



**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 320-38538-1**

*Naval Air Warfare Center Warminster
Warminster, Pennsylvania*

August 2019

N62269_001174
WARMINSTER_NAWC
SSIC 5000-33c

**LABORATORY DATA PACKAGE, 320-38538-1, NAS WILLOW GROVE NAWC
WARMINSTER PA**

05/08/2018
TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-38538-1

Job Description: Warminster: PFAS, NAS JRB Willow Grove

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
5/8/2018 10:23 AM

David R Alltucker, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4383
david.alltucker@testamericainc.com
05/08/2018

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Definitions/Glossary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-38538-1

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

Qualifiers

LCMS

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

Glossary

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

Job Narrative
320-38538-1

Receipt

The samples were received on 4/26/2018 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.3° 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) associated with preparation batch 320-220576.

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

Detection Summary

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

TestAmerica Job ID: 320-38538-1

Client Sample ID: WGNA-042518-RW-3785

Lab Sample ID: 320-38538-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	13	J M	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	17	J	20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	17	J	30	5.5	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.4	J	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: WGNA-042518-FRB-3785

Lab Sample ID: 320-38538-2

No Detections.

Client Sample ID: WGNA-042518-RW-3325

Lab Sample ID: 320-38538-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	7.4	J M	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	7.4	J M	20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.2	J	30	5.5	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.1	J M	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: WGNA-042518-FRB-3325

Lab Sample ID: 320-38538-4

No Detections.

Client Sample ID: WGNA-042518-RW-500

Lab Sample ID: 320-38538-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	22	J M	40	6.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	22		20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.3	J	30	5.5	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.7	J M	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: WGNA-042518-FRB-500

Lab Sample ID: 320-38538-6

No Detections.

Client Sample ID: WGNA-042518-RW-3529

Lab Sample ID: 320-38538-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	14	J M	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	16	J	20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.7	J	30	5.5	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.2	J	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: WGNA-042518-FRB-3529

Lab Sample ID: 320-38538-8

No Detections.

Client Sample ID: WGNA-042518-RW-3957

Lab Sample ID: 320-38538-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	12	J M	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	13	J	20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.2	J	30	5.5	ng/L	1		537	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

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

TestAmerica Job ID: 320-38538-1

Client Sample ID: WGNA-042518-RW-3957 (Continued)

Lab Sample ID: 320-38538-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	4.6	J M	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: WGNA-042518-FRB-3957

Lab Sample ID: 320-38538-10

No Detections.

Client Sample ID: WGNA-042518-RW-0683

Lab Sample ID: 320-38538-11

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	24	J M	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	24		20	2.8	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	7.0	J	9.9	1.9	ng/L	1		537	Total/NA

Client Sample ID: WGNA-042518-FRB-0683

Lab Sample ID: 320-38538-12

No Detections.

Client Sample ID: NAWC-042518-RW-272

Lab Sample ID: 320-38538-13

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	15	J M	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	11	J M	20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.7	J	30	5.5	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.6	J M	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-042518-FRB-272

Lab Sample ID: 320-38538-14

No Detections.

Client Sample ID: WGNA-042518-DUP-34

Lab Sample ID: 320-38538-15

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	15	J M	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	11	J	20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.8	J	30	5.5	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.3	J M	9.9	1.9	ng/L	1		537	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-38538-1

Client Sample ID: WGNA-042518-RW-3785

Date Collected: 04/25/18 08:10

Date Received: 04/26/18 09:30

Lab Sample ID: 320-38538-1

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	13	J M	40	6.8	ng/L	—	04/30/18 08:44	05/05/18 06:18	1
Perfluorooctanoic acid (PFOA)	17	J	20	2.8	ng/L	—	04/30/18 08:44	05/05/18 06:18	1
Perfluorononanoic acid (PFNA)	20	U M	24	8.1	ng/L	—	04/30/18 08:44	05/05/18 06:18	1
Perfluorohexanesulfonic acid (PFHxS)	17	J	30	5.5	ng/L	—	04/30/18 08:44	05/05/18 06:18	1
Perfluoroheptanoic acid (PFHpA)	6.4	J	10	1.9	ng/L	—	04/30/18 08:44	05/05/18 06:18	1
Perfluorobutanesulfonic acid (PFBS)	36	U	91	16	ng/L	—	04/30/18 08:44	05/05/18 06:18	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		70 - 130				04/30/18 08:44	05/05/18 06:18	1
13C2 PFDA	84		70 - 130				04/30/18 08:44	05/05/18 06:18	1

Client Sample ID: WGNA-042518-FRB-3785

Date Collected: 04/25/18 08:05

Date Received: 04/26/18 09:30

Lab Sample ID: 320-38538-2

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L	—	04/30/18 08:44	05/05/18 06:23	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L	—	04/30/18 08:44	05/05/18 06:23	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L	—	04/30/18 08:44	05/05/18 06:23	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L	—	04/30/18 08:44	05/05/18 06:23	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L	—	04/30/18 08:44	05/05/18 06:23	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L	—	04/30/18 08:44	05/05/18 06:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	109		70 - 130				04/30/18 08:44	05/05/18 06:23	1
13C2 PFDA	94		70 - 130				04/30/18 08:44	05/05/18 06:23	1

Client Sample ID: WGNA-042518-RW-3325

Date Collected: 04/25/18 08:40

Date Received: 04/26/18 09:30

Lab Sample ID: 320-38538-3

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	7.4	J M	40	6.8	ng/L	—	04/30/18 08:44	05/05/18 06:27	1
Perfluorooctanoic acid (PFOA)	7.4	J M	20	2.8	ng/L	—	04/30/18 08:44	05/05/18 06:27	1
Perfluorononanoic acid (PFNA)	20	U M	24	8.0	ng/L	—	04/30/18 08:44	05/05/18 06:27	1
Perfluorohexanesulfonic acid (PFHxS)	8.2	J	30	5.5	ng/L	—	04/30/18 08:44	05/05/18 06:27	1
Perfluoroheptanoic acid (PFHpA)	2.1	J M	10	1.9	ng/L	—	04/30/18 08:44	05/05/18 06:27	1
Perfluorobutanesulfonic acid (PFBS)	36	U M	90	16	ng/L	—	04/30/18 08:44	05/05/18 06:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		70 - 130				04/30/18 08:44	05/05/18 06:27	1
13C2 PFDA	83		70 - 130				04/30/18 08:44	05/05/18 06:27	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-38538-1

Client Sample ID: WGNA-042518-FRB-3325

Lab Sample ID: 320-38538-4

Date Collected: 04/25/18 08:35

Matrix: Water

Date Received: 04/26/18 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		04/30/18 08:44	05/05/18 06:32	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		04/30/18 08:44	05/05/18 06:32	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		04/30/18 08:44	05/05/18 06:32	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		04/30/18 08:44	05/05/18 06:32	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		04/30/18 08:44	05/05/18 06:32	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		04/30/18 08:44	05/05/18 06:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		70 - 130	04/30/18 08:44	05/05/18 06:32	1
13C2 PFDA	95		70 - 130	04/30/18 08:44	05/05/18 06:32	1

Client Sample ID: WGNA-042518-RW-500

Lab Sample ID: 320-38538-5

Date Collected: 04/25/18 09:10

Matrix: Water

Date Received: 04/26/18 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	22	J M	40	6.9	ng/L		04/30/18 08:44	05/05/18 06:37	1
Perfluorooctanoic acid (PFOA)	22		20	2.8	ng/L		04/30/18 08:44	05/05/18 06:37	1
Perfluorononanoic acid (PFNA)	20	U M	24	8.1	ng/L		04/30/18 08:44	05/05/18 06:37	1
Perfluorohexanesulfonic acid (PFHxS)	8.3	J	30	5.5	ng/L		04/30/18 08:44	05/05/18 06:37	1
Perfluoroheptanoic acid (PFHpA)	6.7	J M	10	1.9	ng/L		04/30/18 08:44	05/05/18 06:37	1
Perfluorobutanesulfonic acid (PFBS)	36	U	91	16	ng/L		04/30/18 08:44	05/05/18 06:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		70 - 130	04/30/18 08:44	05/05/18 06:37	1
13C2 PFDA	92		70 - 130	04/30/18 08:44	05/05/18 06:37	1

Client Sample ID: WGNA-042518-FRB-500

Lab Sample ID: 320-38538-6

Date Collected: 04/25/18 09:05

Matrix: Water

Date Received: 04/26/18 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		04/30/18 08:44	05/05/18 06:41	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		04/30/18 08:44	05/05/18 06:41	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		04/30/18 08:44	05/05/18 06:41	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		04/30/18 08:44	05/05/18 06:41	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		04/30/18 08:44	05/05/18 06:41	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		04/30/18 08:44	05/05/18 06:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	112		70 - 130	04/30/18 08:44	05/05/18 06:41	1
13C2 PFDA	97		70 - 130	04/30/18 08:44	05/05/18 06:41	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-38538-1

Client Sample ID: WGNA-042518-RW-3529

Lab Sample ID: 320-38538-7

Date Collected: 04/25/18 09:40

Matrix: Water

Date Received: 04/26/18 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	J M	40	6.8	ng/L		04/30/18 08:44	05/05/18 06:46	1
Perfluorooctanoic acid (PFOA)	16	J	20	2.8	ng/L		04/30/18 08:44	05/05/18 06:46	1
Perfluorononanoic acid (PFNA)	20	U M	24	8.0	ng/L		04/30/18 08:44	05/05/18 06:46	1
Perfluorohexanesulfonic acid (PFHxS)	5.7	J	30	5.5	ng/L		04/30/18 08:44	05/05/18 06:46	1
Perfluoroheptanoic acid (PFHpA)	6.2	J	10	1.9	ng/L		04/30/18 08:44	05/05/18 06:46	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		04/30/18 08:44	05/05/18 06:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		70 - 130				04/30/18 08:44	05/05/18 06:46	1
13C2 PFDA	94		70 - 130				04/30/18 08:44	05/05/18 06:46	1

Client Sample ID: WGNA-042518-FRB-3529

Lab Sample ID: 320-38538-8

Date Collected: 04/25/18 09:35

Matrix: Water

Date Received: 04/26/18 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	39	6.7	ng/L		04/30/18 08:44	05/05/18 07:00	1
Perfluorooctanoic acid (PFOA)	7.9	U	20	2.8	ng/L		04/30/18 08:44	05/05/18 07:00	1
Perfluorononanoic acid (PFNA)	20	U	24	7.9	ng/L		04/30/18 08:44	05/05/18 07:00	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.4	ng/L		04/30/18 08:44	05/05/18 07:00	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	1.9	ng/L		04/30/18 08:44	05/05/18 07:00	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		04/30/18 08:44	05/05/18 07:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		70 - 130				04/30/18 08:44	05/05/18 07:00	1
13C2 PFDA	95		70 - 130				04/30/18 08:44	05/05/18 07:00	1

Client Sample ID: WGNA-042518-RW-3957

Lab Sample ID: 320-38538-9

Date Collected: 04/25/18 10:10

Matrix: Water

Date Received: 04/26/18 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	12	J M	40	6.8	ng/L		04/30/18 08:44	05/05/18 07:05	1
Perfluorooctanoic acid (PFOA)	13	J	20	2.8	ng/L		04/30/18 08:44	05/05/18 07:05	1
Perfluorononanoic acid (PFNA)	20	U M	24	8.0	ng/L		04/30/18 08:44	05/05/18 07:05	1
Perfluorohexanesulfonic acid (PFHxS)	8.2	J	30	5.5	ng/L		04/30/18 08:44	05/05/18 07:05	1
Perfluoroheptanoic acid (PFHpA)	4.6	J M	10	1.9	ng/L		04/30/18 08:44	05/05/18 07:05	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		04/30/18 08:44	05/05/18 07:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	105		70 - 130				04/30/18 08:44	05/05/18 07:05	1
13C2 PFDA	92		70 - 130				04/30/18 08:44	05/05/18 07:05	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-38538-1

Client Sample ID: WGNA-042518-FRB-3957

Lab Sample ID: 320-38538-10

Date Collected: 04/25/18 10:05

Matrix: Water

Date Received: 04/26/18 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.7	ng/L		04/30/18 08:44	05/05/18 07:10	1
Perfluorooctanoic acid (PFOA)	7.9	U	20	2.8	ng/L		04/30/18 08:44	05/05/18 07:10	1
Perfluorononanoic acid (PFNA)	20	U	24	7.9	ng/L		04/30/18 08:44	05/05/18 07:10	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.4	ng/L		04/30/18 08:44	05/05/18 07:10	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	9.9	1.9	ng/L		04/30/18 08:44	05/05/18 07:10	1
Perfluorobutanesulfonic acid (PFBS)	36	U	89	16	ng/L		04/30/18 08:44	05/05/18 07:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	102		70 - 130	04/30/18 08:44	05/05/18 07:10	1
13C2 PFDA	91		70 - 130	04/30/18 08:44	05/05/18 07:10	1

Client Sample ID: WGNA-042518-RW-0683

Lab Sample ID: 320-38538-11

Date Collected: 04/25/18 11:40

Matrix: Water

Date Received: 04/26/18 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	24	J M	40	6.8	ng/L		04/30/18 08:44	05/05/18 07:14	1
Perfluorooctanoic acid (PFOA)	24		20	2.8	ng/L		04/30/18 08:44	05/05/18 07:14	1
Perfluorononanoic acid (PFNA)	20	U M	24	8.0	ng/L		04/30/18 08:44	05/05/18 07:14	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		04/30/18 08:44	05/05/18 07:14	1
Perfluoroheptanoic acid (PFHpA)	7.0	J	9.9	1.9	ng/L		04/30/18 08:44	05/05/18 07:14	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		04/30/18 08:44	05/05/18 07:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	104		70 - 130	04/30/18 08:44	05/05/18 07:14	1
13C2 PFDA	97		70 - 130	04/30/18 08:44	05/05/18 07:14	1

Client Sample ID: WGNA-042518-FRB-0683

Lab Sample ID: 320-38538-12

Date Collected: 04/25/18 11:35

Matrix: Water

Date Received: 04/26/18 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	17	U	41	7.0	ng/L		04/30/18 08:44	05/05/18 07:19	1
Perfluorooctanoic acid (PFOA)	8.3	U	21	2.9	ng/L		04/30/18 08:44	05/05/18 07:19	1
Perfluorononanoic acid (PFNA)	21	U	25	8.3	ng/L		04/30/18 08:44	05/05/18 07:19	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	31	5.7	ng/L		04/30/18 08:44	05/05/18 07:19	1
Perfluoroheptanoic acid (PFHpA)	4.1	U	10	2.0	ng/L		04/30/18 08:44	05/05/18 07:19	1
Perfluorobutanesulfonic acid (PFBS)	37	U	93	17	ng/L		04/30/18 08:44	05/05/18 07:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	113		70 - 130	04/30/18 08:44	05/05/18 07:19	1
13C2 PFDA	102		70 - 130	04/30/18 08:44	05/05/18 07:19	1

Client Sample Results

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

TestAmerica Job ID: 320-38538-1

Client Sample ID: NAWC-042518-RW-272

Lab Sample ID: 320-38538-13

Date Collected: 04/25/18 12:10

Matrix: Water

Date Received: 04/26/18 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	J M	40	6.8	ng/L		04/30/18 08:44	05/05/18 07:24	1
Perfluorooctanoic acid (PFOA)	11	J M	20	2.8	ng/L		04/30/18 08:44	05/05/18 07:24	1
Perfluorononanoic acid (PFNA)	20	U M	24	8.0	ng/L		04/30/18 08:44	05/05/18 07:24	1
Perfluorohexanesulfonic acid (PFHxS)	5.7	J	30	5.5	ng/L		04/30/18 08:44	05/05/18 07:24	1
Perfluoroheptanoic acid (PFHpA)	3.6	J M	10	1.9	ng/L		04/30/18 08:44	05/05/18 07:24	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		04/30/18 08:44	05/05/18 07:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	102		70 - 130				04/30/18 08:44	05/05/18 07:24	1
13C2 PFDA	90		70 - 130				04/30/18 08:44	05/05/18 07:24	1

Client Sample ID: NAWC-042518-FRB-272

Lab Sample ID: 320-38538-14

Date Collected: 04/25/18 12:05

Matrix: Water

Date Received: 04/26/18 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	41	7.0	ng/L		04/30/18 08:44	05/05/18 07:28	1
Perfluorooctanoic acid (PFOA)	8.2	U	20	2.9	ng/L		04/30/18 08:44	05/05/18 07:28	1
Perfluorononanoic acid (PFNA)	20	U	25	8.2	ng/L		04/30/18 08:44	05/05/18 07:28	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	31	5.6	ng/L		04/30/18 08:44	05/05/18 07:28	1
Perfluoroheptanoic acid (PFHpA)	4.1	U	10	1.9	ng/L		04/30/18 08:44	05/05/18 07:28	1
Perfluorobutanesulfonic acid (PFBS)	37	U	92	16	ng/L		04/30/18 08:44	05/05/18 07:28	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	110		70 - 130				04/30/18 08:44	05/05/18 07:28	1
13C2 PFDA	101		70 - 130				04/30/18 08:44	05/05/18 07:28	1

Client Sample ID: WGNA-042518-DUP-34

Lab Sample ID: 320-38538-15

Date Collected: 04/25/18 07:00

Matrix: Water

Date Received: 04/26/18 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	J M	40	6.8	ng/L		04/30/18 08:44	05/05/18 07:33	1
Perfluorooctanoic acid (PFOA)	11	J	20	2.8	ng/L		04/30/18 08:44	05/05/18 07:33	1
Perfluorononanoic acid (PFNA)	20	U M	24	7.9	ng/L		04/30/18 08:44	05/05/18 07:33	1
Perfluorohexanesulfonic acid (PFHxS)	5.8	J	30	5.5	ng/L		04/30/18 08:44	05/05/18 07:33	1
Perfluoroheptanoic acid (PFHpA)	3.3	J M	9.9	1.9	ng/L		04/30/18 08:44	05/05/18 07:33	1
Perfluorobutanesulfonic acid (PFBS)	36	U M	89	16	ng/L		04/30/18 08:44	05/05/18 07:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	106		70 - 130				04/30/18 08:44	05/05/18 07:33	1
13C2 PFDA	100		70 - 130				04/30/18 08:44	05/05/18 07:33	1

TestAmerica Sacramento

Default Detection Limits

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-38538-1

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

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

Prep: 537

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

Surrogate Summary

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

TestAmerica Job ID: 320-38538-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	PFHxA (70-130)	PFDA (70-130)
320-38538-1	WGNA-042518-RW-3785	100	84
320-38538-2	WGNA-042518-FRB-3785	109	94
320-38538-3	WGNA-042518-RW-3325	97	83
320-38538-4	WGNA-042518-FRB-3325	97	95
320-38538-5	WGNA-042518-RW-500	101	92
320-38538-6	WGNA-042518-FRB-500	112	97
320-38538-7	WGNA-042518-RW-3529	96	94
320-38538-8	WGNA-042518-FRB-3529	100	95
320-38538-9	WGNA-042518-RW-3957	105	92
320-38538-10	WGNA-042518-FRB-3957	102	91
320-38538-11	WGNA-042518-RW-0683	104	97
320-38538-12	WGNA-042518-FRB-0683	113	102
320-38538-13	NAWC-042518-RW-272	102	90
320-38538-14	NAWC-042518-FRB-272	110	101
320-38538-15	WGNA-042518-DUP-34	106	100
LLCS 320-220576/2-A	Lab Control Sample	102	87
LLCSD 320-220576/3-A	Lab Control Sample Dup	106	91
MB 320-220576/1-A	Method Blank	104	96

Surrogate Legend

PFHxA = 13C2 PFHxA

PFDA = 13C2 PFDA

QC Sample Results

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

TestAmerica Job ID: 320-38538-1

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

Lab Sample ID: MB 320-220576/1-A

Matrix: Water

Analysis Batch: 221679

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 220576

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		04/30/18 08:44	05/05/18 06:04	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		04/30/18 08:44	05/05/18 06:04	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		04/30/18 08:44	05/05/18 06:04	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		04/30/18 08:44	05/05/18 06:04	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		04/30/18 08:44	05/05/18 06:04	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		04/30/18 08:44	05/05/18 06:04	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	104		70 - 130	04/30/18 08:44	05/05/18 06:04	1
13C2 PFDA	96		70 - 130	04/30/18 08:44	05/05/18 06:04	1

Lab Sample ID: LLCS 320-220576/2-A

Matrix: Water

Analysis Batch: 221679

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 220576

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	40.2	40.4	M	ng/L		100	50 - 150
Perfluorooctanoic acid (PFOA)	20.0	19.1	J	ng/L		96	50 - 150
Perfluorononanoic acid (PFNA)	20.0	17.8	J	ng/L		89	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	30.3	32.8		ng/L		108	50 - 150
Perfluoroheptanoic acid (PFHpA)	10.0	9.81	J	ng/L		98	50 - 150
Perfluorobutanesulfonic acid (PFBS)	90.2	97.0		ng/L		108	50 - 150

Surrogate	LLCS %Recovery	LLCS Qualifier	Limits
13C2 PFHxA	102		70 - 130
13C2 PFDA	87		70 - 130

Lab Sample ID: LLCSD 320-220576/3-A

Matrix: Water

Analysis Batch: 221679

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 220576

Analyte	Spike Added	LLCSD Result	LLCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	40.2	41.3	M	ng/L		103	50 - 150	2	50
Perfluorooctanoic acid (PFOA)	20.0	19.4	J	ng/L		97	50 - 150	1	50
Perfluorononanoic acid (PFNA)	20.0	17.7	J	ng/L		89	50 - 150	0.5	50
Perfluorohexanesulfonic acid (PFHxS)	30.3	32.3		ng/L		107	50 - 150	1	50
Perfluoroheptanoic acid (PFHpA)	10.0	9.50	J	ng/L		95	50 - 150	3	50
Perfluorobutanesulfonic acid (PFBS)	90.2	98.1		ng/L		109	50 - 150	1	50

Surrogate	LLCSD %Recovery	LLCSD Qualifier	Limits
13C2 PFHxA	106		70 - 130
13C2 PFDA	91		70 - 130

TestAmerica Sacramento

QC Association Summary

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

TestAmerica Job ID: 320-38538-1

LCMS

Prep Batch: 220576

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-38538-1	WGNA-042518-RW-3785	Total/NA	Water	537	
320-38538-2	WGNA-042518-FRB-3785	Total/NA	Water	537	
320-38538-3	WGNA-042518-RW-3325	Total/NA	Water	537	
320-38538-4	WGNA-042518-FRB-3325	Total/NA	Water	537	
320-38538-5	WGNA-042518-RW-500	Total/NA	Water	537	
320-38538-6	WGNA-042518-FRB-500	Total/NA	Water	537	
320-38538-7	WGNA-042518-RW-3529	Total/NA	Water	537	
320-38538-8	WGNA-042518-FRB-3529	Total/NA	Water	537	
320-38538-9	WGNA-042518-RW-3957	Total/NA	Water	537	
320-38538-10	WGNA-042518-FRB-3957	Total/NA	Water	537	
320-38538-11	WGNA-042518-RW-0683	Total/NA	Water	537	
320-38538-12	WGNA-042518-FRB-0683	Total/NA	Water	537	
320-38538-13	NAWC-042518-RW-272	Total/NA	Water	537	
320-38538-14	NAWC-042518-FRB-272	Total/NA	Water	537	
320-38538-15	WGNA-042518-DUP-34	Total/NA	Water	537	
MB 320-220576/1-A	Method Blank	Total/NA	Water	537	
LLCS 320-220576/2-A	Lab Control Sample	Total/NA	Water	537	
LLCSD 320-220576/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 221679

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-38538-1	WGNA-042518-RW-3785	Total/NA	Water	537	220576
320-38538-2	WGNA-042518-FRB-3785	Total/NA	Water	537	220576
320-38538-3	WGNA-042518-RW-3325	Total/NA	Water	537	220576
320-38538-4	WGNA-042518-FRB-3325	Total/NA	Water	537	220576
320-38538-5	WGNA-042518-RW-500	Total/NA	Water	537	220576
320-38538-6	WGNA-042518-FRB-500	Total/NA	Water	537	220576
320-38538-7	WGNA-042518-RW-3529	Total/NA	Water	537	220576
MB 320-220576/1-A	Method Blank	Total/NA	Water	537	220576
LLCS 320-220576/2-A	Lab Control Sample	Total/NA	Water	537	220576
LLCSD 320-220576/3-A	Lab Control Sample Dup	Total/NA	Water	537	220576

Analysis Batch: 221681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-38538-8	WGNA-042518-FRB-3529	Total/NA	Water	537	220576
320-38538-9	WGNA-042518-RW-3957	Total/NA	Water	537	220576
320-38538-10	WGNA-042518-FRB-3957	Total/NA	Water	537	220576
320-38538-11	WGNA-042518-RW-0683	Total/NA	Water	537	220576
320-38538-12	WGNA-042518-FRB-0683	Total/NA	Water	537	220576
320-38538-13	NAWC-042518-RW-272	Total/NA	Water	537	220576
320-38538-14	NAWC-042518-FRB-272	Total/NA	Water	537	220576
320-38538-15	WGNA-042518-DUP-34	Total/NA	Water	537	220576

Lab Chronicle

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

TestAmerica Job ID: 320-38538-1

Client Sample ID: WGNA-042518-RW-3785

Date Collected: 04/25/18 08:10

Date Received: 04/26/18 09:30

Lab Sample ID: 320-38538-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			220576	04/30/18 08:44	KMK	TAL SAC
Total/NA	Analysis	537		1	221679	05/05/18 06:18	CBW	TAL SAC

Client Sample ID: WGNA-042518-FRB-3785

Date Collected: 04/25/18 08:05

Date Received: 04/26/18 09:30

Lab Sample ID: 320-38538-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			220576	04/30/18 08:44	KMK	TAL SAC
Total/NA	Analysis	537		1	221679	05/05/18 06:23	CBW	TAL SAC

Client Sample ID: WGNA-042518-RW-3325

Date Collected: 04/25/18 08:40

Date Received: 04/26/18 09:30

Lab Sample ID: 320-38538-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			220576	04/30/18 08:44	KMK	TAL SAC
Total/NA	Analysis	537		1	221679	05/05/18 06:27	CBW	TAL SAC

Client Sample ID: WGNA-042518-FRB-3325

Date Collected: 04/25/18 08:35

Date Received: 04/26/18 09:30

Lab Sample ID: 320-38538-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			220576	04/30/18 08:44	KMK	TAL SAC
Total/NA	Analysis	537		1	221679	05/05/18 06:32	CBW	TAL SAC

Client Sample ID: WGNA-042518-RW-500

Date Collected: 04/25/18 09:10

Date Received: 04/26/18 09:30

Lab Sample ID: 320-38538-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			220576	04/30/18 08:44	KMK	TAL SAC
Total/NA	Analysis	537		1	221679	05/05/18 06:37	CBW	TAL SAC

Client Sample ID: WGNA-042518-FRB-500

Date Collected: 04/25/18 09:05

Date Received: 04/26/18 09:30

Lab Sample ID: 320-38538-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			220576	04/30/18 08:44	KMK	TAL SAC
Total/NA	Analysis	537		1	221679	05/05/18 06:41	CBW	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-38538-1

Client Sample ID: WGNA-042518-RW-3529

Date Collected: 04/25/18 09:40

Date Received: 04/26/18 09:30

Lab Sample ID: 320-38538-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			220576	04/30/18 08:44	KMK	TAL SAC
Total/NA	Analysis	537		1	221679	05/05/18 06:46	CBW	TAL SAC

Client Sample ID: WGNA-042518-FRB-3529

Date Collected: 04/25/18 09:35

Date Received: 04/26/18 09:30

Lab Sample ID: 320-38538-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			220576	04/30/18 08:44	KMK	TAL SAC
Total/NA	Analysis	537		1	221681	05/05/18 07:00	CBW	TAL SAC

Client Sample ID: WGNA-042518-RW-3957

Date Collected: 04/25/18 10:10

Date Received: 04/26/18 09:30

Lab Sample ID: 320-38538-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			220576	04/30/18 08:44	KMK	TAL SAC
Total/NA	Analysis	537		1	221681	05/05/18 07:05	CBW	TAL SAC

Client Sample ID: WGNA-042518-FRB-3957

Date Collected: 04/25/18 10:05

Date Received: 04/26/18 09:30

Lab Sample ID: 320-38538-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			220576	04/30/18 08:44	KMK	TAL SAC
Total/NA	Analysis	537		1	221681	05/05/18 07:10	CBW	TAL SAC

Client Sample ID: WGNA-042518-RW-0683

Date Collected: 04/25/18 11:40

Date Received: 04/26/18 09:30

Lab Sample ID: 320-38538-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			220576	04/30/18 08:44	KMK	TAL SAC
Total/NA	Analysis	537		1	221681	05/05/18 07:14	CBW	TAL SAC

Client Sample ID: WGNA-042518-FRB-0683

Date Collected: 04/25/18 11:35

Date Received: 04/26/18 09:30

Lab Sample ID: 320-38538-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			220576	04/30/18 08:44	KMK	TAL SAC
Total/NA	Analysis	537		1	221681	05/05/18 07:19	CBW	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-38538-1

Client Sample ID: NAWC-042518-RW-272

Lab Sample ID: 320-38538-13

Date Collected: 04/25/18 12:10

Matrix: Water

Date Received: 04/26/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			220576	04/30/18 08:44	KMK	TAL SAC
Total/NA	Analysis	537		1	221681	05/05/18 07:24	CBW	TAL SAC

Client Sample ID: NAWC-042518-FRB-272

Lab Sample ID: 320-38538-14

Date Collected: 04/25/18 12:05

Matrix: Water

Date Received: 04/26/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			220576	04/30/18 08:44	KMK	TAL SAC
Total/NA	Analysis	537		1	221681	05/05/18 07:28	CBW	TAL SAC

Client Sample ID: WGNA-042518-DUP-34

Lab Sample ID: 320-38538-15

Date Collected: 04/25/18 07:00

Matrix: Water

Date Received: 04/26/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			220576	04/30/18 08:44	KMK	TAL SAC
Total/NA	Analysis	537		1	221681	05/05/18 07:33	CBW	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-38538-1

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

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
Arizona	State Program	9	AZ0708	08-11-18
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-18
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-18
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-19
Kansas	NELAP	7	E-10375	10-31-18
L-A-B	DoD ELAP		L2468	01-20-21
Louisiana	NELAP	6	30612	06-30-18
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-18
New Hampshire	NELAP	1	2997	04-18-19
New Jersey	NELAP	2	CA005	06-30-18
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	07-31-18
USDA	Federal		P330-11-00436	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	05-05-18
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: Warminster: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-38538-1

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.

TestAmerica Job ID: 320-38538-1

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-38538-1	WGNA-042518-RW-3785	Water	04/25/18 08:10	04/26/18 09:30
320-38538-2	WGNA-042518-FRB-3785	Water	04/25/18 08:05	04/26/18 09:30
320-38538-3	WGNA-042518-RW-3325	Water	04/25/18 08:40	04/26/18 09:30
320-38538-4	WGNA-042518-FRB-3325	Water	04/25/18 08:35	04/26/18 09:30
320-38538-5	WGNA-042518-RW-500	Water	04/25/18 09:10	04/26/18 09:30
320-38538-6	WGNA-042518-FRB-500	Water	04/25/18 09:05	04/26/18 09:30
320-38538-7	WGNA-042518-RW-3529	Water	04/25/18 09:40	04/26/18 09:30
320-38538-8	WGNA-042518-FRB-3529	Water	04/25/18 09:35	04/26/18 09:30
320-38538-9	WGNA-042518-RW-3957	Water	04/25/18 10:10	04/26/18 09:30
320-38538-10	WGNA-042518-FRB-3957	Water	04/25/18 10:05	04/26/18 09:30
320-38538-11	WGNA-042518-RW-0683	Water	04/25/18 11:40	04/26/18 09:30
320-38538-12	WGNA-042518-FRB-0683	Water	04/25/18 11:35	04/26/18 09:30
320-38538-13	NAWC-042518-RW-272	Water	04/25/18 12:10	04/26/18 09:30
320-38538-14	NAWC-042518-FRB-272	Water	04/25/18 12:05	04/26/18 09:30
320-38538-15	WGNA-042518-DUP-34	Water	04/25/18 07:00	04/26/18 09:30

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217453Lab Sample ID: IC 320-217453/3 Client Sample ID: _____Date Analyzed: 04/11/18 11:45 Lab File ID: 2018.04.11_537ICALB_004.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.10	Peak assignment corrected	westendor fc	04/11/18 12:31

Lab Sample ID: IC 320-217453/4 Client Sample ID: _____Date Analyzed: 04/11/18 11:50 Lab File ID: 2018.04.11_537ICALB_005.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.10	Peak assignment corrected	westendor fc	04/11/18 12:31

Lab Sample ID: IC 320-217453/5 Client Sample ID: _____Date Analyzed: 04/11/18 11:55 Lab File ID: 2018.04.11_537ICALB_006.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	westendor fc	04/11/18 12:31

Lab Sample ID: IC 320-217453/6 ICISAV Client Sample ID: _____Date Analyzed: 04/11/18 11:59 Lab File ID: 2018.04.11_537ICALB_007.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.10	Peak assignment corrected	westendor fc	04/11/18 12:31

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217453Lab Sample ID: IC 320-217453/7 Client Sample ID: _____Date Analyzed: 04/11/18 12:04 Lab File ID: 2018.04.11_537ICALB_008.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.10	Peak assignment corrected	westendor fc	04/11/18 12:31

Lab Sample ID: IC 320-217453/8 Client Sample ID: _____Date Analyzed: 04/11/18 12:09 Lab File ID: 2018.04.11_537ICALB_009.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.09	Peak assignment corrected	westendor fc	04/11/18 12:31

Lab Sample ID: CCVL 320-217453/10 Client Sample ID: _____Date Analyzed: 04/11/18 12:18 Lab File ID: 2018.04.11_537ICALB_011.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.10	Peak assignment corrected	westendor fc	04/11/18 12:32

Lab Sample ID: ICV 320-217453/12 Client Sample ID: _____Date Analyzed: 04/11/18 12:27 Lab File ID: 2018.04.11_537ICALB_013.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.10	Peak assignment corrected	westendor fc	04/11/18 12:35

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 221668Lab Sample ID: CCVL 320-221668/1 Client Sample ID: _____Date Analyzed: 05/05/18 02:43 Lab File ID: 2018.05.05_537A_004.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.13	Peak assignment corrected	barnettj	05/07/18 10:03

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 221679Lab Sample ID: CCV 320-221679/1 CCVIS Client Sample ID: _____Date Analyzed: 05/05/18 05:55 Lab File ID: 2018.05.05_537A_045.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	westendor fc	05/07/18 13:24

Lab Sample ID: LLCS 320-220576/2-A Client Sample ID: _____Date Analyzed: 05/05/18 06:09 Lab File ID: 2018.05.05_537A_048.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	westendor fc	05/07/18 13:24

Lab Sample ID: LLCSD 320-220576/3-A Client Sample ID: _____Date Analyzed: 05/05/18 06:13 Lab File ID: 2018.05.05_537A_049.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	westendor fc	05/07/18 13:24

Lab Sample ID: 320-38538-1 Client Sample ID: WGNA-042518-RW-3785Date Analyzed: 05/05/18 06:18 Lab File ID: 2018.05.05_537A_050.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorononanoic acid (PFNA)	2.12	Split Peak	westendor fc	05/07/18 13:24
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	westendor fc	05/07/18 13:24

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 221679Lab Sample ID: 320-38538-3 Client Sample ID: WGNA-042518-RW-3325Date Analyzed: 05/05/18 06:27 Lab File ID: 2018.05.05_537A_052.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.40	Assign Peak	westendor fc	05/07/18 13:25
Perfluoroheptanoic acid (PFHpA)	1.68	Assign Peak	westendor fc	05/07/18 13:25
Perfluorooctanoic acid (PFOA)	1.87	Baseline	westendor fc	05/07/18 13:25
Perfluorooctanesulfonic acid (PFOS)	2.04	Baseline	westendor fc	05/07/18 13:25
Perfluorononanoic acid (PFNA)	2.12	Assign Peak	westendor fc	05/07/18 13:25

Lab Sample ID: 320-38538-5 Client Sample ID: WGNA-042518-RW-500Date Analyzed: 05/05/18 06:37 Lab File ID: 2018.05.05_537A_054.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.68	Baseline	westendor fc	05/07/18 13:26
Perfluorononanoic acid (PFNA)	2.12	Assign Peak	westendor fc	05/07/18 13:26
Perfluorooctanesulfonic acid (PFOS)	2.12	Baseline	westendor fc	05/07/18 13:26

Lab Sample ID: 320-38538-7 Client Sample ID: WGNA-042518-RW-3529Date Analyzed: 05/05/18 06:46 Lab File ID: 2018.05.05_537A_056.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	westendor fc	05/07/18 13:26
Perfluorononanoic acid (PFNA)	2.12	Assign Peak	westendor fc	05/07/18 13:26

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 221679Lab Sample ID: CCV 320-221679/13 CCVIS Client Sample ID: _____Date Analyzed: 05/05/18 06:51 Lab File ID: 2018.05.05_537A_057.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	westendor fc	05/07/18 13:27

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 221681Lab Sample ID: CCV 320-221681/13 CCVIS Client Sample ID: _____Date Analyzed: 05/05/18 06:51 Lab File ID: 2018.05.05_537A_057.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	westendor fc	05/07/18 13:27

Lab Sample ID: 320-38538-9 Client Sample ID: WGNA-042518-RW-3957Date Analyzed: 05/05/18 07:05 Lab File ID: 2018.05.05_537A_060.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.68	Assign Peak	westendor fc	05/07/18 13:27
Perfluorononanoic acid (PFNA)	2.12	Assign Peak	westendor fc	05/07/18 13:27
Perfluorooctanesulfonic acid (PFOS)	2.12	Assign Peak	westendor fc	05/07/18 13:27

Lab Sample ID: 320-38538-11 Client Sample ID: WGNA-042518-RW-0683Date Analyzed: 05/05/18 07:14 Lab File ID: 2018.05.05_537A_062.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	westendor fc	05/07/18 13:28
Perfluorononanoic acid (PFNA)	2.12	Assign Peak	westendor fc	05/07/18 13:28

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 221681Lab Sample ID: 320-38538-13 Client Sample ID: NAWC-042518-RW-272Date Analyzed: 05/05/18 07:24 Lab File ID: 2018.05.05_537A_064.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.68	Assign Peak	westendor fc	05/07/18 13:28
Perfluorooctanoic acid (PFOA)	1.87	Baseline	westendor fc	05/07/18 13:28
Perfluorooctanesulfonic acid (PFOS)	2.11	Baseline	westendor fc	05/07/18 13:28
Perfluorononanoic acid (PFNA)	2.12	Assign Peak	westendor fc	05/07/18 13:28

Lab Sample ID: 320-38538-15 Client Sample ID: WGNA-042518-DUP-34Date Analyzed: 05/05/18 07:33 Lab File ID: 2018.05.05_537A_066.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.41	Assign Peak	westendor fc	05/07/18 13:29
Perfluoroheptanoic acid (PFHpA)	1.69	Assign Peak	westendor fc	05/07/18 13:29
Perfluorononanoic acid (PFNA)	2.12	Assign Peak	westendor fc	05/07/18 13:29
Perfluorooctanesulfonic acid (PFOS)	2.12	Assign Peak	westendor fc	05/07/18 13:29

Lab Sample ID: CCV 320-221681/23 CCVIS Client Sample ID: _____Date Analyzed: 05/05/18 07:38 Lab File ID: 2018.05.05_537A_067.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	westendor fc	05/07/18 13:29

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-ICV_00030	07/30/18	02/15/18	MeOH/H ₂ O, Lot 067374	10 mL	LC537-IS_00059	1000 uL	13C2-PFOA	10 ng/mL
.LC537-IS_00059	07/30/18	01/30/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-ICV_00030	07/30/18	02/15/18	MeOH/H ₂ O, Lot 067374	10 mL	LC537-SU_00059	1000 uL	13C2 PFDA	10 ng/mL
					LC537ICIM2_00001	400 uL	13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	100.092 ng/mL
							Perfluoroheptanoic acid (PFHpA)	10 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	20.1619 ng/mL
							Perfluorononanoic acid (PFNA)	20.1641 ng/mL
							Perfluorooctanoic acid (PFOA)	20.167 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	20.1702 ng/mL
.LC537-SU_00059	07/30/18	01/30/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LC537ICIM2_00001	08/15/18	02/15/18	Methanol, Lot 090285	10 mL	LC537ICIM_00020	0.5 mL	Perfluorobutanesulfonic acid (PFBS)	2.5023 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.25 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.504047 ug/mL
							Perfluorononanoic acid (PFNA)	0.504103 ug/mL
							Perfluorooctanoic acid (PFOA)	0.504176 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.504255 ug/mL
..LC537ICIM_00020	08/15/18	02/15/18	Methanol, Lot 090285	25 mL	LC537-PFBS2_00009	0.625 mL	Perfluorobutanesulfonic acid (PFBS)	50.0459 ug/mL
					LC537-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.: 320-38538-1

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_00068	12/26/18	04/26/18	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)	8.99912 ng/mL
							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.: 320-38538-1

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
					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-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-HSP_00028	09/30/18	03/30/18	Methanol, Lot 104453	30 mL	LC537-SU_00064	2 mL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/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.: 320-38538-1

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	13C4 PFOS	47.8 ug/mL
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		LCMPFHxA_00015	60 uL	13C2 PFDA	0.1 ug/mL
..LCMPFHxA_00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFDA	0.1 ug/mL
..LCMPFHxA_00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFDA	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
							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
					..LCPFHxA_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 LPPFBS1116		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFHxA_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.: 320-38538-1

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	500 uL	13C2-PFOA	10 ng/mL
.LC537-HSP_00028	09/30/18	03/30/18	Methanol, Lot 104453	30 mL	LCPFBSA_00002	849 uL	13C4 PFOS	28.68 ng/mL
							13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	1250.86 ng/mL
							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
..LCPFBSA_00002	12/02/21	Wellington Laboratories, Lot LPPBS1116					Perfluorooctanoic acid (PFOA)	275 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	549.067 ng/mL
							(Purchased Reagent)	44.2 ug/mL
							Perfluoroheptanoic acid (PFHpA)	50 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFHxS-br_00005	01/04/22	Wellington Laboratories, Lot brPFHxSK0117					Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717					Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOA_00010	09/27/22	Wellington Laboratories, Lot PFOA0917					Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOS-br_00005	01/12/22	Wellington Laboratories, Lot brPFOSK0117					13C2-PFOA	0.1 ug/mL
.LC537-IS_00065	10/02/18	04/02/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00010	02/12/21	Wellington Laboratories, Lot M2PFOA0216			LCMPFOS_00024	180 uL	13C2-PFOA	50 ug/mL
..LCMPFOS_00024	05/19/22	Wellington Laboratories, Lot MPFOS517					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
..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					13C2 PFDA	50 ug/mL
LC537-L5_00026	09/30/18	04/02/18	MeOH/H2O, Lot 090285	20 mL	LC537-HSP_00028	2160 uL	13C2 PFHxA	50 ug/mL
							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.: 320-38538-1

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 LPPBS1116			(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.: 320-38538-1

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
.LCPFBSA_00002	12/02/21	Wellington Laboratories, Lot LPFBS1116			LCPFOS-br_00005	65 uL	Perfluorooctanesulfonic acid (PFOS)	100.533 ng/mL
					(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
					(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
					(Purchased Reagent)		Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
					(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.: 320-38538-1

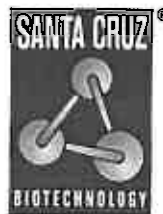
SDG No.: _____

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_00067	10/26/18	04/26/18	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 (19F-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

PFHe A

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

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

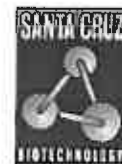
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ThermoFisher
SCIENTIFIC

Reagent

LC537_PFHxS2_00002



The Future is Now

CERTIFICATE OF ANALYSIS

Catalog Number: sc-237289
 Lot Number: G2516
 Product Name: Tridecafluorohexane-1-sulfonic acid potassium salt
 CAS Number: 3871-99-6
 Molecular Formula: $C_{13}F_{27}KO_2S$
 Molecular Weight: 438.20

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

$PFH_x S-K$

$C_{13}F_{27}SO_3K$ 438.201

$C_{13}F_{27}SO_3H$ 400.111

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

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

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Reagent

LC537_PFNA2_00002

17.6.14.17 SW

3050 Spruce Street, Saint Louis, MO 63103, USA

Website: www.sigmaaldrich.com

Email USA: techserv@sial.com

Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:

Perfluorononanoic acid - 97%

Product Number:

394459

Batch Number:

MKCC0699

Brand:

ALDRICH

CAS Number:

375-95-1

MDL Number:

MFCD00039605

Formula:

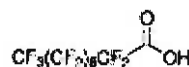
C₉H₁₇O₂

Formula Weight:

464.08 g/mol

Quality Release Date:

07 DEC 2016



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

Michael Grady, Manager
Quality Control
Milwaukee, WI US

PFNA

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%

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ThermoFisher
SCIENTIFIC

Reagent

LC537_PFOS2_00002

7:6.14.17 SKV

SIGMA-ALDRICH

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

Certificate of Analysis

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

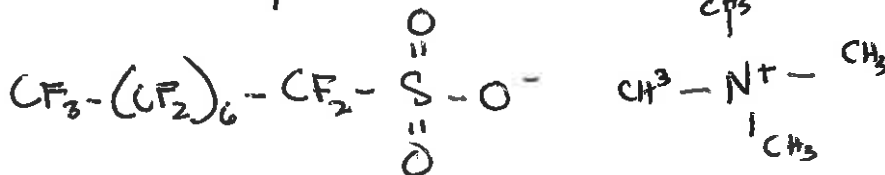
TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE TO OFF WHITE	OFF-WHITE
APPEARANCE (FORM)	POWDER OR POWDER WITH CHUNK(S)	POWDER
CARBON CONTENT	29.77 % - 31.29 %	29.97 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

$$\text{Purity \& mw correction} = 77.87\%$$



C = 12.011	96.088
F = 18.998	322.966
S = 32.066	32.066
O = 16.000	47.997
H = 1.008	1.008
N = 14.007	—
	500.125



96.088

20.460

14.007

130.255

Reagent

LCM2PFOA_00007



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

M2PFOA

LOT NUMBER:

M2PFOA0216

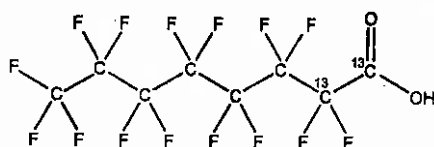
COMPOUND:

Perfluoro-n-[1,2-¹³C₂]octanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₆HF₁₆O₂

MOLECULAR WEIGHT:

416.05

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

Water (<1%)

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:

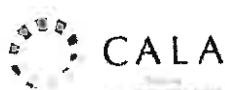
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

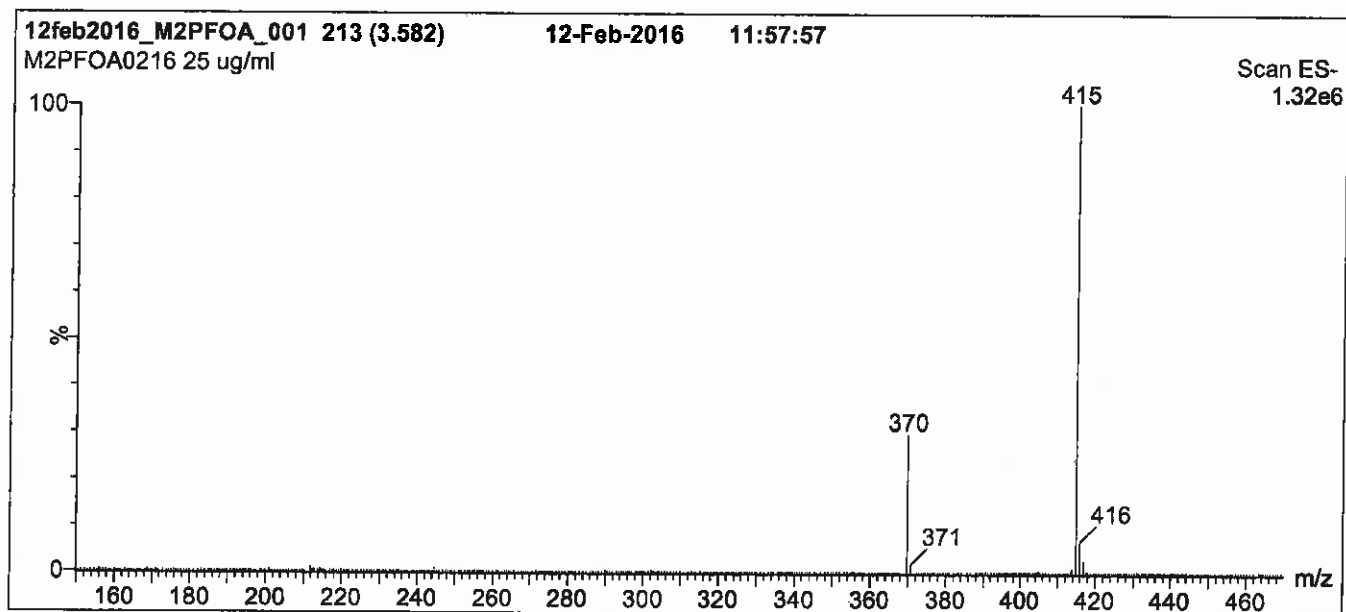
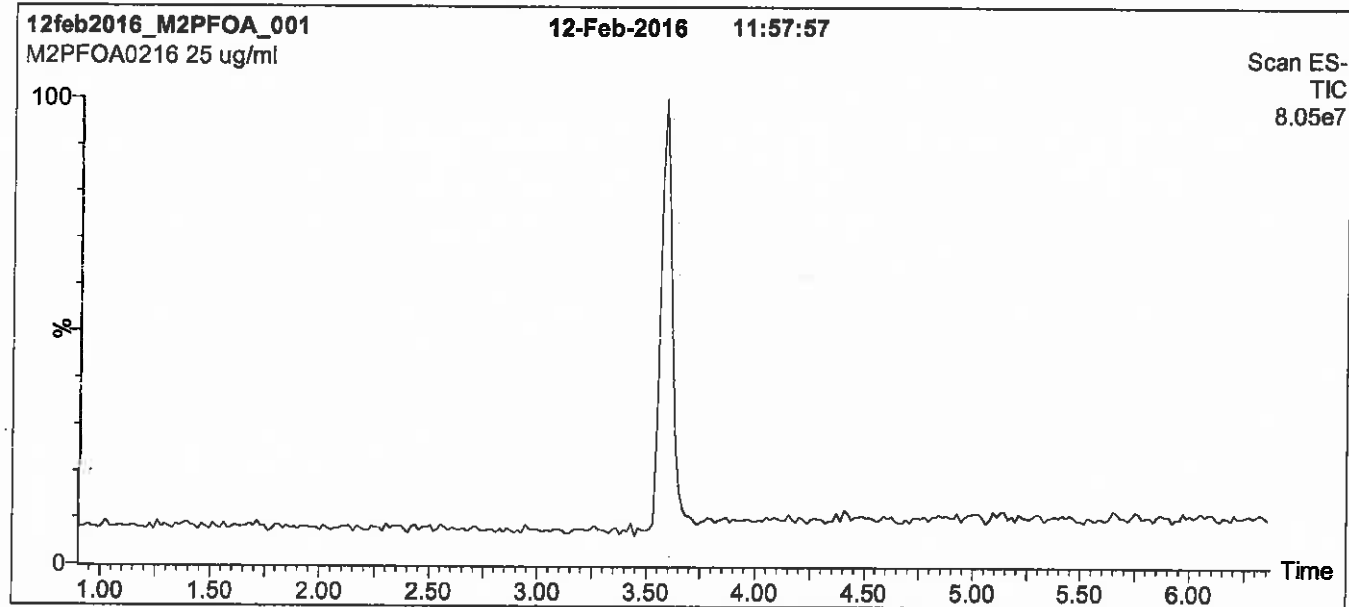
QUALITY MANAGEMENT:

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)

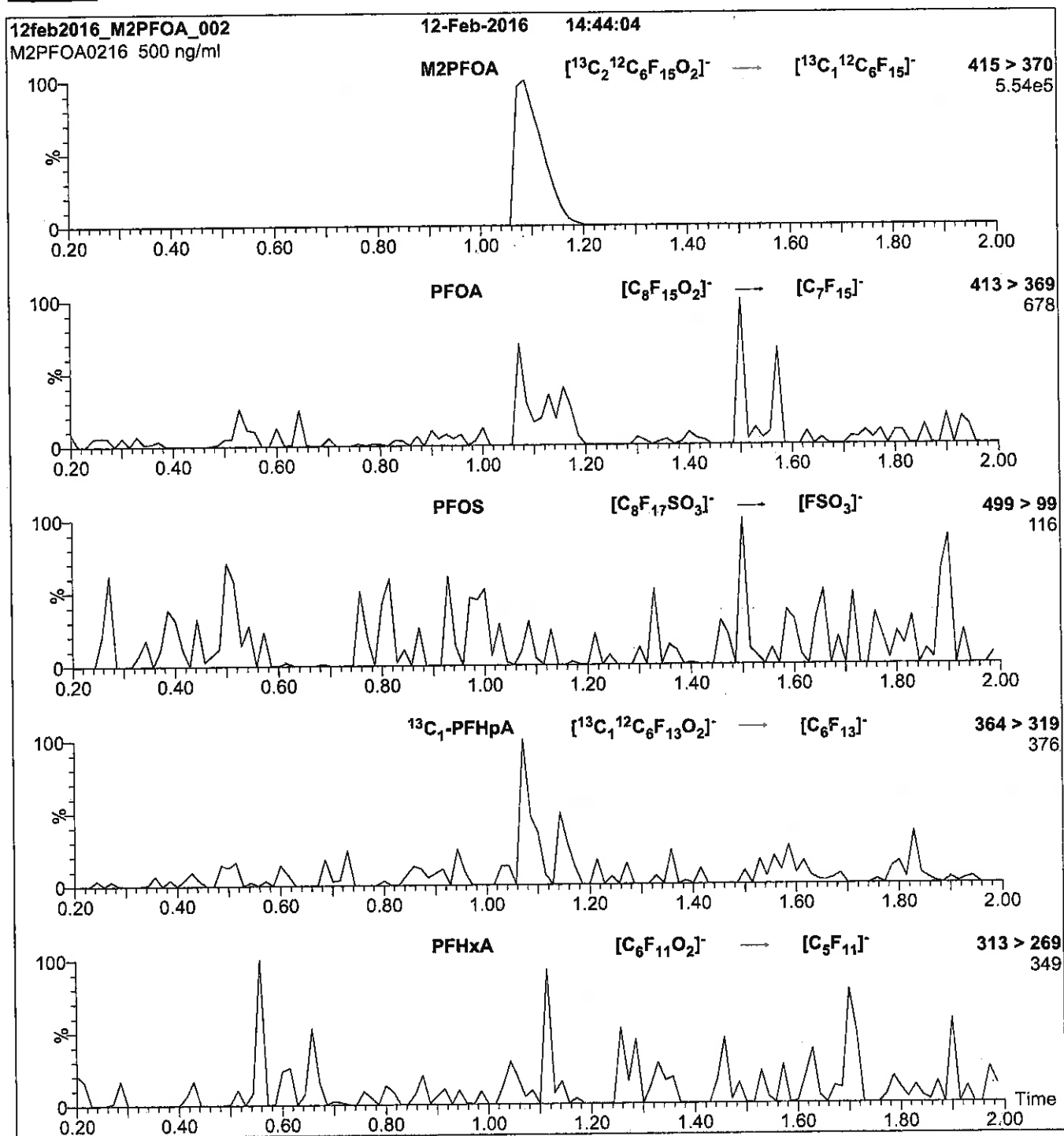
Capillary Voltage (kV) = 3.00

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

LCM2PFOA_00010



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

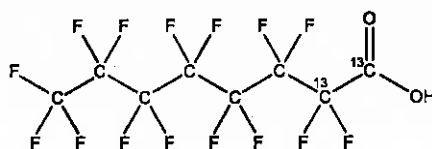
M2PFOA

LOT NUMBER:

M2PFOA0216

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

Not available

**MOLECULAR FORMULA:**¹³C₂¹²C₆HF₁₆O₂**CONCENTRATION:**

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

416.05

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

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

02/12/2016

EXPIRY DATE: (mm/dd/yyyy)

02/12/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

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

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

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

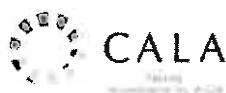
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LIMITED WARRANTY:

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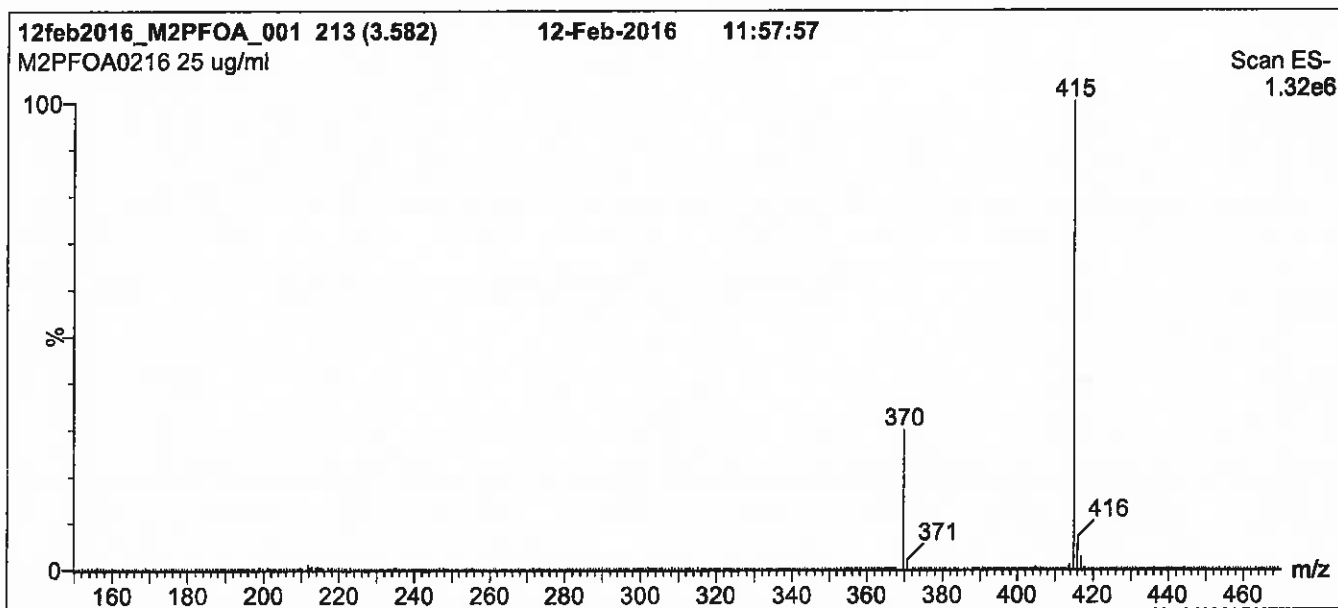
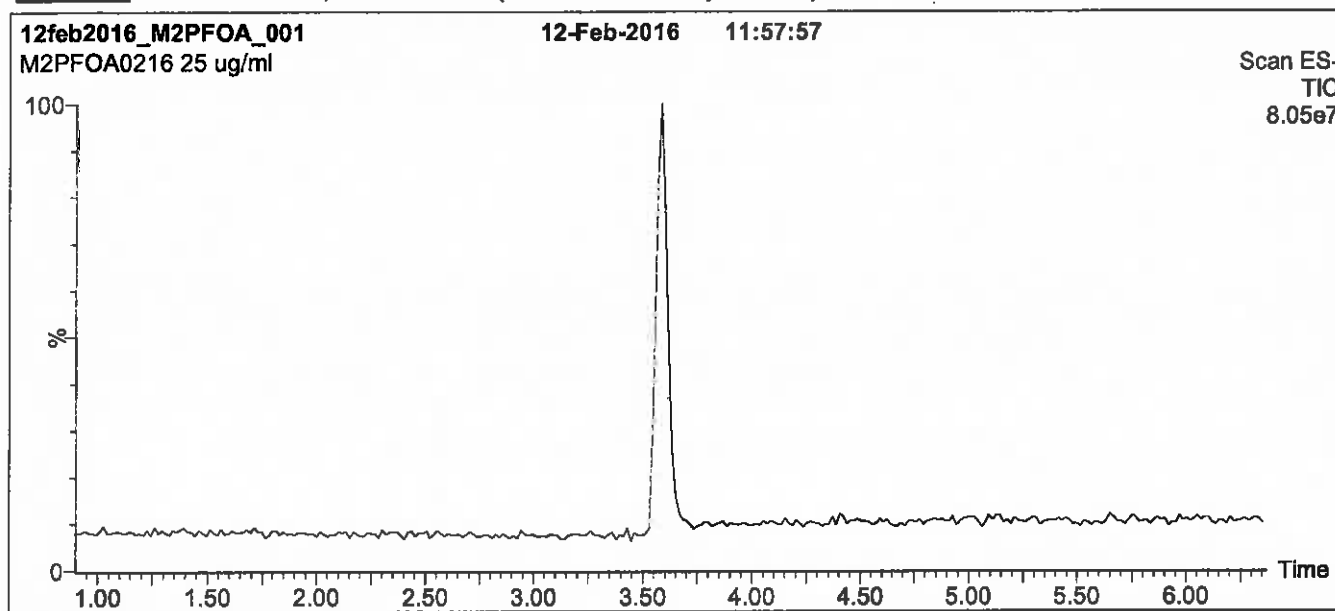
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

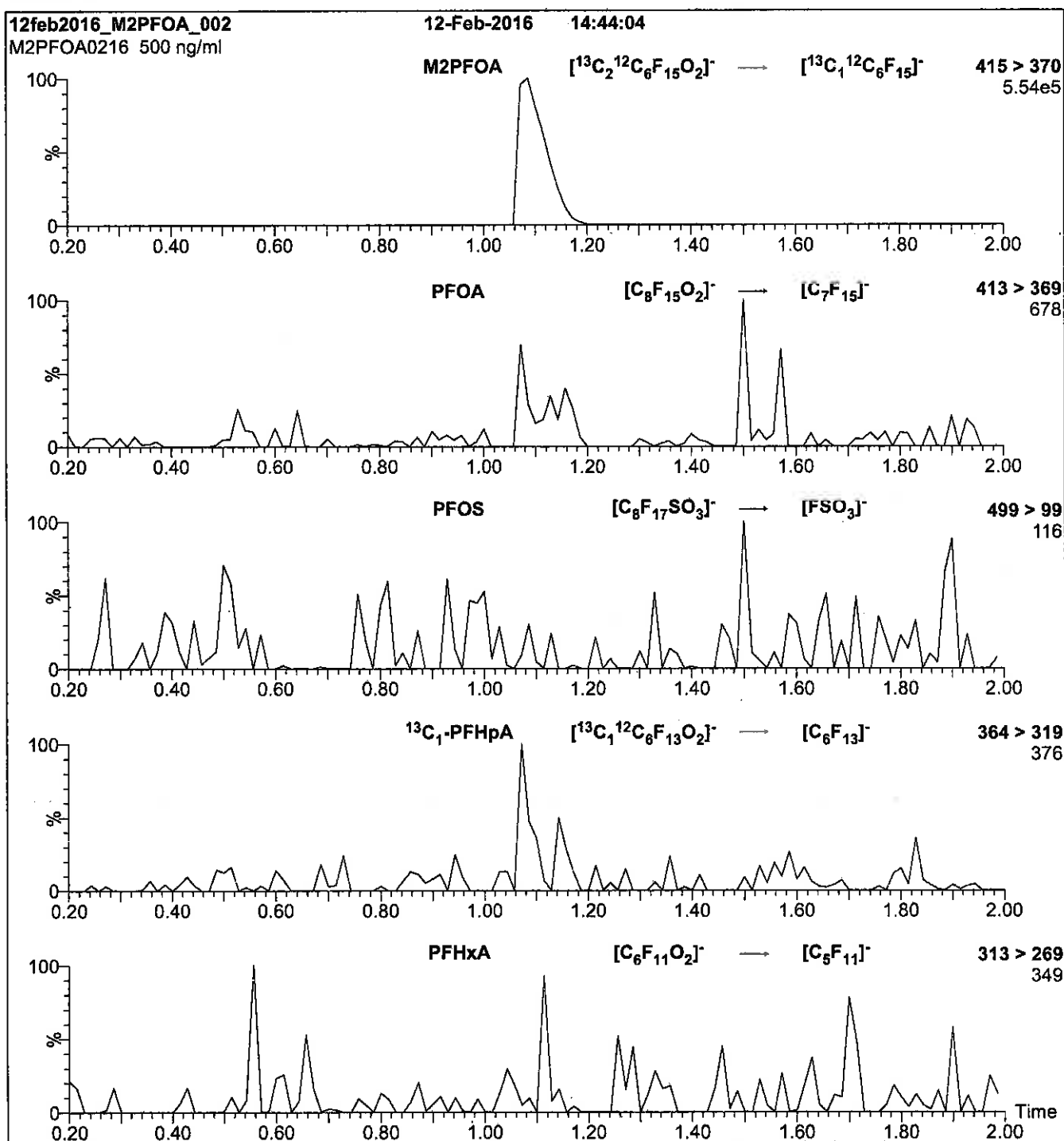
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% MeOH / 20% H_2O

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

MS Parameters

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

Reagent

LCMPFDA_00012

R: SBC 12/21/16



814255

ID: LCMFDA_00012

Exp: 09/30/21 Prod: SBC

13C2-Perfluorodecanoic acid



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

MPFDA

LOT NUMBER:

MPFDA0916

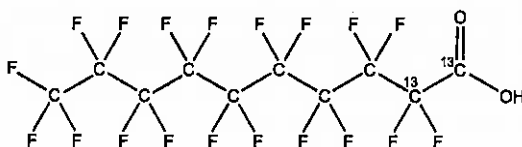
COMPOUND:

Perfluoro-n-[1,2-¹³C₂]decanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₈H₁₈O₂

MOLECULAR WEIGHT:

516.07

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

09/30/2016

(1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy)

09/30/2021

RECOMMENDED STORAGE:

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. Chittim

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:

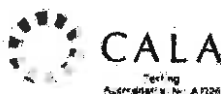
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

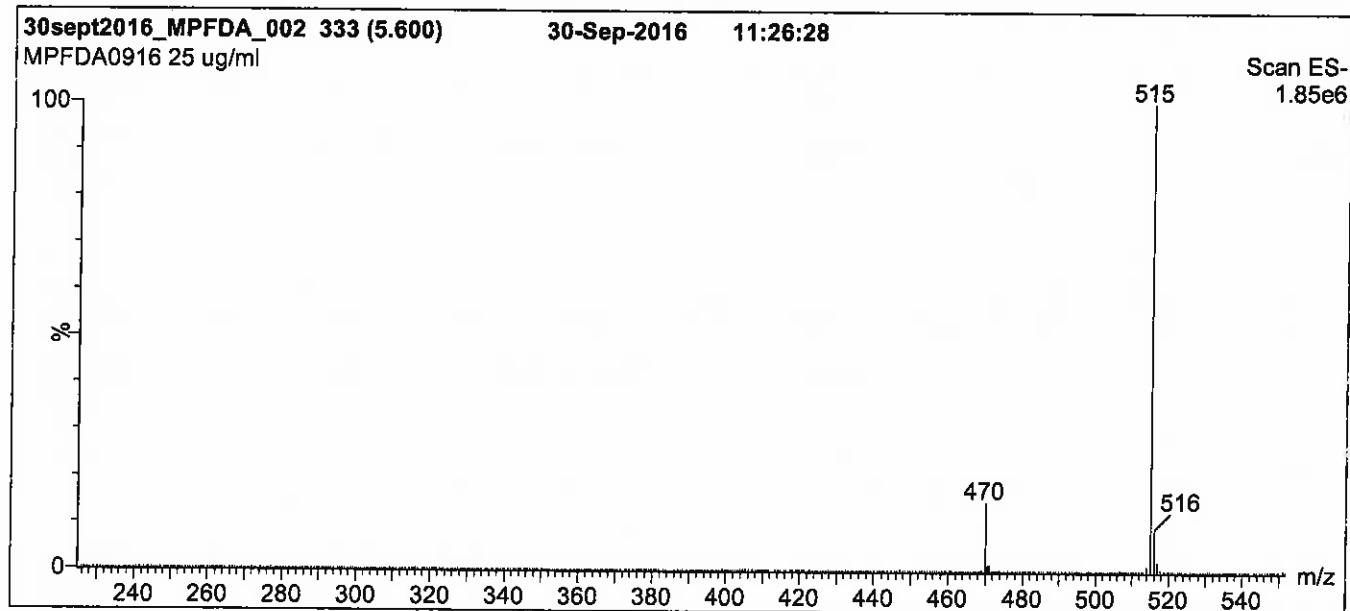
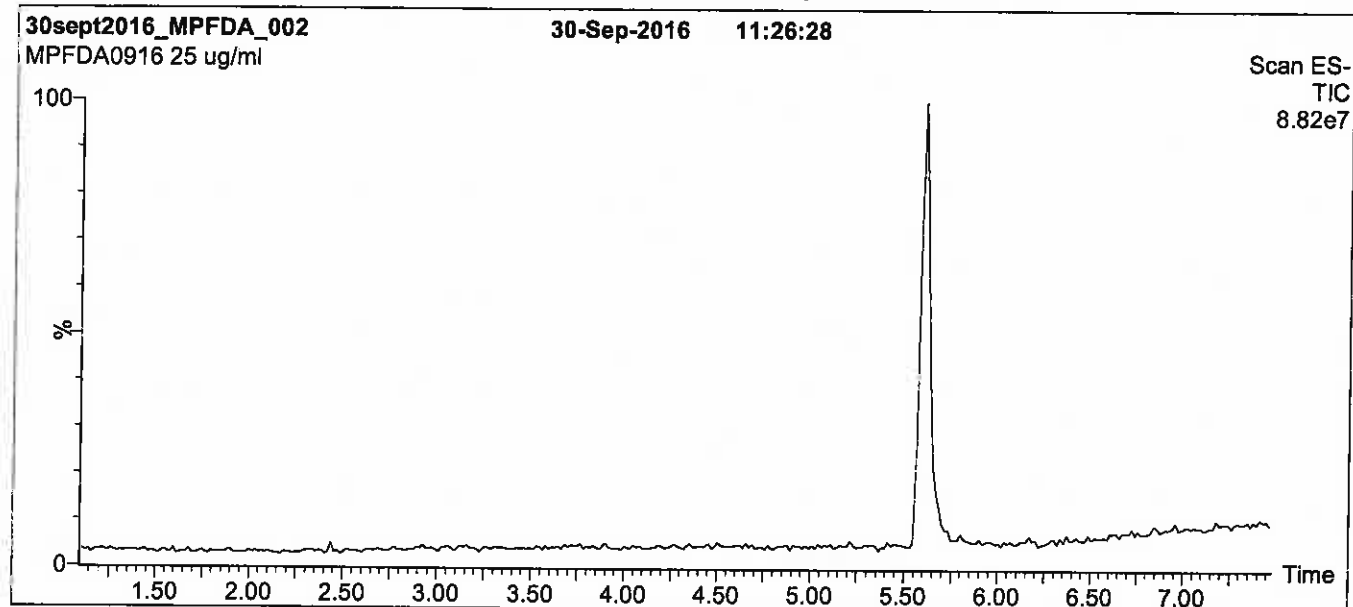
QUALITY MANAGEMENT:

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).



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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

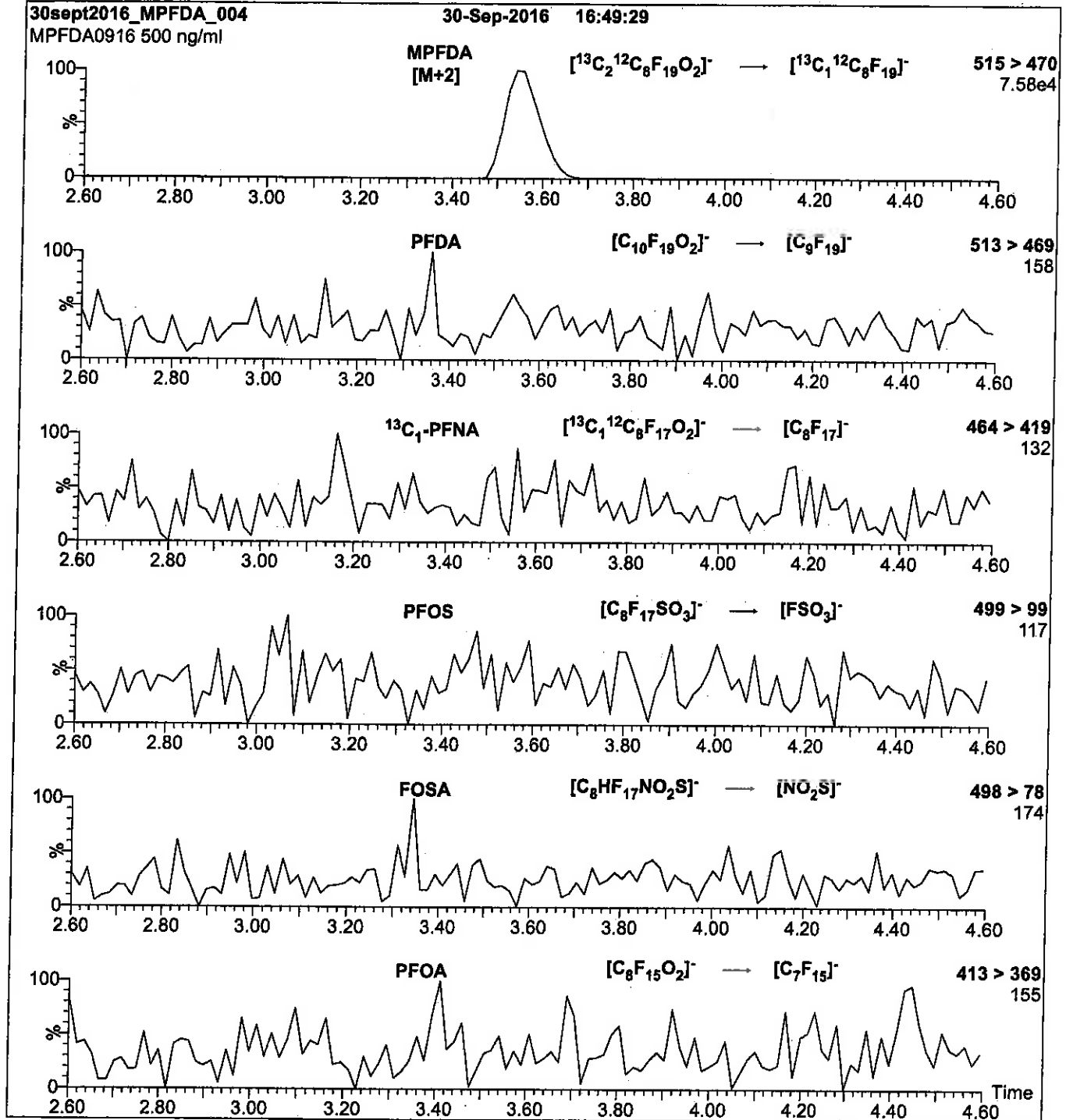
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% 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



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

MPFHxA

LOT NUMBER:

MPFHxA1116

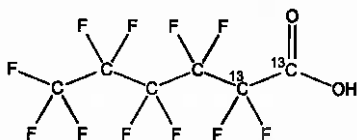
COMPOUND:

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
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EXPIRY DATE / PERIOD OF VALIDITY:

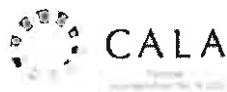
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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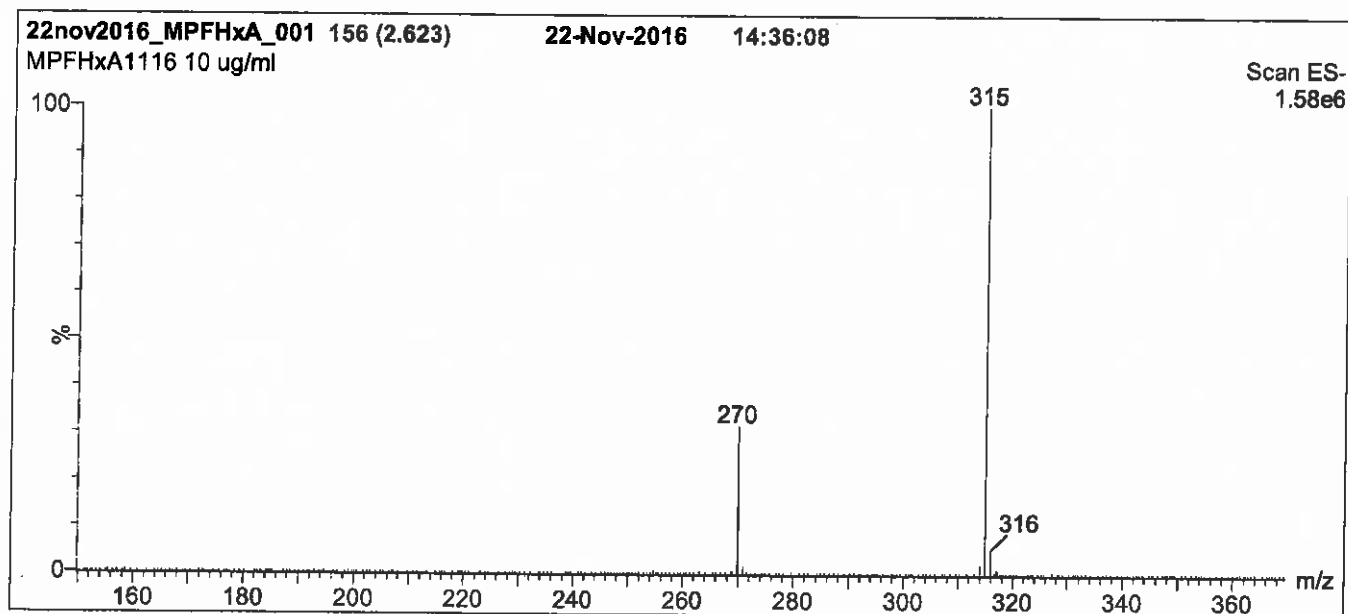
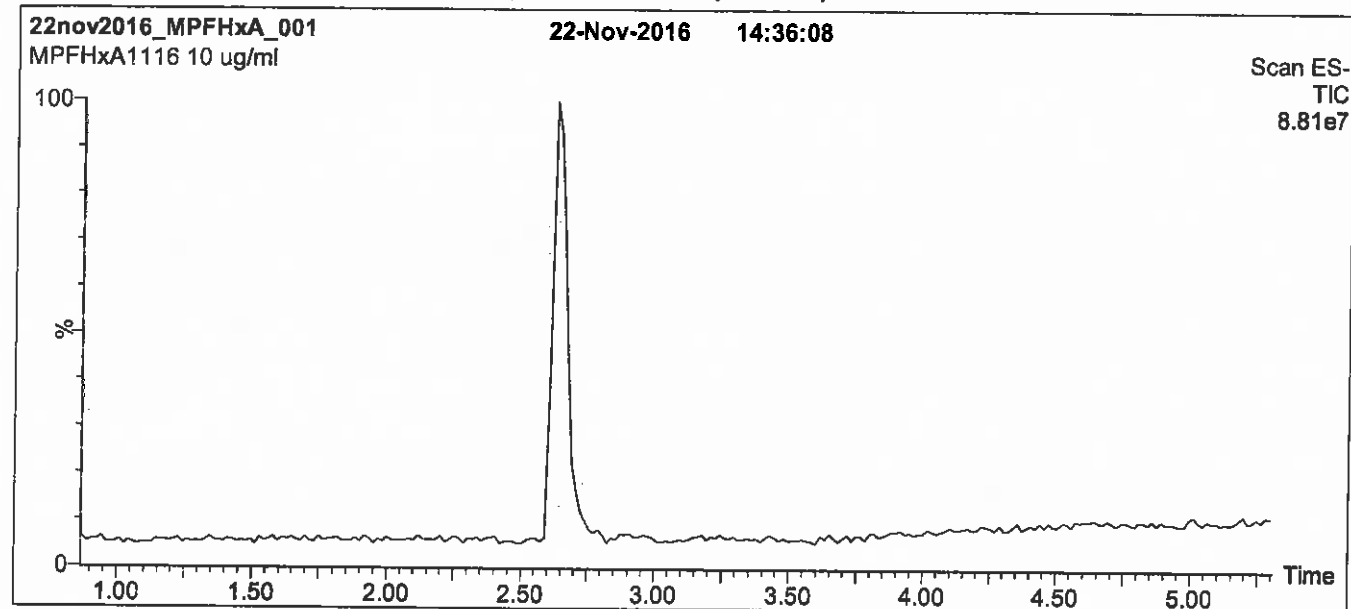
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

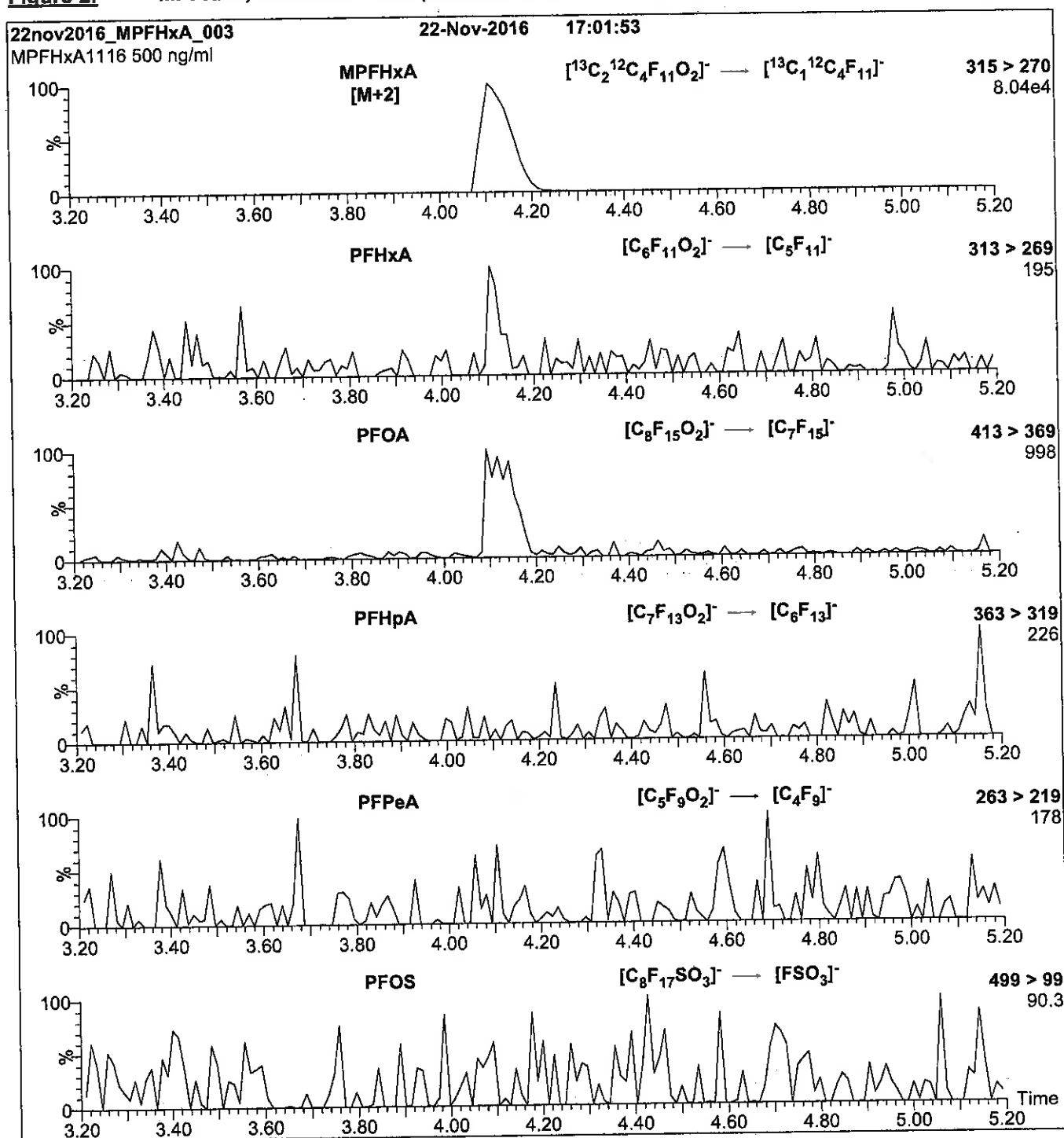
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCMPFOS_00021

r: 5/6/17 skv



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

MPFOS

COMPOUND:

Sodium perfluoro-1-[1,2,3,4-¹³C]₄octanesulfonate

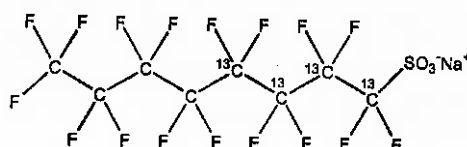
LOT NUMBER:

MPFOS1216

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₄¹²C₄F₁₇SO₃Na

CONCENTRATION:

50.0 ± 2.5 µg/ml (Na salt)
47.8 ± 2.4 µg/ml (MPFOS anion)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/12/2016

EXPIRY DATE: (mm/dd/yyyy)

12/12/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

MOLECULAR WEIGHT:

526.08

SOLVENT(S):

Methanol

ISOTOPIC PURITY:

≥99% ¹³C
(1,2,3,4-¹³C₄)

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-[1,2,3-¹³C]₃heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/14/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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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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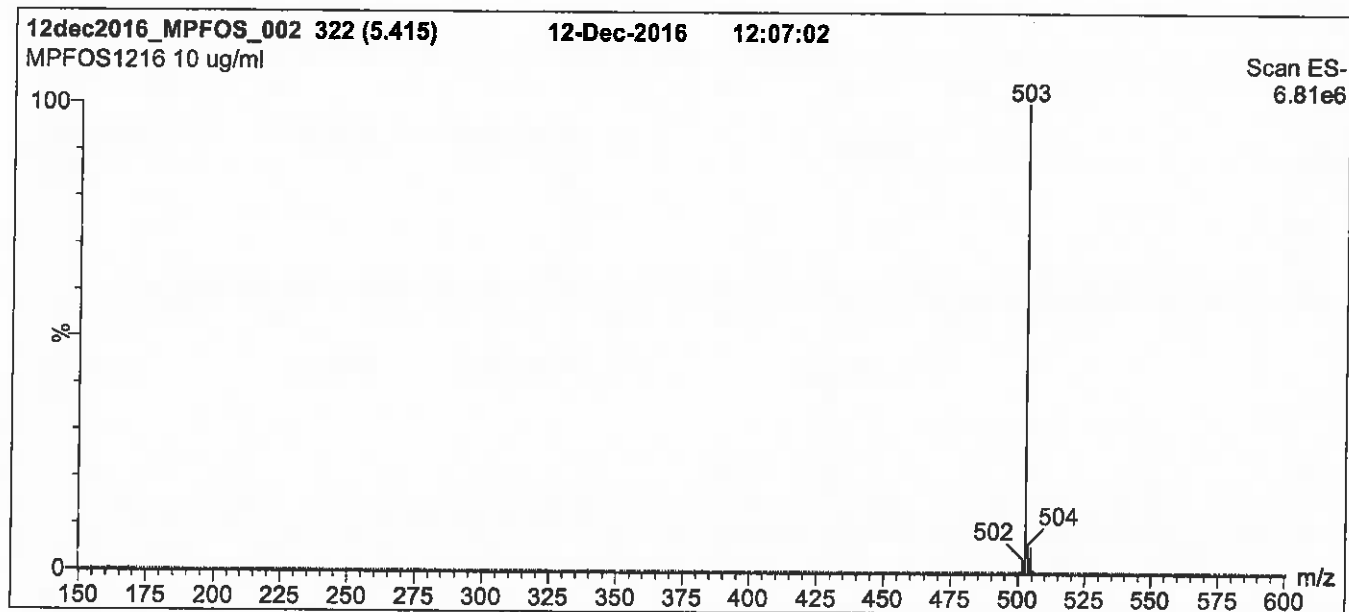
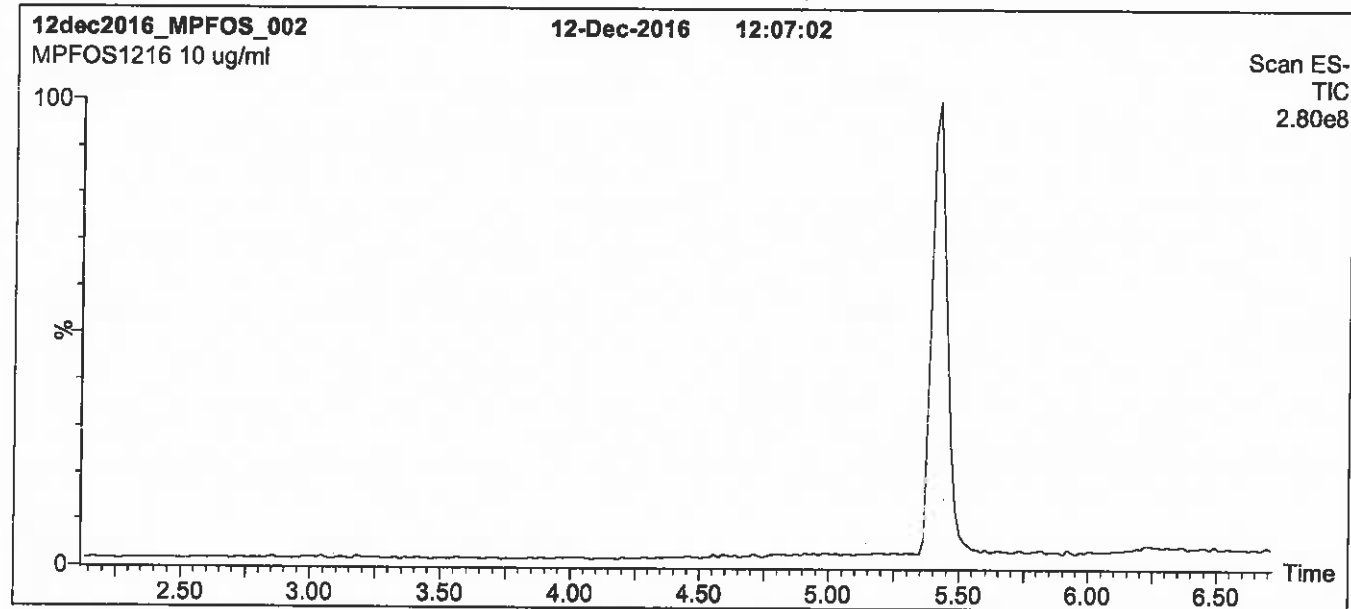
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Figure 1: MPFOS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

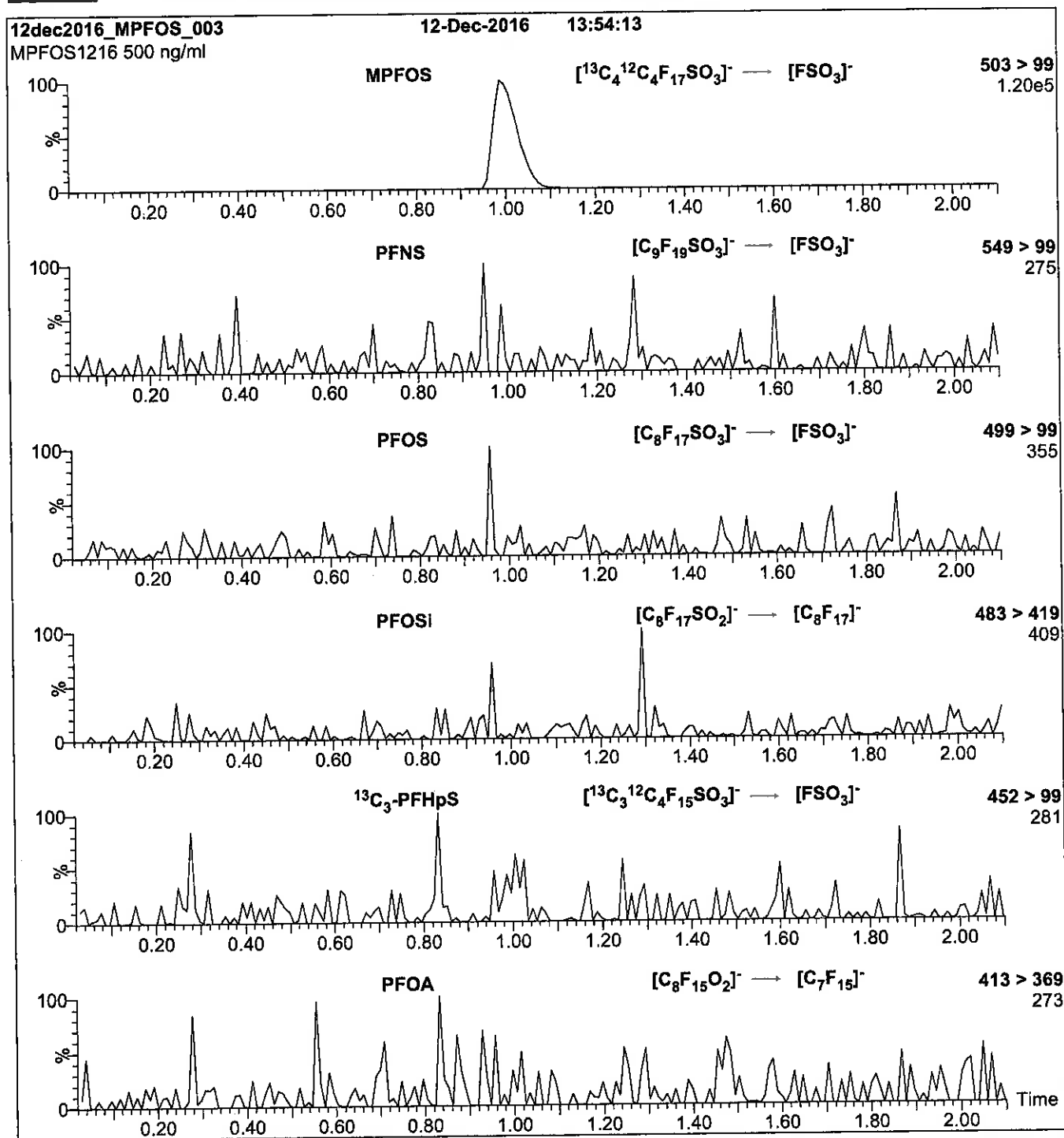
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

Reagent

LCMPFOS_00024

r: 8/2/17 SKJ

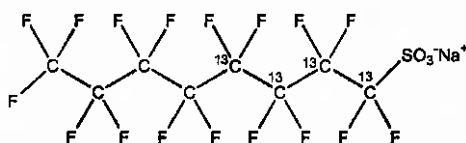


WELLINGTON LABORATORIES

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:

B.G. Chittim, General Manager

Date: 05/30/2017
(mm/dd/yyyy)

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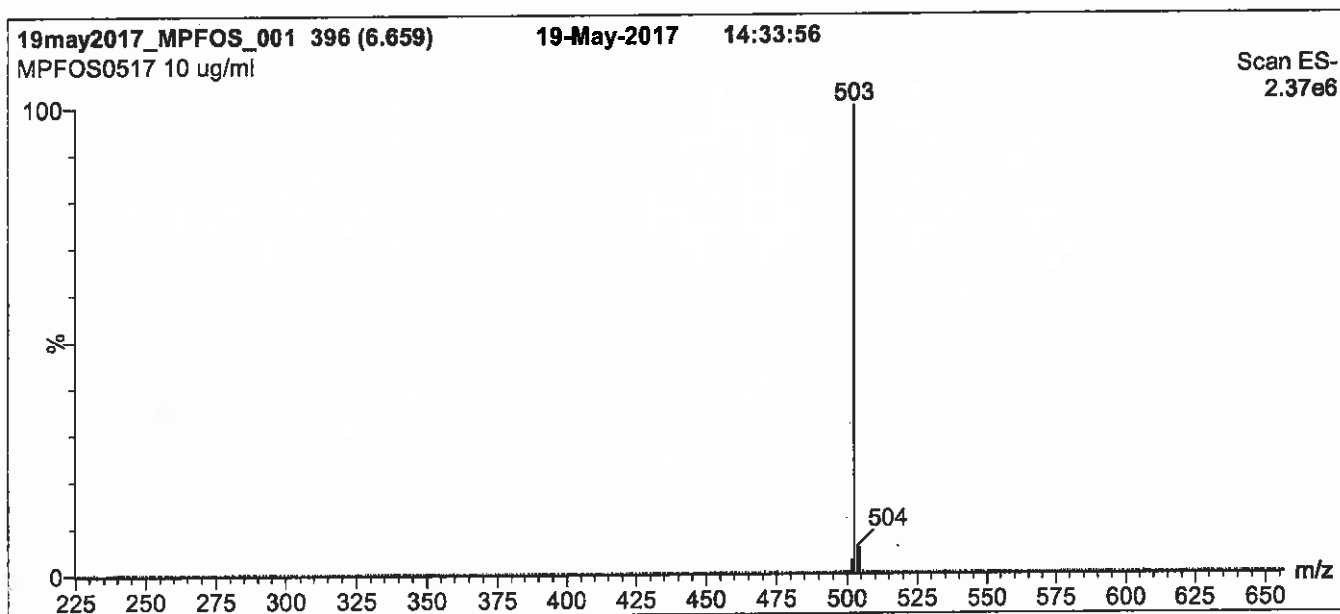
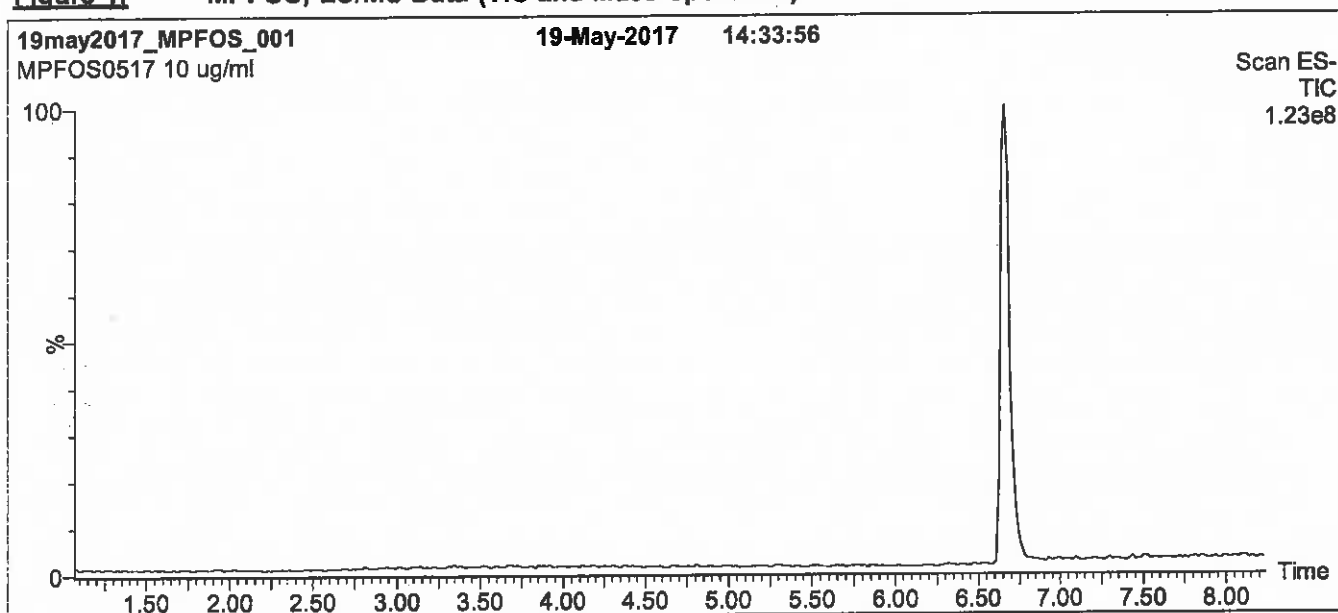
QUALITY MANAGEMENT:

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 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 8 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

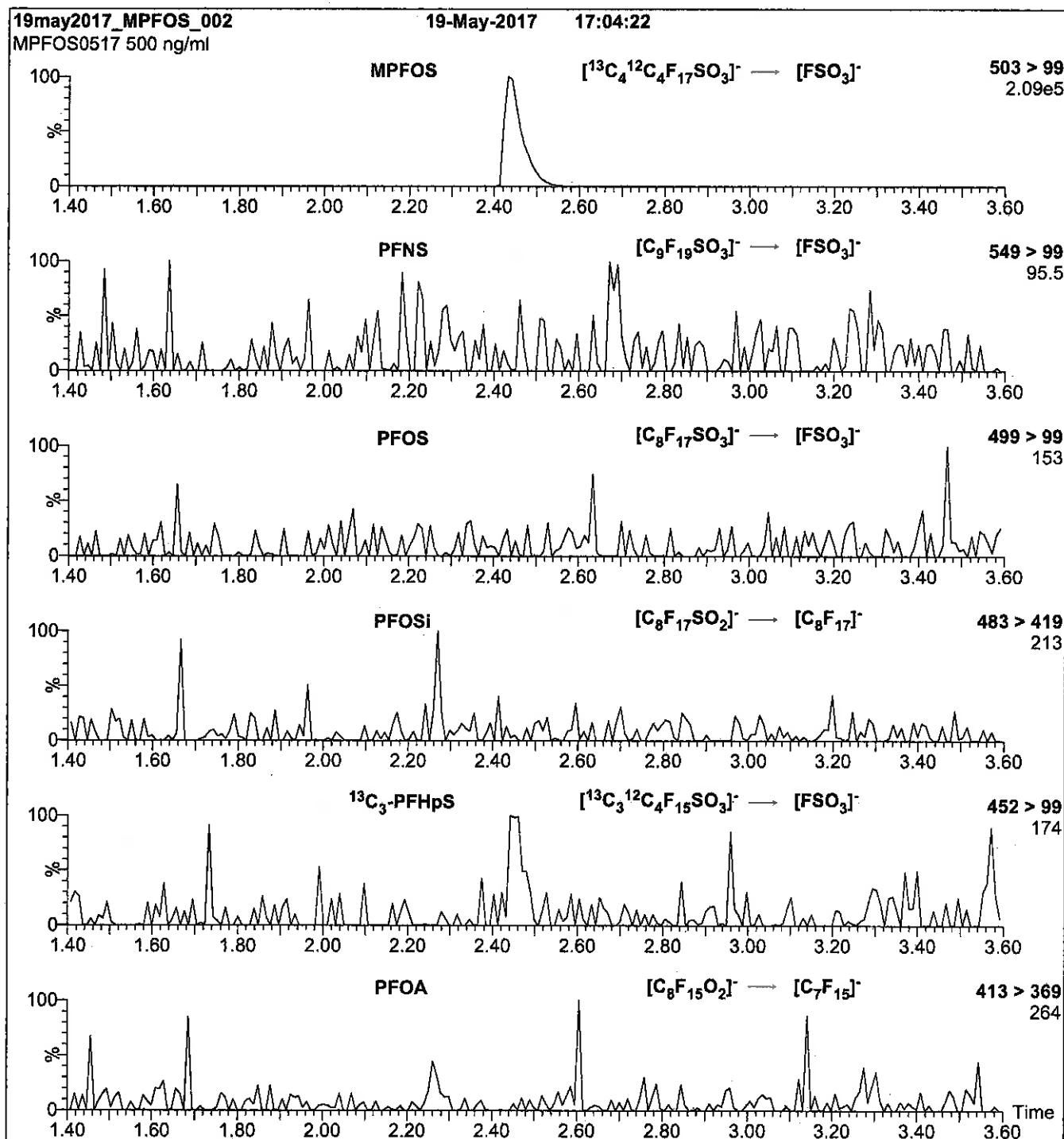
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 60
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: 4/2/17 SKW



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFBS

LOT NUMBER:

LPFBS1116

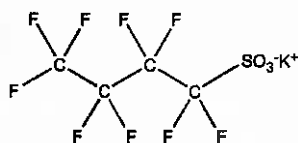
COMPOUND:

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:

B.G. Chittim

Date: 12/05/2016

(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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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.

