



**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 320-37675-1**

*Naval Air Station Willow Grove
Willow Grove, Pennsylvania*

August 2019

N00158_000788
WILLOW_GROVE_NAS
SSIC 5000-33c

**LABORATORY DATA PACKAGE, 320-37675-1, NAWC WARMINSTER NAS
WILLOW GROVE PA**

04/18/2018
TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-37675-1

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
4/18/2018 10:16 AM

David R Alltucker, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4383
david.alltucker@testamericainc.com
04/18/2018

Table of Contents

Cover Title Page	1
Data Summaries	4
Definitions	4
Case Narrative	5
Detection Summary	6
Client Sample Results	9
Default Detection Limits	16
Surrogate Summary	17
QC Sample Results	18
QC Association	21
Chronicle	23
Certification Summary	27
Method Summary	28
Sample Summary	29
Manual Integration Summary	30
Reagent Traceability	39
COAs	47
Organic Sample Data	123
LCMS	123
Method 537 DOD	123
Method 537 DOD QC Summary	124
Method 537 DOD Sample Data	143
Standards Data	275
Method 537 DOD ICAL Data	275
Method 537 DOD CCAL Data	319
Raw QC Data	385

Table of Contents

Method 537 DOD Blank Data	385
Method 537 DOD LCS/LCSD Data	395
Method 537 DOD MS/MSD Data	416
Method 537 DOD Run Logs	430
Method 537 DOD Prep Data	436
Shipping and Receiving Documents	457
Client Chain of Custody	458
Sample Receipt Checklist	459

Definitions/Glossary

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

TestAmerica Job ID: 320-37675-1

Qualifiers

LCMS

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

Glossary

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

Job Narrative
320-37675-1

Receipt

The samples were received on 3/30/2018 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.4° C and 2.4° 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.

Method(s) 537: The following samples were re-extracted outside of holding time to confirm the original results as detections were seen in the FRB sample but not the parent samples. NAWC-032819-RW-117 (320-37675-16) and NAWC-032819-FRB-117 (320-37675-17) . The results confirmed and the original results are reported.

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 320-216791.

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: 320-37675-1

Client Sample ID: WGNA-032918-DUP-31

Lab Sample ID: 320-37675-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	5.4	J	20	2.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-032819-RW-286

Lab Sample ID: 320-37675-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	17	J M	39	6.7	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	18	J	20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.8	J	30	5.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.7	J	9.9	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-032819-FRB-286

Lab Sample ID: 320-37675-3

No Detections.

Client Sample ID: WGNA-032819-RW-0518

Lab Sample ID: 320-37675-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	22	J M	40	6.7	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	23		20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.9	J	30	5.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.7	J	9.9	1.9	ng/L	1		537	Total/NA
Perfluorobutanesulfonic acid (PFBS)	19	J	89	16	ng/L	1		537	Total/NA

Client Sample ID: WGNA-032819-FRB-0518

Lab Sample ID: 320-37675-5

No Detections.

Client Sample ID: NAWC-032819-RW-010

Lab Sample ID: 320-37675-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	27	J M	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	20		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)	5.8	J	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-032819-FRB-010

Lab Sample ID: 320-37675-7

No Detections.

Client Sample ID: NAWC-032819-RW-127

Lab Sample ID: 320-37675-8

No Detections.

Client Sample ID: NAWC-032819-FRB-127

Lab Sample ID: 320-37675-9

No Detections.

Client Sample ID: NAWC-032819-RW-195

Lab Sample ID: 320-37675-10

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)	12	J	20	2.8	ng/L	1		537	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

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

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-RW-195 (Continued)

Lab Sample ID: 320-37675-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	4.2	J	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-032819-FRB-195

Lab Sample ID: 320-37675-11

No Detections.

Client Sample ID: NAWC-032819-RW-048

Lab Sample ID: 320-37675-12

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	4.8	J	20	2.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-032819-FRB-048

Lab Sample ID: 320-37675-13

No Detections.

Client Sample ID: NAWC-032819-RW-139

Lab Sample ID: 320-37675-14

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	9.5	J	20	2.8	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.0	J M	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-032819-FRB-139

Lab Sample ID: 320-37675-15

No Detections.

Client Sample ID: NAWC-032819-RW-117

Lab Sample ID: 320-37675-16

No Detections.

Client Sample ID: NAWC-032819-FRB-117

Lab Sample ID: 320-37675-17

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	28	J M	39	6.6	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	20		19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	15	J	29	5.3	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.9	J	9.7	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-032819-RW-181

Lab Sample ID: 320-37675-18

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	5.2	J	20	2.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-032819-FRB-181

Lab Sample ID: 320-37675-19

No Detections.

Client Sample ID: NAWC-032819-RW-138

Lab Sample ID: 320-37675-20

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	8.0	J M	41	7.0	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	30		21	2.9	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	7.4	J	10	2.0	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: 320-37675-1

Client Sample ID: NAWC-032819-FRB-138 Lab Sample ID: 320-37675-21

No Detections.

Client Sample Results

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

TestAmerica Job ID: 320-37675-1

Client Sample ID: WGNA-032918-DUP-31

Date Collected: 03/29/18 07:00

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-1

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	6.7	ng/L	—	04/07/18 08:11	04/13/18 00:51	1
Perfluorooctanoic acid (PFOA)	5.4	J	20	2.8	ng/L	—	04/07/18 08:11	04/13/18 00:51	1
Perfluorononanoic acid (PFNA)	20	U	24	7.9	ng/L	—	04/07/18 08:11	04/13/18 00:51	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L	—	04/07/18 08:11	04/13/18 00:51	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	9.9	1.9	ng/L	—	04/07/18 08:11	04/13/18 00:51	1
Perfluorobutanesulfonic acid (PFBS)	36	U	89	16	ng/L	—	04/07/18 08:11	04/13/18 00:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		70 - 130				04/07/18 08:11	04/13/18 00:51	1
13C2 PFDA	93		70 - 130				04/07/18 08:11	04/13/18 00:51	1

Client Sample ID: NAWC-032819-RW-286

Date Collected: 03/29/18 08:10

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-2

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	17	J M	39	6.7	ng/L	—	04/07/18 08:11	04/13/18 00:55	1
Perfluorooctanoic acid (PFOA)	18	J	20	2.8	ng/L	—	04/07/18 08:11	04/13/18 00:55	1
Perfluorononanoic acid (PFNA)	20	U M	24	7.9	ng/L	—	04/07/18 08:11	04/13/18 00:55	1
Perfluorohexanesulfonic acid (PFHxS)	5.8	J	30	5.4	ng/L	—	04/07/18 08:11	04/13/18 00:55	1
Perfluoroheptanoic acid (PFHpA)	4.7	J	9.9	1.9	ng/L	—	04/07/18 08:11	04/13/18 00:55	1
Perfluorobutanesulfonic acid (PFBS)	36	U	89	16	ng/L	—	04/07/18 08:11	04/13/18 00:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		70 - 130				04/07/18 08:11	04/13/18 00:55	1
13C2 PFDA	101		70 - 130				04/07/18 08:11	04/13/18 00:55	1

Client Sample ID: NAWC-032819-FRB-286

Date Collected: 03/29/18 08:05

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-3

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	41	6.9	ng/L	—	04/07/18 08:11	04/13/18 01:00	1
Perfluorooctanoic acid (PFOA)	8.1	U	20	2.8	ng/L	—	04/07/18 08:11	04/13/18 01:00	1
Perfluorononanoic acid (PFNA)	20	U	24	8.1	ng/L	—	04/07/18 08:11	04/13/18 01:00	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.6	ng/L	—	04/07/18 08:11	04/13/18 01:00	1
Perfluoroheptanoic acid (PFHpA)	4.1	U	10	1.9	ng/L	—	04/07/18 08:11	04/13/18 01:00	1
Perfluorobutanesulfonic acid (PFBS)	36	U	91	16	ng/L	—	04/07/18 08:11	04/13/18 01:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		70 - 130				04/07/18 08:11	04/13/18 01:00	1
13C2 PFDA	95		70 - 130				04/07/18 08:11	04/13/18 01:00	1

Client Sample Results

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

TestAmerica Job ID: 320-37675-1

Client Sample ID: WGNA-032819-RW-0518

Date Collected: 03/29/18 08:40

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-4

Matrix: Water

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	6.7	ng/L		04/07/18 08:11	04/13/18 01:05	1
Perfluorooctanoic acid (PFOA)	23		20	2.8	ng/L		04/07/18 08:11	04/13/18 01:05	1
Perfluorononanoic acid (PFNA)	20	U M	24	7.9	ng/L		04/07/18 08:11	04/13/18 01:05	1
Perfluorohexanesulfonic acid (PFHxS)	8.9	J	30	5.4	ng/L		04/07/18 08:11	04/13/18 01:05	1
Perfluoroheptanoic acid (PFHpA)	5.7	J	9.9	1.9	ng/L		04/07/18 08:11	04/13/18 01:05	1
Perfluorobutanesulfonic acid (PFBS)	19	J	89	16	ng/L		04/07/18 08:11	04/13/18 01:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	106		70 - 130				04/07/18 08:11	04/13/18 01:05	1
13C2 PFDA	104		70 - 130				04/07/18 08:11	04/13/18 01:05	1

Client Sample ID: WGNA-032819-FRB-0518

Date Collected: 03/29/18 08:35

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-5

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	39	6.7	ng/L		04/07/18 08:11	04/13/18 01:09	1
Perfluorooctanoic acid (PFOA)	7.9	U	20	2.8	ng/L		04/07/18 08:11	04/13/18 01:09	1
Perfluorononanoic acid (PFNA)	20	U	24	7.9	ng/L		04/07/18 08:11	04/13/18 01:09	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.4	ng/L		04/07/18 08:11	04/13/18 01:09	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.9	1.9	ng/L		04/07/18 08:11	04/13/18 01:09	1
Perfluorobutanesulfonic acid (PFBS)	36	U	89	16	ng/L		04/07/18 08:11	04/13/18 01:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		70 - 130				04/07/18 08:11	04/13/18 01:09	1
13C2 PFDA	98		70 - 130				04/07/18 08:11	04/13/18 01:09	1

Client Sample ID: NAWC-032819-RW-010

Date Collected: 03/29/18 09:10

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-6

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	27	J M	40	6.8	ng/L		04/07/18 08:11	04/13/18 01:14	1
Perfluorooctanoic acid (PFOA)	20		20	2.8	ng/L		04/07/18 08:11	04/13/18 01:14	1
Perfluorononanoic acid (PFNA)	20	U M	24	8.0	ng/L		04/07/18 08:11	04/13/18 01:14	1
Perfluorohexanesulfonic acid (PFHxS)	17	J	30	5.5	ng/L		04/07/18 08:11	04/13/18 01:14	1
Perfluoroheptanoic acid (PFHpA)	5.8	J	10	1.9	ng/L		04/07/18 08:11	04/13/18 01:14	1
Perfluorobutanesulfonic acid (PFBS)	36	U	91	16	ng/L		04/07/18 08:11	04/13/18 01:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		70 - 130				04/07/18 08:11	04/13/18 01:14	1
13C2 PFDA	88		70 - 130				04/07/18 08:11	04/13/18 01:14	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-FRB-010

Date Collected: 03/29/18 09:05

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-7

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	39	6.7	ng/L		04/07/18 08:11	04/13/18 01:19	1
Perfluorooctanoic acid (PFOA)	7.8	U	20	2.7	ng/L		04/07/18 08:11	04/13/18 01:19	1
Perfluorononanoic acid (PFNA)	20	U	23	7.8	ng/L		04/07/18 08:11	04/13/18 01:19	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.4	ng/L		04/07/18 08:11	04/13/18 01:19	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	1.9	ng/L		04/07/18 08:11	04/13/18 01:19	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		04/07/18 08:11	04/13/18 01:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		70 - 130	04/07/18 08:11	04/13/18 01:19	1
13C2 PFDA	101		70 - 130	04/07/18 08:11	04/13/18 01:19	1

Client Sample ID: NAWC-032819-RW-127

Date Collected: 03/29/18 09:40

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-8

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	39	6.7	ng/L		04/07/18 08:11	04/13/18 01:33	1
Perfluorooctanoic acid (PFOA)	7.8	U	20	2.7	ng/L		04/07/18 08:11	04/13/18 01:33	1
Perfluorononanoic acid (PFNA)	20	U	24	7.8	ng/L		04/07/18 08:11	04/13/18 01:33	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.4	ng/L		04/07/18 08:11	04/13/18 01:33	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	1.9	ng/L		04/07/18 08:11	04/13/18 01:33	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		04/07/18 08:11	04/13/18 01:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		70 - 130	04/07/18 08:11	04/13/18 01:33	1
13C2 PFDA	96		70 - 130	04/07/18 08:11	04/13/18 01:33	1

Client Sample ID: NAWC-032819-FRB-127

Date Collected: 03/29/18 09:35

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-9

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		04/07/18 08:11	04/13/18 01:37	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		04/07/18 08:11	04/13/18 01:37	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		04/07/18 08:11	04/13/18 01:37	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		04/07/18 08:11	04/13/18 01:37	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		04/07/18 08:11	04/13/18 01:37	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		04/07/18 08:11	04/13/18 01:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		70 - 130	04/07/18 08:11	04/13/18 01:37	1
13C2 PFDA	100		70 - 130	04/07/18 08:11	04/13/18 01:37	1

Client Sample Results

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

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-RW-195

Lab Sample ID: 320-37675-10

Date Collected: 03/29/18 10:10

Matrix: Water

Date Received: 03/30/18 09:00

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		04/07/18 08:11	04/13/18 01:42	1
Perfluorooctanoic acid (PFOA)	12	J	20	2.8	ng/L		04/07/18 08:11	04/13/18 01:42	1
Perfluorononanoic acid (PFNA)	20	U M	24	8.0	ng/L		04/07/18 08:11	04/13/18 01:42	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		04/07/18 08:11	04/13/18 01:42	1
Perfluoroheptanoic acid (PFHpA)	4.2	J	10	1.9	ng/L		04/07/18 08:11	04/13/18 01:42	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		04/07/18 08:11	04/13/18 01:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		70 - 130	04/07/18 08:11	04/13/18 01:42	1
13C2 PFDA	91		70 - 130	04/07/18 08:11	04/13/18 01:42	1

Client Sample ID: NAWC-032819-FRB-195

Lab Sample ID: 320-37675-11

Date Collected: 03/29/18 10:05

Matrix: Water

Date Received: 03/30/18 09:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	39	6.6	ng/L		04/07/18 08:11	04/13/18 01:47	1
Perfluorooctanoic acid (PFOA)	7.8	U	20	2.7	ng/L		04/07/18 08:11	04/13/18 01:47	1
Perfluorononanoic acid (PFNA)	20	U	23	7.8	ng/L		04/07/18 08:11	04/13/18 01:47	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.4	ng/L		04/07/18 08:11	04/13/18 01:47	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	1.9	ng/L		04/07/18 08:11	04/13/18 01:47	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		04/07/18 08:11	04/13/18 01:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		70 - 130	04/07/18 08:11	04/13/18 01:47	1
13C2 PFDA	94		70 - 130	04/07/18 08:11	04/13/18 01:47	1

Client Sample ID: NAWC-032819-RW-048

Lab Sample ID: 320-37675-12

Date Collected: 03/29/18 10:40

Matrix: Water

Date Received: 03/30/18 09:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U M	41	6.9	ng/L		04/07/18 08:19	04/13/18 02:10	1
Perfluorooctanoic acid (PFOA)	4.8	J	20	2.9	ng/L		04/07/18 08:19	04/13/18 02:10	1
Perfluorononanoic acid (PFNA)	20	U	24	8.2	ng/L		04/07/18 08:19	04/13/18 02:10	1
Perfluorohexanesulfonic acid (PFHxS)	12	U M	31	5.6	ng/L		04/07/18 08:19	04/13/18 02:10	1
Perfluoroheptanoic acid (PFHpA)	4.1	U	10	1.9	ng/L		04/07/18 08:19	04/13/18 02:10	1
Perfluorobutanesulfonic acid (PFBS)	37	U M	92	16	ng/L		04/07/18 08:19	04/13/18 02:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		70 - 130	04/07/18 08:19	04/13/18 02:10	1
13C2 PFDA	96		70 - 130	04/07/18 08:19	04/13/18 02:10	1

Client Sample Results

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

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-FRB-048

Lab Sample ID: 320-37675-13

Date Collected: 03/29/18 10:35

Matrix: Water

Date Received: 03/30/18 09:00

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		04/07/18 08:19	04/13/18 02:15	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		04/07/18 08:19	04/13/18 02:15	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		04/07/18 08:19	04/13/18 02:15	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		04/07/18 08:19	04/13/18 02:15	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		04/07/18 08:19	04/13/18 02:15	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		04/07/18 08:19	04/13/18 02:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		70 - 130	04/07/18 08:19	04/13/18 02:15	1
13C2 PFDA	94		70 - 130	04/07/18 08:19	04/13/18 02:15	1

Client Sample ID: NAWC-032819-RW-139

Lab Sample ID: 320-37675-14

Date Collected: 03/29/18 11:10

Matrix: Water

Date Received: 03/30/18 09:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U M	40	6.8	ng/L		04/07/18 08:19	04/13/18 02:29	1
Perfluorooctanoic acid (PFOA)	9.5	J	20	2.8	ng/L		04/07/18 08:19	04/13/18 02:29	1
Perfluorononanoic acid (PFNA)	20	U M	24	8.0	ng/L		04/07/18 08:19	04/13/18 02:29	1
Perfluorohexanesulfonic acid (PFHxS)	12	U M	30	5.5	ng/L		04/07/18 08:19	04/13/18 02:29	1
Perfluoroheptanoic acid (PFHpA)	4.0	J M	10	1.9	ng/L		04/07/18 08:19	04/13/18 02:29	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		04/07/18 08:19	04/13/18 02:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	87		70 - 130	04/07/18 08:19	04/13/18 02:29	1
13C2 PFDA	100		70 - 130	04/07/18 08:19	04/13/18 02:29	1

Client Sample ID: NAWC-032819-FRB-139

Lab Sample ID: 320-37675-15

Date Collected: 03/29/18 11:05

Matrix: Water

Date Received: 03/30/18 09:00

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		04/07/18 08:19	04/13/18 02:43	1
Perfluorooctanoic acid (PFOA)	7.9	U	20	2.7	ng/L		04/07/18 08:19	04/13/18 02:43	1
Perfluorononanoic acid (PFNA)	20	U	24	7.9	ng/L		04/07/18 08:19	04/13/18 02:43	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.4	ng/L		04/07/18 08:19	04/13/18 02:43	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	1.9	ng/L		04/07/18 08:19	04/13/18 02:43	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		04/07/18 08:19	04/13/18 02:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		70 - 130	04/07/18 08:19	04/13/18 02:43	1
13C2 PFDA	98		70 - 130	04/07/18 08:19	04/13/18 02:43	1

Client Sample Results

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

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-RW-117

Lab Sample ID: 320-37675-16

Date Collected: 03/29/18 11:40

Matrix: Water

Date Received: 03/30/18 09:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	39	6.6	ng/L		04/07/18 08:19	04/13/18 02:47	1
Perfluorooctanoic acid (PFOA)	7.8	U	19	2.7	ng/L		04/07/18 08:19	04/13/18 02:47	1
Perfluorononanoic acid (PFNA)	19	U	23	7.8	ng/L		04/07/18 08:19	04/13/18 02:47	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.4	ng/L		04/07/18 08:19	04/13/18 02:47	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	1.9	ng/L		04/07/18 08:19	04/13/18 02:47	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		04/07/18 08:19	04/13/18 02:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		70 - 130	04/07/18 08:19	04/13/18 02:47	1
13C2 PFDA	98		70 - 130	04/07/18 08:19	04/13/18 02:47	1

Client Sample ID: NAWC-032819-FRB-117

Lab Sample ID: 320-37675-17

Date Collected: 03/29/18 11:35

Matrix: Water

Date Received: 03/30/18 09:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	28	J M	39	6.6	ng/L		04/07/18 08:19	04/13/18 02:52	1
Perfluorooctanoic acid (PFOA)	20		19	2.7	ng/L		04/07/18 08:19	04/13/18 02:52	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		04/07/18 08:19	04/13/18 02:52	1
Perfluorohexanesulfonic acid (PFHxS)	15	J	29	5.3	ng/L		04/07/18 08:19	04/13/18 02:52	1
Perfluoroheptanoic acid (PFHpA)	4.9	J	9.7	1.8	ng/L		04/07/18 08:19	04/13/18 02:52	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L		04/07/18 08:19	04/13/18 02:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		70 - 130	04/07/18 08:19	04/13/18 02:52	1
13C2 PFDA	88		70 - 130	04/07/18 08:19	04/13/18 02:52	1

Client Sample ID: NAWC-032819-RW-181

Lab Sample ID: 320-37675-18

Date Collected: 03/29/18 12:10

Matrix: Water

Date Received: 03/30/18 09:00

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		04/07/18 08:19	04/13/18 02:57	1
Perfluorooctanoic acid (PFOA)	5.2	J	20	2.8	ng/L		04/07/18 08:19	04/13/18 02:57	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		04/07/18 08:19	04/13/18 02:57	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		04/07/18 08:19	04/13/18 02:57	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		04/07/18 08:19	04/13/18 02:57	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		04/07/18 08:19	04/13/18 02:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		70 - 130	04/07/18 08:19	04/13/18 02:57	1
13C2 PFDA	86		70 - 130	04/07/18 08:19	04/13/18 02:57	1

Client Sample Results

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

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-FRB-181

Lab Sample ID: 320-37675-19

Date Collected: 03/29/18 12:05

Matrix: Water

Date Received: 03/30/18 09:00

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		04/07/18 08:19	04/13/18 03:01	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		04/07/18 08:19	04/13/18 03:01	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		04/07/18 08:19	04/13/18 03:01	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		04/07/18 08:19	04/13/18 03:01	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		04/07/18 08:19	04/13/18 03:01	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		04/07/18 08:19	04/13/18 03:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		70 - 130	04/07/18 08:19	04/13/18 03:01	1
13C2 PFDA	104		70 - 130	04/07/18 08:19	04/13/18 03:01	1

Client Sample ID: NAWC-032819-RW-138

Lab Sample ID: 320-37675-20

Date Collected: 03/29/18 13:10

Matrix: Water

Date Received: 03/30/18 09:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	8.0	J M	41	7.0	ng/L		04/07/18 08:19	04/13/18 03:06	1
Perfluorooctanoic acid (PFOA)	30		21	2.9	ng/L		04/07/18 08:19	04/13/18 03:06	1
Perfluorononanoic acid (PFNA)	21	U M	25	8.3	ng/L		04/07/18 08:19	04/13/18 03:06	1
Perfluorohexanesulfonic acid (PFHxS)	12	U M	31	5.7	ng/L		04/07/18 08:19	04/13/18 03:06	1
Perfluoroheptanoic acid (PFHpA)	7.4	J	10	2.0	ng/L		04/07/18 08:19	04/13/18 03:06	1
Perfluorobutanesulfonic acid (PFBS)	37	U	93	17	ng/L		04/07/18 08:19	04/13/18 03:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		70 - 130	04/07/18 08:19	04/13/18 03:06	1
13C2 PFDA	99		70 - 130	04/07/18 08:19	04/13/18 03:06	1

Client Sample ID: NAWC-032819-FRB-138

Lab Sample ID: 320-37675-21

Date Collected: 03/29/18 13:05

Matrix: Water

Date Received: 03/30/18 09:00

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		04/07/18 08:19	04/13/18 03:11	1
Perfluorooctanoic acid (PFOA)	7.9	U	20	2.8	ng/L		04/07/18 08:19	04/13/18 03:11	1
Perfluorononanoic acid (PFNA)	20	U	24	7.9	ng/L		04/07/18 08:19	04/13/18 03:11	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.4	ng/L		04/07/18 08:19	04/13/18 03:11	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.9	1.9	ng/L		04/07/18 08:19	04/13/18 03:11	1
Perfluorobutanesulfonic acid (PFBS)	36	U	89	16	ng/L		04/07/18 08:19	04/13/18 03:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		70 - 130	04/07/18 08:19	04/13/18 03:11	1
13C2 PFDA	91		70 - 130	04/07/18 08:19	04/13/18 03:11	1

Default Detection Limits

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-37675-1

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: 320-37675-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		PFHxA (70-130)	PFDA (70-130)
320-37675-1	WGNA-032918-DUP-31	95	93
320-37675-2	NAWC-032819-RW-286	98	101
320-37675-3	NAWC-032819-FRB-286	101	95
320-37675-4	WGNA-032819-RW-0518	106	104
320-37675-5	WGNA-032819-FRB-0518	100	98
320-37675-6	NAWC-032819-RW-010	91	88
320-37675-7	NAWC-032819-FRB-010	101	101
320-37675-8	NAWC-032819-RW-127	93	96
320-37675-9	NAWC-032819-FRB-127	95	100
320-37675-10	NAWC-032819-RW-195	97	91
320-37675-11	NAWC-032819-FRB-195	97	94
320-37675-12	NAWC-032819-RW-048	91	96
320-37675-13	NAWC-032819-FRB-048	94	94
320-37675-14	NAWC-032819-RW-139	87	100
320-37675-14 LMS	NAWC-032819-RW-139	101	97
320-37675-14 LMSD	NAWC-032819-RW-139	93	98
320-37675-15	NAWC-032819-FRB-139	98	98
320-37675-16	NAWC-032819-RW-117	97	98
320-37675-17	NAWC-032819-FRB-117	96	88
320-37675-18	NAWC-032819-RW-181	94	86
320-37675-19	NAWC-032819-FRB-181	100	104
320-37675-20	NAWC-032819-RW-138	98	99
320-37675-21	NAWC-032819-FRB-138	96	91
LCS 320-216791/2-A	Lab Control Sample	95	93
LCSD 320-216791/3-A	Lab Control Sample Dup	87	101
LLCS 320-216792/2-A	Lab Control Sample	99	92
MB 320-216791/1-A	Method Blank	83	94
MB 320-216792/1-A	Method Blank	91	90

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: 320-37675-1

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

Lab Sample ID: MB 320-216791/1-A

Matrix: Water

Analysis Batch: 217814

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 216791

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L	-	04/07/18 08:11	04/13/18 00:37	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L	-	04/07/18 08:11	04/13/18 00:37	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L	-	04/07/18 08:11	04/13/18 00:37	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L	-	04/07/18 08:11	04/13/18 00:37	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L	-	04/07/18 08:11	04/13/18 00:37	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L	-	04/07/18 08:11	04/13/18 00:37	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	83		70 - 130	04/07/18 08:11	04/13/18 00:37	1
13C2 PFDA	94		70 - 130	04/07/18 08:11	04/13/18 00:37	1

Lab Sample ID: LCS 320-216791/2-A

Matrix: Water

Analysis Batch: 217814

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 216791

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	132	132	M	ng/L	-	100	70 - 130
Perfluorooctanoic acid (PFOA)	66.0	67.8		ng/L	-	103	70 - 130
Perfluorononanoic acid (PFNA)	66.0	62.6		ng/L	-	95	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	100	105		ng/L	-	105	70 - 130
Perfluoroheptanoic acid (PFHpA)	32.0	32.0		ng/L	-	100	70 - 130
Perfluorobutanesulfonic acid (PFBS)	300	303		ng/L	-	101	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	95		70 - 130
13C2 PFDA	93		70 - 130

Lab Sample ID: LCSD 320-216791/3-A

Matrix: Water

Analysis Batch: 217814

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 216791

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	132	126	M	ng/L	-	96	70 - 130	4	30
Perfluorooctanoic acid (PFOA)	66.0	65.5		ng/L	-	99	70 - 130	3	30
Perfluorononanoic acid (PFNA)	66.0	62.7		ng/L	-	95	70 - 130	0	30
Perfluorohexanesulfonic acid (PFHxS)	100	102		ng/L	-	102	70 - 130	3	30
Perfluoroheptanoic acid (PFHpA)	32.0	31.0		ng/L	-	97	70 - 130	3	30
Perfluorobutanesulfonic acid (PFBS)	300	266		ng/L	-	89	70 - 130	13	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
13C2 PFHxA	87		70 - 130
13C2 PFDA	101		70 - 130

TestAmerica Sacramento

QC Sample Results

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

TestAmerica Job ID: 320-37675-1

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

Lab Sample ID: MB 320-216792/1-A

Matrix: Water

Analysis Batch: 217818

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 216792

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		04/07/18 08:19	04/13/18 02:01	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		04/07/18 08:19	04/13/18 02:01	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		04/07/18 08:19	04/13/18 02:01	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		04/07/18 08:19	04/13/18 02:01	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		04/07/18 08:19	04/13/18 02:01	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		04/07/18 08:19	04/13/18 02:01	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		70 - 130	04/07/18 08:19	04/13/18 02:01	1
13C2 PFDA	90		70 - 130	04/07/18 08:19	04/13/18 02:01	1

Lab Sample ID: LLCS 320-216792/2-A

Matrix: Water

Analysis Batch: 217818

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 216792

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	Limits
Perfluorooctanesulfonic acid (PFOS)	40.2	38.9	J M	ng/L		97	50 - 150
Perfluorooctanoic acid (PFOA)	20.0	19.1	J	ng/L		95	50 - 150
Perfluorononanoic acid (PFNA)	20.0	17.5	J	ng/L		88	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	30.3	31.7		ng/L		105	50 - 150
Perfluoroheptanoic acid (PFHpA)	10.0	9.59	J	ng/L		96	50 - 150
Perfluorobutanesulfonic acid (PFBS)	90.2	97.1		ng/L		108	50 - 150

Surrogate	LLCS %Recovery	LLCS Qualifier	Limits
13C2 PFHxA	99		70 - 130
13C2 PFDA	92		70 - 130

Lab Sample ID: 320-37675-14 LMS

Matrix: Water

Analysis Batch: 217820

Client Sample ID: NAWC-032819-RW-139

Prep Type: Total/NA

Prep Batch: 216792

Analyte	Sample Result	Sample Qualifier	Spike Added	LMS Result	LMS Qualifier	Unit	D	%Rec	Limits
Perfluorooctanesulfonic acid (PFOS)	16	U M	39.3	42.7	M	ng/L		109	50 - 150
Perfluorooctanoic acid (PFOA)	9.5	J	19.6	28.1		ng/L		95	50 - 150
Perfluorononanoic acid (PFNA)	20	U M	19.6	19.0	J	ng/L		97	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	12	U M	29.7	31.3		ng/L		106	50 - 150
Perfluoroheptanoic acid (PFHpA)	4.0	J M	9.78	13.4		ng/L		96	50 - 150
Perfluorobutanesulfonic acid (PFBS)	36	U	88.2	104		ng/L		118	50 - 150

Surrogate	LMS %Recovery	LMS Qualifier	Limits
13C2 PFHxA	101		70 - 130
13C2 PFDA	97		70 - 130

TestAmerica Sacramento

QC Sample Results

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

TestAmerica Job ID: 320-37675-1

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

Lab Sample ID: 320-37675-14 LMSD

Matrix: Water

Analysis Batch: 217820

Client Sample ID: NAWC-032819-RW-139

Prep Type: Total/NA

Prep Batch: 216792

Analyte	Sample Result	Sample Qualifier	Spike Added	LMSD Result	LMSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	16	U M	39.8	41.2	M	ng/L		104	50 - 150	3	50
Perfluorooctanoic acid (PFOA)	9.5	J	19.8	27.4		ng/L		91	50 - 150	3	50
Perfluorononanoic acid (PFNA)	20	U M	19.8	18.5	J	ng/L		94	50 - 150	3	50
Perfluorohexanesulfonic acid (PFHxS)	12	U M	30.0	29.4	J	ng/L		98	50 - 150	6	50
Perfluoroheptanoic acid (PFHpA)	4.0	J M	9.89	13.0		ng/L		91	50 - 150	3	50
Perfluorobutanesulfonic acid (PFBS)	36	U	89.1	94.4		ng/L		106	50 - 150	9	50
Surrogate	LMSD %Recovery	LMSD Qualifier	Limits								
13C2 PFHxA	93		70 - 130								
13C2 PFDA	98		70 - 130								

QC Association Summary

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

TestAmerica Job ID: 320-37675-1

LCMS

Prep Batch: 216791

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-37675-1	WGNA-032918-DUP-31	Total/NA	Water	537	
320-37675-2	NAWC-032819-RW-286	Total/NA	Water	537	
320-37675-3	NAWC-032819-FRB-286	Total/NA	Water	537	
320-37675-4	WGNA-032819-RW-0518	Total/NA	Water	537	
320-37675-5	WGNA-032819-FRB-0518	Total/NA	Water	537	
320-37675-6	NAWC-032819-RW-010	Total/NA	Water	537	
320-37675-7	NAWC-032819-FRB-010	Total/NA	Water	537	
320-37675-8	NAWC-032819-RW-127	Total/NA	Water	537	
320-37675-9	NAWC-032819-FRB-127	Total/NA	Water	537	
320-37675-10	NAWC-032819-RW-195	Total/NA	Water	537	
320-37675-11	NAWC-032819-FRB-195	Total/NA	Water	537	
MB 320-216791/1-A	Method Blank	Total/NA	Water	537	
LCS 320-216791/2-A	Lab Control Sample	Total/NA	Water	537	
LCSD 320-216791/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Prep Batch: 216792

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-37675-12	NAWC-032819-RW-048	Total/NA	Water	537	
320-37675-13	NAWC-032819-FRB-048	Total/NA	Water	537	
320-37675-14	NAWC-032819-RW-139	Total/NA	Water	537	
320-37675-15	NAWC-032819-FRB-139	Total/NA	Water	537	
320-37675-16	NAWC-032819-RW-117	Total/NA	Water	537	
320-37675-17	NAWC-032819-FRB-117	Total/NA	Water	537	
320-37675-18	NAWC-032819-RW-181	Total/NA	Water	537	
320-37675-19	NAWC-032819-FRB-181	Total/NA	Water	537	
320-37675-20	NAWC-032819-RW-138	Total/NA	Water	537	
320-37675-21	NAWC-032819-FRB-138	Total/NA	Water	537	
MB 320-216792/1-A	Method Blank	Total/NA	Water	537	
LLCS 320-216792/2-A	Lab Control Sample	Total/NA	Water	537	
320-37675-14 LMS	NAWC-032819-RW-139	Total/NA	Water	537	
320-37675-14 LMSD	NAWC-032819-RW-139	Total/NA	Water	537	

Analysis Batch: 217814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-37675-1	WGNA-032918-DUP-31	Total/NA	Water	537	216791
320-37675-2	NAWC-032819-RW-286	Total/NA	Water	537	216791
320-37675-3	NAWC-032819-FRB-286	Total/NA	Water	537	216791
320-37675-4	WGNA-032819-RW-0518	Total/NA	Water	537	216791
320-37675-5	WGNA-032819-FRB-0518	Total/NA	Water	537	216791
320-37675-6	NAWC-032819-RW-010	Total/NA	Water	537	216791
320-37675-7	NAWC-032819-FRB-010	Total/NA	Water	537	216791
MB 320-216791/1-A	Method Blank	Total/NA	Water	537	216791
LCS 320-216791/2-A	Lab Control Sample	Total/NA	Water	537	216791
LCSD 320-216791/3-A	Lab Control Sample Dup	Total/NA	Water	537	216791

Analysis Batch: 217816

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-37675-8	NAWC-032819-RW-127	Total/NA	Water	537	216791
320-37675-9	NAWC-032819-FRB-127	Total/NA	Water	537	216791
320-37675-10	NAWC-032819-RW-195	Total/NA	Water	537	216791
320-37675-11	NAWC-032819-FRB-195	Total/NA	Water	537	216791

TestAmerica Sacramento

QC Association Summary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-37675-1

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

Analysis Batch: 217818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-37675-12	NAWC-032819-RW-048	Total/NA	Water	537	216792
320-37675-13	NAWC-032819-FRB-048	Total/NA	Water	537	216792
MB 320-216792/1-A	Method Blank	Total/NA	Water	537	216792
LLCS 320-216792/2-A	Lab Control Sample	Total/NA	Water	537	216792

Analysis Batch: 217820

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-37675-14	NAWC-032819-RW-139	Total/NA	Water	537	216792
320-37675-15	NAWC-032819-FRB-139	Total/NA	Water	537	216792
320-37675-16	NAWC-032819-RW-117	Total/NA	Water	537	216792
320-37675-17	NAWC-032819-FRB-117	Total/NA	Water	537	216792
320-37675-18	NAWC-032819-RW-181	Total/NA	Water	537	216792
320-37675-19	NAWC-032819-FRB-181	Total/NA	Water	537	216792
320-37675-20	NAWC-032819-RW-138	Total/NA	Water	537	216792
320-37675-21	NAWC-032819-FRB-138	Total/NA	Water	537	216792
320-37675-14 LMS	NAWC-032819-RW-139	Total/NA	Water	537	216792
320-37675-14 LMSD	NAWC-032819-RW-139	Total/NA	Water	537	216792

Lab Chronicle

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

TestAmerica Job ID: 320-37675-1

Client Sample ID: WGNA-032918-DUP-31

Date Collected: 03/29/18 07:00

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216791	04/07/18 08:11	SK	TAL SAC
Total/NA	Analysis	537		1	217814	04/13/18 00:51	JRB	TAL SAC

Client Sample ID: NAWC-032819-RW-286

Date Collected: 03/29/18 08:10

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216791	04/07/18 08:11	SK	TAL SAC
Total/NA	Analysis	537		1	217814	04/13/18 00:55	JRB	TAL SAC

Client Sample ID: NAWC-032819-FRB-286

Date Collected: 03/29/18 08:05

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216791	04/07/18 08:11	SK	TAL SAC
Total/NA	Analysis	537		1	217814	04/13/18 01:00	JRB	TAL SAC

Client Sample ID: WGNA-032819-RW-0518

Date Collected: 03/29/18 08:40

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216791	04/07/18 08:11	SK	TAL SAC
Total/NA	Analysis	537		1	217814	04/13/18 01:05	JRB	TAL SAC

Client Sample ID: WGNA-032819-FRB-0518

Date Collected: 03/29/18 08:35

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216791	04/07/18 08:11	SK	TAL SAC
Total/NA	Analysis	537		1	217814	04/13/18 01:09	JRB	TAL SAC

Client Sample ID: NAWC-032819-RW-010

Date Collected: 03/29/18 09:10

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216791	04/07/18 08:11	SK	TAL SAC
Total/NA	Analysis	537		1	217814	04/13/18 01:14	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-FRB-010

Date Collected: 03/29/18 09:05

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216791	04/07/18 08:11	SK	TAL SAC
Total/NA	Analysis	537		1	217814	04/13/18 01:19	JRB	TAL SAC

Client Sample ID: NAWC-032819-RW-127

Date Collected: 03/29/18 09:40

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216791	04/07/18 08:11	SK	TAL SAC
Total/NA	Analysis	537		1	217816	04/13/18 01:33	JRB	TAL SAC

Client Sample ID: NAWC-032819-FRB-127

Date Collected: 03/29/18 09:35

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216791	04/07/18 08:11	SK	TAL SAC
Total/NA	Analysis	537		1	217816	04/13/18 01:37	JRB	TAL SAC

Client Sample ID: NAWC-032819-RW-195

Date Collected: 03/29/18 10:10

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216791	04/07/18 08:11	SK	TAL SAC
Total/NA	Analysis	537		1	217816	04/13/18 01:42	JRB	TAL SAC

Client Sample ID: NAWC-032819-FRB-195

Date Collected: 03/29/18 10:05

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216791	04/07/18 08:11	SK	TAL SAC
Total/NA	Analysis	537		1	217816	04/13/18 01:47	JRB	TAL SAC

Client Sample ID: NAWC-032819-RW-048

Date Collected: 03/29/18 10:40

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216792	04/07/18 08:19	SK	TAL SAC
Total/NA	Analysis	537		1	217818	04/13/18 02:10	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-FRB-048

Date Collected: 03/29/18 10:35

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216792	04/07/18 08:19	SK	TAL SAC
Total/NA	Analysis	537		1	217818	04/13/18 02:15	JRB	TAL SAC

Client Sample ID: NAWC-032819-RW-139

Date Collected: 03/29/18 11:10

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-14

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216792	04/07/18 08:19	SK	TAL SAC
Total/NA	Analysis	537		1	217820	04/13/18 02:29	JRB	TAL SAC

Client Sample ID: NAWC-032819-FRB-139

Date Collected: 03/29/18 11:05

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-15

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216792	04/07/18 08:19	SK	TAL SAC
Total/NA	Analysis	537		1	217820	04/13/18 02:43	JRB	TAL SAC

Client Sample ID: NAWC-032819-RW-117

Date Collected: 03/29/18 11:40

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-16

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216792	04/07/18 08:19	SK	TAL SAC
Total/NA	Analysis	537		1	217820	04/13/18 02:47	JRB	TAL SAC

Client Sample ID: NAWC-032819-FRB-117

Date Collected: 03/29/18 11:35

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-17

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216792	04/07/18 08:19	SK	TAL SAC
Total/NA	Analysis	537		1	217820	04/13/18 02:52	JRB	TAL SAC

Client Sample ID: NAWC-032819-RW-181

Date Collected: 03/29/18 12:10

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-18

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216792	04/07/18 08:19	SK	TAL SAC
Total/NA	Analysis	537		1	217820	04/13/18 02:57	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-37675-1

Client Sample ID: NAWC-032819-FRB-181

Date Collected: 03/29/18 12:05

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-19

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216792	04/07/18 08:19	SK	TAL SAC
Total/NA	Analysis	537		1	217820	04/13/18 03:01	JRB	TAL SAC

Client Sample ID: NAWC-032819-RW-138

Date Collected: 03/29/18 13:10

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-20

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216792	04/07/18 08:19	SK	TAL SAC
Total/NA	Analysis	537		1	217820	04/13/18 03:06	JRB	TAL SAC

Client Sample ID: NAWC-032819-FRB-138

Date Collected: 03/29/18 13:05

Date Received: 03/30/18 09:00

Lab Sample ID: 320-37675-21

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			216792	04/07/18 08:19	SK	TAL SAC
Total/NA	Analysis	537		1	217820	04/13/18 03:11	JRB	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-37675-1

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

Laboratory: TestAmerica Sacramento

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

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

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

TestAmerica Sacramento

Method Summary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-37675-1

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

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-37675-1

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-37675-1	WGNA-032918-DUP-31	Water	03/29/18 07:00	03/30/18 09:00
320-37675-2	NAWC-032819-RW-286	Water	03/29/18 08:10	03/30/18 09:00
320-37675-3	NAWC-032819-FRB-286	Water	03/29/18 08:05	03/30/18 09:00
320-37675-4	WGNA-032819-RW-0518	Water	03/29/18 08:40	03/30/18 09:00
320-37675-5	WGNA-032819-FRB-0518	Water	03/29/18 08:35	03/30/18 09:00
320-37675-6	NAWC-032819-RW-010	Water	03/29/18 09:10	03/30/18 09:00
320-37675-7	NAWC-032819-FRB-010	Water	03/29/18 09:05	03/30/18 09:00
320-37675-8	NAWC-032819-RW-127	Water	03/29/18 09:40	03/30/18 09:00
320-37675-9	NAWC-032819-FRB-127	Water	03/29/18 09:35	03/30/18 09:00
320-37675-10	NAWC-032819-RW-195	Water	03/29/18 10:10	03/30/18 09:00
320-37675-11	NAWC-032819-FRB-195	Water	03/29/18 10:05	03/30/18 09:00
320-37675-12	NAWC-032819-RW-048	Water	03/29/18 10:40	03/30/18 09:00
320-37675-13	NAWC-032819-FRB-048	Water	03/29/18 10:35	03/30/18 09:00
320-37675-14	NAWC-032819-RW-139	Water	03/29/18 11:10	03/30/18 09:00
320-37675-15	NAWC-032819-FRB-139	Water	03/29/18 11:05	03/30/18 09:00
320-37675-16	NAWC-032819-RW-117	Water	03/29/18 11:40	03/30/18 09:00
320-37675-17	NAWC-032819-FRB-117	Water	03/29/18 11:35	03/30/18 09:00
320-37675-18	NAWC-032819-RW-181	Water	03/29/18 12:10	03/30/18 09:00
320-37675-19	NAWC-032819-FRB-181	Water	03/29/18 12:05	03/30/18 09:00
320-37675-20	NAWC-032819-RW-138	Water	03/29/18 13:10	03/30/18 09:00
320-37675-21	NAWC-032819-FRB-138	Water	03/29/18 13:05	03/30/18 09:00

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

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.: 320-37675-1

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.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217726Lab Sample ID: CCVL 320-217726/1 Client Sample ID: _____Date Analyzed: 04/12/18 14:48 Lab File ID: 2018.04.12_537A_004.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	roycea	04/12/18 16:14

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217814Lab Sample ID: CCV 320-217814/1 CCVIS Client Sample ID: _____Date Analyzed: 04/13/18 00:27 Lab File ID: 2018.04.12_537AA_029.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	roycea	04/13/18 09:24

Lab Sample ID: LCS 320-216791/2-A Client Sample ID: _____Date Analyzed: 04/13/18 00:41 Lab File ID: 2018.04.12_537AA_032.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	roycea	04/13/18 09:25

Lab Sample ID: LCSD 320-216791/3-A Client Sample ID: _____Date Analyzed: 04/13/18 00:46 Lab File ID: 2018.04.12_537AA_033.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	roycea	04/13/18 09:25

Lab Sample ID: 320-37675-2 Client Sample ID: NAWC-032819-RW-286Date Analyzed: 04/13/18 00:55 Lab File ID: 2018.04.12_537AA_035.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorononanoic acid (PFNA)	2.12	Missed Peak	barnettj	04/13/18 09:55
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	barnettj	04/13/18 09:55

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217814Lab Sample ID: 320-37675-4 Client Sample ID: WGNA-032819-RW-0518Date Analyzed: 04/13/18 01:05 Lab File ID: 2018.04.12_537AA_037.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	barnettj	04/13/18 09:56
Perfluorononanoic acid (PFNA)	2.12	Missed Peak	barnettj	04/13/18 09:56

Lab Sample ID: 320-37675-6 Client Sample ID: NAWC-032819-RW-010Date Analyzed: 04/13/18 01:14 Lab File ID: 2018.04.12_537AA_039.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	barnettj	04/13/18 09:57
Perfluorononanoic acid (PFNA)	2.12	Missed Peak	barnettj	04/13/18 09:57

Lab Sample ID: CCV 320-217814/13 CCVIS Client Sample ID: _____Date Analyzed: 04/13/18 01:23 Lab File ID: 2018.04.12_537AA_041.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	roycea	04/13/18 09:26

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217816Lab Sample ID: CCV 320-217816/13 CCVIS Client Sample ID: _____Date Analyzed: 04/13/18 01:23 Lab File ID: 2018.04.12_537AA_041.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	roycea	04/13/18 09:26

Lab Sample ID: 320-37675-10 Client Sample ID: NAWC-032819-RW-195Date Analyzed: 04/13/18 01:42 Lab File ID: 2018.04.12_537AA_045.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	barnettj	04/13/18 09:58
Perfluorononanoic acid (PFNA)	2.11	Missed Peak	barnettj	04/13/18 09:59

Lab Sample ID: CCV 320-217816/19 CCVIS Client Sample ID: _____Date Analyzed: 04/13/18 01:51 Lab File ID: 2018.04.12_537AA_047.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	roycea	04/13/18 09:27

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217818Lab Sample ID: CCV 320-217818/19 CCVIS Client Sample ID: _____Date Analyzed: 04/13/18 01:51 Lab File ID: 2018.04.12_537AA_047.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	roycea	04/13/18 09:27

Lab Sample ID: LLCS 320-216792/2-A Client Sample ID: _____Date Analyzed: 04/13/18 02:05 Lab File ID: 2018.04.12_537AA_050.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	barnettj	04/13/18 10:06

Lab Sample ID: 320-37675-12 Client Sample ID: NAWC-032819-RW-048Date Analyzed: 04/13/18 02:10 Lab File ID: 2018.04.12_537AA_051.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.38	Peak assignment corrected	barnettj	04/13/18 10:06
Perfluorohexanesulfonic acid (PFHxS)	1.68	Missed Peak	barnettj	04/13/18 10:07
Perfluorooctanesulfonic acid (PFOS)	2.03	Missed Peak	barnettj	04/13/18 10:07

Lab Sample ID: CCV 320-217818/25 CCVIS Client Sample ID: _____Date Analyzed: 04/13/18 02:19 Lab File ID: 2018.04.12_537AA_053.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	roycea	04/13/18 09:28

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217820Lab Sample ID: CCV 320-217820/25 CCVIS Client Sample ID: _____Date Analyzed: 04/13/18 02:19 Lab File ID: 2018.04.12_537AA_053.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	roycea	04/13/18 09:28

Lab Sample ID: 320-37675-14 Client Sample ID: NAWC-032819-RW-139Date Analyzed: 04/13/18 02:29 Lab File ID: 2018.04.12_537AA_055.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.68	Missed Peak	barnettj	04/13/18 10:08
Perfluorohexanesulfonic acid (PFHxS)	1.68	Missed Peak	barnettj	04/13/18 10:08
Perfluorooctanesulfonic acid (PFOS)	2.10	Missed Peak	barnettj	04/13/18 10:08
Perfluorononanoic acid (PFNA)	2.11	Missed Peak	barnettj	04/13/18 10:09

Lab Sample ID: 320-37675-14 LMS Client Sample ID: NAWC-032819-RW-139 LMSDate Analyzed: 04/13/18 02:33 Lab File ID: 2018.04.12_537AA_056.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	barnettj	04/13/18 10:09

Lab Sample ID: 320-37675-14 LMSD Client Sample ID: NAWC-032819-RW-139 LMSDDate Analyzed: 04/13/18 02:38 Lab File ID: 2018.04.12_537AA_057.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	barnettj	04/13/18 10:09

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 217820Lab Sample ID: 320-37675-17 Client Sample ID: NAWC-032819-FRB-117Date Analyzed: 04/13/18 02:52 Lab File ID: 2018.04.12_537AA_060.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	barnettj	04/13/18 10:10

Lab Sample ID: 320-37675-20 Client Sample ID: NAWC-032819-RW-138Date Analyzed: 04/13/18 03:06 Lab File ID: 2018.04.12_537AA_063.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	1.68	Missed Peak	barnettj	04/13/18 10:10
Perfluorooctanesulfonic acid (PFOS)	2.10	Missed Peak	barnettj	04/13/18 10:11
Perfluorononanoic acid (PFNA)	2.12	Missed Peak	barnettj	04/13/18 10:11

Lab Sample ID: CCV 320-217820/37 CCVIS Client Sample ID: _____Date Analyzed: 04/13/18 03:15 Lab File ID: 2018.04.12_537AA_065.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	barnettj	04/13/18 09:58

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

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.: 320-37675-1

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_00067	10/10/18	04/10/18	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
					(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.: 320-37675-1

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-SU_00064	2 mL	13C2 PFDA	10 ng/mL
		13C2 PFHxA	10 ng/mL					
.LC537-HSP_00028	09/30/18	03/30/18	Methanol, Lot 104453	30 mL	LCPFBSA_00002	849 uL	Perfluorobutanesulfonic acid (PFBS)	1250.86 ng/mL
					LCPFHpA_00009	81 uL	Perfluoroheptanoic acid (PFHpA)	135 ng/mL
					LCPFHxS-br_00005	277 uL	Perfluorohexanesulfonic acid (PFHxS)	420.117 ng/mL
					LCPFNA 00009	165 uL	Perfluorononanoic acid (PFNA)	275 ng/mL
					LCPFOA_00010	165 uL	Perfluorooctanoic acid (PFOA)	275 ng/mL
					LCPFOS-br_00005	355 uL	Perfluorooctanesulfonic acid (PFOS)	549.067 ng/mL
..LCPFBSA_00002	12/02/21	Wellington Laboratories, Lot LPFBS1116			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFHpA_00009	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHxS-br_00005	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA 00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA 00010	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00005	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LC537-IS_00065	10/02/18	04/02/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37675-1

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.: 320-37675-1

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
		13C4 PFOS	28.68 ng/mL					
	LC537-SU_00064	500 uL	13C2 PFDA	10 ng/mL				
		13C2 PFHxA	10 ng/mL					
.LC537-HSP_00028	09/30/18	03/30/18	Methanol, Lot 104453	30 mL	LCPFBSA_00002	849 uL	Perfluorobutanesulfonic acid (PFBS)	1250.86 ng/mL
					LCPFHpA_00009	81 uL	Perfluoroheptanoic acid (PFHpA)	135 ng/mL
					LCPFHxS-br_00005	277 uL	Perfluorohexanesulfonic acid (PFHxS)	420.117 ng/mL
					LCPFNA_00009	165 uL	Perfluorononanoic acid (PFNA)	275 ng/mL
					LCPFOA_00010	165 uL	Perfluorooctanoic acid (PFOA)	275 ng/mL
LCPFOS-br_00005	355 uL	Perfluorooctanesulfonic acid (PFOS)	549.067 ng/mL					
..LCPFBSA_00002	12/02/21	Wellington Laboratories, Lot LPFBS1116			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFHpA_00009	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHxS-br_00005	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00010	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00005	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
LC537-IS_00065	10/02/18	04/02/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	0.1 ug/mL
..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	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L5_00026	09/30/18	04/02/18	MeOH/H2O, Lot 090285	20 mL	LC537-HSP_00028	2160 uL	Perfluorobutanesulfonic acid (PFBS)	135.093 ng/mL
							Perfluoroheptanoic acid (PFHpA)	14.58 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.3726 ng/mL
							Perfluorononanoic acid (PFNA)	29.7 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37675-1

SDG No.: _____

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-37675-1

SDG No.: _____

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

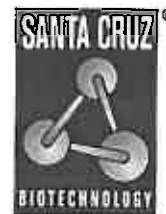
SDG No.: _____

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-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	Perfluorohexane Sulfonate	250.25 ng/mL
							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					
.LCPFBSA_00002	12/02/21	Wellington Laboratories, Lot LPFBS1116			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFHpA_00009	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHxS-br_00005	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
.LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
.LCPFOA_00010	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
.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

Reagent

LC537_PFB2_00002

7:6&17 SW



CERTIFICATE OF ANALYSIS

The Power to Question

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

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

Reagent

LC537_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

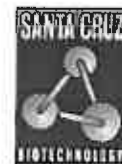
This document has been electronically generated and does not require a signature.

Order our products online www.alfa.com

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: $C_6F_{13}KO_3S$
 Molecular Weight: 438.20

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

$PFH_x S-K$

$C_6F_{13}SO_3K$ 438.201

$C_6F_{13}SO_3H$ 400.111

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

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

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

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:

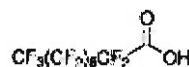
C₉H₁₇O₂

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%

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

Order our products online www.alfa.com

ThermoFisher
SCIENTIFIC

Reagent

LC537_PFOS2_00002

V: 6.14.17 SKV

SIGMA-ALDRICH

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

Certificate of Analysis

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

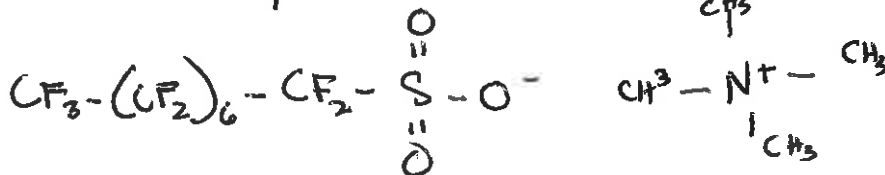
TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE TO OFF WHITE	OFF-WHITE
APPEARANCE (FORM)	POWDER OR POWDER WITH CHUNK(S)	POWDER
CARBON CONTENT	29.77 % - 31.29 %	29.97 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

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



C = 12.011	96.088
F = 18.998	322.966
S = 32.066	32.066
O = 15.999	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

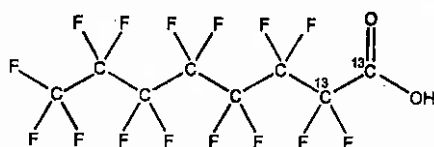
COMPOUND:

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:

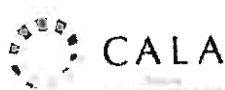
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

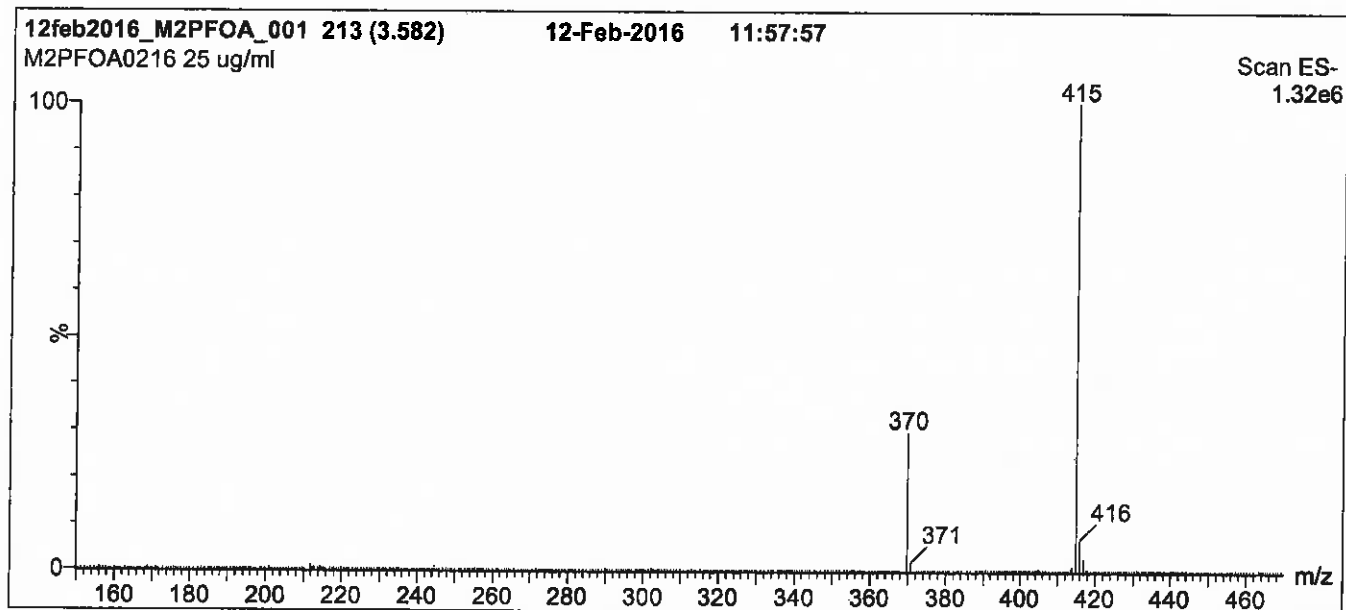
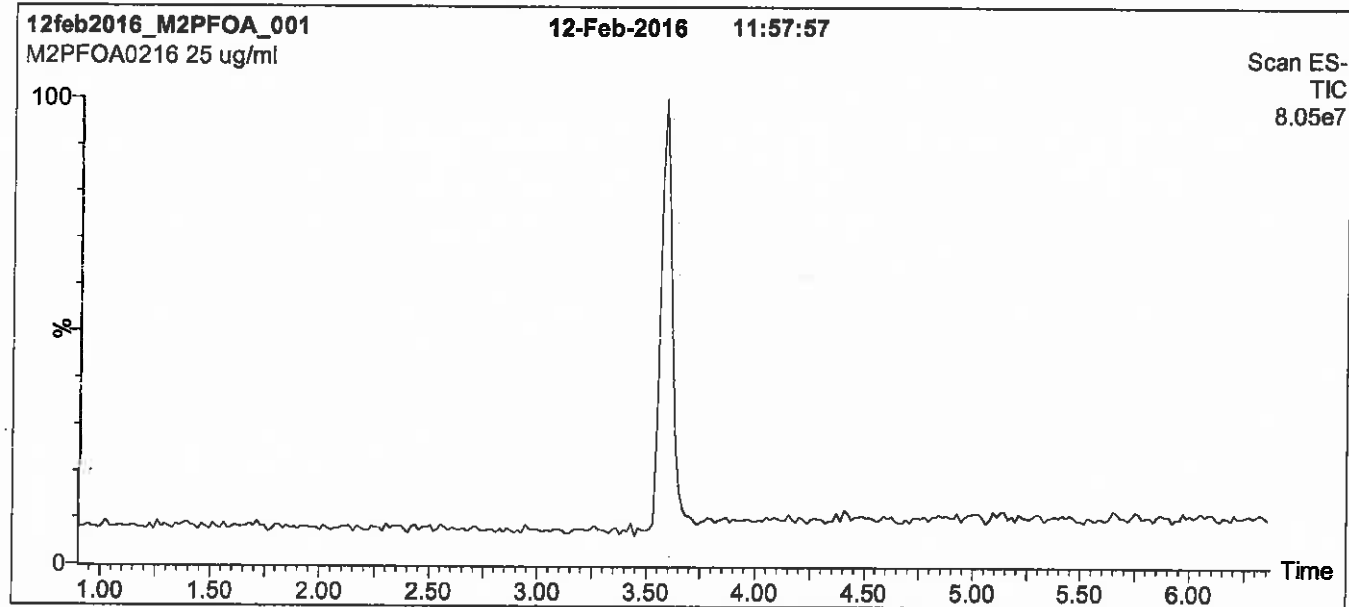
QUALITY MANAGEMENT:

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)

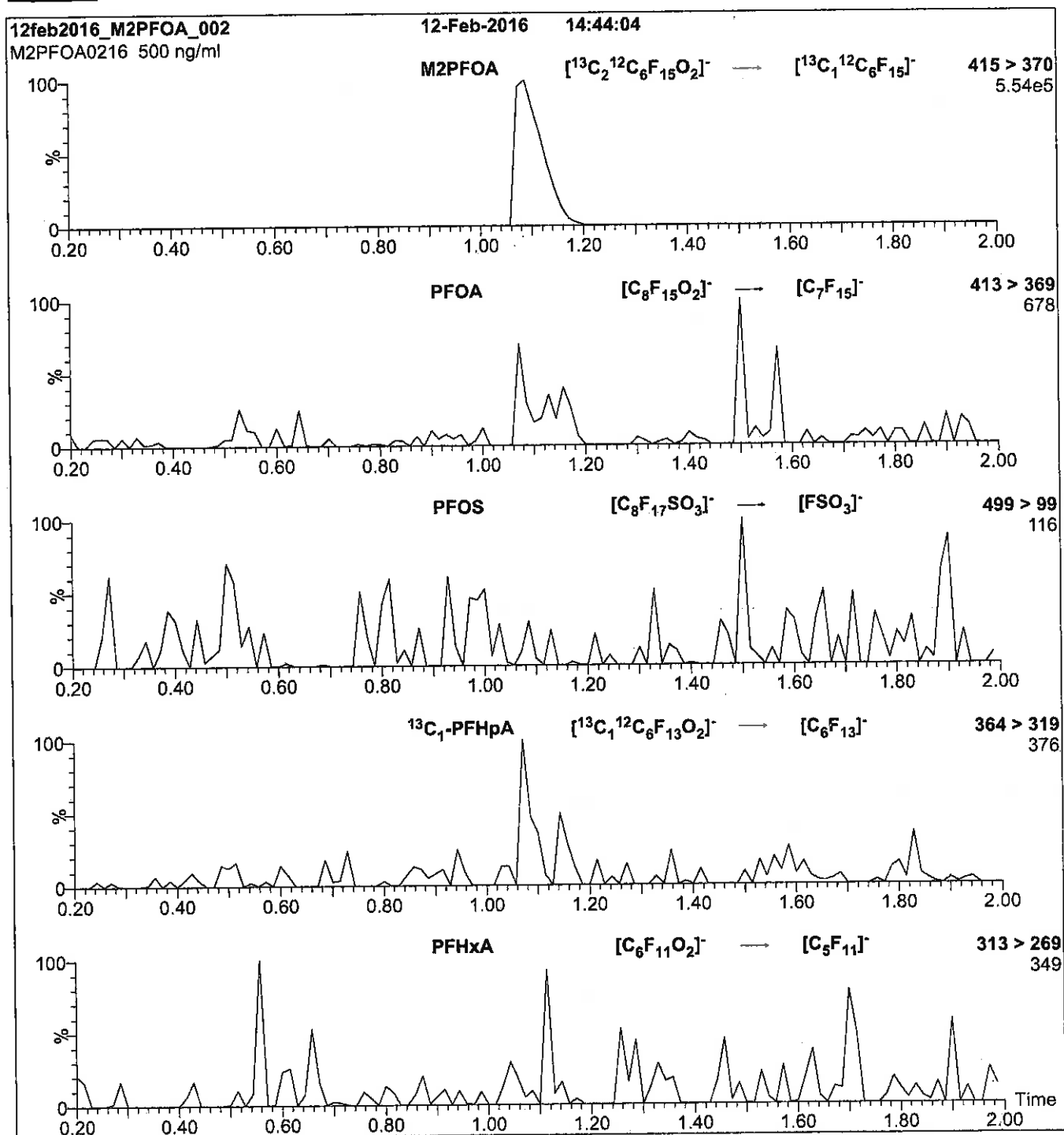
Capillary Voltage (kV) = 3.00

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:

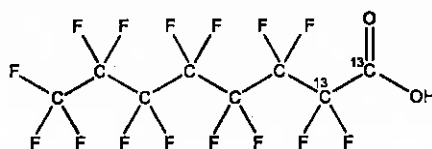
M2PFOA

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

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:

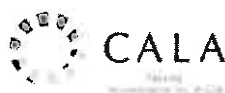
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

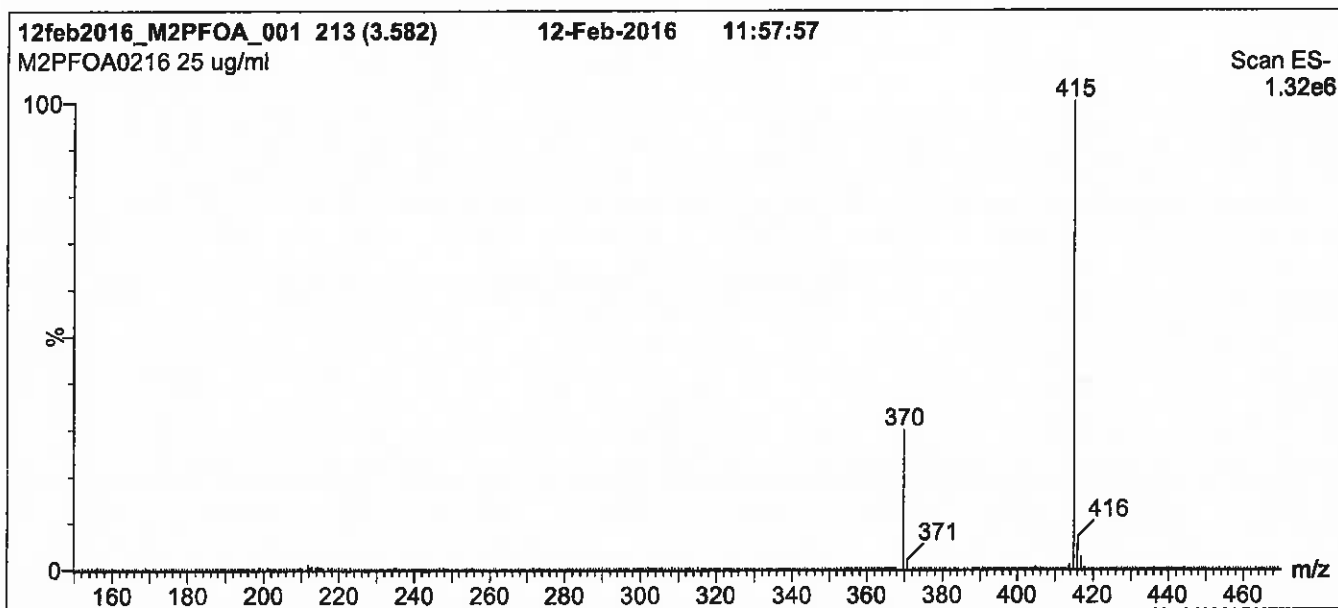
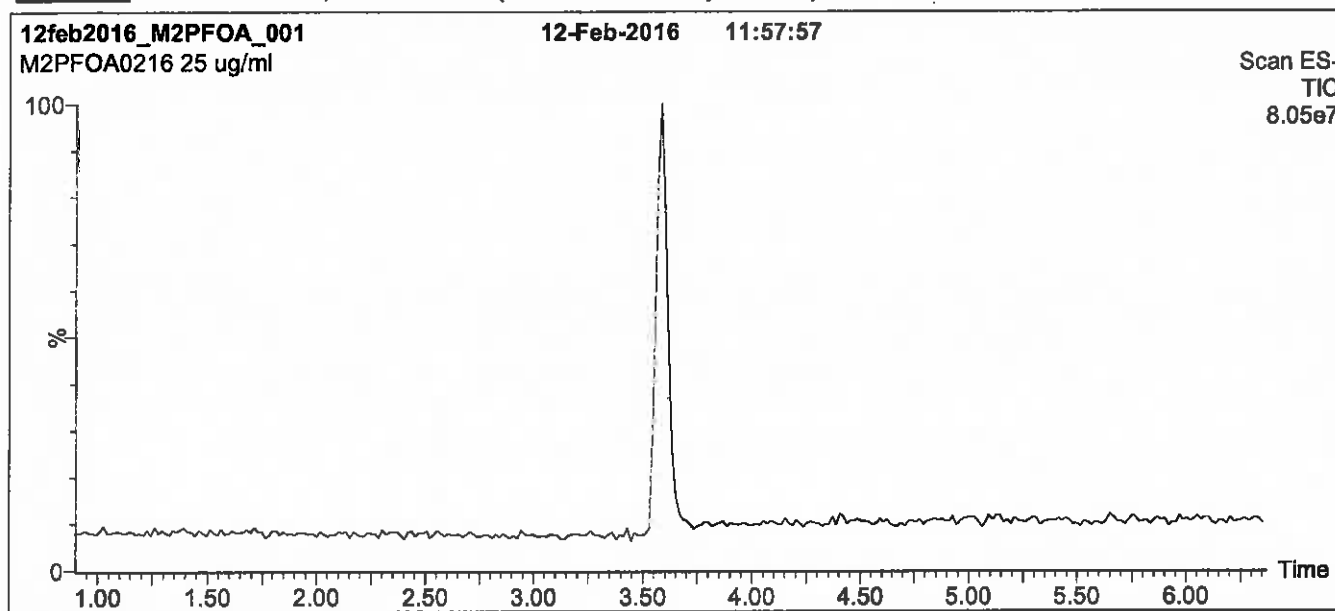
QUALITY MANAGEMENT:

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

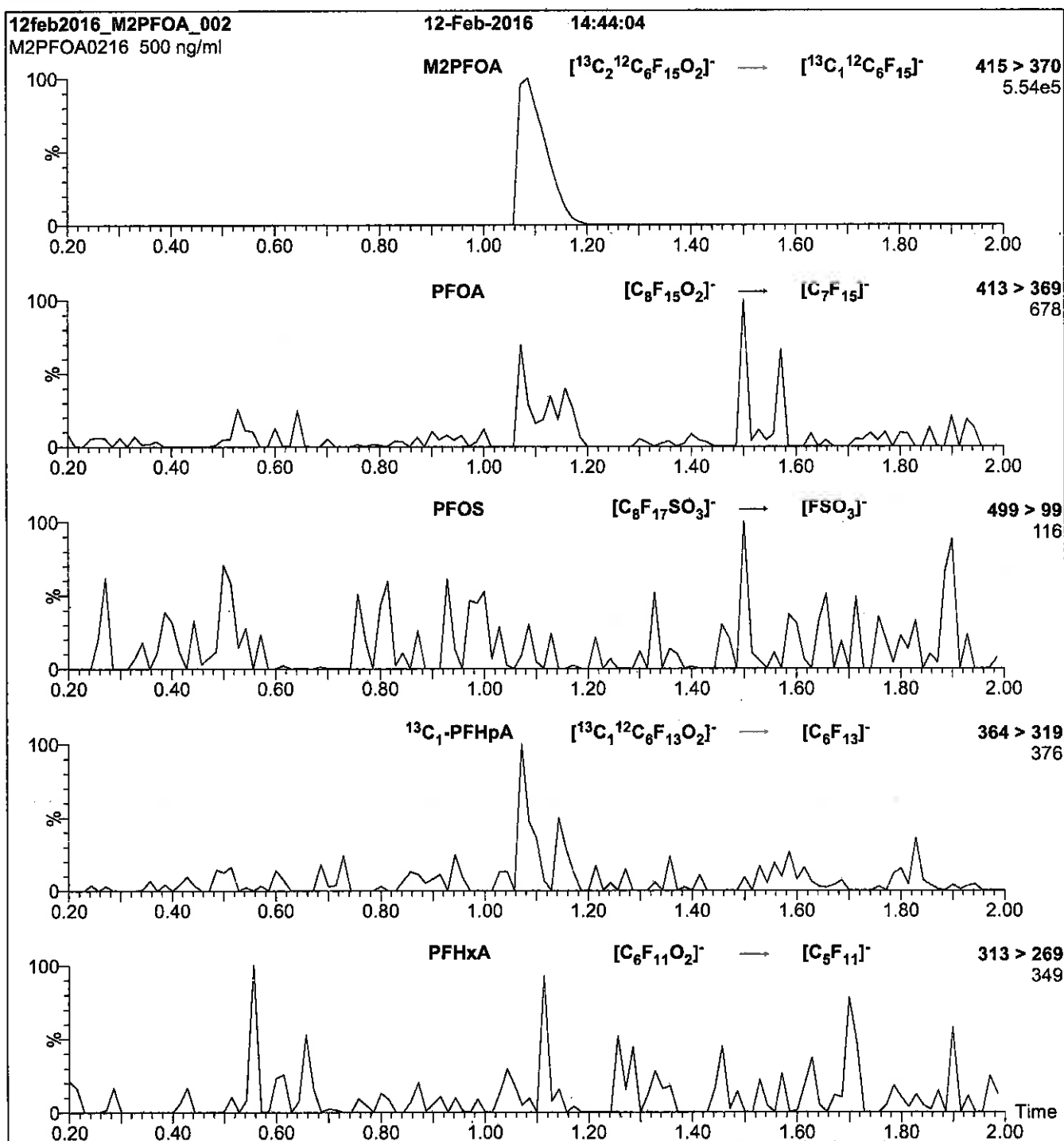
Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

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) = $3.39\text{e-}3$
Collision Energy (eV) = 10

Reagent

LCMPFDA_00012

R: SBC 12/21/16



814255

ID: LCMFDA_00012

Exp: 09/30/21 Prod: SBC

13C2-Perfluorodecanoic a



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

MPFDA

COMPOUND:

Perfluoro-n-[1,2-¹³C₂]decanoic acid

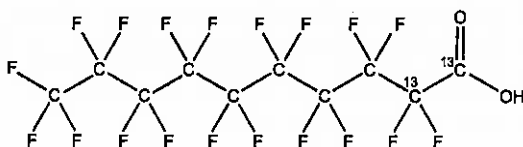
LOT NUMBER:

MPFDA0916

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₈HF₁₉O₂

CONCENTRATION:

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

516.07

SOLVENT(S):

Methanol

Water (<1%)

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:

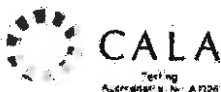
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

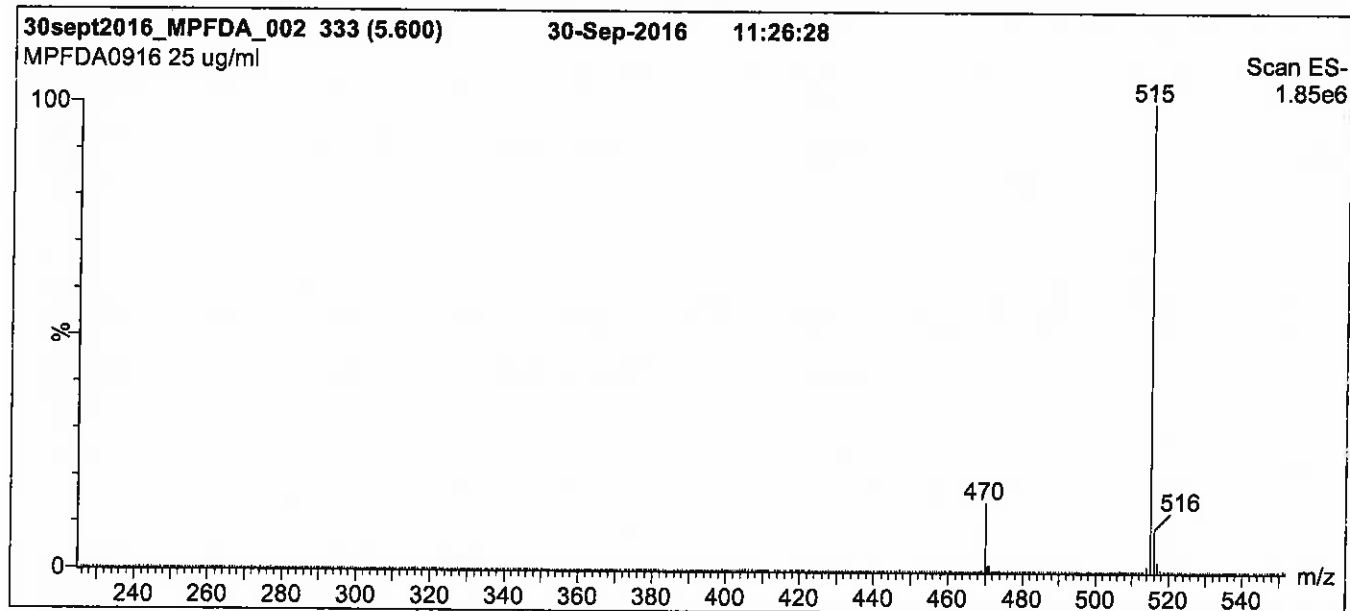
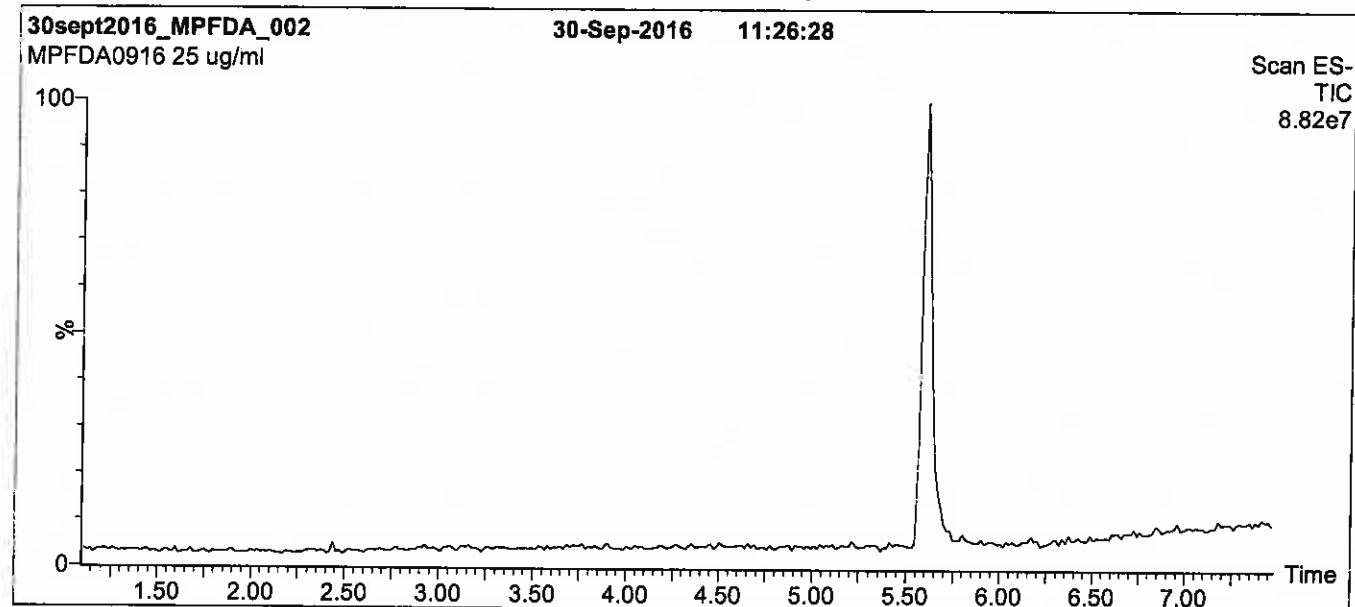
QUALITY MANAGEMENT:

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).



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

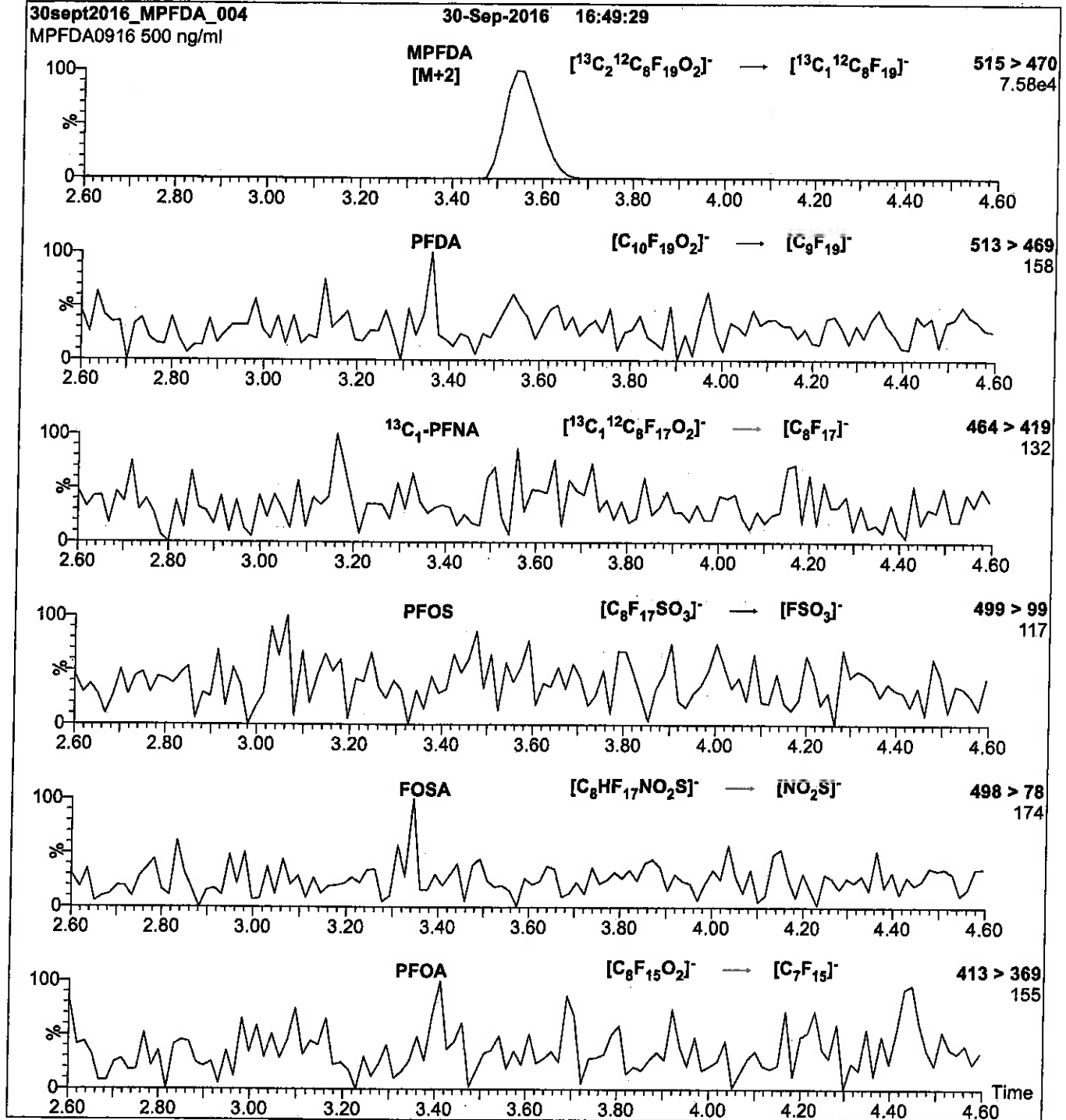
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCMPFHxA_00015

r: 5/10/17 SKJ



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

MPFHxA

LOT NUMBER:

MPFHxA1116

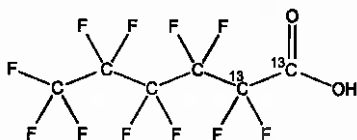
COMPOUND:

Perfluoro-n-[1,2-¹³C₂]hexanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₄HF₁₁O₂

MOLECULAR WEIGHT:

316.04

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99%¹³C

LAST TESTED: (mm/dd/yyyy)

11/22/2016

(1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy)

11/22/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/13/2016

(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

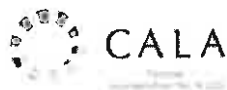
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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

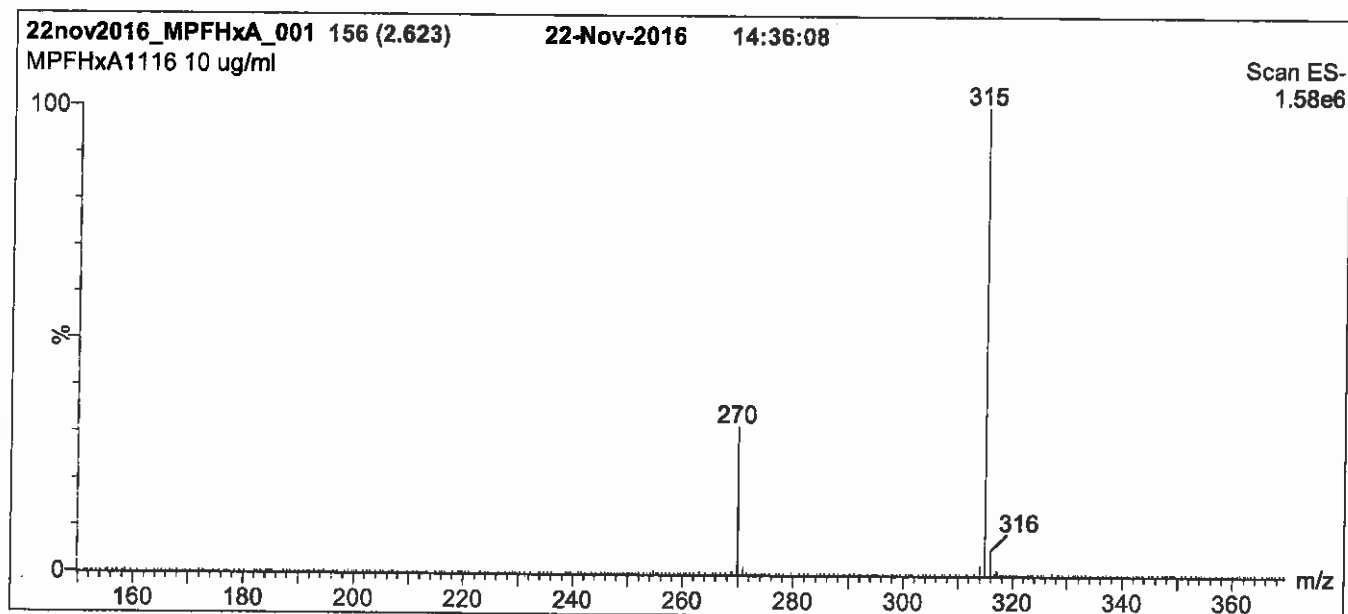
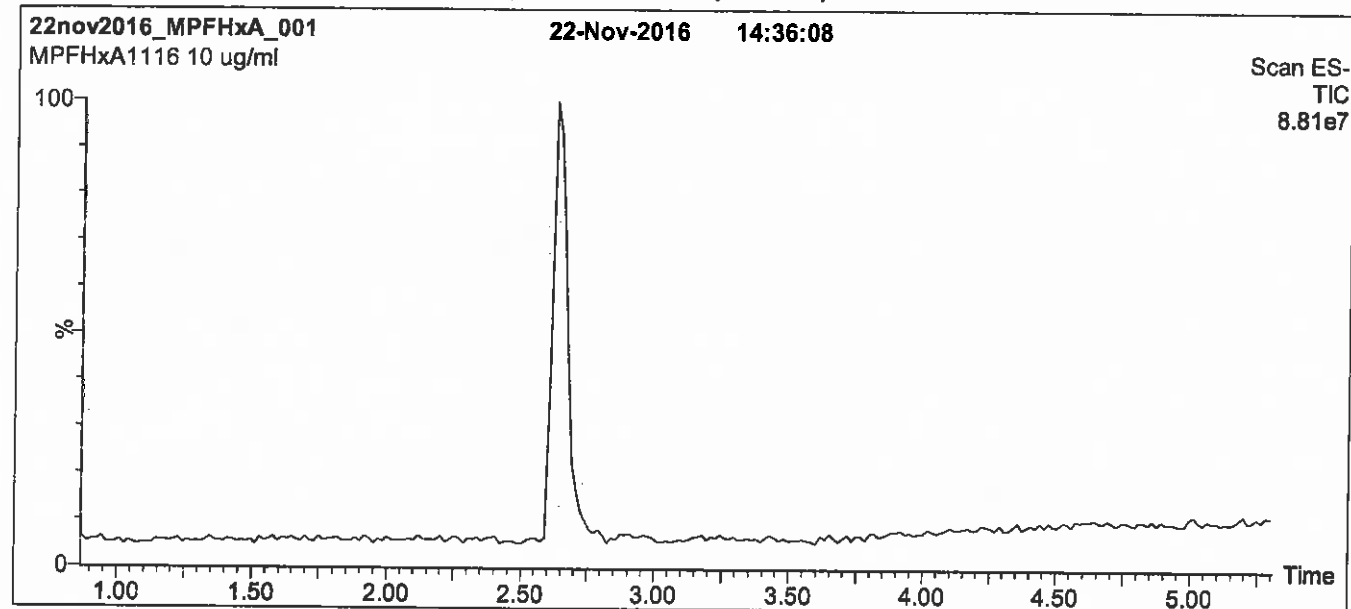
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

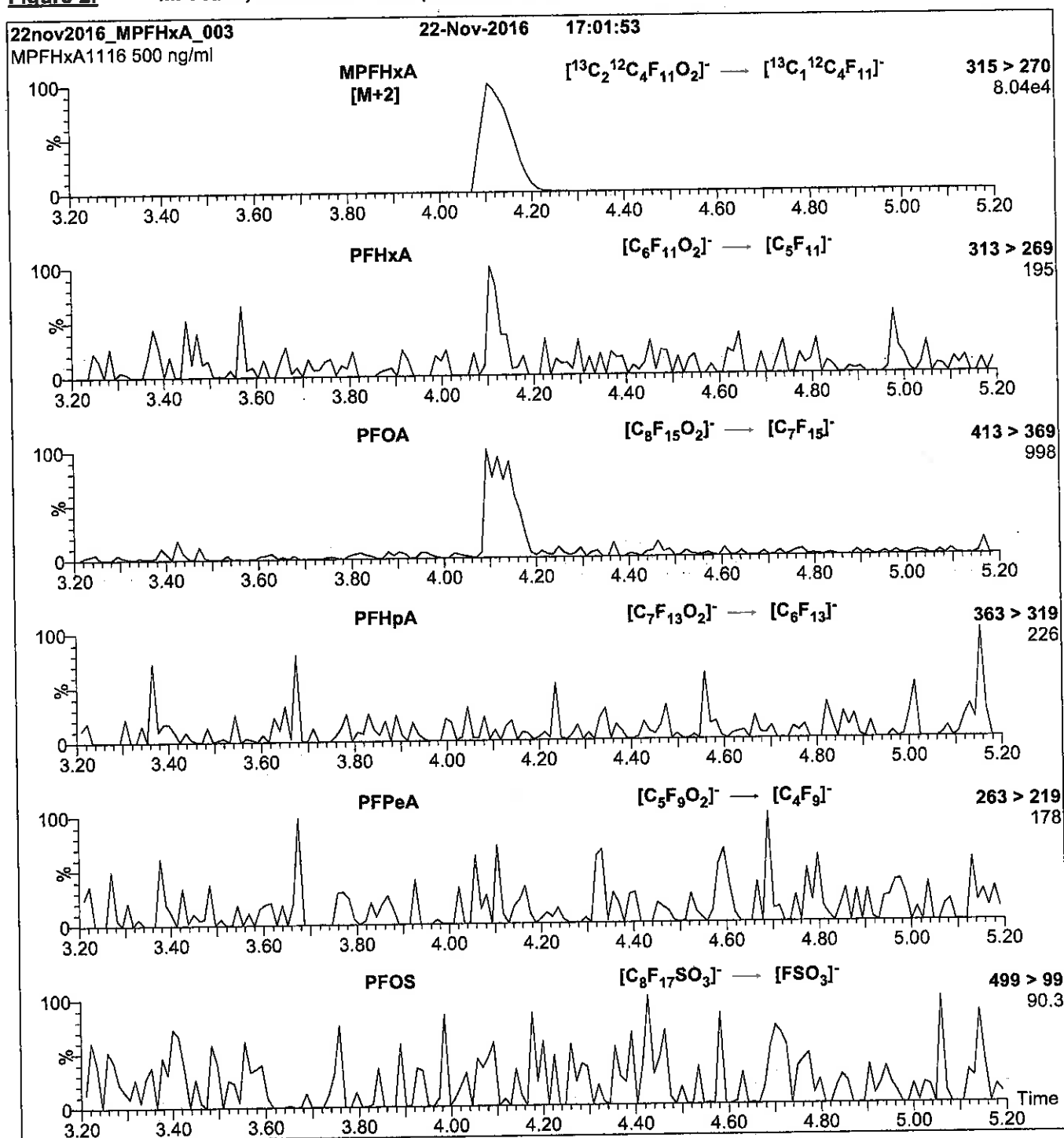
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.46e-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

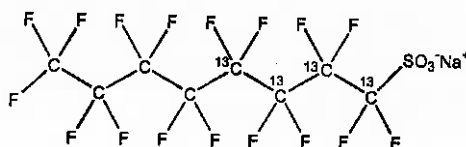
LOT NUMBER:

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
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.

