB-4846", "537", "RES", "320-42002-12", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "7.0", "ng/L", "U", "2.5", "DL", "", "TRG", "", "", "18", "LOQ", "YES", "-99", "", "283.9", "1.00", "7.0", ""

"WGNA-080918-FRB-4846", "537", "RES", "320-42002-12", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid

(PFHxS)", "11", "ng/L", "U", "4.8", "DL", "", "TRG", "", "", "26", "LOQ", "YES", "-99", "", "283.9", "1.00", "11", ""
"WGNA-080918-FRB-4846", "537", "RES", "320-42002-12", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "32", "ng/L", "U", "14", "DL", "", "TRG", "", "", "79", "LOQ", "YES", "-99", "", "283.9", "1.00", "32", ""
"WGNA-080918-FRB-4846", "537", "RES", "320-42002-12", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "3.5", "ng/L", "U", "1.7", "DL", "", "TRG", "", "", "8.8", "LOQ", "YES", "-99", "", "283.9", "1.00", "3.5", ""
"WGNA-080918-FRB-4846", "537", "RES", "320-42002-12", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "18", "ng/L", "U", "7.0", "DL", "", "TRG", "", "", "21", "LOQ", "YES", "-99", "", "283.9", "1.00", "18", ""
"WGNA-080918-FRB-4846", "537", "RES", "320-42002-12", "TALSAC", "STL00993", "13C2
PFHxA", "39", "ng/L", "", "-99", "DL", "", "SURR", "111", "", "-99", "LOQ", "YES", "35.2", "", "283.9", "1.00", "0", ""
"WGNA-080918-FRB-4846", "537", "RES", "320-42002-12", "TALSAC", "STL00996", "13C2
PFDA", "38", "ng/L", "", "-99", "DL", "", "SURR", "108", "", "-99", "LOQ", "YES", "35.2", "", "283.9", "1.00", "0", ""
"WGNA-080918-RW-4850", "537", "RES", "320-42002-13", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "170", "ng/L", "", "6.1", "DL", "", "TRG", "", "", "36", "LOQ", "YES", "-99", "", "279.7", "1.00", "14", ""
"WGNA-080918-RW-4850", "537", "RES", "320-42002-13", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "21", "ng/L", "M", "2.5", "DL", "", "TRG", "", "", "18", "LOQ", "YES", "-99", "", "279.7", "1.00", "7.2", ""
"WGNA-080918-RW-4850", "537", "RES", "320-42002-13", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "110", "ng/L", "", "4.9", "DL", "", "TRG", "", "", "27", "LOQ", "YES", "-99", "", "279.7", "1.00", "11", ""
"WGNA-080918-RW-4850", "537", "RES", "320-42002-13", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "26", "ng/L", "J", "14", "DL", "", "TRG", "", "", "80", "LOQ", "YES", "-99", "", "279.7", "1.00", "32", ""
"WGNA-080918-RW-4850", "537", "RES", "320-42002-13", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "12", "ng/L", "", "1.7", "DL", "", "TRG", "", "", "8.9", "LOQ", "YES", "-99", "", "279.7", "1.00", "3.6", ""
"WGNA-080918-RW-4850", "537", "RES", "320-42002-13", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "18", "ng/L", "U", "7.2", "DL", "", "TRG", "", "", "21", "LOQ", "YES", "-99", "", "279.7", "1.00", "18", ""
"WGNA-080918-RW-4850", "537", "RES", "320-42002-13", "TALSAC", "STL00993", "13C2
PFHxA", "40", "ng/L", "", "-99", "DL", "", "SURR", "111", "", "-99", "LOQ", "YES", "35.8", "", "279.7", "1.00", "0", ""
"WGNA-080918-RW-4850", "537", "RES", "320-42002-13", "TALSAC", "STL00996", "13C2
PFDA", "40", "ng/L", "", "-99", "DL", "", "SURR", "113", "", "-99", "LOQ", "YES", "35.8", "", "279.7", "1.00", "0", ""
"WGNA-080918-FRB-4850", "537", "RES", "320-42002-14", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "14", "ng/L", "U", "6.0", "DL", "", "TRG", "", "", "36", "LOQ", "YES", "-99", "", "281.6", "1.00", "14", ""
"WGNA-080918-FRB-4850", "537", "RES", "320-42002-14", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "7.1", "ng/L", "U", "2.5", "DL", "", "TRG", "", "", "18", "LOQ", "YES", "-99", "", "281.6", "1.00", "7.1", ""
"WGNA-080918-FRB-4850", "537", "RES", "320-42002-14", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "11", "ng/L", "U", "4.9", "DL", "", "TRG", "", "", "27", "LOQ", "YES", "-99", "", "281.6", "1.00", "11", ""
"WGNA-080918-FRB-4850", "537", "RES", "320-42002-14", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "32", "ng/L", "U", "14", "DL", "", "TRG", "", "", "80", "LOQ", "YES", "-99", "", "281.6", "1.00", "32", ""
"WGNA-080918-FRB-4850", "537", "RES", "320-42002-14", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "3.6", "ng/L", "U", "1.7", "DL", "", "TRG", "", "", "8.9", "LOQ", "YES", "-99", "", "281.6", "1.00", "3.6", ""
"WGNA-080918-FRB-4850", "537", "RES", "320-42002-14", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "18", "ng/L", "U", "7.1", "DL", "", "TRG", "", "", "21", "LOQ", "YES", "-99", "", "281.6", "1.00", "18", ""
"WGNA-080918-FRB-4850", "537", "RES", "320-42002-14", "TALSAC", "STL00993", "13C2
PFHxA", "37", "ng/L", "", "-99", "DL", "", "SURR", "105", "", "-99", "LOQ", "YES", "35.5", "", "281.6", "1.00", "0", ""
"WGNA-080918-FRB-4850", "537", "RES", "320-42002-14", "TALSAC", "STL00996", "13C2
PFDA", "38", "ng/L", "", "-99", "DL", "", "SURR", "107", "", "-99", "LOQ", "YES", "35.5", "", "281.6", "1.00", "0", ""
"WGNA-080918-RW-0626", "537", "RES", "320-42002-15", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "14", "ng/L", "U", "6.2", "DL", "", "TRG", "", "", "36", "LOQ", "YES", "-99", "", "276.1", "1.00", "14", ""
"WGNA-080918-RW-0626", "537", "RES", "320-42002-15", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "7.2", "ng/L", "U", "2.5", "DL", "", "TRG", "", "", "18", "LOQ", "YES", "-99", "", "276.1", "1.00", "7.2", ""
"WGNA-080918-RW-0626", "537", "RES", "320-42002-15", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "11", "ng/L", "U", "5.0", "DL", "", "TRG", "", "", "27", "LOQ", "YES", "-99", "", "276.1", "1.00", "11", ""
"WGNA-080918-RW-0626", "537", "RES", "320-42002-15", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "33", "ng/L", "U", "15", "DL", "", "TRG", "", "", "81", "LOQ", "YES", "-99", "", "276.1", "1.00", "33", ""
"WGNA-080918-RW-0626", "537", "RES", "320-42002-15", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "3.6", "ng/L", "U", "1.7", "DL", "", "TRG", "", "", "9.1", "LOQ", "YES", "-99", "", "276.1", "1.00", "3.6", ""
"WGNA-080918-RW-0626", "537", "RES", "320-42002-15", "TALSAC", "375-95-1", "Perfluorononanoic acid