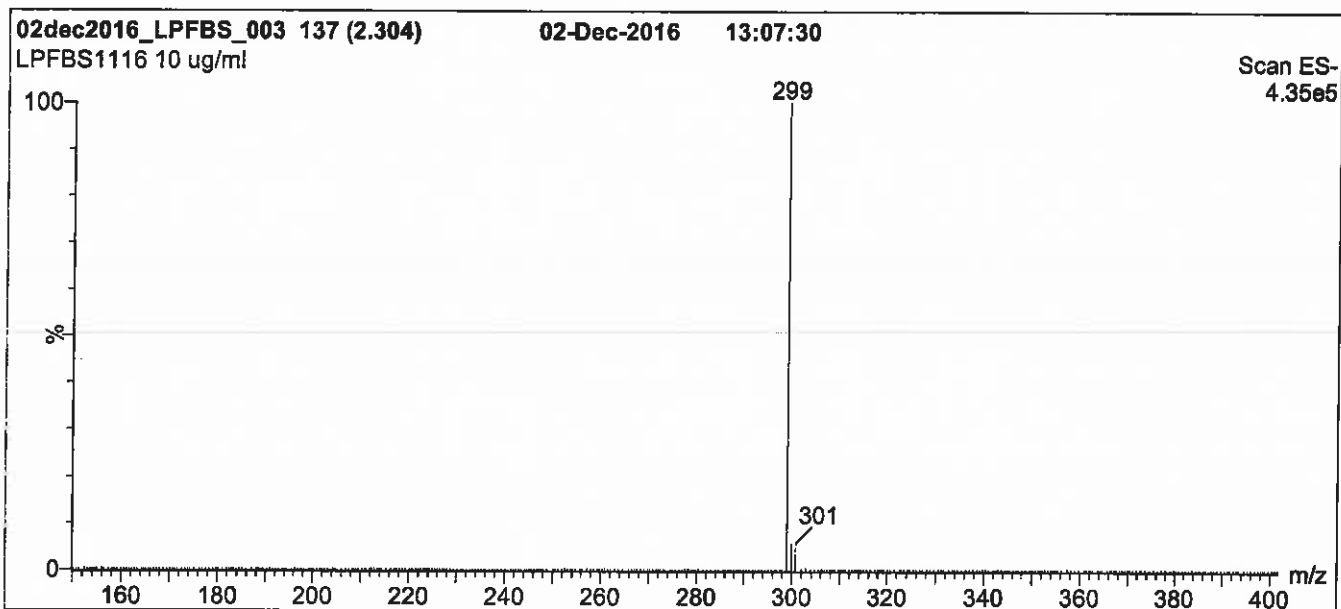
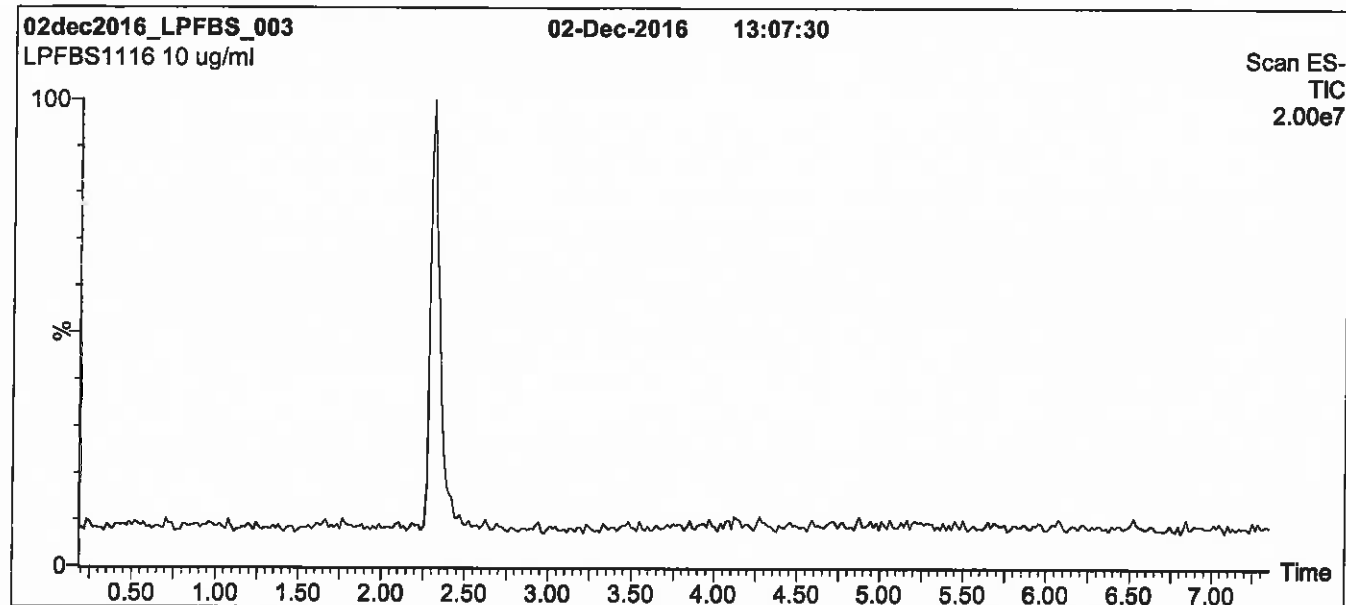
QUALITY MANAGEMENT:

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

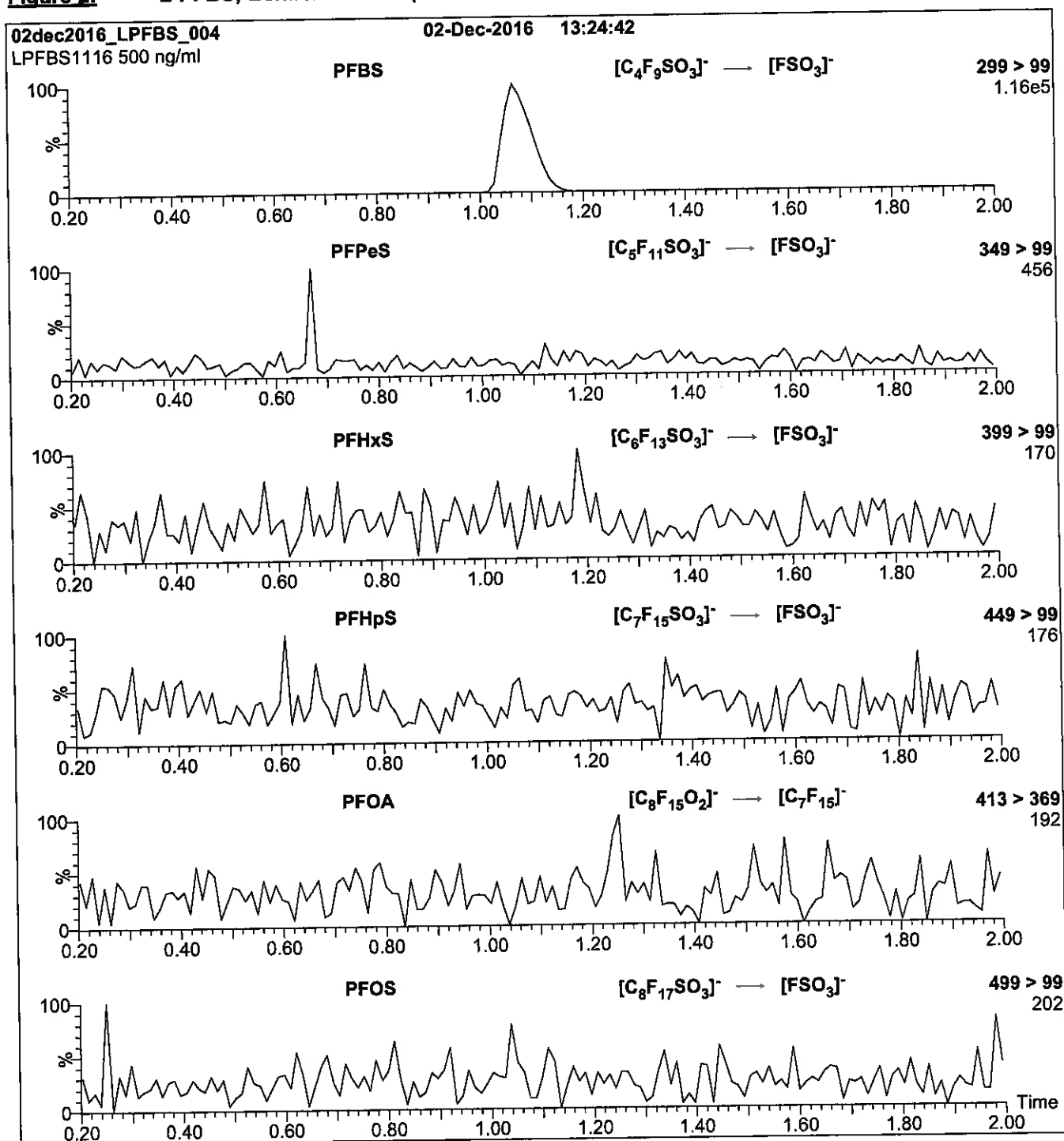
Flow: 300 μ l/min

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% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFHpA_00009

P: 9/21/17 SKJ



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFHpA

LOT NUMBER:

PFHpA1216

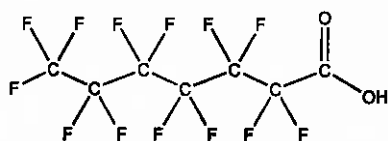
COMPOUND:

Perfluoro-n-heptanoic acid

STRUCTURE:

CAS #:

375-85-9



MOLECULAR FORMULA:

$C_7H_{13}O_2$

MOLECULAR WEIGHT:

364.06

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

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.
- 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: 12/12/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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INTENDED USE:

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

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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:

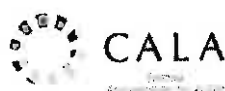
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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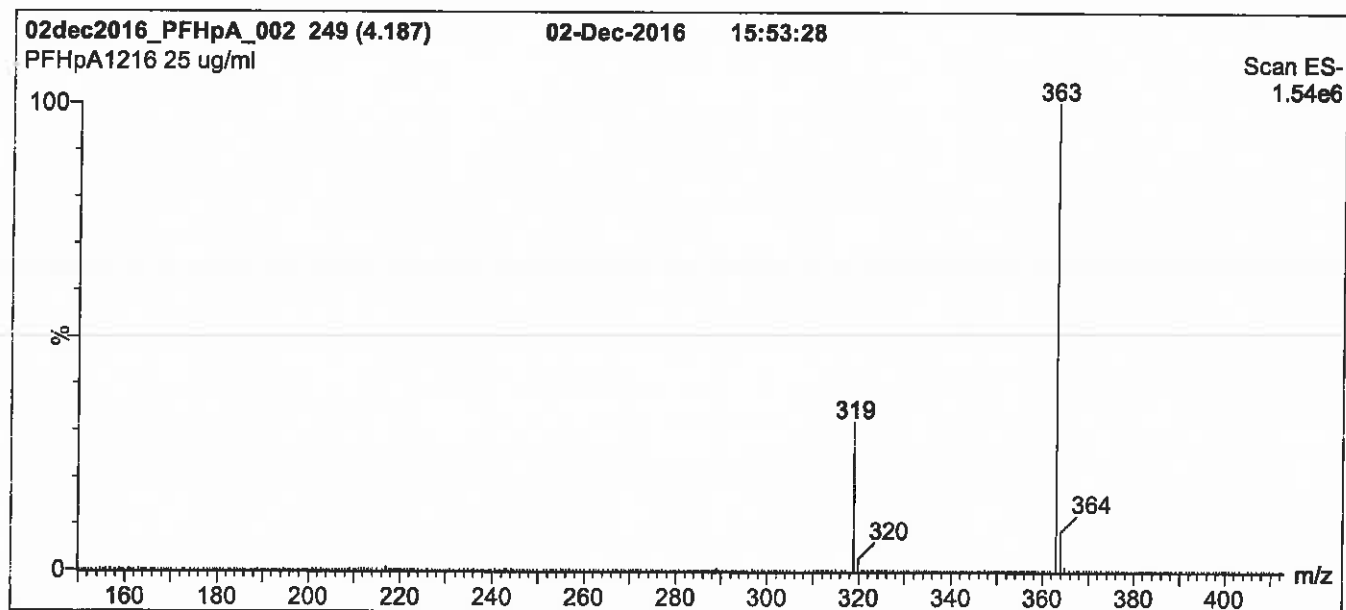
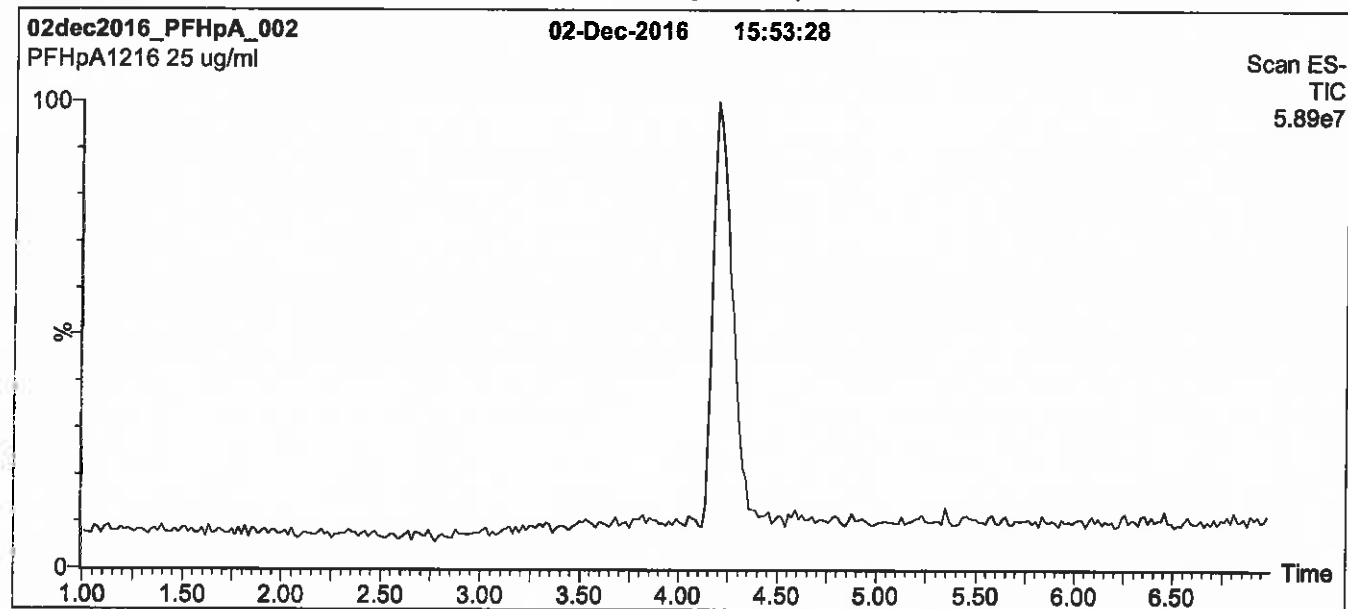
QUALITY MANAGEMENT:

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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

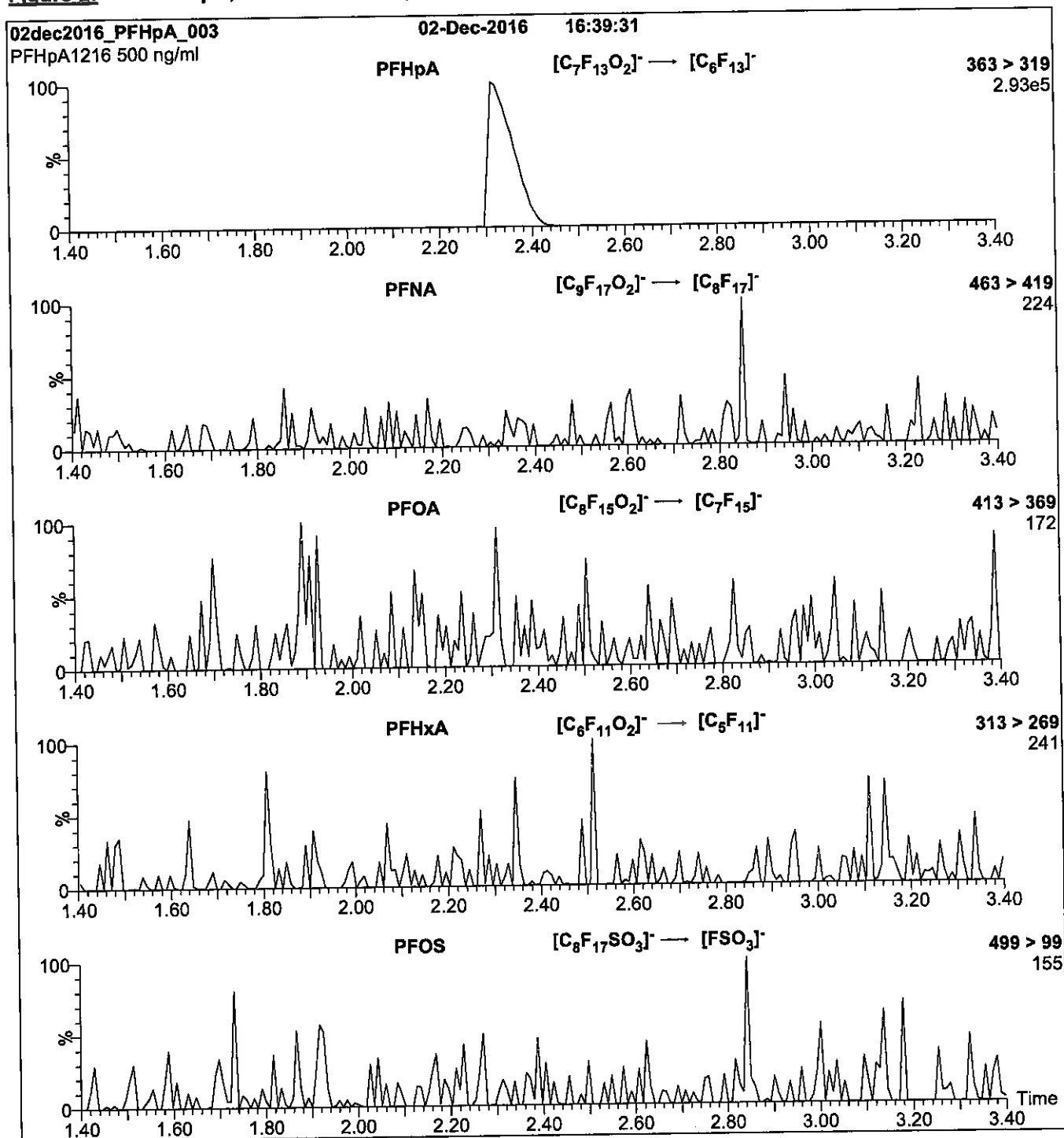
Flow: 300 μ l/min

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% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFHxS-br_00005



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate Solution/Mixture of Linear and Branched Isomers

<u>PRODUCT CODE:</u>	br-PFHxSK
<u>LOT NUMBER:</u>	brPFHxSK0117
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/ml (total potassium salt) 45.5 ± 2.3 µg/ml (total PFHxS anion)
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	01/03/2017
<u>LAST TESTED:</u> (mm/dd/yyyy)	01/04/2017
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	01/04/2022
<u>RECOMMENDED STORAGE:</u>	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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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.

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EXPIRY DATE / PERIOD OF VALIDITY:

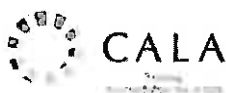
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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

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

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

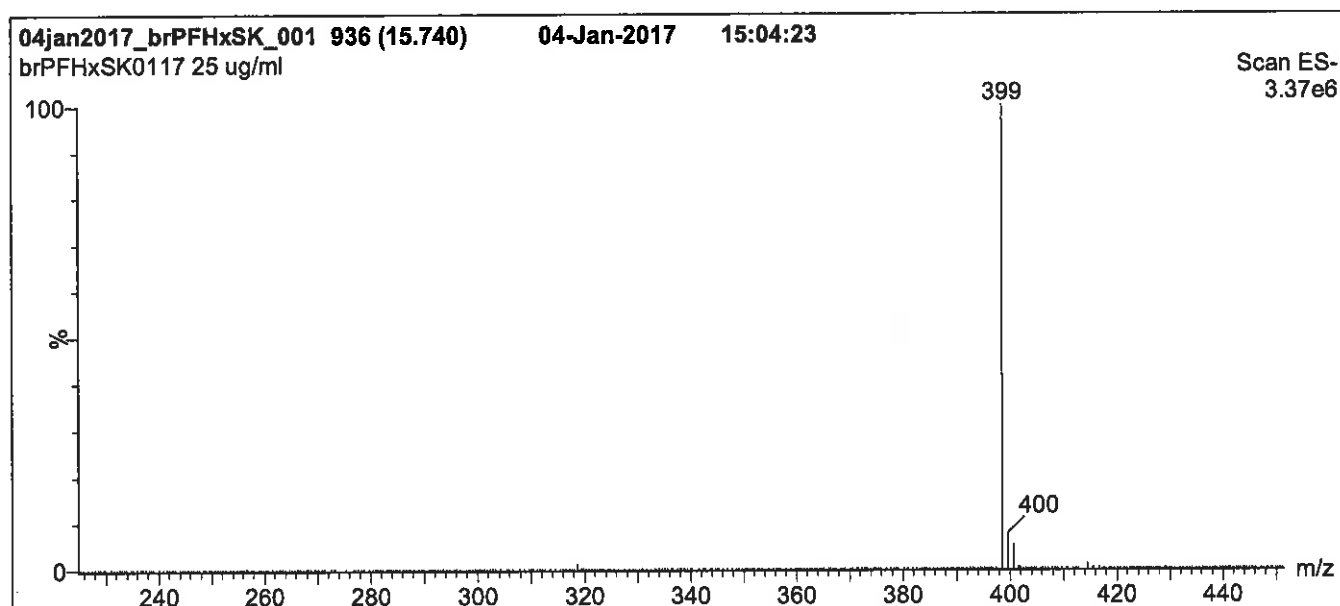
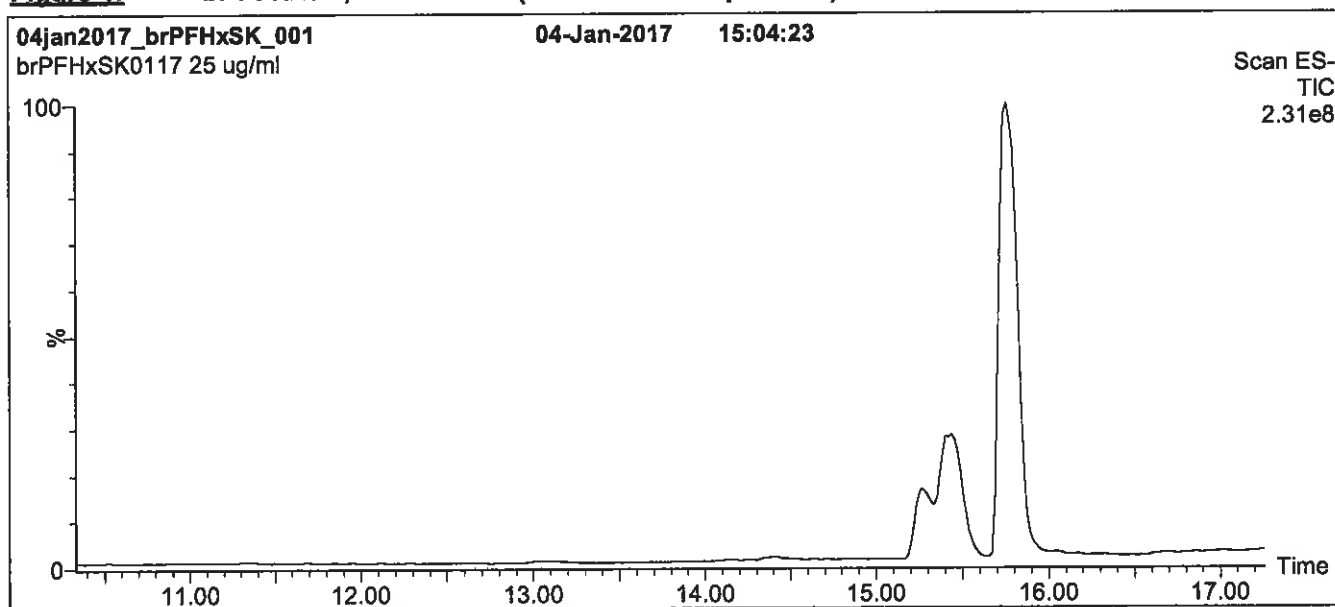
Certified By:


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

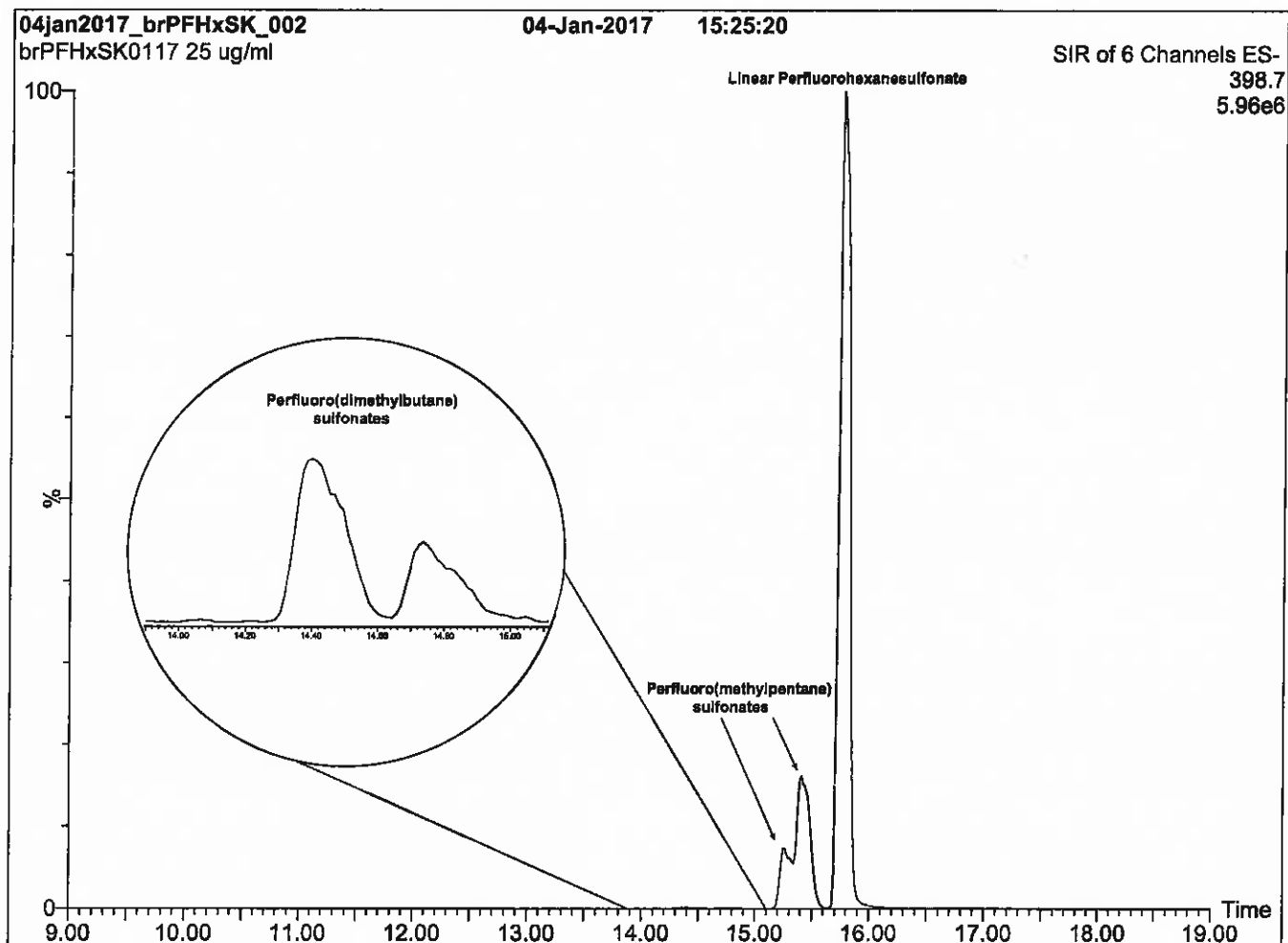
Flow: 300 μ l/min

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

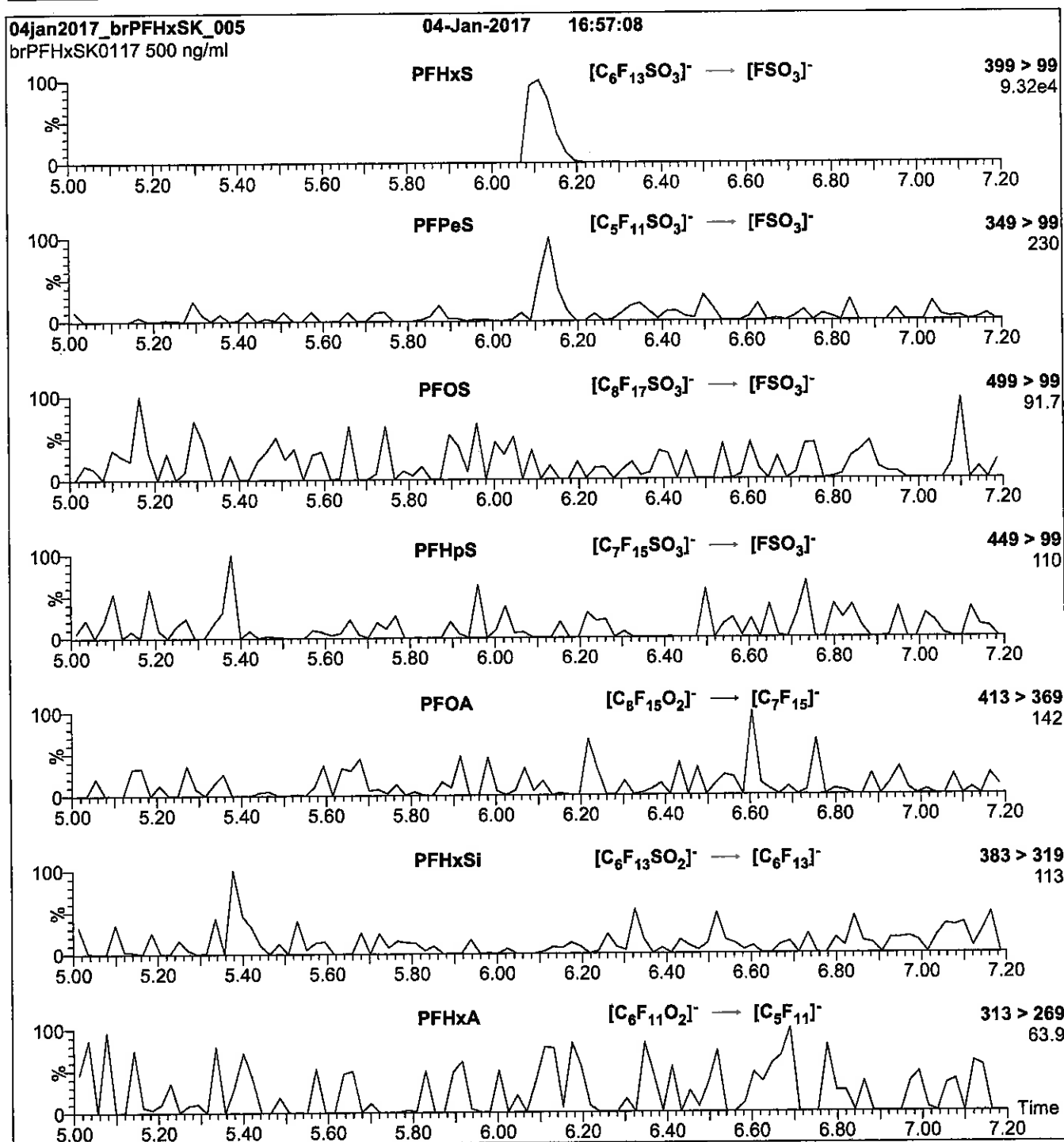
Flow: 300 μ l/min

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

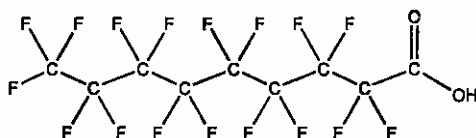
COMPOUND:

Perfluoro-n-nonanoic acid

STRUCTURE:

CAS #:

375-95-1



MOLECULAR FORMULA:

$C_9H_{17}O_2$

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:

B.G. Chittim, General Manager

Date: 07/24/2017

(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:

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.

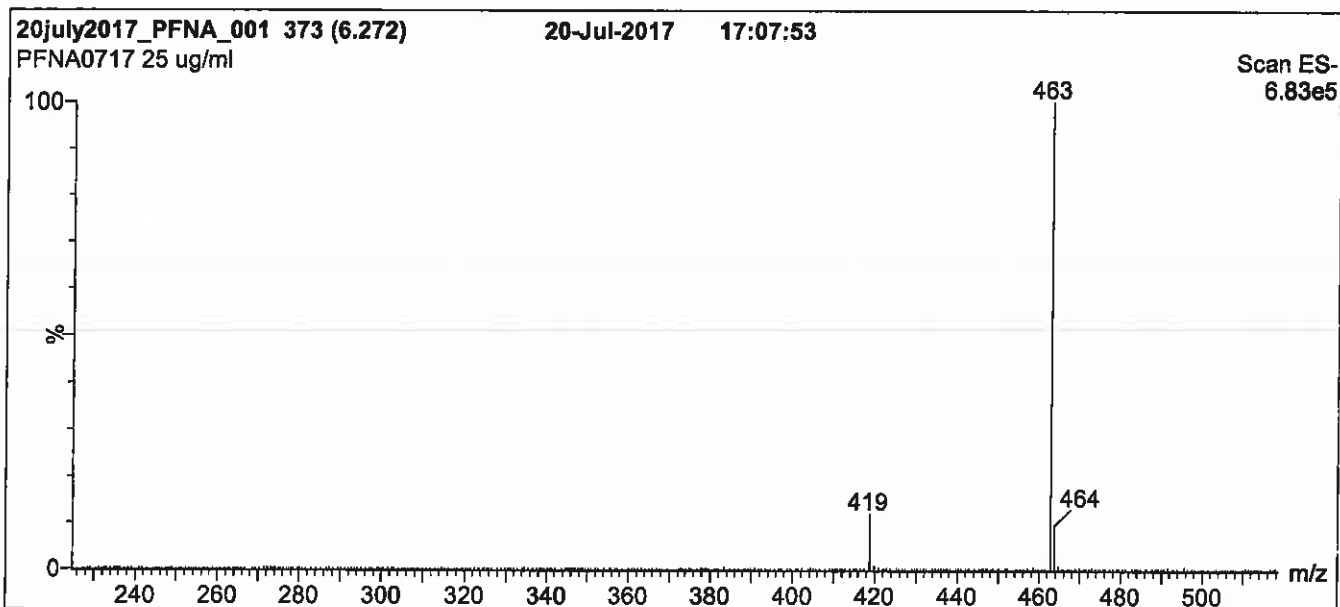
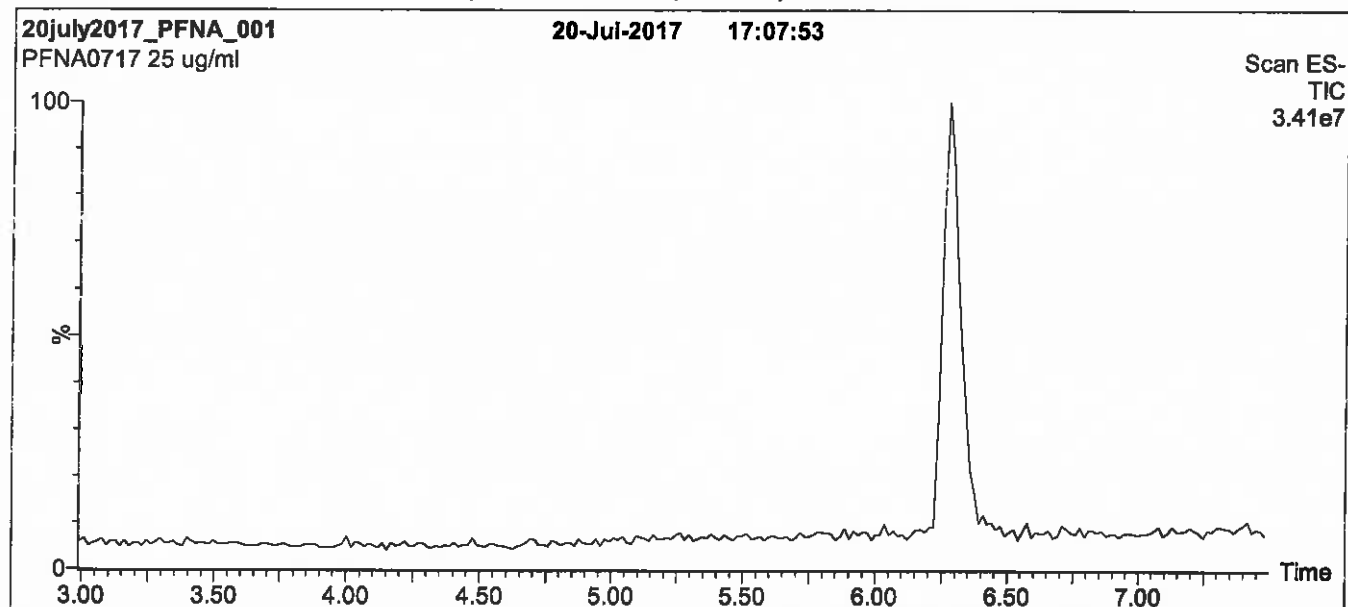
QUALITY MANAGEMENT:

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)

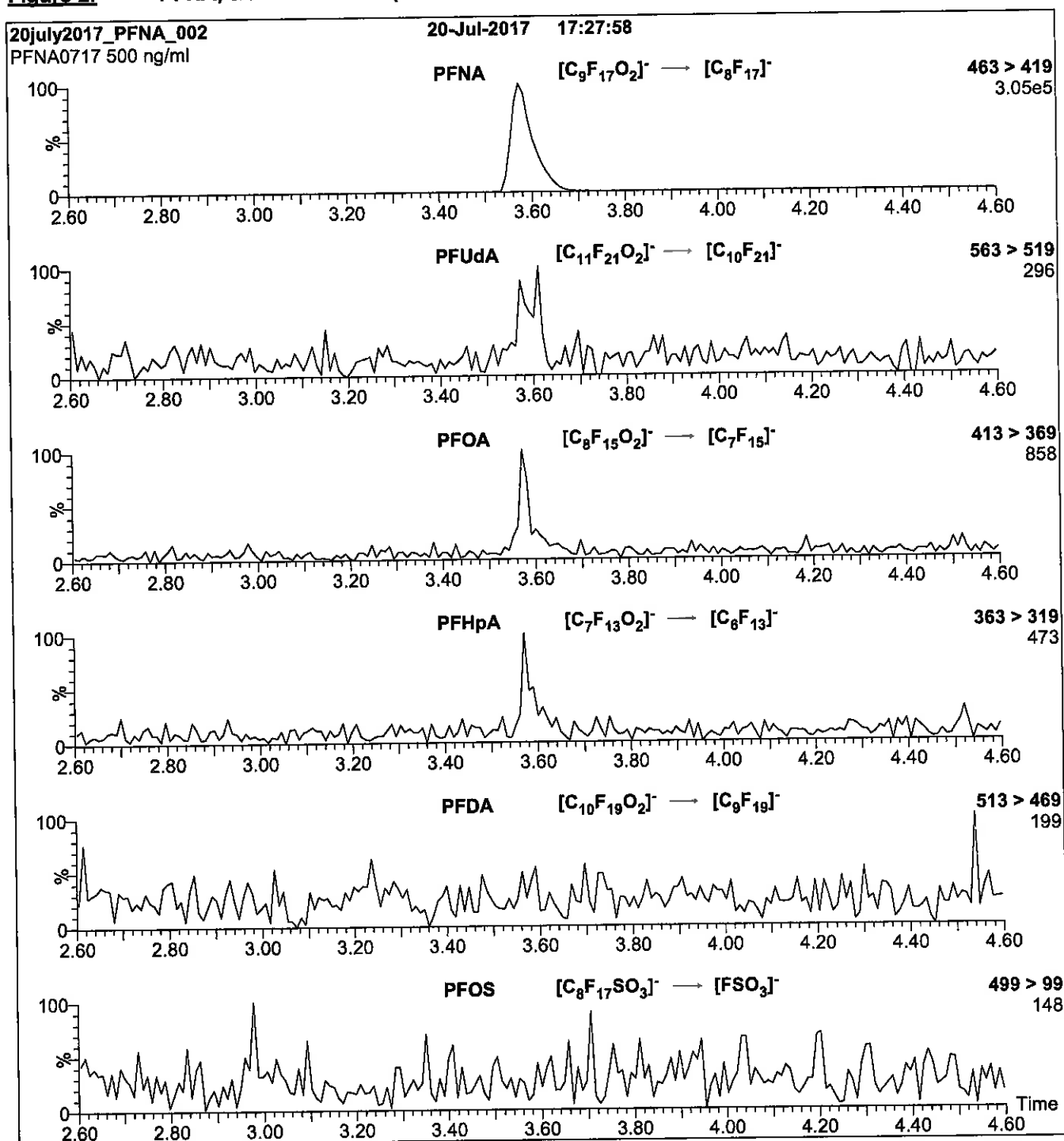
Capillary Voltage (kV) = 2.00

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



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFOA

LOT NUMBER:

PFOA0917

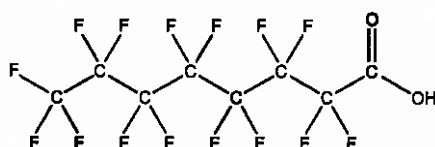
COMPOUND:

Perfluoro-n-octanoic acid

STRUCTURE:

CAS #:

335-67-1



MOLECULAR FORMULA:

$C_8H_{15}O_2$

MOLECULAR WEIGHT:

414.07

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

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:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

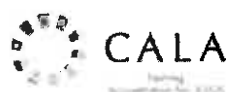
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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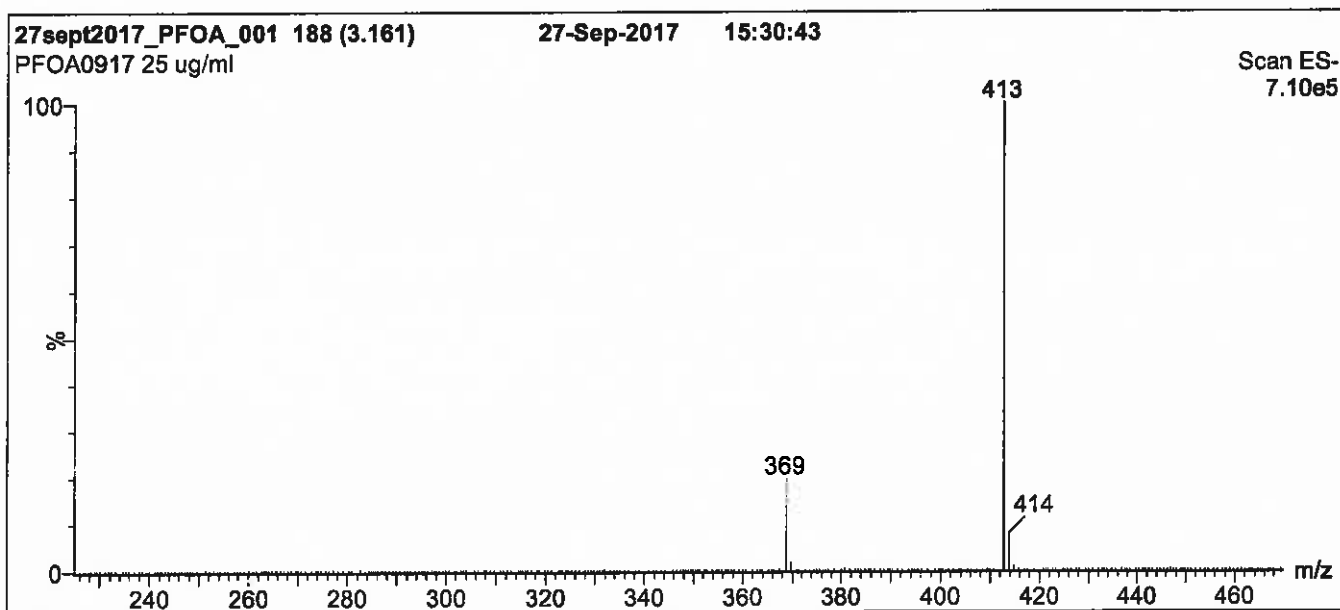
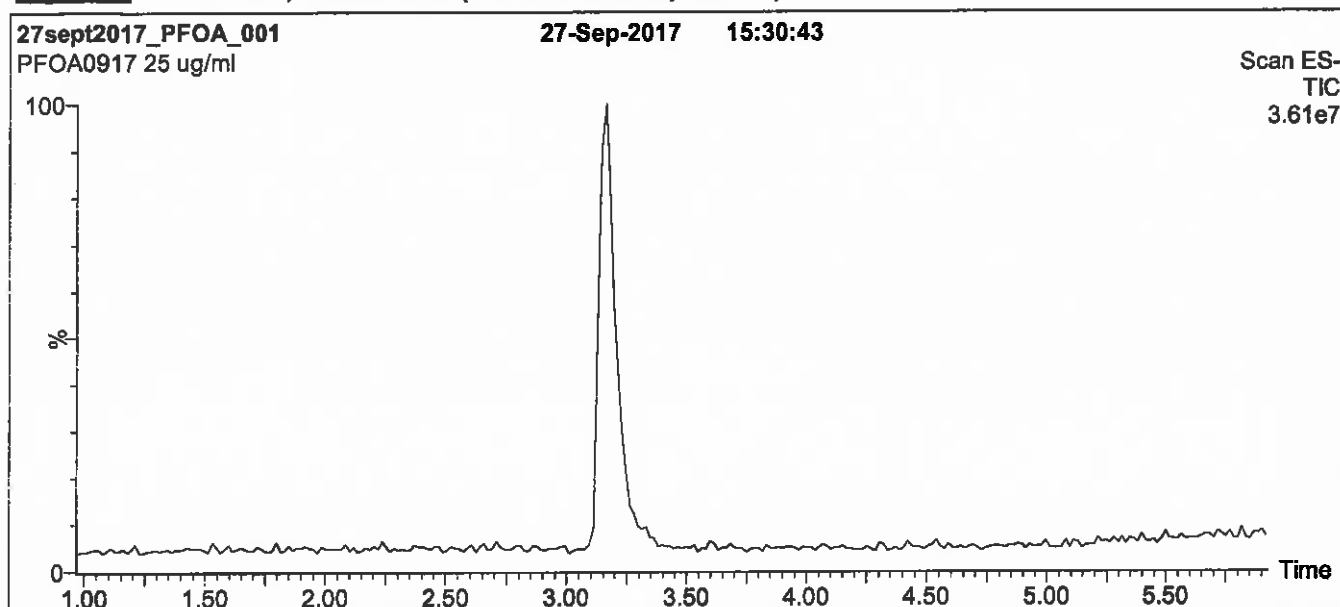
QUALITY MANAGEMENT:

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

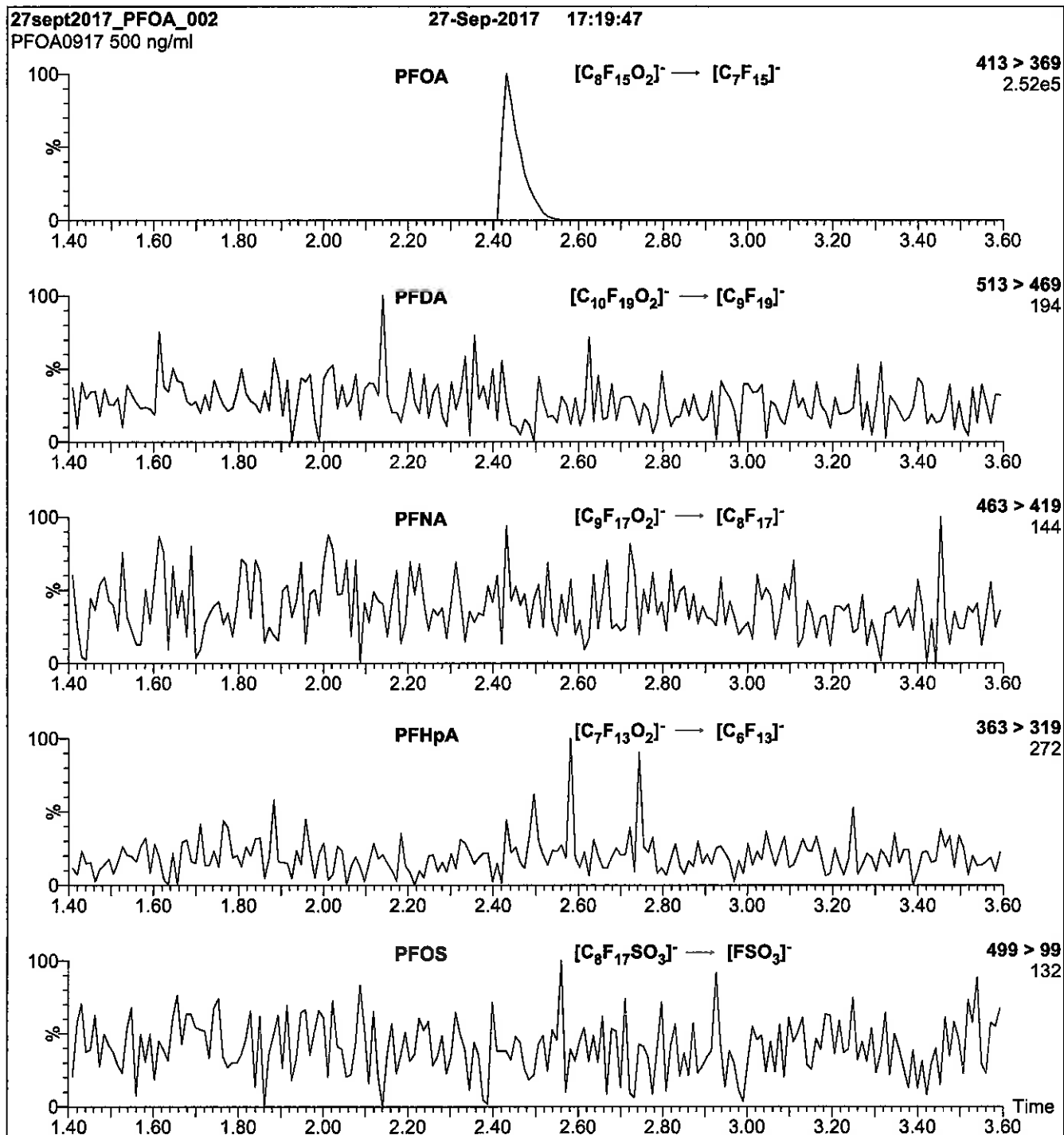
Flow: 300 μ l/min

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: 10/20/17 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

<u>PRODUCT CODE:</u>	br-PFOSK
<u>LOT NUMBER:</u>	brPFOSK0117
<u>CONCENTRATION:</u>	50 ± 2.5 µg/ml (total potassium salt) 46.4 ± 2.3 µg/ml (total PFOS anion)
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	01/09/2017
<u>LAST TESTED:</u> (mm/dd/yyyy)	01/12/2017
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	01/12/2022
<u>RECOMMENDED STORAGE:</u>	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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SYNTHESIS / CHARACTERIZATION:

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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.

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

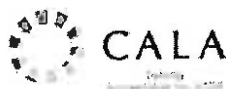
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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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 SO ₃ ⁻ K ⁺	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF(SO ₃ ⁻)K ⁺ CF ₃	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF(CF ₃)SO ₃ ⁻ K ⁺ CF ₃	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF(CF ₃)CF ₂ SO ₃ ⁻ K ⁺ CF ₃	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF(CF ₃)CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF(CF ₃)CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF(CF ₃)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 ₃ CCF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₃ CF ₂ CCF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₃ CF(CF ₃)CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₃ CF(CF ₃)CF ₂ CF(CF ₃)CF ₂ SO ₃ ⁻ K ⁺ CF ₃	0.07

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.

** Systematic Name: Potassium perfluorooctane-2-sulfonate.

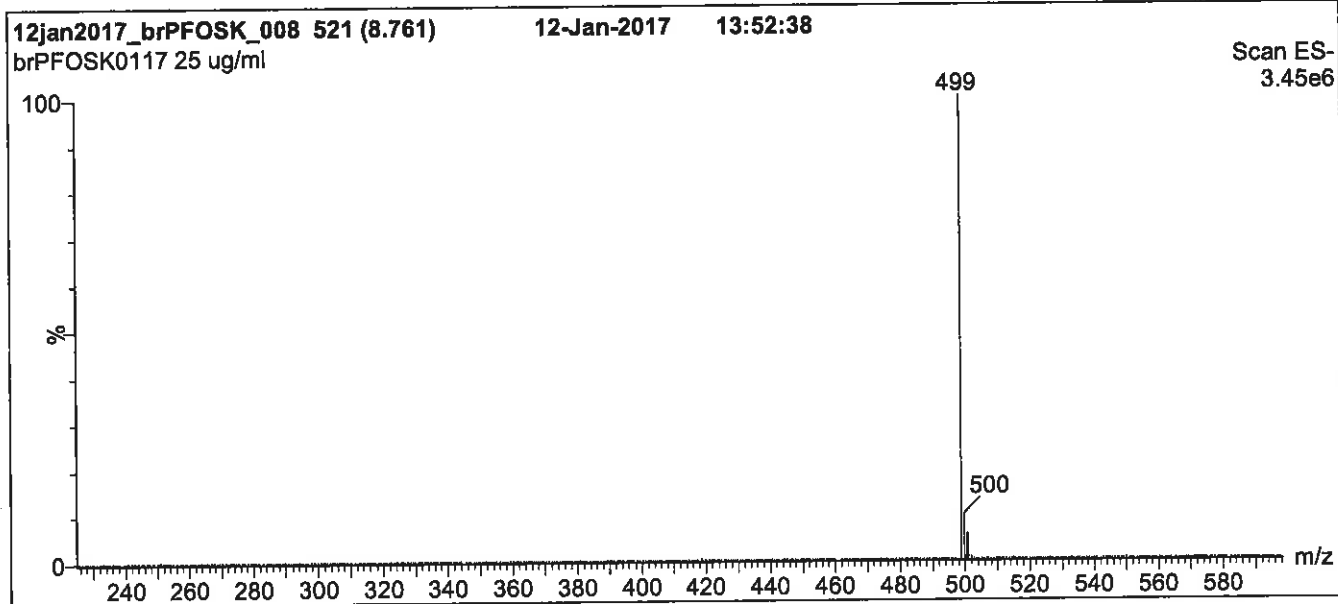
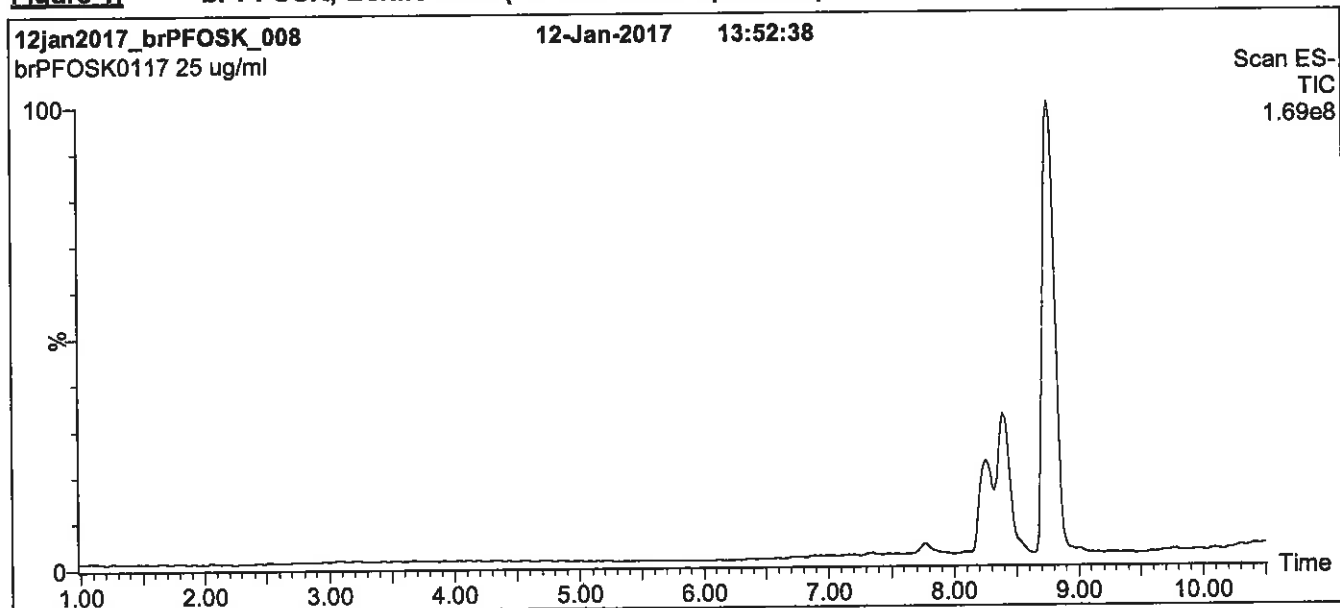
Certified By:


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

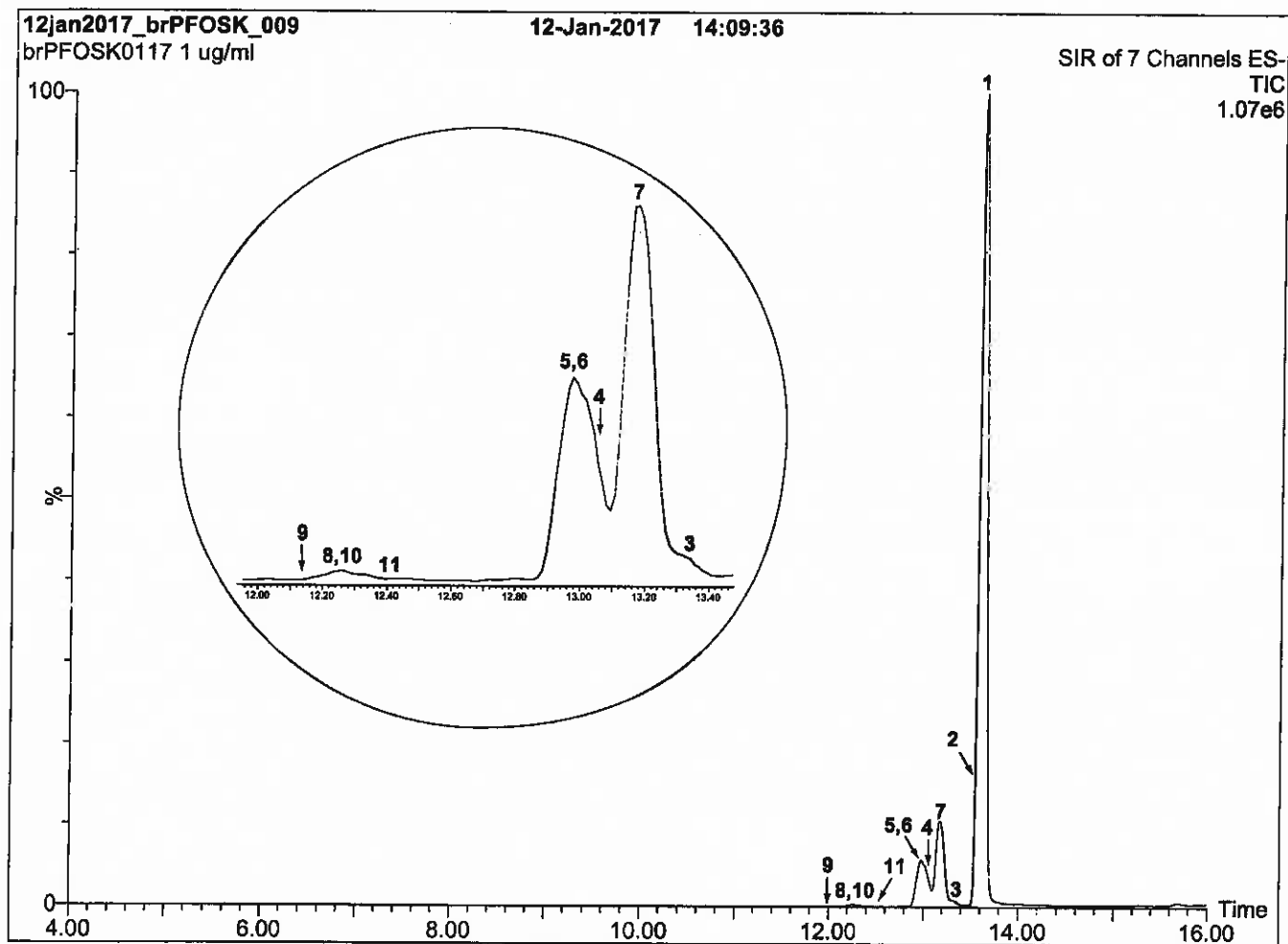
Flow: 300 μ l/min

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

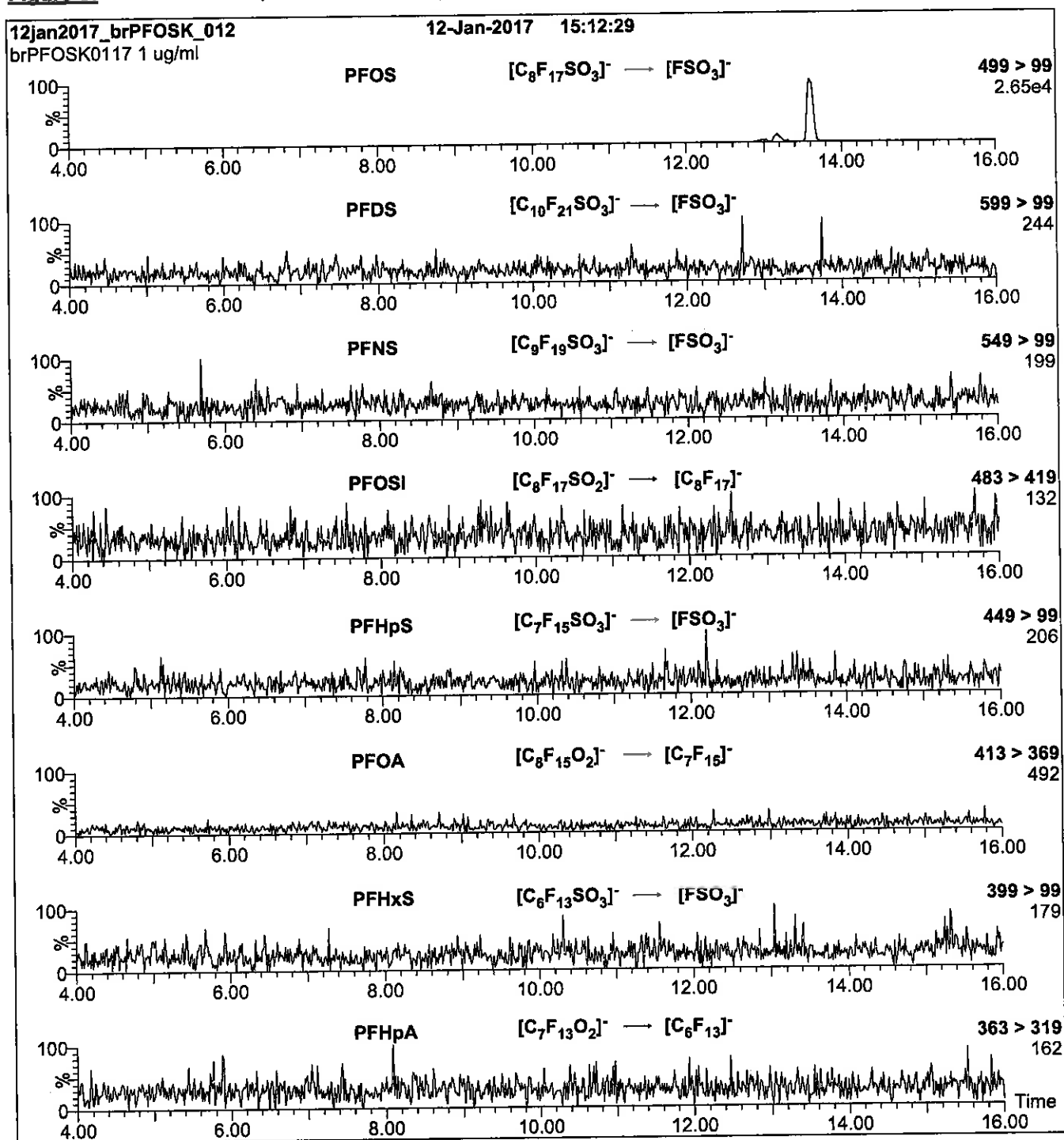
Chromatographic Conditions:

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.: 320-38538-1

SDG No.: _____

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-042518-RW-378 5	320-38538-1	100	84
WGNA-042518-FRB-37 85	320-38538-2	109	94
WGNA-042518-RW-332 5	320-38538-3	97	83
WGNA-042518-FRB-33 25	320-38538-4	97	95
WGNA-042518-RW-500	320-38538-5	101	92
WGNA-042518-FRB-50 0	320-38538-6	112	97
WGNA-042518-RW-352 9	320-38538-7	96	94
WGNA-042518-FRB-35 29	320-38538-8	100	95
WGNA-042518-RW-395 7	320-38538-9	105	92
WGNA-042518-FRB-39 57	320-38538-10	102	91
WGNA-042518-RW-068 3	320-38538-11	104	97
WGNA-042518-FRB-06 83	320-38538-12	113	102
NAWC-042518-RW-272	320-38538-13	102	90
NAWC-042518-FRB-27 2	320-38538-14	110	101
WGNA-042518-DUP-34	320-38538-15	106	100
	MB 320-220576/1-A	104	96
	LLCS 320-220576/2-A	102	87
	LLCSD 320-220576/3-A	106	91

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.: 320-38538-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.05.05_537A_048.d
 Lab ID: LLCS 320-220576/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LLCS CONCENTRATION (ng/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	40.2	40.4	100	50-150	M
Perfluorooctanoic acid (PFOA)	20.0	19.1 J	96	50-150	
Perfluorononanoic acid (PFNA)	20.0	17.8 J	89	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.3	32.8	108	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	9.81 J	98	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.2	97.0	108	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.: 320-38538-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.05.05_537A_049.d
 Lab ID: LLCSD 320-220576/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LLCSD CONCENTRATION (ng/L)	LLCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	40.2	41.3	103	2	50	50-150	M
Perfluorooctanoic acid (PFOA)	20.0	19.4 J	97	1	50	50-150	
Perfluorononanoic acid (PFNA)	20.0	17.7 J	89	0.5	50	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.3	32.3	107	1	50	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	9.50 J	95	3	50	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.2	98.1	109	1	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.: 320-38538-1
 SDG No.: _____
 Lab File ID: 2018.05.05_537A_047.d Lab Sample ID: MB 320-220576/1-A
 Matrix: Water Date Extracted: 04/30/2018 08:44
 Instrument ID: A8_N Date Analyzed: 05/05/2018 06:04
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-220576/2-A	2018.05.05_537A_048.d	05/05/2018 06:09
	LLCSD 320-220576/3-A	2018.05.05_537A_049.d	05/05/2018 06:13
WGNA-042518-RW-3785	320-38538-1	2018.05.05_537A_050.d	05/05/2018 06:18
WGNA-042518-FRB-3785	320-38538-2	2018.05.05_537A_051.d	05/05/2018 06:23
WGNA-042518-RW-3325	320-38538-3	2018.05.05_537A_052.d	05/05/2018 06:27
WGNA-042518-FRB-3325	320-38538-4	2018.05.05_537A_053.d	05/05/2018 06:32
WGNA-042518-RW-500	320-38538-5	2018.05.05_537A_054.d	05/05/2018 06:37
WGNA-042518-FRB-500	320-38538-6	2018.05.05_537A_055.d	05/05/2018 06:41
WGNA-042518-RW-3529	320-38538-7	2018.05.05_537A_056.d	05/05/2018 06:46
WGNA-042518-FRB-3529	320-38538-8	2018.05.05_537A_059.d	05/05/2018 07:00
WGNA-042518-RW-3957	320-38538-9	2018.05.05_537A_060.d	05/05/2018 07:05
WGNA-042518-FRB-3957	320-38538-10	2018.05.05_537A_061.d	05/05/2018 07:10
WGNA-042518-RW-0683	320-38538-11	2018.05.05_537A_062.d	05/05/2018 07:14
WGNA-042518-FRB-0683	320-38538-12	2018.05.05_537A_063.d	05/05/2018 07:19
NAWC-042518-RW-272	320-38538-13	2018.05.05_537A_064.d	05/05/2018 07:24
NAWC-042518-FRB-272	320-38538-14	2018.05.05_537A_065.d	05/05/2018 07:28
WGNA-042518-DUP-34	320-38538-15	2018.05.05_537A_066.d	05/05/2018 07:33

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 04/11/2018 12:09
 Calibration ID: 38530

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		970041	1.86	2344935	2.10		
UPPER LIMIT		1455062	2.36	3517403	2.60		
LOWER LIMIT		485021	1.36	1172468	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-217453/10		964533	1.87	2387973	2.10		
ICV 320-217453/12		1123391	1.86	2710764	2.10		
CCVL 320-221668/1		973132	1.89	2267687	2.13		
CCV 320-221679/1 CCVIS		996991	1.87	2376746	2.12		
MB 320-220576/1-A		986179	1.87	2337498	2.12		
LLCS 320-220576/2-A		925698	1.88	2118373	2.12		
LLCSD 320-220576/3-A		996981	1.87	2219527	2.11		
320-38538-1	WGNA-042518-RW-3785	1047030	1.87	2294047	2.12		
320-38538-2	WGNA-042518-FRB-3785	952184	1.88	2108878	2.12		
320-38538-3	WGNA-042518-RW-3325	1027275	1.87	2294962	2.11		
320-38538-4	WGNA-042518-FRB-3325	984513	1.87	2281039	2.11		
320-38538-5	WGNA-042518-RW-500	907357	1.87	2095567	2.11		
320-38538-6	WGNA-042518-FRB-500	1033040	1.87	2423494	2.12		
320-38538-7	WGNA-042518-RW-3529	1134717	1.87	2564258	2.11		
CCV 320-221679/13 CCVIS		1039210	1.88	2342991	2.12		
CCV 320-221681/13 CCVIS		1039210	1.88	2342991	2.12		
320-38538-8	WGNA-042518-FRB-3529	987829	1.87	2182756	2.11		
320-38538-9	WGNA-042518-RW-3957	964018	1.88	2245560	2.12		
320-38538-10	WGNA-042518-FRB-3957	985723	1.87	2216286	2.11		
320-38538-11	WGNA-042518-RW-0683	1129722	1.87	2628111	2.11		
320-38538-12	WGNA-042518-FRB-0683	1021032	1.87	2337212	2.11		
320-38538-13	NAWC-042518-RW-272	977865	1.87	2256090	2.11		
320-38538-14	NAWC-042518-FRB-272	1147226	1.87	2678684	2.11		
320-38538-15	WGNA-042518-DUP-34	1028595	1.88	2346982	2.12		
CCV 320-221681/23 CCVIS		941946	1.87	2296399	2.11		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Sample No.: CCV 320-221679/1 Date Analyzed: 05/05/2018 05:55
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.05.05_537A_045 Heated Purge: (Y/N) N
 Calibration ID: 38530

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		996991	1.87	2376746	2.12		
UPPER LIMIT		1395787	2.37	3327444	2.62		
LOWER LIMIT		697894	1.37	1663722	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-220576/1-A		986179	1.87	2337498	2.12		
LLCS 320-220576/2-A		925698	1.88	2118373	2.12		
LLCSD 320-220576/3-A		996981	1.87	2219527	2.11		
320-38538-1	WGNA-042518-RW-3785	1047030	1.87	2294047	2.12		
320-38538-2	WGNA-042518-FRB-3785	952184	1.88	2108878	2.12		
320-38538-3	WGNA-042518-RW-3325	1027275	1.87	2294962	2.11		
320-38538-4	WGNA-042518-FRB-3325	984513	1.87	2281039	2.11		
320-38538-5	WGNA-042518-RW-500	907357	1.87	2095567	2.11		
320-38538-6	WGNA-042518-FRB-500	1033040	1.87	2423494	2.12		
320-38538-7	WGNA-042518-RW-3529	1134717	1.87	2564258	2.11		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Sample No.: CCV 320-221679/13 Date Analyzed: 05/05/2018 06:51
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.05.05_537A_057 Heated Purge: (Y/N) N
 Calibration ID: 38530

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1039210	1.88	2342991	2.12		
UPPER LIMIT		1454894	2.38	3280187	2.62		
LOWER LIMIT		727447	1.38	1640094	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-220576/1-A		986179	1.87	2337498	2.12		
LLCS 320-220576/2-A		925698	1.88	2118373	2.12		
LLCSD 320-220576/3-A		996981	1.87	2219527	2.11		
320-38538-1	WGNA-042518-RW-3785	1047030	1.87	2294047	2.12		
320-38538-2	WGNA-042518-FRB-3785	952184	1.88	2108878	2.12		
320-38538-3	WGNA-042518-RW-3325	1027275	1.87	2294962	2.11		
320-38538-4	WGNA-042518-FRB-3325	984513	1.87	2281039	2.11		
320-38538-5	WGNA-042518-RW-500	907357	1.87	2095567	2.11		
320-38538-6	WGNA-042518-FRB-500	1033040	1.87	2423494	2.12		
320-38538-7	WGNA-042518-RW-3529	1134717	1.87	2564258	2.11		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Sample No.: CCV 320-221681/13 Date Analyzed: 05/05/2018 06:51
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.05.05_537A_057 Heated Purge: (Y/N) N
 Calibration ID: 38530

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	1039210	1.88	2342991	2.12		
UPPER LIMIT	1454894	2.38	3280187	2.62		
LOWER LIMIT	727447	1.38	1640094	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-38538-8	WGNA-042518-FRB-3529	987829	1.87	2182756	2.11	
320-38538-9	WGNA-042518-RW-3957	964018	1.88	2245560	2.12	
320-38538-10	WGNA-042518-FRB-3957	985723	1.87	2216286	2.11	
320-38538-11	WGNA-042518-RW-0683	1129722	1.87	2628111	2.11	
320-38538-12	WGNA-042518-FRB-0683	1021032	1.87	2337212	2.11	
320-38538-13	NAWC-042518-RW-272	977865	1.87	2256090	2.11	
320-38538-14	NAWC-042518-FRB-272	1147226	1.87	2678684	2.11	
320-38538-15	WGNA-042518-DUP-34	1028595	1.88	2346982	2.12	

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Sample No.: CCV 320-221681/23 Date Analyzed: 05/05/2018 07:38
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.05.05_537A_067 Heated Purge: (Y/N) N
 Calibration ID: 38530

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	941946	1.87	2296399	2.11		
UPPER LIMIT	1318724	2.37	3214959	2.61		
LOWER LIMIT	659362	1.37	1607479	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-38538-8	WGNA-042518-FRB-3529	987829	1.87	2182756	2.11	
320-38538-9	WGNA-042518-RW-3957	964018	1.88	2245560	2.12	
320-38538-10	WGNA-042518-FRB-3957	985723	1.87	2216286	2.11	
320-38538-11	WGNA-042518-RW-0683	1129722	1.87	2628111	2.11	
320-38538-12	WGNA-042518-FRB-0683	1021032	1.87	2337212	2.11	
320-38538-13	NAWC-042518-RW-272	977865	1.87	2256090	2.11	
320-38538-14	NAWC-042518-FRB-272	1147226	1.87	2678684	2.11	
320-38538-15	WGNA-042518-DUP-34	1028595	1.88	2346982	2.12	

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

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

Column used to flag values outside QC limits

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-RW-3785</u>	Lab Sample ID: <u>320-38538-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_050.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 08:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>248.4 (mL)</u>	Date Analyzed: <u>05/05/2018 06:18</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221679</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	13	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	17	J	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	17	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.4	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	84		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_050.d
 Lims ID: 320-38538-A-1-A
 Client ID: WGNA-042518-RW-3785
 Sample Type: Client
 Inject. Date: 05-May-2018 06:18:33 ALS Bottle#: 34 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-38538-a-1-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:25:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.404	0.0	1.000	168010	2.00		57.8	
298.90 > 99.00	1.404	1.404	0.0	1.000	133886		1.25(0.00-0.00)	74.7	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.533	0.0	1.000	1108730	9.96		7707	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.684	0.0	1.000	544993	4.15		123	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.684	0.0	1.000	177827	1.58		14.8	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.874	0.0		1047030	10.0		6164	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.882	-0.008	1.000	461150	4.15		48.7	
413.00 > 169.00	1.874	1.882	-0.008	1.000	344588		1.34(0.00-0.00)	185	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.117	0.0		2294047	28.7		896	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.117	0.0	1.000	279319	3.28		36.9	a
499.00 > 99.00	2.117	2.117	0.0	1.000	49440		5.65(0.00-0.00)	60.9	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.124	0.0	1.000	30064	0.3409		3.7	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	746537	8.38		7271	M

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_050.d

Injection Date: 05-May-2018 06:18:33

Instrument ID: A8_N

Lims ID: 320-38538-A-1-A

Lab Sample ID: 320-38538-1

Client ID: WGNA-042518-RW-3785

Operator ID: SACINSTLCMS01

ALS Bottle#: 34

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

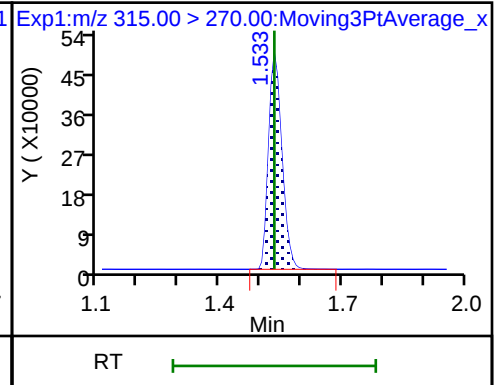
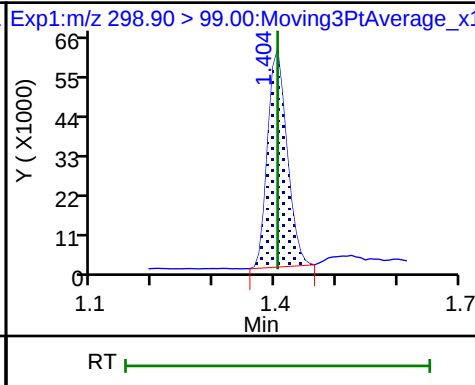
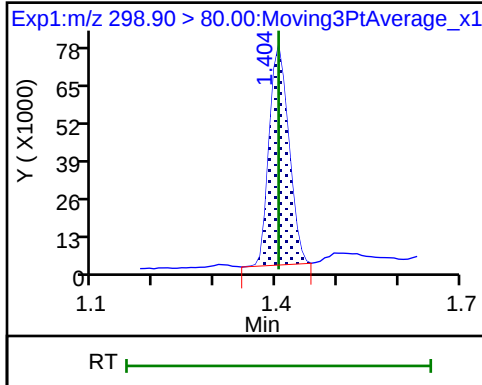
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

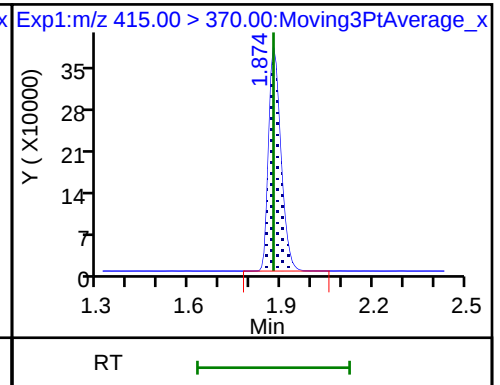
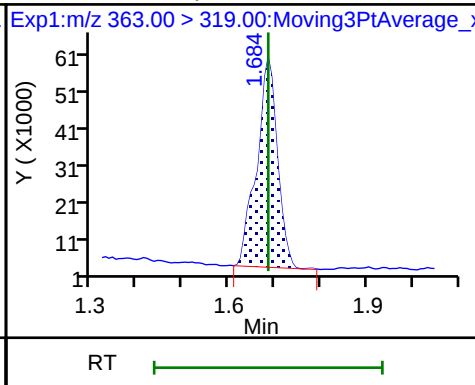
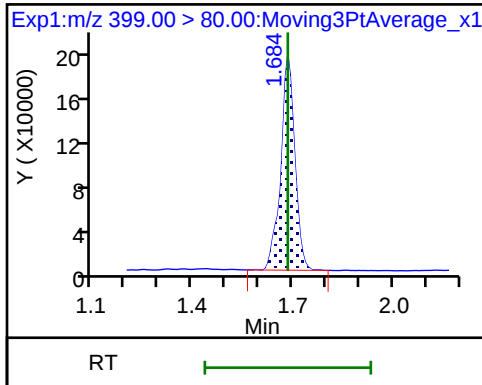
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

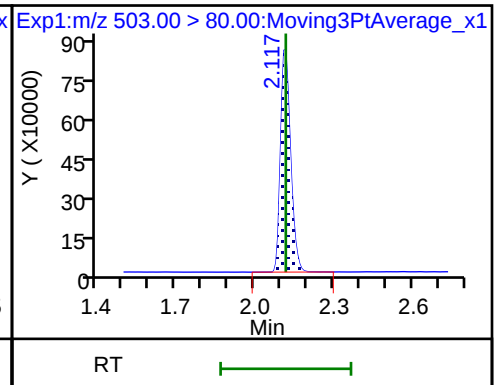
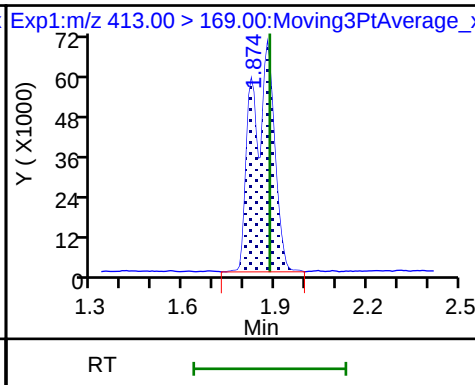
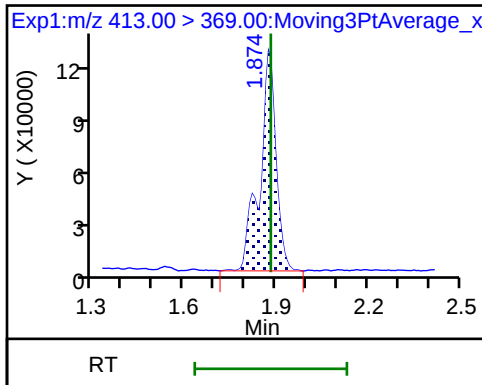
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

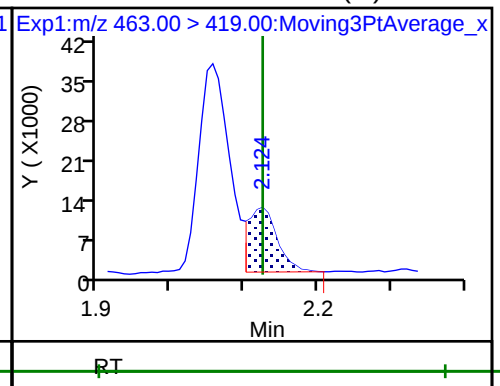
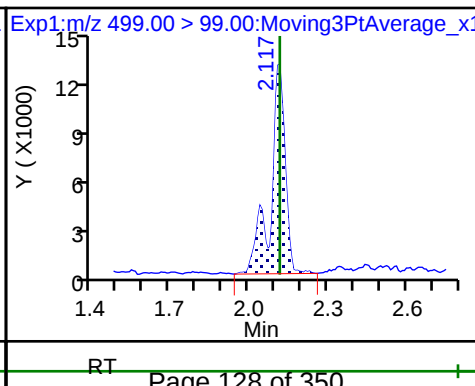
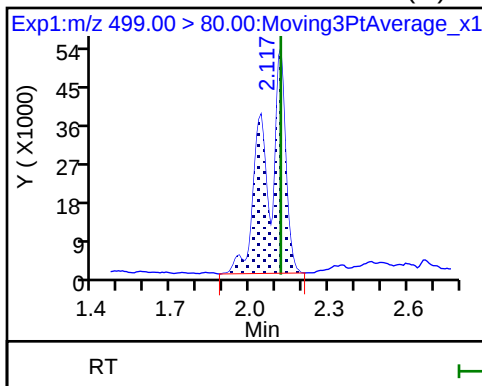
* 7 13C4 PFOS



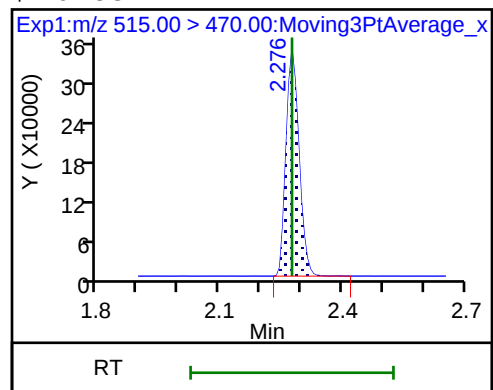
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_050.d
Lims ID: 320-38538-A-1-A
Client ID: WGNA-042518-RW-3785
Sample Type: Client
Inject. Date: 05-May-2018 06:18:33 ALS Bottle#: 34 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-38538-a-1-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:25:01

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.96	99.60
\$ 10 13C2 PFDA	10.0	8.38	83.84

TestAmerica Sacramento

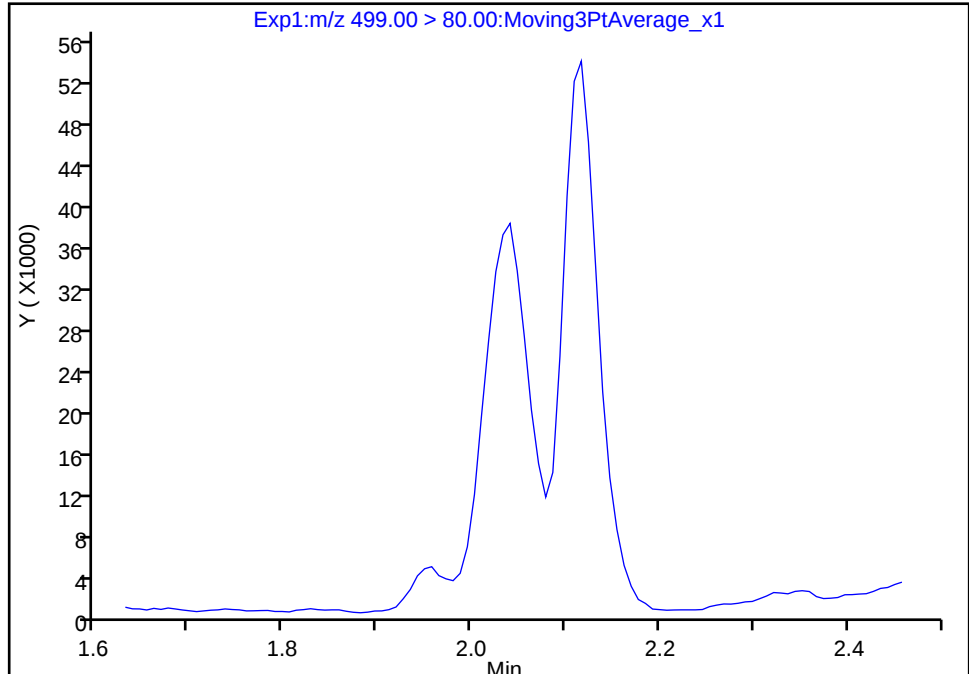
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_050.d				
Injection Date:	05-May-2018 06:18:33	Instrument ID:	A8_N		
Lims ID:	320-38538-A-1-A	Lab Sample ID:	320-38538-1		
Client ID:	WGNA-042518-RW-3785				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector:	EXP1		

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

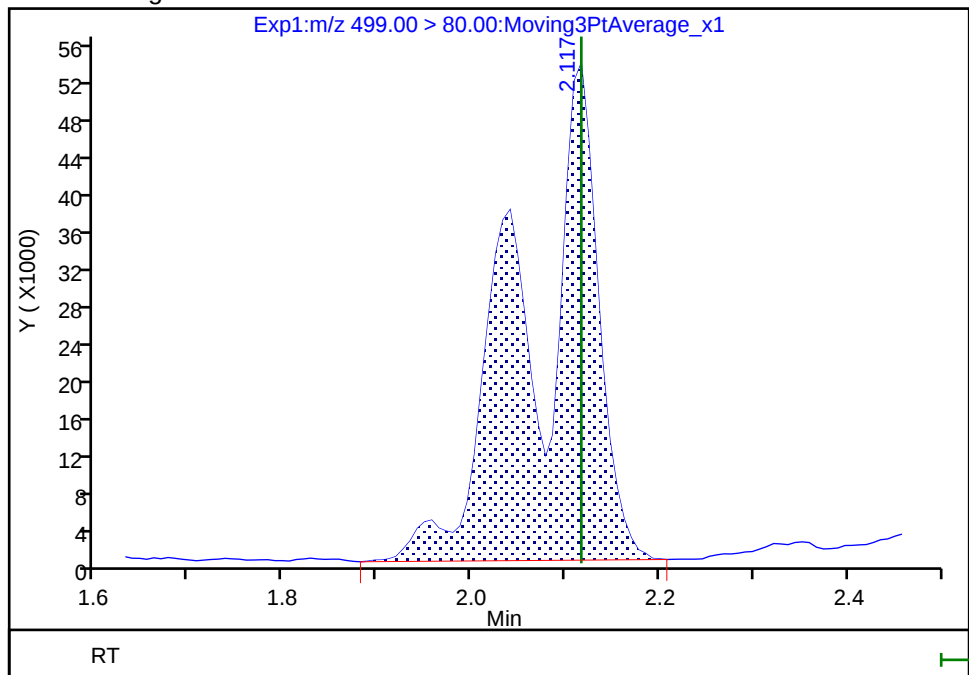
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 279319
Amount: 3.275597
Amount Units: ng/ml

Reviewer: westendorfc, 07-May-2018 13:24:49

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_050.d

Injection Date: 05-May-2018 06:18:33

Instrument ID: A8_N

Lims ID: 320-38538-A-1-A

Lab Sample ID: 320-38538-1

Client ID: WGNA-042518-RW-3785

Operator ID: SACINSTLCMS01

ALS Bottle#: 34 Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

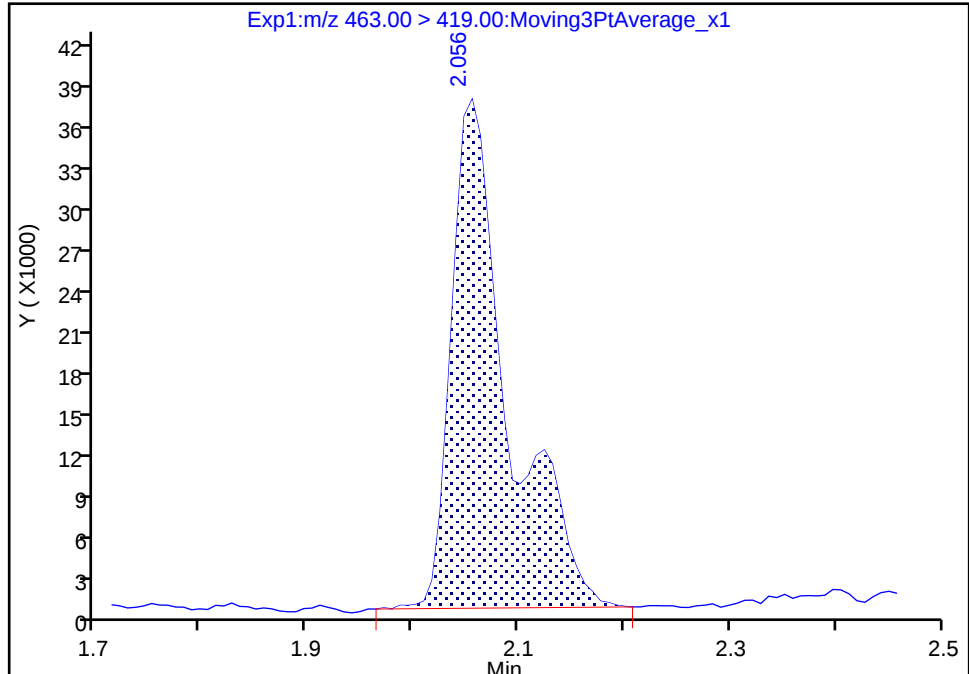
Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

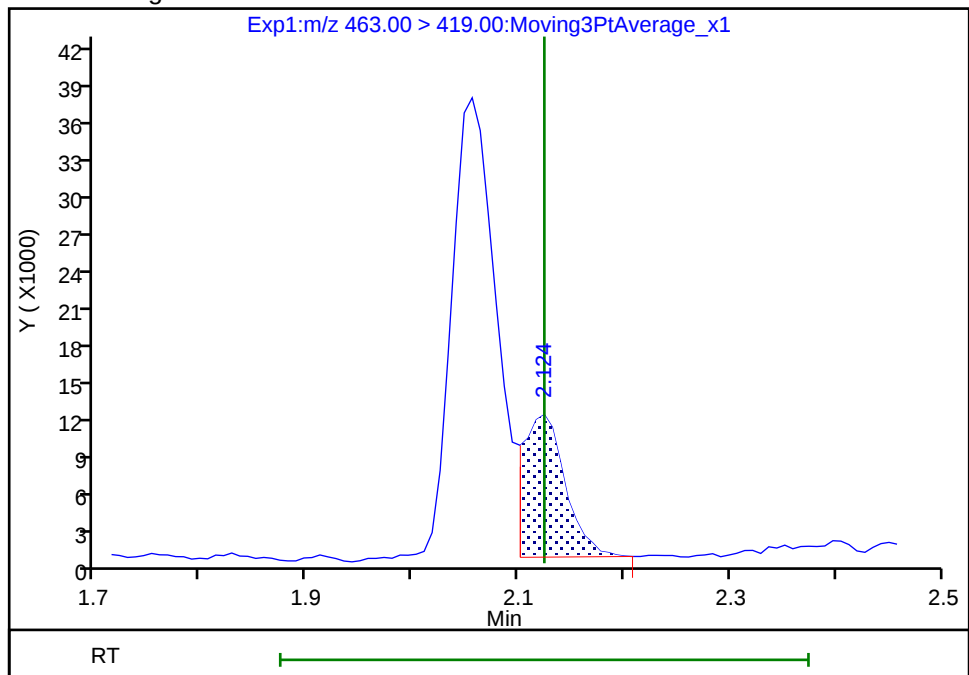
RT: 2.06
Area: 137774
Amount: 1.562047
Amount Units: ng/ml

Processing Integration Results



RT: 2.12
Area: 30064
Amount: 0.340858
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:24:58

Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-FRB-3785</u>	Lab Sample ID: <u>320-38538-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_051.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 08:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>249.2 (mL)</u>	Date Analyzed: <u>05/05/2018 06:23</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221679</u>	Units: <u>ng/L</u>

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	109		70-130
STL00996	13C2 PFDA	94		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_051.d
 Lims ID: 320-38538-A-2-A
 Client ID: WGNA-042518-FRB-3785
 Sample Type: Client
 Inject. Date: 05-May-2018 06:23:15 ALS Bottle#: 35 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-38538-a-2-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK023

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.533	0.007	1.000	1105251	10.9		8686	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.874	0.008		952184	10.0		5804	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.117	0.0		2108878	28.7		1103	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.276	0.008	1.000	761392	9.40		6237	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_051.d

Injection Date: 05-May-2018 06:23:15

Instrument ID: A8_N

Lims ID: 320-38538-A-2-A

Lab Sample ID: 320-38538-2

Client ID: WGNA-042518-FRB-3785

Operator ID: SACINSTLCMS01

ALS Bottle#: 35

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

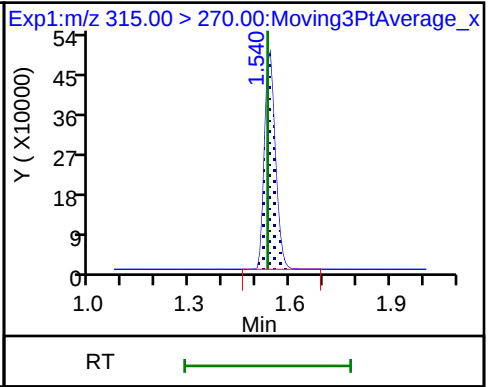
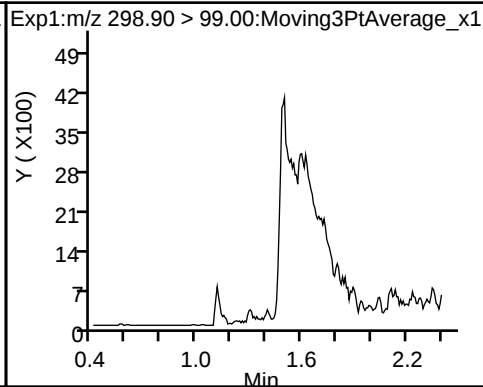
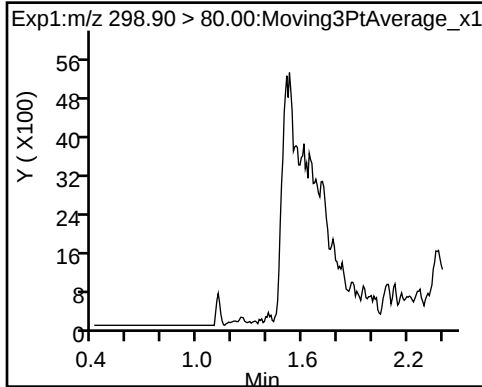
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

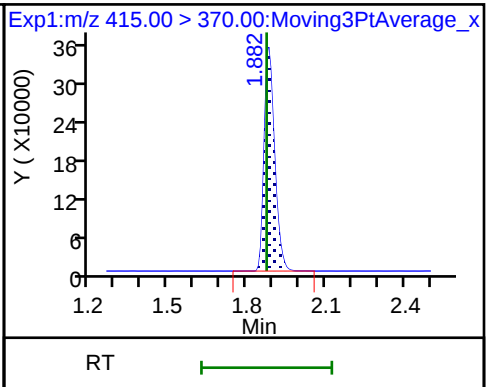
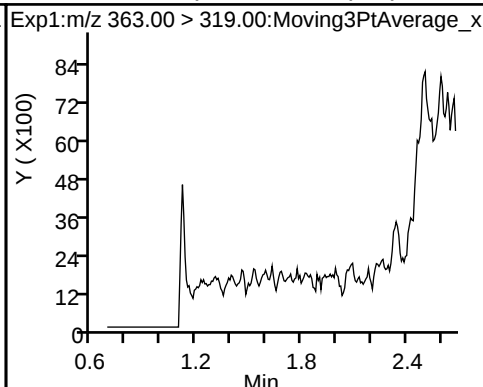
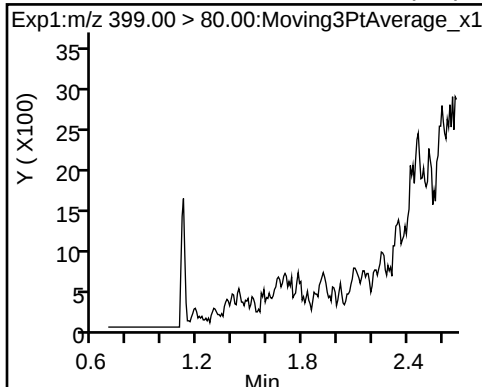
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

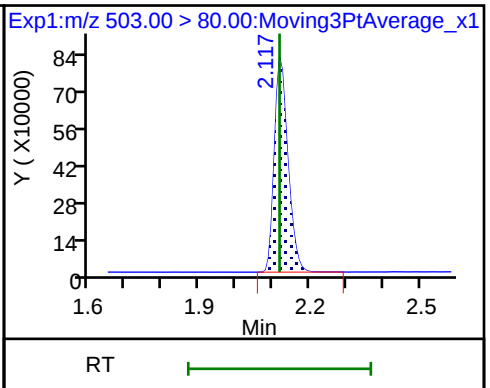
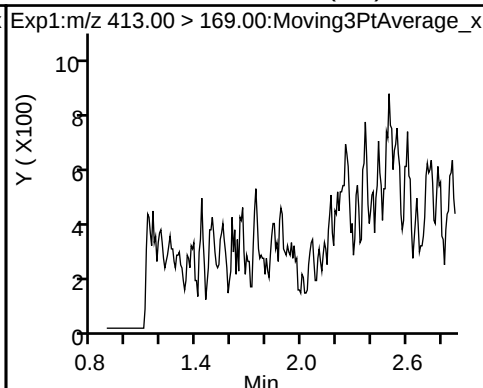
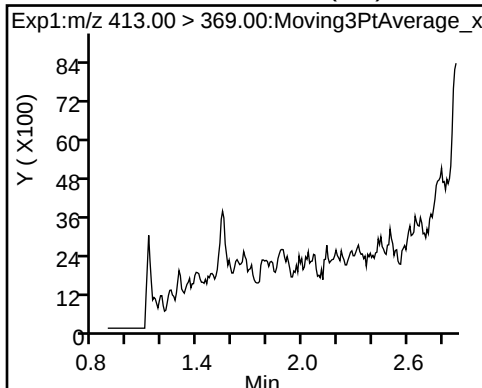
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

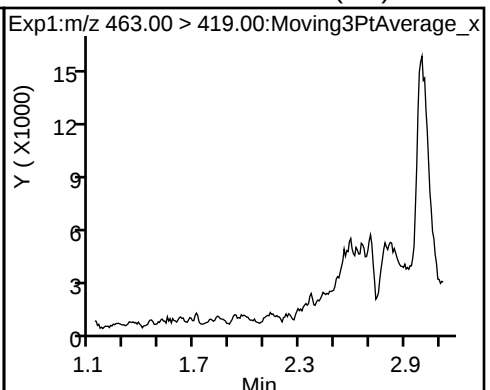
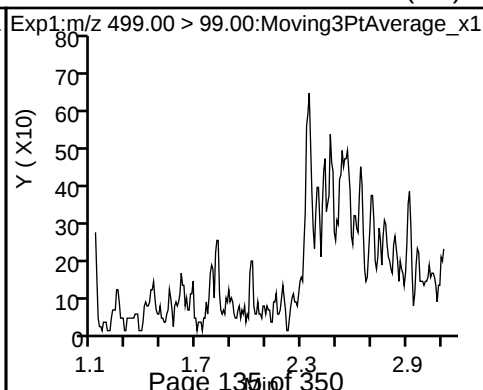
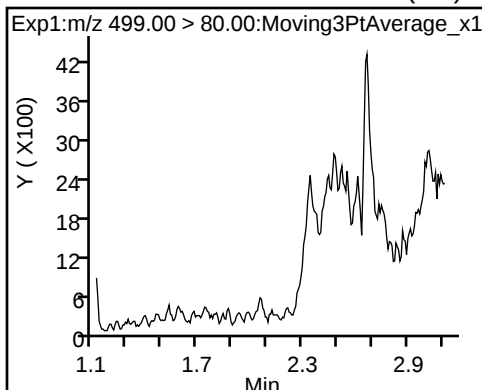
* 7 13C4 PFOS



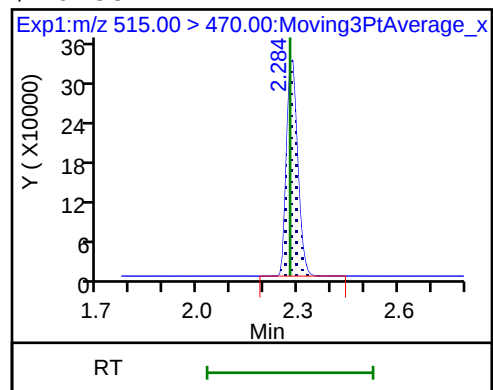
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_051.d
Lims ID: 320-38538-A-2-A
Client ID: WGNA-042518-FRB-3785
Sample Type: Client
Inject. Date: 05-May-2018 06:23:15 ALS Bottle#: 35 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-38538-a-2-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK023

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.9	109.18
\$ 10 13C2 PFDA	10.0	9.40	94.02

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Client Sample ID: WGNA-042518-RW-3325 Lab Sample ID: 320-38538-3

Matrix: Water Lab File ID: 2018.05.05_537A_052.d

Analysis Method: 537 Date Collected: 04/25/2018 08:40

Extraction Method: 537 Date Extracted: 04/30/2018 08:44

Sample wt/vol: 249.2 (mL) Date Analyzed: 05/05/2018 06:27

Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1

Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)

% Moisture: _____ GPC Cleanup: (Y/N) N

Analysis Batch No.: 221679 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.4	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	7.4	J M	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.2	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.1	J M	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U M	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	83		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_052.d
 Lims ID: 320-38538-A-3-A
 Client ID: WGNA-042518-RW-3325
 Sample Type: Client
 Inject. Date: 05-May-2018 06:27:56 ALS Bottle#: 36 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-38538-a-3-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:26:00

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									M
298.90 > 80.00	1.404	1.404	0.0	1.000	46738	0.5552		17.9	M
298.90 > 99.00	1.404	1.404	0.0	1.000	38929		1.20(0.00-0.00)	20.9	M
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.533	0.0	1.000	1057483	9.68		6713	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.684	0.0	1.000	267235	2.03		60.8	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	1.684	1.684	0.0	1.000	58883	0.5339		5.4	M
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.874	0.0		1027275	10.0		5959	
5 Perfluorooctanoic acid									M
413.00 > 369.00	1.874	1.882	-0.008	1.000	201569	1.85		23.3	M
413.00 > 169.00	1.874	1.882	-0.008	1.000	123465		1.63(0.00-0.00)	91.7	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.117	-0.008		2294962	28.7		921	
8 Perfluorooctane sulfonic acid									Ma
499.00 > 80.00	2.041	2.117	-0.076	1.000	158162	1.85		18.7	M
499.00 > 99.00	2.109	2.117	-0.008	1.033	26565		5.95(0.00-0.00)	28.6	M
9 Perfluorononanoic acid									M
463.00 > 419.00	2.124	2.124	0.0	1.000	23875	0.2759		3.4	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	723283	8.28		7434	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_052.d

Injection Date: 05-May-2018 06:27:56

Instrument ID: A8_N

Lims ID: 320-38538-A-3-A

Lab Sample ID: 320-38538-3

Client ID: WGNA-042518-RW-3325

Operator ID: SACINSTLCMS01

ALS Bottle#: 36

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

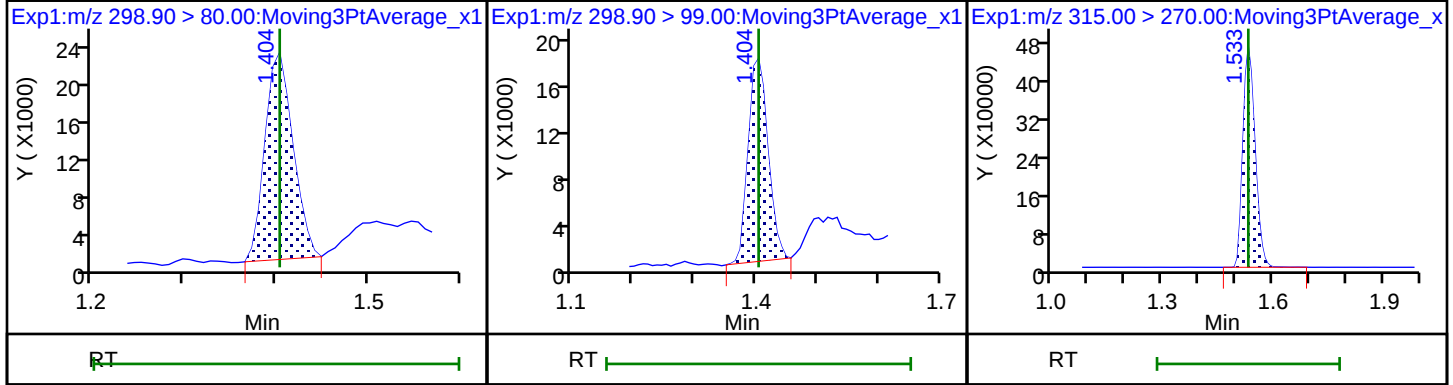
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (M)

1 Perfluorobutanesulfonic acid (M)

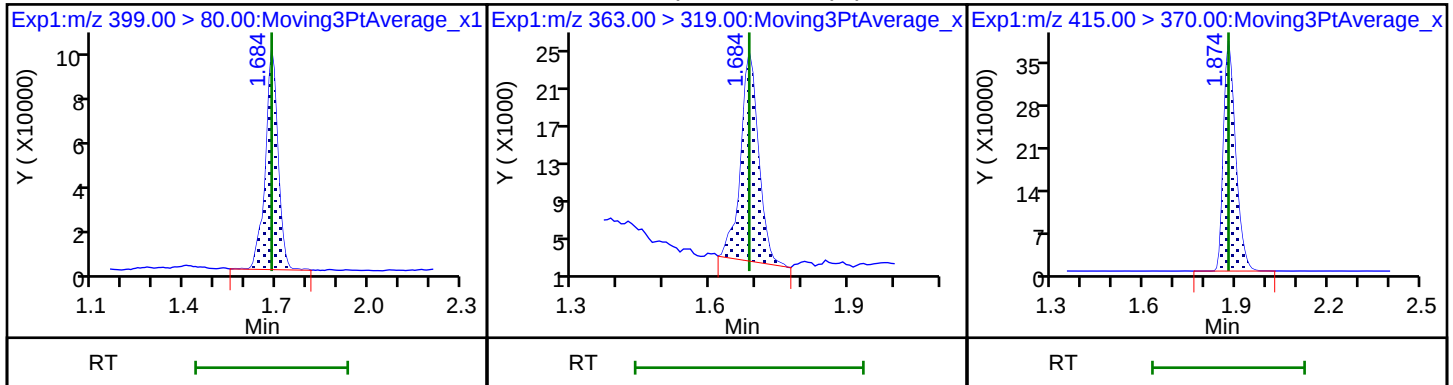
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid (M)

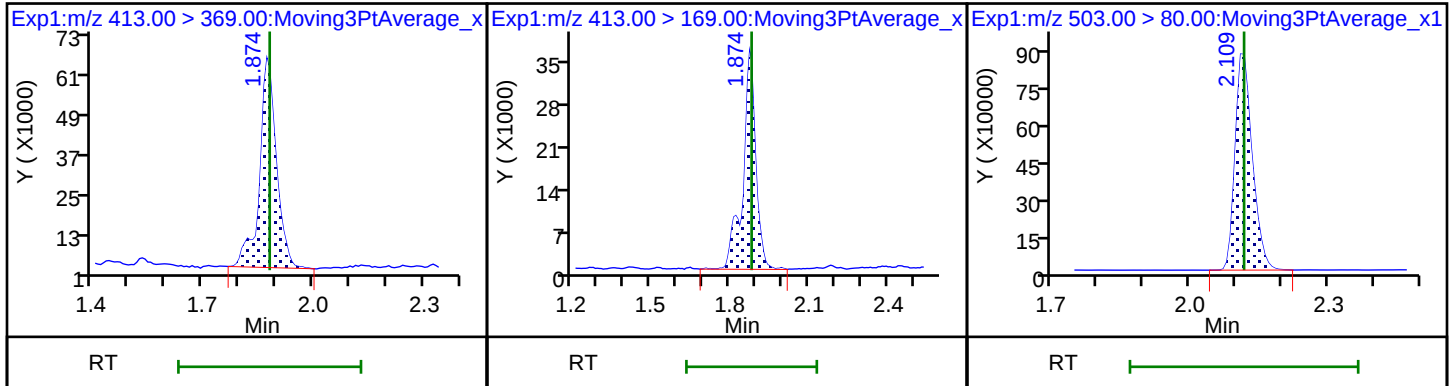
* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid