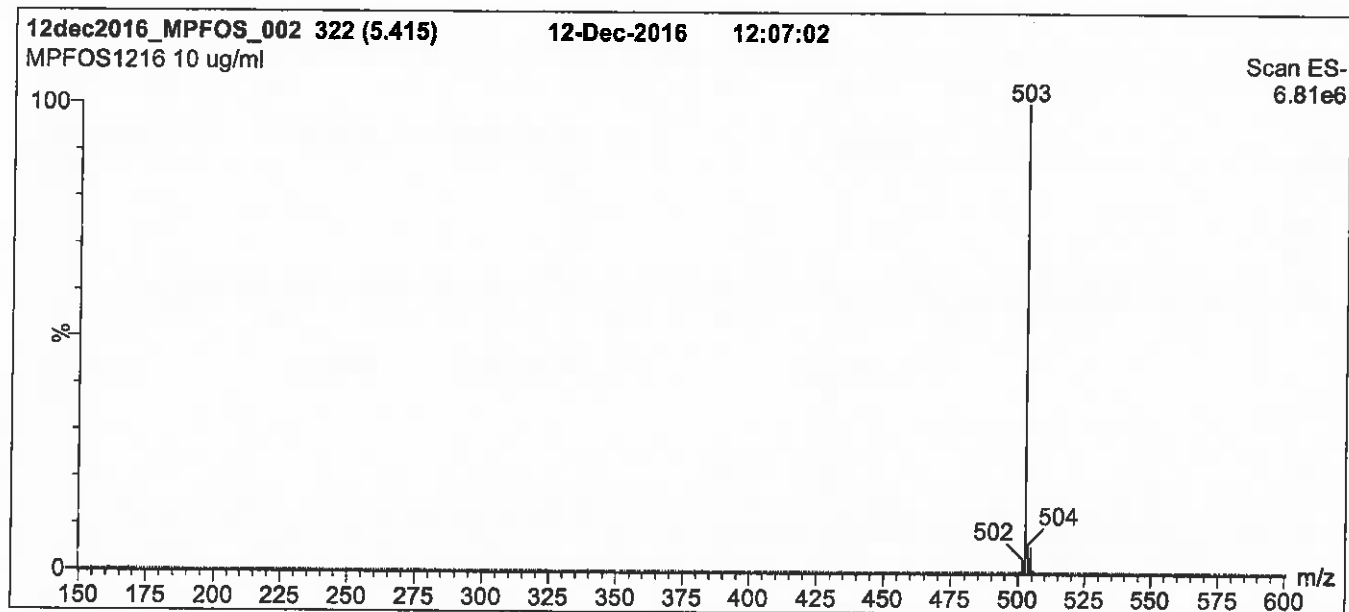
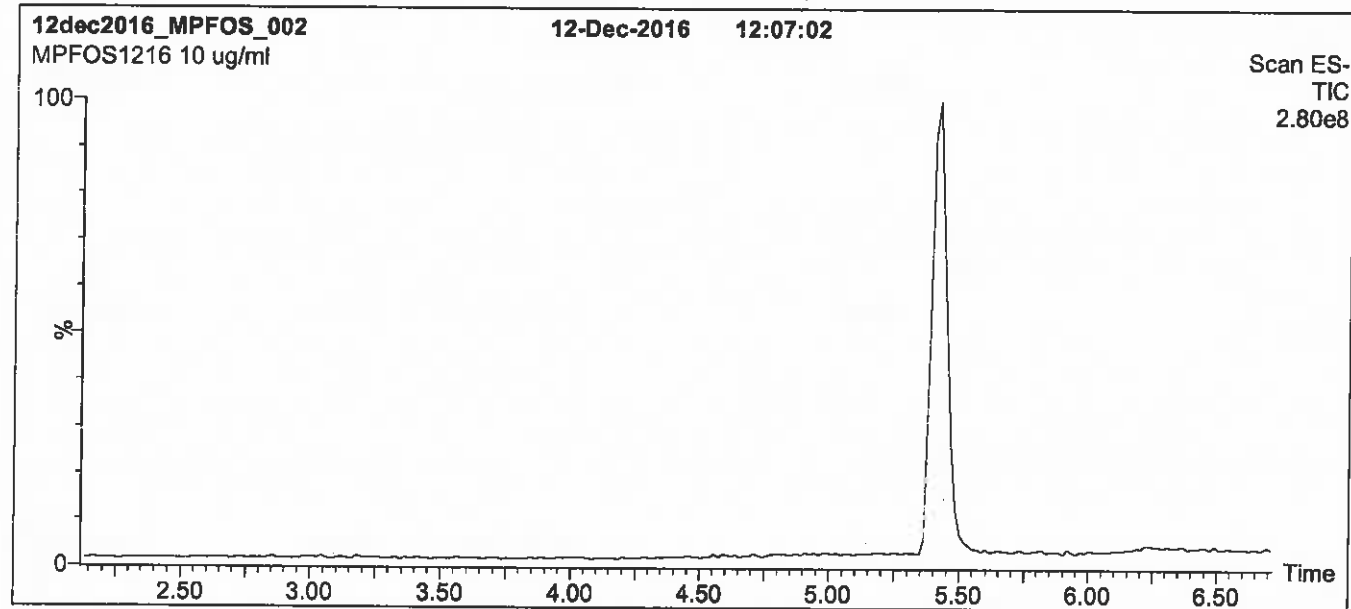
QUALITY MANAGEMENT:

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: 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

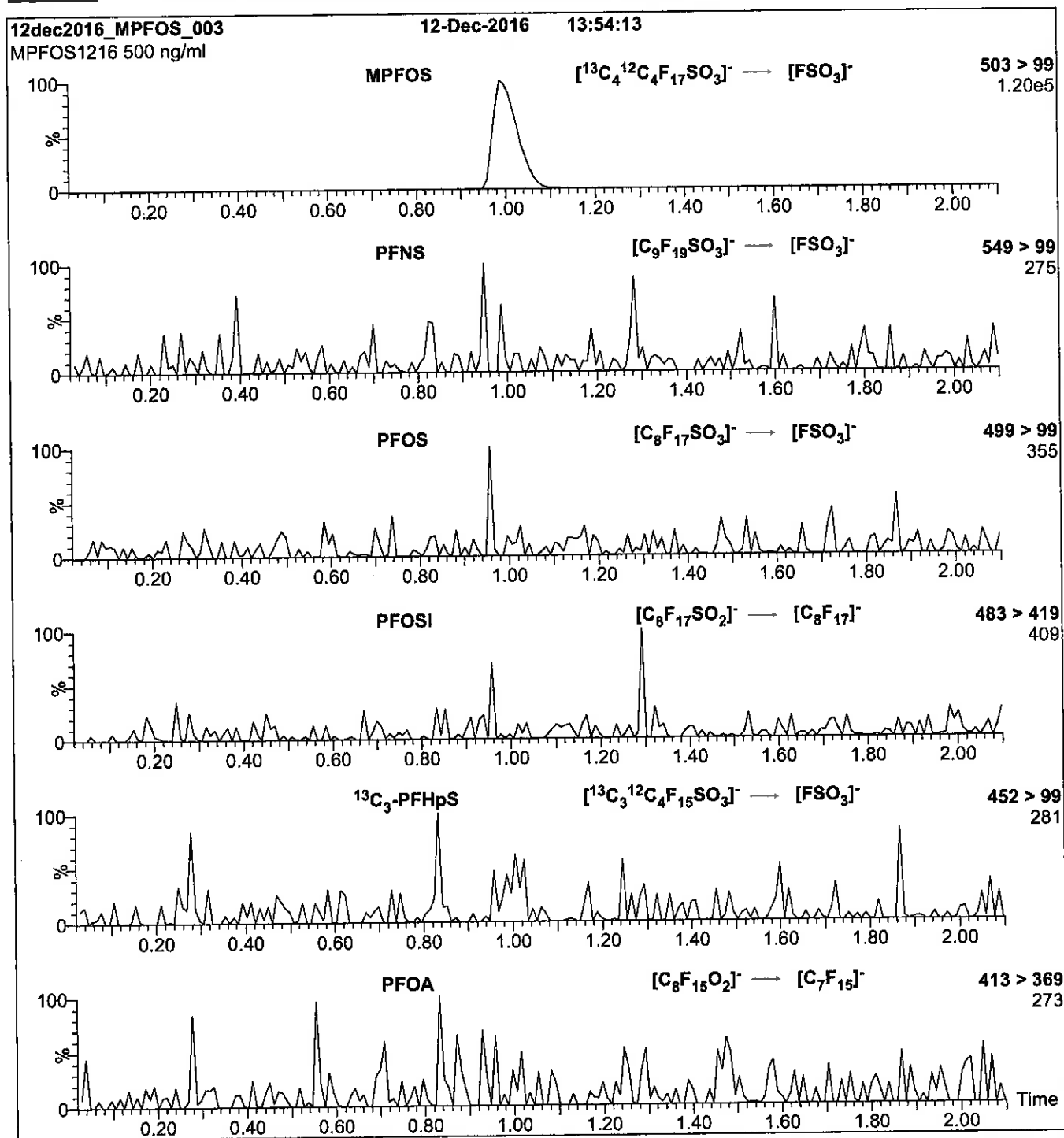
Flow: 300 μ l/min

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

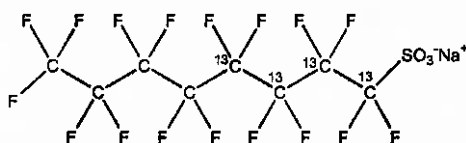
COMPOUND:

Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₄¹²C₄F₁₇SO₃Na

MOLECULAR WEIGHT:

526.08

CONCENTRATION:

50.0 ± 2.5 µg/ml (Na salt)

SOLVENT(S):

Methanol

47.8 ± 2.4 µg/ml (MPFOS anion)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

05/19/2017

(1,2,3,4-¹³C₄)

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)

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.

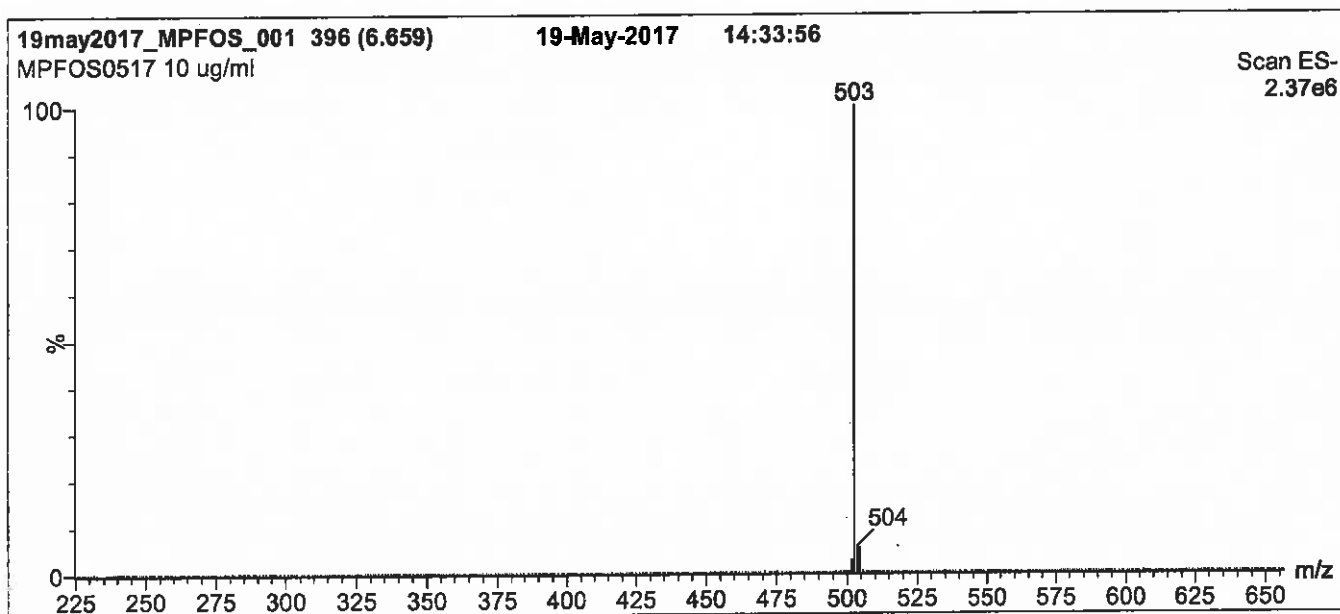
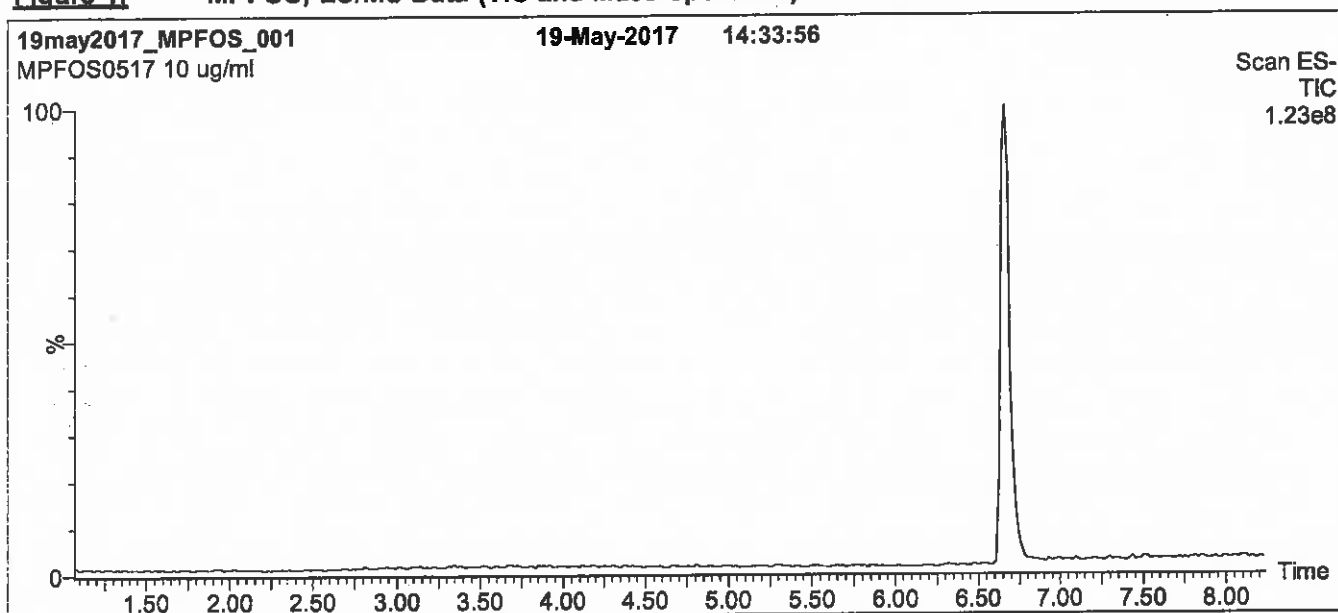
QUALITY MANAGEMENT:

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: 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

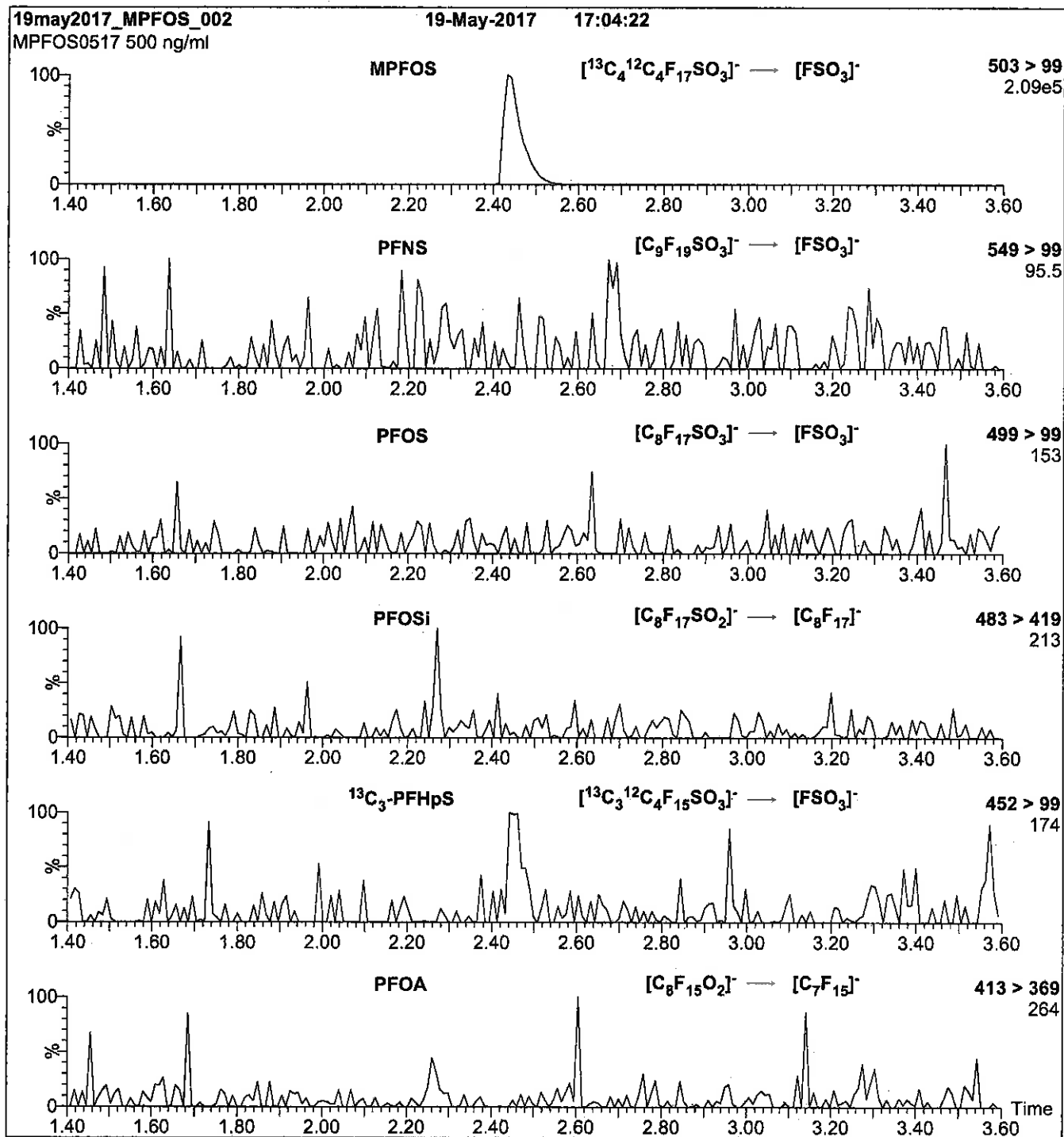
Flow: 300 μ l/min

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

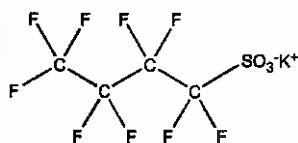
COMPOUND:

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:

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:

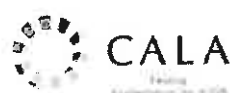
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

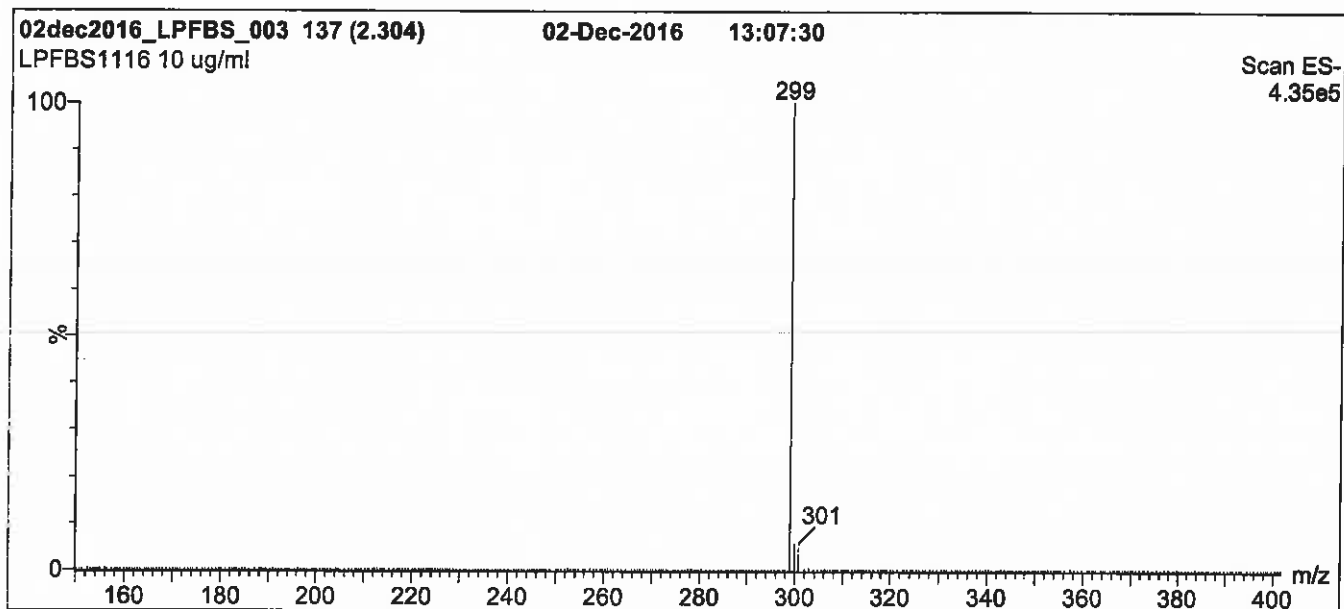
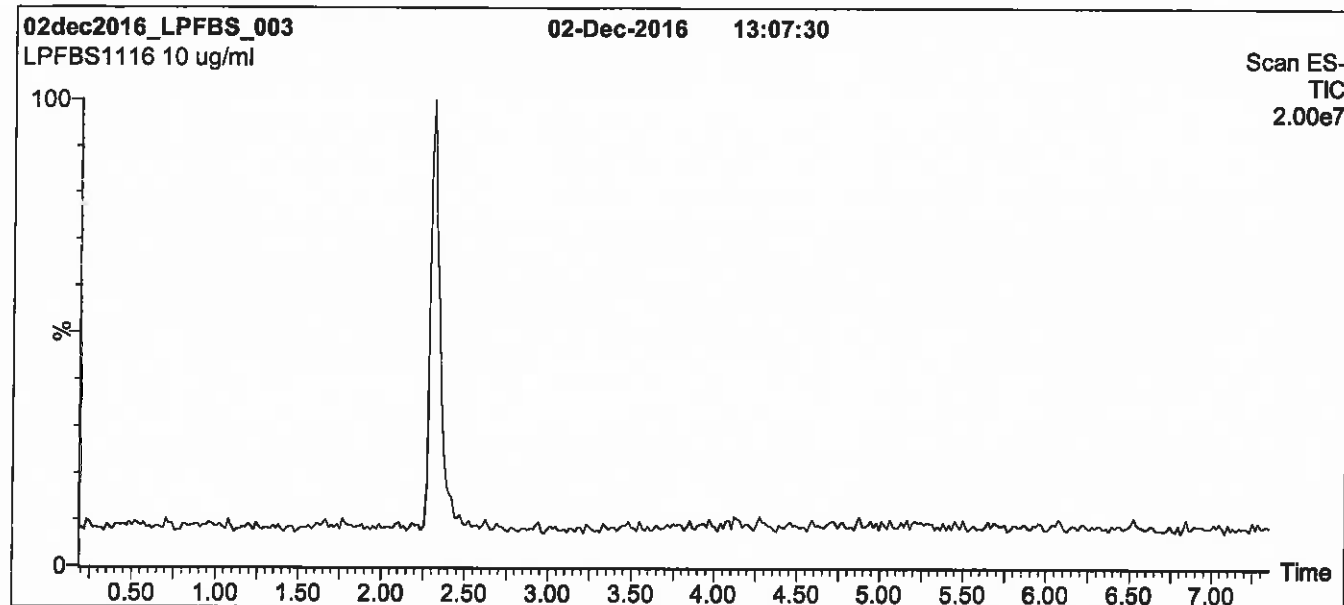
QUALITY MANAGEMENT:

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: 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

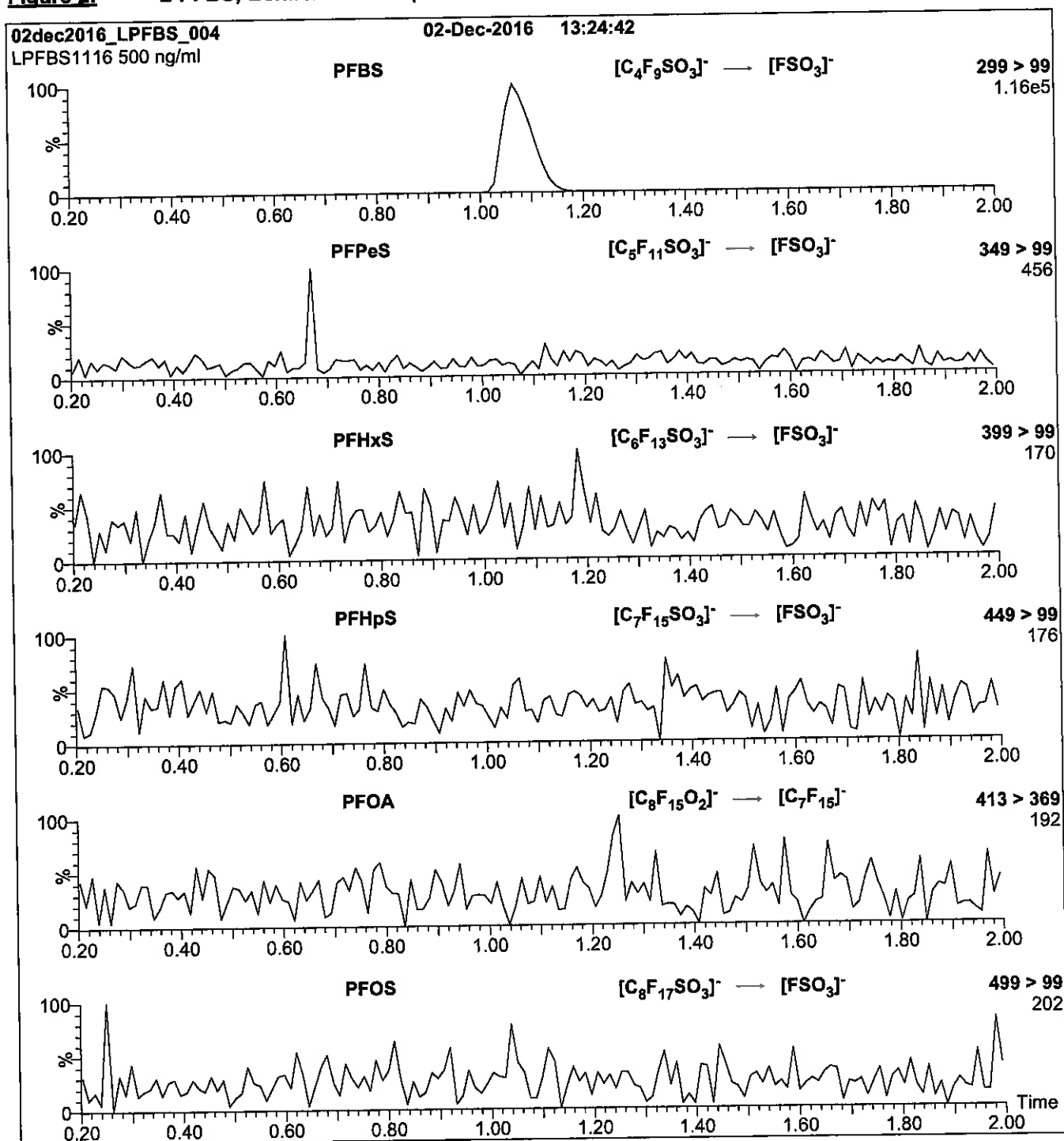
Flow: 300 μ l/min

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

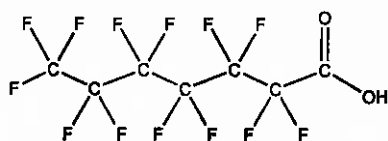
COMPOUND:

Perfluoro-n-heptanoic acid

STRUCTURE:

CAS #:

375-85-9



MOLECULAR FORMULA:

$C_7H_2F_{13}O_2$

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
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:

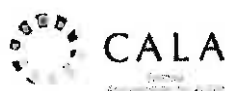
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

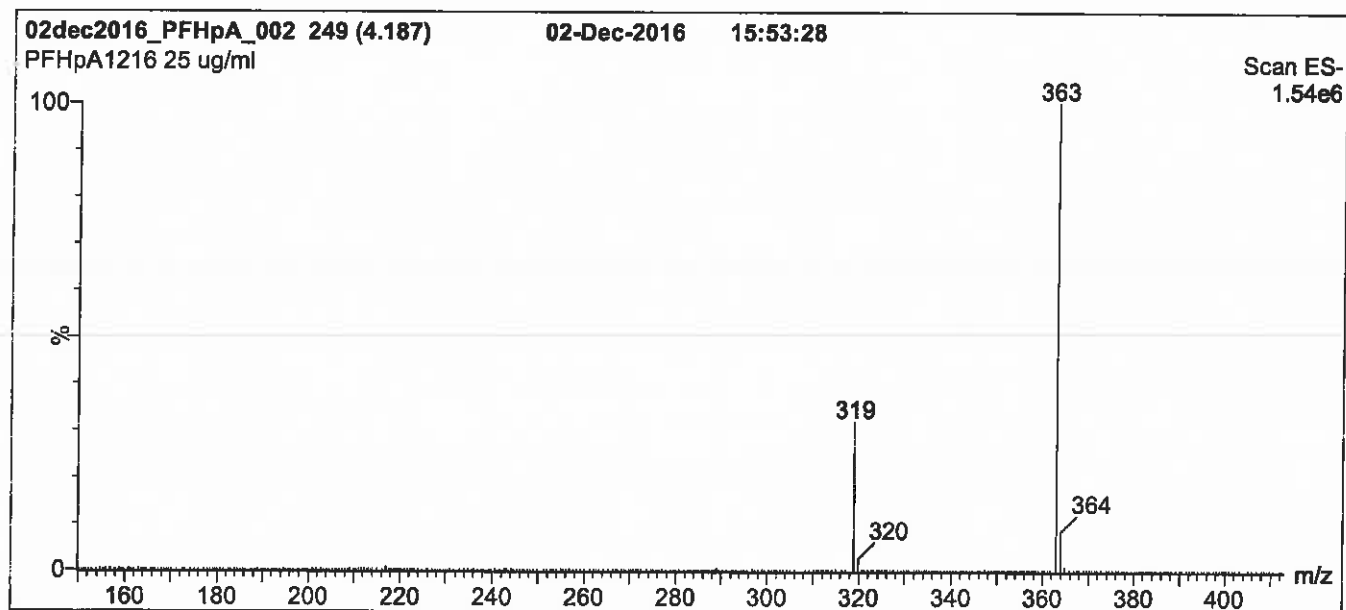
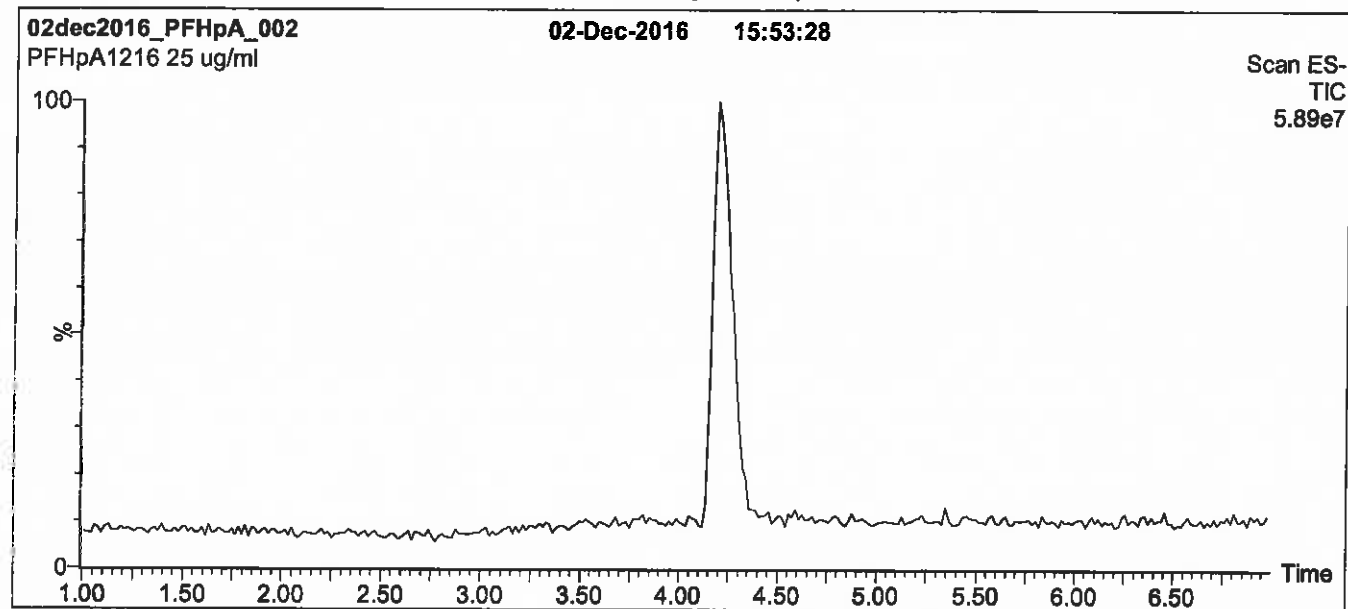
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

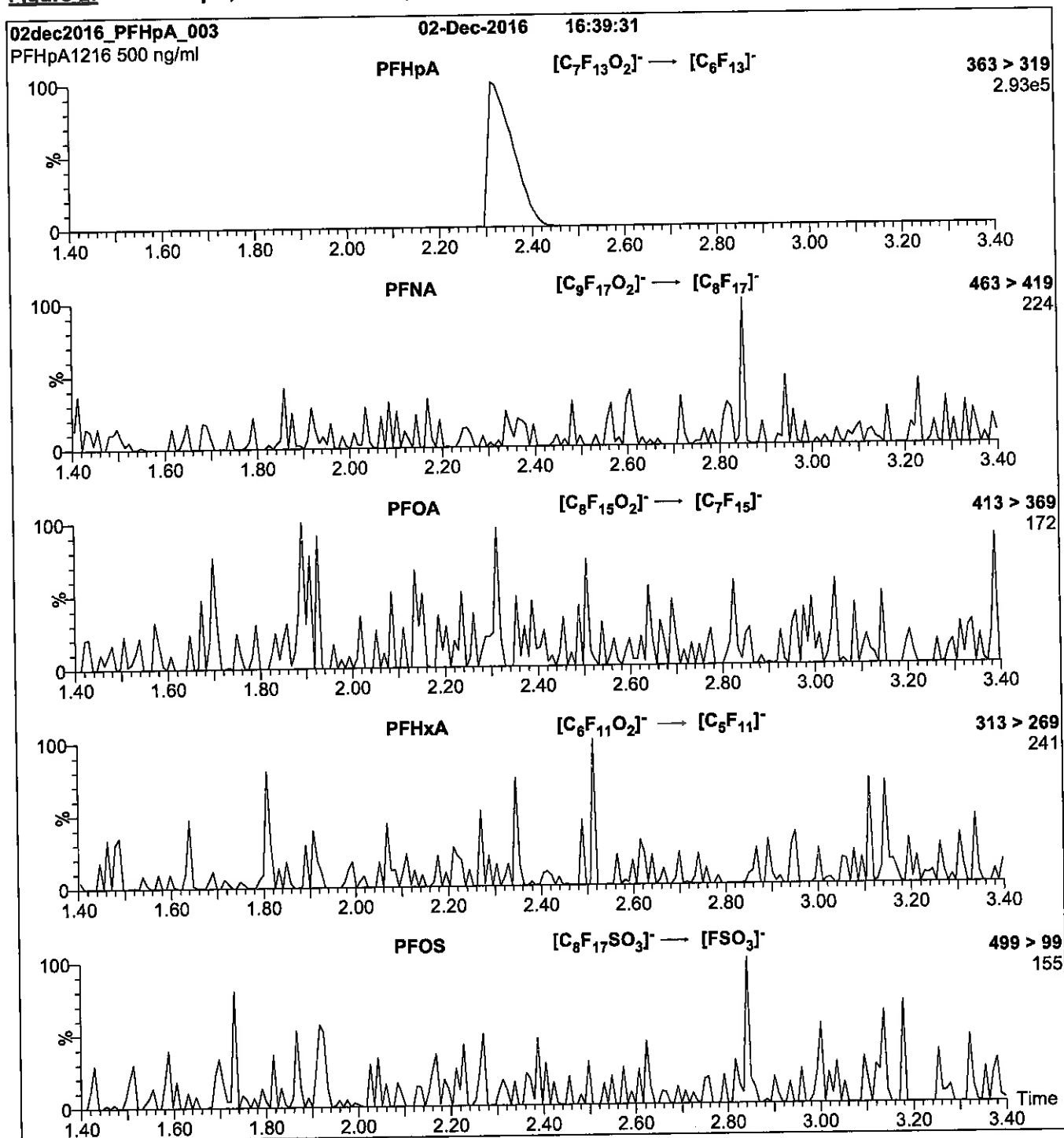
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFHxS-br_00005



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).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

**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 compounds 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:

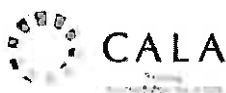
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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

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.

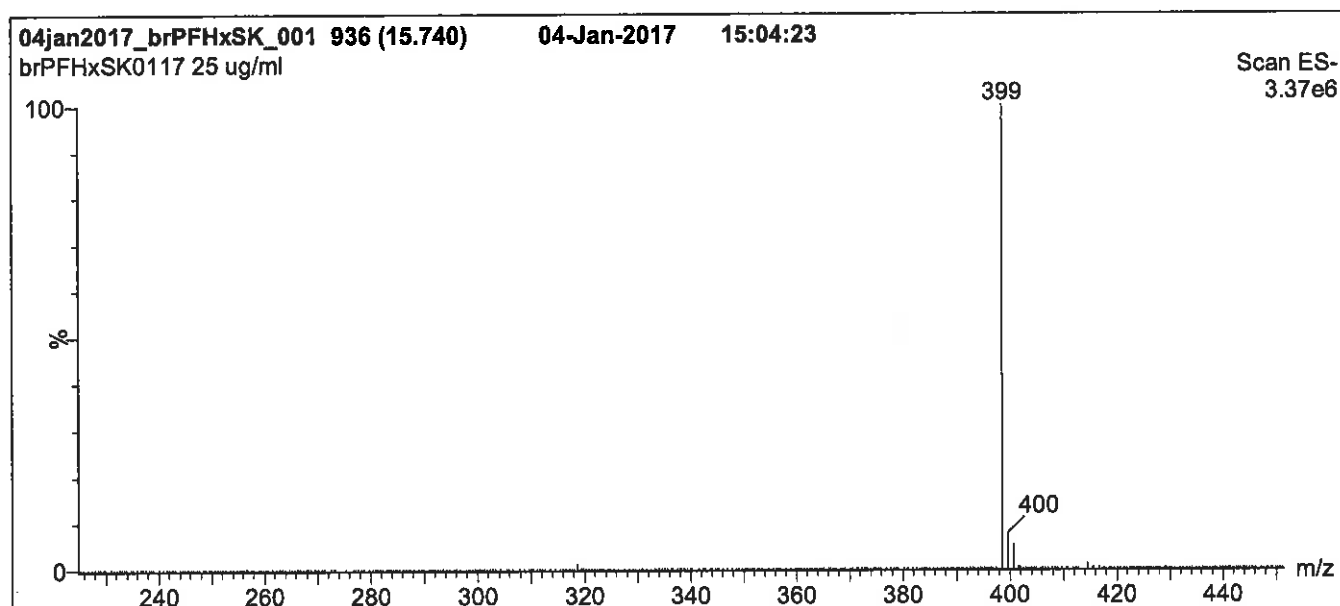
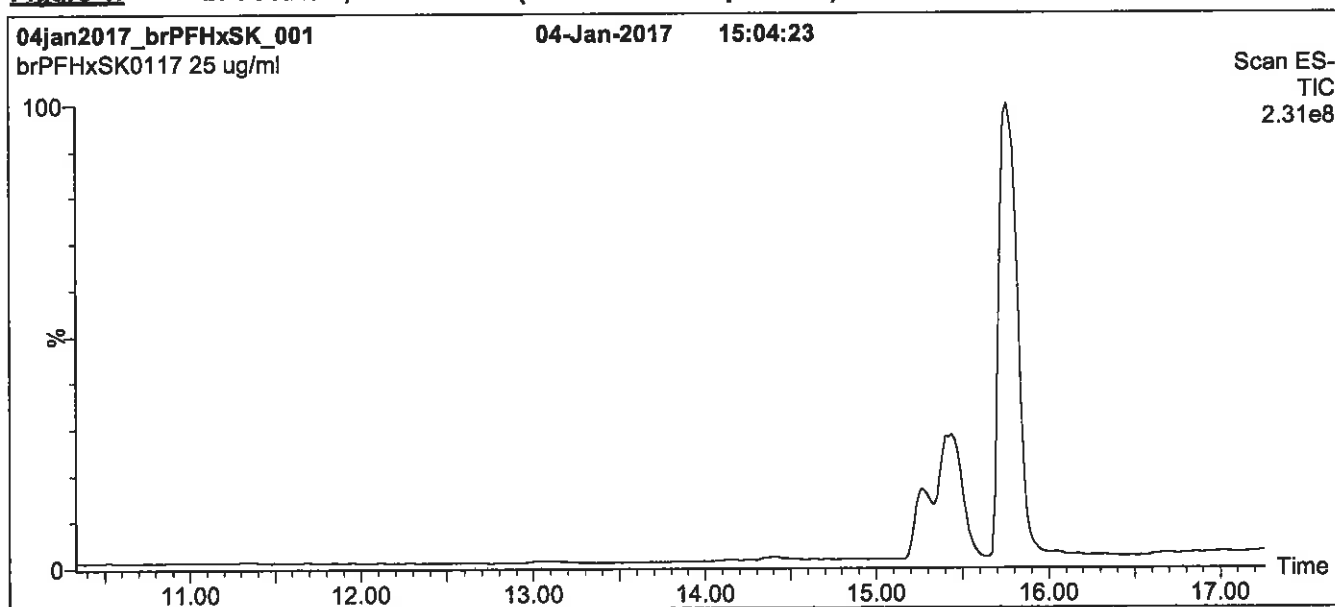
Certified By:


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

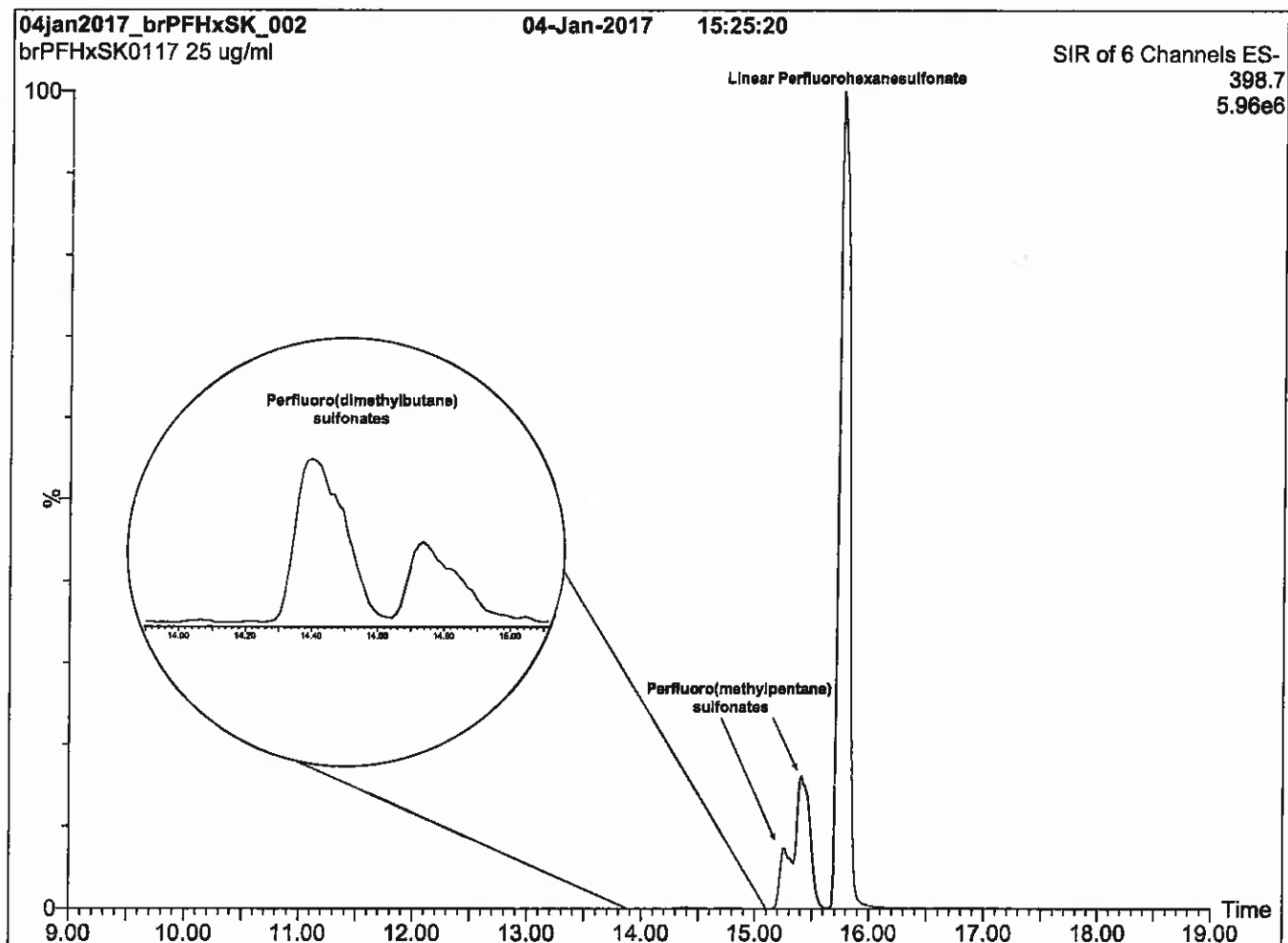
Flow: 300 μ l/min

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

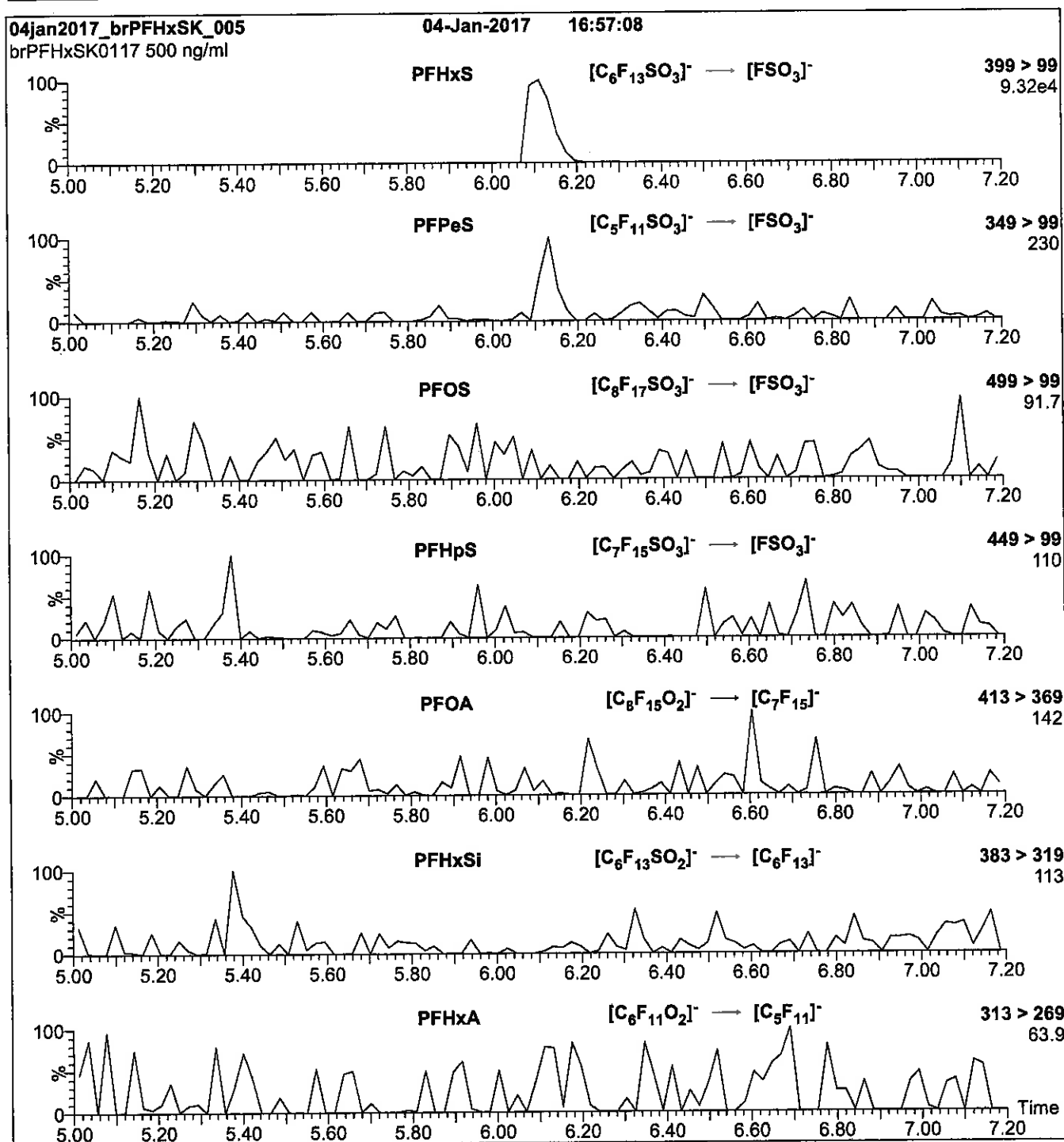
Flow: 300 μ l/min

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% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFNA_00009

r: 9/21/17 skv



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFNA

LOT NUMBER:

PFNA0717

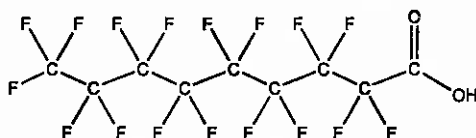
COMPOUND:

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.

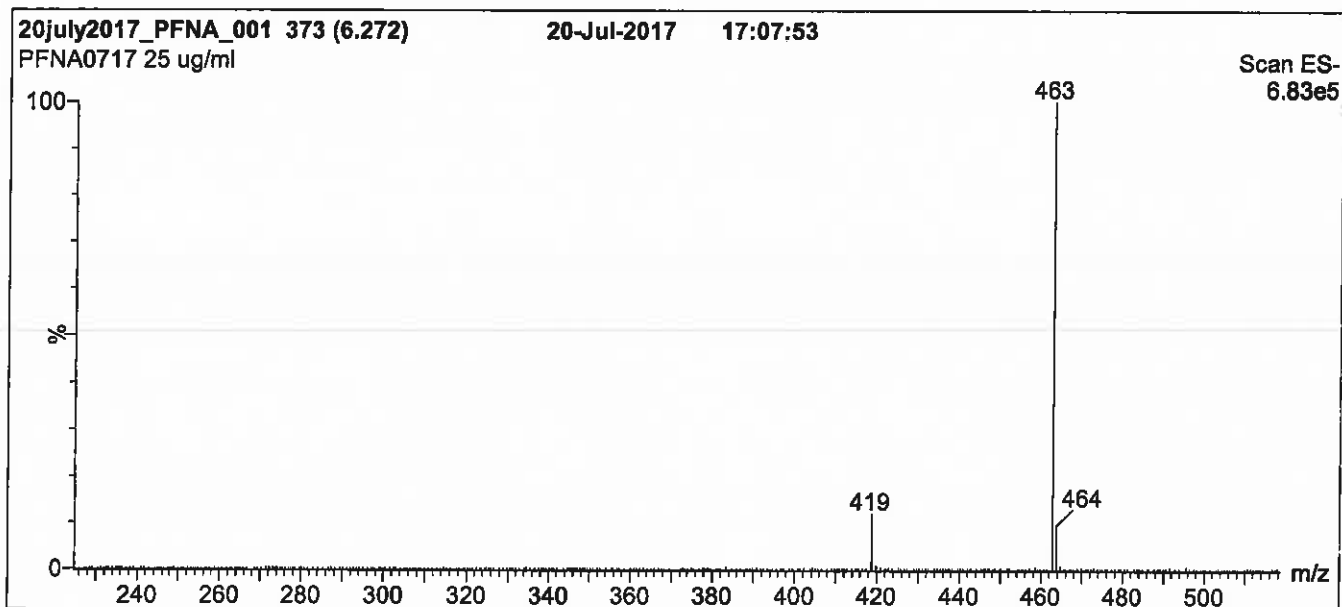
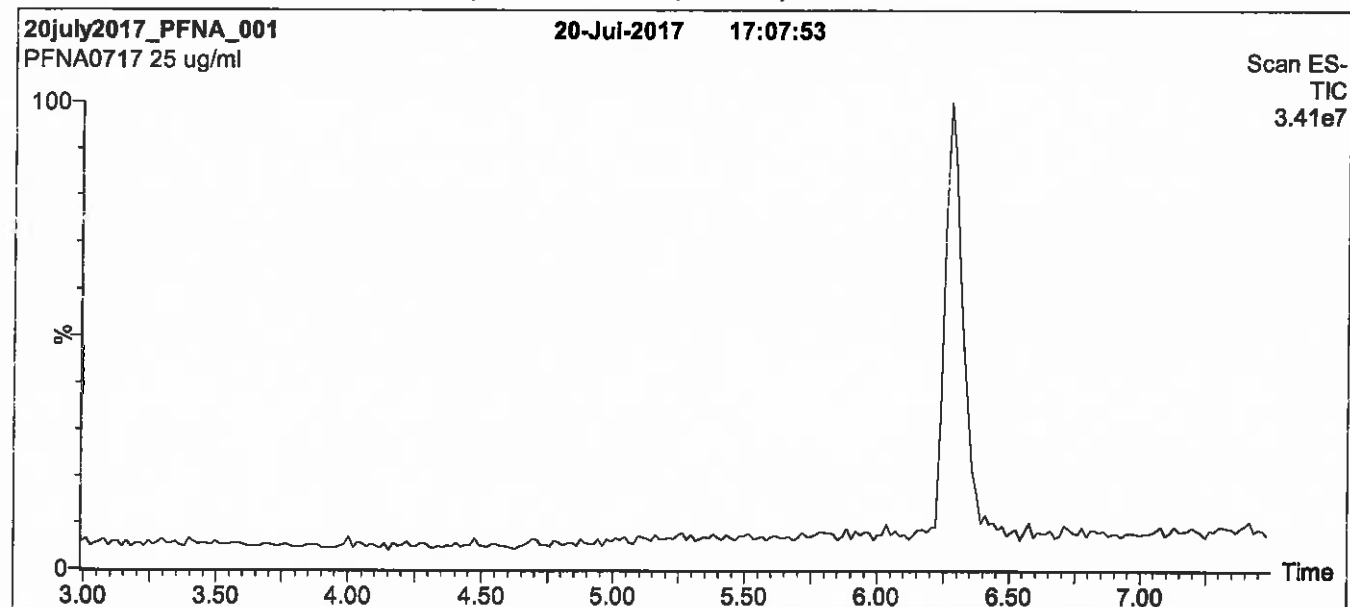
QUALITY MANAGEMENT:

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)

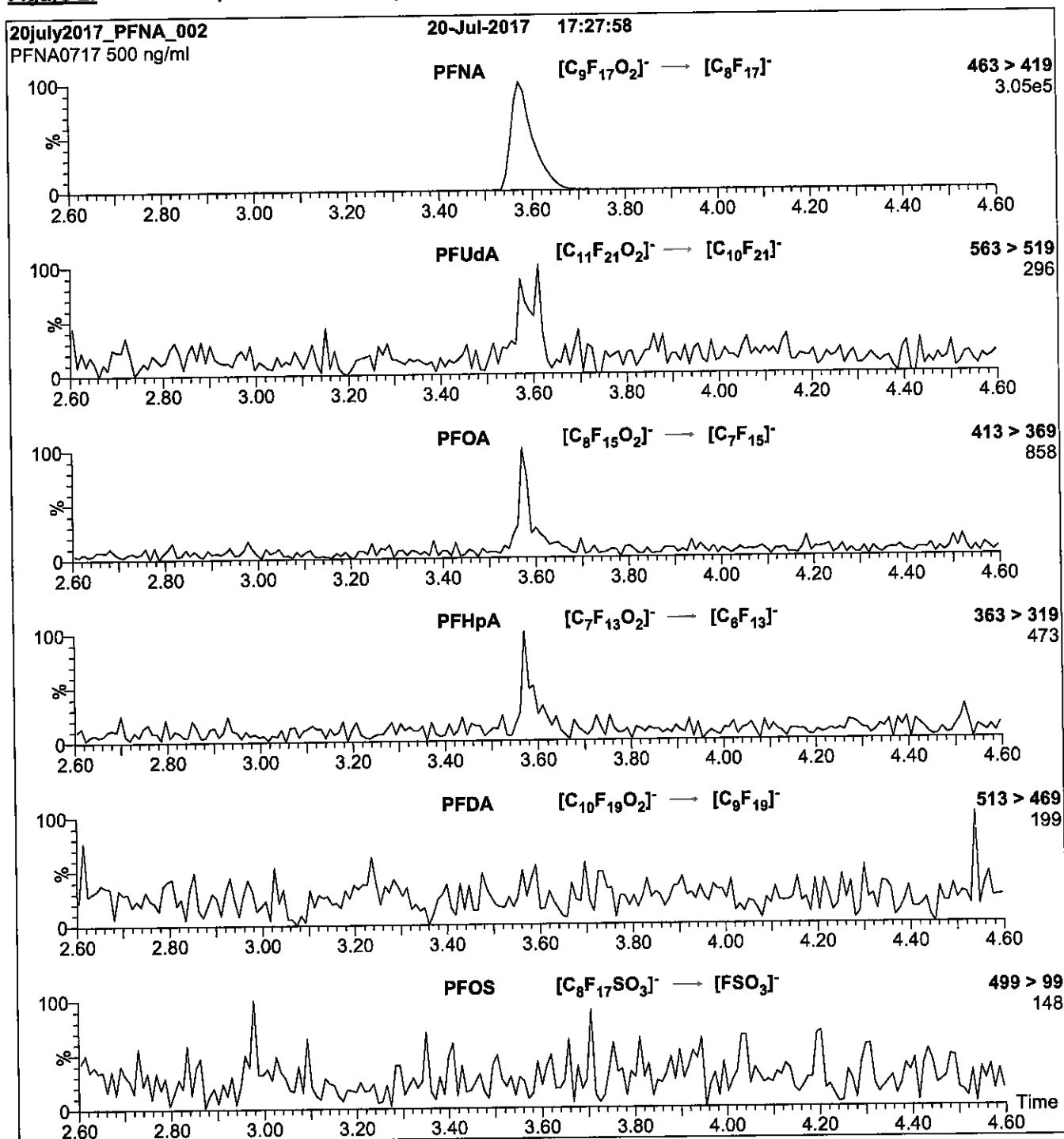
Capillary Voltage (kV) = 2.00

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

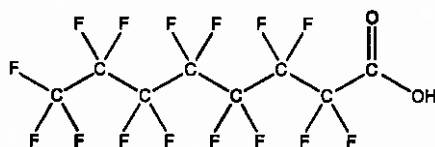
LOT NUMBER: PFOA0917

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:

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:

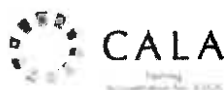
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

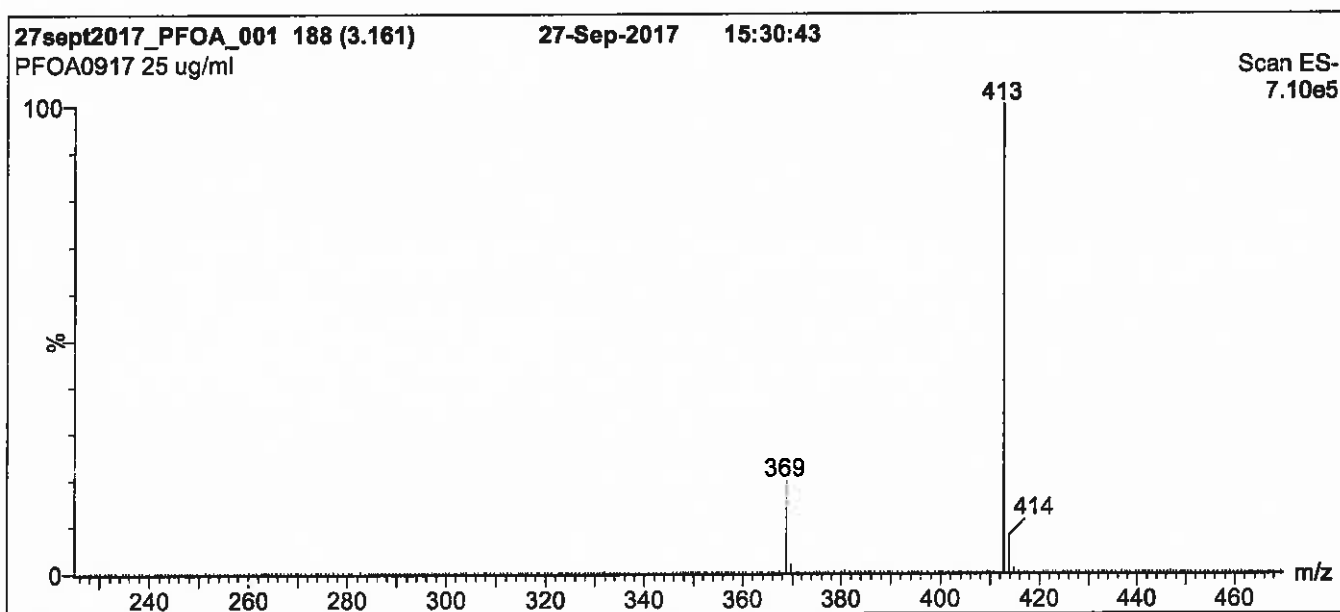
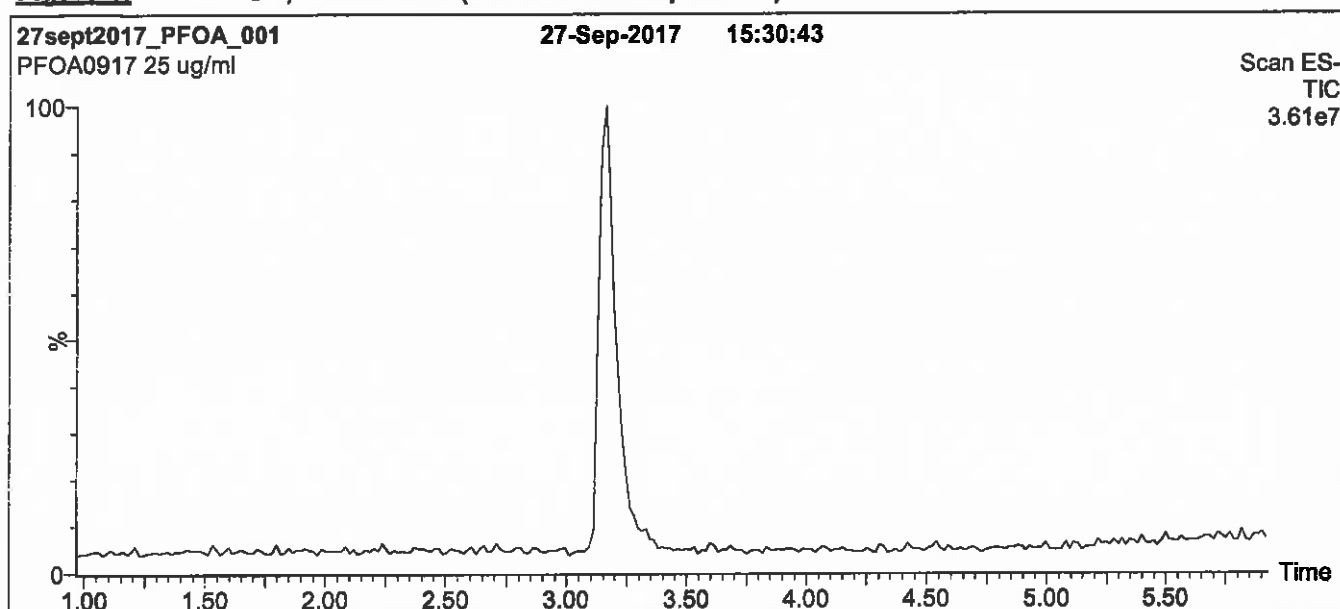
QUALITY MANAGEMENT:

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: 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

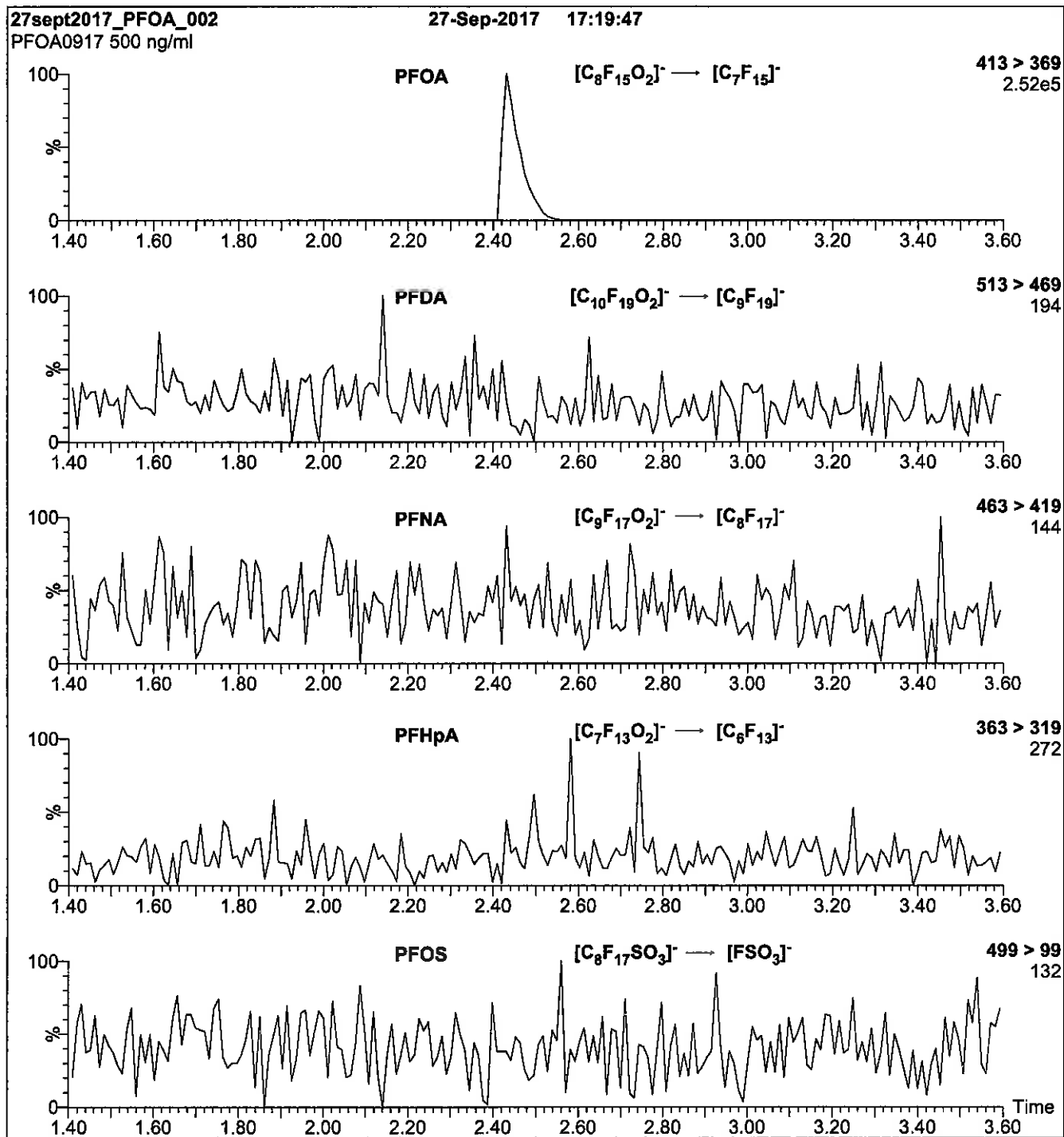
Flow: 300 μ l/min

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).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

**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 compounds 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:

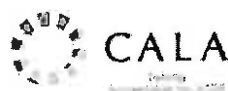
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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****

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.

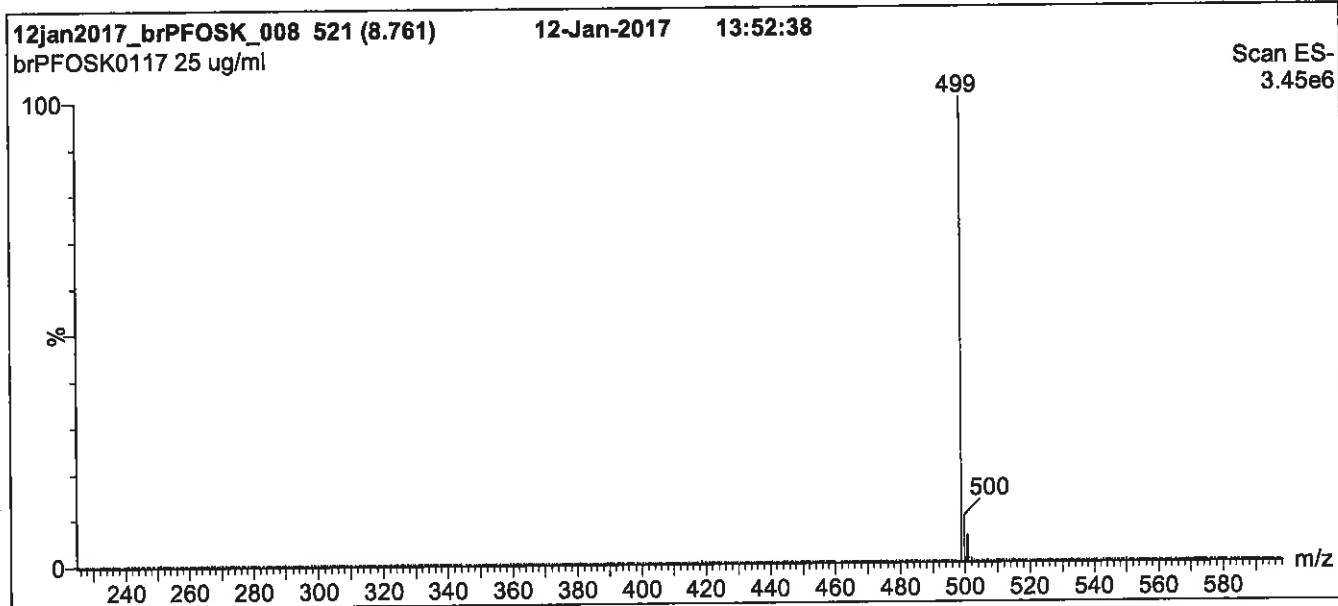
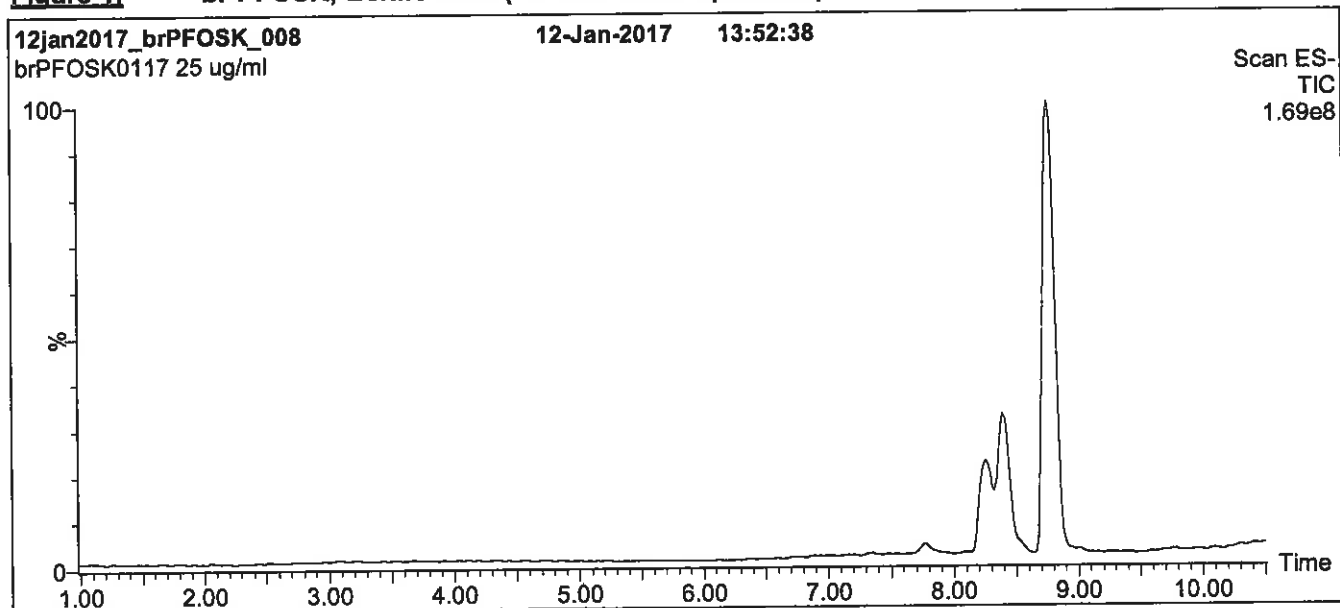
Certified By:


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

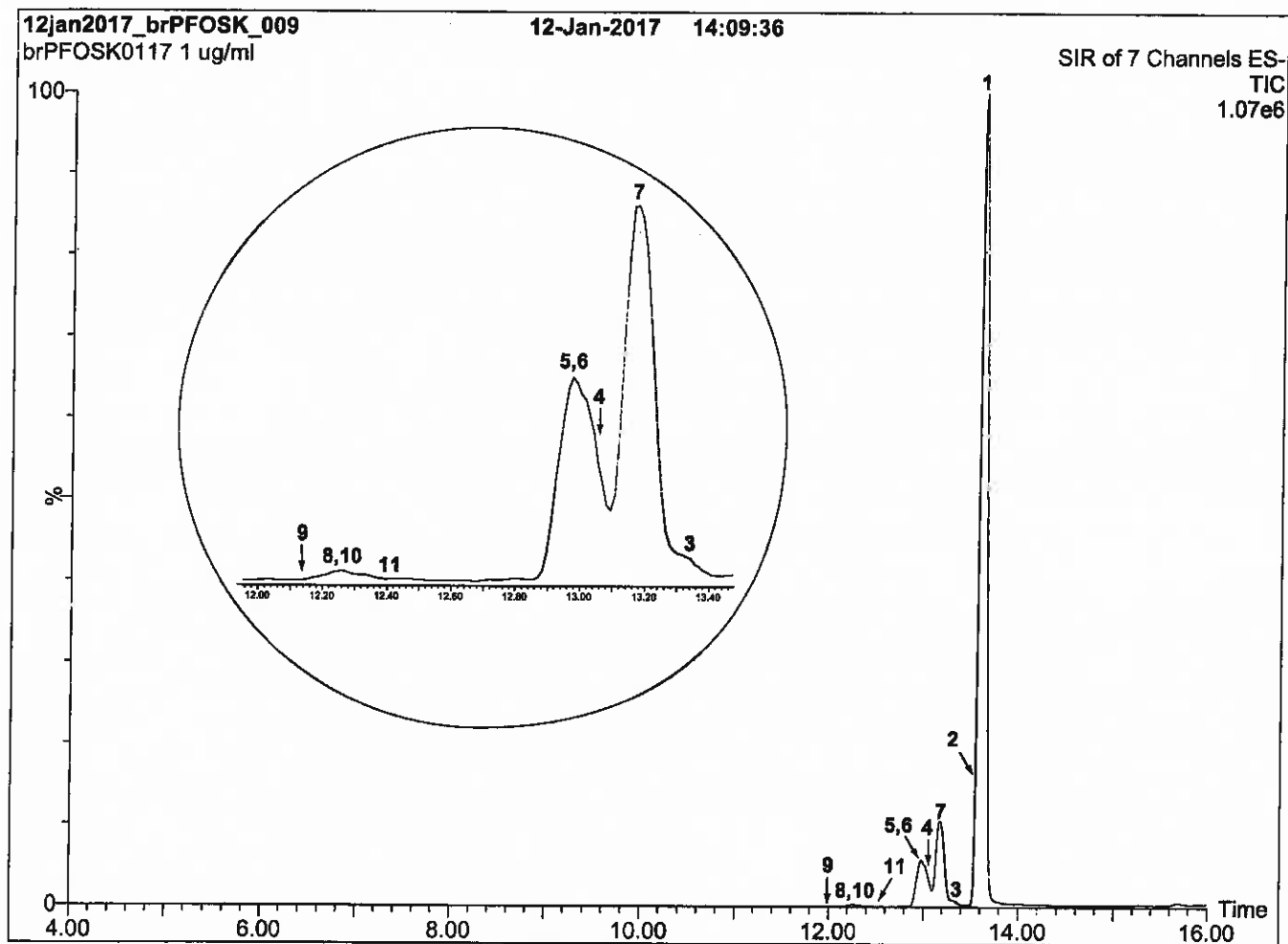
Flow: 300 μ l/min

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

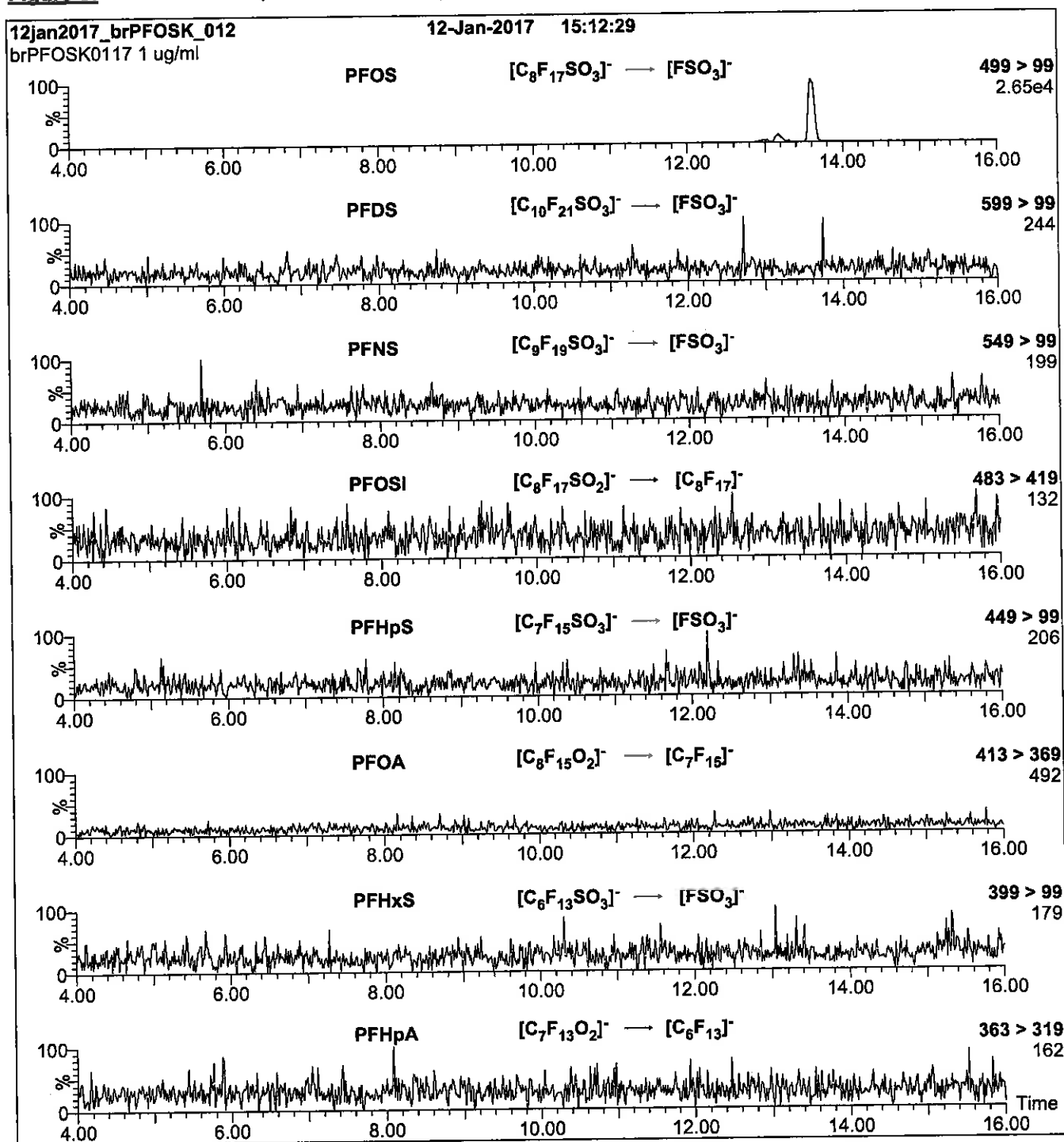
Chromatographic Conditions:

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.: 320-37675-1

SDG No.: _____

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-032918-DUP-31	320-37675-1	95	93
NAWC-032819-RW-286	320-37675-2	98	101
NAWC-032819-FRB-286	320-37675-3	101	95
WGNA-032819-RW-0518	320-37675-4	106	104
WGNA-032819-FRB-0518	320-37675-5	100	98
NAWC-032819-RW-010	320-37675-6	91	88
NAWC-032819-FRB-010	320-37675-7	101	101
NAWC-032819-RW-127	320-37675-8	93	96
NAWC-032819-FRB-127	320-37675-9	95	100
NAWC-032819-RW-195	320-37675-10	97	91
NAWC-032819-FRB-195	320-37675-11	97	94
NAWC-032819-RW-048	320-37675-12	91	96
NAWC-032819-FRB-048	320-37675-13	94	94
NAWC-032819-RW-139	320-37675-14	87	100
NAWC-032819-FRB-139	320-37675-15	98	98
NAWC-032819-RW-117	320-37675-16	97	98
NAWC-032819-FRB-117	320-37675-17	96	88
NAWC-032819-RW-181	320-37675-18	94	86
NAWC-032819-FRB-181	320-37675-19	100	104
NAWC-032819-RW-138	320-37675-20	98	99
NAWC-032819-FRB-138	320-37675-21	96	91
	MB 320-216791/1-A	83	94
	MB 320-216792/1-A	91	90
	LCS 320-216791/2-A	95	93
	LCSD 320-216791/3-A	87	101
	LLCS 320-216792/2-A	99	92
NAWC-032819-RW-139 LMS	320-37675-14 LMS	101	97

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-032819-RW-139 LMSD	320-37675-14 LMSD	93	98

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_032.d
 Lab ID: LCS 320-216791/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	132	132	100	70-130	M
Perfluorooctanoic acid (PFOA)	66.0	67.8	103	70-130	
Perfluorononanoic acid (PFNA)	66.0	62.6	95	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	105	105	70-130	
Perfluoroheptanoic acid (PFHpA)	32.0	32.0	100	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	303	101	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_033.d
 Lab ID: LCSD 320-216791/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	132	126	96	4	30	70-130	M
Perfluorooctanoic acid (PFOA)	66.0	65.5	99	3	30	70-130	
Perfluorononanoic acid (PFNA)	66.0	62.7	95	0	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	102	102	3	30	70-130	
Perfluoroheptanoic acid (PFHpA)	32.0	31.0	97	3	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	266	89	13	30	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_050.d
 Lab ID: LLCS 320-216792/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LLCS CONCENTRATION (ng/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	40.2	38.9 J	97	50-150	M
Perfluorooctanoic acid (PFOA)	20.0	19.1 J	95	50-150	
Perfluorononanoic acid (PFNA)	20.0	17.5 J	88	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.3	31.7	105	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	9.59 J	96	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.2	97.1	108	50-150	

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_056.d
 Lab ID: 320-37675-14 LMS Client ID: NAWC-032819-RW-139 LMS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	LMS CONCENTRATION (ng/L)	LMS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	39.3	16 U	42.7	109	50-150	M
Perfluorooctanoic acid (PFOA)	19.6	9.5 J	28.1	95	50-150	
Perfluorononanoic acid (PFNA)	19.6	20 U	19.0 J	97	50-150	
Perfluorohexanesulfonic acid (PFHxS)	29.7	12 U	31.3	106	50-150	
Perfluoroheptanoic acid (PFHpA)	9.78	4.0 J	13.4	96	50-150	
Perfluorobutanesulfonic acid (PFBS)	88.2	36 U	104	118	50-150	

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_057.d
 Lab ID: 320-37675-14 LMSD Client ID: NAWC-032819-RW-139 LMSD

COMPOUND	SPIKE ADDED (ng/L)	LMSD CONCENTRATION (ng/L)	LMSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	39.8	41.2	104	3	50	50-150	M
Perfluorooctanoic acid (PFOA)	19.8	27.4	91	3	50	50-150	
Perfluorononanoic acid (PFNA)	19.8	18.5 J	94	3	50	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.0	29.4 J	98	6	50	50-150	
Perfluoroheptanoic acid (PFHpA)	9.89	13.0	91	3	50	50-150	
Perfluorobutanesulfonic acid (PFBS)	89.1	94.4	106	9	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.: 320-37675-1
SDG No.: _____
Lab File ID: 2018.04.12_537AA_031.d Lab Sample ID: MB 320-216791/1-A
Matrix: Water Date Extracted: 04/07/2018 08:11
Instrument ID: A8_N Date Analyzed: 04/13/2018 00:37
Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-216791/2-A	2018.04.12 537AA 032.d	04/13/2018 00:41
	LCSD 320-216791/3-A	2018.04.12 537AA 033.d	04/13/2018 00:46
WGNA-032918-DUP-31	320-37675-1	2018.04.12 537AA 034.d	04/13/2018 00:51
NAWC-032819-RW-286	320-37675-2	2018.04.12 537AA 035.d	04/13/2018 00:55
NAWC-032819-FRB-286	320-37675-3	2018.04.12 537AA 036.d	04/13/2018 01:00
WGNA-032819-RW-0518	320-37675-4	2018.04.12 537AA 037.d	04/13/2018 01:05
WGNA-032819-FRB-0518	320-37675-5	2018.04.12 537AA 038.d	04/13/2018 01:09
NAWC-032819-RW-010	320-37675-6	2018.04.12 537AA 039.d	04/13/2018 01:14
NAWC-032819-FRB-010	320-37675-7	2018.04.12 537AA 040.d	04/13/2018 01:19
NAWC-032819-RW-127	320-37675-8	2018.04.12 537AA 043.d	04/13/2018 01:33
NAWC-032819-FRB-127	320-37675-9	2018.04.12 537AA 044.d	04/13/2018 01:37
NAWC-032819-RW-195	320-37675-10	2018.04.12 537AA 045.d	04/13/2018 01:42
NAWC-032819-FRB-195	320-37675-11	2018.04.12 537AA 046.d	04/13/2018 01:47

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab File ID: 2018.04.12_537AA_049.d Lab Sample ID: MB 320-216792/1-A
 Matrix: Water Date Extracted: 04/07/2018 08:19
 Instrument ID: A8_N Date Analyzed: 04/13/2018 02:01
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-216792/2-A	2018.04.12 537AA 050.d	04/13/2018 02:05
NAWC-032819-RW-048	320-37675-12	2018.04.12 537AA 051.d	04/13/2018 02:10
NAWC-032819-FRB-048	320-37675-13	2018.04.12 537AA 052.d	04/13/2018 02:15
NAWC-032819-RW-139	320-37675-14	2018.04.12 537AA 055.d	04/13/2018 02:29
NAWC-032819-RW-139 LMS	320-37675-14 LMS	2018.04.12 537AA 056.d	04/13/2018 02:33
NAWC-032819-RW-139 LMSD	320-37675-14 LMSD	2018.04.12 537AA 057.d	04/13/2018 02:38
NAWC-032819-FRB-139	320-37675-15	2018.04.12 537AA 058.d	04/13/2018 02:43
NAWC-032819-RW-117	320-37675-16	2018.04.12 537AA 059.d	04/13/2018 02:47
NAWC-032819-FRB-117	320-37675-17	2018.04.12 537AA 060.d	04/13/2018 02:52
NAWC-032819-RW-181	320-37675-18	2018.04.12 537AA 061.d	04/13/2018 02:57
NAWC-032819-FRB-181	320-37675-19	2018.04.12 537AA 062.d	04/13/2018 03:01
NAWC-032819-RW-138	320-37675-20	2018.04.12 537AA 063.d	04/13/2018 03:06
NAWC-032819-FRB-138	320-37675-21	2018.04.12 537AA 064.d	04/13/2018 03:11

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 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 320-217726/1		1007212	1.89	2413051	2.12		
CCV 320-217814/1 CCVIS		945293	1.89	2202701	2.12		
MB 320-216791/1-A		949828	1.88	2322770	2.12		
LCS 320-216791/2-A		993342	1.87	2367322	2.11		
LCSD 320-216791/3-A		1202728	1.87	2870335	2.11		
320-37675-1	WGNA-032918-DUP-31	935283	1.87	2285394	2.11		
320-37675-2	NAWC-032819-RW-286	1004022	1.87	2445606	2.11		
320-37675-3	NAWC-032819-FRB-286	931391	1.87	2287824	2.11		
320-37675-4	WGNA-032819-RW-0518	939190	1.87	2335776	2.11		
320-37675-5	WGNA-032819-FRB-0518	954713	1.87	2370457	2.11		
320-37675-6	NAWC-032819-RW-010	1003975	1.87	2389703	2.11		
320-37675-7	NAWC-032819-FRB-010	998861	1.87	2402516	2.11		
CCV 320-217814/13 CCVIS		947894	1.87	2307891	2.10		
CCV 320-217816/13 CCVIS		947894	1.87	2307891	2.10		
320-37675-8	NAWC-032819-RW-127	915274	1.87	2281073	2.11		
320-37675-9	NAWC-032819-FRB-127	893479	1.87	2204862	2.11		
320-37675-10	NAWC-032819-RW-195	926217	1.87	2305396	2.10		
320-37675-11	NAWC-032819-FRB-195	921584	1.87	2286972	2.10		
CCV 320-217816/19 CCVIS		899573	1.87	2148163	2.10		
CCV 320-217818/19 CCVIS		899573	1.87	2148163	2.10		
MB 320-216792/1-A		927774	1.87	2237326	2.10		
LLCS 320-216792/2-A		932269	1.87	2141422	2.10		
320-37675-12	NAWC-032819-RW-048	933636	1.87	2208683	2.10		
320-37675-13	NAWC-032819-FRB-048	921490	1.87	2241801	2.11		
CCV 320-217818/25 CCVIS		921520	1.87	2115143	2.10		

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.: 320-37675-1
 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						
CCV 320-217820/25 CCVIS		921520	1.87	2115143	2.10		
320-37675-14	NAWC-032819-RW-139	941432	1.87	2279160	2.10		
320-37675-14 LMS	NAWC-032819-RW-139 LMS	907706	1.87	2270226	2.10		
320-37675-14 LMSD	NAWC-032819-RW-139 LMSD	932927	1.87	2349968	2.10		
320-37675-15	NAWC-032819-FRB-139	938492	1.87	2282460	2.10		
320-37675-16	NAWC-032819-RW-117	946733	1.87	2304139	2.10		
320-37675-17	NAWC-032819-FRB-117	951026	1.87	2287790	2.10		
320-37675-18	NAWC-032819-RW-181	960037	1.86	2317950	2.09		
320-37675-19	NAWC-032819-FRB-181	957412	1.87	2371551	2.10		
320-37675-20	NAWC-032819-RW-138	941041	1.87	2361059	2.10		
320-37675-21	NAWC-032819-FRB-138	924480	1.87	2293177	2.10		
CCV 320-217820/37 CCVIS		934501	1.86	2203770	2.09		

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

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217814/1 Date Analyzed: 04/13/2018 00:27
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_02 Heated Purge: (Y/N) N
 Calibration ID: 38530