(PFNA),"18","ng/L","U","7.2","DL","","TRG","","","22","LOQ","YES",-99","","276.1","1.00","18","","
"WGNA-080918-RW-0626","537","RES","320-42002-15","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","-99","DL","","SURR","108","","-99","LOQ","YES","36.2","","276.1","1.00","0","","
"WGNA-080918-RW-0626","537","RES","320-42002-15","TALSAC","STL00996","13C2
PFDA","40","ng/L","","-99","DL","","SURR","111","","-99","LOQ","YES","36.2","","276.1","1.00","0","","
"WGNA-080918-FRB-0626","537","RES","320-42002-16","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.0","DL","","TRG","","","35","LOQ","YES",-99","","284.4","1.00","14","","
"WGNA-080918-FRB-0626","537","RES","320-42002-16","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.0","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES",-99","","284.4","1.00","7.0","","
"WGNA-080918-FRB-0626","537","RES","320-42002-16","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES",-99","","284.4","1.00","11","","
"WGNA-080918-FRB-0626","537","RES","320-42002-16","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","79","LOQ","YES",-99","","284.4","1.00","32","","
"WGNA-080918-FRB-0626","537","RES","320-42002-16","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.5","ng/L","U","1.7","DL","","TRG","","","8.8","LOQ","YES",-99","","284.4","1.00","3.5","","
"WGNA-080918-FRB-0626","537","RES","320-42002-16","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.0","DL","","TRG","","","21","LOQ","YES",-99","","284.4","1.00","18","","
"WGNA-080918-FRB-0626","537","RES","320-42002-16","TALSAC","STL00993","13C2
PFHxA","38","ng/L","","-99","DL","","SURR","108","","-99","LOQ","YES","35.2","","284.4","1.00","0","","
"WGNA-080918-FRB-0626","537","RES","320-42002-16","TALSAC","STL00996","13C2
PFDA","36","ng/L","","-99","DL","","SURR","104","","-99","LOQ","YES","35.2","","284.4","1.00","0","","
"WGNA-080918-FRB-3145","537","RES","320-42002-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.0","DL","","TRG","","","35","LOQ","YES",-99","","282.9","1.00","14","","
"WGNA-080918-FRB-3145","537","RES","320-42002-2","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.1","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES",-99","","282.9","1.00","7.1","","
"WGNA-080918-FRB-3145","537","RES","320-42002-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","4.9","DL","","TRG","","","27","LOQ","YES",-99","","282.9","1.00","11","","
"WGNA-080918-FRB-3145","537","RES","320-42002-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","80","LOQ","YES",-99","","282.9","1.00","32","","
"WGNA-080918-FRB-3145","537","RES","320-42002-2","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.5","ng/L","U","1.7","DL","","TRG","","","8.8","LOQ","YES",-99","","282.9","1.00","3.5","","
"WGNA-080918-FRB-3145","537","RES","320-42002-2","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.1","DL","","TRG","","","21","LOQ","YES",-99","","282.9","1.00","18","","
"WGNA-080918-FRB-3145","537","RES","320-42002-2","TALSAC","STL00993","13C2
PFHxA","37","ng/L","","-99","DL","","SURR","104","","-99","LOQ","YES","35.3","","282.9","1.00","0","","
"WGNA-080918-FRB-3145","537","RES","320-42002-2","TALSAC","STL00996","13C2
PFDA","38","ng/L","","-99","DL","","SURR","108","","-99","LOQ","YES","35.3","","282.9","1.00","0","","
"WGNA-080918-RW-0683","537","RES","320-42002-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","25","ng/L","J M","5.9","DL","","TRG","","","35","LOQ","YES",-99","","289.6","1.00","14","","
"WGNA-080918-RW-0683","537","RES","320-42002-3","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","27","ng/L","","2.4","DL","","TRG","","","17","LOQ","YES",-99","","289.6","1.00","6.9","","
"WGNA-080918-RW-0683","537","RES","320-42002-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","10","ng/L","U","4.7","DL","","TRG","","","26","LOQ","YES",-99","","289.6","1.00","10","","
"WGNA-080918-RW-0683","537","RES","320-42002-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","31","ng/L","U","14","DL","","TRG","","","78","LOQ","YES",-99","","289.6","1.00","31","","
"WGNA-080918-RW-0683","537","RES","320-42002-3","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","7.9","ng/L","J","1.6","DL","","TRG","","","8.6","LOQ","YES",-99","","289.6","1.00","3.5","","
"WGNA-080918-RW-0683","537","RES","320-42002-3","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","17","ng/L","U","6.9","DL","","TRG","","","21","LOQ","YES",-99","","289.6","1.00","17","","
"WGNA-080918-RW-0683","537","RES","320-42002-3","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","-99","DL","","SURR","113","","-99","LOQ","YES","34.5","","289.6","1.00","0","","
"WGNA-080918-RW-0683","537","RES","320-42002-3","TALSAC","STL00996","13C2
PFDA","38","ng/L","","-99","DL","","SURR","111","","-99","LOQ","YES","34.5","","289.6","1.00","0","","
"WGNA-080918-FRB-0683","537","RES","320-42002-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS),"14","ng/L","U","6.0","DL","","TRG","","","36","LOQ","YES",-99,"","281.6","1.00","14",""
"WGNA-080918-FRB-0683","537","RES","320-42002-4","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"7.1","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES",-99,"","281.6","1.00","7.1",""
"WGNA-080918-FRB-0683","537","RES","320-42002-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"11","ng/L","U","4.9","DL","","TRG","","","27","LOQ","YES",-99,"","281.6","1.00","11",""
"WGNA-080918-FRB-0683","537","RES","320-42002-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"32","ng/L","U","14","DL","","TRG","","","80","LOQ","YES",-99,"","281.6","1.00","32",""
"WGNA-080918-FRB-0683","537","RES","320-42002-4","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"3.6","ng/L","U","1.7","DL","","TRG","","","8.9","LOQ","YES",-99,"","281.6","1.00","3.6",""
"WGNA-080918-FRB-0683","537","RES","320-42002-4","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"18","ng/L","U","7.1","DL","","TRG","","","21","LOQ","YES",-99,"","281.6","1.00","18",""
"WGNA-080918-FRB-0683","537","RES","320-42002-4","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","-99","DL","","SURR","109","","-99","LOQ","YES","35.5","","281.6","1.00","0",""
"WGNA-080918-FRB-0683","537","RES","320-42002-4","TALSAC","STL00996","13C2
PFDA","39","ng/L","","-99","DL","","SURR","110","","-99","LOQ","YES","35.5","","281.6","1.00","0",""
"WGNA-080918-RW-0443","537","RES","320-42002-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"19","ng/L","J","5.9","DL","","TRG","","","35","LOQ","YES",-99,"","287.3","1.00","14",""
"WGNA-080918-RW-0443","537","RES","320-42002-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"19","ng/L","M","2.4","DL","","TRG","","","17","LOQ","YES",-99,"","287.3","1.00","7.0",""
"WGNA-080918-RW-0443","537","RES","320-42002-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"5.5","ng/L","J","4.8","DL","","TRG","","","26","LOQ","YES",-99,"","287.3","1.00","10",""
"WGNA-080918-RW-0443","537","RES","320-42002-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"26","ng/L","J","14","DL","","TRG","","","78","LOQ","YES",-99,"","287.3","1.00","31",""
"WGNA-080918-RW-0443","537","RES","320-42002-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"8.4","ng/L","J","1.7","DL","","TRG","","","8.7","LOQ","YES",-99,"","287.3","1.00","3.5",""
"WGNA-080918-RW-0443","537","RES","320-42002-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"17","ng/L","U","7.0","DL","","TRG","","","21","LOQ","YES",-99,"","287.3","1.00","17",""
"WGNA-080918-RW-0443","537","RES","320-42002-5","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","-99","DL","","SURR","111","","-99","LOQ","YES","34.8","","287.3","1.00","0",""
"WGNA-080918-RW-0443","537","RES","320-42002-5","TALSAC","STL00996","13C2
PFDA","39","ng/L","","-99","DL","","SURR","113","","-99","LOQ","YES","34.8","","287.3","1.00","0",""
"WGNA-080918-FRB-0443","537","RES","320-42002-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"14","ng/L","U","5.9","DL","","TRG","","","35","LOQ","YES",-99,"","287.7","1.00","14",""
"WGNA-080918-FRB-0443","537","RES","320-42002-6","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"7.0","ng/L","U","2.4","DL","","TRG","","","17","LOQ","YES",-99,"","287.7","1.00","7.0",""
"WGNA-080918-FRB-0443","537","RES","320-42002-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"10","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES",-99,"","287.7","1.00","10",""
"WGNA-080918-FRB-0443","537","RES","320-42002-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"31","ng/L","U","14","DL","","TRG","","","78","LOQ","YES",-99,"","287.7","1.00","31",""
"WGNA-080918-FRB-0443","537","RES","320-42002-6","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"3.5","ng/L","U","1.7","DL","","TRG","","","8.7","LOQ","YES",-99,"","287.7","1.00","3.5",""
"WGNA-080918-FRB-0443","537","RES","320-42002-6","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"17","ng/L","U","7.0","DL","","TRG","","","21","LOQ","YES",-99,"","287.7","1.00","17",""
"WGNA-080918-FRB-0443","537","RES","320-42002-6","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","-99","DL","","SURR","111","","-99","LOQ","YES","34.8","","287.7","1.00","0",""
"WGNA-080918-FRB-0443","537","RES","320-42002-6","TALSAC","STL00996","13C2
PFDA","38","ng/L","","-99","DL","","SURR","109","","-99","LOQ","YES","34.8","","287.7","1.00","0",""
"NAWC-080918-RW-269","537","RES","320-42002-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"22","ng/L","J","5.9","DL","","TRG","","","35","LOQ","YES",-99,"","287.7","1.00","14",""
"NAWC-080918-RW-269","537","RES","320-42002-7","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"22","ng/L","","2.4","DL","","TRG","","","17","LOQ","YES",-99,"","287.7","1.00","7.0",""
"NAWC-080918-RW-269","537","RES","320-42002-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"12","ng/L","J","4.8","DL","","TRG","","","26","LOQ","YES",-99,"","287.7","1.00","10",""
"NAWC-080918-RW-269","537","RES","320-42002-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)", "31", "ng/L", "U", "14", "DL", "", "TRG", "", "", "78", "LOQ", "YES", "-99", "", "287.7", "1.00", "31", ""
"NAWC-080918-RW-269", "537", "RES", "320-42002-7", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "7.2", "ng/L", "J", "1.7", "DL", "", "TRG", "", "", "8.7", "LOQ", "YES", "-99", "", "287.7", "1.00", "3.5", ""
"NAWC-080918-RW-269", "537", "RES", "320-42002-7", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "17", "ng/L", "U", "7.0", "DL", "", "TRG", "", "", "21", "LOQ", "YES", "-99", "", "287.7", "1.00", "17", ""
"NAWC-080918-RW-269", "537", "RES", "320-42002-7", "TALSAC", "STL00993", "13C2
PFHxA", "38", "ng/L", "", "-99", "DL", "", "SURR", "109", "", "-99", "LOQ", "YES", "34.8", "", "287.7", "1.00", "0", ""
"NAWC-080918-RW-269", "537", "RES", "320-42002-7", "TALSAC", "STL00996", "13C2
PFDA", "38", "ng/L", "", "-99", "DL", "", "SURR", "109", "", "-99", "LOQ", "YES", "34.8", "", "287.7", "1.00", "0", ""
"NAWC-080918-FRB-269", "537", "RES", "320-42002-8", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "14", "ng/L", "U", "6.1", "DL", "", "TRG", "", "", "36", "LOQ", "YES", "-99", "", "278.5", "1.00", "14", ""
"NAWC-080918-FRB-269", "537", "RES", "320-42002-8", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "7.2", "ng/L", "U", "2.5", "DL", "", "TRG", "", "", "18", "LOQ", "YES", "-99", "", "278.5", "1.00", "7.2", ""
"NAWC-080918-FRB-269", "537", "RES", "320-42002-8", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "11", "ng/L", "U", "4.9", "DL", "", "TRG", "", "", "27", "LOQ", "YES", "-99", "", "278.5", "1.00", "11", ""
"NAWC-080918-FRB-269", "537", "RES", "320-42002-8", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "32", "ng/L", "U", "14", "DL", "", "TRG", "", "", "81", "LOQ", "YES", "-99", "", "278.5", "1.00", "32", ""
"NAWC-080918-FRB-269", "537", "RES", "320-42002-8", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "3.6", "ng/L", "U", "1.7", "DL", "", "TRG", "", "", "9.0", "LOQ", "YES", "-99", "", "278.5", "1.00", "3.6", ""
"NAWC-080918-FRB-269", "537", "RES", "320-42002-8", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "18", "ng/L", "U", "7.2", "DL", "", "TRG", "", "", "22", "LOQ", "YES", "-99", "", "278.5", "1.00", "18", ""
"NAWC-080918-FRB-269", "537", "RES", "320-42002-8", "TALSAC", "STL00993", "13C2
PFHxA", "39", "ng/L", "", "-99", "DL", "", "SURR", "110", "", "-99", "LOQ", "YES", "35.9", "", "278.5", "1.00", "0", ""
"NAWC-080918-FRB-269", "537", "RES", "320-42002-8", "TALSAC", "STL00996", "13C2
PFDA", "40", "ng/L", "", "-99", "DL", "", "SURR", "112", "", "-99", "LOQ", "YES", "35.9", "", "278.5", "1.00", "0", ""
"NAWC-080918-RW-117", "537", "RES", "320-42002-9", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "53", "ng/L", "", "5.8", "DL", "", "TRG", "", "", "34", "LOQ", "YES", "-99", "", "292.8", "1.00", "14", ""
"NAWC-080918-RW-117", "537", "RES", "320-42002-9", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "29", "ng/L", "", "2.4", "DL", "", "TRG", "", "", "17", "LOQ", "YES", "-99", "", "292.8", "1.00", "6.8", ""
"NAWC-080918-RW-117", "537", "RES", "320-42002-9", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "20", "ng/L", "J", "4.7", "DL", "", "TRG", "", "", "26", "LOQ", "YES", "-99", "", "292.8", "1.00", "10", ""
"NAWC-080918-RW-117", "537", "RES", "320-42002-9", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "31", "ng/L", "U", "14", "DL", "", "TRG", "", "", "77", "LOQ", "YES", "-99", "", "292.8", "1.00", "31", ""
"NAWC-080918-RW-117", "537", "RES", "320-42002-9", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "6.6", "ng/L", "J", "1.6", "DL", "", "TRG", "", "", "8.5", "LOQ", "YES", "-99", "", "292.8", "1.00", "3.4", ""
"NAWC-080918-RW-117", "537", "RES", "320-42002-9", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "17", "ng/L", "U", "6.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "292.8", "1.00", "17", ""
"NAWC-080918-RW-117", "537", "RES", "320-42002-9", "TALSAC", "STL00993", "13C2
PFHxA", "34", "ng/L", "", "-99", "DL", "", "SURR", "100", "", "-99", "LOQ", "YES", "34.2", "", "292.8", "1.00", "0", ""
"NAWC-080918-RW-117", "537", "RES", "320-42002-9", "TALSAC", "STL00996", "13C2
PFDA", "35", "ng/L", "", "-99", "DL", "", "SURR", "104", "", "-99", "LOQ", "YES", "34.2", "", "292.8", "1.00", "0", ""
"LLCS 320-241537/2-A", "537", "RES", "LLCS 320-241537/2-A", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic
acid (PFOS)", "43.0", "ng/L", "", "6.8", "DL", "", "SPK", "107", "", "40", "LOQ", "YES", "40.2", "", "250", "1.00", "16", ""
"LLCS 320-241537/2-A", "537", "RES", "LLCS 320-241537/2-A", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "20.4", "ng/L", "", "2.8", "DL", "", "SPK", "102", "", "20", "LOQ", "YES", "20.0", "", "250", "1.00", "8.0", ""
"LLCS 320-241537/2-A", "537", "RES", "LLCS 320-241537/2-A", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "33.1", "ng/L", "", "5.5", "DL", "", "SPK", "109", "", "30", "LOQ", "YES", "30.3", "", "250", "1.00", "12", ""
"LLCS 320-241537/2-A", "537", "RES", "LLCS 320-241537/2-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "105", "ng/L", "", "16", "DL", "", "SPK", "117", "", "90", "LOQ", "YES", "90.2", "", "250", "1.00", "36", ""
"LLCS 320-241537/2-A", "537", "RES", "LLCS 320-241537/2-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "10.2", "ng/L", "", "1.9", "DL", "", "SPK", "102", "", "10", "LOQ", "YES", "10.0", "", "250", "1.00", "4.0", ""
"LLCS 320-241537/2-A", "537", "RES", "LLCS 320-241537/2-A", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "18.9", "ng/L", "J", "8.0", "DL", "", "SPK", "94", "", "24", "LOQ", "YES", "20.0", "", "250", "1.00", "20", ""
"LLCS 320-241537/2-A", "537", "RES", "LLCS 320-241537/2-A", "TALSAC", "STL00993", "13C2