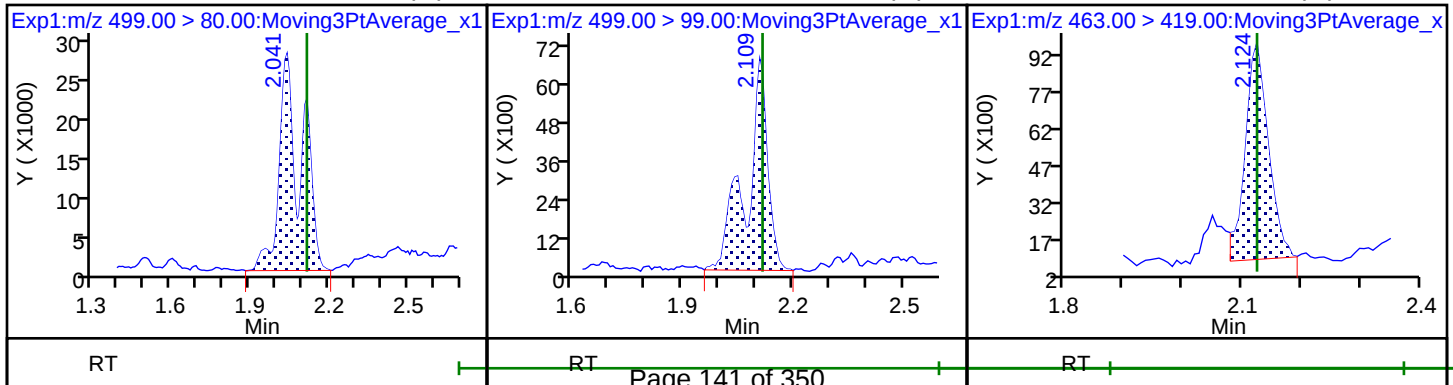
* 7 13C4 PFOS



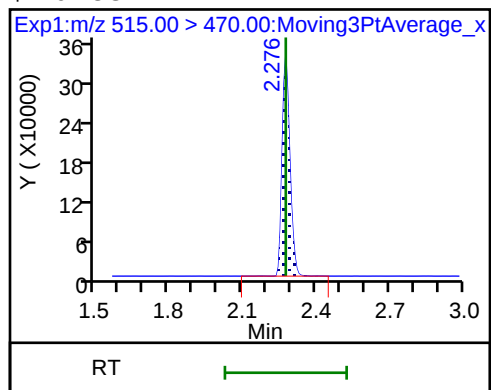
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_052.d
Lims ID: 320-38538-A-3-A
Client ID: WGNA-042518-RW-3325
Sample Type: Client
Inject. Date: 05-May-2018 06:27:56 ALS Bottle#: 36 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-38538-a-3-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:26:00

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.68	96.82
\$ 10 13C2 PFDA	10.0	8.28	82.79

TestAmerica Sacramento

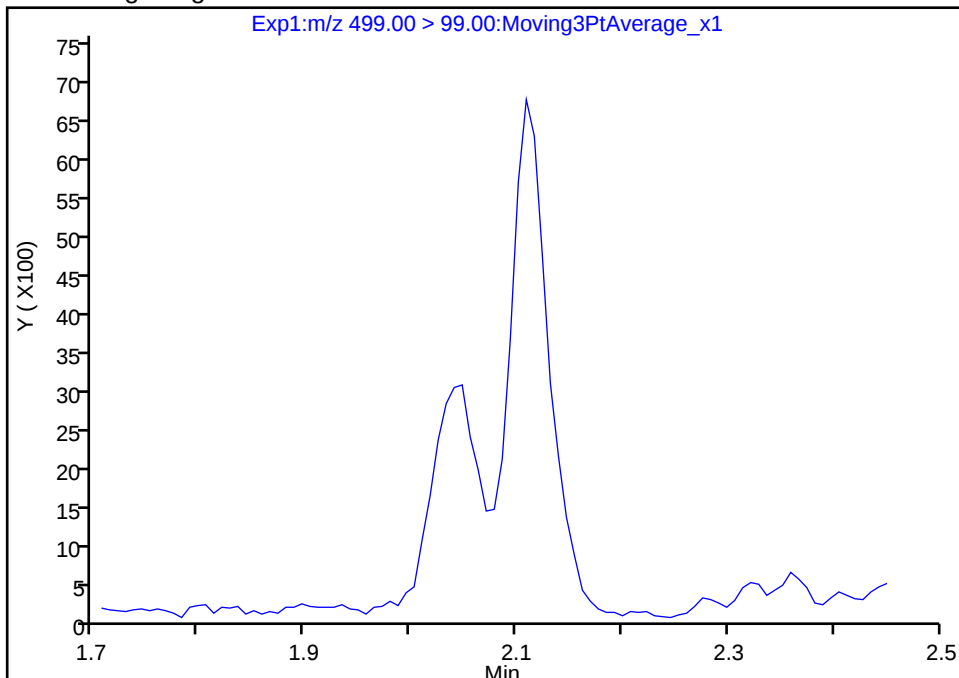
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_052.d				
Injection Date:	05-May-2018 06:27:56	Instrument ID:	A8_N		
Lims ID:	320-38538-A-3-A	Lab Sample ID:	320-38538-3		
Client ID:	WGNA-042518-RW-3325				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	36	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

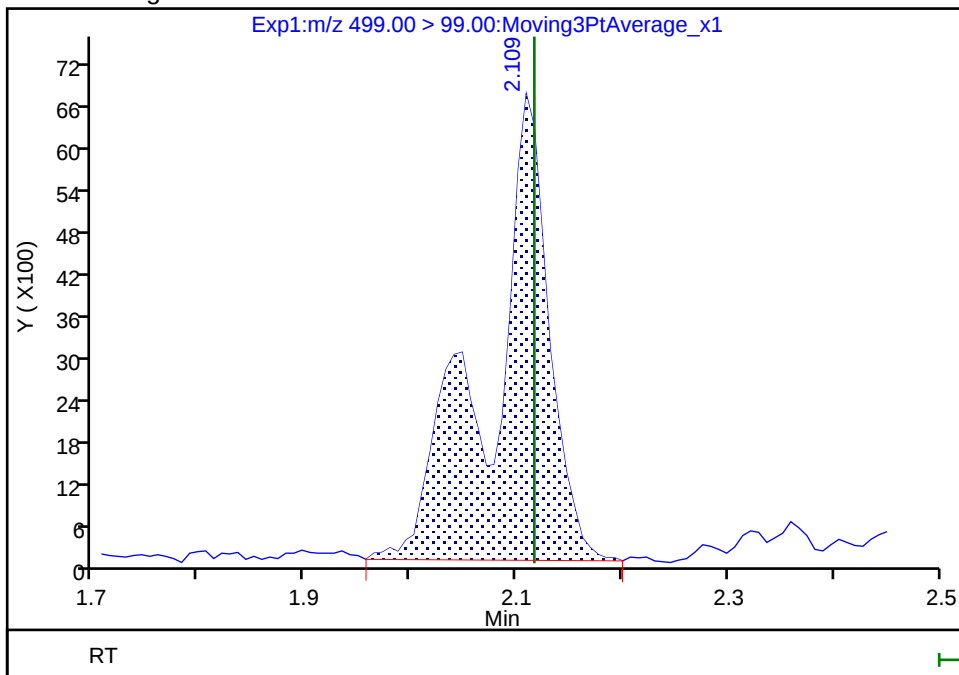
Signal: 2

Not Detected
Expected RT: 2.12

Processing Integration Results

RT: 2.11
Area: 26565
Amount: 1.854039
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:25:49

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

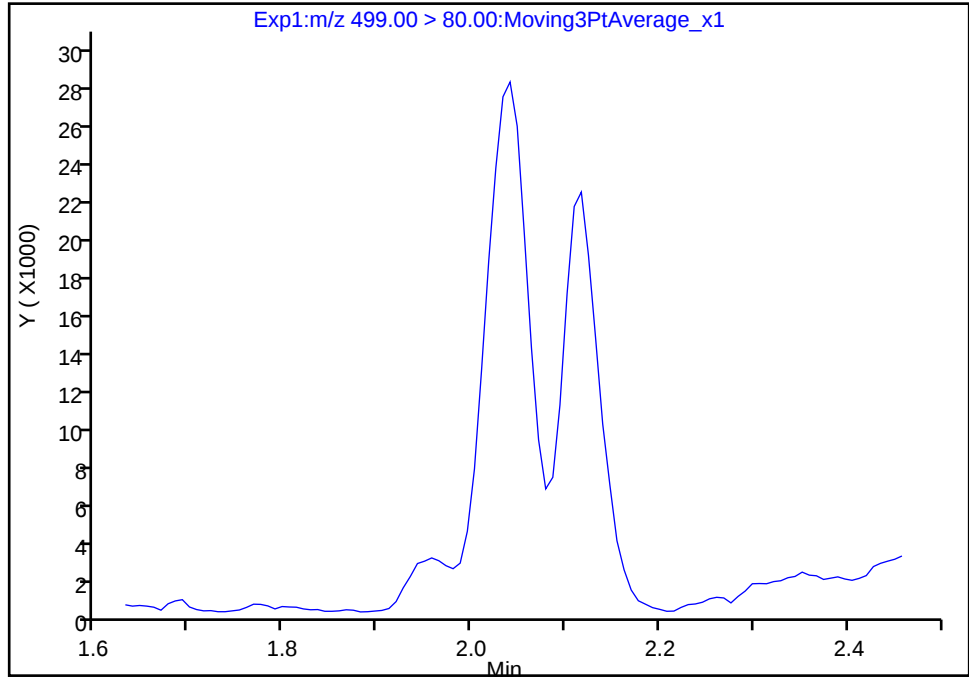
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_052.d
Injection Date: 05-May-2018 06:27:56 Instrument ID: A8_N
Lims ID: 320-38538-A-3-A Lab Sample ID: 320-38538-3
Client ID: WGNA-042518-RW-3325
Operator ID: SACINSTLCMS01 ALS Bottle#: 36 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

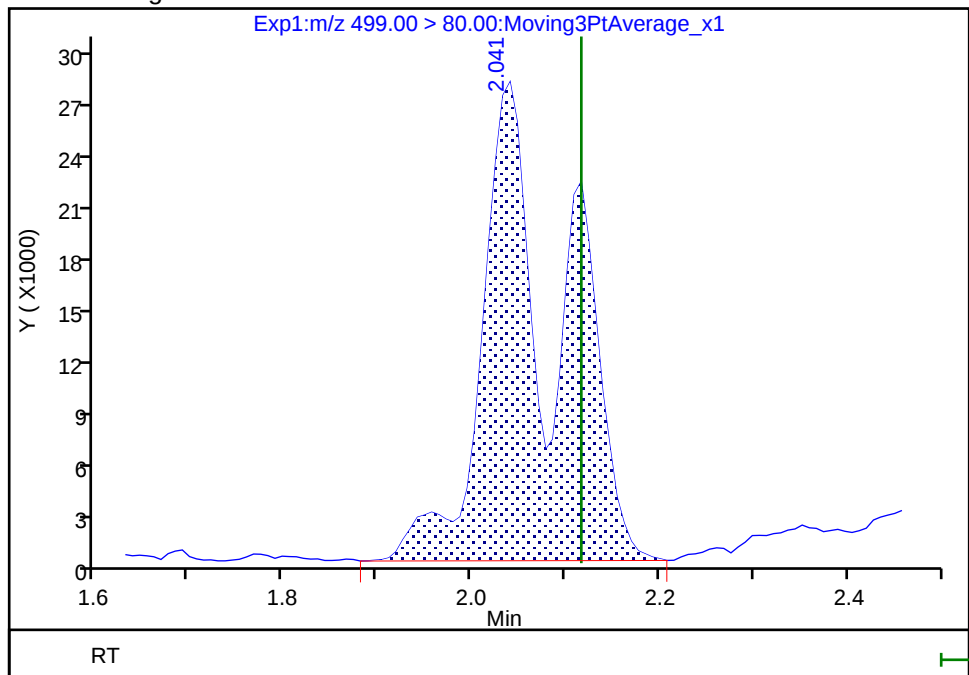
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.04
Area: 158162
Amount: 1.854039
Amount Units: ng/ml



Reviewer: westendorfc, 07-May-2018 13:25:49

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

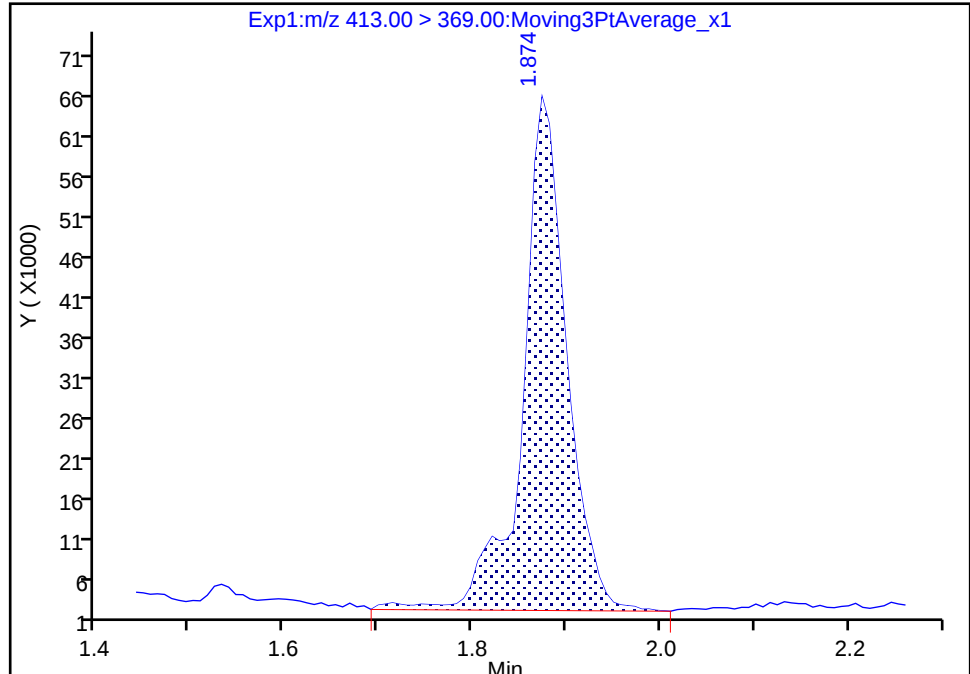
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_052.d				
Injection Date:	05-May-2018 06:27:56	Instrument ID:	A8_N		
Lims ID:	320-38538-A-3-A	Lab Sample ID:	320-38538-3		
Client ID:	WGNA-042518-RW-3325				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	36	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector:	EXP1		

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

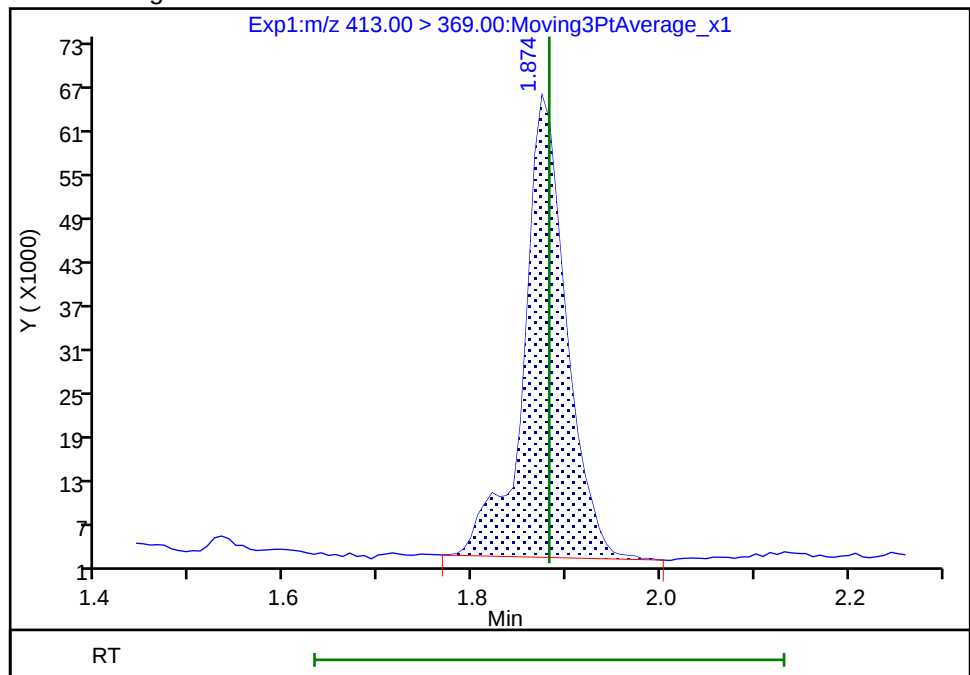
RT: 1.87
Area: 208664
Amount: 1.912075
Amount Units: ng/ml

Processing Integration Results



RT: 1.87
Area: 201569
Amount: 1.847060
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:25:56

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

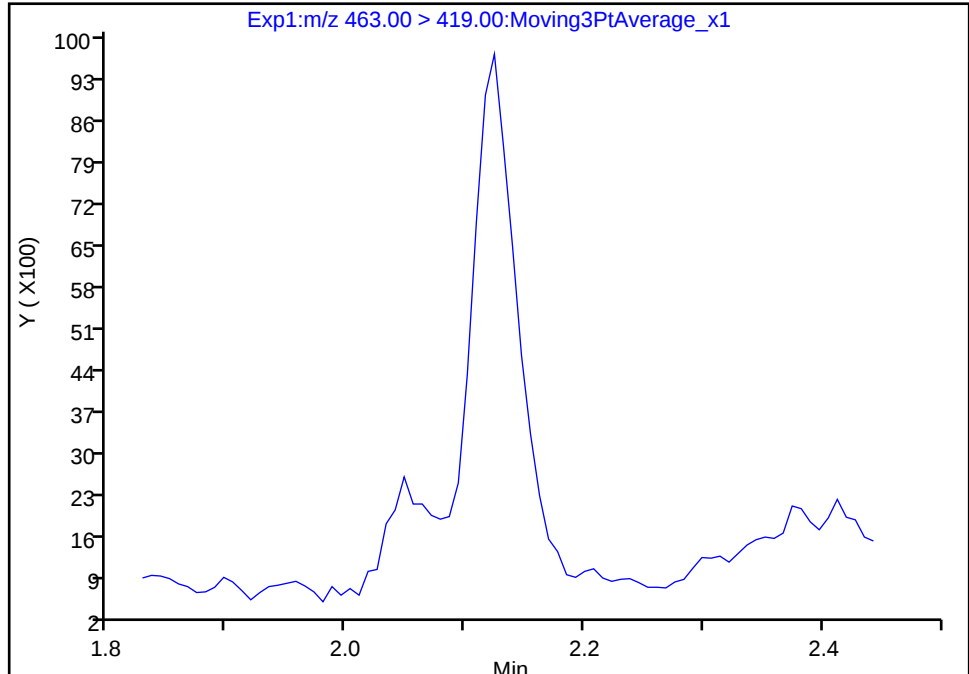
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_052.d				
Injection Date:	05-May-2018 06:27:56	Instrument ID:	A8_N		
Lims ID:	320-38538-A-3-A	Lab Sample ID:	320-38538-3		
Client ID:	WGNA-042518-RW-3325				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	36	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector:	EXP1		

9 Perfluorononanoic acid, CAS: 375-95-1

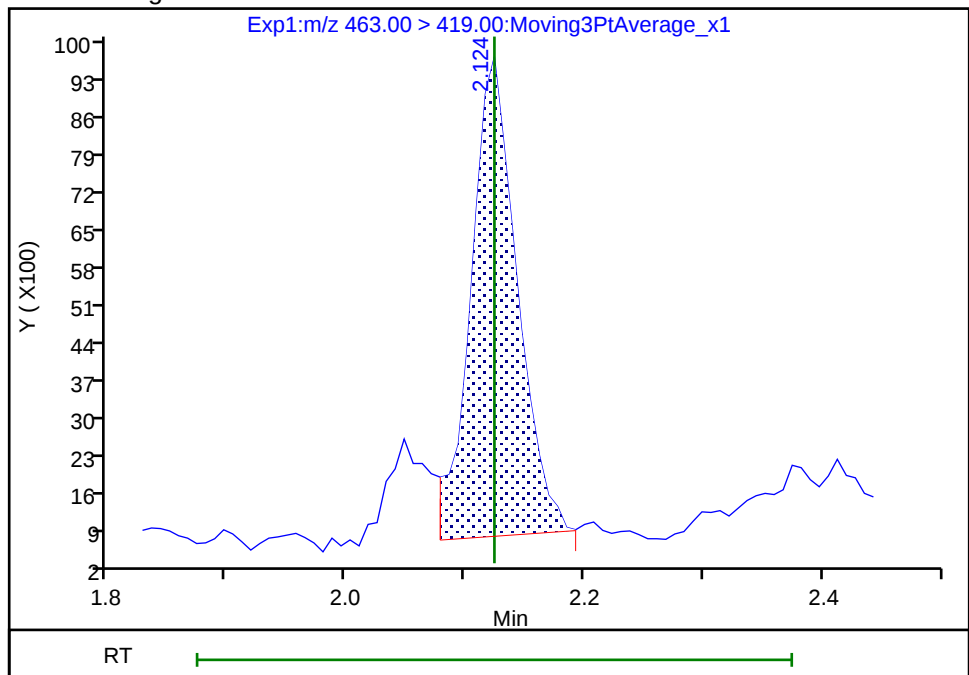
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:25:34

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

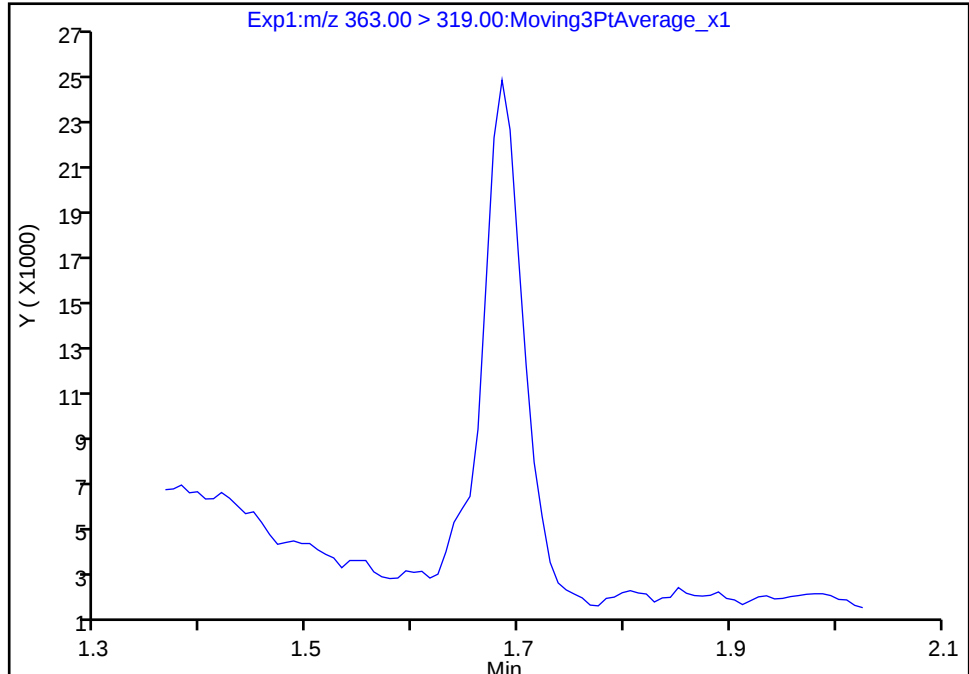
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_052.d				
Injection Date:	05-May-2018 06:27:56	Instrument ID:	A8_N		
Lims ID:	320-38538-A-3-A	Lab Sample ID:	320-38538-3		
Client ID:	WGNA-042518-RW-3325				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	36	Worklist Smp#:	8
Injection 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

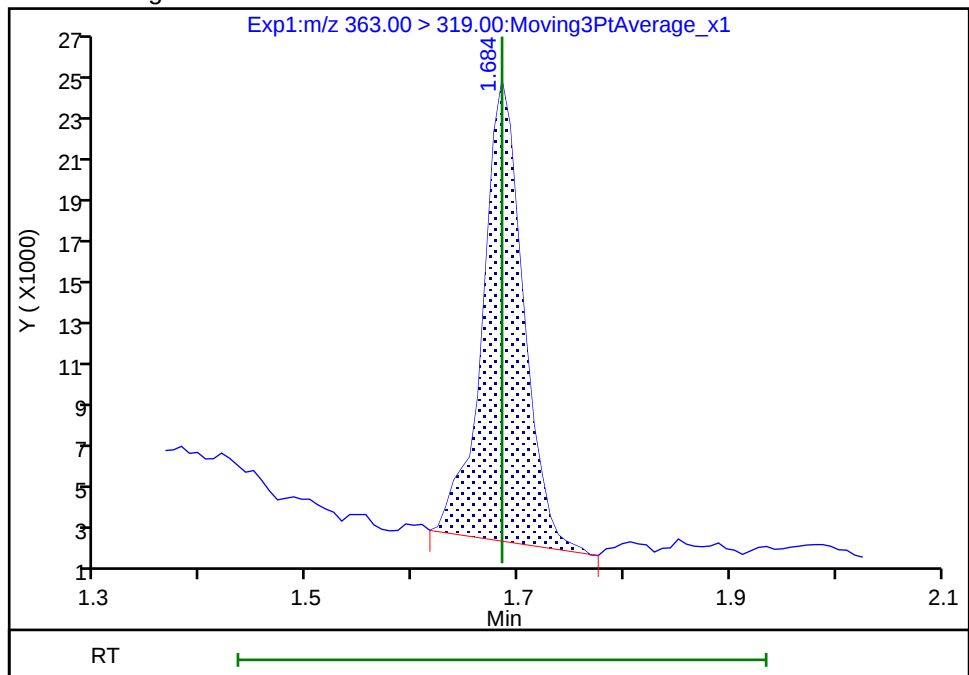
Signal: 1

Not Detected
Expected RT: 1.68

Processing Integration Results



Manual Integration Results



RT: 1.68
Area: 58883
Amount: 0.533858
Amount Units: ng/ml

Reviewer: westendorfc, 07-May-2018 13:25:21

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

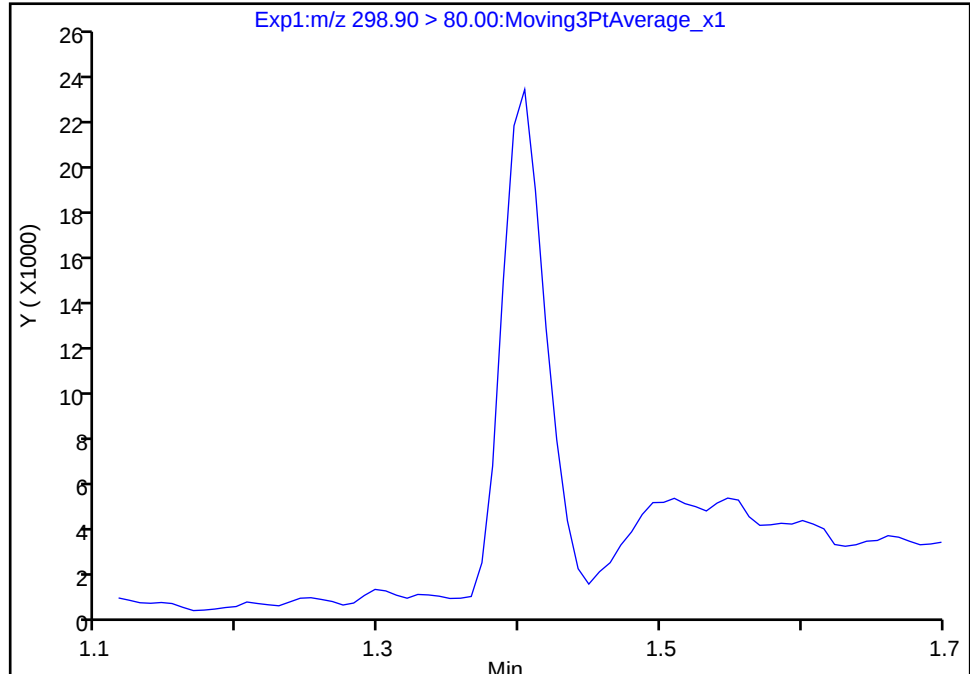
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_052.d				
Injection Date:	05-May-2018 06:27:56	Instrument ID:	A8_N		
Lims ID:	320-38538-A-3-A	Lab Sample ID:	320-38538-3		
Client ID:	WGNA-042518-RW-3325				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	36	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

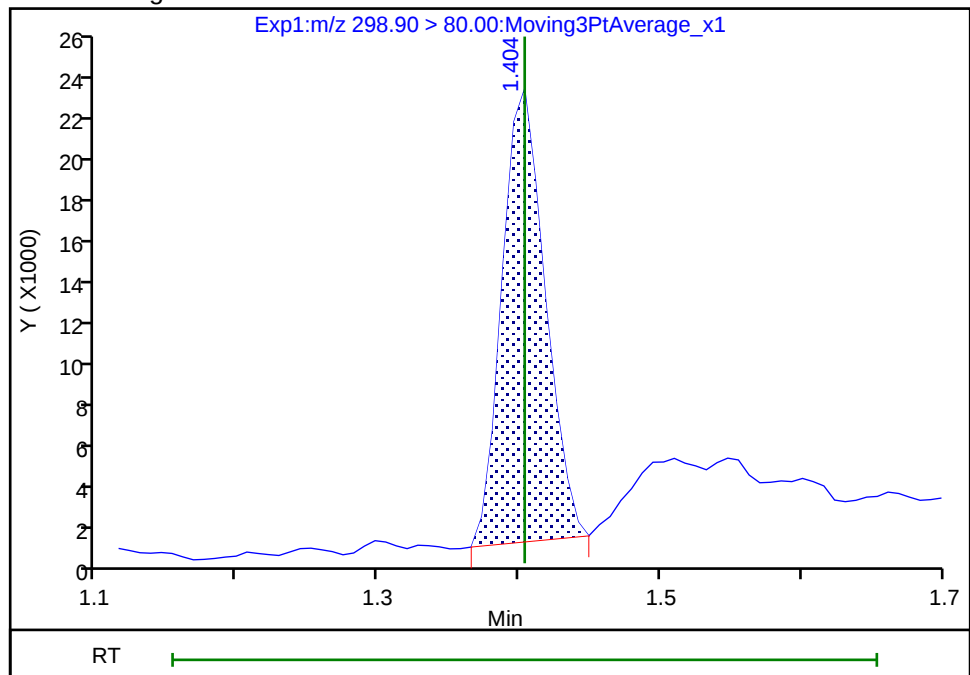
Signal: 1

Not Detected
Expected RT: 1.40

Processing Integration Results



Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:25:13

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

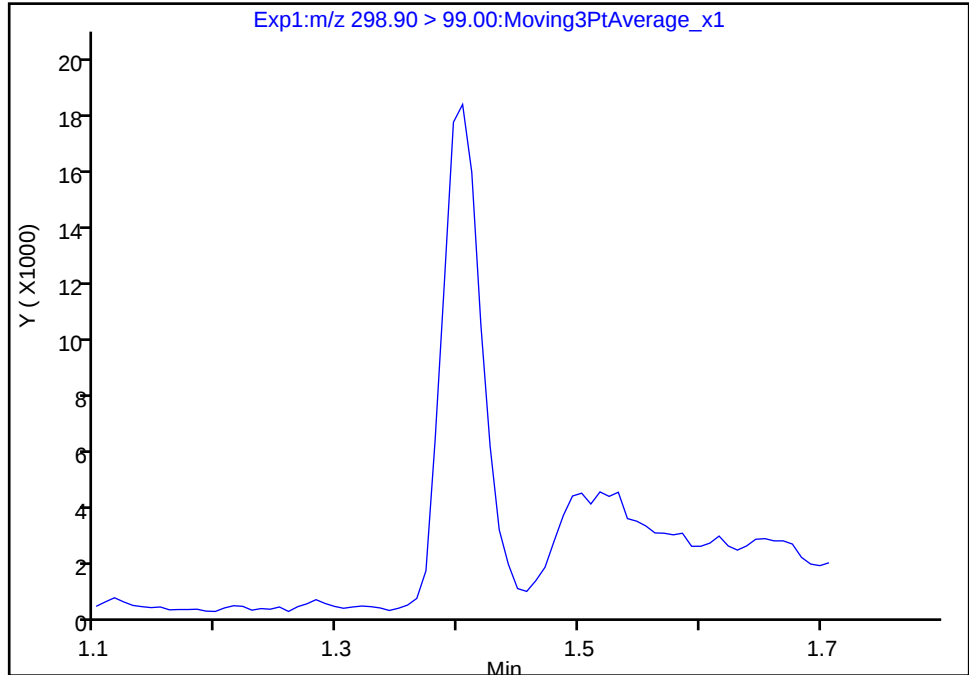
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_052.d
Injection Date: 05-May-2018 06:27:56 Instrument ID: A8_N
Lims ID: 320-38538-A-3-A Lab Sample ID: 320-38538-3
Client ID: WGNA-042518-RW-3325
Operator ID: SACINSTLCMS01 ALS Bottle#: 36 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

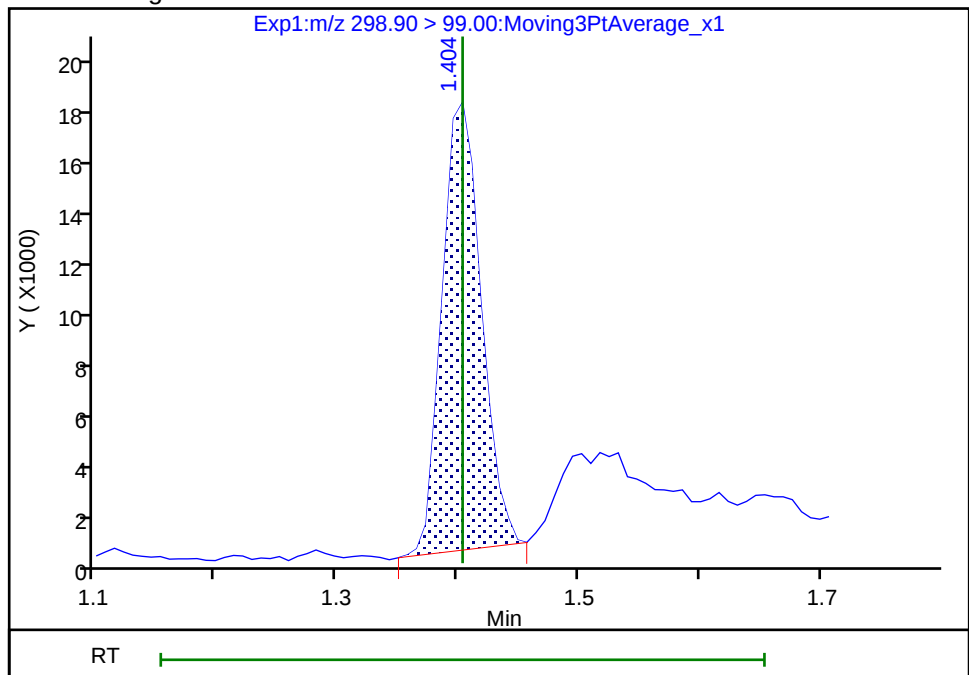
Not Detected
Expected RT: 1.40

Processing Integration Results



Manual Integration Results

RT: 1.40
Area: 38929
Amount: 0.555248
Amount Units: ng/ml



Reviewer: westendorfc, 07-May-2018 13:25:15

Audit Action: Manually Integrated

Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-FRB-3325</u>	Lab Sample ID: <u>320-38538-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_053.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 08:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>250.7(mL)</u>	Date Analyzed: <u>05/05/2018 06:32</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221679</u>	Units: <u>ng/L</u>

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	97		70-130
STL00996	13C2 PFDA	95		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_053.d
 Lims ID: 320-38538-A-4-A
 Client ID: WGNA-042518-FRB-3325
 Sample Type: Client
 Inject. Date: 05-May-2018 06:32:37 ALS Bottle#: 37 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-38538-a-4-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:30:24 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK023

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.533	0.0	1.000	1010635	9.66		7169	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.874	0.0		984513	10.0		6255	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.109	0.0		2281039	28.7		1099	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.276	-0.008	1.000	798839	9.54		6575	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_053.d

Injection Date: 05-May-2018 06:32:37

Instrument ID: A8_N

Lims ID: 320-38538-A-4-A

Lab Sample ID: 320-38538-4

Client ID: WGNA-042518-FRB-3325

Operator ID: SACINSTLCMS01

ALS Bottle#: 37

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

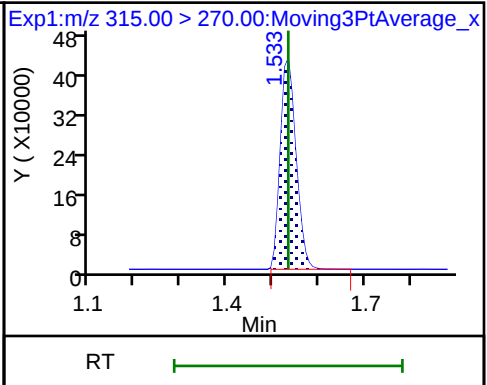
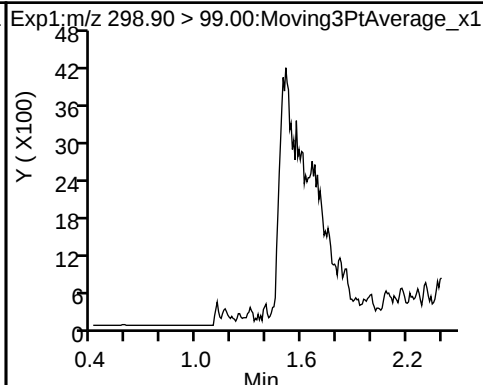
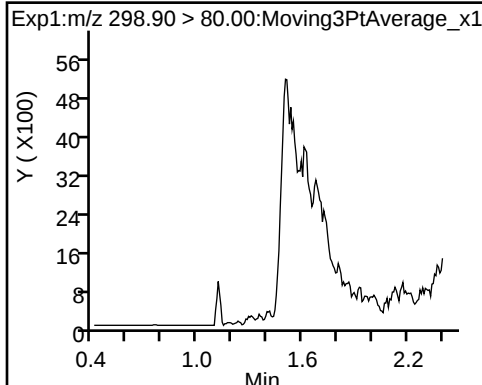
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

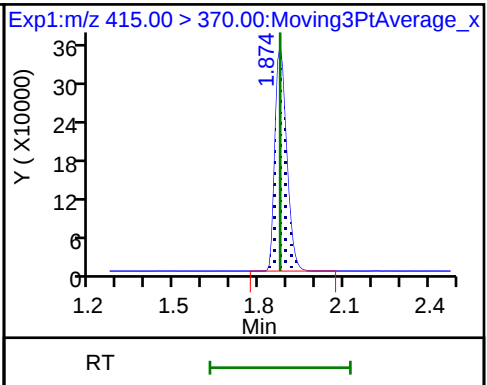
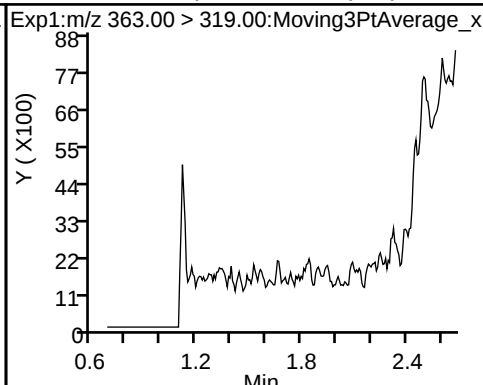
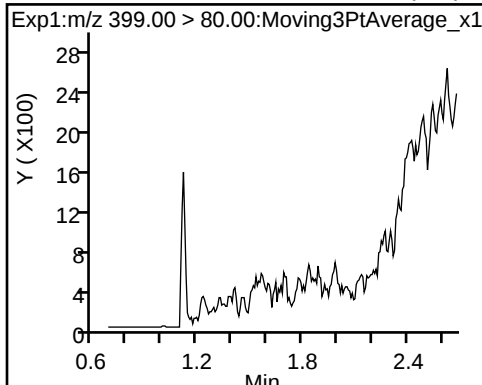
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

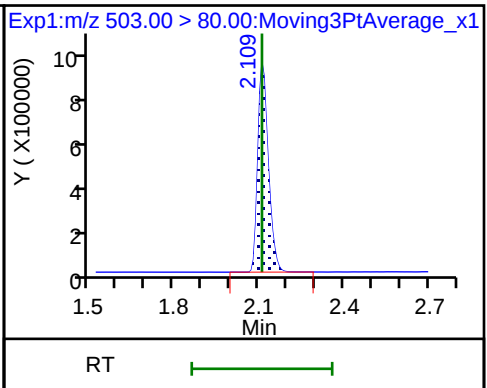
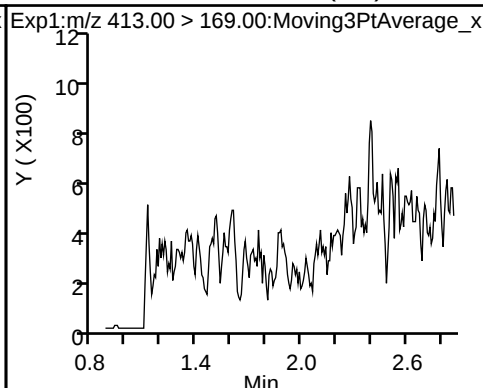
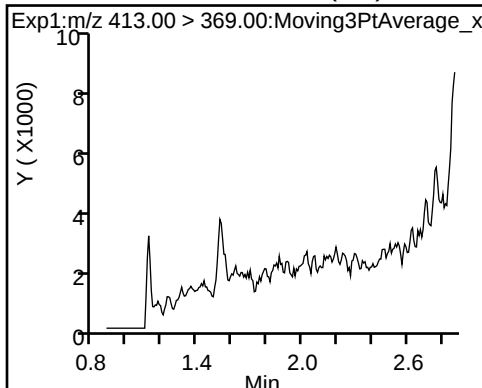
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

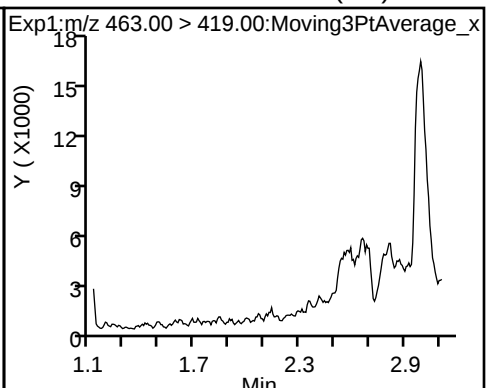
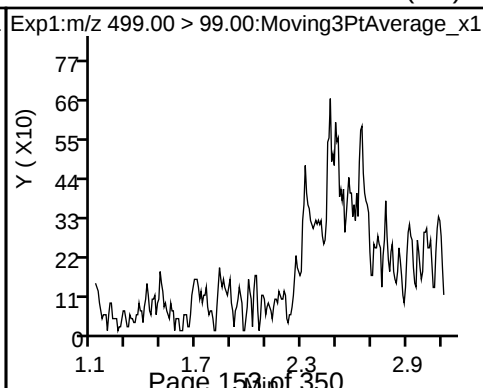
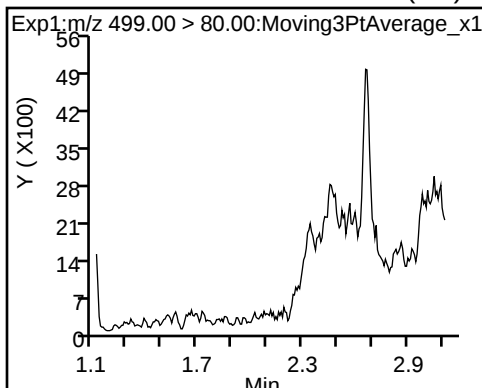
* 7 13C4 PFOS



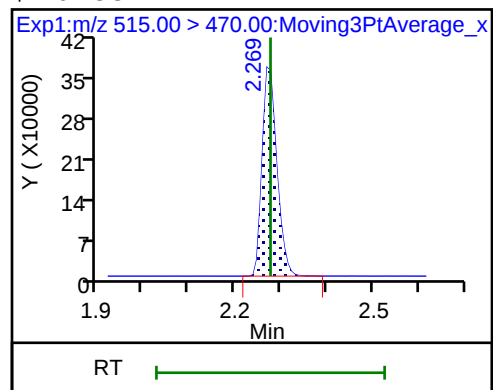
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_053.d
Lims ID: 320-38538-A-4-A
Client ID: WGNA-042518-FRB-3325
Sample Type: Client
Inject. Date: 05-May-2018 06:32:37 ALS Bottle#: 37 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-38538-a-4-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:30:24 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK023

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.66	96.55
\$ 10 13C2 PFDA	10.0	9.54	95.41

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Client Sample ID: WGNA-042518-RW-500 Lab Sample ID: 320-38538-5
 Matrix: Water Lab File ID: 2018.05.05_537A_054.d
 Analysis Method: 537 Date Collected: 04/25/2018 09:10
 Extraction Method: 537 Date Extracted: 04/30/2018 08:44
 Sample wt/vol: 248.1 (mL) Date Analyzed: 05/05/2018 06:37
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 221679 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	22	J M	40	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	22		20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.3	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.7	J M	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	92		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_054.d
 Lims ID: 320-38538-A-5-A
 Client ID: WGNA-042518-RW-500
 Sample Type: Client
 Inject. Date: 05-May-2018 06:37:18 ALS Bottle#: 38 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-38538-a-5-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:26:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.404	0.0	1.000	174138	2.27		60.0	
298.90 > 99.00	1.396	1.404	-0.008	0.995	125562		1.39(0.00-0.00)	65.4	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.533	0.0	1.000	970667	10.1		6774	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.684	0.0	1.000	248384	2.07		57.9	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.684	0.0	1.000	162663	1.67		16.7	M
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.874	0.0		907357	10.0		5391	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.882	-0.008	1.000	536857	5.57		67.4	
413.00 > 169.00	1.874	1.882	-0.008	1.000	318352		1.69(0.00-0.00)	245	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.117	-0.008		2095567	28.7		863	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.117	0.0	1.000	430871	5.53		60.4	a
499.00 > 99.00	2.117	2.117	0.0	1.000	77806		5.54(0.00-0.00)	104	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.124	-0.007	1.000	48955	0.6405		6.7	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	713294	9.24		6994	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_054.d

Injection Date: 05-May-2018 06:37:18

Instrument ID: A8_N

Lims ID: 320-38538-A-5-A

Lab Sample ID: 320-38538-5

Client ID: WGNA-042518-RW-500

Operator ID: SACINSTLCMS01

ALS Bottle#: 38

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

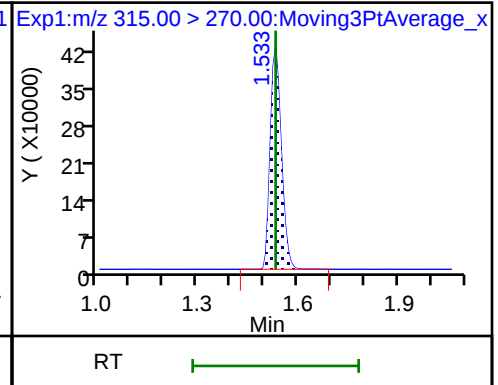
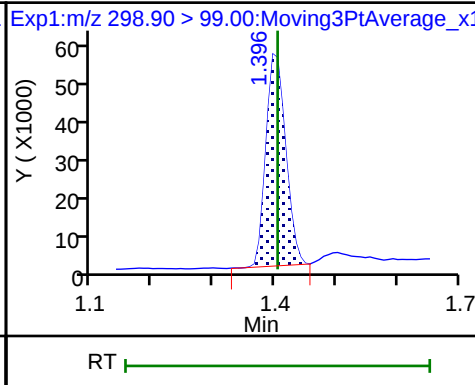
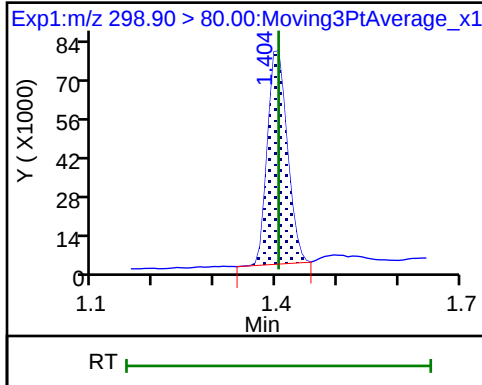
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

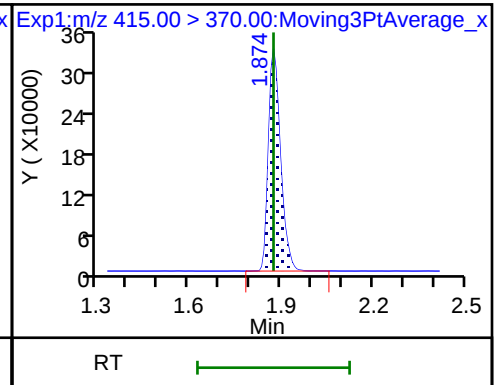
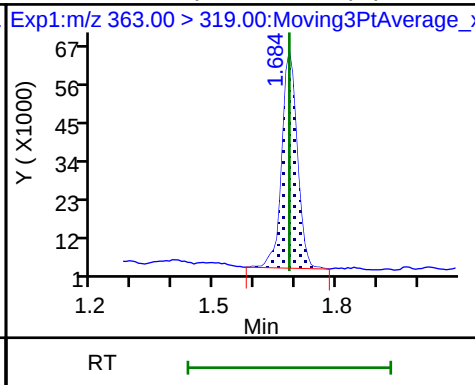
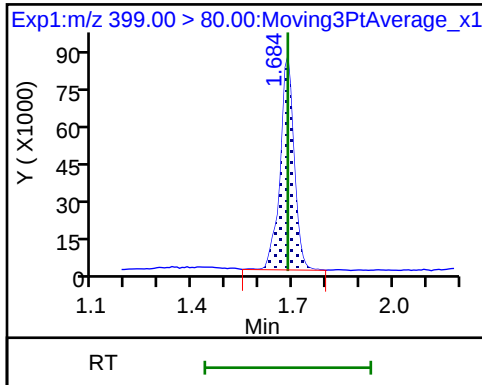
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid (M)

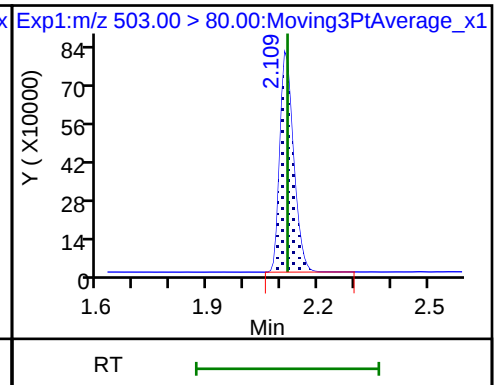
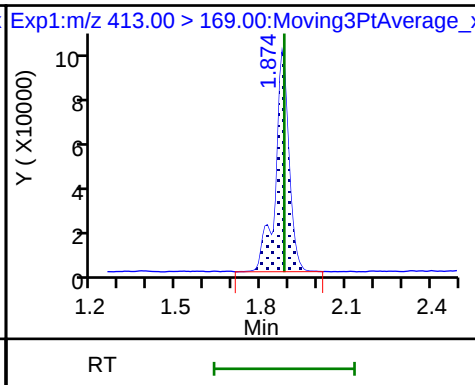
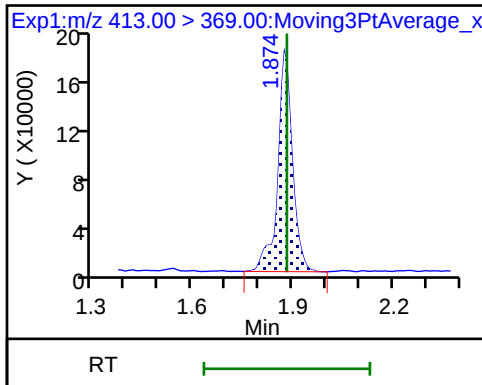
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

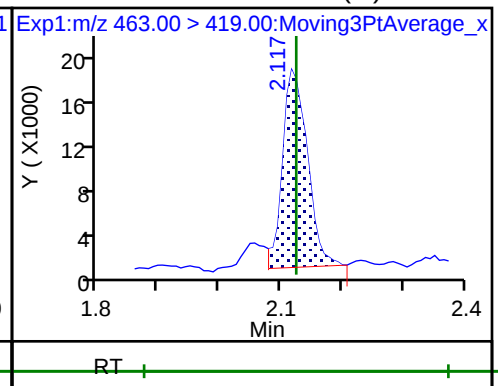
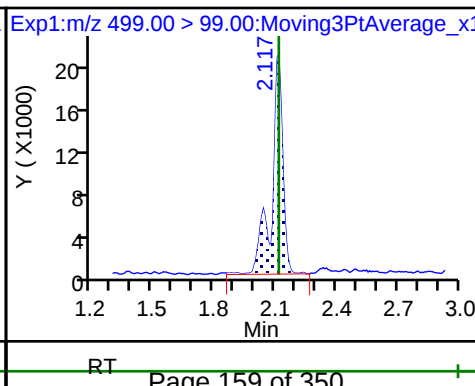
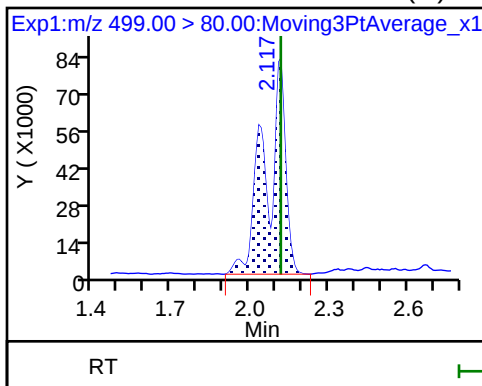
* 7 13C4 PFOS



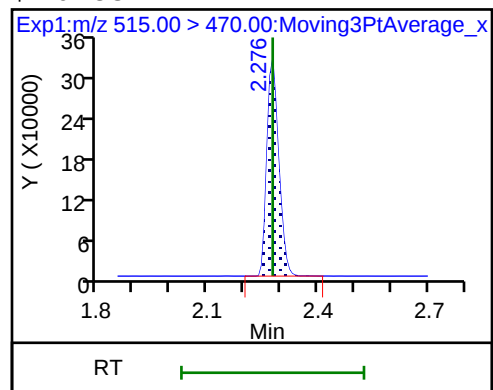
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_054.d
Lims ID: 320-38538-A-5-A
Client ID: WGNA-042518-RW-500
Sample Type: Client
Inject. Date: 05-May-2018 06:37:18 ALS Bottle#: 38 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-38538-a-5-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:26:33

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.1	100.62
\$ 10 13C2 PFDA	10.0	9.24	92.43

TestAmerica Sacramento

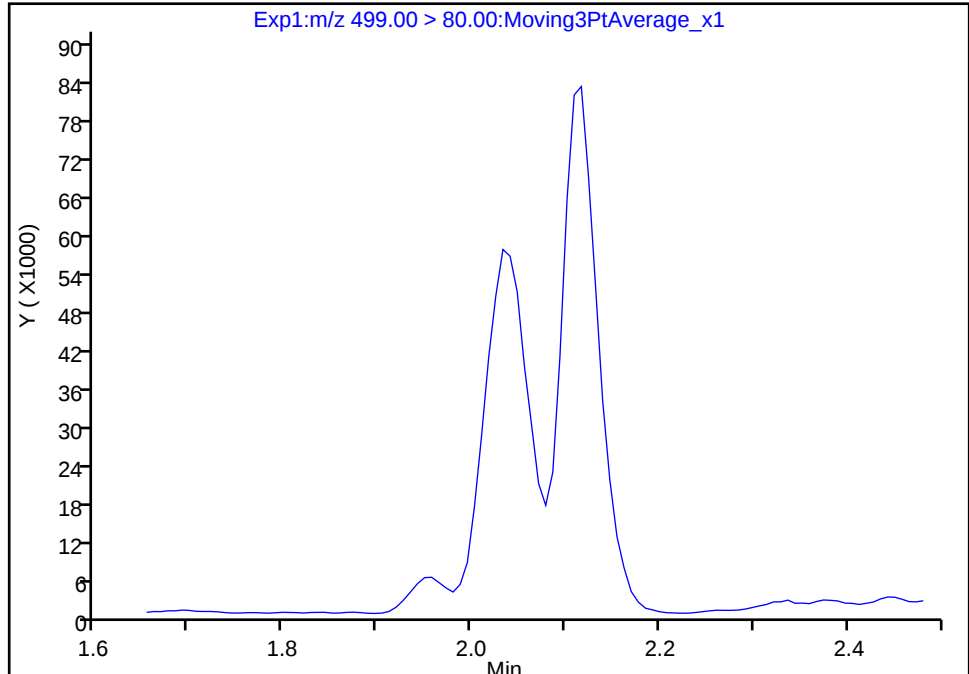
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_054.d				
Injection Date:	05-May-2018 06:37:18	Instrument ID:	A8_N		
Lims ID:	320-38538-A-5-A	Lab Sample ID:	320-38538-5		
Client ID:	WGNA-042518-RW-500				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	38	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

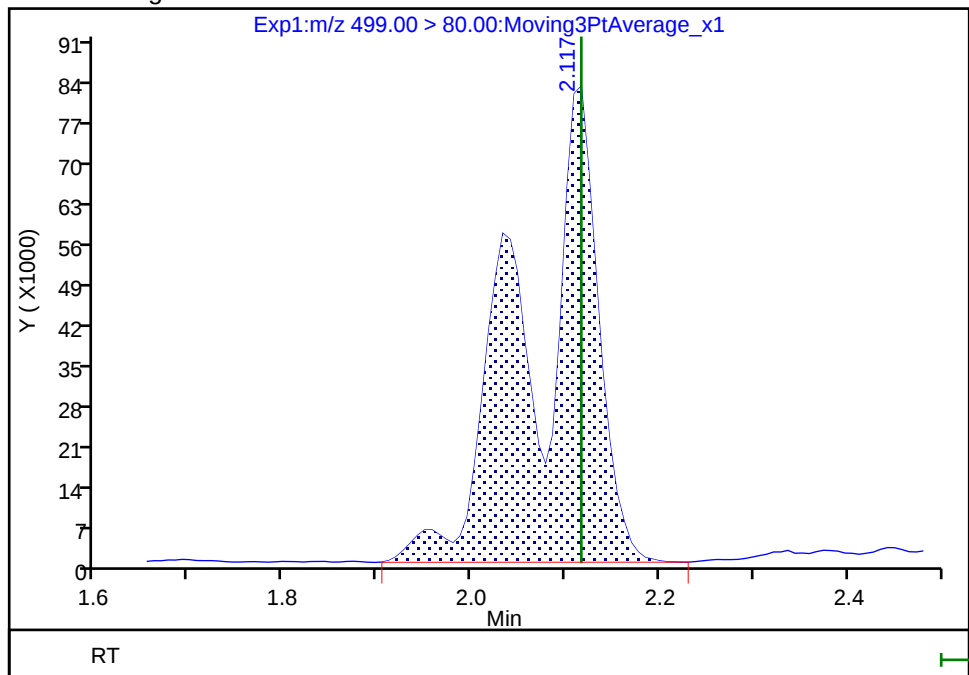
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:26:19

Audit Action: Assigned Compound ID

Audit Reason: Baseline

TestAmerica Sacramento

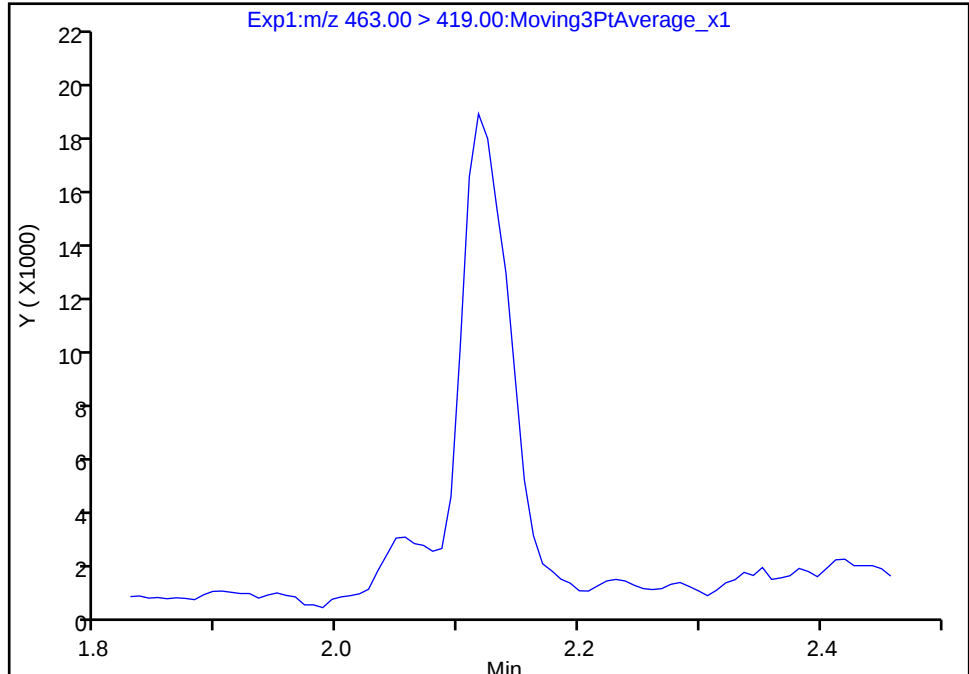
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_054.d				
Injection Date:	05-May-2018 06:37:18	Instrument ID:	A8_N		
Lims ID:	320-38538-A-5-A	Lab Sample ID:	320-38538-5		
Client ID:	WGNA-042518-RW-500				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	38	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

9 Perfluorononanoic acid, CAS: 375-95-1

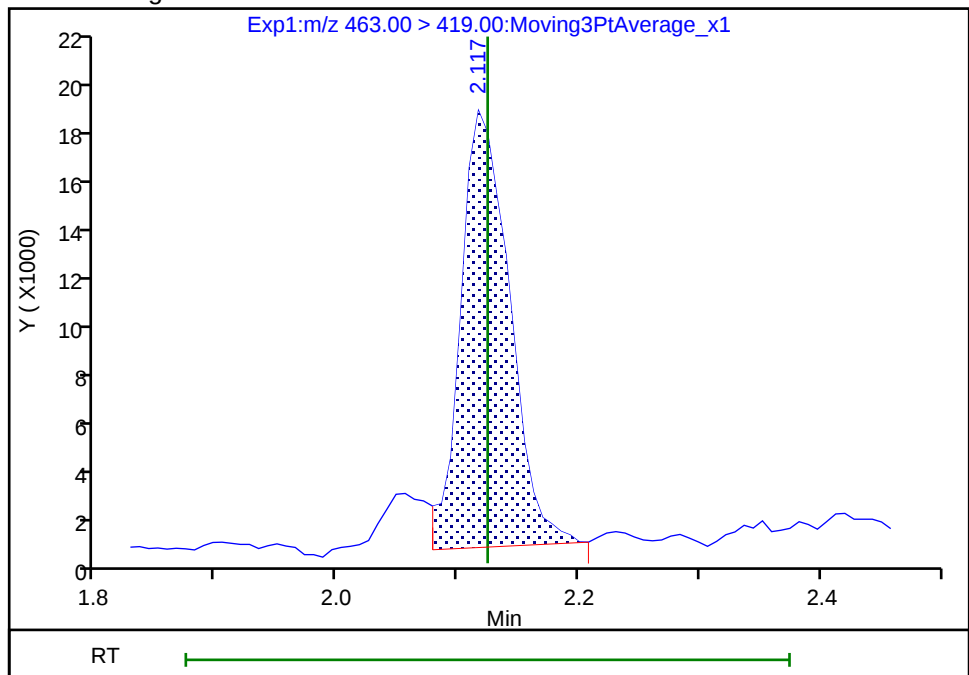
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:26:29

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

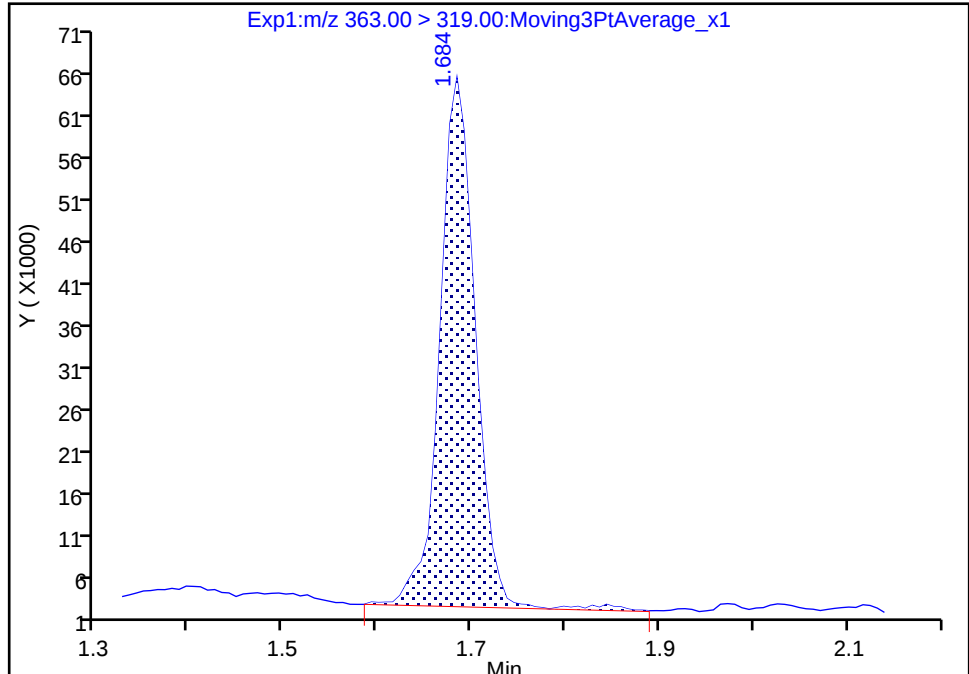
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_054.d				
Injection Date:	05-May-2018 06:37:18	Instrument ID:	A8_N		
Lims ID:	320-38538-A-5-A	Lab Sample ID:	320-38538-5		
Client ID:	WGNA-042518-RW-500				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	38	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

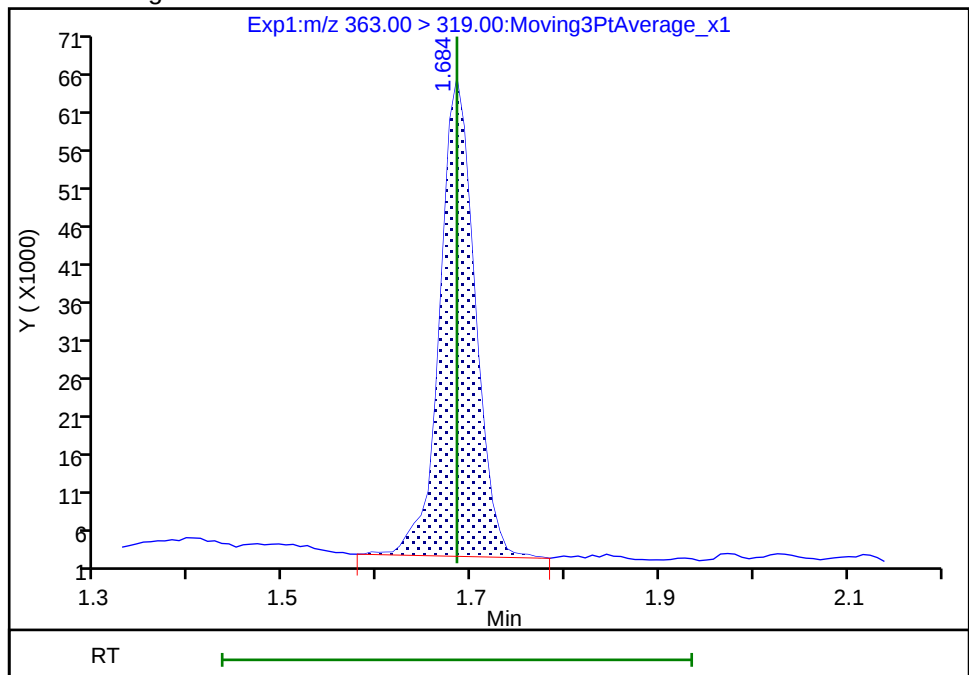
RT: 1.68
Area: 164644
Amount: 1.690013
Amount Units: ng/ml

Processing Integration Results



RT: 1.68
Area: 162663
Amount: 1.669678
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:26:15

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-FRB-500</u>	Lab Sample ID: <u>320-38538-6</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_055.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 09:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>251(mL)</u>	Date Analyzed: <u>05/05/2018 06:41</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221679</u>	Units: <u>ng/L</u>

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	112		70-130
STL00996	13C2 PFDA	97		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_055.d
 Lims ID: 320-38538-A-6-A
 Client ID: WGNA-042518-FRB-500
 Sample Type: Client
 Inject. Date: 05-May-2018 06:41:59 ALS Bottle#: 39 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-38538-a-6-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK023

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.533	0.0	1.000	1226878	11.2		9659	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.874	0.0		1033040	10.0		5965	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.117	0.0		2423494	28.7		1169	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	853169	9.71		7595	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_055.d

Injection Date: 05-May-2018 06:41:59

Instrument ID: A8_N

Lims ID: 320-38538-A-6-A

Lab Sample ID: 320-38538-6

Client ID: WGNA-042518-FRB-500

Operator ID: SACINSTLCMS01

ALS Bottle#: 39

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

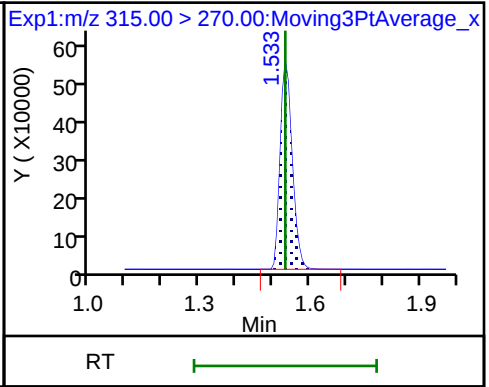
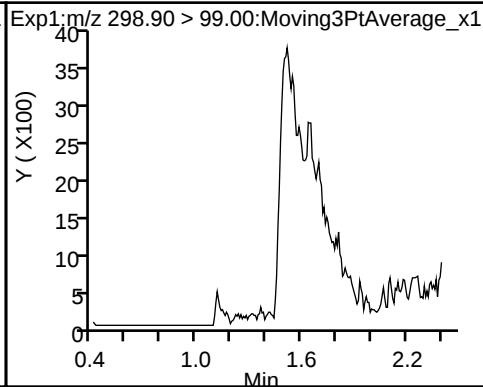
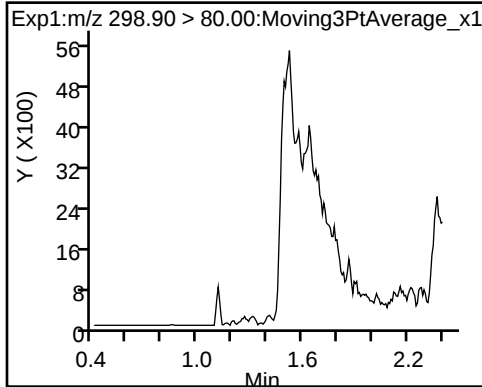
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

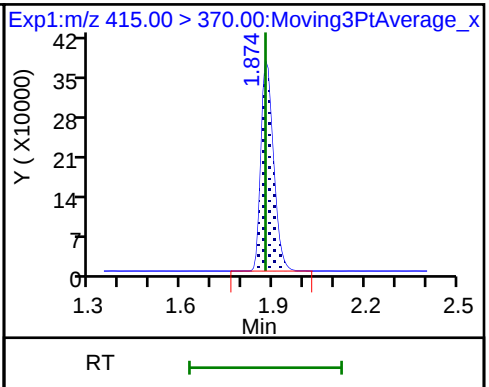
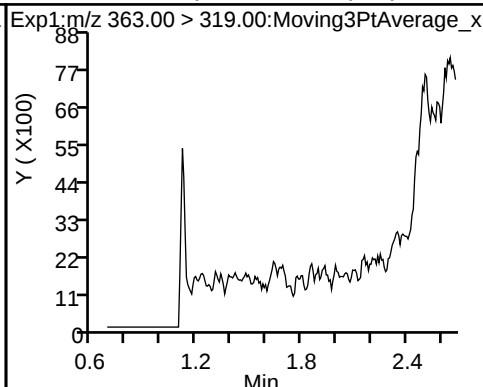
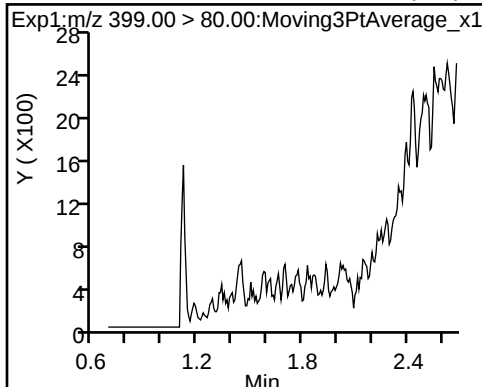
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

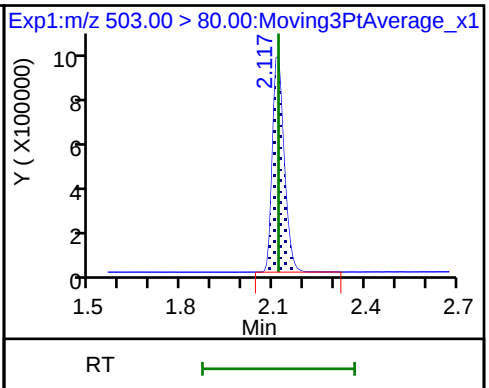
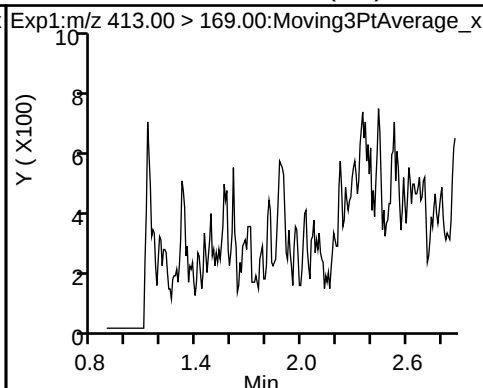
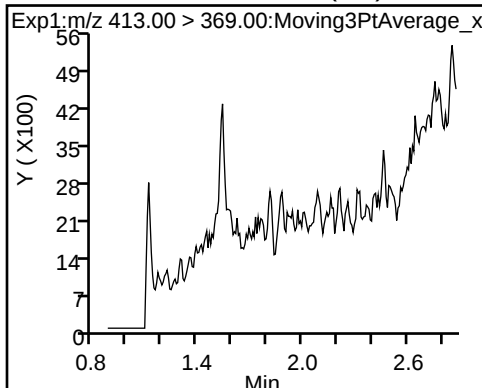
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

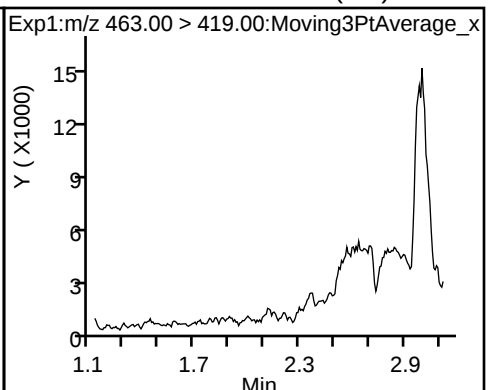
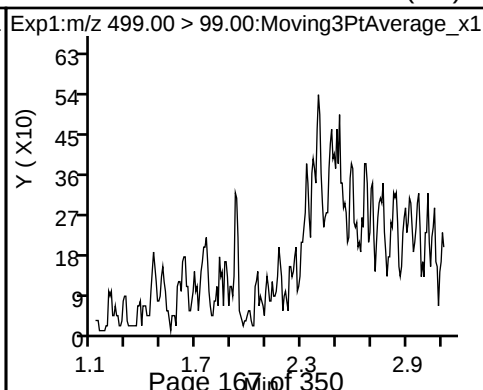
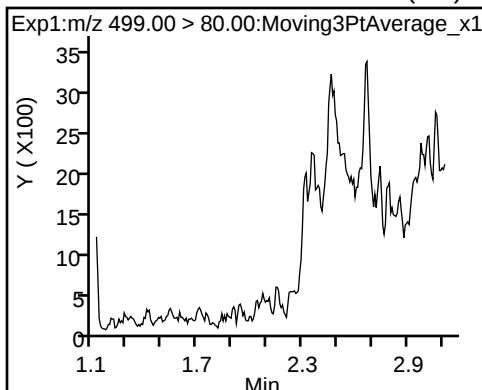
* 7 13C4 PFOS



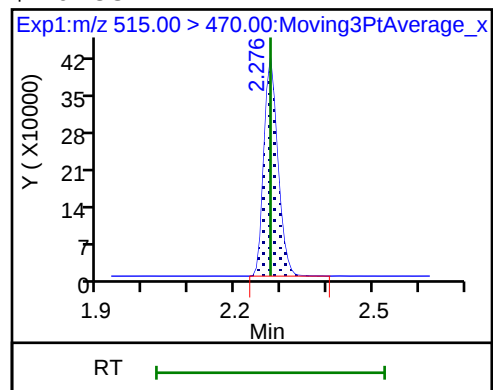
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_055.d
Lims ID: 320-38538-A-6-A
Client ID: WGNA-042518-FRB-500
Sample Type: Client
Inject. Date: 05-May-2018 06:41:59 ALS Bottle#: 39 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-38538-a-6-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK023

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.2	111.71
\$ 10 13C2 PFDA	10.0	9.71	97.11

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-RW-3529</u>	Lab Sample ID: <u>320-38538-7</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_056.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 09:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>249.2 (mL)</u>	Date Analyzed: <u>05/05/2018 06:46</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221679</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	16	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.7	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.2	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	94		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_056.d
 Lims ID: 320-38538-A-7-A
 Client ID: WGNA-042518-RW-3529
 Sample Type: Client
 Inject. Date: 05-May-2018 06:46:41 ALS Bottle#: 40 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-38538-a-7-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:27:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.404	0.0	1.000	96255	1.02		32.8	
298.90 > 99.00	1.404	1.404	0.0	1.000	71081		1.35(0.00-0.00)	36.1	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.533	0.0	1.000	1156683	9.59		7765	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.684	0.0	1.000	207144	1.41		44.0	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.684	0.0	1.000	188452	1.55		19.3	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.874	0.0		1134717	10.0		6290	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.882	-0.008	1.000	469158	3.89		57.9	
413.00 > 169.00	1.874	1.882	-0.008	1.000	273697		1.71(0.00-0.00)	225	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.117	-0.008		2564258	28.7		1072	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.117	-0.008	1.000	335564	3.52		38.7	a
499.00 > 99.00	2.109	2.117	-0.008	1.000	55851		6.01(0.00-0.00)	69.7	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.124	-0.007	1.000	36879	0.3858		5.7	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	904219	9.37		8842	M

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_056.d

Injection Date: 05-May-2018 06:46:41

Instrument ID: A8_N

Lims ID: 320-38538-A-7-A

Lab Sample ID: 320-38538-7

Client ID: WGNA-042518-RW-3529

Operator ID: SACINSTLCMS01

ALS Bottle#: 40

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

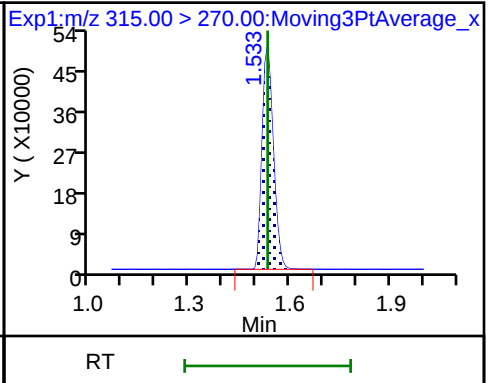
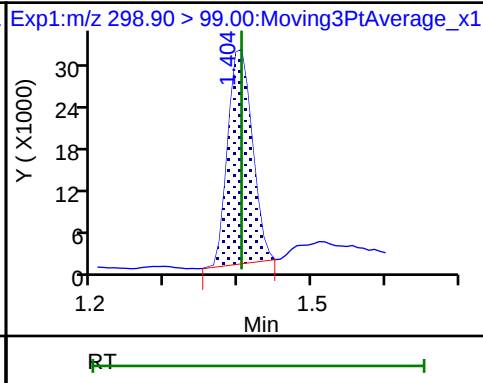
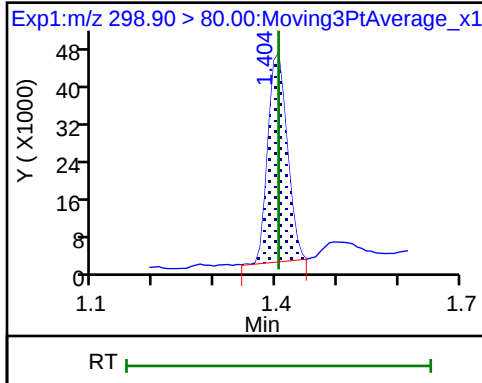
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

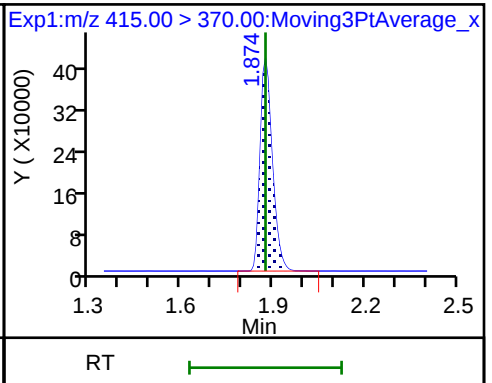
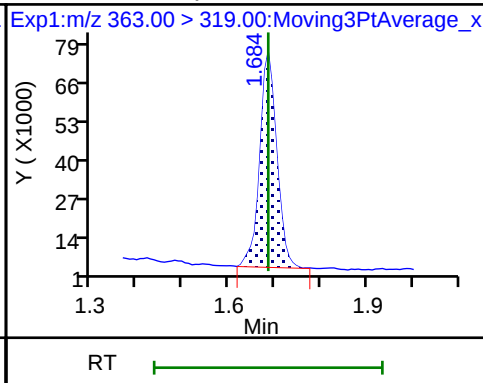
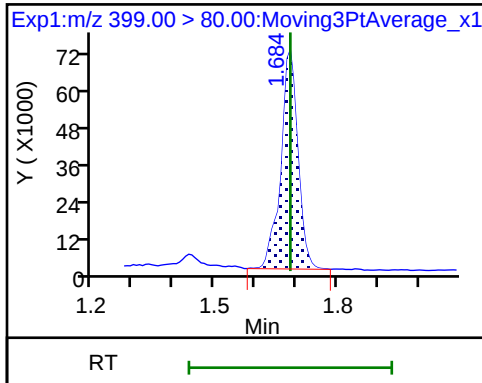
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

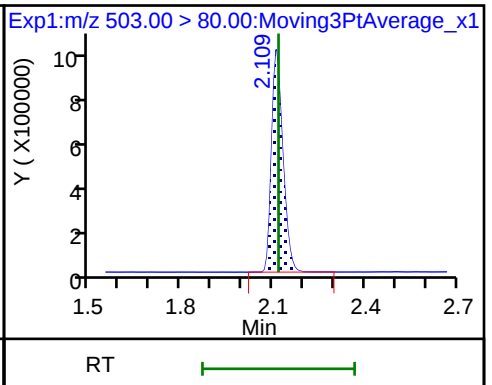
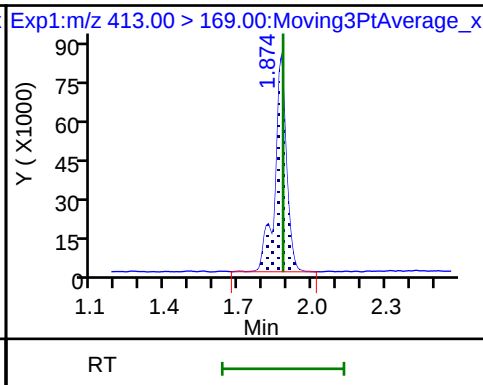
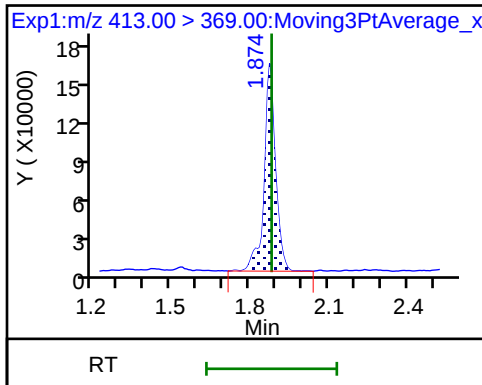
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

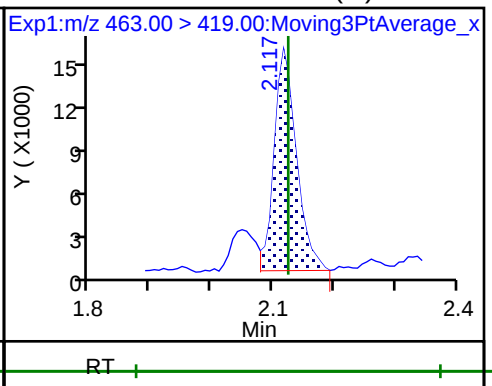
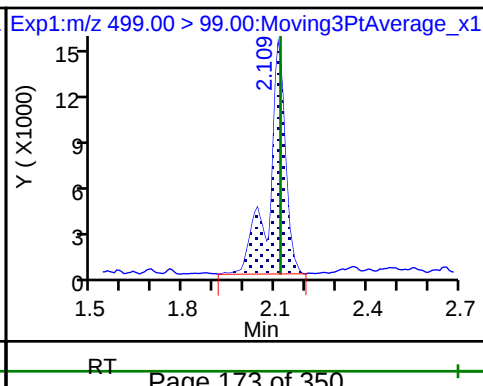
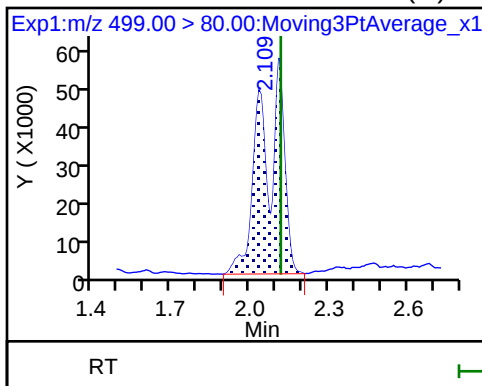
* 7 13C4 PFOS



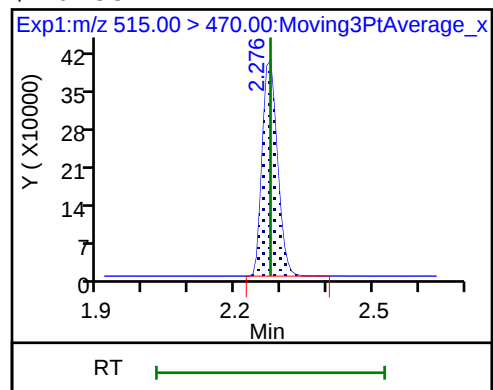
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_056.d
Lims ID: 320-38538-A-7-A
Client ID: WGNA-042518-RW-3529
Sample Type: Client
Inject. Date: 05-May-2018 06:46:41 ALS Bottle#: 40 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-38538-a-7-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:27:01

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.59	95.88
\$ 10 13C2 PFDA	10.0	9.37	93.70

TestAmerica Sacramento

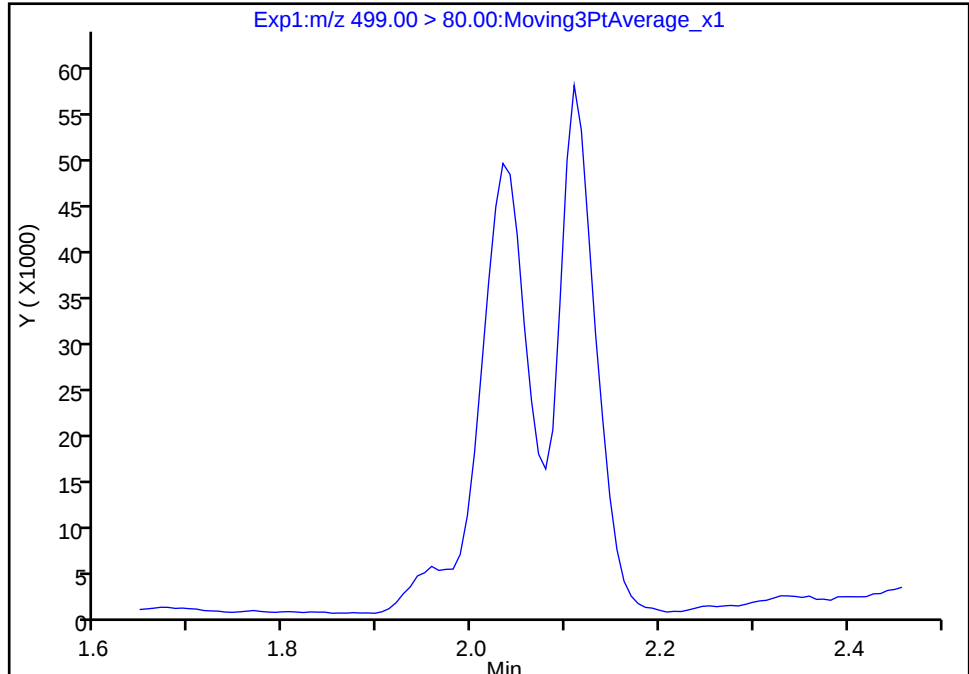
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_056.d
Injection Date: 05-May-2018 06:46:41 Instrument ID: A8_N
Lims ID: 320-38538-A-7-A Lab Sample ID: 320-38538-7
Client ID: WGNA-042518-RW-3529
Operator ID: SACINSTLCMS01 ALS Bottle#: 40 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

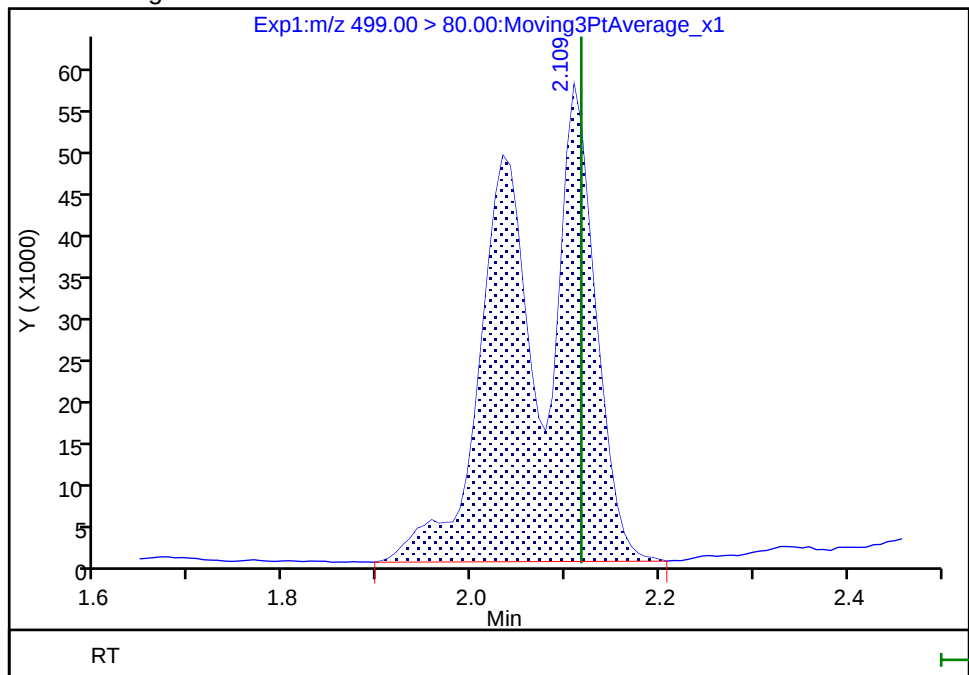
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results



RT: 2.11
Area: 335564
Amount: 3.520513
Amount Units: ng/ml

TestAmerica Sacramento

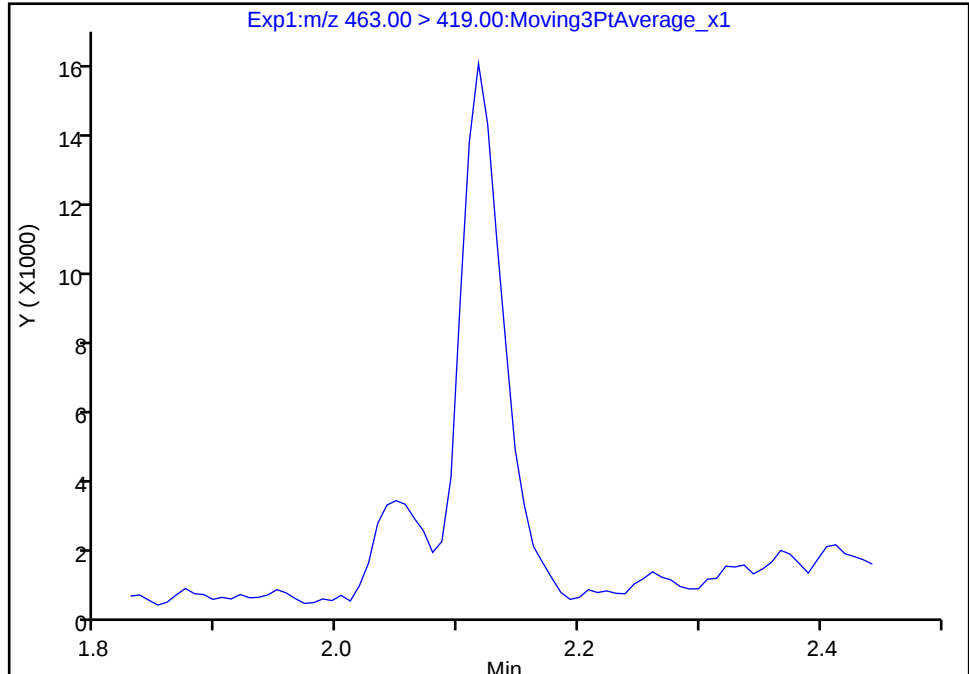
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_056.d
Injection Date: 05-May-2018 06:46:41 Instrument ID: A8_N
Lims ID: 320-38538-A-7-A Lab Sample ID: 320-38538-7
Client ID: WGNA-042518-RW-3529
Operator ID: SACINSTLCMS01 ALS Bottle#: 40 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

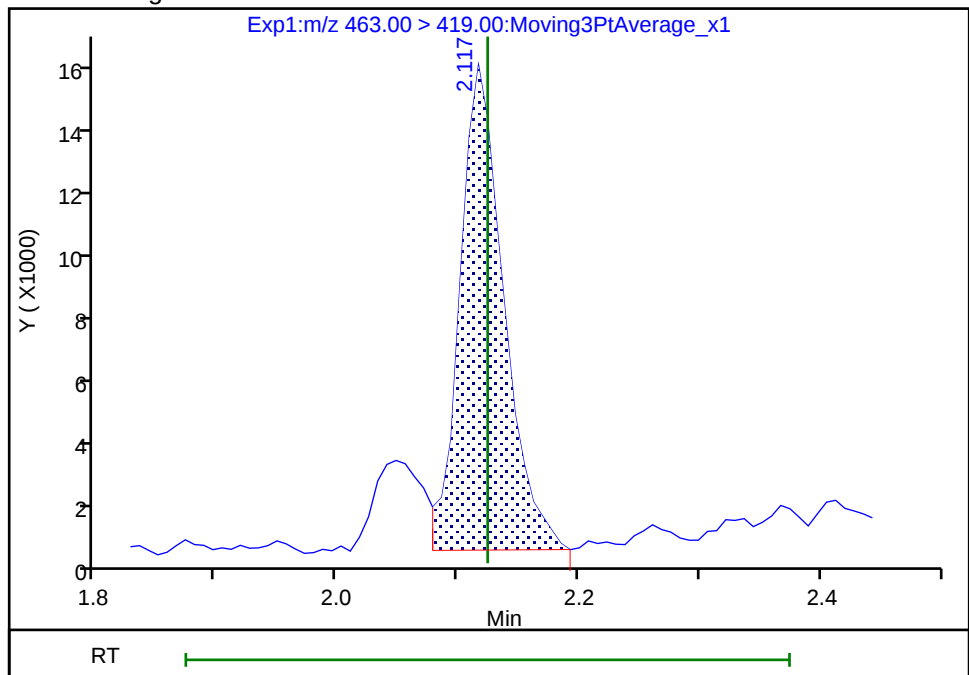
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:26:57

Audit Action: Manually Integrated

Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-FRB-3529</u>	Lab Sample ID: <u>320-38538-8</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_059.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 09:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>254.5 (mL)</u>	Date Analyzed: <u>05/05/2018 07:00</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221681</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.9	U	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	95		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_059.d
 Lims ID: 320-38538-A-8-A
 Client ID: WGNA-042518-FRB-3529
 Sample Type: Client
 Inject. Date: 05-May-2018 07:00:42 ALS Bottle#: 41 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-38538-a-8-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:27:18

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

315.00 > 270.00 1.533 1.540 -0.007 1.000 1046622 9.97 7312

* 6 13C2-PFOA

415.00 > 370.00 1.874 1.882 -0.008 987829 10.0 5905

* 7 13C4 PFOS

503.00 > 80.00 2.109 2.117 -0.008 2182756 28.7 1184

\$ 10 13C2 PFDA

515.00 > 470.00 2.276 2.276 0.0 1.000 794636 9.46 7024

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_059.d

Injection Date: 05-May-2018 07:00:42

Instrument ID: A8_N

Lims ID: 320-38538-A-8-A

Lab Sample ID: 320-38538-8

Client ID: WGNA-042518-FRB-3529

Operator ID: SACINSTLCMS01

ALS Bottle#: 41

Worklist Smp#: 15

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

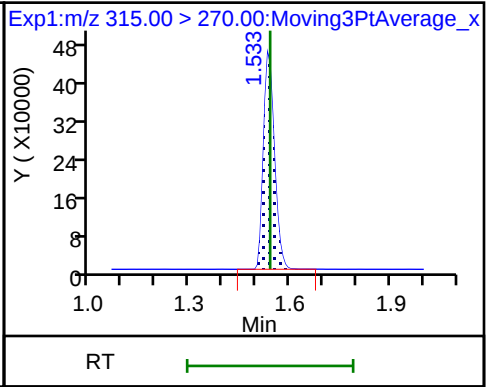
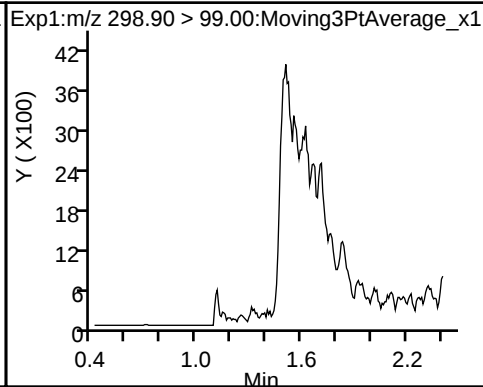
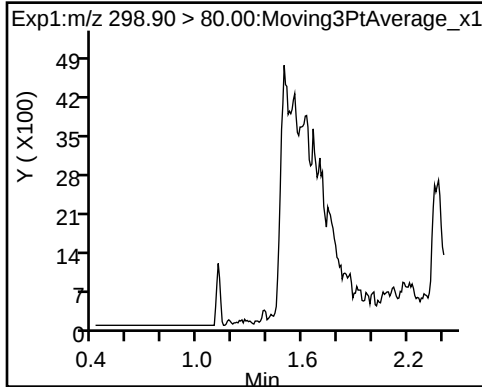
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

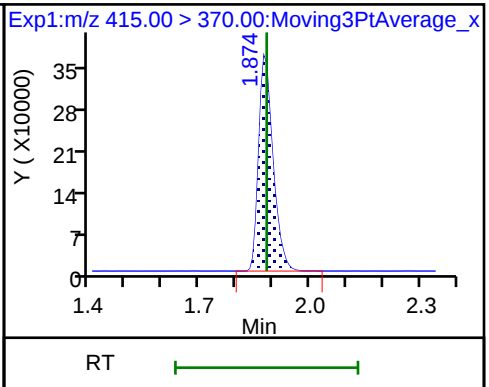
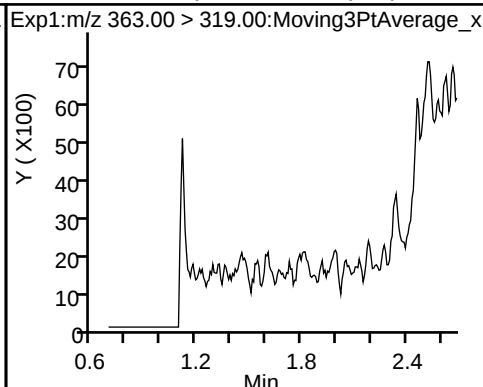
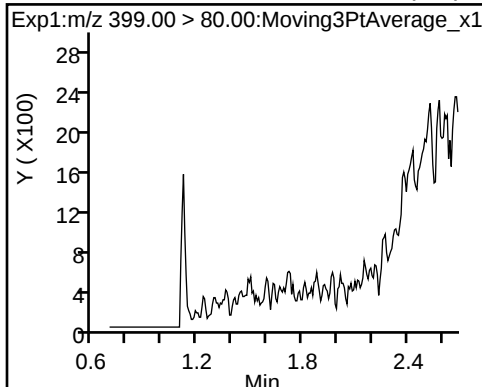
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

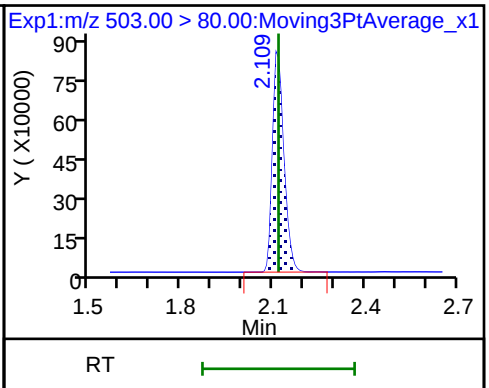
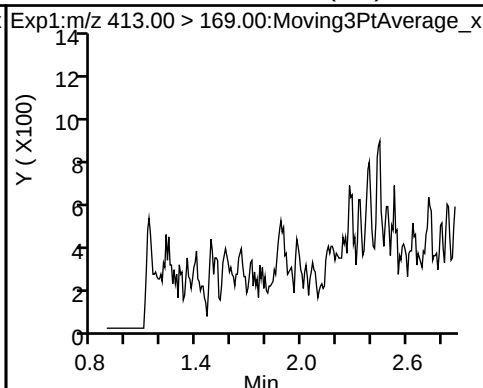
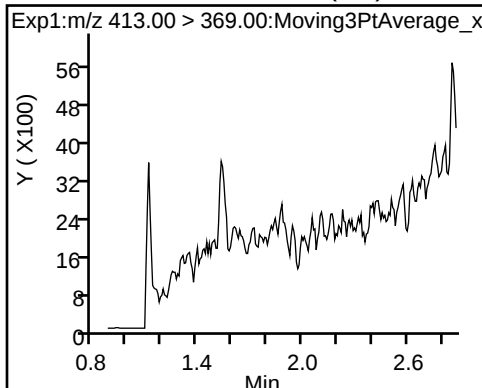
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

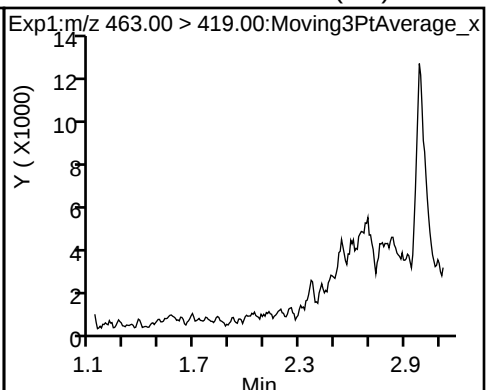
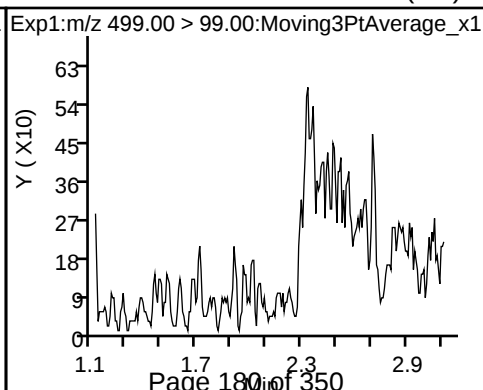
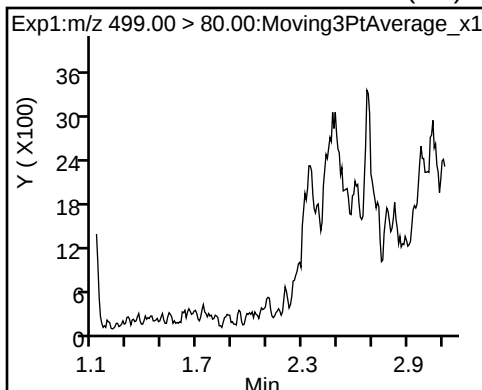
* 7 13C4 PFOS



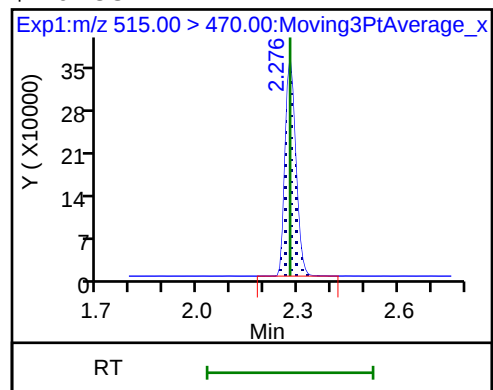
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_059.d
Lims ID: 320-38538-A-8-A
Client ID: WGNA-042518-FRB-3529
Sample Type: Client
Inject. Date: 05-May-2018 07:00:42 ALS Bottle#: 41 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-38538-a-8-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:27:18

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.97	99.66
\$ 10 13C2 PFDA	10.0	9.46	94.59

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Client Sample ID: WGNA-042518-RW-3957 Lab Sample ID: 320-38538-9
 Matrix: Water Lab File ID: 2018.05.05_537A_060.d
 Analysis Method: 537 Date Collected: 04/25/2018 10:10
 Extraction Method: 537 Date Extracted: 04/30/2018 08:44
 Sample wt/vol: 249.8 (mL) Date Analyzed: 05/05/2018 07:05
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 221681 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.2	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.6	J M	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	105		70-130
STL00996	13C2 PFDA	92		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_060.d
 Lims ID: 320-38538-A-9-A
 Client ID: WGNA-042518-RW-3957
 Sample Type: Client
 Inject. Date: 05-May-2018 07:05:23 ALS Bottle#: 42 Worklist Smp#: 16
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-38538-a-9-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:27:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.411	-0.007	1.000	179259	2.18		62.9	
298.90 > 99.00	1.404	1.411	-0.007	1.000	139282		1.29(0.00-0.00)	78.6	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.540	0.0	1.000	1075078	10.5		7135	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.692	-0.008	1.000	263262	2.05		62.0	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.692	-0.008	1.000	118666	1.15		12.7	M
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.882	0.0		964018	10.0		5320	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.882	0.0	1.000	343184	3.35		40.1	
413.00 > 169.00	1.882	1.882	0.0	1.000	218541		1.57(0.00-0.00)	145	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.117	0.0		2245560	28.7		956	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.117	0.0	1.000	243805	2.92		35.8	a
499.00 > 99.00	2.117	2.117	0.0	1.000	42404		5.75(0.00-0.00)	59.5	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.124	0.0	1.000	28548	0.3515		4.3	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	753758	9.19		6775	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_060.d