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		945293	1.89	2202701	2.12		
UPPER LIMIT		1323410	2.39	3083781	2.62		
LOWER LIMIT		661705	1.39	1541891	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-216791/1-A		949828	1.88	2322770	2.12		
LCS 320-216791/2-A		993342	1.87	2367322	2.11		
LCSD 320-216791/3-A		1202728	1.87	2870335	2.11		
320-37675-1	WGNA-032918-DUP-31	935283	1.87	2285394	2.11		
320-37675-2	NAWC-032819-RW-286	1004022	1.87	2445606	2.11		
320-37675-3	NAWC-032819-FRB-286	931391	1.87	2287824	2.11		
320-37675-4	WGNA-032819-RW-0518	939190	1.87	2335776	2.11		
320-37675-5	WGNA-032819-FRB-0518	954713	1.87	2370457	2.11		
320-37675-6	NAWC-032819-RW-010	1003975	1.87	2389703	2.11		
320-37675-7	NAWC-032819-FRB-010	998861	1.87	2402516	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.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217814/13 Date Analyzed: 04/13/2018 01:23
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_04 Heated Purge: (Y/N) N
 Calibration ID: 38530

		13PFOA		PFOS		AREA #		RT #
		AREA #	RT #	AREA #	RT #			
12/24 HOUR STD		947894	1.87	2307891	2.10			
UPPER LIMIT		1327052	2.37	3231047	2.60			
LOWER LIMIT		663526	1.37	1615524	1.60			
LAB SAMPLE ID	CLIENT SAMPLE ID							
MB 320-216791/1-A		949828	1.88	2322770	2.12			
LCS 320-216791/2-A		993342	1.87	2367322	2.11			
LCSD 320-216791/3-A		1202728	1.87	2870335	2.11			
320-37675-1	WGNA-032918-DUP-31	935283	1.87	2285394	2.11			
320-37675-2	NAWC-032819-RW-286	1004022	1.87	2445606	2.11			
320-37675-3	NAWC-032819-FRB-286	931391	1.87	2287824	2.11			
320-37675-4	WGNA-032819-RW-0518	939190	1.87	2335776	2.11			
320-37675-5	WGNA-032819-FRB-0518	954713	1.87	2370457	2.11			
320-37675-6	NAWC-032819-RW-010	1003975	1.87	2389703	2.11			
320-37675-7	NAWC-032819-FRB-010	998861	1.87	2402516	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.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217816/13 Date Analyzed: 04/13/2018 01:23
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_04 Heated Purge: (Y/N) N
 Calibration ID: 38530

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	947894	1.87	2307891	2.10		
UPPER LIMIT	1327052	2.37	3231047	2.60		
LOWER LIMIT	663526	1.37	1615524	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-37675-8	NAWC-032819-RW-127		915274	1.87	2281073	2.11
320-37675-9	NAWC-032819-FRB-127		893479	1.87	2204862	2.11
320-37675-10	NAWC-032819-RW-195		926217	1.87	2305396	2.10
320-37675-11	NAWC-032819-FRB-195		921584	1.87	2286972	2.10

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

Area Limit = 70%-140% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217816/19 Date Analyzed: 04/13/2018 01:51
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_04 Heated Purge: (Y/N) N
 Calibration ID: 38530

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	899573	1.87	2148163	2.10		
UPPER LIMIT	1259402	2.37	3007428	2.60		
LOWER LIMIT	629701	1.37	1503714	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-37675-8	NAWC-032819-RW-127		915274	1.87	2281073	2.11
320-37675-9	NAWC-032819-FRB-127		893479	1.87	2204862	2.11
320-37675-10	NAWC-032819-RW-195		926217	1.87	2305396	2.10
320-37675-11	NAWC-032819-FRB-195		921584	1.87	2286972	2.10

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

Area Limit = 70%-140% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217818/19 Date Analyzed: 04/13/2018 01:51
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_04 Heated Purge: (Y/N) N
 Calibration ID: 38530

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	899573	1.87	2148163	2.10		
UPPER LIMIT	1259402	2.37	3007428	2.60		
LOWER LIMIT	629701	1.37	1503714	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-216792/1-A		927774	1.87	2237326	2.10	
LLCS 320-216792/2-A		932269	1.87	2141422	2.10	
320-37675-12	NAWC-032819-RW-048	933636	1.87	2208683	2.10	
320-37675-13	NAWC-032819-FRB-048	921490	1.87	2241801	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.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217818/25 Date Analyzed: 04/13/2018 02:19
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_05 Heated Purge: (Y/N) N
 Calibration ID: 38530

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	921520	1.87	2115143	2.10		
UPPER LIMIT	1290128	2.37	2961200	2.60		
LOWER LIMIT	645064	1.37	1480600	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-216792/1-A		927774	1.87	2237326	2.10	
LLCS 320-216792/2-A		932269	1.87	2141422	2.10	
320-37675-12	NAWC-032819-RW-048	933636	1.87	2208683	2.10	
320-37675-13	NAWC-032819-FRB-048	921490	1.87	2241801	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.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217820/25 Date Analyzed: 04/13/2018 02:19
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_05 Heated Purge: (Y/N) N
 Calibration ID: 38530

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		921520	1.87	2115143	2.10		
UPPER LIMIT		1290128	2.37	2961200	2.60		
LOWER LIMIT		645064	1.37	1480600	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-37675-14	NAWC-032819-RW-139	941432	1.87	2279160	2.10		
320-37675-14 LMS	NAWC-032819-RW-139 LMS	907706	1.87	2270226	2.10		
320-37675-14 LMSD	NAWC-032819-RW-139 LMSD	932927	1.87	2349968	2.10		
320-37675-15	NAWC-032819-FRB-139	938492	1.87	2282460	2.10		
320-37675-16	NAWC-032819-RW-117	946733	1.87	2304139	2.10		
320-37675-17	NAWC-032819-FRB-117	951026	1.87	2287790	2.10		
320-37675-18	NAWC-032819-RW-181	960037	1.86	2317950	2.09		
320-37675-19	NAWC-032819-FRB-181	957412	1.87	2371551	2.10		
320-37675-20	NAWC-032819-RW-138	941041	1.87	2361059	2.10		
320-37675-21	NAWC-032819-FRB-138	924480	1.87	2293177	2.10		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217820/37 Date Analyzed: 04/13/2018 03:15
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_06 Heated Purge: (Y/N) N
 Calibration ID: 38530

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		934501	1.86	2203770	2.09		
UPPER LIMIT		1308301	2.36	3085278	2.59		
LOWER LIMIT		654151	1.36	1542639	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-37675-14	NAWC-032819-RW-139	941432	1.87	2279160	2.10		
320-37675-14 LMS	NAWC-032819-RW-139 LMS	907706	1.87	2270226	2.10		
320-37675-14 LMSD	NAWC-032819-RW-139 LMSD	932927	1.87	2349968	2.10		
320-37675-15	NAWC-032819-FRB-139	938492	1.87	2282460	2.10		
320-37675-16	NAWC-032819-RW-117	946733	1.87	2304139	2.10		
320-37675-17	NAWC-032819-FRB-117	951026	1.87	2287790	2.10		
320-37675-18	NAWC-032819-RW-181	960037	1.86	2317950	2.09		
320-37675-19	NAWC-032819-FRB-181	957412	1.87	2371551	2.10		
320-37675-20	NAWC-032819-RW-138	941041	1.87	2361059	2.10		
320-37675-21	NAWC-032819-FRB-138	924480	1.87	2293177	2.10		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

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

Column used to flag values outside QC limits

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-032918-DUP-31</u>	Lab Sample ID: <u>320-37675-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_034.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 07:00</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:11</u>
Sample wt/vol: <u>252 (mL)</u>	Date Analyzed: <u>04/13/2018 00:51</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>217814</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)	5.4	J	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	5.5
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	95		70-130
STL00996	13C2 PFDA	93		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_034.d
 Lims ID: 320-37675-A-1-A
 Client ID: WGNA-032918-DUP-31
 Sample Type: Client
 Inject. Date: 13-Apr-2018 00:51:05 ALS Bottle#: 24 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 09:54:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.525	-0.008	1.000	948631	9.54		8669	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.889	-0.015		935283	10.0		5574	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.889	-0.015	1.000	135824	1.37		17.0	
413.00 > 169.00	1.874	1.889	-0.015	1.000	86375		1.57(0.00-0.00)	82.4	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.124	-0.015		2285394	28.7		3725	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.269	-0.007	1.000	740696	9.31		6265	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_034.d

Injection Date: 13-Apr-2018 00:51:05

Instrument ID: A8_N

Lims ID: 320-37675-A-1-A

Lab Sample ID: 320-37675-1

Client ID: WGNA-032918-DUP-31

Operator ID: SACINSTLCMS01

ALS Bottle#: 24

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

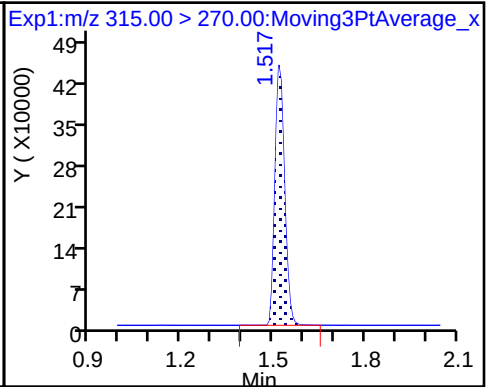
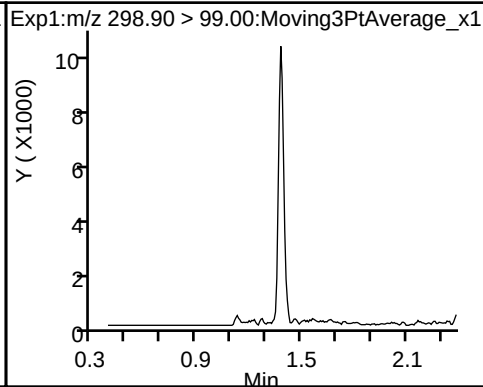
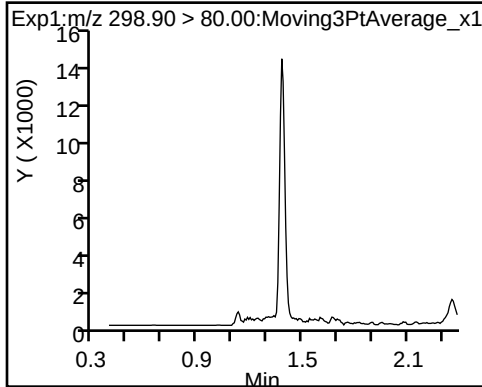
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

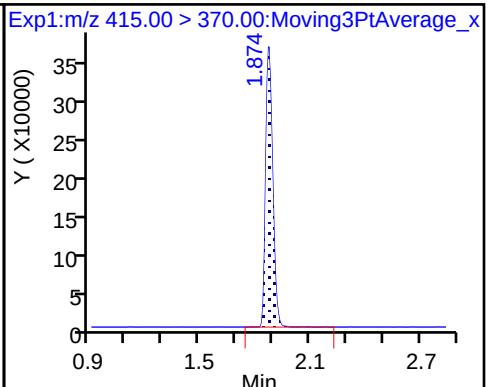
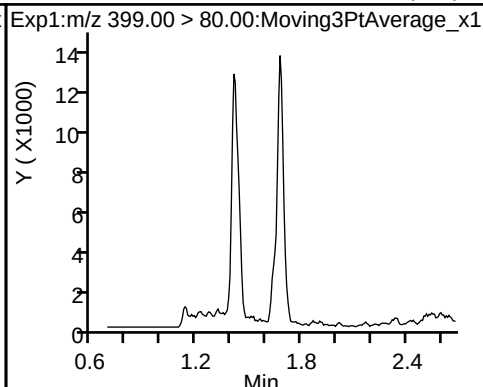
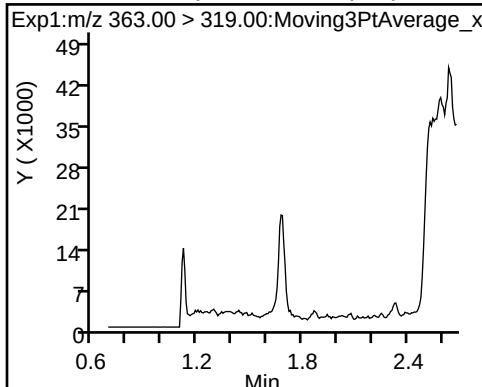
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

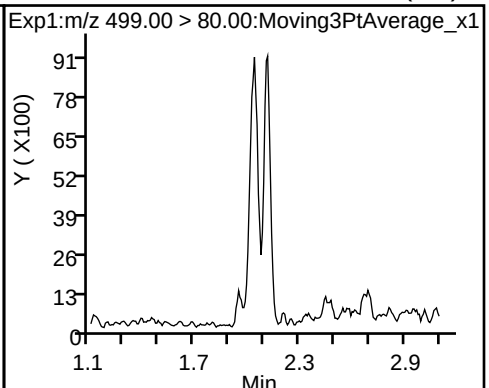
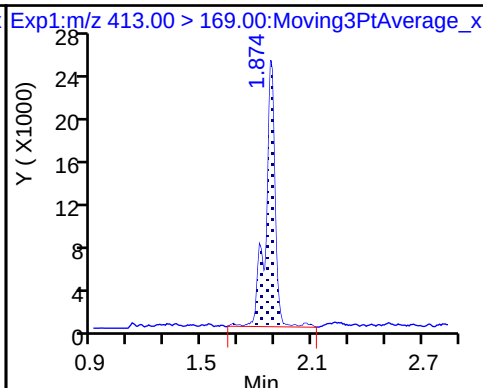
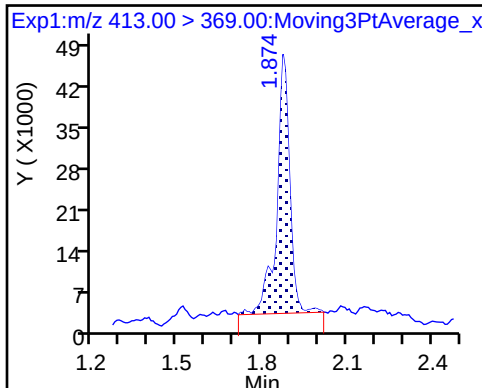
* 6 13C2-PFOA



5 Perfluorooctanoic acid

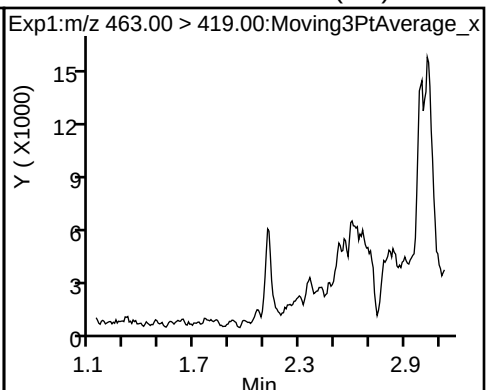
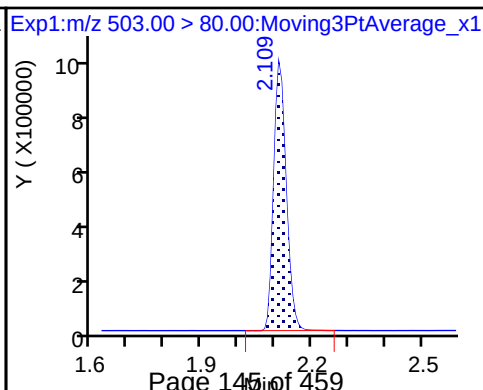
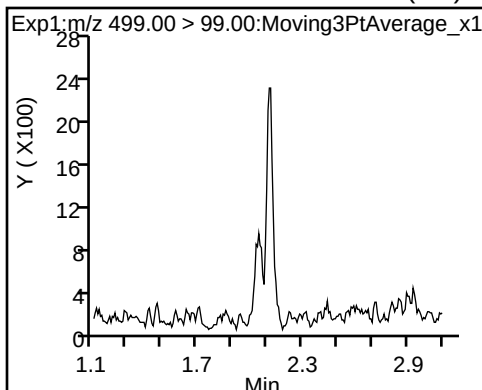
5 Perfluorooctanoic acid

8 Perfluorooctane sulfonic acid (ND)

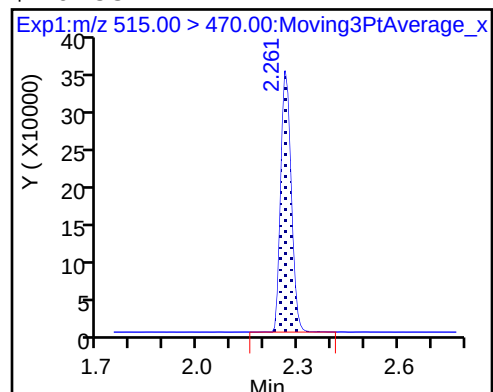


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_034.d
Lims ID: 320-37675-A-1-A
Client ID: WGNA-032918-DUP-31
Sample Type: Client
Inject. Date: 13-Apr-2018 00:51:05 ALS Bottle#: 24 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 09:54:56

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.54	95.40
\$ 10 13C2 PFDA	10.0	9.31	93.12

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-032819-RW-286</u>	Lab Sample ID: <u>320-37675-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_035.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 08:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:11</u>
Sample wt/vol: <u>253.3(mL)</u>	Date Analyzed: <u>04/13/2018 00:55</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>217814</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J M	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	18	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	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.7	J	9.9	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	101		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_035.d
 Lims ID: 320-37675-A-2-A
 Client ID: NAWC-032819-RW-286
 Sample Type: Client
 Inject. Date: 13-Apr-2018 00:55:45 ALS Bottle#: 25 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 09:55:49

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	1.388	-0.007	1.000	189196	2.11		241	
298.90 > 99.00	1.381	1.388	-0.007	1.000	144591		1.31(0.00-0.00)	329	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.525	-0.008	1.000	1043543	9.78		10901	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.684	-0.007	1.000	128925	1.20		4.3	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.684	-0.007	1.000	207120	1.48		129	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.889	-0.015		1004022	10.0		7191	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.889	-0.015	1.000	483550	4.53		59.4	
413.00 > 169.00	1.874	1.889	-0.015	1.000	281406		1.72(0.00-0.00)	256	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.094	0.023	1.000	383256	4.22		176	a
499.00 > 99.00	2.109	2.094	0.015	0.996	66259		5.78(0.00-0.00)	100	a
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.124	-0.015		2445606	28.7		3181	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.132	-0.015	1.000	37592	0.4445		5.5	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.269	-0.007	1.000	863929	10.1		8185	M

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_035.d

Injection Date: 13-Apr-2018 00:55:45

Instrument ID: A8_N

Lims ID: 320-37675-A-2-A

Lab Sample ID: 320-37675-2

Client ID: NAWC-032819-RW-286

Operator ID: SACINSTLCMS01

ALS Bottle#: 25

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

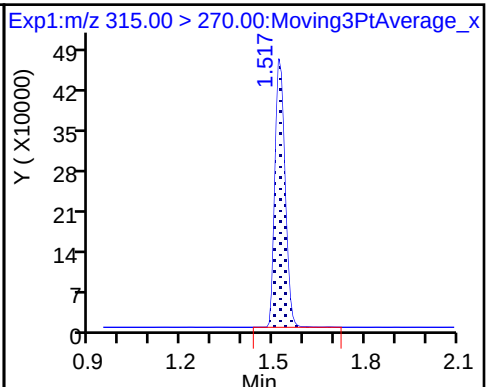
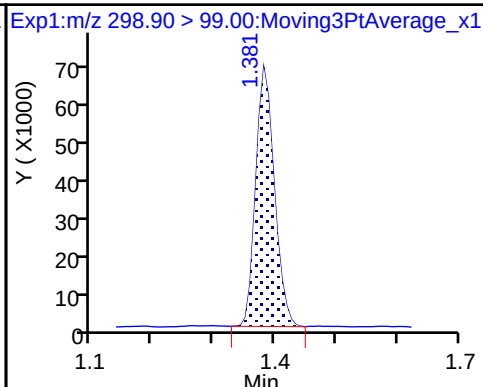
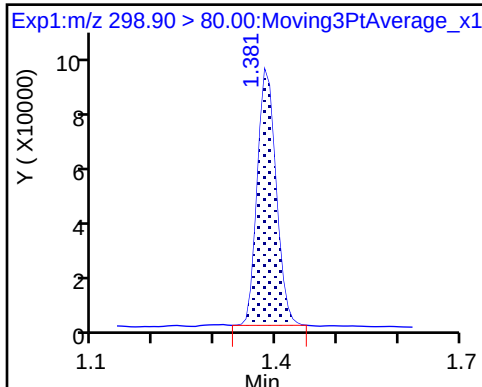
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

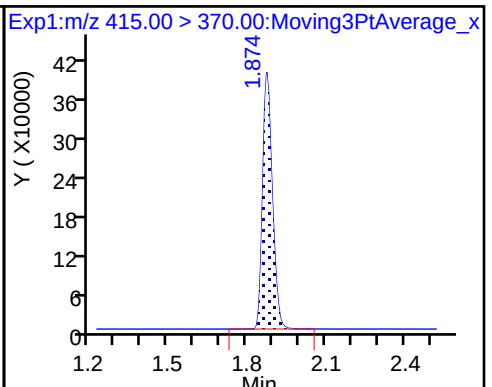
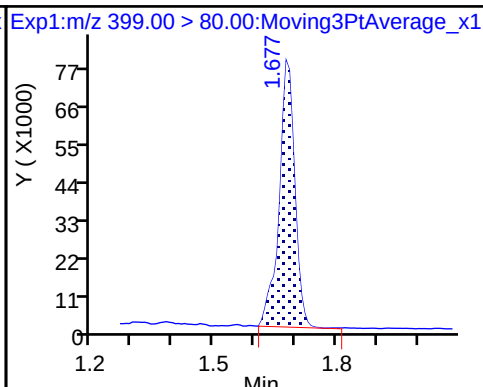
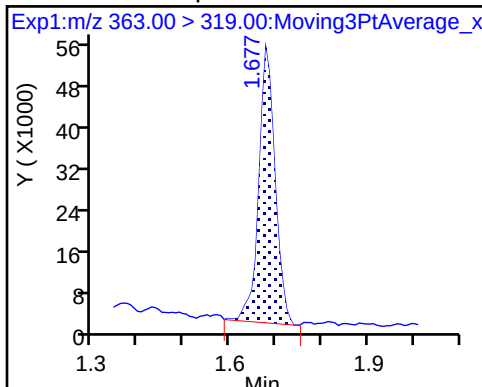
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

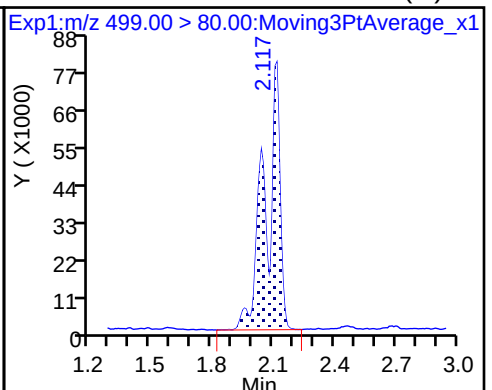
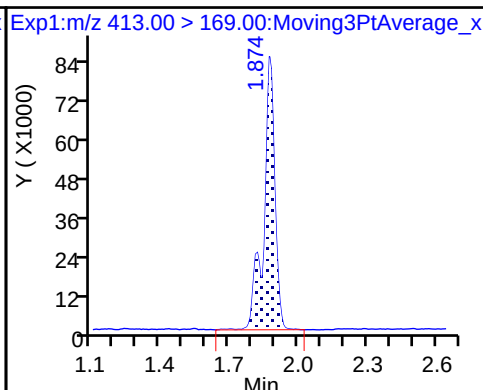
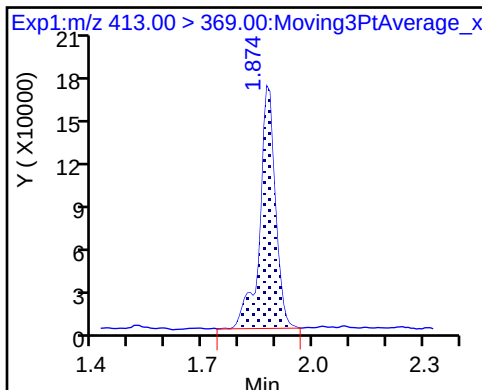
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

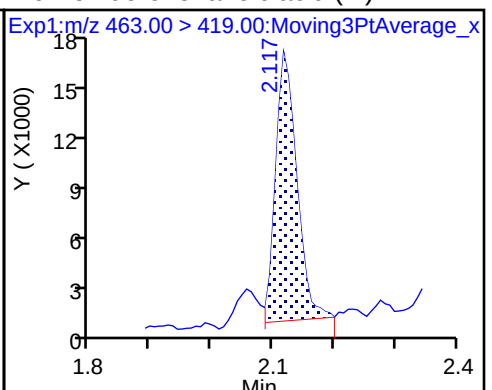
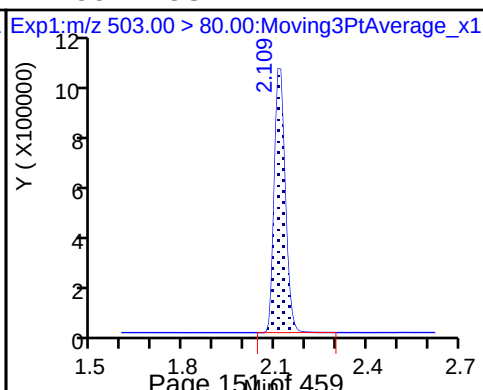
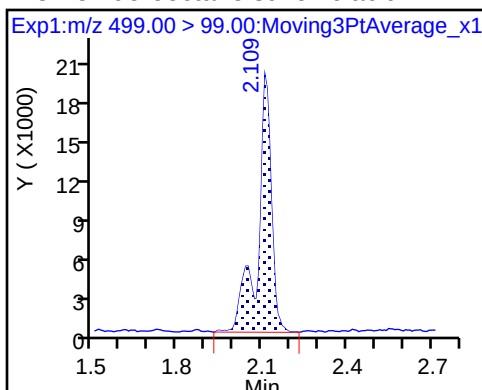
8 Perfluorooctane sulfonic acid (M)



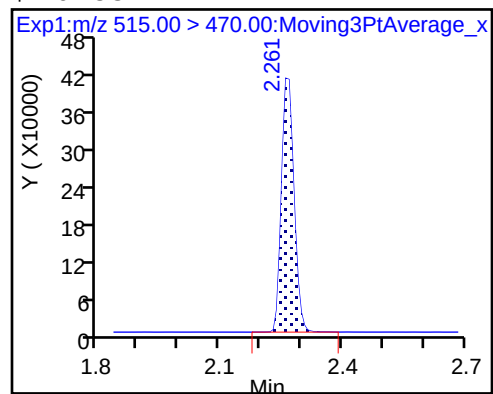
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_035.d
Lims ID: 320-37675-A-2-A
Client ID: NAWC-032819-RW-286
Sample Type: Client
Inject. Date: 13-Apr-2018 00:55:45 ALS Bottle#: 25 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 09:55:49

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.78	97.76
\$ 10 13C2 PFDA	10.0	10.1	101.18

TestAmerica Sacramento

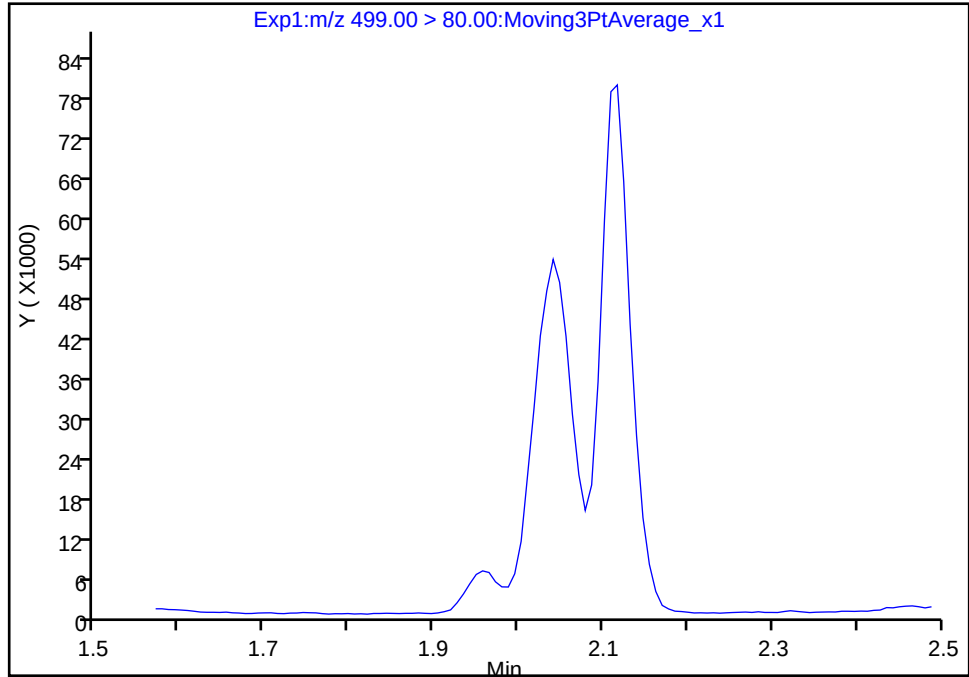
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_035.d
Injection Date: 13-Apr-2018 00:55:45 Instrument ID: A8_N
Lims ID: 320-37675-A-2-A Lab Sample ID: 320-37675-2
Client ID: NAWC-032819-RW-286
Operator ID: SACINSTLCMS01 ALS Bottle#: 25 Worklist Smp#: 7
Injection Vol: 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

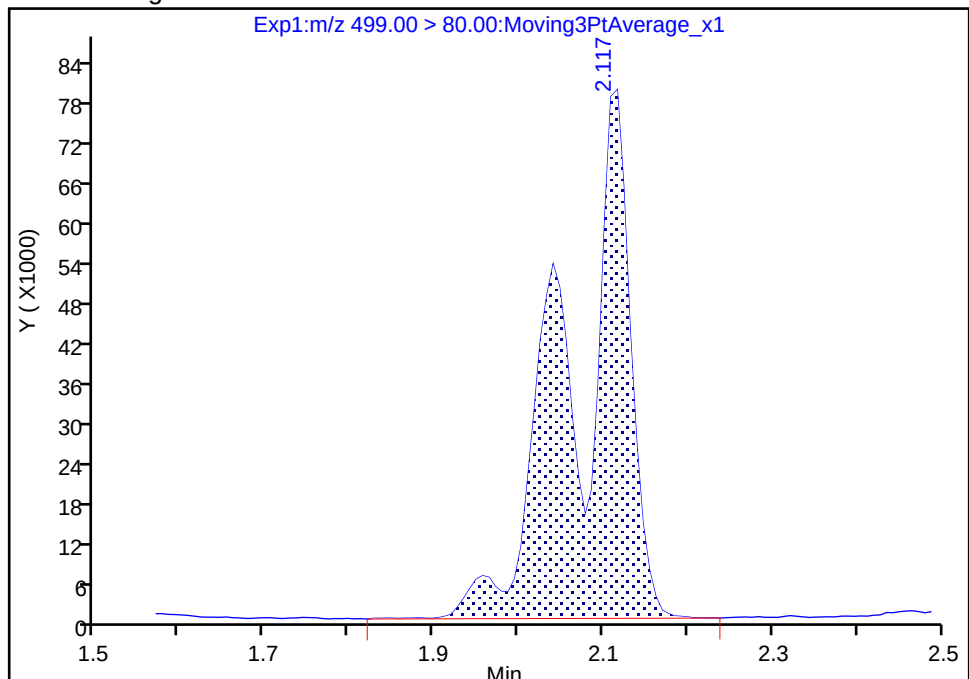
Signal: 1

Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.12
Area: 383256
Amount: 4.215943
Amount Units: ng/ml

TestAmerica Sacramento

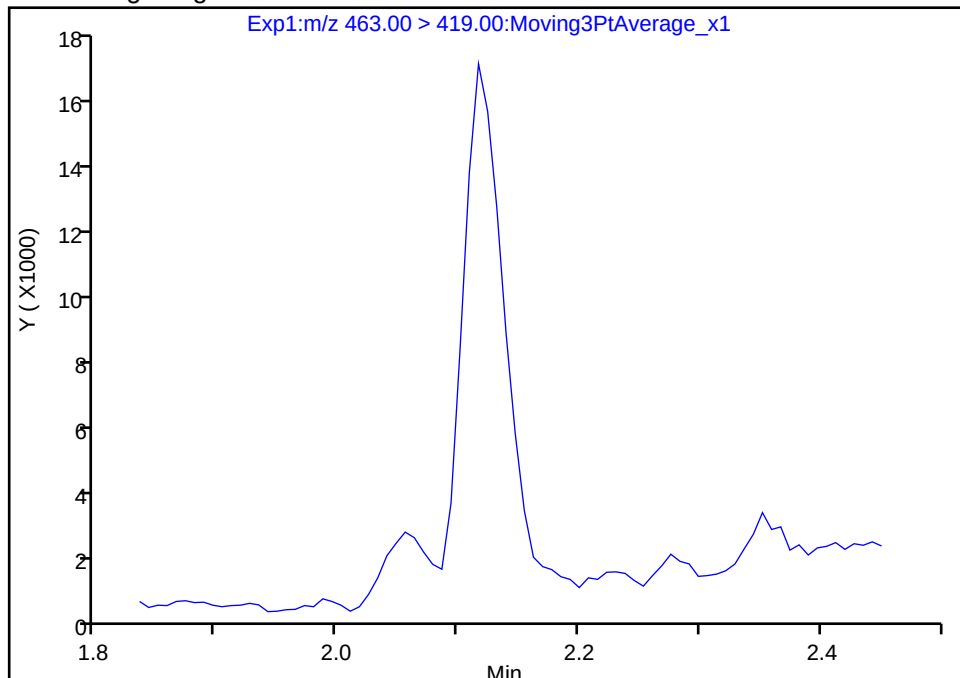
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_035.d				
Injection Date:	13-Apr-2018 00:55:45	Instrument ID:	A8_N		
Lims ID:	320-37675-A-2-A	Lab Sample ID:	320-37675-2		
Client ID:	NAWC-032819-RW-286				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	25	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

9 Perfluorononanoic acid, CAS: 375-95-1

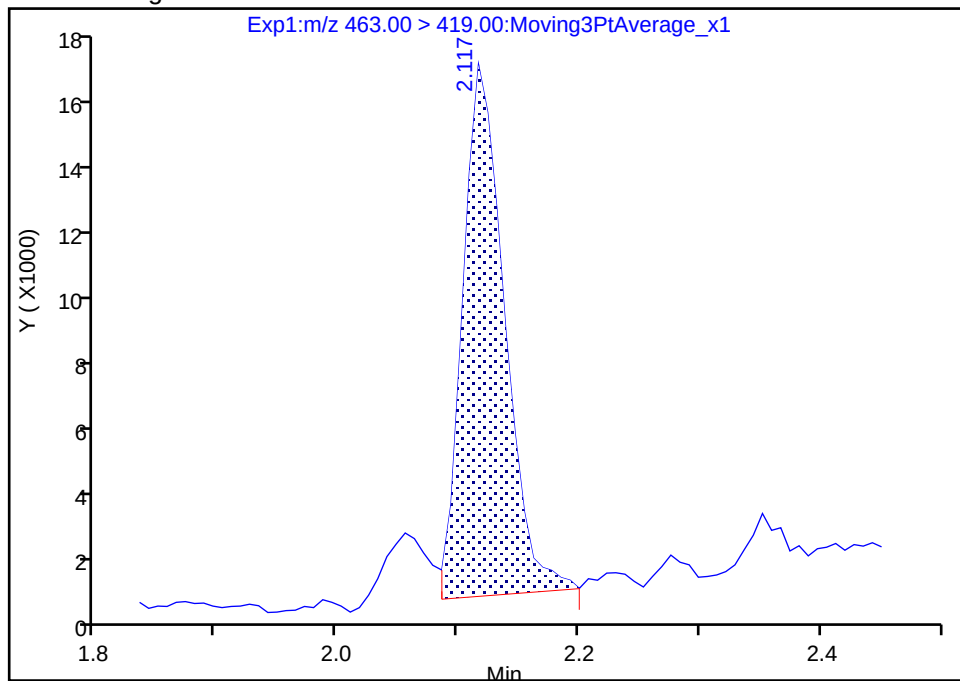
Signal: 1

Not Detected
Expected RT: 2.13

Processing Integration Results

RT: 2.12
Area: 37592
Amount: 0.444466
Amount Units: ng/ml

Manual Integration Results

Reviewer: barnettj, 13-Apr-2018 09:55:36
Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-032819-FRB-286</u>	Lab Sample ID: <u>320-37675-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_036.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 08:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:11</u>
Sample wt/vol: <u>246.7(mL)</u>	Date Analyzed: <u>04/13/2018 01:00</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>217814</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	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	8.1	U	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	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	95		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_036.d
 Lims ID: 320-37675-A-3-A
 Client ID: NAWC-032819-FRB-286
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:00:24 ALS Bottle#: 26 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.525	-0.008	1.000	1000132	10.1		11122	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.889	-0.015		931391	10.0		5504	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.124	-0.015		2287824	28.7		4254	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.269	-0.007	1.000	753731	9.52		6898	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_036.d

Injection Date: 13-Apr-2018 01:00:24

Instrument ID: A8_N

Lims ID: 320-37675-A-3-A

Lab Sample ID: 320-37675-3

Client ID: NAWC-032819-FRB-286

Operator ID: SACINSTLCMS01

ALS Bottle#: 26

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

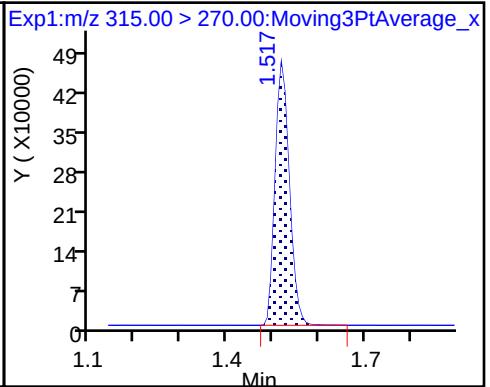
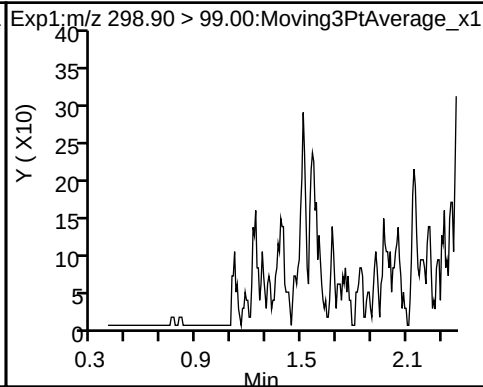
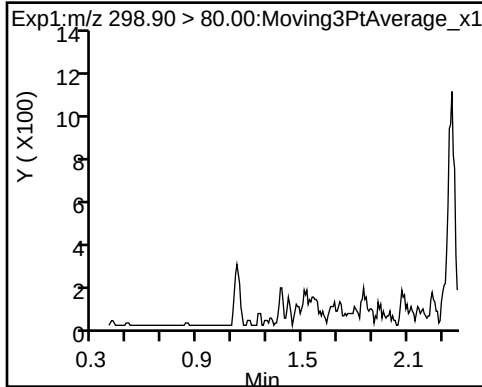
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

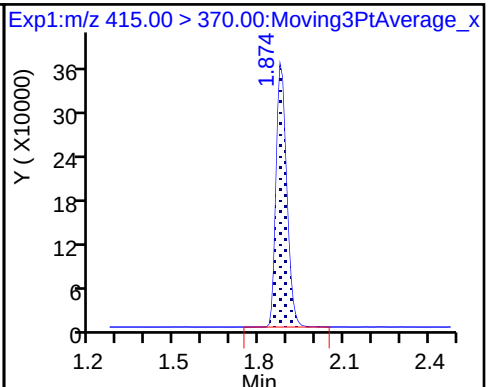
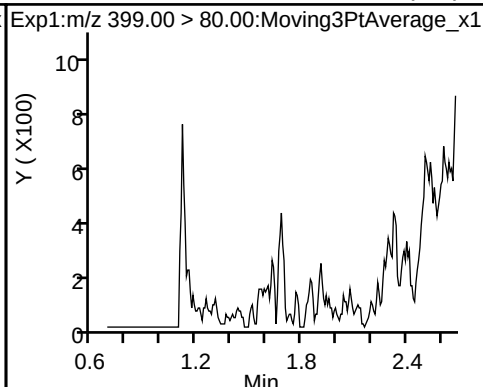
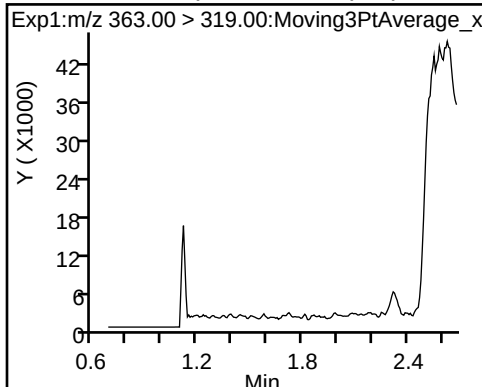
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

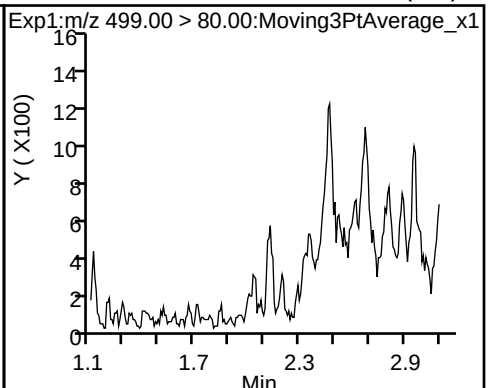
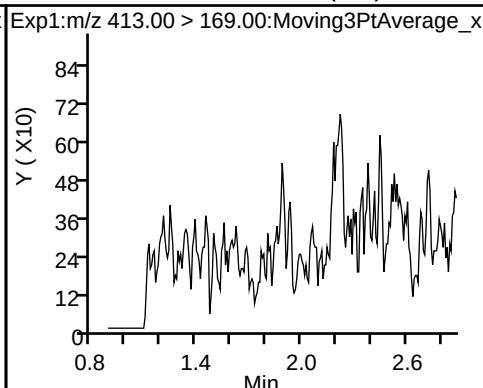
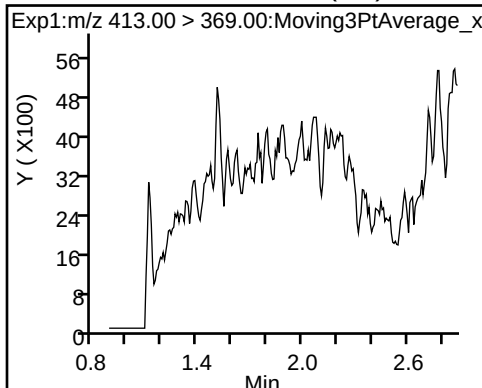
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

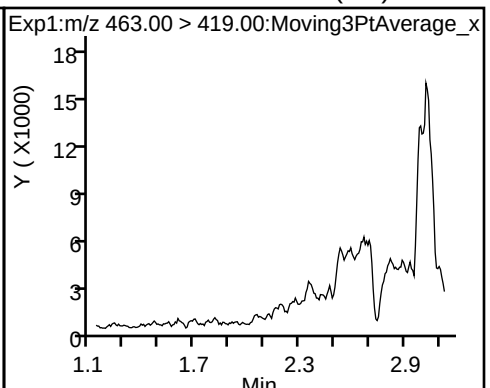
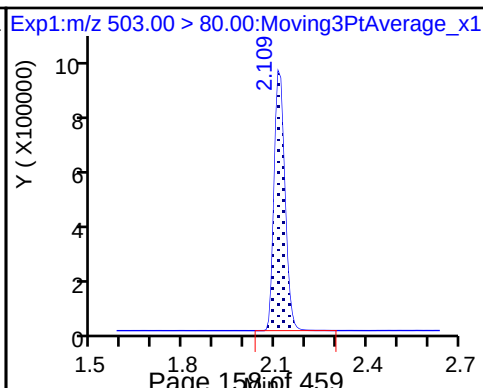
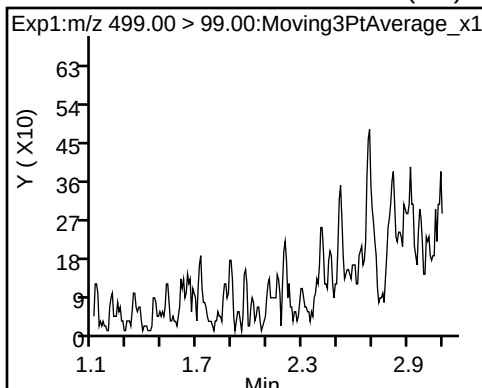
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

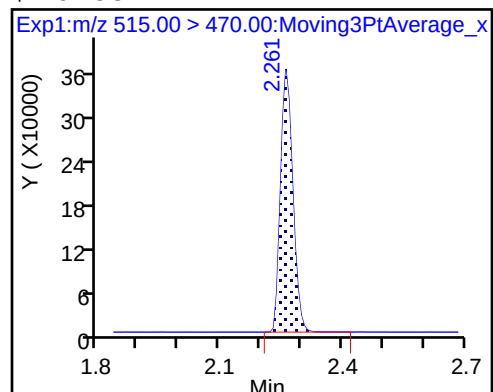


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_036.d
Lims ID: 320-37675-A-3-A
Client ID: NAWC-032819-FRB-286
Sample Type: Client
Inject. Date: 13-Apr-2018 01:00:24 ALS Bottle#: 26 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.1	101.00
\$ 10 13C2 PFDA	10.0	9.52	95.15

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: WGNA-032819-RW-0518 Lab Sample ID: 320-37675-4
 Matrix: Water Lab File ID: 2018.04.12_537AA_037.d
 Analysis Method: 537 Date Collected: 03/29/2018 08:40
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 252.4 (mL) Date Analyzed: 04/13/2018 01:05
 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.: 217814 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	22	J M	40	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	23		20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.9	J	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.7	J	9.9	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	19	J	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	106		70-130
STL00996	13C2 PFDA	104		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_037.d
 Lims ID: 320-37675-A-4-A
 Client ID: WGNA-032819-RW-0518
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:05:04 ALS Bottle#: 27 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-4-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 09:56:47

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	1.388	-0.007	1.000	408935	4.77		416	
298.90 > 99.00	1.381	1.388	-0.007	1.000	300983		1.36(0.00-0.00)	724	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.525	-0.008	1.000	1061004	10.6		10484	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.684	-0.007	1.000	146206	1.45		4.5	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.684	-0.007	1.000	300117	2.24		170	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.889	-0.015		939190	10.0		5877	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.889	-0.015	1.000	590711	5.92		70.2	
413.00 > 169.00	1.874	1.889	-0.015	1.000	344393		1.72(0.00-0.00)	308	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.094	0.015	1.000	477998	5.51		219	a
499.00 > 99.00	2.109	2.094	0.015	1.000	84638		5.65(0.00-0.00)	155	a
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.124	-0.015		2335776	28.7		2457	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.132	-0.015	1.000	42023	0.5312		6.2	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.269	-0.007	1.000	831388	10.4		8152	M

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_037.d

Injection Date: 13-Apr-2018 01:05:04

Instrument ID: A8_N

Lims ID: 320-37675-A-4-A

Lab Sample ID: 320-37675-4

Client ID: WGNA-032819-RW-0518

Operator ID: SACINSTLCMS01

ALS Bottle#: 27

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

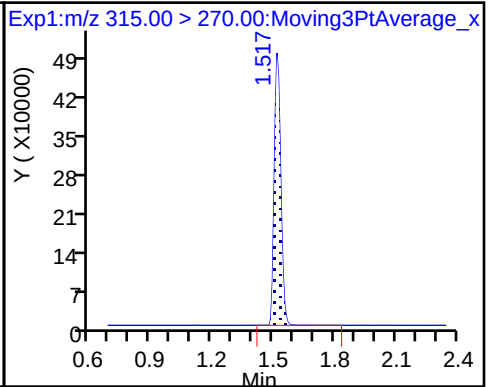
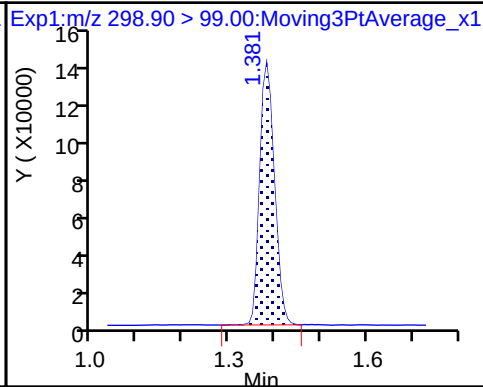
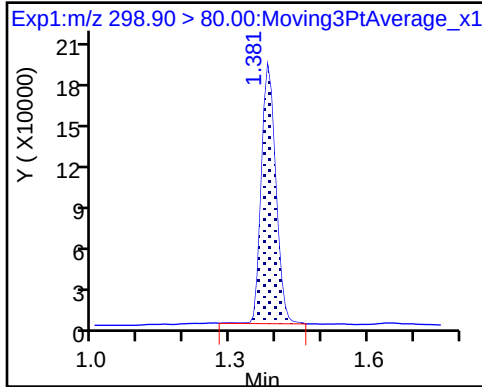
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

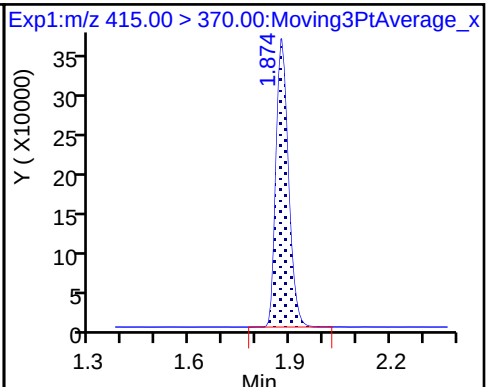
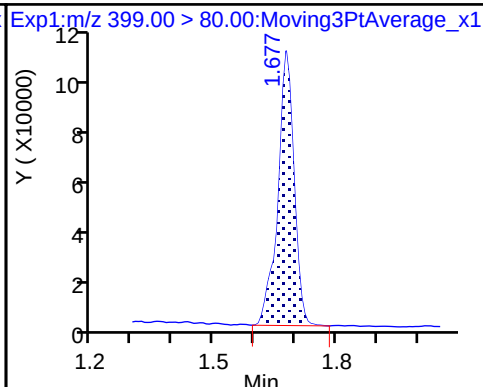
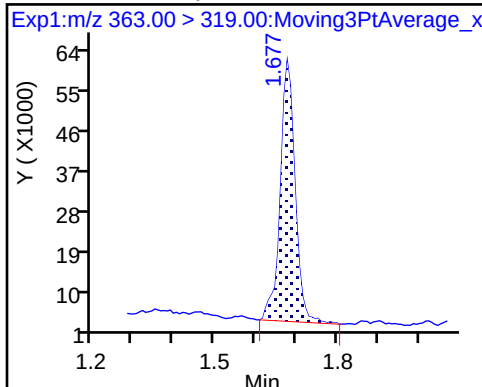
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

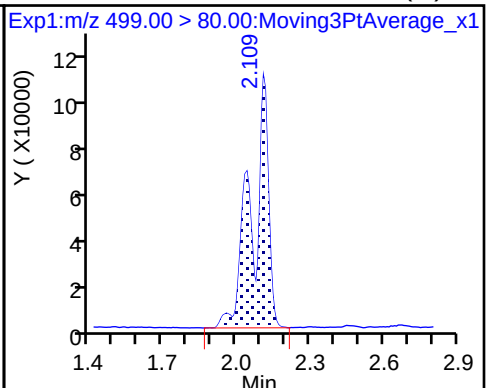
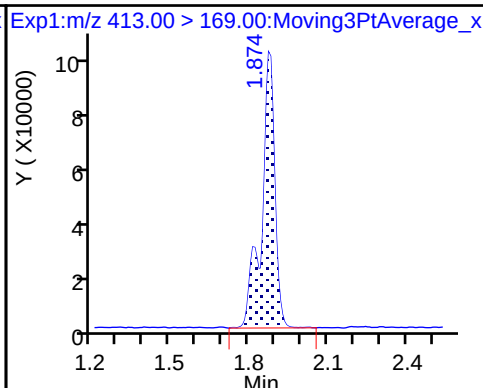
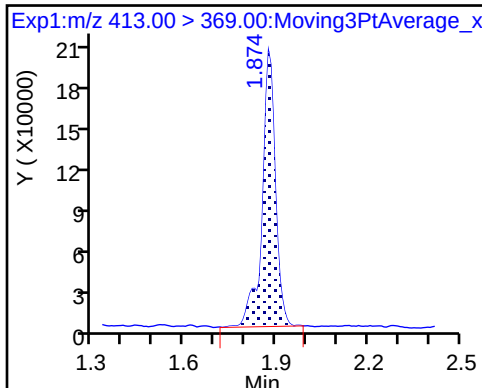
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

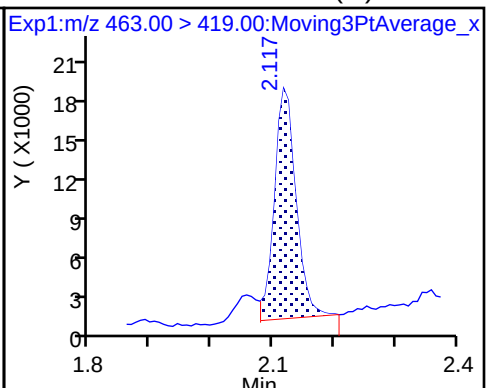
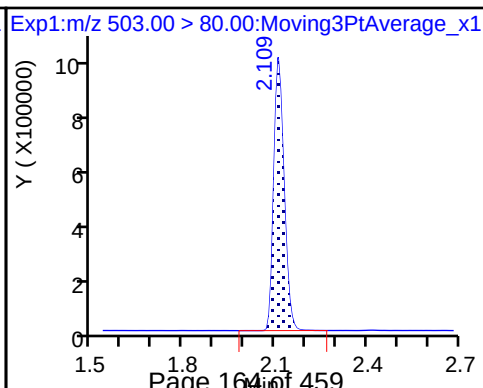
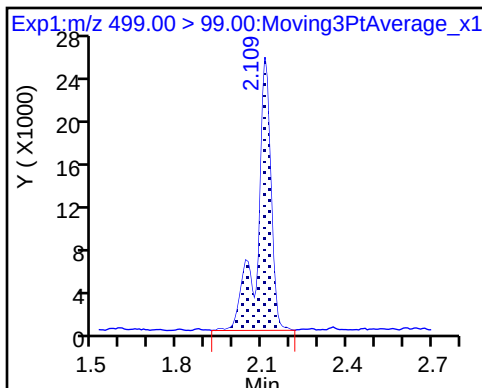
8 Perfluorooctane sulfonic acid (M)



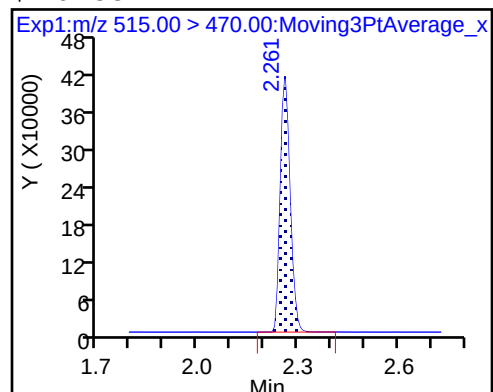
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_037.d
Lims ID: 320-37675-A-4-A
Client ID: WGNA-032819-RW-0518
Sample Type: Client
Inject. Date: 13-Apr-2018 01:05:04 ALS Bottle#: 27 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-4-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 09:56:47

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.6	106.26
\$ 10 13C2 PFDA	10.0	10.4	104.09

TestAmerica Sacramento

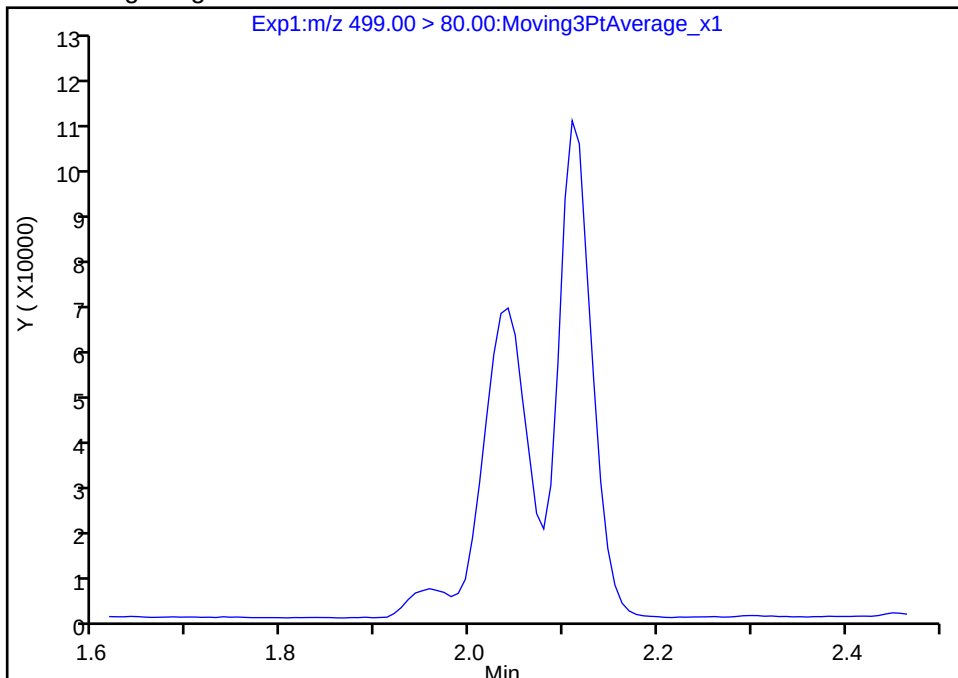
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_037.d
Injection Date: 13-Apr-2018 01:05:04 Instrument ID: A8_N
Lims ID: 320-37675-A-4-A Lab Sample ID: 320-37675-4
Client ID: WGNA-032819-RW-0518
Operator ID: SACINSTLCMS01 ALS Bottle#: 27 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

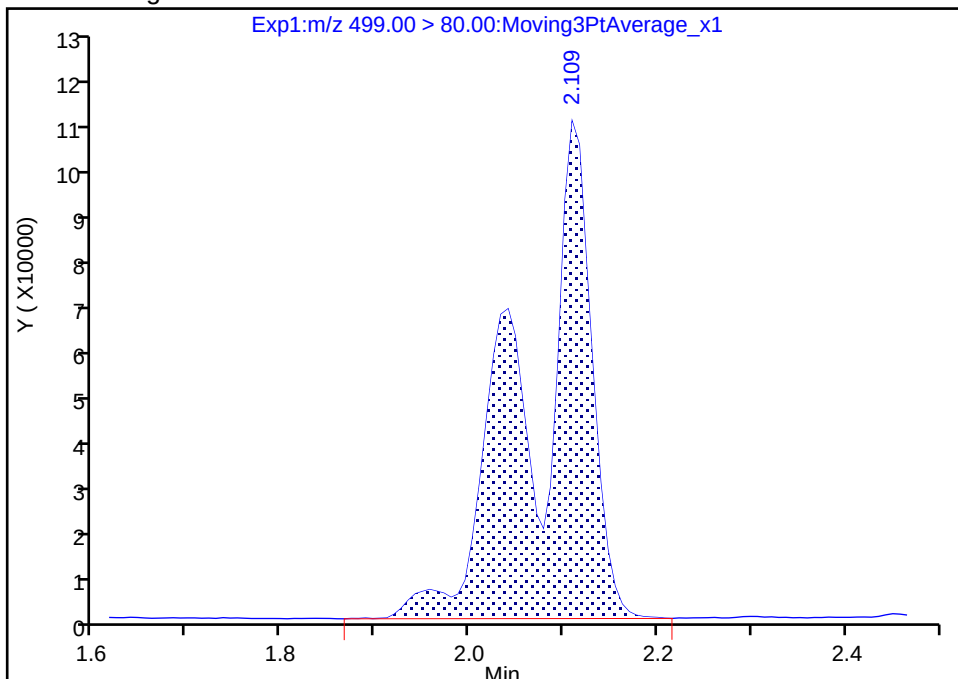
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.11
Area: 477998
Amount: 5.505378
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 13-Apr-2018 09:56:01
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_037.d

Injection Date: 13-Apr-2018 01:05:04

Instrument ID: A8_N

Lims ID: 320-37675-A-4-A

Lab Sample ID: 320-37675-4

Client ID: WGNA-032819-RW-0518

Operator ID: SACINSTLCMS01

ALS Bottle#: 27 Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

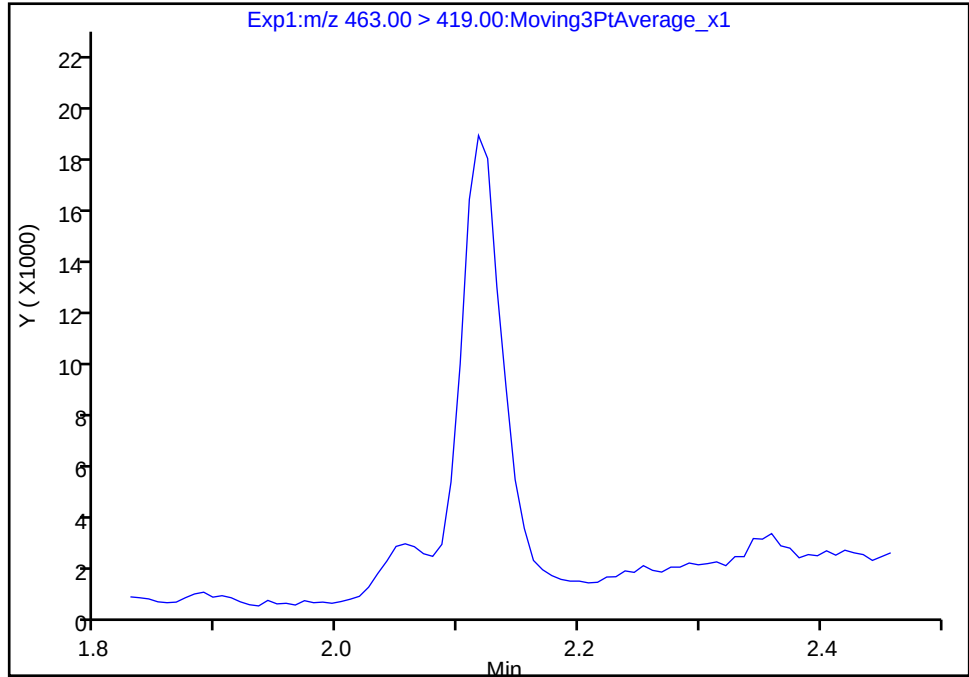
9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

Not Detected

Expected RT: 2.13

Processing Integration Results



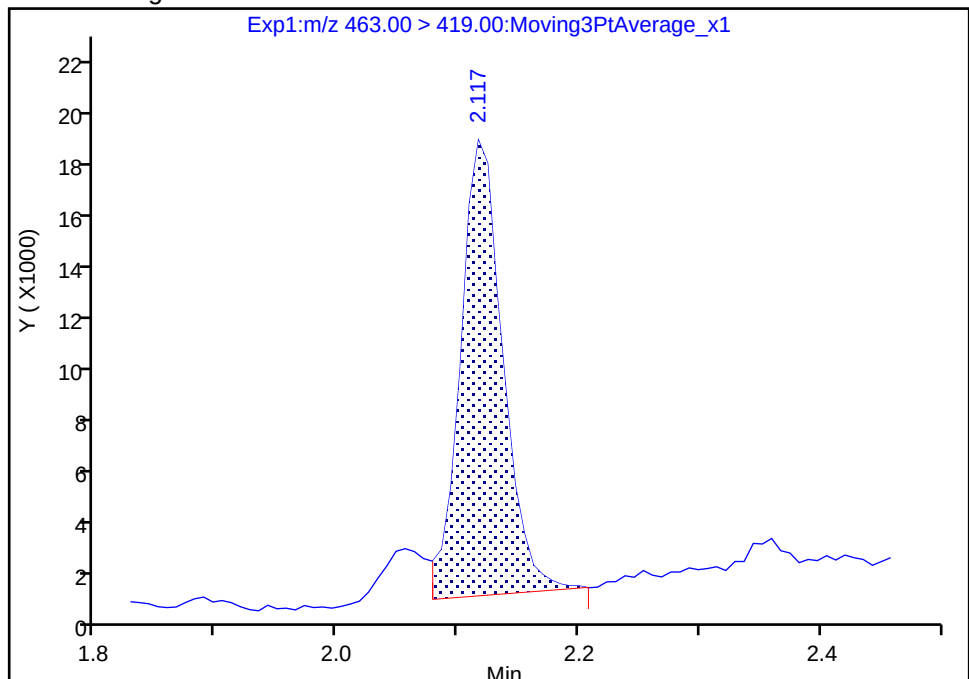
RT: 2.12

Area: 42023

Amount: 0.531153

Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 13-Apr-2018 09:56:29

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: WGNA-032819-FRB-0518 Lab Sample ID: 320-37675-5

Matrix: Water Lab File ID: 2018.04.12_537AA_038.d

Analysis Method: 537 Date Collected: 03/29/2018 08:35

Extraction Method: 537 Date Extracted: 04/07/2018 08:11

Sample wt/vol: 253.5 (mL) Date Analyzed: 04/13/2018 01:09

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.: 217814 Units: ng/L

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	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.9	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	98		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_038.d
 Lims ID: 320-37675-A-5-A
 Client ID: WGNA-032819-FRB-0518
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:09:44 ALS Bottle#: 28 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-5-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.525	-0.008	1.000	1013651	9.99		9454	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.889	-0.015		954713	10.0		5193	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.124	-0.015		2370457	28.7		4313	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.269	-0.007	1.000	797269	9.82		6792	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_038.d

Injection Date: 13-Apr-2018 01:09:44

Instrument ID: A8_N

Lims ID: 320-37675-A-5-A

Lab Sample ID: 320-37675-5

Client ID: WGNA-032819-FRB-0518

Operator ID: SACINSTLCMS01

ALS Bottle#: 28

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

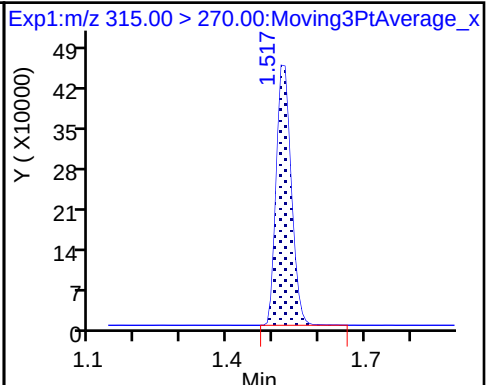
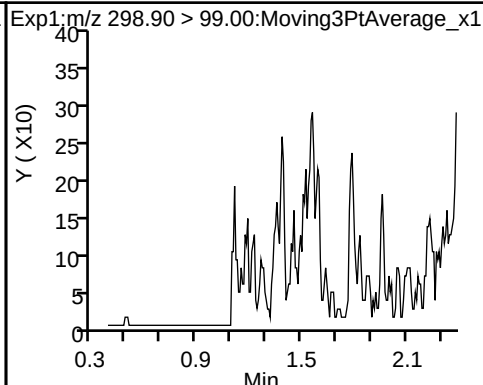
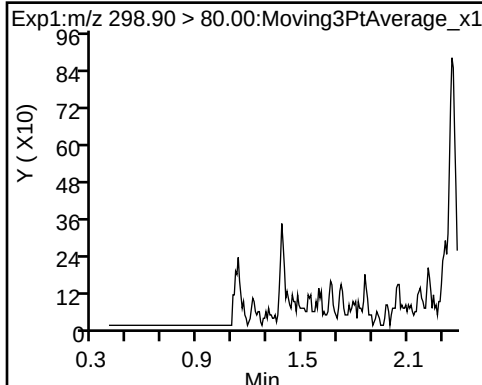
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

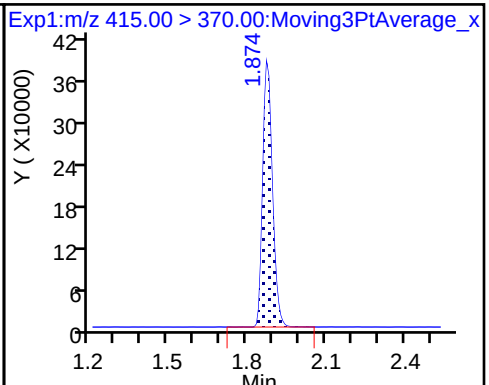
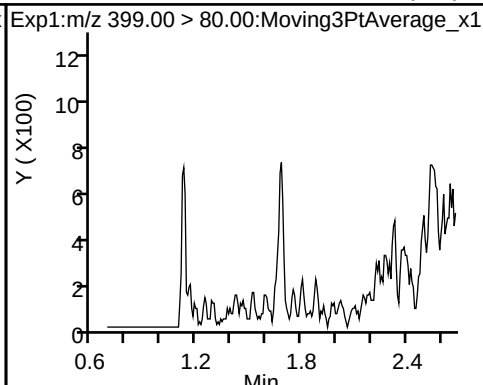
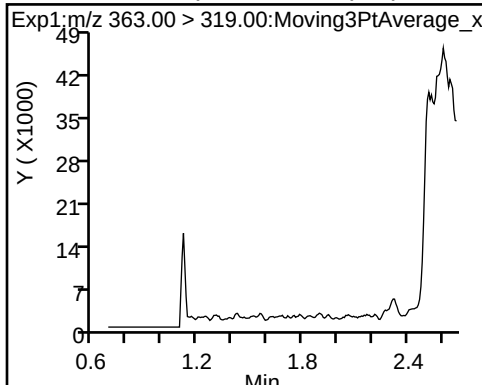
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

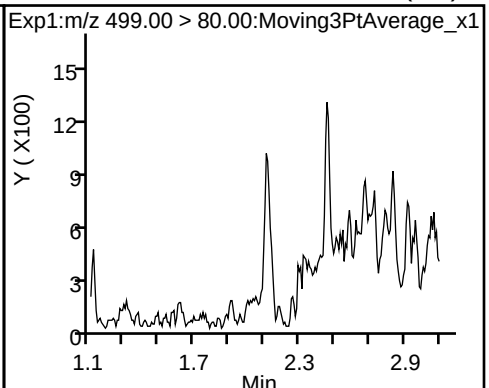
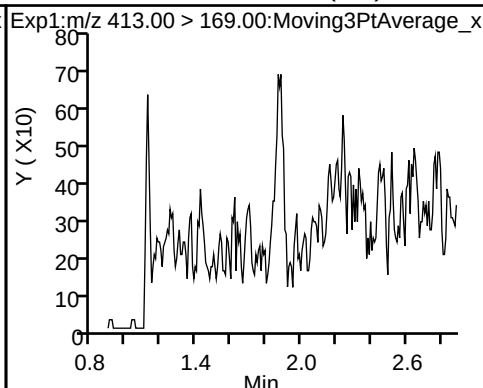
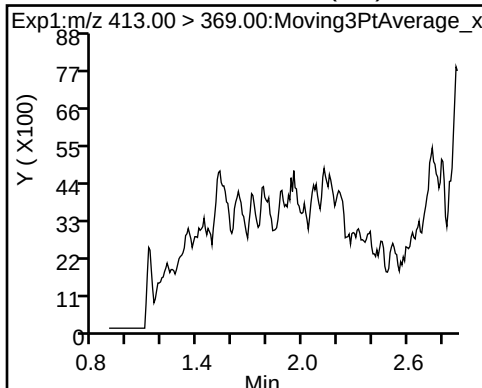
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

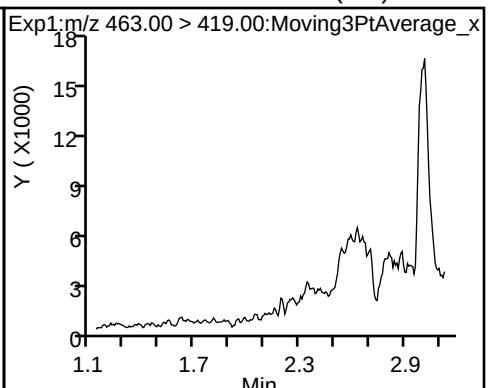
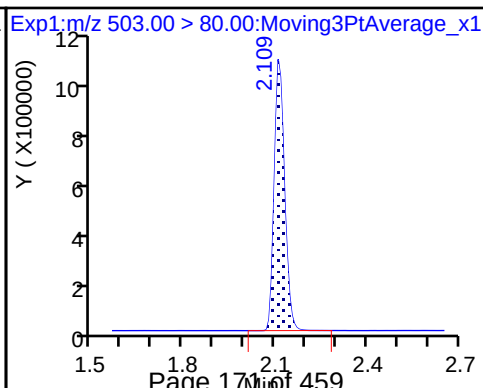
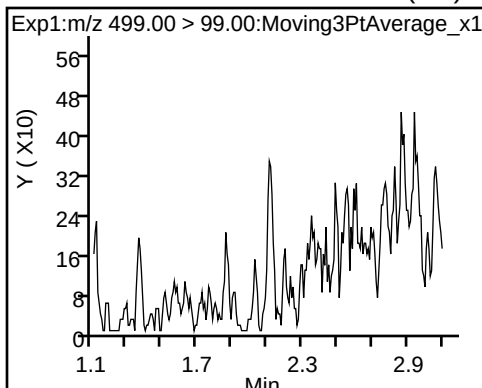
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

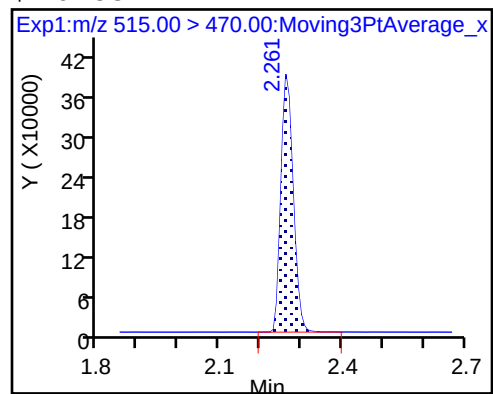


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_038.d
Lims ID: 320-37675-A-5-A
Client ID: WGNA-032819-FRB-0518
Sample Type: Client
Inject. Date: 13-Apr-2018 01:09:44 ALS Bottle#: 28 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-5-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.99	99.86
\$ 10 13C2 PFDA	10.0	9.82	98.19

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-010 Lab Sample ID: 320-37675-6
 Matrix: Water Lab File ID: 2018.04.12_537AA_039.d
 Analysis Method: 537 Date Collected: 03/29/2018 09:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 248.5 (mL) Date Analyzed: 04/13/2018 01:14
 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.: 217814 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	27	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	20		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	17	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.8	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	91		70-130
STL00996	13C2 PFDA	88		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_039.d
 Lims ID: 320-37675-A-6-A
 Client ID: NAWC-032819-RW-010
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:14:26 ALS Bottle#: 29 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-6-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 09:57:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.388	-0.007	1.000	69821	0.7966		63.4	
298.90 > 99.00	1.381	1.388	-0.007	1.000	54680		1.28(0.00-0.00)	142	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.525	-0.008	1.000	967455	9.06		9326	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.684	-0.007	1.000	156507	1.45		5.2	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.684	-0.007	1.000	566337	4.14		348	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.889	-0.015		1003975	10.0		5702	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.889	-0.015	1.000	539691	5.06		67.6	
413.00 > 169.00	1.874	1.889	-0.015	1.000	318826		1.69(0.00-0.00)	303	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.094	0.015	1.000	587135	6.61		288	a
499.00 > 99.00	2.109	2.094	0.015	1.000	129247		4.54(0.00-0.00)	248	a
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.124	-0.015		2389703	28.7		2677	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.132	-0.015	1.000	55221	0.6529		9.0	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.269	-0.007	1.000	747897	8.76		8492	M

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_039.d

Injection Date: 13-Apr-2018 01:14:26

Instrument ID: A8_N

Lims ID: 320-37675-A-6-A

Lab Sample ID: 320-37675-6

Client ID: NAWC-032819-RW-010

Operator ID: SACINSTLCMS01

ALS Bottle#: 29

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

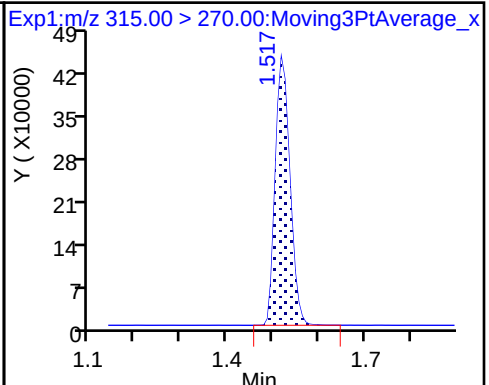
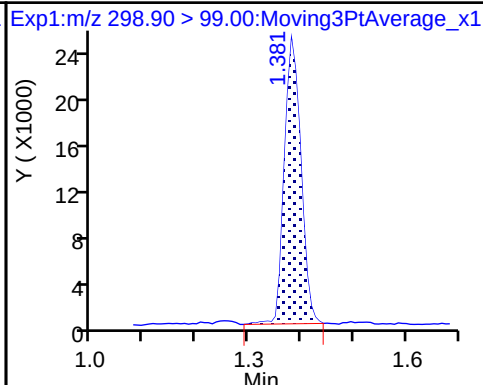
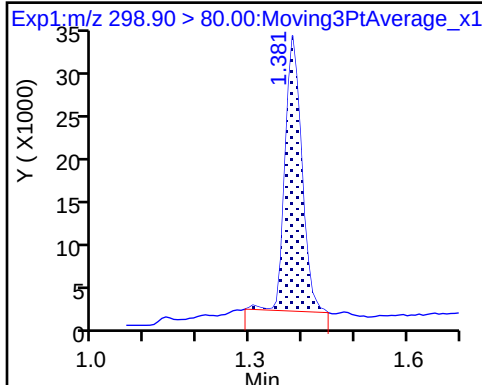
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

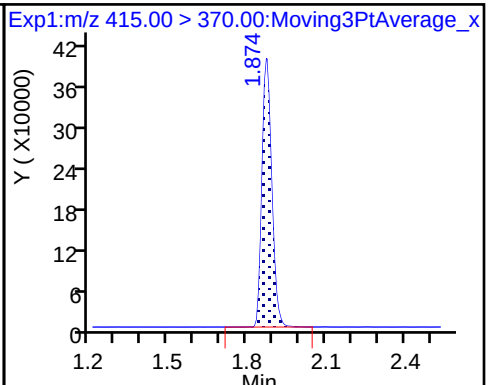
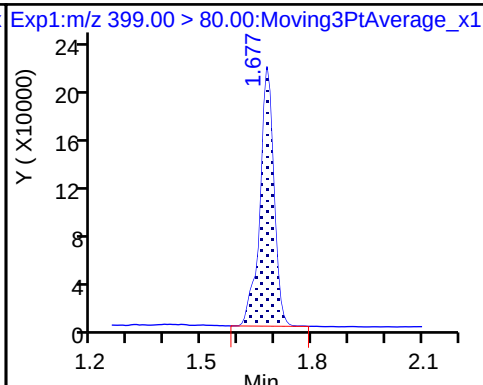
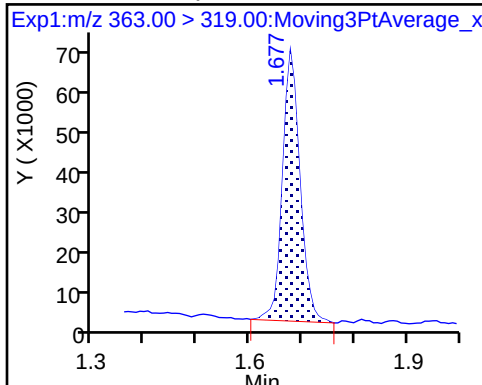
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

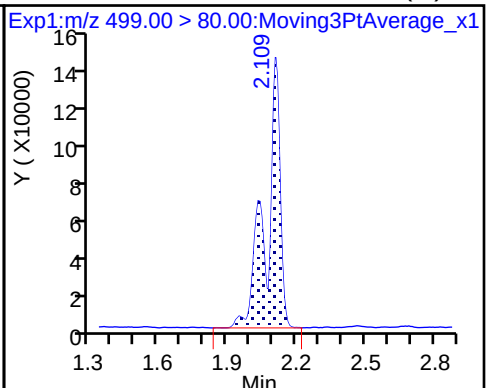
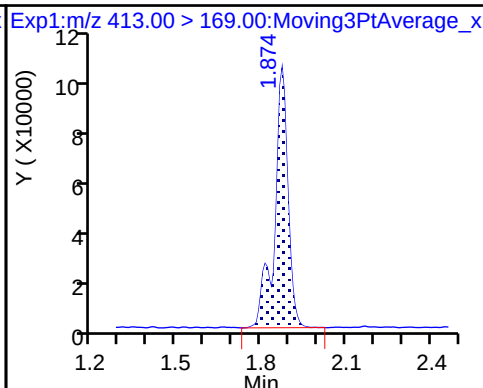
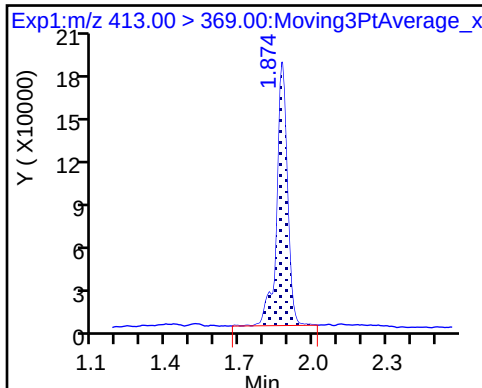
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

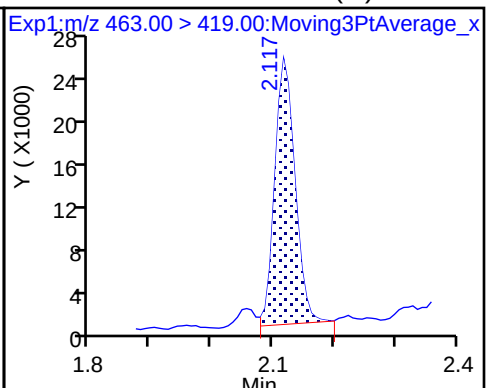
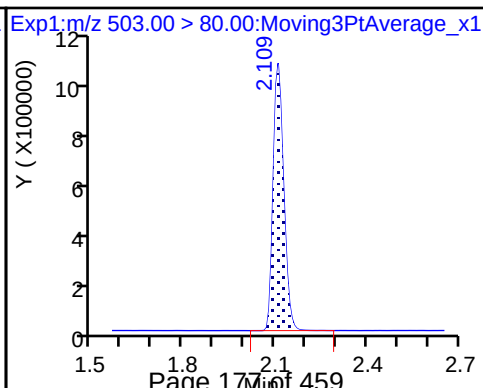
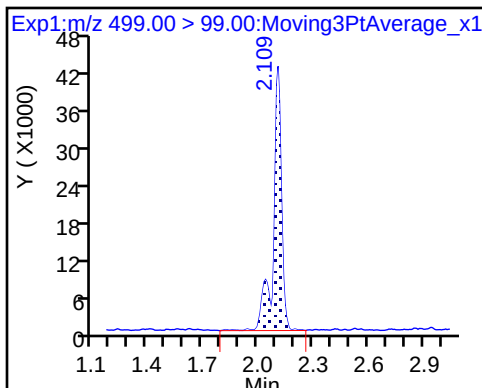
8 Perfluorooctane sulfonic acid (M)



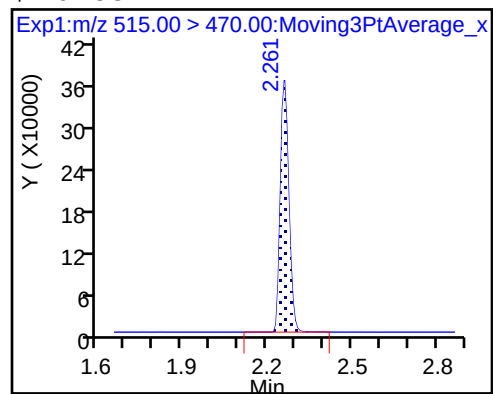
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_039.d
Lims ID: 320-37675-A-6-A
Client ID: NAWC-032819-RW-010
Sample Type: Client
Inject. Date: 13-Apr-2018 01:14:26 ALS Bottle#: 29 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-6-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 09:57:45

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.06	90.64
\$ 10 13C2 PFDA	10.0	8.76	87.59

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_039.d

Injection Date: 13-Apr-2018 01:14:26

Instrument ID: A8_N

Lims ID: 320-37675-A-6-A

Lab Sample ID: 320-37675-6

Client ID: NAWC-032819-RW-010

Operator ID: SACINSTLCMS01

ALS Bottle#: 29 Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

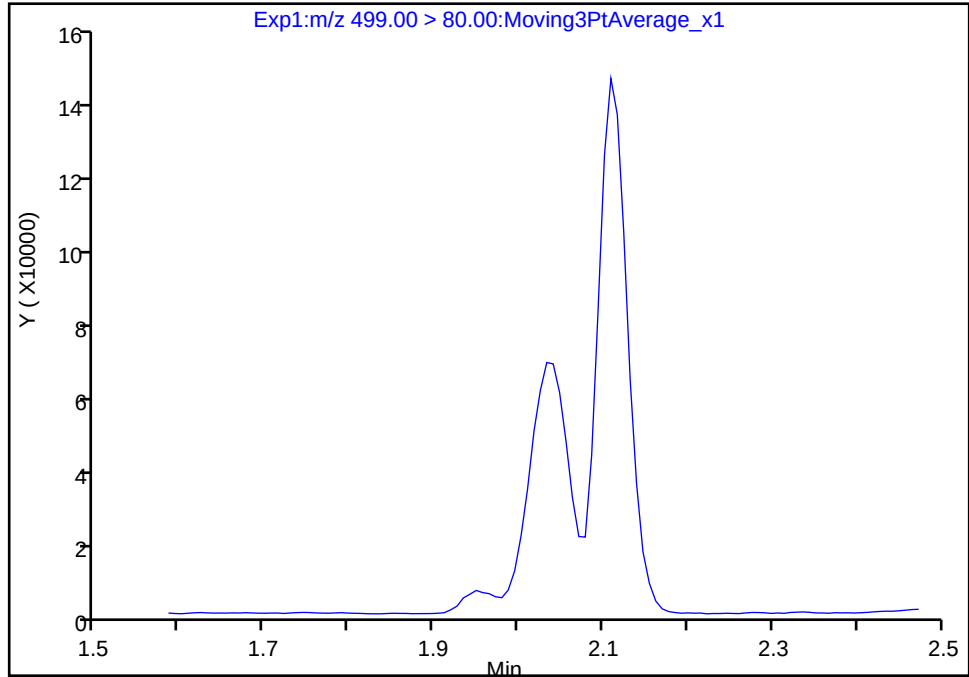
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

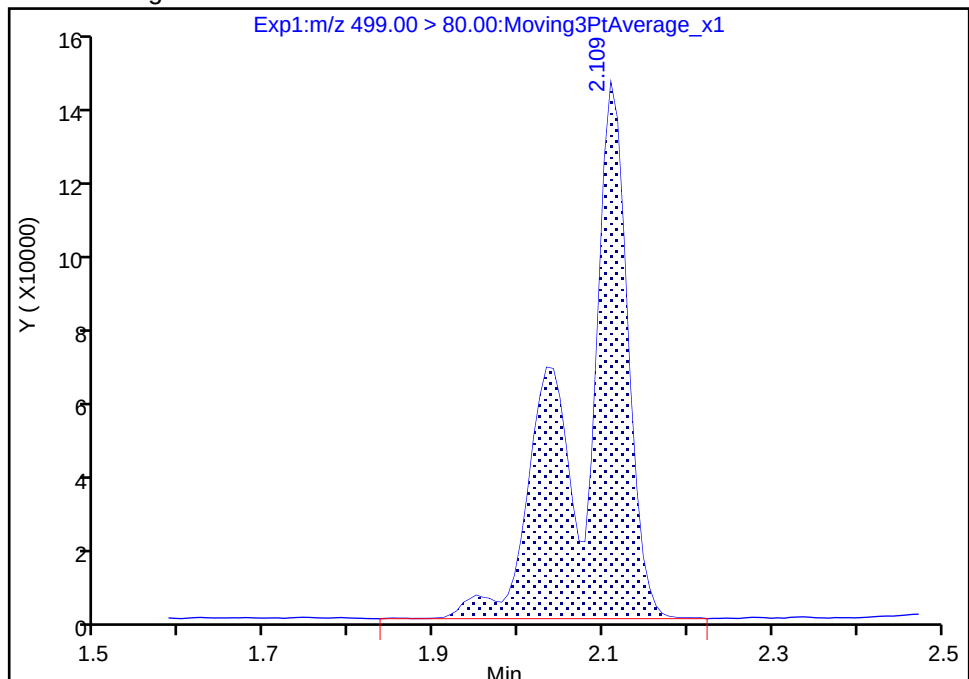
Not Detected

Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.11

Area: 587135

Amount: 6.609769

Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 09:57:03

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

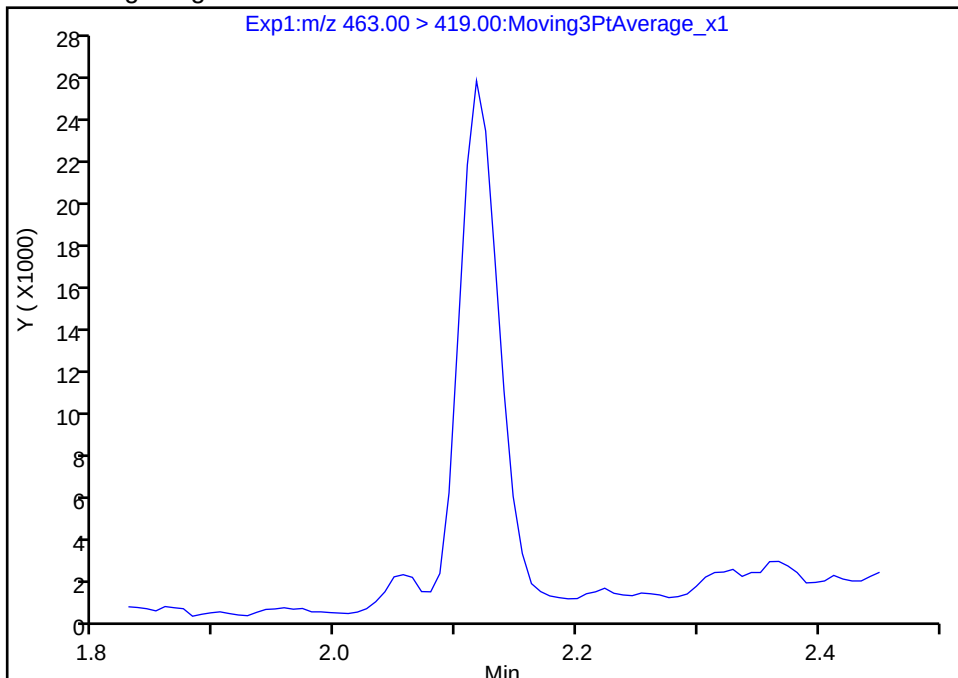
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_039.d
Injection Date: 13-Apr-2018 01:14:26 Instrument ID: A8_N
Lims ID: 320-37675-A-6-A Lab Sample ID: 320-37675-6
Client ID: NAWC-032819-RW-010
Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

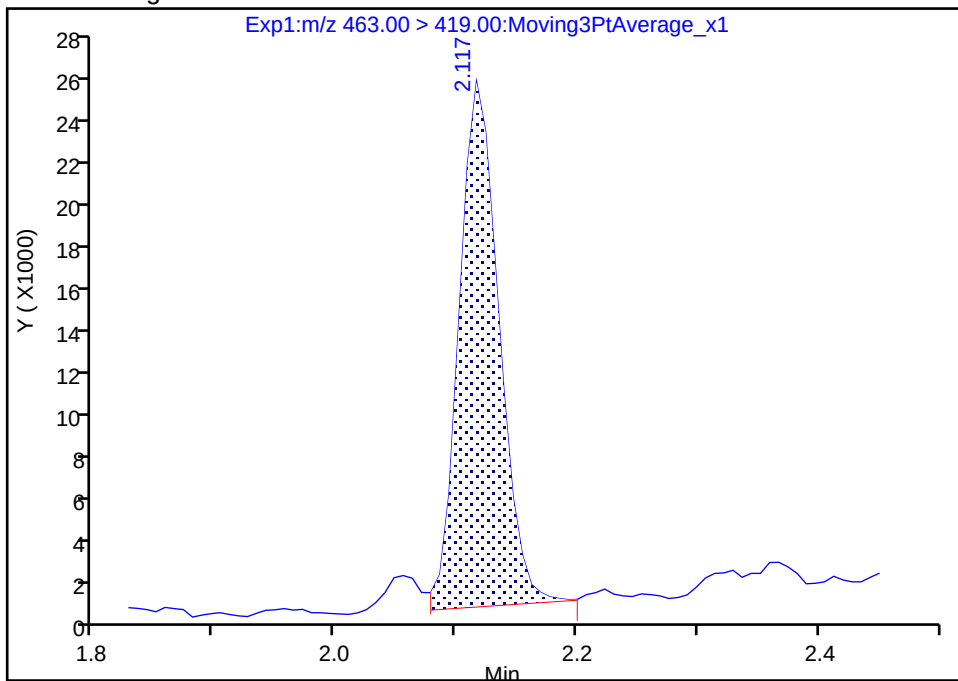
Not Detected
Expected RT: 2.13

Processing Integration Results



RT: 2.12
Area: 55221
Amount: 0.652931
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 13-Apr-2018 09:57:22