PFHxA", "45.1", "ng/L", "", "-99", "DL", "", "SURR", "113", "", "-99", "LOQ", "YES", "40.0", "", "250", "1.00", "0", ""
"LLCS 320-241537/2-A", "537", "RES", "LLCS 320-241537/2-A", "TALSAC", "STL00996", "13C2
PFDA", "45.8", "ng/L", "", "-99", "DL", "", "SURR", "114", "", "-99", "LOQ", "YES", "40.0", "", "250", "1.00", "0", ""
"LLCSD 320-241537/3-A", "537", "RES", "LLCSD 320-241537/3-A", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic
acid (PFOS)", "45.1", "ng/L", "", "6.8", "DL", "", "SPK", "112", "5", "40", "LOQ", "YES", "40.2", "LLCS 320-241537/2-
A", "250", "1.00", "16", ""
"LLCSD 320-241537/3-A", "537", "RES", "LLCSD 320-241537/3-A", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "20.6", "ng/L", "", "2.8", "DL", "", "SPK", "103", "1", "20", "LOQ", "YES", "20.0", "LLCS 320-241537/2-
A", "250", "1.00", "8.0", ""
"LLCSD 320-241537/3-A", "537", "RES", "LLCSD 320-241537/3-A", "TALSAC", "355-46-4", "Perfluorohexanesulfonic
acid (PFHxS)", "34.9", "ng/L", "", "5.5", "DL", "", "SPK", "115", "5", "30", "LOQ", "YES", "30.3", "LLCS 320-241537/2-
A", "250", "1.00", "12", ""
"LLCSD 320-241537/3-A", "537", "RES", "LLCSD 320-241537/3-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic
acid (PFBS)", "115", "ng/L", "", "16", "DL", "", "SPK", "127", "8", "90", "LOQ", "YES", "90.2", "LLCS 320-241537/2-
A", "250", "1.00", "36", ""
"LLCSD 320-241537/3-A", "537", "RES", "LLCSD 320-241537/3-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "11.3", "ng/L", "", "1.9", "DL", "", "SPK", "113", "10", "10", "LOQ", "YES", "10.0", "LLCS 320-241537/2-
A", "250", "1.00", "4.0", ""
"LLCSD 320-241537/3-A", "537", "RES", "LLCSD 320-241537/3-A", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "19.4", "ng/L", "J", "8.0", "DL", "", "SPK", "97", "3", "24", "LOQ", "YES", "20.0", "LLCS 320-241537/2-
A", "250", "1.00", "20", ""
"LLCSD 320-241537/3-A", "537", "RES", "LLCSD 320-241537/3-A", "TALSAC", "STL00993", "13C2
PFHxA", "43.8", "ng/L", "", "-99", "DL", "", "SURR", "110", "3", "-99", "LOQ", "YES", "40.0", "LLCS 320-241537/2-
A", "250", "1.00", "0", ""
"LLCSD 320-241537/3-A", "537", "RES", "LLCSD 320-241537/3-A", "TALSAC", "STL00996", "13C2
PFDA", "43.7", "ng/L", "", "-99", "DL", "", "SURR", "109", "5", "-99", "LOQ", "YES", "40.0", "LLCS 320-241537/2-
A", "250", "1.00", "0", ""
"MB 320-241537/1-A", "537", "RES", "MB 320-241537/1-A", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "16", "ng/L", "U", "6.8", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "250", "1.00", "16", ""
"MB 320-241537/1-A", "537", "RES", "MB 320-241537/1-A", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "8.0", "ng/L", "U", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "250", "1.00", "8.0", ""
"MB 320-241537/1-A", "537", "RES", "MB 320-241537/1-A", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "12", "ng/L", "U", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "250", "1.00", "12", ""
"MB 320-241537/1-A", "537", "RES", "MB 320-241537/1-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "250", "1.00", "36", ""
"MB 320-241537/1-A", "537", "RES", "MB 320-241537/1-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "4.0", "ng/L", "U", "1.9", "DL", "", "TRG", "", "", "10", "LOQ", "YES", "-99", "", "250", "1.00", "4.0", ""
"MB 320-241537/1-A", "537", "RES", "MB 320-241537/1-A", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "20", "ng/L", "U", "8.0", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "250", "1.00", "20", ""
"MB 320-241537/1-A", "537", "RES", "MB 320-241537/1-A", "TALSAC", "STL00993", "13C2
PFHxA", "41.7", "ng/L", "", "-99", "DL", "", "SURR", "104", "", "-99", "LOQ", "YES", "40.0", "", "250", "1.00", "0", ""
"MB 320-241537/1-A", "537", "RES", "MB 320-241537/1-A", "TALSAC", "STL00996", "13C2
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TO: A. FREBOWITZ **DATE:** SEPTEMBER 4, 2018
FROM: TERRI L. SOLOMON **COPIES:** DV FILE
SUBJECT: ORGANIC DATA VALIDATION –POLYFLUOROALKYL SUBSTANCES (PFAS)
 NAS JRB WILLOW GROVE
 SAMPLE DELIVERY GROUP (SDG) 320-42002-1

SAMPLES: 8/Field Reagent Blank (FRB)

NAWC-080918-FRB-117	NAWC-080918-FRB-269
WGNA-080918-FRB-0443	WGNA-080918-FRB-0626
WGNA-080918-FRB-0683	WGNA-080918-FRB-3145
WGNA-080918-FRB-4846	WGNA-080918-FRB-4850

8/Drinking Water

NAWC-080918-RW-117	NAWC-080918-RW-269
WGNA-080918-RW-0443	WGNA-080918-RW-0626
WGNA-080918-RW-0683	WGNA-080918-RW-3145
WGNA-080918-RW-4846	WGNA-080918-RW-4850

Overview

The sample set for NAS JRB Willow Grove, SDG 320-42002-1, consisted of eight (8) drinking water samples and eight (8) FRB samples. All samples were analyzed for select perfluorinated alkyl acids including pentadecafluorooctanoic acid (PFOA), perfluorobutane sulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA) and perfluorooctane sulfonic acid (PFOS). No field duplicate pairs were included in this SDG.

The samples were collected by Tetra Tech on August 9, 2018 and analyzed by Test America-Sacramento. All sample analyses were conducted in accordance with EPA Method 537 version 1.1 analytical and reporting protocols.

The data contained in this SDG was validated with regard to the following parameters: data completeness, holding times, mass calibration, mass spectral acquisition rate, tune check, instrument sensitivity check, initial/continuing calibrations, ion transitions, laboratory method/FRBs, surrogate spike recoveries, laboratory control sample / laboratory control sample duplicate results, injected internal standard areas and recoveries, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

None.

Minor

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

TO: A. FREBOWITZ
SDG: 320-42002-1

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Notes

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-080918-RW-117	NAWC-080918-FRB-117
NAWC-080918-RW-269	NAWC-080918-FRB-269
WGNA-080918-RW-0443	WGNA-080918-FRB-0443
WGNA-080918-RW-0626	WGNA-080918-FRB-0626
WGNA-080918-RW-0683	WGNA-080918-FRB-0683
WGNA-080918-RW-3145	WGNA-080918-FRB-3145
WGNA-080918-RW-4846	WGNA-080918-FRB-4846
WGNA-080918-RW-4850	WGNA-080918-FRB-4850

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

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

Executive Summary

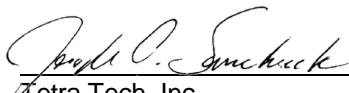
Laboratory Performance: None.

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 detection limit.
J	The result is an estimated quantity. 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.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.
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.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team, but exclusion of the data is recommended.

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: 320-42002-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-080918-FRB-117			NAWC-080918-FRB-269			NAWC-080918-RW-117			NAWC-080918-RW-269		
	LAB_ID	320-42002-10			320-42002-8			320-42002-9			320-42002-7		
	SAMP_DATE	8/9/2018			8/9/2018			8/9/2018			8/9/2018		
	QC_TYPE	FB			FB			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID (PFOA)	7.3	U		7.2	U		29			22			
PERFLUOROBUTANESULFONIC ACID (PFBS)	33	U		32	U		31	U		31	U		
PERFLUOROHEPTANOIC ACID (PFHPA)	3.7	U		3.6	U		6.6	J	P	7.2	J	P	
PERFLUOROHEXANESULFONIC ACID (PFHXS)	11	U		11	U		20	J	P	12	J	P	
PERFLUORONONANOIC ACID (PFNA)	18	U		18	U		17	U		17	U		
PERFLUOROOCTANESULFONIC ACID (PFOS)	15	U		14	U		53			22	J	P	

PROJ_NO: 08005-WE04 SDG: 320-42002-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	WGNA-080918-FRB-0443			WGNA-080918-FRB-0626			WGNA-080918-FRB-0683			WGNA-080918-FRB-3145		
	LAB_ID	320-42002-6			320-42002-16			320-42002-4			320-42002-2		
	SAMP_DATE	8/9/2018			8/9/2018			8/9/2018			8/9/2018		
	QC_TYPE	FB			FB			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID (PFOA)	7	U		7	U		7.1	U		7.1	U		
PERFLUOROBUTANESULFONIC ACID (PFBS)	31	U		32	U		32	U		32	U		
PERFLUOROHEPTANOIC ACID (PFHPA)	3.5	U		3.5	U		3.6	U		3.5	U		
PERFLUOROHEXANESULFONIC ACID (PFHXS)	10	U		11	U		11	U		11	U		
PERFLUORONONANOIC ACID (PFNA)	17	U		18	U		18	U		18	U		
PERFLUOROOCTANESULFONIC ACID (PFOS)	14	U		14	U		14	U		14	U		

PROJ_NO: 08005-WE04 SDG: 320-42002-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	WGNA-080918-FRB-4846			WGNA-080918-FRB-4850			WGNA-080918-RW-0443			WGNA-080918-RW-0626		
	LAB_ID	320-42002-12			320-42002-14			320-42002-5			320-42002-15		
	SAMP_DATE	8/9/2018			8/9/2018			8/9/2018			8/9/2018		
	QC_TYPE	FB			FB			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID (PFOA)	7	U		7.1	U		19			7.2	U		
PERFLUOROBUTANESULFONIC ACID (PFBS)	32	U		32	U		26	J	P	33	U		
PERFLUOROHEPTANOIC ACID (PFHPA)	3.5	U		3.6	U		8.4	J	P	3.6	U		
PERFLUOROHEXANESULFONIC ACID (PFHXS)	11	U		11	U		5.5	J	P	11	U		
PERFLUORONONANOIC ACID (PFNA)	18	U		18	U		17	U		18	U		
PERFLUOROOCTANESULFONIC ACID (PFOS)	14	U		14	U		19	J	P	14	U		

PROJ_NO: 08005-WE04 SDG: 320-42002-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	WGNA-080918-RW-0683			WGNA-080918-RW-3145			WGNA-080918-RW-4846			WGNA-080918-RW-4850		
	LAB_ID	320-42002-3			320-42002-1			320-42002-11			320-42002-13		
	SAMP_DATE	8/9/2018			8/9/2018			8/9/2018			8/9/2018		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID (PFOA)	27			15 J	P		5.4 J	P		21			
PERFLUOROBUTANESULFONIC ACID (PFBS)	31 U			15 J	P		30 U			26 J	P		
PERFLUOROHEPTANOIC ACID (PFHPA)	7.9 J	P		6.3 J	P		1.7 J	P		12			
PERFLUOROHEXANESULFONIC ACID (PFHXS)	10 U			9.9 J	P		10 U			110			
PERFLUORONONANOIC ACID (PFNA)	17 U			18 U			17 U			18 U			
PERFLUOROOCTANESULFONIC ACID (PFOS)	25 J	P		12 J	P		6.6 J	P		170			

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-3145 Lab Sample ID: 320-42002-1
 Matrix: Water Lab File ID: 2018.08.26_537C_010.d
 Analysis Method: 537 Date Collected: 08/09/2018 07:25
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 275.5 (mL) Date Analyzed: 08/26/2018 23:58
 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.: 242153 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	18	7.3	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.9	J	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.3	J	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	15	J	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	110		70-130
STL00996	13C2 PFDA	109		70-130

Wesley L. Salzman
09/04/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-3145 Lab Sample ID: 320-42002-2
 Matrix: Water Lab File ID: 2018.08.26_537C_011.d
 Analysis Method: 537 Date Collected: 08/09/2018 07:20
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 282.9(mL) Date Analyzed: 08/27/2018 00:02
 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.: 242153 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.1	U	18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	108		70-130

Wesley L. Selman
09/04/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-0683 Lab Sample ID: 320-42002-3
 Matrix: Water Lab File ID: 2018.08.26_537C_012.d
 Analysis Method: 537 Date Collected: 08/09/2018 08:10
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 289.6(mL) Date Analyzed: 08/27/2018 00:07
 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.: 242153 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	25	J M	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	27		17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.9	J	8.6	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	113		70-130
STL00996	13C2 PFDA	111		70-130

Heidi L. Selman
09/04/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-0683 Lab Sample ID: 320-42002-4
 Matrix: Water Lab File ID: 2018.08.26_537C_013.d
 Analysis Method: 537 Date Collected: 08/09/2018 08:05
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 281.6(mL) Date Analyzed: 08/27/2018 00:12
 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.: 242153 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	109		70-130
STL00996	13C2 PFDA	110		70-130