Injection Date: 05-May-2018 07:05:23

Instrument ID: A8_N

Lims ID: 320-38538-A-9-A

Lab Sample ID: 320-38538-9

Client ID: WGNA-042518-RW-3957

Operator ID: SACINSTLCMS01

ALS Bottle#: 42

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

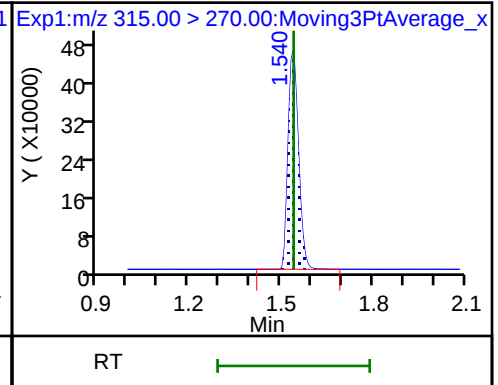
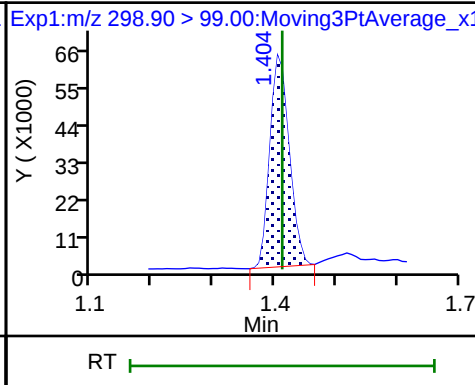
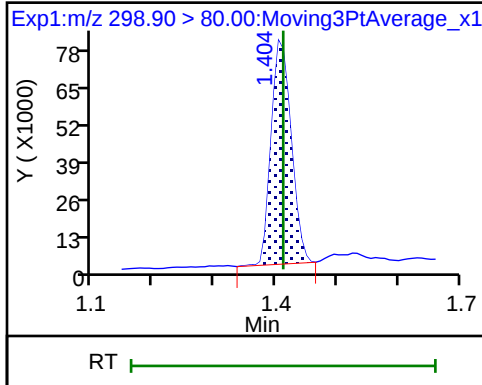
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

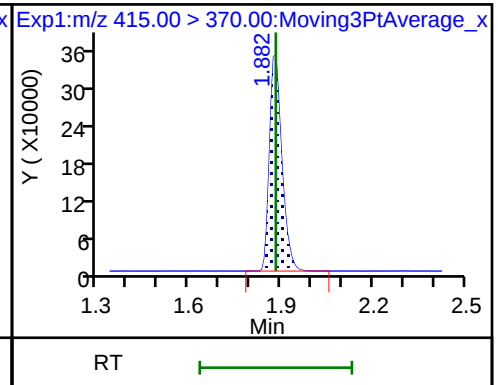
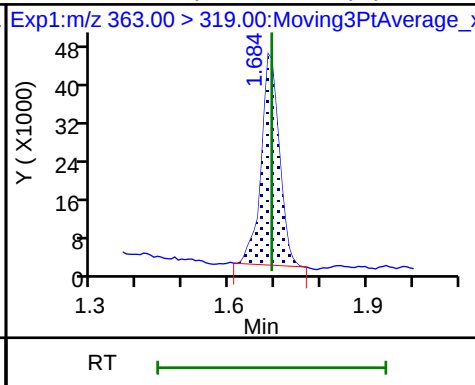
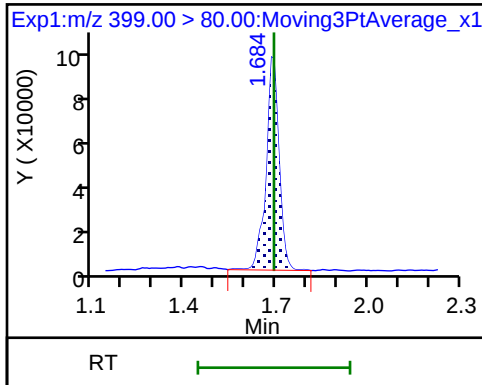
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid (M)

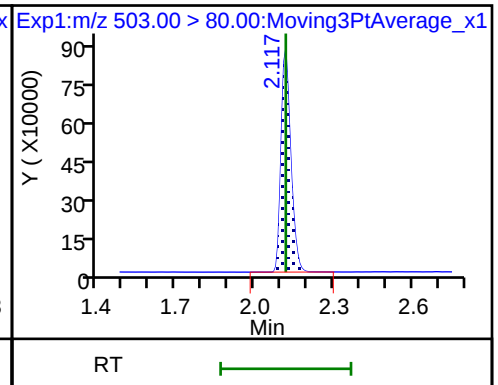
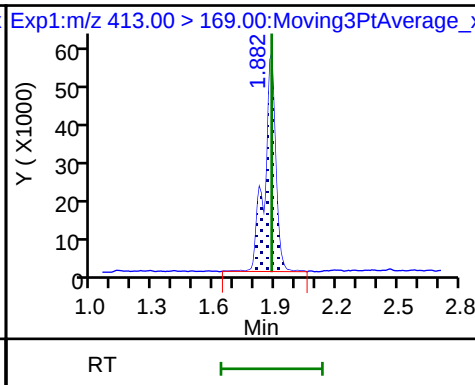
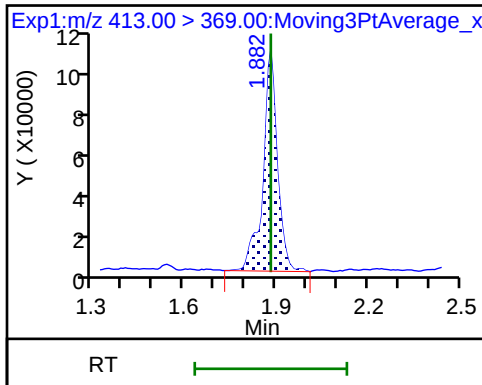
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

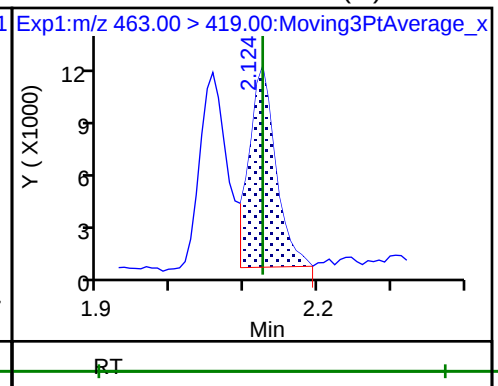
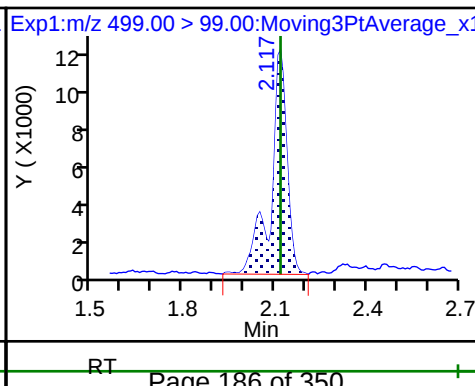
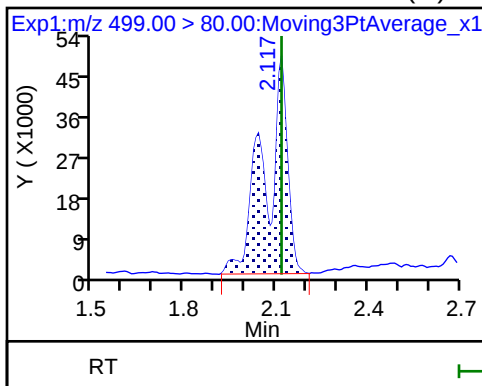
* 7 13C4 PFOS



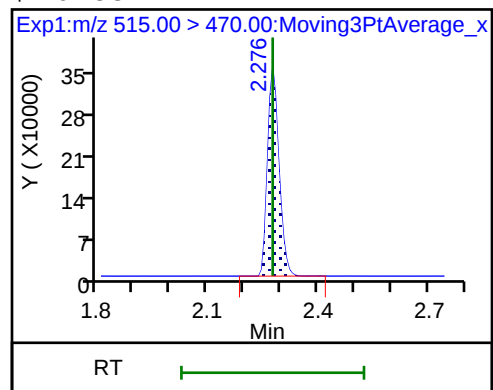
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_060.d
Lims ID: 320-38538-A-9-A
Client ID: WGNA-042518-RW-3957
Sample Type: Client
Inject. Date: 05-May-2018 07:05:23 ALS Bottle#: 42 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-38538-a-9-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:27:48

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.5	104.89
\$ 10 13C2 PFDA	10.0	9.19	91.94

TestAmerica Sacramento

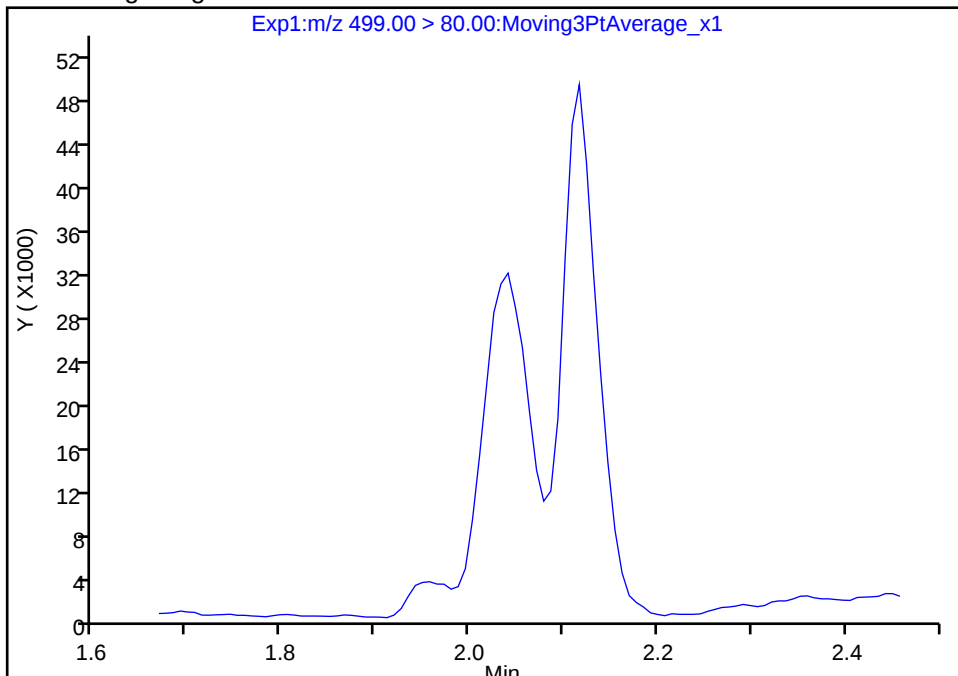
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_060.d				
Injection Date:	05-May-2018 07:05:23	Instrument ID:	A8_N		
Lims ID:	320-38538-A-9-A	Lab Sample ID:	320-38538-9		
Client ID:	WGNA-042518-RW-3957				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	42	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

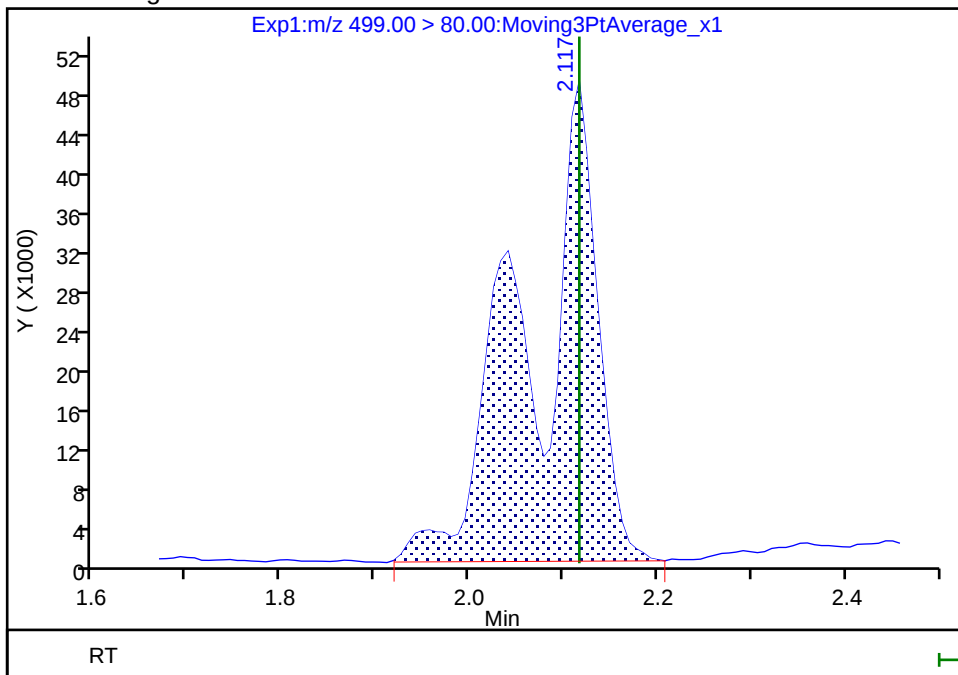
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 243805
Amount: 2.920856
Amount Units: ng/ml

Reviewer: westendorfc, 07-May-2018 13:27:37

Audit Action: Assigned Compound ID

Audit Reason: Assign Peak

TestAmerica Sacramento

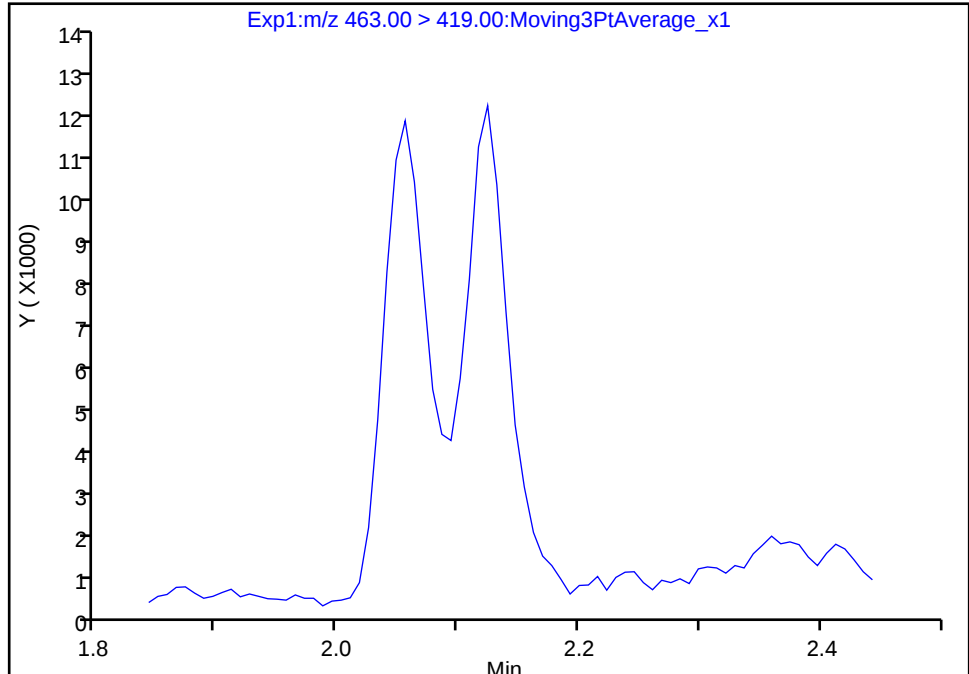
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_060.d				
Injection Date:	05-May-2018 07:05:23	Instrument ID:	A8_N		
Lims ID:	320-38538-A-9-A	Lab Sample ID:	320-38538-9		
Client ID:	WGNA-042518-RW-3957				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	42	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector:	EXP1		

9 Perfluorononanoic acid, CAS: 375-95-1

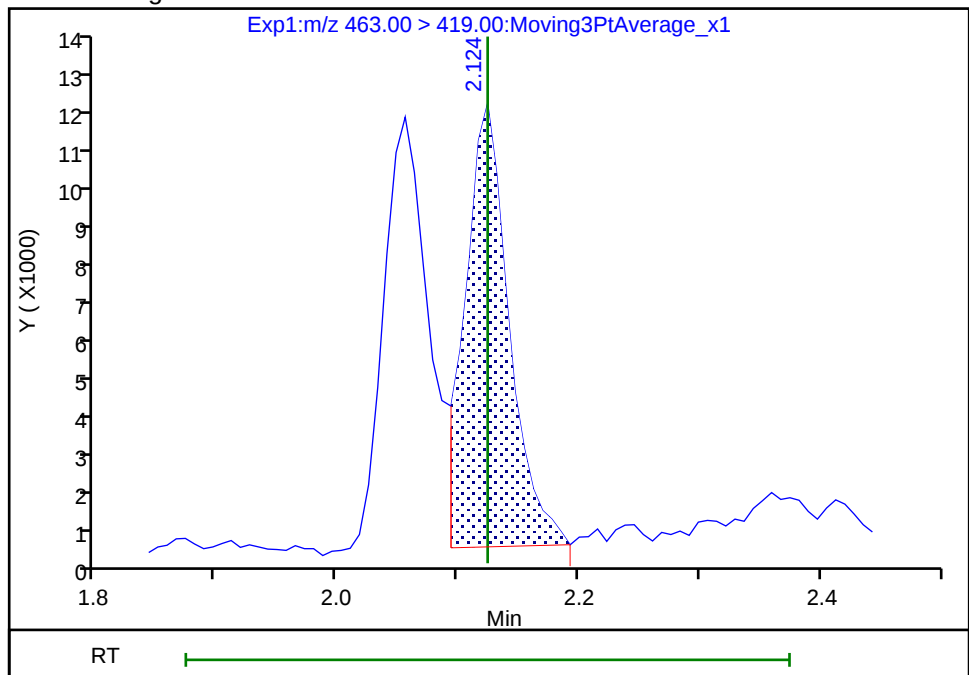
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 28548
Amount: 0.351541
Amount Units: ng/ml

Reviewer: westendorfc, 07-May-2018 13:27:45

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

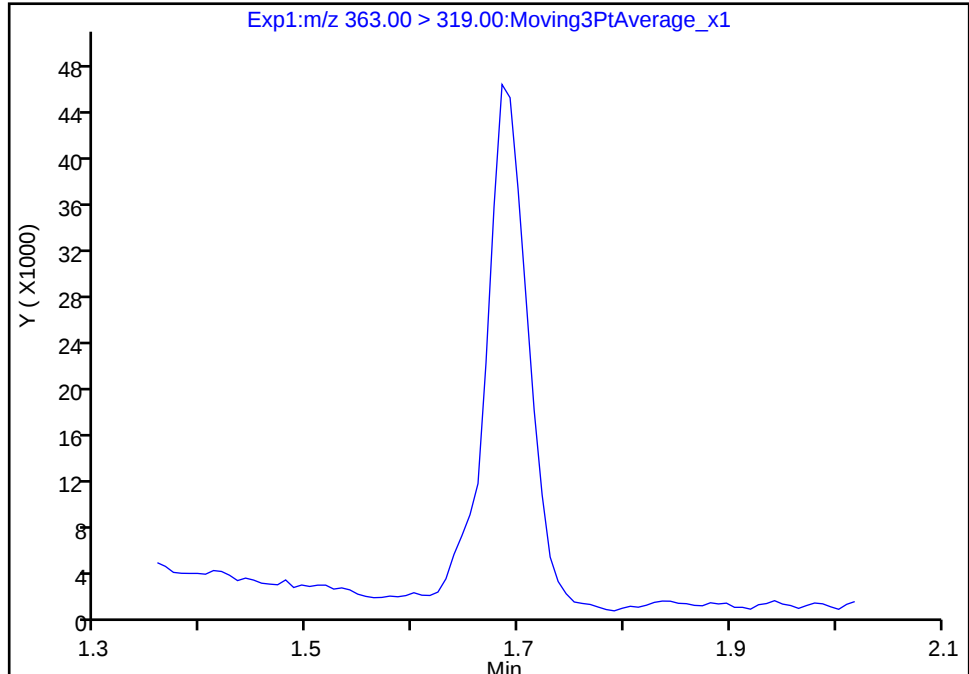
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_060.d
Injection Date: 05-May-2018 07:05:23 Instrument ID: A8_N
Lims ID: 320-38538-A-9-A Lab Sample ID: 320-38538-9
Client ID: WGNA-042518-RW-3957
Operator ID: SACINSTLCMS01 ALS Bottle#: 42 Worklist Smp#: 16
Injection Vol: 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

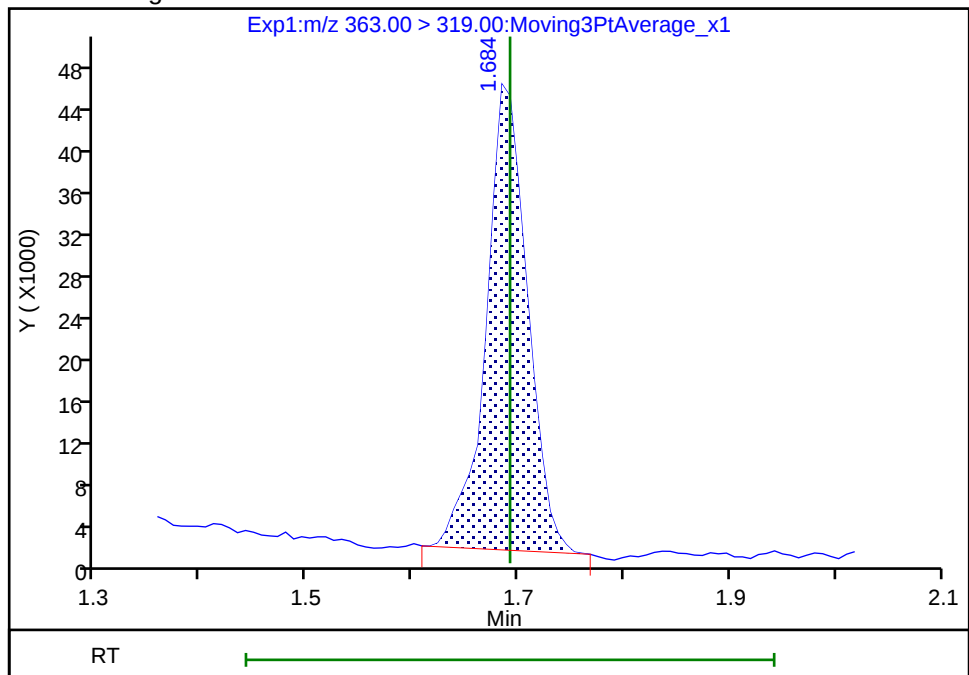
Signal: 1

Not Detected
Expected RT: 1.69

Processing Integration Results



Manual Integration Results



RT: 1.68
Area: 118666
Amount: 1.146472
Amount Units: ng/ml

Reviewer: westendorfc, 07-May-2018 13:27:32

Audit Action: Manually Integrated

Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-FRB-3957</u>	Lab Sample ID: <u>320-38538-10</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_061.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 10:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>253.1 (mL)</u>	Date Analyzed: <u>05/05/2018 07:10</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221681</u>	Units: <u>ng/L</u>

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	102		70-130
STL00996	13C2 PFDA	91		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_061.d
 Lims ID: 320-38538-A-10-A
 Client ID: WGNA-042518-FRB-3957
 Sample Type: Client
 Inject. Date: 05-May-2018 07:10:04 ALS Bottle#: 43 Worklist Smp#: 17
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-38538-a-10-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:27:54

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

315.00 > 270.00 1.533 1.540 -0.007 1.000 1071868 10.2 7289

* 6 13C2-PFOA

415.00 > 370.00 1.874 1.882 -0.008 985723 10.0 4992

* 7 13C4 PFOS

503.00 > 80.00 2.109 2.117 -0.008 2216286 28.7 1154

\$ 10 13C2 PFDA

515.00 > 470.00 2.276 2.276 0.0 1.000 758819 9.05 5693

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_061.d

Injection Date: 05-May-2018 07:10:04

Instrument ID: A8_N

Lims ID: 320-38538-A-10-A

Lab Sample ID: 320-38538-10

Client ID: WGNA-042518-FRB-3957

Operator ID: SACINSTLCMS01

ALS Bottle#: 43

Worklist Smp#: 17

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

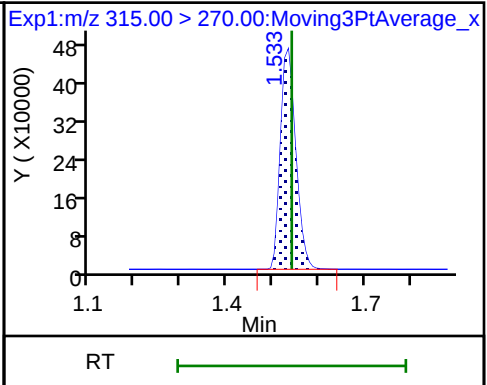
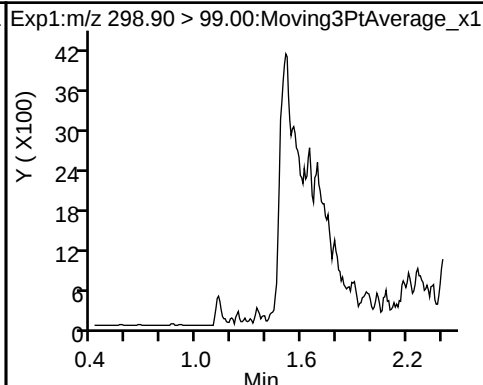
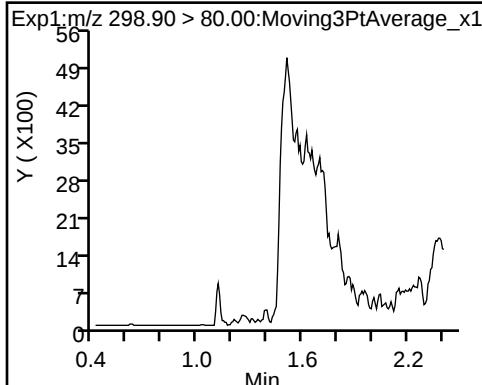
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

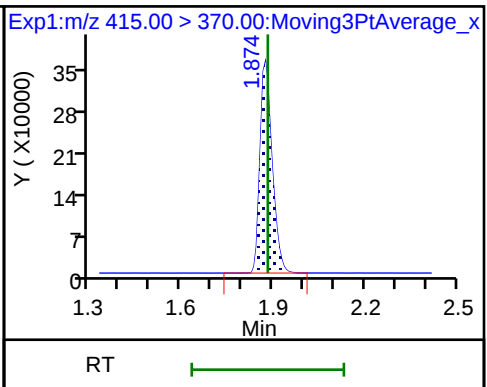
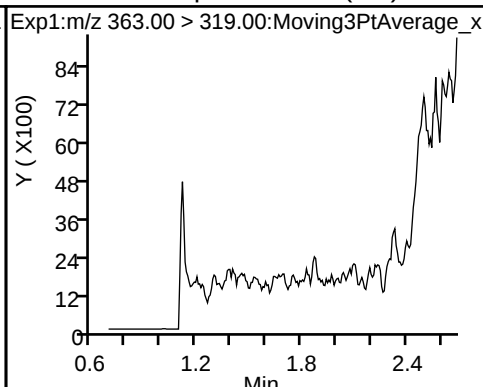
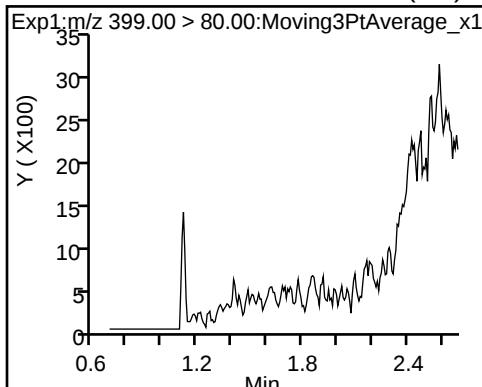
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

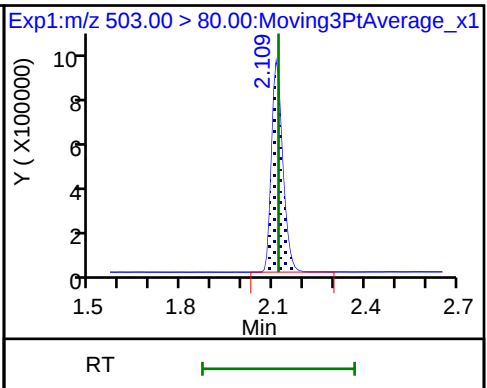
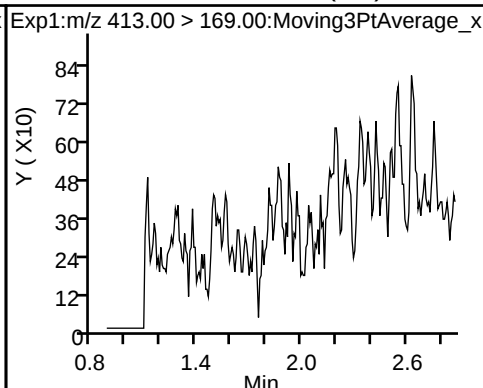
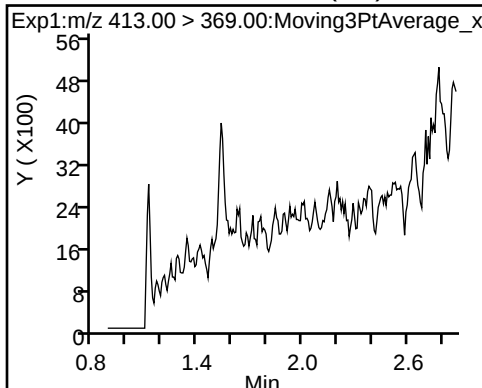
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

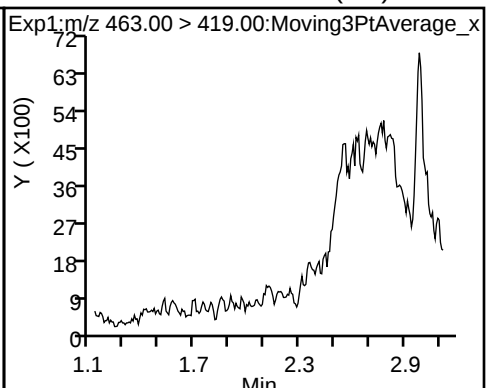
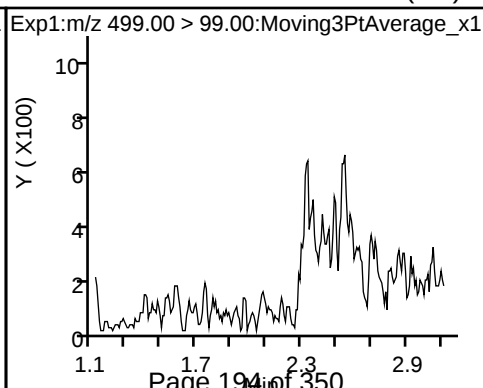
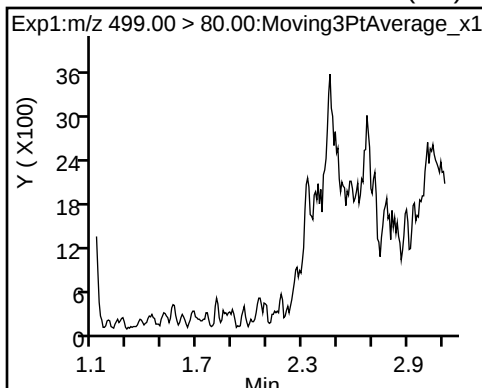
* 7 13C4 PFOS



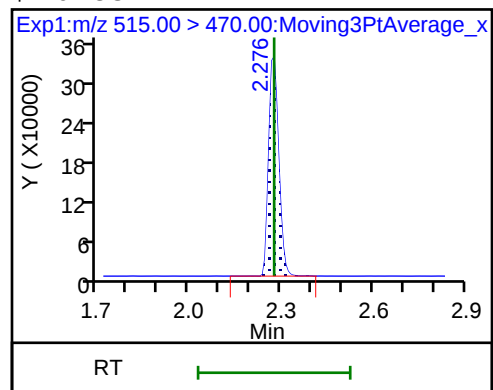
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_061.d
Lims ID: 320-38538-A-10-A
Client ID: WGNA-042518-FRB-3957
Sample Type: Client
Inject. Date: 05-May-2018 07:10:04 ALS Bottle#: 43 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-38538-a-10-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:27:54

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.2	102.28
\$ 10 13C2 PFDA	10.0	9.05	90.52

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Client Sample ID: WGNA-042518-RW-0683 Lab Sample ID: 320-38538-11
 Matrix: Water Lab File ID: 2018.05.05_537A_062.d
 Analysis Method: 537 Date Collected: 04/25/2018 11:40
 Extraction Method: 537 Date Extracted: 04/30/2018 08:44
 Sample wt/vol: 251.3(mL) Date Analyzed: 05/05/2018 07:14
 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.: 221681 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	24		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.0	J	9.9	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	97		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_062.d
 Lims ID: 320-38538-A-11-A
 Client ID: WGNA-042518-RW-0683
 Sample Type: Client
 Inject. Date: 05-May-2018 07:14:44 ALS Bottle#: 44 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-38538-a-11-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:28:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.411	-0.007	1.000	137242	1.42		42.4	
298.90 > 99.00	1.404	1.411	-0.007	1.000	102200		1.34(0.00-0.00)	49.9	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.540	-0.007	1.000	1248200	10.4		8158	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.692	-0.008	1.000	189626	1.26		35.9	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.692	-0.008	1.000	213774	1.76		19.2	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.882	-0.008		1129722	10.0		6333	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.882	-0.008	1.000	708878	5.91		72.1	
413.00 > 169.00	1.874	1.882	-0.008	1.000	403623		1.76(0.00-0.00)	297	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.117	-0.008		2628111	28.7		946	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.117	-0.008	1.000	596586	6.11		72.7	a
499.00 > 99.00	2.109	2.117	-0.008	1.000	94551		6.31(0.00-0.00)	97.1	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.124	-0.007	1.000	47129	0.4952		5.4	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	931487	9.69		8495	M

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_062.d

Injection Date: 05-May-2018 07:14:44

Instrument ID: A8_N

Lims ID: 320-38538-A-11-A

Lab Sample ID: 320-38538-11

Client ID: WGNA-042518-RW-0683

Operator ID: SACINSTLCMS01

ALS Bottle#: 44

Worklist Smp#: 18

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

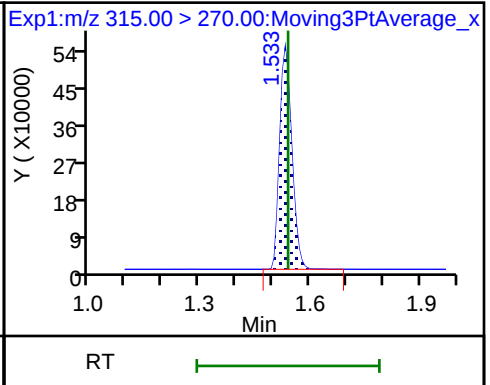
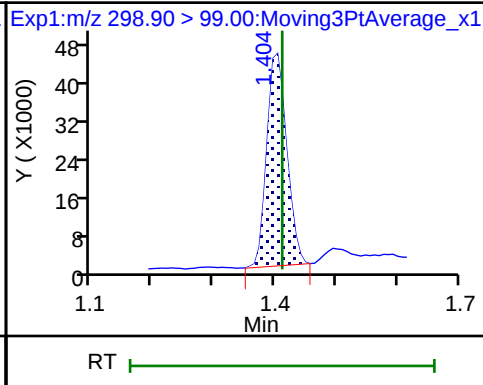
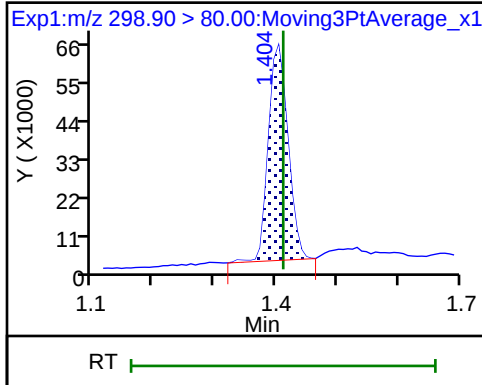
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

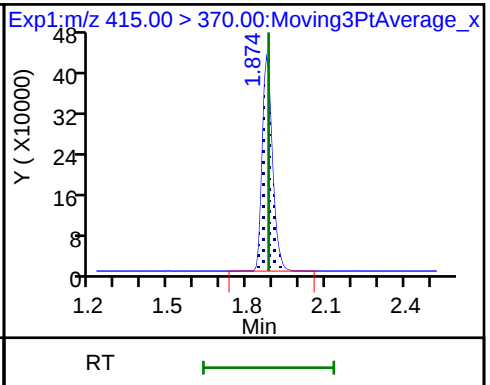
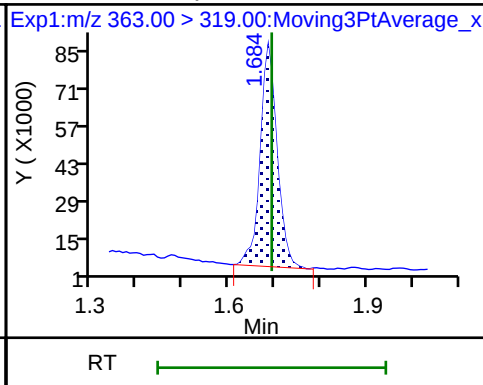
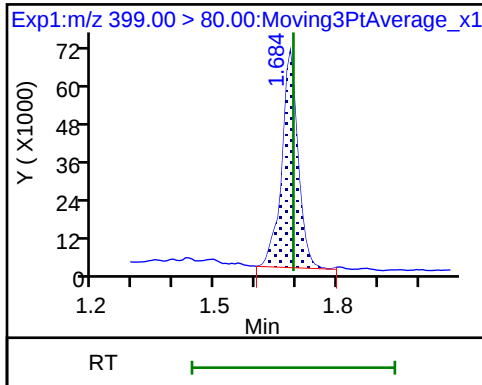
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

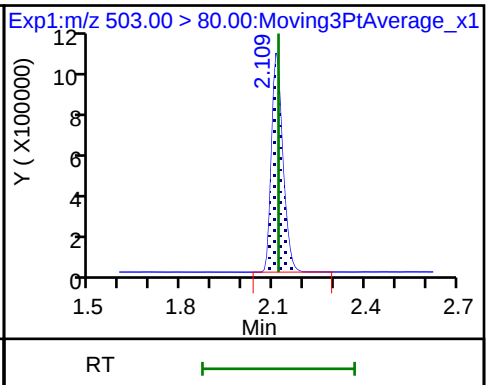
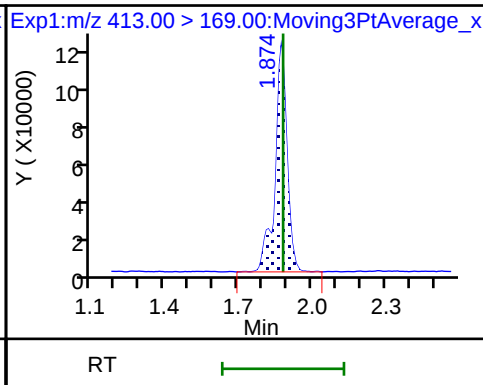
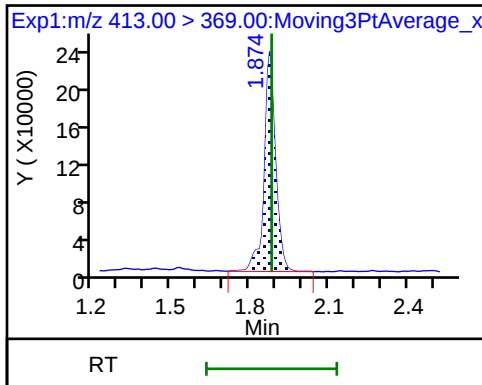
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

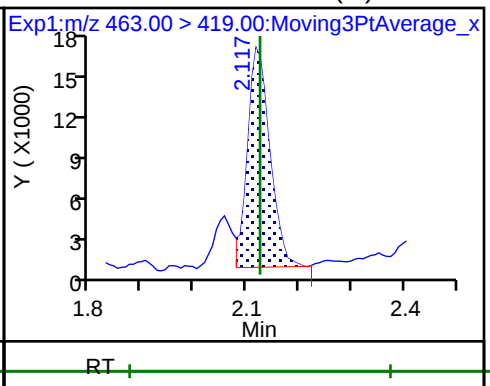
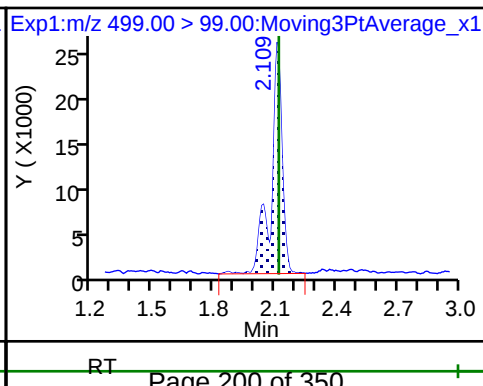
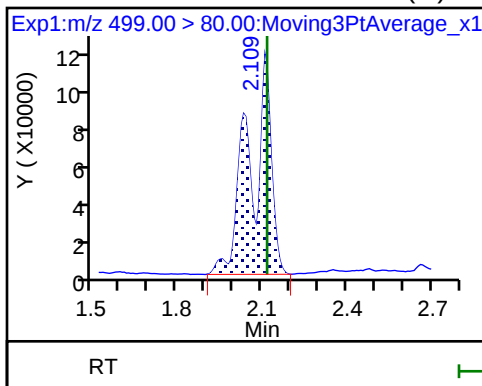
* 7 13C4 PFOS



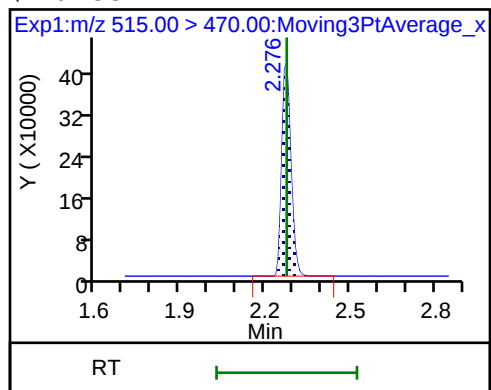
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_062.d
Lims ID: 320-38538-A-11-A
Client ID: WGNA-042518-RW-0683
Sample Type: Client
Inject. Date: 05-May-2018 07:14:44 ALS Bottle#: 44 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-38538-a-11-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:28:13

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.4	103.92
\$ 10 13C2 PFDA	10.0	9.69	96.95

TestAmerica Sacramento

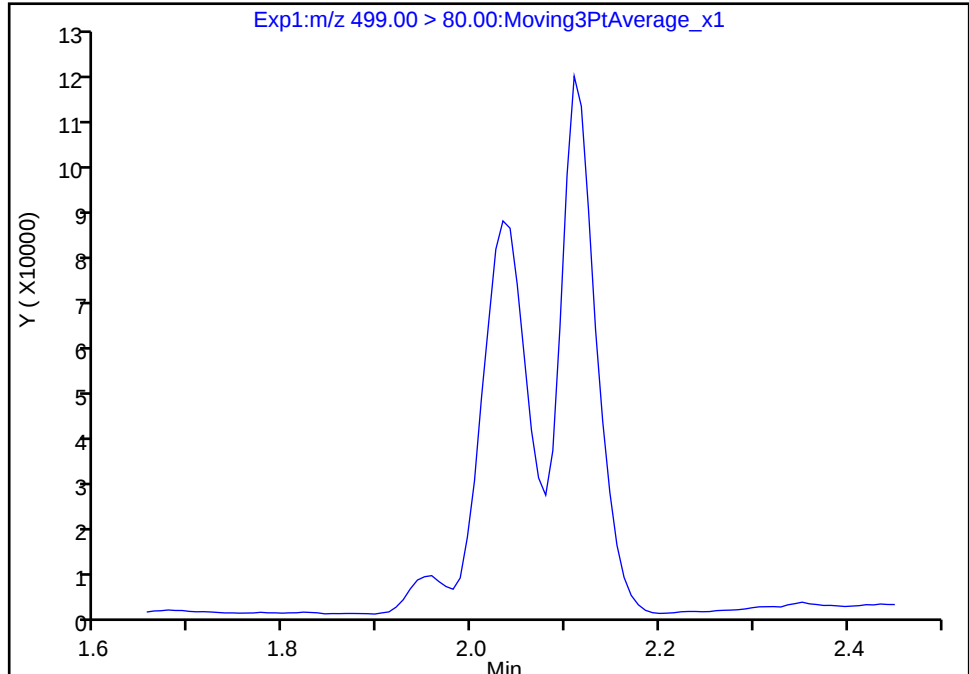
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_062.d				
Injection Date:	05-May-2018 07:14:44	Instrument ID:	A8_N		
Lims ID:	320-38538-A-11-A	Lab Sample ID:	320-38538-11		
Client ID:	WGNA-042518-RW-0683				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	44	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

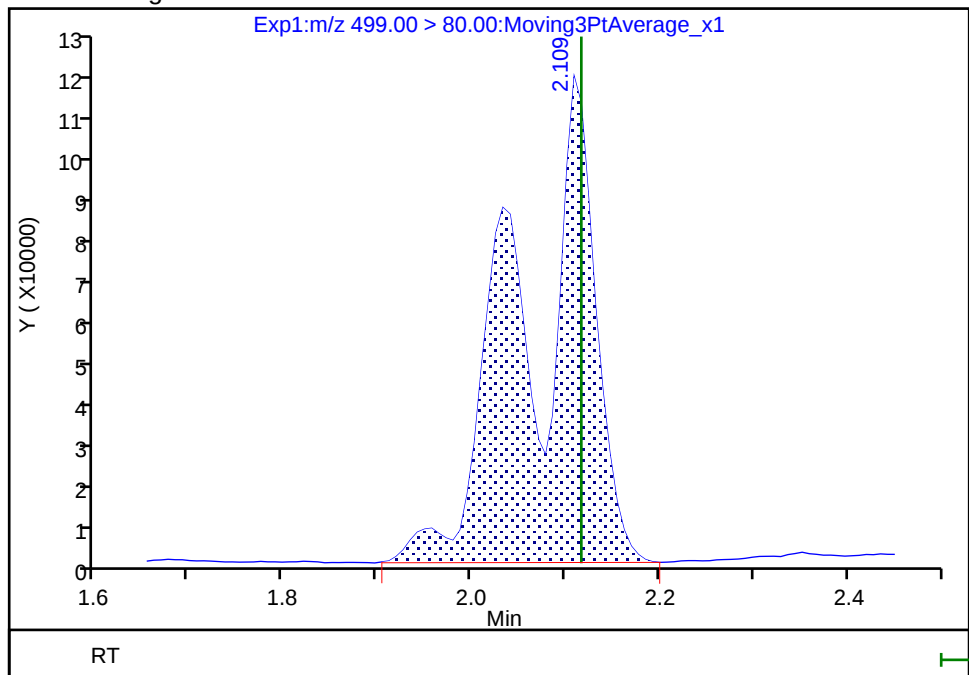
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 596586
Amount: 6.106911
Amount Units: ng/ml

Reviewer: westendorfc, 07-May-2018 13:28:00

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

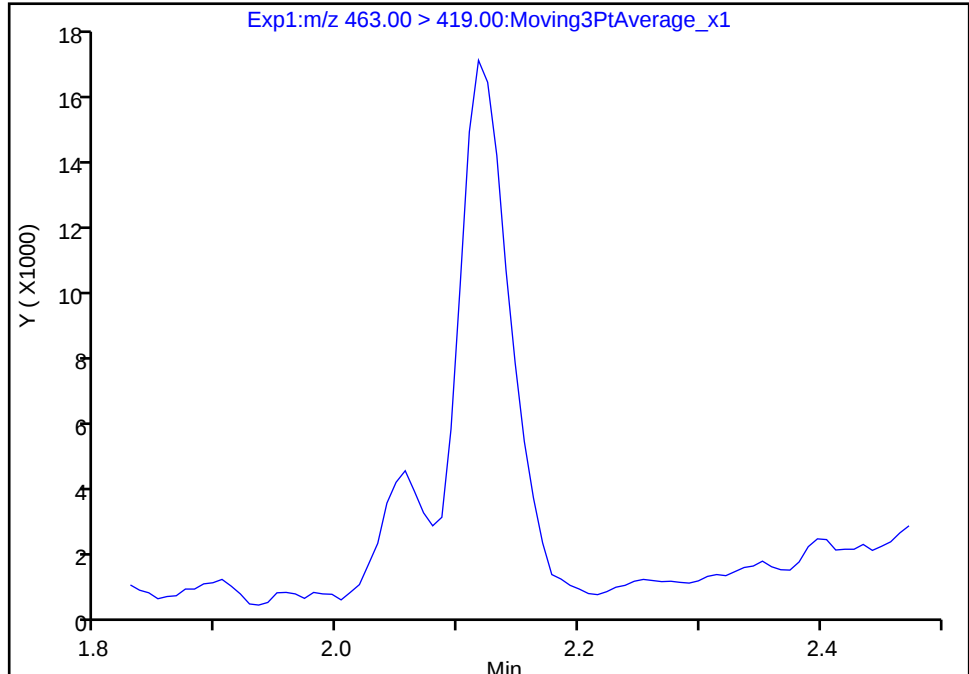
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_062.d				
Injection Date:	05-May-2018 07:14:44	Instrument ID:	A8_N		
Lims ID:	320-38538-A-11-A	Lab Sample ID:	320-38538-11		
Client ID:	WGNA-042518-RW-0683				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	44	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

9 Perfluorononanoic acid, CAS: 375-95-1

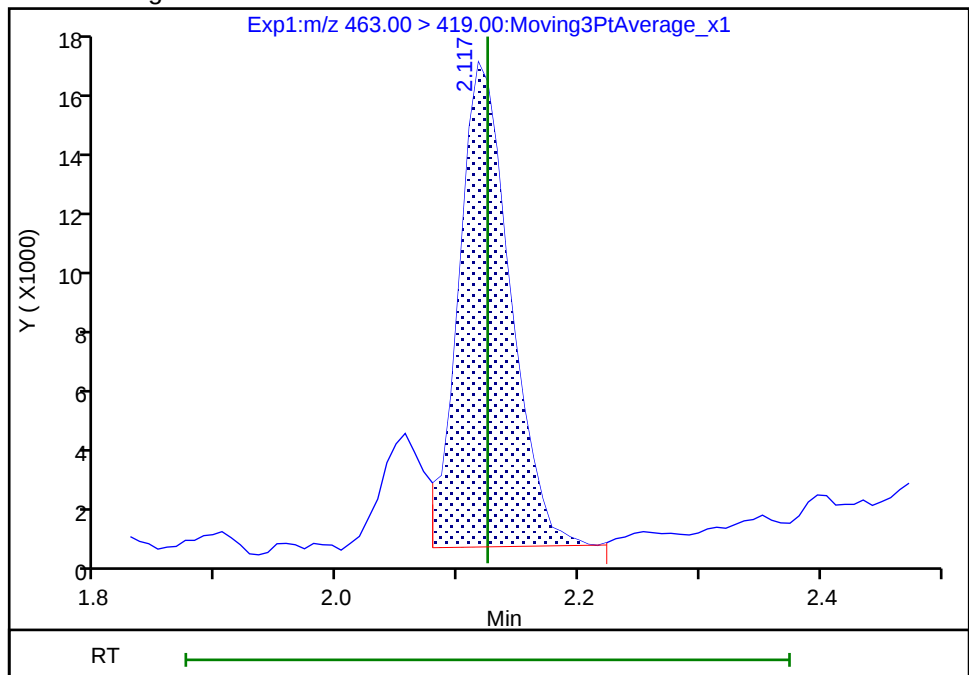
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:28:09

Audit Action: Manually Integrated

Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-FRB-0683</u>	Lab Sample ID: <u>320-38538-12</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_063.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 11:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>242.4 (mL)</u>	Date Analyzed: <u>05/05/2018 07:19</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221681</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	U	41	17	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	8.3	U	21	8.3	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	2.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	93	37	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	113		70-130
STL00996	13C2 PFDA	102		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_063.d
 Lims ID: 320-38538-A-12-A
 Client ID: WGNA-042518-FRB-0683
 Sample Type: Client
 Inject. Date: 05-May-2018 07:19:25 ALS Bottle#: 45 Worklist Smp#: 19
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-38538-a-12-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK023

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.540	-0.015	1.000	1231178	11.3		9085	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.882	-0.016		1021032	10.0		5811	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.117	-0.008		2337212	28.7		1087	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.276	-0.008	1.000	882003	10.2		8541	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_063.d

Injection Date: 05-May-2018 07:19:25

Instrument ID: A8_N

Lims ID: 320-38538-A-12-A

Lab Sample ID: 320-38538-12

Client ID: WGNA-042518-FRB-0683

Operator ID: SACINSTLCMS01

ALS Bottle#: 45

Worklist Smp#: 19

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

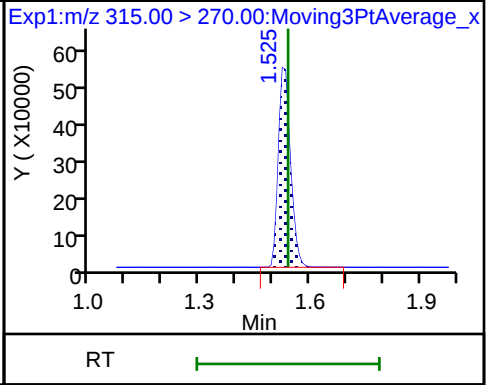
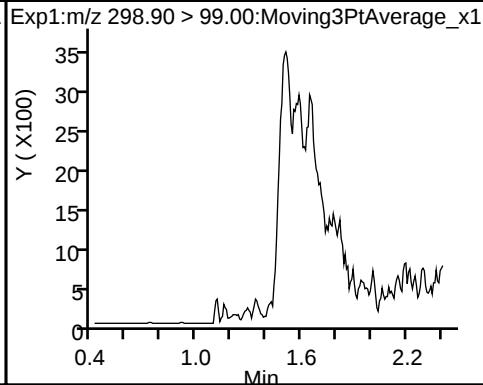
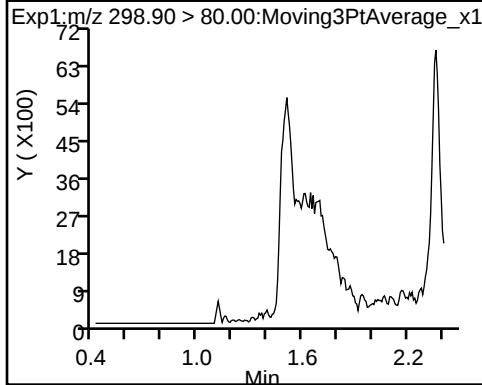
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

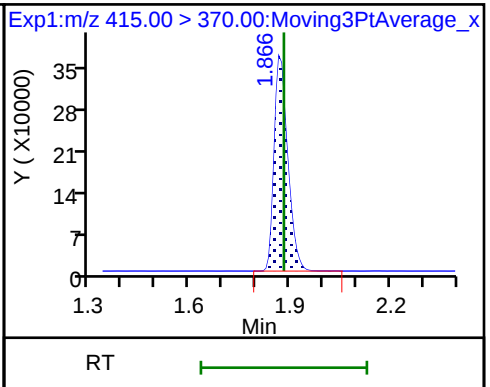
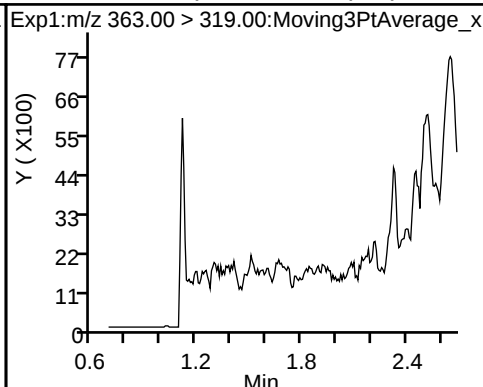
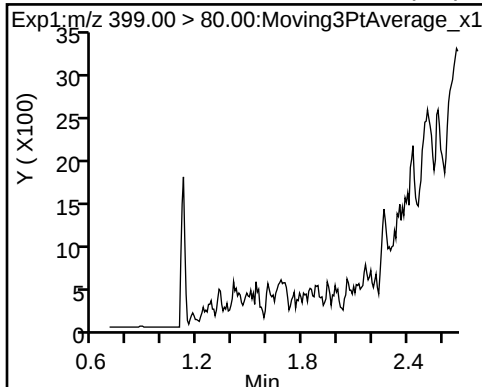
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

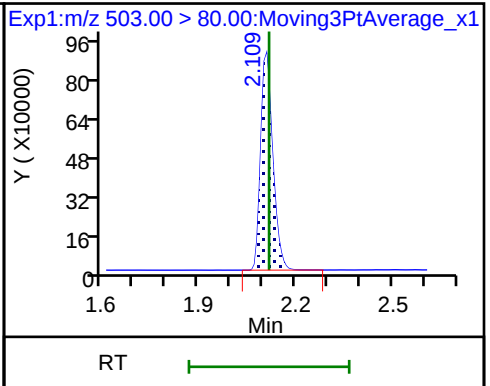
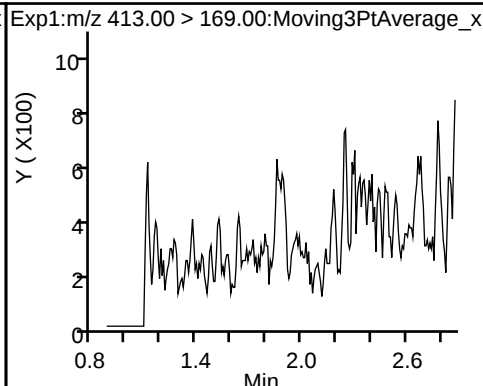
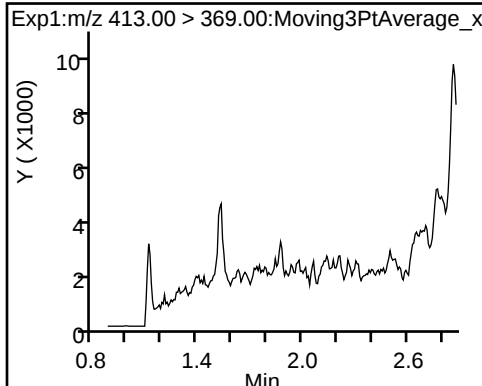
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

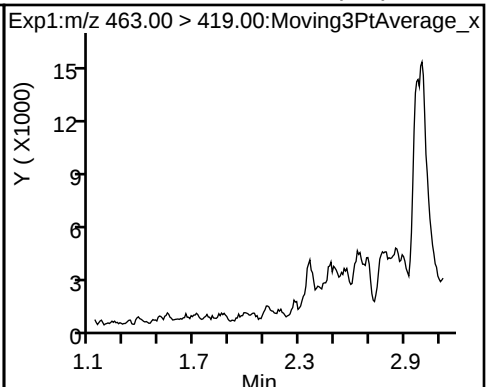
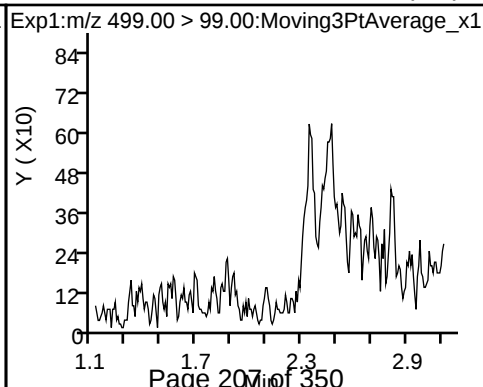
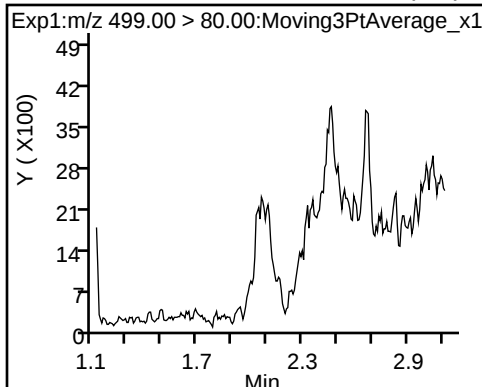
* 7 13C4 PFOS



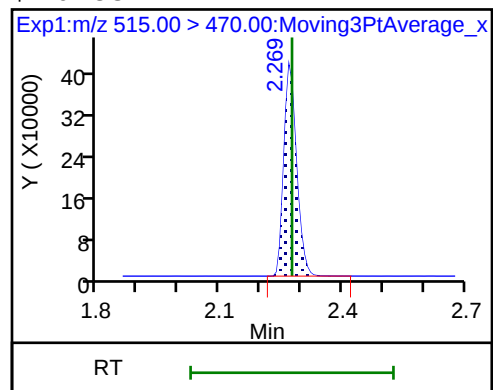
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_063.d
Lims ID: 320-38538-A-12-A
Client ID: WGNA-042518-FRB-0683
Sample Type: Client
Inject. Date: 05-May-2018 07:19:25 ALS Bottle#: 45 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-38538-a-12-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 :

Det: EXP1

Process Host: XAWRK023

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.3	113.42
\$ 10 13C2 PFDA	10.0	10.2	101.57

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-042518-RW-272</u>	Lab Sample ID: <u>320-38538-13</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_064.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 12:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>251(mL)</u>	Date Analyzed: <u>05/05/2018 07:24</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221681</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	11	J M	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.7	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	J M	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	102		70-130
STL00996	13C2 PFDA	90		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_064.d
 Lims ID: 320-38538-A-13-A
 Client ID: NAWC-042518-RW-272
 Sample Type: Client
 Inject. Date: 05-May-2018 07:24:05 ALS Bottle#: 46 Worklist Smp#: 20
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-38538-a-13-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:28:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.411	-0.007	1.000	77859	0.9409		26.1	
298.90 > 99.00	1.404	1.411	-0.007	1.000	58313		1.34(0.00-0.00)	29.1	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.540	-0.007	1.000	1061045	10.2		7908	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.692	-0.008	1.000	183317	1.42		41.8	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.692	-0.015	1.000	93968	0.8950		9.2	M
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.882	-0.008		977865	10.0		5331	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.882	-0.008	1.000	285203	2.75		33.3	M
413.00 > 169.00	1.874	1.882	-0.008	1.000	158699		1.80(0.00-0.00)	117	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.117	-0.008		2256090	28.7		938	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.117	-0.008	1.000	307284	3.66		42.1	a
499.00 > 99.00	2.109	2.117	-0.008	1.000	61627		4.99(0.00-0.00)	85.0	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.124	-0.007	1.000	30981	0.3761		4.4	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.276	-0.008	1.000	749466	9.01		6390	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_064.d

Injection Date: 05-May-2018 07:24:05

Instrument ID: A8_N

Lims ID: 320-38538-A-13-A

Lab Sample ID: 320-38538-13

Client ID: NAWC-042518-RW-272

Operator ID: SACINSTLCMS01

ALS Bottle#: 46

Worklist Smp#: 20

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

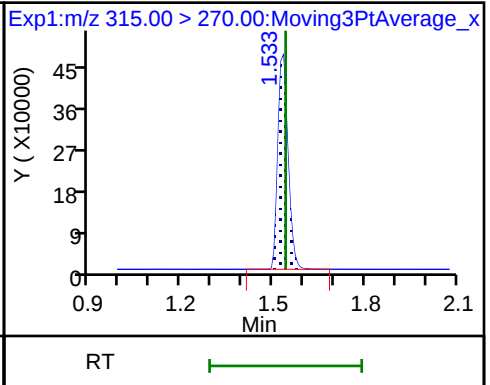
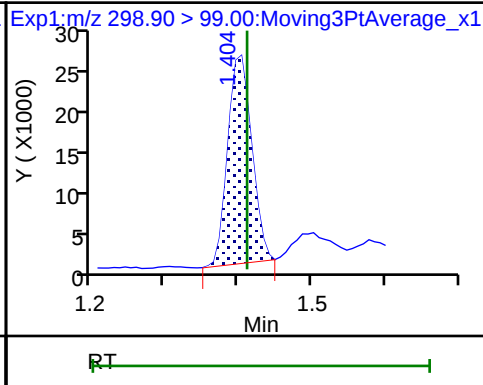
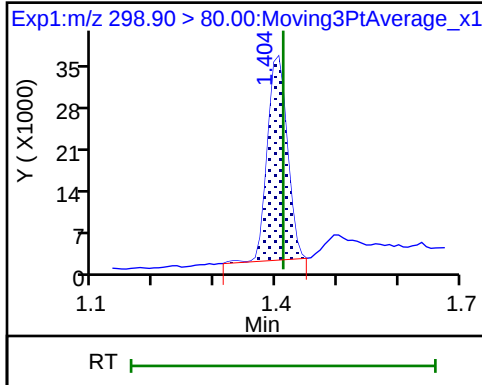
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

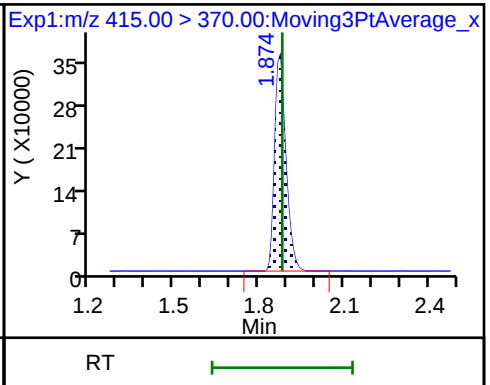
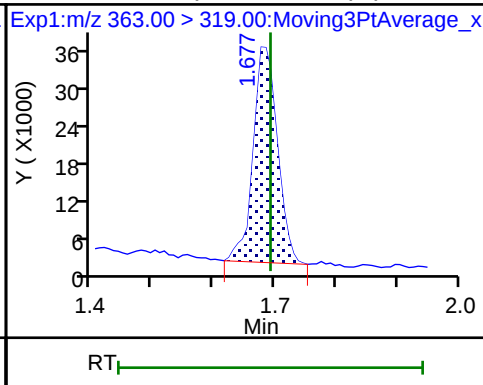
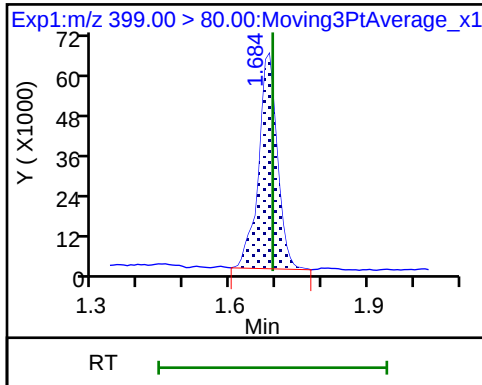
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid (M)

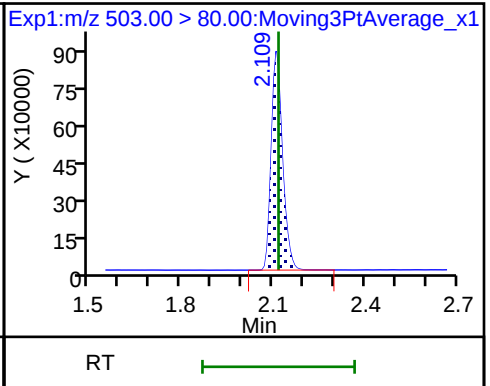
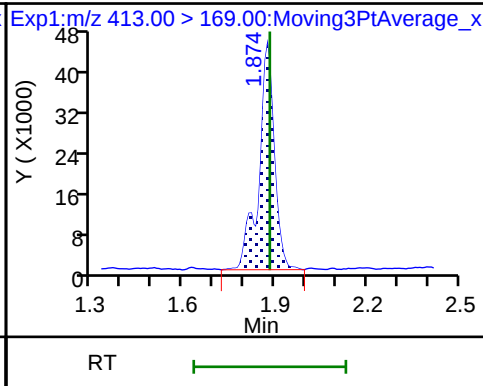
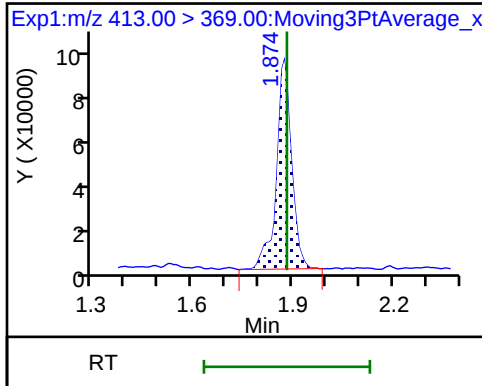
* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid

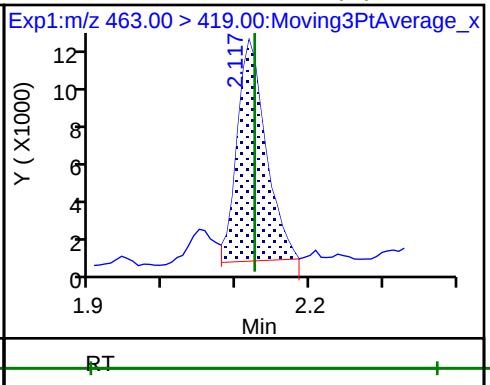
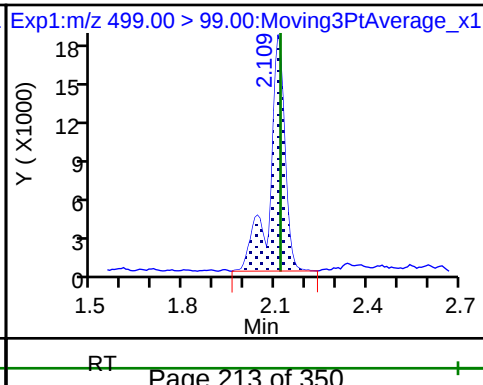
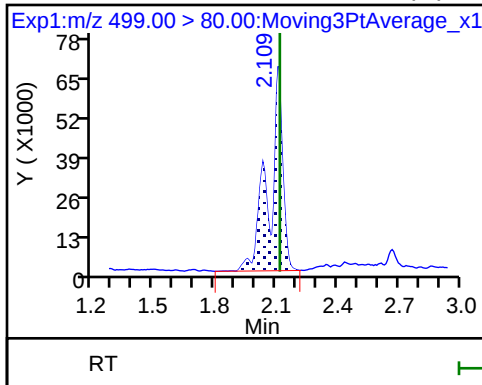
* 7 13C4 PFOS



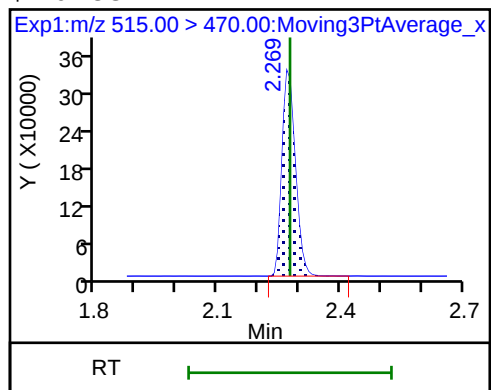
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_064.d
Lims ID: 320-38538-A-13-A
Client ID: NAWC-042518-RW-272
Sample Type: Client
Inject. Date: 05-May-2018 07:24:05 ALS Bottle#: 46 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-38538-a-13-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:28:56

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.2	102.06
\$ 10 13C2 PFDA	10.0	9.01	90.12

TestAmerica Sacramento

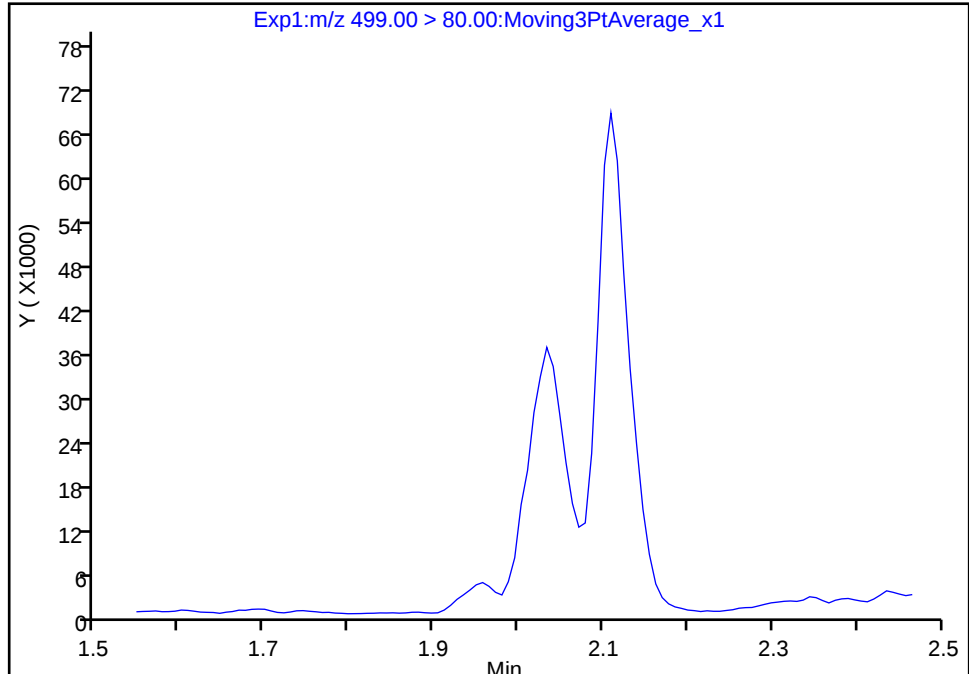
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_064.d
Injection Date: 05-May-2018 07:24:05 Instrument ID: A8_N
Lims ID: 320-38538-A-13-A Lab Sample ID: 320-38538-13
Client ID: NAWC-042518-RW-272
Operator ID: SACINSTLCMS01 ALS Bottle#: 46 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

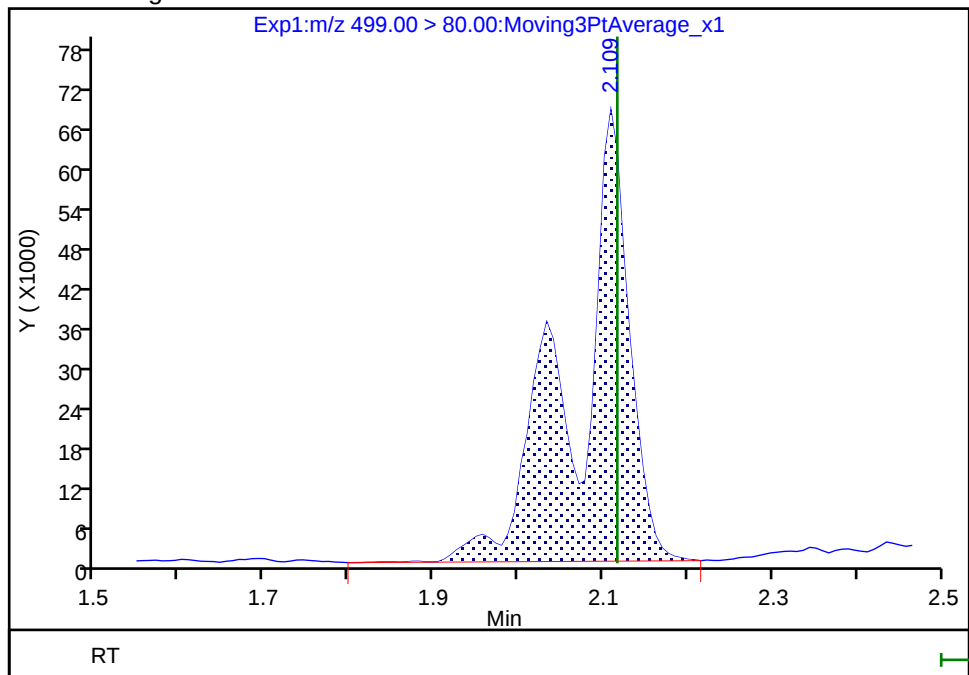
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:28:44

Audit Action: Assigned Compound ID

Audit Reason: Baseline

TestAmerica Sacramento

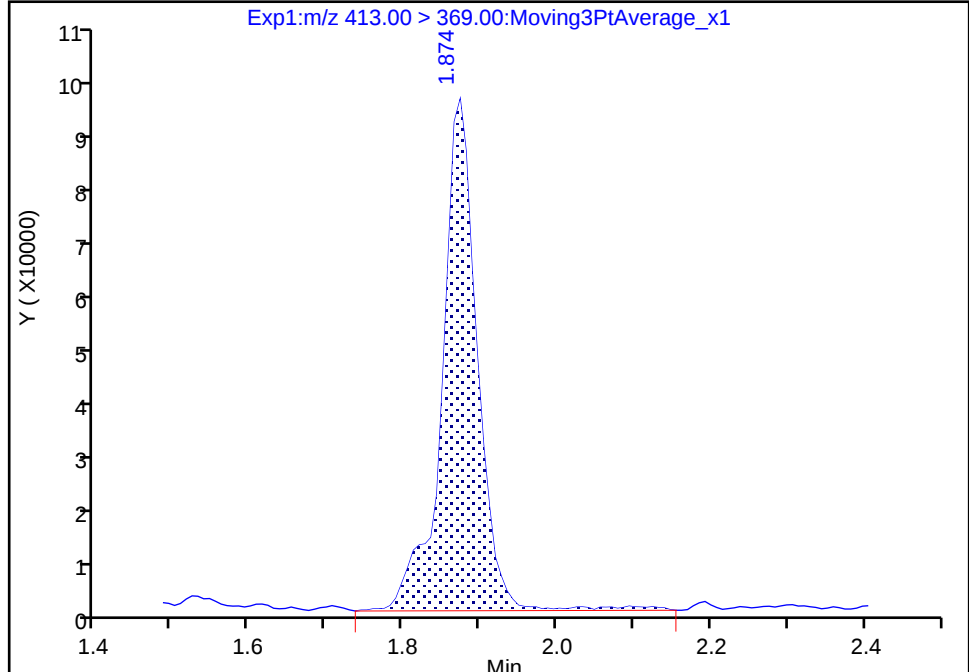
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_064.d				
Injection Date:	05-May-2018 07:24:05	Instrument ID:	A8_N		
Lims ID:	320-38538-A-13-A	Lab Sample ID:	320-38538-13		
Client ID:	NAWC-042518-RW-272				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	46	Worklist Smp#:	20
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

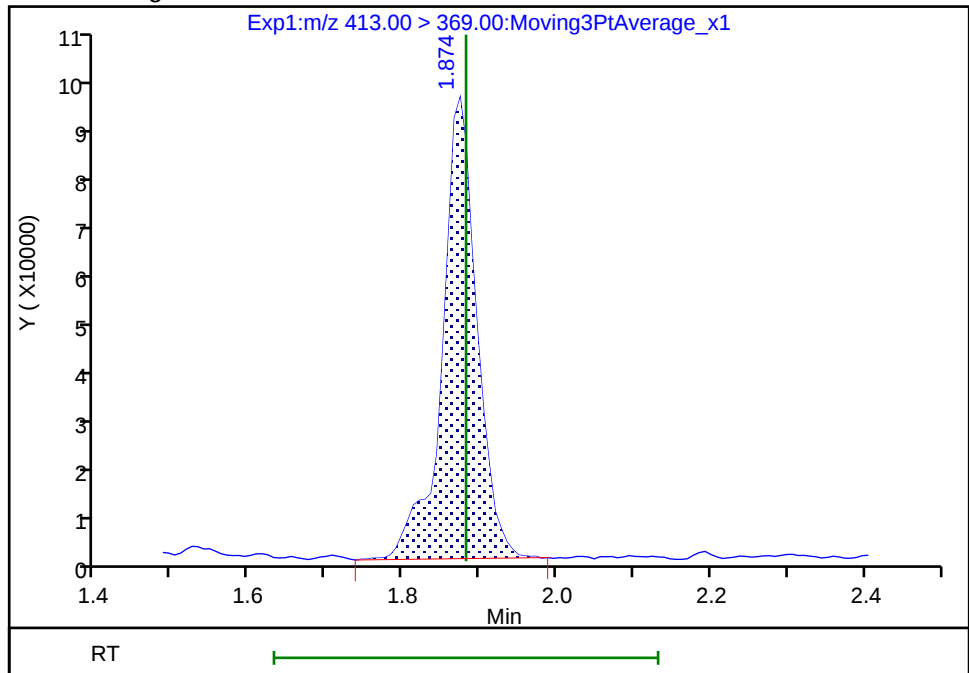
RT: 1.87
Area: 292783
Amount: 2.818455
Amount Units: ng/ml

Processing Integration Results



RT: 1.87
Area: 285203
Amount: 2.745486
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:28:40

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

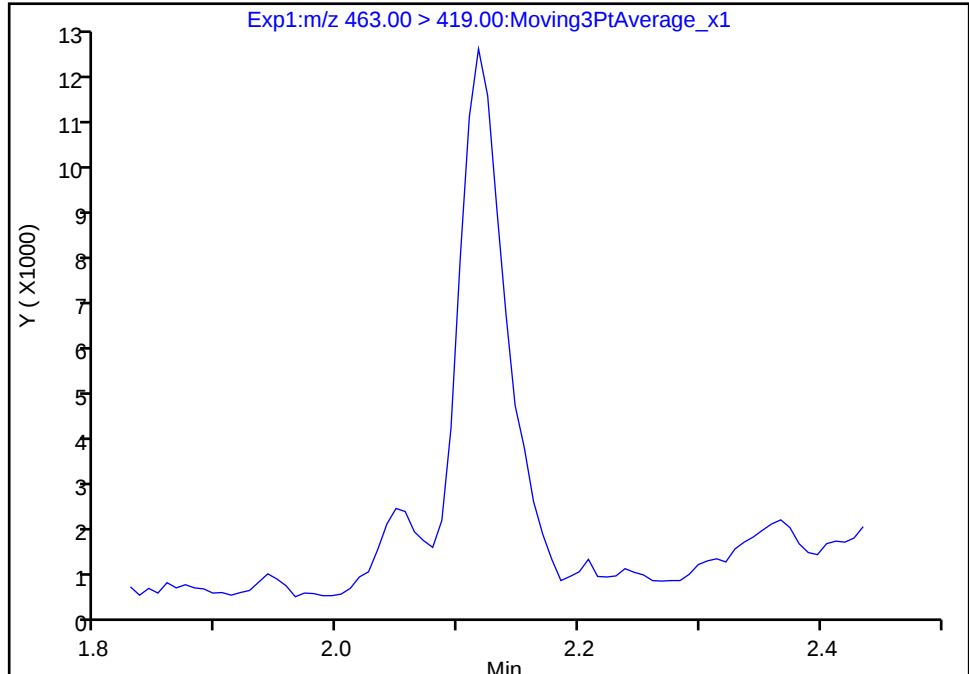
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_064.d				
Injection Date:	05-May-2018 07:24:05	Instrument ID:	A8_N		
Lims ID:	320-38538-A-13-A	Lab Sample ID:	320-38538-13		
Client ID:	NAWC-042518-RW-272				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	46	Worklist Smp#:	20
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

9 Perfluorononanoic acid, CAS: 375-95-1

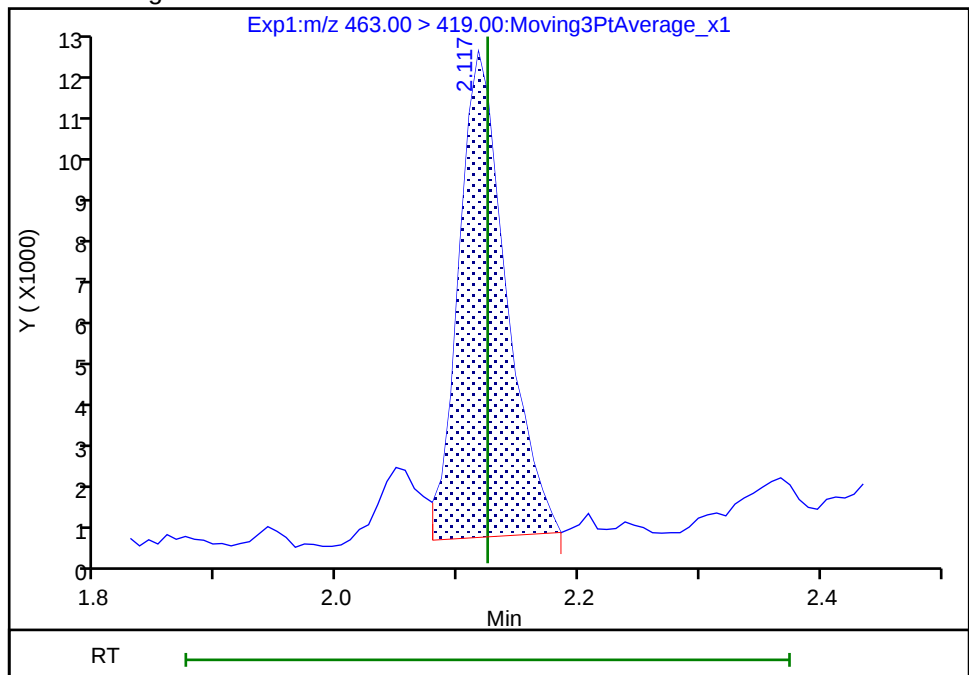
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 30981
Amount: 0.376099
Amount Units: ng/ml

Reviewer: westendorfc, 07-May-2018 13:28:52

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

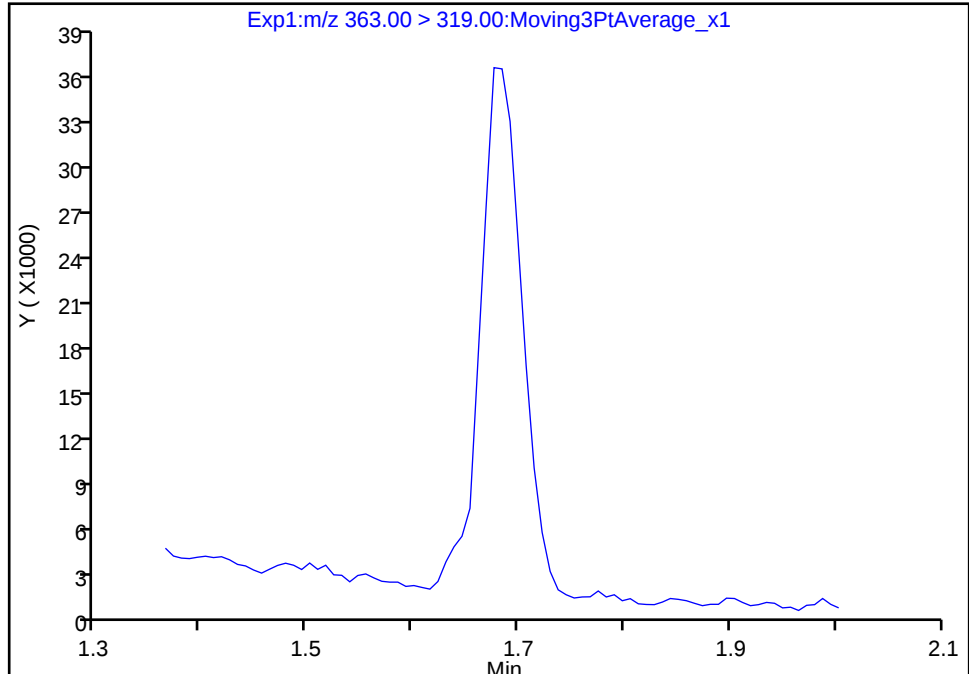
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_064.d				
Injection Date:	05-May-2018 07:24:05	Instrument ID:	A8_N		
Lims ID:	320-38538-A-13-A	Lab Sample ID:	320-38538-13		
Client ID:	NAWC-042518-RW-272				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	46	Worklist Smp#:	20
Injection 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

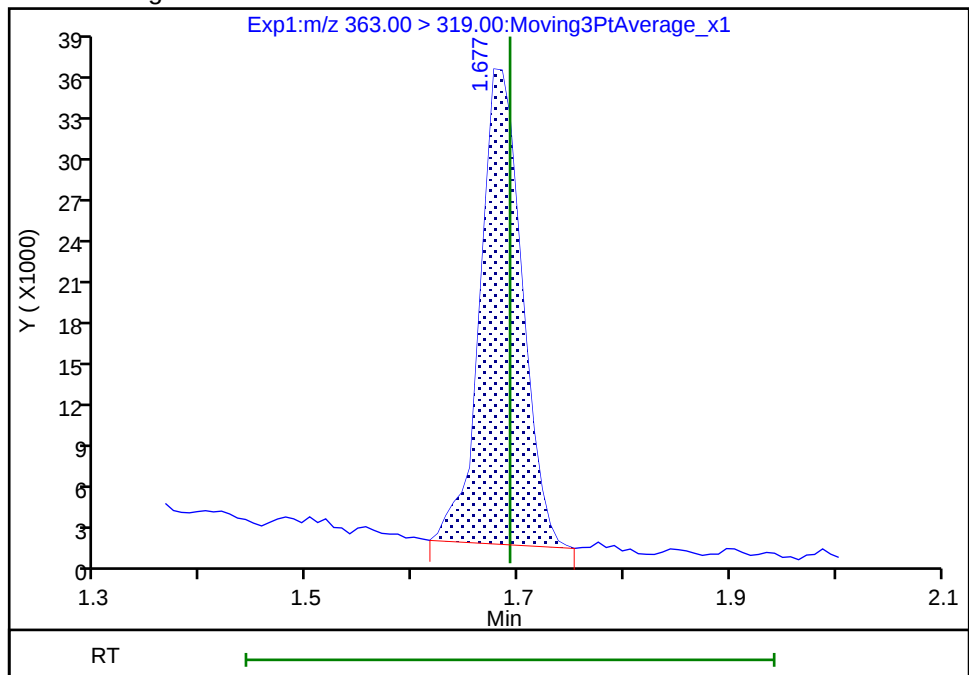
Signal: 1

Not Detected
Expected RT: 1.69

Processing Integration Results



Manual Integration Results



RT: 1.68
Area: 93968
Amount: 0.895001
Amount Units: ng/ml

Reviewer: westendorfc, 07-May-2018 13:28:30

Audit Action: Manually Integrated

Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-042518-FRB-272</u>	Lab Sample ID: <u>320-38538-14</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_065.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 12:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>244.6(mL)</u>	Date Analyzed: <u>05/05/2018 07:28</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221681</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	8.2	U	20	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	20	U	25	20	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	110		70-130
STL00996	13C2 PFDA	101		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_065.d
 Lims ID: 320-38538-A-14-A
 Client ID: NAWC-042518-FRB-272
 Sample Type: Client
 Inject. Date: 05-May-2018 07:28:47 ALS Bottle#: 47 Worklist Smp#: 21
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-38538-a-14-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK023

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.540	-0.007	1.000	1343892	11.0		10388	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.882	-0.008		1147226	10.0		5800	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.117	-0.008		2678684	28.7		1348	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.276	-0.008	1.000	981216	10.1		8675	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_065.d

Injection Date: 05-May-2018 07:28:47

Instrument ID: A8_N

Lims ID: 320-38538-A-14-A

Lab Sample ID: 320-38538-14

Client ID: NAWC-042518-FRB-272

Operator ID: SACINSTLCMS01

ALS Bottle#: 47

Worklist Smp#: 21

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

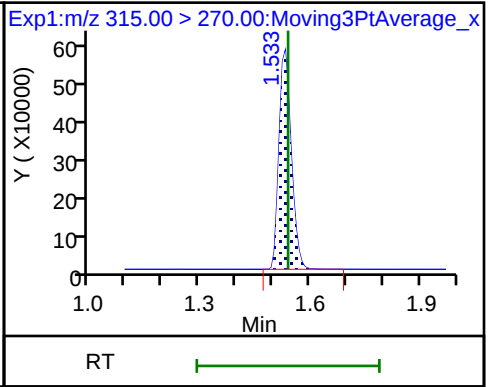
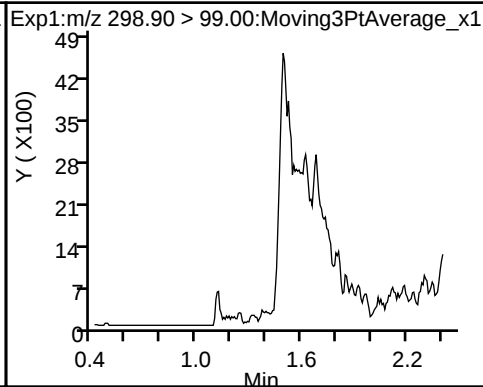
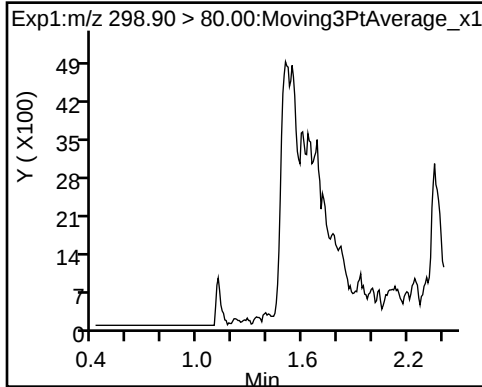
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

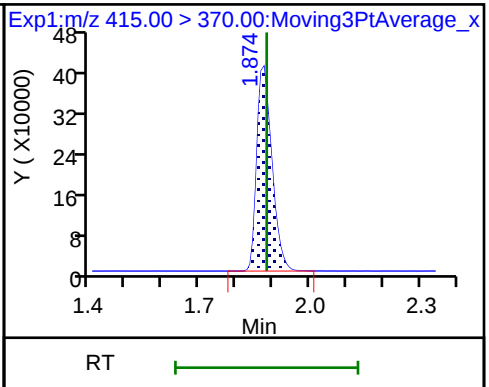
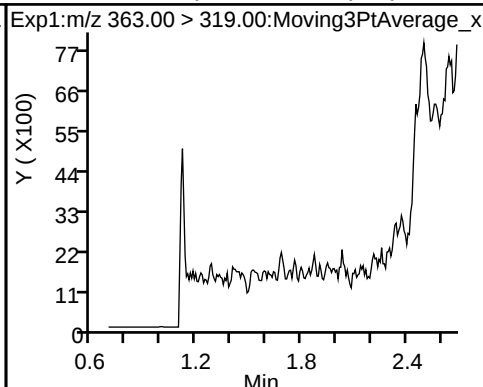
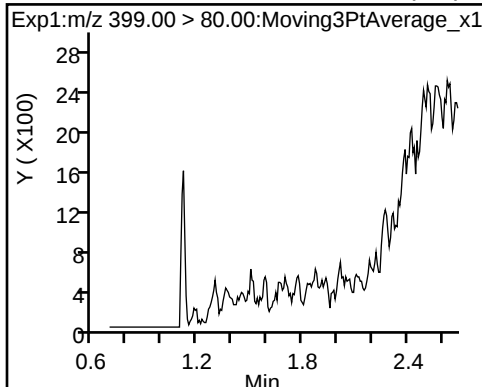
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

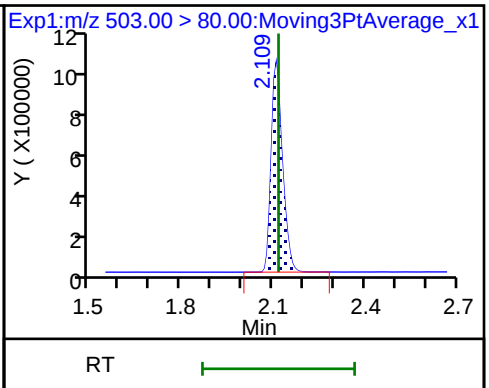
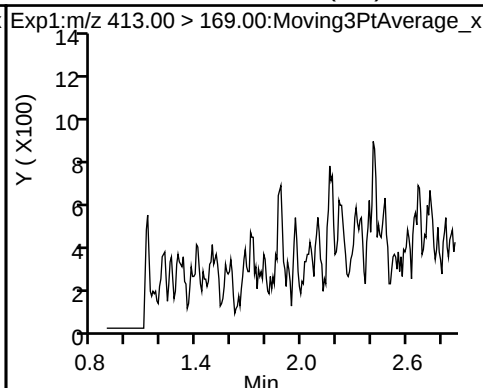
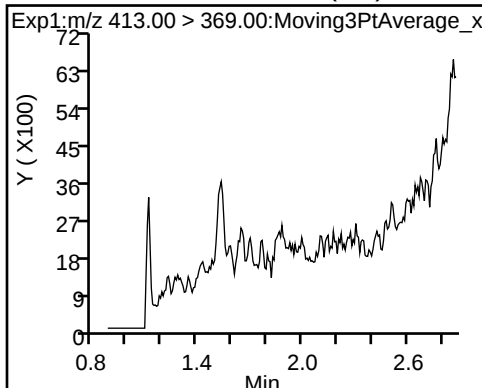
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

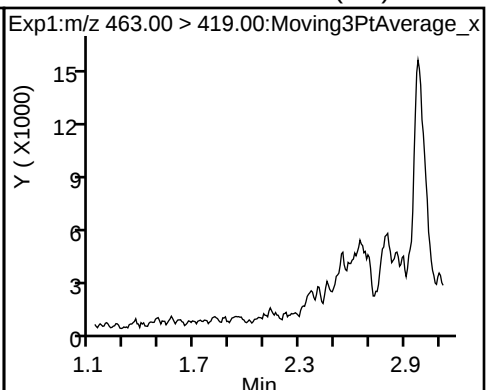
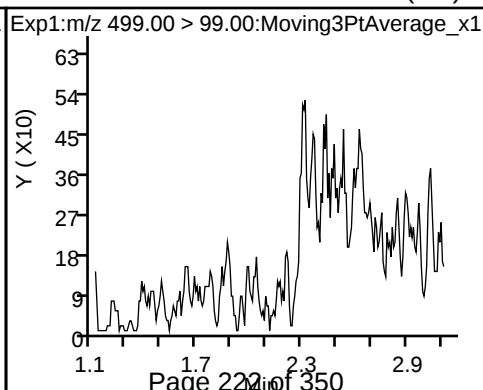
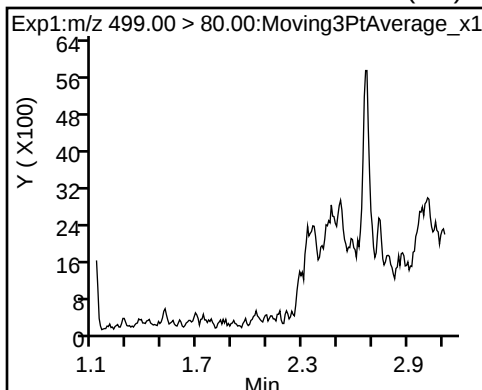
* 7 13C4 PFOS



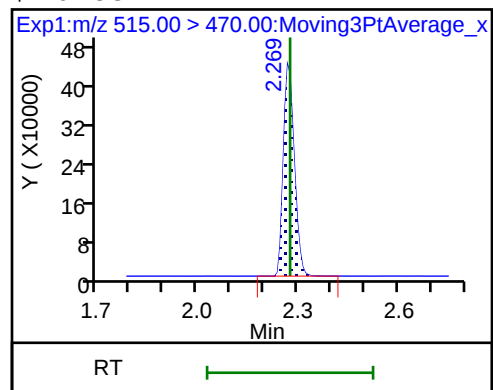
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_065.d
Lims ID: 320-38538-A-14-A
Client ID: NAWC-042518-FRB-272
Sample Type: Client
Inject. Date: 05-May-2018 07:28:47 ALS Bottle#: 47 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-38538-a-14-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK023

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.0	110.18
\$ 10 13C2 PFDA	10.0	10.1	100.57

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-DUP-34</u>	Lab Sample ID: <u>320-38538-15</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_066.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 07:00</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>251.7(mL)</u>	Date Analyzed: <u>05/05/2018 07:33</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221681</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	11	J	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.8	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.3	J M	9.9	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U M	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	106		70-130
STL00996	13C2 PFDA	100		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_066.d
 Lims ID: 320-38538-A-15-A
 Client ID: WGNA-042518-DUP-34
 Sample Type: Client
 Inject. Date: 05-May-2018 07:33:28 ALS Bottle#: 48 Worklist Smp#: 22
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-38538-a-15-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:29:36

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	1.411	1.411	0.0	1.000	81887	0.9513		26.9	
298.90 > 99.00	1.404	1.411	-0.007	0.995	62373		1.31(0.00-0.00)	35.1	M
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.540	0.0	1.000	1163385	10.6		7713	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.692	0.0	1.000	196999	1.47		47.7	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	1.692	1.692	0.0	1.000	91798	0.8312		9.6	M
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.882	0.0		1028595	10.0		5589	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.882	0.0	1.000	293947	2.69		36.7	
413.00 > 169.00	1.882	1.882	0.0	1.000	171648		1.71(0.00-0.00)	135	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.117	0.0		2346982	28.7		975	
8 Perfluorooctane sulfonic acid									a
499.00 > 80.00	2.117	2.117	0.0	1.000	333867	3.83		50.3	a
499.00 > 99.00	2.109	2.117	-0.008	0.996	63353		5.27(0.00-0.00)	95.2	
9 Perfluorononanoic acid									M
463.00 > 419.00	2.124	2.124	0.0	1.000	32930	0.3800		5.2	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	878474	10.0		7610	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_066.d

Injection Date: 05-May-2018 07:33:28

Instrument ID: A8_N

Lims ID: 320-38538-A-15-A

Lab Sample ID: 320-38538-15

Client ID: WGNA-042518-DUP-34

Operator ID: SACINSTLCMS01

ALS Bottle#: 48

Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

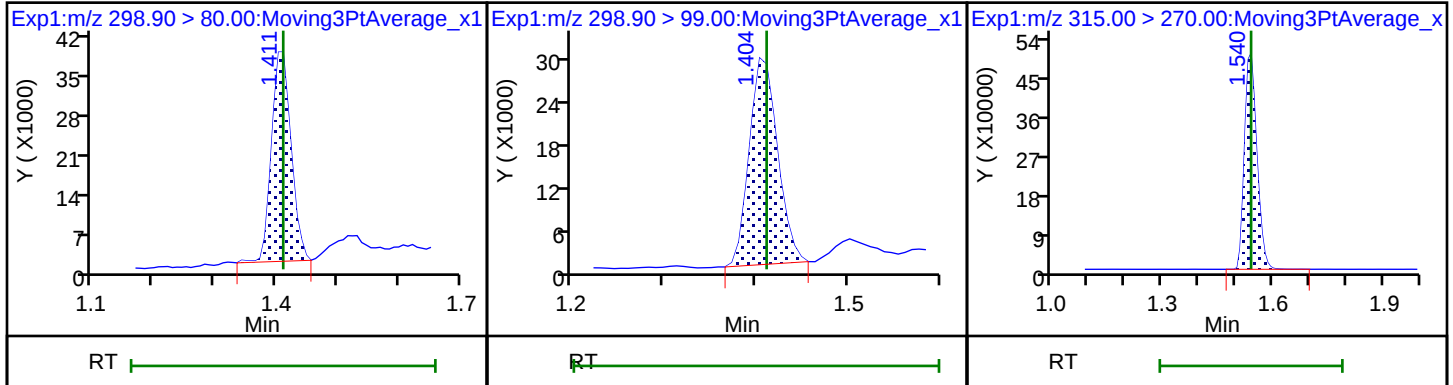
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (M)

1 Perfluorobutanesulfonic acid (M)

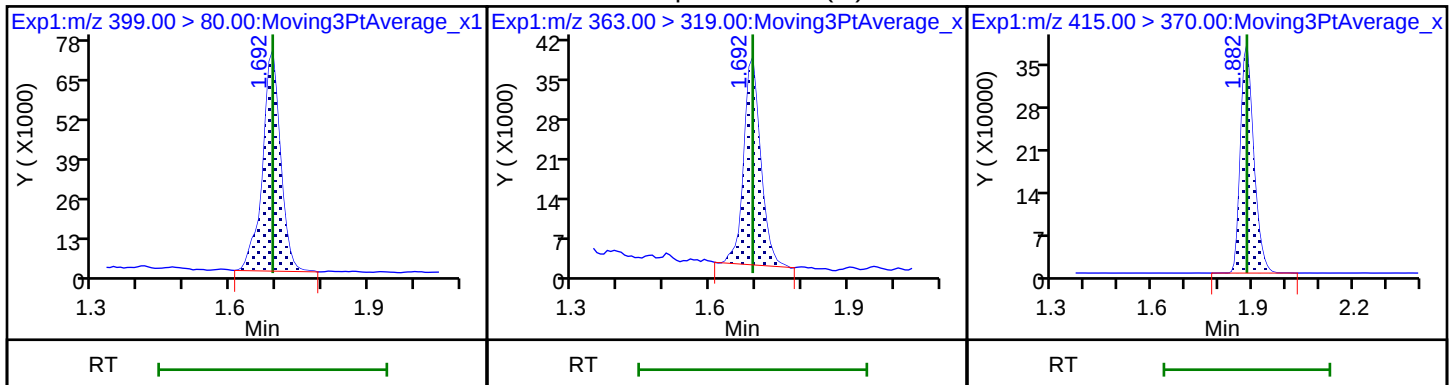
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid (M)

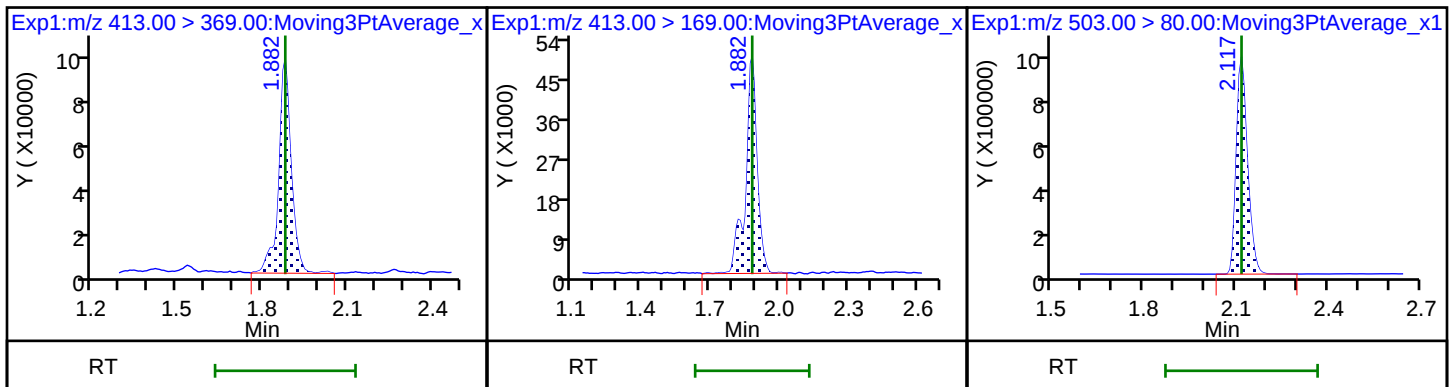
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

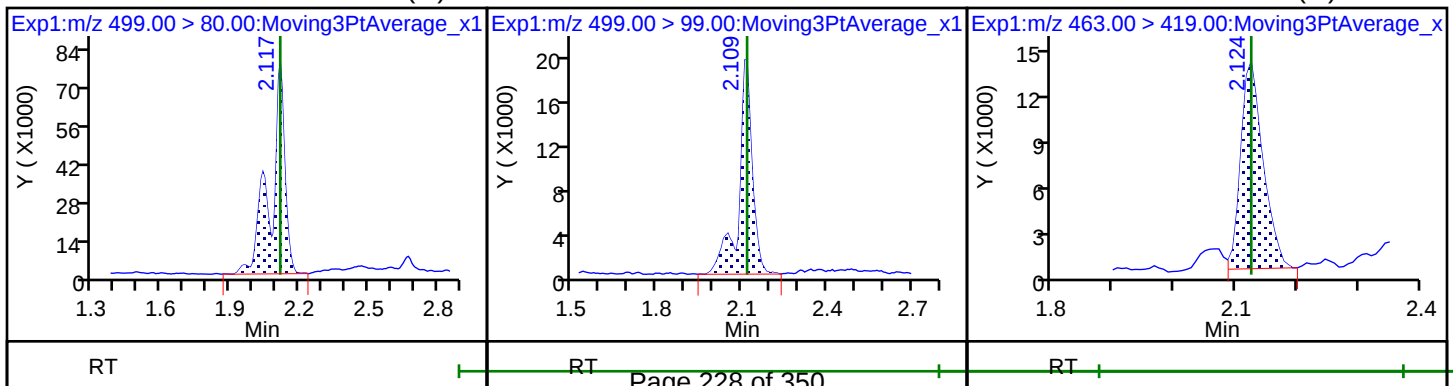
* 7 13C4 PFOS



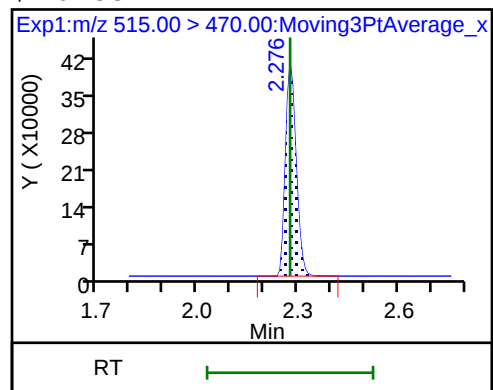
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_066.d
Lims ID: 320-38538-A-15-A
Client ID: WGNA-042518-DUP-34
Sample Type: Client
Inject. Date: 05-May-2018 07:33:28 ALS Bottle#: 48 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-38538-a-15-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:29:36