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: NAWC-032819-FRB-010 Lab Sample ID: 320-37675-7

Matrix: Water Lab File ID: 2018.04.12_537AA_040.d

Analysis Method: 537 Date Collected: 03/29/2018 09:05

Extraction Method: 537 Date Extracted: 04/07/2018 08:11

Sample wt/vol: 255.5 (mL) Date Analyzed: 04/13/2018 01:19

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

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

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

Analysis Batch No.: 217814 Units: ng/L

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)	7.8	U	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
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	101		70-130
STL00996	13C2 PFDA	101		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_040.d
 Lims ID: 320-37675-A-7-A
 Client ID: NAWC-032819-FRB-010
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:19:06 ALS Bottle#: 30 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-7-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 09:58:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags

\$ 2 13C2 PFHxA

315.00 > 270.00 1.517 1.525 -0.008 1.000 1068255 10.1 9628

* 6 13C2-PFOA

415.00 > 370.00 1.874 1.889 -0.015 998861 10.0 5790

* 7 13C4 PFOS

503.00 > 80.00 2.109 2.124 -0.015 2402516 28.7 4313

\$ 10 13C2 PFDA

515.00 > 470.00 2.261 2.269 -0.007 1.000 861966 10.1 8384

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_040.d

Injection Date: 13-Apr-2018 01:19:06

Instrument ID: A8_N

Lims ID: 320-37675-A-7-A

Lab Sample ID: 320-37675-7

Client ID: NAWC-032819-FRB-010

Operator ID: SACINSTLCMS01

ALS Bottle#: 30

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

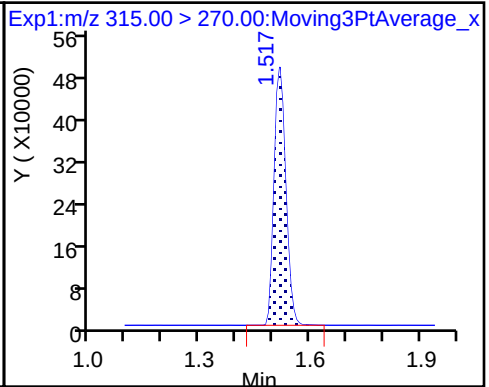
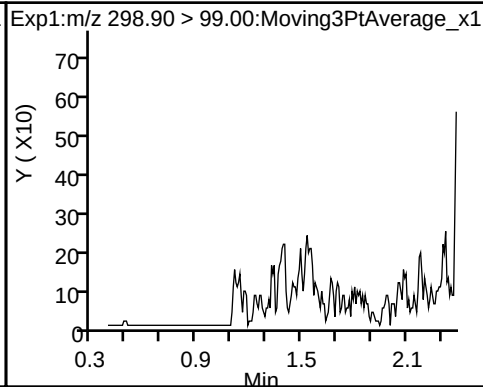
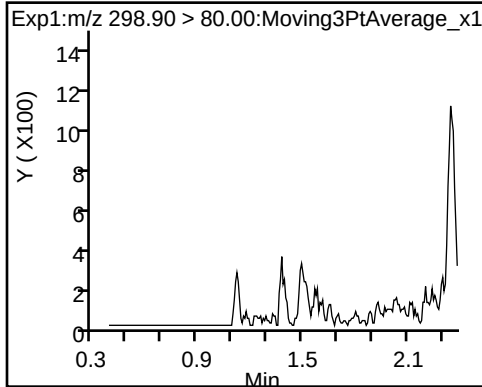
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

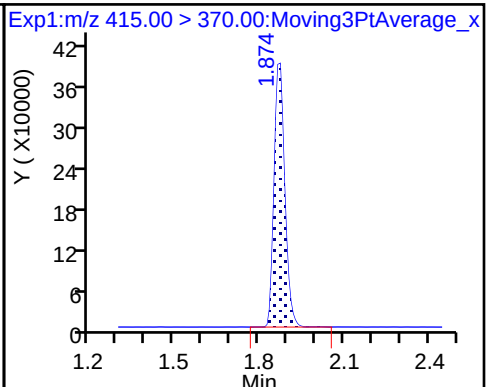
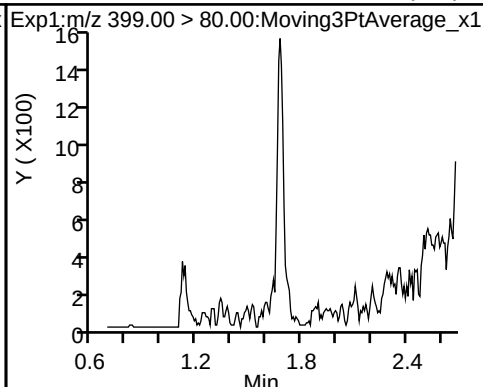
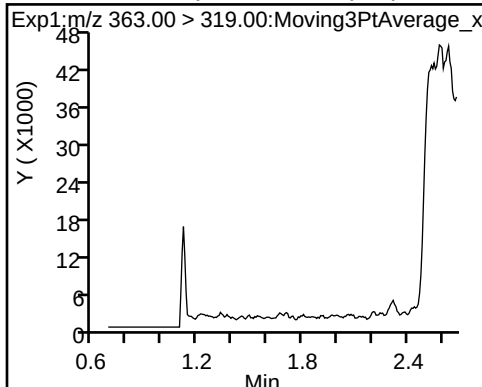
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

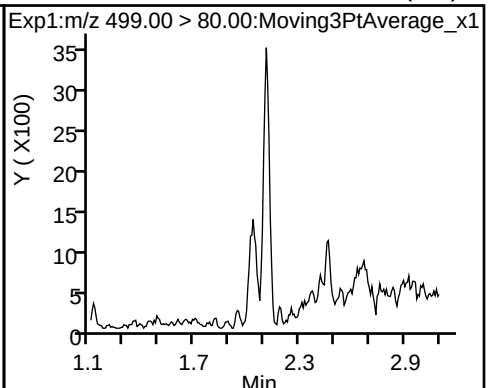
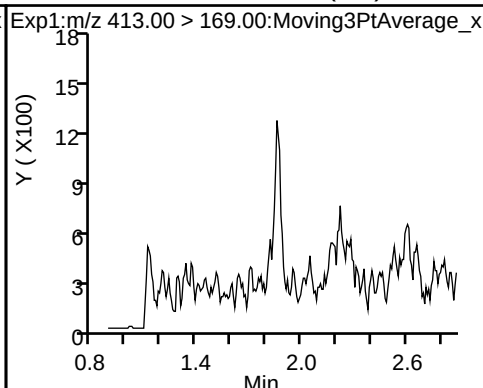
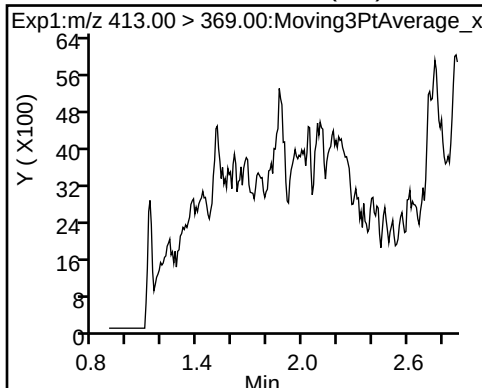
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

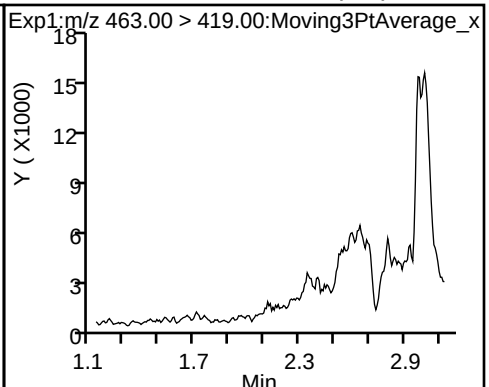
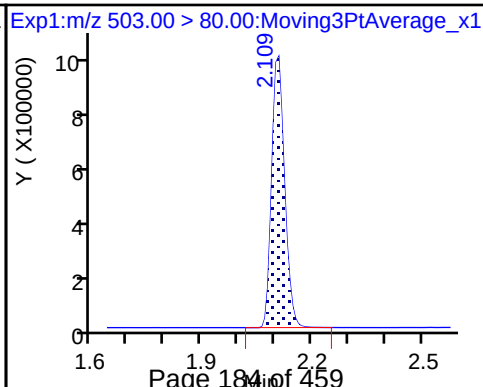
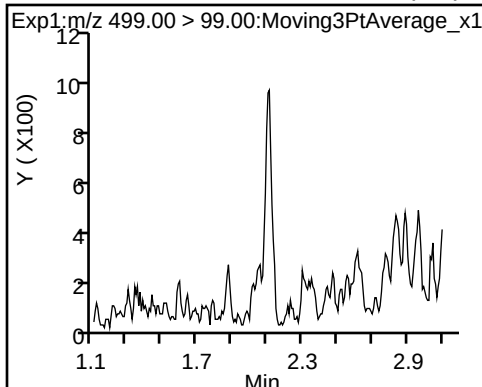
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

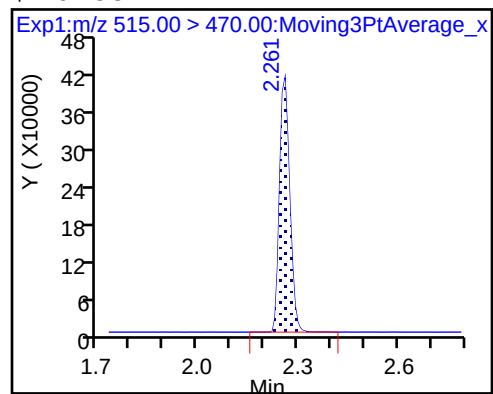


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_040.d
Lims ID: 320-37675-A-7-A
Client ID: NAWC-032819-FRB-010
Sample Type: Client
Inject. Date: 13-Apr-2018 01:19:06 ALS Bottle#: 30 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-7-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 09:58:17

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.1	100.59
\$ 10 13C2 PFDA	10.0	10.1	101.47

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-032819-RW-127</u>	Lab Sample ID: <u>320-37675-8</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_043.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 09:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:11</u>
Sample wt/vol: <u>254.8 (mL)</u>	Date Analyzed: <u>04/13/2018 01:33</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>217816</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)	7.8	U	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.8
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	93		70-130
STL00996	13C2 PFDA	96		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_043.d
 Lims ID: 320-37675-A-8-A
 Client ID: NAWC-032819-RW-127
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:33:06 ALS Bottle#: 31 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-8-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:45 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: XAWRK028

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	900550	9.25		9958	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.866	0.008		915274	10.0		5704	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.102	0.007		2281073	28.7		3780	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.253	0.008	1.000	744792	9.57		6593	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_043.d

Injection Date: 13-Apr-2018 01:33:06

Instrument ID: A8_N

Lims ID: 320-37675-A-8-A

Lab Sample ID: 320-37675-8

Client ID: NAWC-032819-RW-127

Operator ID: SACINSTLCMS01

ALS Bottle#: 31

Worklist Smp#: 15

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

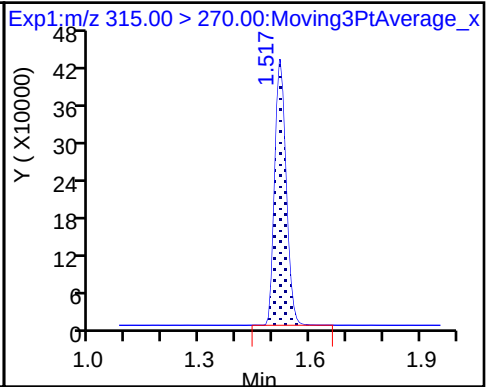
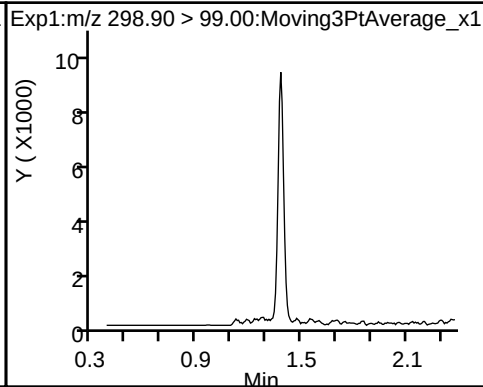
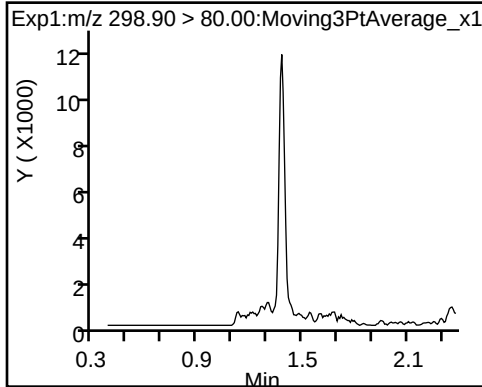
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

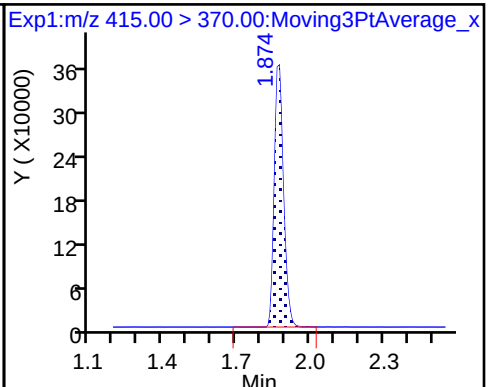
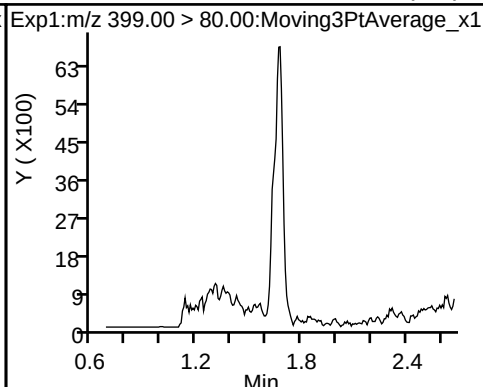
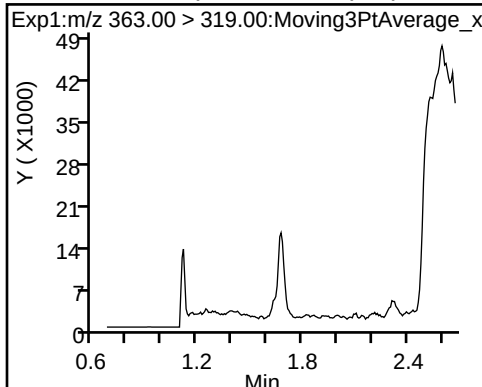
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

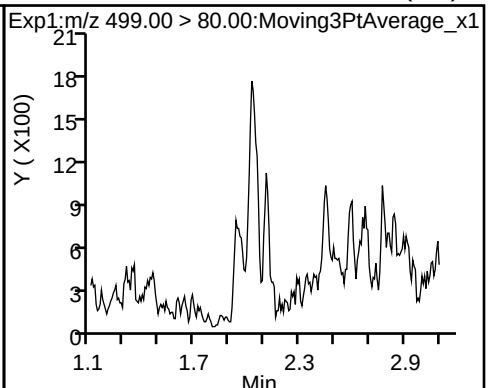
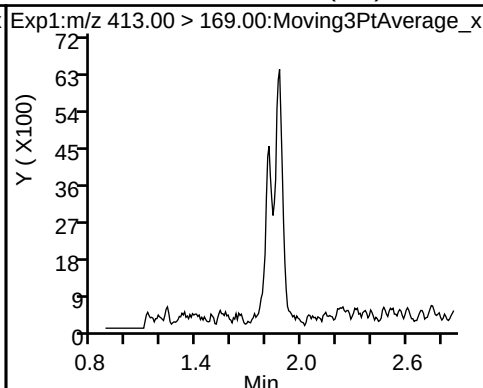
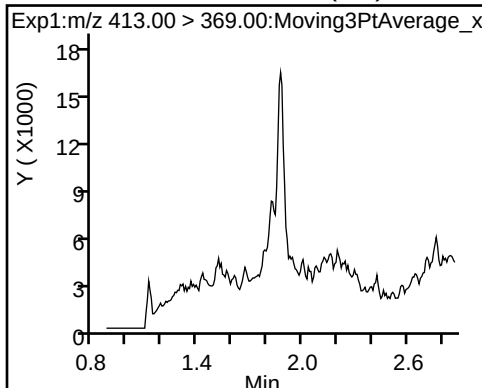
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

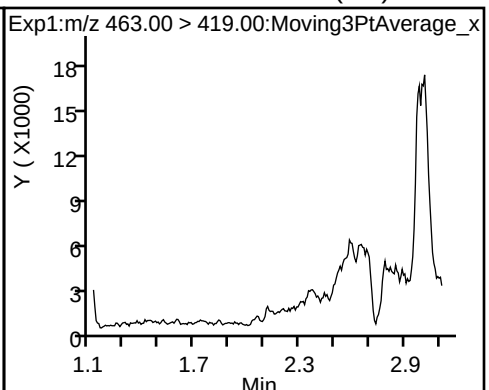
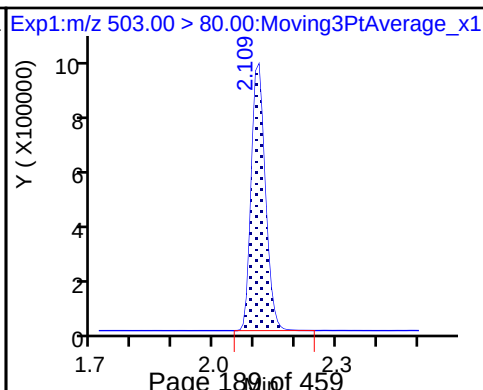
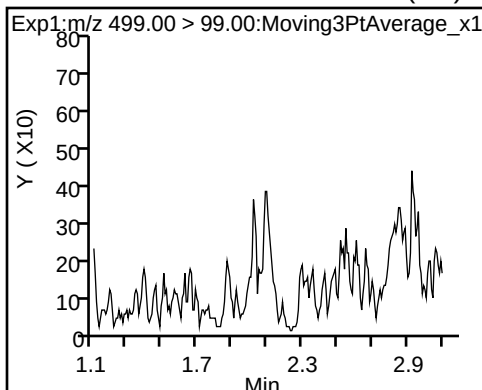
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

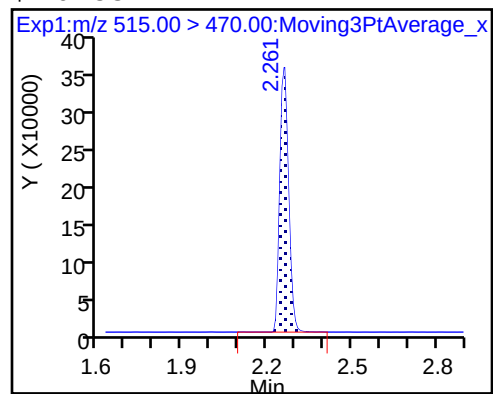


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_043.d
Lims ID: 320-37675-A-8-A
Client ID: NAWC-032819-RW-127
Sample Type: Client
Inject. Date: 13-Apr-2018 01:33:06 ALS Bottle#: 31 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-8-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:01:45 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: XAWRK028

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.25	92.55
\$ 10 13C2 PFDA	10.0	9.57	95.68

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-032819-FRB-127</u>	Lab Sample ID: <u>320-37675-9</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_044.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 09:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:11</u>
Sample wt/vol: <u>249.3 (mL)</u>	Date Analyzed: <u>04/13/2018 01:37</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>217816</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	95		70-130
STL00996	13C2 PFDA	100		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_044.d
 Lims ID: 320-37675-A-9-A
 Client ID: NAWC-032819-FRB-127
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:37:46 ALS Bottle#: 32 Worklist Smp#: 16
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-9-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:45 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: XAWRK028

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.517	0.008	1.000	904644	9.52		8615	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.866	0.008		893479	10.0		5474	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.102	0.007		2204862	28.7		4115	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.253	0.008	1.000	757401	9.97		7370	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_044.d

Injection Date: 13-Apr-2018 01:37:46

Instrument ID: A8_N

Lims ID: 320-37675-A-9-A

Lab Sample ID: 320-37675-9

Client ID: NAWC-032819-FRB-127

Operator ID: SACINSTLCMS01

ALS Bottle#: 32

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

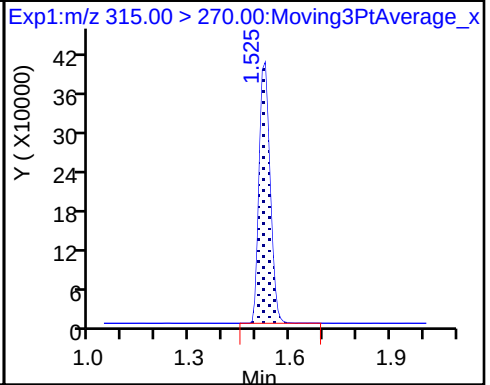
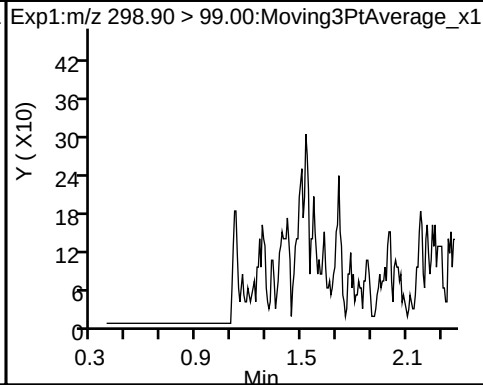
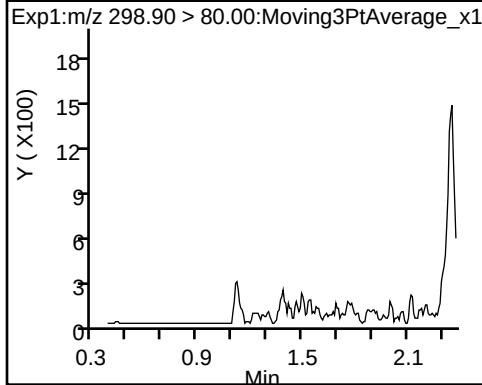
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

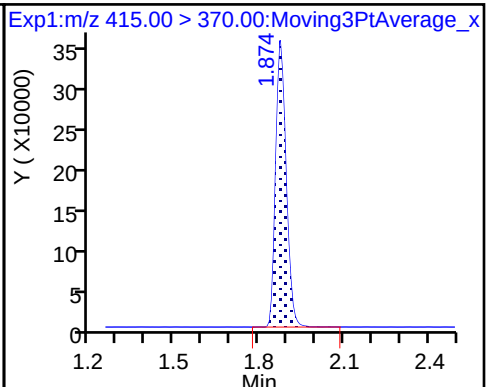
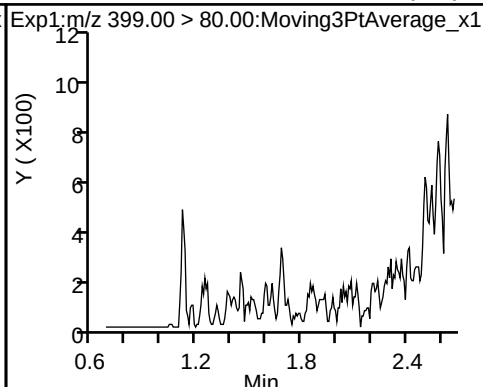
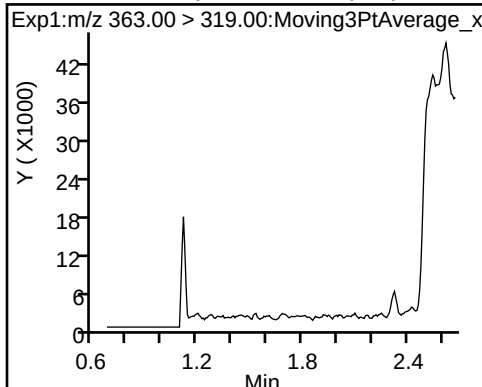
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

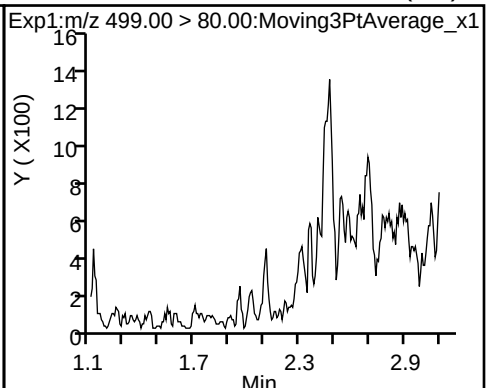
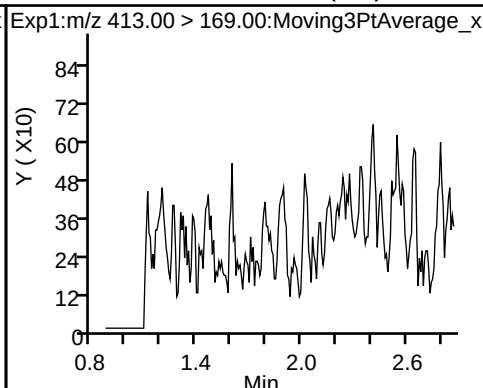
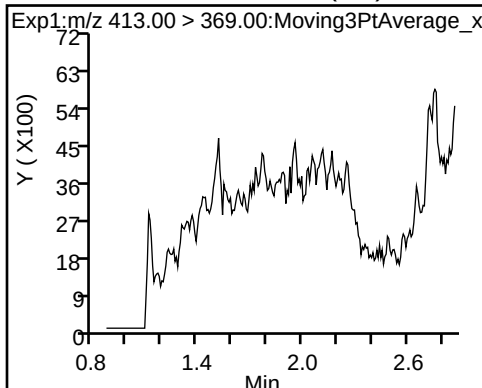
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

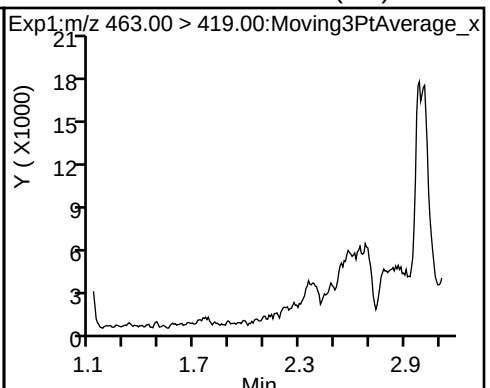
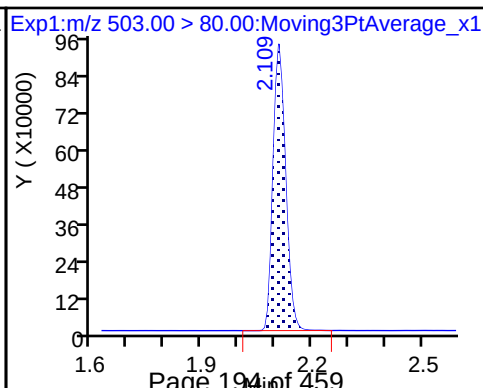
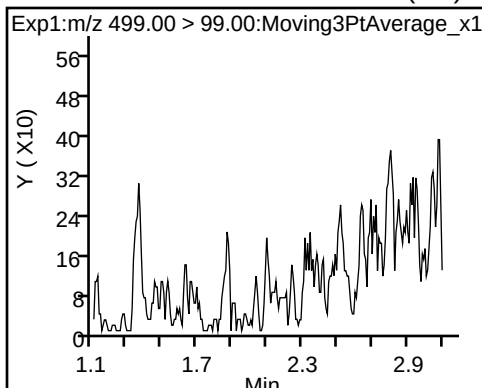
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

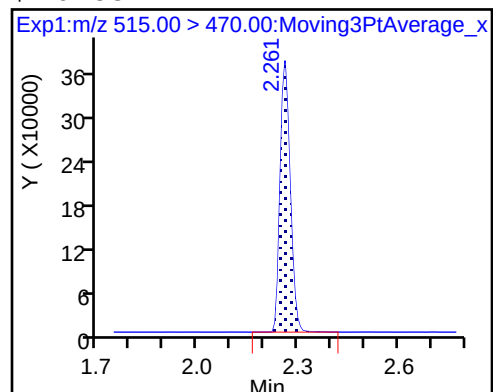


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_044.d
Lims ID: 320-37675-A-9-A
Client ID: NAWC-032819-FRB-127
Sample Type: Client
Inject. Date: 13-Apr-2018 01:37:46 ALS Bottle#: 32 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-9-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:01:45 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: XAWRK028

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.52	95.23
\$ 10 13C2 PFDA	10.0	9.97	99.67

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-195 Lab Sample ID: 320-37675-10
 Matrix: Water Lab File ID: 2018.04.12_537AA_045.d
 Analysis Method: 537 Date Collected: 03/29/2018 10:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 251.1 (mL) Date Analyzed: 04/13/2018 01:42
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217816 Units: ng/L

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)	12	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)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.2	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	97		70-130
STL00996	13C2 PFDA	91		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_045.d
 Lims ID: 320-37675-A-10-A
 Client ID: NAWC-032819-RW-195
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:42:27 ALS Bottle#: 33 Worklist Smp#: 17
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-10-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:45 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 09:59:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.373	1.381	-0.008	1.000	129980	1.54		142	
298.90 > 99.00	1.373	1.381	-0.008	1.000	95198		1.37(0.00-0.00)	209	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	956507	9.71		8873	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	104758	1.05		3.2	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.677	-0.008	1.000	104972	0.7952		56.1	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.866	0.0		926217	10.0		5456	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.874	-0.008	1.000	284635	2.89		33.6	
413.00 > 169.00	1.866	1.874	-0.008	1.000	163553		1.74(0.00-0.00)	173	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	301462	3.52		140	a
499.00 > 99.00	2.102	2.094	0.008	1.000	55684		5.41(0.00-0.00)	97.6	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2305396	28.7		2698	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.117	-0.008	1.000	38796	0.4972		5.9	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	713984	9.06		7554	M

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_045.d

Injection Date: 13-Apr-2018 01:42:27

Instrument ID: A8_N

Lims ID: 320-37675-A-10-A

Lab Sample ID: 320-37675-10

Client ID: NAWC-032819-RW-195

Operator ID: SACINSTLCMS01

ALS Bottle#: 33

Worklist Smp#: 17

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

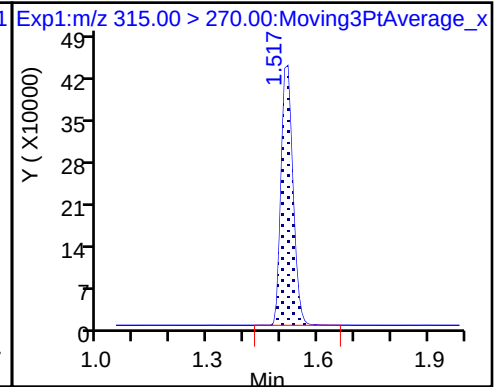
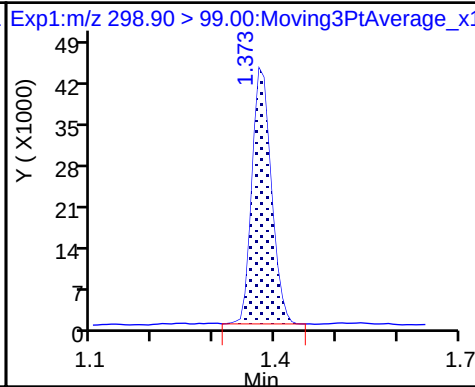
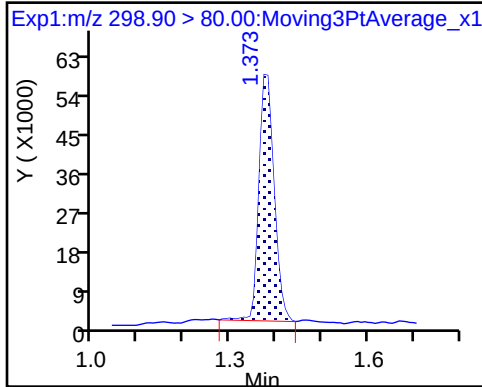
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

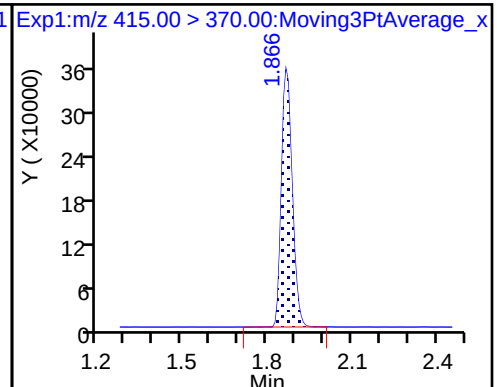
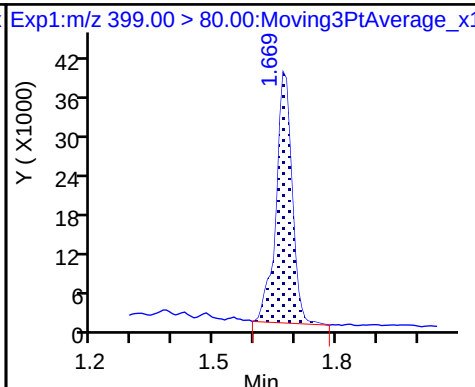
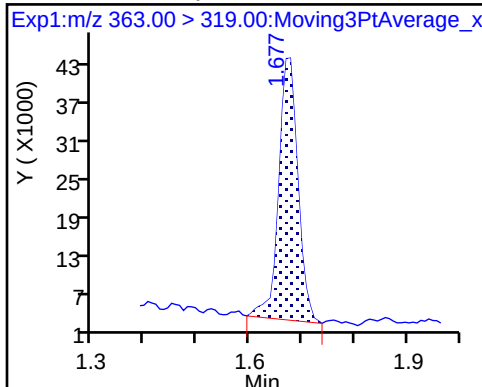
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

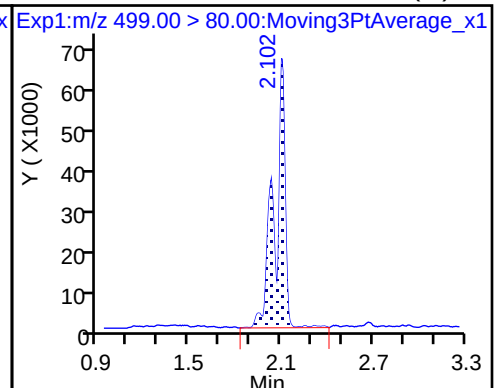
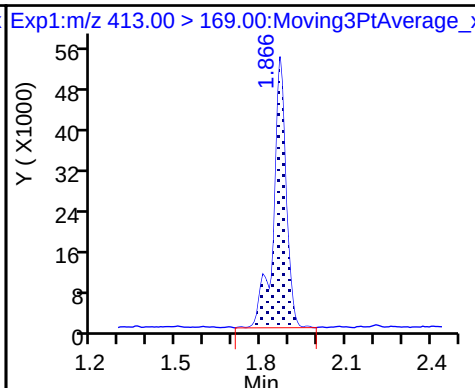
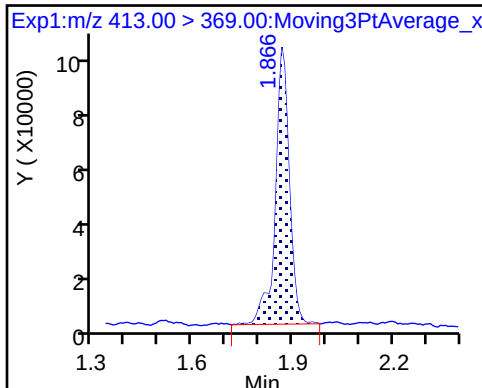
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

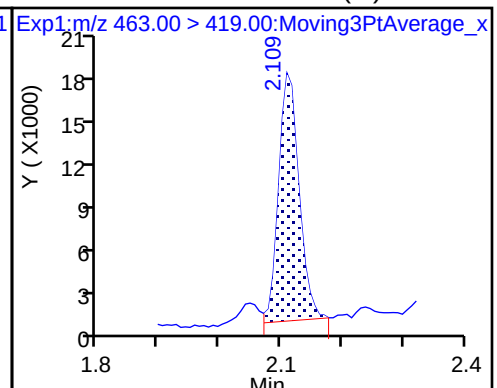
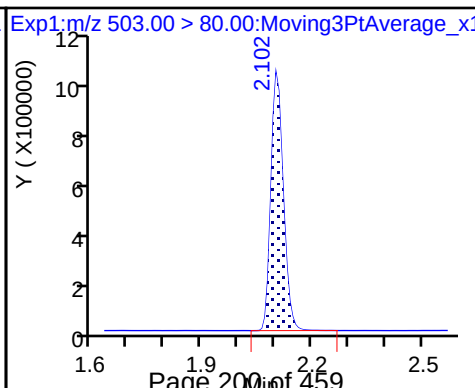
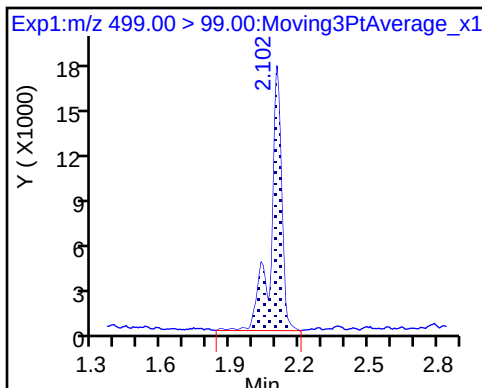
8 Perfluorooctane sulfonic acid (M)



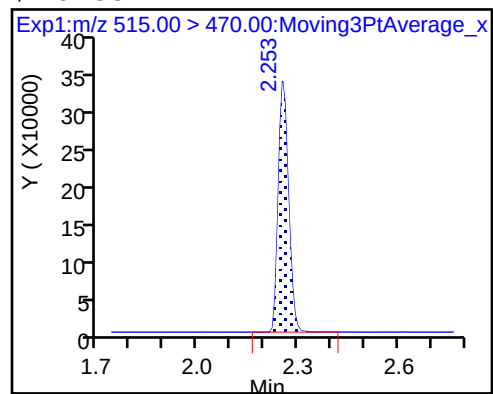
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_045.d
Lims ID: 320-37675-A-10-A
Client ID: NAWC-032819-RW-195
Sample Type: Client
Inject. Date: 13-Apr-2018 01:42:27 ALS Bottle#: 33 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-10-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:01:45 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 09:59:35

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.71	97.13
\$ 10 13C2 PFDA	10.0	9.06	90.64

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_045.d

Injection Date: 13-Apr-2018 01:42:27

Instrument ID: A8_N

Lims ID: 320-37675-A-10-A

Lab Sample ID: 320-37675-10

Client ID: NAWC-032819-RW-195

Operator ID: SACINSTLCMS01

ALS Bottle#: 33 Worklist Smp#: 17

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

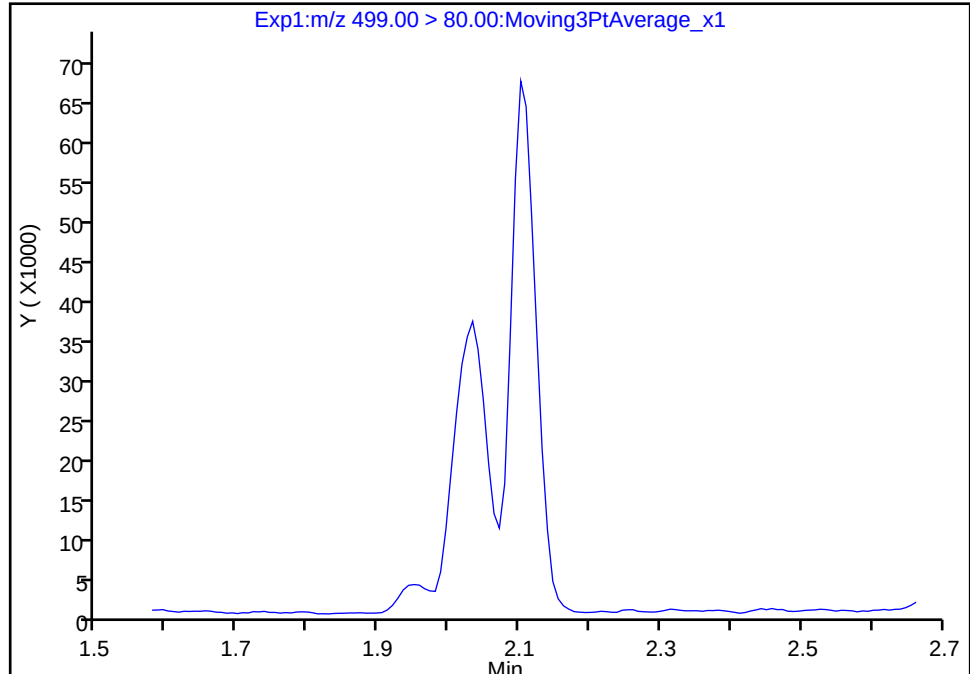
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

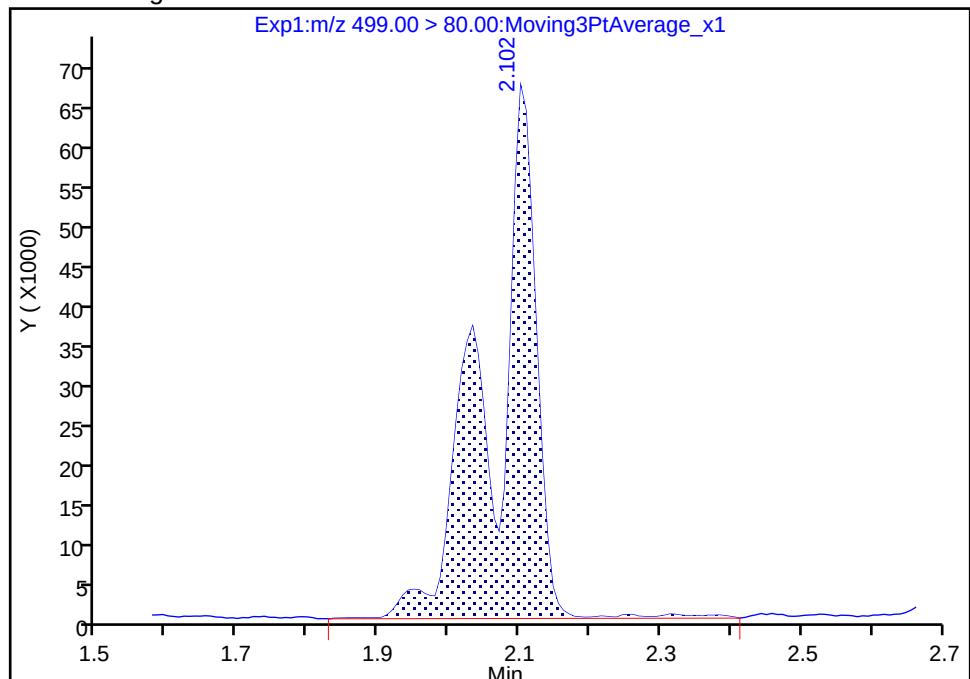
Not Detected

Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.10

Area: 301462

Amount: 3.517866

Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 09:58:59

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

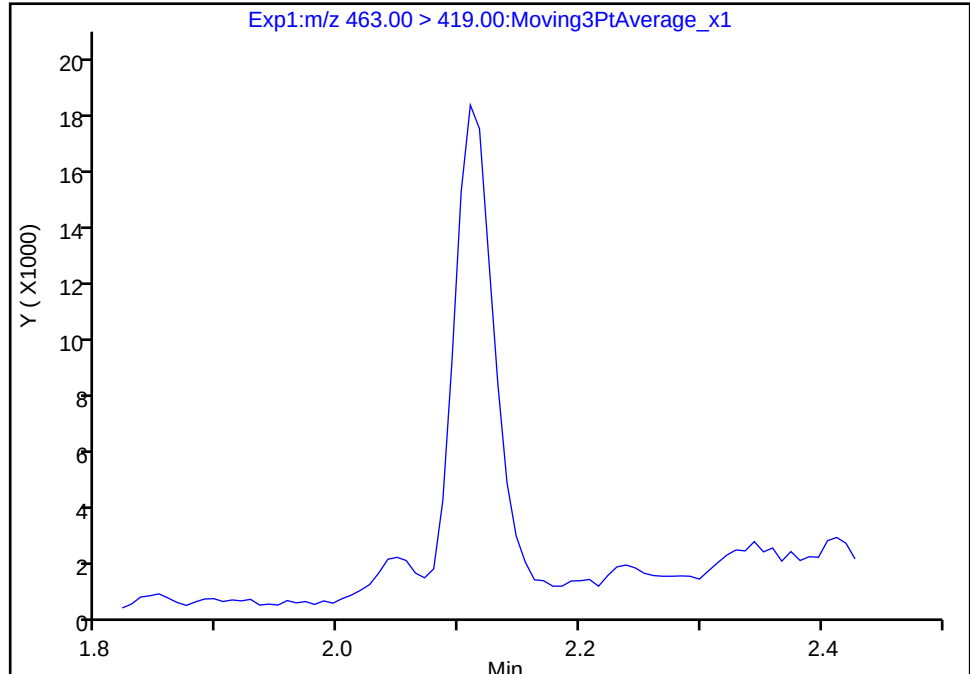
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_045.d				
Injection Date:	13-Apr-2018 01:42:27	Instrument ID:	A8_N		
Lims ID:	320-37675-A-10-A	Lab Sample ID:	320-37675-10		
Client ID:	NAWC-032819-RW-195				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

9 Perfluorononanoic acid, CAS: 375-95-1

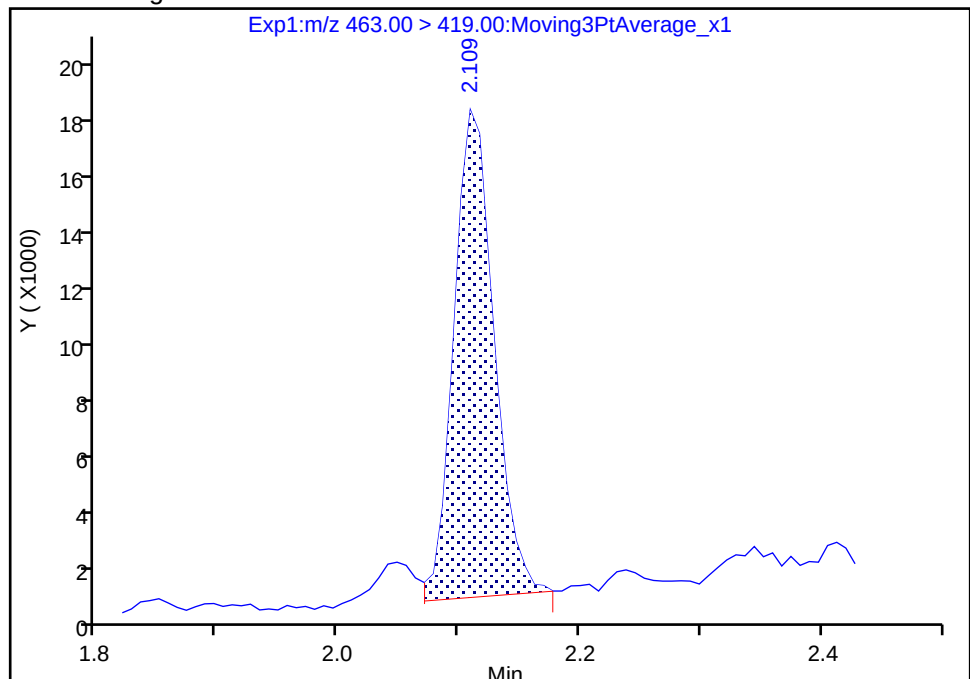
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results

RT: 2.11
Area: 38796
Amount: 0.497233
Amount Units: ng/ml

Manual Integration Results

Reviewer: barnettj, 13-Apr-2018 09:59:14
Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-FRB-195 Lab Sample ID: 320-37675-11
 Matrix: Water Lab File ID: 2018.04.12_537AA_046.d
 Analysis Method: 537 Date Collected: 03/29/2018 10:05
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 255.8 (mL) Date Analyzed: 04/13/2018 01:47
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217816 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
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	97		70-130
STL00996	13C2 PFDA	94		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_046.d
 Lims ID: 320-37675-A-11-A
 Client ID: NAWC-032819-FRB-195
 Sample Type: Client
 Inject. Date: 13-Apr-2018 01:47:07 ALS Bottle#: 34 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-11-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:45 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: XAWRK028

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	951860	9.71		9179	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.866	0.0		921584	10.0		5359	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2286972	28.7		3919	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	740633	9.45		6163	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_046.d

Injection Date: 13-Apr-2018 01:47:07

Instrument ID: A8_N

Lims ID: 320-37675-A-11-A

Lab Sample ID: 320-37675-11

Client ID: NAWC-032819-FRB-195

Operator ID: SACINSTLCMS01

ALS Bottle#: 34

Worklist Smp#: 18

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

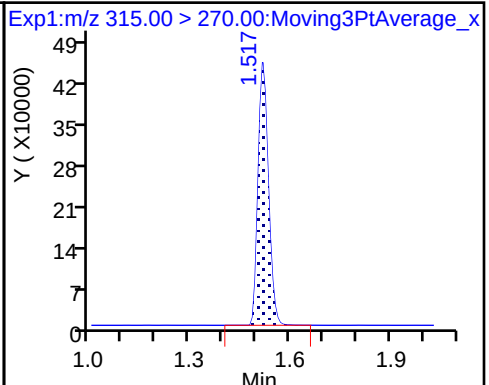
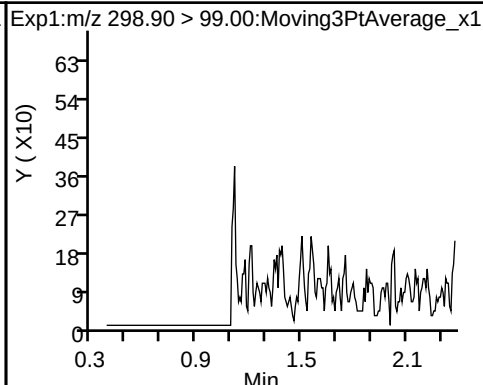
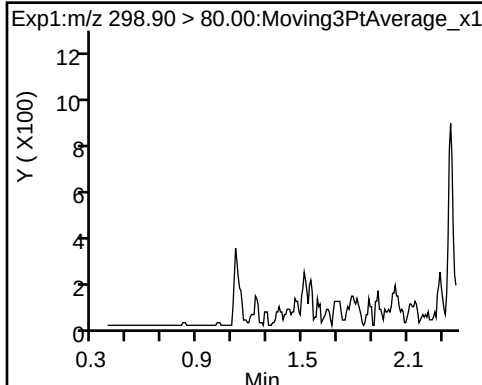
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

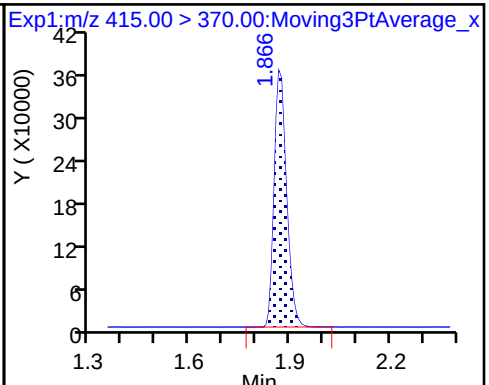
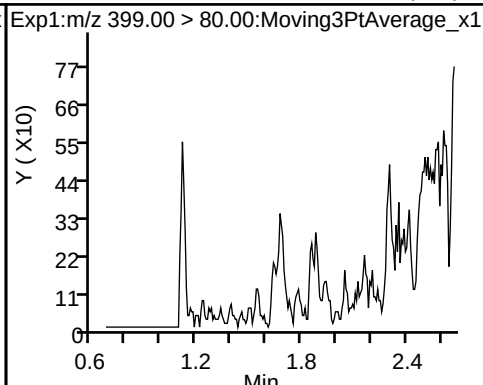
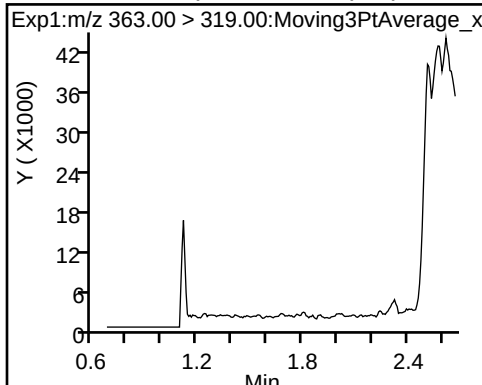
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

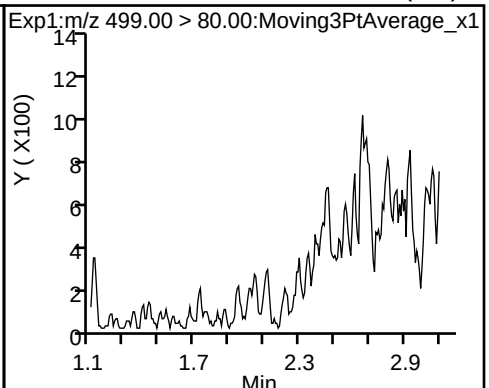
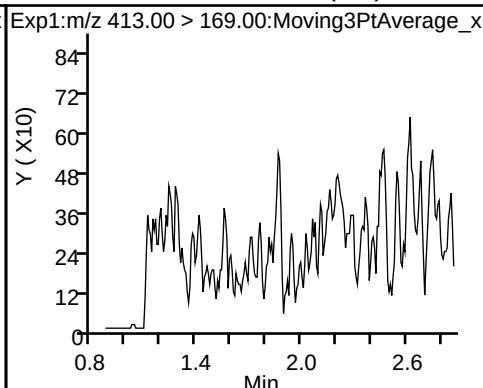
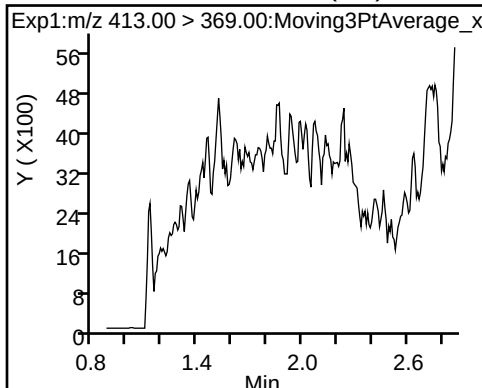
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

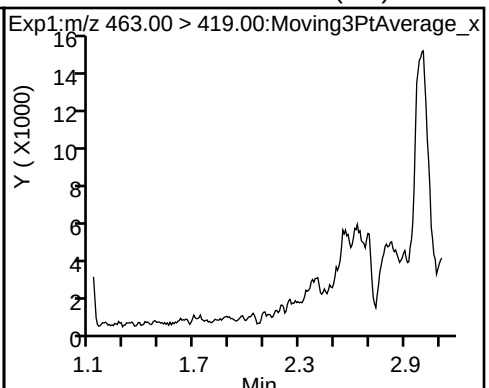
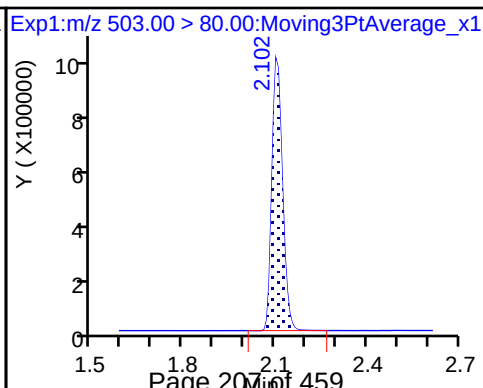
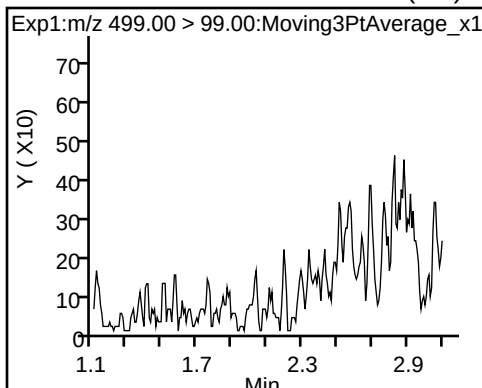
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

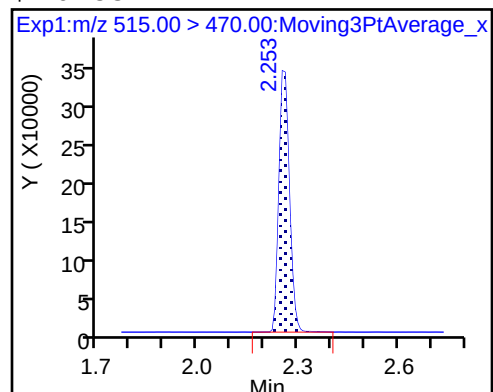


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_046.d
Lims ID: 320-37675-A-11-A
Client ID: NAWC-032819-FRB-195
Sample Type: Client
Inject. Date: 13-Apr-2018 01:47:07 ALS Bottle#: 34 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-11-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:01:45 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: XAWRK028

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.71	97.15
\$ 10 13C2 PFDA	10.0	9.45	94.50

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-032819-RW-048</u>	Lab Sample ID: <u>320-37675-12</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_051.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 10:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:19</u>
Sample wt/vol: <u>245 (mL)</u>	Date Analyzed: <u>04/13/2018 02:10</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>217818</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U M	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	4.8	J	20	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U M	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 M	92	37	16

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_051.d
 Lims ID: 320-37675-A-12-A
 Client ID: NAWC-032819-RW-048
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:10:28 ALS Bottle#: 37 Worklist Smp#: 23
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-12-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:11:31 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 10:07:51

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	1.381	1.381	0.0	1.000	48084	0.5936		72.2	
298.90 > 99.00	1.381	1.381	0.0	1.000	35430		1.36(0.00-0.00)	77.3	M
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	899979	9.07		9279	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	1.677	1.677	0.0	1.000	70867	0.5603		49.5	M
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.866	0.008		933636	10.0		4884	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.874	0.0	1.000	116919	1.18		13.0	
413.00 > 169.00	1.866	1.874	-0.008	0.996	71368		1.64(0.00-0.00)	65.8	
8 Perfluorooctane sulfonic acid									a
499.00 > 80.00	2.033	2.094	-0.061	1.000	105408	1.28		47.4	a
499.00 > 99.00	2.102	2.094	0.008	1.034	13481		7.82(0.00-0.00)	13.3	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2208683	28.7		2766	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.261	0.0	1.000	758504	9.55		6857	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_051.d

Injection Date: 13-Apr-2018 02:10:28

Instrument ID: A8_N

Lims ID: 320-37675-A-12-A

Lab Sample ID: 320-37675-12

Client ID: NAWC-032819-RW-048

Operator ID: SACINSTLCMS01

ALS Bottle#: 37

Worklist Smp#: 23

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

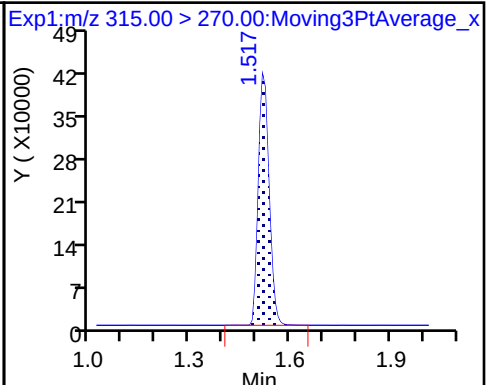
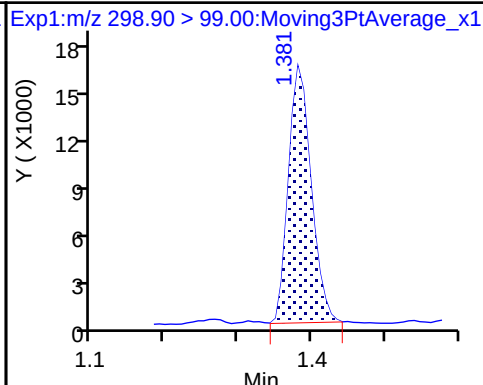
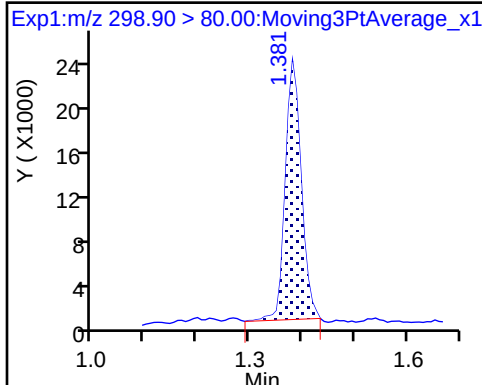
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (M)

1 Perfluorobutanesulfonic acid (M)

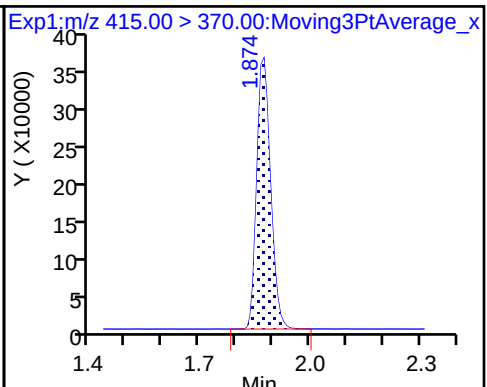
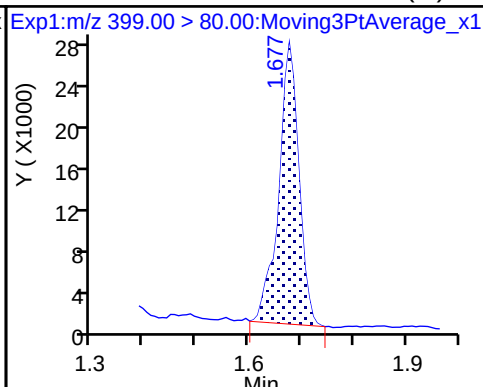
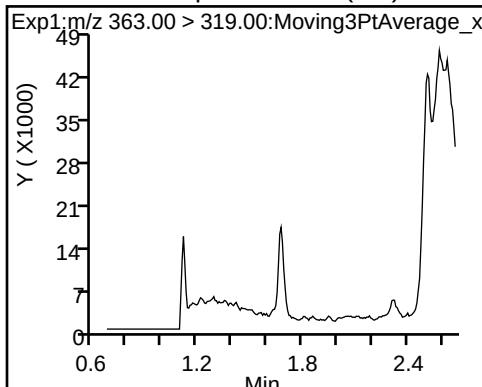
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (M)

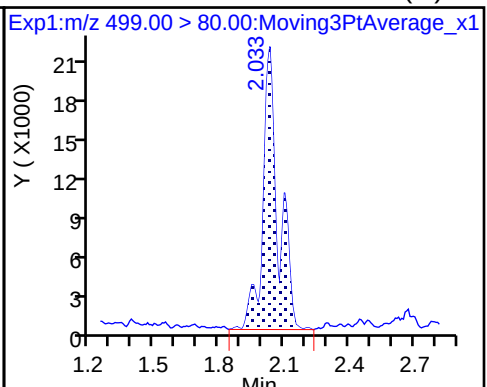
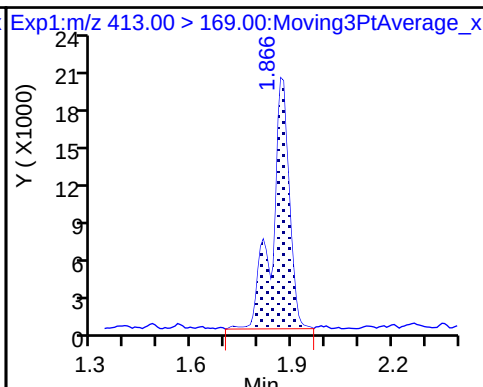
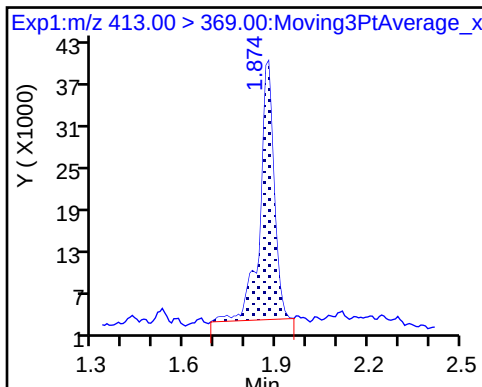
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

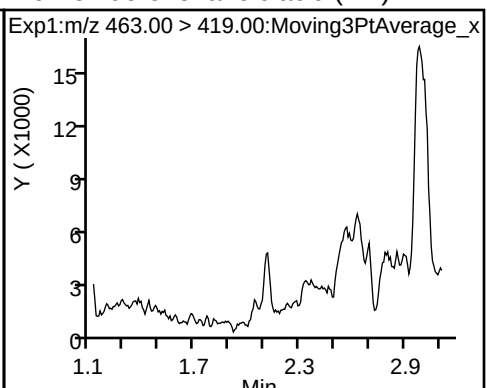
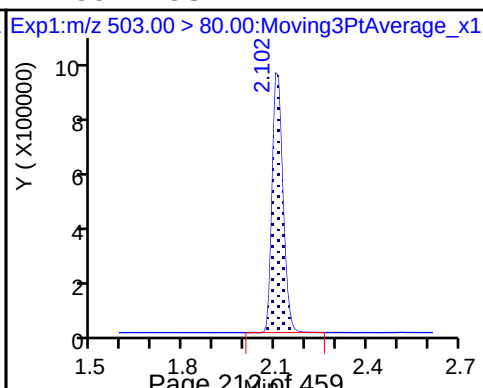
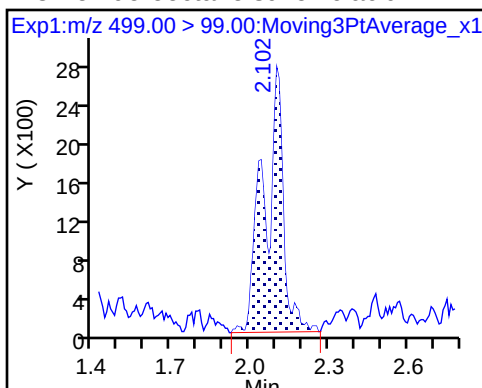
8 Perfluorooctane sulfonic acid (M)



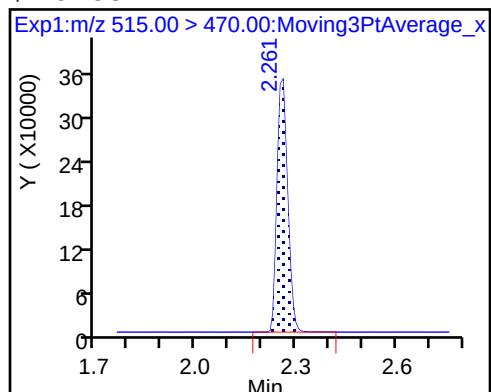
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_051.d
Lims ID: 320-37675-A-12-A
Client ID: NAWC-032819-RW-048
Sample Type: Client
Inject. Date: 13-Apr-2018 02:10:28 ALS Bottle#: 37 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-12-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:11:31 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 10:07:51

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.07	90.67
\$ 10 13C2 PFDA	10.0	9.55	95.53

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_051.d

Injection Date: 13-Apr-2018 02:10:28

Instrument ID: A8_N

Lims ID: 320-37675-A-12-A

Lab Sample ID: 320-37675-12

Client ID: NAWC-032819-RW-048

Operator ID: SACINSTLCMS01

ALS Bottle#: 37 Worklist Smp#: 23

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

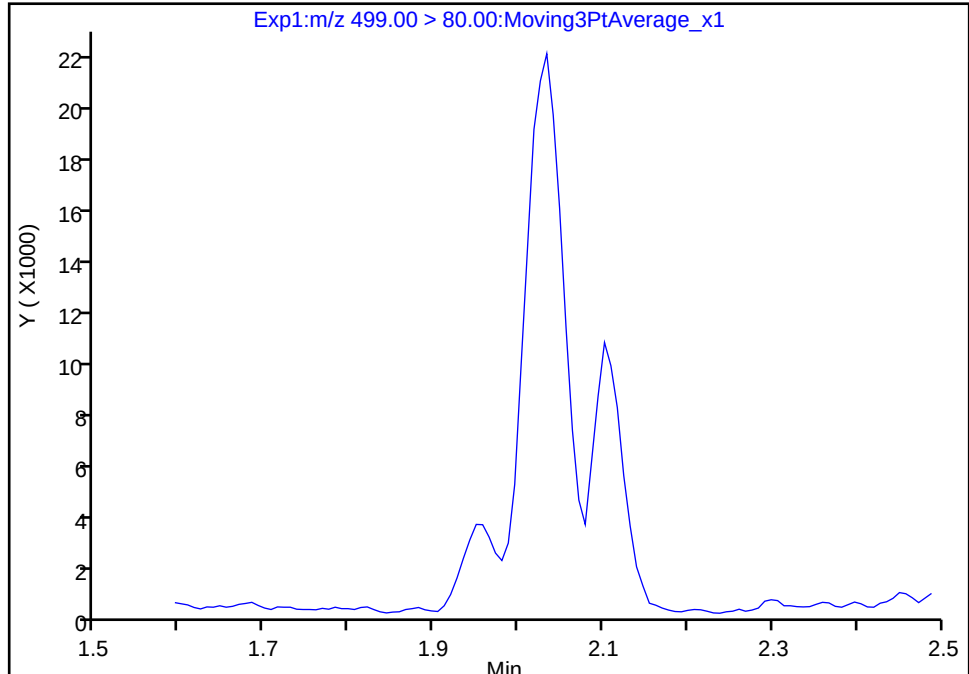
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

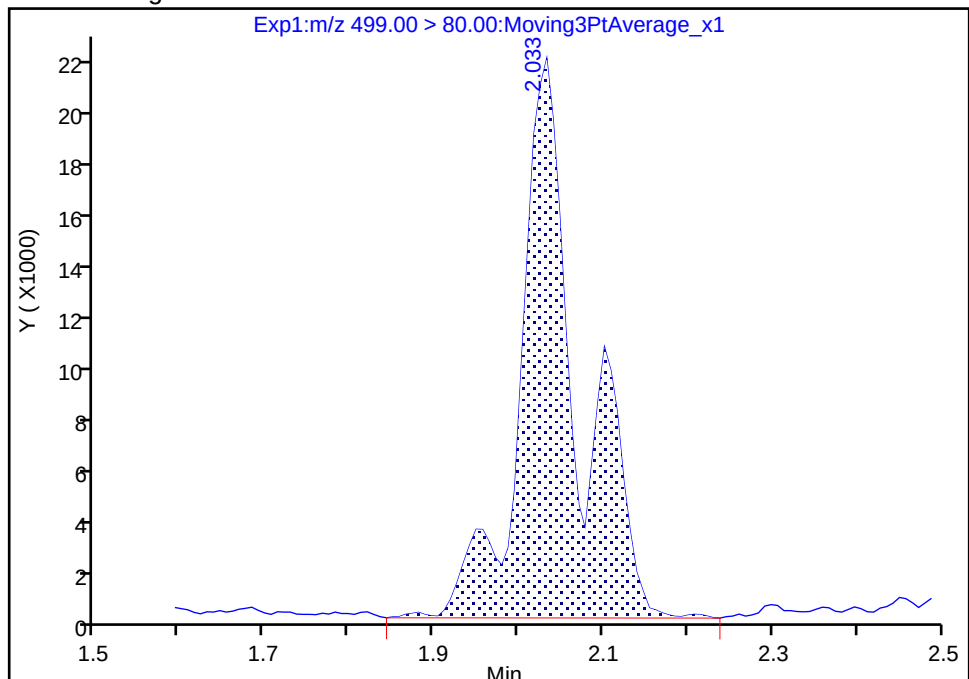
Not Detected

Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.03

Area: 105408

Amount: 1.283904

Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 10:07:32

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_051.d

Injection Date: 13-Apr-2018 02:10:28

Instrument ID: A8_N

Lims ID: 320-37675-A-12-A

Lab Sample ID: 320-37675-12

Client ID: NAWC-032819-RW-048

Operator ID: SACINSTLCMS01

ALS Bottle#: 37 Worklist Smp#: 23

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

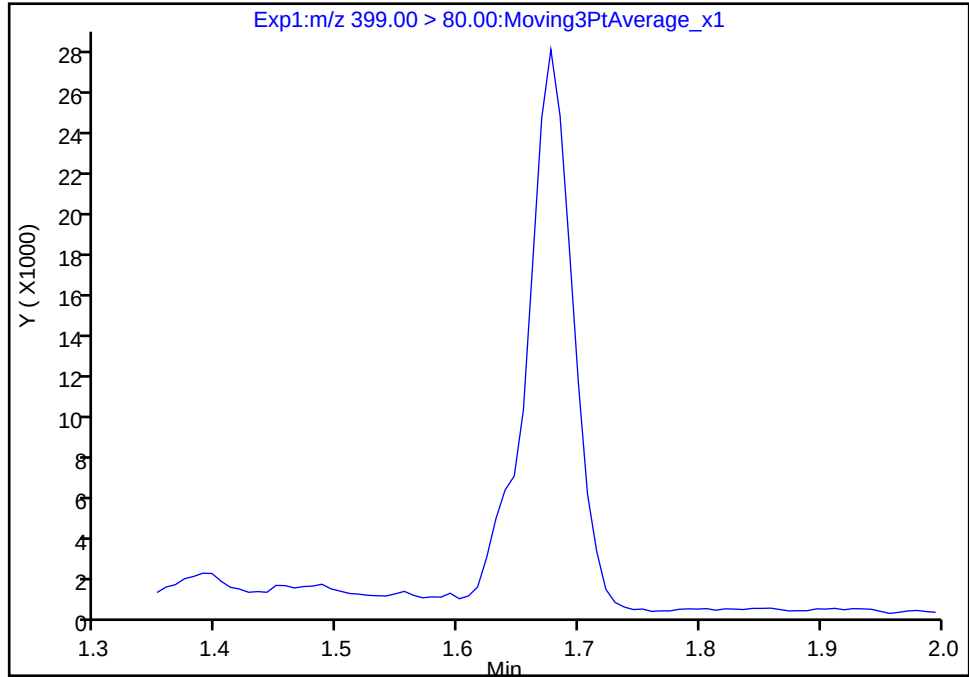
3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

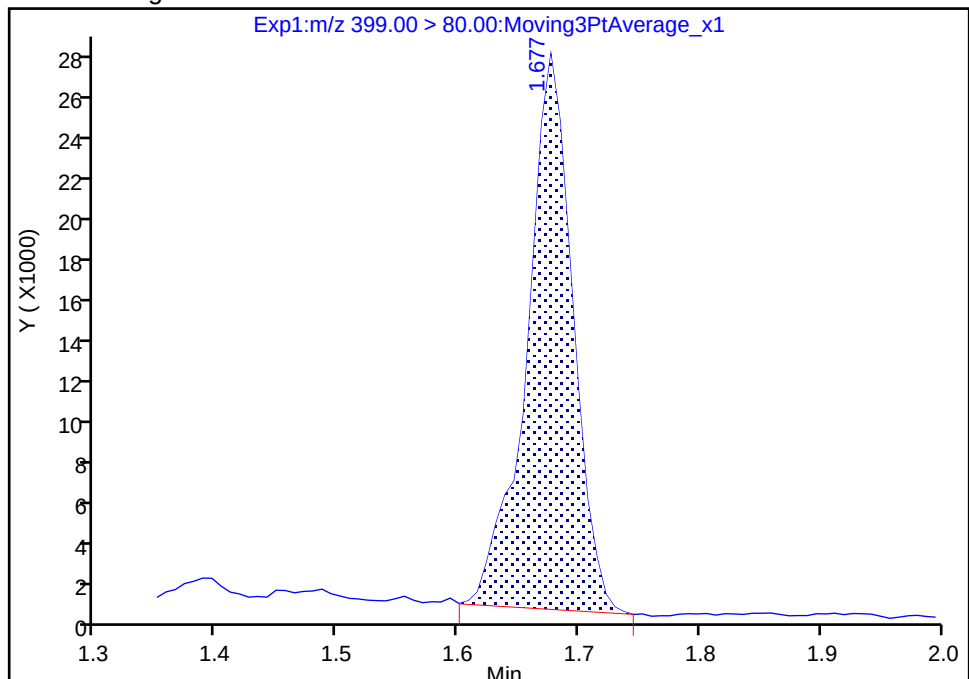
Not Detected

Expected RT: 1.68

Processing Integration Results



Manual Integration Results



RT: 1.68

Area: 70867

Amount: 0.560345

Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 10:07:21

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

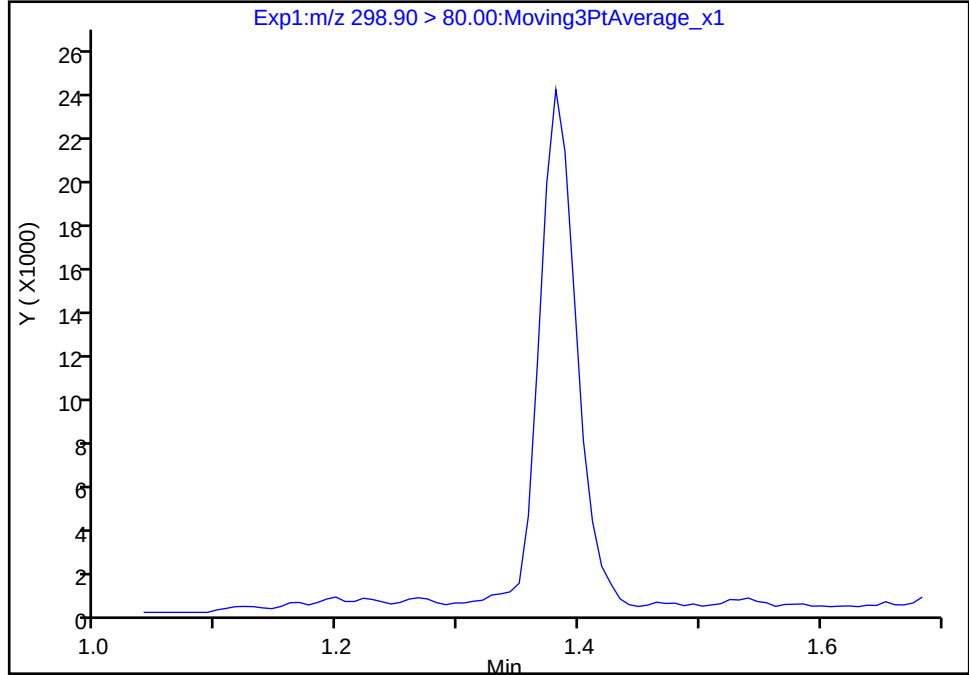
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_051.d				
Injection Date:	13-Apr-2018 02:10:28	Instrument ID:	A8_N		
Lims ID:	320-37675-A-12-A	Lab Sample ID:	320-37675-12		
Client ID:	NAWC-032819-RW-048				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	37	Worklist Smp#:	23
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

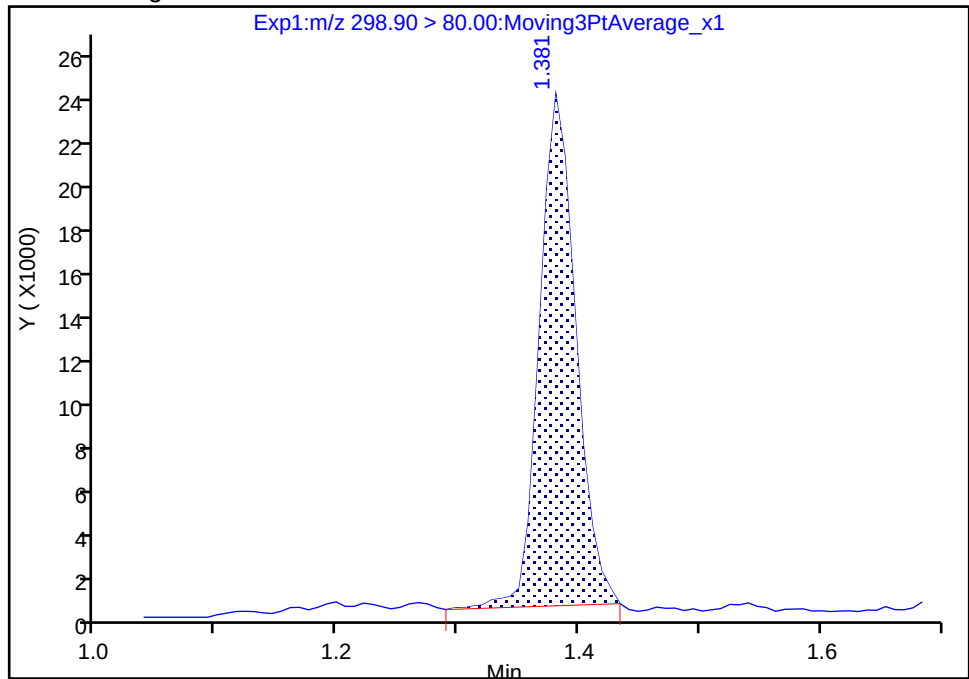
Signal: 1

Not Detected
Expected RT: 1.38

Processing Integration Results

RT: 1.38
Area: 48084
Amount: 0.593553
Amount Units: ng/ml

Manual Integration Results

Reviewer: barnettj, 13-Apr-2018 10:06:54
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

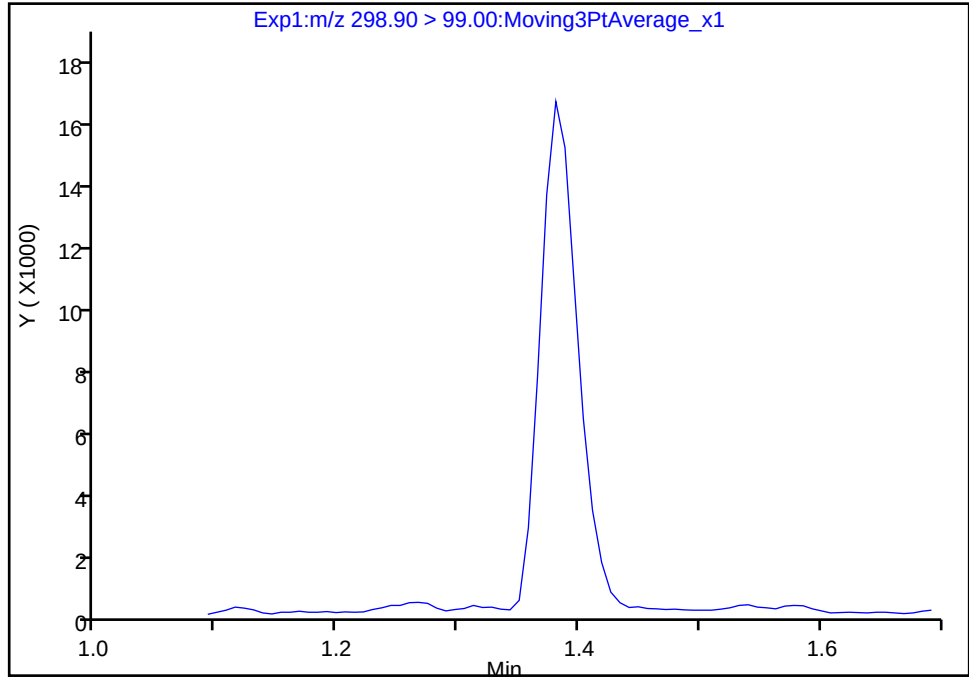
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_051.d				
Injection Date:	13-Apr-2018 02:10:28	Instrument ID:	A8_N		
Lims ID:	320-37675-A-12-A	Lab Sample ID:	320-37675-12		
Client ID:	NAWC-032819-RW-048				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	37	Worklist Smp#:	23
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

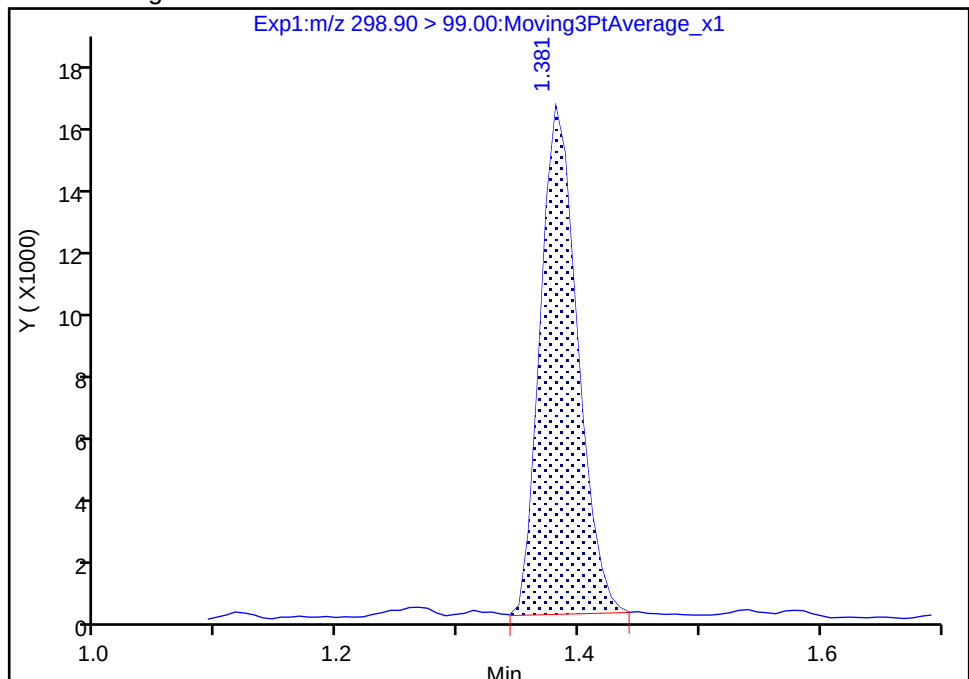
Signal: 2

Not Detected
Expected RT: 1.38

Processing Integration Results



Manual Integration Results



RT: 1.38
Area: 35430
Amount: 0.593553
Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 10:07:09

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-032819-FRB-048</u>	Lab Sample ID: <u>320-37675-13</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_052.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 10:35</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:19</u>
Sample wt/vol: <u>248.7(mL)</u>	Date Analyzed: <u>04/13/2018 02:15</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>217818</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	94		70-130
STL00996	13C2 PFDA	94		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_052.d
 Lims ID: 320-37675-A-13-A
 Client ID: NAWC-032819-FRB-048
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:15:10 ALS Bottle#: 38 Worklist Smp#: 24
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-13-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:11:31 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: XAWRK028

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	920667	9.40		8909	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.866	0.0		921490	10.0		4856	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.102	0.007		2241801	28.7		4219	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.261	0.0	1.000	739809	9.44		7313	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_052.d

Injection Date: 13-Apr-2018 02:15:10

Instrument ID: A8_N

Lims ID: 320-37675-A-13-A

Lab Sample ID: 320-37675-13

Client ID: NAWC-032819-FRB-048

Operator ID: SACINSTLCMS01

ALS Bottle#: 38

Worklist Smp#: 24

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

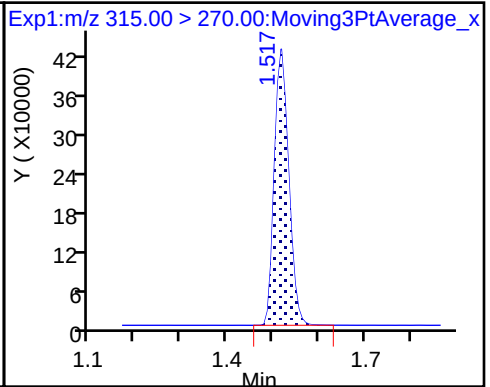
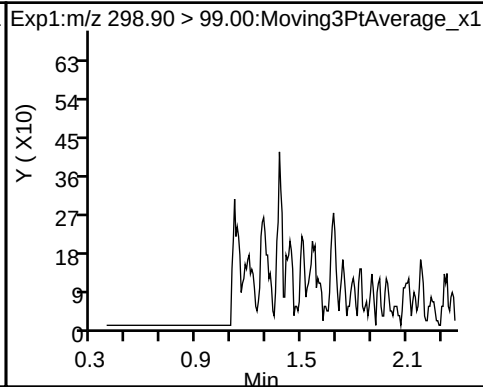
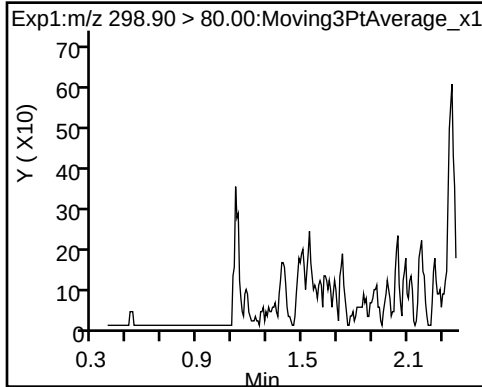
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

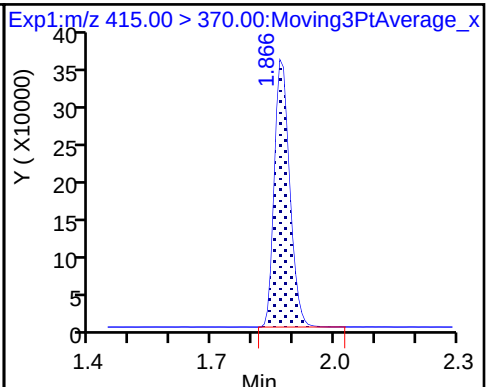
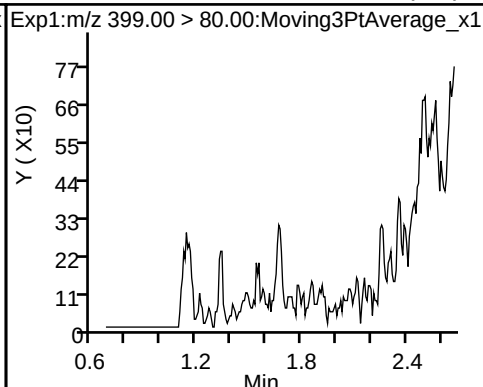
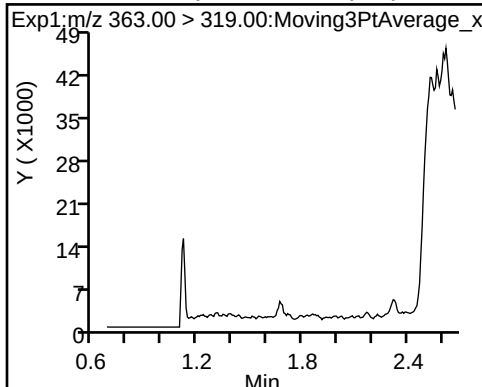
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

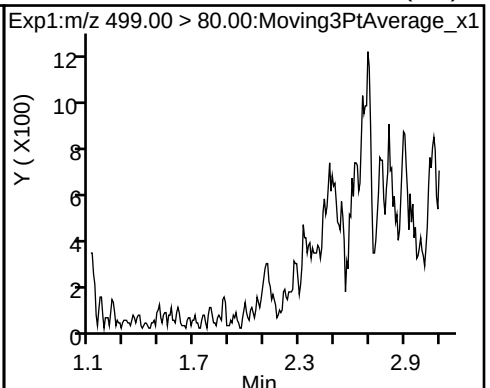
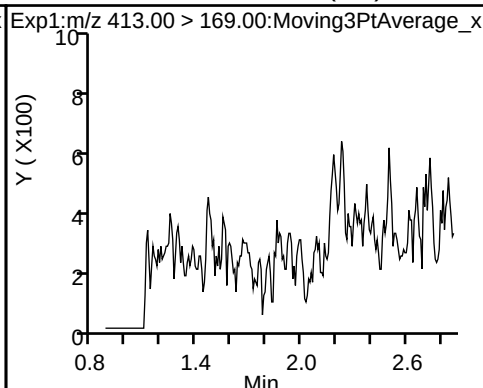
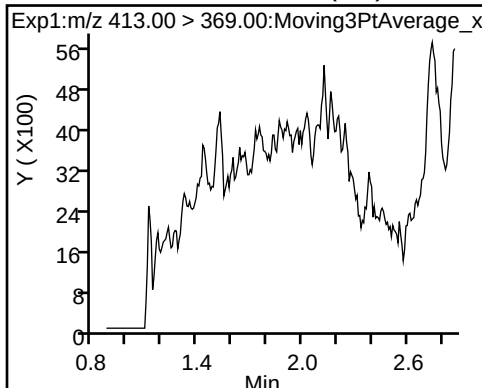
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