Wesley L. Selman
09/04/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-0443 Lab Sample ID: 320-42002-5
 Matrix: Water Lab File ID: 2018.08.26_537C_014.d
 Analysis Method: 537 Date Collected: 08/09/2018 08:40
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 287.3(mL) Date Analyzed: 08/27/2018 00:16
 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.: 242153 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	19	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	19	M	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.5	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.4	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	26	J	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	111		70-130
STL00996	13C2 PFDA	113		70-130

Maria L. Selman
09/04/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-0443 Lab Sample ID: 320-42002-6
 Matrix: Water Lab File ID: 2018.08.26_537C_015.d
 Analysis Method: 537 Date Collected: 08/09/2018 08:35
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 287.7(mL) Date Analyzed: 08/27/2018 00:21
 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.: 242153 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	111		70-130
STL00996	13C2 PFDA	109		70-130

Wesley L. Selman
09/04/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: NAWC-080918-RW-269 Lab Sample ID: 320-42002-7
 Matrix: Water Lab File ID: 2018.08.26_537C_016.d
 Analysis Method: 537 Date Collected: 08/09/2018 09:10
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 287.7(mL) Date Analyzed: 08/27/2018 00:26
 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.: 242153 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	22	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	22		17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.2	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

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

Wesley L. Selman
09/04/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: NAWC-080918-FRB-269 Lab Sample ID: 320-42002-8
 Matrix: Water Lab File ID: 2018.08.26_537C_019.d
 Analysis Method: 537 Date Collected: 08/09/2018 09:05
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 278.5 (mL) Date Analyzed: 08/27/2018 00:40
 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.: 242156 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	110		70-130
STL00996	13C2 PFDA	112		70-130

Wesley L. Salomon
09/04/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: NAWC-080918-RW-117 Lab Sample ID: 320-42002-9
 Matrix: Water Lab File ID: 2018.08.28_537A_006.d
 Analysis Method: 537 Date Collected: 08/09/2018 09:40
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 292.8 (mL) Date Analyzed: 08/28/2018 23:36
 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.: 242684 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	53		34	14	5.8
335-67-1	Perfluorooctanoic acid (PFOA)	29		17	6.8	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	20	17	6.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	20	J	26	10	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.6	J	8.5	3.4	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	77	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	104		70-130

Wesley L. Salaman
09/04/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: NAWC-080918-FRB-117 Lab Sample ID: 320-42002-10
 Matrix: Water Lab File ID: 2018.08.26_537C_021.d
 Analysis Method: 537 Date Collected: 08/09/2018 09:35
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 273.7(mL) Date Analyzed: 08/27/2018 00:49
 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.: 242156 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	U	18	7.3	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.1	3.7	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	110		70-130
STL00996	13C2 PFDA	106		70-130

Atari L. Salaman
09/04/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-4846 Lab Sample ID: 320-42002-11
 Matrix: Water Lab File ID: 2018.08.26_537C_022.d
 Analysis Method: 537 Date Collected: 08/09/2018 10:10
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 296.2 (mL) Date Analyzed: 08/27/2018 00:54
 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.: 242156 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	6.6	J M	34	14	5.7
335-67-1	Perfluorooctanoic acid (PFOA)	5.4	J	17	6.8	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	20	17	6.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U M	25	10	4.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.7	J M	8.4	3.4	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	30	U M	76	30	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	105		70-130
STL00996	13C2 PFDA	109		70-130

W. L. Salaman
09/04/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-4846 Lab Sample ID: 320-42002-12
 Matrix: Water Lab File ID: 2018.08.26_537C_023.d
 Analysis Method: 537 Date Collected: 08/09/2018 10:05
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 283.9(mL) Date Analyzed: 08/27/2018 00:58
 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.: 242156 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	111		70-130
STL00996	13C2 PFDA	108		70-130

Wesley L. Selman
09/04/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-4850 Lab Sample ID: 320-42002-13
 Matrix: Water Lab File ID: 2018.08.26_537C_024.d
 Analysis Method: 537 Date Collected: 08/09/2018 11:10
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 279.7(mL) Date Analyzed: 08/27/2018 01:03
 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.: 242156 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	170		36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	21	M	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	110		27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	12		8.9	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	26	J	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	111		70-130
STL00996	13C2 PFDA	113		70-130

Steve L. Salomon
09/04/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-4850 Lab Sample ID: 320-42002-14
 Matrix: Water Lab File ID: 2018.08.26_537C_025.d
 Analysis Method: 537 Date Collected: 08/09/2018 11:05
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 281.6(mL) Date Analyzed: 08/27/2018 01:08
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 242156 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	105		70-130
STL00996	13C2 PFDA	107		70-130

Maria L. Selman
09/04/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-0626 Lab Sample ID: 320-42002-15
 Matrix: Water Lab File ID: 2018.08.26_537C_026.d
 Analysis Method: 537 Date Collected: 08/09/2018 12:10
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 276.1(mL) Date Analyzed: 08/27/2018 01:13
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 242156 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	81	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	108		70-130
STL00996	13C2 PFDA	111		70-130

Steve J. Salomon
09/04/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-0626 Lab Sample ID: 320-42002-16
 Matrix: Water Lab File ID: 2018.08.26_537C_027.d
 Analysis Method: 537 Date Collected: 08/09/2018 12:05
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 284.4 (mL) Date Analyzed: 08/27/2018 01:17
 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.: 242156 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	108		70-130
STL00996	13C2 PFDA	104		70-130

Wesley L. Salomon
09/04/2018

Appendix B

Results as Reported by the Laboratory

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-3145 Lab Sample ID: 320-42002-1
 Matrix: Water Lab File ID: 2018.08.26_537C_010.d
 Analysis Method: 537 Date Collected: 08/09/2018 07:25
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 275.5 (mL) Date Analyzed: 08/26/2018 23:58
 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.: 242153 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	18	7.3	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.9	J	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.3	J	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	15	J	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	110		70-130
STL00996	13C2 PFDA	109		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-3145 Lab Sample ID: 320-42002-2
 Matrix: Water Lab File ID: 2018.08.26_537C_011.d
 Analysis Method: 537 Date Collected: 08/09/2018 07:20
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 282.9(mL) Date Analyzed: 08/27/2018 00:02
 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.: 242153 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.1	U	18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	108		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-0683 Lab Sample ID: 320-42002-3
 Matrix: Water Lab File ID: 2018.08.26_537C_012.d
 Analysis Method: 537 Date Collected: 08/09/2018 08:10
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 289.6(mL) Date Analyzed: 08/27/2018 00:07
 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.: 242153 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	25	J M	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	27		17	6.9	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	6.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.9	J	8.6	3.5	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	113		70-130
STL00996	13C2 PFDA	111		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-0683 Lab Sample ID: 320-42002-4
 Matrix: Water Lab File ID: 2018.08.26_537C_013.d
 Analysis Method: 537 Date Collected: 08/09/2018 08:05
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 281.6(mL) Date Analyzed: 08/27/2018 00:12
 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.: 242153 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	109		70-130
STL00996	13C2 PFDA	110		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-0443 Lab Sample ID: 320-42002-5
 Matrix: Water Lab File ID: 2018.08.26_537C_014.d
 Analysis Method: 537 Date Collected: 08/09/2018 08:40
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 287.3(mL) Date Analyzed: 08/27/2018 00:16
 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.: 242153 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	19	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	19	M	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.5	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.4	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	26	J	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	111		70-130
STL00996	13C2 PFDA	113		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-0443 Lab Sample ID: 320-42002-6
 Matrix: Water Lab File ID: 2018.08.26_537C_015.d
 Analysis Method: 537 Date Collected: 08/09/2018 08:35
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 287.7(mL) Date Analyzed: 08/27/2018 00:21
 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.: 242153 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	111		70-130
STL00996	13C2 PFDA	109		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: NAWC-080918-RW-269 Lab Sample ID: 320-42002-7
 Matrix: Water Lab File ID: 2018.08.26_537C_016.d
 Analysis Method: 537 Date Collected: 08/09/2018 09:10
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 287.7(mL) Date Analyzed: 08/27/2018 00:26
 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.: 242153 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	22	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	22		17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.2	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: NAWC-080918-FRB-269 Lab Sample ID: 320-42002-8
 Matrix: Water Lab File ID: 2018.08.26_537C_019.d
 Analysis Method: 537 Date Collected: 08/09/2018 09:05
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 278.5 (mL) Date Analyzed: 08/27/2018 00:40
 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.: 242156 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	110		70-130
STL00996	13C2 PFDA	112		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: NAWC-080918-RW-117 Lab Sample ID: 320-42002-9
 Matrix: Water Lab File ID: 2018.08.28_537A_006.d
 Analysis Method: 537 Date Collected: 08/09/2018 09:40
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 292.8 (mL) Date Analyzed: 08/28/2018 23:36
 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.: 242684 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	53		34	14	5.8
335-67-1	Perfluorooctanoic acid (PFOA)	29		17	6.8	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	20	17	6.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	20	J	26	10	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.6	J	8.5	3.4	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	77	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	104		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: NAWC-080918-FRB-117 Lab Sample ID: 320-42002-10
 Matrix: Water Lab File ID: 2018.08.26_537C_021.d
 Analysis Method: 537 Date Collected: 08/09/2018 09:35
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 273.7(mL) Date Analyzed: 08/27/2018 00:49
 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.: 242156 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	U	18	7.3	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.1	3.7	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	110		70-130
STL00996	13C2 PFDA	106		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-4846 Lab Sample ID: 320-42002-11
 Matrix: Water Lab File ID: 2018.08.26_537C_022.d
 Analysis Method: 537 Date Collected: 08/09/2018 10:10
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 296.2 (mL) Date Analyzed: 08/27/2018 00:54
 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.: 242156 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	6.6	J M	34	14	5.7
335-67-1	Perfluorooctanoic acid (PFOA)	5.4	J	17	6.8	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	20	17	6.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U M	25	10	4.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.7	J M	8.4	3.4	1.6
375-73-5	Perfluorobutanesulfonic acid (PFBS)	30	U M	76	30	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	105		70-130
STL00996	13C2 PFDA	109		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-4846 Lab Sample ID: 320-42002-12
 Matrix: Water Lab File ID: 2018.08.26_537C_023.d
 Analysis Method: 537 Date Collected: 08/09/2018 10:05
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 283.9(mL) Date Analyzed: 08/27/2018 00:58
 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.: 242156 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	111		70-130
STL00996	13C2 PFDA	108		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-4850 Lab Sample ID: 320-42002-13
 Matrix: Water Lab File ID: 2018.08.26_537C_024.d
 Analysis Method: 537 Date Collected: 08/09/2018 11:10
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 279.7(mL) Date Analyzed: 08/27/2018 01:03
 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.: 242156 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	170		36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	21	M	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	110		27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	12		8.9	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	26	J	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	111		70-130
STL00996	13C2 PFDA	113		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-4850 Lab Sample ID: 320-42002-14
 Matrix: Water Lab File ID: 2018.08.26_537C_025.d
 Analysis Method: 537 Date Collected: 08/09/2018 11:05
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 281.6(mL) Date Analyzed: 08/27/2018 01:08
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 242156 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	105		70-130
STL00996	13C2 PFDA	107		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-RW-0626 Lab Sample ID: 320-42002-15
 Matrix: Water Lab File ID: 2018.08.26_537C_026.d
 Analysis Method: 537 Date Collected: 08/09/2018 12:10
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 276.1(mL) Date Analyzed: 08/27/2018 01:13
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 242156 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	81	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	108		70-130
STL00996	13C2 PFDA	111		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: WGNA-080918-FRB-0626 Lab Sample ID: 320-42002-16
 Matrix: Water Lab File ID: 2018.08.26_537C_027.d
 Analysis Method: 537 Date Collected: 08/09/2018 12:05
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 284.4 (mL) Date Analyzed: 08/27/2018 01:17
 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.: 242156 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	108		70-130
STL00996	13C2 PFDA	104		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 Laboratories, Inc.