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.6	106.38
\$ 10 13C2 PFDA	10.0	10.0	100.42

TestAmerica Sacramento

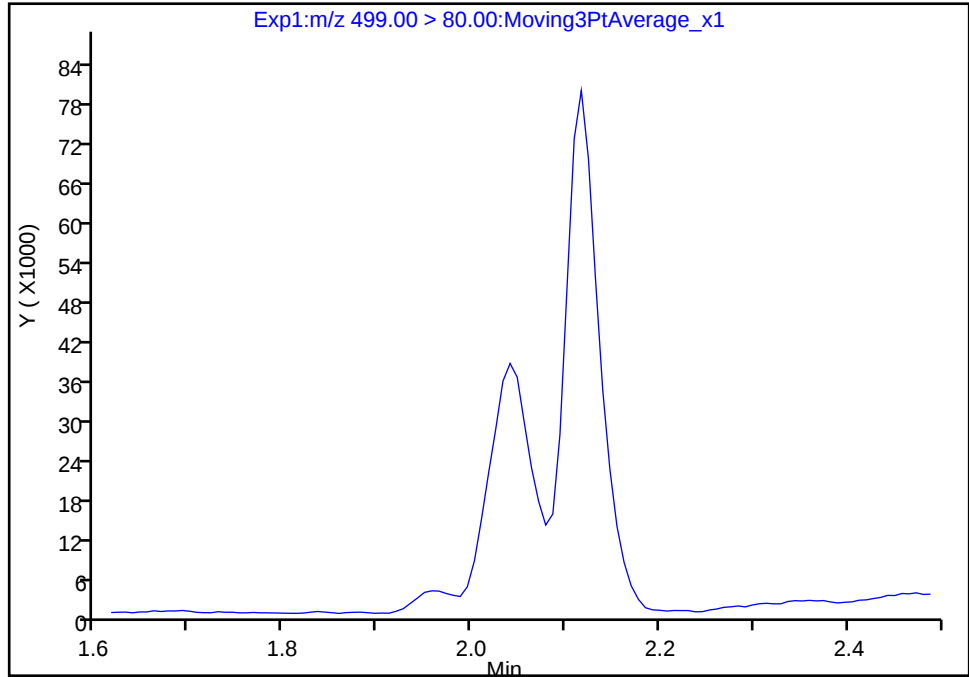
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_066.d				
Injection Date:	05-May-2018 07:33:28	Instrument ID:	A8_N		
Lims ID:	320-38538-A-15-A	Lab Sample ID:	320-38538-15		
Client ID:	WGNA-042518-DUP-34				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	48	Worklist Smp#:	22
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

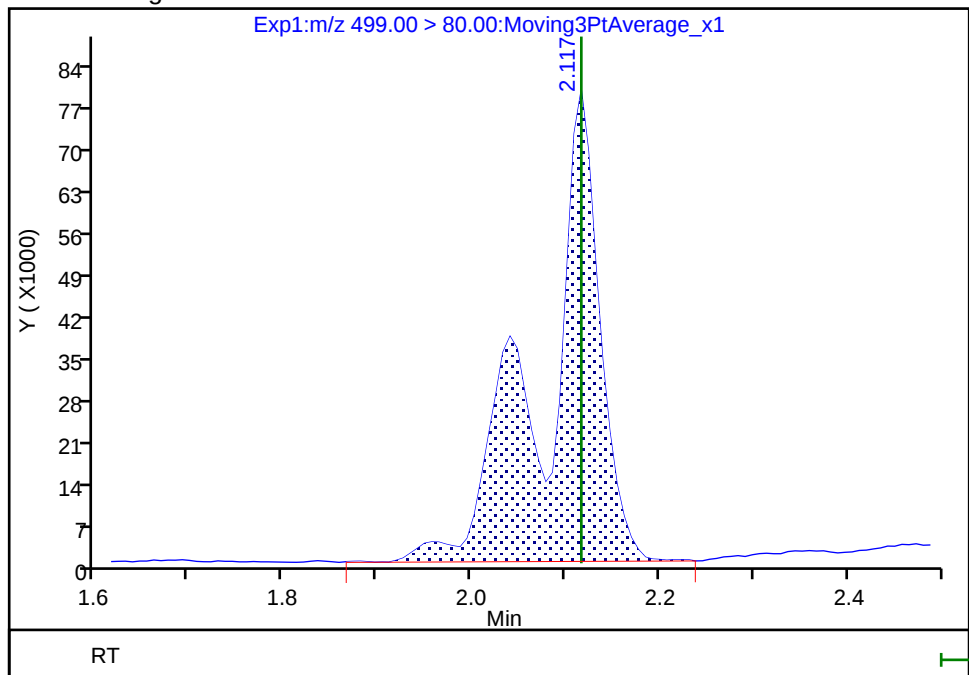
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 333867
Amount: 3.826978
Amount Units: ng/ml

Reviewer: westendorfc, 07-May-2018 13:29:12

Audit Action: Assigned Compound ID

Audit Reason: Assign Peak

TestAmerica Sacramento

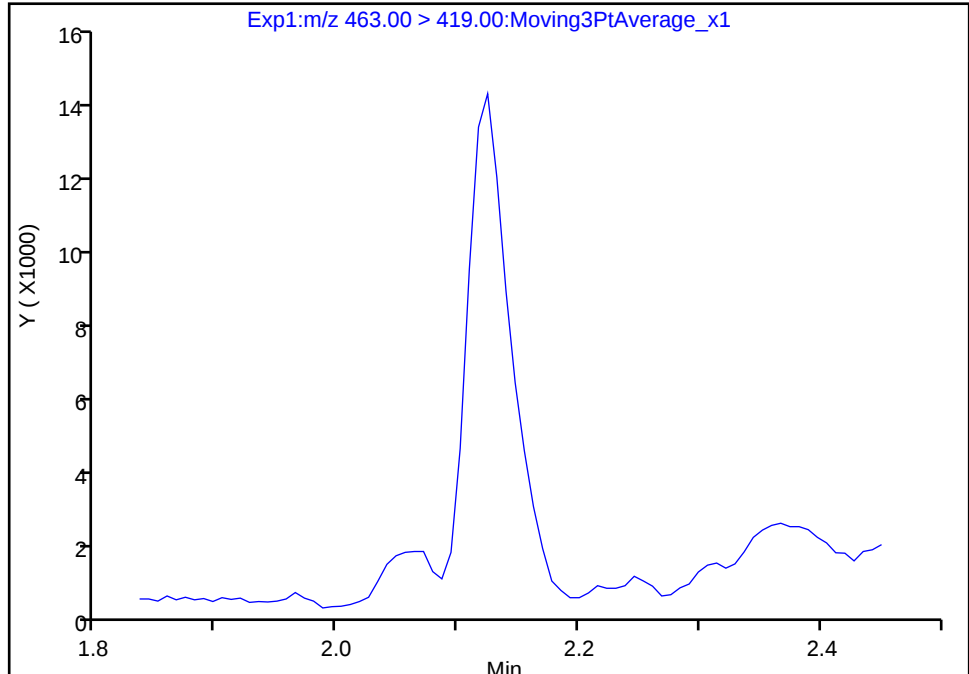
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_066.d				
Injection Date:	05-May-2018 07:33:28	Instrument ID:	A8_N		
Lims ID:	320-38538-A-15-A	Lab Sample ID:	320-38538-15		
Client ID:	WGNA-042518-DUP-34				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	48	Worklist Smp#:	22
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

9 Perfluorononanoic acid, CAS: 375-95-1

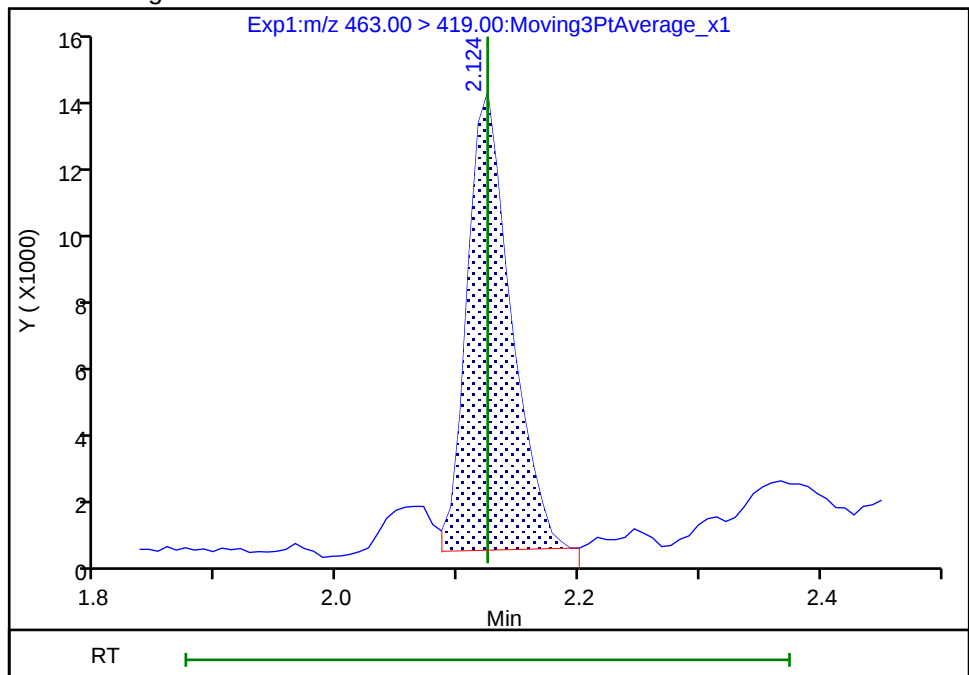
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results



RT: 2.12
Area: 32930
Amount: 0.380043
Amount Units: ng/ml

Reviewer: westendorfc, 07-May-2018 13:29:08

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

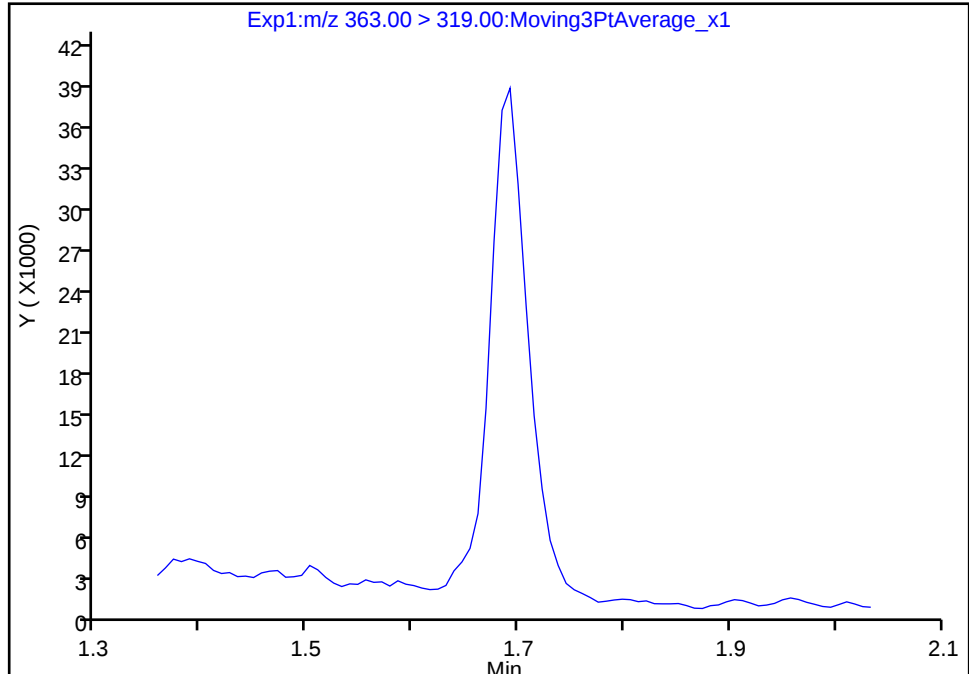
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_066.d				
Injection Date:	05-May-2018 07:33:28	Instrument ID:	A8_N		
Lims ID:	320-38538-A-15-A	Lab Sample ID:	320-38538-15		
Client ID:	WGNA-042518-DUP-34				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	48	Worklist Smp#:	22
Injection 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

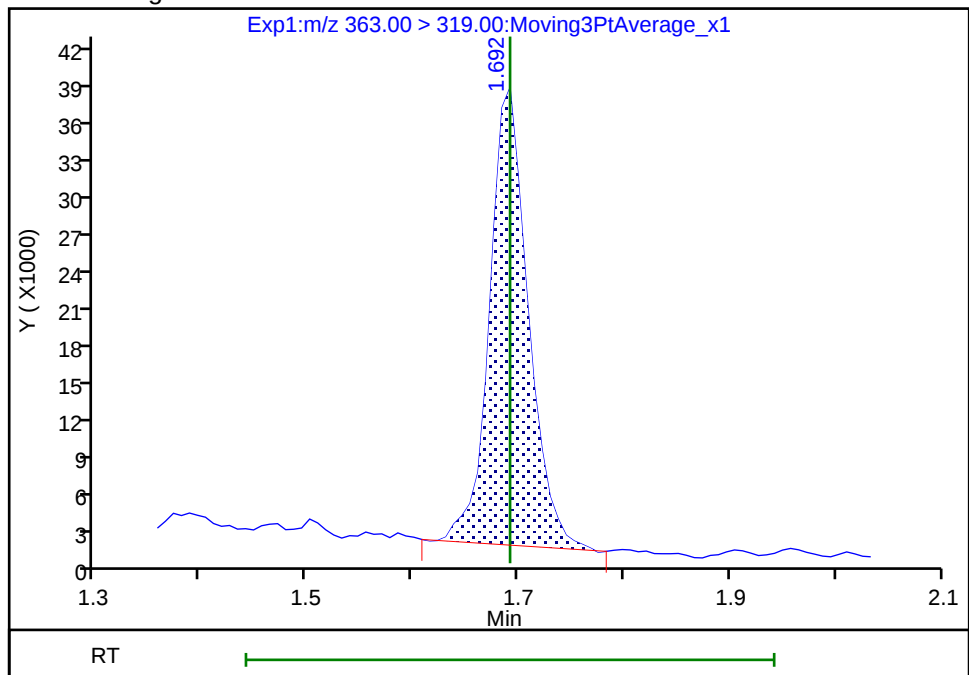
Signal: 1

Not Detected
Expected RT: 1.69

Processing Integration Results



Manual Integration Results

RT: 1.69
Area: 91798
Amount: 0.831210
Amount Units: ng/ml

Reviewer: westendorfc, 07-May-2018 13:29:20

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

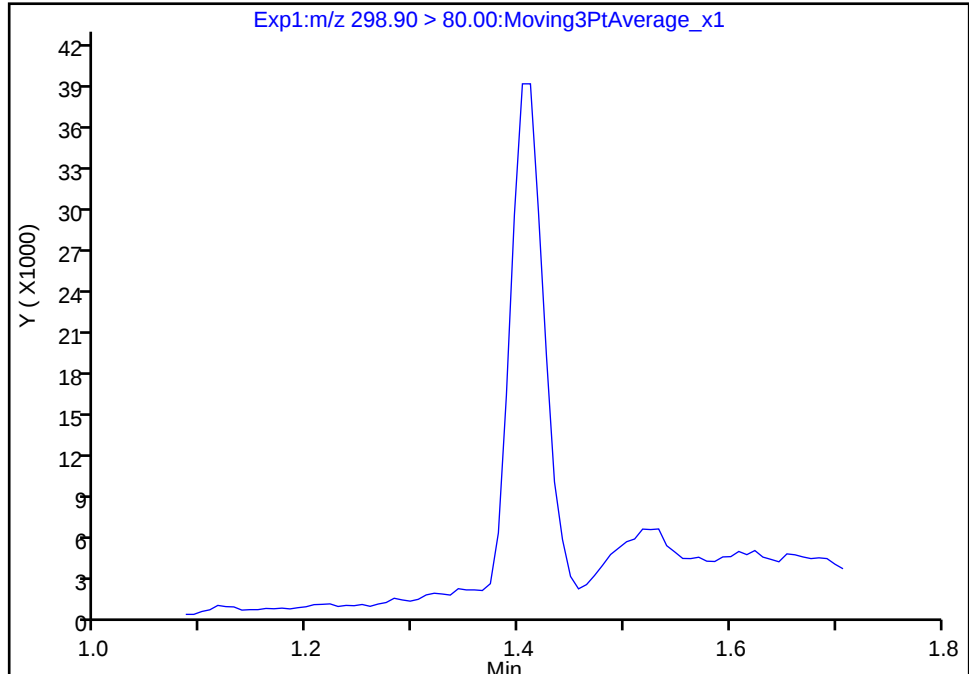
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_066.d
Injection Date: 05-May-2018 07:33:28 Instrument ID: A8_N
Lims ID: 320-38538-A-15-A Lab Sample ID: 320-38538-15
Client ID: WGNA-042518-DUP-34
Operator ID: SACINSTLCMS01 ALS Bottle#: 48 Worklist Smp#: 22
Injection Vol: 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

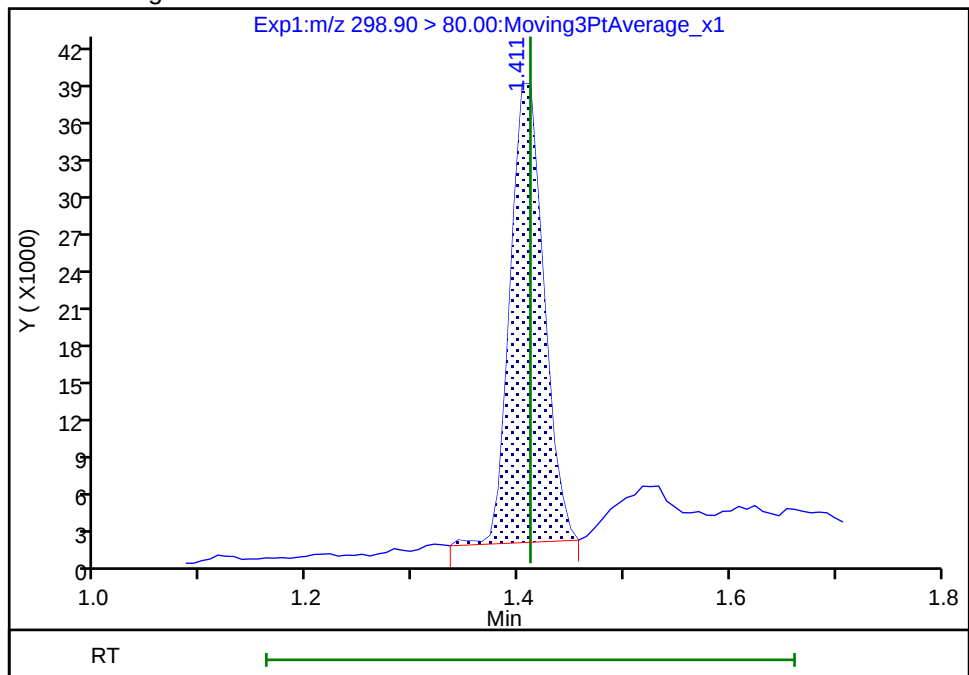
Not Detected
Expected RT: 1.41

Processing Integration Results



RT: 1.41
Area: 81887
Amount: 0.951256
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:29:26

Audit Action: Assigned Compound ID

Audit Reason: Assign Peak

TestAmerica Sacramento

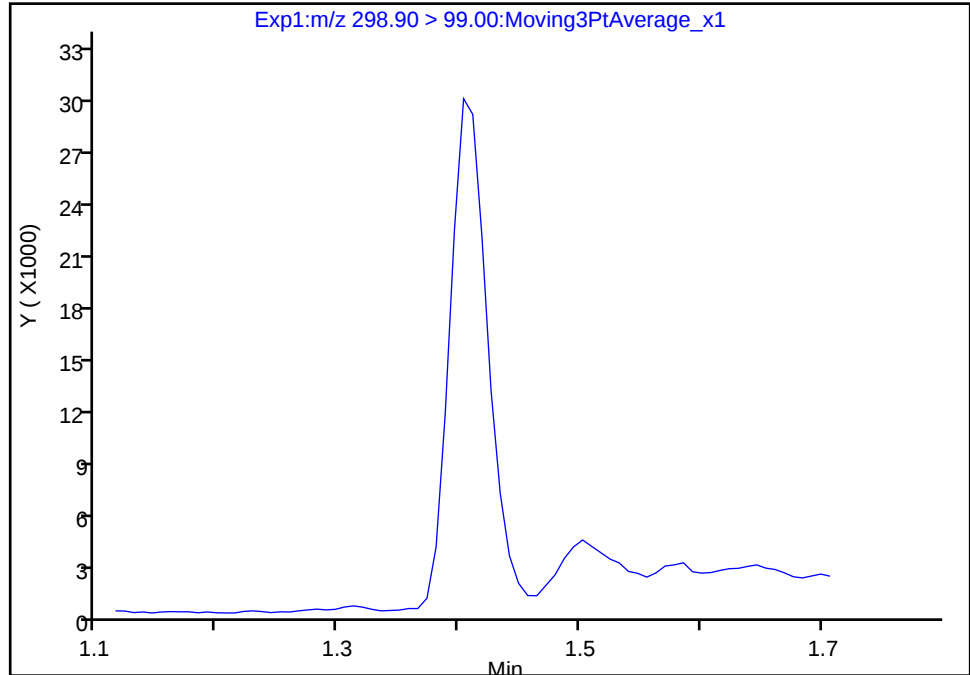
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_066.d
Injection Date: 05-May-2018 07:33:28 Instrument ID: A8_N
Lims ID: 320-38538-A-15-A Lab Sample ID: 320-38538-15
Client ID: WGNA-042518-DUP-34
Operator ID: SACINSTLCMS01 ALS Bottle#: 48 Worklist Smp#: 22
Injection Vol: 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

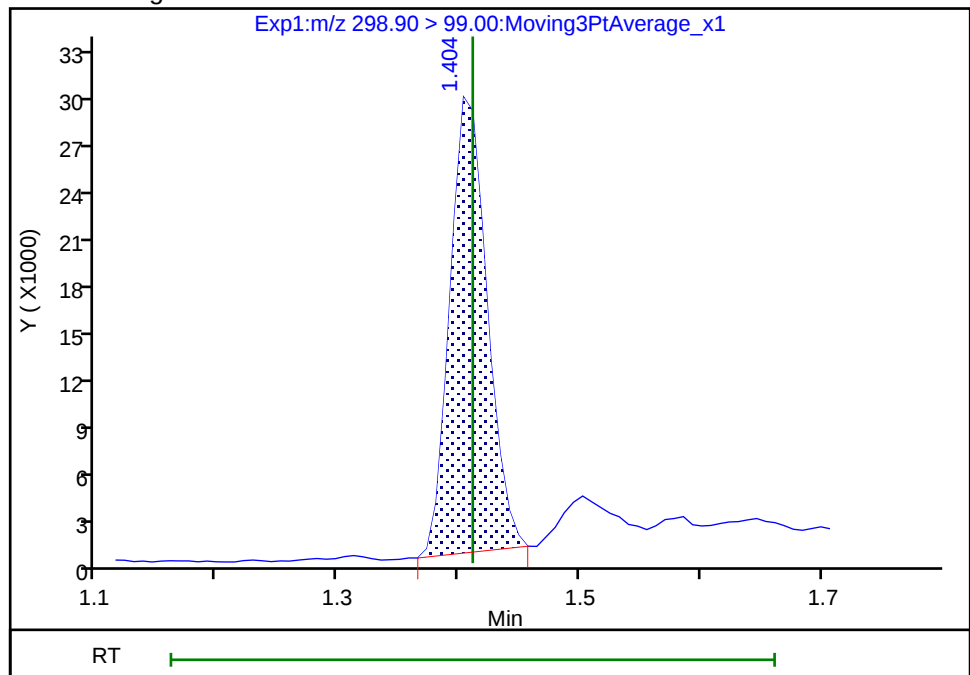
Not Detected
Expected RT: 1.41

Processing Integration Results



Manual Integration Results

RT: 1.40
Area: 62373
Amount: 0.951256
Amount Units: ng/ml



Reviewer: westendorfc, 07-May-2018 13:29:30

Audit Action: Manually Integrated

Audit Reason: Assign Peak

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

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1 Analy Batch No.: 217453

SDG No.: _____

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

Calibration Start Date: 04/11/2018 11:45 Calibration End Date: 04/11/2018 12:09 Calibration ID: 38530

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-217453/3	2018.04.11_537ICALB_004.d
Level 2	IC 320-217453/4	2018.04.11_537ICALB_005.d
Level 3	IC 320-217453/5	2018.04.11_537ICALB_006.d
Level 4	IC 320-217453/6	2018.04.11_537ICALB_007.d
Level 5	IC 320-217453/7	2018.04.11_537ICALB_008.d
Level 6	IC 320-217453/8	2018.04.11_537ICALB_009.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	1.1422 0.9535	1.0952	1.0744	1.0454	1.0008	Ave		1.0519				6.4		30.0			
Perfluoroheptanoic acid (PFHpA)	1.0850 1.0447	1.0991	1.0649	1.0783	1.0702	Ave		1.0737				1.7		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.6457 1.6837	1.5988	1.6030	1.6384	1.6838	Ave		1.6422				2.3		30.0			
Perfluorooctanoic acid (PFOA)	1.0599 1.0325	1.0296	1.0703	1.0516	1.1300	Ave		1.0623				3.5		30.0			
Perfluorooctanesulfonic acid (PFOS)	1.0432 1.0989	1.0519	1.0326	1.0935	1.0764	Ave		1.0661				2.6		30.0			
Perfluorononanoic acid (PFNA)	0.8261 0.8363	0.8133	0.8488	0.8818	0.8480	Ave		0.8424				2.8		30.0			
13C2 PFHxA	1.0447 1.0648	1.0532	1.0875	1.0687	1.0602	Ave		1.0632				1.4		30.0			
13C2 PFDA	0.8513 0.8262	0.8714	0.8533	0.8487	0.8519	Ave		0.8505				1.7		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.: 320-38538-1 Analy Batch No.: 217453

SDG No.: _____

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

Calibration Start Date: 04/11/2018 11:45 Calibration End Date: 04/11/2018 12:09 Calibration ID: 38530

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-217453/3	2018.04.11_537ICALB_004.d
Level 2	IC 320-217453/4	2018.04.11_537ICALB_005.d
Level 3	IC 320-217453/5	2018.04.11_537ICALB_006.d
Level 4	IC 320-217453/6	2018.04.11_537ICALB_007.d
Level 5	IC 320-217453/7	2018.04.11_537ICALB_008.d
Level 6	IC 320-217453/8	2018.04.11_537ICALB_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	Ave	870696 13871852	1696932	4015148	8010147	10764182	9.00 180	20.0	45.0	90.1	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	108741 1996261	218860	489075	1044752	1450463	0.960 19.4	2.16	4.86	9.72	14.6
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	418640 8226588	831963	2012030	4216387	6082352	3.00 60.5	6.72	15.1	30.2	45.4
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	219100 4019004	417632	1001316	2075568	3119787	1.98 39.6	4.40	9.90	19.8	29.7
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	349354 7016962	715378	1693810	3678059	5081660	3.95 79.1	8.79	19.8	39.5	59.3
Perfluorononanoic acid (PFNA)	13PF OA	Ave	170770 3255374	329904	794076	1740422	2341235	1.98 39.6	4.40	9.90	19.8	29.7
13C2 PFHxA	13PF OA	Ave	1090690 1046576	970942	1027706	1065262	985534	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	888742 812112	803402	806360	845990	791901	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.: 320-38538-1 Analy Batch No.: 217453

SDG No.: _____

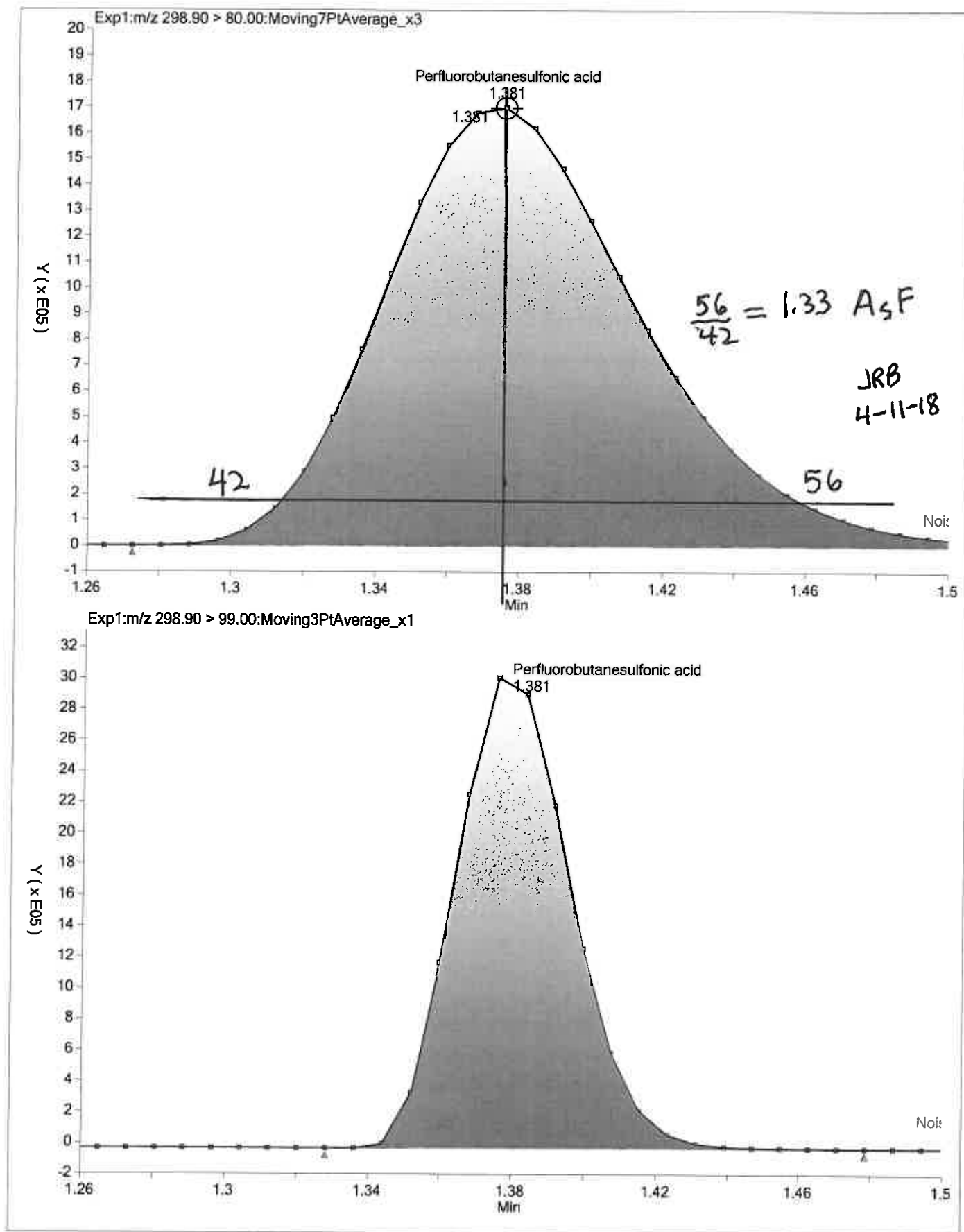
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

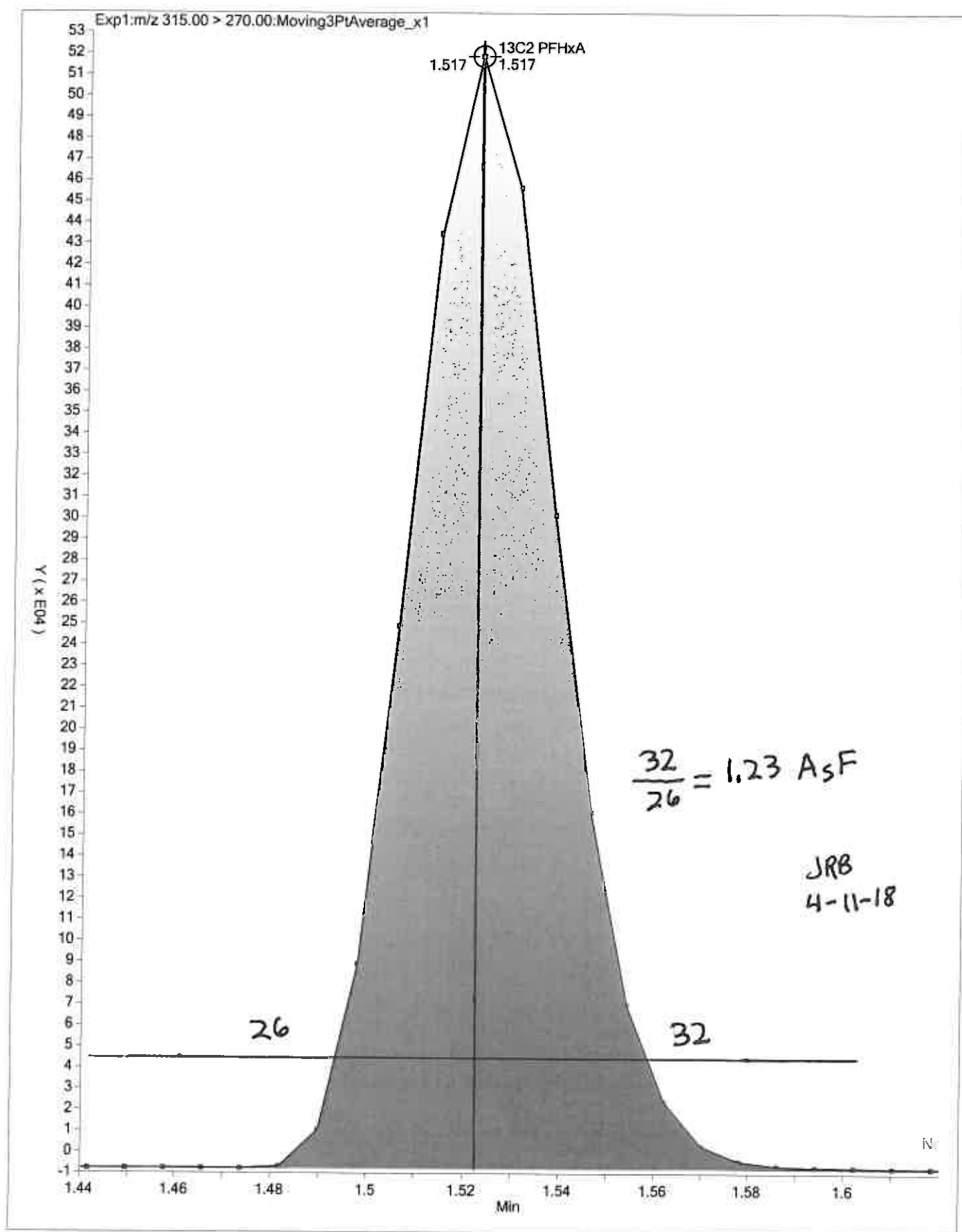
Calibration Start Date: 04/11/2018 11:45 Calibration End Date: 04/11/2018 12:09 Calibration ID: 38530

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-217453/3	2018.04.11_537ICALB_004.d
Level 2	IC 320-217453/4	2018.04.11_537ICALB_005.d
Level 3	IC 320-217453/5	2018.04.11_537ICALB_006.d
Level 4	IC 320-217453/6	2018.04.11_537ICALB_007.d
Level 5	IC 320-217453/7	2018.04.11_537ICALB_008.d
Level 6	IC 320-217453/8	2018.04.11_537ICALB_009.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	8.6	4.1	2.1	-0.6	-4.9	-9.4	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	1.0	2.4	-0.8	0.4	-0.3	-2.7	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	0.2	-2.6	-2.4	-0.2	2.5	2.5	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-0.2	-3.1	0.7	-1.0	6.4	-2.8	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-2.1	-1.3	-3.1	2.6	1.0	3.1	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-1.9	-3.5	0.8	4.7	0.7	-0.7	50	30	30	30	30	30
13C2 PFHxA	-1.7	-0.9	2.3	0.5	-0.3	0.1	30	30	30	30	30	30
13C2 PFDA	0.1	2.5	0.3	-0.2	0.2	-2.9	30	30	30	30	30	30





TestAmerica Laboratories
Istd/Surrogate Recovery Report

Worklist Name: 11APR2018A_537B_ICAL

Worklist Num: 56557

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b

Limit Group: LC 537 ICAI

Analysis Type: SemiVOA

Inj Volume: 2.00

Inj Vol Units: ul

Lims Batch: 217453

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

Non-Cal IS Mode: Last Ccal Sample

\$ 2 13C2 PFHxA

\$ 10 13C2 PFDA

Lab ID	Inj Date	\$ 2	\$ 10	* 6 13C2-PFOA	* 7 13C4 PFOS
IS Std				1027183 1.87	2580682 2.11
# 1 RB	11-Apr-2018 11:36:27			957389 93.2 1.87	2343443 90.8 2.12
# 2 RB	11-Apr-2018 11:41:06			937814 91.3 1.87	2225117 86.2 2.11
IS Std					
# 3 IC L1	11-Apr-2018 11:45:47	1.52 98.26	2.26 100.10	1044020> 100.0* 1.87	2429483> 100.0* 2.10
# 4 IC L2	11-Apr-2018 11:50:27	1.51 99.06	2.26 102.50	921915> 88.3* 1.87	2220259> 91.4* 2.10
# 5 IC L3	11-Apr-2018 11:55:08	1.52 102.30	2.26 100.30	945031> 90.5* 1.87	2380125> 98.0* 2.11
# 6 IC L4	11-Apr-2018 11:59:48	1.52 100.50	2.26 99.79	996809> 95.5* 1.87	2440107> 100.4* 2.10
# 7 IC L5	11-Apr-2018 12:04:29	1.52 99.72	2.26 100.20	929546> 89.0* 1.87	2283311> 94.0* 2.10
# 8 IC L6	11-Apr-2018 12:09:09	1.51 100.10	2.25 97.15	982926> 94.1* 1.86	2316327> 95.3* 2.09
IS Std				945031 1.87	2380125 2.11
# 9 RB	11-Apr-2018 12:13:50			919421 97.3 1.86	2344246 98.5 2.10
IS Std				996809 1.87	2440107 2.10
#10 CCVL	11-Apr-2018 12:18:29	1.52 97.44	2.26 103.40	964533 96.8 1.87	2387973 97.9 2.10
IS Std				964533 1.87	2387973 2.10
#11 ICB	11-Apr-2018 12:23:10			943600 97.8 1.86	2246875 94.1 2.09
IS Std				996809 1.87	2440107 2.10
#12 ICV	11-Apr-2018 12:27:50	1.51 92.99	2.25 91.91	1123391 112.7 1.86	2710764 111.1 2.10

13C2-PFOA

$$RPD = \frac{1044020 - 921915}{\left(\frac{1044020 + 921915}{2} \right)} \times 100 = 12.4$$

13C4-PFOS

$$RPD = \frac{2440107 - 2220259}{\left(\frac{2440107 + 2220259}{2} \right)} \times 100 = 9.43$$

JRB
4-11-18

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_004.d
 Lims ID: IC L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 11-Apr-2018 11:45:47 ALS Bottle#: 1 Worklist Smp#: 3
 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\20180411-56557.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 11-Apr-2018 12:35:27 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

First Level Reviewer: westendorfc

Date: 11-Apr-2018 12:31:32

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	1.382	-0.001	1.000	870696	9.77		690	
298.90 > 99.00	1.381	1.382	-0.001	1.000	638403		1.36(0.00-0.00)	875	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.515	0.002	1.000	1090690	9.83		11391	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.669	0.0	1.000	418640	3.01		133	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.669	0.0	1.000	108741	0.9701		13.9	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.865	0.001		1044020	10.0		6295	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.866	0.0	1.000	219100	1.98		35.1	
413.00 > 169.00	1.866	1.866	0.0	1.000	116014		1.89(0.00-0.00)	128	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	349354	3.87		105	a
499.00 > 99.00	2.102	2.094	0.008	1.000	79188		4.41(0.00-0.00)	237	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2429483	28.7		1437	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.109	0.0	1.000	170770	1.94		31.2	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.260	0.001	1.000	888742	10.0		8004	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L1_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_004.d

Injection Date: 11-Apr-2018 11:45:47

Instrument ID: A8_N

Lims ID: IC L1

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 1

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

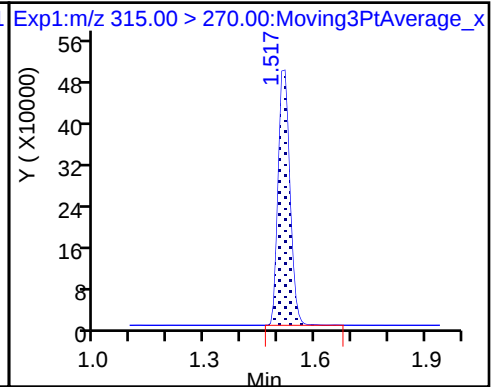
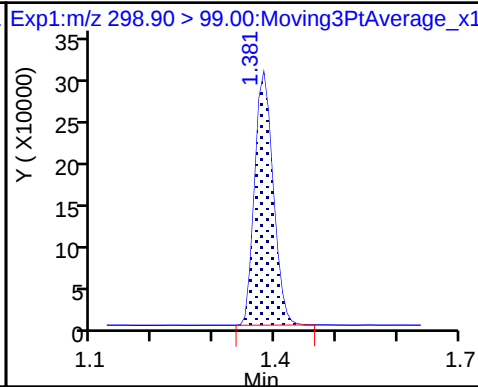
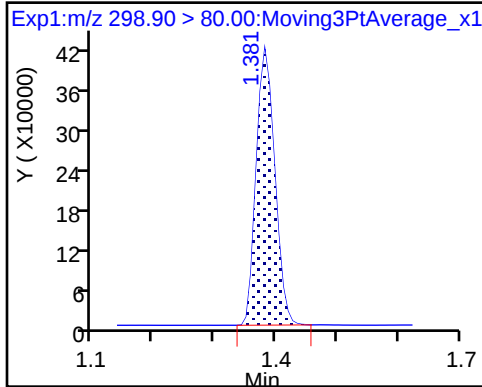
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

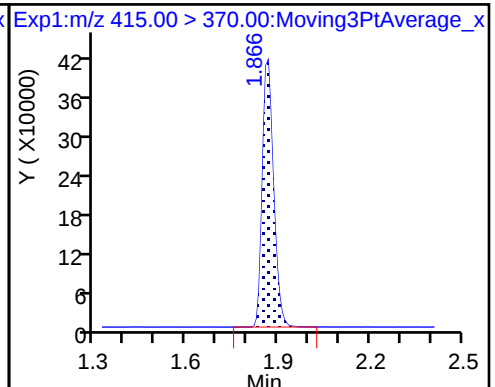
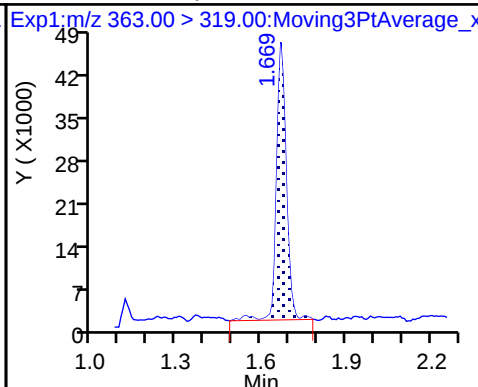
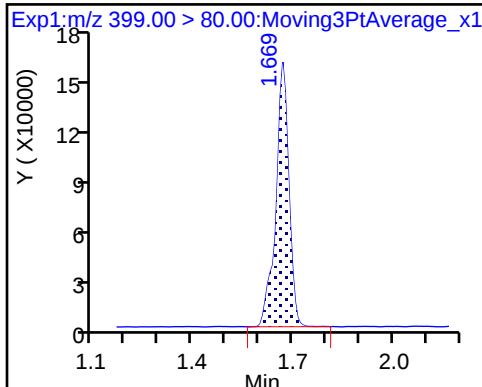
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

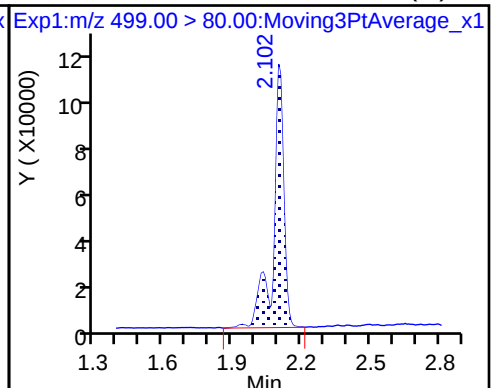
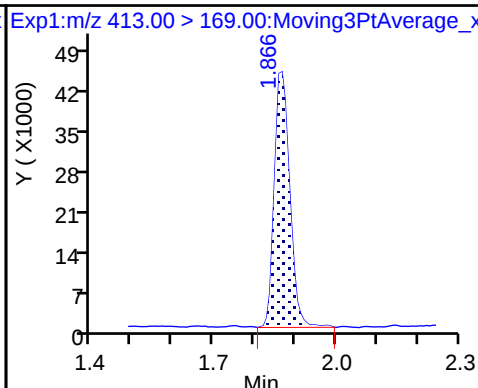
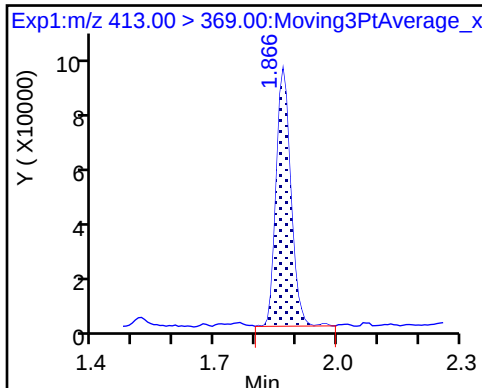
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

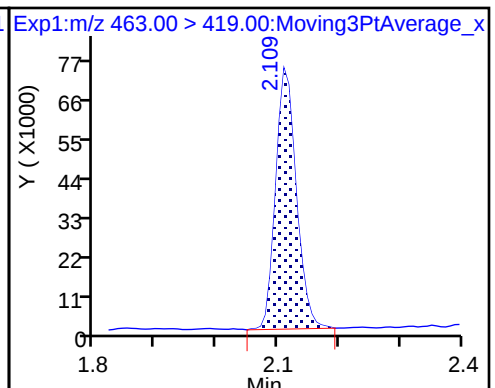
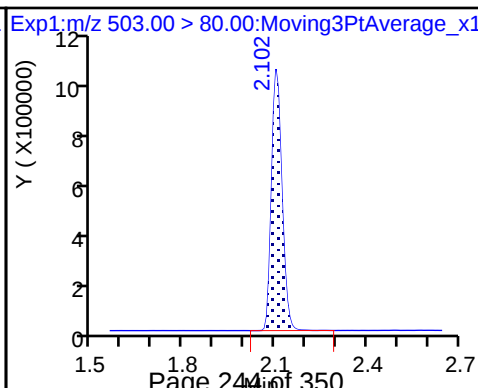
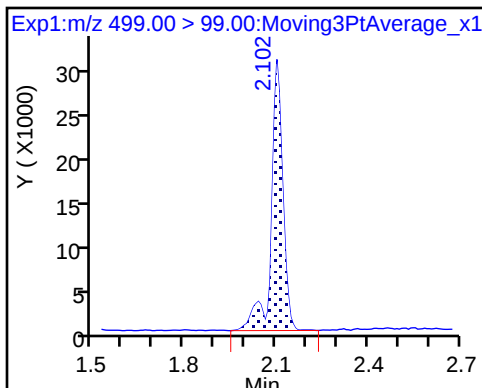
8 Perfluorooctane sulfonic acid (M)



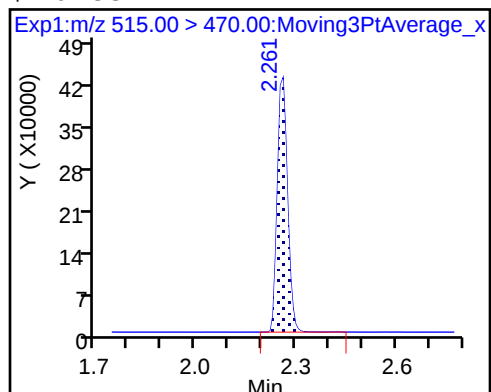
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

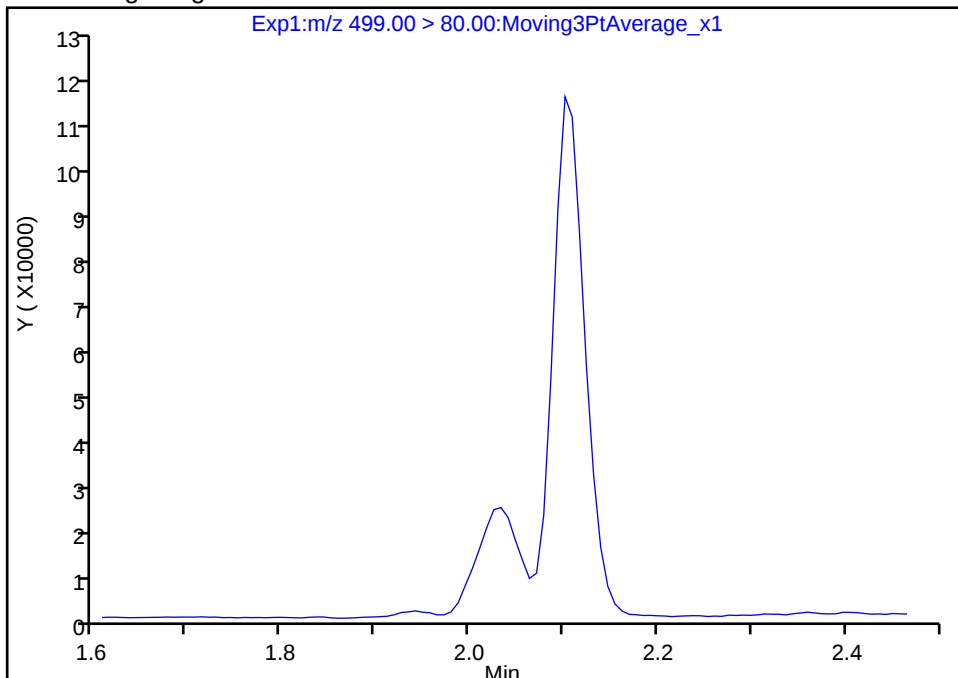
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_004.d
Injection Date: 11-Apr-2018 11:45:47 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

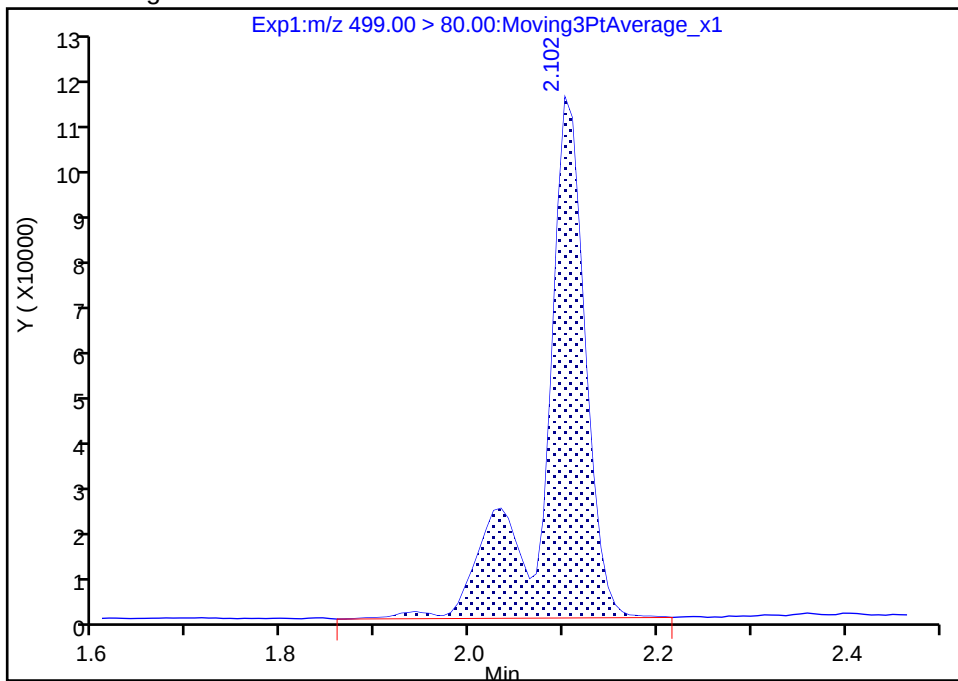
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 349354
Amount: 3.868513
Amount Units: ng/ml



Reviewer: westendorfc, 11-Apr-2018 12:31:29

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_005.d
 Lims ID: IC L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 11-Apr-2018 11:50:27 ALS Bottle#: 2 Worklist Smp#: 4
 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\20180411-56557.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 11-Apr-2018 12:35:28 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

First Level Reviewer: westendorfc

Date: 11-Apr-2018 12:31:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.382	-0.001	1.000	1696932	20.8		1370	
298.90 > 99.00	1.381	1.382	-0.001	1.000	1238814		1.37(0.00-0.00)	1448	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.515	-0.005	1.000	970942	9.91		9056	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.669	0.0	1.000	218860	2.21		24.5	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.669	0.0	1.000	831963	6.54		251	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.865	0.001		921915	10.0		5396	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.866	0.0	1.000	417632	4.26		64.6	
413.00 > 169.00	1.866	1.866	0.0	1.000	226435		1.84(0.00-0.00)	235	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	715378	8.67		193	a
499.00 > 99.00	2.102	2.094	0.008	1.000	153149		4.67(0.00-0.00)	389	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2220259	28.7		1258	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.109	0.0	1.000	329904	4.25		54.3	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.260	0.001	1.000	803402	10.2		7224	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L2_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_005.d

Injection Date: 11-Apr-2018 11:50:27

Instrument ID: A8_N

Lims ID: IC L2

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

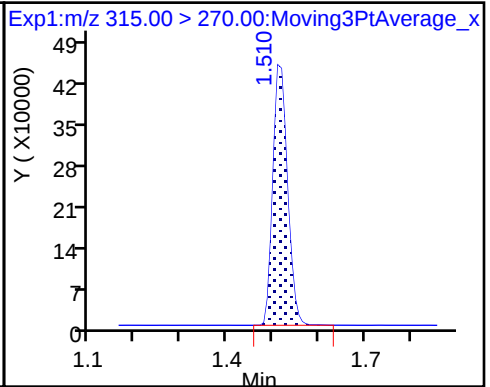
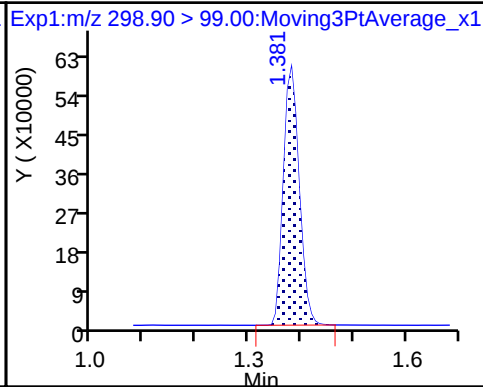
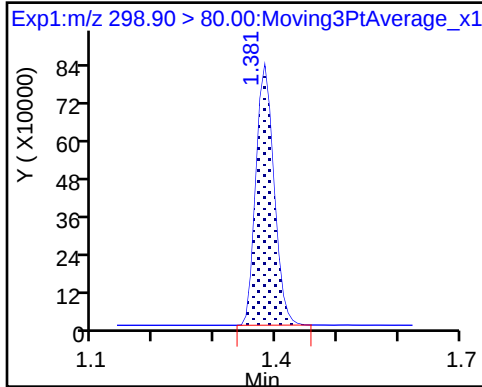
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

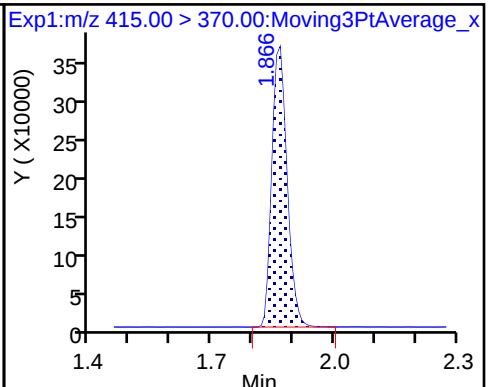
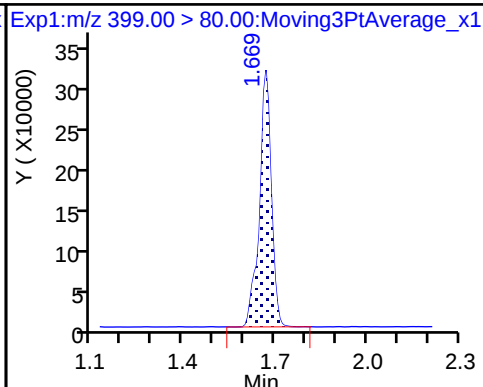
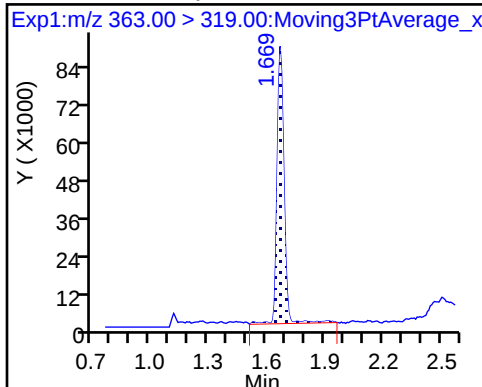
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

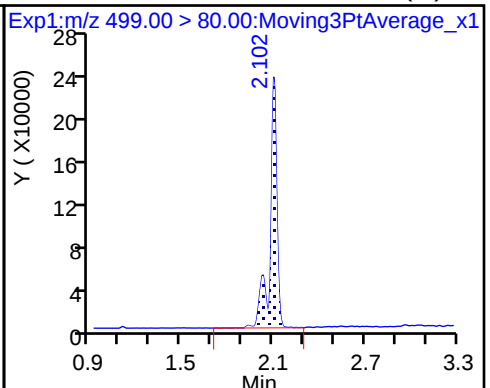
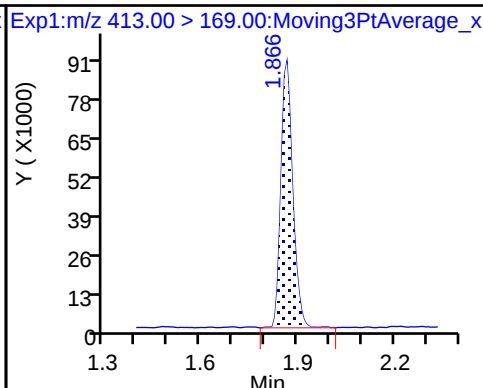
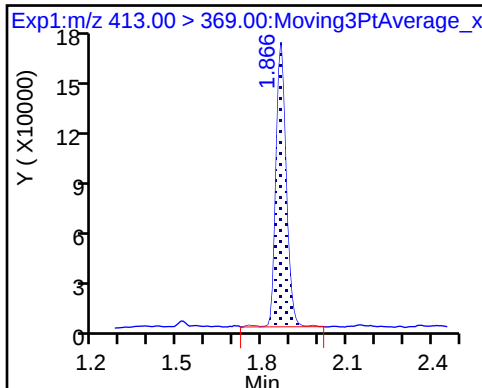
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

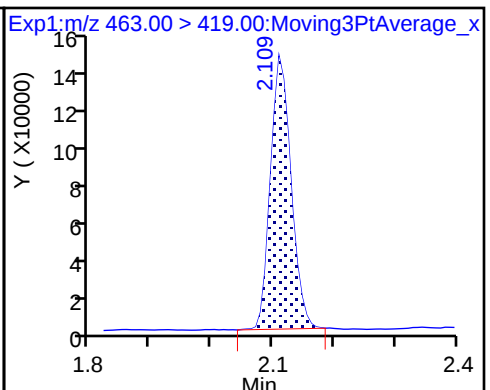
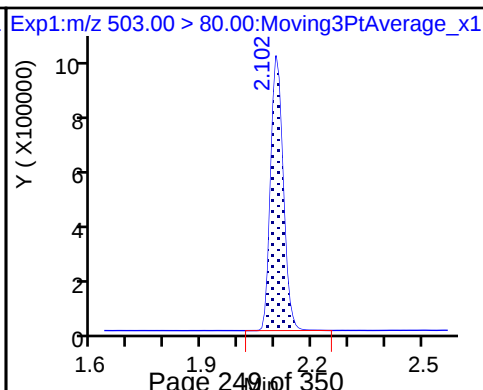
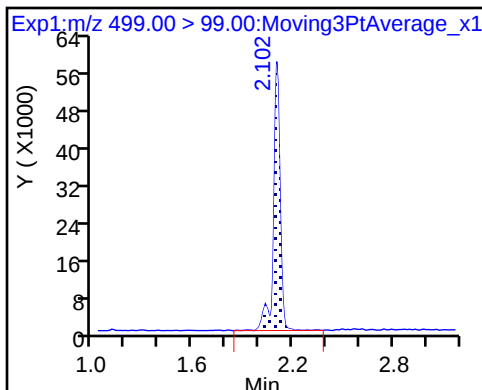
8 Perfluorooctane sulfonic acid (M)



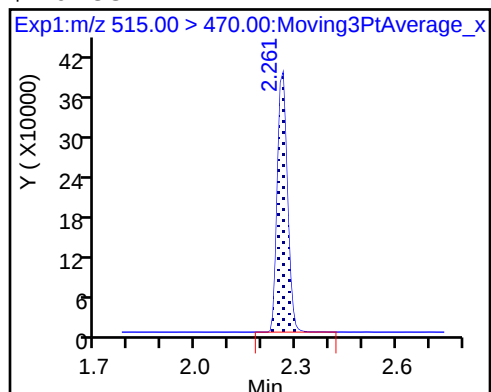
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

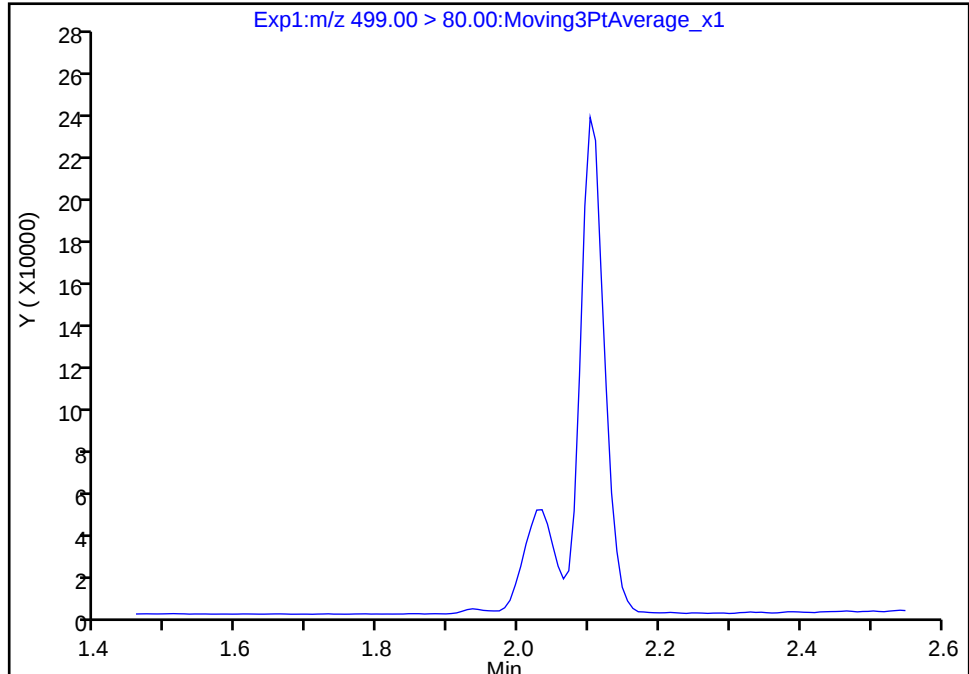
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_005.d
Injection Date: 11-Apr-2018 11:50:27 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

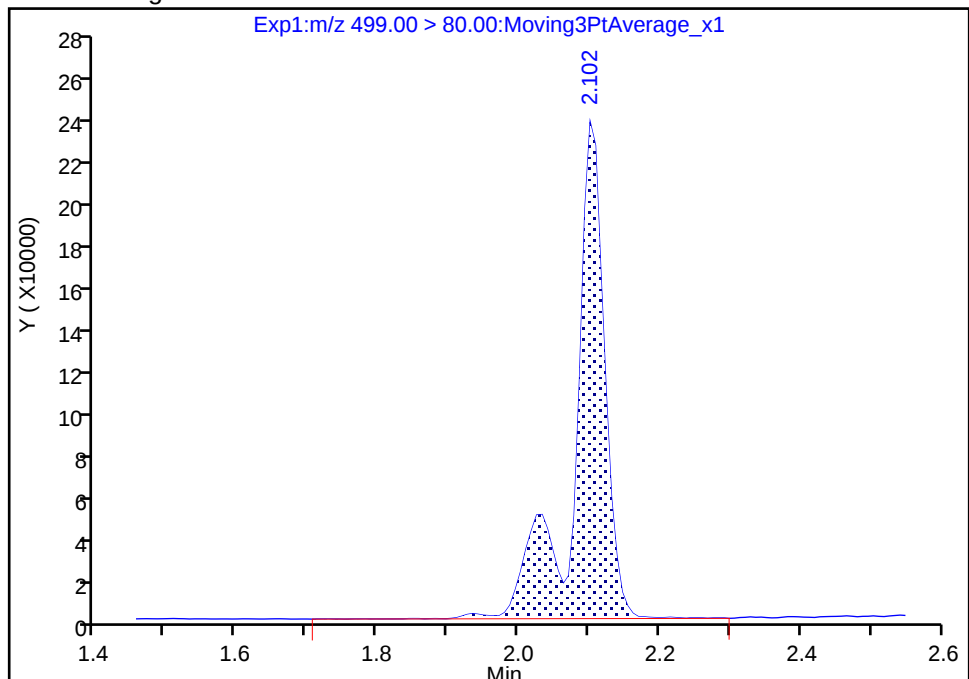
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.10
Area: 715378
Amount: 8.668106
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 11-Apr-2018 12:31:35

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_006.d
 Lims ID: IC L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 11-Apr-2018 11:55:08 ALS Bottle#: 3 Worklist Smp#: 5
 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\20180411-56557.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 11-Apr-2018 12:35:29 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

First Level Reviewer: westendorfc

Date: 11-Apr-2018 12:31:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.382	0.006	1.000	4015148	46.0		3087	
298.90 > 99.00	1.388	1.382	0.006	1.000	3101910		1.29(0.00-0.00)	3481	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.515	0.002	1.000	1027706	10.2		8913	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.669	0.008	1.000	2012030	14.8		618	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.669	0.008	1.000	489075	4.82		58.8	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.865	0.001		945031	10.0		5639	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.866	0.008	1.000	1001316	9.97		149	
413.00 > 169.00	1.866	1.866	0.0	0.996	522184		1.92(0.00-0.00)	570	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.094	0.015	1.000	1693810	19.1		469	a
499.00 > 99.00	2.109	2.094	0.015	1.000	359496		4.71(0.00-0.00)	862	a
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.102	0.007		2380125	28.7		1348	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.109	0.008	1.000	794076	9.97		123	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.260	0.001	1.000	806360	10.0		7204	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L3_00025

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_006.d

Injection Date: 11-Apr-2018 11:55:08

Instrument ID: A8_N

Lims ID: IC L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

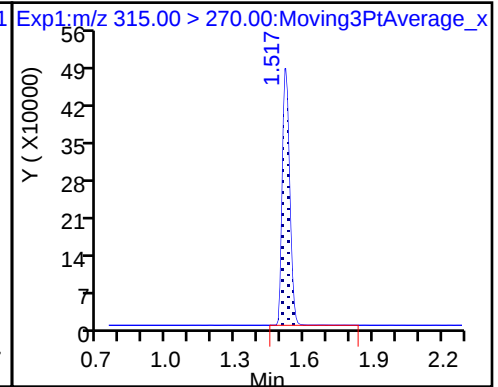
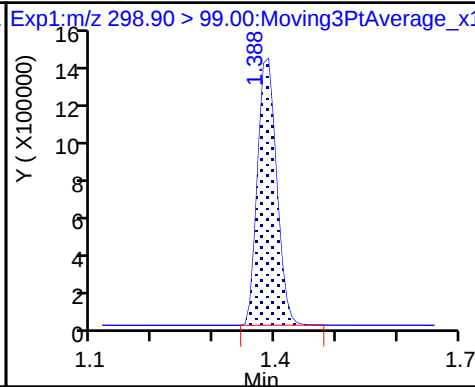
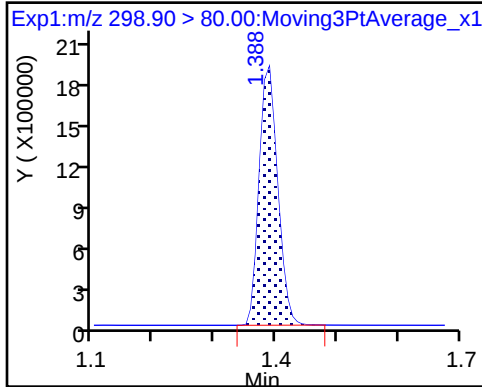
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

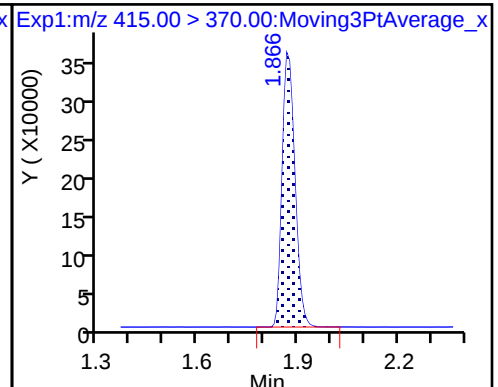
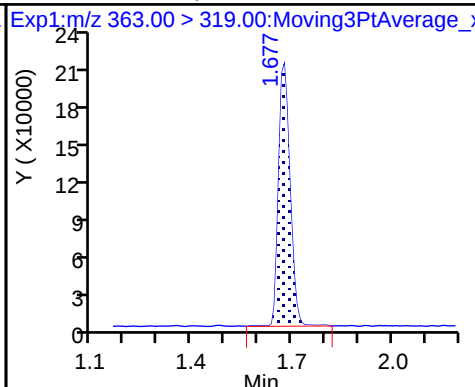
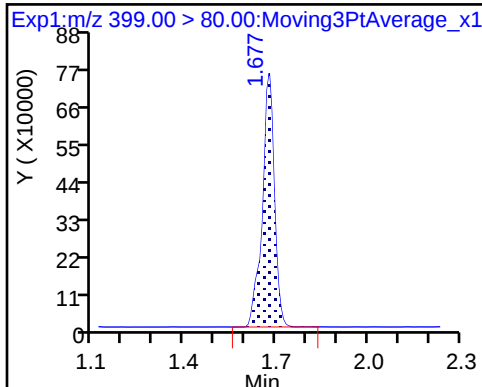
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

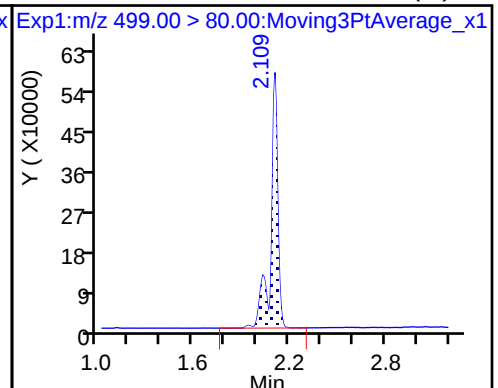
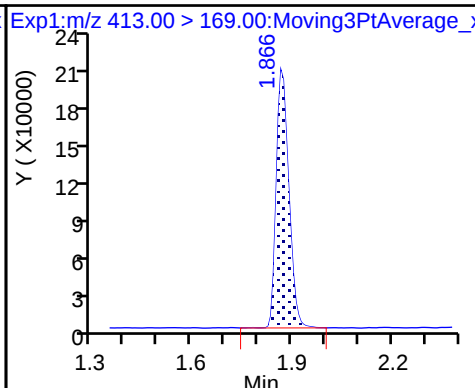
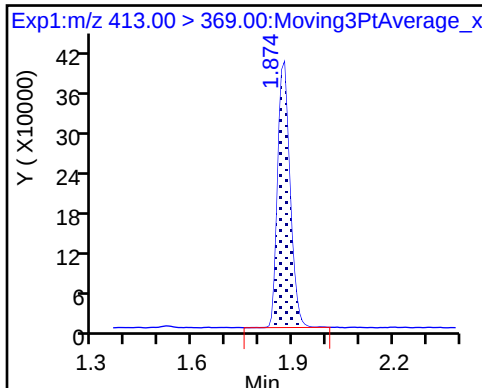
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

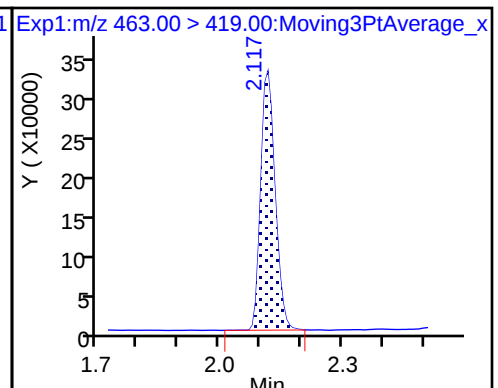
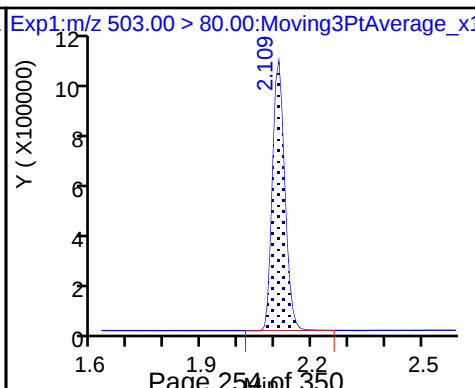
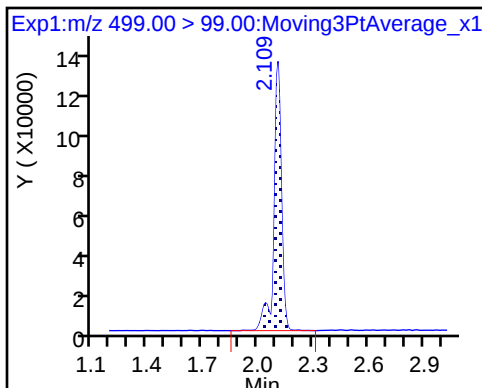
8 Perfluorooctane sulfonic acid (M)



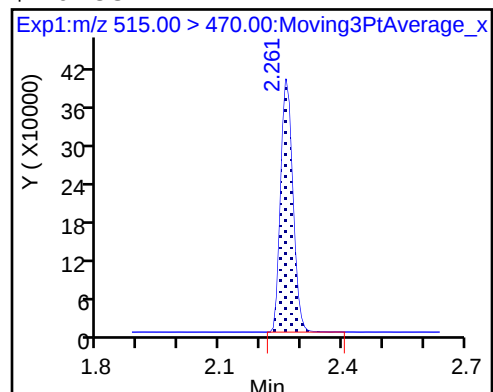
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

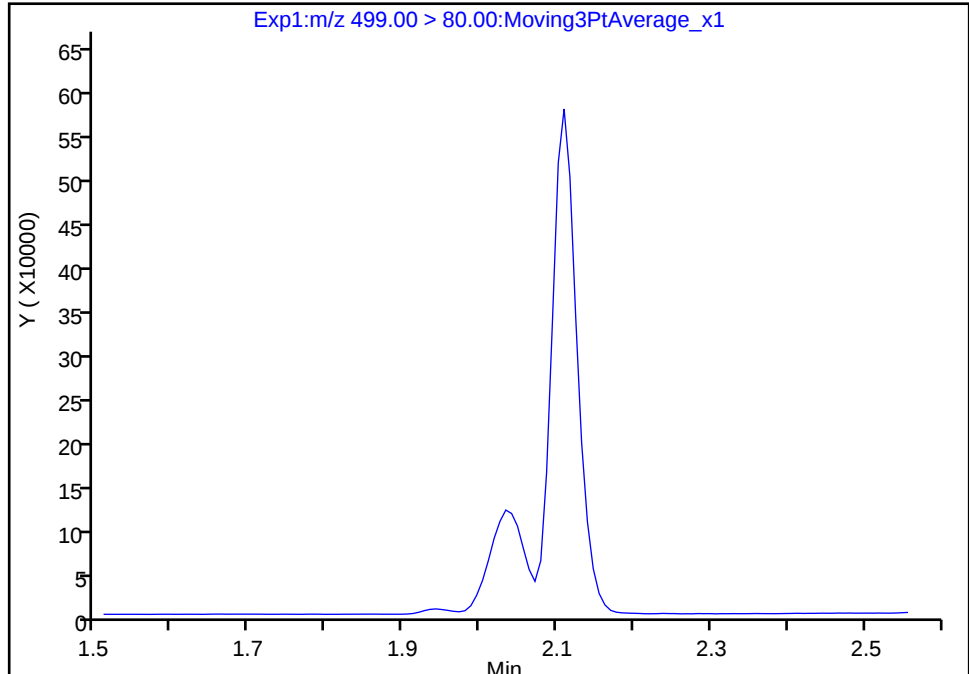
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_006.d
Injection Date: 11-Apr-2018 11:55:08 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

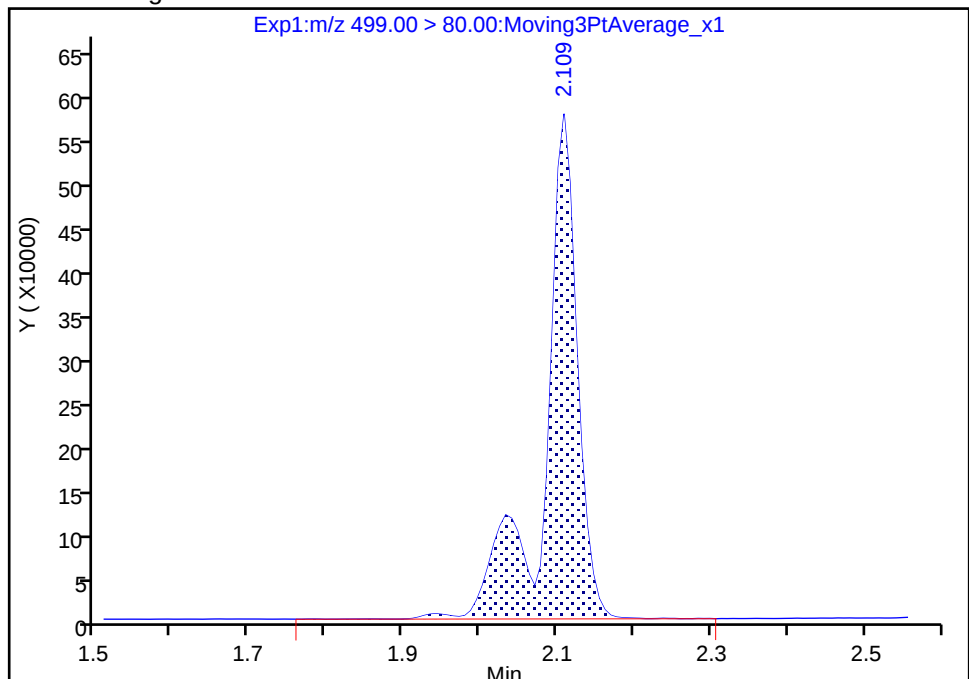
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 1693810
Amount: 19.145080
Amount Units: ng/ml



Reviewer: westendorfc, 11-Apr-2018 12:31:39

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_007.d
 Lims ID: IC L4
 Client ID:
 Sample Type: ICISAV Calib Level: 4
 Inject. Date: 11-Apr-2018 11:59:48 ALS Bottle#: 4 Worklist Smp#: 6
 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\20180411-56557.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 11-Apr-2018 12:35:30 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

First Level Reviewer: westendorfc

Date: 11-Apr-2018 12:31:47

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	1.382	-0.001	1.000	8010147	89.5		5376	
298.90 > 99.00	1.381	1.382	-0.001	1.000	6369602		1.26(0.00-0.00)	6440	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.515	0.002	1.000	1065262	10.1		8514	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.669	0.0	1.000	1044752	9.76		122	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.669	0.0	1.000	4216387	30.2		1268	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.865	0.001		996809	10.0		6544	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.866	0.0	1.000	2075568	19.6		309	
413.00 > 169.00	1.866	1.866	0.0	1.000	1142250		1.82(0.00-0.00)	1229	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	3678059	40.6		1000	a
499.00 > 99.00	2.102	2.094	0.008	1.000	748966		4.91(0.00-0.00)	1731	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2440107	28.7		1331	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.109	0.0	1.000	1740422	20.7		274	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.260	0.001	1.000	845990	9.98		7531	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L4_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_007.d

Injection Date: 11-Apr-2018 11:59:48

Instrument ID: A8_N

Lims ID: IC L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 4

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

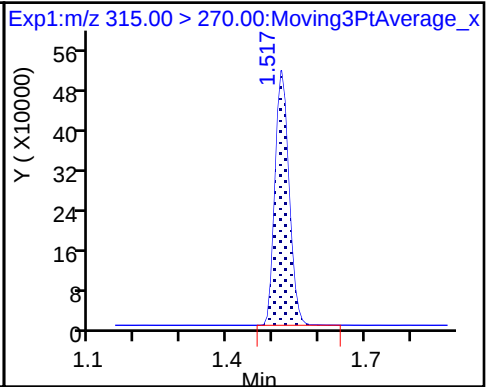
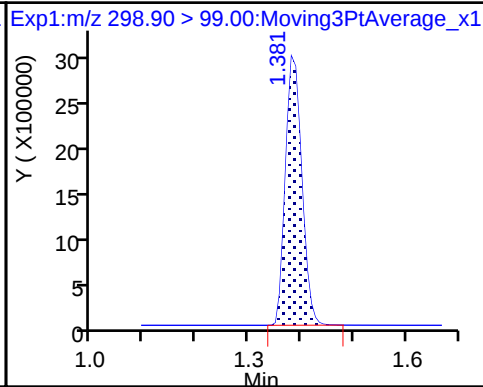
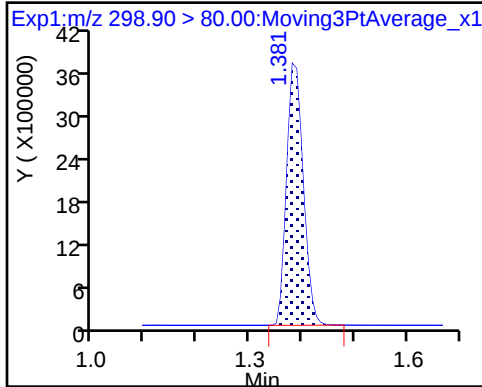
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

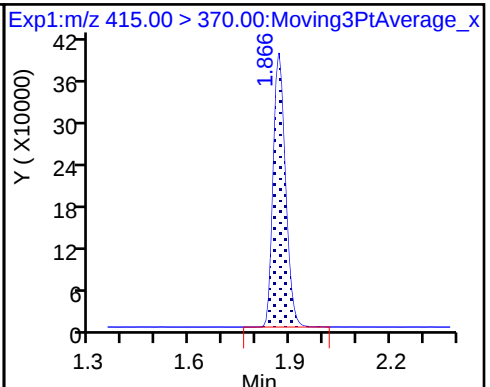
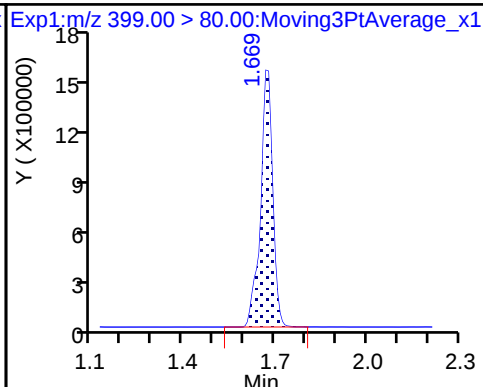
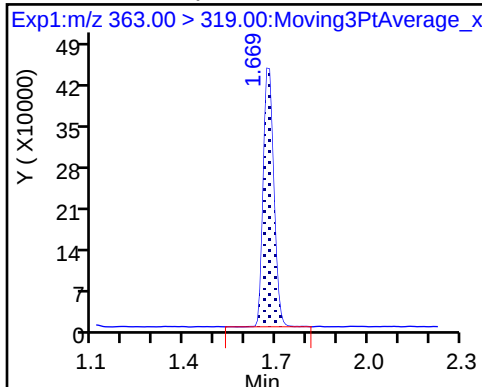
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

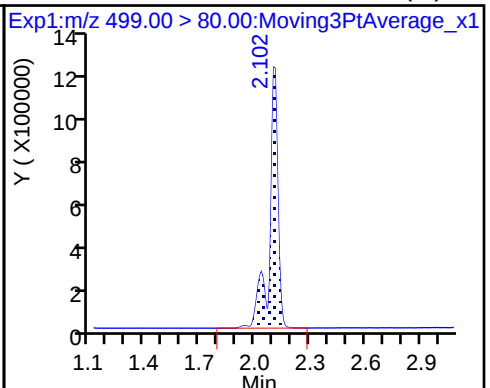
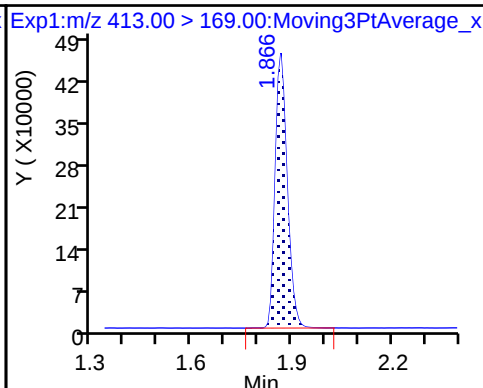
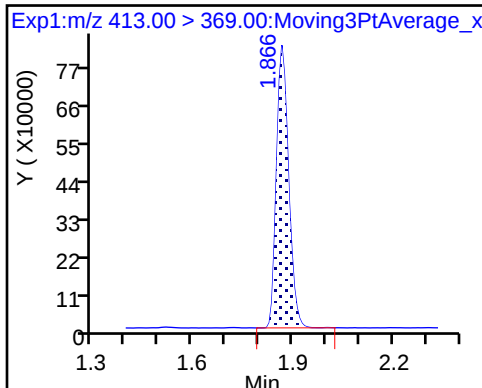
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

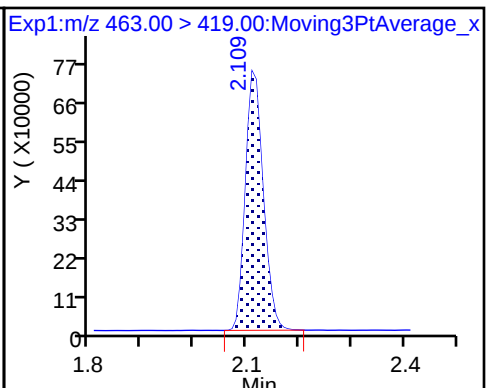
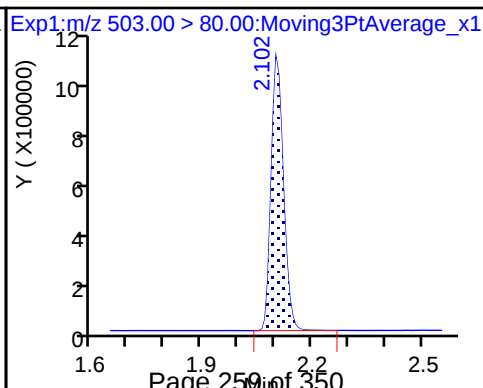
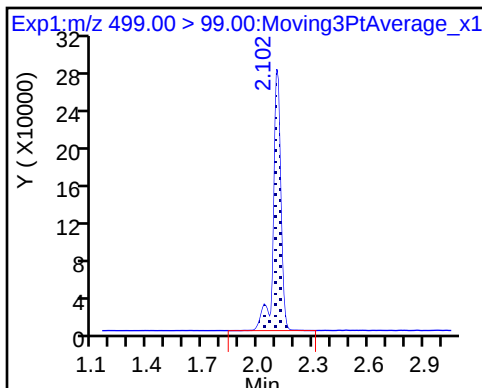
8 Perfluorooctane sulfonic acid (M)



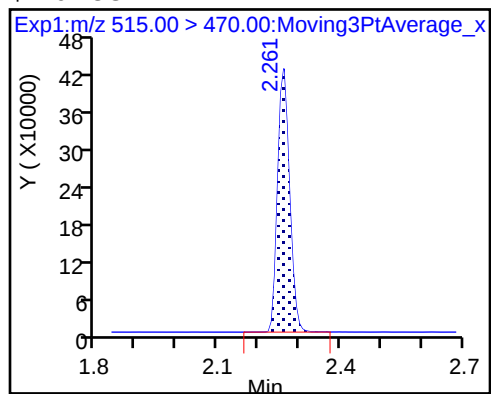
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

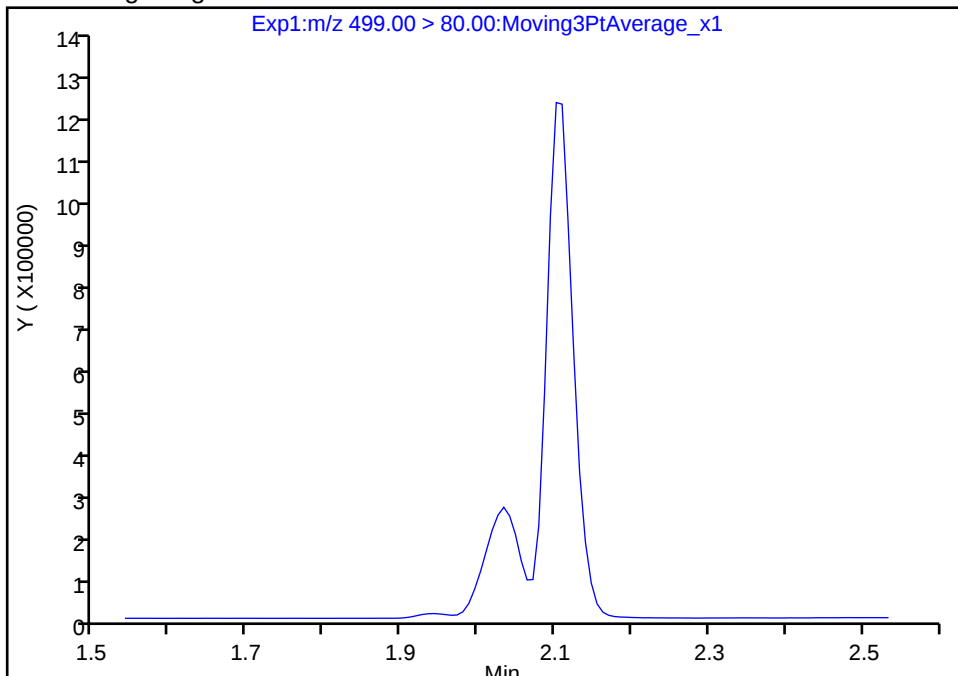
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_007.d
Injection Date: 11-Apr-2018 11:59:48 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

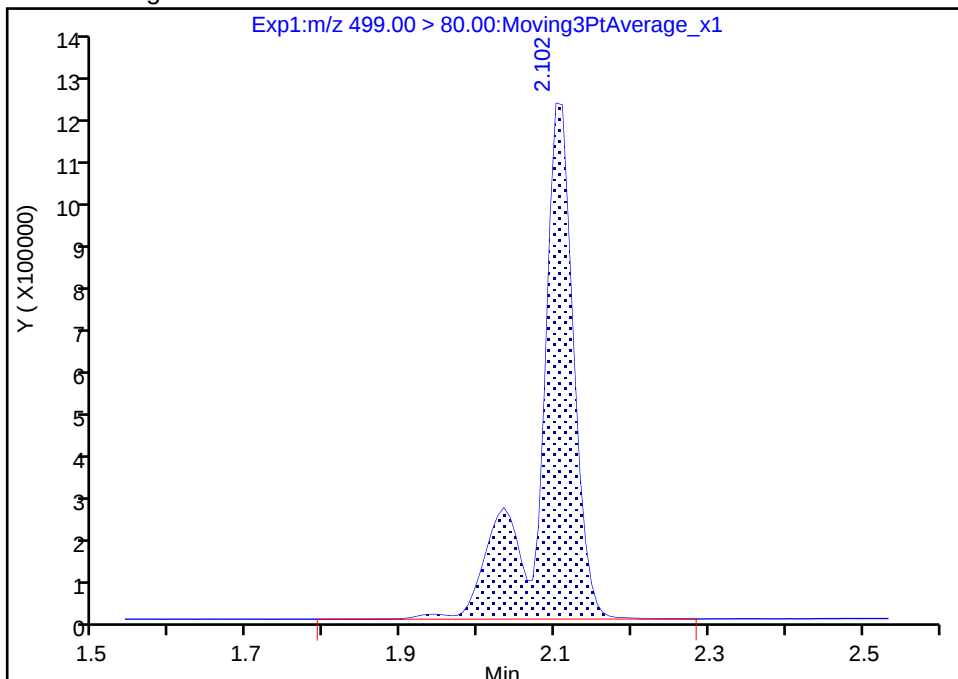
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.10
Area: 3678059
Amount: 40.551047
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 11-Apr-2018 12:31:45

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_008.d
 Lims ID: IC L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 11-Apr-2018 12:04:29 ALS Bottle#: 5 Worklist Smp#: 7
 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\20180411-56557.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 11-Apr-2018 12:35:32 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

First Level Reviewer: westendorfc

Date: 11-Apr-2018 12:31:52

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	1.382	-0.001	1.000	10764182	128.5		6999	
298.90 > 99.00	1.381	1.382	-0.001	1.000	8269613		1.30(0.00-0.00)	7836	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.515	0.002	1.000	985534	9.97		7814	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.669	0.0	1.000	6082352	46.5		1721	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.669	0.0	1.000	1450463	14.5		171	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.865	0.001		929546	10.0		5174	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.866	0.0	1.000	3119787	31.6		475	
413.00 > 169.00	1.866	1.866	0.0	1.000	1555272		2.01(0.00-0.00)	1662	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	5081660	59.9		1317	a
499.00 > 99.00	2.102	2.094	0.008	1.000	1106855		4.59(0.00-0.00)	2490	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2283311	28.7		1206	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.109	0.0	1.000	2341235	29.9		363	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.260	0.001	1.000	791901	10.0		6104	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00026

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_008.d

Injection Date: 11-Apr-2018 12:04:29

Instrument ID: A8_N

Lims ID: IC L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

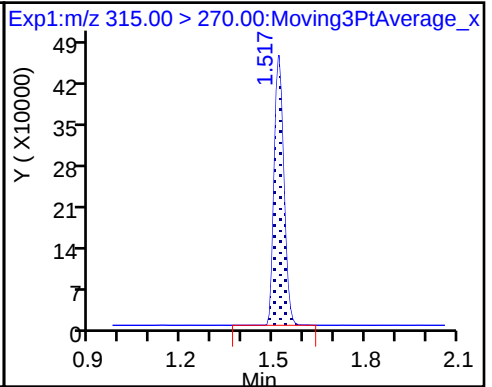
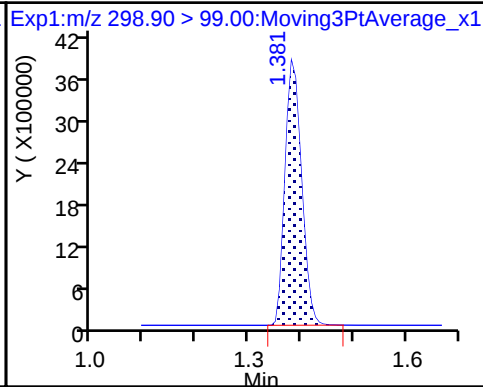
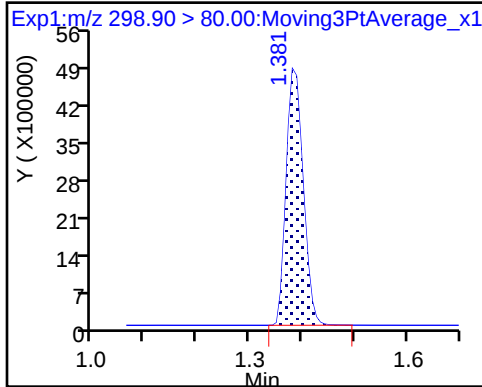
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

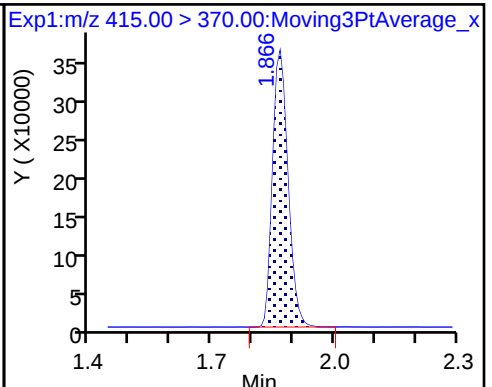
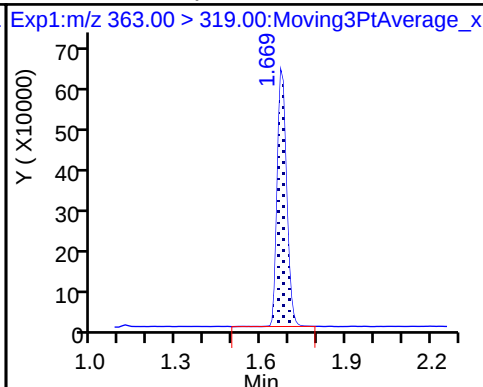
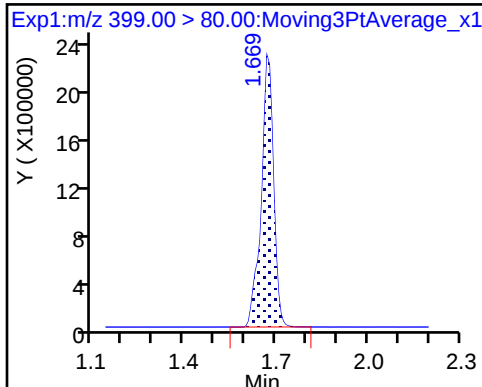
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

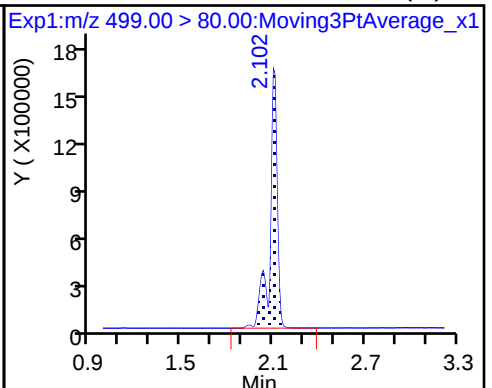
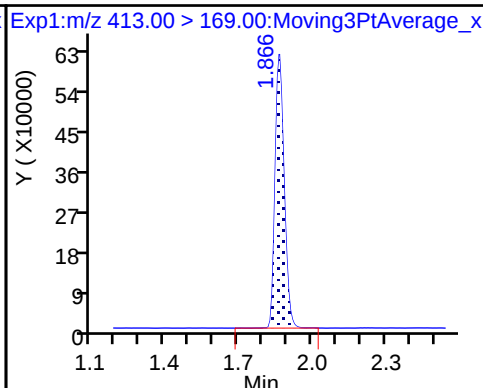
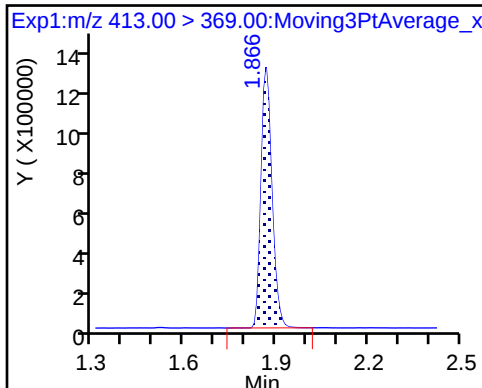
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

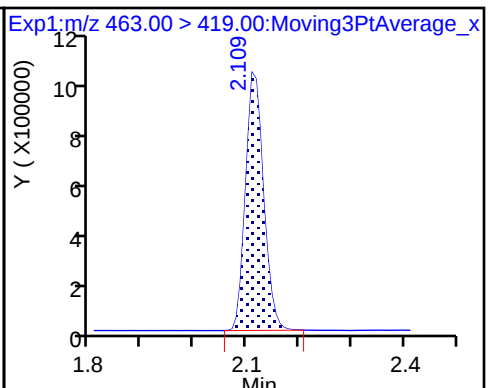
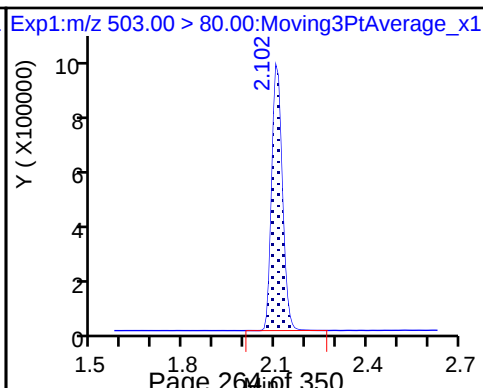
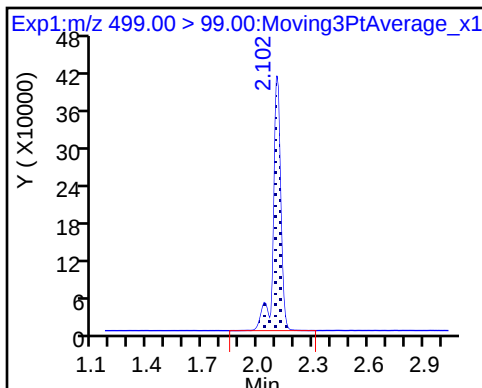
8 Perfluorooctane sulfonic acid (M)



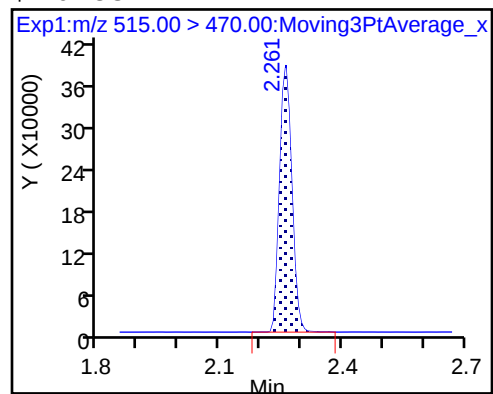
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

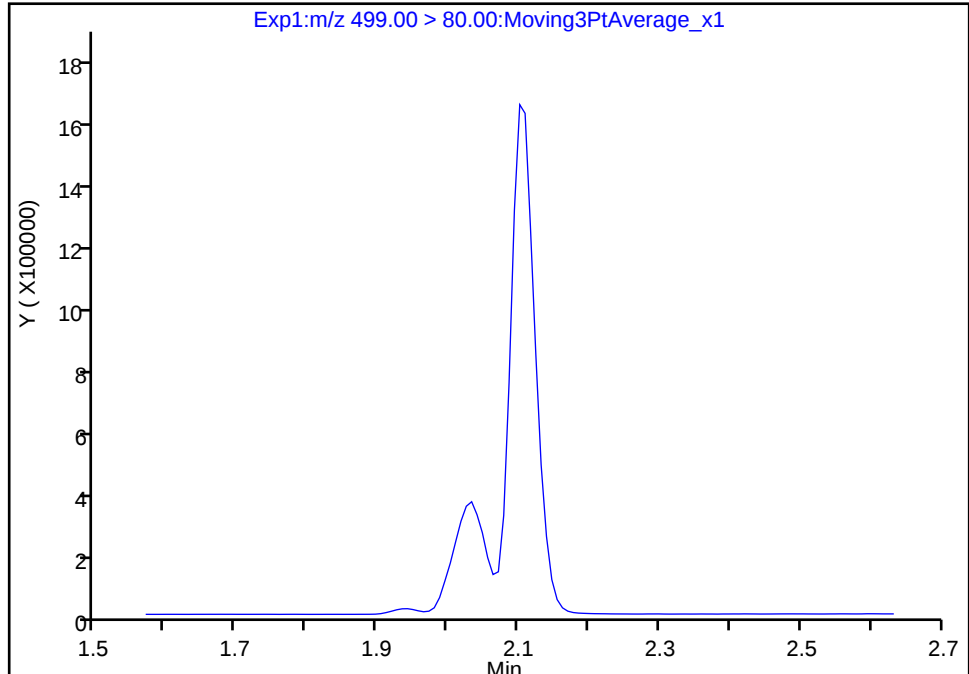
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_008.d
Injection Date: 11-Apr-2018 12:04:29 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

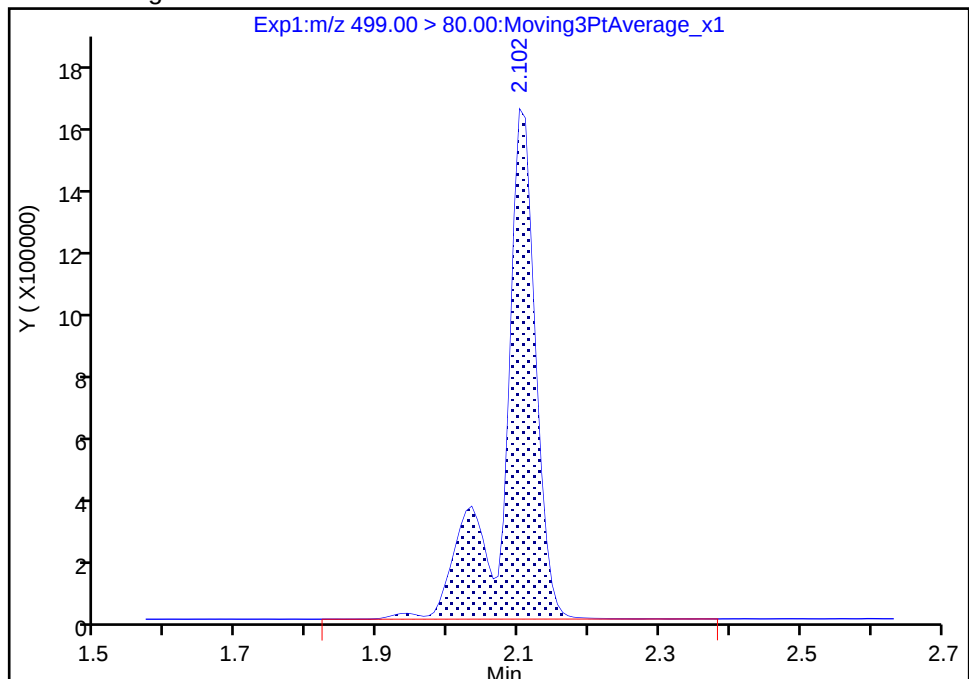
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.10
Area: 5081660
Amount: 59.873244
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 11-Apr-2018 12:31:49