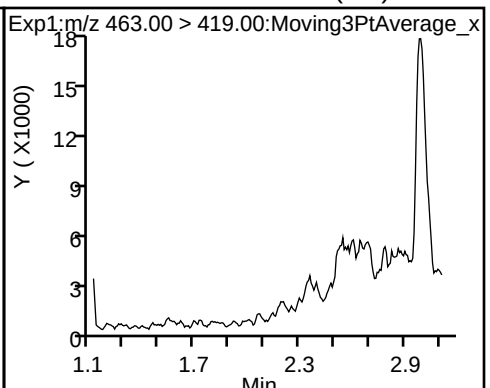
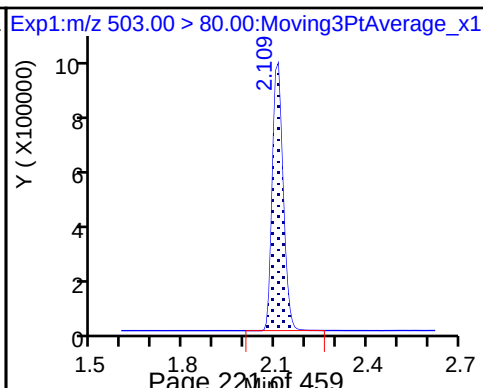
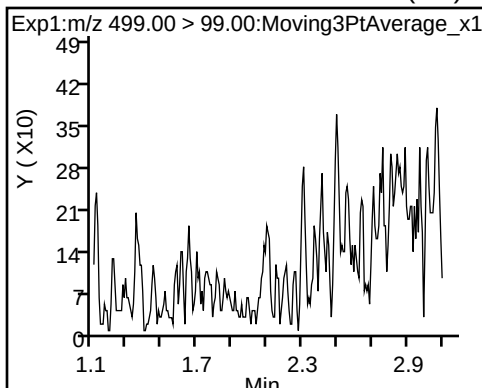
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

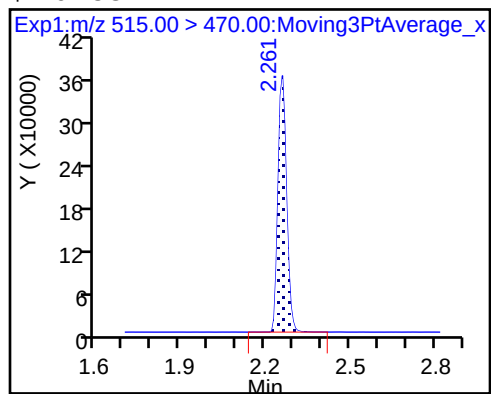


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_052.d
Lims ID: 320-37675-A-13-A
Client ID: NAWC-032819-FRB-048
Sample Type: Client
Inject. Date: 13-Apr-2018 02:15:10 ALS Bottle#: 38 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-13-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:11:31 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: XAWRK028

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.40	93.97
\$ 10 13C2 PFDA	10.0	9.44	94.40

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-032819-RW-139</u>	Lab Sample ID: <u>320-37675-14</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_055.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 11:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:19</u>
Sample wt/vol: <u>249.4 (mL)</u>	Date Analyzed: <u>04/13/2018 02:29</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>217820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	9.5	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)	12	U M	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	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	87		70-130
STL00996	13C2 PFDA	100		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_055.d
 Lims ID: 320-37675-A-14-A
 Client ID: NAWC-032819-RW-139
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:29:11 ALS Bottle#: 39 Worklist Smp#: 27
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-14-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 10:09:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	180650	2.16		227	
298.90 > 99.00	1.381	1.381	0.0	1.000	128712		1.40(0.00-0.00)	338	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	872819	8.72		9199	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	99978	0.9891		3.6	M
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.677	0.0	1.000	64507	0.4943		47.0	M
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.874	-0.008		941432	10.0		5524	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.874	0.0	1.000	236534	2.37		30.8	
413.00 > 169.00	1.874	1.874	0.0	1.000	140905		1.68(0.00-0.00)	147	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	136404	1.61		67.2	a
499.00 > 99.00	2.102	2.094	0.008	1.000	22417		6.08(0.00-0.00)	40.7	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2279160	28.7		2900	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.117	-0.008	1.000	26692	0.3366		4.0	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	801587	10.0		7349	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_055.d

Injection Date: 13-Apr-2018 02:29:11

Instrument ID: A8_N

Lims ID: 320-37675-A-14-A

Lab Sample ID: 320-37675-14

Client ID: NAWC-032819-RW-139

Operator ID: SACINSTLCMS01

ALS Bottle#: 39

Worklist Smp#: 27

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

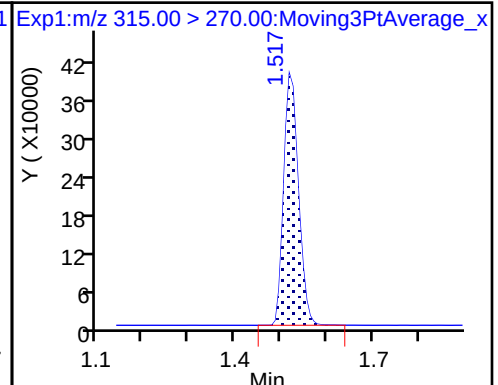
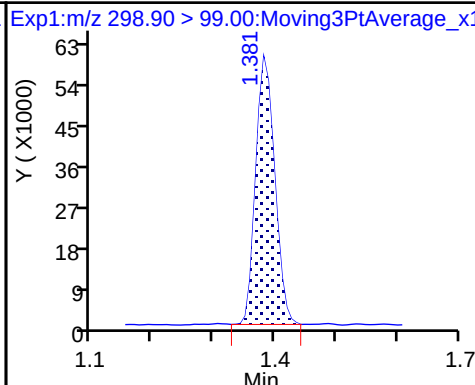
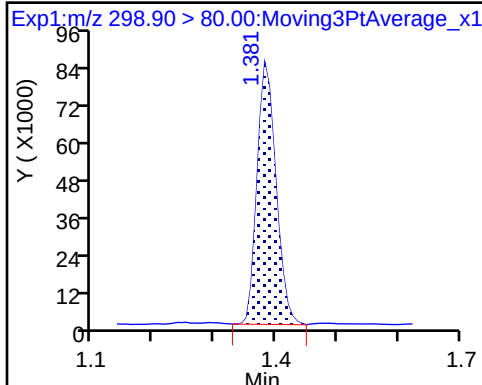
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

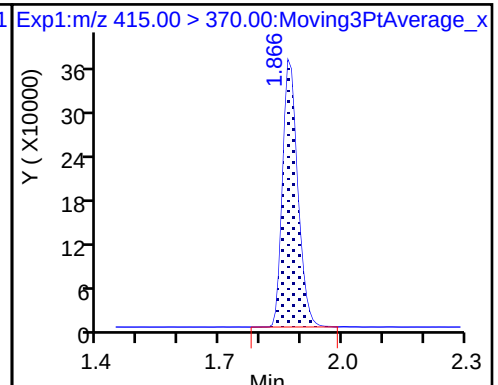
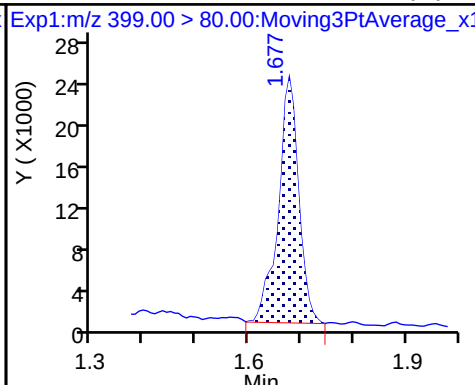
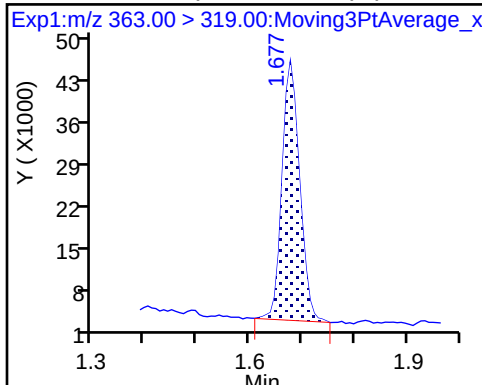
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (M)

3 Perfluorohexanesulfonic acid (M)

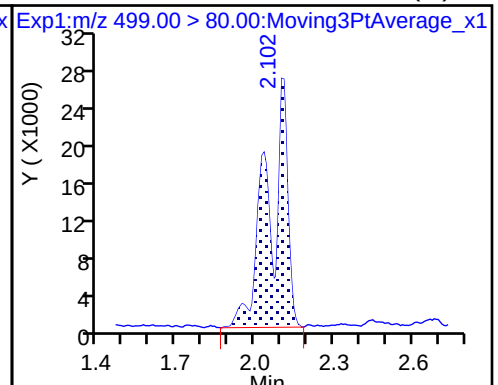
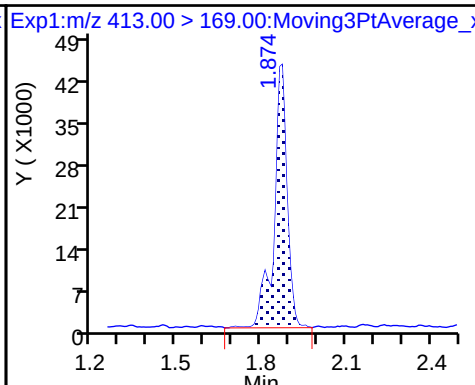
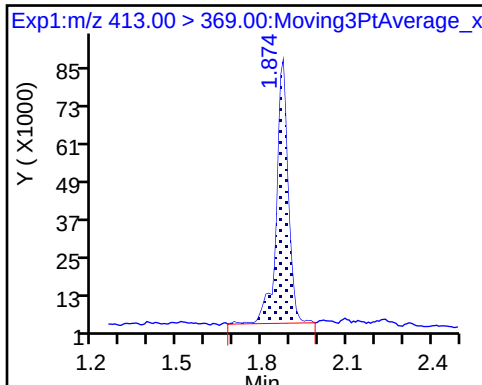
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

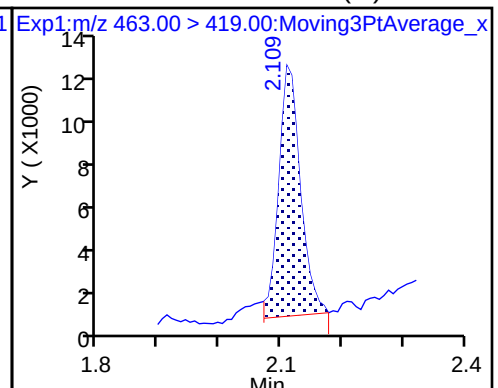
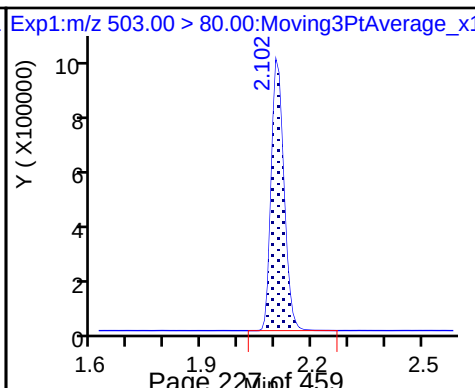
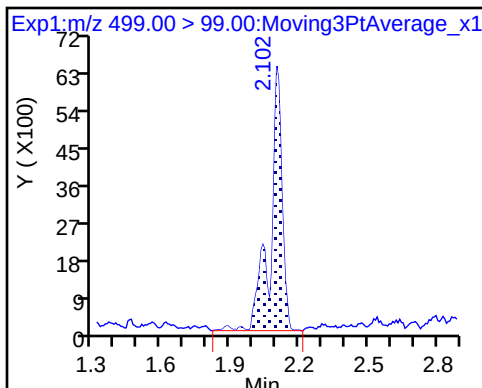
8 Perfluorooctane sulfonic acid (M)



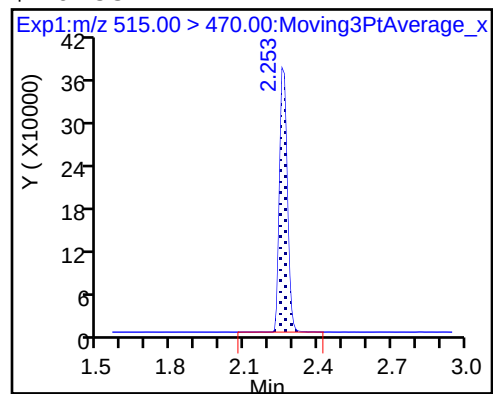
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_055.d
Lims ID: 320-37675-A-14-A
Client ID: NAWC-032819-RW-139
Sample Type: Client
Inject. Date: 13-Apr-2018 02:29:11 ALS Bottle#: 39 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-14-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 10:09:08

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.72	87.20
\$ 10 13C2 PFDA	10.0	10.0	100.12

TestAmerica Sacramento

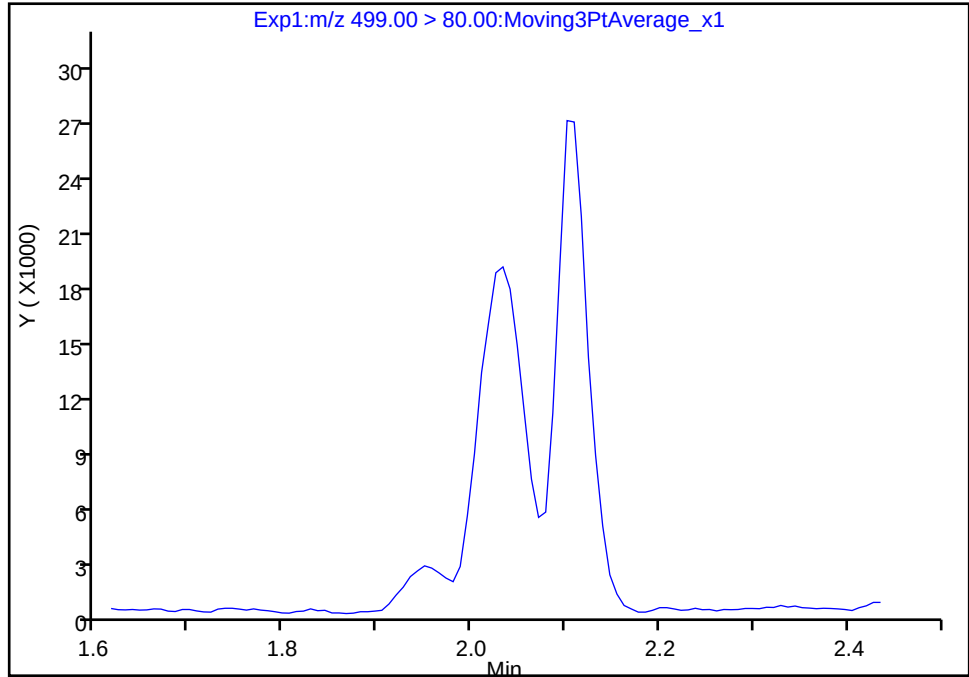
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_055.d
Injection Date: 13-Apr-2018 02:29:11 Instrument ID: A8_N
Lims ID: 320-37675-A-14-A Lab Sample ID: 320-37675-14
Client ID: NAWC-032819-RW-139
Operator ID: SACINSTLCMS01 ALS Bottle#: 39 Worklist Smp#: 27
Injection Vol: 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

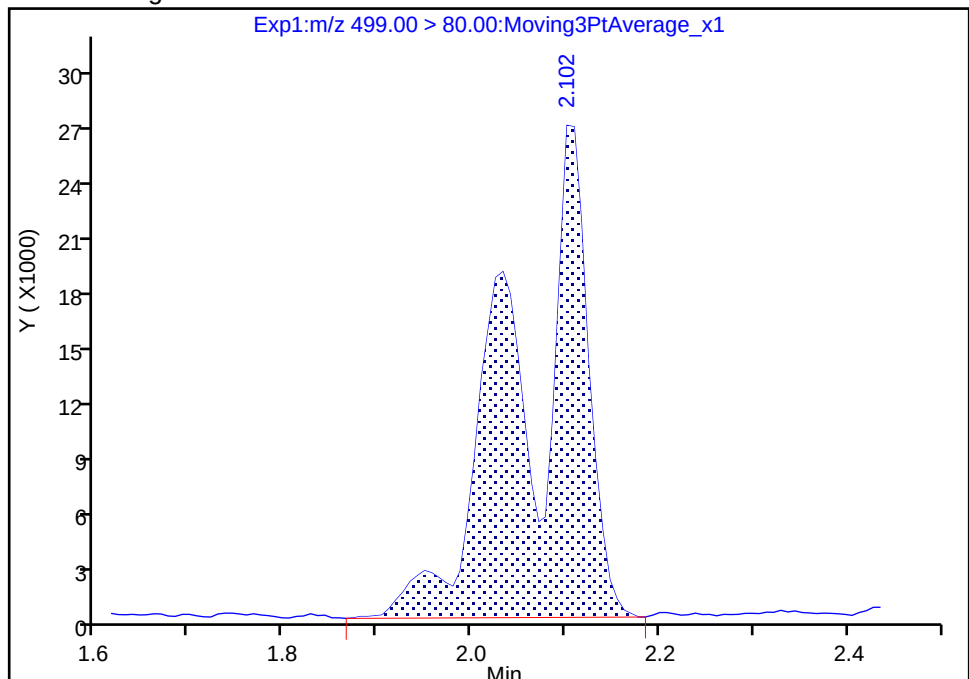
Signal: 1

Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.10
Area: 136404
Amount: 1.610069
Amount Units: ng/ml

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_055.d

Injection Date: 13-Apr-2018 02:29:11

Instrument ID: A8_N

Lims ID: 320-37675-A-14-A

Lab Sample ID: 320-37675-14

Client ID: NAWC-032819-RW-139

Operator ID: SACINSTLCMS01

ALS Bottle#: 39 Worklist Smp#: 27

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

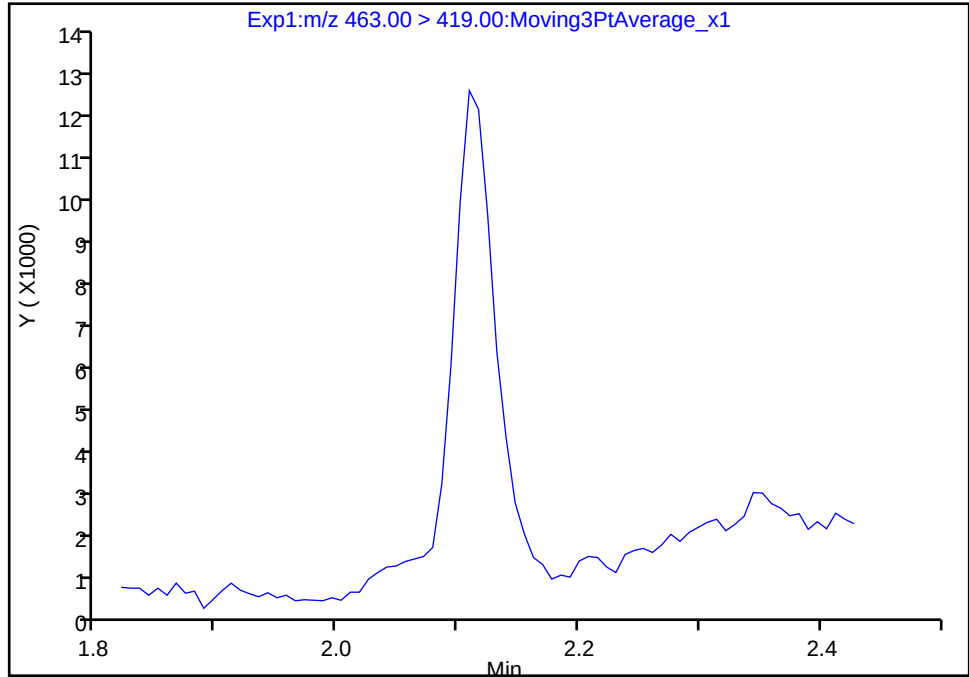
9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

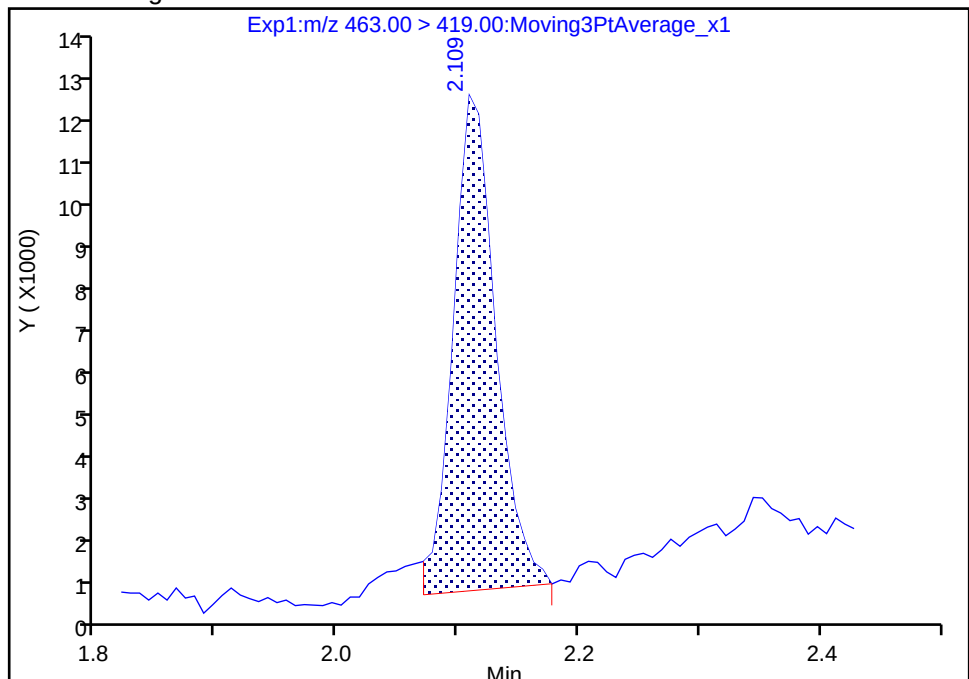
Not Detected

Expected RT: 2.12

Processing Integration Results



Manual Integration Results



RT: 2.11

Area: 26692

Amount: 0.336572

Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 10:09:01

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_055.d

Injection Date: 13-Apr-2018 02:29:11

Instrument ID: A8_N

Lims ID: 320-37675-A-14-A

Lab Sample ID: 320-37675-14

Client ID: NAWC-032819-RW-139

Operator ID: SACINSTLCMS01

ALS Bottle#: 39 Worklist Smp#: 27

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

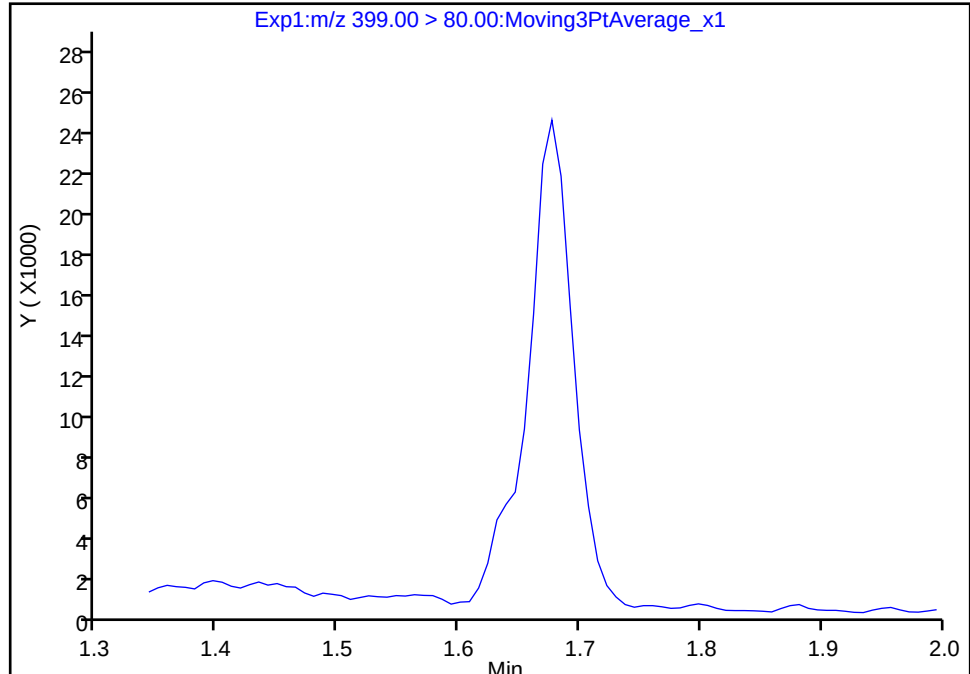
3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

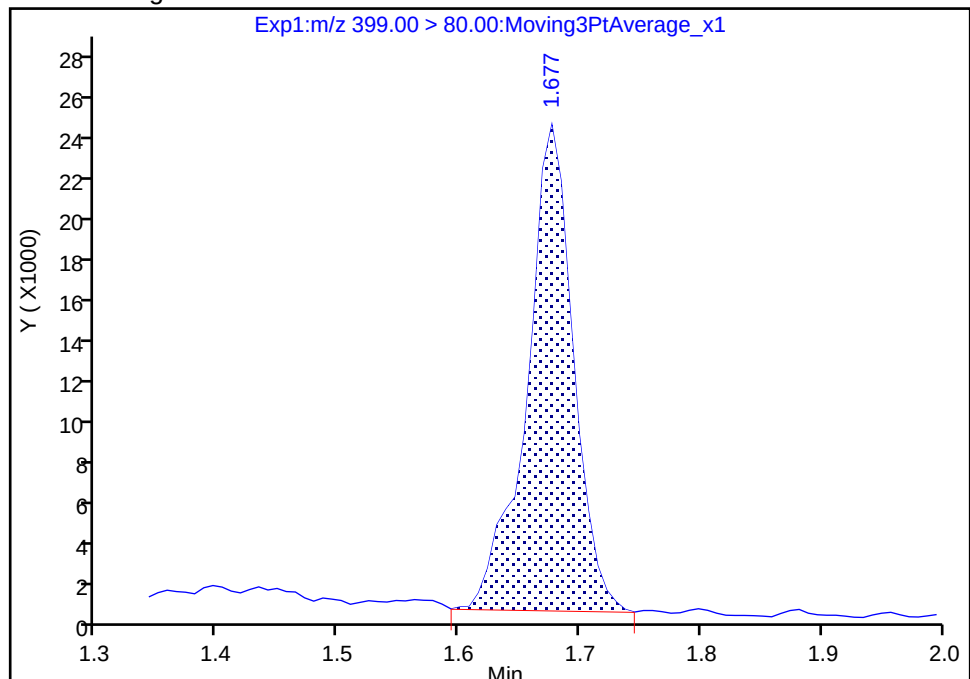
Not Detected

Expected RT: 1.68

Processing Integration Results



Manual Integration Results



RT: 1.68

Area: 64507

Amount: 0.494285

Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 10:08:27

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_055.d

Injection Date: 13-Apr-2018 02:29:11

Instrument ID: A8_N

Lims ID: 320-37675-A-14-A

Lab Sample ID: 320-37675-14

Client ID: NAWC-032819-RW-139

Operator ID: SACINSTLCMS01

ALS Bottle#: 39 Worklist Smp#: 27

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

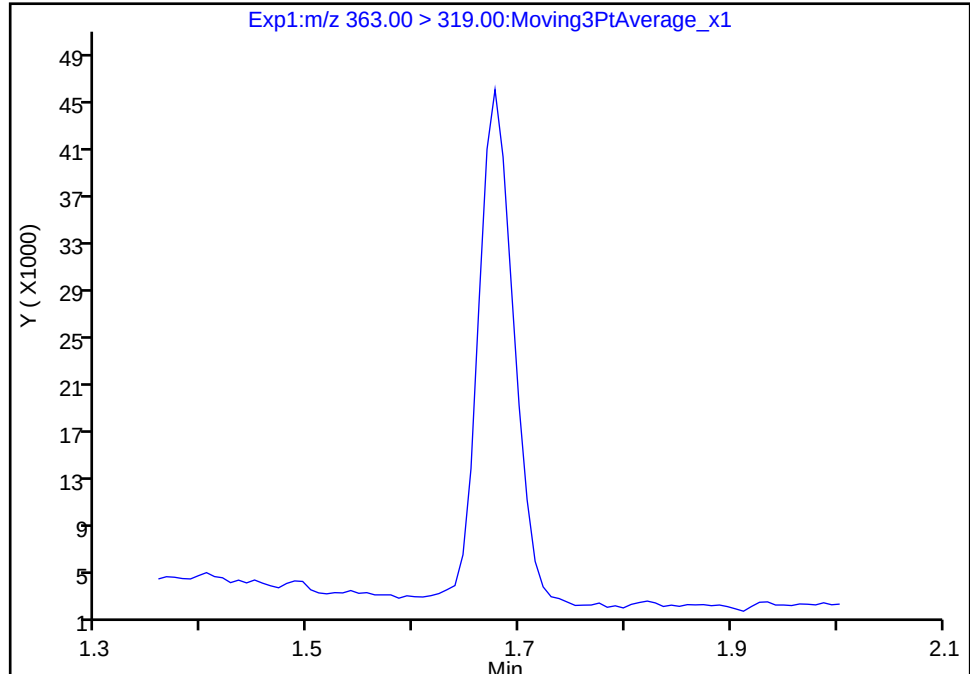
4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

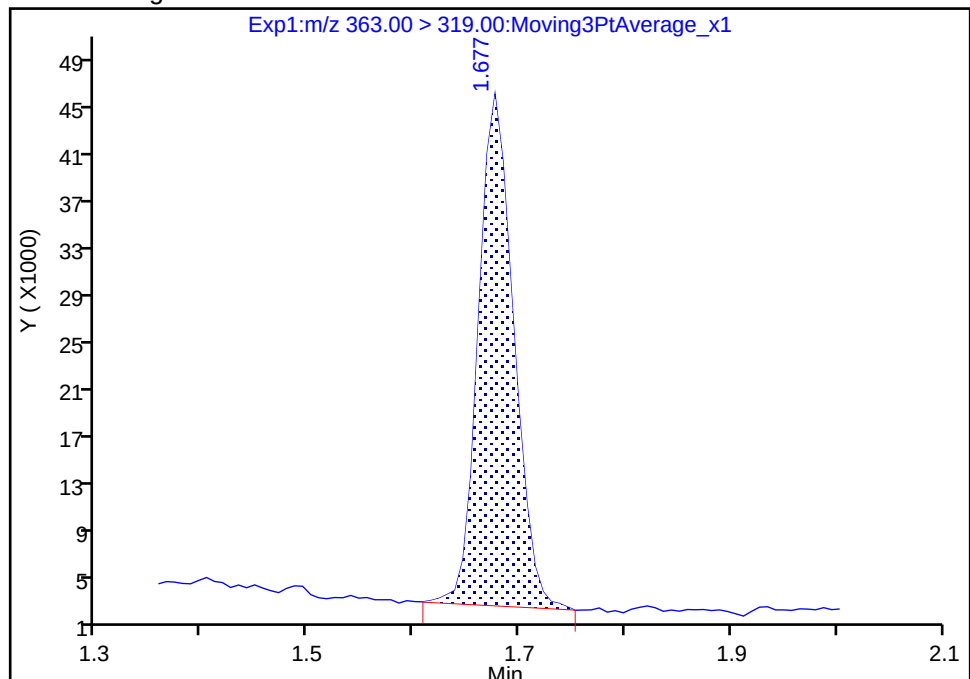
Not Detected

Expected RT: 1.68

Processing Integration Results



Manual Integration Results



RT: 1.68

Area: 99978

Amount: 0.989094

Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 10:08:36

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-032819-FRB-139</u>	Lab Sample ID: <u>320-37675-15</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_058.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 11:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:19</u>
Sample wt/vol: <u>254.6(mL)</u>	Date Analyzed: <u>04/13/2018 02:43</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>217820</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	2.7
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	98		70-130
STL00996	13C2 PFDA	98		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_058.d
 Lims ID: 320-37675-A-15-A
 Client ID: NAWC-032819-FRB-139
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:43:10 ALS Bottle#: 42 Worklist Smp#: 30
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-15-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.517	-0.007	1.000	973930	9.76		9496	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.874	-0.008		938492	10.0		5450	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2282460	28.7		4020	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	779811	9.77		7037	

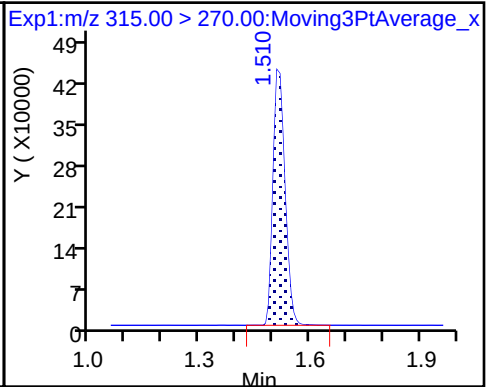
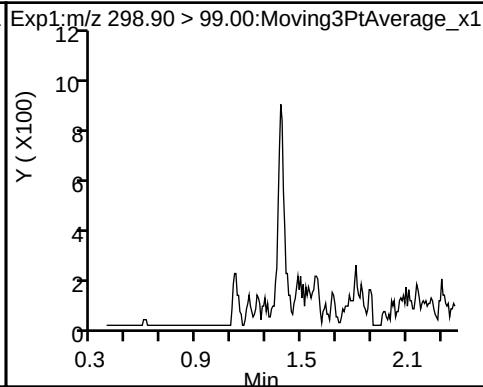
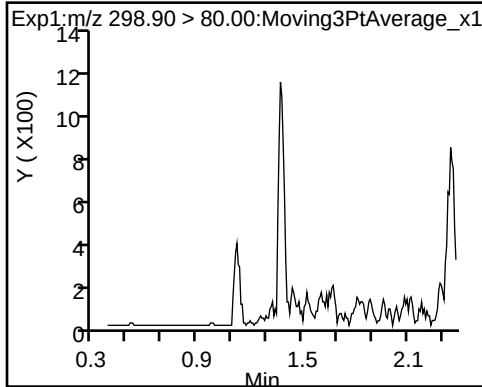
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_058.d
Injection Date: 13-Apr-2018 02:43:10 Instrument ID: A8_N
Lims ID: 320-37675-A-15-A Lab Sample ID: 320-37675-15
Client ID: NAWC-032819-FRB-139
Operator ID: SACINSTLCMS01 ALS Bottle#: 42 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

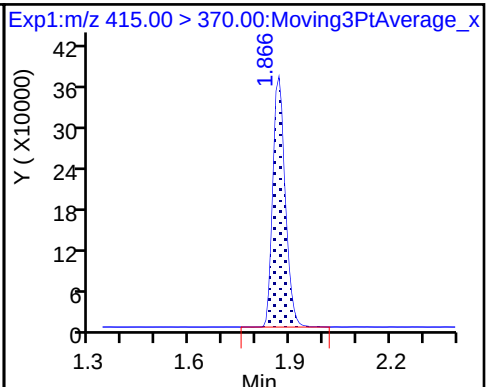
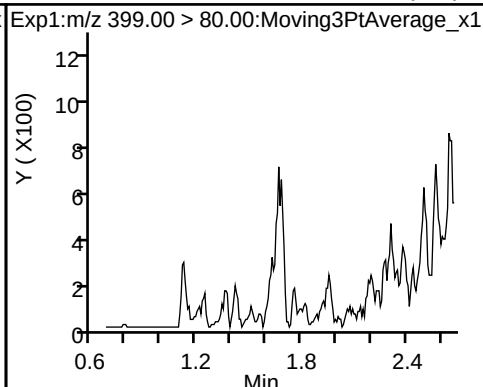
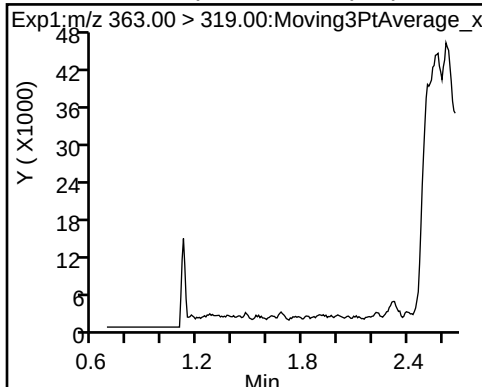
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

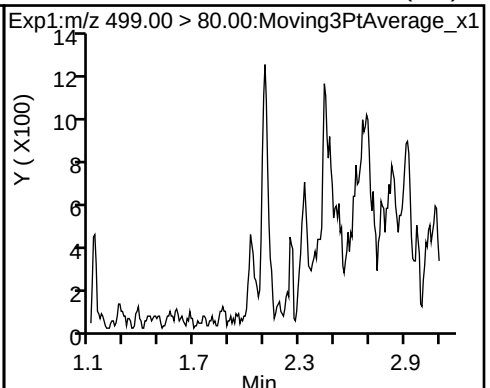
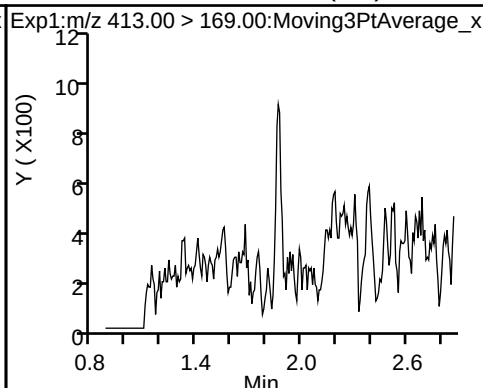
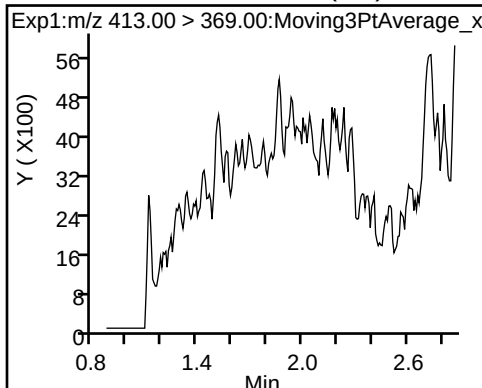
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

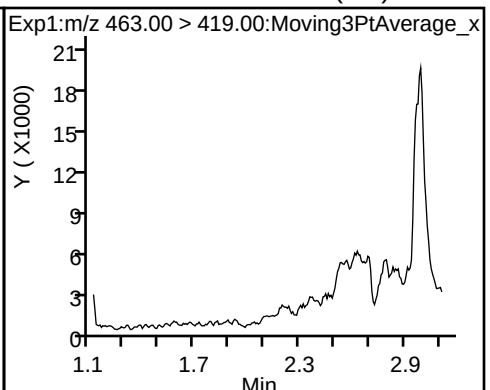
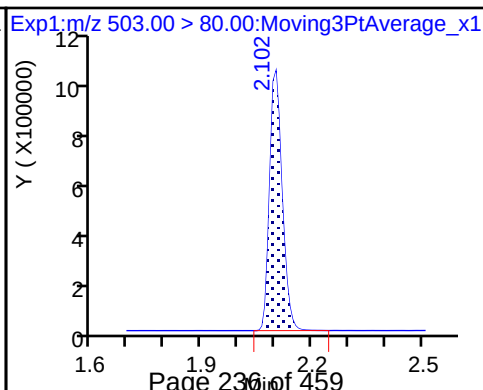
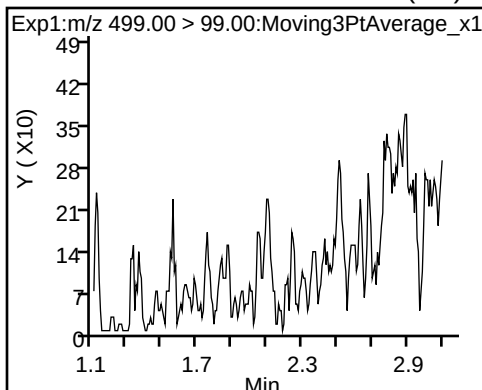
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

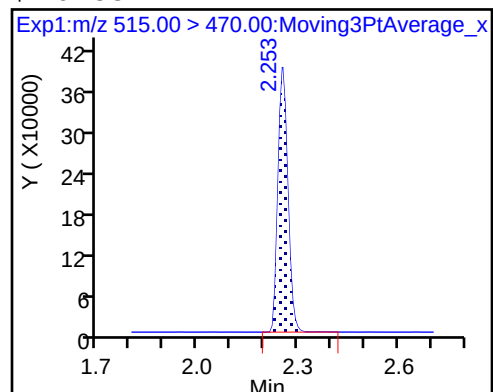


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_058.d
Lims ID: 320-37675-A-15-A
Client ID: NAWC-032819-FRB-139
Sample Type: Client
Inject. Date: 13-Apr-2018 02:43:10 ALS Bottle#: 42 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-15-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.76	97.61
\$ 10 13C2 PFDA	10.0	9.77	97.70

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-032819-RW-117</u>	Lab Sample ID: <u>320-37675-16</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_059.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 11:40</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:19</u>
Sample wt/vol: <u>256.5 (mL)</u>	Date Analyzed: <u>04/13/2018 02:47</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>217820</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	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	98		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_059.d
 Lims ID: 320-37675-A-16-A
 Client ID: NAWC-032819-RW-117
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:47:51 ALS Bottle#: 43 Worklist Smp#: 31
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-16-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	979617	9.73		8989	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.874	-0.008		946733	10.0		6037	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2304139	28.7		4042	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	786541	9.77		6995	

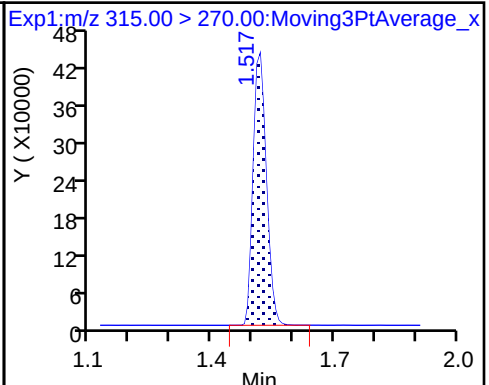
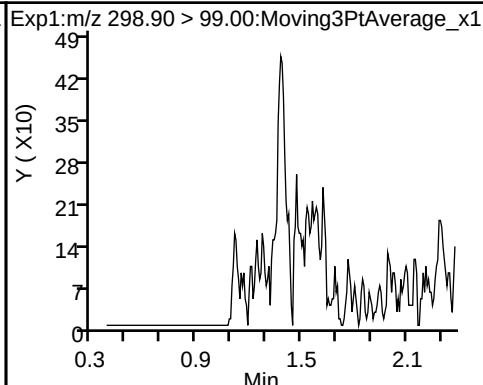
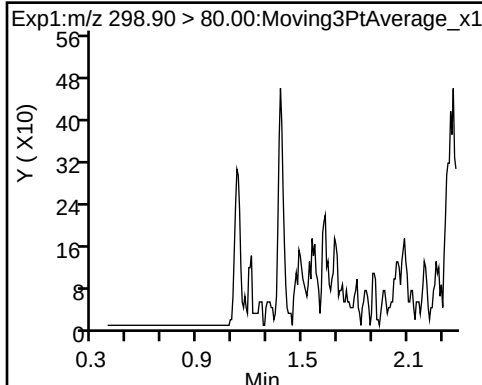
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_059.d
Injection Date: 13-Apr-2018 02:47:51 Instrument ID: A8_N
Lims ID: 320-37675-A-16-A Lab Sample ID: 320-37675-16
Client ID: NAWC-032819-RW-117
Operator ID: SACINSTLCMS01 ALS Bottle#: 43 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

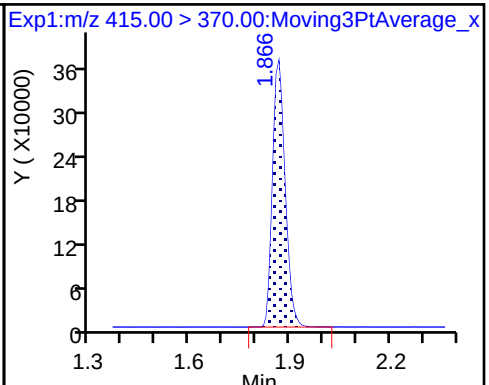
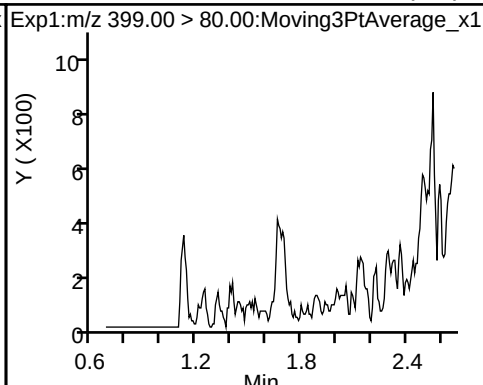
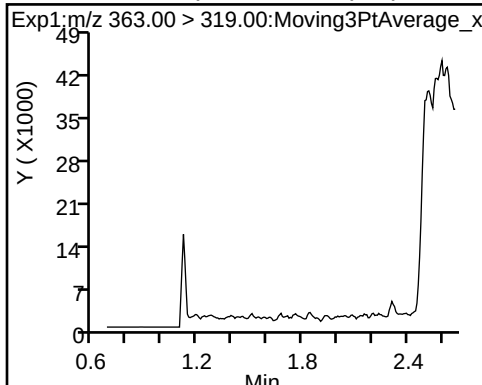
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

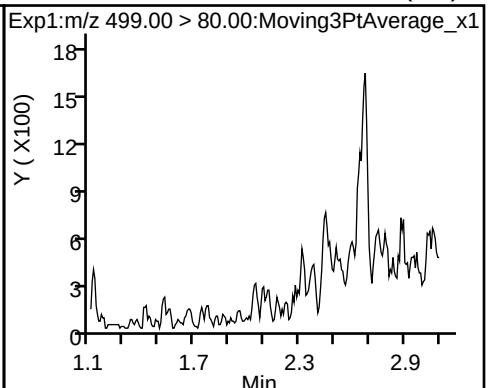
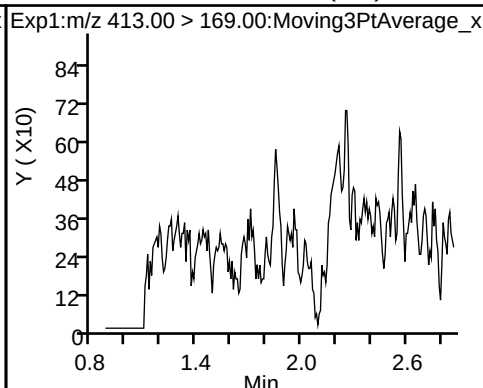
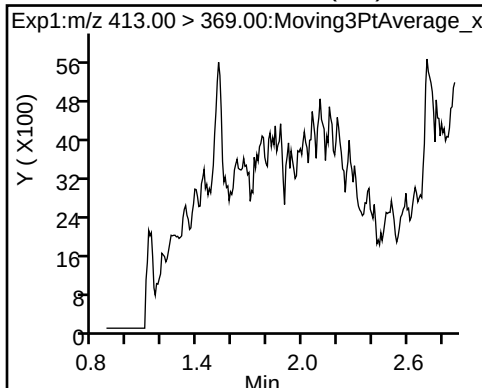
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

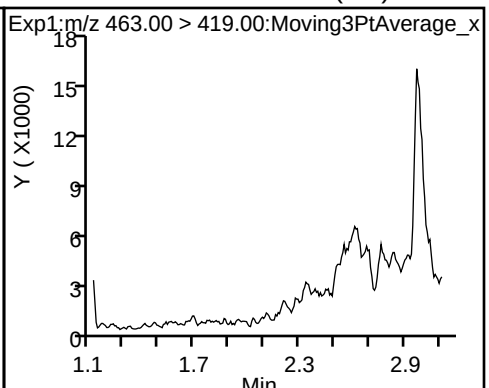
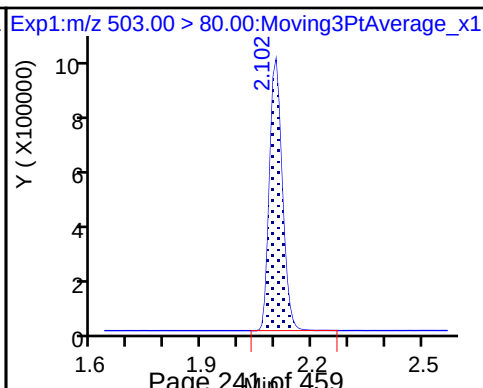
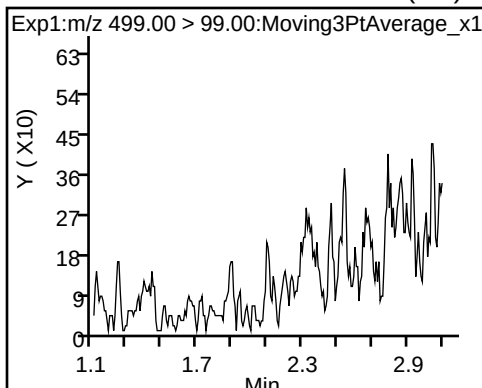
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

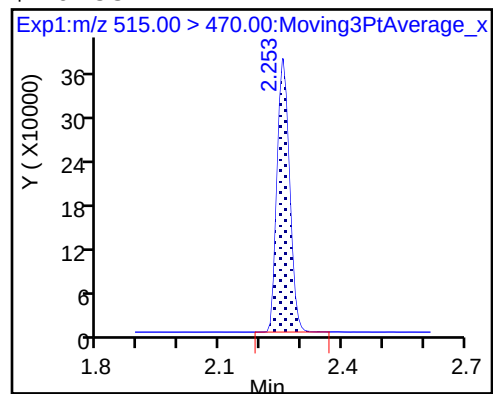


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_059.d
Lims ID: 320-37675-A-16-A
Client ID: NAWC-032819-RW-117
Sample Type: Client
Inject. Date: 13-Apr-2018 02:47:51 ALS Bottle#: 43 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-16-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.73	97.33
\$ 10 13C2 PFDA	10.0	9.77	97.69

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: NAWC-032819-FRB-117 Lab Sample ID: 320-37675-17

Matrix: Water Lab File ID: 2018.04.12_537AA_060.d

Analysis Method: 537 Date Collected: 03/29/2018 11:35

Extraction Method: 537 Date Extracted: 04/07/2018 08:19

Sample wt/vol: 258.6(mL) Date Analyzed: 04/13/2018 02:52

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

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

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

Analysis Batch No.: 217820 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	J M	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	20		19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	15	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.9	J	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_060.d
 Lims ID: 320-37675-A-17-A
 Client ID: NAWC-032819-FRB-117
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:52:31 ALS Bottle#: 44 Worklist Smp#: 32
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-17-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 10:10:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	68167	0.8124		57.6	
298.90 > 99.00	1.381	1.381	0.0	1.000	52110		1.31(0.00-0.00)	139	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	969569	9.59		9724	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.677	-0.008	1.000	129997	1.27		4.1	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.677	-0.008	1.000	514571	3.93		277	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.874	-0.008		951026	10.0		5932	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.874	-0.008	1.000	535233	5.30		68.2	
413.00 > 169.00	1.866	1.874	-0.008	1.000	318903		1.68(0.00-0.00)	341	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	609625	7.17		282	a
499.00 > 99.00	2.102	2.094	0.008	1.000	121299		5.03(0.00-0.00)	225	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2287790	28.7		2612	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.117	-0.008	1.000	54576	0.6812		7.6	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	713896	8.83		8155	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_060.d

Injection Date: 13-Apr-2018 02:52:31

Instrument ID: A8_N

Lims ID: 320-37675-A-17-A

Lab Sample ID: 320-37675-17

Client ID: NAWC-032819-FRB-117

Operator ID: SACINSTLCMS01

ALS Bottle#: 44

Worklist Smp#: 32

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

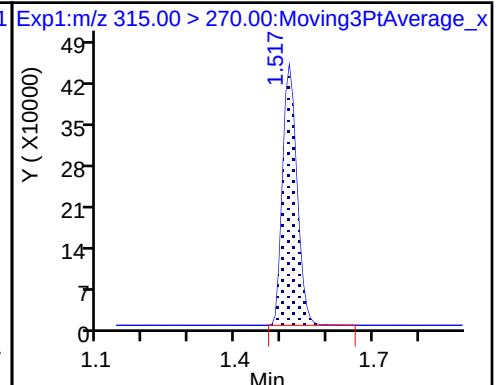
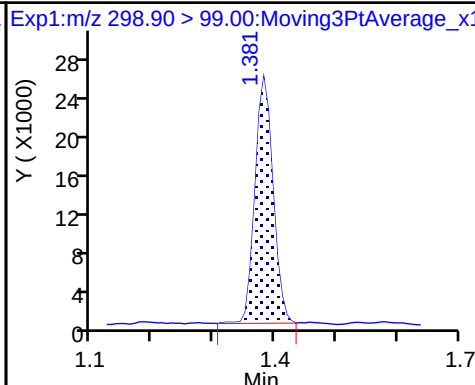
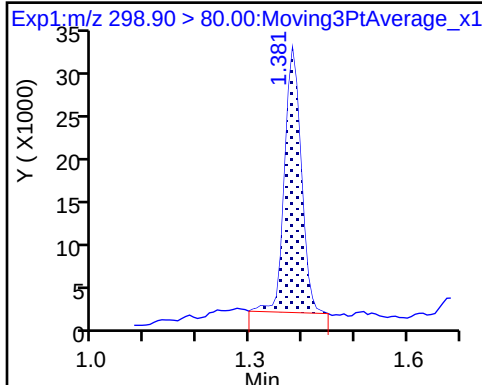
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

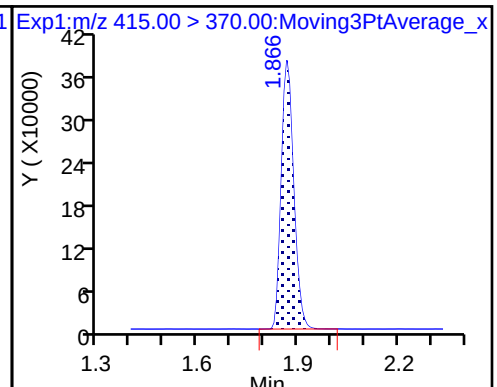
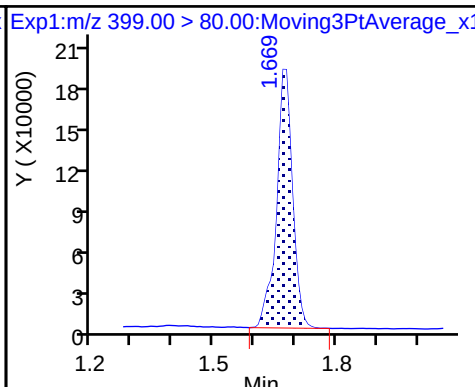
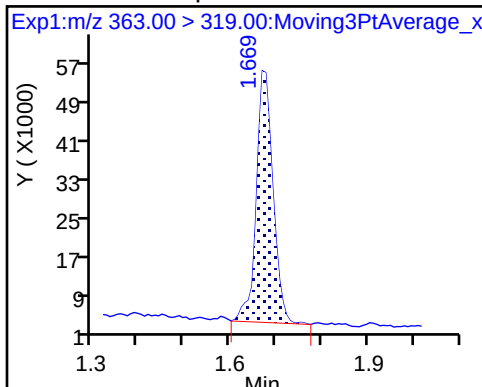
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

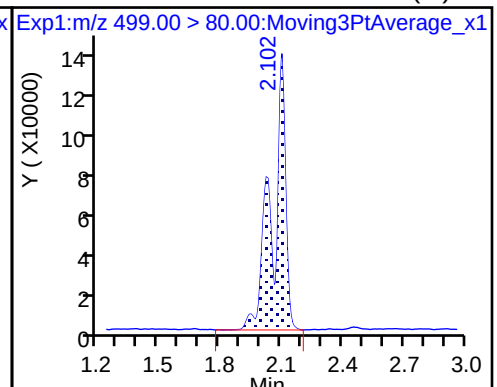
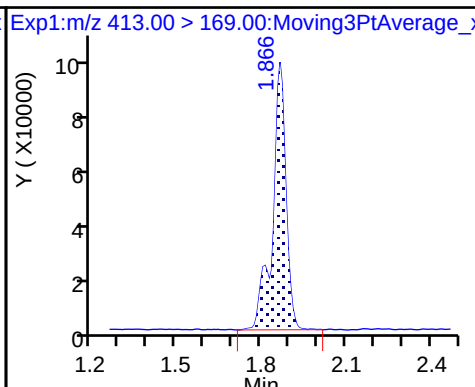
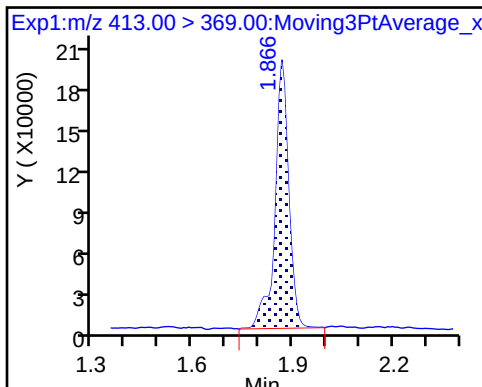
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

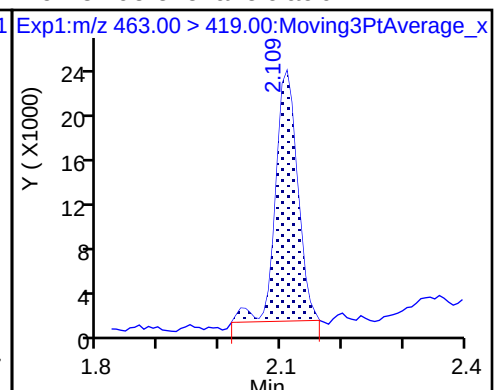
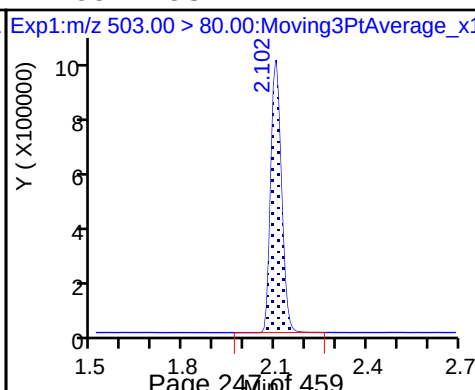
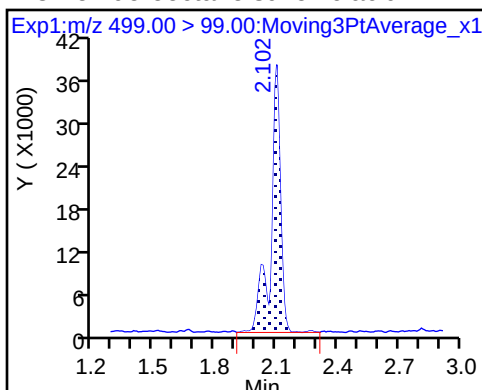
8 Perfluorooctane sulfonic acid (M)



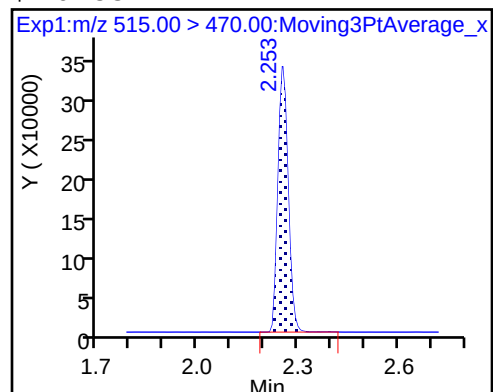
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_060.d
Lims ID: 320-37675-A-17-A
Client ID: NAWC-032819-FRB-117
Sample Type: Client
Inject. Date: 13-Apr-2018 02:52:31 ALS Bottle#: 44 Worklist Smp#: 32
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-17-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 10:10:23

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.59	95.89
\$ 10 13C2 PFDA	10.0	8.83	88.26

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_060.d

Injection Date: 13-Apr-2018 02:52:31

Instrument ID: A8_N

Lims ID: 320-37675-A-17-A

Lab Sample ID: 320-37675-17

Client ID: NAWC-032819-FRB-117

Operator ID: SACINSTLCMS01

ALS Bottle#: 44 Worklist Smp#: 32

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

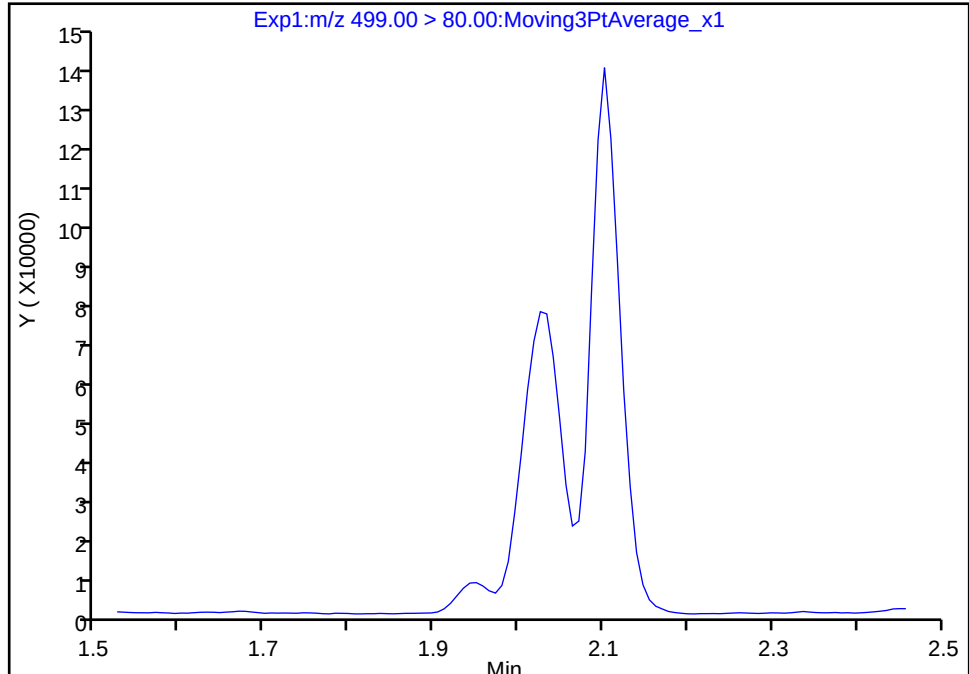
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

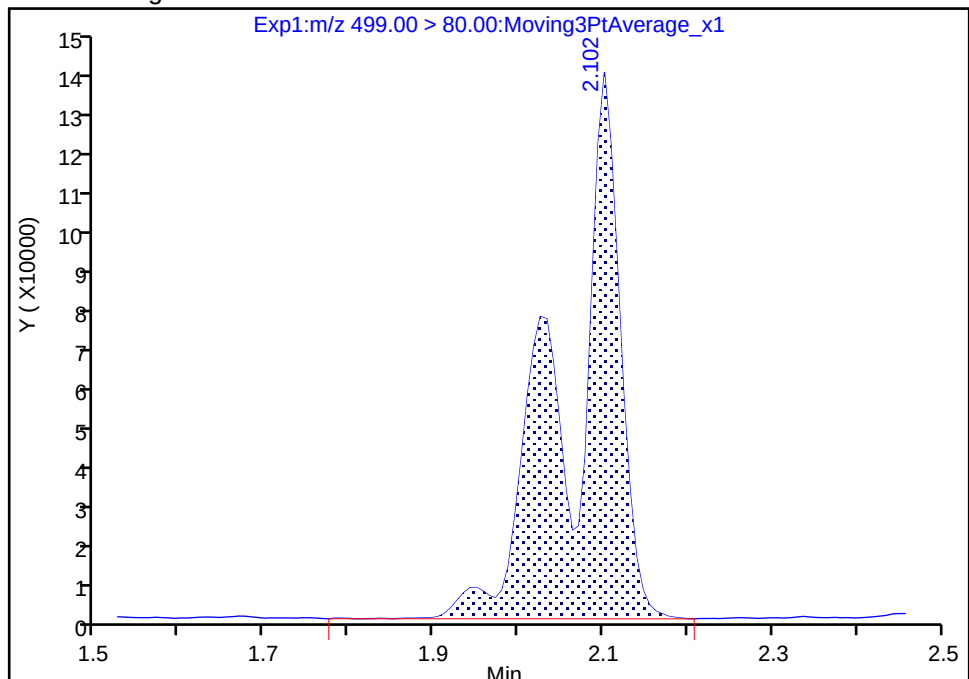
Not Detected

Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.10

Area: 609625

Amount: 7.168675

Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 10:10:08

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-181 Lab Sample ID: 320-37675-18
 Matrix: Water Lab File ID: 2018.04.12_537AA_061.d
 Analysis Method: 537 Date Collected: 03/29/2018 12:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 248.9(mL) Date Analyzed: 04/13/2018 02:57
 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.: 217820 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)	5.2	J	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	94		70-130
STL00996	13C2 PFDA	86		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_061.d
 Lims ID: 320-37675-A-18-A
 Client ID: NAWC-032819-RW-181
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:57:11 ALS Bottle#: 45 Worklist Smp#: 33
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-18-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.517	-0.007	1.000	962161	9.43		8268	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.874	-0.015		960037	10.0		5554	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.874	-0.008	1.000	131160	1.29		14.9	
413.00 > 169.00	1.859	1.874	-0.015	0.996	79672		1.65(0.00-0.00)	74.6	
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.102	-0.008		2317950	28.7		3225	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	698122	8.55		7391	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_061.d

Injection Date: 13-Apr-2018 02:57:11

Instrument ID: A8_N

Lims ID: 320-37675-A-18-A

Lab Sample ID: 320-37675-18

Client ID: NAWC-032819-RW-181

Operator ID: SACINSTLCMS01

ALS Bottle#: 45

Worklist Smp#: 33

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

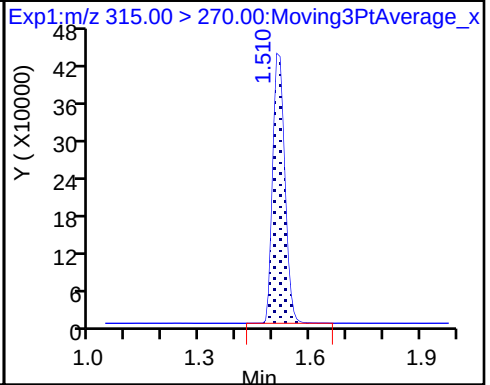
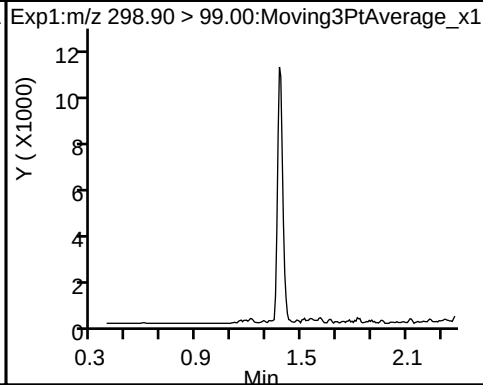
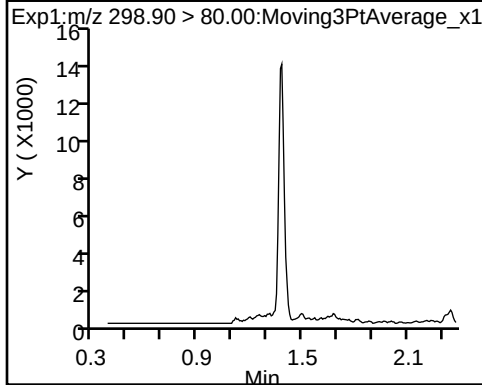
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

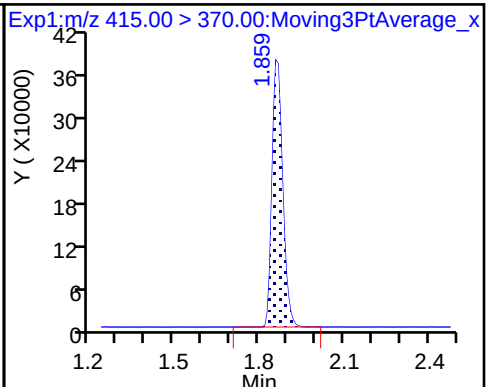
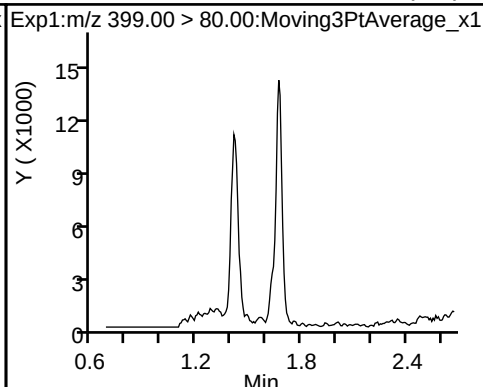
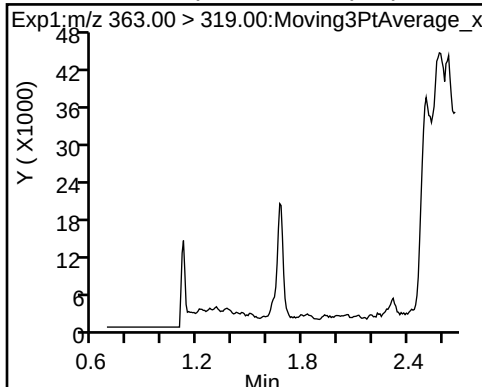
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

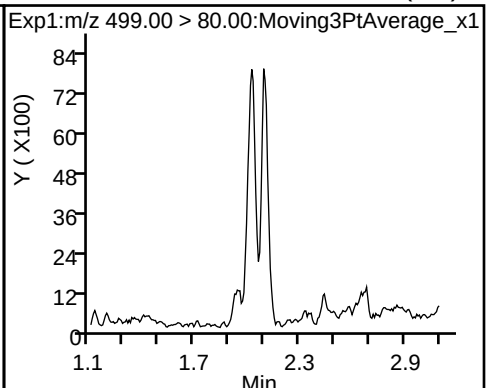
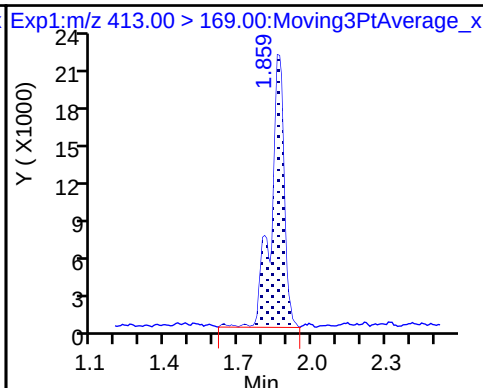
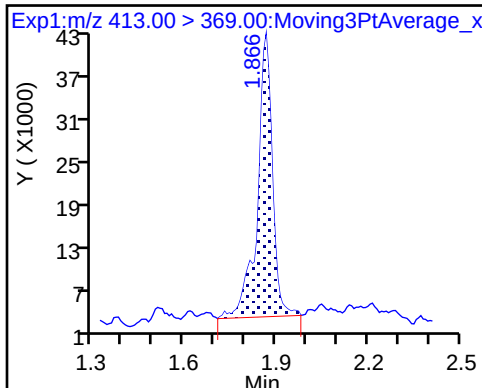
* 6 13C2-PFOA



5 Perfluorooctanoic acid

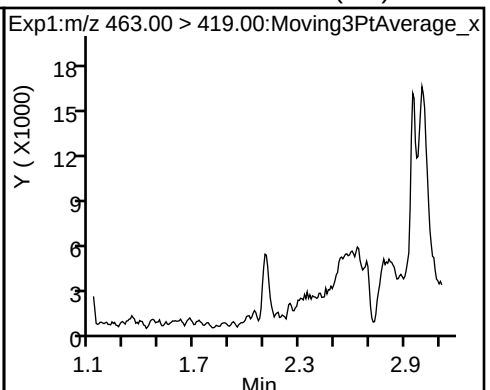
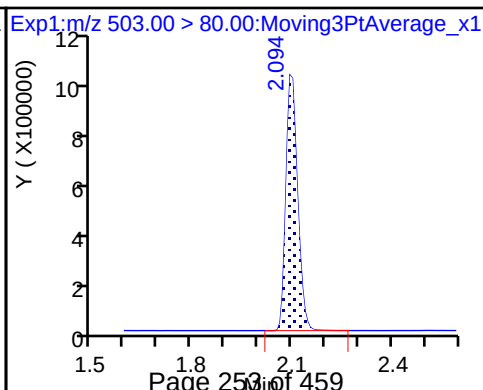
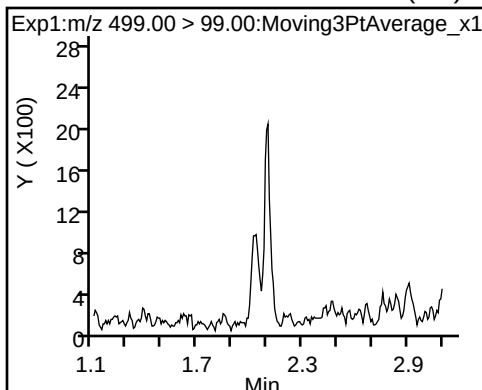
5 Perfluorooctanoic acid

8 Perfluorooctane sulfonic acid (ND)

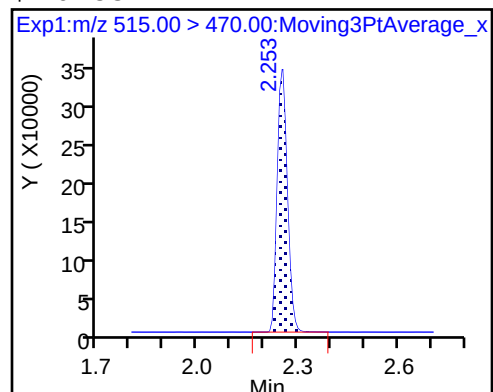


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_061.d
Lims ID: 320-37675-A-18-A
Client ID: NAWC-032819-RW-181
Sample Type: Client
Inject. Date: 13-Apr-2018 02:57:11 ALS Bottle#: 45 Worklist Smp#: 33
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-18-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.43	94.27
\$ 10 13C2 PFDA	10.0	8.55	85.50

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-032819-FRB-181</u>	Lab Sample ID: <u>320-37675-19</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_062.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 12:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:19</u>
Sample wt/vol: <u>250.6(mL)</u>	Date Analyzed: <u>04/13/2018 03:01</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>217820</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	100		70-130
STL00996	13C2 PFDA	104		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_062.d
 Lims ID: 320-37675-A-19-A
 Client ID: NAWC-032819-FRB-181
 Sample Type: Client
 Inject. Date: 13-Apr-2018 03:01:50 ALS Bottle#: 46 Worklist Smp#: 34
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-19-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	1021144	10.0		9508	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.874	-0.008		957412	10.0		5479	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2371551	28.7		4189	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	849318	10.4		8487	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_062.d

Injection Date: 13-Apr-2018 03:01:50

Instrument ID: A8_N

Lims ID: 320-37675-A-19-A

Lab Sample ID: 320-37675-19

Client ID: NAWC-032819-FRB-181

Operator ID: SACINSTLCMS01

ALS Bottle#: 46

Worklist Smp#: 34

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

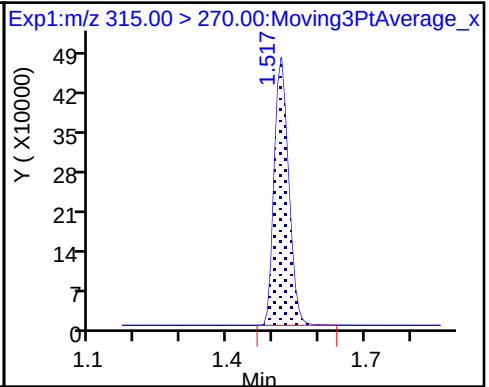
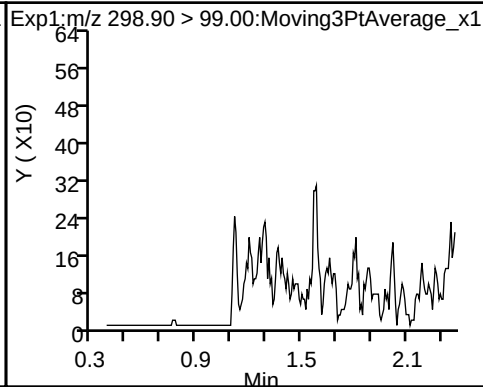
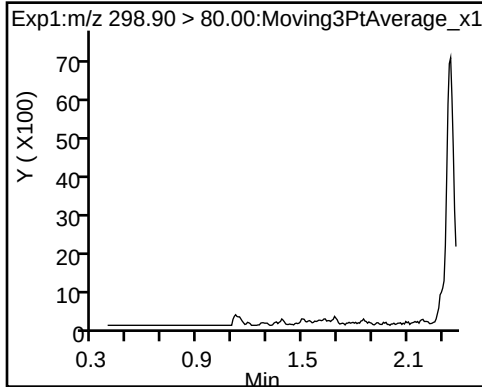
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

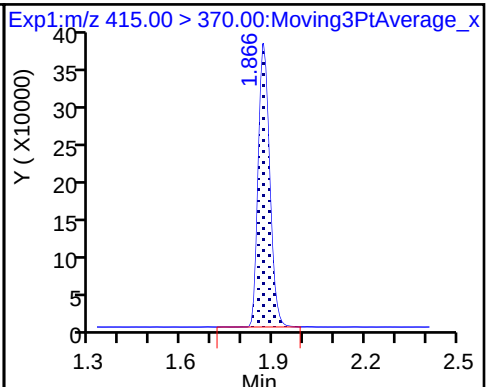
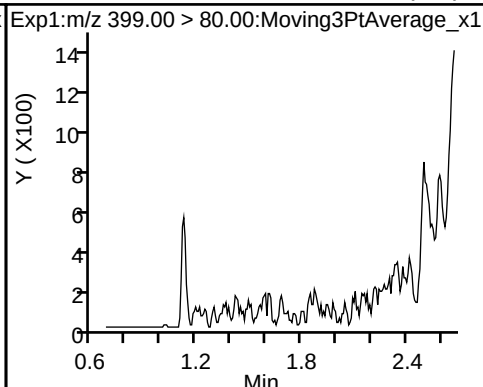
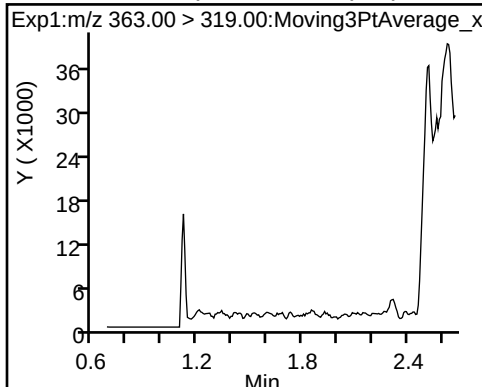
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

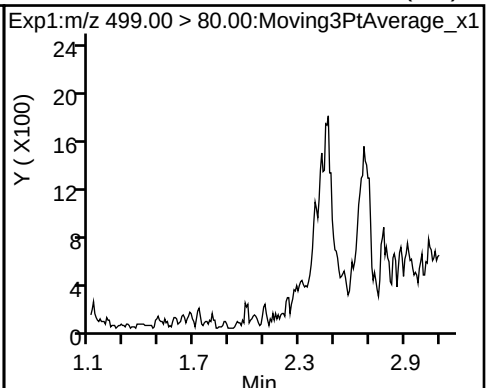
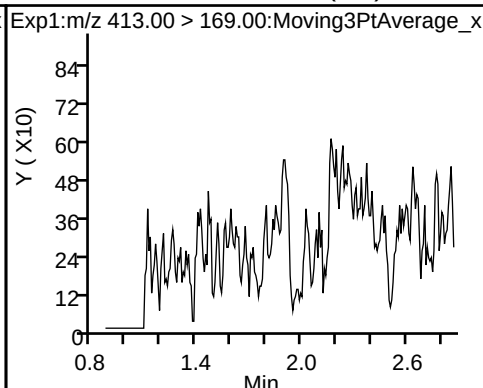
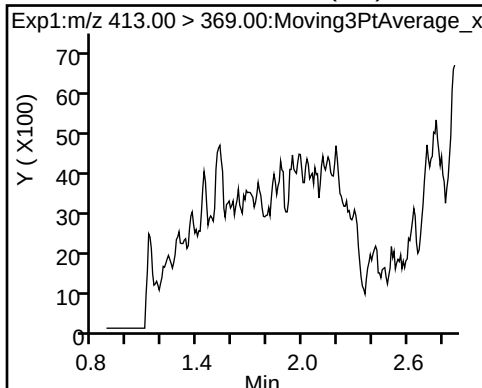
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

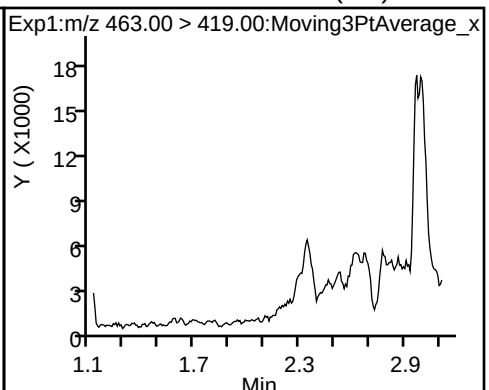
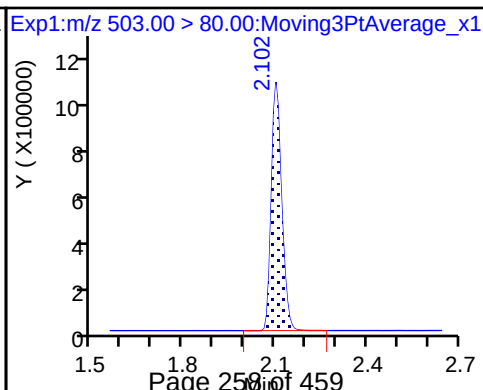
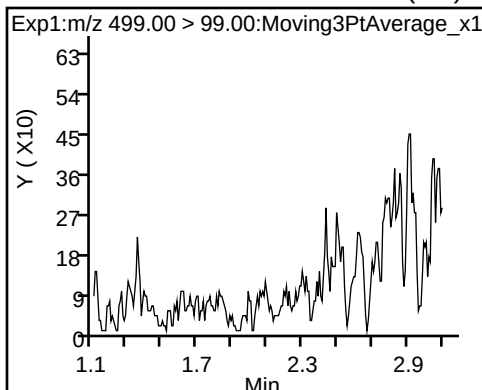
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

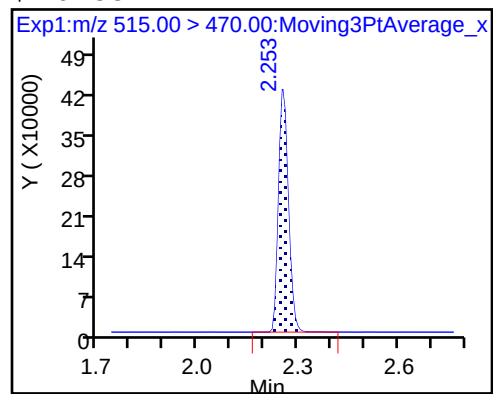


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_062.d
Lims ID: 320-37675-A-19-A
Client ID: NAWC-032819-FRB-181
Sample Type: Client
Inject. Date: 13-Apr-2018 03:01:50 ALS Bottle#: 46 Worklist Smp#: 34
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-19-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.0	100.32
\$ 10 13C2 PFDA	10.0	10.4	104.31

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-032819-RW-138</u>	Lab Sample ID: <u>320-37675-20</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_063.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 13:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:19</u>
Sample wt/vol: <u>242 (mL)</u>	Date Analyzed: <u>04/13/2018 03:06</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>217820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.0	J M	41	17	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	30		21	8.3	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U M	25	21	8.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U M	31	12	5.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.4	J	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	98		70-130
STL00996	13C2 PFDA	99		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_063.d
 Lims ID: 320-37675-A-20-A
 Client ID: NAWC-032819-RW-138
 Sample Type: Client
 Inject. Date: 13-Apr-2018 03:06:31 ALS Bottle#: 47 Worklist Smp#: 35
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-20-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 10:11:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	64088	0.7401		72.0	
298.90 > 99.00	1.381	1.381	0.0	1.000	47558		1.35(0.00-0.00)	106	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	980671	9.80		8988	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	181149	1.79		6.7	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.677	0.0	1.000	82557	0.6106		54.8	M
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.874	-0.008		941041	10.0		5687	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.874	-0.008	1.000	728230	7.28		81.2	
413.00 > 169.00	1.866	1.874	-0.008	1.000	417504		1.74(0.00-0.00)	491	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	169725	1.93		79.2	a
499.00 > 99.00	2.102	2.094	0.008	1.000	27388		6.20(0.00-0.00)	45.0	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2361059	28.7		2774	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.117	0.0	1.000	34810	0.4391		4.5	M
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.253	0.008	1.000	789573	9.87		7977	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_063.d

Injection Date: 13-Apr-2018 03:06:31

Instrument ID: A8_N

Lims ID: 320-37675-A-20-A

Lab Sample ID: 320-37675-20

Client ID: NAWC-032819-RW-138

Operator ID: SACINSTLCMS01

ALS Bottle#: 47

Worklist Smp#: 35

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

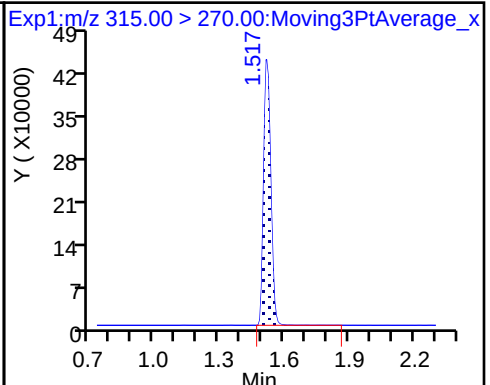
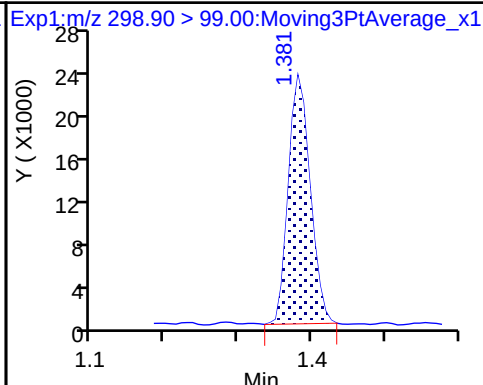
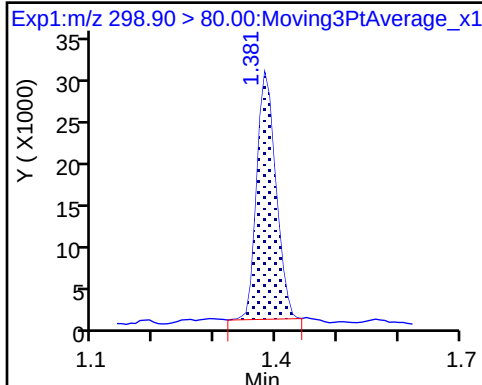
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

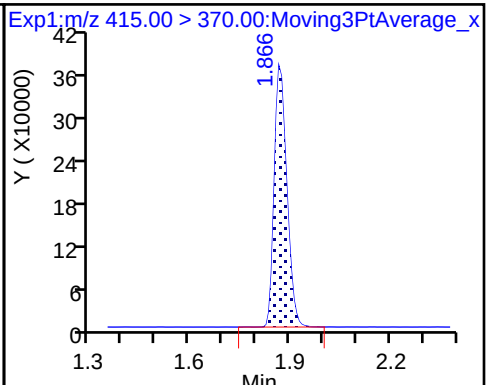
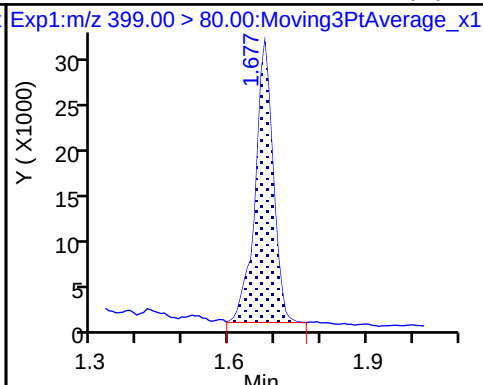
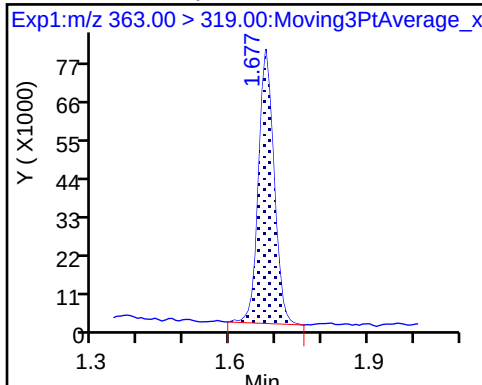
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid (M)

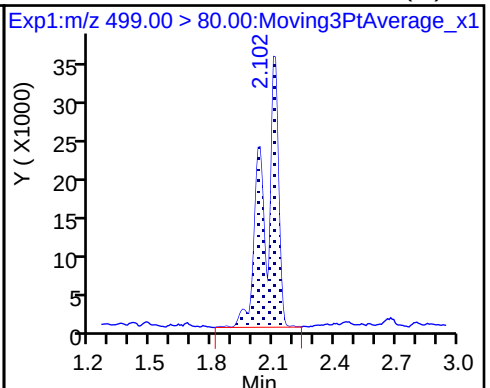
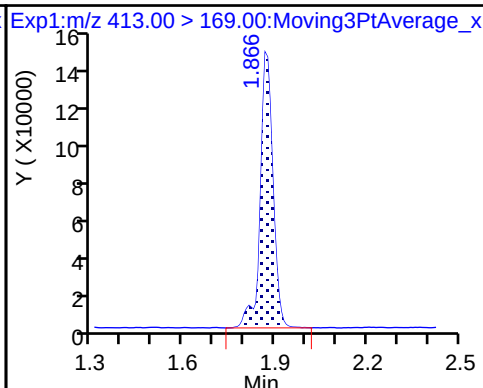
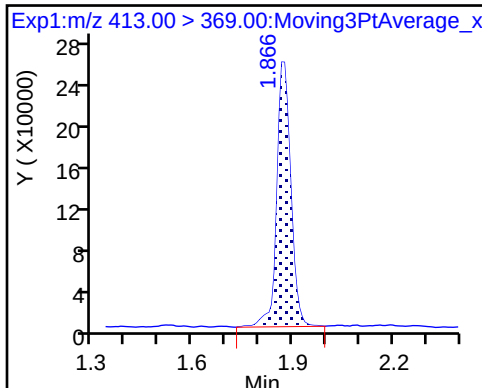
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

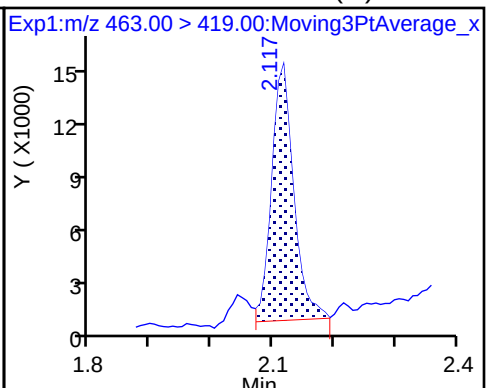
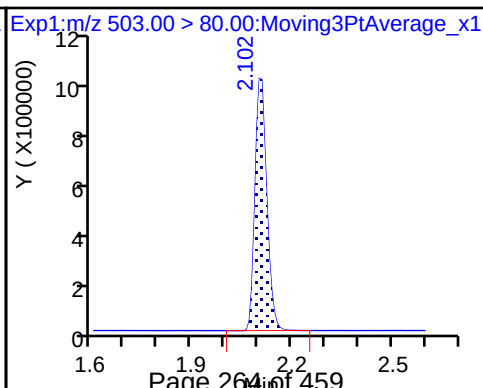
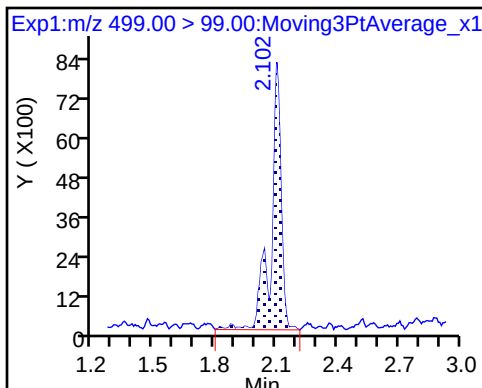
8 Perfluorooctane sulfonic acid (M)



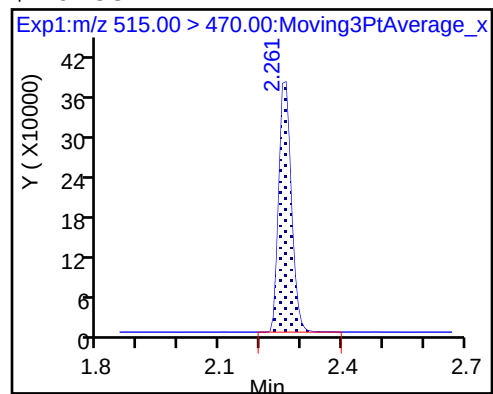
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_063.d
Lims ID: 320-37675-A-20-A
Client ID: NAWC-032819-RW-138
Sample Type: Client
Inject. Date: 13-Apr-2018 03:06:31 ALS Bottle#: 47 Worklist Smp#: 35
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-20-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 10:11:31