Regulatory Program: DW NPDES RCRA Other:

Client Contact		Project Manager: Andy Frebowitz		Site Contact: Mary Kay Bond		Date: 8/9/2018		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 <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below 21 <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day								Sampler: Mary Kay Bond	
King of Prussia, PA 19406										For Lab Use Only:	
610-382-1174		Walk-in Client:		 320-42002 Chain of Custody		Lab Sampling:					
610-491-9688		Job / SDG No.:									
Project Name: WE04											
Site: WE04											
P O # 1132358 (through EarthToxics)											
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 UCMR3	Sample Specific Notes:	
WGNA-080918-RW-3145	8/9/2018	07:25	G	DW	2	N	N	Y			
WGNA-080918-FRB-3145	8/9/2018	07:20	G	DW	2	N	N	Y		Field Reagent Blank	
WGNA-080918-RW-0683	8/9/2018	08:10	G	DW	2	N	N	Y			
WGNA-080918-FRB-0683	8/9/2018	08:05	G	DW	2	N	N	Y		Field Reagent Blank	
WGNA-080918-RW-0443	8/9/2018	08:40	G	DW	2	N	N	Y			
WGNA-080918-FRB-0443	8/9/2018	08:35	G	DW	2	N	N	Y		Field Reagent Blank	
NAWC-080918-RW-269	8/9/2018	09:10	G	DW	2	N	N	Y			
NAWC-080918-FRB-269	8/9/2018	09:05	G	DW	2	N	N	Y		Field Reagent Blank	
NAWC-080918-RW-117	8/9/2018	09:40	G	DW	2	N	N	Y			
NAWC-080918-FRB-117	8/9/2018	09:35	G	DW	2	N	N	Y		Field Reagent Blank	
WGNA-080918-RW-4846	8/9/2018	10:10	G	DW	2	N	N	Y			
WGNA-080918-FRB-4846	8/9/2018	10:05	G	DW	2	N	N	Y		Field Reagent Blank	
WGNA-080918-RW-4850	8/9/2018	11:10	G	DW	2	N	N	Y			
WGNA-080918-FRB-4850	8/9/2018	11:05	G	DW	2	N	N	Y		Field Reagent Blank	
WGNA-080918-RW-0626	8/9/2018	12:10	G	DW	2	N	N	Y			
WGNA-080918-FRB-0626	8/9/2018	12:05	G	DW	2	N	N	Y		Field Reagent Blank	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma							6				
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.							Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown							<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months				
Fed Ex Tracking: 7729 3838 6478											
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: 2.6		Corr'd: 2.6		Therm ID No.: AK-2			
Relinquished by: <i>Mary Kay Bond</i>		Company: Tetra Tech		Date/Time: 8/9/2018 16:00		Received by: <i>[Signature]</i>		Company: <i>[Signature]</i>		Date/Time: 8-10-18 950	
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:		Date/Time:	

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Job Narrative
320-42002-1

Receipt

The samples were received on 8/10/2018 9:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.6° C.

LCMS

Method(s) 537: 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) WGNA-080918-RW-3145 (320-42002-1), WGNA-080918-FRB-3145 (320-42002-2), WGNA-080918-RW-0683 (320-42002-3), WGNA-080918-FRB-0683 (320-42002-4), WGNA-080918-RW-0443 (320-42002-5), WGNA-080918-FRB-0443 (320-42002-6), NAWC-080918-RW-269 (320-42002-7), NAWC-080918-FRB-269 (320-42002-8), NAWC-080918-RW-117 (320-42002-9), NAWC-080918-FRB-117 (320-42002-10), WGNA-080918-RW-4846 (320-42002-11), WGNA-080918-FRB-4846 (320-42002-12), WGNA-080918-RW-4850 (320-42002-13), WGNA-080918-FRB-4850 (320-42002-14), WGNA-080918-RW-0626 (320-42002-15) and WGNA-080918-FRB-0626 (320-42002-16) in preparation batch 320-241537

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

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: WE04

TestAmerica Job ID: 320-42002-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-42002-1	WGNA-080918-RW-3145	Water	08/09/18 07:25	08/10/18 09:50
320-42002-2	WGNA-080918-FRB-3145	Water	08/09/18 07:20	08/10/18 09:50
320-42002-3	WGNA-080918-RW-0683	Water	08/09/18 08:10	08/10/18 09:50
320-42002-4	WGNA-080918-FRB-0683	Water	08/09/18 08:05	08/10/18 09:50
320-42002-5	WGNA-080918-RW-0443	Water	08/09/18 08:40	08/10/18 09:50
320-42002-6	WGNA-080918-FRB-0443	Water	08/09/18 08:35	08/10/18 09:50
320-42002-7	NAWC-080918-RW-269	Water	08/09/18 09:10	08/10/18 09:50
320-42002-8	NAWC-080918-FRB-269	Water	08/09/18 09:05	08/10/18 09:50
320-42002-9	NAWC-080918-RW-117	Water	08/09/18 09:40	08/10/18 09:50
320-42002-10	NAWC-080918-FRB-117	Water	08/09/18 09:35	08/10/18 09:50
320-42002-11	WGNA-080918-RW-4846	Water	08/09/18 10:10	08/10/18 09:50
320-42002-12	WGNA-080918-FRB-4846	Water	08/09/18 10:05	08/10/18 09:50
320-42002-13	WGNA-080918-RW-4850	Water	08/09/18 11:10	08/10/18 09:50
320-42002-14	WGNA-080918-FRB-4850	Water	08/09/18 11:05	08/10/18 09:50
320-42002-15	WGNA-080918-RW-0626	Water	08/09/18 12:10	08/10/18 09:50
320-42002-16	WGNA-080918-FRB-0626	Water	08/09/18 12:05	08/10/18 09:50

Method Summary

Client: Tetra Tech, Inc.
Project/Site: WE04

TestAmerica Job ID: 320-42002-1

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

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-42002-1

SDG No.: _____

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-080918-RW-314 5	320-42002-1	110	109
WGNA-080918-FRB-31 45	320-42002-2	104	108
WGNA-080918-RW-068 3	320-42002-3	113	111
WGNA-080918-FRB-06 83	320-42002-4	109	110
WGNA-080918-RW-044 3	320-42002-5	111	113
WGNA-080918-FRB-04 43	320-42002-6	111	109
NAWC-080918-RW-269	320-42002-7	109	109
NAWC-080918-FRB-26 9	320-42002-8	110	112
NAWC-080918-RW-117	320-42002-9	100	104
NAWC-080918-FRB-11 7	320-42002-10	110	106
WGNA-080918-RW-484 6	320-42002-11	105	109
WGNA-080918-FRB-48 46	320-42002-12	111	108
WGNA-080918-RW-485 0	320-42002-13	111	113
WGNA-080918-FRB-48 50	320-42002-14	105	107
WGNA-080918-RW-062 6	320-42002-15	108	111
WGNA-080918-FRB-06 26	320-42002-16	108	104
	MB 320-241537/1-A	104	110
	LLCS 320-241537/2-A	113	114
	LLCSD 320-241537/3-A	110	109

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.: 320-42002-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2018.08.26_537C_008.d

Lab ID: LLCS 320-241537/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LLCS CONCENTRATION (ng/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	40.2	43.0	107	50-150	
Perfluorooctanoic acid (PFOA)	20.0	20.4	102	50-150	
Perfluorononanoic acid (PFNA)	20.0	18.9 J	94	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.3	33.1	109	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	10.2	102	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.2	105	117	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.: 320-42002-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2018.08.26_537C_009.d

Lab ID: LLCSD 320-241537/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LLCSD CONCENTRATION (ng/L)	LLCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	40.2	45.1	112	5	50	50-150	
Perfluorooctanoic acid (PFOA)	20.0	20.6	103	1	50	50-150	
Perfluorononanoic acid (PFNA)	20.0	19.4 J	97	3	50	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.3	34.9	115	5	50	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	11.3	113	10	50	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.2	115	127	8	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.: 320-42002-1
 SDG No.: _____
 Lab File ID: 2018.08.26_537C_007.d Lab Sample ID: MB 320-241537/1-A
 Matrix: Water Date Extracted: 08/23/2018 07:20
 Instrument ID: A8_N Date Analyzed: 08/26/2018 23:44
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-241537/2-A	2018.08.26_537C 008.d	08/26/2018 23:48
	LLCSD 320-241537/3-A	2018.08.26_537C 009.d	08/26/2018 23:53
WGNA-080918-RW-3145	320-42002-1	2018.08.26_537C 010.d	08/26/2018 23:58
WGNA-080918-FRB-3145	320-42002-2	2018.08.26_537C 011.d	08/27/2018 00:02
WGNA-080918-RW-0683	320-42002-3	2018.08.26_537C 012.d	08/27/2018 00:07
WGNA-080918-FRB-0683	320-42002-4	2018.08.26_537C 013.d	08/27/2018 00:12
WGNA-080918-RW-0443	320-42002-5	2018.08.26_537C 014.d	08/27/2018 00:16
WGNA-080918-FRB-0443	320-42002-6	2018.08.26_537C 015.d	08/27/2018 00:21
NAWC-080918-RW-269	320-42002-7	2018.08.26_537C 016.d	08/27/2018 00:26
NAWC-080918-FRB-269	320-42002-8	2018.08.26_537C 019.d	08/27/2018 00:40
NAWC-080918-FRB-117	320-42002-10	2018.08.26_537C 021.d	08/27/2018 00:49
WGNA-080918-RW-4846	320-42002-11	2018.08.26_537C 022.d	08/27/2018 00:54
WGNA-080918-FRB-4846	320-42002-12	2018.08.26_537C 023.d	08/27/2018 00:58
WGNA-080918-RW-4850	320-42002-13	2018.08.26_537C 024.d	08/27/2018 01:03
WGNA-080918-FRB-4850	320-42002-14	2018.08.26_537C 025.d	08/27/2018 01:08
WGNA-080918-RW-0626	320-42002-15	2018.08.26_537C 026.d	08/27/2018 01:13
WGNA-080918-FRB-0626	320-42002-16	2018.08.26_537C 027.d	08/27/2018 01:17
NAWC-080918-RW-117	320-42002-9	2018.08.28_537A 006.d	08/28/2018 23:36

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-241537/1-A
 Matrix: Water Lab File ID: 2018.08.26_537C_007.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 08/23/2018 07:20
 Sample wt/vol: 250 (mL) Date Analyzed: 08/26/2018 23:44
 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.: 242153 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	104		70-130
STL00996	13C2 PFDA	110		70-130

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/15/2018 18:44
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	999840	1.85	2469394	2.11		
UPPER LIMIT	1499760	2.35	3704091	2.61		
LOWER LIMIT	499920	1.35	1234697	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCVL 320-240166/9	1006603	1.84	2388436	2.10		
ICV 320-240166/11	1022273	1.84	2551643	2.10		
CCVL 320-242153/1	956576	1.81	2465858	2.07		
CCV 320-242153/2 CCVIS	846614	1.82	2153988	2.07		
MB 320-241537/1-A	1043498	1.82	2632697	2.07		
LLCS 320-241537/2-A	1063967	1.81	2653479	2.07		
LLCSD 320-241537/3-A	1061847	1.81	2615789	2.06		
320-42002-1	WGNA-080918-RW-3145	1092761	1.81	2677043	2.07	
320-42002-2	WGNA-080918-FRB-3145	1067225	1.81	2581052	2.06	
320-42002-3	WGNA-080918-RW-0683	1074775	1.81	2703674	2.07	
320-42002-4	WGNA-080918-FRB-0683	1108168	1.81	2718911	2.06	
320-42002-5	WGNA-080918-RW-0443	1082033	1.81	2595616	2.07	
320-42002-6	WGNA-080918-FRB-0443	983360	1.81	2416892	2.07	
320-42002-7	NAWC-080918-RW-269	1138388	1.81	2719447	2.07	
CCV 320-242153/14 CCVIS	802241	1.81	2163583	2.07		
CCV 320-242156/14 CCVIS	802241	1.81	2163583	2.07		
320-42002-8	NAWC-080918-FRB-269	1099847	1.81	2831201	2.07	
320-42002-10	NAWC-080918-FRB-117	1089017	1.81	2708943	2.06	
320-42002-11	WGNA-080918-RW-4846	892460	1.82	2179421	2.07	
320-42002-12	WGNA-080918-FRB-4846	1067437	1.81	2663669	2.06	
320-42002-13	WGNA-080918-RW-4850	977186	1.81	2453714	2.06	
320-42002-14	WGNA-080918-FRB-4850	1069465	1.81	2582799	2.07	
320-42002-15	WGNA-080918-RW-0626	1087470	1.82	2740798	2.07	
320-42002-16	WGNA-080918-FRB-0626	984460	1.81	2397883	2.07	
CCV 320-242156/26 CCVIS	836144	1.81	2142935	2.06		
CCVL 320-242684/1	1111468	1.84	2737262	2.09		
CCV 320-242684/2 CCVIS	904879	1.84	2320915	2.10		
320-42002-9	NAWC-080918-RW-117	1186370	1.83	2873335	2.09	