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Lims ID: IC L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 11-Apr-2018 12:09:09 ALS Bottle#: 6 Worklist Smp#: 8
 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\20180411-56557.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 11-Apr-2018 12:35:33 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

First Level Reviewer: westendorfc

Date: 11-Apr-2018 12:31:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.382	-0.001	1.000	13871852	163.3		8258	
298.90 > 99.00	1.381	1.382	-0.001	1.000	10985181		1.26(0.00-0.00)	9440	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.515	-0.005	1.000	1046576	10.0		9565	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.669	-0.007	1.000	1996261	18.9		234	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.669	-0.007	1.000	8226588	62.0		2319	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.865	-0.006		982926	10.0		5616	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.866	-0.007	1.000	4019004	38.5		570	
413.00 > 169.00	1.859	1.866	-0.007	1.000	2217251		1.81(0.00-0.00)	2465	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.094	2.094	0.0	1.000	7016962	81.5		1855	a
499.00 > 99.00	2.094	2.094	0.0	1.000	1468337		4.78(0.00-0.00)	3642	a
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.102	-0.008		2316327	28.7		1268	
9 Perfluorononanoic acid									
463.00 > 419.00	2.102	2.109	-0.007	1.000	3255374	39.3		485	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.260	-0.007	1.000	812112	9.71		7134	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L6_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Injection Date: 11-Apr-2018 12:09:09

Instrument ID: A8_N

Lims ID: IC L6

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 6

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

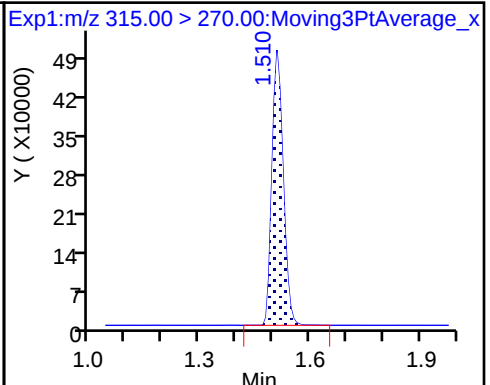
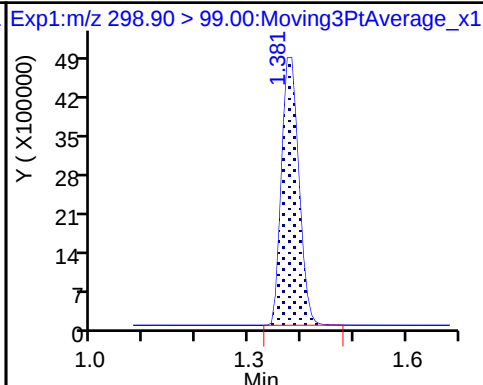
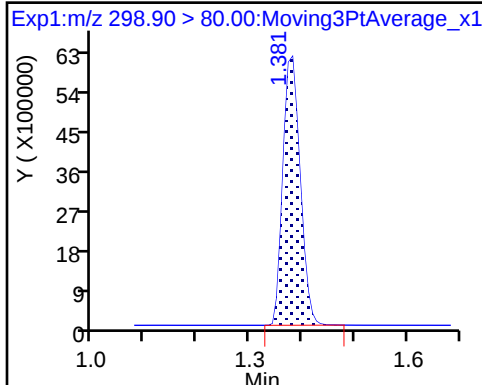
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

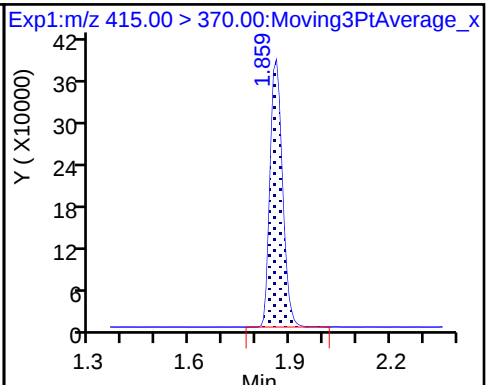
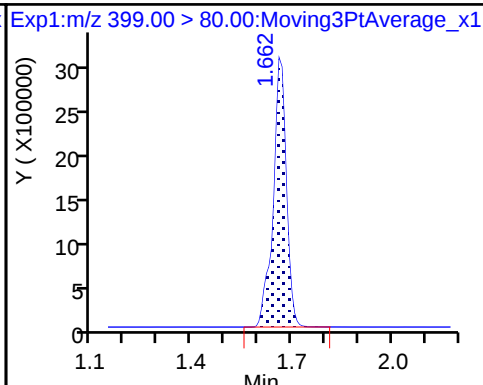
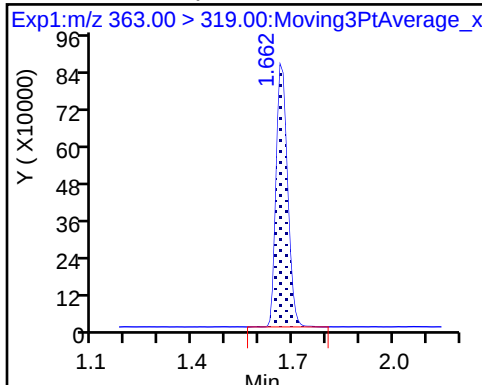
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

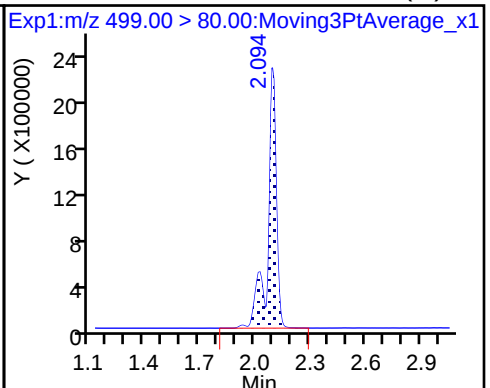
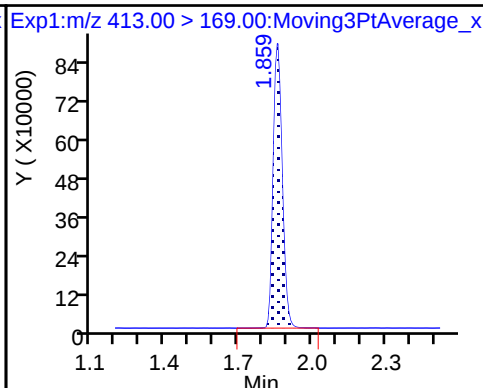
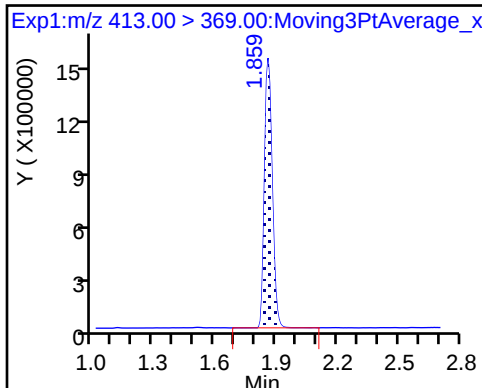
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

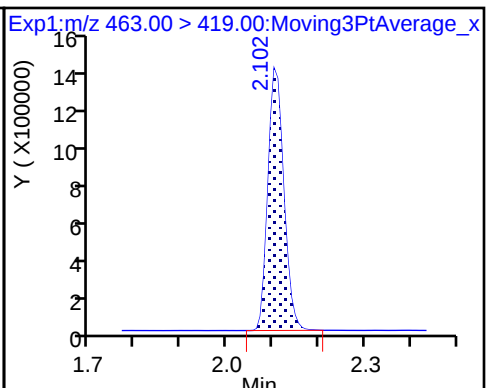
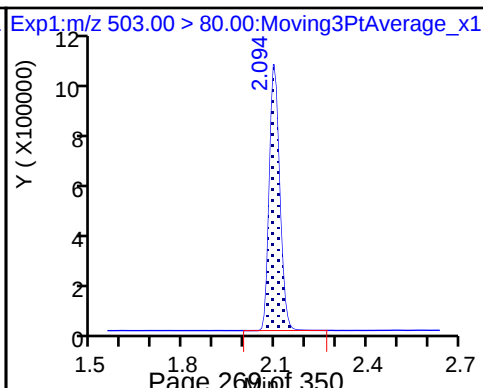
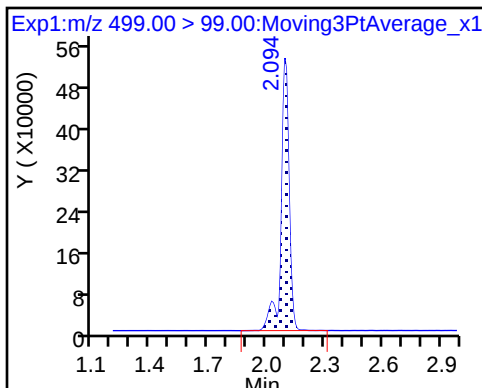
8 Perfluorooctane sulfonic acid (M)



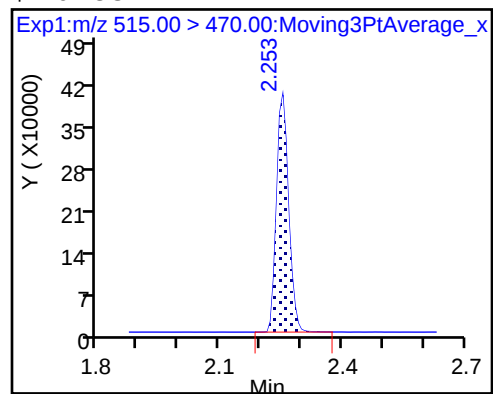
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

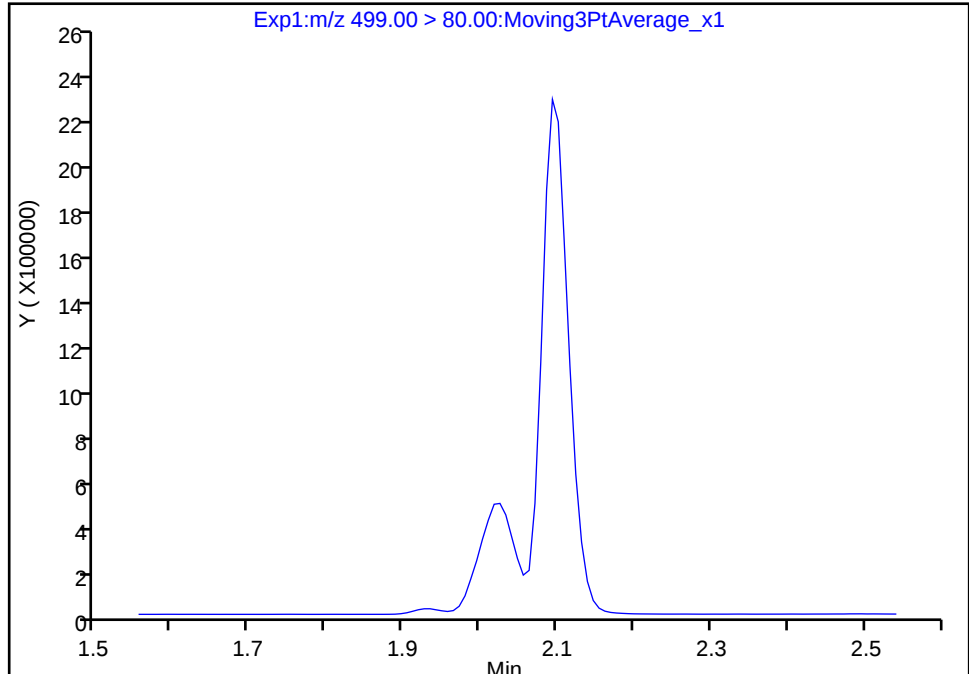
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
Injection Date: 11-Apr-2018 12:09:09 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

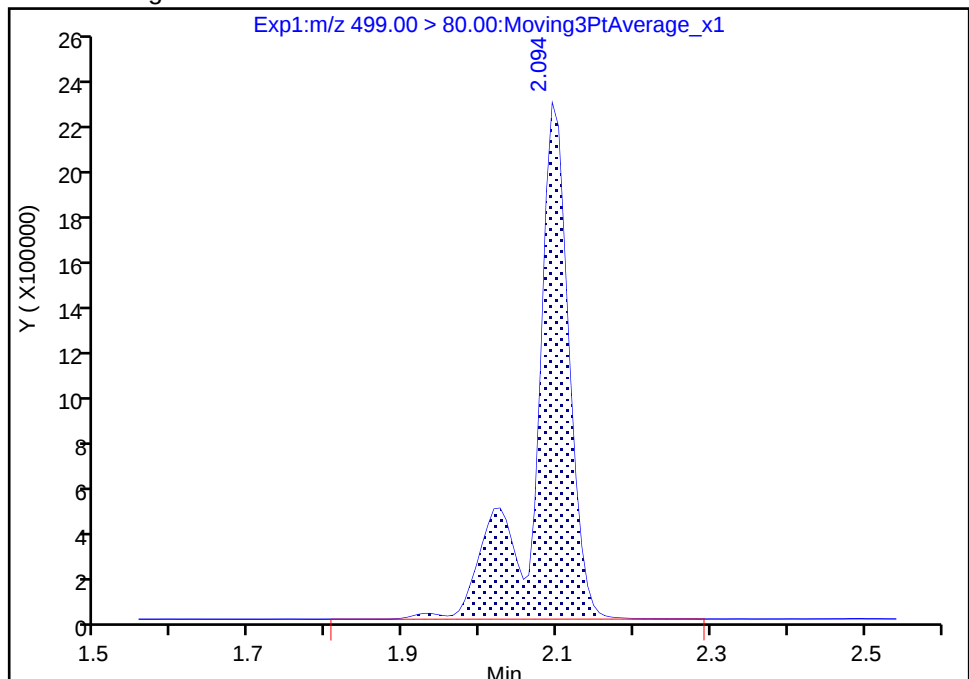
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 7016962
Amount: 81.496978
Amount Units: ng/ml



Reviewer: westendorfc, 11-Apr-2018 12:31:55

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

Calibration

/ Perfluorobutanesulfonic acid

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

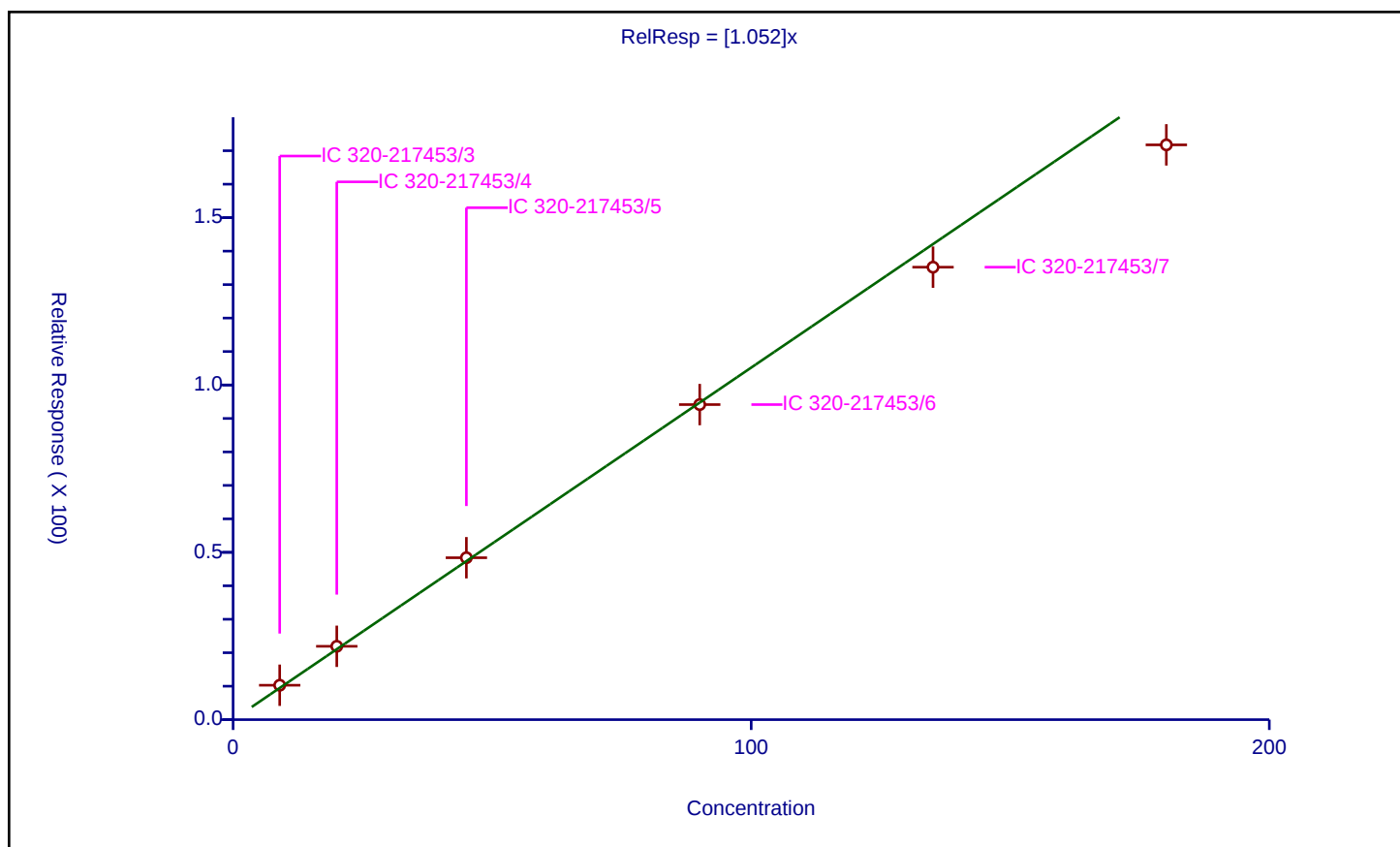
Curve Coefficients

Intercept: 0
 Slope: 1.052

Error Coefficients

Standard Error: 8860000
 Relative Standard Error: 6.4
 Correlation Coefficient: 0.995
 Coefficient of Determination (Adjusted): 0.993

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-217453/3	8.99912	10.27855	28.68	2429483.0	1.142173	Y
2	IC 320-217453/4	20.01376	21.91997	28.68	2220259.0	1.095245	Y
3	IC 320-217453/5	45.03096	48.381679	28.68	2380125.0	1.074409	Y
4	IC 320-217453/6	90.06192	94.147927	28.68	2440107.0	1.045369	Y
5	IC 320-217453/7	135.09288	135.205734	28.68	2283311.0	1.000835	Y
6	IC 320-217453/8	180.12384	171.756715	28.68	2316327.0	0.953548	Y



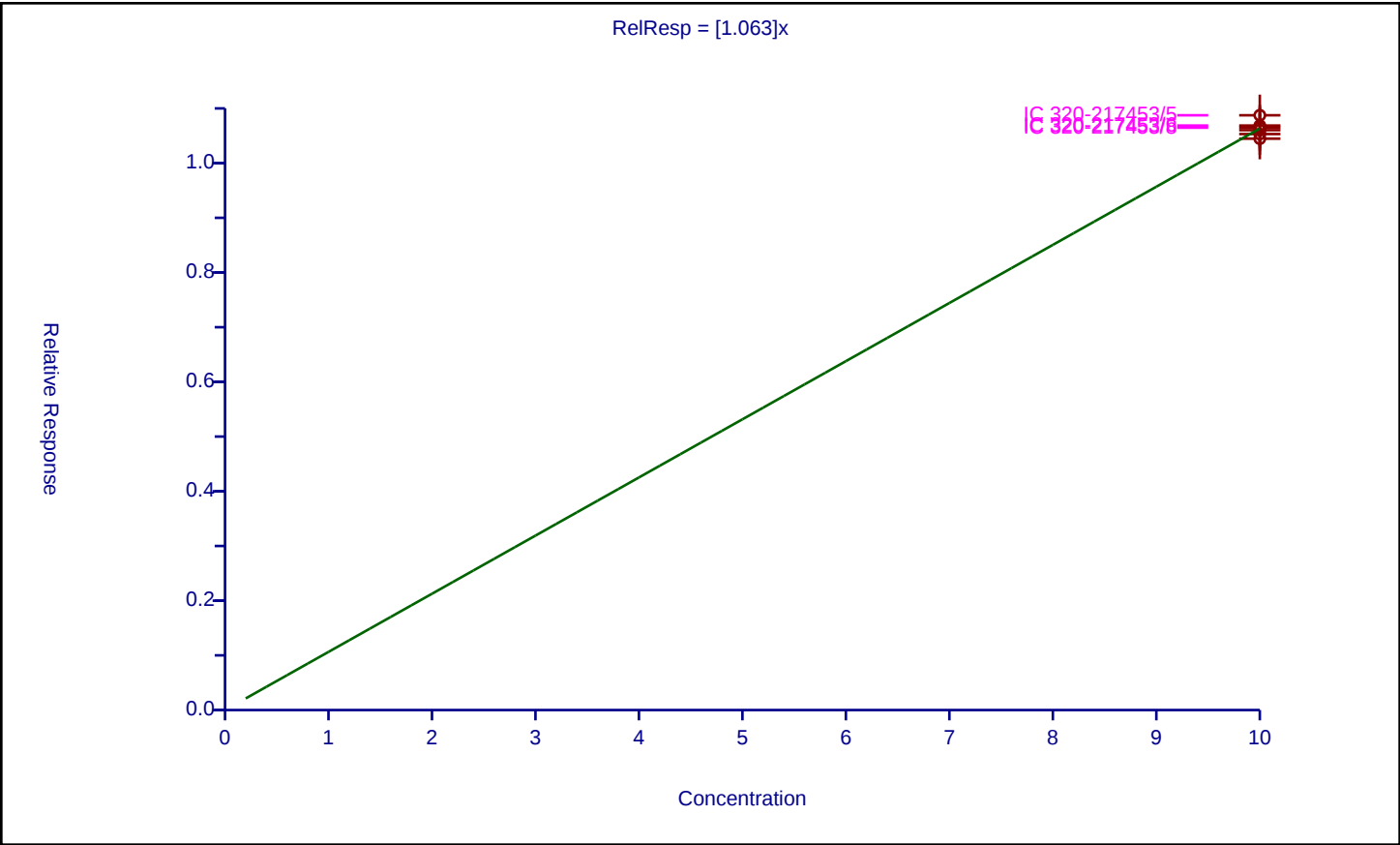
Calibration

/ 13C2 PFHxA

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

Curve Coefficients	
Intercept:	0
Slope:	1.063
Error Coefficients	
Standard Error:	1130000
Relative Standard Error:	1.4
Correlation Coefficient:	NA
Coefficient of Determination (Adjusted):	0

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-217453/3	10.0	10.447022	10.0	1044020.0	1.044702	Y
2	IC 320-217453/4	10.0	10.531795	10.0	921915.0	1.05318	Y
3	IC 320-217453/5	10.0	10.874839	10.0	945031.0	1.087484	Y
4	IC 320-217453/6	10.0	10.686721	10.0	996809.0	1.068672	Y
5	IC 320-217453/7	10.0	10.602316	10.0	929546.0	1.060232	Y
6	IC 320-217453/8	10.0	10.647556	10.0	982926.0	1.064756	Y



Calibration

/ Perfluorohexanesulfonic acid

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

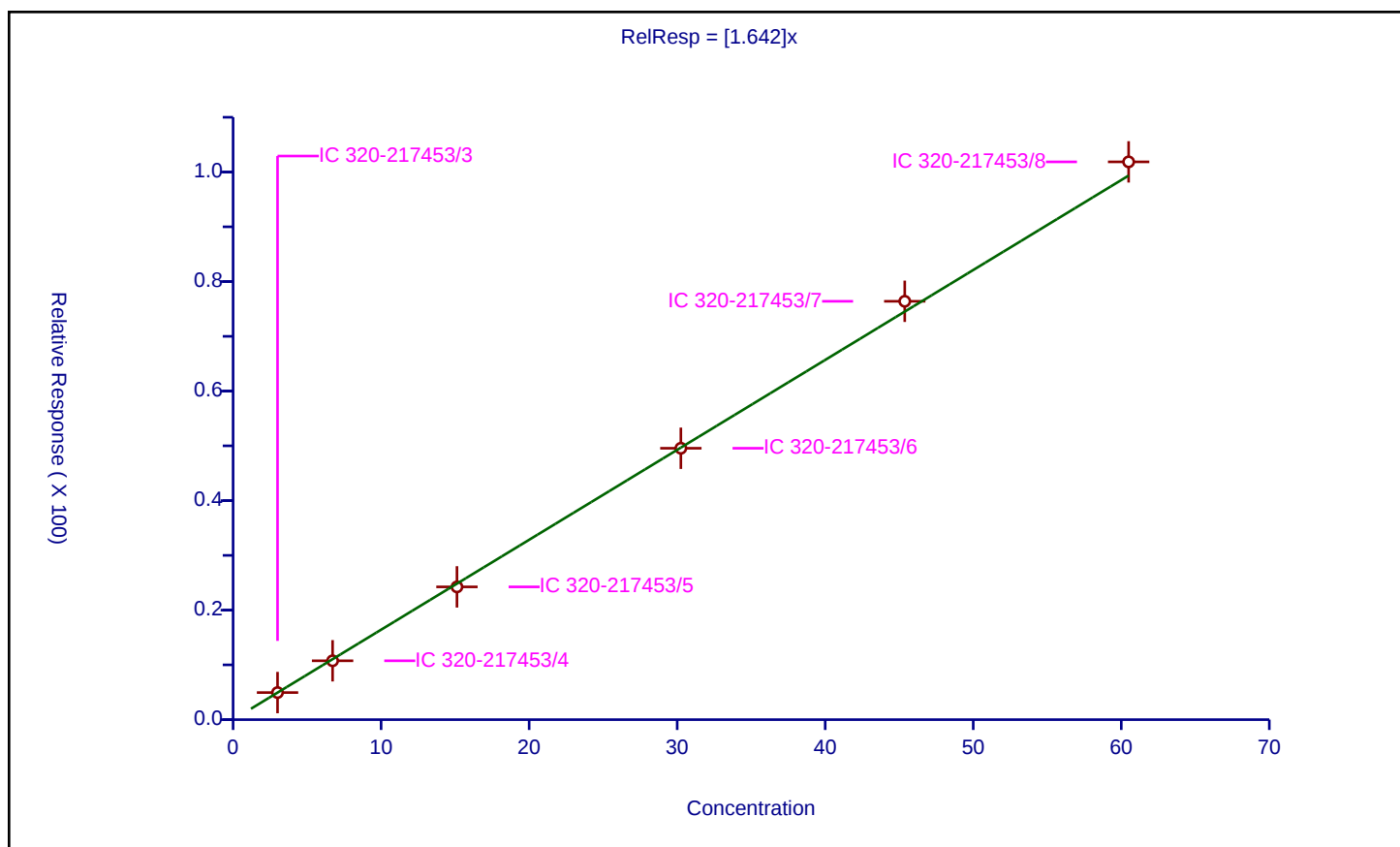
Curve Coefficients

Intercept: 0
 Slope: 1.642

Error Coefficients

Standard Error: 5050000
 Relative Standard Error: 2.3
 Correlation Coefficient: 0.999
 Coefficient of Determination (Adjusted): 0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-217453/3	3.003	4.942037	28.68	2429483.0	1.6457	Y
2	IC 320-217453/4	6.721867	10.746809	28.68	2220259.0	1.598783	Y
3	IC 320-217453/5	15.1242	24.244534	28.68	2380125.0	1.603029	Y
4	IC 320-217453/6	30.2484	49.557654	28.68	2440107.0	1.638356	Y
5	IC 320-217453/7	45.3726	76.39864	28.68	2283311.0	1.683806	Y
6	IC 320-217453/8	60.4968	101.85891	28.68	2316327.0	1.683707	Y



Calibration

/ Perfluoroheptanoic acid

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

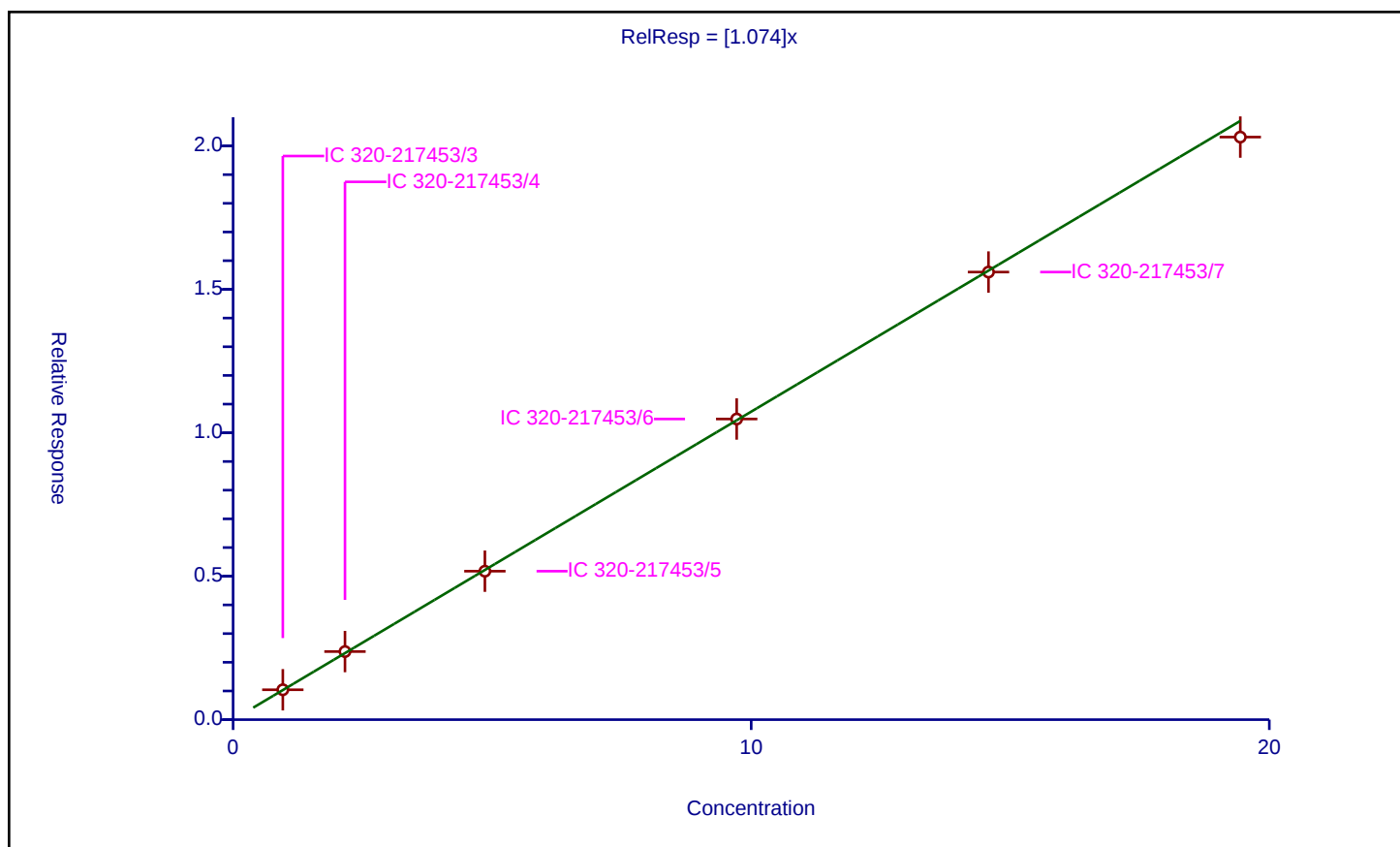
Curve Coefficients

Intercept: 0
 Slope: 1.074

Error Coefficients

Standard Error: 1220000
 Relative Standard Error: 1.7
 Correlation Coefficient: 0.998
 Coefficient of Determination (Adjusted): 1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-217453/3	0.96	1.041561	10.0	1044020.0	1.084959	Y
2	IC 320-217453/4	2.16	2.373972	10.0	921915.0	1.099061	Y
3	IC 320-217453/5	4.86	5.175227	10.0	945031.0	1.064862	Y
4	IC 320-217453/6	9.72	10.480965	10.0	996809.0	1.078289	Y
5	IC 320-217453/7	14.58	15.603994	10.0	929546.0	1.070233	Y
6	IC 320-217453/8	19.44	20.309372	10.0	982926.0	1.044721	Y



Calibration

/ Perfluorooctanoic acid

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

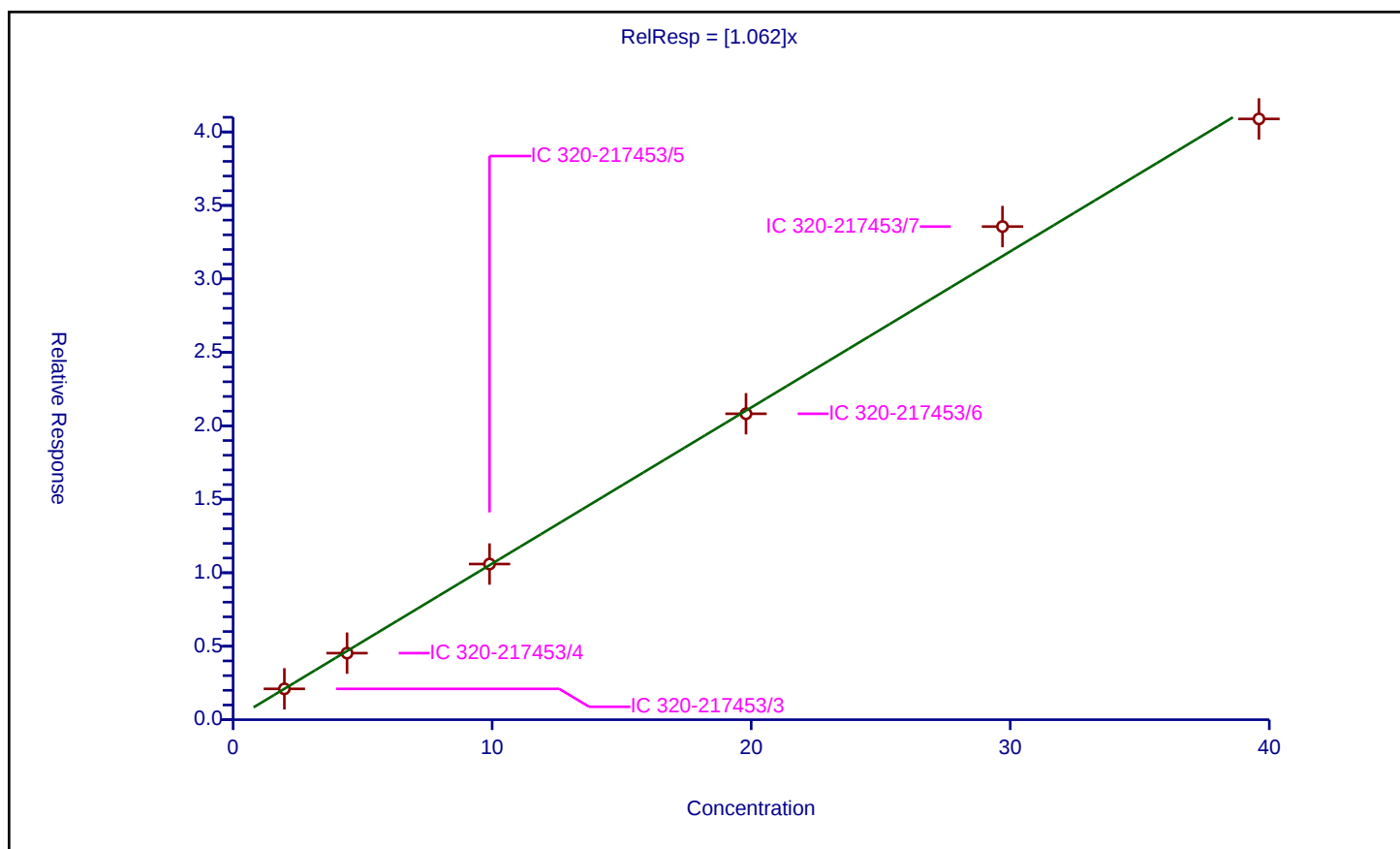
Curve Coefficients

Intercept: 0
 Slope: 1.062

Error Coefficients

Standard Error: 2510000
 Relative Standard Error: 3.5
 Correlation Coefficient: 0.999
 Coefficient of Determination (Adjusted): 0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-217453/3	1.98	2.098619	10.0	1044020.0	1.059908	Y
2	IC 320-217453/4	4.4	4.530049	10.0	921915.0	1.029557	Y
3	IC 320-217453/5	9.9	10.595589	10.0	945031.0	1.070262	Y
4	IC 320-217453/6	19.8	20.822123	10.0	996809.0	1.051622	Y
5	IC 320-217453/7	29.7	33.562481	10.0	929546.0	1.13005	Y
6	IC 320-217453/8	39.6	40.888165	10.0	982926.0	1.032529	Y



Calibration

/ Perfluorooctane sulfonic acid

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

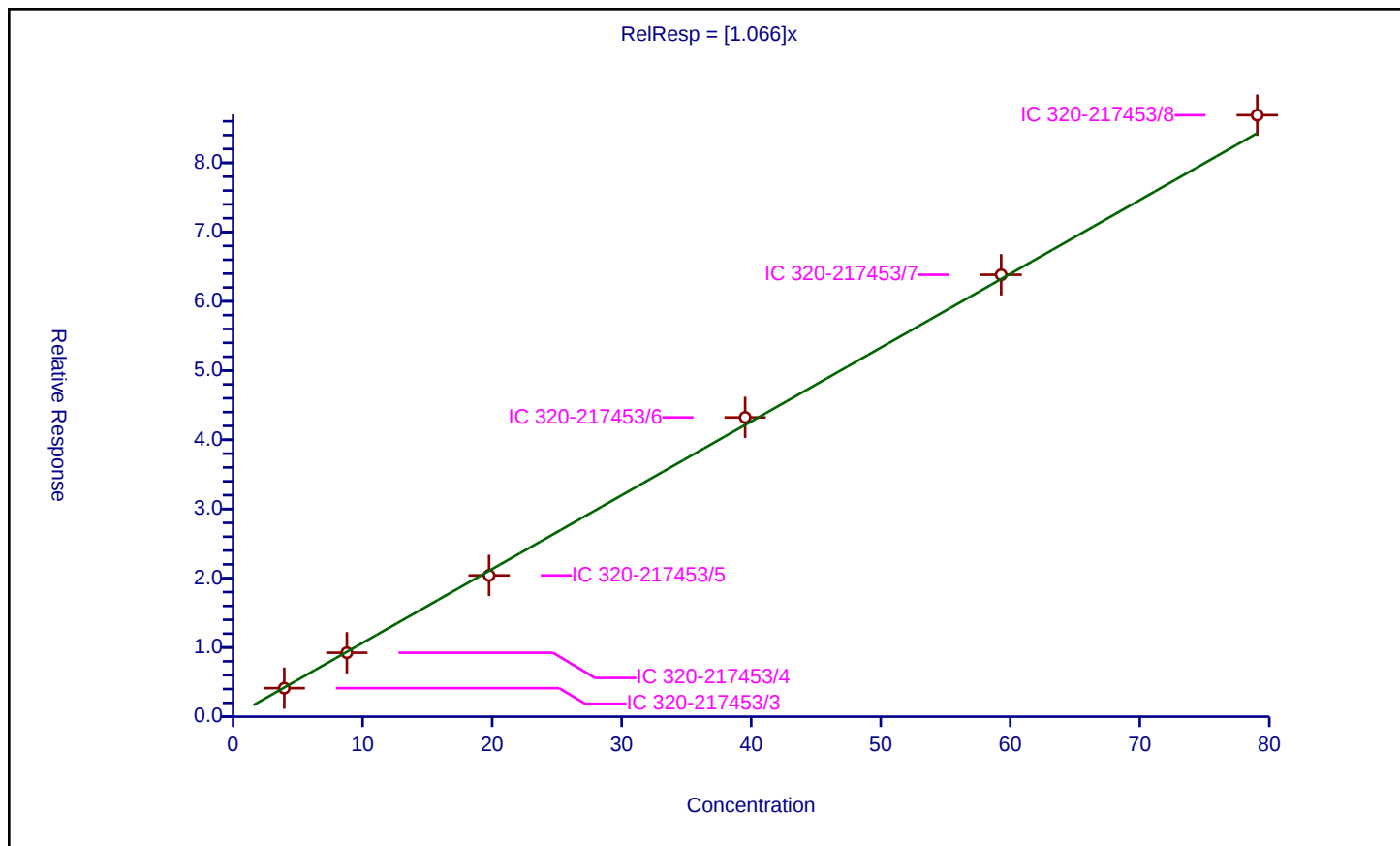
Curve Coefficients

Intercept: 0
 Slope: 1.066

Error Coefficients

Standard Error: 4290000
 Relative Standard Error: 2.6
 Correlation Coefficient: 0.998
 Coefficient of Determination (Adjusted): 0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-217453/3	3.95328	4.124117	28.68	2429483.0	1.043214	Y
2	IC 320-217453/4	8.785067	9.240832	28.68	2220259.0	1.05188	Y
3	IC 320-217453/5	19.7664	20.41005	28.68	2380125.0	1.032563	Y
4	IC 320-217453/6	39.5328	43.230372	28.68	2440107.0	1.093532	Y
5	IC 320-217453/7	59.2992	63.829241	28.68	2283311.0	1.076393	Y
6	IC 320-217453/8	79.0656	86.881718	28.68	2316327.0	1.098856	Y



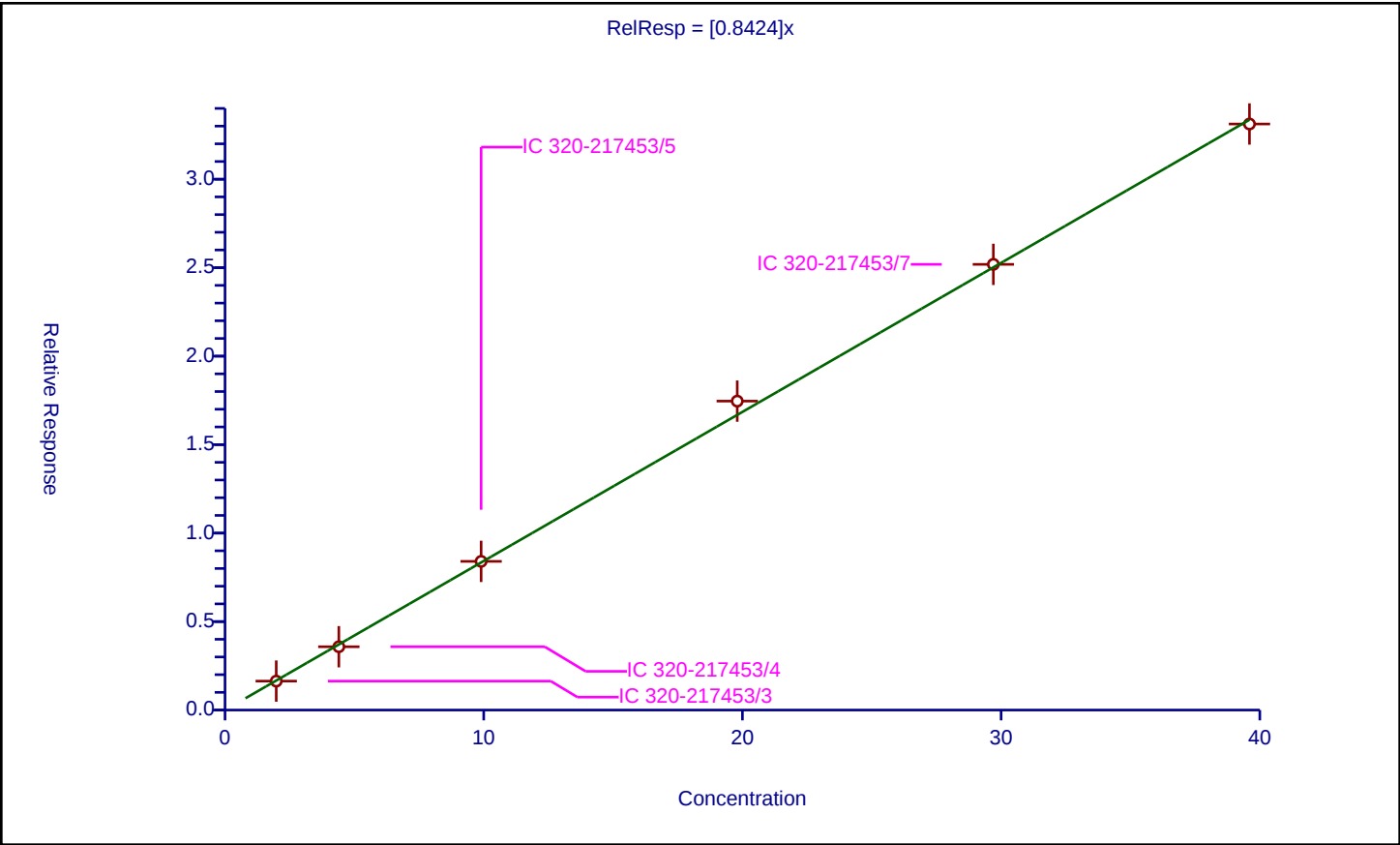
Calibration

/ Perfluorononanoic acid

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

Curve Coefficients	
Intercept:	0
Slope:	0.8424
Error Coefficients	
Standard Error:	1990000
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 320-217453/3	1.98	1.635697	10.0	1044020.0	0.826109	Y
2	IC 320-217453/4	4.4	3.578464	10.0	921915.0	0.813287	Y
3	IC 320-217453/5	9.9	8.402645	10.0	945031.0	0.848752	Y
4	IC 320-217453/6	19.8	17.459935	10.0	996809.0	0.881815	Y
5	IC 320-217453/7	29.7	25.186865	10.0	929546.0	0.848043	Y
6	IC 320-217453/8	39.6	33.119218	10.0	982926.0	0.836344	Y



Calibration

/ 13C2 PFDA

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

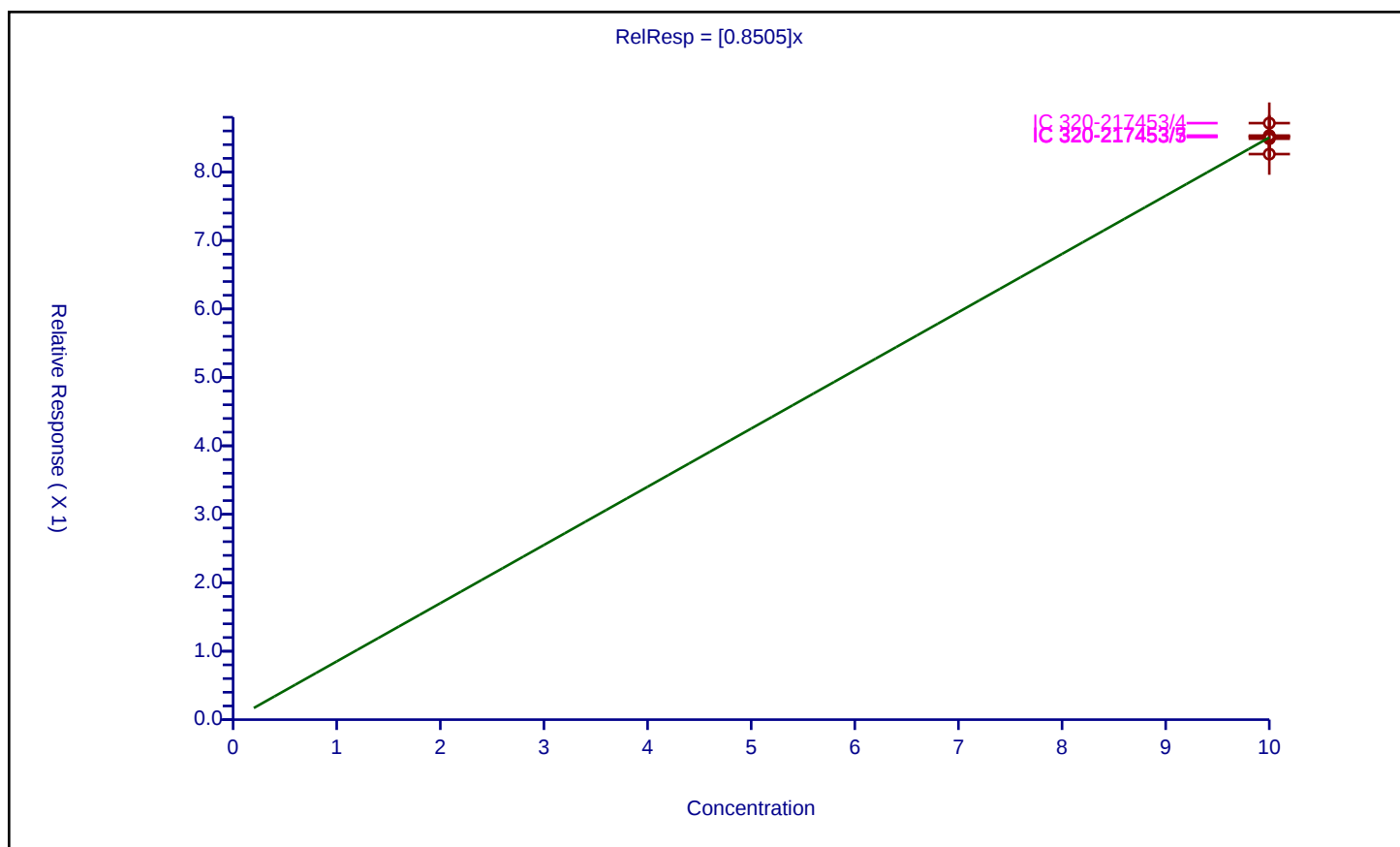
Curve Coefficients

Intercept: 0
 Slope: 0.8505

Error Coefficients

Standard Error: 904000
 Relative Standard Error: 1.7
 Correlation Coefficient: NA
 Coefficient of Determination (Adjusted): 0

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-217453/3	10.0	8.512691	10.0	1044020.0	0.851269	Y
2	IC 320-217453/4	10.0	8.714491	10.0	921915.0	0.871449	Y
3	IC 320-217453/5	10.0	8.53263	10.0	945031.0	0.853263	Y
4	IC 320-217453/6	10.0	8.486982	10.0	996809.0	0.848698	Y
5	IC 320-217453/7	10.0	8.519223	10.0	929546.0	0.851922	Y
6	IC 320-217453/8	10.0	8.262189	10.0	982926.0	0.826219	Y



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-217453/10 Calibration Date: 04/11/2018 12:18
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.11_537ICALB_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.052	1.078		20.5	20.0	2.5	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.079		2.17	2.16	0.5	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.583		6.48	6.72	-3.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.067		4.42	4.40	0.4	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.026		8.45	8.79	-3.8	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8056		4.21	4.40	-4.4	50.0
13C2 PFHxA	Ave	1.063	1.036		9.74	10.0	-2.6	30.0
13C2 PFDA	Ave	0.8505	0.8798		10.3	10.0	3.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_011.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 11-Apr-2018 12:18:29 ALS Bottle#: 2 Worklist Smp#: 10
 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\20180411-56557.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 11-Apr-2018 12:35:34 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

First Level Reviewer: westendorfc

Date: 11-Apr-2018 12:32:05

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.382	-0.001	1.000	1796973	20.5		1419	
298.90 > 99.00	1.381	1.382	-0.001	1.000	1315166		1.37(0.00-0.00)	1507	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.515	0.002	1.000	999202	9.74		8081	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.669	0.0	1.000	886015	6.48		254	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.669	0.0	1.000	224797	2.17		28.4	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.865	0.001		964533	10.0		6486	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.866	0.0	1.000	452711	4.42		66.1	
413.00 > 169.00	1.859	1.866	-0.007	0.996	238029		1.90(0.00-0.00)	253	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	750245	8.45		211	a
499.00 > 99.00	2.102	2.094	0.008	1.000	160618		4.67(0.00-0.00)	405	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2387973	28.7		1256	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.109	0.0	1.000	341890	4.21		51.1	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.260	0.001	1.000	848574	10.3		7810	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L2_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_011.d

Injection Date: 11-Apr-2018 12:18:29

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

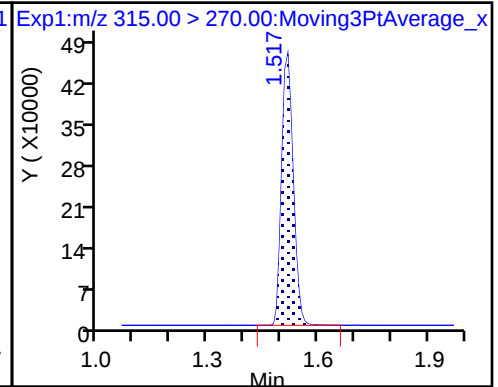
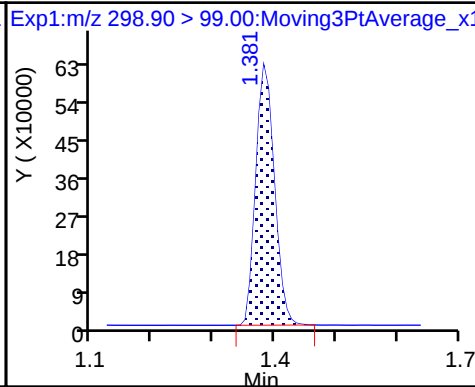
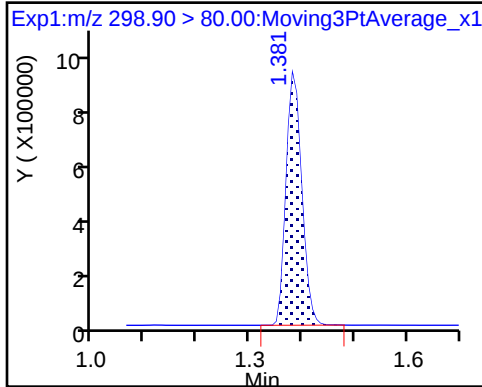
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

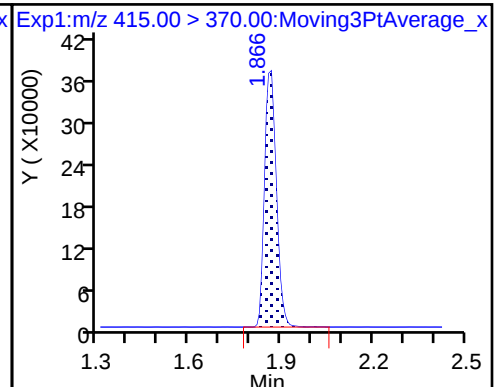
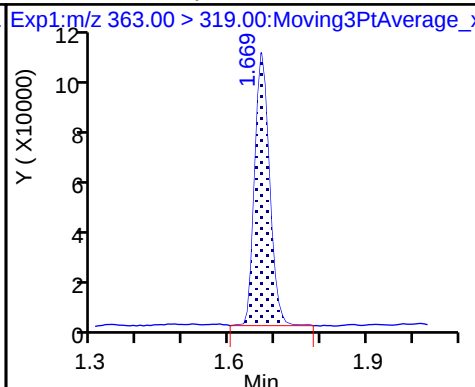
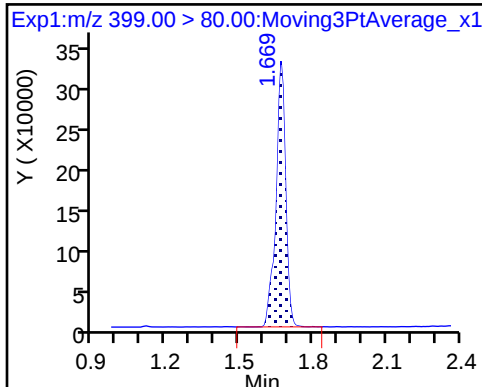
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

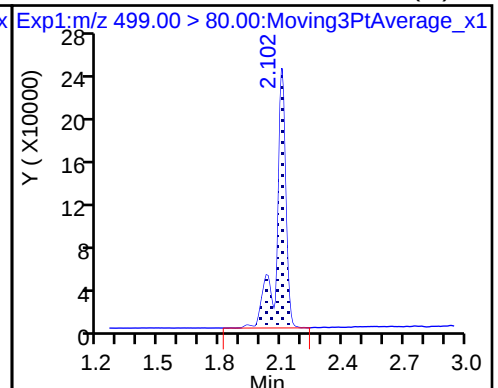
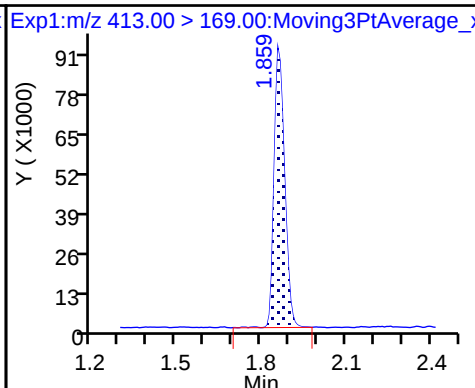
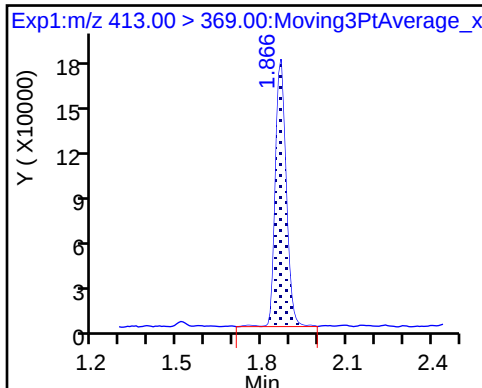
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

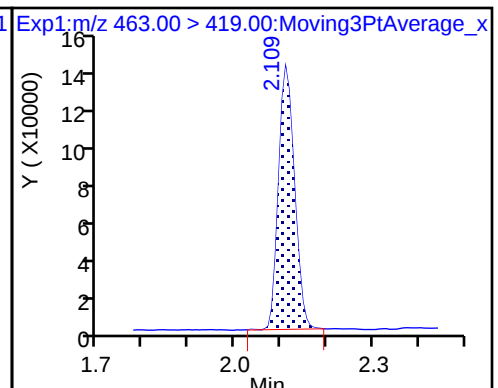
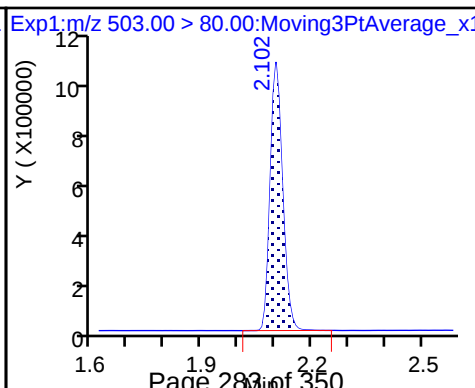
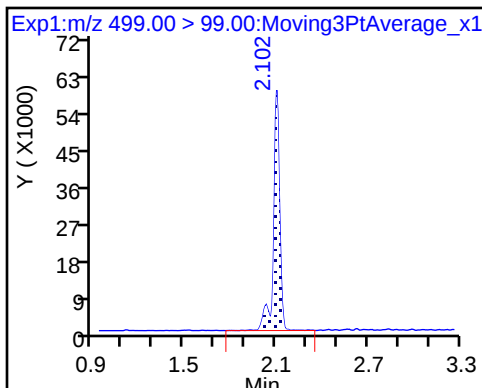
8 Perfluorooctane sulfonic acid (M)



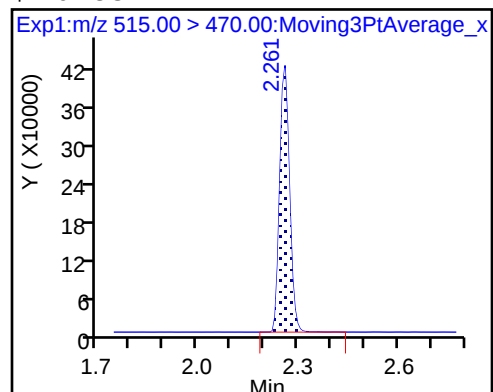
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

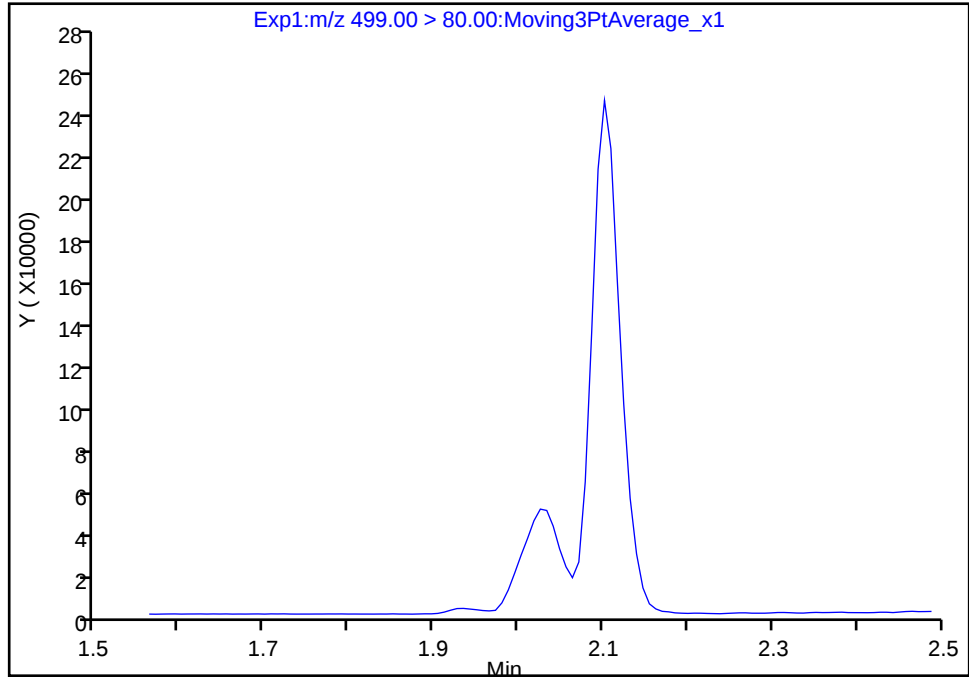
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_011.d
Injection Date: 11-Apr-2018 12:18:29 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

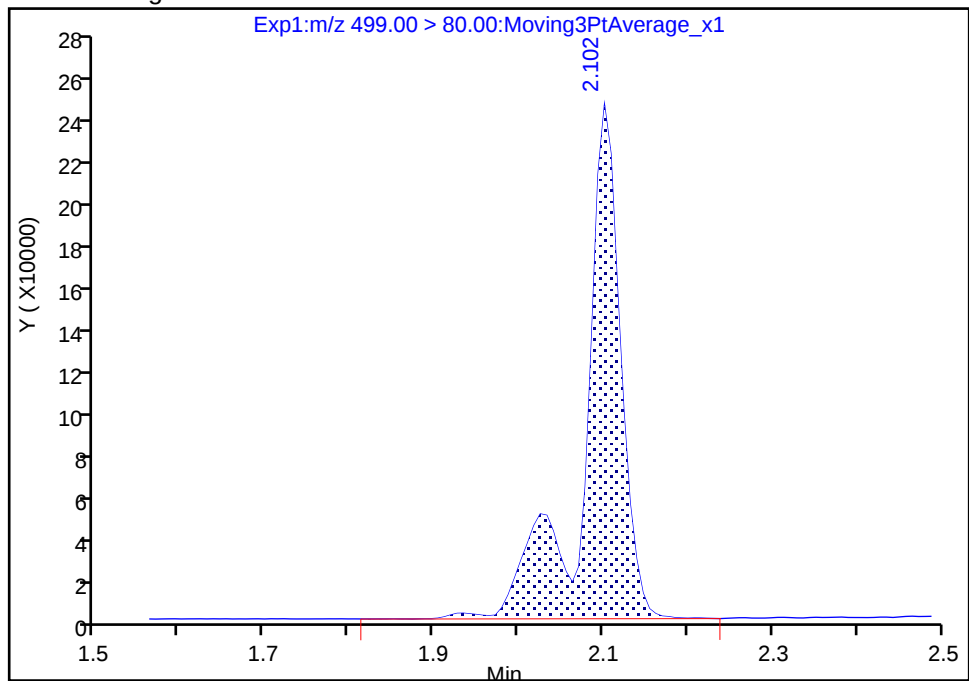
Signal: 1

Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.10
Area: 750245
Amount: 8.452126
Amount Units: ng/ml

Reviewer: westendorfc, 11-Apr-2018 12:32:02

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Lab Sample ID: ICV 320-217453/12 Calibration Date: 04/11/2018 12:27
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.11_537ICALB_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.052	0.9079		86.4	100	-13.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	0.9453		8.80	10.0	-12.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.546		19.0	20.2	-5.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	0.8947		17.0	20.2	-15.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	0.9451		17.9	20.2	-11.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.7643		18.3	20.2	-9.3	30.0
13C2 PFHxA	Ave	1.063	0.9887		9.30	10.0	-7.0	30.0
13C2 PFDA	Ave	0.8505	0.7817		9.19	10.0	-8.1	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_013.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 11-Apr-2018 12:27:50 ALS Bottle#: 7 Worklist Smp#: 12
 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\20180411-56557.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 11-Apr-2018 12:35:36 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

First Level Reviewer: westendorfc

Date: 11-Apr-2018 12:35:17

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	1.382	-0.001	1.000	8588615	86.4		6016	
298.90 > 99.00	1.381	1.382	-0.001	1.000	6638954		1.29(0.00-0.00)	7031	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.515	-0.005	1.000	1110636	9.30		10046	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.669	0.0	1.000	2946450	19.0		915	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.669	0.0	1.000	1061944	8.80		129	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.865	-0.006		1123391	10.0		7104	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.866	-0.007	1.000	2026973	17.0		297	
413.00 > 169.00	1.859	1.866	-0.007	1.000	1039561		1.95(0.00-0.00)	1075	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	1801850	17.9		451	a
499.00 > 99.00	2.102	2.094	0.008	1.000	352970		5.10(0.00-0.00)	761	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2710764	28.7		1406	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.109	0.0	1.000	1731220	18.3		262	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.260	-0.007	1.000	878101	9.19		8492	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-ICV_00030

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_013.d

Injection Date: 11-Apr-2018 12:27:50

Instrument ID: A8_N

Lims ID: ICV

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 7

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

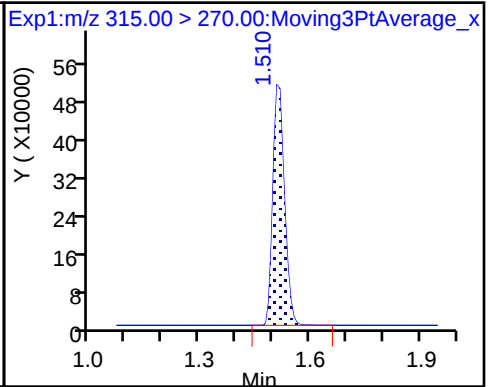
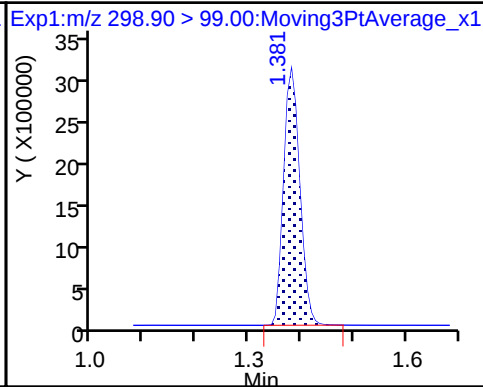
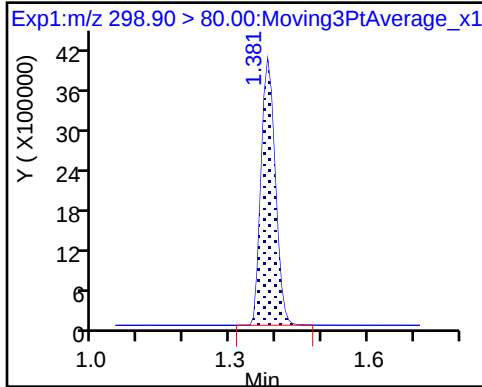
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

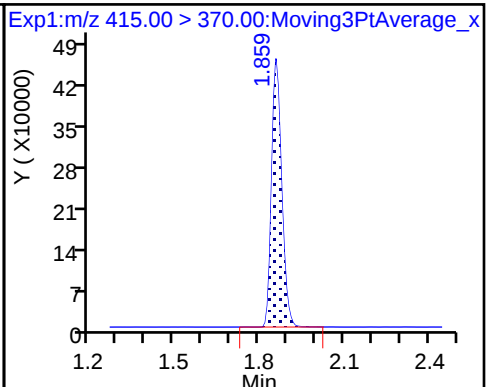
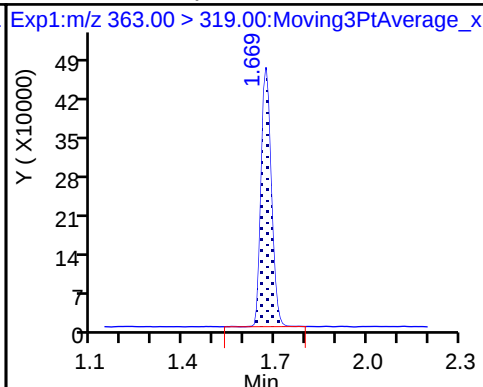
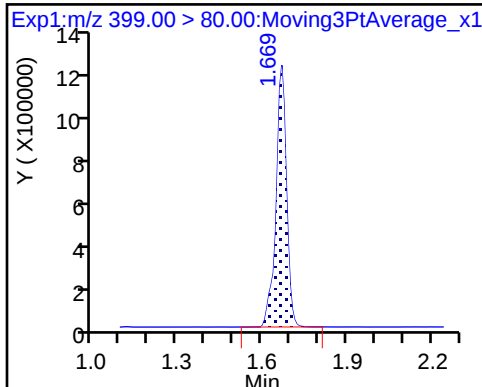
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

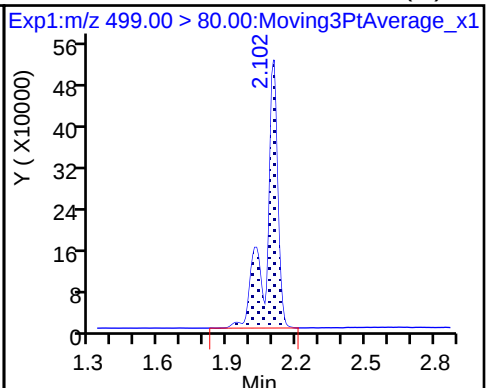
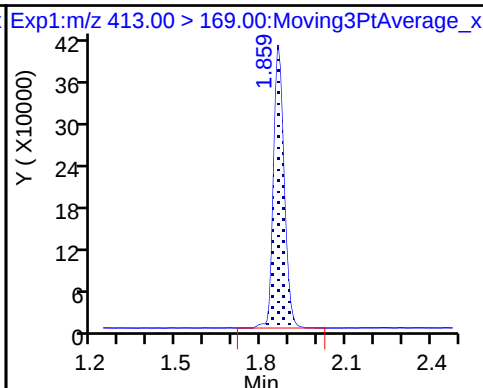
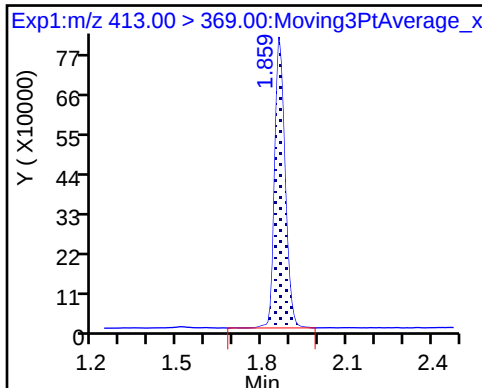
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

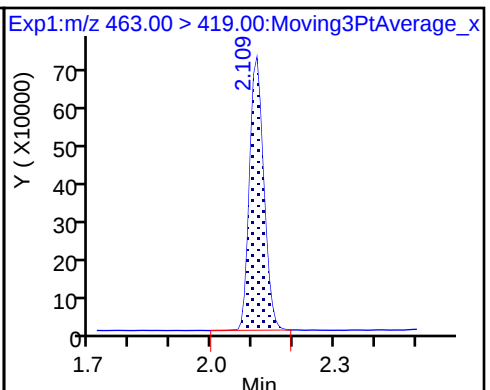
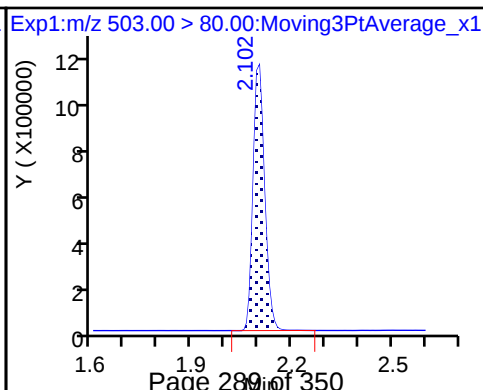
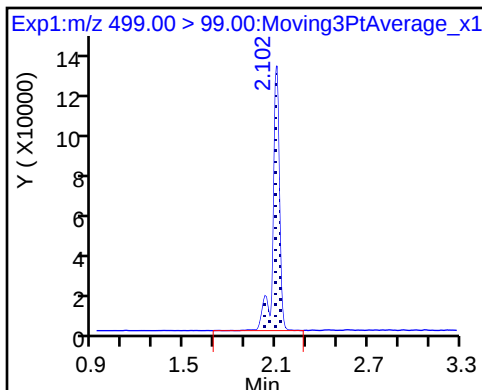
8 Perfluorooctane sulfonic acid (M)



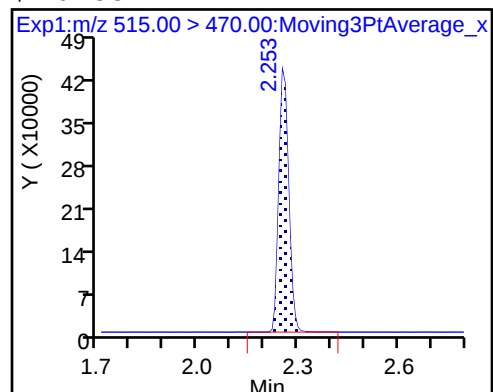
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

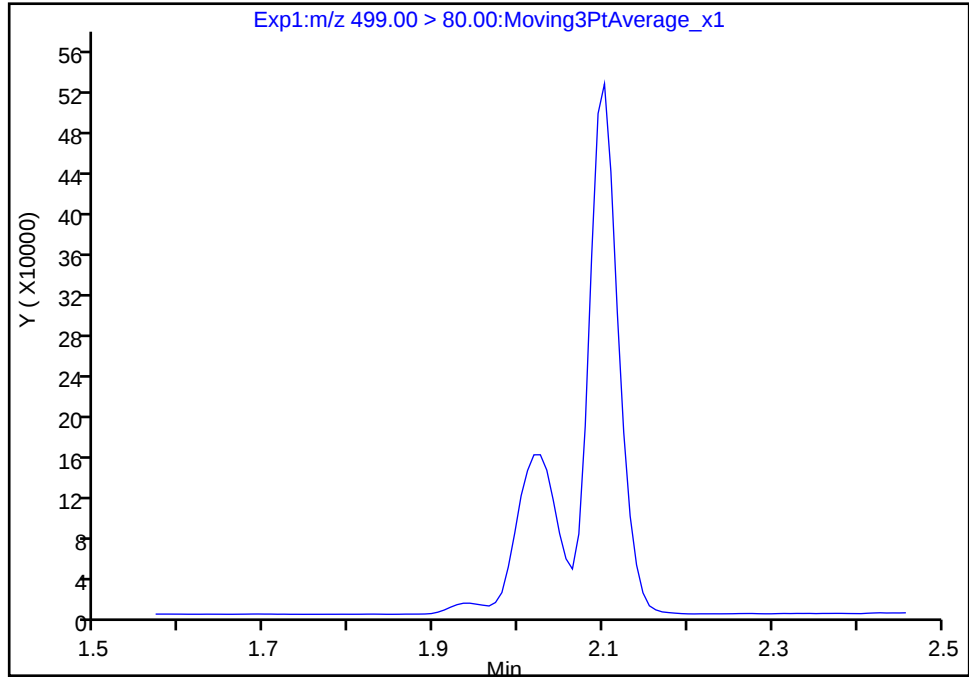
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_013.d
Injection Date: 11-Apr-2018 12:27:50 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

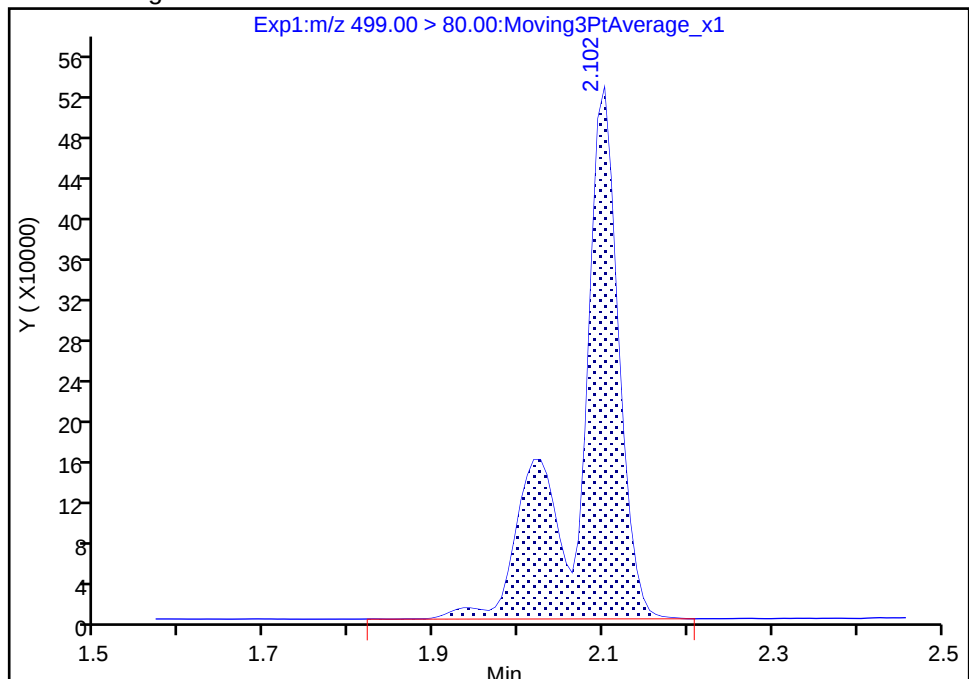
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 1801850
Amount: 17.882127
Amount Units: ng/ml



Reviewer: westendorfc, 11-Apr-2018 12:35:10

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-221668/1 Calibration Date: 05/05/2018 02:43
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.05.05_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	1.052	1.163		22.1	20.0	10.6	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.069		2.15	2.16	-0.5	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.602		6.56	6.72	-2.4	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.088		4.50	4.40	2.4	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.026		8.45	8.79	-3.8	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.7757		4.05	4.40	-7.9	50.0
13C2 PFHxA	Ave	1.063	1.077		10.1	10.0	1.3	30.0
13C2 PFDA	Ave	0.8505	0.8053		9.47	10.0	-5.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57729.b\2018.05.05_537A_004.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 05-May-2018 02:43:19 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\20180505-57729.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 10:13:53 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK032

First Level Reviewer: barnettj

Date: 07-May-2018 10:03:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.404	0.0	1.000	1840806	22.1		776	
298.90 > 99.00	1.404	1.404	0.0	1.000	1369218		1.34(0.00-0.00)	789	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.540	-0.007	1.000	1047873	10.1		6058	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.692	0.0	1.000	851471	6.56		270	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.692	0.0	1.000	224651	2.15		26.1	
* 6 13C2-PFOA									
415.00 > 370.00	1.889	1.882	0.007		973132	10.0		4740	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.889	1.889	0.0	1.000	465677	4.50		74.7	
413.00 > 169.00	1.889	1.889	0.0	1.000	243946		1.91(0.00-0.00)	207	
* 7 13C4 PFOS									
503.00 > 80.00	2.132	2.124	0.008		2267687	28.7		1277	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.132	2.124	0.008	1.000	712412	8.45		184	a
499.00 > 99.00	2.132	2.124	0.008	1.000	155557		4.58(0.00-0.00)	299	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.140	2.132	0.008	1.000	332157	4.05		73.6	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.284	0.007	1.000	783704	9.47		6516	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L2_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57729.b\2018.05.05_537A_004.d

Injection Date: 05-May-2018 02:43:19

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

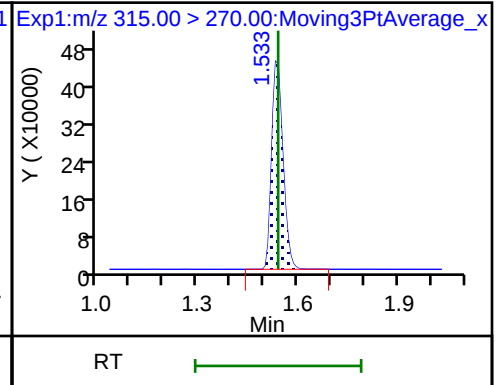
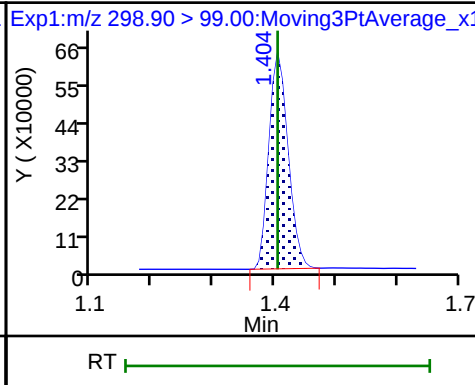
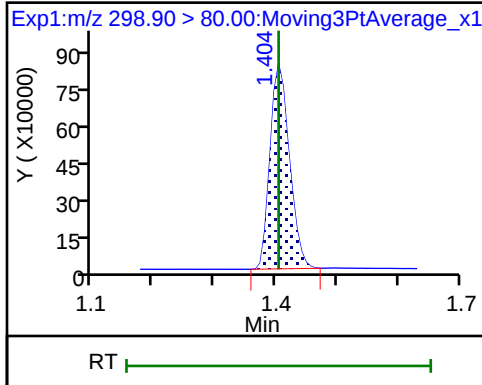
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

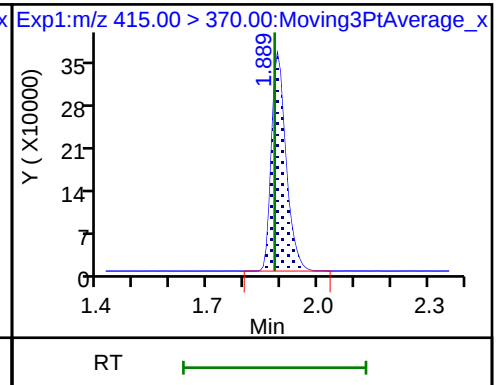
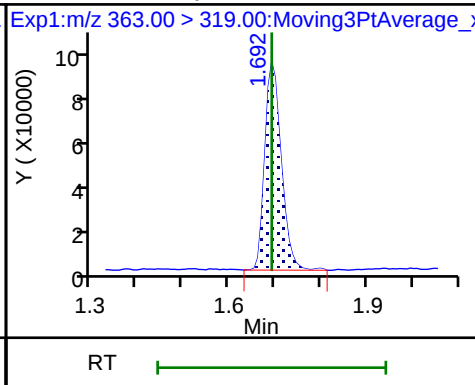
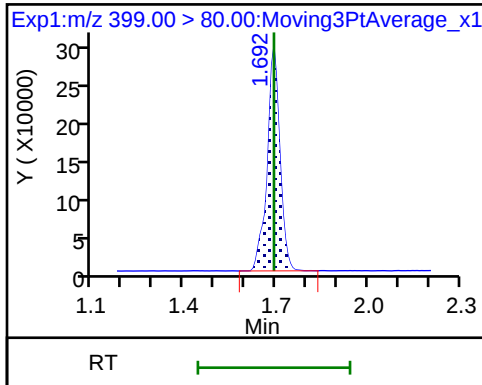
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

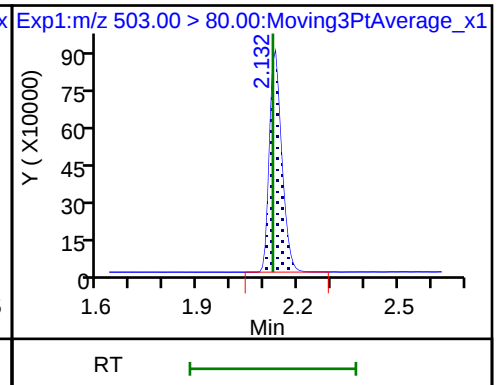
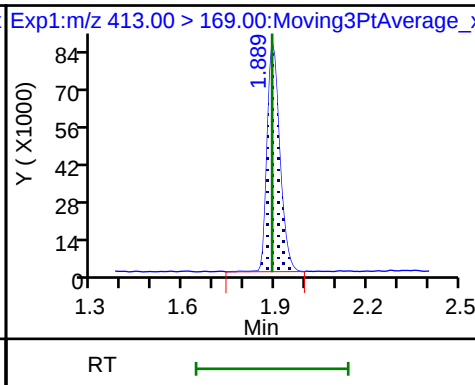
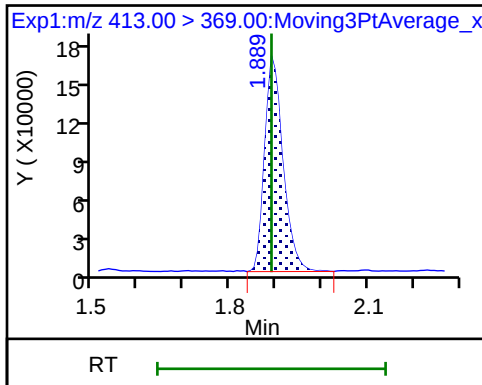
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

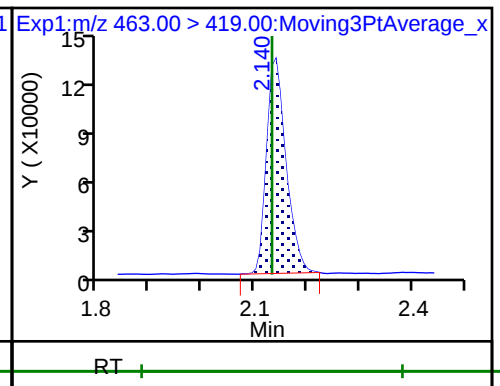
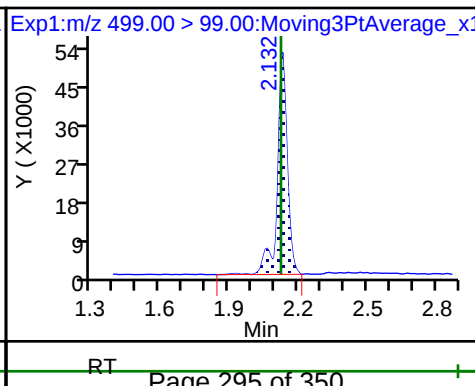
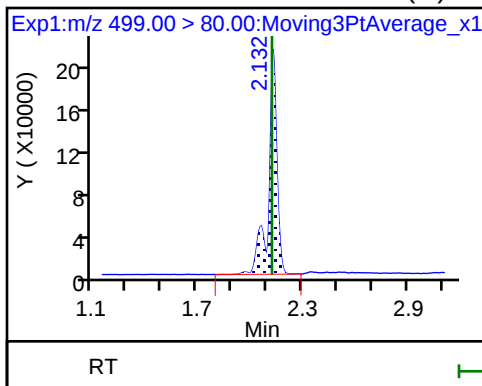
* 7 13C4 PFOS



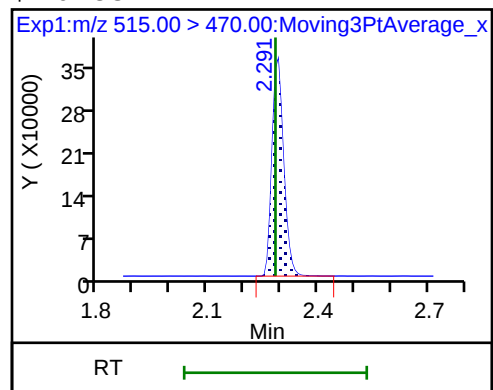
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

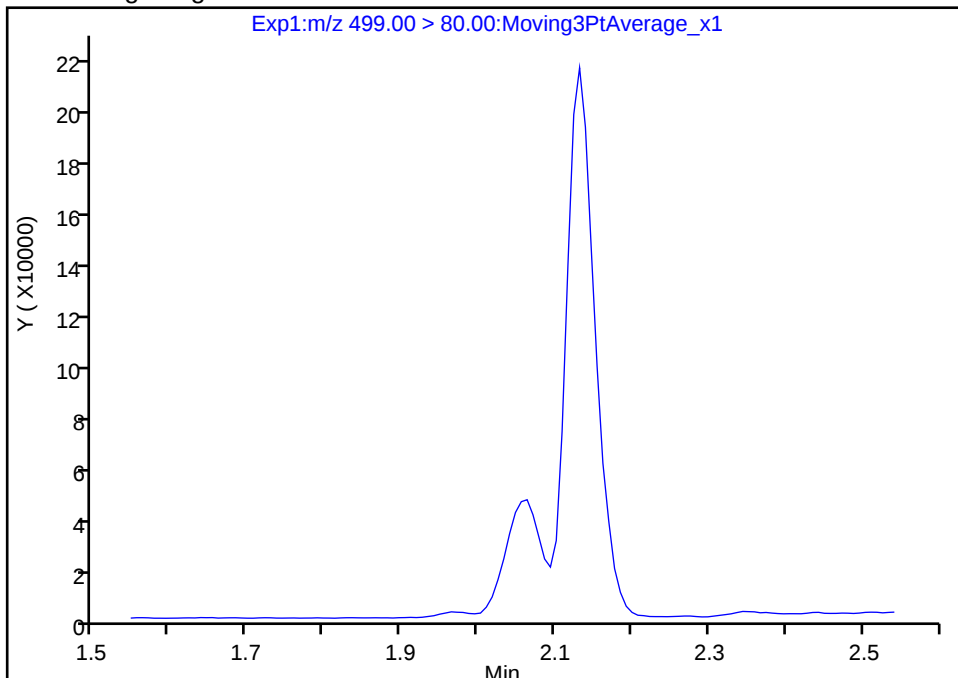
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Injection Date: 05-May-2018 02:43:19 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

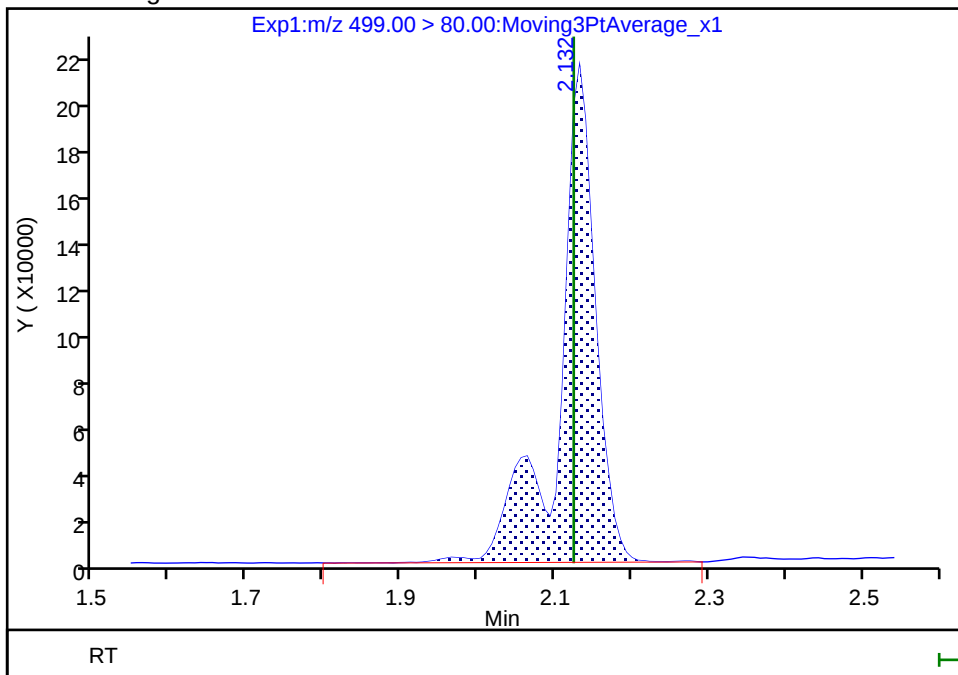
Not Detected
Expected RT: 2.12

Processing Integration Results



RT: 2.13
Area: 712412
Amount: 8.451628
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 07-May-2018 10:03:35
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected
Page 297 of 350

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Lab Sample ID: CCV 320-221679/1 Calibration Date: 05/05/2018 05:55
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.05.05_537A_045.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.052	1.066		137	135	1.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.086		14.7	14.6	1.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.712		47.3	45.4	4.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.079		30.2	29.7	1.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.083		60.2	59.3	1.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8185		28.9	29.7	-2.8	30.0
13C2 PFHxA	Ave	1.063	1.113		10.5	10.0	4.7	30.0
13C2 PFDA	Ave	0.8505	0.7775		9.14	10.0	-8.6	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_045.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 05-May-2018 05:55:11 ALS Bottle#: 5 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:24:18

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.404	0.0	1.000	11936318	136.9		4585	
298.90 > 99.00	1.404	1.404	0.0	1.000	9376967		1.27(0.00-0.00)	5128	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.533	0.0	1.000	1110058	10.5		8409	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.684	0.0	1.000	6438437	47.3		1950	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.684	0.0	1.000	1578278	14.7		205	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.874	0.0		996991	10.0		4607	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.882	0.0	1.000	3193988	30.2		522	
413.00 > 169.00	1.874	1.882	-0.008	0.996	1679668		1.90(0.00-0.00)	1523	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.117	0.0		2376746	28.7		1309	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.117	0.0	1.000	5320072	60.2		1382	a
499.00 > 99.00	2.117	2.117	0.0	1.000	1142371		4.66(0.00-0.00)	2088	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.124	0.0	1.000	2423510	28.9		535	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	775196	9.14		6303	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00026

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_045.d

Injection Date: 05-May-2018 05:55:11

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

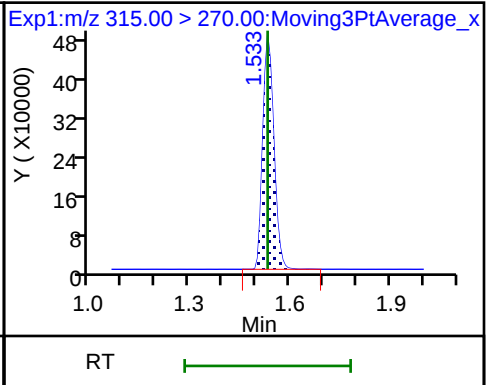
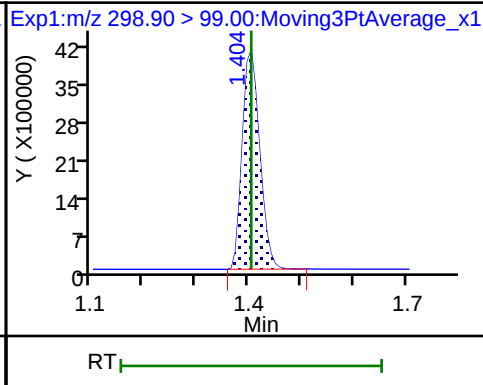
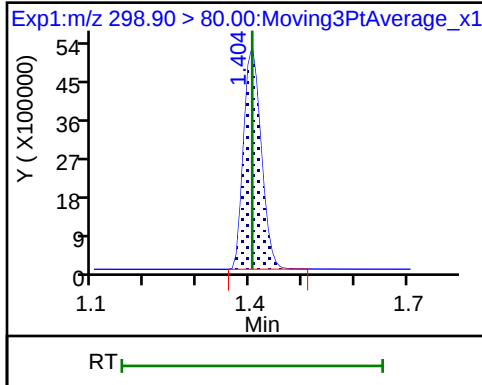
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

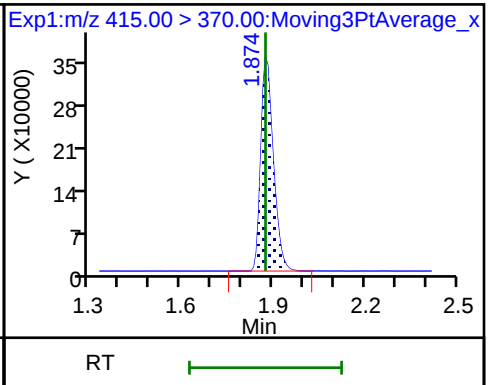
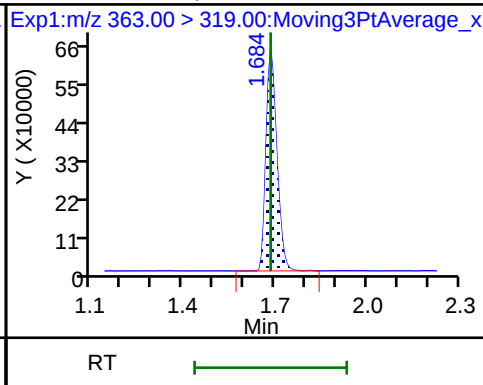
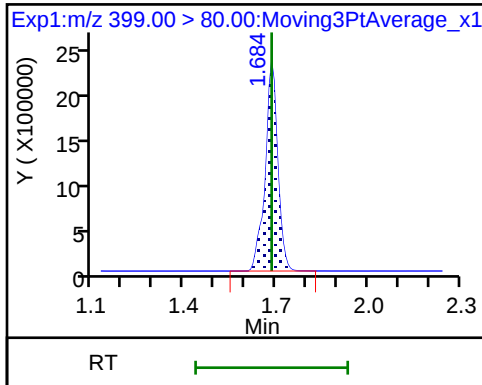
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

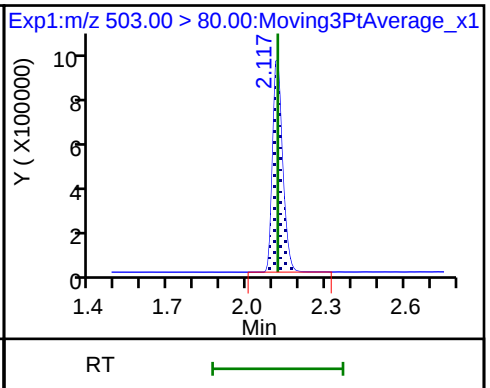
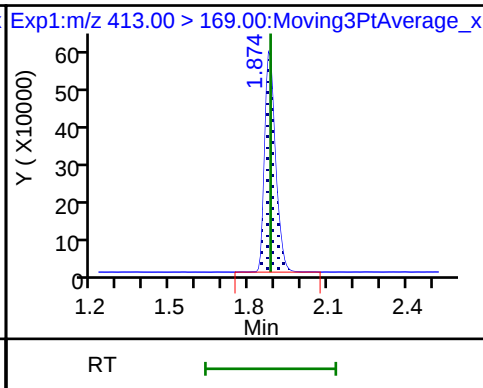
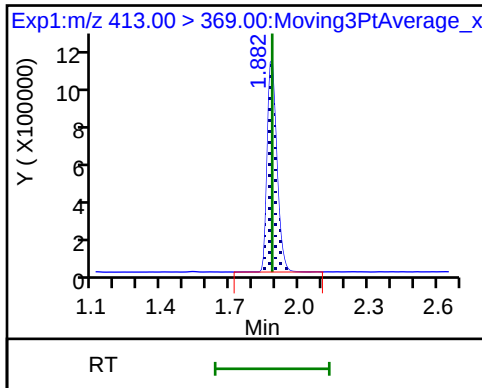
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

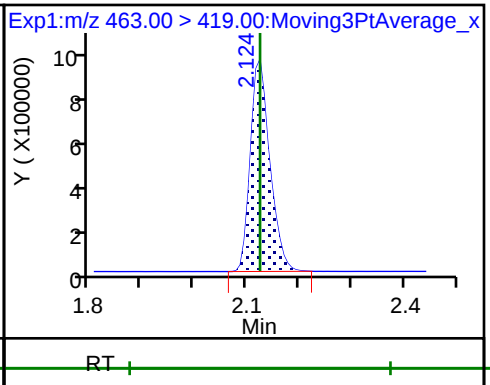
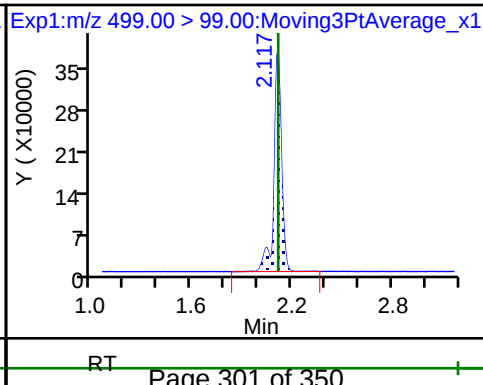
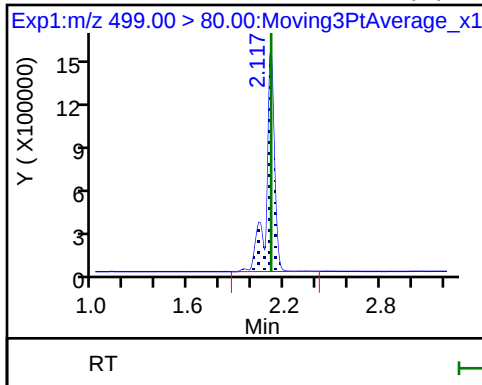
* 7 13C4 PFOS



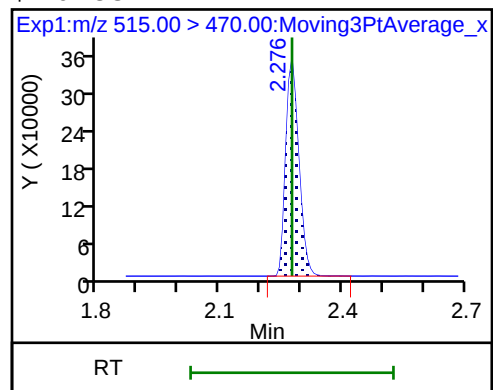
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

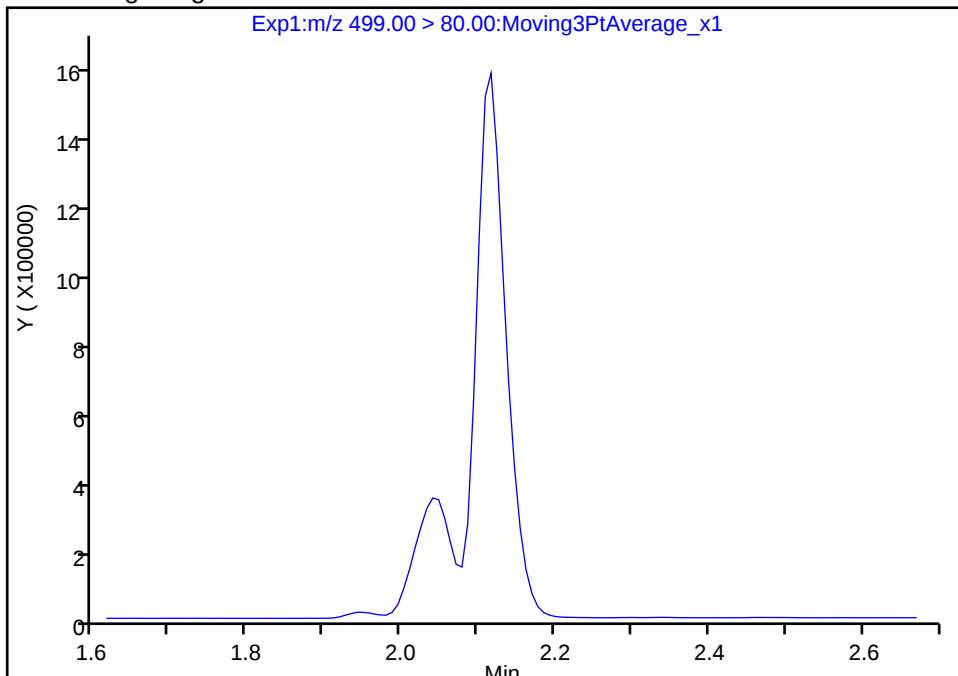
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_045.d
Injection Date: 05-May-2018 05:55:11 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

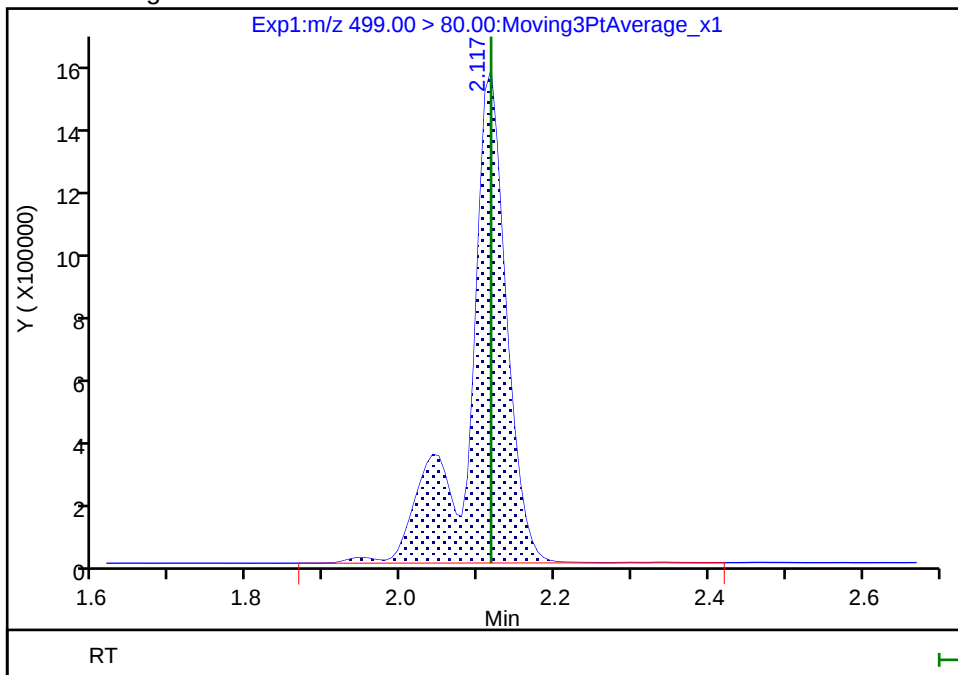
Not Detected
Expected RT: 2.12

Processing Integration Results



RT: 2.12
Area: 5320072
Amount: 60.218092
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:24:16

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Lab Sample ID: CCV 320-221679/13 Calibration Date: 05/05/2018 06:51
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.05.05_537A_057.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.052	1.195		51.1	45.0	13.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.033		4.67	4.86	-3.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.705		15.7	15.1	3.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.050		9.78	9.90	-1.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.065		19.7	19.8	-0.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.7646		8.99	9.90	-9.2	30.0
13C2 PFHxA	Ave	1.063	1.038		9.77	10.0	-2.3	30.0
13C2 PFDA	Ave	0.8505	0.7535		8.86	10.0	-11.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Lab Sample ID: CCV 320-221681/13 Calibration Date: 05/05/2018 06:51
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.05.05_537A_057.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.052	1.195		51.1	45.0	13.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.033		4.67	4.86	-3.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.705		15.7	15.1	3.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.050		9.78	9.90	-1.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.065		19.7	19.8	-0.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.7646		8.99	9.90	-9.2	30.0
13C2 PFHxA	Ave	1.063	1.038		9.77	10.0	-2.3	30.0
13C2 PFDA	Ave	0.8505	0.7535		8.86	10.0	-11.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_057.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 05-May-2018 06:51:22 ALS Bottle#: 3 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:27:12