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.80	98.02
\$ 10 13C2 PFDA	10.0	9.87	98.66

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_063.d

Injection Date: 13-Apr-2018 03:06:31

Instrument ID: A8_N

Lims ID: 320-37675-A-20-A

Lab Sample ID: 320-37675-20

Client ID: NAWC-032819-RW-138

Operator ID: SACINSTLCMS01

ALS Bottle#: 47 Worklist Smp#: 35

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

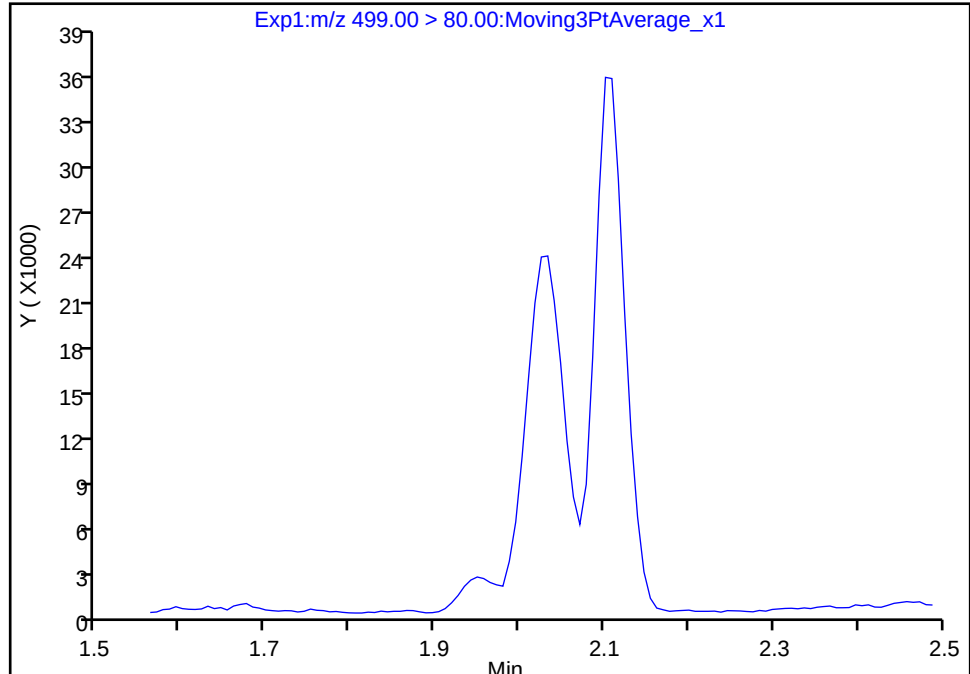
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

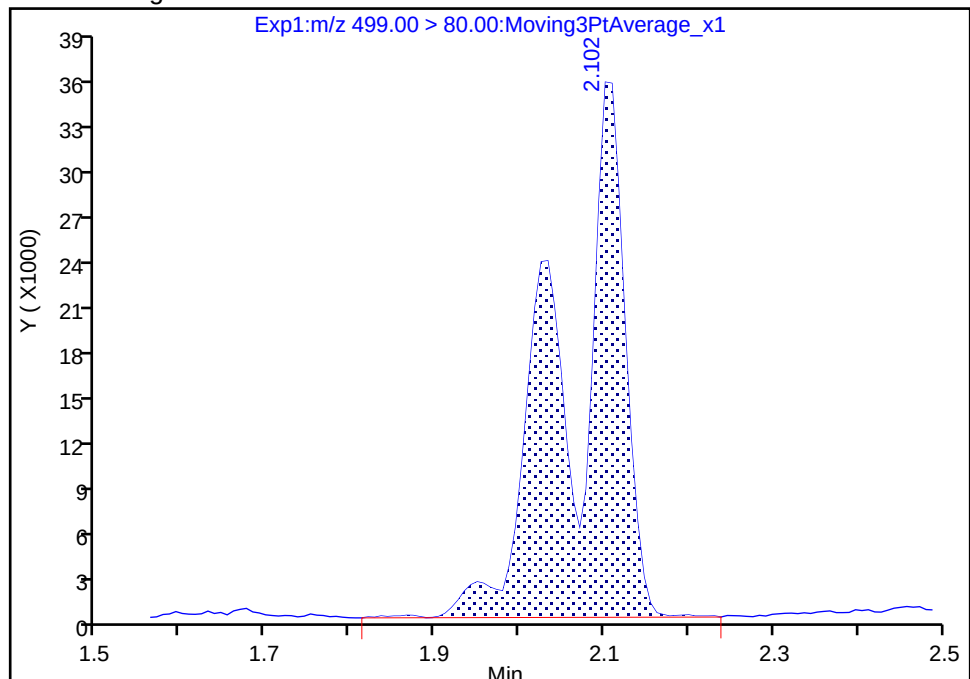
Not Detected

Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.10

Area: 169725

Amount: 1.933888

Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 10:11:01

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

TestAmerica Sacramento

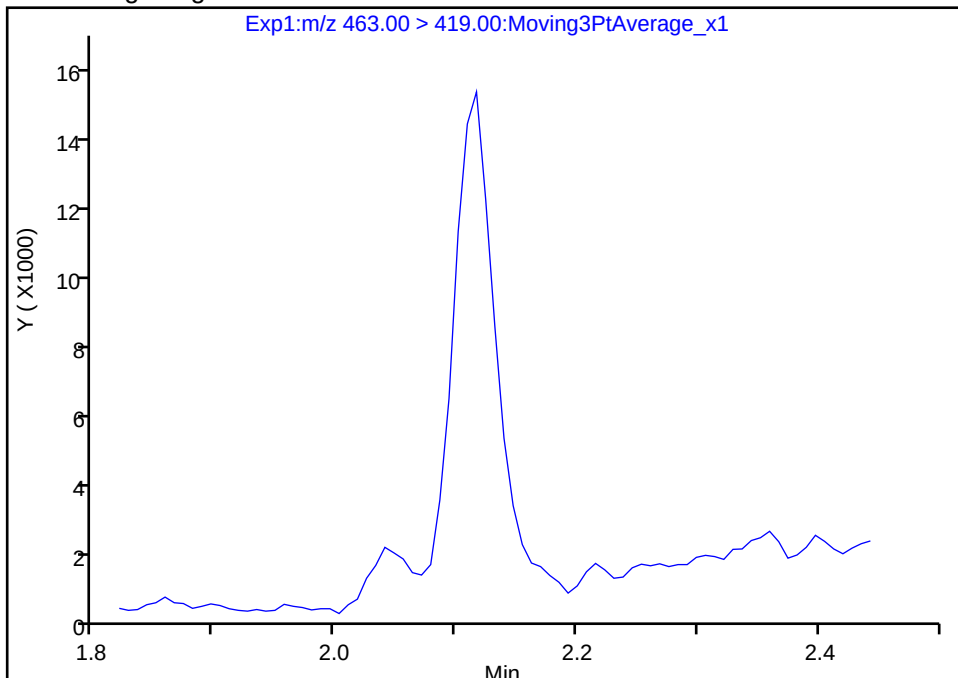
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_063.d				
Injection Date:	13-Apr-2018 03:06:31	Instrument ID:	A8_N		
Lims ID:	320-37675-A-20-A	Lab Sample ID:	320-37675-20		
Client ID:	NAWC-032819-RW-138				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	47	Worklist Smp#:	35
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

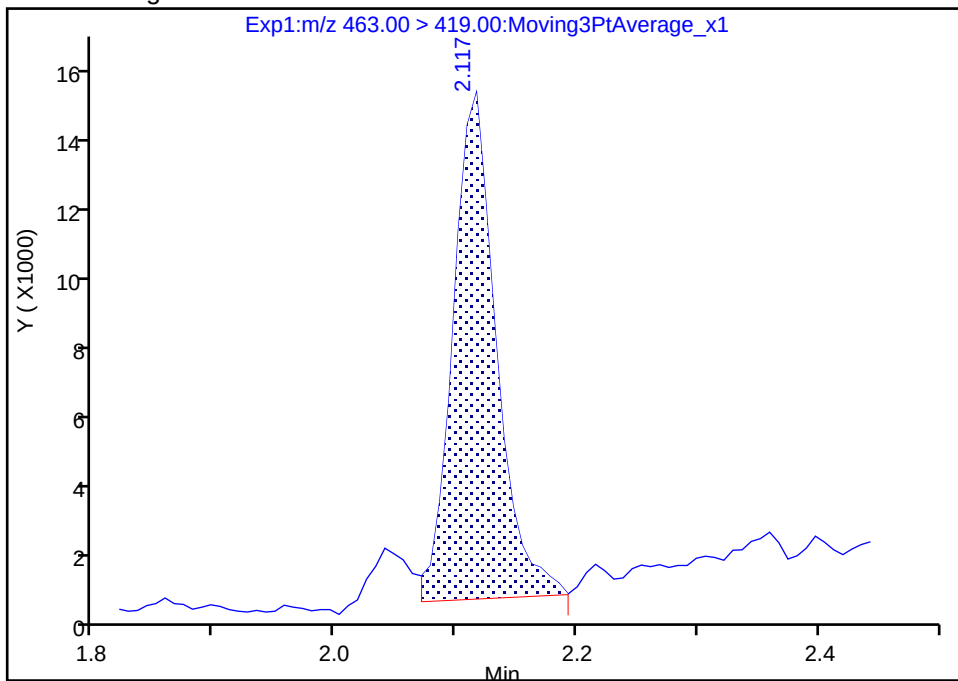
Signal: 1

Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results



RT: 2.12
Area: 34810
Amount: 0.439118
Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 10:11:14
Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_063.d

Injection Date: 13-Apr-2018 03:06:31

Instrument ID: A8_N

Lims ID: 320-37675-A-20-A

Lab Sample ID: 320-37675-20

Client ID: NAWC-032819-RW-138

Operator ID: SACINSTLCMS01

ALS Bottle#: 47 Worklist Smp#: 35

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

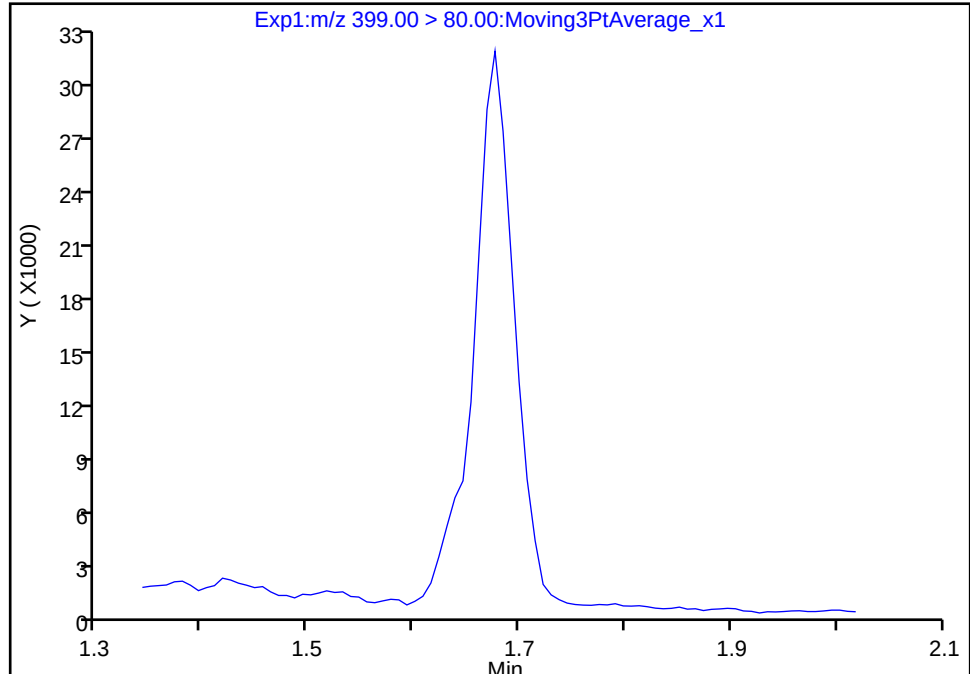
3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

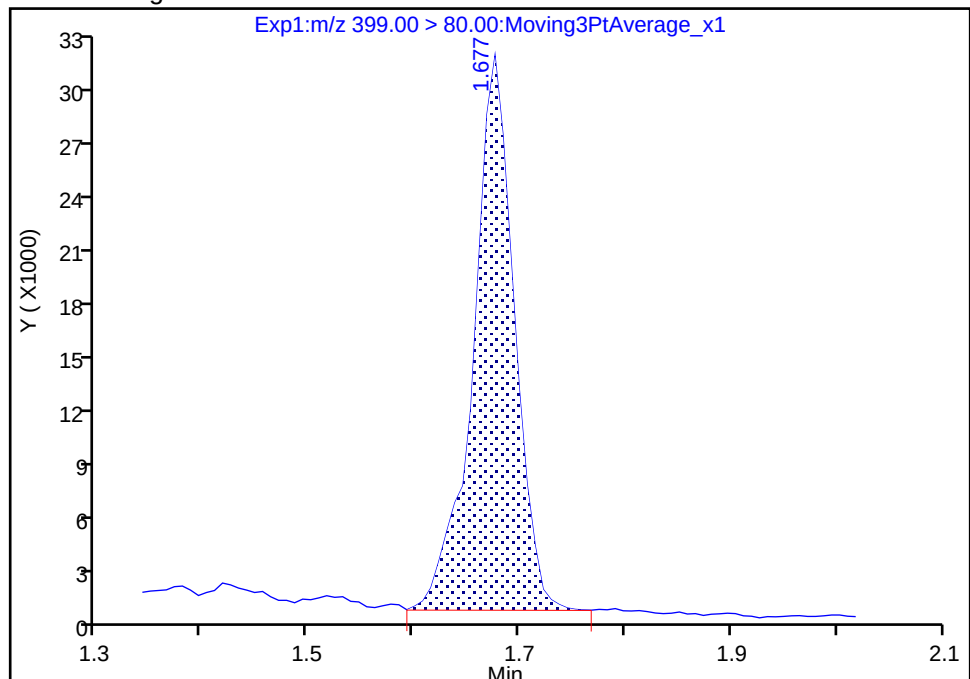
Not Detected

Expected RT: 1.68

Processing Integration Results



Manual Integration Results



RT: 1.68

Area: 82557

Amount: 0.610650

Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 10:10:51

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-032819-FRB-138</u>	Lab Sample ID: <u>320-37675-21</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_064.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 13:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:19</u>
Sample wt/vol: <u>253.2 (mL)</u>	Date Analyzed: <u>04/13/2018 03:11</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>217820</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	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.9	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	89	36	16

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_064.d
 Lims ID: 320-37675-A-21-A
 Client ID: NAWC-032819-FRB-138
 Sample Type: Client
 Inject. Date: 13-Apr-2018 03:11:13 ALS Bottle#: 48 Worklist Smp#: 36
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-21-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	940922	9.57		10025	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.874	-0.008		924480	10.0		5769	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2293177	28.7		4338	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	717455	9.13		7103	

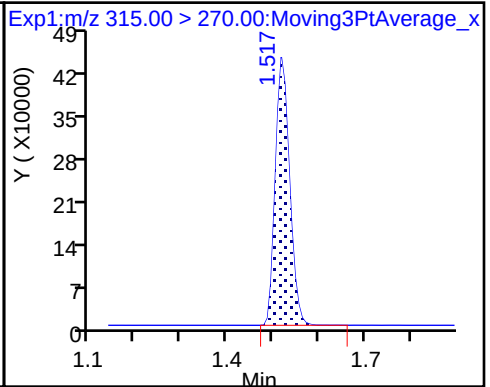
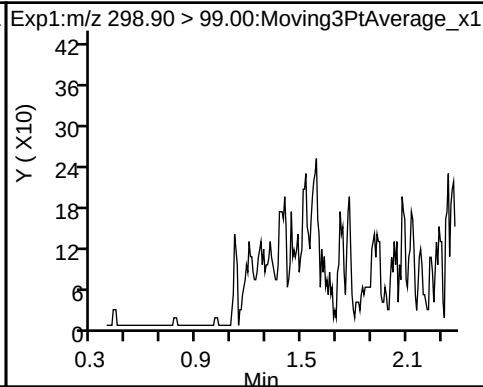
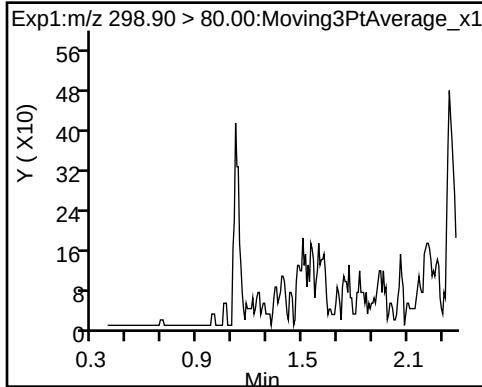
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_064.d
Injection Date: 13-Apr-2018 03:11:13 Instrument ID: A8_N
Lims ID: 320-37675-A-21-A Lab Sample ID: 320-37675-21
Client ID: NAWC-032819-FRB-138
Operator ID: SACINSTLCMS01 ALS Bottle#: 48 Worklist Smp#: 36
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

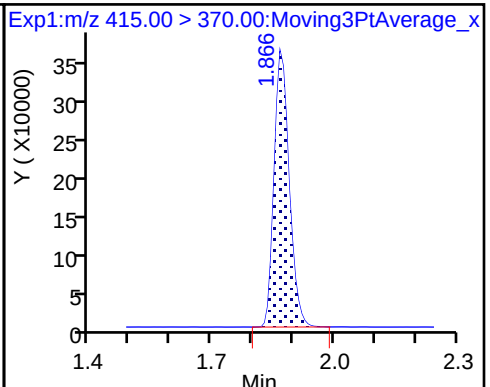
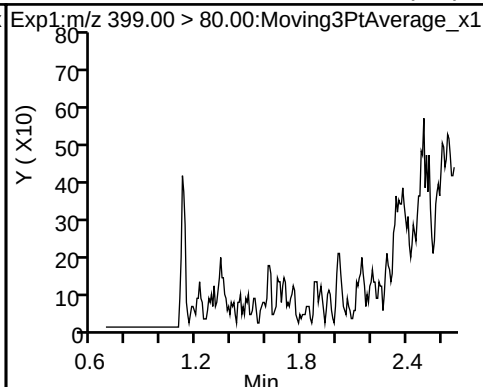
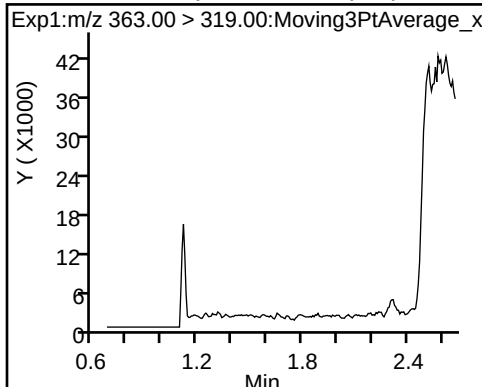
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

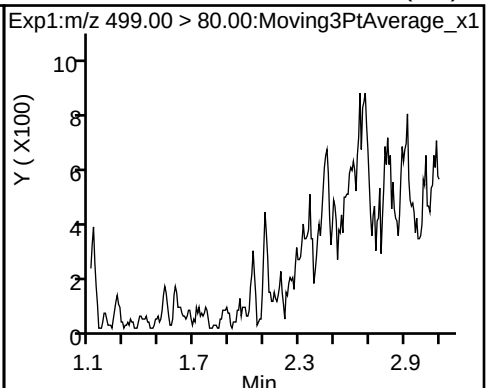
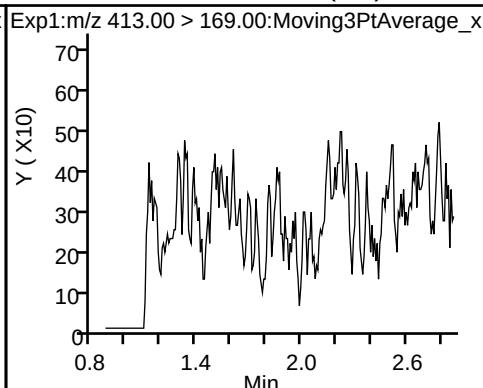
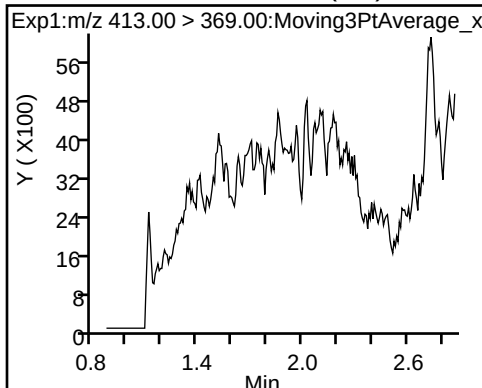
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

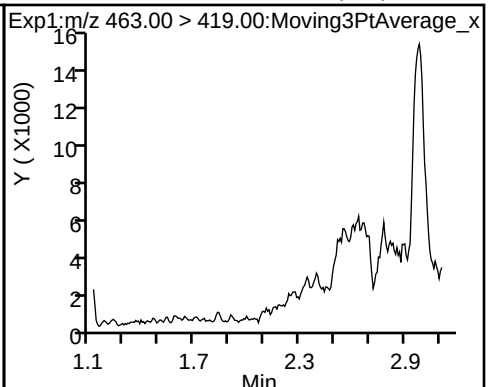
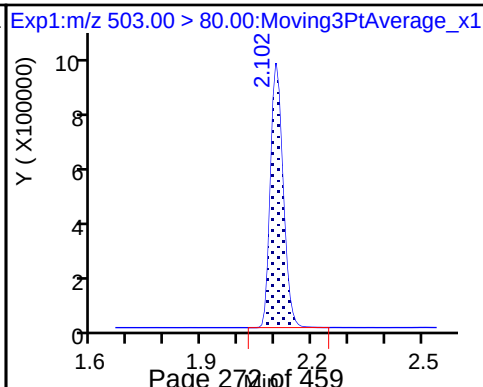
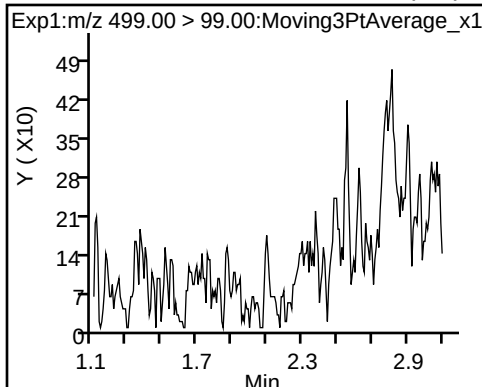
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

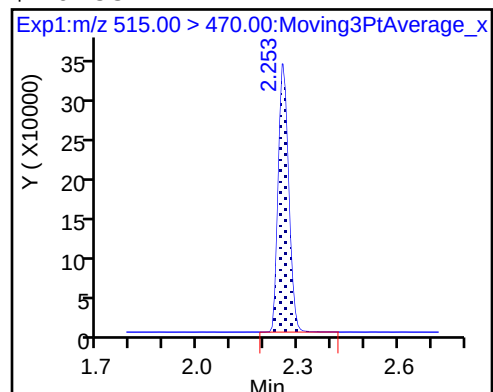


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_064.d
Lims ID: 320-37675-A-21-A
Client ID: NAWC-032819-FRB-138
Sample Type: Client
Inject. Date: 13-Apr-2018 03:11:13 ALS Bottle#: 48 Worklist Smp#: 36
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-21-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.57	95.73
\$ 10 13C2 PFDA	10.0	9.13	91.25

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

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1 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.: 320-37675-1 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.: 320-37675-1 Analy Batch No.: 217453

SDG No.: _____

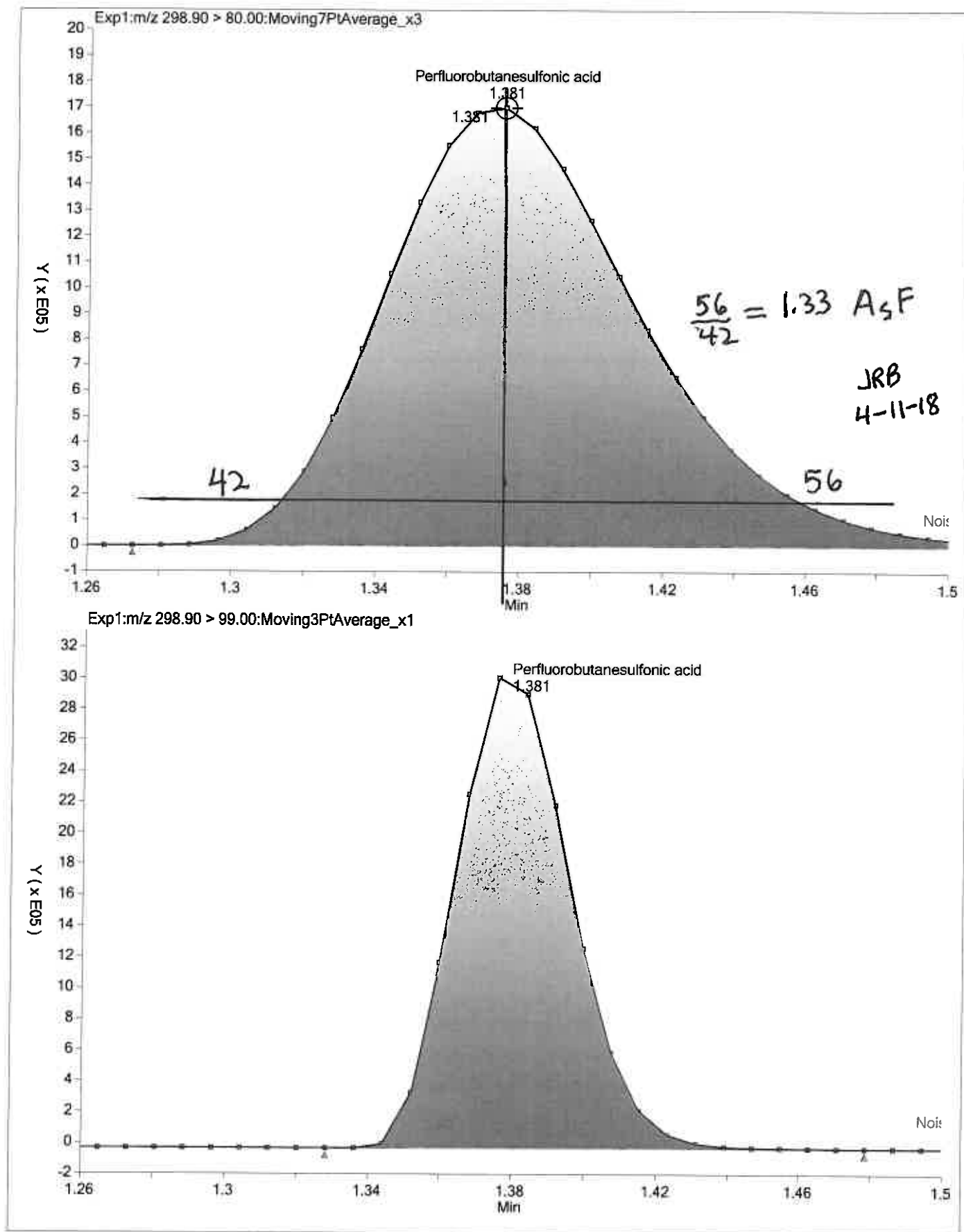
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

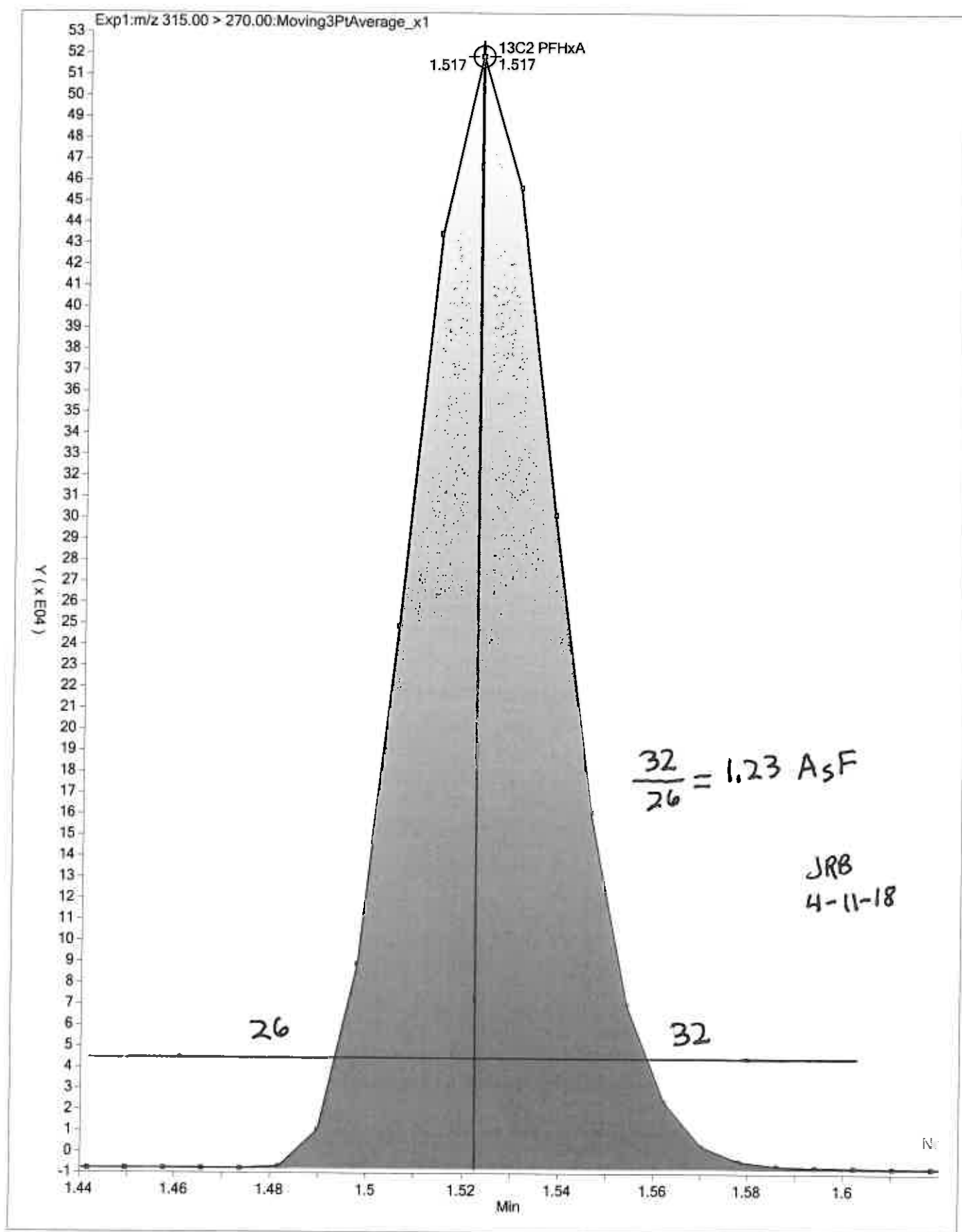
Calibration Start Date: 04/11/2018 11:45 Calibration End Date: 04/11/2018 12:09 Calibration ID: 38530

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	2343443 90.8
# 2 RB	11-Apr-2018 11:41:06			937814 91.3	2225117 86.2
IS Std					
# 3 IC L1	11-Apr-2018 11:45:47	1.52	2.26	1044020> 100.0*	2429483> 100.0*
# 4 IC L2	11-Apr-2018 11:50:27	1.51	2.26	921915> 88.3*	2220259> 91.4*
# 5 IC L3	11-Apr-2018 11:55:08	1.52	2.26	945031> 90.5*	2380125> 98.0*
# 6 IC L4	11-Apr-2018 11:59:48	1.52	2.26	996809> 95.5*	2440107> 100.4*
# 7 IC L5	11-Apr-2018 12:04:29	1.52	2.26	929546> 89.0*	2283311> 94.0*
# 8 IC L6	11-Apr-2018 12:09:09	1.51	2.25	982926> 94.1*	2316327> 95.3*
IS Std				945031 1.87	2380125 2.11
# 9 RB	11-Apr-2018 12:13:50			919421 97.3	2344246 98.5
IS Std				996809 1.87	2440107 2.10
#10 CCVL	11-Apr-2018 12:18:29	1.52	2.26	964533 96.8	2387973 97.9
IS Std				964533 1.87	2387973 2.10
#11 ICB	11-Apr-2018 12:23:10			943600 97.8	2246875 94.1
IS Std				996809 1.87	2440107 2.10
#12 ICV	11-Apr-2018 12:27:50	1.51	2.25	1123391 112.7	2710764 111.1

13C2-PFOA

$$RPD = \frac{1044020 - 921915}{\frac{1044020 + 921915}{2}} \times 100 = 12.4$$

13C4-PFOS

$$RPD = \frac{2440107 - 2220259}{\frac{2440107 + 2220259}{2}} \times 100 = 9.43$$

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

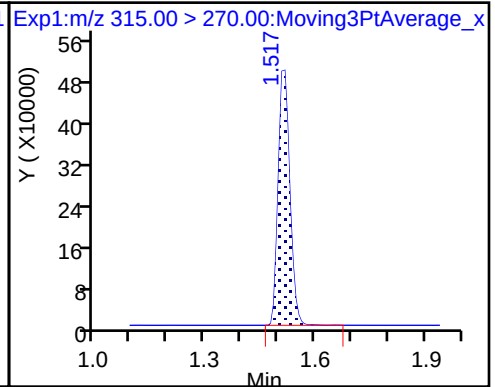
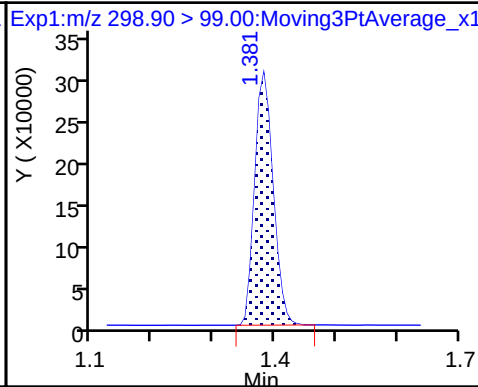
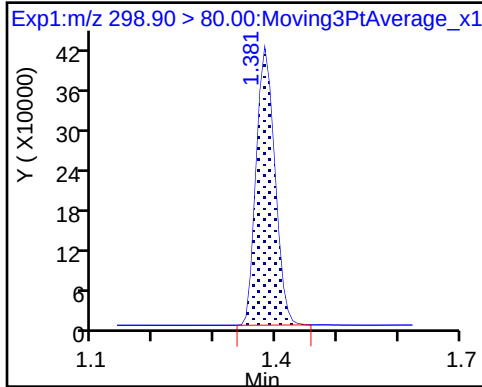
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

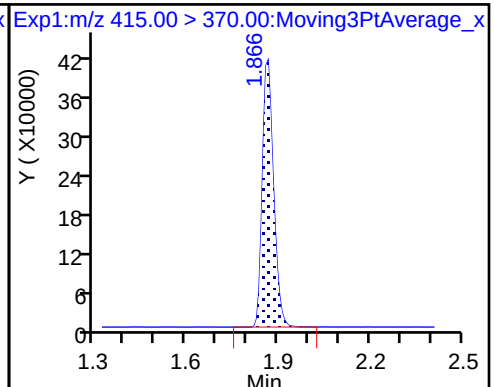
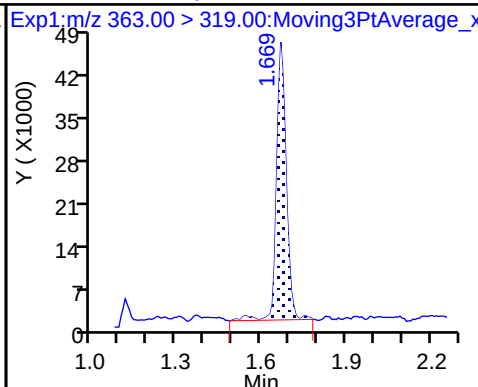
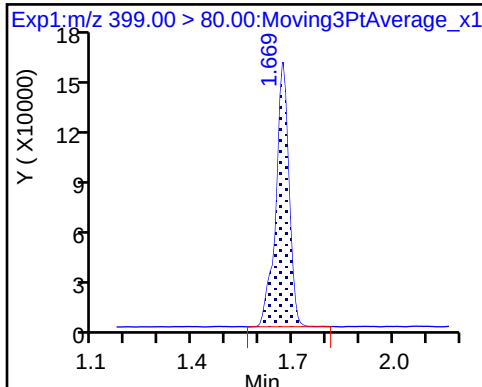
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

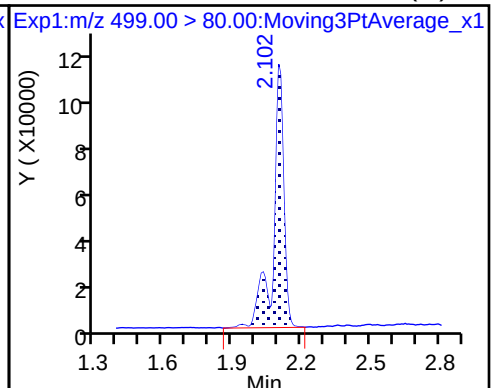
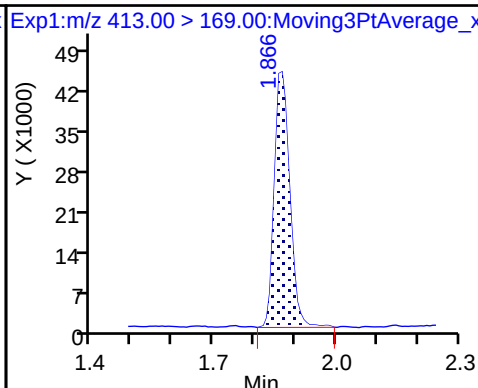
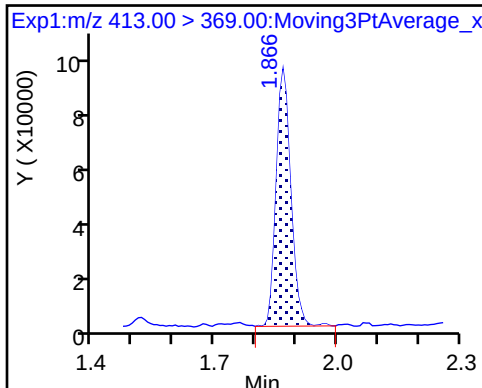
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

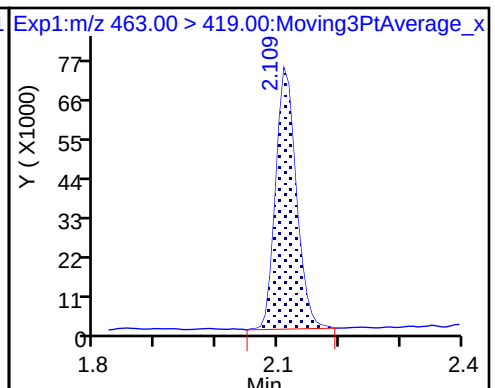
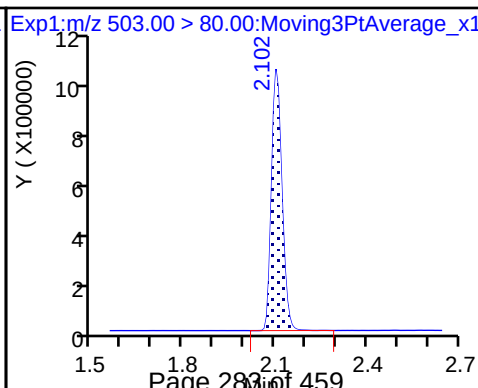
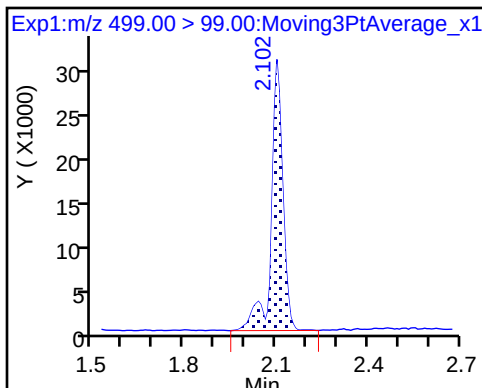
8 Perfluorooctane sulfonic acid (M)



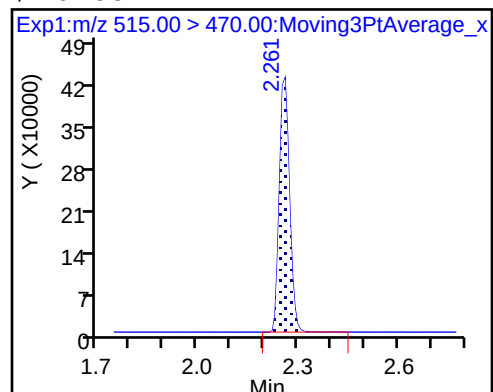
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

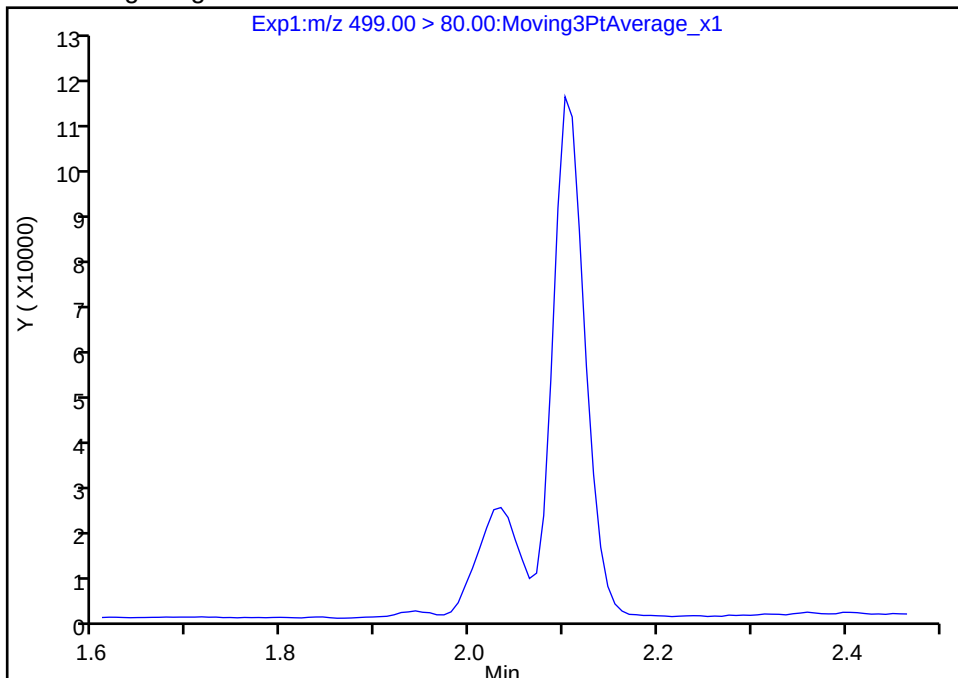
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_004.d
Injection Date: 11-Apr-2018 11:45:47 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: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

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

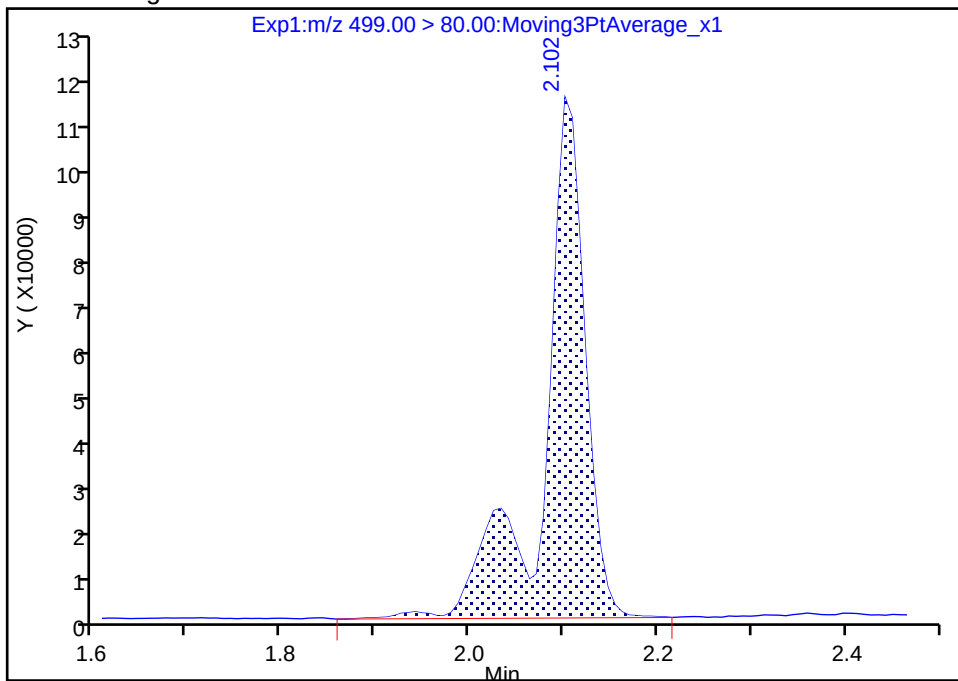
Signal: 1

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

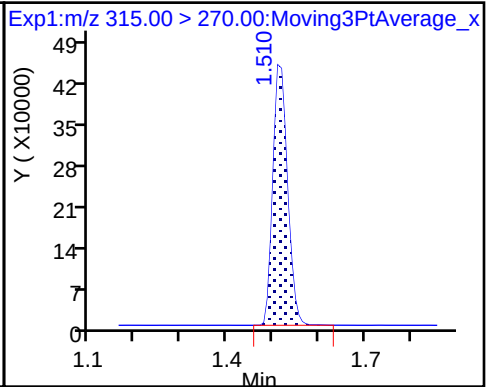
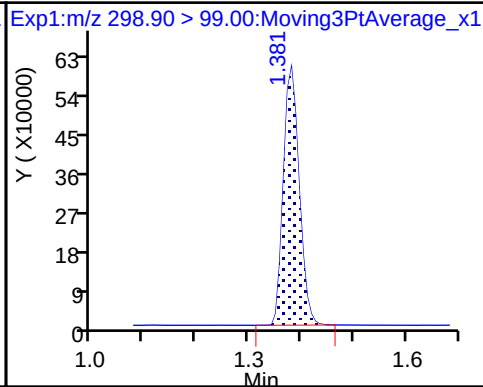
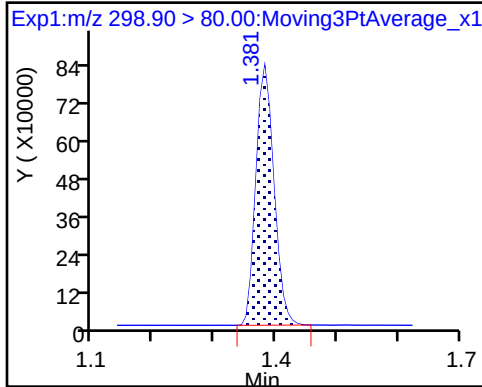
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

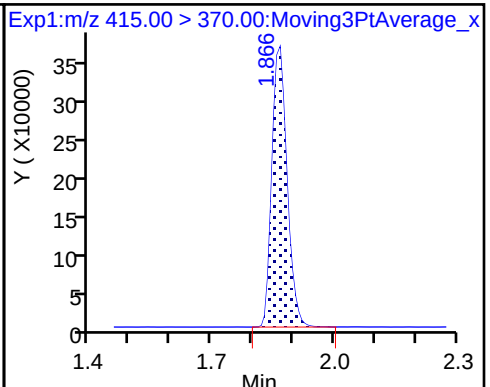
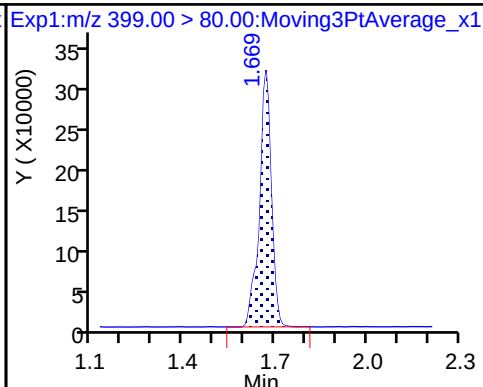
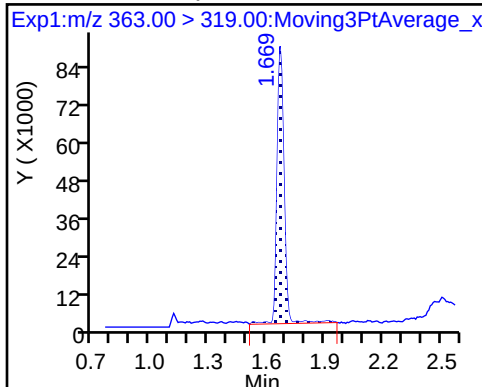
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

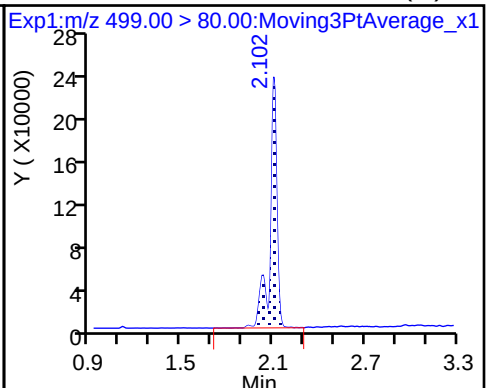
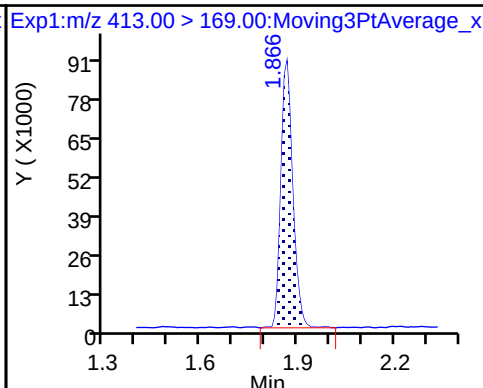
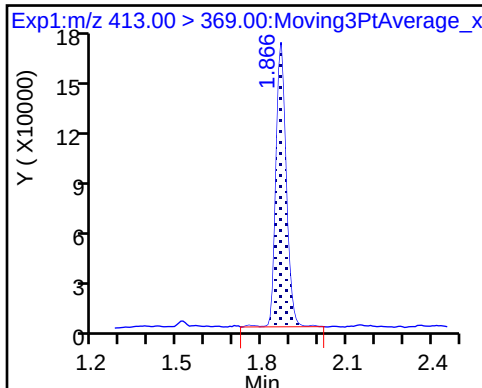
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

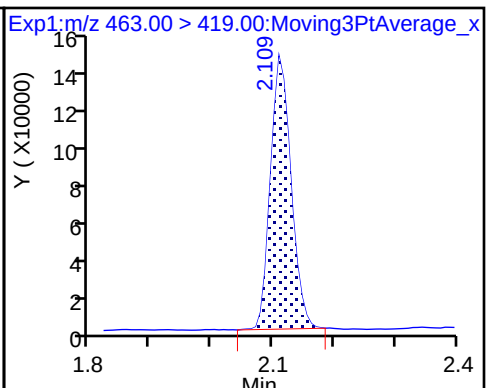
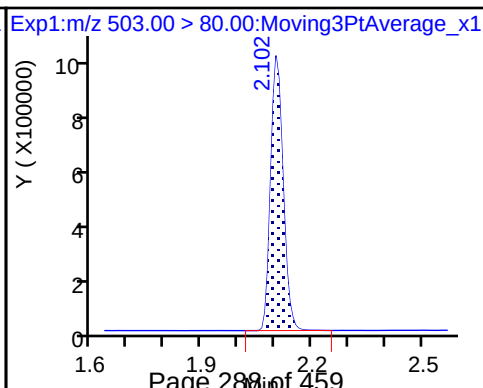
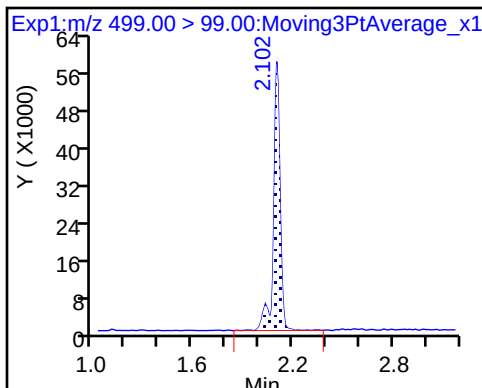
8 Perfluorooctane sulfonic acid (M)



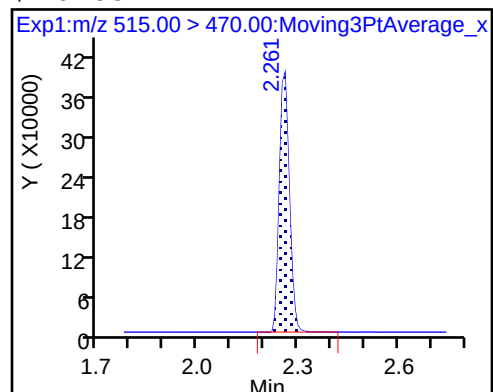
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

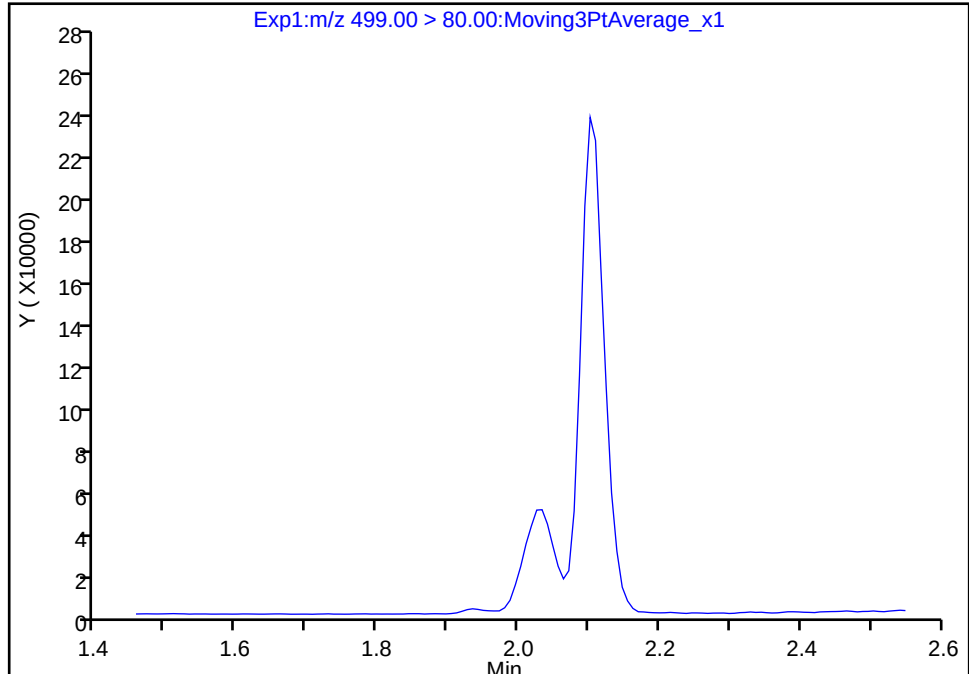
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_005.d
Injection Date: 11-Apr-2018 11:50:27 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: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

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

Signal: 1

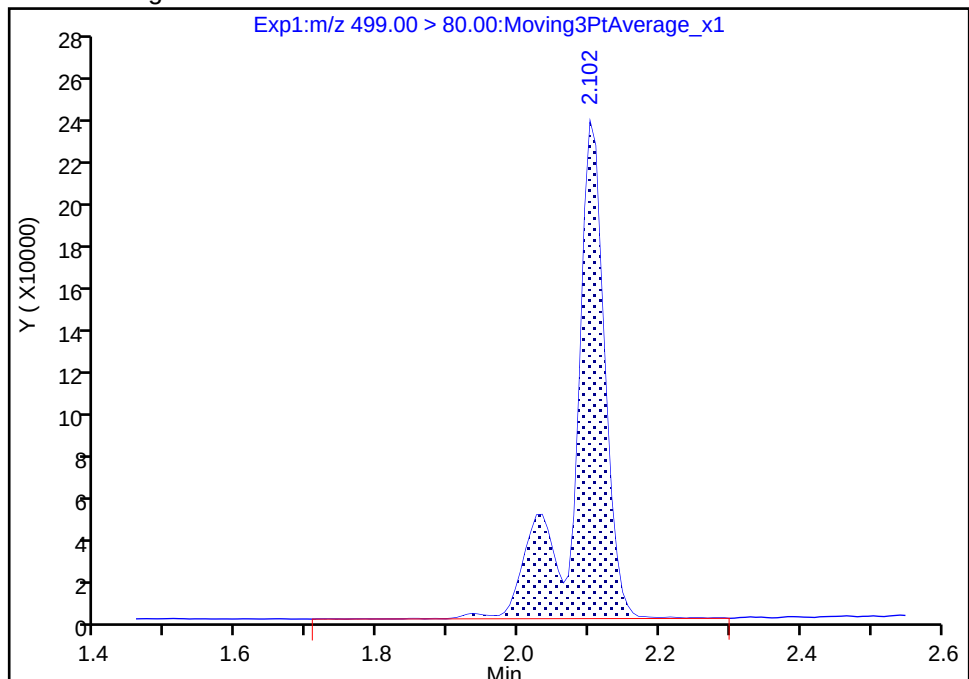
Not Detected
Expected RT: 2.09

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

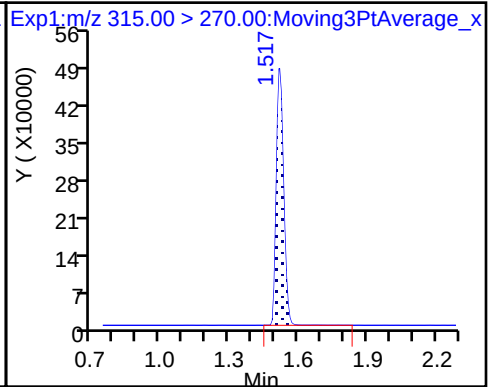
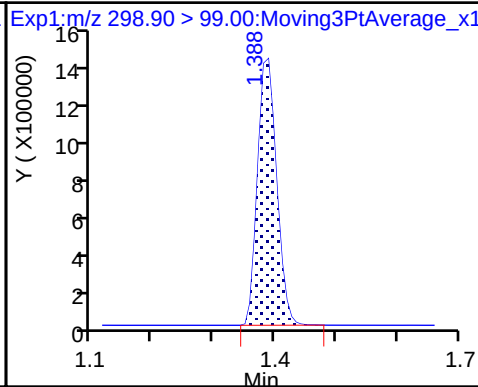
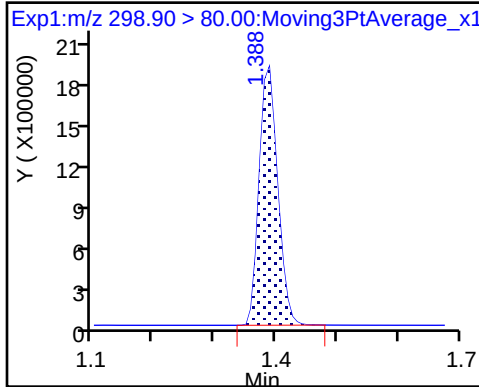
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

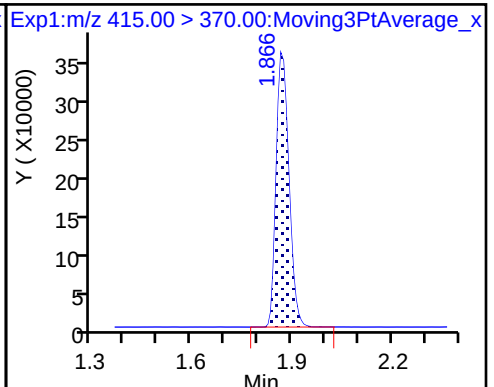
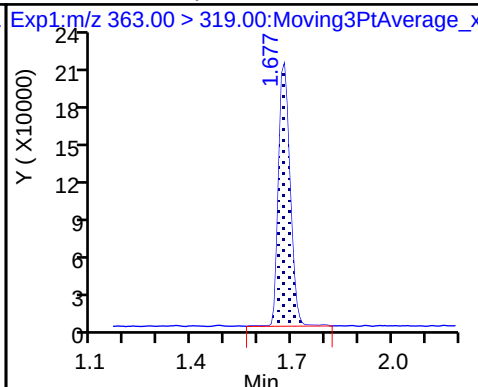
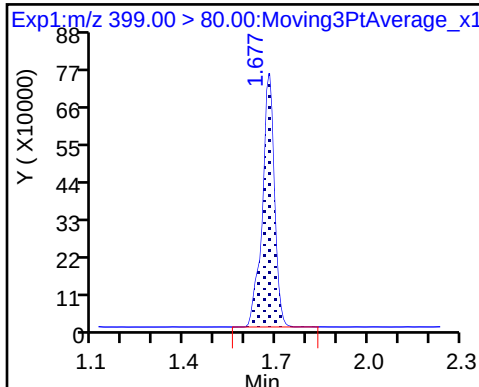
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

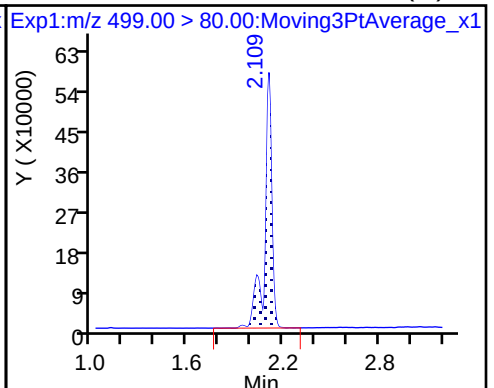
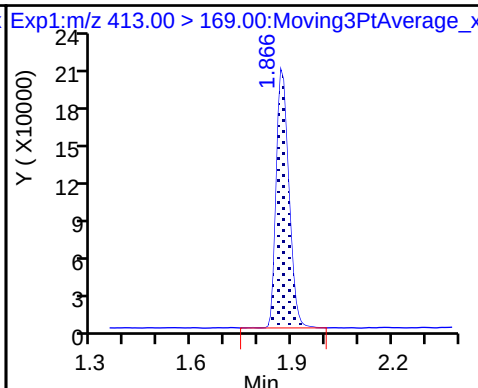
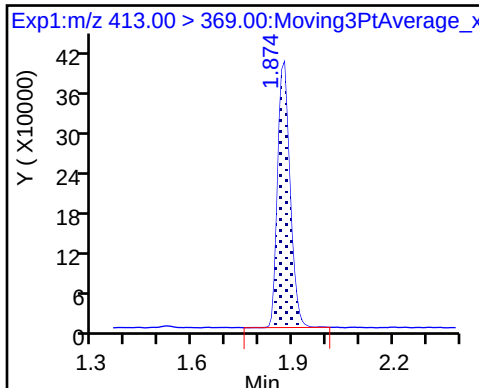
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

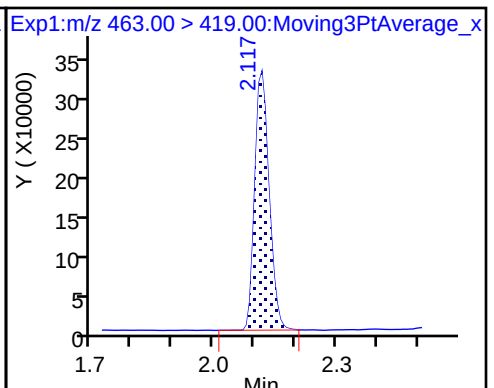
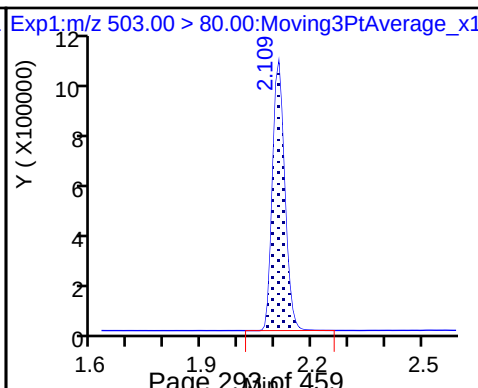
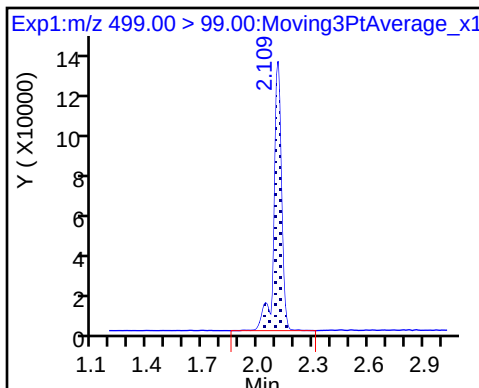
8 Perfluorooctane sulfonic acid (M)



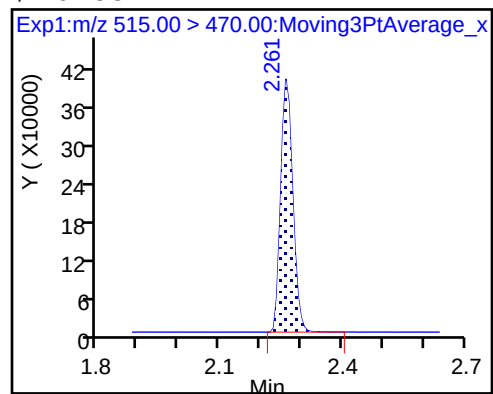
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

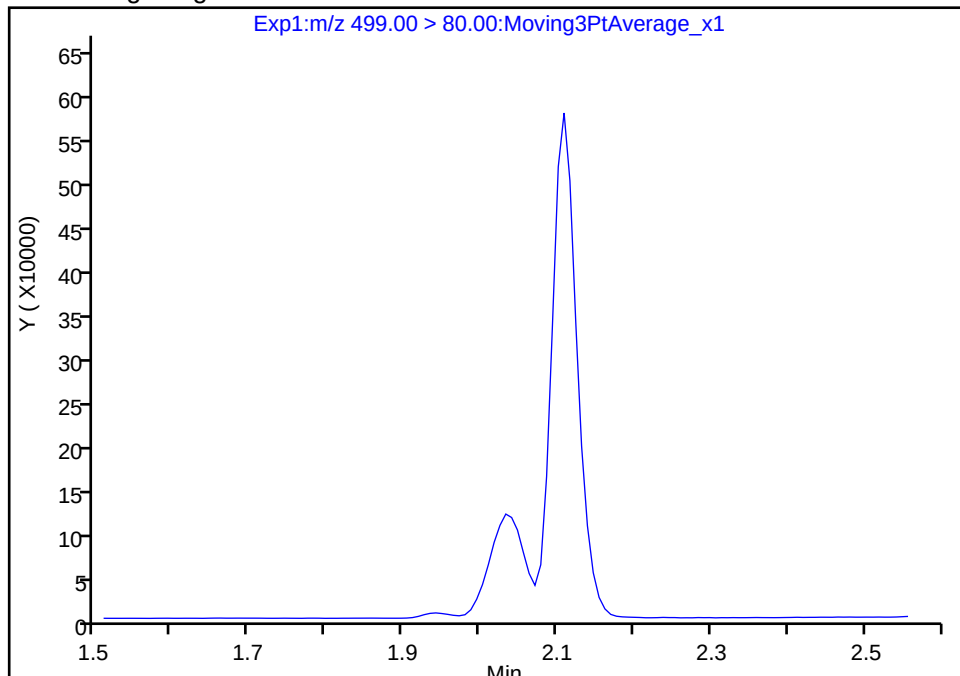
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_006.d
Injection Date: 11-Apr-2018 11:55:08 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: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

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

Signal: 1

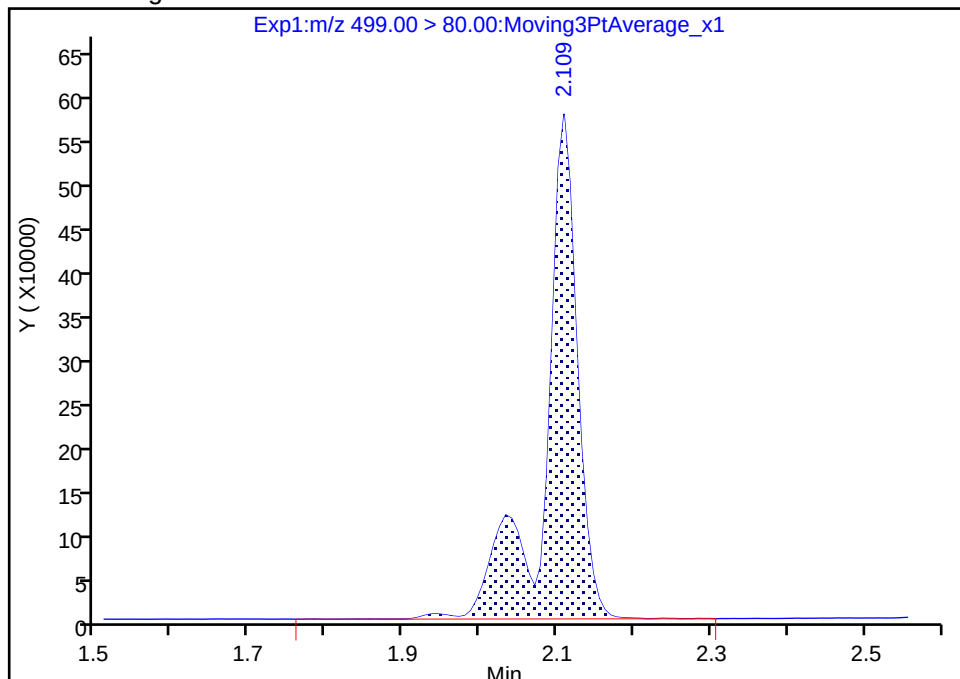
Not Detected
Expected RT: 2.09

Processing Integration Results



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

Manual Integration Results



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

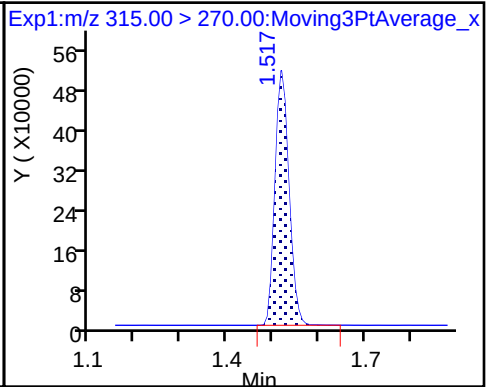
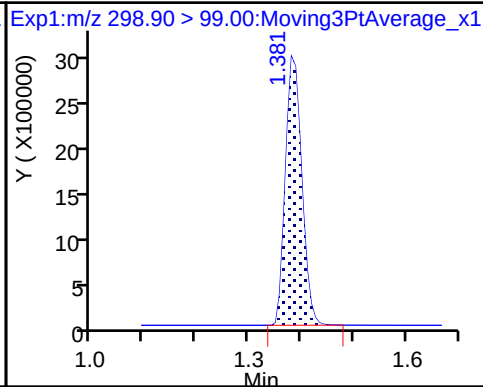
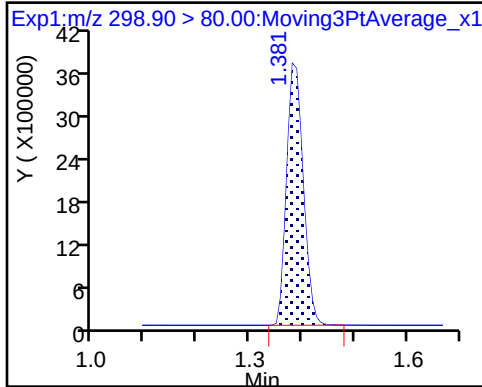
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

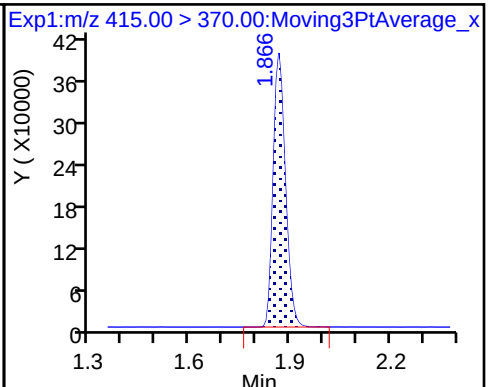
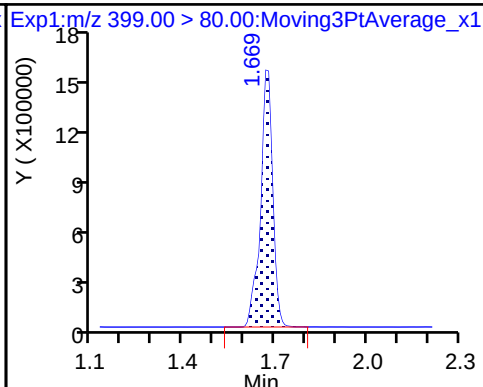
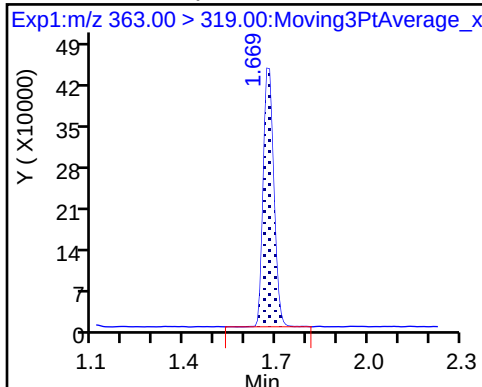
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

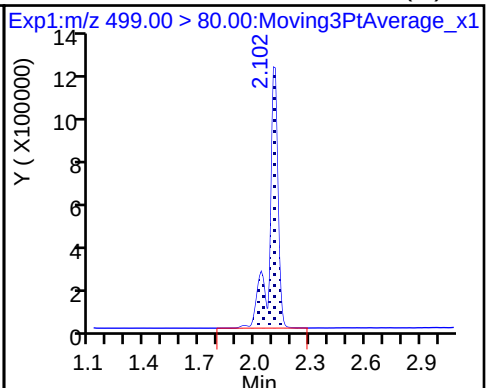
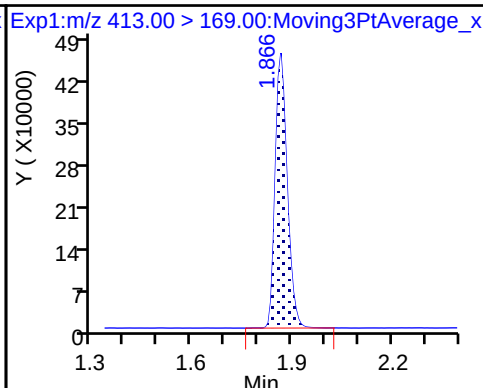
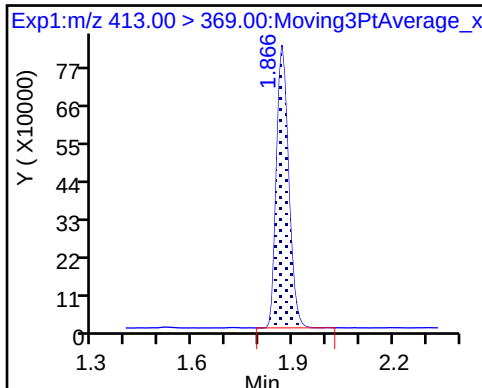
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

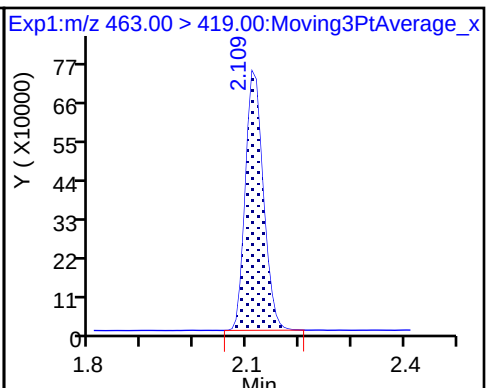
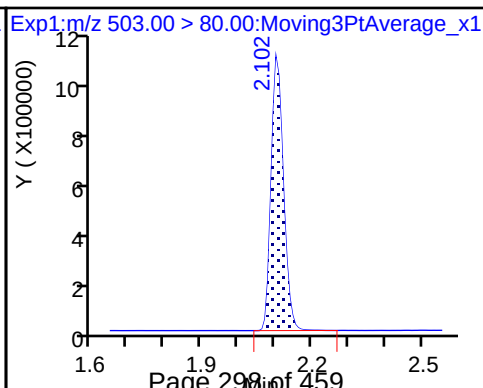
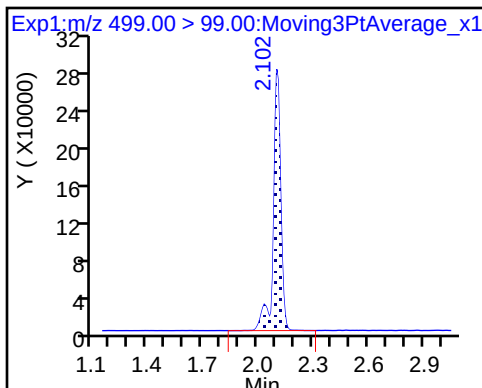
8 Perfluorooctane sulfonic acid (M)



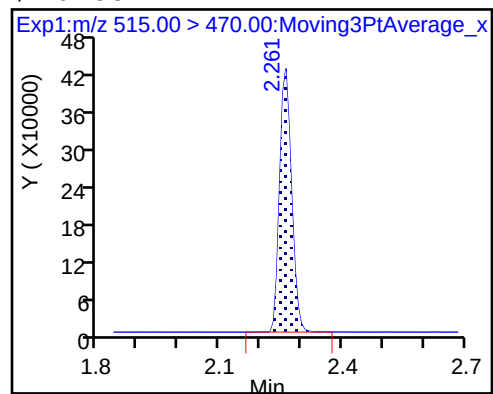
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

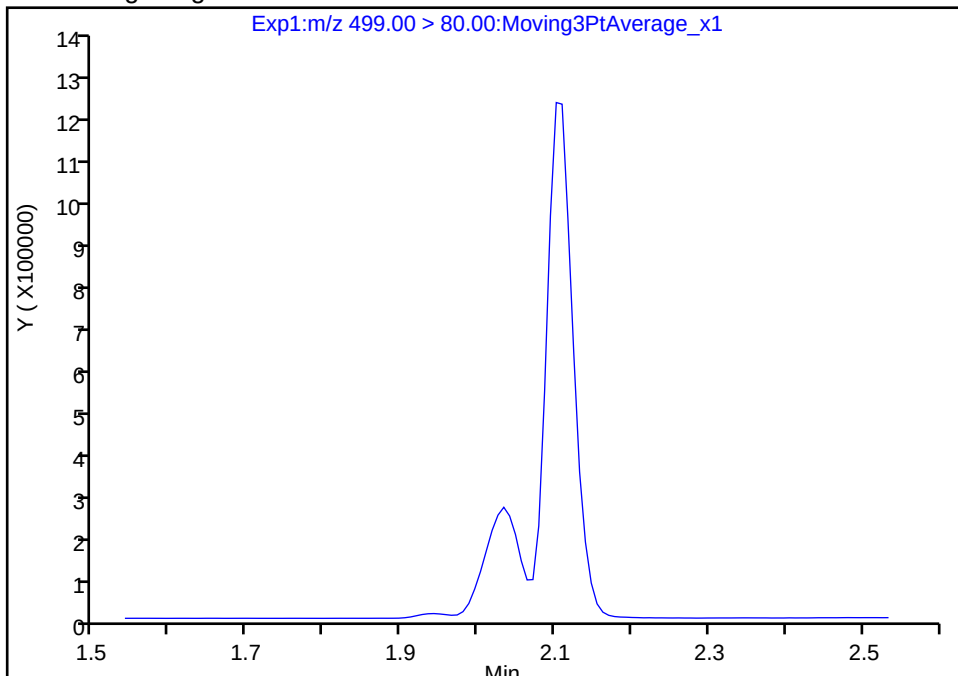
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_007.d
Injection Date: 11-Apr-2018 11:59:48 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: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

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

Signal: 1

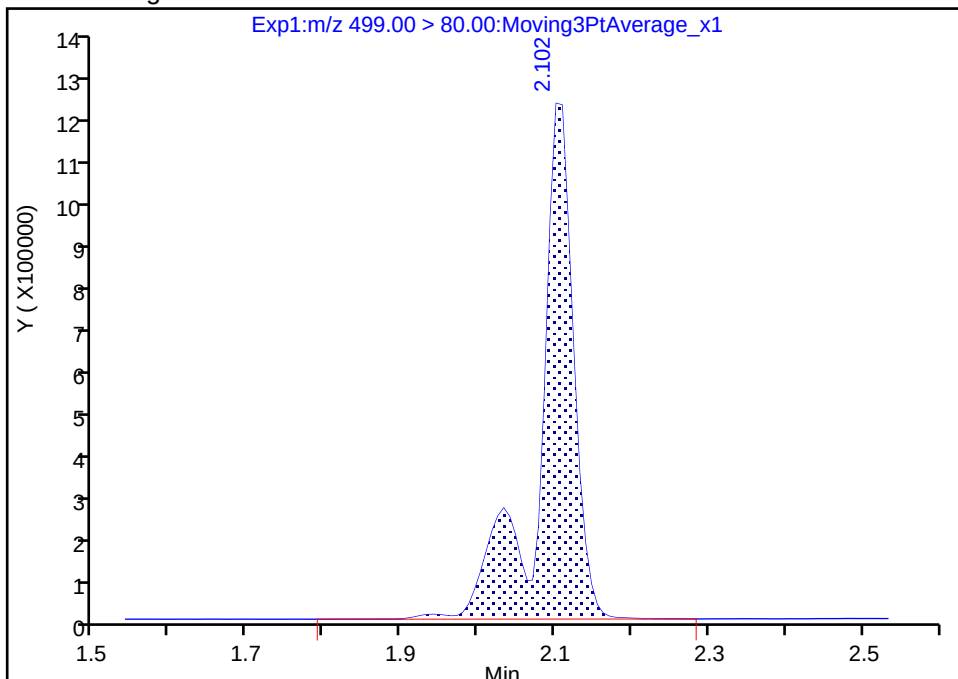
Not Detected
Expected RT: 2.09

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

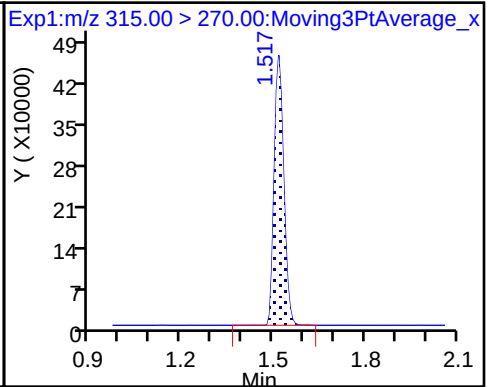
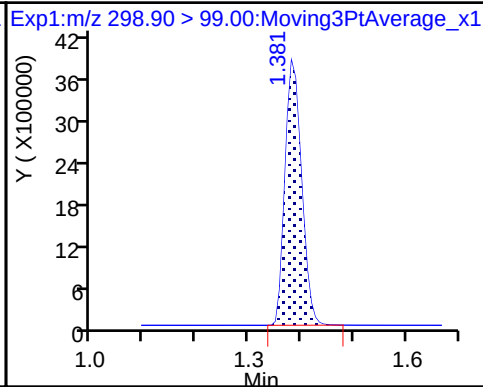
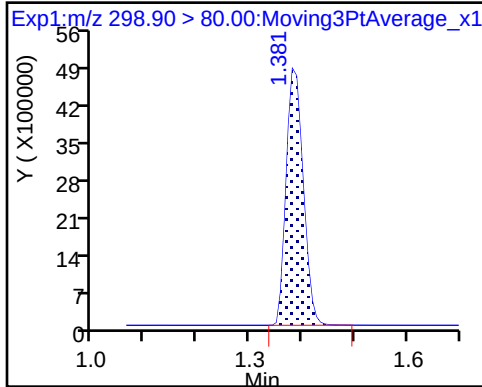
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

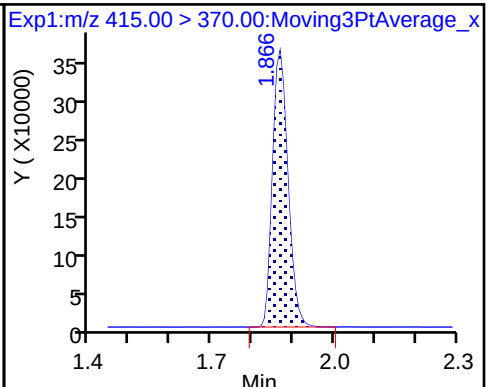
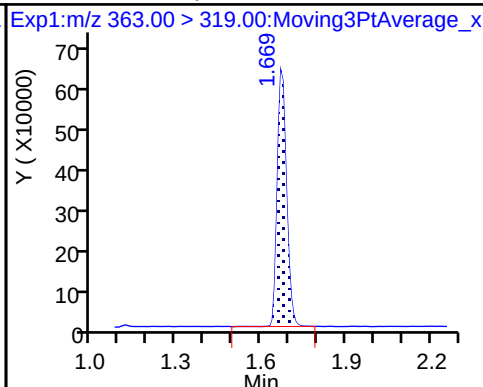
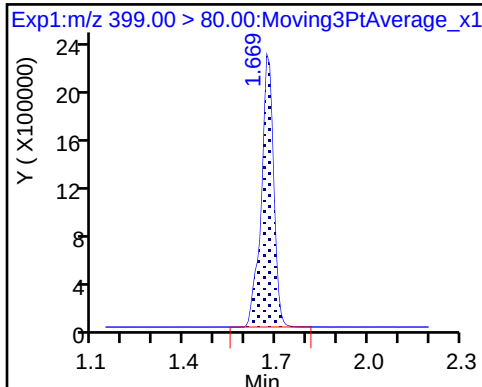
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

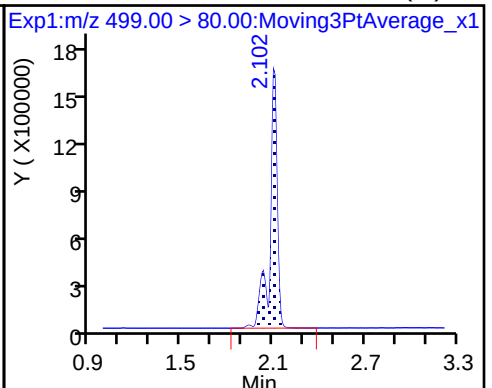
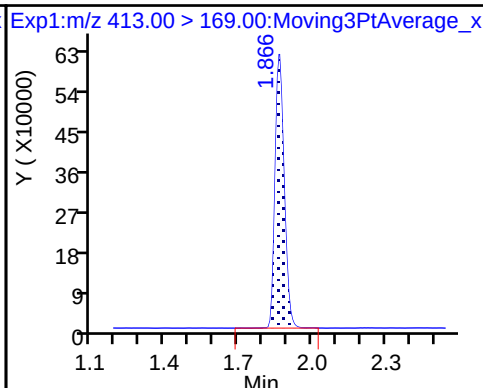
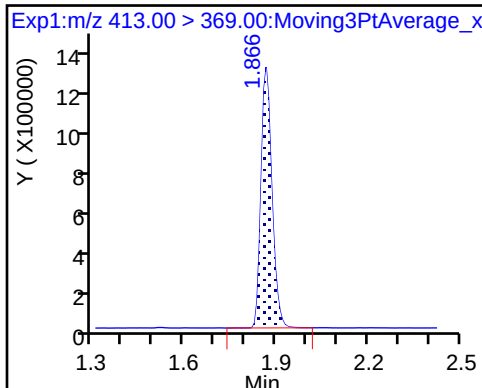
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

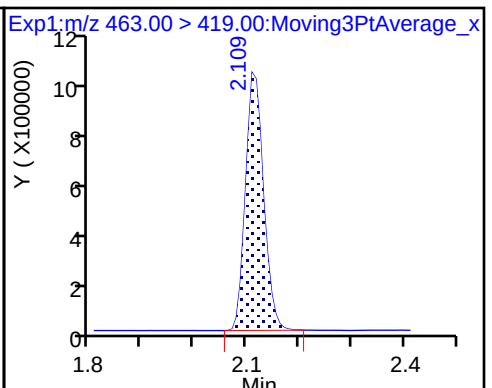
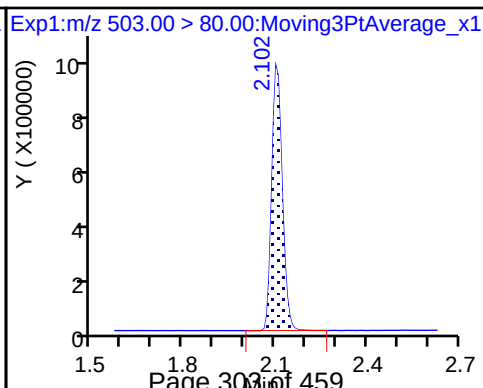
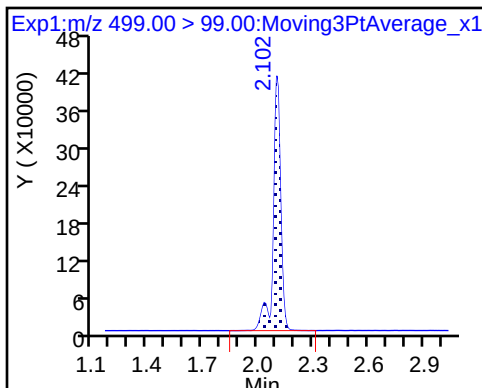
8 Perfluorooctane sulfonic acid (M)



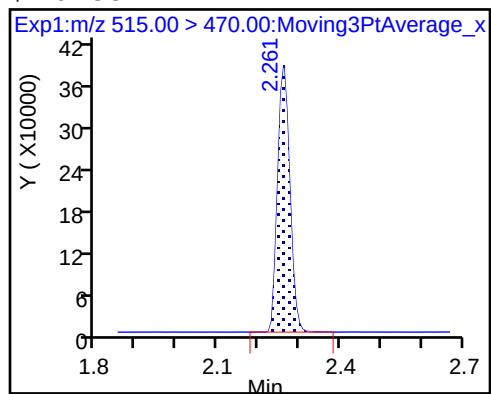
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

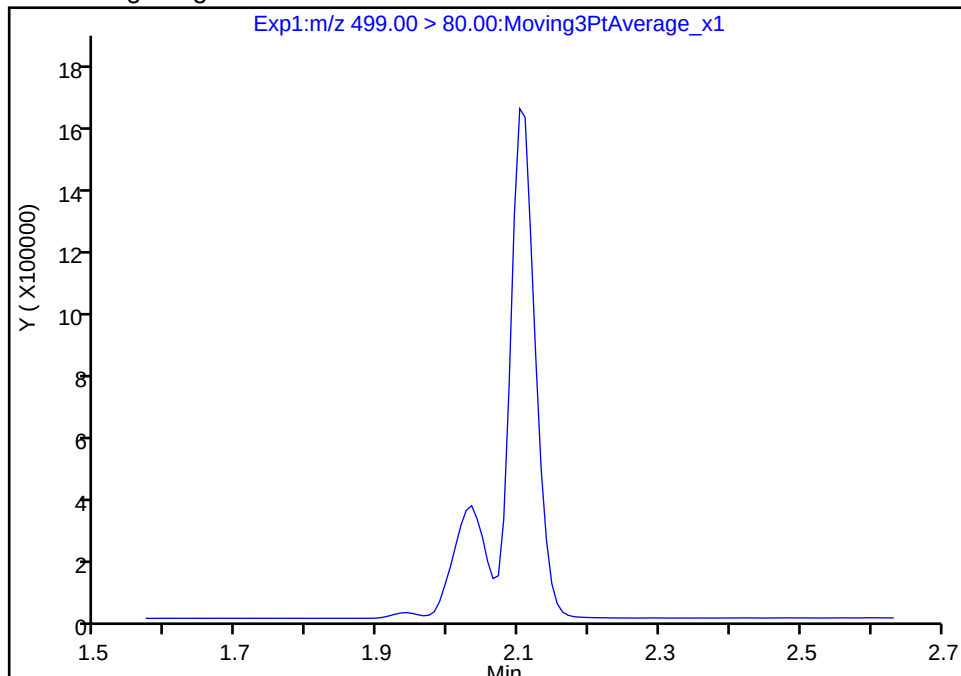
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_008.d
Injection Date: 11-Apr-2018 12:04:29 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: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