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/15/2018 18:44
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	999840	1.85	2469394	2.11		
UPPER LIMIT	1499760	2.35	3704091	2.61		
LOWER LIMIT	499920	1.35	1234697	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCV 320-242684/8 CCVIS		930267	1.83	2345437	2.09	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Sample No.: CCV 320-242153/2 Date Analyzed: 08/26/2018 23:34
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.26_537C_005 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	846614	1.82	2153988	2.07		
UPPER LIMIT	1185260	2.32	3015583	2.57		
LOWER LIMIT	592630	1.32	1507792	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-241537/1-A		1043498	1.82	2632697	2.07	
LLCS 320-241537/2-A		1063967	1.81	2653479	2.07	
LLCSD 320-241537/3-A		1061847	1.81	2615789	2.06	
320-42002-1	WGNA-080918-RW-3145	1092761	1.81	2677043	2.07	
320-42002-2	WGNA-080918-FRB-3145	1067225	1.81	2581052	2.06	
320-42002-3	WGNA-080918-RW-0683	1074775	1.81	2703674	2.07	
320-42002-4	WGNA-080918-FRB-0683	1108168	1.81	2718911	2.06	
320-42002-5	WGNA-080918-RW-0443	1082033	1.81	2595616	2.07	
320-42002-6	WGNA-080918-FRB-0443	983360	1.81	2416892	2.07	
320-42002-7	NAWC-080918-RW-269	1138388	1.81	2719447	2.07	

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.: 320-42002-1
 SDG No.: _____
 Sample No.: CCV 320-242153/14 Date Analyzed: 08/27/2018 00:30
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.26_537C_017 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	802241	1.81	2163583	2.07		
UPPER LIMIT	1123137	2.31	3029016	2.57		
LOWER LIMIT	561569	1.31	1514508	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-241537/1-A		1043498	1.82	2632697	2.07	
LLCS 320-241537/2-A		1063967	1.81	2653479	2.07	
LLCSD 320-241537/3-A		1061847	1.81	2615789	2.06	
320-42002-1	WGNA-080918-RW-3145	1092761	1.81	2677043	2.07	
320-42002-2	WGNA-080918-FRB-3145	1067225	1.81	2581052	2.06	
320-42002-3	WGNA-080918-RW-0683	1074775	1.81	2703674	2.07	
320-42002-4	WGNA-080918-FRB-0683	1108168	1.81	2718911	2.06	
320-42002-5	WGNA-080918-RW-0443	1082033	1.81	2595616	2.07	
320-42002-6	WGNA-080918-FRB-0443	983360	1.81	2416892	2.07	
320-42002-7	NAWC-080918-RW-269	1138388	1.81	2719447	2.07	

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.: 320-42002-1
 SDG No.: _____
 Sample No.: CCV 320-242156/14 Date Analyzed: 08/27/2018 00:30
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.26_537C_017 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	802241	1.81	2163583	2.07		
UPPER LIMIT	1123137	2.31	3029016	2.57		
LOWER LIMIT	561569	1.31	1514508	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-42002-8	NAWC-080918-FRB-269	1099847	1.81	2831201	2.07	
320-42002-10	NAWC-080918-FRB-117	1089017	1.81	2708943	2.06	
320-42002-11	WGNA-080918-RW-4846	892460	1.82	2179421	2.07	
320-42002-12	WGNA-080918-FRB-4846	1067437	1.81	2663669	2.06	
320-42002-13	WGNA-080918-RW-4850	977186	1.81	2453714	2.06	
320-42002-14	WGNA-080918-FRB-4850	1069465	1.81	2582799	2.07	
320-42002-15	WGNA-080918-RW-0626	1087470	1.82	2740798	2.07	
320-42002-16	WGNA-080918-FRB-0626	984460	1.81	2397883	2.07	

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.: 320-42002-1
 SDG No.: _____
 Sample No.: CCV 320-242156/26 Date Analyzed: 08/27/2018 01:27
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.26_537C_029 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	836144	1.81	2142935	2.06		
UPPER LIMIT	1170602	2.31	3000109	2.56		
LOWER LIMIT	585301	1.31	1500055	1.56		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-42002-8	NAWC-080918-FRB-269	1099847	1.81	2831201	2.07	
320-42002-10	NAWC-080918-FRB-117	1089017	1.81	2708943	2.06	
320-42002-11	WGNA-080918-RW-4846	892460	1.82	2179421	2.07	
320-42002-12	WGNA-080918-FRB-4846	1067437	1.81	2663669	2.06	
320-42002-13	WGNA-080918-RW-4850	977186	1.81	2453714	2.06	
320-42002-14	WGNA-080918-FRB-4850	1069465	1.81	2582799	2.07	
320-42002-15	WGNA-080918-RW-0626	1087470	1.82	2740798	2.07	
320-42002-16	WGNA-080918-FRB-0626	984460	1.81	2397883	2.07	

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.: 320-42002-1
 SDG No.: _____
 Sample No.: CCV 320-242684/2 Date Analyzed: 08/28/2018 23:27
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.28_537A_004 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	904879	1.84	2320915	2.10		
UPPER LIMIT	1266831	2.34	3249281	2.60		
LOWER LIMIT	633415	1.34	1624641	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-42002-9	NAWC-080918-RW-117		1186370	1.83	2873335	2.09

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.: 320-42002-1
 SDG No.: _____
 Sample No.: CCV 320-242684/8 Date Analyzed: 08/28/2018 23:55
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.28_537A_010 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	930267	1.83	2345437	2.09		
UPPER LIMIT	1302374	2.33	3283612	2.59		
LOWER LIMIT	651187	1.33	1641806	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-42002-9	NAWC-080918-RW-117		1186370	1.83	2873335	2.09

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.: 320-42002-1 Analy Batch No.: 240166

SDG No.: _____

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

Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	1.2479 0.9705	1.1886	1.2616	1.1091	1.0906	Ave		1.1447			9.6		30.0				
Perfluoroheptanoic acid (PFHpA)	1.0855 1.0407	1.0364	1.0489	1.0876	1.0460	Ave		1.0575			2.2		30.0				
Perfluorohexanesulfonic acid (PFHxS)	1.6492 1.6115	1.6167	1.6890	1.6380	1.7330	Ave		1.6562			2.8		30.0				
Perfluorooctanoic acid (PFOA)	1.0954 1.0842	1.0529	1.0915	1.1075	1.1058	Ave		1.0895			1.8		30.0				
Perfluorooctanesulfonic acid (PFOS)	1.0830 1.0982	1.0386	1.0683	1.0853	1.1084	Ave		1.0803			2.3		30.0				
Perfluorononanoic acid (PFNA)	0.8630 0.8350	0.7990	0.7881	0.8431	0.8177	Ave		0.8243			3.4		30.0				
13C2 PFHxA	1.0723 1.0545	1.0111	1.0024	1.0515	1.0447	Ave		1.0394			2.6		30.0				
13C2 PFDA	0.7972 0.7976	0.7443	0.7670	0.8351	0.8115	Ave		0.7921			4.1		30.0				

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1 Analy Batch No.: 240166

SDG No.: _____

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

Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.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	998954 15136483	2070355	4549188	9386038	11785636	9.00 180	20.0	45.0	90.1	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	106948 1986691	233189	488515	1105731	1440874	0.960 19.4	2.16	4.86	9.72	14.6
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	440547 8441814	945775	2045536	4655795	6289862	3.00 60.5	6.72	15.1	30.2	45.4
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	222587 4216218	482587	1035552	2293687	3102767	1.98 39.6	4.40	9.90	19.8	29.7
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	380845 7518443	794113	1690983	4031609	5257770	3.95 79.1	8.79	19.8	39.5	59.3
Perfluorononanoic acid (PFNA)	13PF OA	Ave	175370 3246932	366204	747749	1746006	2294540	1.98 39.6	4.40	9.90	19.8	29.7
13C2 PFHxA	13PF OA	Ave	1100508 1035478	1053216	960623	1099800	987004	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	818198 783206	775306	735076	873467	766710	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.: 320-42002-1 Analy Batch No.: 240166

SDG No.: _____

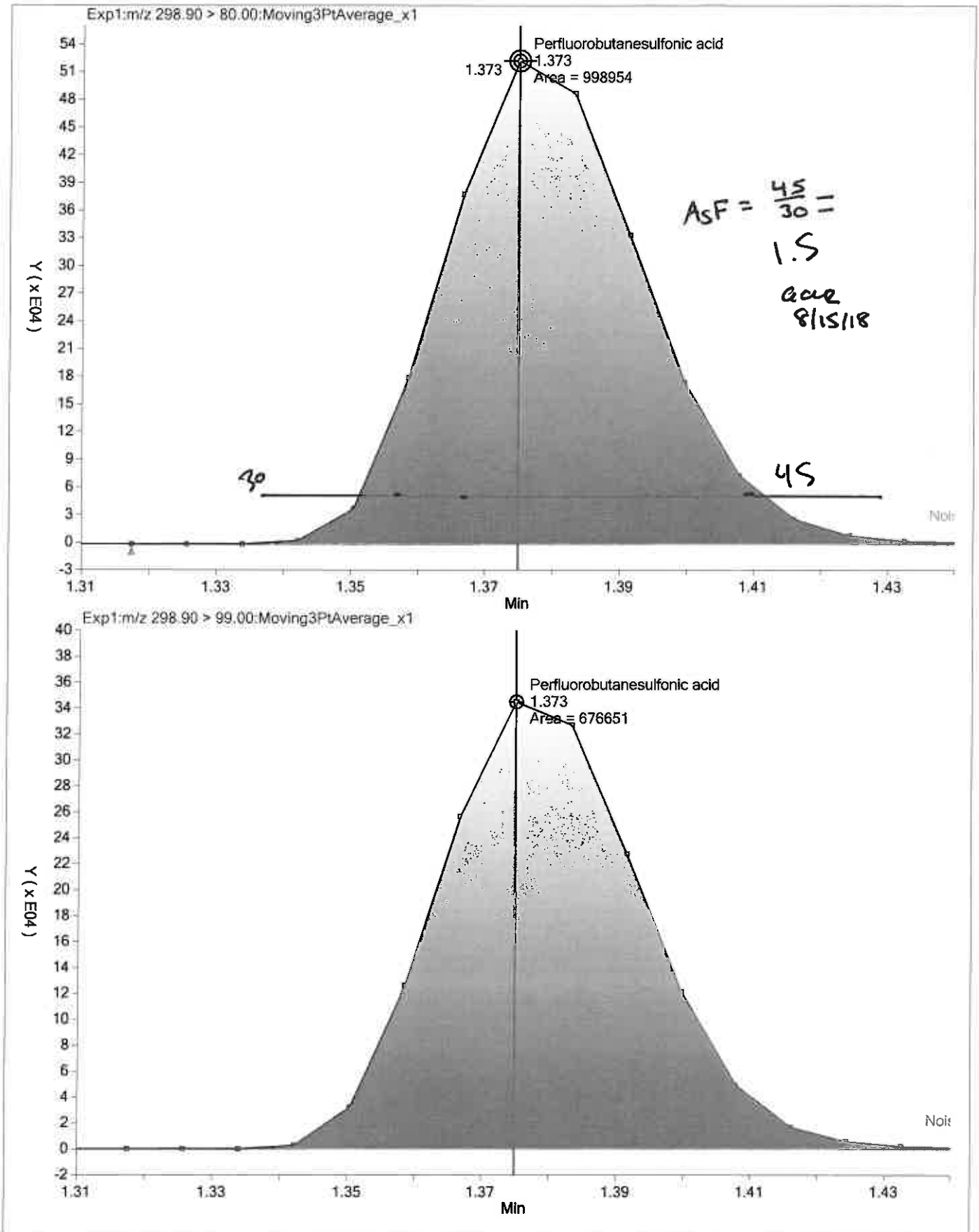
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