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.411	0.0	1.000	4395219	51.1		2070	
298.90 > 99.00	1.404	1.411	-0.007	0.995	3249634		1.35(0.00-0.00)	1888	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.540	0.0	1.000	1079118	9.77		6969	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.692	0.0	1.000	2106163	15.7		651	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.692	0.0	1.000	521593	4.67		65.9	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.882	0.0		1039210	10.0		6399	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.882	0.0	1.000	1080143	9.78		182	
413.00 > 169.00	1.882	1.882	0.0	1.000	564308		1.91(0.00-0.00)	581	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.117	0.0		2342991	28.7		1294	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.117	0.0	1.000	1719450	19.7		441	a
499.00 > 99.00	2.117	2.117	0.0	1.000	378580		4.54(0.00-0.00)	752	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.124	0.0	1.000	786677	8.99		166	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	783065	8.86		6783	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L3_00025

Amount Added: 1.00

Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_057.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 05-May-2018 06:51:22 ALS Bottle#: 3 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:27:12

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.411	0.0	1.000	4395219	51.1		2070	
298.90 > 99.00	1.404	1.411	-0.007	0.995	3249634		1.35(0.00-0.00)	1888	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.540	0.0	1.000	1079118	9.77		6969	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.692	0.0	1.000	2106163	15.7		651	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.692	0.0	1.000	521593	4.67		65.9	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.882	0.0		1039210	10.0		6399	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.882	0.0	1.000	1080143	9.78		182	
413.00 > 169.00	1.882	1.882	0.0	1.000	564308		1.91(0.00-0.00)	581	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.117	0.0		2342991	28.7		1294	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.117	0.0	1.000	1719450	19.7		441	a
499.00 > 99.00	2.117	2.117	0.0	1.000	378580		4.54(0.00-0.00)	752	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.124	0.0	1.000	786677	8.99		166	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	783065	8.86		6783	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L3_00025

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_057.d

Injection Date: 05-May-2018 06:51:22

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

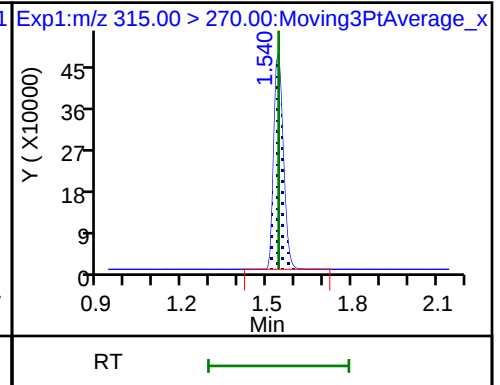
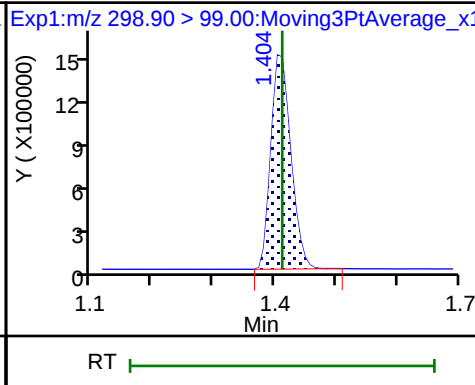
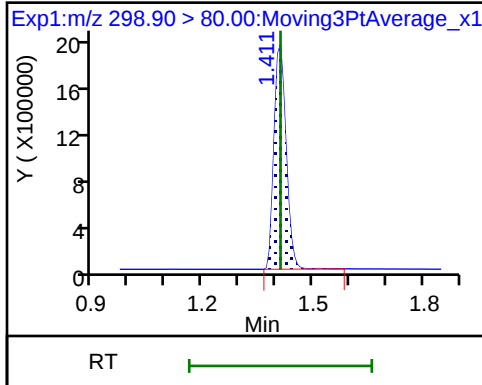
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

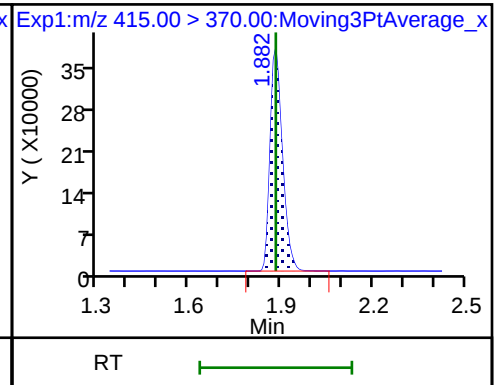
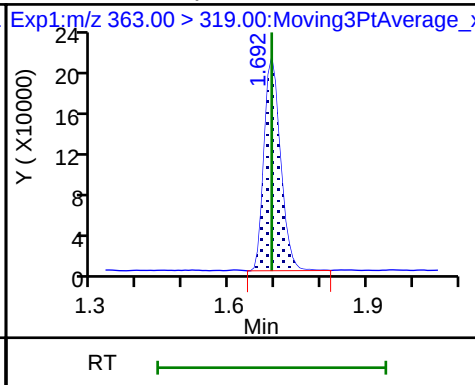
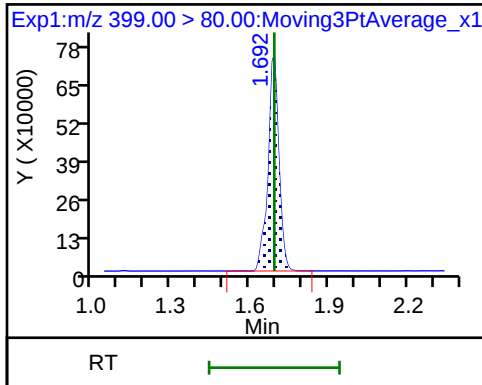
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

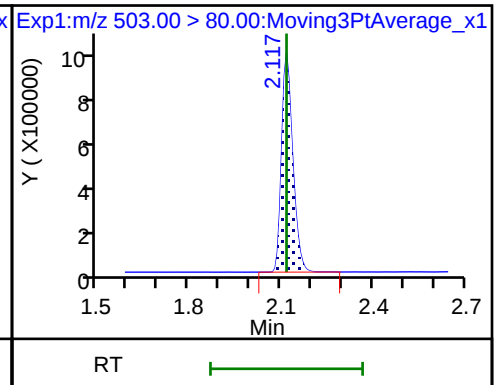
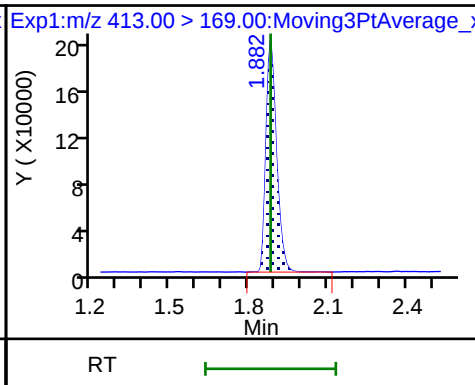
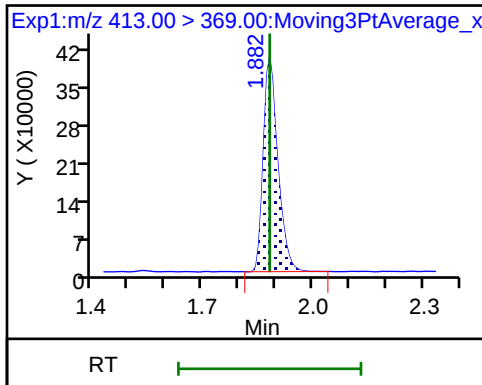
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

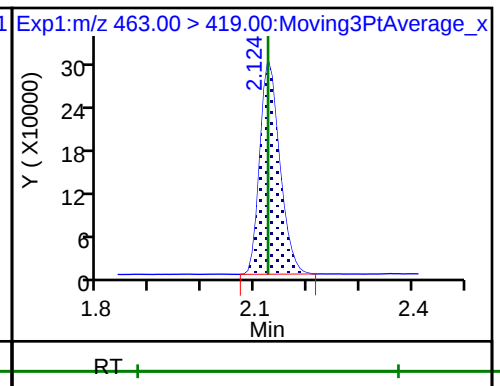
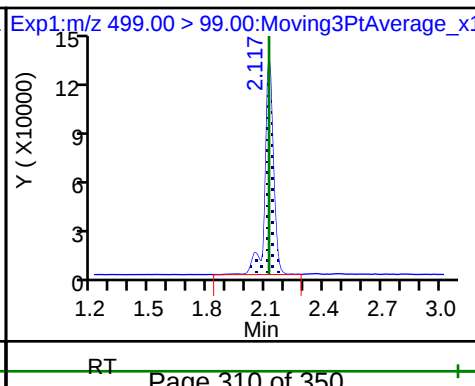
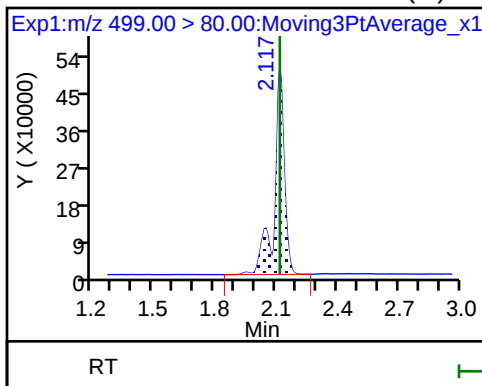
* 7 13C4 PFOS



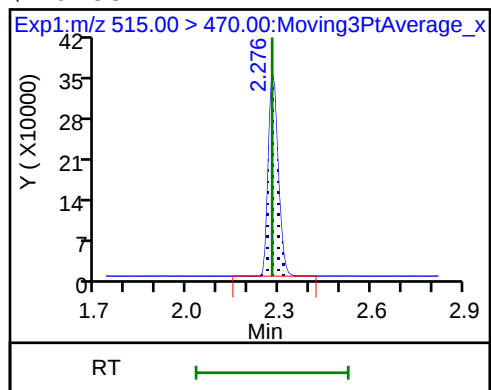
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_057.d

Injection Date: 05-May-2018 06:51:22

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

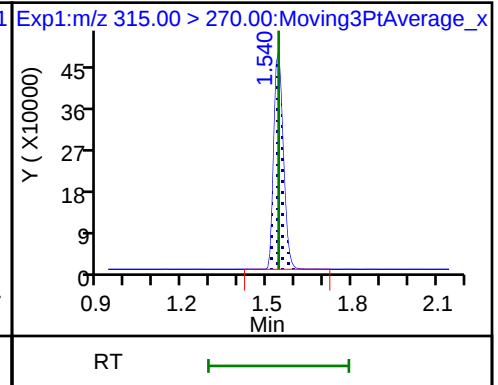
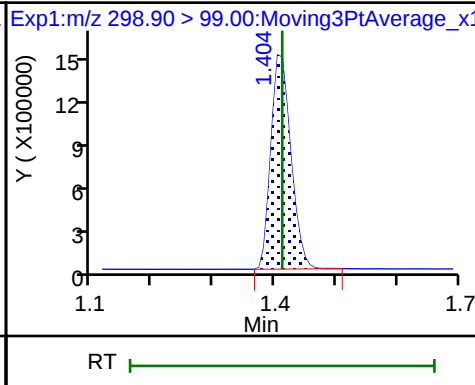
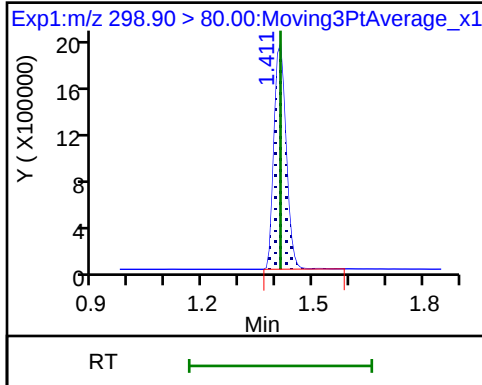
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

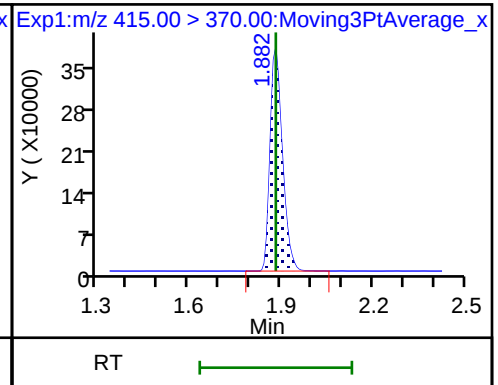
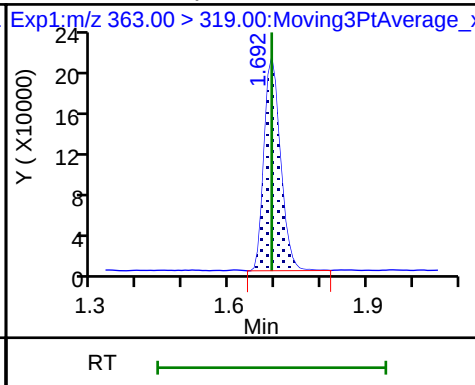
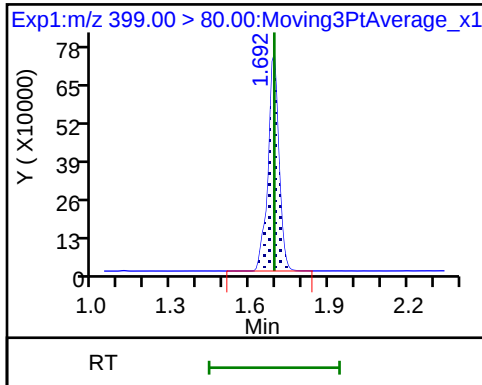
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

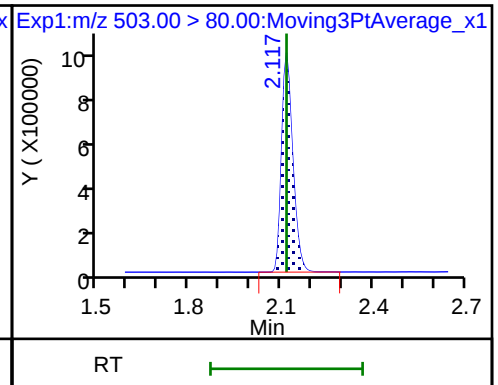
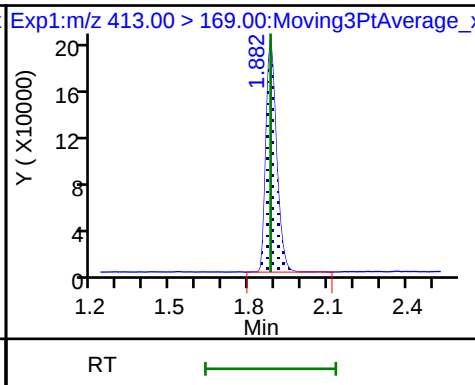
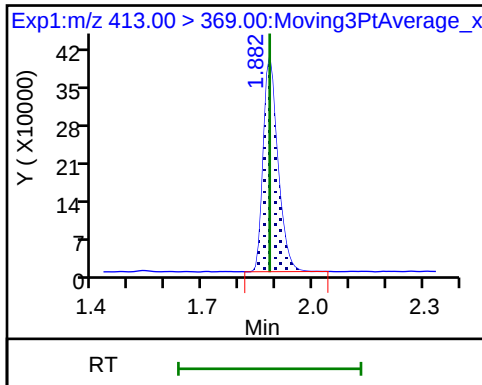
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

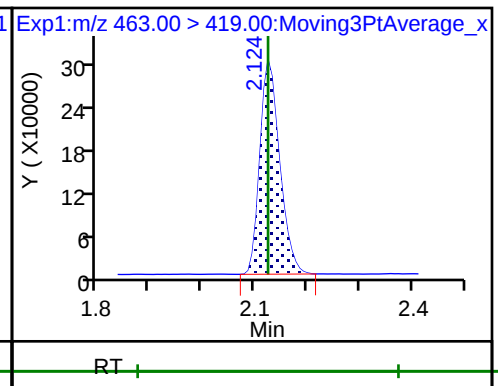
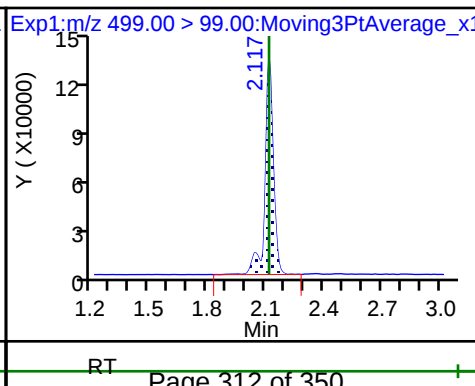
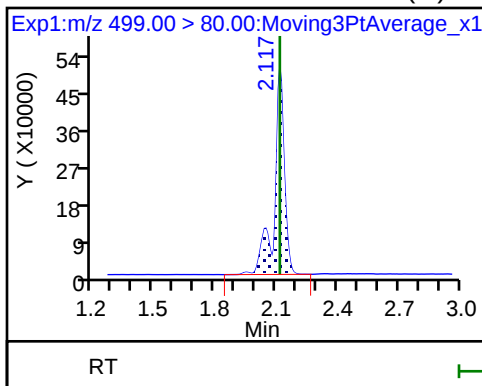
* 7 13C4 PFOS



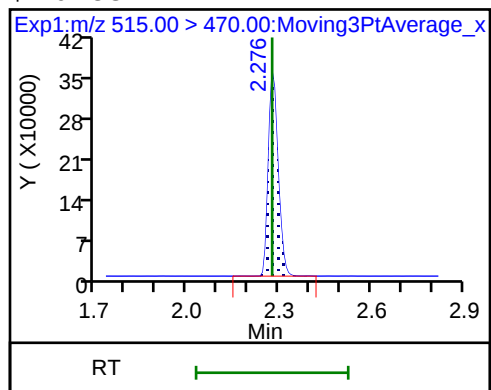
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

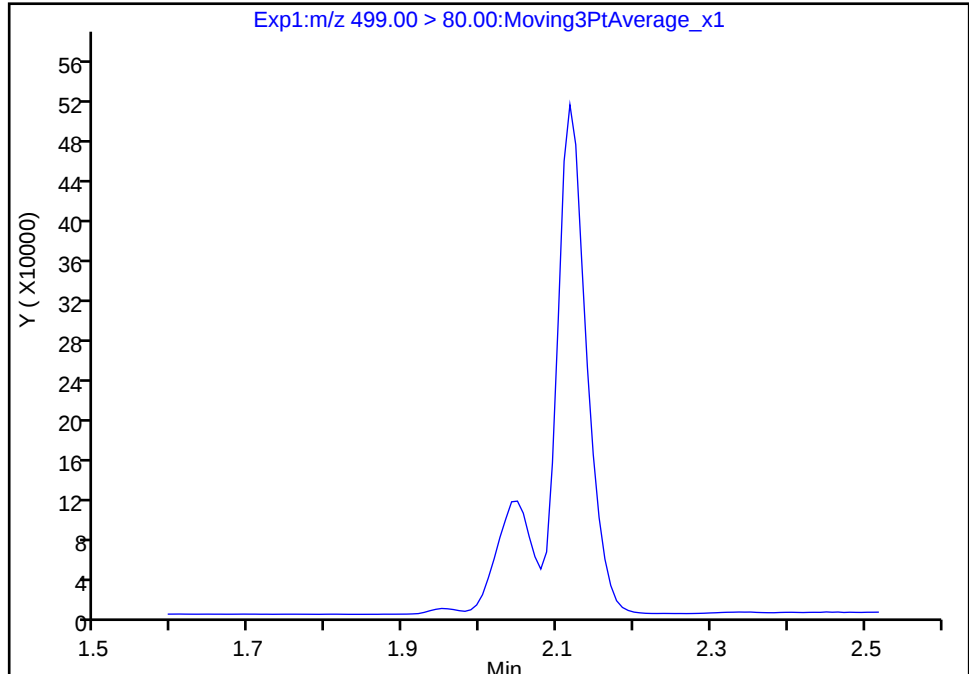
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Injection Date: 05-May-2018 06:51:22 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

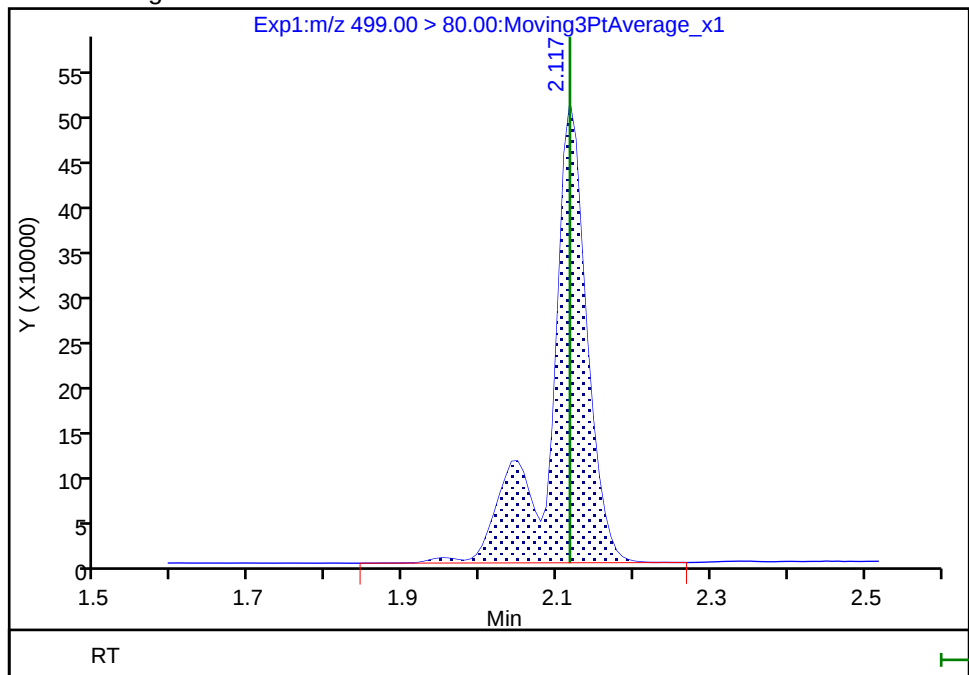
Not Detected
Expected RT: 2.12

Processing Integration Results



RT: 2.12
Area: 1719450
Amount: 19.742911
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:27:07

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

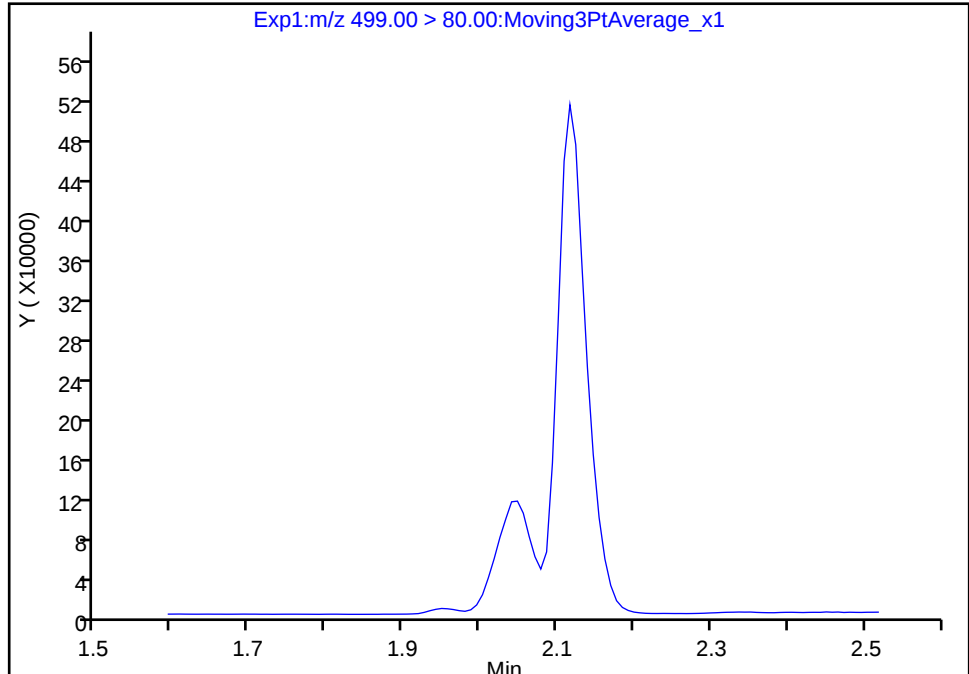
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_057.d
Injection Date: 05-May-2018 06:51:22 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

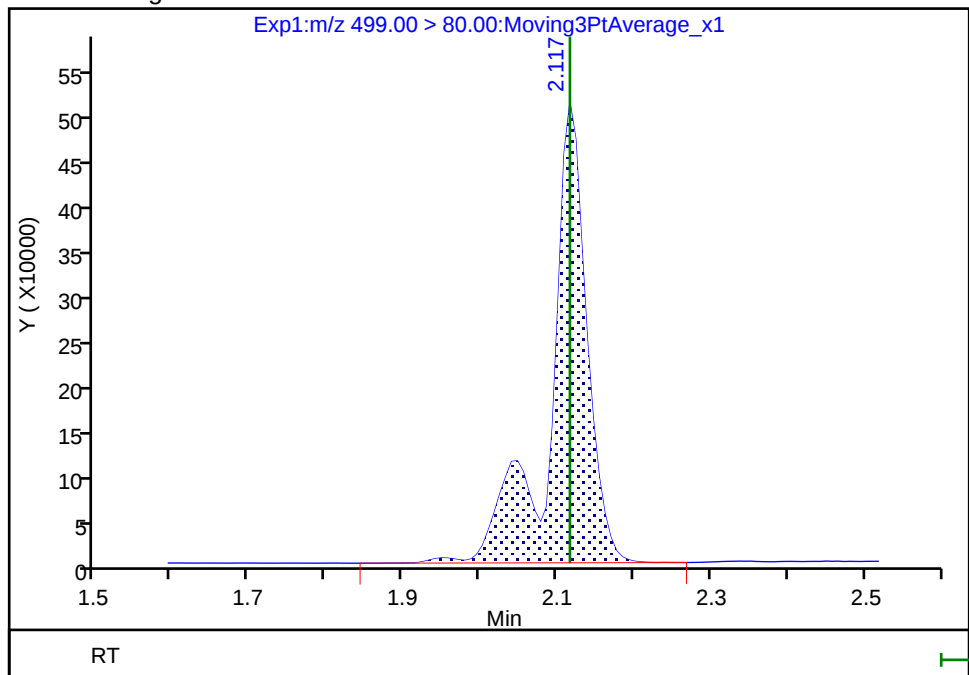
Not Detected
Expected RT: 2.12

Processing Integration Results



RT: 2.12
Area: 1719450
Amount: 19.742911
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:27:07

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Lab Sample ID: CCV 320-221681/23 Calibration Date: 05/05/2018 07:38
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.05.05_537A_067.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.052	1.072		138	135	1.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.099		14.9	14.6	2.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.695		46.8	45.4	3.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.091		30.5	29.7	2.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8407		29.6	29.7	-0.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.094		60.8	59.3	2.6	30.0
13C2 PFHxA	Ave	1.063	1.155		10.9	10.0	8.6	30.0
13C2 PFDA	Ave	0.8505	0.8135		9.56	10.0	-4.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_067.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 05-May-2018 07:38:10 ALS Bottle#: 5 Worklist Smp#: 23
 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\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:30:24 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d

Column 1 : Det: EXP1

Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:29:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.404	0.0	1.000	11598582	137.7		4560	
298.90 > 99.00	1.404	1.404	0.0	1.000	9116412		1.27(0.00-0.00)	5001	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.533	0.0	1.000	1087818	10.9		7718	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.684	0.0	1.000	6156301	46.8		1795	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.684	0.0	1.000	1509667	14.9		187	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.874	0.0		941946	10.0		5344	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.874	0.0	1.000	3052707	30.5		521	
413.00 > 169.00	1.874	1.874	0.0	1.000	1687442		1.81(0.00-0.00)	1664	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.109	0.0		2296399	28.7		1271	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.117	0.0	1.000	5192410	60.8		1218	a
499.00 > 99.00	2.109	2.117	-0.008	0.996	1108447		4.68(0.00-0.00)	2793	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.117	0.0	1.000	2352011	29.6		496	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	766240	9.56		7186	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00026

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_067.d

Injection Date: 05-May-2018 07:38:10

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 23

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

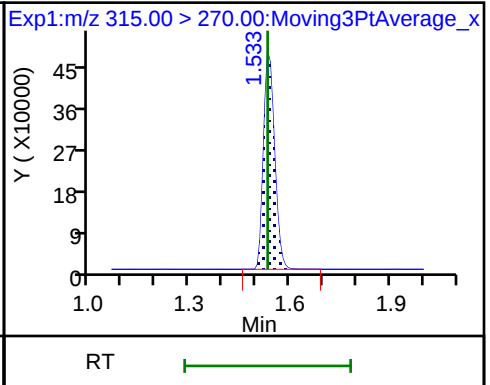
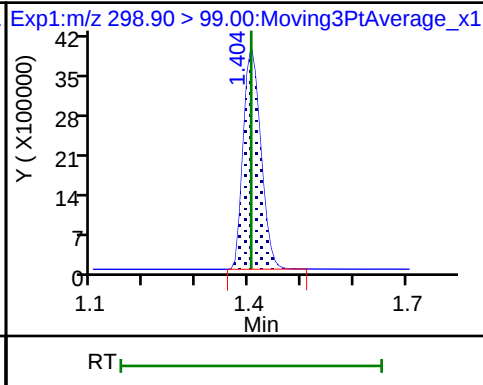
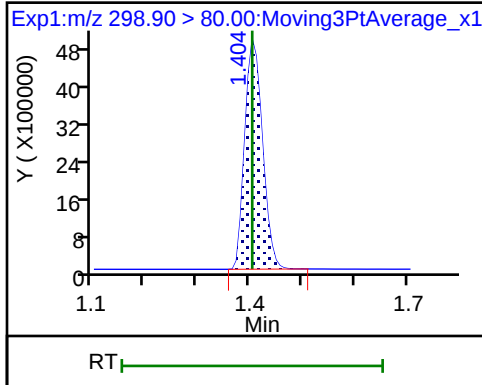
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

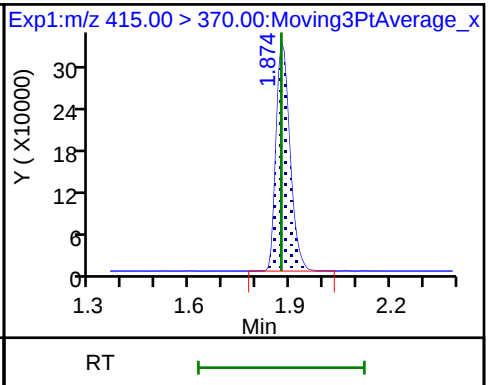
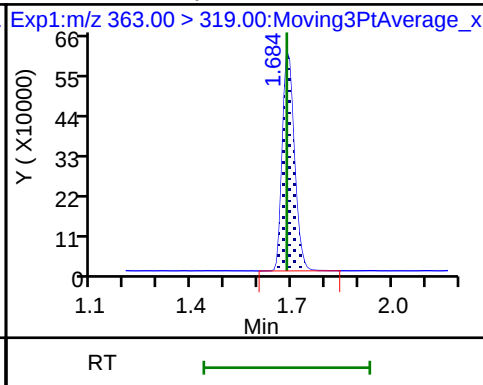
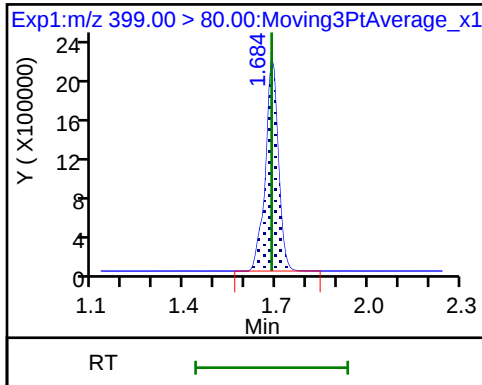
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

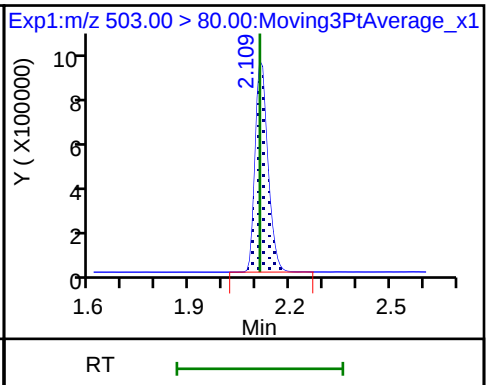
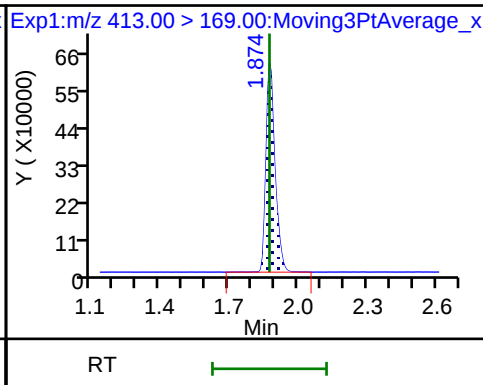
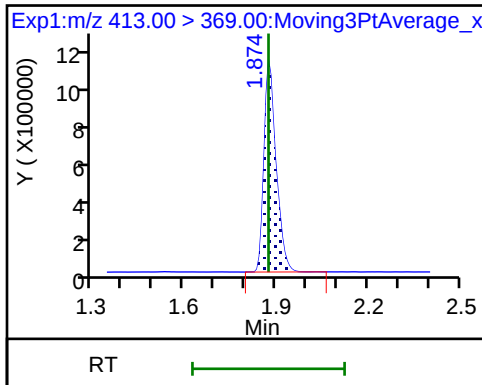
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

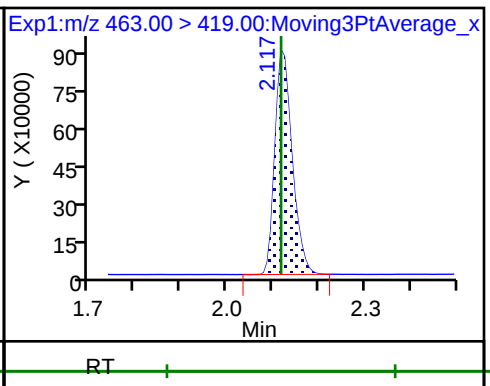
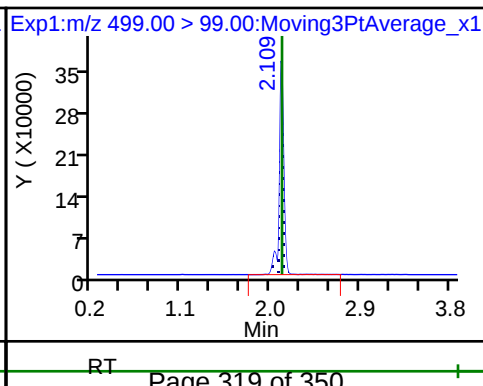
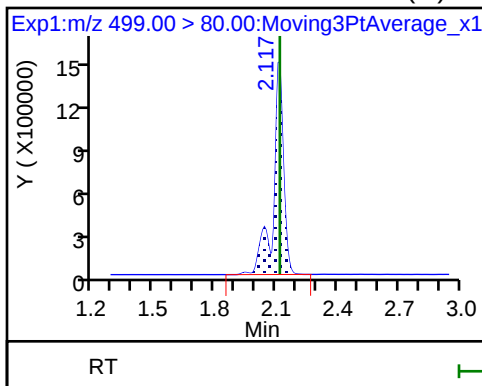
* 7 13C4 PFOS



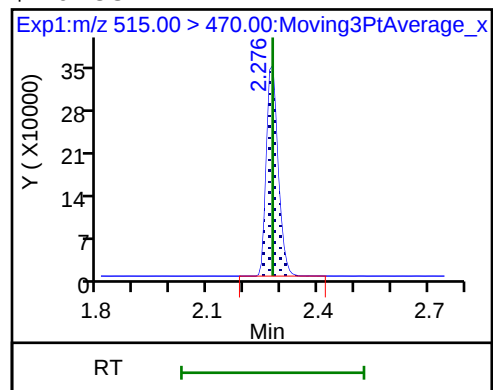
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

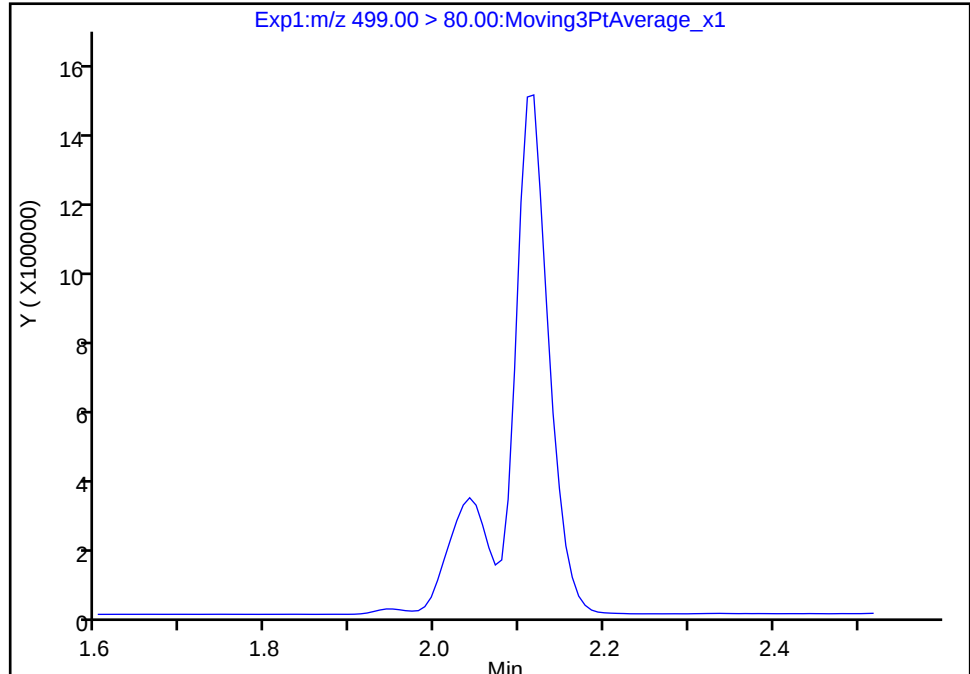
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_067.d
Injection Date: 05-May-2018 07:38:10 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

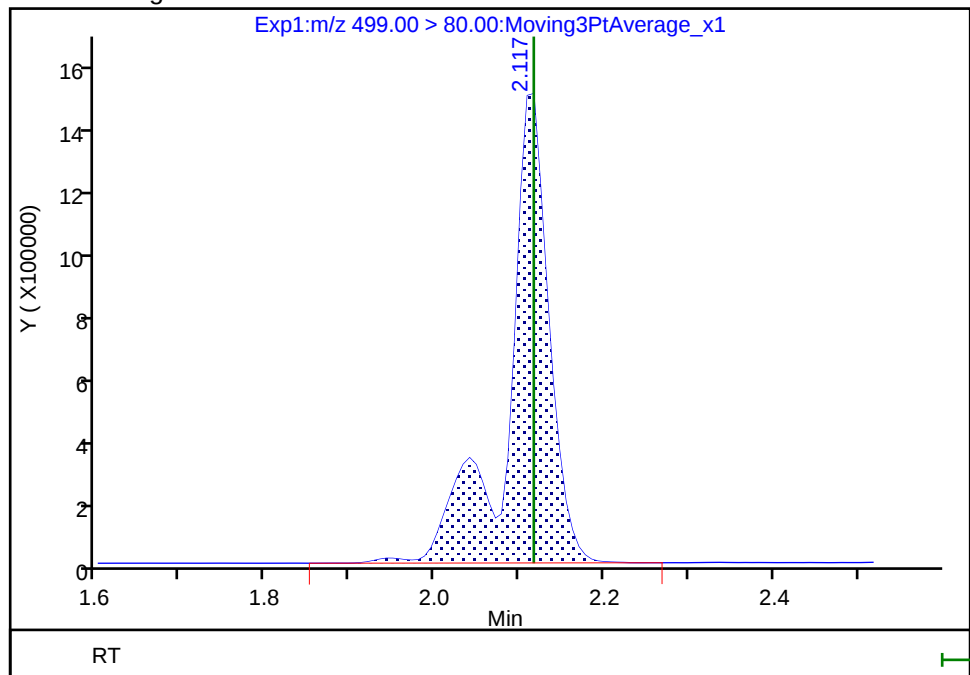
Not Detected
Expected RT: 2.12

Processing Integration Results



RT: 2.12
Area: 5192410
Amount: 60.829449
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:29:45

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-220576/1-A
 Matrix: Water Lab File ID: 2018.05.05_537A_047.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/30/2018 08:44
 Sample wt/vol: 250 (mL) Date Analyzed: 05/05/2018 06:04
 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.: 221679 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	96		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_047.d
 Lims ID: MB 320-220576/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 05-May-2018 06:04:30 ALS Bottle#: 31 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-220576/1-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:24:23

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

315.00 > 270.00 1.533 1.533 0.0 1.000 1095268 10.4 7444

* 6 13C2-PFOA

415.00 > 370.00 1.874 1.874 0.0 986179 10.0 5741

* 7 13C4 PFOS

503.00 > 80.00 2.117 2.117 0.0 2337498 28.7 1333

\$ 10 13C2 PFDA

515.00 > 470.00 2.276 2.276 0.0 1.000 801394 9.56 7002

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_047.d

Injection Date: 05-May-2018 06:04:30

Instrument ID: A8_N

Lims ID: MB 320-220576/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 31

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

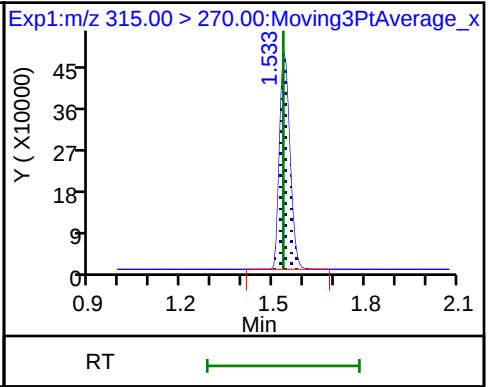
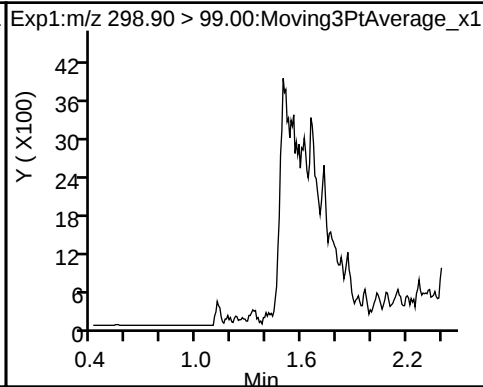
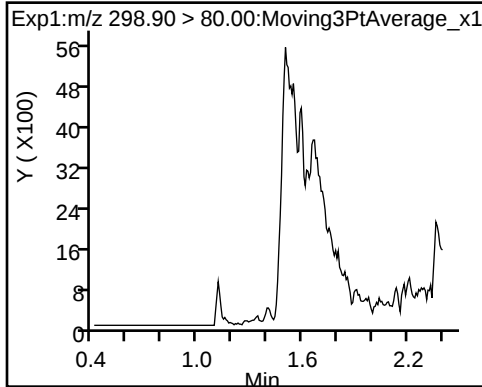
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

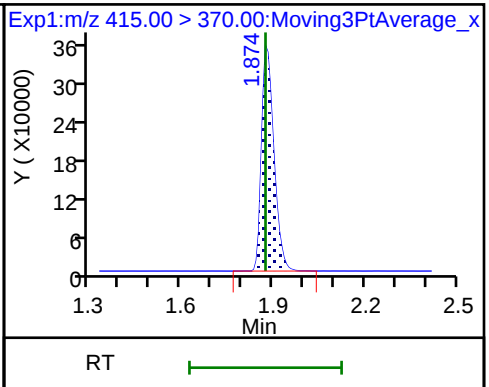
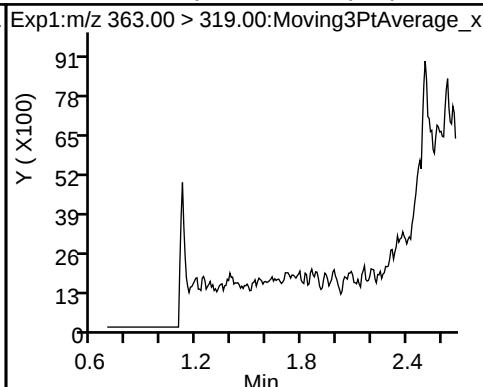
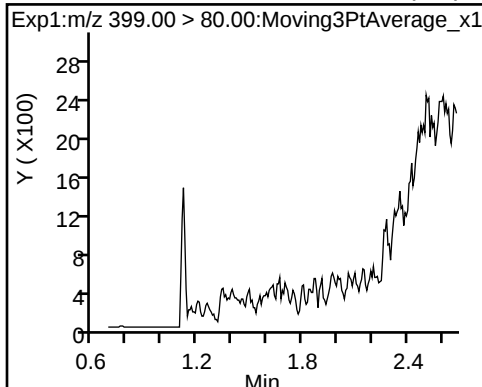
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

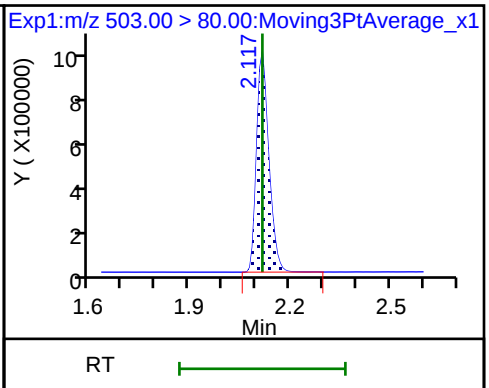
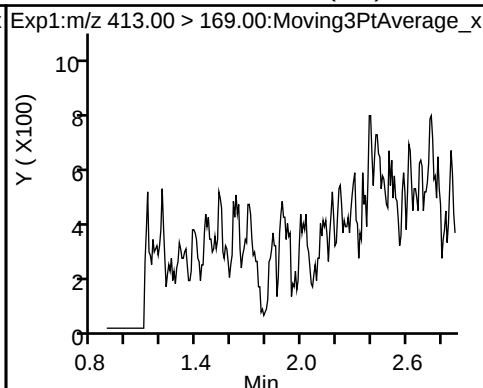
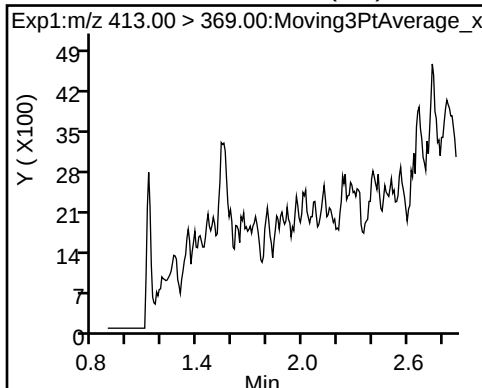
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

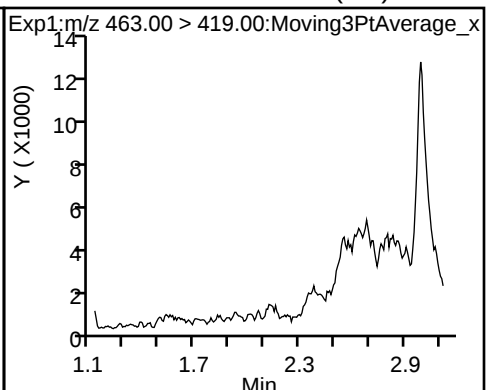
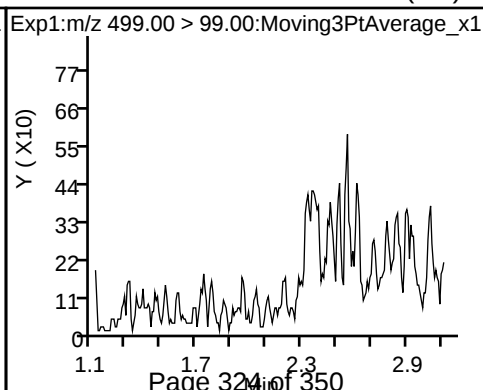
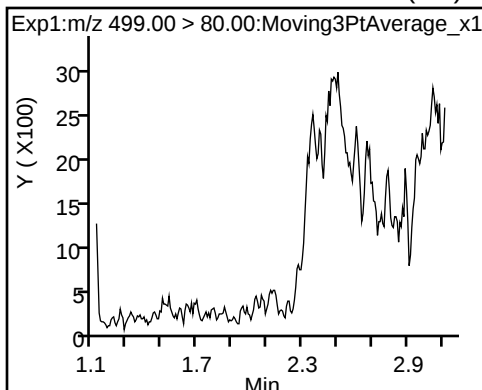
* 7 13C4 PFOS



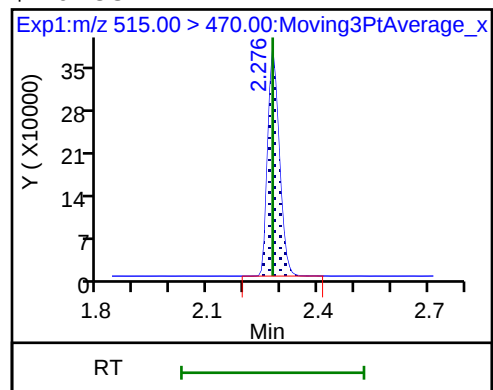
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_047.d
Lims ID: MB 320-220576/1-A
Client ID:
Sample Type: MB
Inject. Date: 05-May-2018 06:04:30 ALS Bottle#: 31 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-220576/1-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:24:23

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.4	104.46
\$ 10 13C2 PFDA	10.0	9.56	95.55

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LLCS 320-220576/2-A
 Matrix: Water Lab File ID: 2018.05.05_537A_048.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/30/2018 08:44
 Sample wt/vol: 250 (mL) Date Analyzed: 05/05/2018 06:09
 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.: 221679 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	40.4	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	19.1	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	17.8	J	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	32.8		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	9.81	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	97.0		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	102		70-130
STL00996	13C2 PFDA	87		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_048.d
 Lims ID: LLCS 320-220576/2-A
 Client ID:
 Sample Type: LLCS
 Inject. Date: 05-May-2018 06:09:11 ALS Bottle#: 32 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: llcs 320-220576/2-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:24:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.404	0.0	1.000	1884362	24.3		862	
298.90 > 99.00	1.404	1.404	0.0	1.000	1453345		1.30(0.00-0.00)	829	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.533	0.0	1.000	1005720	10.2		8290	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.684	0.0	1.000	994620	8.20		300	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.684	0.0	1.000	243659	2.45		29.4	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.874	0.008		925698	10.0		4874	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.882	0.0	1.000	470293	4.78		75.9	
413.00 > 169.00	1.882	1.882	0.0	1.000	258996		1.82(0.00-0.00)	250	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.117	0.0		2118373	28.7		1183	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.117	0.0	1.000	794681	10.1		192	a
499.00 > 99.00	2.117	2.117	0.0	1.000	167219		4.75(0.00-0.00)	354	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.124	0.0	1.000	347754	4.46		67.5	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	685839	8.71		5812	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_048.d

Injection Date: 05-May-2018 06:09:11

Instrument ID: A8_N

Lims ID: LLCS 320-220576/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 32

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

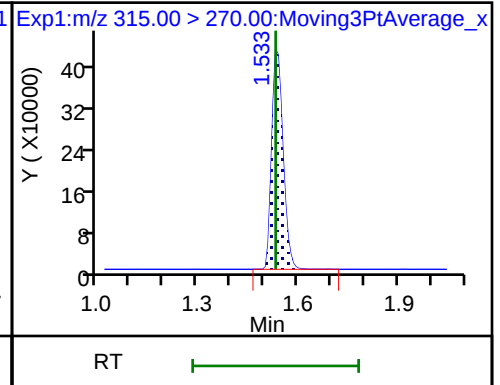
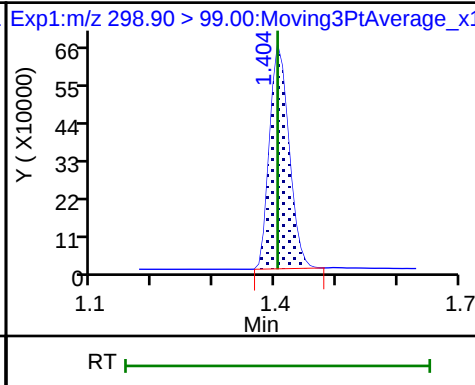
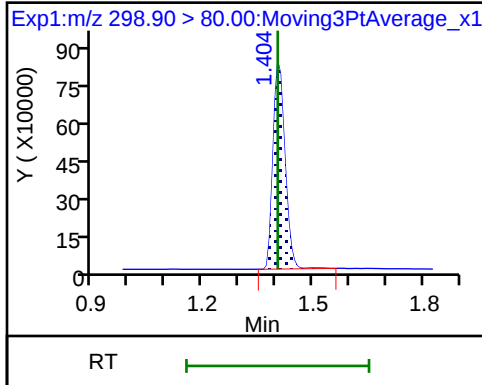
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

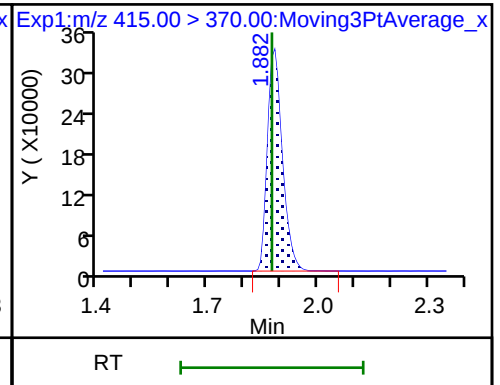
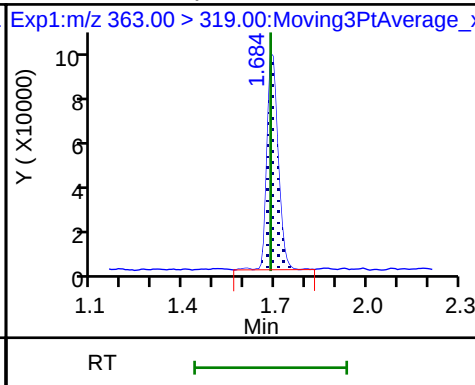
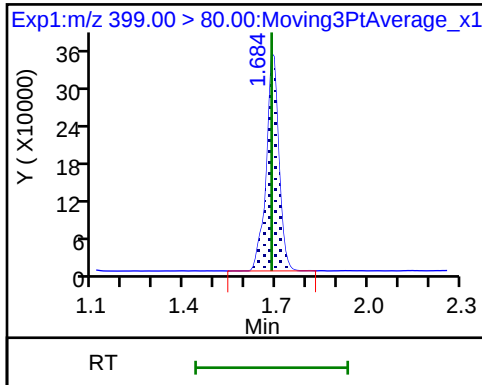
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

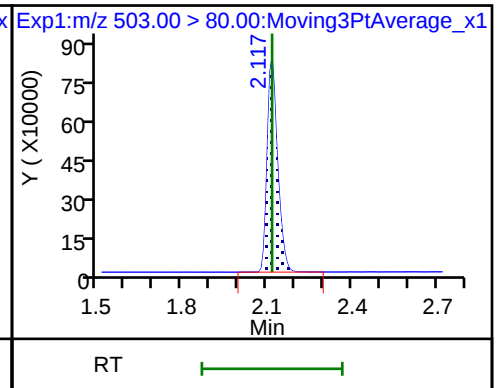
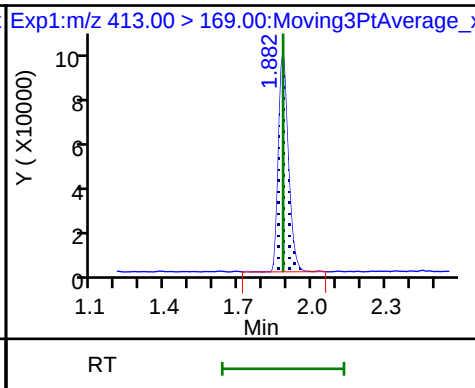
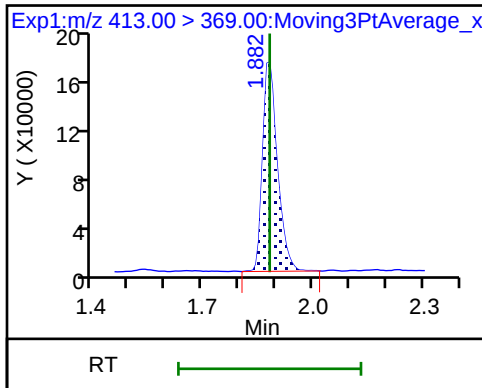
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

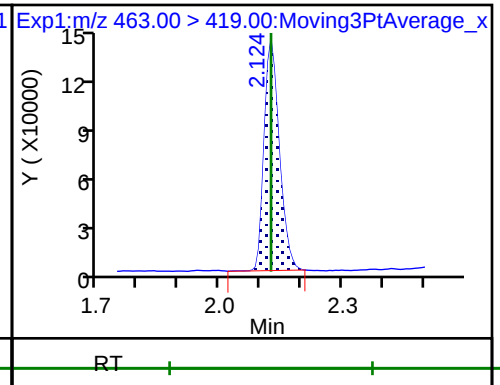
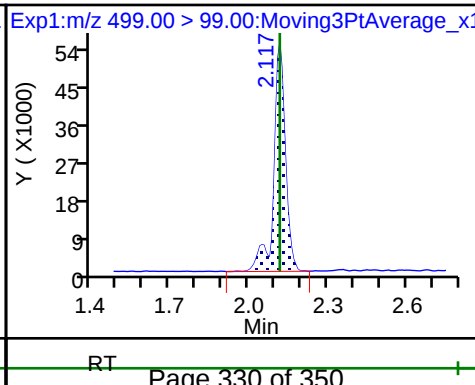
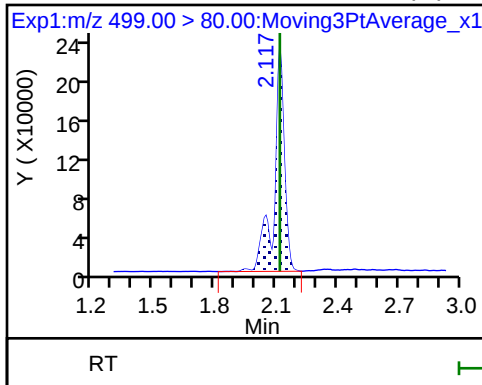
* 7 13C4 PFOS



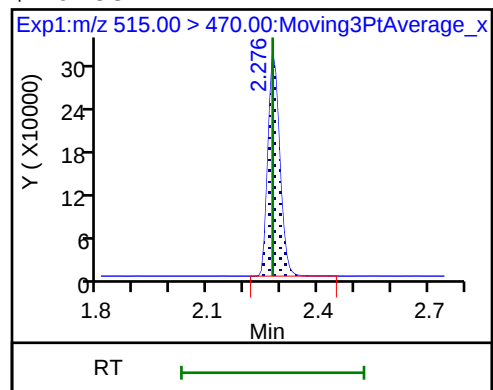
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_048.d
Lims ID: LLCs 320-220576/2-A
Client ID:
Sample Type: LLCs
Inject. Date: 05-May-2018 06:09:11 ALS Bottle#: 32 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: llcs 320-220576/2-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:24:32

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.2	102.19
\$ 10 13C2 PFDA	10.0	8.71	87.12

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_048.d

Injection Date: 05-May-2018 06:09:11

Instrument ID: A8_N

Lims ID: LLCS 320-220576/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#:

32

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

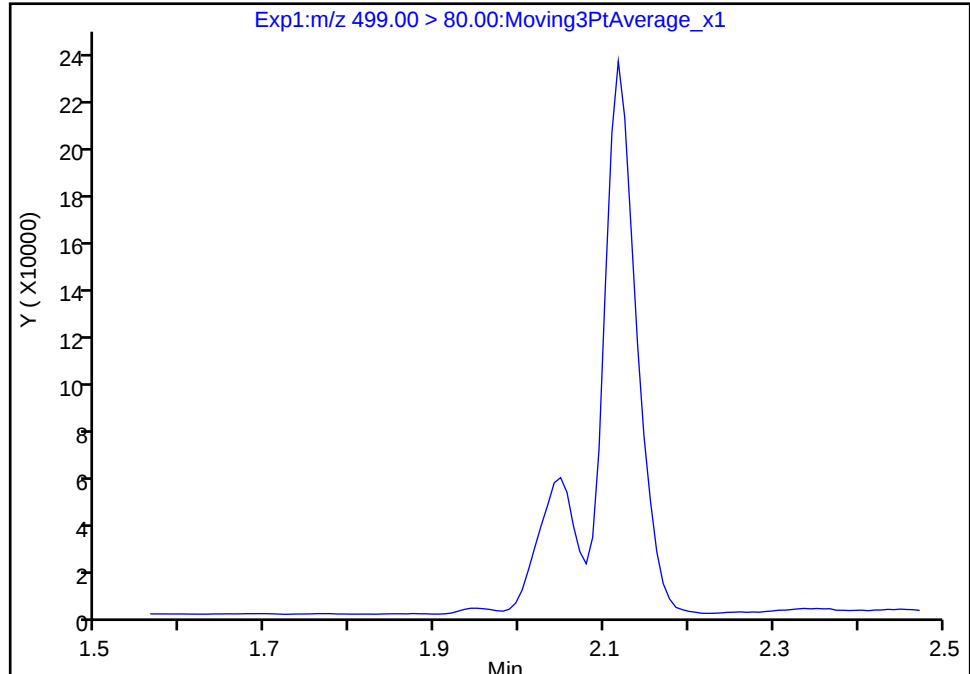
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

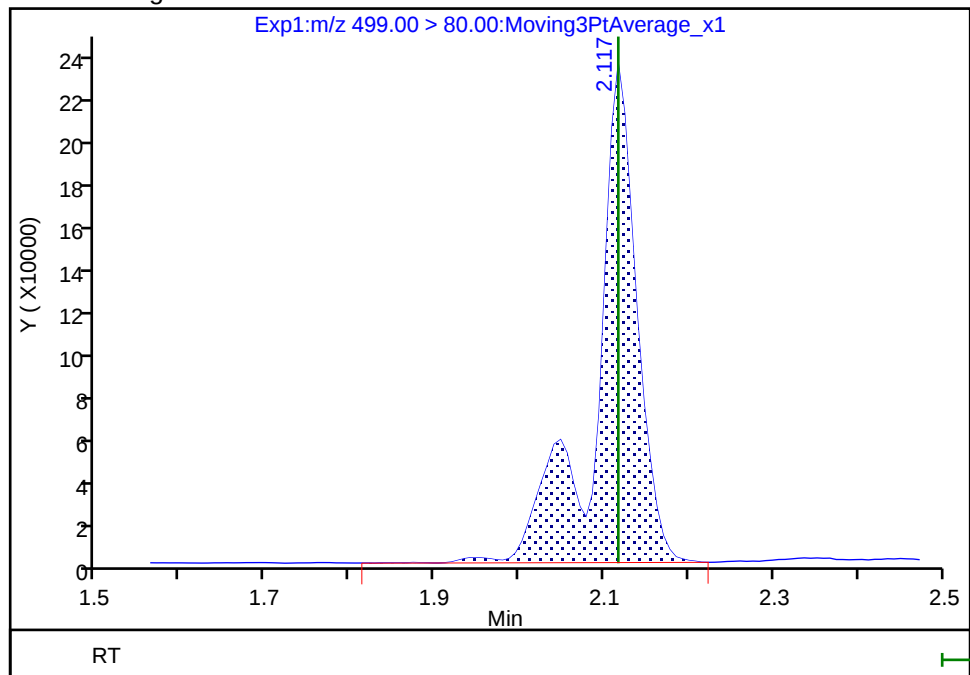
Not Detected

Expected RT: 2.12

Processing Integration Results



Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:24:29

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LLCSD 320-220576/3-A
 Matrix: Water Lab File ID: 2018.05.05_537A_049.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/30/2018 08:44
 Sample wt/vol: 250 (mL) Date Analyzed: 05/05/2018 06:13
 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.: 221679 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	41.3	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	19.4	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	17.7	J	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	32.3		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	9.50	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	98.1		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	106		70-130
STL00996	13C2 PFDA	91		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_049.d
 Lims ID: LLCSD 320-220576/3-A
 Client ID:
 Sample Type: LLCSD
 Inject. Date: 05-May-2018 06:13:52 ALS Bottle#: 33 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: llcsd 320-220576/3-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:24:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.404	0.0	1.000	1995769	24.5		760	
298.90 > 99.00	1.396	1.404	-0.008	0.995	1588545		1.26(0.00-0.00)	1038	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.533	0.0	1.000	1121999	10.6		8559	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.684	-0.007	1.000	1027372	8.08		304	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.684	0.0	1.000	254254	2.38		33.0	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.874	0.0		996981	10.0		5574	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.882	-0.008	1.000	513998	4.85		78.4	
413.00 > 169.00	1.874	1.882	-0.008	1.000	271486		1.89(0.00-0.00)	269	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.117	-0.008		2219527	28.7		1155	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.117	-0.008	1.000	852805	10.3		199	a
499.00 > 99.00	2.109	2.117	-0.008	1.000	185763		4.59(0.00-0.00)	366	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.124	-0.007	1.000	372674	4.44		60.1	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.276	-0.008	1.000	773109	9.12		6291	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_049.d

Injection Date: 05-May-2018 06:13:52

Instrument ID: A8_N

Lims ID: LLCSD 320-220576/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 33

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

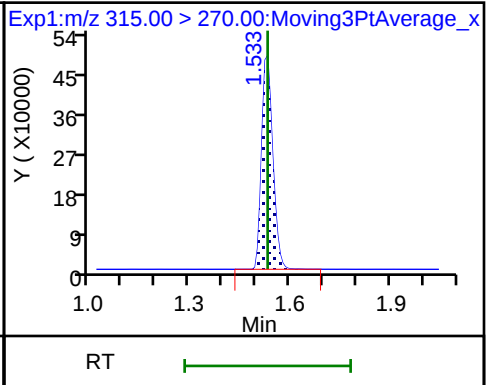
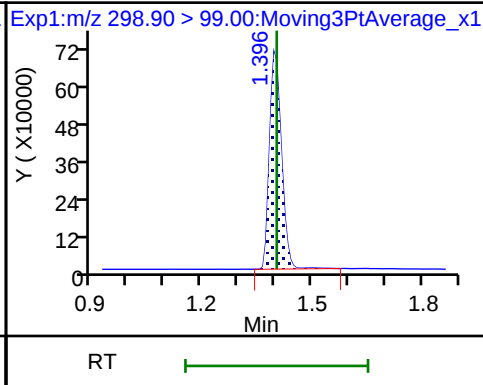
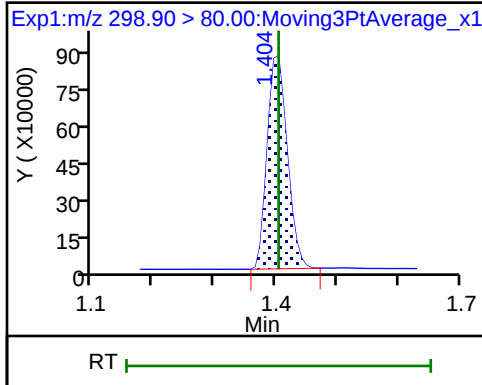
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

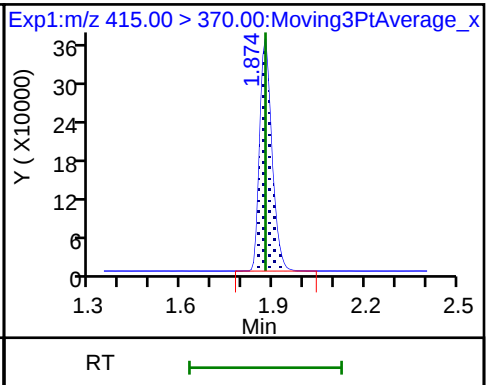
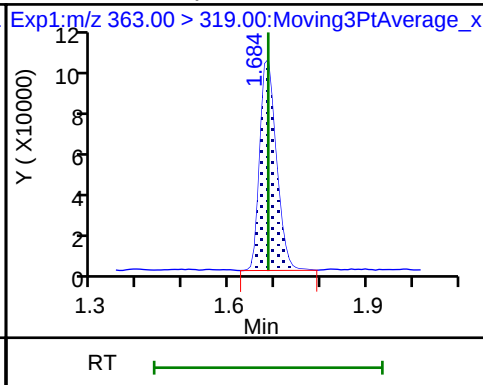
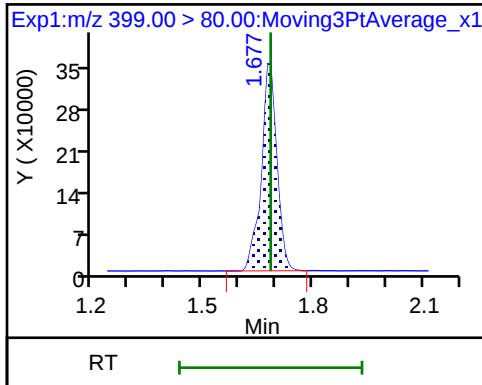
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

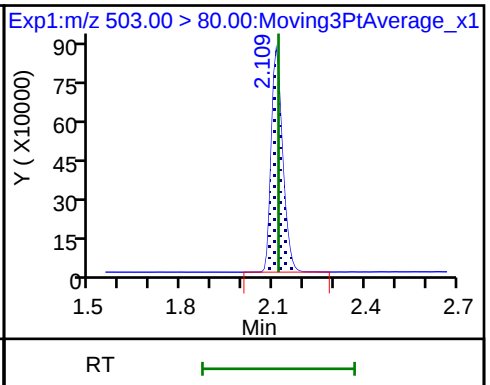
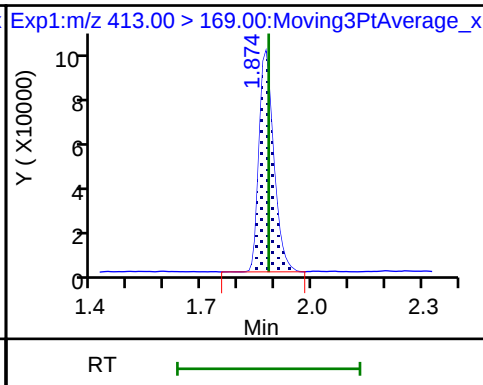
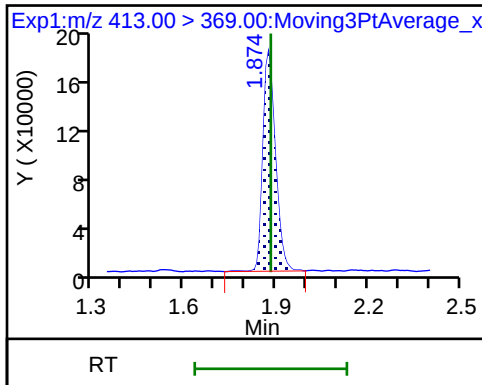
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

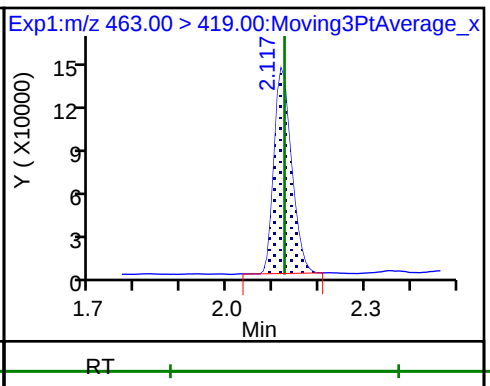
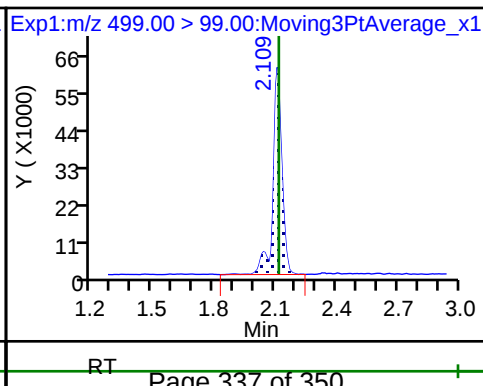
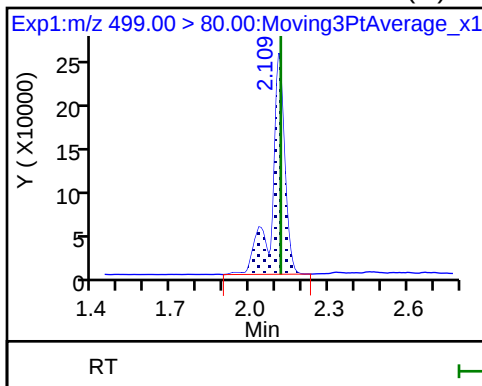
* 7 13C4 PFOS



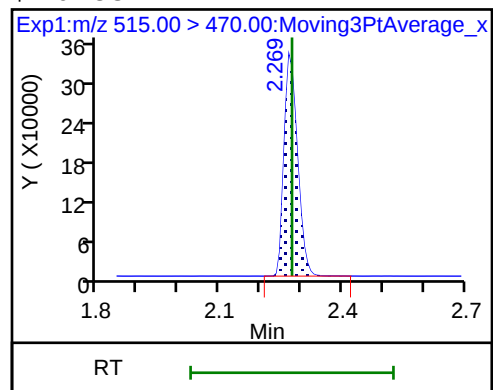
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_049.d
Lims ID: LLCSD 320-220576/3-A
Client ID:
Sample Type: LLCSD
Inject. Date: 05-May-2018 06:13:52 ALS Bottle#: 33 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: llcsd 320-220576/3-a
Misc. Info.: Plate: 1 Rack: 6
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-May-2018 13:29:55 Calib Date: 11-Apr-2018 12:09:09
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:24:41

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.6	105.85
\$ 10 13C2 PFDA	10.0	9.12	91.18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_049.d

Injection Date: 05-May-2018 06:13:52

Instrument ID: A8_N

Lims ID: LLCSD 320-220576/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#:

33

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

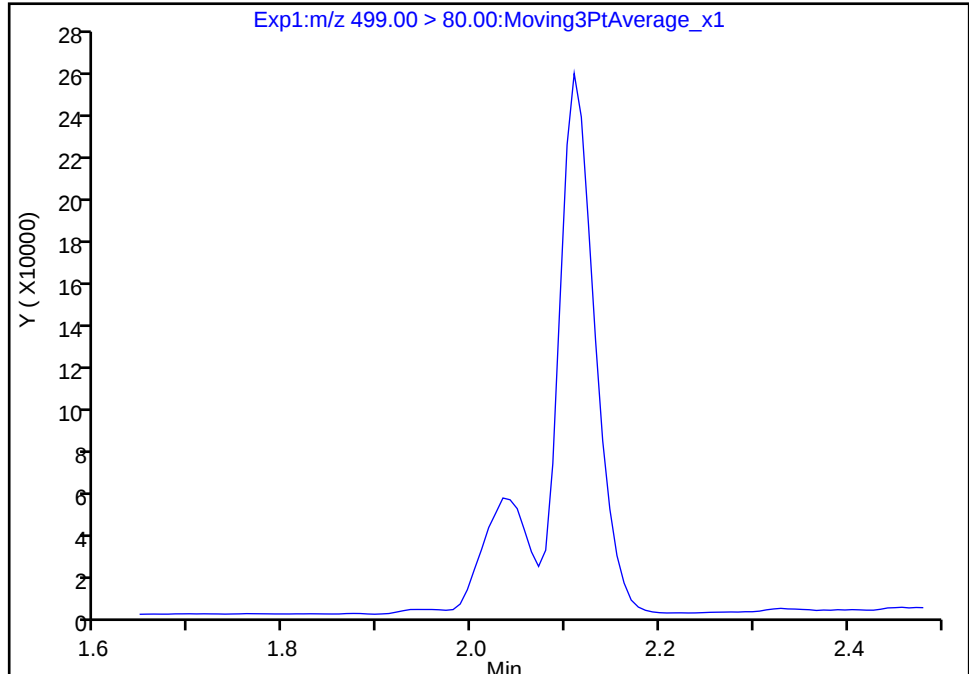
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

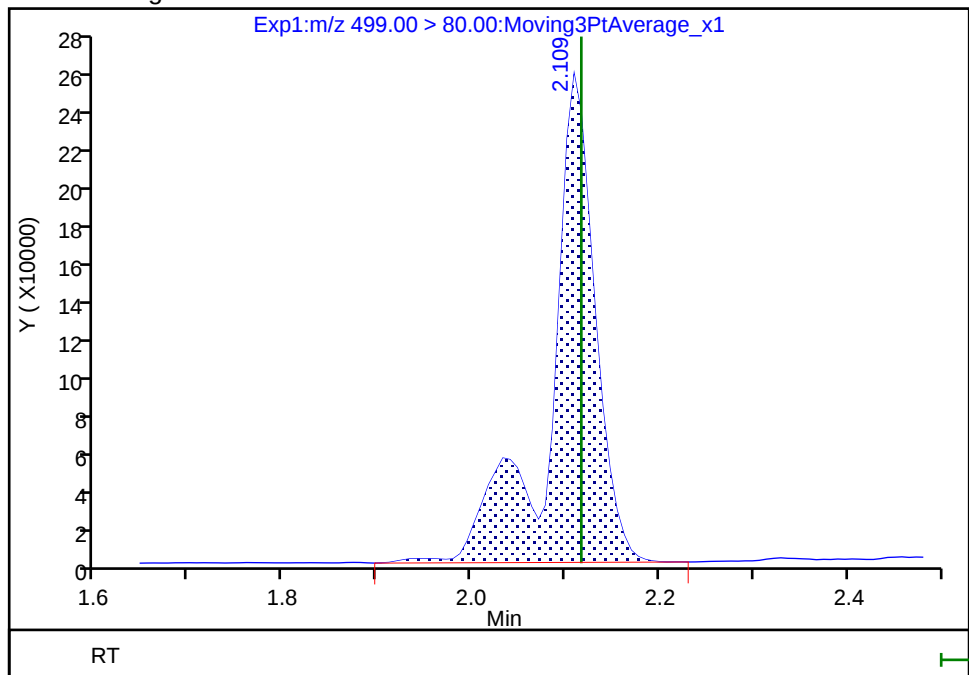
Not Detected

Expected RT: 2.12

Processing Integration Results



Manual Integration Results



Reviewer: westendorfc, 07-May-2018 13:24:38

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-38538-1

SDG No.: _____

Instrument ID: A8_NStart Date: 04/11/2018 11:45Analysis Batch Number: 217453End Date: 04/11/2018 12:27

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-217453/3		04/11/2018 11:45	1	2018.04.11_537I CALB 004.d	GeminiC18 3x100 3(mm)
IC 320-217453/4		04/11/2018 11:50	1	2018.04.11_537I CALB 005.d	GeminiC18 3x100 3(mm)
IC 320-217453/5		04/11/2018 11:55	1	2018.04.11_537I CALB 006.d	GeminiC18 3x100 3(mm)
IC 320-217453/6 ICISAV		04/11/2018 11:59	1	2018.04.11_537I CALB 007.d	GeminiC18 3x100 3(mm)
IC 320-217453/7		04/11/2018 12:04	1	2018.04.11_537I CALB 008.d	GeminiC18 3x100 3(mm)
IC 320-217453/8		04/11/2018 12:09	1	2018.04.11_537I CALB 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		04/11/2018 12:13	1		GeminiC18 3x100 3(mm)
CCVL 320-217453/10		04/11/2018 12:18	1	2018.04.11_537I CALB 011.d	GeminiC18 3x100 3(mm)
ICB 320-217453/11		04/11/2018 12:23	1		GeminiC18 3x100 3(mm)
ICV 320-217453/12		04/11/2018 12:27	1	2018.04.11_537I CALB 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Instrument ID: A8_N Start Date: 05/05/2018 02:43Analysis Batch Number: 221668 End Date: 05/05/2018 03:44

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-221668/1		05/05/2018 02:43	1	2018.05.05_537A 004.d	GeminiC18 3x100 3(mm)
CCV 320-221668/2 CCVIS		05/05/2018 02:47	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 02:57	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:01	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:06	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:11	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:16	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:20	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:25	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:30	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:34	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:39	1		GeminiC18 3x100 3(mm)
CCV 320-221668/14 CCVIS		05/05/2018 03:44	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Instrument ID: A8_N Start Date: 05/05/2018 05:55Analysis Batch Number: 221679 End Date: 05/05/2018 06:51

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-221679/1 CCVIS		05/05/2018 05:55	1	2018.05.05_537A 045.d	GeminiC18 3x100 3(mm)
MB 320-220576/1-A		05/05/2018 06:04	1	2018.05.05_537A 047.d	GeminiC18 3x100 3(mm)
LLCS 320-220576/2-A		05/05/2018 06:09	1	2018.05.05_537A 048.d	GeminiC18 3x100 3(mm)
LLCSD 320-220576/3-A		05/05/2018 06:13	1	2018.05.05_537A 049.d	GeminiC18 3x100 3(mm)
320-38538-1		05/05/2018 06:18	1	2018.05.05_537A 050.d	GeminiC18 3x100 3(mm)
320-38538-2		05/05/2018 06:23	1	2018.05.05_537A 051.d	GeminiC18 3x100 3(mm)
320-38538-3		05/05/2018 06:27	1	2018.05.05_537A 052.d	GeminiC18 3x100 3(mm)
320-38538-4		05/05/2018 06:32	1	2018.05.05_537A 053.d	GeminiC18 3x100 3(mm)
320-38538-5		05/05/2018 06:37	1	2018.05.05_537A 054.d	GeminiC18 3x100 3(mm)
320-38538-6		05/05/2018 06:41	1	2018.05.05_537A 055.d	GeminiC18 3x100 3(mm)
320-38538-7		05/05/2018 06:46	1	2018.05.05_537A 056.d	GeminiC18 3x100 3(mm)
CCV 320-221679/13 CCVIS		05/05/2018 06:51	1	2018.05.05_537A 057.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Instrument ID: A8_N Start Date: 05/05/2018 06:51Analysis Batch Number: 221681 End Date: 05/05/2018 07:38

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-221681/13 CCVIS		05/05/2018 06:51	1	2018.05.05_537A 057.d	GeminiC18 3x100 3(mm)
320-38538-8		05/05/2018 07:00	1	2018.05.05_537A 059.d	GeminiC18 3x100 3(mm)
320-38538-9		05/05/2018 07:05	1	2018.05.05_537A 060.d	GeminiC18 3x100 3(mm)
320-38538-10		05/05/2018 07:10	1	2018.05.05_537A 061.d	GeminiC18 3x100 3(mm)
320-38538-11		05/05/2018 07:14	1	2018.05.05_537A 062.d	GeminiC18 3x100 3(mm)
320-38538-12		05/05/2018 07:19	1	2018.05.05_537A 063.d	GeminiC18 3x100 3(mm)
320-38538-13		05/05/2018 07:24	1	2018.05.05_537A 064.d	GeminiC18 3x100 3(mm)
320-38538-14		05/05/2018 07:28	1	2018.05.05_537A 065.d	GeminiC18 3x100 3(mm)
320-38538-15		05/05/2018 07:33	1	2018.05.05_537A 066.d	GeminiC18 3x100 3(mm)
CCV 320-221681/23 CCVIS		05/05/2018 07:38	1	2018.05.05_537A 067.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Batch Number: 220576 Batch Start Date: 04/30/18 08:44 Batch Analyst: Kolstad, Kate MBatch Method: 537 Batch End Date: 05/02/18 17:45

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00068
MB 320-220576/1		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
LLCS 320-220576/2		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
LLCSD 320-220576/3		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-1	WGNA-042518-RW-3 785	537, 537	T	277.84 g	29.46 g	248.4 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-2	WGNA-042518-FRB- 3785	537, 537	T	277.38 g	28.15 g	249.2 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-3	WGNA-042518-RW-3 325	537, 537	T	278.27 g	29.08 g	249.2 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-4	WGNA-042518-FRB- 3325	537, 537	T	279.15 g	28.43 g	250.7 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-5	WGNA-042518-RW-5 00	537, 537	T	276.54 g	28.49 g	248.1 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-6	WGNA-042518-FRB- 500	537, 537	T	279.28 g	28.32 g	251 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-7	WGNA-042518-RW-3 529	537, 537	T	279.29 g	30.06 g	249.2 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-8	WGNA-042518-FRB- 3529	537, 537	T	282.46 g	27.93 g	254.5 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-9	WGNA-042518-RW-3 957	537, 537	T	277.96 g	28.21 g	249.8 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-10	WGNA-042518-FRB- 3957	537, 537	T	283.36 g	30.31 g	253.1 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-11	WGNA-042518-RW-0 683	537, 537	T	279.31 g	28.04 g	251.3 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-12	WGNA-042518-FRB- 0683	537, 537	T	270.15 g	27.77 g	242.4 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-13	NAWC-042518-RW-2 72	537, 537	T	279.96 g	28.99 g	251 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-14	NAWC-042518-FRB- 272	537, 537	T	274.62 g	30.01 g	244.6 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-15	WGNA-042518-DUP- 34	537, 537	T	280.81 g	29.14 g	251.7 mL	1.00 mL	7.0 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00067	AnalysisComment			
MB 320-220576/1		537, 537			100 uL	C1 ND			
LLCS 320-220576/2		537, 537		100 uL	100 uL	C1 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.: 320-38538-1

SDG No.: _____

Batch Number: 220576 Batch Start Date: 04/30/18 08:44 Batch Analyst: Kolstad, Kate MBatch Method: 537 Batch End Date: 05/02/18 17:45

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00067	AnalysisComment			
LLCSD 320-220576/3		537, 537		100 uL	100 uL	C1 ND			
320-38538-A-1	WGNA-042518-RW-3 785	537, 537	T		100 uL	C1 ND			
320-38538-A-2	WGNA-042518-FRB- 3785	537, 537	T		100 uL	C1 ND			
320-38538-A-3	WGNA-042518-RW-3 325	537, 537	T		100 uL	C1 ND			
320-38538-A-4	WGNA-042518-FRB- 3325	537, 537	T		100 uL	C1 ND			
320-38538-A-5	WGNA-042518-RW-5 00	537, 537	T		100 uL	C1 ND			
320-38538-A-6	WGNA-042518-FRB- 500	537, 537	T		100 uL	C1 ND			
320-38538-A-7	WGNA-042518-RW-3 529	537, 537	T		100 uL	C1 ND			
320-38538-A-8	WGNA-042518-FRB- 3529	537, 537	T		100 uL	C1 ND			
320-38538-A-9	WGNA-042518-RW-3 957	537, 537	T		100 uL	C1 ND			
320-38538-A-10	WGNA-042518-FRB- 3957	537, 537	T		100 uL	C1 ND			
320-38538-A-11	WGNA-042518-RW-0 683	537, 537	T		100 uL	C1 ND			
320-38538-A-12	WGNA-042518-FRB- 0683	537, 537	T		100 uL	C1 ND			
320-38538-A-13	NAWC-042518-RW-2 72	537, 537	T		100 uL	C1 ND			
320-38538-A-14	NAWC-042518-FRB- 272	537, 537	T		100 uL	C1 ND			
320-38538-A-15	WGNA-042518-DUP- 34	537, 537	T		100 uL	C1 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.: 320-38538-1

SDG No.: _____

Batch Number: 220576 Batch Start Date: 04/30/18 08:44 Batch Analyst: Kolstad, Kate MBatch Method: 537 Batch End Date: 05/02/18 17:45

Batch Notes	
Analyst ID - Aliquot Step	TWL
Batch Comment	Sample ID's match with T.A. Label: KMK
Analyst ID - Concentration	SKD/KMK
Analyst ID - Final Volume Step	TWL
Internal Standard ID#	1223393
Manifold ID	1, 4
Methanol ID	1221633
pH Indicator ID	0818
Pipette ID	O43093F
Analyst ID - IS Reagent Drop	TWL
Analyst ID - IS Reagent Drop Witness	VPM
Analyst ID - SU Reagent Drop	KMK
Analyst ID - SU Reagent Drop Witness	ABH
Analyst ID - TA Reagent Drop	KMK
Analyst ID - TA Reagent Drop Witness	ABH
SPE Cartridge Lot ID	6390138-03
Trizma ID	SLBR5241V
Reagent Water ID	4-26-18

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.

Regulatory Program: ☒ DW ☐ NPDES ☐ RCRA ☐ Other:		Project Manager: Andy Frebowitz Tel/Fax: 610.382.1170		Site Contact: Mary Kay Bond Lab Contact: Dave Alltucker		Date: 4/25/2018 Carrier: FedEx		COC No: 1 of 1 COCs	
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)		Analysis Turnaround Time ☐ CALENDAR DAYS ☐ WORKING DAYS TAT if different from Below 21 ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Sample Type (C=Comp, G=Grab) Matrix # of Cont.		Sample Identification Sample Date Sample Time		Sample Specific Notes:	
WGNA-042518-RW-3785		G		DW		2		Field Reagent Blank	
WGNA-042518-FRB-3785		G		DW		2		Field Reagent Blank	
WGNA-042518-RW-3325		G		DW		2		Field Reagent Blank	
WGNA-042518-FRB-3325		G		DW		2		Field Reagent Blank	
WGNA-042518-RW-0500		G		DW		2		Field Reagent Blank	
WGNA-042518-FRB-0500		G		DW		2		Field Reagent Blank	
WGNA-042518-RW-3529		G		DW		2		Field Reagent Blank	
WGNA-042518-FRB-3529		G		DW		2		Field Reagent Blank	
WGNA-042518-RW-3957		G		DW		2		Field Reagent Blank	
WGNA-042518-FRB-3957		G		DW		2		Field Reagent Blank	
WGNA-042518-RW-0683		G		DW		2		Field Reagent Blank	
WGNA-042518-FRB-0683		G		DW		2		Field Reagent Blank	
NAWC-042518-RW-272		G		DW		2		Field Reagent Blank	
NAWC-042518-FRB-272		G		DW		2		Field Reagent Blank	
WGNA-042518-DUP-34		G		DW		2		DUPLICATE	
Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4= HNO3, 5= NaOH, 6= Other: Trizma Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the		☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown		☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			
Custody Seals Intact: ☐ Yes ☐ No Relinquished by: [Signature] Relinquished by: [Signature] Relinquished by:		Custody Seal No.: Company: Tetra Tech Company: Company:		Date/Time: 4/25/2018 16:00 Date/Time: Date/Time:		Received by: Tony G. Tumpan Received by: Received in Laboratory by:		Therm ID No.: 5-3 Date/Time: 4/26/18 Date/Time: 04/30 Date/Time:	

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-38538-1

Login Number: 38538

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-042518-RW-3785","537","RES","320-38538-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","13","ng/L","J M","6.8","DL","","TRG","","","40","LOQ","YES","-99","","248.4","1.00","16",""
"WGNA-042518-RW-3785","537","RES","320-38538-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","17","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","248.4","1.00","8.1",""
"WGNA-042518-RW-3785","537","RES","320-38538-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","17","ng/L","J","5.5","DL","","TRG","","","30","LOQ","YES","-99","","248.4","1.00","12",""
"WGNA-042518-RW-3785","537","RES","320-38538-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","91","LOQ","YES","-99","","248.4","1.00","36",""
"WGNA-042518-RW-3785","537","RES","320-38538-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","6.4","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES","-99","","248.4","1.00","4.0",""
"WGNA-042518-RW-3785","537","RES","320-38538-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U M","8.1","DL","","TRG","","","24","LOQ","YES","-99","","248.4","1.00","20",""
"WGNA-042518-RW-3785","537","RES","320-38538-1","TALSAC","STL00993","13C2 PFHxA","40","ng/L","","-99","DL","","SURRE","100","","-99","LOQ","YES","40.3","","248.4","1.00","0",""
"WGNA-042518-RW-3785","537","RES","320-38538-1","TALSAC","STL00996","13C2 PFDA","34","ng/L","","-99","DL","","SURRE","84","","-99","LOQ","YES","40.3","","248.4","1.00","0",""
"WGNA-042518-FRB-3957","537","RES","320-38538-10","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.7","DL","","TRG","","","40","LOQ","YES","-99","","253.1","1.00","16",""
"WGNA-042518-FRB-3957","537","RES","320-38538-10","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.9","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","253.1","1.00","7.9",""
"WGNA-042518-FRB-3957","537","RES","320-38538-10","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","30","LOQ","YES","-99","","253.1","1.00","12",""
"WGNA-042518-FRB-3957","537","RES","320-38538-10","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","89","LOQ","YES","-99","","253.1","1.00","36",""
"WGNA-042518-FRB-3957","537","RES","320-38538-10","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","9.9","LOQ","YES","-99","","253.1","1.00","4.0",""
"WGNA-042518-FRB-3957","537","RES","320-38538-10","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES","-99","","253.1","1.00","20",""
"WGNA-042518-FRB-3957","537","RES","320-38538-10","TALSAC","STL00993","13C2 PFHxA","40","ng/L","","-99","DL","","SURRE","102","","-99","LOQ","YES","39.5","","253.1","1.00","0",""
"WGNA-042518-FRB-3957","537","RES","320-38538-10","TALSAC","STL00996","13C2 PFDA","36","ng/L","","-99","DL","","SURRE","91","","-99","LOQ","YES","39.5","","253.1","1.00","0",""
"WGNA-042518-RW-0683","537","RES","320-38538-11","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","24","ng/L","J M","6.8","DL","","TRG","","","40","LOQ","YES","-99","","251.3","1.00","16",""
"WGNA-042518-RW-0683","537","RES","320-38538-11","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","24","ng/L","","2.8","DL","","TRG","","","20","LOQ","YES","-99","","251.3","1.00","8.0",""
"WGNA-042518-RW-0683","537","RES","320-38538-11","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","251.3","1.00","12",""
"WGNA-042518-RW-0683","537","RES","320-38538-11","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","251.3","1.00","36",""
"WGNA-042518-RW-0683","537","RES","320-38538-11","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","7.0","ng/L","J","1.9","DL","","TRG","","","9.9","LOQ","YES","-99","","251.3","1.00","4.0",""
"WGNA-042518-RW-0683","537","RES","320-38538-11","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U M","8.0","DL","","TRG","","","24","LOQ","YES","-99","","251.3","1.00","20",""
"WGNA-042518-RW-0683","537","RES","320-38538-11","TALSAC","STL00993","13C2 PFHxA","41","ng/L","","-99","DL","","SURRE","104","","-99","LOQ","YES","39.8","","251.3","1.00","0",""
"WGNA-042518-RW-0683","537","RES","320-38538-11","TALSAC","STL00996","13C2 PFDA","39","ng/L","","-99","DL","","SURRE","97","","-99","LOQ","YES","39.8","","251.3","1.00","0",""
"WGNA-042518-FRB-0683","537","RES","320-38538-12","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","17","ng/L","U","7.0","DL","","TRG","","","41","LOQ","YES","-99","","242.4","1.00","17",""
"WGNA-042518-FRB-0683","537","RES","320-38538-12","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","8.3","ng/L","U","2.9","DL","","TRG","","","21","LOQ","YES","-99","","242.4","1.00","8.3",""
"WGNA-042518-FRB-0683","537","RES","320-38538-12","TALSAC","355-46-4","Perfluorohexanesulfonic acid

(PFHxS)","12","ng/L","U","5.7","DL","","TRG","","","31","LOQ","YES",-99","","242.4","1.00","12","","
"WGNA-042518-FRB-0683","537","RES","320-38538-12","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","37","ng/L","U","17","DL","","TRG","","","93","LOQ","YES",-99","","242.4","1.00","37","","
"WGNA-042518-FRB-0683","537","RES","320-38538-12","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.1","ng/L","U","2.0","DL","","TRG","","","10","LOQ","YES",-99","","242.4","1.00","4.1","","
"WGNA-042518-FRB-0683","537","RES","320-38538-12","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","21","ng/L","U","8.3","DL","","TRG","","","25","LOQ","YES",-99","","242.4","1.00","21","","
"WGNA-042518-FRB-0683","537","RES","320-38538-12","TALSAC","STL00993","13C2
PFHxA","47","ng/L","","-99","DL","","SURR","113","","-99","LOQ","YES","41.3","","242.4","1.00","0","","
"WGNA-042518-FRB-0683","537","RES","320-38538-12","TALSAC","STL00996","13C2
PFDA","42","ng/L","","-99","DL","","SURR","102","","-99","LOQ","YES","41.3","","242.4","1.00","0","","
"NAWC-042518-RW-272","537","RES","320-38538-13","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","J M","6.8","DL","","TRG","","","40","LOQ","YES",-99","","251","1.00","16","","
"NAWC-042518-RW-272","537","RES","320-38538-13","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","11","ng/L","J M","2.8","DL","","TRG","","","20","LOQ","YES",-99","","251","1.00","8.0","","
"NAWC-042518-RW-272","537","RES","320-38538-13","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","5.7","ng/L","J","5.5","DL","","TRG","","","30","LOQ","YES",-99","","251","1.00","12","","
"NAWC-042518-RW-272","537","RES","320-38538-13","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES",-99","","251","1.00","36","","
"NAWC-042518-RW-272","537","RES","320-38538-13","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","J M","1.9","DL","","TRG","","","10","LOQ","YES",-99","","251","1.00","4.0","","
"NAWC-042518-RW-272","537","RES","320-38538-13","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U M","8.0","DL","","TRG","","","24","LOQ","YES",-99","","251","1.00","20","","
"NAWC-042518-RW-272","537","RES","320-38538-13","TALSAC","STL00993","13C2
PFHxA","41","ng/L","","-99","DL","","SURR","102","","-99","LOQ","YES","39.8","","251","1.00","0","","
"NAWC-042518-RW-272","537","RES","320-38538-13","TALSAC","STL00996","13C2
PFDA","36","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","39.8","","251","1.00","0","","
"NAWC-042518-FRB-272","537","RES","320-38538-14","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","7.0","DL","","TRG","","","41","LOQ","YES",-99","","244.6","1.00","16","","
"NAWC-042518-FRB-272","537","RES","320-38538-14","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.2","ng/L","U","2.9","DL","","TRG","","","20","LOQ","YES",-99","","244.6","1.00","8.2","","
"NAWC-042518-FRB-272","537","RES","320-38538-14","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.6","DL","","TRG","","","31","LOQ","YES",-99","","244.6","1.00","12","","
"NAWC-042518-FRB-272","537","RES","320-38538-14","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","37","ng/L","U","16","DL","","TRG","","","92","LOQ","YES",-99","","244.6","1.00","37","","
"NAWC-042518-FRB-272","537","RES","320-38538-14","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.1","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES",-99","","244.6","1.00","4.1","","
"NAWC-042518-FRB-272","537","RES","320-38538-14","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.2","DL","","TRG","","","25","LOQ","YES",-99","","244.6","1.00","20","","
"NAWC-042518-FRB-272","537","RES","320-38538-14","TALSAC","STL00993","13C2
PFHxA","45","ng/L","","-99","DL","","SURR","110","","-99","LOQ","YES","40.9","","244.6","1.00","0","","
"NAWC-042518-FRB-272","537","RES","320-38538-14","TALSAC","STL00996","13C2
PFDA","41","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","40.9","","244.6","1.00","0","","
"WGNA-042518-DUP-34","537","RES","320-38538-15","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","J M","6.8","DL","","TRG","","","40","LOQ","YES",-99","","251.7","1.00","16","","
"WGNA-042518-DUP-34","537","RES","320-38538-15","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","11","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES",-99","","251.7","1.00","7.9","","
"WGNA-042518-DUP-34","537","RES","320-38538-15","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","5.8","ng/L","J","5.5","DL","","TRG","","","30","LOQ","YES",-99","","251.7","1.00","12","","
"WGNA-042518-DUP-34","537","RES","320-38538-15","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U M","16","DL","","TRG","","","89","LOQ","YES",-99","","251.7","1.00","36","","
"WGNA-042518-DUP-34","537","RES","320-38538-15","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.3","ng/L","J M","1.9","DL","","TRG","","","9.9","LOQ","YES",-99","","251.7","1.00","4.0","","
"WGNA-042518-DUP-34","537","RES","320-38538-15","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA)", "20", "ng/L", "U M", "7.9", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "251.7", "1.00", "20", "",
"WGNA-042518-DUP-34", "537", "RES", "320-38538-15", "TALSAC", "STL00993", "13C2
PFHxA", "42", "ng/L", "", "-99", "DL", "", "SURR", "106", "", "-99", "LOQ", "YES", "39.7", "", "251.7", "1.00", "0", "",
"WGNA-042518-DUP-34", "537", "RES", "320-38538-15", "TALSAC", "STL00996", "13C2
PFDA", "40", "ng/L", "", "-99", "DL", "", "SURR", "100", "", "-99", "LOQ", "YES", "39.7", "", "251.7", "1.00", "0", "",
"WGNA-042518-FRB-3785", "537", "RES", "320-38538-2", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "16", "ng/L", "U", "6.8", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "249.2", "1.00", "16", "",
"WGNA-042518-FRB-3785", "537", "RES", "320-38538-2", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "8.0", "ng/L", "U", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "249.2", "1.00", "8.0", "",
"WGNA-042518-FRB-3785", "537", "RES", "320-38538-2", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "12", "ng/L", "U", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "249.2", "1.00", "12", "",
"WGNA-042518-FRB-3785", "537", "RES", "320-38538-2", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "249.2", "1.00", "36", "",
"WGNA-042518-FRB-3785", "537", "RES", "320-38538-2", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "4.0", "ng/L", "U", "1.9", "DL", "", "TRG", "", "", "10", "LOQ", "YES", "-99", "", "249.2", "1.00", "4.0", "",
"WGNA-042518-FRB-3785", "537", "RES", "320-38538-2", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "20", "ng/L", "U", "8.0", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "249.2", "1.00", "20", "",
"WGNA-042518-FRB-3785", "537", "RES", "320-38538-2", "TALSAC", "STL00993", "13C2
PFHxA", "44", "ng/L", "", "-99", "DL", "", "SURR", "109", "", "-99", "LOQ", "YES", "40.1", "", "249.2", "1.00", "0", "",
"WGNA-042518-FRB-3785", "537", "RES", "320-38538-2", "TALSAC", "STL00996", "13C2
PFDA", "38", "ng/L", "", "-99", "DL", "", "SURR", "94", "", "-99", "LOQ", "YES", "40.1", "", "249.2", "1.00", "0", "",
"WGNA-042518-RW-3325", "537", "RES", "320-38538-3", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "7.4", "ng/L", "J M", "6.8", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "249.2", "1.00", "16", "",
"WGNA-042518-RW-3325", "537", "RES", "320-38538-3", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "7.4", "ng/L", "J M", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "249.2", "1.00", "8.0", "",
"WGNA-042518-RW-3325", "537", "RES", "320-38538-3", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "8.2", "ng/L", "J", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "249.2", "1.00", "12", "",
"WGNA-042518-RW-3325", "537", "RES", "320-38538-3", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "36", "ng/L", "U M", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "249.2", "1.00", "36", "",
"WGNA-042518-RW-3325", "537", "RES", "320-38538-3", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "2.1", "ng/L", "J M", "1.9", "DL", "", "TRG", "", "", "10", "LOQ", "YES", "-99", "", "249.2", "1.00", "4.0", "",
"WGNA-042518-RW-3325", "537", "RES", "320-38538-3", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "20", "ng/L", "U M", "8.0", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "249.2", "1.00", "20", "",
"WGNA-042518-RW-3325", "537", "RES", "320-38538-3", "TALSAC", "STL00993", "13C2
PFHxA", "39", "ng/L", "", "-99", "DL", "", "SURR", "97", "", "-99", "LOQ", "YES", "40.1", "", "249.2", "1.00", "0", "",
"WGNA-042518-RW-3325", "537", "RES", "320-38538-3", "TALSAC", "STL00996", "13C2
PFDA", "33", "ng/L", "", "-99", "DL", "", "SURR", "83", "", "-99", "LOQ", "YES", "40.1", "", "249.2", "1.00", "0", "",
"WGNA-042518-FRB-3325", "537", "RES", "320-38538-4", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "16", "ng/L", "U", "6.8", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "250.7", "1.00", "16", "",
"WGNA-042518-FRB-3325", "537", "RES", "320-38538-4", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "8.0", "ng/L", "U", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "250.7", "1.00", "8.0", "",
"WGNA-042518-FRB-3325", "537", "RES", "320-38538-4", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "12", "ng/L", "U", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "250.7", "1.00", "12", "",
"WGNA-042518-FRB-3325", "537", "RES", "320-38538-4", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "250.7", "1.00", "36", "",
"WGNA-042518-FRB-3325", "537", "RES", "320-38538-4", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "4.0", "ng/L", "U", "1.9", "DL", "", "TRG", "", "", "10", "LOQ", "YES", "-99", "", "250.7", "1.00", "4.0", "",
"WGNA-042518-FRB-3325", "537", "RES", "320-38538-4", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "20", "ng/L", "U", "8.0", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "250.7", "1.00", "20", "",
"WGNA-042518-FRB-3325", "537", "RES", "320-38538-4", "TALSAC", "STL00993", "13C2
PFHxA", "39", "ng/L", "", "-99", "DL", "", "SURR", "97", "", "-99", "LOQ", "YES", "39.9", "", "250.7", "1.00", "0", "",
"WGNA-042518-FRB-3325", "537", "RES", "320-38538-4", "TALSAC", "STL00996", "13C2
PFDA", "38", "ng/L", "", "-99", "DL", "", "SURR", "95", "", "-99", "LOQ", "YES", "39.9", "", "250.7", "1.00", "0", "",
"WGNA-042518-RW-500", "537", "RES", "320-38538-5", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid

(PFOS)","22","ng/L","J M","6.9","DL","","TRG","","","40","LOQ","YES",-99","","248.1","1.00","16","","
"WGNA-042518-RW-500","537","RES","320-38538-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","22","ng/L","","2.8","DL","","TRG","","","20","LOQ","YES",-99","","248.1","1.00","8.1","","
"WGNA-042518-RW-500","537","RES","320-38538-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","8.3","ng/L","J","5.5","DL","","TRG","","","30","LOQ","YES",-99","","248.1","1.00","12","","
"WGNA-042518-RW-500","537","RES","320-38538-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","91","LOQ","YES",-99","","248.1","1.00","36","","
"WGNA-042518-RW-500","537","RES","320-38538-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","6.7","ng/L","J M","1.9","DL","","TRG","","","10","LOQ","YES",-99","","248.1","1.00","4.0","","
"WGNA-042518-RW-500","537","RES","320-38538-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U M","8.1","DL","","TRG","","","24","LOQ","YES",-99","","248.1","1.00","20","","
"WGNA-042518-RW-500","537","RES","320-38538-5","TALSAC","STL00993","13C2
PFHxA","41","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","40.3","","248.1","1.00","0","","
"WGNA-042518-RW-500","537","RES","320-38538-5","TALSAC","STL00996","13C2
PFDA","37","ng/L","","-99","DL","","SURR","92","","-99","LOQ","YES","40.3","","248.1","1.00","0","","
"WGNA-042518-FRB-500","537","RES","320-38538-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES",-99","","251","1.00","16","","
"WGNA-042518-FRB-500","537","RES","320-38538-6","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES",-99","","251","1.00","8.0","","
"WGNA-042518-FRB-500","537","RES","320-38538-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES",-99","","251","1.00","12","","
"WGNA-042518-FRB-500","537","RES","320-38538-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES",-99","","251","1.00","36","","
"WGNA-042518-FRB-500","537","RES","320-38538-6","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES",-99","","251","1.00","4.0","","
"WGNA-042518-FRB-500","537","RES","320-38538-6","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES",-99","","251","1.00","20","","
"WGNA-042518-FRB-500","537","RES","320-38538-6","TALSAC","STL00993","13C2
PFHxA","45","ng/L","","-99","DL","","SURR","112","","-99","LOQ","YES","39.8","","251","1.00","0","","
"WGNA-042518-FRB-500","537","RES","320-38538-6","TALSAC","STL00996","13C2
PFDA","39","ng/L","","-99","DL","","SURR","97","","-99","LOQ","YES","39.8","","251","1.00","0","","
"WGNA-042518-RW-3529","537","RES","320-38538-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","J M","6.8","DL","","TRG","","","40","LOQ","YES",-99","","249.2","1.00","16","","
"WGNA-042518-RW-3529","537","RES","320-38538-7","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","16","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES",-99","","249.2","1.00","8.0","","
"WGNA-042518-RW-3529","537","RES","320-38538-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","5.7","ng/L","J","5.5","DL","","TRG","","","30","LOQ","YES",-99","","249.2","1.00","12","","
"WGNA-042518-RW-3529","537","RES","320-38538-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES",-99","","249.2","1.00","36","","
"WGNA-042518-RW-3529","537","RES","320-38538-7","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","6.2","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES",-99","","249.2","1.00","4.0","","
"WGNA-042518-RW-3529","537","RES","320-38538-7","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U M","8.0","DL","","TRG","","","24","LOQ","YES",-99","","249.2","1.00","20","","
"WGNA-042518-RW-3529","537","RES","320-38538-7","TALSAC","STL00993","13C2
PFHxA","38","ng/L","","-99","DL","","SURR","96","","-99","LOQ","YES","40.1","","249.2","1.00","0","","
"WGNA-042518-RW-3529","537","RES","320-38538-7","TALSAC","STL00996","13C2
PFDA","38","ng/L","","-99","DL","","SURR","94","","-99","LOQ","YES","40.1","","249.2","1.00","0","","
"WGNA-042518-FRB-3529","537","RES","320-38538-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.7","DL","","TRG","","","39","LOQ","YES",-99","","254.5","1.00","16","","
"WGNA-042518-FRB-3529","537","RES","320-38538-8","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.9","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES",-99","","254.5","1.00","7.9","","
"WGNA-042518-FRB-3529","537","RES","320-38538-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","29","LOQ","YES",-99","","254.5","1.00","12","","
"WGNA-042518-FRB-3529","537","RES","320-38538-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)","35","ng/L","U","16","DL","","","TRG","","","88","LOQ","YES",-99","","254.5","1.00","35","","
"WGNA-042518-FRB-3529","537","RES","320-38538-8","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.9","ng/L","U","1.9","DL","","","TRG","","","9.8","LOQ","YES",-99","","254.5","1.00","3.9","","
"WGNA-042518-FRB-3529","537","RES","320-38538-8","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","7.9","DL","","","TRG","","","24","LOQ","YES",-99","","254.5","1.00","20","","
"WGNA-042518-FRB-3529","537","RES","320-38538-8","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","","-99","DL","","","SURR","100","","","-99","LOQ","YES","39.3","","254.5","1.00","0","","
"WGNA-042518-FRB-3529","537","RES","320-38538-8","TALSAC","STL00996","13C2
PFDA","37","ng/L","","","-99","DL","","","SURR","95","","","-99","LOQ","YES","39.3","","254.5","1.00","0","","
"WGNA-042518-RW-3957","537","RES","320-38538-9","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","12","ng/L","J M","6.8","DL","","","TRG","","","40","LOQ","YES",-99","","249.8","1.00","16","","
"WGNA-042518-RW-3957","537","RES","320-38538-9","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","13","ng/L","J","2.8","DL","","","TRG","","","20","LOQ","YES",-99","","249.8","1.00","8.0","","
"WGNA-042518-RW-3957","537","RES","320-38538-9","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","8.2","ng/L","J","5.5","DL","","","TRG","","","30","LOQ","YES",-99","","249.8","1.00","12","","
"WGNA-042518-RW-3957","537","RES","320-38538-9","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","","TRG","","","90","LOQ","YES",-99","","249.8","1.00","36","","
"WGNA-042518-RW-3957","537","RES","320-38538-9","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.6","ng/L","J M","1.9","DL","","","TRG","","","10","LOQ","YES",-99","","249.8","1.00","4.0","","
"WGNA-042518-RW-3957","537","RES","320-38538-9","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U M","8.0","DL","","","TRG","","","24","LOQ","YES",-99","","249.8","1.00","20","","
"WGNA-042518-RW-3957","537","RES","320-38538-9","TALSAC","STL00993","13C2
PFHxA","42","ng/L","","","-99","DL","","","SURR","105","","","-99","LOQ","YES","40.0","","249.8","1.00","0","","
"WGNA-042518-RW-3957","537","RES","320-38538-9","TALSAC","STL00996","13C2
PFDA","37","ng/L","","","-99","DL","","","SURR","92","","","-99","LOQ","YES","40.0","","249.8","1.00","0","","
"LLCS 320-220576/2-A","537","RES","LLCS 320-220576/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","40.4","ng/L","M","6.8","DL","","","SPK","100","","","40","LOQ","YES","40.2","","250","1.00","16","","
"LLCS 320-220576/2-A","537","RES","LLCS 320-220576/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","19.1","ng/L","J","2.8","DL","","","SPK","96","","","20","LOQ","YES","20.0","","250","1.00","8.0","","
"LLCS 320-220576/2-A","537","RES","LLCS 320-220576/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","32.8","ng/L","","","5.5","DL","","","SPK","108","","","30","LOQ","YES","30.3","","250","1.00","12","","
"LLCS 320-220576/2-A","537","RES","LLCS 320-220576/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","97.0","ng/L","","","16","DL","","","SPK","108","","","90","LOQ","YES","90.2","","250","1.00","36","","
"LLCS 320-220576/2-A","537","RES","LLCS 320-220576/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","9.81","ng/L","J","1.9","DL","","","SPK","98","","","10","LOQ","YES","10.0","","250","1.00","4.0","","
"LLCS 320-220576/2-A","537","RES","LLCS 320-220576/2-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","17.8","ng/L","J","8.0","DL","","","SPK","89","","","24","LOQ","YES","20.0","","250","1.00","20","","
"LLCS 320-220576/2-A","537","RES","LLCS 320-220576/2-A","TALSAC","STL00993","13C2
PFHxA","40.9","ng/L","","","-99","DL","","","SURR","102","","","-99","LOQ","YES","40.0","","250","1.00","0","","
"LLCS 320-220576/2-A","537","RES","LLCS 320-220576/2-A","TALSAC","STL00996","13C2
PFDA","34.8","ng/L","","","-99","DL","","","SURR","87","","","-99","LOQ","YES","40.0","","250","1.00","0","","
"LLCSD 320-220576/3-A","537","RES","LLCSD 320-220576/3-A","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","41.3","ng/L","M","6.8","DL","","","SPK","103","2","40","LOQ","YES","40.2","LLCS 320-220576/2-
A","250","1.00","16","","
"LLCSD 320-220576/3-A","537","RES","LLCSD 320-220576/3-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","19.4","ng/L","J","2.8","DL","","","SPK","97","1","20","LOQ","YES","20.0","LLCS 320-220576/2-
A","250","1.00","8.0","","
"LLCSD 320-220576/3-A","537","RES","LLCSD 320-220576/3-A","TALSAC","355-46-4","Perfluorohexanesulfonic
acid (PFHxS)","32.3","ng/L","","","5.5","DL","","","SPK","107","1","30","LOQ","YES","30.3","LLCS 320-220576/2-
A","250","1.00","12","","
"LLCSD 320-220576/3-A","537","RES","LLCSD 320-220576/3-A","TALSAC","375-73-5","Perfluorobutanesulfonic
acid (PFBS)","98.1","ng/L","","","16","DL","","","SPK","109","1","90","LOQ","YES","90.2","LLCS 320-220576/2-
A","250","1.00","36","","
"LLCSD 320-220576/3-A","537","RES","LLCSD 320-220576/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid

(PFHpA),"9.50","ng/L","J","1.9","DL","","SPK","95","3","10","LOQ","YES","10.0","LLCS 320-220576/2-A","250","1.00","4.0",""

"LLCSD 320-220576/3-A","537","RES","LLCSD 320-220576/3-A","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","17.7","ng/L","J","8.0","DL","","SPK","89","0.5","24","LOQ","YES","20.0","LLCS 320-220576/2-A","250","1.00","20",""

"LLCSD 320-220576/3-A","537","RES","LLCSD 320-220576/3-A","TALSAC","STL00993","13C2 PFHxA","42.3","ng/L","","-99","DL","","SURR","106","4","-99","LOQ","YES","40.0","LLCS 320-220576/2-A","250","1.00","0",""

"LLCSD 320-220576/3-A","537","RES","LLCSD 320-220576/3-A","TALSAC","STL00996","13C2 PFDA","36.5","ng/L","","-99","DL","","SURR","91","5","-99","LOQ","YES","40.0","LLCS 320-220576/2-A","250","1.00","0",""

"MB 320-220576/1-A","537","RES","MB 320-220576/1-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 320-220576/1-A","537","RES","MB 320-220576/1-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 320-220576/1-A","537","RES","MB 320-220576/1-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 320-220576/1-A","537","RES","MB 320-220576/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250","1.00","36",""

"MB 320-220576/1-A","537","RES","MB 320-220576/1-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 320-220576/1-A","537","RES","MB 320-220576/1-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 320-220576/1-A","537","RES","MB 320-220576/1-A","TALSAC","STL00993","13C2 PFHxA","41.8","ng/L","","-99","DL","","SURR","104","","-99","LOQ","YES","40.0","","250","1.00","0",""

"MB 320-220576/1-A","537","RES","MB 320-220576/1-A","TALSAC","STL00996","13C2 PFDA","38.2","ng/L","","-99","DL","","SURR","96","","-99","LOQ","YES","40.0","","250","1.00","0",""

"Unknown","Unknown","WGNA-042518-RW-3785","04/25/2018 08:10","AQ","320-38538-1","NM","","5.30","537","METHOD","RES","04/30/2018 08:44","05/05/2018 06:18","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-221679","320-38538-1","04/26/2018 09:30","04/27/2018 12:40",""

"Unknown","Unknown","WGNA-042518-FRB-3957","04/25/2018 10:05","AQ","320-38538-10","FB","","5.30","537","METHOD","RES","04/30/2018 08:44","05/05/2018 07:10","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-221681","320-38538-1","04/26/2018 09:30","04/27/2018 12:40",""

"Unknown","Unknown","WGNA-042518-RW-0683","04/25/2018 11:40","AQ","320-38538-11","NM","","5.30","537","METHOD","RES","04/30/2018 08:44","05/05/2018 07:14","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-221681","320-38538-1","04/26/2018 09:30","04/27/2018 12:40",""

"Unknown","Unknown","WGNA-042518-FRB-0683","04/25/2018 11:35","AQ","320-38538-12","FB","","5.30","537","METHOD","RES","04/30/2018 08:44","05/05/2018 07:19","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-221681","320-38538-1","04/26/2018 09:30","04/27/2018 12:40",""

"Unknown","Unknown","NAWC-042518-RW-272","04/25/2018 12:10","AQ","320-38538-13","NM","","5.30","537","METHOD","RES","04/30/2018 08:44","05/05/2018 07:24","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-221681","320-38538-1","04/26/2018 09:30","04/27/2018 12:40",""

"Unknown","Unknown","NAWC-042518-FRB-272","04/25/2018 12:05","AQ","320-38538-14","FB","","5.30","537","METHOD","RES","04/30/2018 08:44","05/05/2018 07:28","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-221681","320-38538-1","04/26/2018 09:30","04/27/2018 12:40",""

"Unknown","Unknown","WGNA-042518-DUP-34","04/25/2018 07:00","AQ","320-38538-15","FD","","5.30","537","METHOD","RES","04/30/2018 08:44","05/05/2018 07:33","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-

221681","320-38538-1","04/26/2018 09:30","04/27/2018 12:40",""
"Unknown","Unknown","WGNA-042518-FRB-3785","04/25/2018 08:05","AQ","320-38538-
2","FB","","5.30","537","METHOD","RES","04/30/2018 08:44","05/05/2018
06:23","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-
221679","320-38538-1","04/26/2018 09:30","04/27/2018 12:40",""
"Unknown","Unknown","WGNA-042518-RW-3325","04/25/2018 08:40","AQ","320-38538-
3","NM","","5.30","537","METHOD","RES","04/30/2018 08:44","05/05/2018
06:27","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-
221679","320-38538-1","04/26/2018 09:30","04/27/2018 12:40",""
"Unknown","Unknown","WGNA-042518-FRB-3325","04/25/2018 08:35","AQ","320-38538-
4","FB","","5.30","537","METHOD","RES","04/30/2018 08:44","05/05/2018
06:32","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-
221679","320-38538-1","04/26/2018 09:30","04/27/2018 12:40",""
"Unknown","Unknown","WGNA-042518-RW-500","04/25/2018 09:10","AQ","320-38538-
5","NM","","5.30","537","METHOD","RES","04/30/2018 08:44","05/05/2018
06:37","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-
221679","320-38538-1","04/26/2018 09:30","04/27/2018 12:40",""
"Unknown","Unknown","WGNA-042518-FRB-500","04/25/2018 09:05","AQ","320-38538-
6","FB","","5.30","537","METHOD","RES","04/30/2018 08:44","05/05/2018
06:41","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-
221679","320-38538-1","04/26/2018 09:30","04/27/2018 12:40",""
"Unknown","Unknown","WGNA-042518-RW-3529","04/25/2018 09:40","AQ","320-38538-
7","NM","","5.30","537","METHOD","RES","04/30/2018 08:44","05/05/2018
06:46","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-
221679","320-38538-1","04/26/2018 09:30","04/27/2018 12:40",""
"Unknown","Unknown","WGNA-042518-FRB-3529","04/25/2018 09:35","AQ","320-38538-
8","FB","","5.30","537","METHOD","RES","04/30/2018 08:44","05/05/2018
07:00","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-
221681","320-38538-1","04/26/2018 09:30","04/27/2018 12:40",""
"Unknown","Unknown","WGNA-042518-RW-3957","04/25/2018 10:10","AQ","320-38538-
9","NM","","5.30","537","METHOD","RES","04/30/2018 08:44","05/05/2018
07:05","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-
221681","320-38538-1","04/26/2018 09:30","04/27/2018 12:40",""
"Unknown","Unknown","LLCS 320-220576/2-A","","AQ","LLCS 320-220576/2-
A","LCS","","-99","537","METHOD","RES","04/30/2018 08:44","05/05/2018
06:09","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-
221679","320-38538-1","04/30/2018 08:44","04/27/2018 12:40",""
"Unknown","Unknown","LLCSD 320-220576/3-A","","AQ","LLCSD 320-220576/3-
A","LCSD","","-99","537","METHOD","RES","04/30/2018 08:44","05/05/2018
06:13","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-
221679","320-38538-1","04/30/2018 08:44","04/27/2018 12:40",""
"Unknown","Unknown","MB 320-220576/1-A","","AQ","MB 320-220576/1-
A","MB","","-99","537","METHOD","RES","04/30/2018 08:44","05/05/2018
06:04","TALSAC","COA","WET","NA","1","NA","NA","","100","320-220576","320-220576","NA","320-
221679","320-38538-1","04/30/2018 08:44","04/27/2018 12:40",""



TO: A. FREBOWITZ **DATE:** JUNE 4, 2018
FROM: MEGAN RITCHIE **COPIES:** DV FILE
SUBJECT: ORGANIC DATA VALIDATION –POLYFLUOROALKYL SUBSTANCES (PFAS)
NAS JRB WILLOW GROVE
SAMPLE DELIVERY GROUP (SDG) 320-38538-1

SAMPLES: 7/Field Reagent Blank (FRB)

NAWC-042518-FRB-272	WGNA-042518-FRB-0683
WGNA-042518-FRB-3325	WGNA-042518-FRB-3529
WGNA-042518-FRB-3785	WGNA-042518-FRB-3957
WGNA-042518-FRB-500	

8/Drinking Water

NAWC-042518-RW-272	WGNA-042518-DUP-34
WGNA-042518-RW-0683	WGNA-042518-RW-3325
WGNA-042518-RW-3529	WGNA-042518-RW-3785
WGNA-042518-RW-3957	WGNA-042518-RW-500

Overview

The sample set for NAS JRB Willow Grove, SDG 320-38538-1, consisted of eight (8) drinking water samples and seven (7) FRB samples. All samples were analyzed for select perfluorinated alkyl acids including pentadecafluorooctanoic acid (PFOA), perfluorobutane sulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA) and perfluorooctane sulfonic acid (PFOS). One (1) field duplicate pair, WGNA-042418-RW-0443 / WGNA-042418-DUP-33 was included in this SDG.