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

Signal: 1

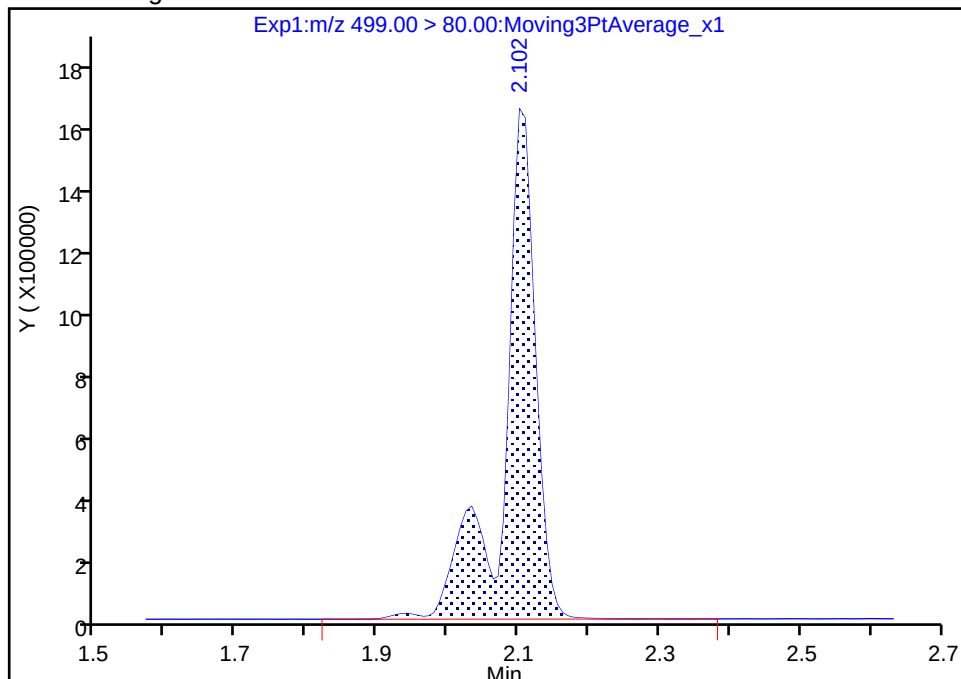
Not Detected
Expected RT: 2.09

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

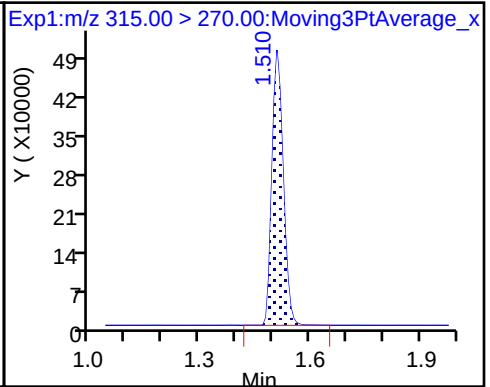
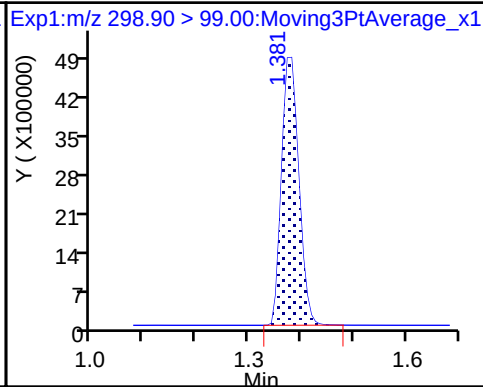
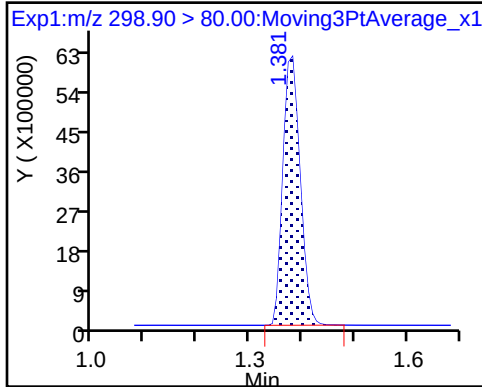
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

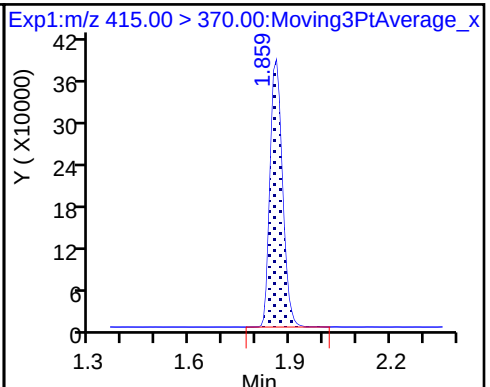
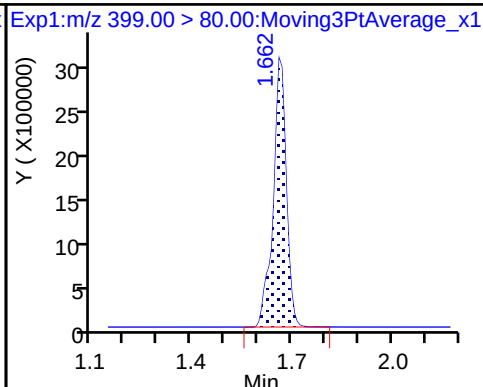
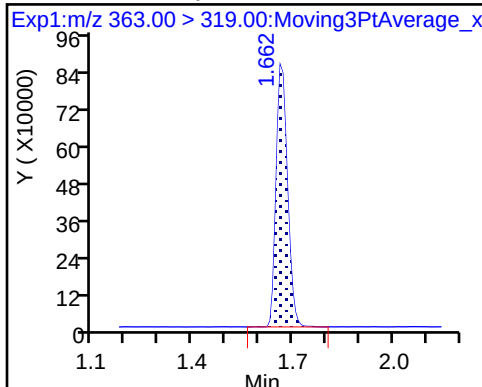
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

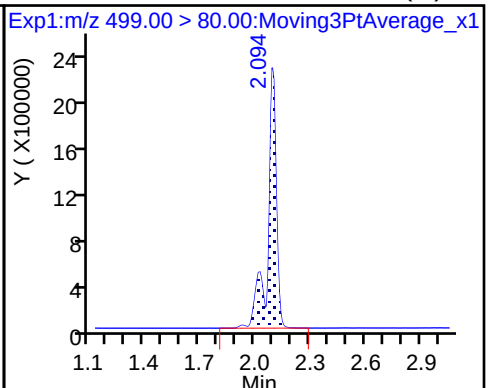
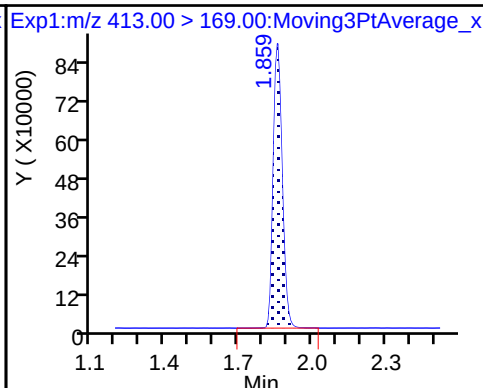
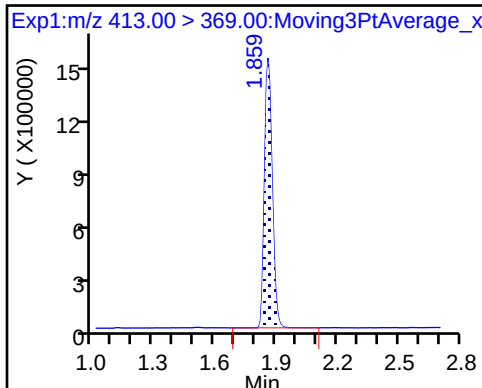
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

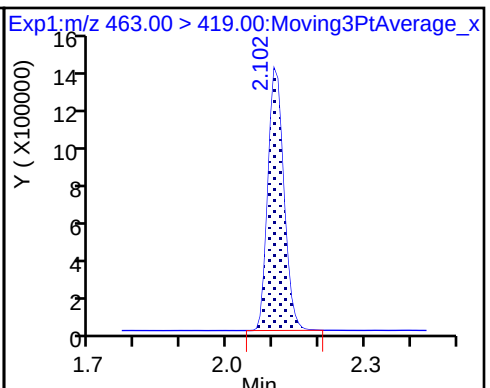
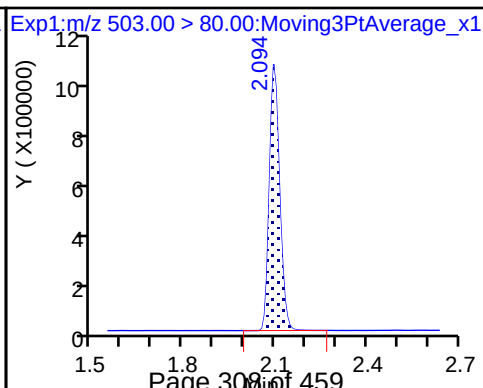
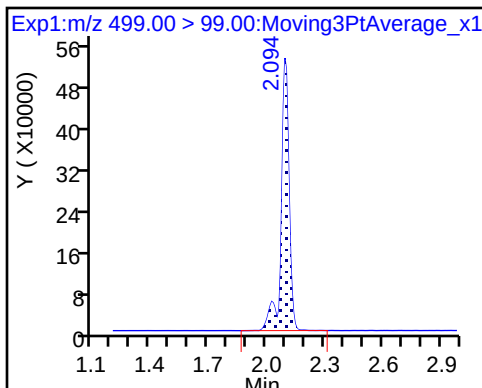
8 Perfluorooctane sulfonic acid (M)



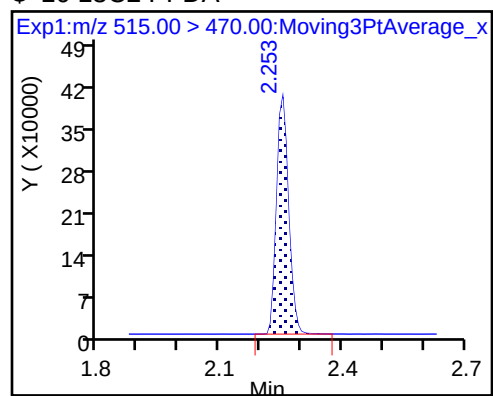
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

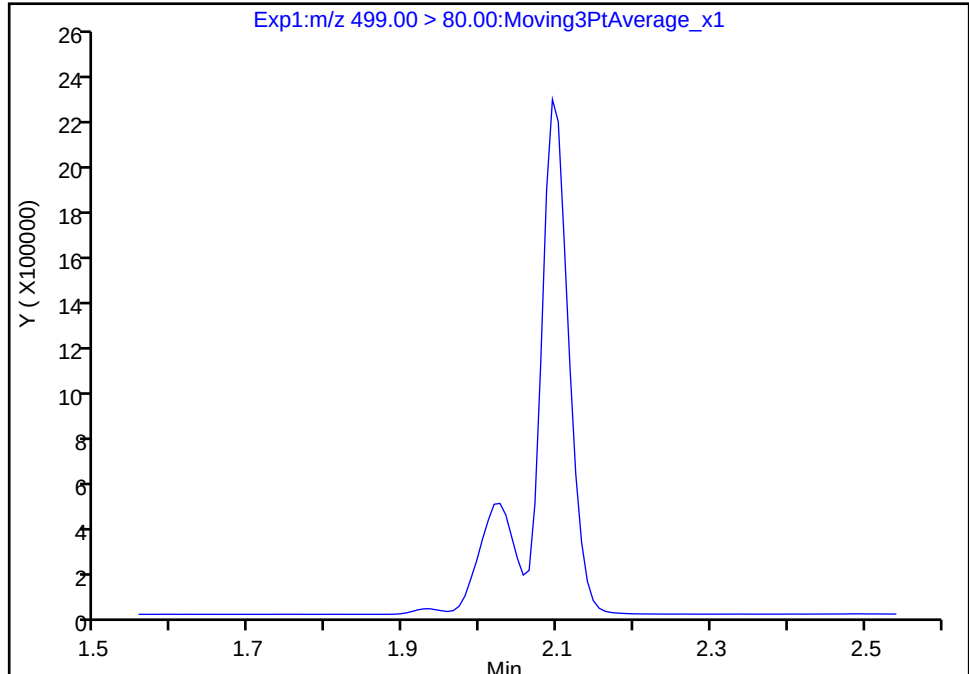
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_009.d
Injection Date: 11-Apr-2018 12:09:09 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: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

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

Signal: 1

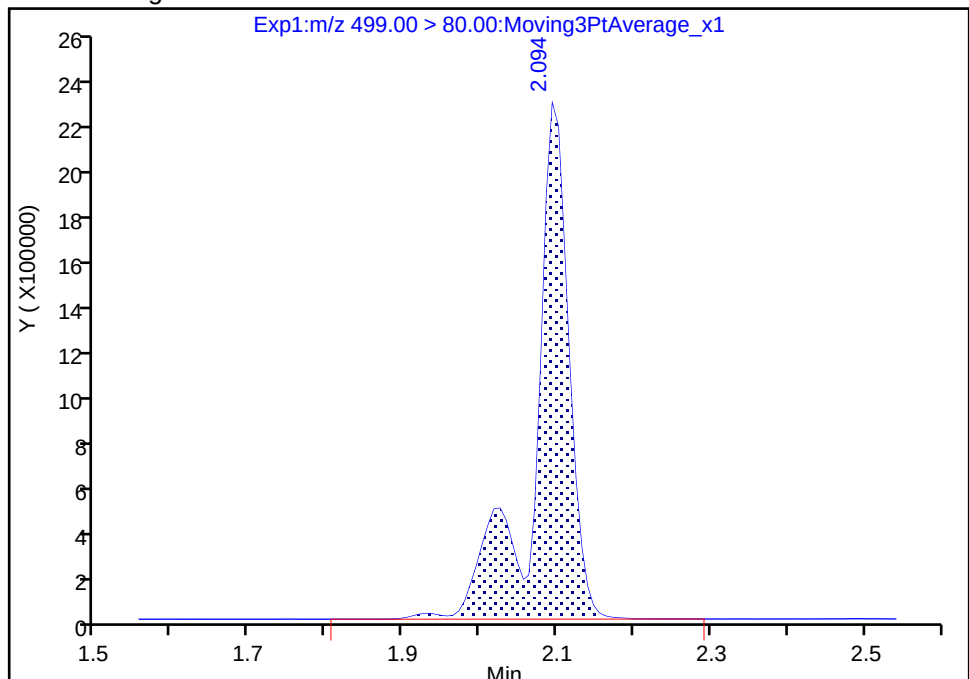
Not Detected
Expected RT: 2.09

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

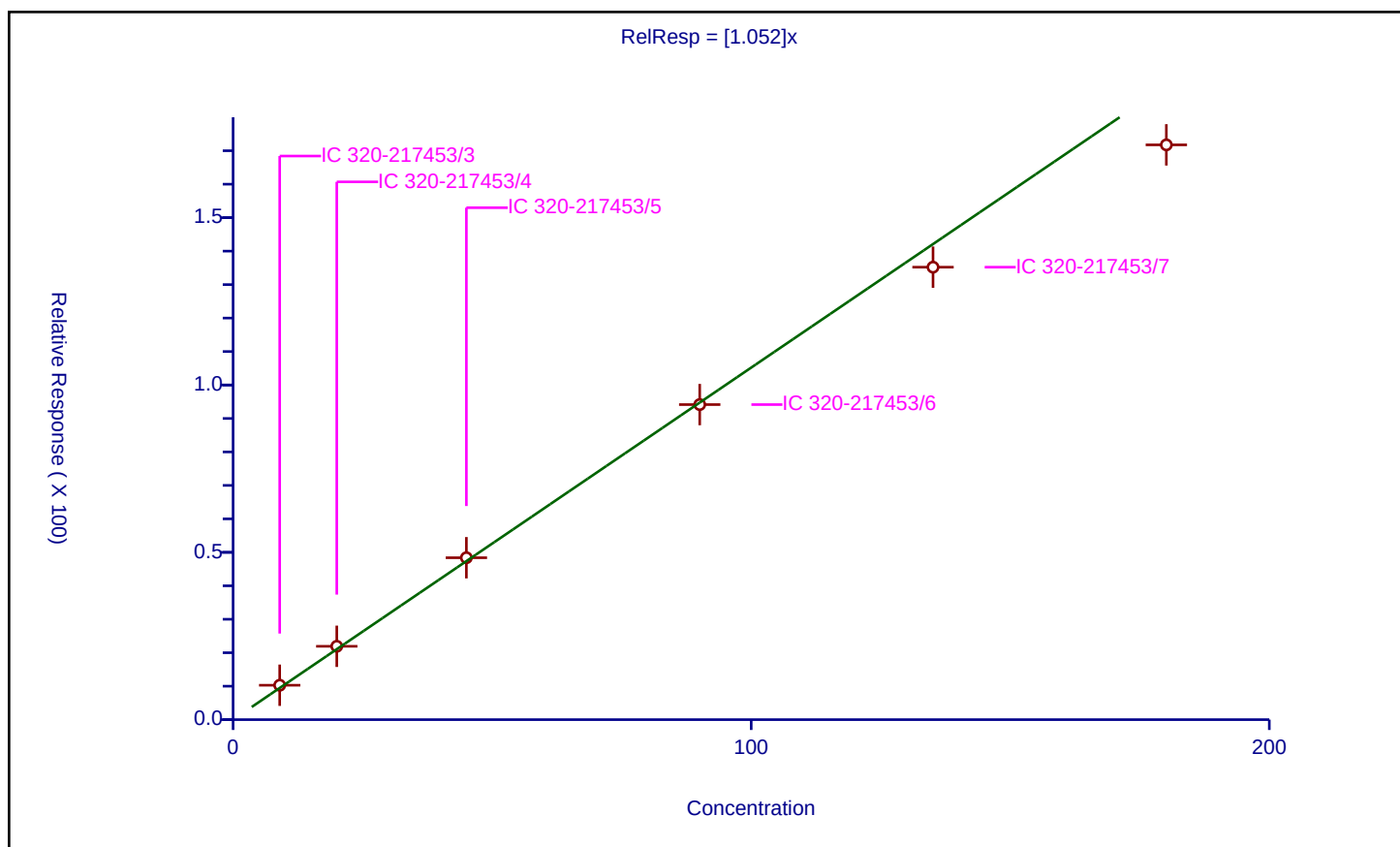
Curve Coefficients

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



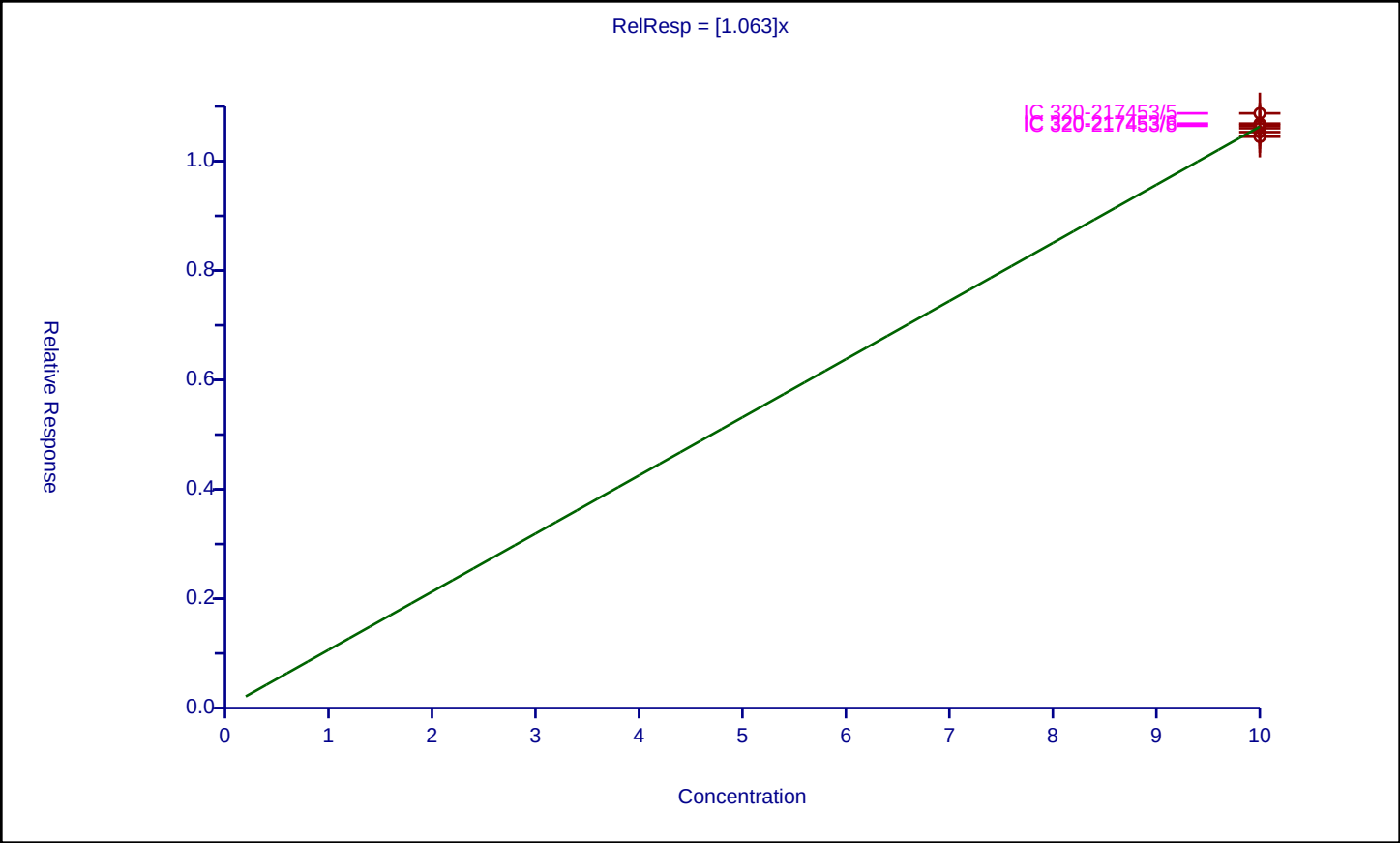
Calibration

/ 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

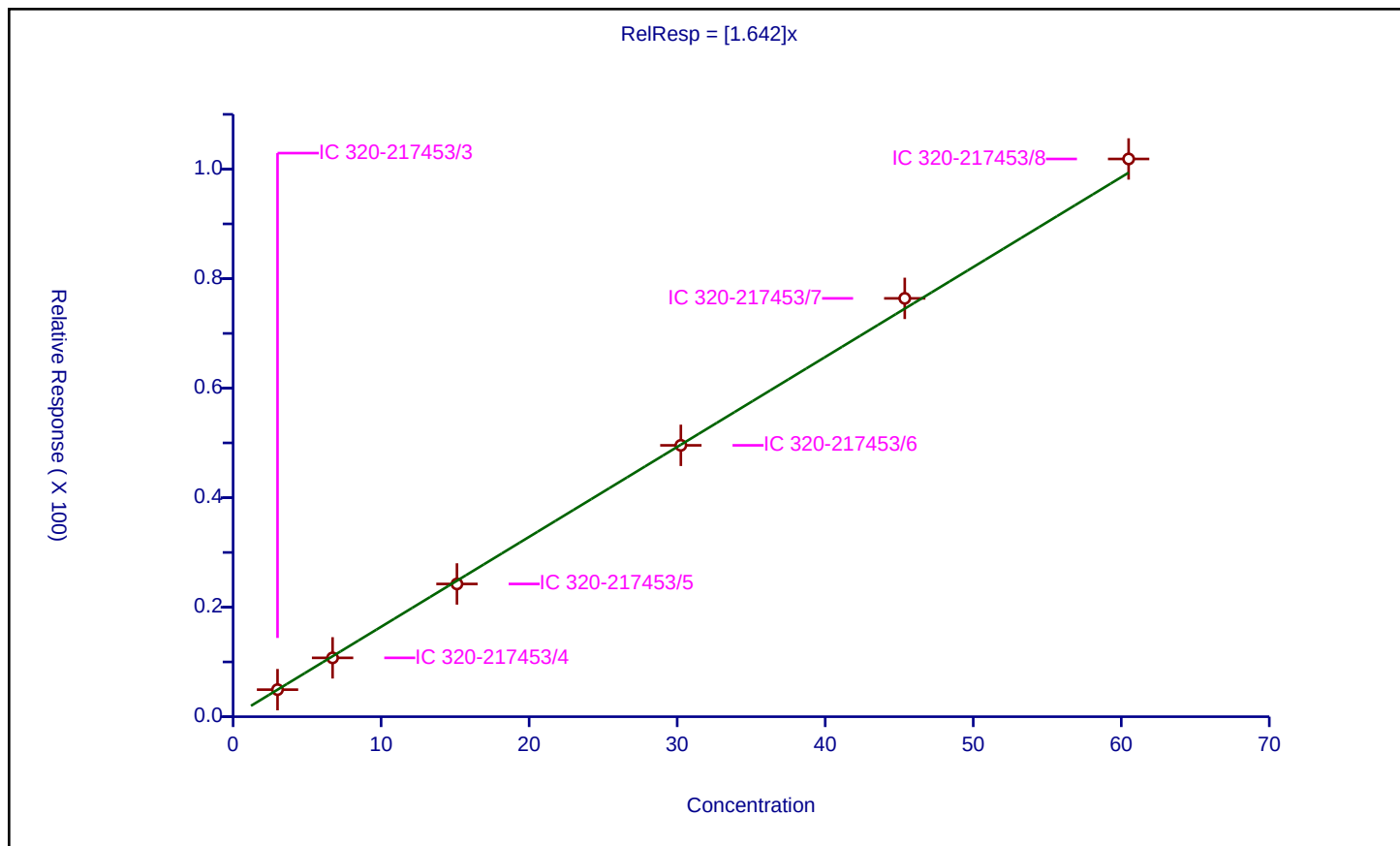
Curve Coefficients

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

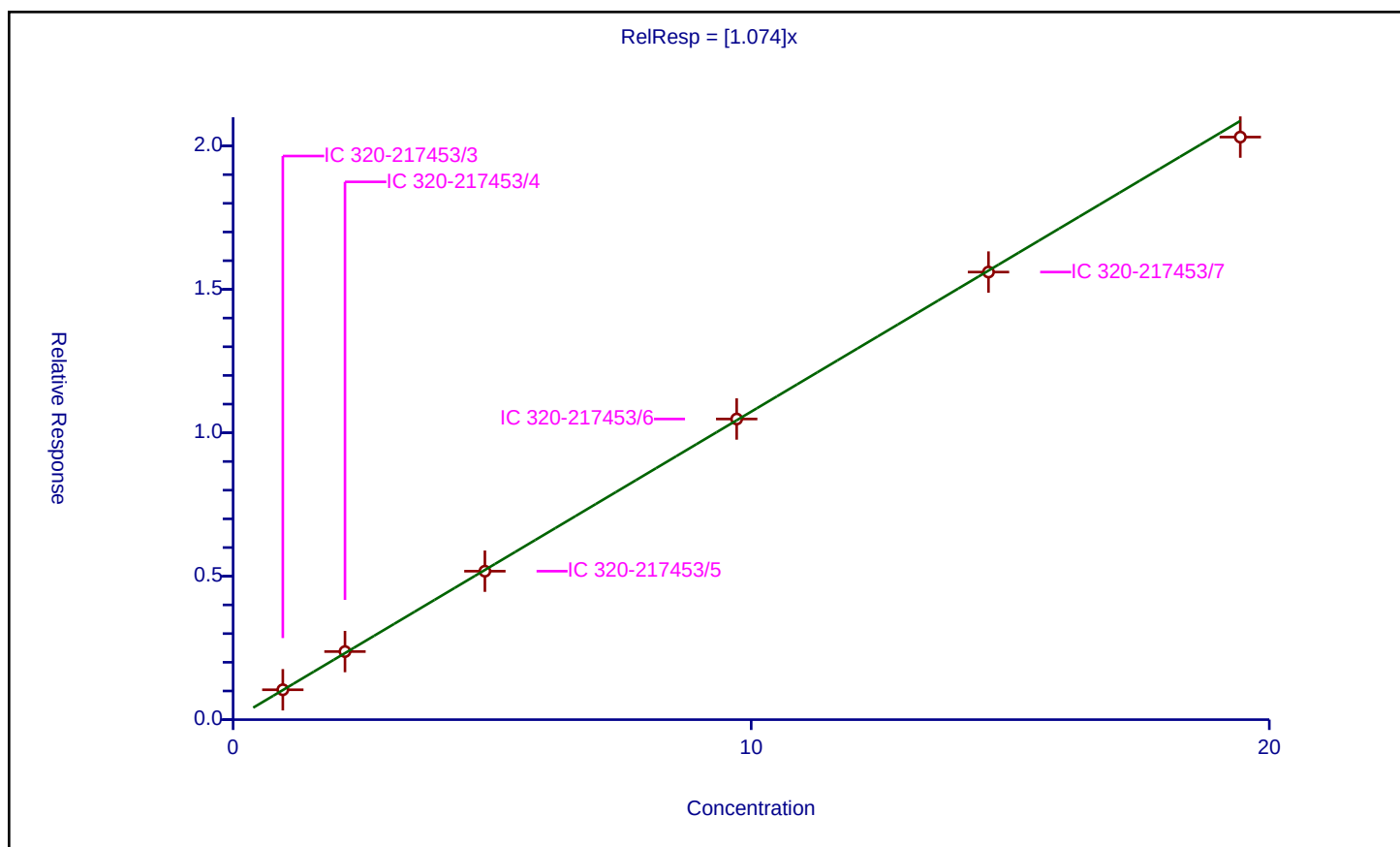
Curve Coefficients

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

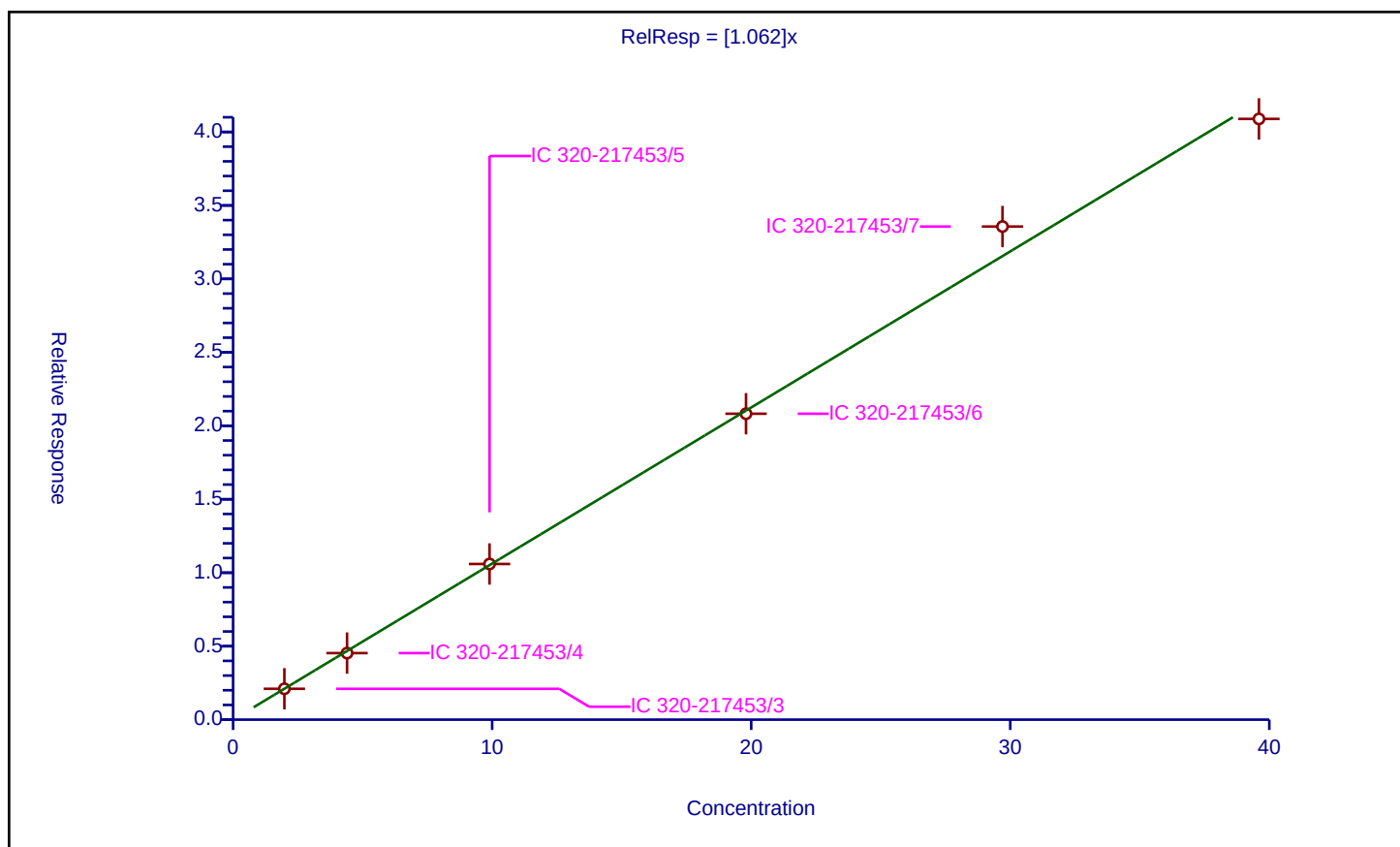
Curve Coefficients

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

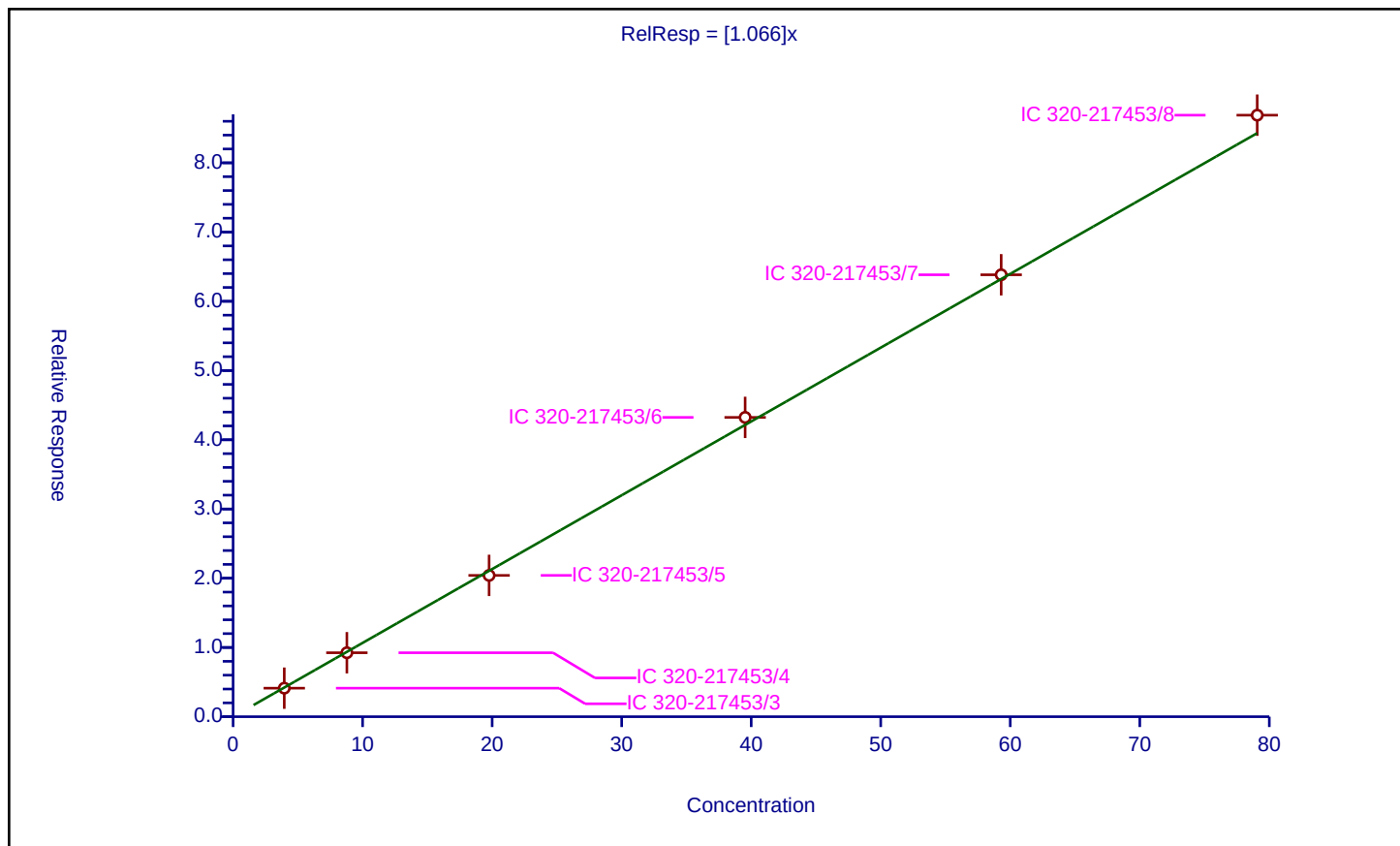
Curve Coefficients

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



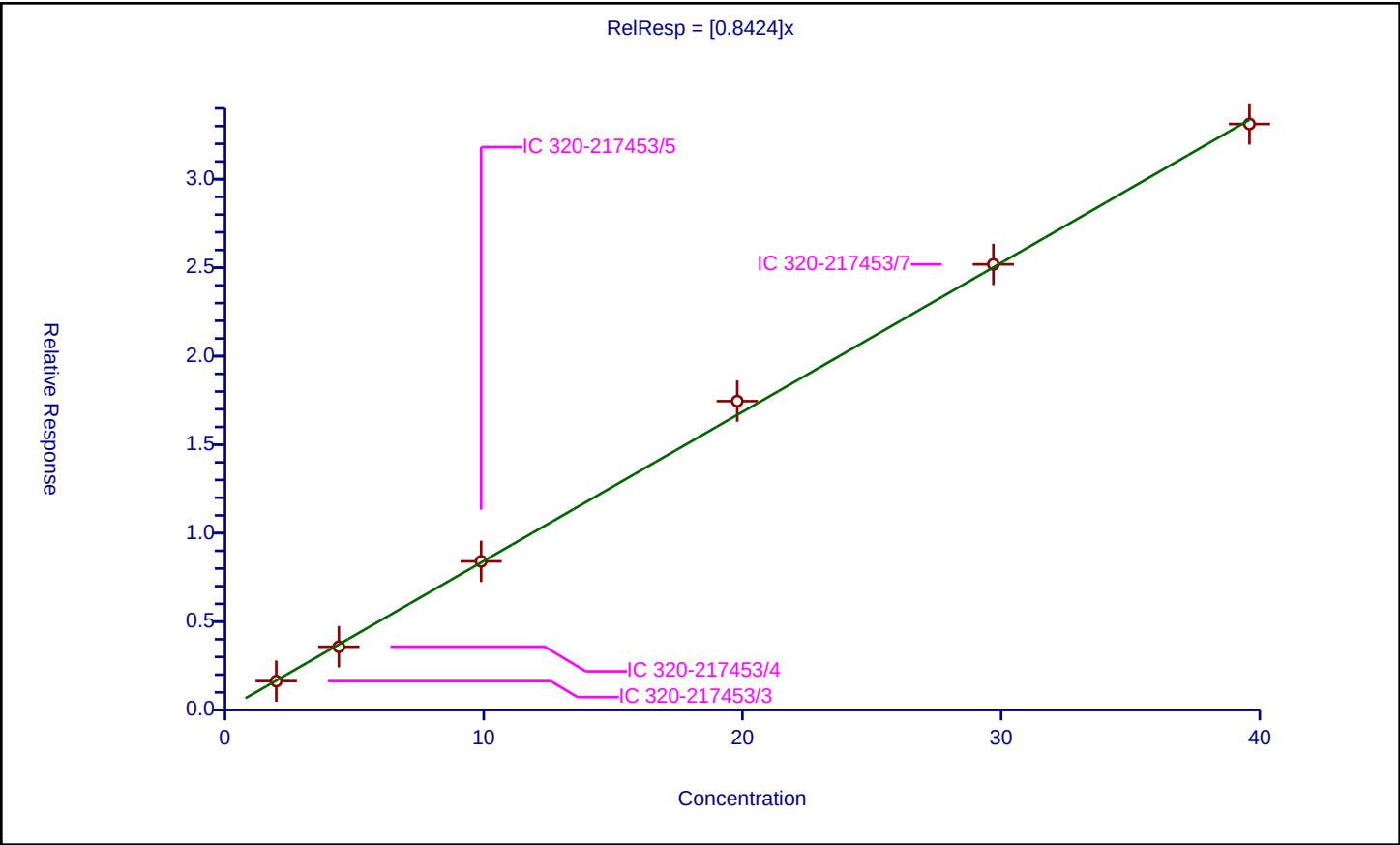
Calibration

/ 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

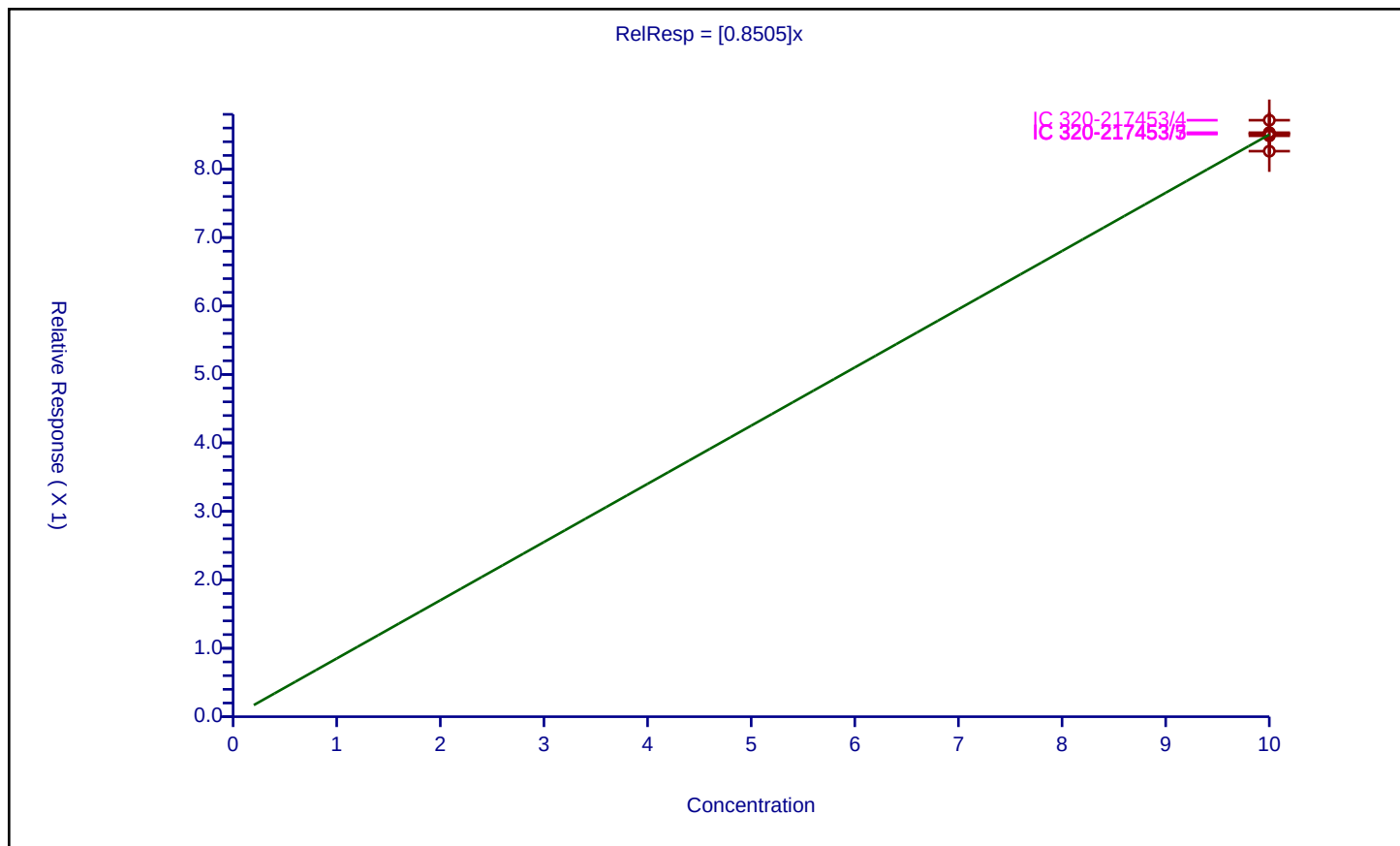
Curve Coefficients

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.: 320-37675-1
 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

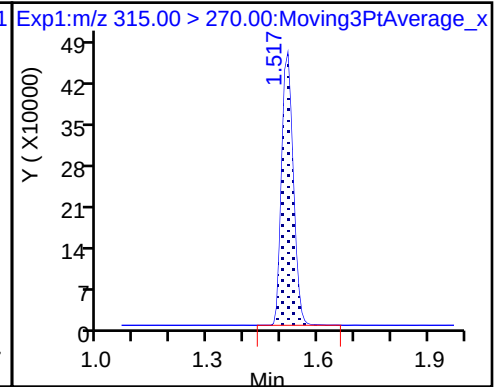
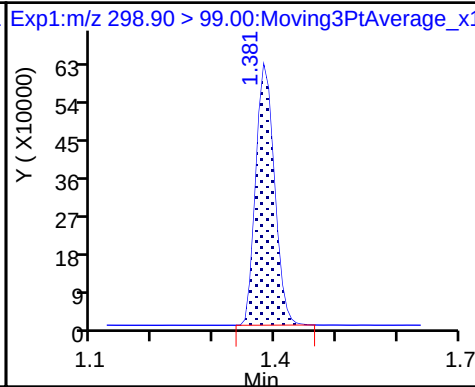
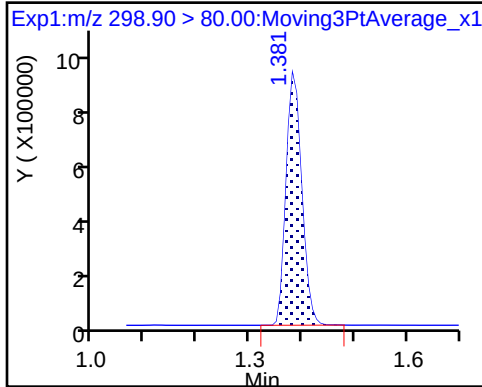
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

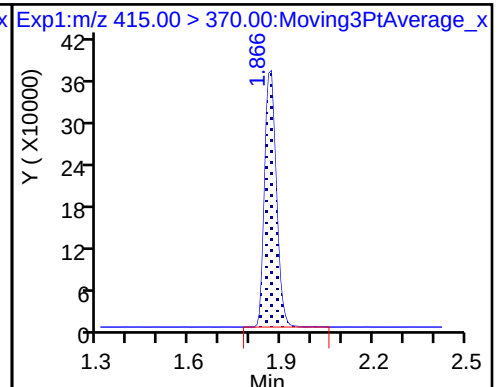
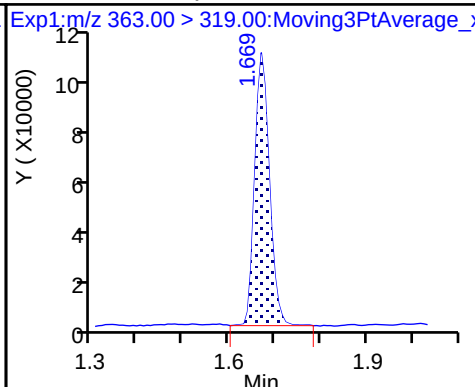
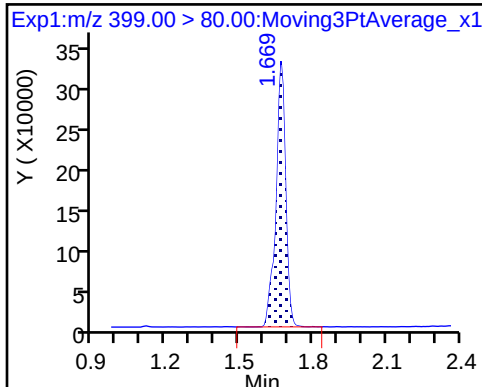
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

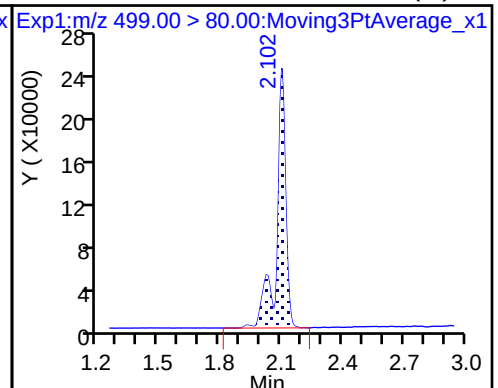
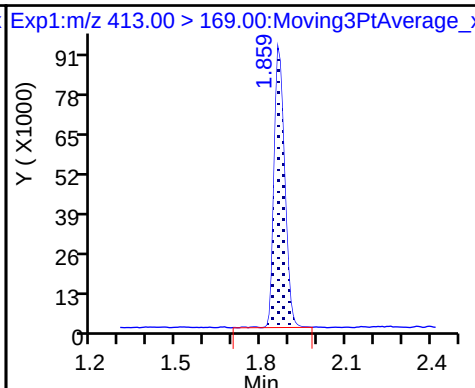
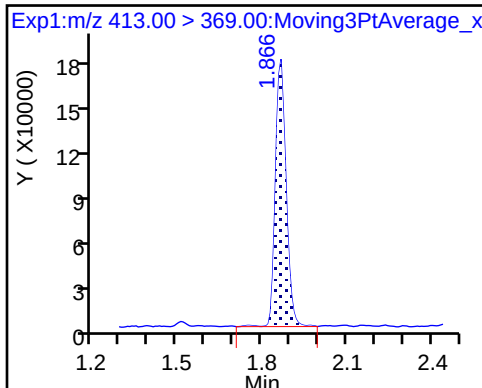
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

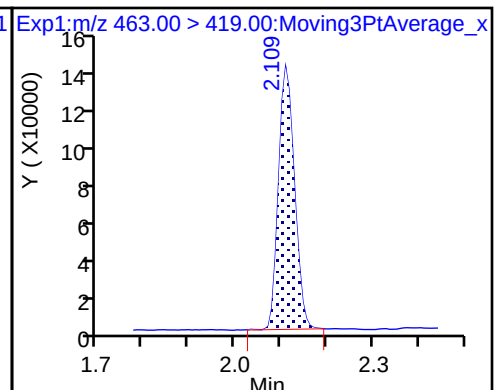
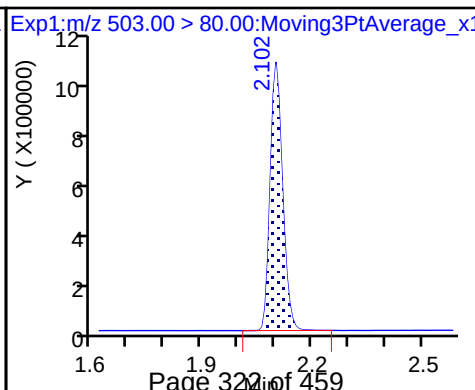
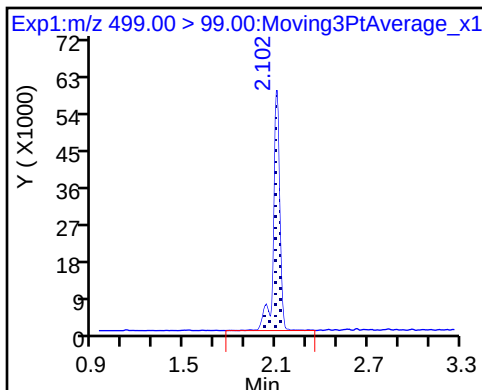
8 Perfluorooctane sulfonic acid (M)



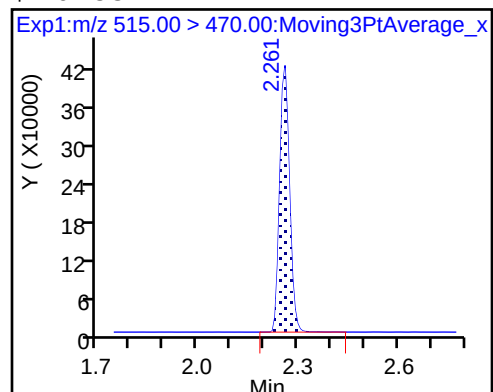
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

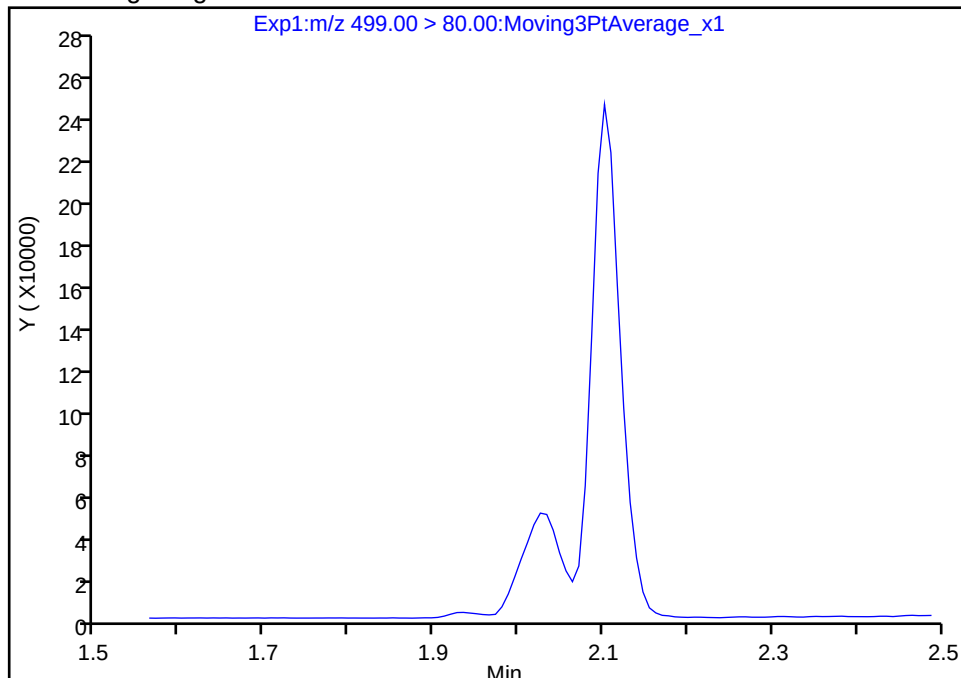
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_011.d
Injection Date: 11-Apr-2018 12:18:29 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: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

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

Signal: 1

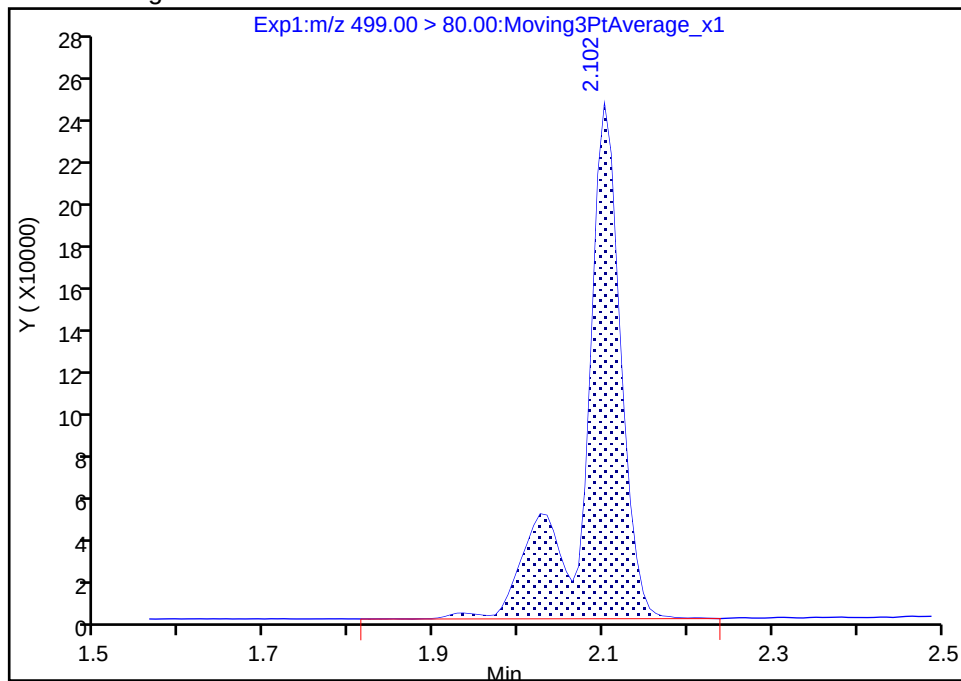
Not Detected
Expected RT: 2.09

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.: 320-37675-1
 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

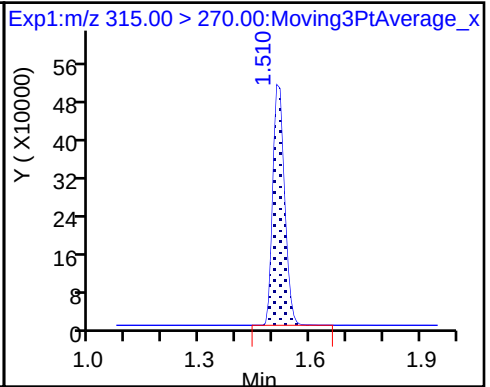
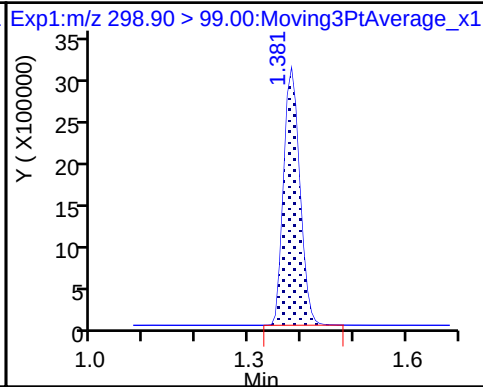
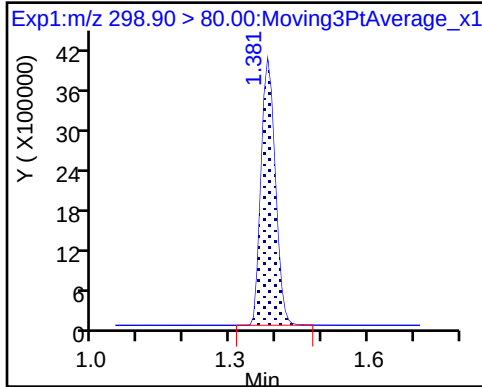
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

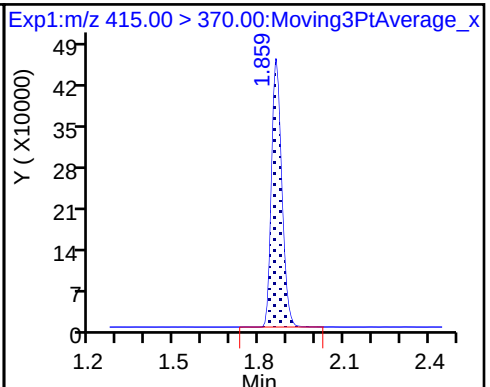
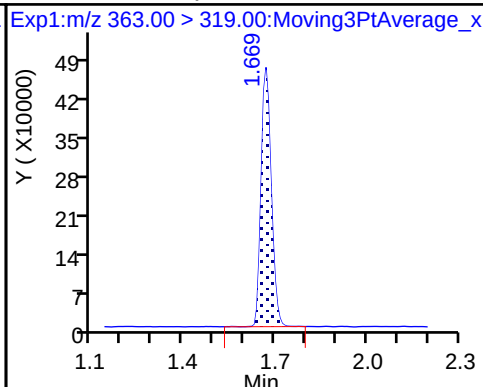
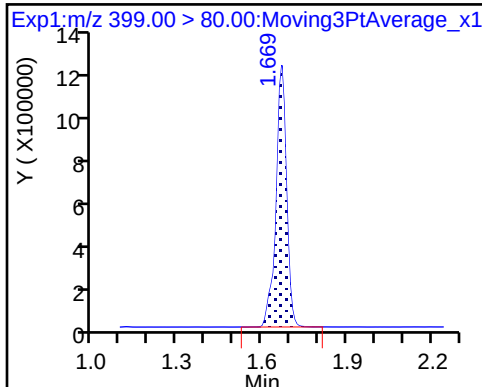
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

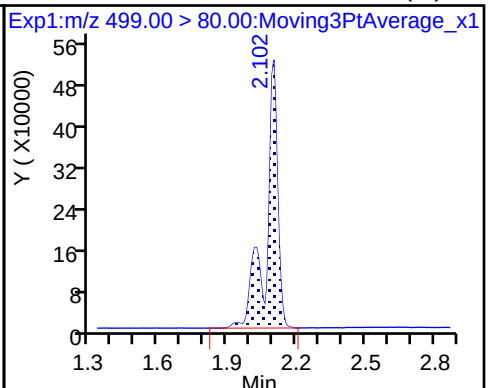
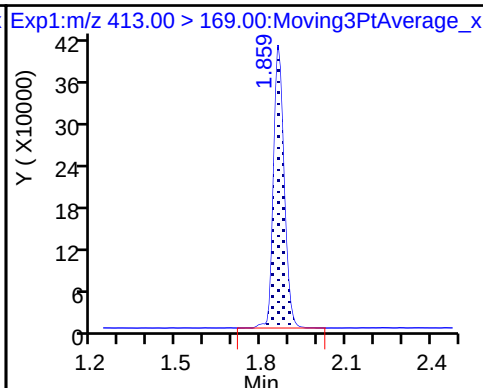
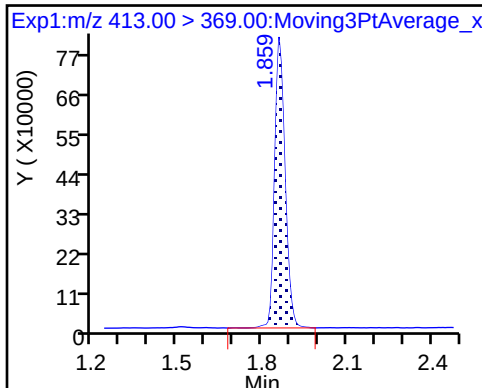
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

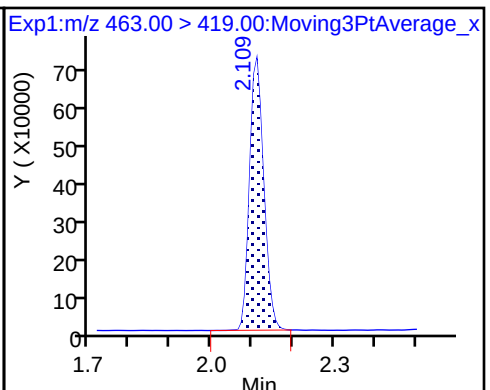
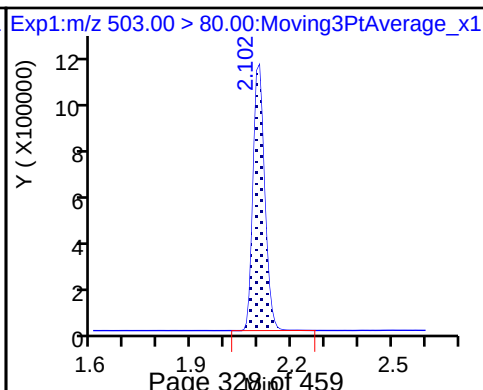
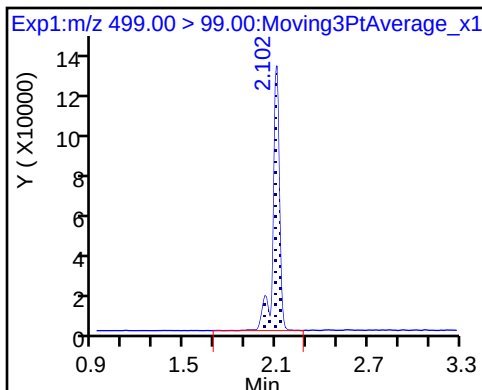
8 Perfluorooctane sulfonic acid (M)



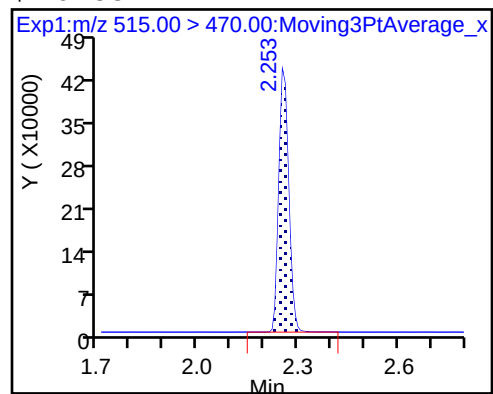
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

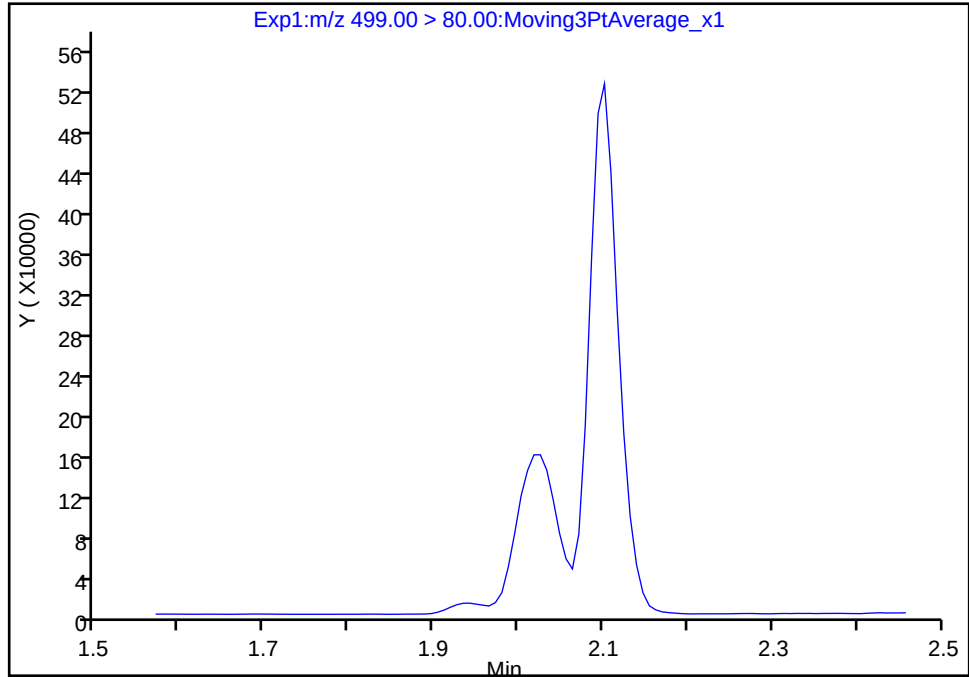
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180411-56557.b\2018.04.11_537ICALB_013.d
Injection Date: 11-Apr-2018 12:27:50 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: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

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

Signal: 1

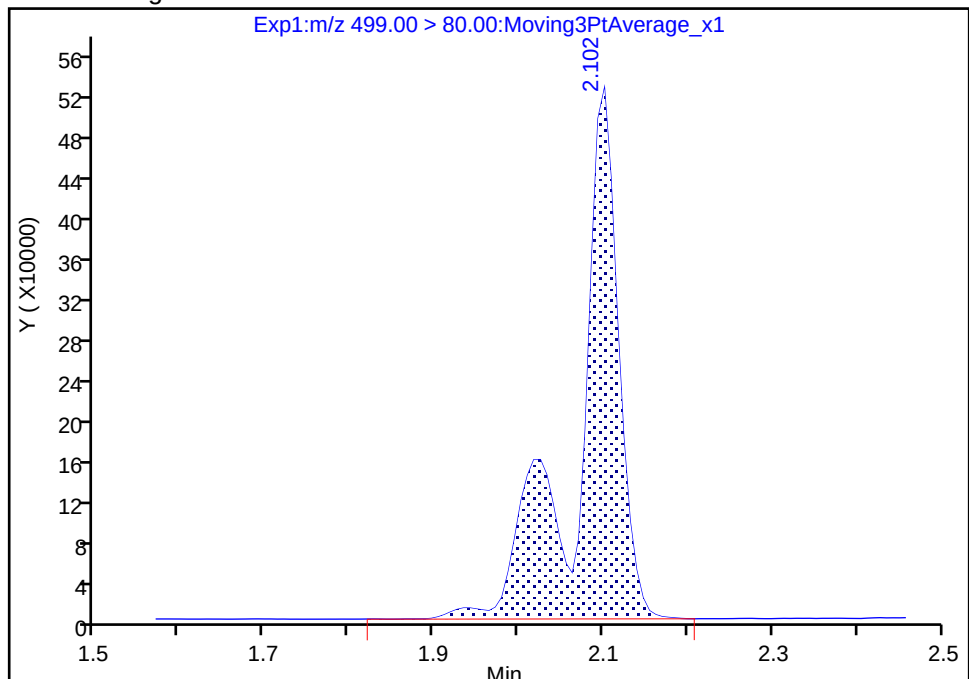
Not Detected
Expected RT: 2.09

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.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-217726/1 Calibration Date: 04/12/2018 14:48
 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: 2018.04.12_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	1.091		20.8	20.0	3.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.529		6.26	6.72	-6.9	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.003		2.02	2.16	-6.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.016		4.21	4.40	-4.3	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.003		8.27	8.79	-5.9	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.7699		4.02	4.40	-8.6	50.0
13C2 PFHxA	Ave	1.063	1.016		9.56	10.0	-4.4	30.0
13C2 PFDA	Ave	0.8505	0.8461		9.95	10.0	-0.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180412-56633.b\2018.04.12_537A_004.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 12-Apr-2018 14:48:43 ALS Bottle#: 2 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180412-56633.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 09:53:46 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: XAWRK035

First Level Reviewer: roycea

Date: 12-Apr-2018 16:14:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.381	0.007	1.000	1837840	20.8		3464	
298.90 > 99.00	1.388	1.381	0.007	1.000	1310486		1.40(0.00-0.00)	4235	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.517	0.008	1.000	1023623	9.56		12163	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.684	0.008	1.000	218253	2.02		7.1	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.684	0.0	1.000	864967	6.26		1089	
* 6 13C2-PFOA									
415.00 > 370.00	1.889	1.882	0.007		1007212	10.0		5703	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.889	1.882	0.007	1.000	450438	4.21		71.0	
413.00 > 169.00	1.889	1.882	0.007	1.000	244835		1.84(0.00-0.00)	348	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.117	0.007	1.000	741540	8.27		742	a
499.00 > 99.00	2.117	2.117	0.0	0.996	161762		4.58(0.00-0.00)	401	a
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.117	0.007		2413051	28.7		5093	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.124	0.008	1.000	341211	4.02		68.4	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.261	0.007	1.000	852202	9.95		7432	

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\20180412-56633.b\2018.04.12_537A_004.d

Injection Date: 12-Apr-2018 14:48:43

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

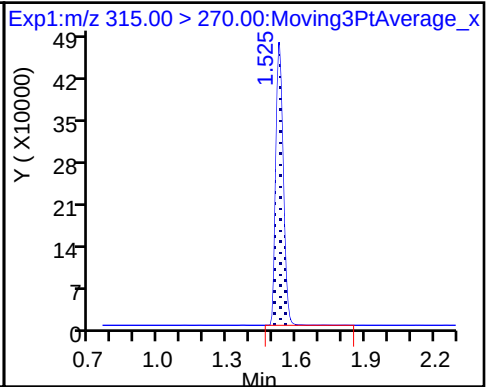
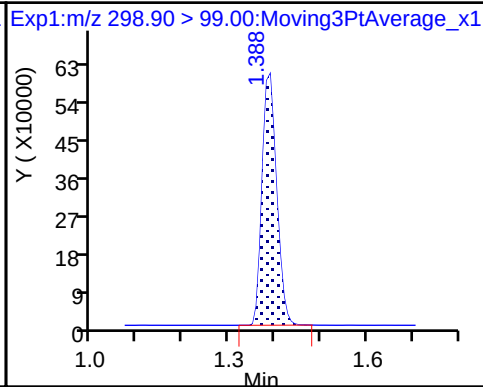
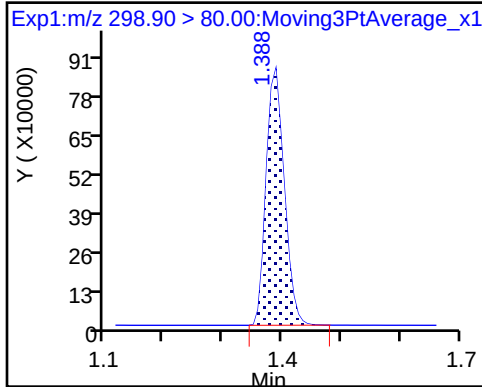
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

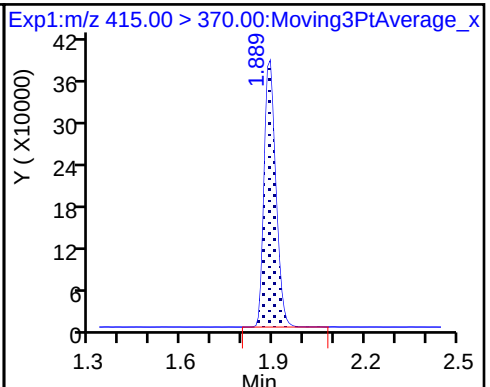
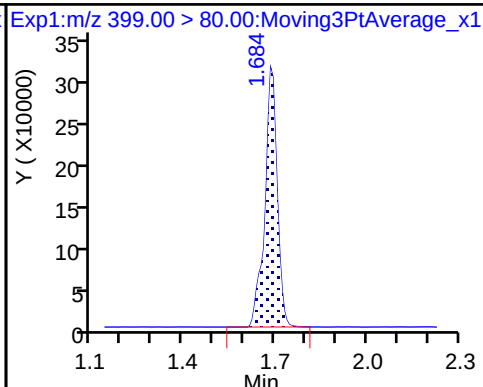
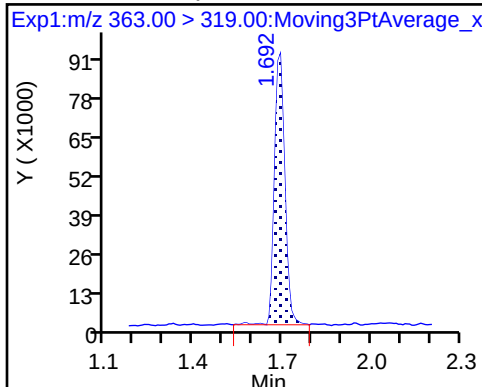
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

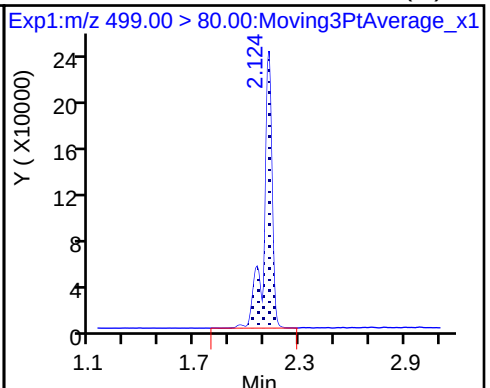
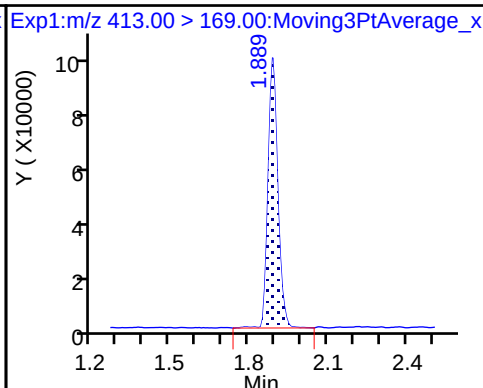
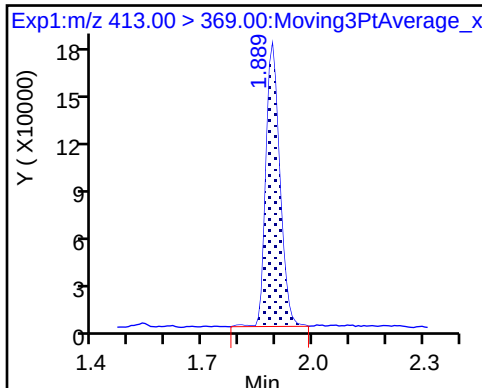
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

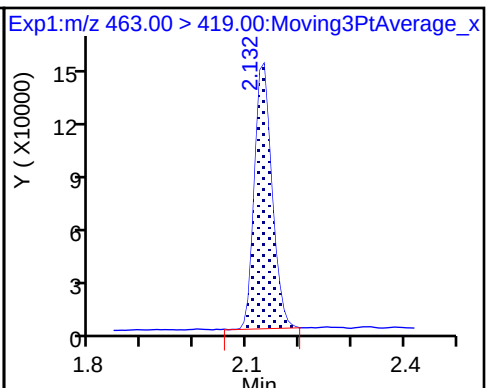
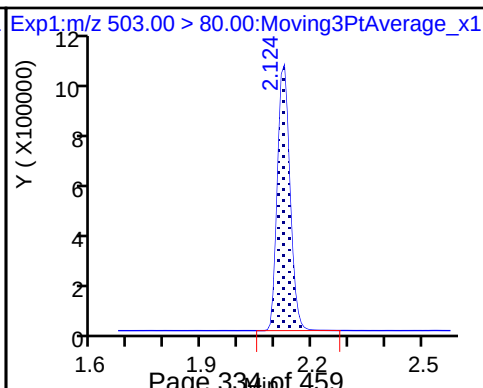
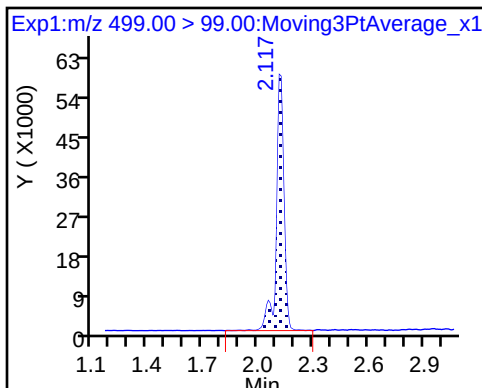
8 Perfluorooctane sulfonic acid (M)



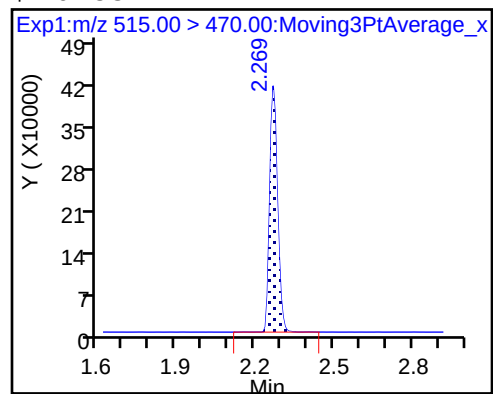
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

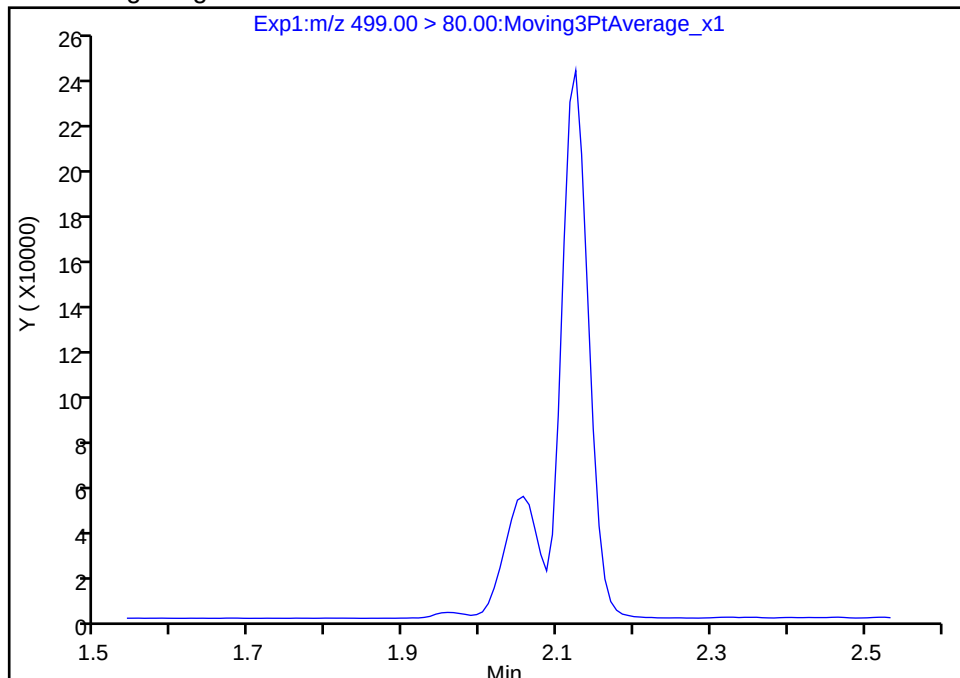
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180412-56633.b\2018.04.12_537A_004.d
Injection Date: 12-Apr-2018 14:48:43 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

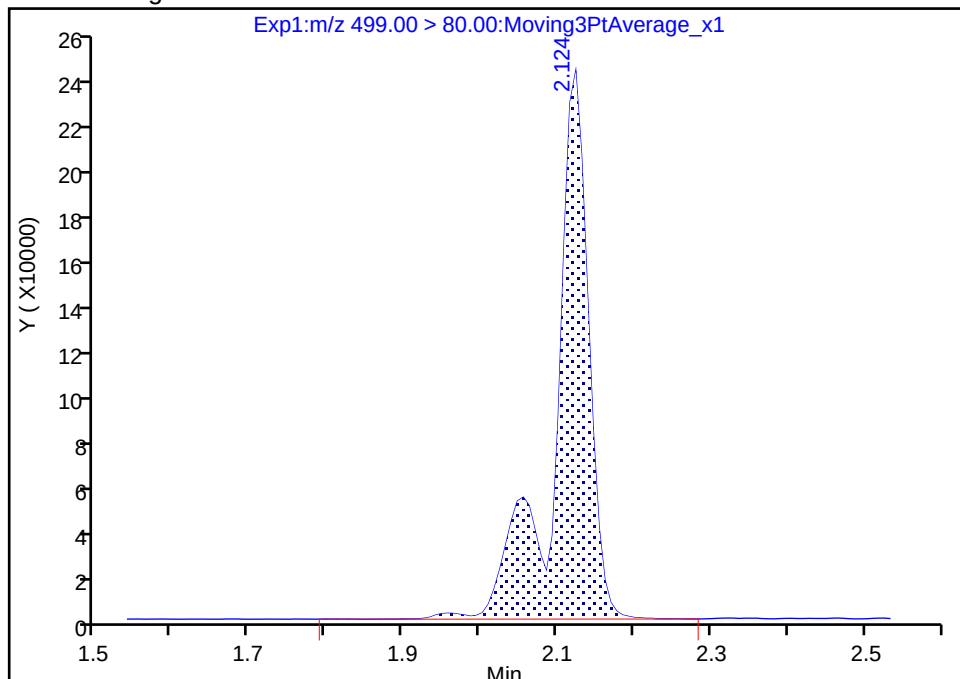
Not Detected
Expected RT: 2.12

Processing Integration Results



RT: 2.12
Area: 741540
Amount: 8.267236
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 12-Apr-2018 16:14:40
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217814/1 Calibration Date: 04/13/2018 00:27
 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: 2018.04.12_537AA_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.052	1.051		135	135	-0.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.071		14.5	14.6	-0.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.648		45.5	45.4	0.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.050		29.3	29.7	-1.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.056		58.8	59.3	-0.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8015		28.3	29.7	-4.9	30.0
13C2 PFHxA	Ave	1.063	1.028		9.67	10.0	-3.3	30.0
13C2 PFDA	Ave	0.8505	0.8168		9.60	10.0	-4.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_029.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 13-Apr-2018 00:27:43 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\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: roycea

Date: 13-Apr-2018 09:24:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.388	0.0	1.000	10905659	135.0		15411	
298.90 > 99.00	1.388	1.388	0.0	1.000	8307914		1.31(0.00-0.00)	18792	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.525	1.525	0.0	1.000	971790	9.67		9306	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.684	0.0	1.000	1476425	14.5		50.0	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.684	0.0	1.000	5743759	45.5		7247	
* 6 13C2-PFOA									
415.00 > 370.00	1.889	1.889	0.0		945293	10.0		5193	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.889	1.889	0.0	1.000	2946866	29.3		427	
413.00 > 169.00	1.882	1.889	-0.007	0.996	1562520		1.89(0.00-0.00)	1919	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.124	0.0		2202701	28.7		4287	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.094	0.030	1.000	4811356	58.8		4815	a
499.00 > 99.00	2.124	2.094	0.030	1.000	1051447		4.58(0.00-0.00)	2651	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.132	0.0	1.000	2250277	28.3		446	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.269	0.0	1.000	772098	9.60		6378	

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\20180413-56657.b\2018.04.12_537AA_029.d

Injection Date: 13-Apr-2018 00:27:43

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

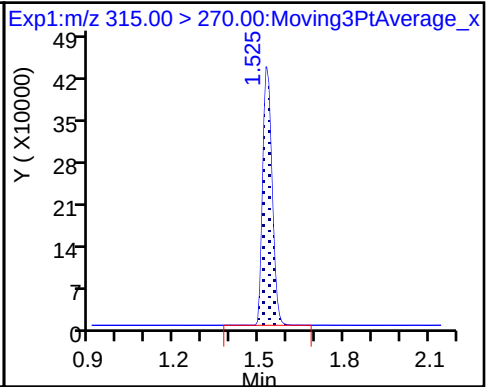
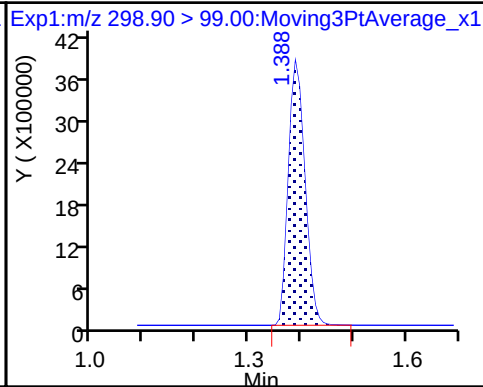
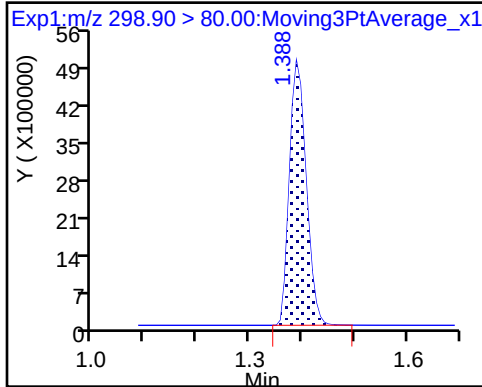
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

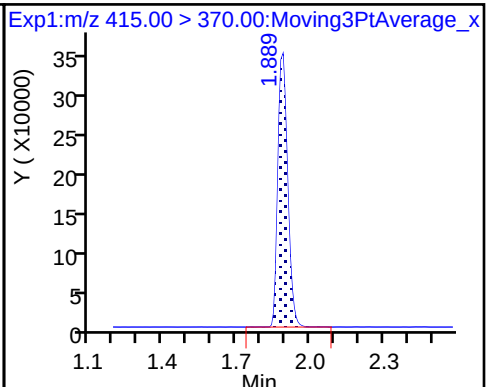
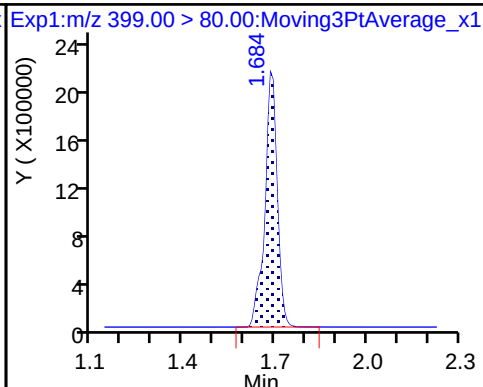
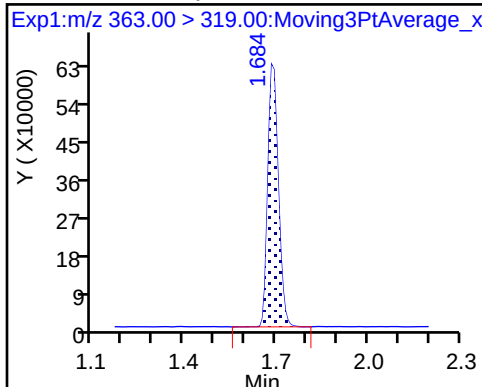
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

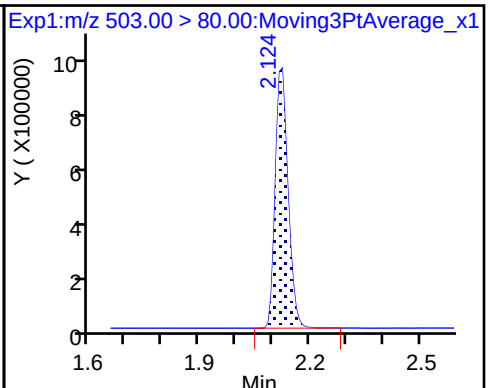
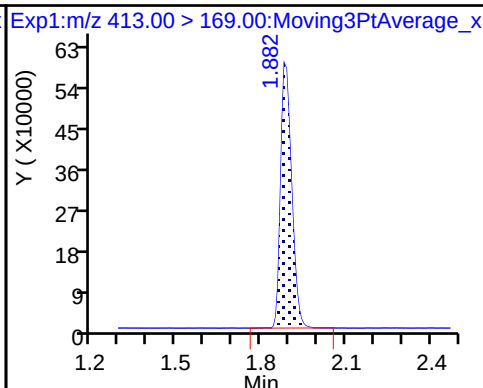
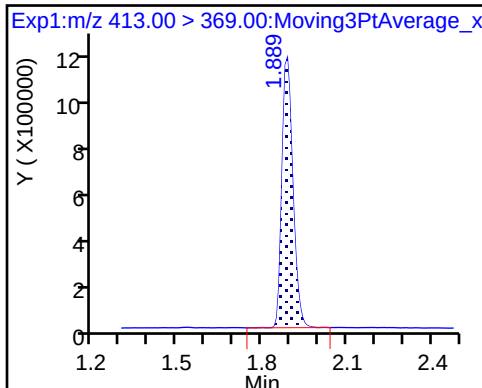
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

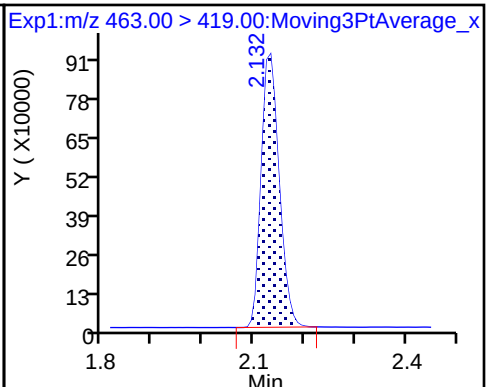
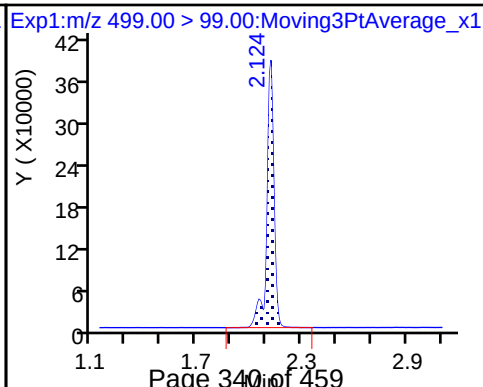
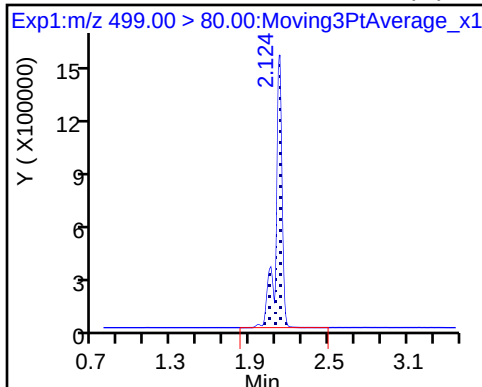
* 7 13C4 PFOS



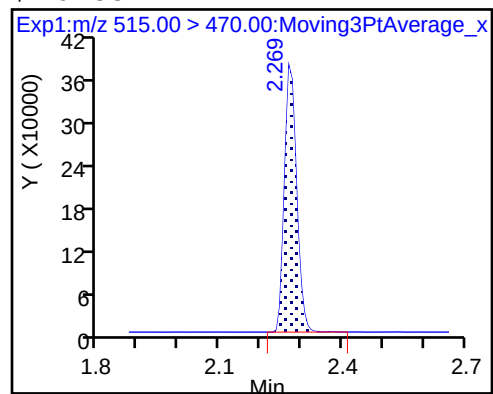
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