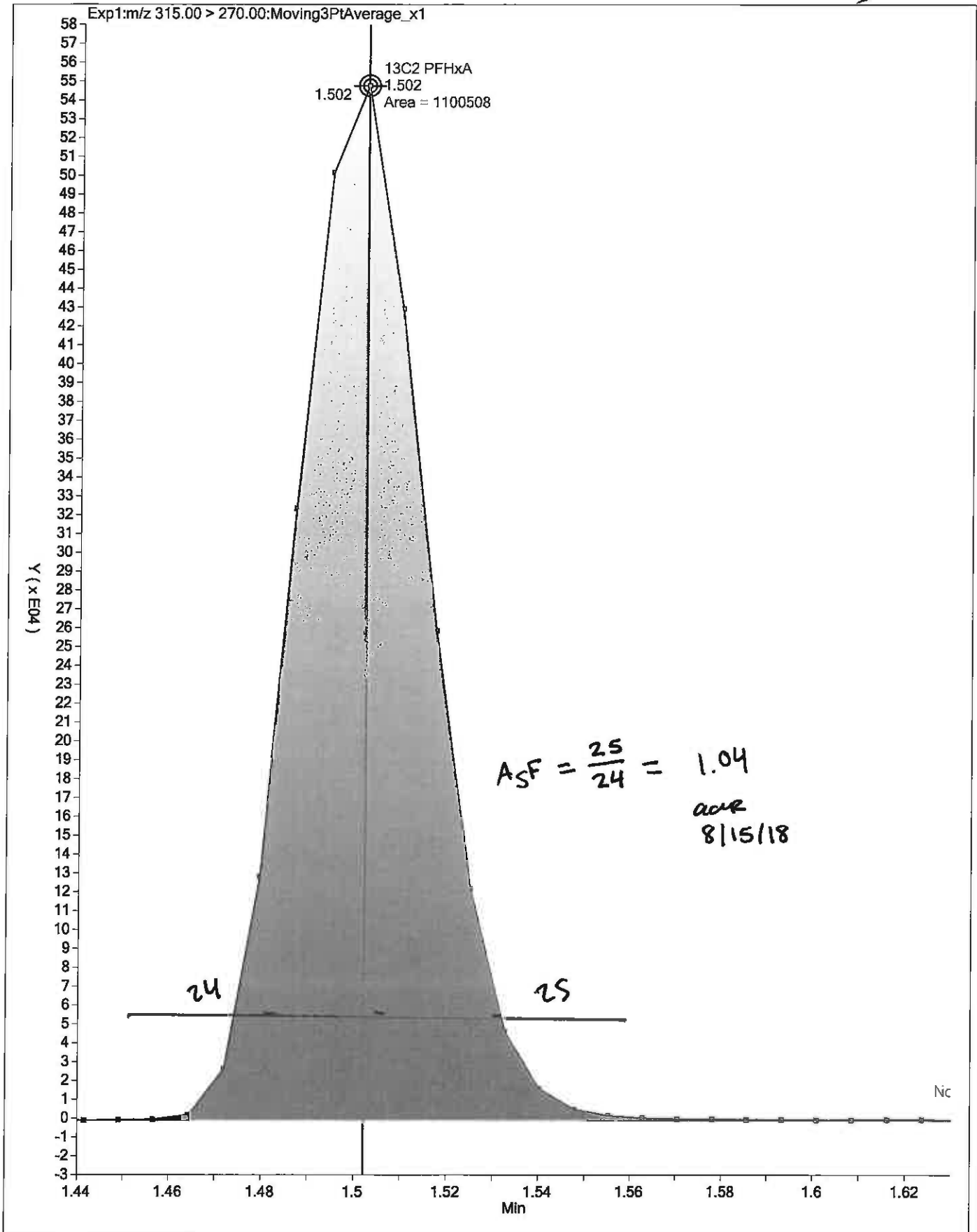
Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.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)	9.0	3.8	10.2	-3.1	-4.7	-15.2	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	2.6	-2.0	-0.8	2.8	-1.1	-1.6	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-0.4	-2.4	2.0	-1.1	4.6	-2.7	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	0.5	-3.4	0.2	1.7	1.5	-0.5	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	0.2	-3.9	-1.1	0.5	2.6	1.7	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	4.7	-3.1	-4.4	2.3	-0.8	1.3	50	30	30	30	30	30
13C2 PFHxA	3.2	-2.7	-3.6	1.2	0.5	1.4	30	30	30	30	30	30
13C2 PFDA	0.6	-6.0	-3.2	5.4	2.4	0.7	30	30	30	30	30	30





FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-240166/9 Calibration Date: 08/15/2018 18:53
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.15_537CURVE_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.167		20.4	20.0	2.0	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.033		2.11	2.16	-2.4	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.611		6.54	6.72	-2.7	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.020		4.12	4.40	-6.4	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.039		8.45	8.79	-3.8	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8023		4.28	4.40	-2.7	50.0
13C2 PFHxA	Ave	1.039	1.002		9.64	10.0	-3.6	30.0
13C2 PFDA	Ave	0.7921	0.7658		9.67	10.0	-3.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: ICV 320-240166/11 Calibration Date: 08/15/2018 19:03
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.15_537CURVE_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.005		87.9	100	-12.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	0.9536		9.02	10.0	-9.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.530		18.6	20.2	-7.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	0.8802		16.3	20.2	-19.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	0.9603		17.9	20.2	-11.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7757		19.0	20.2	-5.9	30.0
13C2 PFHxA	Ave	1.039	1.022		9.83	10.0	-1.7	30.0
13C2 PFDA	Ave	0.7921	0.7952		10.0	10.0	0.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-242153/1 Calibration Date: 08/26/2018 23:30
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.26_537C_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.183		20.7	20.0	3.3	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.122		2.29	2.16	6.1	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.646		6.68	6.72	-0.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.033		4.17	4.40	-5.2	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.027		8.35	8.79	-4.9	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8082		4.31	4.40	-2.0	50.0
13C2 PFHxA	Ave	1.039	1.105		10.6	10.0	6.3	30.0
13C2 PFDA	Ave	0.7921	0.8820		11.1	10.0	11.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCV 320-242153/2 Calibration Date: 08/26/2018 23:34
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.26_537C_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.281		50.4	45.0	11.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.133		5.21	4.86	7.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.680		15.3	15.1	1.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.082		9.83	9.90	-0.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.071		19.6	19.8	-0.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7975		9.58	9.90	-3.3	30.0
13C2 PFHxA	Ave	1.039	1.091		10.5	10.0	5.0	30.0
13C2 PFDA	Ave	0.7921	0.8612		10.9	10.0	8.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCV 320-242153/14 Calibration Date: 08/27/2018 00:30
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.26_537C_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.115		132	135	-2.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.095		15.1	14.6	3.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.694		46.4	45.4	2.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.061		28.9	29.7	-2.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.073		58.9	59.3	-0.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8365		30.1	29.7	1.5	30.0
13C2 PFHxA	Ave	1.039	1.148		11.0	10.0	10.4	30.0
13C2 PFDA	Ave	0.7921	0.9021		11.4	10.0	13.9	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCV 320-242156/14 Calibration Date: 08/27/2018 00:30
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.26_537C_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.115		132	135	-2.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.095		15.1	14.6	3.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.694		46.4	45.4	2.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.061		28.9	29.7	-2.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.073		58.9	59.3	-0.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8365		30.1	29.7	1.5	30.0
13C2 PFHxA	Ave	1.039	1.148		11.0	10.0	10.4	30.0
13C2 PFDA	Ave	0.7921	0.9021		11.4	10.0	13.9	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCV 320-242156/26 Calibration Date: 08/27/2018 01:27
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.26_537C_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.272		50.0	45.0	11.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.092		5.02	4.86	3.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.725		15.7	15.1	4.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.069		9.71	9.90	-1.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.069		19.6	19.8	-1.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7980		9.58	9.90	-3.2	30.0
13C2 PFHxA	Ave	1.039	1.147		11.0	10.0	10.4	30.0
13C2 PFDA	Ave	0.7921	0.8814		11.1	10.0	11.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-242684/1 Calibration Date: 08/28/2018 23:22
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.28_537A_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.171		20.5	20.0	2.3	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.017		2.08	2.16	-3.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.581		6.42	6.72	-4.5	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.003		4.05	4.40	-8.0	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.021		8.30	8.79	-5.5	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7737		4.13	4.40	-6.1	50.0
13C2 PFHxA	Ave	1.039	1.087		10.5	10.0	4.6	30.0
13C2 PFDA	Ave	0.7921	0.8736		11.0	10.0	10.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCV 320-242684/2 Calibration Date: 08/28/2018 23:27
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.28_537A_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.228		48.3	45.0	7.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.121		5.15	4.86	6.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.698		15.5	15.1	2.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.067		9.69	9.90	-2.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.052		19.2	19.8	-2.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8358		10.0	9.90	1.4	30.0
13C2 PFHxA	Ave	1.039	1.107		10.6	10.0	6.5	30.0
13C2 PFDA	Ave	0.7921	0.8761		11.1	10.0	10.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1
 SDG No.: _____
 Lab Sample ID: CCV 320-242684/8 Calibration Date: 08/28/2018 23:55
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.28_537A_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.208		47.5	45.0	5.5	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.056		4.85	4.86	-0.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.716		15.7	15.1	3.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.043		9.48	9.90	-4.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.071		19.6	19.8	-0.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7953		9.55	9.90	-3.5	30.0
13C2 PFHxA	Ave	1.039	1.070		10.3	10.0	2.9	30.0
13C2 PFDA	Ave	0.7921	0.8661		10.9	10.0	9.3	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/15/2018 18:21

Analysis Batch Number: 240166 End Date: 08/15/2018 19:03

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-240166/2		08/15/2018 18:21	1	2018.08.15_537C URVE 003.d	GeminiC18 3x100 3(mm)
IC 320-240166/3		08/15/2018 18:25	1	2018.08.15_537C URVE 004.d	GeminiC18 3x100 3(mm)
IC 320-240166/4		08/15/2018 18:30	1	2018.08.15_537C URVE 005.d	GeminiC18 3x100 3(mm)
IC 320-240166/5 ICISAV		08/15/2018 18:35	1	2018.08.15_537C URVE 006.d	GeminiC18 3x100 3(mm)
IC 320-240166/6		08/15/2018 18:39	1	2018.08.15_537C URVE 007.d	GeminiC18 3x100 3(mm)
IC 320-240166/7		08/15/2018 18:44	1	2018.08.15_537C URVE 008.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/15/2018 18:49	1		GeminiC18 3x100 3(mm)
CCVL 320-240166/9		08/15/2018 18:53	1	2018.08.15_537C URVE 010.d	GeminiC18 3x100 3(mm)
ICB 320-240166/10		08/15/2018 18:58	1		GeminiC18 3x100 3(mm)
ICV 320-240166/11		08/15/2018 19:03	1	2018.08.15_537C URVE 012.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/26/2018 23:30

Analysis Batch Number: 242153 End Date: 08/27/2018 00:30

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-242153/1		08/26/2018 23:30	1	2018.08.26_537C 004.d	GeminiC18 3x100 3(mm)
CCV 320-242153/2 CCVIS		08/26/2018 23:34	1	2018.08.26_537C 005.d	GeminiC18 3x100 3(mm)
MB 320-241537/1-A		08/26/2018 23:44	1	2018.08.26_537C 007.d	GeminiC18 3x100 3(mm)
LLCS 320-241537/2-A		08/26/2018 23:48	1	2018.08.26_537C 008.d	GeminiC18 3x100 3(mm)
LLCSD 320-241537/3-A		08/26/2018 23:53	1	2018.08.26_537C 009.d	GeminiC18 3x100 3(mm)
320-42002-1		08/26/2018 23:58	1	2018.08.26_537C 010.d	GeminiC18 3x100 3(mm)
320-42002-2		08/27/2018 00:02	1	2018.08.26_537C 011.d	GeminiC18 3x100 3(mm)
320-42002-3		08/27/2018 00:07	1	2018.08.26_537C 012.d	GeminiC18 3x100 3(mm)
320-42002-4		08/27/2018 00:12	1	2018.08.26_537C 013.d	GeminiC18 3x100 3(mm)
320-42002-5		08/27/2018 00:16	1	2018.08.26_537C 014.d	GeminiC18 3x100 3(mm)
320-42002-6		08/27/2018 00:21	1	2018.08.26_537C 015.d	GeminiC18 3x100 3(mm)
320-42002-7		08/27/2018 00:26	1	2018.08.26_537C 016.d	GeminiC18 3x100 3(mm)
CCV 320-242153/14 CCVIS		08/27/2018 00:30	1	2018.08.26_537C 017.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/27/2018 00:30