The samples were collected by Tetra Tech on April 25, 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 at Stage 4 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: 320-38538-1

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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-042518-RW-272	NAWC-042518-FRB-272
WGNA-042518-RW-0683	WGNA-042518-FRB-0683
WGNA-042518-RW-3325	WGNA-042518-FRB-3325
WGNA-042518-RW-3529	WGNA-042518-FRB-3529
WGNA-042518-RW-3785	WGNA-042518-FRB-3785
WGNA-042518-RW-3957	WGNA-042518-FRB-3957
WGNA-042518-RW-500	WGNA-042518-FRB-500

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

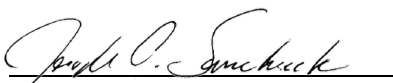
The buffering agent Trizma was added to all drinking water samples.

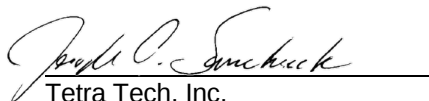
Executive Summary

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.

for 
Tetra Tech, Inc.
Megan Ritchie
Chemist/Data Validator


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

Attachments:

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

Data Qualifier Definitions

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

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

Qualifier Codes:

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

Appendix A

Qualified Analytical Results

PROJ_NO: 08005-WE04 SDG: 320-38538-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-042518-FRB-272			NAWC-042518-RW-272			WGNA-042518-DUP-34			WGNA-042518-FRB-0683		
	LAB_ID	320-38538-14			320-38538-13			320-38538-15			320-38538-12		
	SAMP_DATE	4/25/2018			4/25/2018			4/25/2018			4/25/2018		
	QC_TYPE	FB			NM			FD			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF							NAWC-042518-RW-272					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID (PFOA)		8.2	U		11	J	P	11	J	P	8.3	U	
PERFLUOROBUTANESULFONIC ACID (PFBS)		37	U		36	U		36	U		37	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		4.1	U		3.6	J	P	3.3	J	P	4.1	U	
PERFLUOROHEXANESULFONIC ACID (PFHXS)		12	U		5.7	J	P	5.8	J	P	12	U	
PERFLUORONONANOIC ACID (PFNA)		20	U		20	U		20	U		21	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		16	U		15	J	P	15	J	P	17	U	

PROJ_NO: 08005-WE04 SDG: 320-38538-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	WGNA-042518-FRB-3325			WGNA-042518-FRB-3529			WGNA-042518-FRB-3785			WGNA-042518-FRB-3957		
	LAB_ID	320-38538-4			320-38538-8			320-38538-2			320-38538-10		
	SAMP_DATE	4/25/2018			4/25/2018			4/25/2018			4/25/2018		
	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)		8	U		7.9	U		8	U		7.9	U	
PERFLUOROBUTANESULFONIC ACID (PFBS)		36	U		35	U		36	U		36	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		4	U		3.9	U		4	U		4	U	
PERFLUOROHEXANESULFONIC ACID (PFHXS)		12	U		12	U		12	U		12	U	
PERFLUORONONANOIC ACID (PFNA)		20	U		20	U		20	U		20	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		16	U		16	U		16	U		16	U	

PROJ_NO: 08005-WE04 SDG: 320-38538-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	WGNA-042518-FRB-500			WGNA-042518-RW-0683			WGNA-042518-RW-3325			WGNA-042518-RW-3529		
	LAB_ID	320-38538-6			320-38538-11			320-38538-3			320-38538-7		
	SAMP_DATE	4/25/2018			4/25/2018			4/25/2018			4/25/2018		
	QC_TYPE	FB			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID (PFOA)		8	U		24			7.4	J	P	16	J	P
PERFLUOROBUTANESULFONIC ACID (PFBS)		36	U		36	U		36	U		36	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		4	U		7	J	P	2.1	J	P	6.2	J	P
PERFLUOROHXANESULFONIC ACID (PFHXS)		12	U		12	U		8.2	J	P	5.7	J	P
PERFLUORONONANOIC ACID (PFNA)		20	U		20	U		20	U		20	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		16	U		24	J	P	7.4	J	P	14	J	P

PROJ_NO: 08005-WE04 SDG: 320-38538-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	WGNA-042518-RW-3785			WGNA-042518-RW-3957			WGNA-042518-RW-500		
	LAB_ID	320-38538-1			320-38538-9			320-38538-5		
	SAMP_DATE	4/25/2018			4/25/2018			4/25/2018		
	QC_TYPE	NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID (PFOA)		17	J	P	13	J	P	22		
PERFLUOROBUTANESULFONIC ACID (PFBS)		36	U		36	U		36	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		6.4	J	P	4.6	J	P	6.7	J	P
PERFLUOROHEXANESULFONIC ACID (PFHXS)		17	J	P	8.2	J	P	8.3	J	P
PERFLUORONONANOIC ACID (PFNA)		20	U		20	U		20	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		13	J	P	12	J	P	22	J	P

Appendix B

Results as Reported by the Laboratory

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-RW-3785</u>	Lab Sample ID: <u>320-38538-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_050.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 08:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>248.4 (mL)</u>	Date Analyzed: <u>05/05/2018 06:18</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221679</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	13	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	17	J	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	17	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.4	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	84		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-FRB-3785</u>	Lab Sample ID: <u>320-38538-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_051.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 08:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>249.2 (mL)</u>	Date Analyzed: <u>05/05/2018 06:23</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221679</u>	Units: <u>ng/L</u>

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	109		70-130
STL00996	13C2 PFDA	94		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Client Sample ID: WGNA-042518-RW-3325 Lab Sample ID: 320-38538-3
 Matrix: Water Lab File ID: 2018.05.05_537A_052.d
 Analysis Method: 537 Date Collected: 04/25/2018 08:40
 Extraction Method: 537 Date Extracted: 04/30/2018 08:44
 Sample wt/vol: 249.2 (mL) Date Analyzed: 05/05/2018 06:27
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 221679 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.4	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	7.4	J M	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.2	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.1	J M	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U M	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	83		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-FRB-3325</u>	Lab Sample ID: <u>320-38538-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_053.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 08:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>250.7(mL)</u>	Date Analyzed: <u>05/05/2018 06:32</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221679</u>	Units: <u>ng/L</u>

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	97		70-130
STL00996	13C2 PFDA	95		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Client Sample ID: WGNA-042518-RW-500 Lab Sample ID: 320-38538-5
 Matrix: Water Lab File ID: 2018.05.05_537A_054.d
 Analysis Method: 537 Date Collected: 04/25/2018 09:10
 Extraction Method: 537 Date Extracted: 04/30/2018 08:44
 Sample wt/vol: 248.1 (mL) Date Analyzed: 05/05/2018 06:37
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 221679 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	22	J M	40	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	22		20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.3	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.7	J M	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	92		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-FRB-500</u>	Lab Sample ID: <u>320-38538-6</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_055.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 09:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>251(mL)</u>	Date Analyzed: <u>05/05/2018 06:41</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221679</u>	Units: <u>ng/L</u>

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	112		70-130
STL00996	13C2 PFDA	97		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-RW-3529</u>	Lab Sample ID: <u>320-38538-7</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_056.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 09:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>249.2 (mL)</u>	Date Analyzed: <u>05/05/2018 06:46</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221679</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	16	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.7	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.2	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	94		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-FRB-3529</u>	Lab Sample ID: <u>320-38538-8</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_059.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 09:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>254.5 (mL)</u>	Date Analyzed: <u>05/05/2018 07:00</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100</u> ID: <u>3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221681</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.9	U	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	95		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-RW-3957</u>	Lab Sample ID: <u>320-38538-9</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_060.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 10:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>249.8 (mL)</u>	Date Analyzed: <u>05/05/2018 07:05</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221681</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.2	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.6	J M	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	105		70-130
STL00996	13C2 PFDA	92		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-FRB-3957</u>	Lab Sample ID: <u>320-38538-10</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_061.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 10:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>253.1 (mL)</u>	Date Analyzed: <u>05/05/2018 07:10</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221681</u>	Units: <u>ng/L</u>

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	102		70-130
STL00996	13C2 PFDA	91		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-RW-0683</u>	Lab Sample ID: <u>320-38538-11</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_062.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 11:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>251.3 (mL)</u>	Date Analyzed: <u>05/05/2018 07:14</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221681</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	24		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.0	J	9.9	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	97		70-130

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-FRB-0683</u>	Lab Sample ID: <u>320-38538-12</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_063.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 11:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>242.4 (mL)</u>	Date Analyzed: <u>05/05/2018 07:19</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221681</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	U	41	17	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	8.3	U	21	8.3	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	2.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	93	37	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	113		70-130
STL00996	13C2 PFDA	102		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-042518-RW-272</u>	Lab Sample ID: <u>320-38538-13</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_064.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 12:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>251(mL)</u>	Date Analyzed: <u>05/05/2018 07:24</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221681</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	11	J M	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.7	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	J M	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	102		70-130
STL00996	13C2 PFDA	90		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-042518-FRB-272</u>	Lab Sample ID: <u>320-38538-14</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_065.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 12:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>244.6(mL)</u>	Date Analyzed: <u>05/05/2018 07:28</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221681</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	8.2	U	20	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	20	U	25	20	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	110		70-130
STL00996	13C2 PFDA	101		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-38538-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-042518-DUP-34</u>	Lab Sample ID: <u>320-38538-15</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.05.05_537A_066.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>04/25/2018 07:00</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/30/2018 08:44</u>
Sample wt/vol: <u>251.7(mL)</u>	Date Analyzed: <u>05/05/2018 07:33</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>221681</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	11	J	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.8	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.3	J M	9.9	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U M	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	106		70-130
STL00996	13C2 PFDA	100		70-130

Appendix C

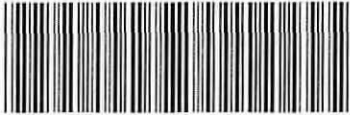
Support Documentation

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

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact		Project Manager: Andy Frebowitz		Site Contact: Mary Kay Bond		Date: 4/25/2018		COC No:	
TetraTech		Tel/Fax: 610.382.1170		Lab Contact: Dave Alltucker		Carrier: FedEx		1 of 1 COCs	
234 Mall Boulevard Suite 260		Analysis Turnaround Time		 320-38538 Chain of Custody		Sampler: Mary Kay Bond For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:		Sample Specific Notes:	
King of Prussia, PA 19406		☐ CALENDAR DAYS ☐ WORKING DAYS							
610-382-1174		TAT if different from Below 21							
610-491-9688		☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day							
Project Name: WE04		Sample Type (C=Comp, G=Grab)		Matrix		# of Cont.		Filtered Sample (Y/N)	
Site: WE04		Sample Date		Sample Time		Perform MS / MSD (Y/N)		EPA 537 UCMR3	
P O # 1132358 (through EarthToxics)									
WGNA-042518-RW-3785		04/25/18		08:10		G		DW	
WGNA-042518-FRB-3785		04/25/18		08:05		G		DW	
WGNA-042518-RW-3325		04/25/18		08:40		G		DW	
WGNA-042518-FRB-3325		04/25/18		08:35		G		DW	
WGNA-042518-RW-0500		04/25/18		09:10		G		DW	
WGNA-042518-FRB-0500		04/25/18		09:05		G		DW	
WGNA-042518-RW-3529		04/25/18		09:40		G		DW	
WGNA-042518-FRB-3529		04/25/18		09:35		G		DW	
WGNA-042518-RW-3957		04/25/18		10:10		G		DW	
WGNA-042518-FRB-3957		04/25/18		10:05		G		DW	
WGNA-042518-RW-0683		04/25/18		11:40		G		DW	
WGNA-042518-FRB-0683		04/25/18		11:35		G		DW	
NAWC-042518-RW-272		04/25/18		12:10		G		DW	
NAWC-042518-FRB-272		04/25/18		12:05		G		DW	
WGNA-042518-DUP-34		04/25/18		07:00		G		DW	
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		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☒ Poison B ☐ Unknown				☐ Return to Client ☒ Disposal by Lab ☒ Archive for _____ Months					
Fed Ex Tracking: 7720 7750 0091									
Custody Seals Intact: ☐ Yes ☐ No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: 5.3 Corr'd: 5.3		Therm ID No.: AK-5 rce			
Relinquished by: 		Company: Tetra Tech		Date/Time: 4/25/2018 16:00		Received by: Tony G. Tumpel		Company: SIA	
Relinquished by:		Company:		Date/Time:		Received by:		Company:	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:	

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

Job Narrative
320-38538-1

Receipt

The samples were received on 4/26/2018 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.3° 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) associated with preparation batch 320-220576.

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

NAS JRB Willow Grove/NAWC Warminster
SDG 320-27675-1

Sample Identification WGNA-042518-RW-0683

Compound PFOS

Compound Area	596586
Internal Standard Amount (ng)	28.7
Dilution Factor	1
Internal Standard Area	2628111
Average RRF	1.0661
Sample Volume(ml)	251.3
Volume Extract (µl)	1000
Injection Volume (µl)	2

Concentration	24 ng/L
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Surrogate Compound 13C2 PFDA

Compound Area	931487
Internal Standard Amount (ng)	10
Dilution Factor	1
Internal Standard Area	1129722
Average RRF	0.8505
Sample Volume(ml)	251.3
Volume Extract (µl)	1000
Injection Volume (µl)	2

Concentration	19.2889 ng/L
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Spike Added	19.8965
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Pecent Recovery	97 %
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NAS JRB Willow Grove/NAWC Warminster
SDG 320-27675-1

Sample Identification LLCS 320-220576/2-A

Compound PFOS

Compound Area 794681

Internal Standard Amount (ng) 28.7

Dilution Factor 1

Internal Standard Area 2118373

Average RRF 1.0661

Sample Volume(ml) 250

Volume Extract (μl) 1000

Injection Volume (μl) 2

Concentration 40.4 ng/L

Spike Added 40.2

Pecent Recovery 100 %

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Client Sample ID: WGNA-042518-RW-0683 Lab Sample ID: 320-38538-11
 Matrix: Water Lab File ID: 2018.05.05_537A_062.d
 Analysis Method: 537 Date Collected: 04/25/2018 11:40
 Extraction Method: 537 Date Extracted: 04/30/2018 08:44
 Sample wt/vol: 251.3(mL) Date Analyzed: 05/05/2018 07:14
 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.: 221681 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	24		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.0	J	9.9	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	97		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\2018.05.05_537A_062.d
 Lims ID: 320-38538-A-11-A
 Client ID: WGNA-042518-RW-0683
 Sample Type: Client
 Inject. Date: 05-May-2018 07:14:44 ALS Bottle#: 44 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-38538-a-11-a
 Misc. Info.: Plate: 1 Rack: 6
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180505-57730.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 07-May-2018 13:30:07 Calib Date: 11-Apr-2018 12:09:09
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK023

First Level Reviewer: westendorfc

Date: 07-May-2018 13:28:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.411	-0.007	1.000	137242	1.42		42.4	
298.90 > 99.00	1.404	1.411	-0.007	1.000	102200		1.34(0.00-0.00)	49.9	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.540	-0.007	1.000	1248200	10.4		8158	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.692	-0.008	1.000	189626	1.26		35.9	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.692	-0.008	1.000	213774	1.76		19.2	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.882	-0.008		1129722	10.0		6333	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.882	-0.008	1.000	708878	5.91		72.1	
413.00 > 169.00	1.874	1.882	-0.008	1.000	403623		1.76(0.00-0.00)	297	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.117	-0.008		2628111	28.7		946	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.117	-0.008	1.000	596586	6.11		72.7	a
499.00 > 99.00	2.109	2.117	-0.008	1.000	94551		6.31(0.00-0.00)	97.1	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.124	-0.007	1.000	47129	0.4952		5.4	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.276	0.0	1.000	931487	9.69		8495	M

PFAS Calibration Calculations:

Initial Calibration 4/11/2018
Instrument A8_N

PFOS

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF
3.95	349354	2429483	28.7	1.04481	1.0432
8.79	715378	2220259	28.7	1.05202	1.0519
19.8	1693810	2380125	28.7	1.03153	1.0326
39.5	3678059	2440107	28.7	1.09520	1.0935
59.3	5081660	2283311	28.7	1.07713	1.0764
79.1	7016962	2316327	28.7	1.09914	1.0989
Average				1.06664	1.0661
Standard Deviation				0.0279	
RSD				0.0262	
%RSD				2.62018	2.6

Continuing Calibration 05/05/2018 @ 06:51

PFOS

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
19.8	1719450	2342991	28.7	1.0637	-0.221334	1.065	-0.1

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-042518-RW-378 5	320-38538-1	100	84
WGNA-042518-FRB-37 85	320-38538-2	109	94
WGNA-042518-RW-332 5	320-38538-3	97	83
WGNA-042518-FRB-33 25	320-38538-4	97	95
WGNA-042518-RW-500	320-38538-5	101	92
WGNA-042518-FRB-50 0	320-38538-6	112	97
WGNA-042518-RW-352 9	320-38538-7	96	94
WGNA-042518-FRB-35 29	320-38538-8	100	95
WGNA-042518-RW-395 7	320-38538-9	105	92
WGNA-042518-FRB-39 57	320-38538-10	102	91
WGNA-042518-RW-068 3	320-38538-11	104	97
WGNA-042518-FRB-06 83	320-38538-12	113	102
NAWC-042518-RW-272	320-38538-13	102	90
NAWC-042518-FRB-27 2	320-38538-14	110	101
WGNA-042518-DUP-34	320-38538-15	106	100
	MB 320-220576/1-A	104	96
	LLCS 320-220576/2-A	102	87
	LLCSD 320-220576/3-A	106	91

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.: 320-38538-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.05.05_537A_048.d
 Lab ID: LLCS 320-220576/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LLCS CONCENTRATION (ng/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	40.2	40.4	100	50-150	M
Perfluorooctanoic acid (PFOA)	20.0	19.1 J	96	50-150	
Perfluorononanoic acid (PFNA)	20.0	17.8 J	89	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.3	32.8	108	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	9.81 J	98	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.2	97.0	108	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.: 320-38538-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.05.05_537A_049.d
 Lab ID: LLCSD 320-220576/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LLCSD CONCENTRATION (ng/L)	LLCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	40.2	41.3	103	2	50	50-150	M
Perfluorooctanoic acid (PFOA)	20.0	19.4 J	97	1	50	50-150	
Perfluorononanoic acid (PFNA)	20.0	17.7 J	89	0.5	50	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.3	32.3	107	1	50	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	9.50 J	95	3	50	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.2	98.1	109	1	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.: 320-38538-1
SDG No.: _____
Lab File ID: 2018.05.05_537A_047.d Lab Sample ID: MB 320-220576/1-A
Matrix: Water Date Extracted: 04/30/2018 08:44
Instrument ID: A8_N Date Analyzed: 05/05/2018 06:04
Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-220576/2-A	2018.05.05_537A_048.d	05/05/2018 06:09
	LLCSD 320-220576/3-A	2018.05.05_537A_049.d	05/05/2018 06:13
WGNA-042518-RW-3785	320-38538-1	2018.05.05_537A_050.d	05/05/2018 06:18
WGNA-042518-FRB-3785	320-38538-2	2018.05.05_537A_051.d	05/05/2018 06:23
WGNA-042518-RW-3325	320-38538-3	2018.05.05_537A_052.d	05/05/2018 06:27
WGNA-042518-FRB-3325	320-38538-4	2018.05.05_537A_053.d	05/05/2018 06:32
WGNA-042518-RW-500	320-38538-5	2018.05.05_537A_054.d	05/05/2018 06:37
WGNA-042518-FRB-500	320-38538-6	2018.05.05_537A_055.d	05/05/2018 06:41
WGNA-042518-RW-3529	320-38538-7	2018.05.05_537A_056.d	05/05/2018 06:46
WGNA-042518-FRB-3529	320-38538-8	2018.05.05_537A_059.d	05/05/2018 07:00
WGNA-042518-RW-3957	320-38538-9	2018.05.05_537A_060.d	05/05/2018 07:05
WGNA-042518-FRB-3957	320-38538-10	2018.05.05_537A_061.d	05/05/2018 07:10
WGNA-042518-RW-0683	320-38538-11	2018.05.05_537A_062.d	05/05/2018 07:14
WGNA-042518-FRB-0683	320-38538-12	2018.05.05_537A_063.d	05/05/2018 07:19
NAWC-042518-RW-272	320-38538-13	2018.05.05_537A_064.d	05/05/2018 07:24
NAWC-042518-FRB-272	320-38538-14	2018.05.05_537A_065.d	05/05/2018 07:28
WGNA-042518-DUP-34	320-38538-15	2018.05.05_537A_066.d	05/05/2018 07:33

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 04/11/2018 12:09
 Calibration ID: 38530

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		970041	1.86	2344935	2.10		
UPPER LIMIT		1455062	2.36	3517403	2.60		
LOWER LIMIT		485021	1.36	1172468	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-217453/10		964533	1.87	2387973	2.10		
ICV 320-217453/12		1123391	1.86	2710764	2.10		
CCVL 320-221668/1		973132	1.89	2267687	2.13		
CCV 320-221679/1 CCVIS		996991	1.87	2376746	2.12		
MB 320-220576/1-A		986179	1.87	2337498	2.12		
LLCS 320-220576/2-A		925698	1.88	2118373	2.12		
LLCSD 320-220576/3-A		996981	1.87	2219527	2.11		
320-38538-1	WGNA-042518-RW-3785	1047030	1.87	2294047	2.12		
320-38538-2	WGNA-042518-FRB-3785	952184	1.88	2108878	2.12		
320-38538-3	WGNA-042518-RW-3325	1027275	1.87	2294962	2.11		
320-38538-4	WGNA-042518-FRB-3325	984513	1.87	2281039	2.11		
320-38538-5	WGNA-042518-RW-500	907357	1.87	2095567	2.11		
320-38538-6	WGNA-042518-FRB-500	1033040	1.87	2423494	2.12		
320-38538-7	WGNA-042518-RW-3529	1134717	1.87	2564258	2.11		
CCV 320-221679/13 CCVIS		1039210	1.88	2342991	2.12		
CCV 320-221681/13 CCVIS		1039210	1.88	2342991	2.12		
320-38538-8	WGNA-042518-FRB-3529	987829	1.87	2182756	2.11		
320-38538-9	WGNA-042518-RW-3957	964018	1.88	2245560	2.12		
320-38538-10	WGNA-042518-FRB-3957	985723	1.87	2216286	2.11		
320-38538-11	WGNA-042518-RW-0683	1129722	1.87	2628111	2.11		
320-38538-12	WGNA-042518-FRB-0683	1021032	1.87	2337212	2.11		
320-38538-13	NAWC-042518-RW-272	977865	1.87	2256090	2.11		
320-38538-14	NAWC-042518-FRB-272	1147226	1.87	2678684	2.11		
320-38538-15	WGNA-042518-DUP-34	1028595	1.88	2346982	2.12		
CCV 320-221681/23 CCVIS		941946	1.87	2296399	2.11		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Sample No.: CCV 320-221679/1 Date Analyzed: 05/05/2018 05:55
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.05.05_537A_045 Heated Purge: (Y/N) N
 Calibration ID: 38530

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		996991	1.87	2376746	2.12		
UPPER LIMIT		1395787	2.37	3327444	2.62		
LOWER LIMIT		697894	1.37	1663722	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-220576/1-A		986179	1.87	2337498	2.12		
LLCS 320-220576/2-A		925698	1.88	2118373	2.12		
LLCSD 320-220576/3-A		996981	1.87	2219527	2.11		
320-38538-1	WGNA-042518-RW-3785	1047030	1.87	2294047	2.12		
320-38538-2	WGNA-042518-FRB-3785	952184	1.88	2108878	2.12		
320-38538-3	WGNA-042518-RW-3325	1027275	1.87	2294962	2.11		
320-38538-4	WGNA-042518-FRB-3325	984513	1.87	2281039	2.11		
320-38538-5	WGNA-042518-RW-500	907357	1.87	2095567	2.11		
320-38538-6	WGNA-042518-FRB-500	1033040	1.87	2423494	2.12		
320-38538-7	WGNA-042518-RW-3529	1134717	1.87	2564258	2.11		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Sample No.: CCV 320-221679/13 Date Analyzed: 05/05/2018 06:51
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.05.05_537A_057 Heated Purge: (Y/N) N
 Calibration ID: 38530

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1039210	1.88	2342991	2.12		
UPPER LIMIT		1454894	2.38	3280187	2.62		
LOWER LIMIT		727447	1.38	1640094	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-220576/1-A		986179	1.87	2337498	2.12		
LLCS 320-220576/2-A		925698	1.88	2118373	2.12		
LLCSD 320-220576/3-A		996981	1.87	2219527	2.11		
320-38538-1	WGNA-042518-RW-3785	1047030	1.87	2294047	2.12		
320-38538-2	WGNA-042518-FRB-3785	952184	1.88	2108878	2.12		
320-38538-3	WGNA-042518-RW-3325	1027275	1.87	2294962	2.11		
320-38538-4	WGNA-042518-FRB-3325	984513	1.87	2281039	2.11		
320-38538-5	WGNA-042518-RW-500	907357	1.87	2095567	2.11		
320-38538-6	WGNA-042518-FRB-500	1033040	1.87	2423494	2.12		
320-38538-7	WGNA-042518-RW-3529	1134717	1.87	2564258	2.11		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Sample No.: CCV 320-221681/13 Date Analyzed: 05/05/2018 06:51
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.05.05_537A_057 Heated Purge: (Y/N) N
 Calibration ID: 38530

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	1039210	1.88	2342991	2.12		
UPPER LIMIT	1454894	2.38	3280187	2.62		
LOWER LIMIT	727447	1.38	1640094	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-38538-8	WGNA-042518-FRB-3529	987829	1.87	2182756	2.11	
320-38538-9	WGNA-042518-RW-3957	964018	1.88	2245560	2.12	
320-38538-10	WGNA-042518-FRB-3957	985723	1.87	2216286	2.11	
320-38538-11	WGNA-042518-RW-0683	1129722	1.87	2628111	2.11	
320-38538-12	WGNA-042518-FRB-0683	1021032	1.87	2337212	2.11	
320-38538-13	NAWC-042518-RW-272	977865	1.87	2256090	2.11	
320-38538-14	NAWC-042518-FRB-272	1147226	1.87	2678684	2.11	
320-38538-15	WGNA-042518-DUP-34	1028595	1.88	2346982	2.12	

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Sample No.: CCV 320-221681/23 Date Analyzed: 05/05/2018 07:38
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.05.05_537A_067 Heated Purge: (Y/N) N
 Calibration ID: 38530

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	941946	1.87	2296399	2.11		
UPPER LIMIT	1318724	2.37	3214959	2.61		
LOWER LIMIT	659362	1.37	1607479	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-38538-8	WGNA-042518-FRB-3529	987829	1.87	2182756	2.11	
320-38538-9	WGNA-042518-RW-3957	964018	1.88	2245560	2.12	
320-38538-10	WGNA-042518-FRB-3957	985723	1.87	2216286	2.11	
320-38538-11	WGNA-042518-RW-0683	1129722	1.87	2628111	2.11	
320-38538-12	WGNA-042518-FRB-0683	1021032	1.87	2337212	2.11	
320-38538-13	NAWC-042518-RW-272	977865	1.87	2256090	2.11	
320-38538-14	NAWC-042518-FRB-272	1147226	1.87	2678684	2.11	
320-38538-15	WGNA-042518-DUP-34	1028595	1.88	2346982	2.12	

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

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

Column used to flag values outside QC limits

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

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1 Analy Batch No.: 217453

SDG No.: _____

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

Calibration Start Date: 04/11/2018 11:45 Calibration End Date: 04/11/2018 12:09 Calibration ID: 38530

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-217453/3	2018.04.11_537ICALB_004.d
Level 2	IC 320-217453/4	2018.04.11_537ICALB_005.d
Level 3	IC 320-217453/5	2018.04.11_537ICALB_006.d
Level 4	IC 320-217453/6	2018.04.11_537ICALB_007.d
Level 5	IC 320-217453/7	2018.04.11_537ICALB_008.d
Level 6	IC 320-217453/8	2018.04.11_537ICALB_009.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	1.1422 0.9535	1.0952	1.0744	1.0454	1.0008	Ave		1.0519				6.4		30.0			
Perfluoroheptanoic acid (PFHpA)	1.0850 1.0447	1.0991	1.0649	1.0783	1.0702	Ave		1.0737				1.7		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.6457 1.6837	1.5988	1.6030	1.6384	1.6838	Ave		1.6422				2.3		30.0			
Perfluorooctanoic acid (PFOA)	1.0599 1.0325	1.0296	1.0703	1.0516	1.1300	Ave		1.0623				3.5		30.0			
Perfluorooctanesulfonic acid (PFOS)	1.0432 1.0989	1.0519	1.0326	1.0935	1.0764	Ave		1.0661				2.6		30.0			
Perfluorononanoic acid (PFNA)	0.8261 0.8363	0.8133	0.8488	0.8818	0.8480	Ave		0.8424				2.8		30.0			
13C2 PFHxA	1.0447 1.0648	1.0532	1.0875	1.0687	1.0602	Ave		1.0632				1.4		30.0			
13C2 PFDA	0.8513 0.8262	0.8714	0.8533	0.8487	0.8519	Ave		0.8505				1.7		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.: 320-38538-1 Analy Batch No.: 217453

SDG No.: _____

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

Calibration Start Date: 04/11/2018 11:45 Calibration End Date: 04/11/2018 12:09 Calibration ID: 38530

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-217453/3	2018.04.11_537ICALB_004.d
Level 2	IC 320-217453/4	2018.04.11_537ICALB_005.d
Level 3	IC 320-217453/5	2018.04.11_537ICALB_006.d
Level 4	IC 320-217453/6	2018.04.11_537ICALB_007.d
Level 5	IC 320-217453/7	2018.04.11_537ICALB_008.d
Level 6	IC 320-217453/8	2018.04.11_537ICALB_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	Ave	870696 13871852	1696932	4015148	8010147	10764182	9.00 180	20.0	45.0	90.1	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	108741 1996261	218860	489075	1044752	1450463	0.960 19.4	2.16	4.86	9.72	14.6
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	418640 8226588	831963	2012030	4216387	6082352	3.00 60.5	6.72	15.1	30.2	45.4
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	219100 4019004	417632	1001316	2075568	3119787	1.98 39.6	4.40	9.90	19.8	29.7
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	349354 7016962	715378	1693810	3678059	5081660	3.95 79.1	8.79	19.8	39.5	59.3
Perfluorononanoic acid (PFNA)	13PF OA	Ave	170770 3255374	329904	794076	1740422	2341235	1.98 39.6	4.40	9.90	19.8	29.7
13C2 PFHxA	13PF OA	Ave	1090690 1046576	970942	1027706	1065262	985534	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	888742 812112	803402	806360	845990	791901	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.: 320-38538-1 Analy Batch No.: 217453

SDG No.: _____

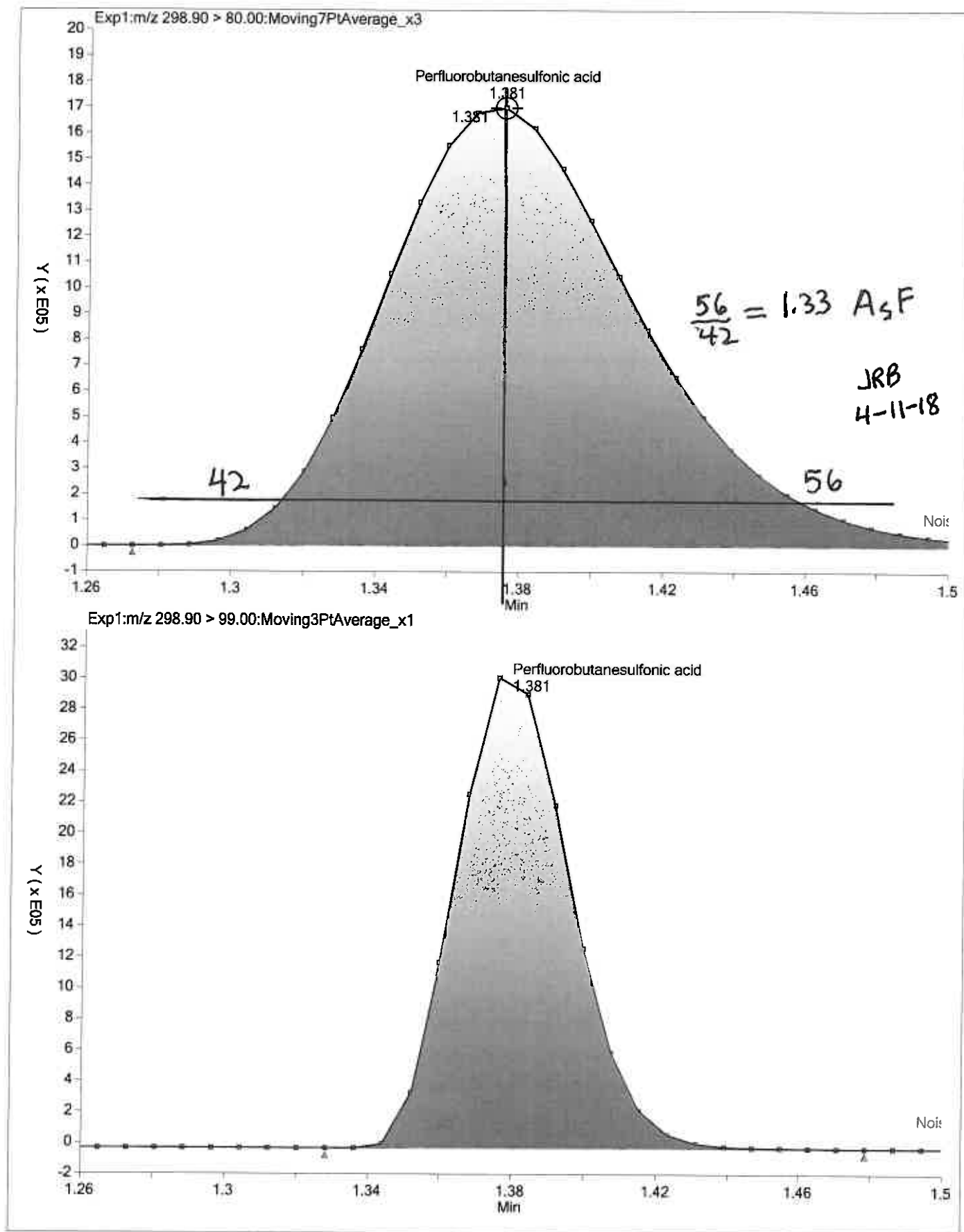
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

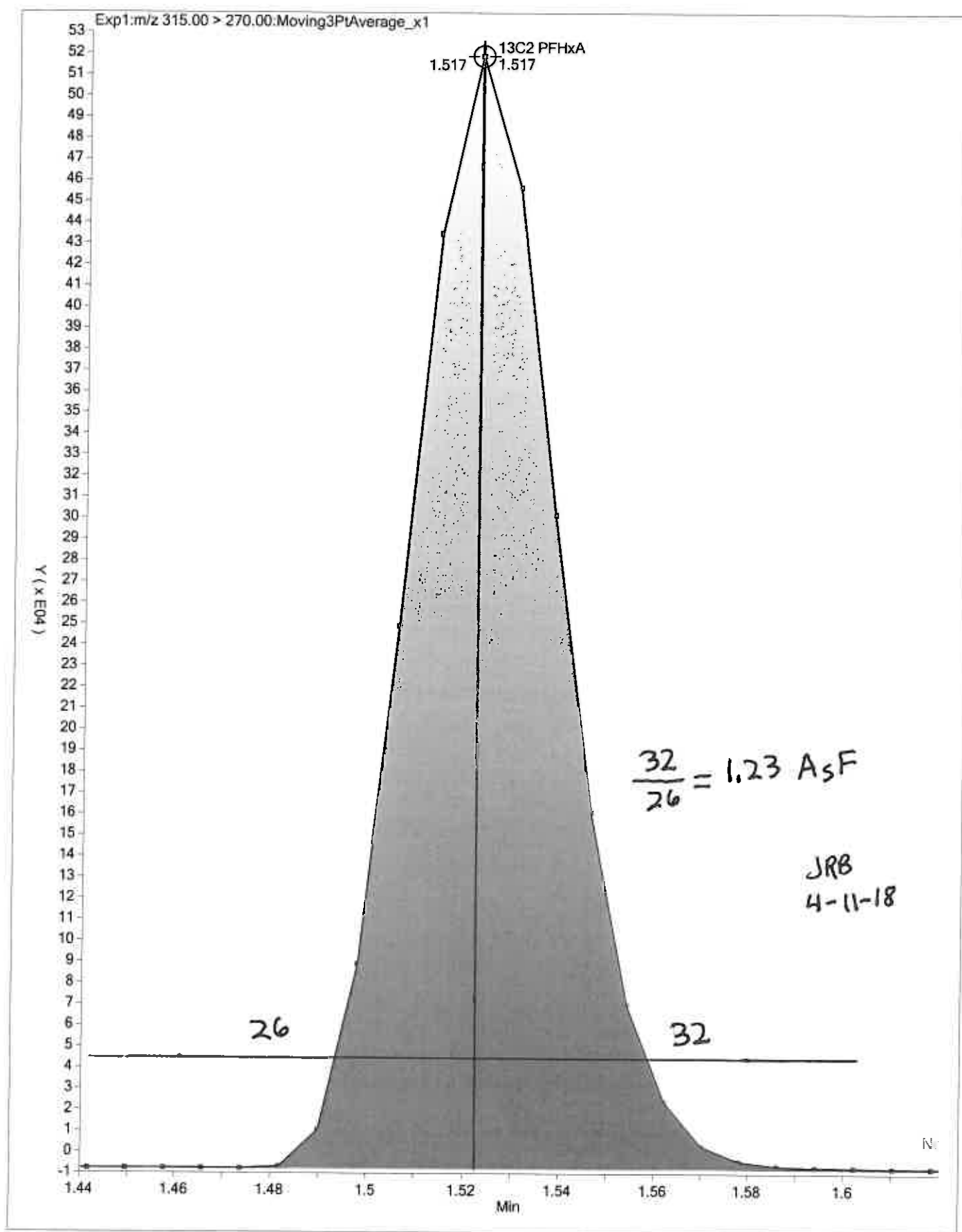
Calibration Start Date: 04/11/2018 11:45 Calibration End Date: 04/11/2018 12:09 Calibration ID: 38530

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-217453/3	2018.04.11_537ICALB_004.d
Level 2	IC 320-217453/4	2018.04.11_537ICALB_005.d
Level 3	IC 320-217453/5	2018.04.11_537ICALB_006.d
Level 4	IC 320-217453/6	2018.04.11_537ICALB_007.d
Level 5	IC 320-217453/7	2018.04.11_537ICALB_008.d
Level 6	IC 320-217453/8	2018.04.11_537ICALB_009.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	8.6	4.1	2.1	-0.6	-4.9	-9.4	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	1.0	2.4	-0.8	0.4	-0.3	-2.7	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	0.2	-2.6	-2.4	-0.2	2.5	2.5	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-0.2	-3.1	0.7	-1.0	6.4	-2.8	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-2.1	-1.3	-3.1	2.6	1.0	3.1	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-1.9	-3.5	0.8	4.7	0.7	-0.7	50	30	30	30	30	30
13C2 PFHxA	-1.7	-0.9	2.3	0.5	-0.3	0.1	30	30	30	30	30	30
13C2 PFDA	0.1	2.5	0.3	-0.2	0.2	-2.9	30	30	30	30	30	30





TestAmerica Laboratories
Istd/Surrogate Recovery Report

Worklist Name: 11APR2018A_537B_ICAL

Worklist Num: 56557

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b

Limit Group: LC 537 ICAI

Analysis Type: SemiVOA

Inj Volume: 2.00

Inj Vol Units: ul

Lims Batch: 217453

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

Non-Cal IS Mode: Last Ccal Sample

\$ 2 13C2 PFHxA

\$ 10 13C2 PFDA

Lab ID	Inj Date	\$ 2	\$ 10	* 6 13C2-PFOA	* 7 13C4 PFOS
IS Std				1027183 1.87	2580682 2.11
# 1 RB	11-Apr-2018 11:36:27			957389 93.2 1.87	2343443 90.8 2.12
# 2 RB	11-Apr-2018 11:41:06			937814 91.3 1.87	2225117 86.2 2.11
IS Std					
# 3 IC L1	11-Apr-2018 11:45:47	1.52 98.26	2.26 100.10	1044020> 100.0* 1.87	2429483> 100.0* 2.10
# 4 IC L2	11-Apr-2018 11:50:27	1.51 99.06	2.26 102.50	921915> 88.3* 1.87	2220259> 91.4* 2.10
# 5 IC L3	11-Apr-2018 11:55:08	1.52 102.30	2.26 100.30	945031> 90.5* 1.87	2380125> 98.0* 2.11
# 6 IC L4	11-Apr-2018 11:59:48	1.52 100.50	2.26 99.79	996809> 95.5* 1.87	2440107> 100.4* 2.10
# 7 IC L5	11-Apr-2018 12:04:29	1.52 99.72	2.26 100.20	929546> 89.0* 1.87	2283311> 94.0* 2.10
# 8 IC L6	11-Apr-2018 12:09:09	1.51 100.10	2.25 97.15	982926> 94.1* 1.86	2316327> 95.3* 2.09
IS Std				945031 1.87	2380125 2.11
# 9 RB	11-Apr-2018 12:13:50			919421 97.3 1.86	2344246 98.5 2.10
IS Std				996809 1.87	2440107 2.10
#10 CCVL	11-Apr-2018 12:18:29	1.52 97.44	2.26 103.40	964533 96.8 1.87	2387973 97.9 2.10
IS Std				964533 1.87	2387973 2.10
#11 ICB	11-Apr-2018 12:23:10			943600 97.8 1.86	2246875 94.1 2.09
IS Std				996809 1.87	2440107 2.10
#12 ICV	11-Apr-2018 12:27:50	1.51 92.99	2.25 91.91	1123391 112.7 1.86	2710764 111.1 2.10

13C2-PFOA

$$RPD = \frac{1044020 - 921915}{\left(\frac{1044020 + 921915}{2} \right)} \times 100 = 12.4$$

13C4-PFOS

$$RPD = \frac{2440107 - 2220259}{\left(\frac{2440107 + 2220259}{2} \right)} \times 100 = 9.43$$

JRB
4-11-18

Calibration

/ Perfluorobutanesulfonic acid

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

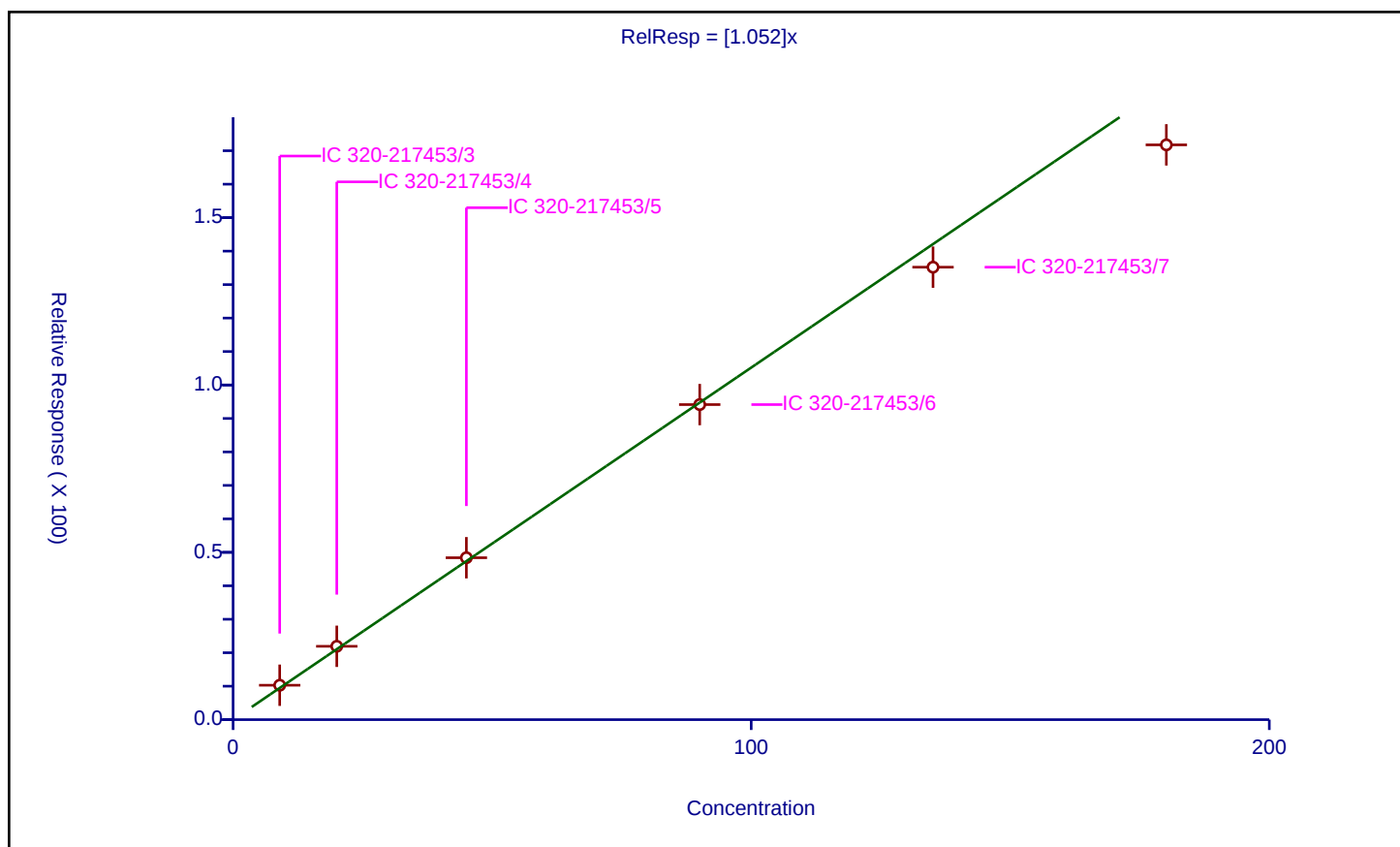
Curve Coefficients

Intercept: 0
 Slope: 1.052

Error Coefficients

Standard Error: 8860000
 Relative Standard Error: 6.4
 Correlation Coefficient: 0.995
 Coefficient of Determination (Adjusted): 0.993

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-217453/3	8.99912	10.27855	28.68	2429483.0	1.142173	Y
2	IC 320-217453/4	20.01376	21.91997	28.68	2220259.0	1.095245	Y
3	IC 320-217453/5	45.03096	48.381679	28.68	2380125.0	1.074409	Y
4	IC 320-217453/6	90.06192	94.147927	28.68	2440107.0	1.045369	Y
5	IC 320-217453/7	135.09288	135.205734	28.68	2283311.0	1.000835	Y
6	IC 320-217453/8	180.12384	171.756715	28.68	2316327.0	0.953548	Y



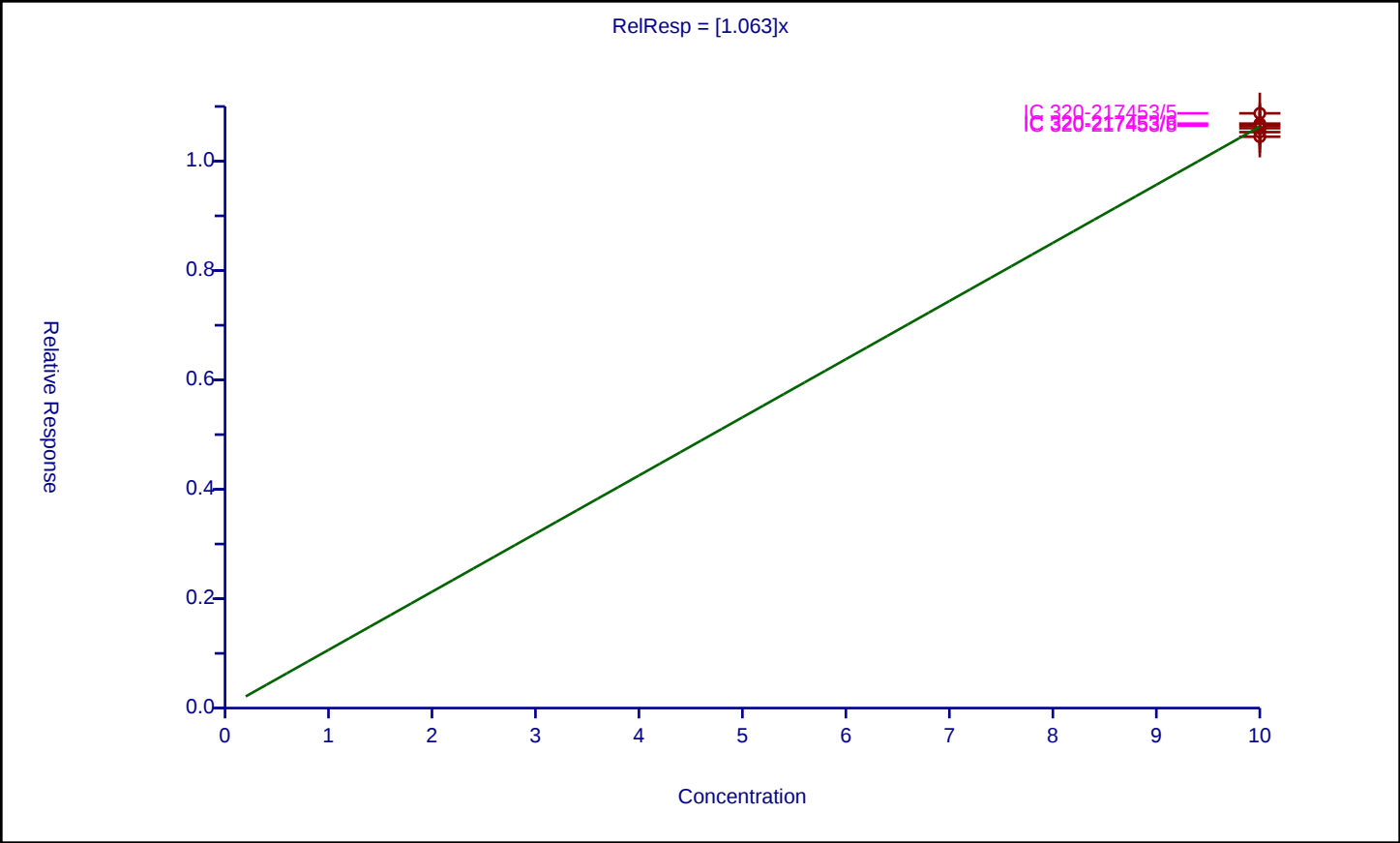
Calibration

/ 13C2 PFHxA

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

Curve Coefficients	
Intercept:	0
Slope:	1.063
Error Coefficients	
Standard Error:	1130000
Relative Standard Error:	1.4
Correlation Coefficient:	NA
Coefficient of Determination (Adjusted):	0

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-217453/3	10.0	10.447022	10.0	1044020.0	1.044702	Y
2	IC 320-217453/4	10.0	10.531795	10.0	921915.0	1.05318	Y
3	IC 320-217453/5	10.0	10.874839	10.0	945031.0	1.087484	Y
4	IC 320-217453/6	10.0	10.686721	10.0	996809.0	1.068672	Y
5	IC 320-217453/7	10.0	10.602316	10.0	929546.0	1.060232	Y
6	IC 320-217453/8	10.0	10.647556	10.0	982926.0	1.064756	Y



Calibration

/ Perfluorohexanesulfonic acid

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

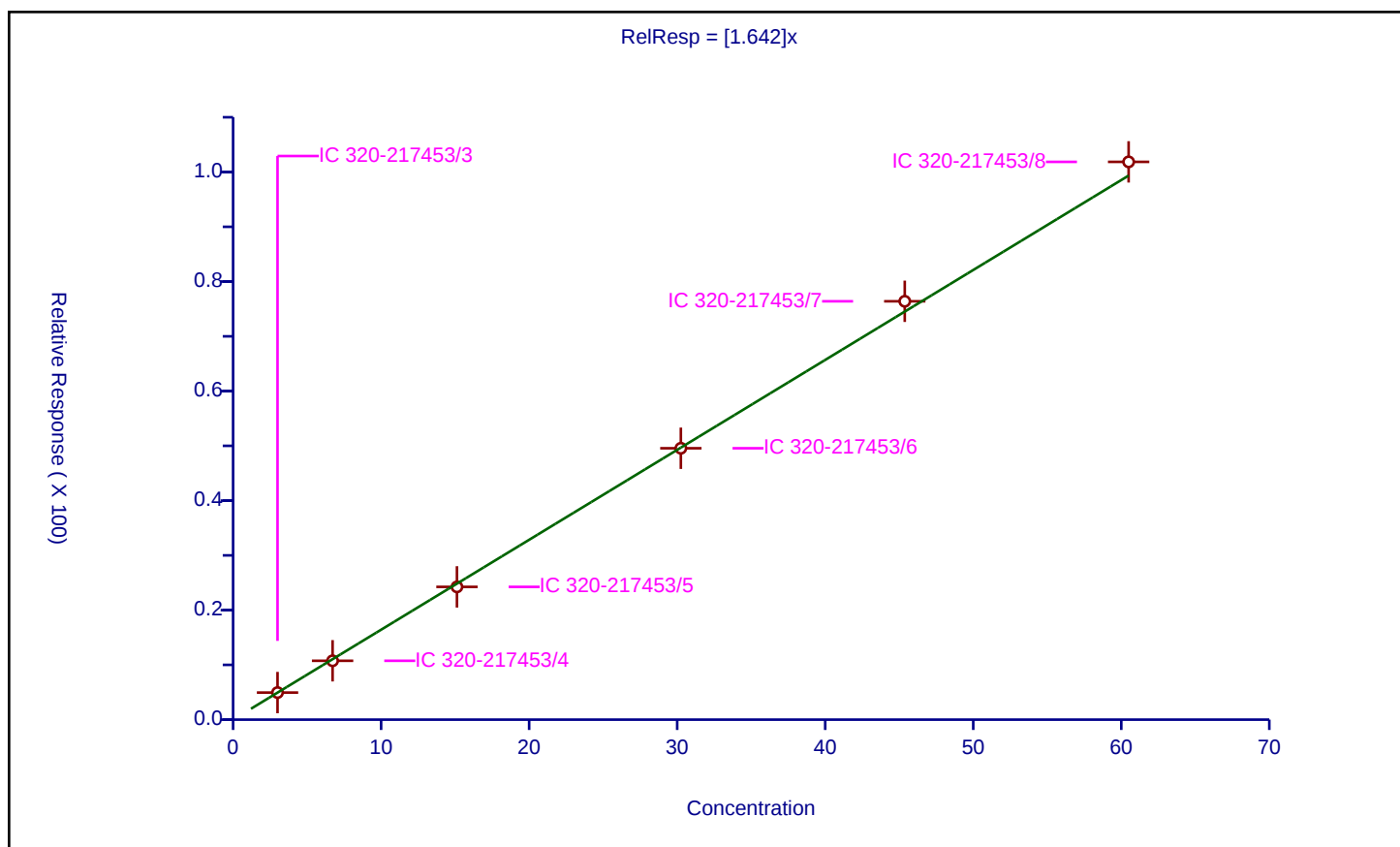
Curve Coefficients

Intercept: 0
 Slope: 1.642

Error Coefficients

Standard Error: 5050000
 Relative Standard Error: 2.3
 Correlation Coefficient: 0.999
 Coefficient of Determination (Adjusted): 0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-217453/3	3.003	4.942037	28.68	2429483.0	1.6457	Y
2	IC 320-217453/4	6.721867	10.746809	28.68	2220259.0	1.598783	Y
3	IC 320-217453/5	15.1242	24.244534	28.68	2380125.0	1.603029	Y
4	IC 320-217453/6	30.2484	49.557654	28.68	2440107.0	1.638356	Y
5	IC 320-217453/7	45.3726	76.39864	28.68	2283311.0	1.683806	Y
6	IC 320-217453/8	60.4968	101.85891	28.68	2316327.0	1.683707	Y



Calibration

/ Perfluoroheptanoic acid

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

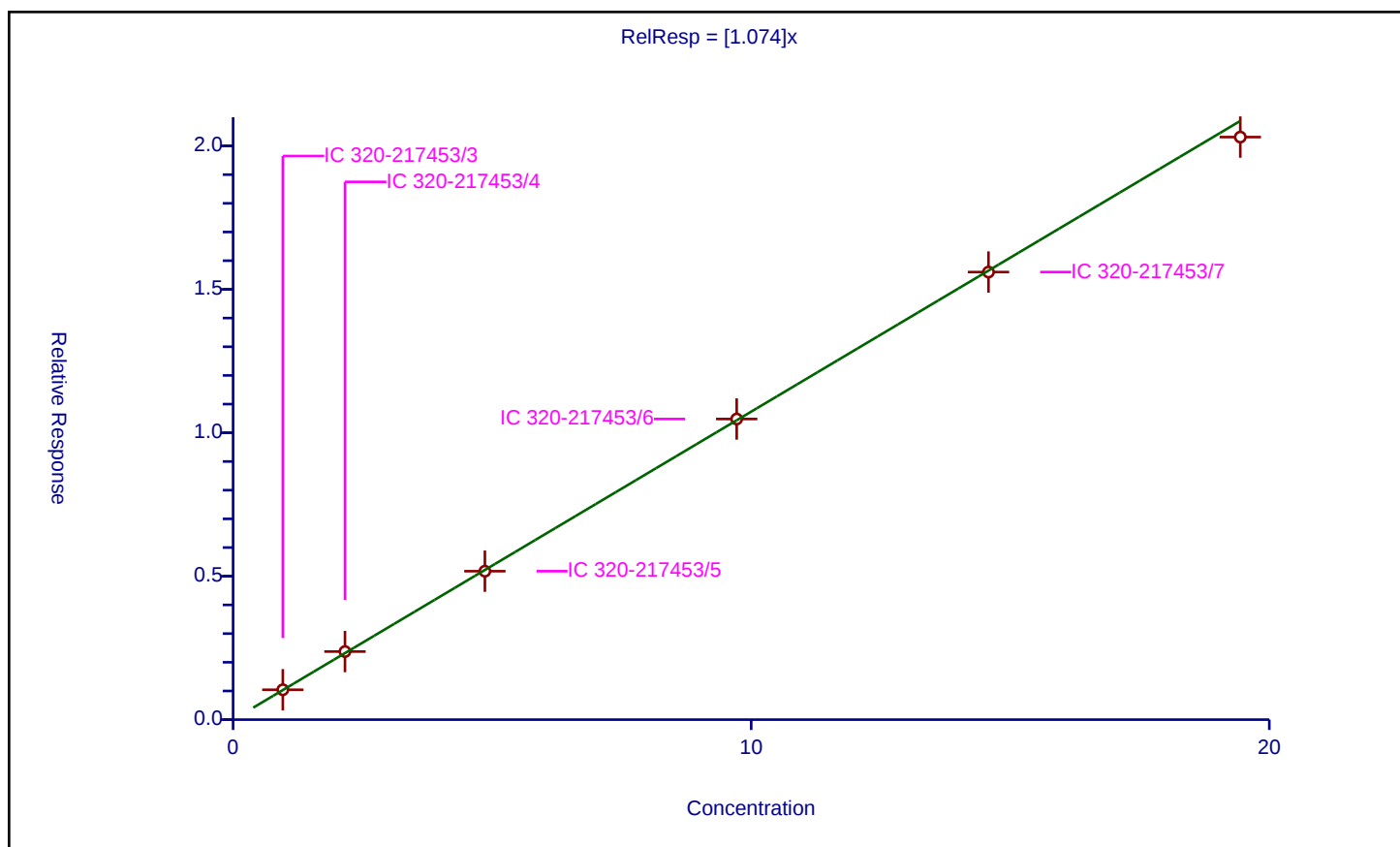
Curve Coefficients

Intercept: 0
 Slope: 1.074

Error Coefficients

Standard Error: 1220000
 Relative Standard Error: 1.7
 Correlation Coefficient: 0.998
 Coefficient of Determination (Adjusted): 1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-217453/3	0.96	1.041561	10.0	1044020.0	1.084959	Y
2	IC 320-217453/4	2.16	2.373972	10.0	921915.0	1.099061	Y
3	IC 320-217453/5	4.86	5.175227	10.0	945031.0	1.064862	Y
4	IC 320-217453/6	9.72	10.480965	10.0	996809.0	1.078289	Y
5	IC 320-217453/7	14.58	15.603994	10.0	929546.0	1.070233	Y
6	IC 320-217453/8	19.44	20.309372	10.0	982926.0	1.044721	Y



Calibration

/ Perfluorooctanoic acid

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

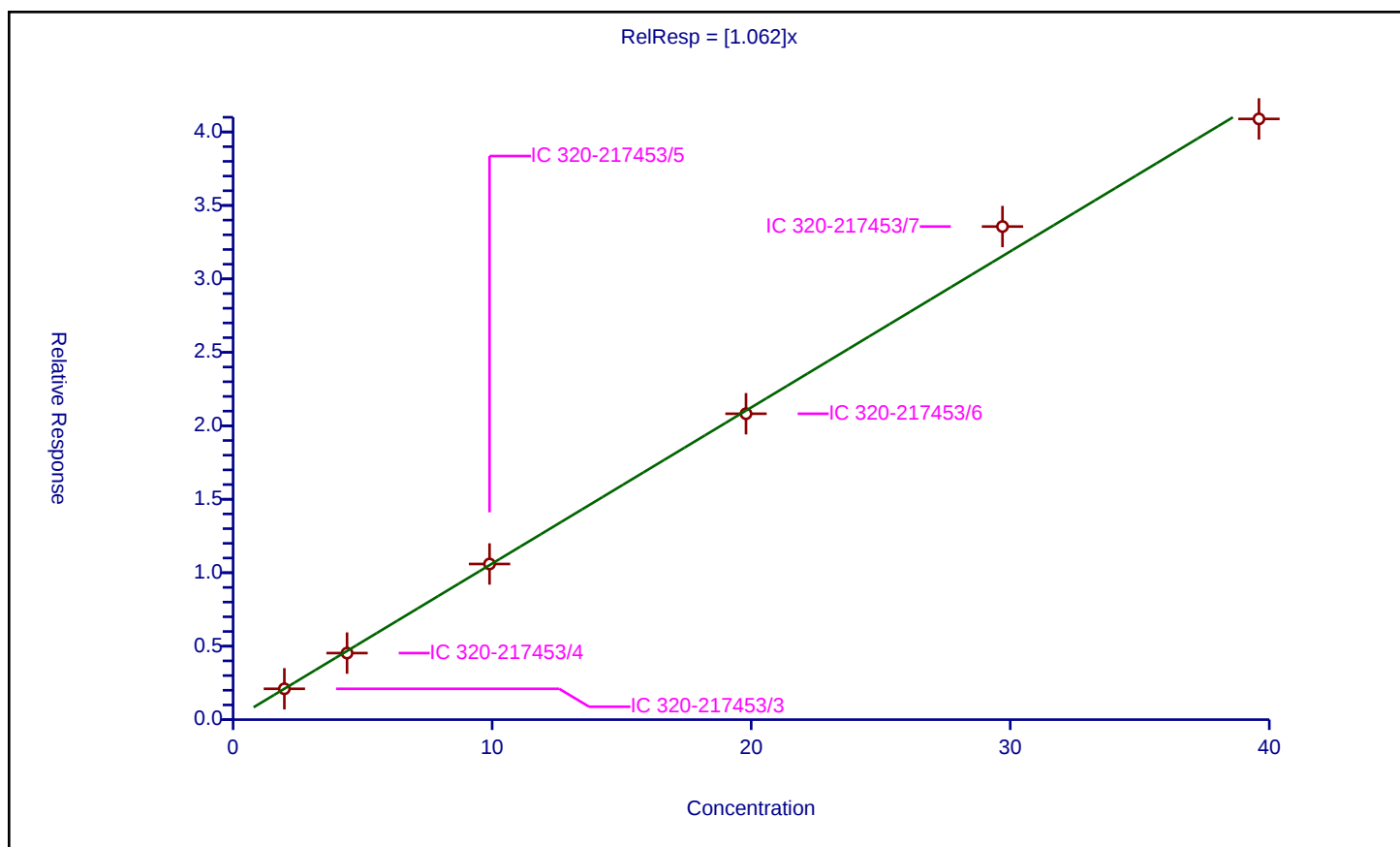
Curve Coefficients

Intercept: 0
Slope: 1.062

Error Coefficients

Standard Error: 2510000
Relative Standard Error: 3.5
Correlation Coefficient: 0.999
Coefficient of Determination (Adjusted): 0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-217453/3	1.98	2.098619	10.0	1044020.0	1.059908	Y
2	IC 320-217453/4	4.4	4.530049	10.0	921915.0	1.029557	Y
3	IC 320-217453/5	9.9	10.595589	10.0	945031.0	1.070262	Y
4	IC 320-217453/6	19.8	20.822123	10.0	996809.0	1.051622	Y
5	IC 320-217453/7	29.7	33.562481	10.0	929546.0	1.13005	Y
6	IC 320-217453/8	39.6	40.888165	10.0	982926.0	1.032529	Y



Calibration

/ Perfluorooctane sulfonic acid

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

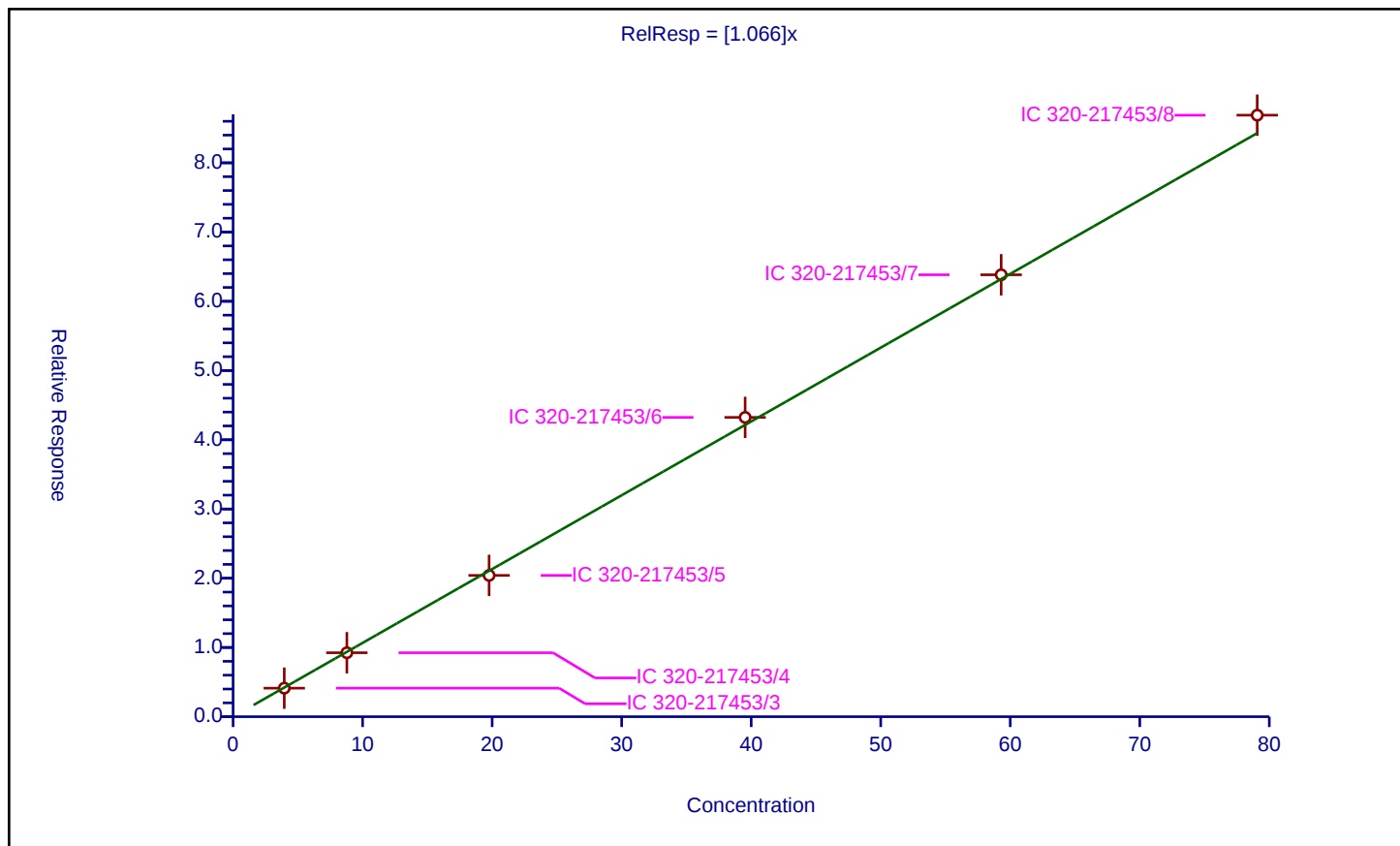
Curve Coefficients

Intercept: 0
 Slope: 1.066

Error Coefficients

Standard Error: 4290000
 Relative Standard Error: 2.6
 Correlation Coefficient: 0.998
 Coefficient of Determination (Adjusted): 0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-217453/3	3.95328	4.124117	28.68	2429483.0	1.043214	Y
2	IC 320-217453/4	8.785067	9.240832	28.68	2220259.0	1.05188	Y
3	IC 320-217453/5	19.7664	20.41005	28.68	2380125.0	1.032563	Y
4	IC 320-217453/6	39.5328	43.230372	28.68	2440107.0	1.093532	Y
5	IC 320-217453/7	59.2992	63.829241	28.68	2283311.0	1.076393	Y
6	IC 320-217453/8	79.0656	86.881718	28.68	2316327.0	1.098856	Y



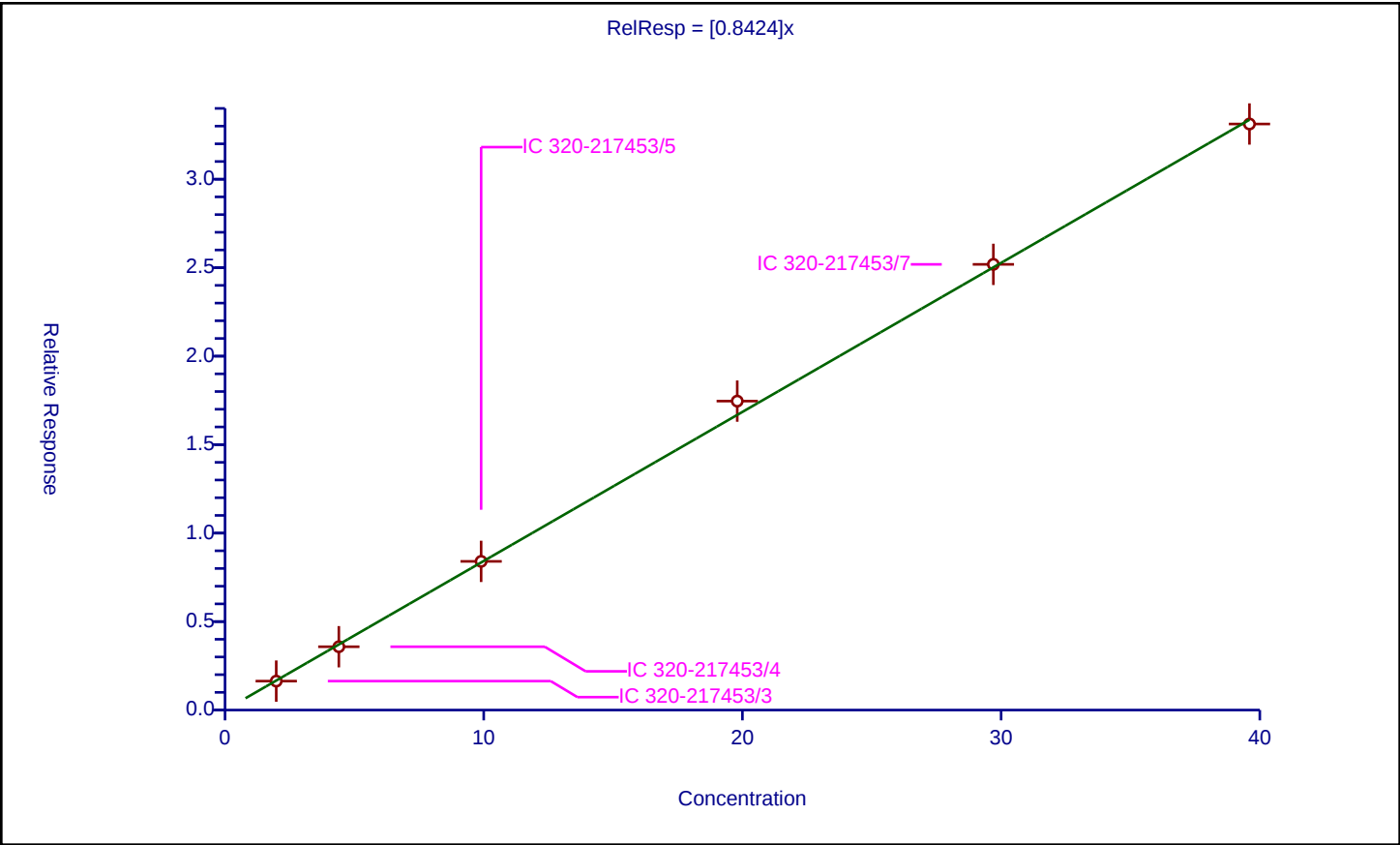
Calibration

/ Perfluorononanoic acid

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

Curve Coefficients	
Intercept:	0
Slope:	0.8424
Error Coefficients	
Standard Error:	1990000
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 320-217453/3	1.98	1.635697	10.0	1044020.0	0.826109	Y
2	IC 320-217453/4	4.4	3.578464	10.0	921915.0	0.813287	Y
3	IC 320-217453/5	9.9	8.402645	10.0	945031.0	0.848752	Y
4	IC 320-217453/6	19.8	17.459935	10.0	996809.0	0.881815	Y
5	IC 320-217453/7	29.7	25.186865	10.0	929546.0	0.848043	Y
6	IC 320-217453/8	39.6	33.119218	10.0	982926.0	0.836344	Y



Calibration

/ 13C2 PFDA

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

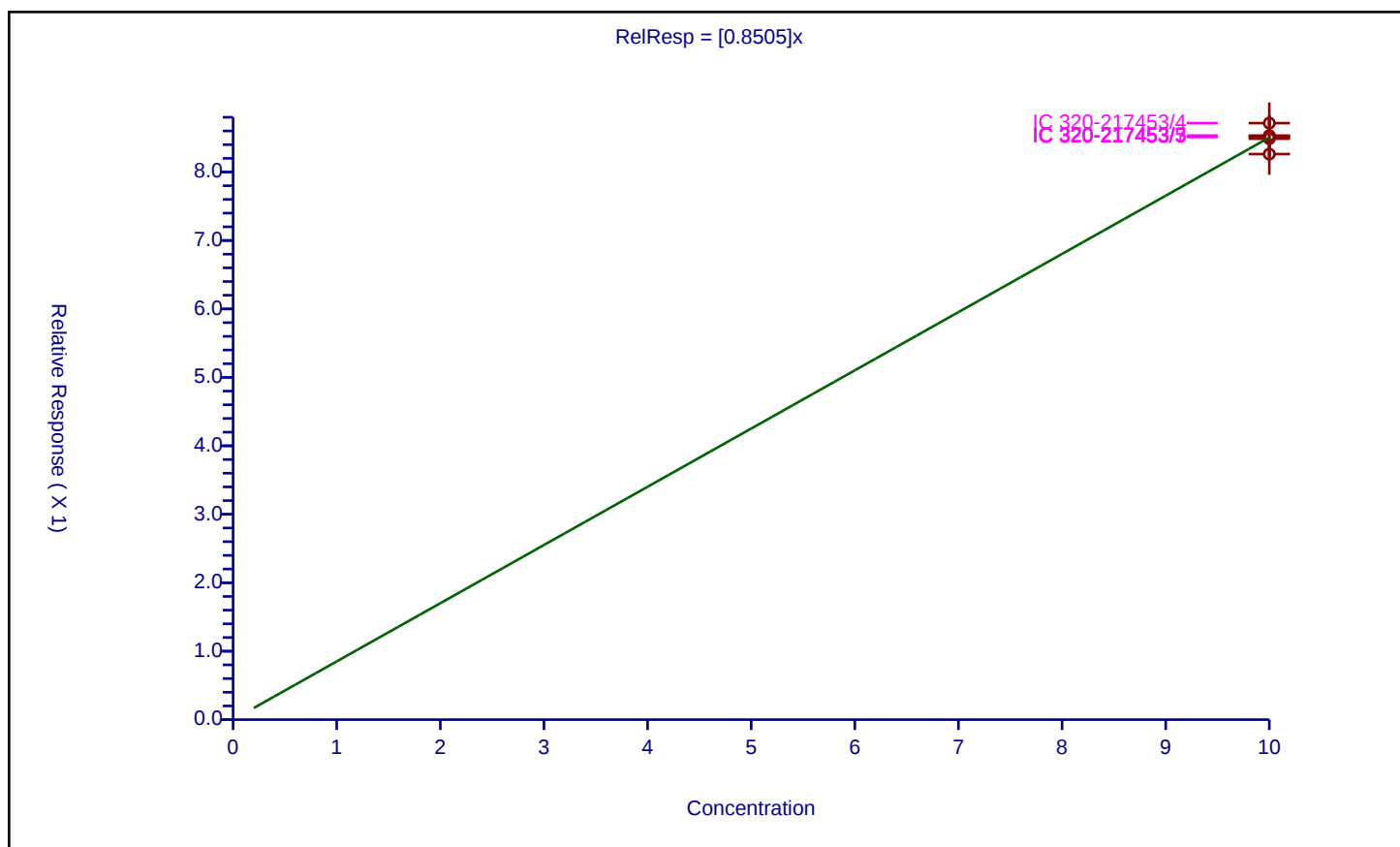
Curve Coefficients

Intercept: 0
Slope: 0.8505

Error Coefficients

Standard Error: 904000
Relative Standard Error: 1.7
Correlation Coefficient: NA
Coefficient of Determination (Adjusted): 0

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-217453/3	10.0	8.512691	10.0	1044020.0	0.851269	Y
2	IC 320-217453/4	10.0	8.714491	10.0	921915.0	0.871449	Y
3	IC 320-217453/5	10.0	8.53263	10.0	945031.0	0.853263	Y
4	IC 320-217453/6	10.0	8.486982	10.0	996809.0	0.848698	Y
5	IC 320-217453/7	10.0	8.519223	10.0	929546.0	0.851922	Y
6	IC 320-217453/8	10.0	8.262189	10.0	982926.0	0.826219	Y



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-217453/10 Calibration Date: 04/11/2018 12:18
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.11_537ICALB_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.052	1.078		20.5	20.0	2.5	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.079		2.17	2.16	0.5	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.583		6.48	6.72	-3.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.067		4.42	4.40	0.4	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.026		8.45	8.79	-3.8	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8056		4.21	4.40	-4.4	50.0
13C2 PFHxA	Ave	1.063	1.036		9.74	10.0	-2.6	30.0
13C2 PFDA	Ave	0.8505	0.8798		10.3	10.0	3.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Lab Sample ID: ICV 320-217453/12 Calibration Date: 04/11/2018 12:27
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.04.11_537ICALB_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.052	0.9079		86.4	100	-13.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	0.9453		8.80	10.0	-12.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.546		19.0	20.2	-5.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	0.8947		17.0	20.2	-15.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	0.9451		17.9	20.2	-11.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.7643		18.3	20.2	-9.3	30.0
13C2 PFHxA	Ave	1.063	0.9887		9.30	10.0	-7.0	30.0
13C2 PFDA	Ave	0.8505	0.7817		9.19	10.0	-8.1	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-221668/1 Calibration Date: 05/05/2018 02:43
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.05.05_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	1.052	1.163		22.1	20.0	10.6	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.069		2.15	2.16	-0.5	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.602		6.56	6.72	-2.4	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.088		4.50	4.40	2.4	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.026		8.45	8.79	-3.8	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.7757		4.05	4.40	-7.9	50.0
13C2 PFHxA	Ave	1.063	1.077		10.1	10.0	1.3	30.0
13C2 PFDA	Ave	0.8505	0.8053		9.47	10.0	-5.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Lab Sample ID: CCV 320-221679/1 Calibration Date: 05/05/2018 05:55
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.05.05_537A_045.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.052	1.066		137	135	1.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.086		14.7	14.6	1.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.712		47.3	45.4	4.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.079		30.2	29.7	1.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.083		60.2	59.3	1.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8185		28.9	29.7	-2.8	30.0
13C2 PFHxA	Ave	1.063	1.113		10.5	10.0	4.7	30.0
13C2 PFDA	Ave	0.8505	0.7775		9.14	10.0	-8.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Lab Sample ID: CCV 320-221679/13 Calibration Date: 05/05/2018 06:51
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.05.05_537A_057.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.052	1.195		51.1	45.0	13.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.033		4.67	4.86	-3.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.705		15.7	15.1	3.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.050		9.78	9.90	-1.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.065		19.7	19.8	-0.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.7646		8.99	9.90	-9.2	30.0
13C2 PFHxA	Ave	1.063	1.038		9.77	10.0	-2.3	30.0
13C2 PFDA	Ave	0.8505	0.7535		8.86	10.0	-11.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Lab Sample ID: CCV 320-221681/13 Calibration Date: 05/05/2018 06:51
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.05.05_537A_057.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.052	1.195		51.1	45.0	13.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.033		4.67	4.86	-3.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.705		15.7	15.1	3.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.050		9.78	9.90	-1.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.065		19.7	19.8	-0.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.7646		8.99	9.90	-9.2	30.0
13C2 PFHxA	Ave	1.063	1.038		9.77	10.0	-2.3	30.0
13C2 PFDA	Ave	0.8505	0.7535		8.86	10.0	-11.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Lab Sample ID: CCV 320-221681/23 Calibration Date: 05/05/2018 07:38
 Instrument ID: A8_N Calib Start Date: 04/11/2018 11:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 04/11/2018 12:09
 Lab File ID: 2018.05.05_537A_067.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.052	1.072		138	135	1.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.099		14.9	14.6	2.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.695		46.8	45.4	3.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.091		30.5	29.7	2.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8407		29.6	29.7	-0.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.094		60.8	59.3	2.6	30.0
13C2 PFHxA	Ave	1.063	1.155		10.9	10.0	8.6	30.0
13C2 PFDA	Ave	0.8505	0.8135		9.56	10.0	-4.4	30.0

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-220576/1-A
 Matrix: Water Lab File ID: 2018.05.05_537A_047.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/30/2018 08:44
 Sample wt/vol: 250 (mL) Date Analyzed: 05/05/2018 06:04
 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.: 221679 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	96		70-130

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-38538-1

SDG No.: _____

Instrument ID: A8_NStart Date: 04/11/2018 11:45Analysis Batch Number: 217453End Date: 04/11/2018 12:27

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-217453/3		04/11/2018 11:45	1	2018.04.11_537I CALB 004.d	GeminiC18 3x100 3(mm)
IC 320-217453/4		04/11/2018 11:50	1	2018.04.11_537I CALB 005.d	GeminiC18 3x100 3(mm)
IC 320-217453/5		04/11/2018 11:55	1	2018.04.11_537I CALB 006.d	GeminiC18 3x100 3(mm)
IC 320-217453/6 ICISAV		04/11/2018 11:59	1	2018.04.11_537I CALB 007.d	GeminiC18 3x100 3(mm)
IC 320-217453/7		04/11/2018 12:04	1	2018.04.11_537I CALB 008.d	GeminiC18 3x100 3(mm)
IC 320-217453/8		04/11/2018 12:09	1	2018.04.11_537I CALB 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		04/11/2018 12:13	1		GeminiC18 3x100 3(mm)
CCVL 320-217453/10		04/11/2018 12:18	1	2018.04.11_537I CALB 011.d	GeminiC18 3x100 3(mm)
ICB 320-217453/11		04/11/2018 12:23	1		GeminiC18 3x100 3(mm)
ICV 320-217453/12		04/11/2018 12:27	1	2018.04.11_537I CALB 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Instrument ID: A8_N Start Date: 05/05/2018 02:43Analysis Batch Number: 221668 End Date: 05/05/2018 03:44

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-221668/1		05/05/2018 02:43	1	2018.05.05_537A 004.d	GeminiC18 3x100 3(mm)
CCV 320-221668/2 CCVIS		05/05/2018 02:47	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 02:57	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:01	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:06	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:11	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:16	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:20	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:25	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:30	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:34	1		GeminiC18 3x100 3(mm)
ZZZZZ		05/05/2018 03:39	1		GeminiC18 3x100 3(mm)
CCV 320-221668/14 CCVIS		05/05/2018 03:44	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Instrument ID: A8_N Start Date: 05/05/2018 05:55Analysis Batch Number: 221679 End Date: 05/05/2018 06:51

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-221679/1 CCVIS		05/05/2018 05:55	1	2018.05.05_537A 045.d	GeminiC18 3x100 3(mm)
MB 320-220576/1-A		05/05/2018 06:04	1	2018.05.05_537A 047.d	GeminiC18 3x100 3(mm)
LLCS 320-220576/2-A		05/05/2018 06:09	1	2018.05.05_537A 048.d	GeminiC18 3x100 3(mm)
LLCSD 320-220576/3-A		05/05/2018 06:13	1	2018.05.05_537A 049.d	GeminiC18 3x100 3(mm)
320-38538-1		05/05/2018 06:18	1	2018.05.05_537A 050.d	GeminiC18 3x100 3(mm)
320-38538-2		05/05/2018 06:23	1	2018.05.05_537A 051.d	GeminiC18 3x100 3(mm)
320-38538-3		05/05/2018 06:27	1	2018.05.05_537A 052.d	GeminiC18 3x100 3(mm)
320-38538-4		05/05/2018 06:32	1	2018.05.05_537A 053.d	GeminiC18 3x100 3(mm)
320-38538-5		05/05/2018 06:37	1	2018.05.05_537A 054.d	GeminiC18 3x100 3(mm)
320-38538-6		05/05/2018 06:41	1	2018.05.05_537A 055.d	GeminiC18 3x100 3(mm)
320-38538-7		05/05/2018 06:46	1	2018.05.05_537A 056.d	GeminiC18 3x100 3(mm)
CCV 320-221679/13 CCVIS		05/05/2018 06:51	1	2018.05.05_537A 057.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-38538-1

SDG No.: _____

Instrument ID: A8_NStart Date: 05/05/2018 06:51Analysis Batch Number: 221681End Date: 05/05/2018 07:38

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-221681/13 CCVIS		05/05/2018 06:51	1	2018.05.05_537A 057.d	GeminiC18 3x100 3(mm)
320-38538-8		05/05/2018 07:00	1	2018.05.05_537A 059.d	GeminiC18 3x100 3(mm)
320-38538-9		05/05/2018 07:05	1	2018.05.05_537A 060.d	GeminiC18 3x100 3(mm)
320-38538-10		05/05/2018 07:10	1	2018.05.05_537A 061.d	GeminiC18 3x100 3(mm)
320-38538-11		05/05/2018 07:14	1	2018.05.05_537A 062.d	GeminiC18 3x100 3(mm)
320-38538-12		05/05/2018 07:19	1	2018.05.05_537A 063.d	GeminiC18 3x100 3(mm)
320-38538-13		05/05/2018 07:24	1	2018.05.05_537A 064.d	GeminiC18 3x100 3(mm)
320-38538-14		05/05/2018 07:28	1	2018.05.05_537A 065.d	GeminiC18 3x100 3(mm)
320-38538-15		05/05/2018 07:33	1	2018.05.05_537A 066.d	GeminiC18 3x100 3(mm)
CCV 320-221681/23 CCVIS		05/05/2018 07:38	1	2018.05.05_537A 067.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-38538-1

SDG No.: _____

Batch Number: 220576 Batch Start Date: 04/30/18 08:44 Batch Analyst: Kolstad, Kate MBatch Method: 537 Batch End Date: 05/02/18 17:45

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00068
MB 320-220576/1		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
LLCS 320-220576/2		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
LLCSD 320-220576/3		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-1	WGNA-042518-RW-3 785	537, 537	T	277.84 g	29.46 g	248.4 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-2	WGNA-042518-FRB- 3785	537, 537	T	277.38 g	28.15 g	249.2 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-3	WGNA-042518-RW-3 325	537, 537	T	278.27 g	29.08 g	249.2 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-4	WGNA-042518-FRB- 3325	537, 537	T	279.15 g	28.43 g	250.7 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-5	WGNA-042518-RW-5 00	537, 537	T	276.54 g	28.49 g	248.1 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-6	WGNA-042518-FRB- 500	537, 537	T	279.28 g	28.32 g	251 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-7	WGNA-042518-RW-3 529	537, 537	T	279.29 g	30.06 g	249.2 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-8	WGNA-042518-FRB- 3529	537, 537	T	282.46 g	27.93 g	254.5 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-9	WGNA-042518-RW-3 957	537, 537	T	277.96 g	28.21 g	249.8 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-10	WGNA-042518-FRB- 3957	537, 537	T	283.36 g	30.31 g	253.1 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-11	WGNA-042518-RW-0 683	537, 537	T	279.31 g	28.04 g	251.3 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-12	WGNA-042518-FRB- 0683	537, 537	T	270.15 g	27.77 g	242.4 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-13	NAWC-042518-RW-2 72	537, 537	T	279.96 g	28.99 g	251 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-14	NAWC-042518-FRB- 272	537, 537	T	274.62 g	30.01 g	244.6 mL	1.00 mL	7.0 SU	100 uL
320-38538-A-15	WGNA-042518-DUP- 34	537, 537	T	280.81 g	29.14 g	251.7 mL	1.00 mL	7.0 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00067	AnalysisComment			
MB 320-220576/1		537, 537			100 uL	C1 ND			
LLCS 320-220576/2		537, 537		100 uL	100 uL	C1 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.: 320-38538-1

SDG No.: _____

Batch Number: 220576 Batch Start Date: 04/30/18 08:44 Batch Analyst: Kolstad, Kate MBatch Method: 537 Batch End Date: 05/02/18 17:45

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00067	AnalysisComment			
LLCSD 320-220576/3		537, 537		100 uL	100 uL	C1 ND			
320-38538-A-1	WGNA-042518-RW-3 785	537, 537	T		100 uL	C1 ND			
320-38538-A-2	WGNA-042518-FRB- 3785	537, 537	T		100 uL	C1 ND			
320-38538-A-3	WGNA-042518-RW-3 325	537, 537	T		100 uL	C1 ND			
320-38538-A-4	WGNA-042518-FRB- 3325	537, 537	T		100 uL	C1 ND			
320-38538-A-5	WGNA-042518-RW-5 00	537, 537	T		100 uL	C1 ND			
320-38538-A-6	WGNA-042518-FRB- 500	537, 537	T		100 uL	C1 ND			
320-38538-A-7	WGNA-042518-RW-3 529	537, 537	T		100 uL	C1 ND			
320-38538-A-8	WGNA-042518-FRB- 3529	537, 537	T		100 uL	C1 ND			
320-38538-A-9	WGNA-042518-RW-3 957	537, 537	T		100 uL	C1 ND			
320-38538-A-10	WGNA-042518-FRB- 3957	537, 537	T		100 uL	C1 ND			
320-38538-A-11	WGNA-042518-RW-0 683	537, 537	T		100 uL	C1 ND			
320-38538-A-12	WGNA-042518-FRB- 0683	537, 537	T		100 uL	C1 ND			
320-38538-A-13	NAWC-042518-RW-2 72	537, 537	T		100 uL	C1 ND			
320-38538-A-14	NAWC-042518-FRB- 272	537, 537	T		100 uL	C1 ND			
320-38538-A-15	WGNA-042518-DUP- 34	537, 537	T		100 uL	C1 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.: 320-38538-1

SDG No.: _____

Batch Number: 220576 Batch Start Date: 04/30/18 08:44 Batch Analyst: Kolstad, Kate MBatch Method: 537 Batch End Date: 05/02/18 17:45

Batch Notes	
Analyst ID - Aliquot Step	TWL
Batch Comment	Sample ID's match with T.A. Label: KMK
Analyst ID - Concentration	SKD/KMK
Analyst ID - Final Volume Step	TWL
Internal Standard ID#	1223393
Manifold ID	1, 4
Methanol ID	1221633
pH Indicator ID	0818
Pipette ID	O43093F
Analyst ID - IS Reagent Drop	TWL
Analyst ID - IS Reagent Drop Witness	VPM
Analyst ID - SU Reagent Drop	KMK
Analyst ID - SU Reagent Drop Witness	ABH
Analyst ID - TA Reagent Drop	KMK
Analyst ID - TA Reagent Drop Witness	ABH
SPE Cartridge Lot ID	6390138-03
Trizma ID	SLBR5241V
Reagent Water ID	4-26-18

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.

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