Analysis Batch Number: 242156 End Date: 08/27/2018 01:27

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-242156/14 CCVIS		08/27/2018 00:30	1	2018.08.26_537C 017.d	GeminiC18 3x100 3(mm)
320-42002-8		08/27/2018 00:40	1	2018.08.26_537C 019.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:44	1		GeminiC18 3x100 3(mm)
320-42002-10		08/27/2018 00:49	1	2018.08.26_537C 021.d	GeminiC18 3x100 3(mm)
320-42002-11		08/27/2018 00:54	1	2018.08.26_537C 022.d	GeminiC18 3x100 3(mm)
320-42002-12		08/27/2018 00:58	1	2018.08.26_537C 023.d	GeminiC18 3x100 3(mm)
320-42002-13		08/27/2018 01:03	1	2018.08.26_537C 024.d	GeminiC18 3x100 3(mm)
320-42002-14		08/27/2018 01:08	1	2018.08.26_537C 025.d	GeminiC18 3x100 3(mm)
320-42002-15		08/27/2018 01:13	1	2018.08.26_537C 026.d	GeminiC18 3x100 3(mm)
320-42002-16		08/27/2018 01:17	1	2018.08.26_537C 027.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 01:22	1		GeminiC18 3x100 3(mm)
CCV 320-242156/26 CCVIS		08/27/2018 01:27	1	2018.08.26_537C 029.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/28/2018 23:22

Analysis Batch Number: 242684 End Date: 08/28/2018 23:55

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-242684/1		08/28/2018 23:22	1	2018.08.28_537A 003.d	GeminiC18 3x100 3(mm)
CCV 320-242684/2 CCVIS		08/28/2018 23:27	1	2018.08.28_537A 004.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:31	1		GeminiC18 3x100 3(mm)
320-42002-9		08/28/2018 23:36	1	2018.08.28_537A 006.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:41	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:45	2		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:50	1		GeminiC18 3x100 3(mm)
CCV 320-242684/8 CCVIS		08/28/2018 23:55	1	2018.08.28_537A 010.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42002-1

SDG No.: _____

Batch Number: 241537 Batch Start Date: 08/23/18 07:20 Batch Analyst: Arauz, Horacio J

Batch Method: 537 Batch End Date: 08/24/18 15:50

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00080
MB 320-241537/1		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
LLCS 320-241537/2		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
LLCSD 320-241537/3		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
320-42002-B-1	WGNA-080918-RW-3 145	537, 537	T	304.57 g	29.05 g	275.5 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-2	WGNA-080918-FRB- 3145	537, 537	T	310.269 g	27.41 g	282.9 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-3	WGNA-080918-RW-0 683	537, 537	T	318.93 g	29.37 g	289.6 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-4	WGNA-080918-FRB- 0683	537, 537	T	308.86 g	27.27 g	281.6 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-5	WGNA-080918-RW-0 443	537, 537	T	315.93 g	28.62 g	287.3 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-6	WGNA-080918-FRB- 0443	537, 537	T	315.47 g	27.78 g	287.7 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-7	NAWC-080918-RW-2 69	537, 537	T	316.86 g	29.14 g	287.7 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-8	NAWC-080918-FRB- 269	537, 537	T	306.95 g	28.46 g	278.5 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-9	NAWC-080918-RW-1 17	537, 537	T	323.08 g	30.30 g	292.8 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-10	NAWC-080918-FRB- 117	537, 537	T	301.97 g	28.27 g	273.7 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-11	WGNA-080918-RW-4 846	537, 537	T	324.79 g	28.61 g	296.2 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-12	WGNA-080918-FRB- 4846	537, 537	T	311.73 g	27.86 g	283.9 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-13	WGNA-080918-RW-4 850	537, 537	T	307.88 g	28.16 g	279.7 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-14	WGNA-080918-FRB- 4850	537, 537	T	309.66 g	28.09 g	281.6 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-15	WGNA-080918-RW-0 626	537, 537	T	304.01 g	27.96 g	276.1 mL	1.00 mL	7.0 SU	100 uL
320-42002-A-16	WGNA-080918-FRB- 0626	537, 537	T	311.97 g	27.53 g	284.4 mL	1.00 mL	7.0 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00077	AnalysisComment			
MB 320-241537/1		537, 537			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.: 320-42002-1

SDG No.: _____

Batch Number: 241537 Batch Start Date: 08/23/18 07:20 Batch Analyst: Arauz, Horacio J

Batch Method: 537 Batch End Date: 08/24/18 15:50

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00077	AnalysisComment			
LLCS 320-241537/2		537, 537		100 uL	100 uL	Chlorine ND			
LLCSD 320-241537/3		537, 537		100 uL	100 uL	Chlorine ND			
320-42002-B-1	WGNA-080918-RW-3 145	537, 537	T		100 uL	Chlorine ND			
320-42002-A-2	WGNA-080918-FRB- 3145	537, 537	T		100 uL	Chlorine ND			
320-42002-A-3	WGNA-080918-RW-0 683	537, 537	T		100 uL	Chlorine ND			
320-42002-A-4	WGNA-080918-FRB- 0683	537, 537	T		100 uL	Chlorine ND			
320-42002-A-5	WGNA-080918-RW-0 443	537, 537	T		100 uL	Chlorine ND			
320-42002-A-6	WGNA-080918-FRB- 0443	537, 537	T		100 uL	Chlorine ND			
320-42002-A-7	NAWC-080918-RW-2 69	537, 537	T		100 uL	Chlorine ND			
320-42002-A-8	NAWC-080918-FRB- 269	537, 537	T		100 uL	Chlorine ND			
320-42002-A-9	NAWC-080918-RW-1 17	537, 537	T		100 uL	Chlorine ND			
320-42002-A-10	NAWC-080918-FRB- 117	537, 537	T		100 uL	Chlorine ND			
320-42002-A-11	WGNA-080918-RW-4 846	537, 537	T		100 uL	Chlorine ND			
320-42002-A-12	WGNA-080918-FRB- 4846	537, 537	T		100 uL	Chlorine ND			
320-42002-A-13	WGNA-080918-RW-4 850	537, 537	T		100 uL	Chlorine ND			
320-42002-A-14	WGNA-080918-FRB- 4850	537, 537	T		100 uL	Chlorine ND			
320-42002-A-15	WGNA-080918-RW-0 626	537, 537	T		100 uL	Chlorine ND			
320-42002-A-16	WGNA-080918-FRB- 0626	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.: 320-42002-1

SDG No.: _____

Batch Number: 241537 Batch Start Date: 08/23/18 07:20 Batch Analyst: Arauz, Horacio J

Batch Method: 537 Batch End Date: 08/24/18 15:50

Batch Notes	
Analyst ID - Aliquot Step	SKD
Batch Comment	Client labels match TA label, HJA 08/22/18
Analyst ID - Concentration	SKD
Analyst ID - Final Volume Step	SKD
Internal Standard ID#	1334015
Manifold ID	1, 3
Methanol ID	1335812
pH Indicator ID	0818
Pipette ID	R40536G
Analyst ID - IS Reagent Drop	SKD
Analyst ID - IS Reagent Drop Witness	VPM
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	SKD
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	SKD
SPE Cartridge Lot ID	6390138-06
Trizma ID	SLBR5241V
Reagent Water ID	08/21/18

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.

PFAS Calibration Calculations:

Initial Calibration
Instrument A8_N

8/15/2018

PFOS

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF
3.95	380845	2551191	28.7	1.08465	1.083
8.79	794113	2496049	28.7	1.03878	1.0386
19.8	1690983	2296598	28.7	1.06726	1.0683
39.5	4031609	2694948	28.7	1.08696	1.0853
59.3	5257770	2294155	28.7	1.10919	1.1084
79.1	7518443	2483425	28.7	1.09846	1.0982
Average				1.08088	1.0803
Standard Deviation				0.0250	
RSD				0.0231	
%RSD				2.31095	2.3

Continuing Calibration

08/27/2018 @ 01:27

PFOS

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
19.8	1578219	2142935	28.7	1.0675	-1.183242	1.069	-1.1

Sample Identification
Compound

WGNA-080918-RW-4850
PFOS

Compound Area	4503842	Average RRF	1.08
Internal Standard Amount (ng)	28.7	Sample Volume(ml)	279.7
Dilution Factor	1	Volume Extract (ml)	1
Internal Standard Area	2453714	Injection Volume (µl)	1

Concentration 174.3913 ng/L
Reported Result 170 ng/L

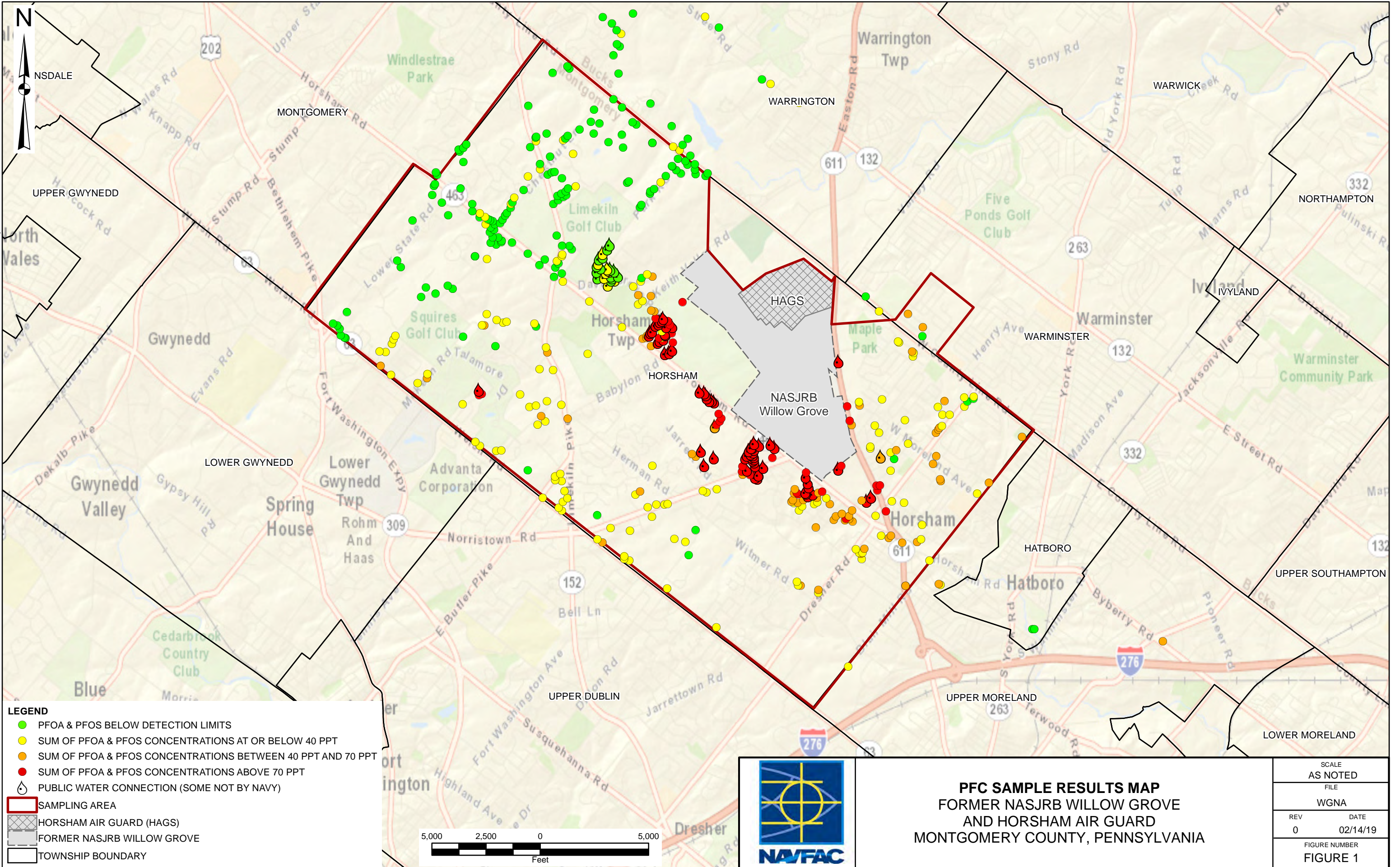
Surrogate PFHxA

Compound Area	1130989		
Internal Standard Amount (ng)	10		
Dilution Factor	1	Volume Extract (ml)	1
Internal Standard Area	977186	Injection Volume (µl)	1
Average RRF	1.0394		
Concentration	11.1352		
Surrogate %R	111.35	Spike amount	10

LCS %R

320-241537/2-A
PFOS Spike amount 40.2
LCS concentration 43
106.97

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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
- HORSHAM AIR GUARD (HAGS)
- FORMER NASJRB WILLOW GROVE
- TOWNSHIP BOUNDARY



PFC SAMPLE RESULTS MAP
FORMER NASJRB WILLOW GROVE
AND HORSHAM AIR GUARD
MONTGOMERY COUNTY, PENNSYLVANIA

SCALE AS NOTED	
FILE WGNA	
REV 0	DATE 02/14/19
FIGURE NUMBER	
FIGURE 1	