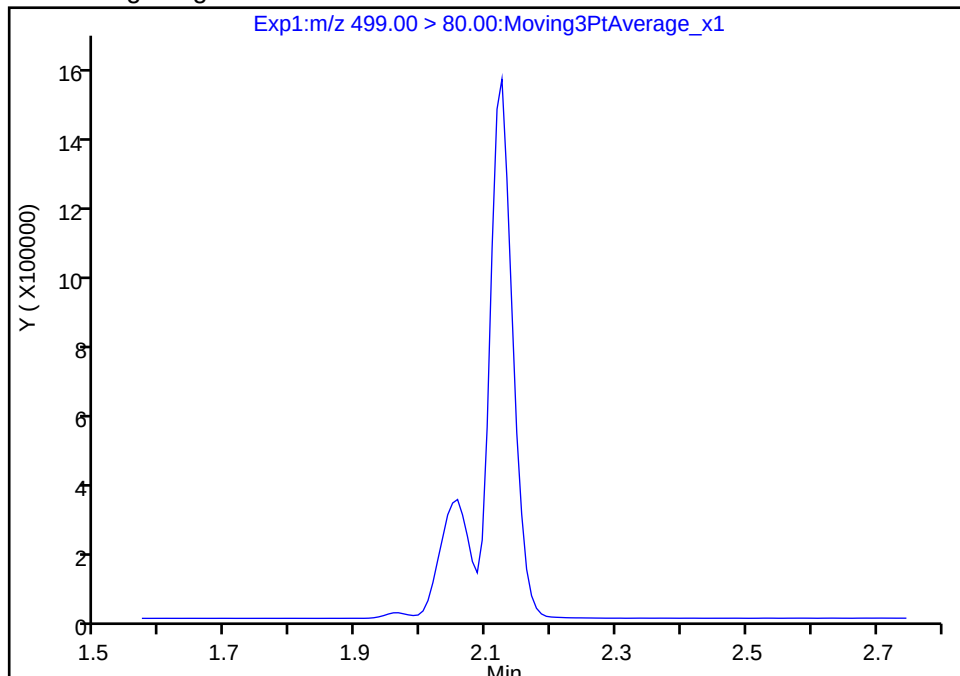
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_029.d
Injection Date: 13-Apr-2018 00:27:43 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

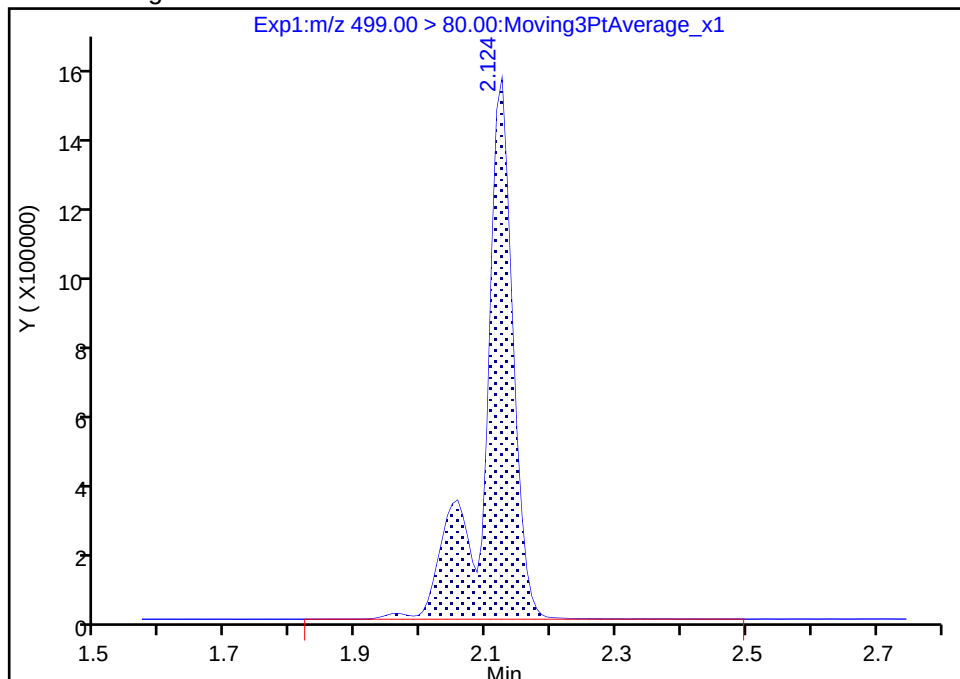
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.12
Area: 4811356
Amount: 58.763032
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 13-Apr-2018 09:24:27

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217814/13 Calibration Date: 04/13/2018 01:23
 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: 2018.04.12_537AA_041.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	1.132		48.5	45.0	7.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.050		4.75	4.86	-2.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.680		15.5	15.1	2.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.051		9.79	9.90	-1.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.068		19.8	19.8	0.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8010		9.41	9.90	-4.9	30.0
13C2 PFHxA	Ave	1.063	1.074		10.1	10.0	1.0	30.0
13C2 PFDA	Ave	0.8505	0.7979		9.38	10.0	-6.2	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217816/13 Calibration Date: 04/13/2018 01:23
 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: 2018.04.12_537AA_041.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	1.132		48.5	45.0	7.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.050		4.75	4.86	-2.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.680		15.5	15.1	2.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.051		9.79	9.90	-1.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.068		19.8	19.8	0.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8010		9.41	9.90	-4.9	30.0
13C2 PFHxA	Ave	1.063	1.074		10.1	10.0	1.0	30.0
13C2 PFDA	Ave	0.8505	0.7979		9.38	10.0	-6.2	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_041.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 13-Apr-2018 01:23:46 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\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:45 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: XAWRK028

First Level Reviewer: roycea

Date: 13-Apr-2018 09:26:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	4103656	48.5		7432	
298.90 > 99.00	1.381	1.381	0.0	1.000	3051003		1.35(0.00-0.00)	7799	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	1017954	10.1		9358	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	483499	4.75		15.3	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.677	0.0	1.000	2044336	15.5		2721	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.866	0.0		947894	10.0		5083	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.874	0.0	1.000	986250	9.79		133	
413.00 > 169.00	1.866	1.874	-0.008	0.996	541222		1.82(0.00-0.00)	662	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.094	0.015	1.000	1698814	19.8		1697	a
499.00 > 99.00	2.109	2.094	0.015	1.000	365884		4.64(0.00-0.00)	864	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2307891	28.7		4429	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.117	0.0	1.000	751681	9.41		146	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	756312	9.38		6836	

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\20180413-56657.b\2018.04.12_537AA_041.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 13-Apr-2018 01:23:46 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\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:45 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: XAWRK028

First Level Reviewer: roycea

Date: 13-Apr-2018 09:26:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	4103656	48.5		7432	
298.90 > 99.00	1.381	1.381	0.0	1.000	3051003		1.35(0.00-0.00)	7799	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	1017954	10.1		9358	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	483499	4.75		15.3	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.677	0.0	1.000	2044336	15.5		2721	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.866	0.0		947894	10.0		5083	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.874	0.0	1.000	986250	9.79		133	
413.00 > 169.00	1.866	1.874	-0.008	0.996	541222		1.82(0.00-0.00)	662	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.094	0.015	1.000	1698814	19.8		1697	a
499.00 > 99.00	2.109	2.094	0.015	1.000	365884		4.64(0.00-0.00)	864	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2307891	28.7		4429	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.117	0.0	1.000	751681	9.41		146	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	756312	9.38		6836	

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\20180413-56657.b\2018.04.12_537AA_041.d

Injection Date: 13-Apr-2018 01:23:46

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

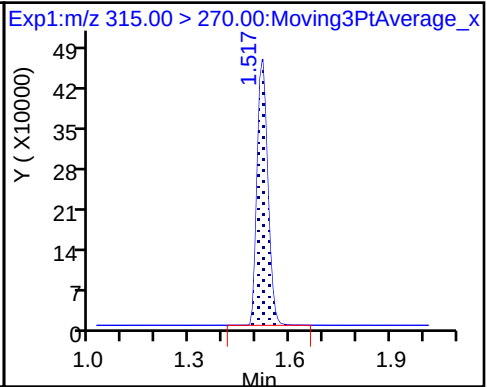
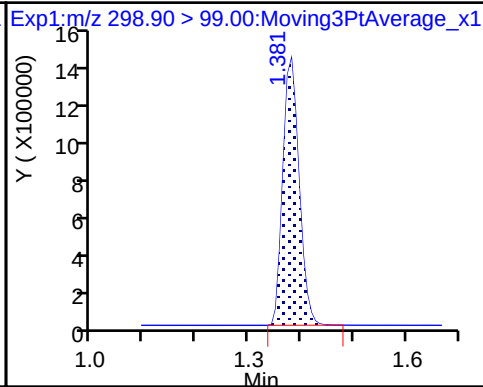
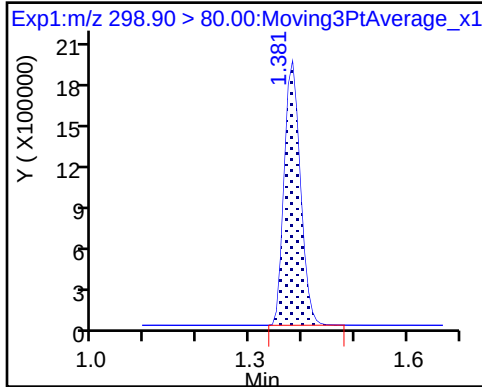
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

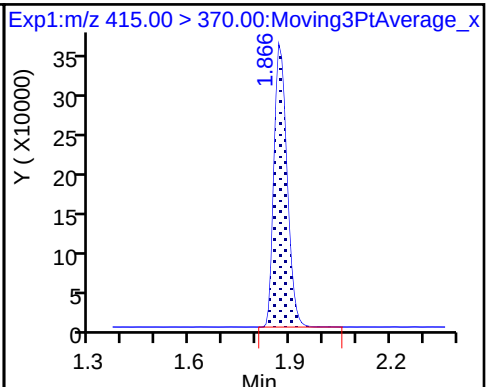
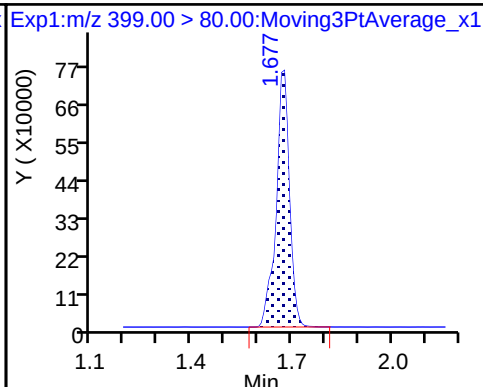
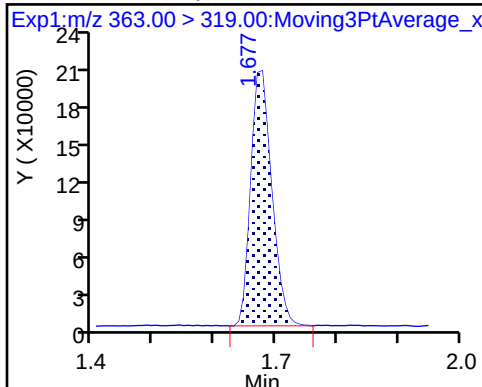
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

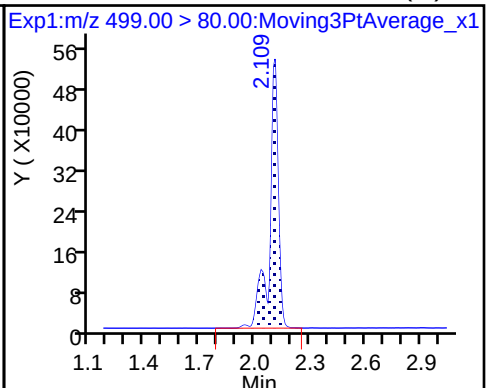
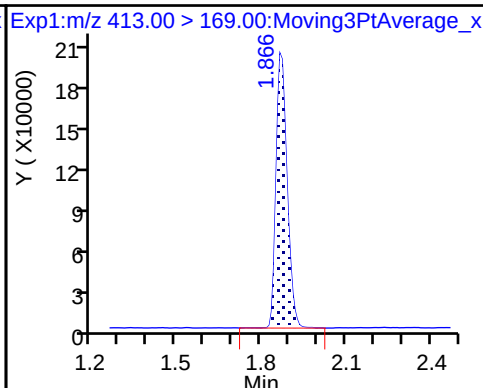
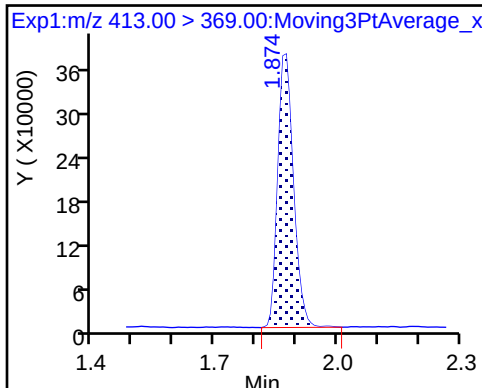
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

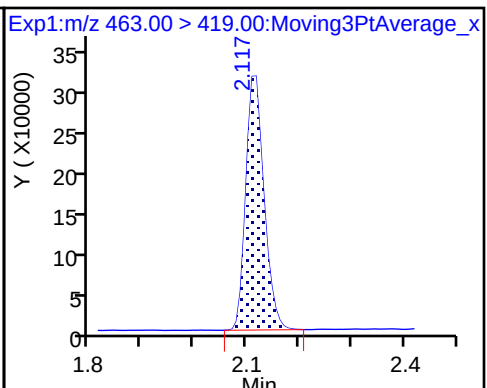
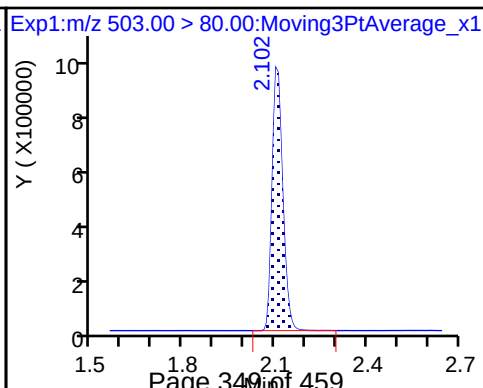
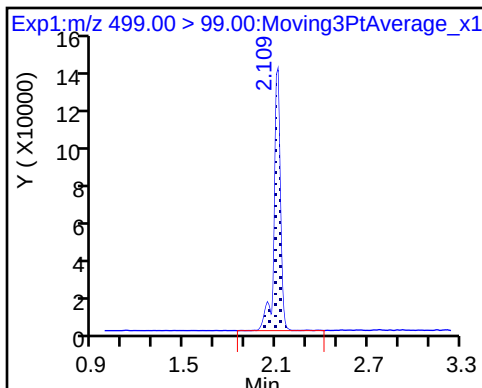
8 Perfluorooctane sulfonic acid (M)



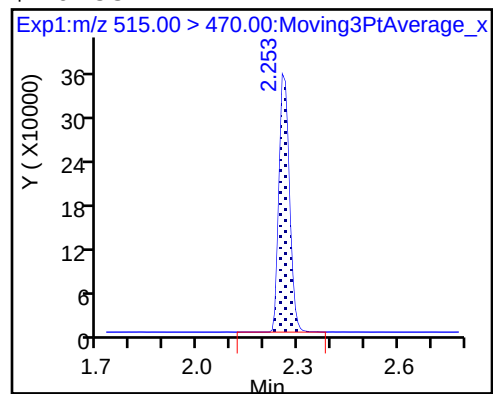
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_041.d

Injection Date: 13-Apr-2018 01:23:46

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

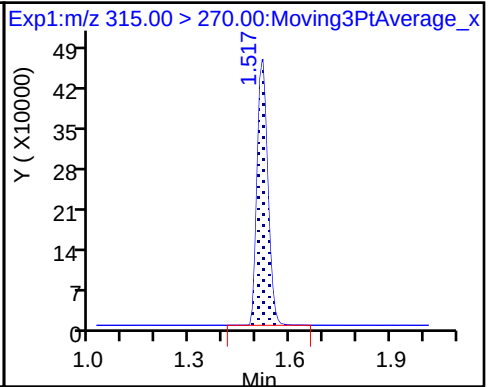
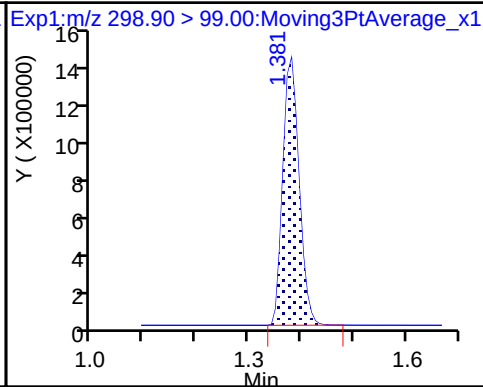
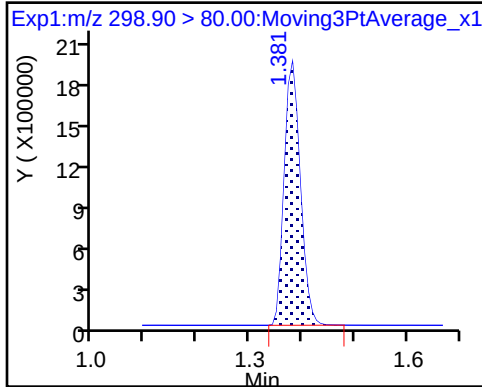
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

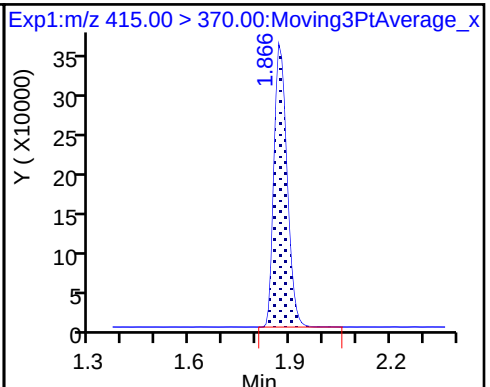
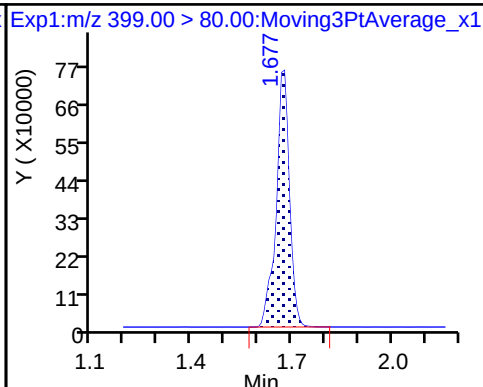
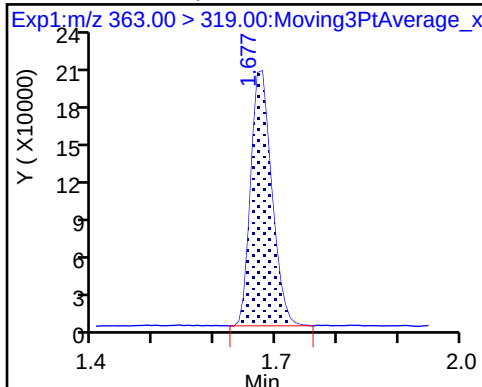
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

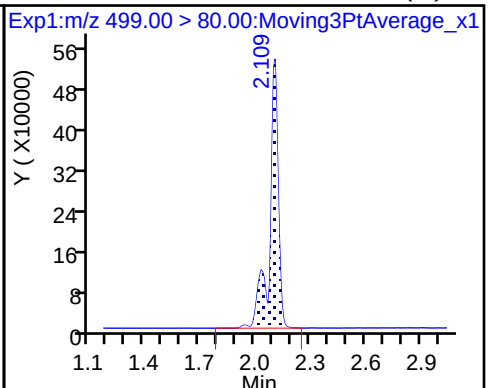
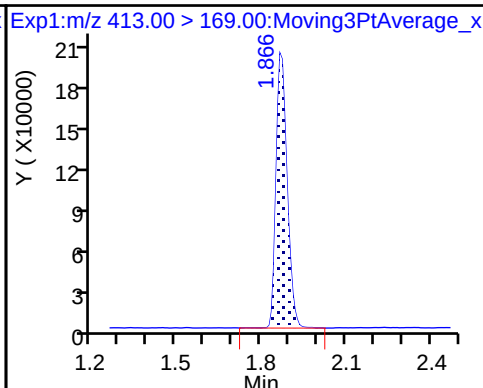
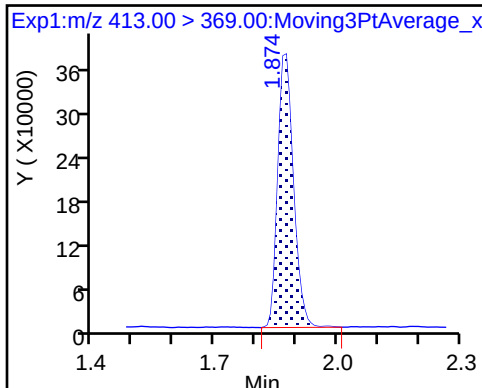
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

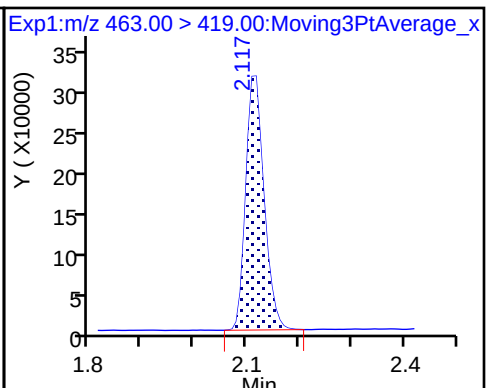
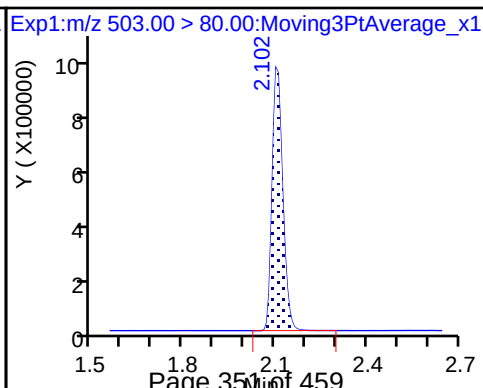
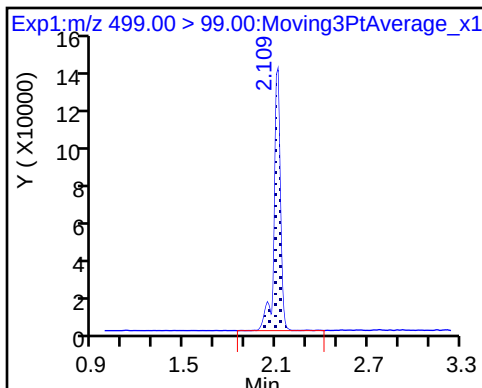
8 Perfluorooctane sulfonic acid (M)



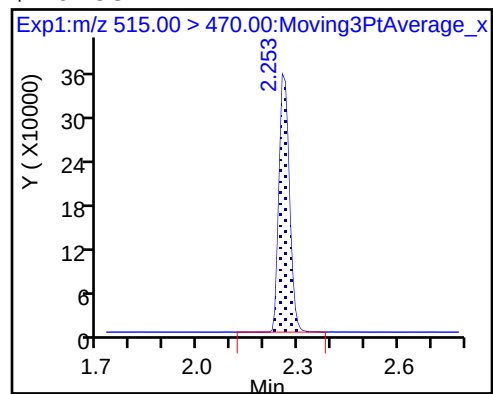
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_041.d

Injection Date: 13-Apr-2018 01:23:46

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

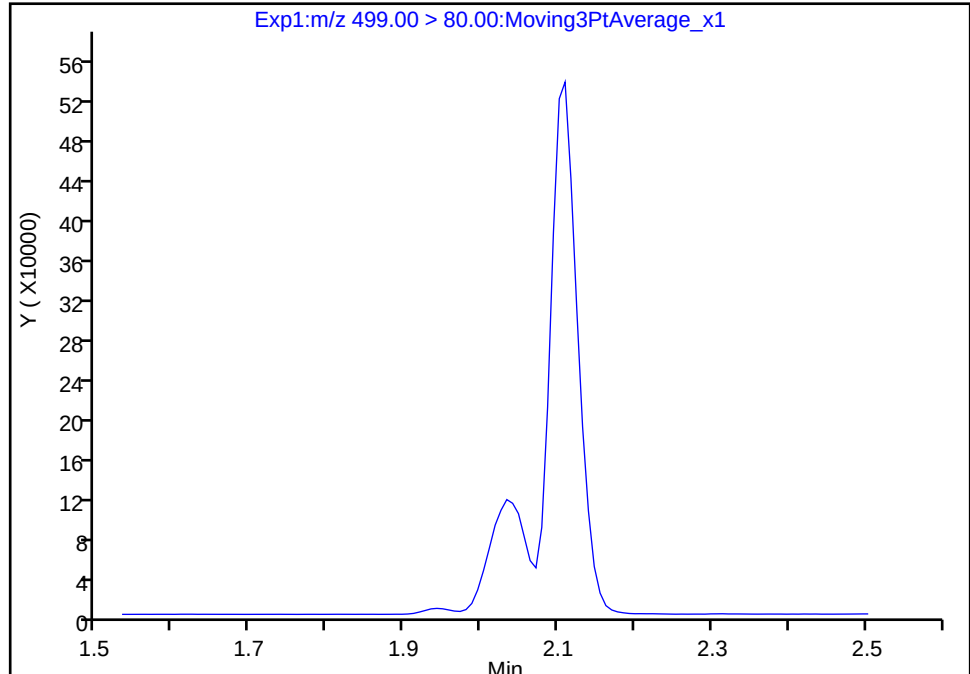
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

Not Detected

Expected RT: 2.09

Processing Integration Results



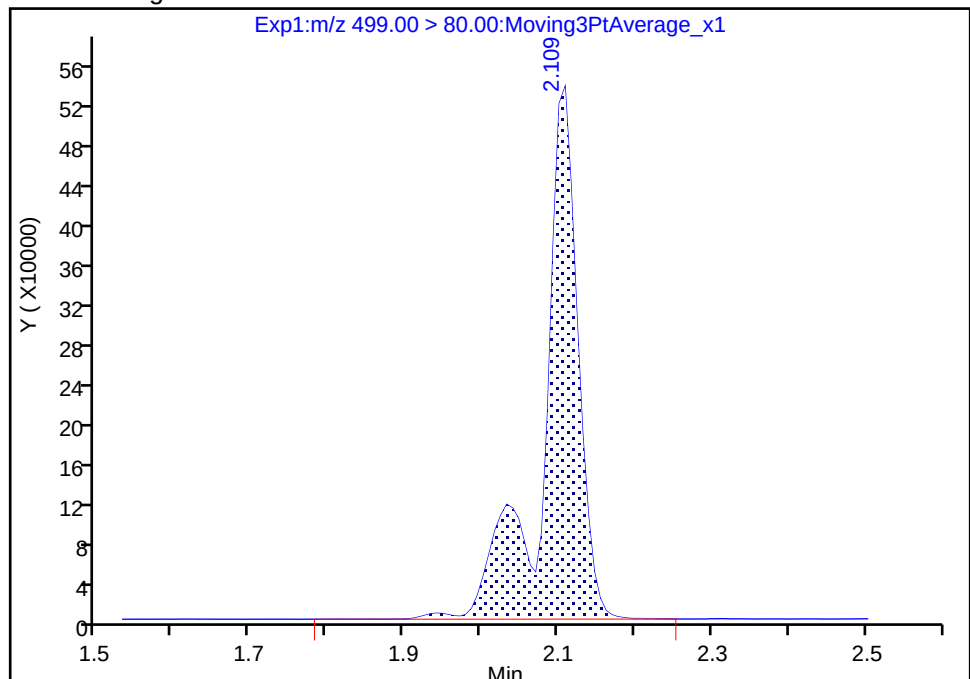
RT: 2.11

Area: 1698814

Amount: 19.802626

Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 13-Apr-2018 09:26:39

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_041.d

Injection Date: 13-Apr-2018 01:23:46

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

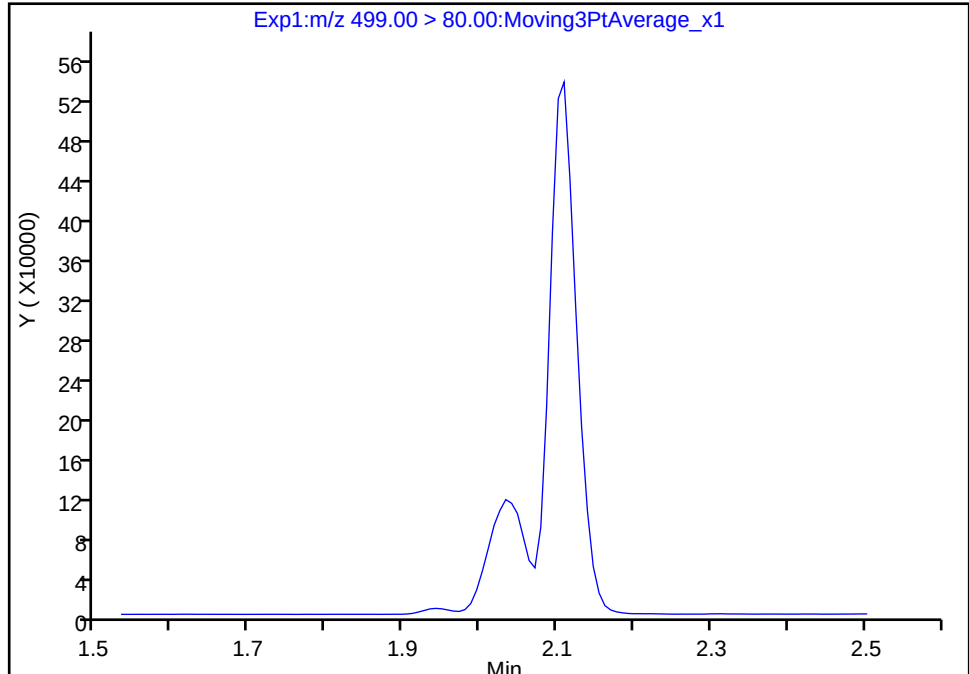
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

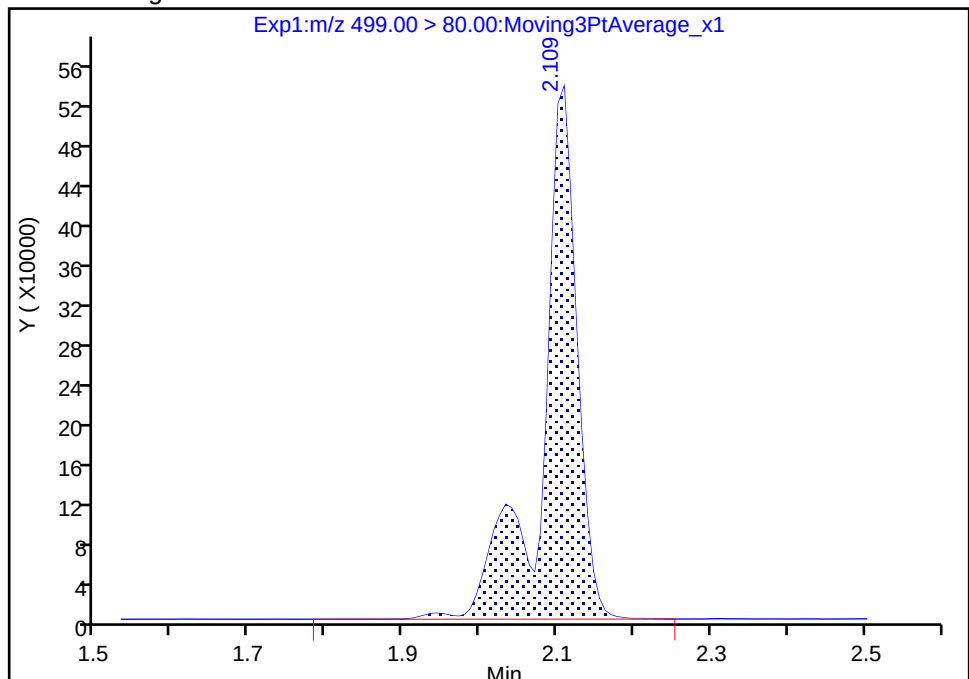
Not Detected

Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.11

Area: 1698814

Amount: 19.802626

Amount Units: ng/ml

Reviewer: roycea, 13-Apr-2018 09:26:39

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217816/19 Calibration Date: 04/13/2018 01:51
 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: 2018.04.12_537AA_047.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	1.083		139	135	2.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.081		14.7	14.6	0.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.709		47.2	45.4	4.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.082		30.2	29.7	1.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8552		30.2	29.7	1.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.096		61.0	59.3	2.8	30.0
13C2 PFHxA	Ave	1.063	1.086		10.2	10.0	2.1	30.0
13C2 PFDA	Ave	0.8505	0.8255		9.71	10.0	-2.9	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217818/19 Calibration Date: 04/13/2018 01:51
 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: 2018.04.12_537AA_047.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	1.083		139	135	2.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.081		14.7	14.6	0.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.709		47.2	45.4	4.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.082		30.2	29.7	1.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8552		30.2	29.7	1.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.096		61.0	59.3	2.8	30.0
13C2 PFHxA	Ave	1.063	1.086		10.2	10.0	2.1	30.0
13C2 PFDA	Ave	0.8505	0.8255		9.71	10.0	-2.9	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_047.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 13-Apr-2018 01:51:47 ALS Bottle#: 5 Worklist Smp#: 19
 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\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:54 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: XAWRK028

First Level Reviewer: roycea

Date: 13-Apr-2018 09:27:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	10956527	139.1		14938	
298.90 > 99.00	1.381	1.381	0.0	1.000	8167747		1.34(0.00-0.00)	17705	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	976923	10.2		9615	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	1418352	14.7		45.4	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.677	0.0	1.000	5807005	47.2		7192	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.866	0.0		899573	10.0		4819	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.874	0.0	1.000	2889639	30.2		429	
413.00 > 169.00	1.874	1.874	0.0	1.000	1514485		1.91(0.00-0.00)	2064	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.094	0.015	1.000	4867344	61.0		4584	a
499.00 > 99.00	2.102	2.094	0.008	0.996	1087695		4.47(0.00-0.00)	2665	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2148163	28.7		3805	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.109	0.0	1.000	2284885	30.2		428	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.261	0.0	1.000	742566	9.71		7084	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00026

Amount Added: 1.00

Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_047.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 13-Apr-2018 01:51:47 ALS Bottle#: 5 Worklist Smp#: 19
 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\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:54 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: XAWRK028

First Level Reviewer: roycea

Date: 13-Apr-2018 09:27:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	10956527	139.1		14938	
298.90 > 99.00	1.381	1.381	0.0	1.000	8167747		1.34(0.00-0.00)	17705	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	976923	10.2		9615	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	1418352	14.7		45.4	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.677	0.0	1.000	5807005	47.2		7192	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.866	0.0		899573	10.0		4819	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.874	0.0	1.000	2889639	30.2		429	
413.00 > 169.00	1.874	1.874	0.0	1.000	1514485		1.91(0.00-0.00)	2064	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.094	0.015	1.000	4867344	61.0		4584	a
499.00 > 99.00	2.102	2.094	0.008	0.996	1087695		4.47(0.00-0.00)	2665	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2148163	28.7		3805	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.109	0.0	1.000	2284885	30.2		428	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.261	0.0	1.000	742566	9.71		7084	

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\20180413-56657.b\2018.04.12_537AA_047.d

Injection Date: 13-Apr-2018 01:51:47

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 19

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

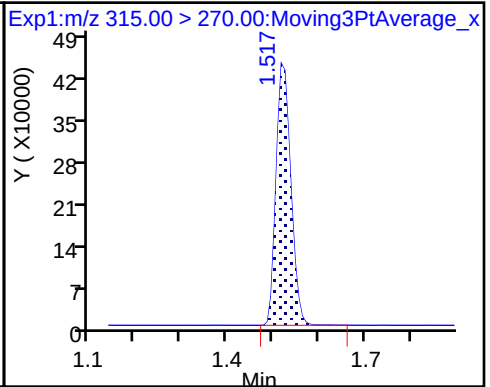
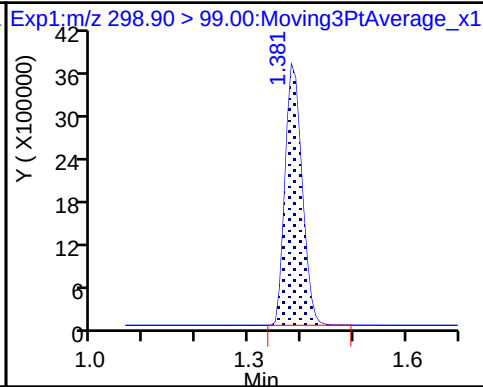
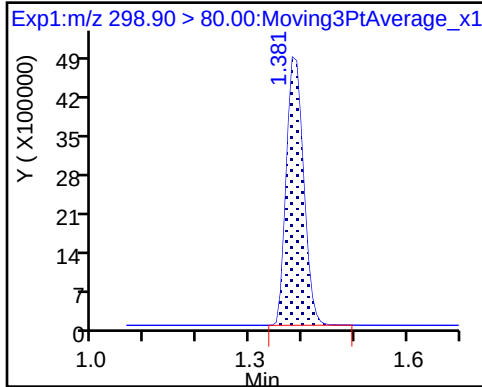
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

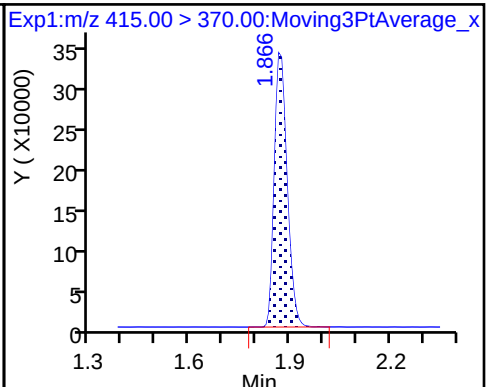
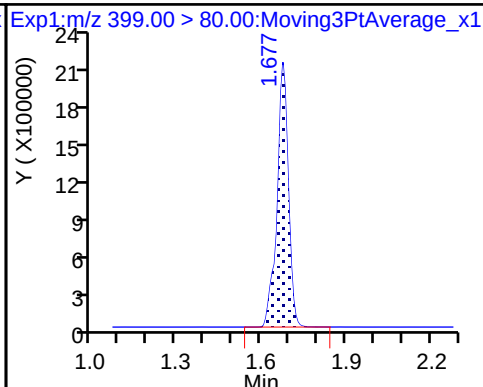
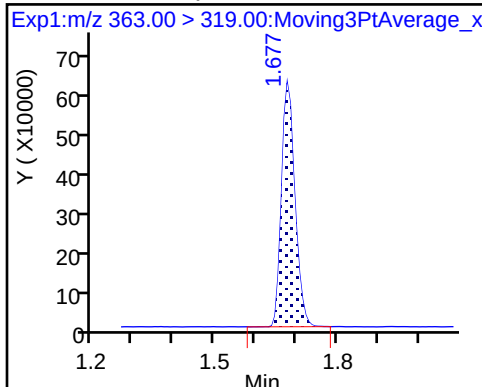
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

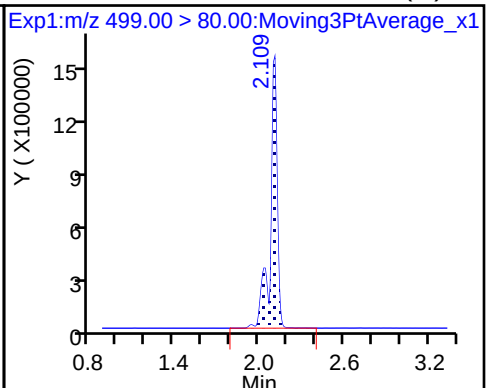
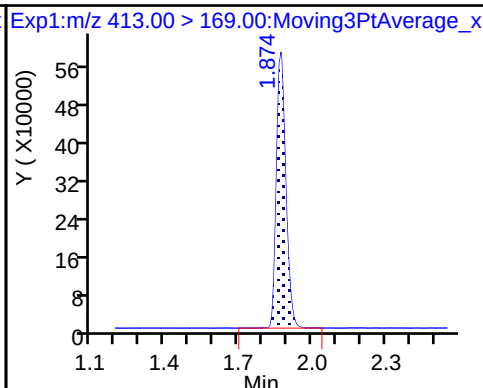
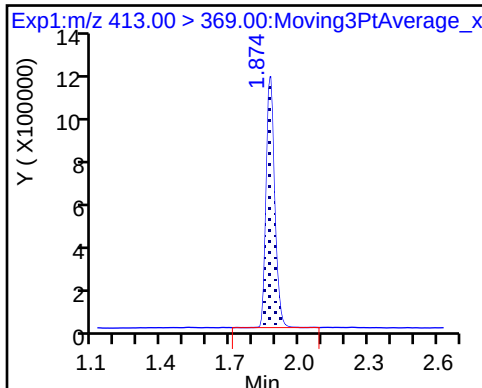
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

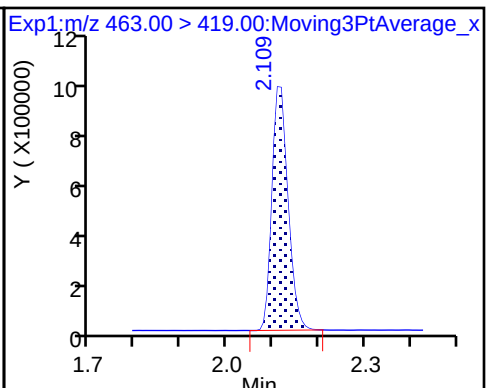
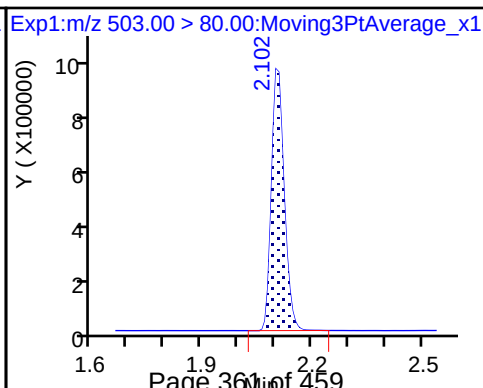
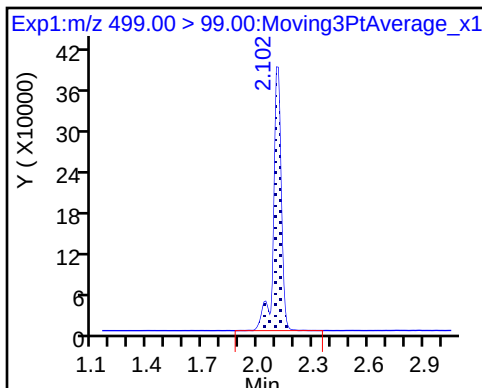
8 Perfluorooctane sulfonic acid (M)



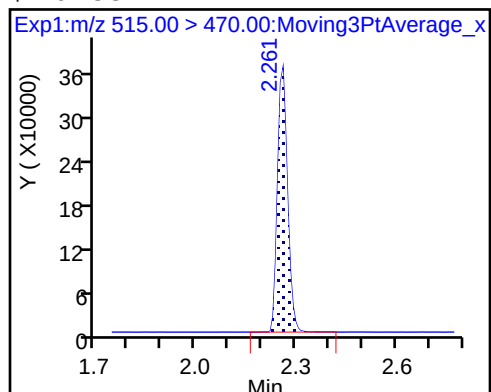
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_047.d

Injection Date: 13-Apr-2018 01:51:47

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 19

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

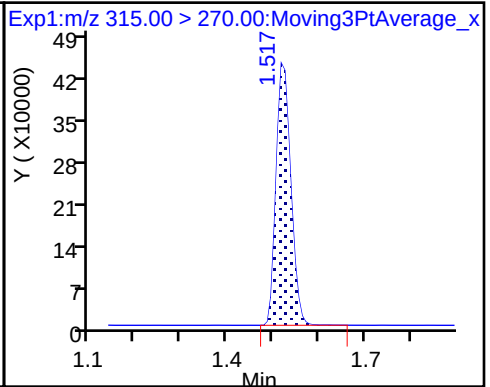
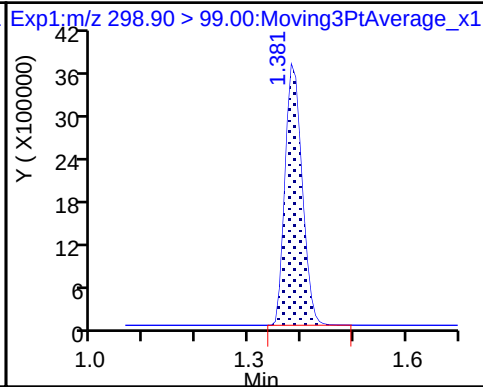
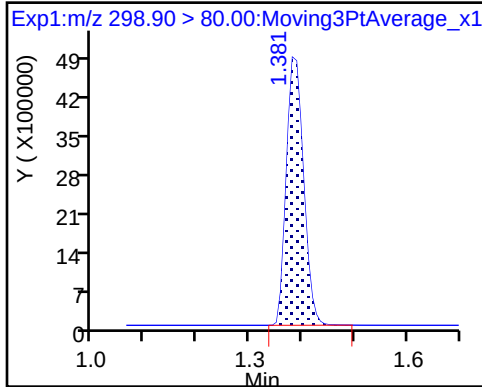
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

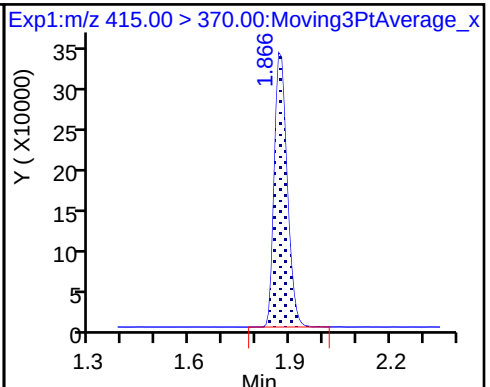
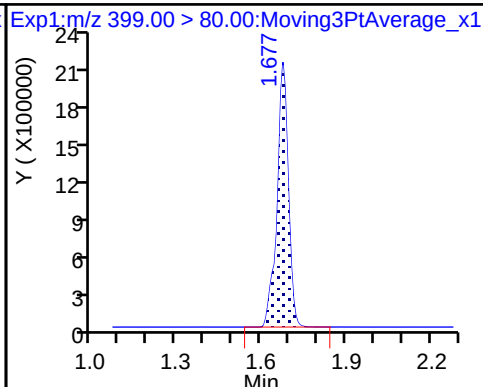
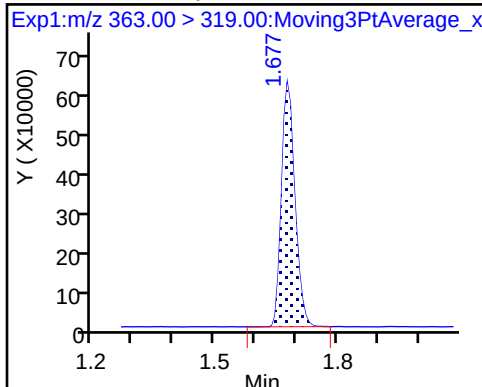
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

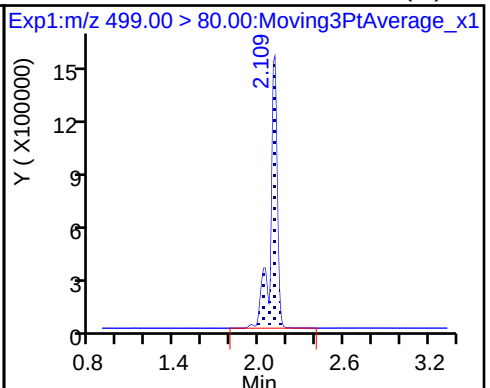
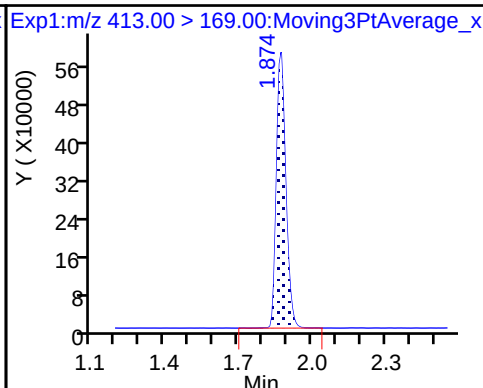
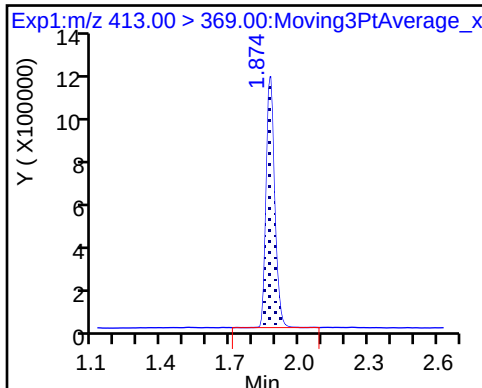
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

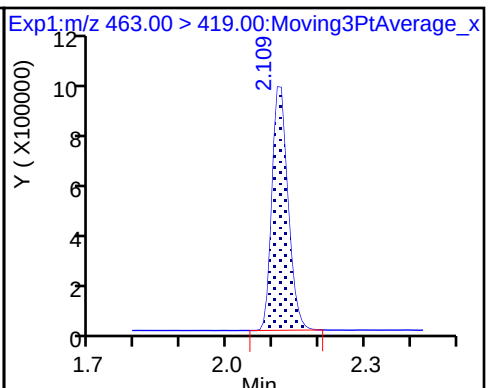
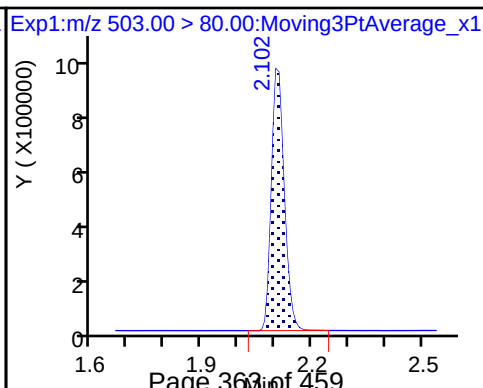
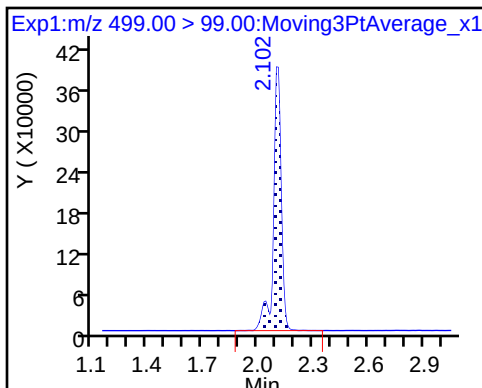
8 Perfluorooctane sulfonic acid (M)



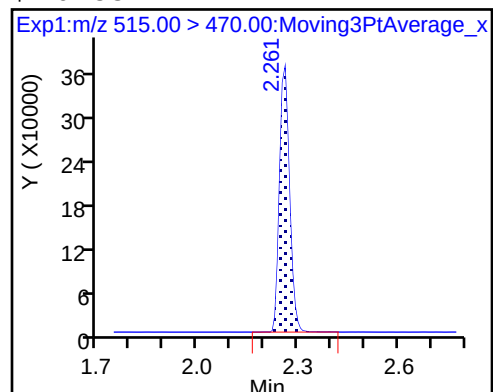
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

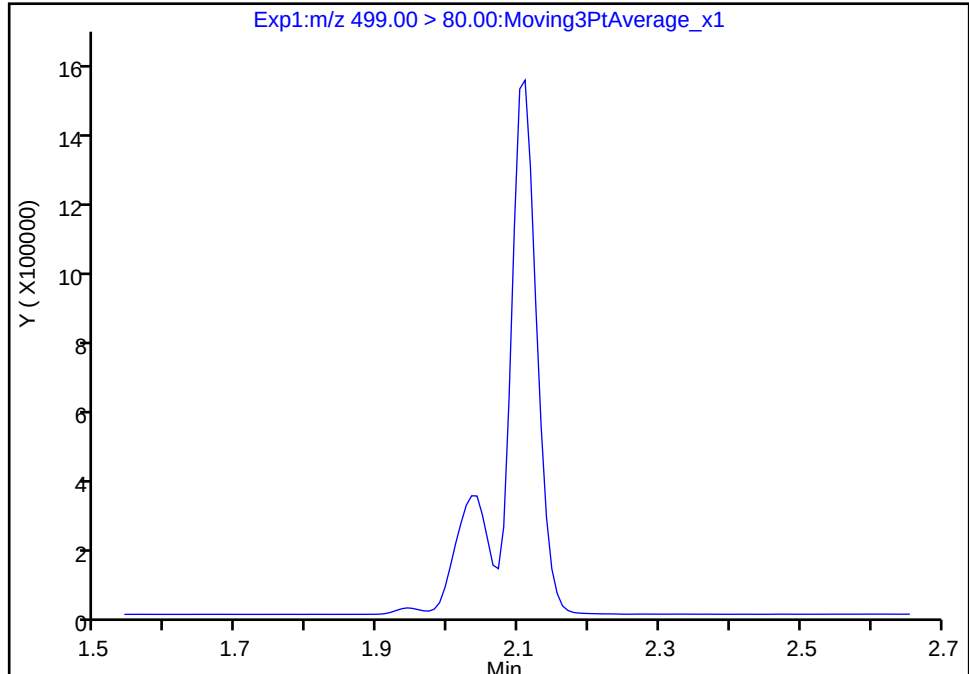
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_047.d
Injection Date: 13-Apr-2018 01:51:47 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

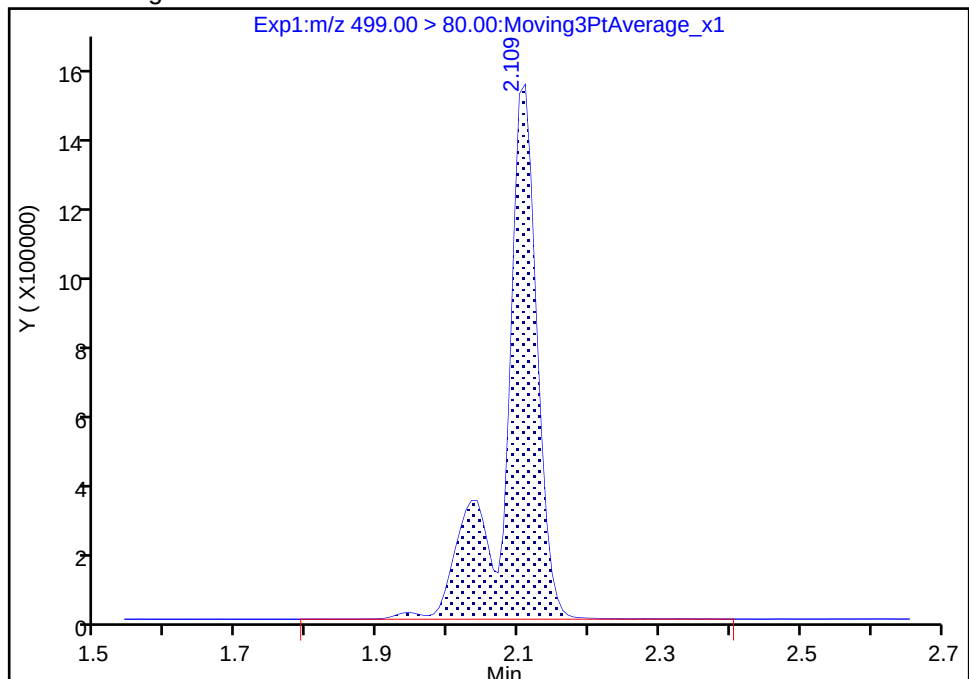
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.11
Area: 4867344
Amount: 60.956084
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 13-Apr-2018 09:27:32

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

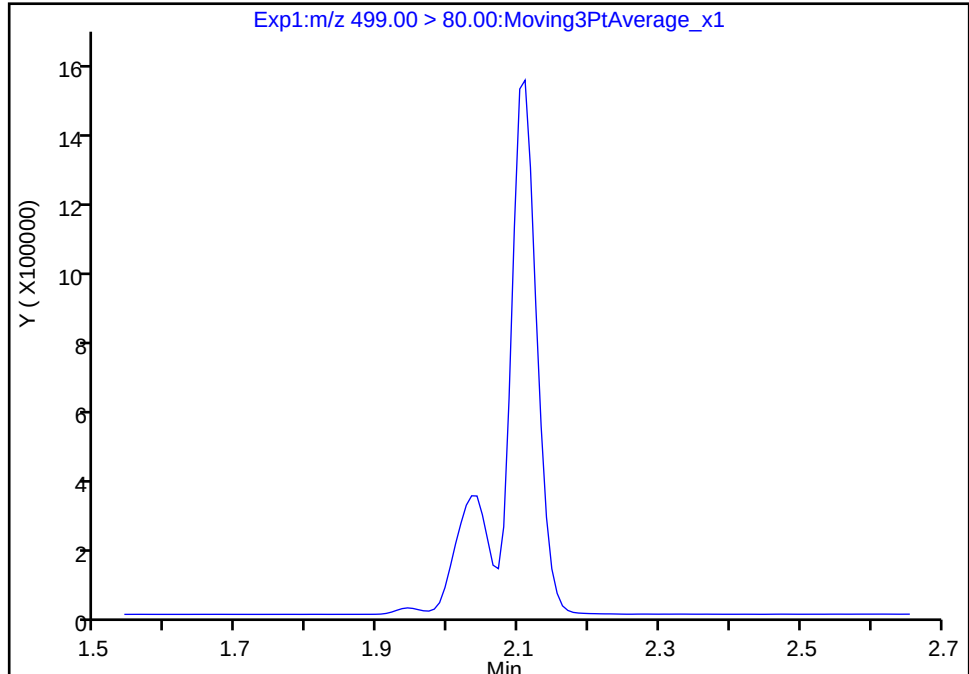
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_047.d
Injection Date: 13-Apr-2018 01:51:47 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

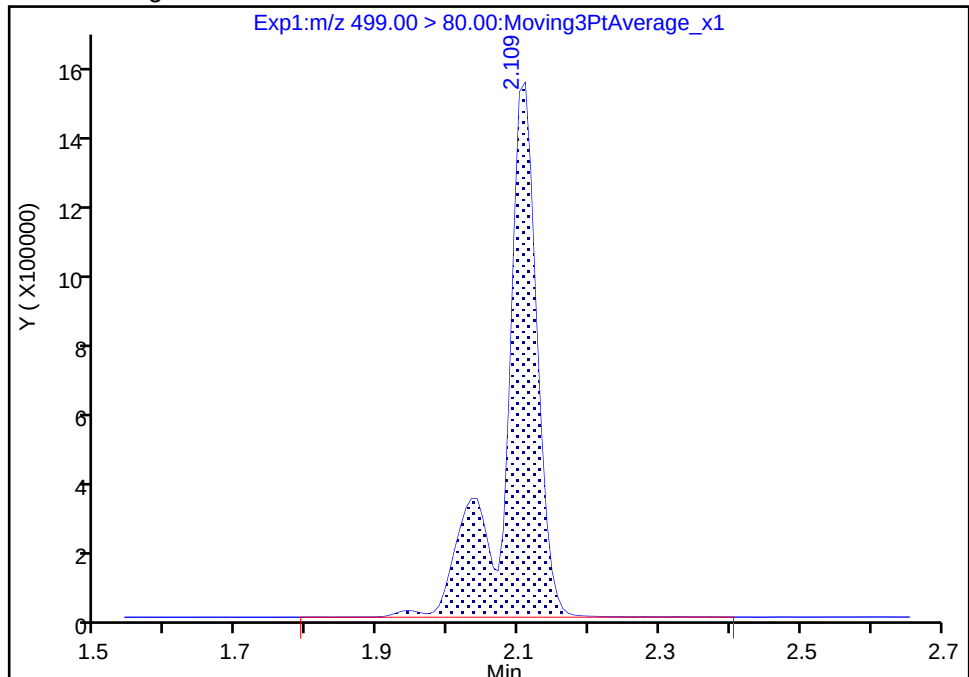
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.11
Area: 4867344
Amount: 60.956084
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 13-Apr-2018 09:27:32

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217818/25 Calibration Date: 04/13/2018 02:19
 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: 2018.04.12_537AA_053.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	1.098		141	135	4.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.071		14.5	14.6	-0.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.747		48.3	45.4	6.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.078		30.1	29.7	1.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.088		60.5	59.3	2.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8382		29.6	29.7	-0.5	30.0
13C2 PFHxA	Ave	1.063	1.058		9.96	10.0	-0.4	30.0
13C2 PFDA	Ave	0.8505	0.8187		9.63	10.0	-3.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217820/25 Calibration Date: 04/13/2018 02:19
 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: 2018.04.12_537AA_053.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	1.098		141	135	4.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.071		14.5	14.6	-0.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.747		48.3	45.4	6.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.078		30.1	29.7	1.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.088		60.5	59.3	2.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8382		29.6	29.7	-0.5	30.0
13C2 PFHxA	Ave	1.063	1.058		9.96	10.0	-0.4	30.0
13C2 PFDA	Ave	0.8505	0.8187		9.63	10.0	-3.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_053.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 13-Apr-2018 02:19:51 ALS Bottle#: 5 Worklist Smp#: 25
 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\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

First Level Reviewer: roycea

Date: 13-Apr-2018 09:28:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	10936921	141.0		15864	
298.90 > 99.00	1.381	1.381	0.0	1.000	8183283		1.34(0.00-0.00)	17488	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	975404	9.96		9606	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	1438614	14.5		44.6	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.677	0.0	1.000	5846210	48.3		7187	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.874	0.0		921520	10.0		4572	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.874	0.0	1.000	2949357	30.1		402	
413.00 > 169.00	1.874	1.874	0.0	1.000	1574077		1.87(0.00-0.00)	2047	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.094	0.015	1.000	4759332	60.5		4467	a
499.00 > 99.00	2.109	2.094	0.015	1.000	1037680		4.59(0.00-0.00)	2406	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2115143	28.7		3828	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.117	0.0	1.000	2294050	29.6		423	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	754465	9.63		6341	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00026

Amount Added: 1.00

Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_053.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 13-Apr-2018 02:19:51 ALS Bottle#: 5 Worklist Smp#: 25
 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\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

First Level Reviewer: roycea

Date: 13-Apr-2018 09:28:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	10936921	141.0		15864	
298.90 > 99.00	1.381	1.381	0.0	1.000	8183283		1.34(0.00-0.00)	17488	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	975404	9.96		9606	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	1438614	14.5		44.6	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.677	0.0	1.000	5846210	48.3		7187	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.874	0.0		921520	10.0		4572	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.874	0.0	1.000	2949357	30.1		402	
413.00 > 169.00	1.874	1.874	0.0	1.000	1574077		1.87(0.00-0.00)	2047	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.094	0.015	1.000	4759332	60.5		4467	a
499.00 > 99.00	2.109	2.094	0.015	1.000	1037680		4.59(0.00-0.00)	2406	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2115143	28.7		3828	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.117	0.0	1.000	2294050	29.6		423	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	754465	9.63		6341	

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\20180413-56657.b\2018.04.12_537AA_053.d

Injection Date: 13-Apr-2018 02:19:51

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 25

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

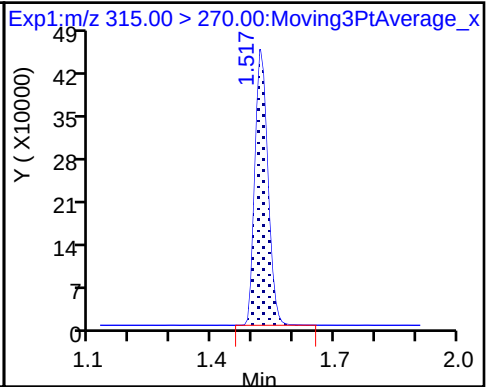
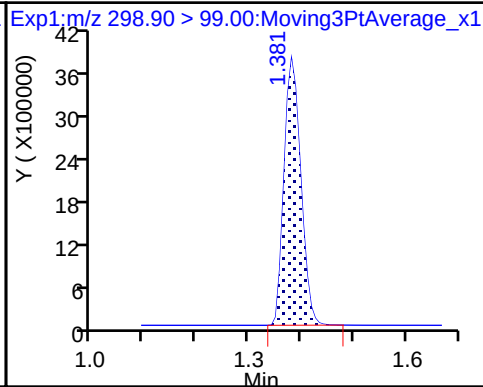
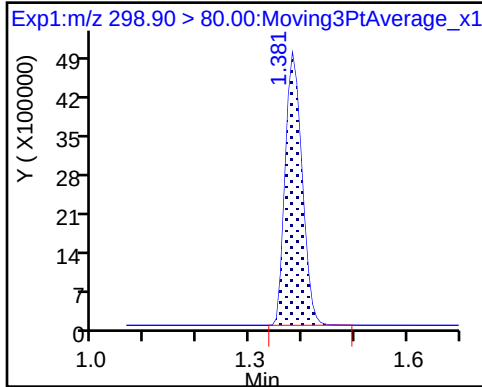
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

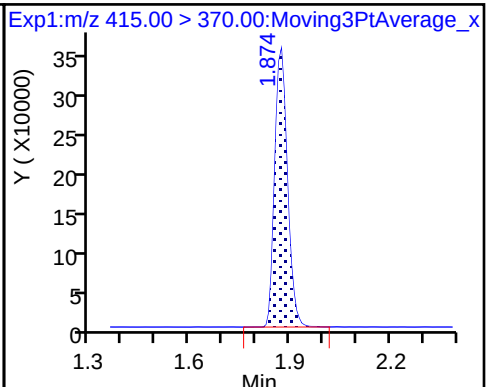
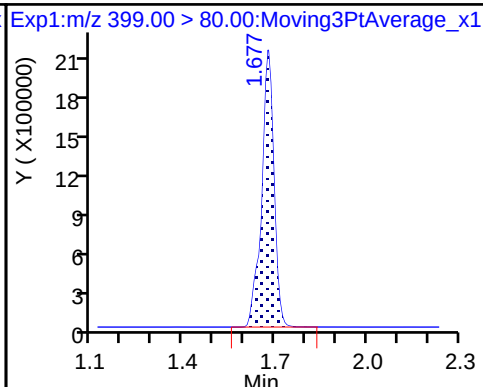
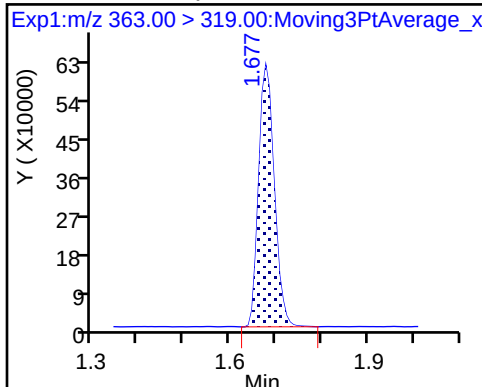
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

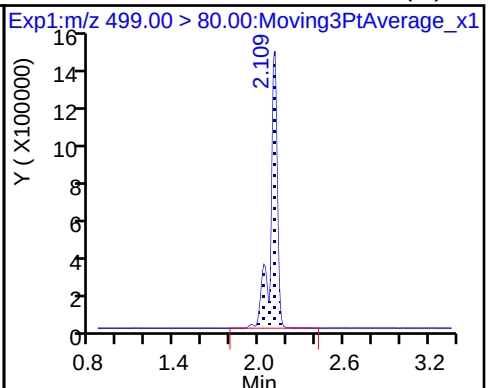
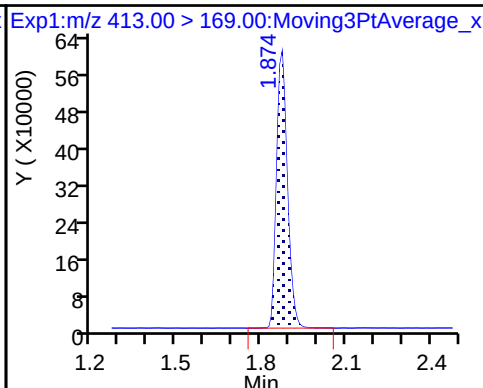
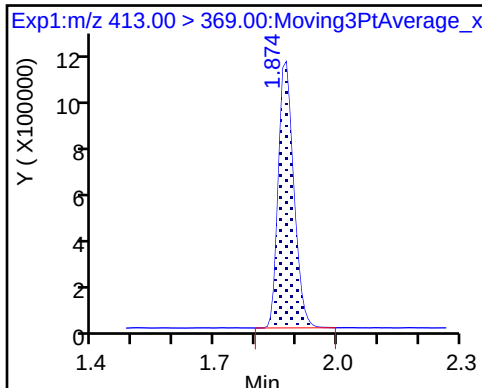
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

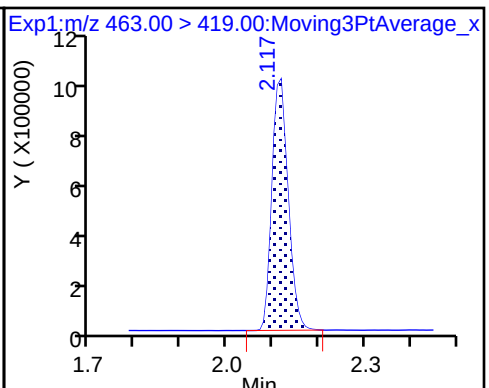
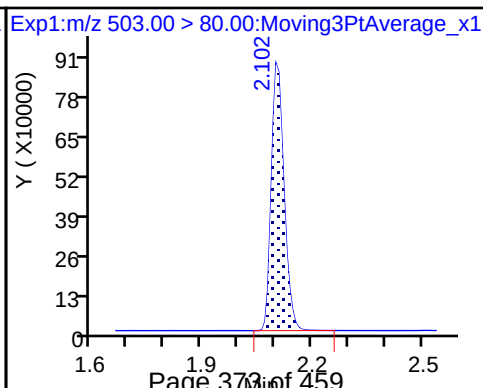
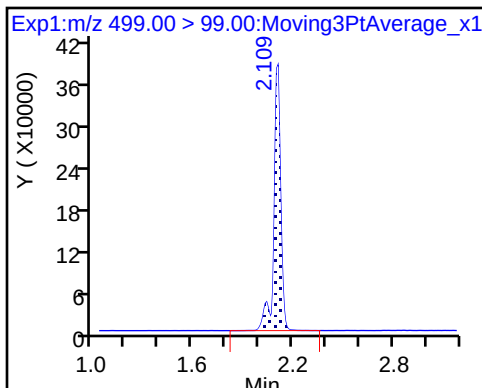
8 Perfluorooctane sulfonic acid (M)



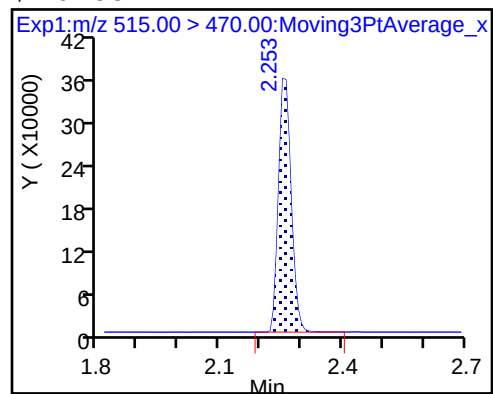
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_053.d

Injection Date: 13-Apr-2018 02:19:51

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 25

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

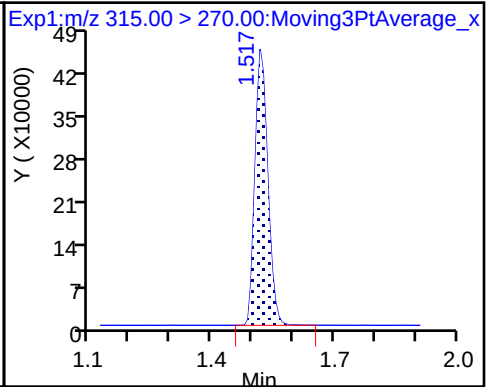
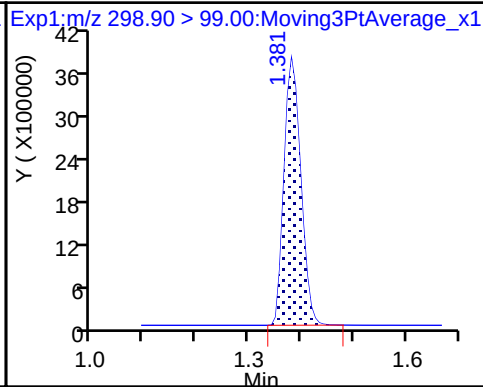
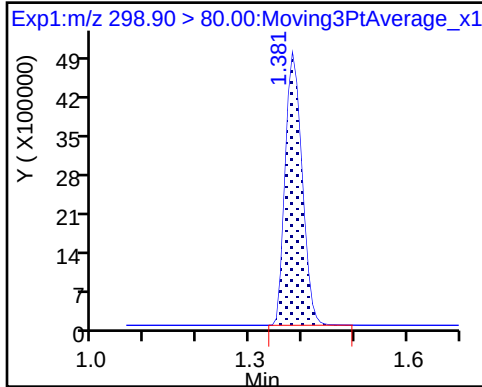
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

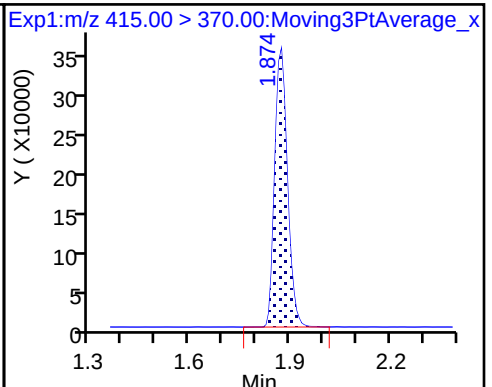
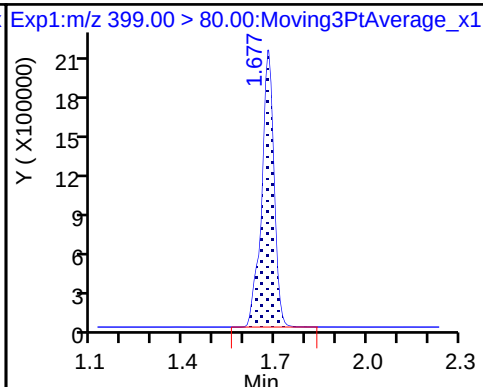
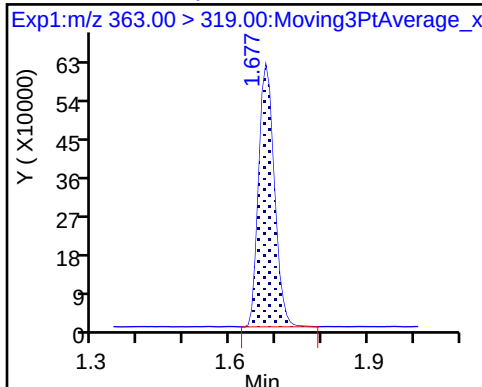
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

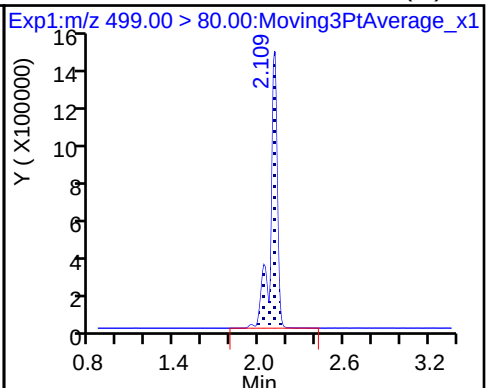
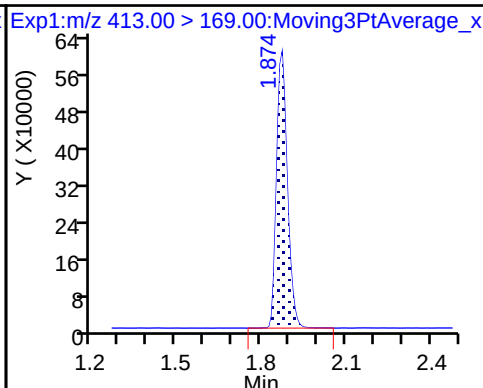
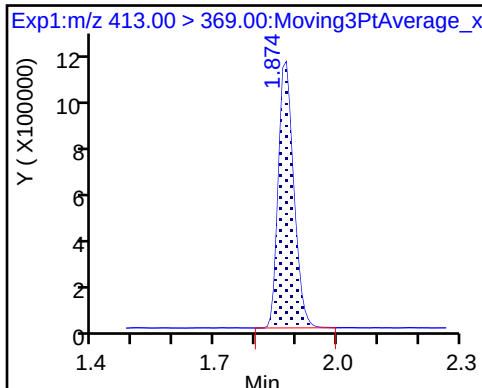
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

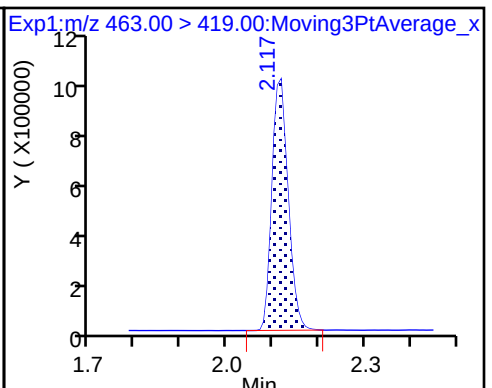
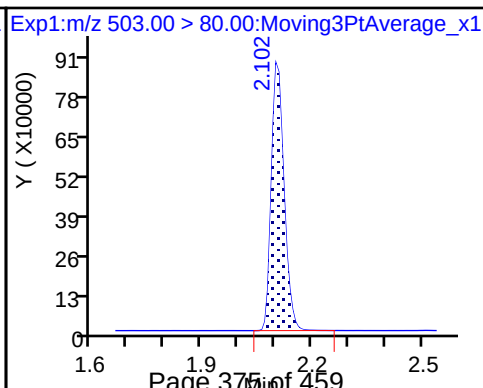
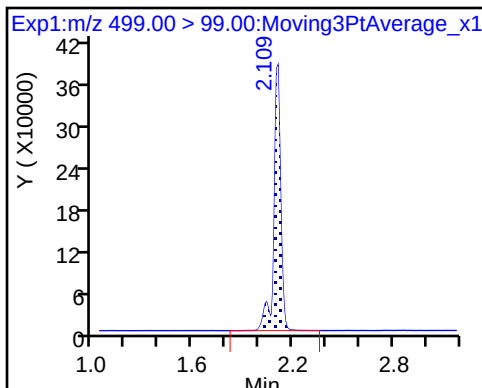
8 Perfluorooctane sulfonic acid (M)



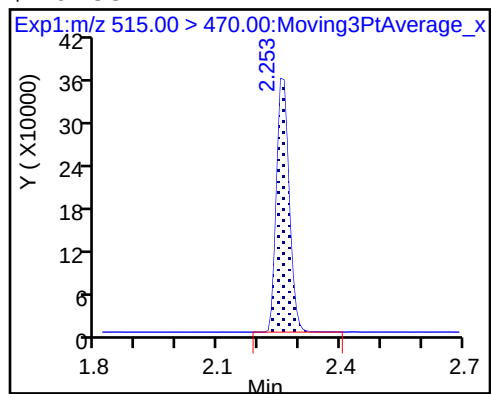
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_053.d

Injection Date: 13-Apr-2018 02:19:51

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#:

5

Worklist Smp#: 25

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

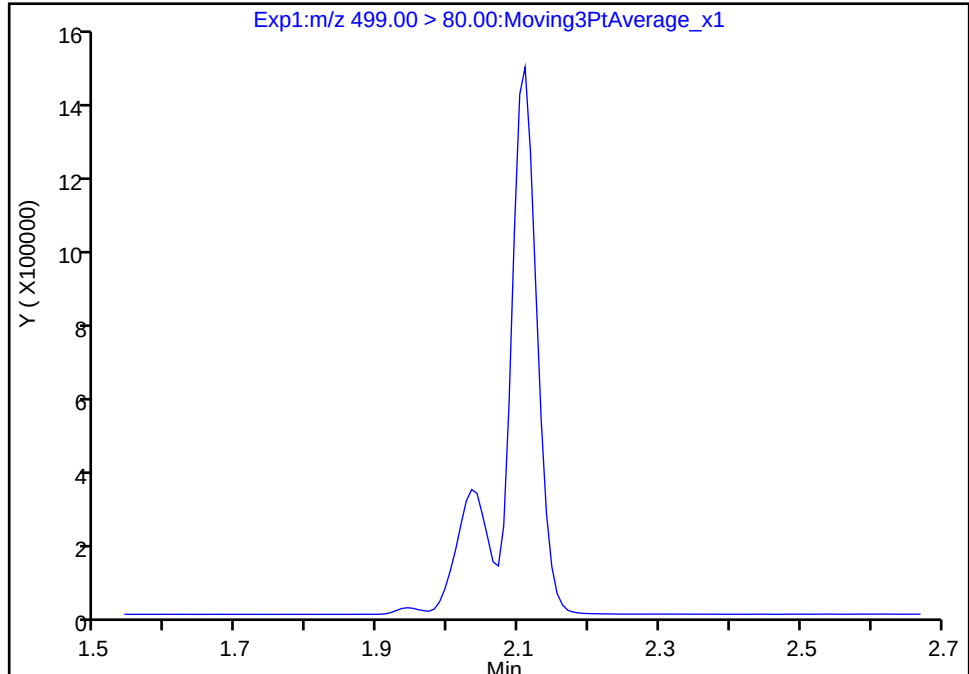
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

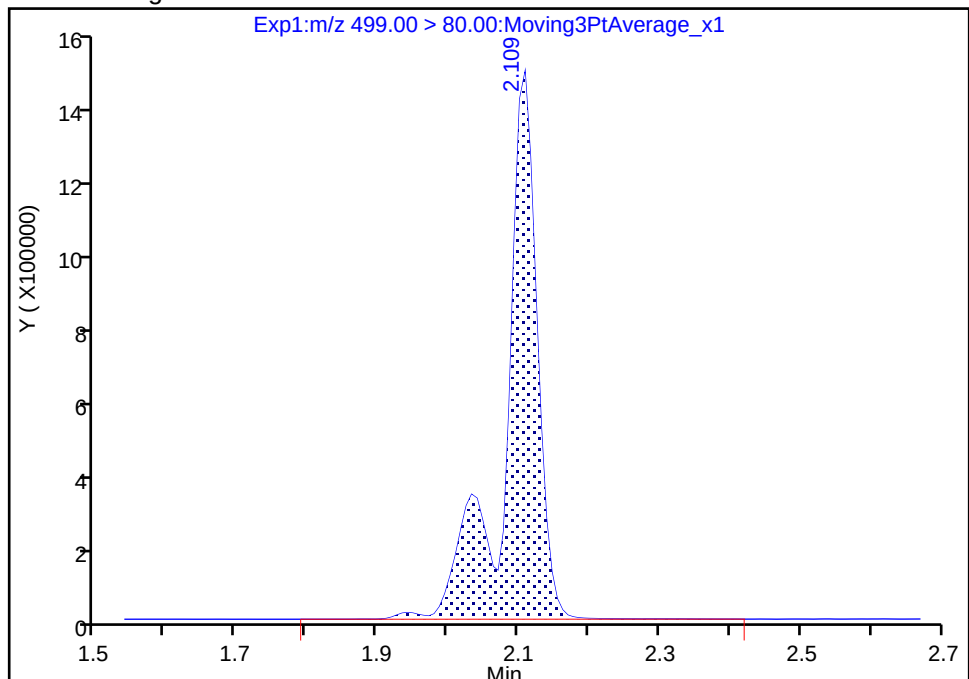
Not Detected

Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.11

Area: 4759332

Amount: 60.533881

Amount Units: ng/ml

Reviewer: roycea, 13-Apr-2018 09:28:34

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_053.d

Injection Date: 13-Apr-2018 02:19:51

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#:

5

Worklist Smp#: 25

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

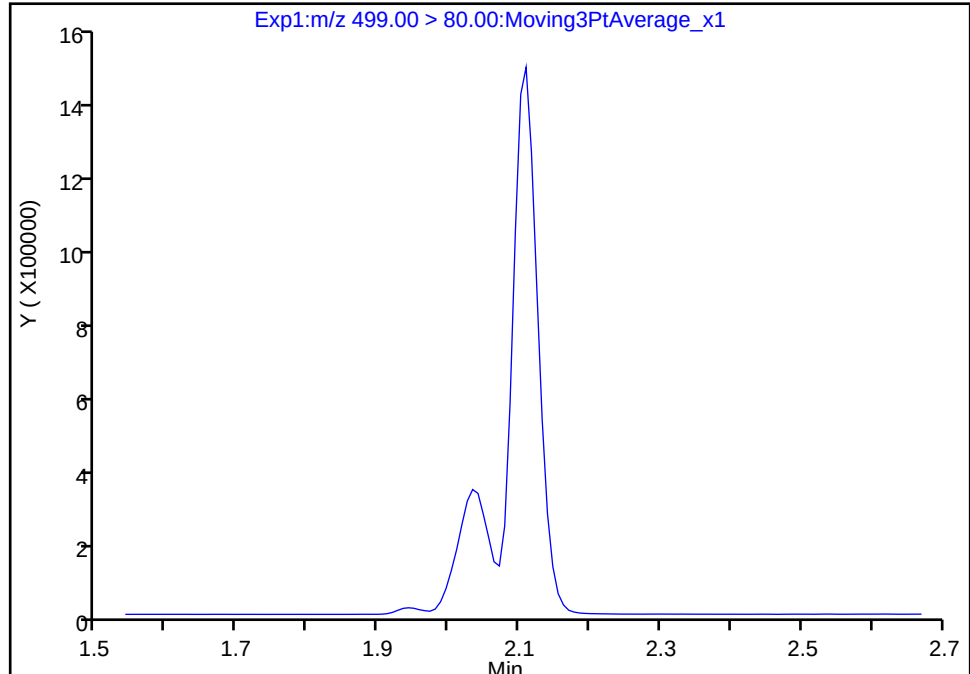
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

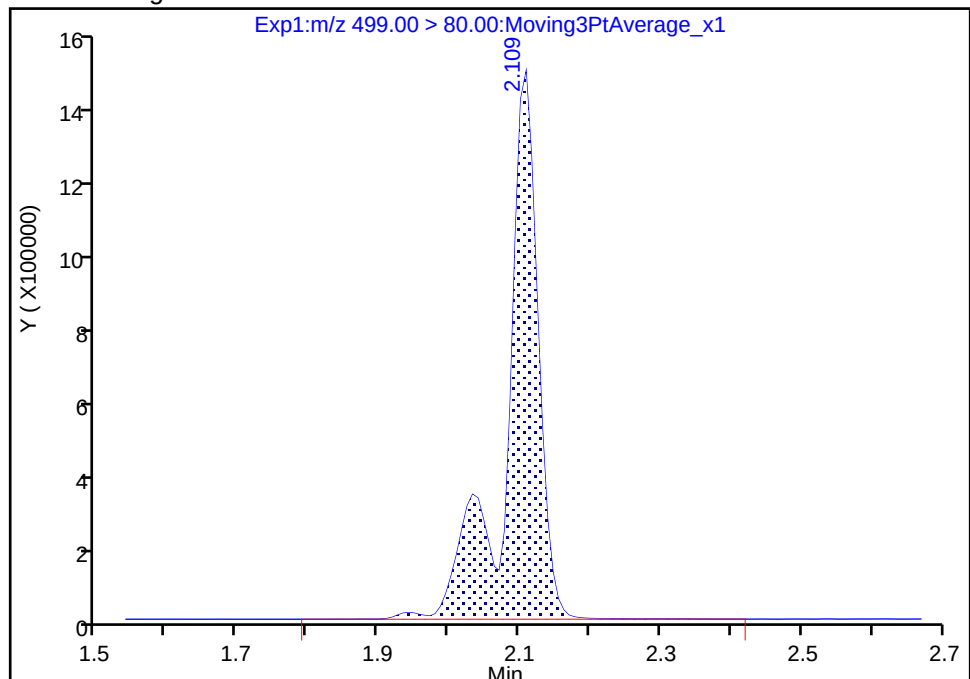
Not Detected

Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.11

Area: 4759332

Amount: 60.533881

Amount Units: ng/ml

Reviewer: roycea, 13-Apr-2018 09:28:34

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217820/37 Calibration Date: 04/13/2018 03:15
 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: 2018.04.12_537AA_065.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	1.204		51.5	45.0	14.5	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.056		4.78	4.86	-1.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.705		15.7	15.1	3.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.007		9.39	9.90	-5.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.068		19.8	19.8	0.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8345		9.81	9.90	-0.9	30.0
13C2 PFHxA	Ave	1.063	1.043		9.81	10.0	-1.9	30.0
13C2 PFDA	Ave	0.8505	0.8029		9.44	10.0	-5.6	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_065.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 13-Apr-2018 03:15:54 ALS Bottle#: 3 Worklist Smp#: 37
 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\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:13:08 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 10:13:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.373	1.373	0.0	1.000	4166338	51.5		7023	
298.90 > 99.00	1.373	1.373	0.0	1.000	2972954		1.40(0.00-0.00)	7818	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.510	0.0	1.000	974305	9.81		9981	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.669	0.0	1.000	479494	4.78		14.2	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.669	0.0	1.000	1981800	15.7		2669	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.859	0.0		934501	10.0		5019	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.866	0.0	1.000	931947	9.39		124	
413.00 > 169.00	1.866	1.866	0.0	1.000	513337		1.82(0.00-0.00)	649	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.094	2.094	0.0	1.000	1622036	19.8		1593	a
499.00 > 99.00	2.094	2.094	0.0	1.000	349111		4.65(0.00-0.00)	817	a
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.094	0.0		2203770	28.7		3564	
9 Perfluorononanoic acid									
463.00 > 419.00	2.102	2.102	0.0	1.000	772077	9.81		145	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	750274	9.44		6751	

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\20180413-56657.b\2018.04.12_537AA_065.d

Injection Date: 13-Apr-2018 03:15:54

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 37

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

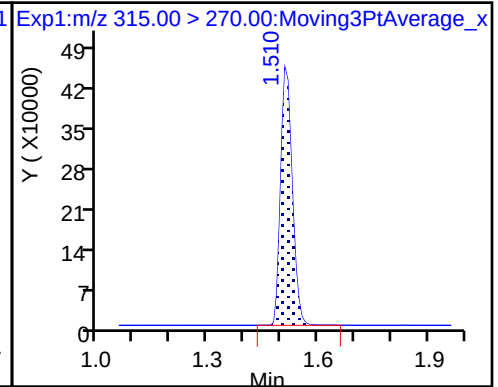
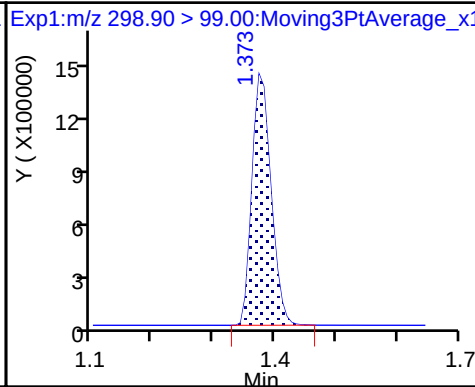
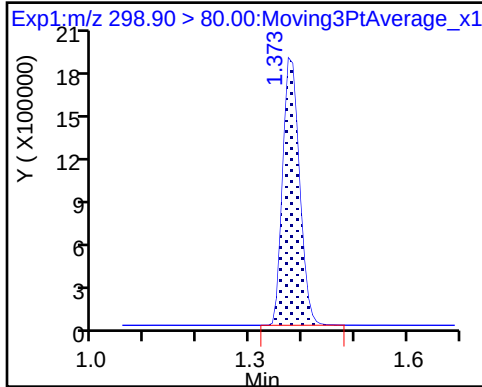
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

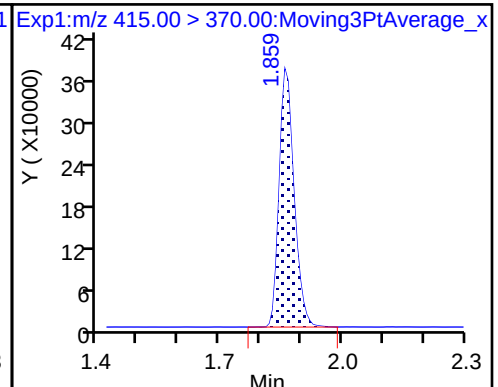
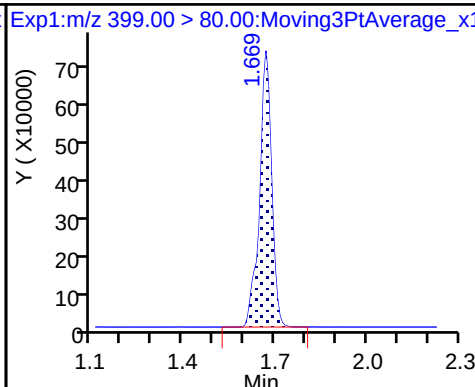
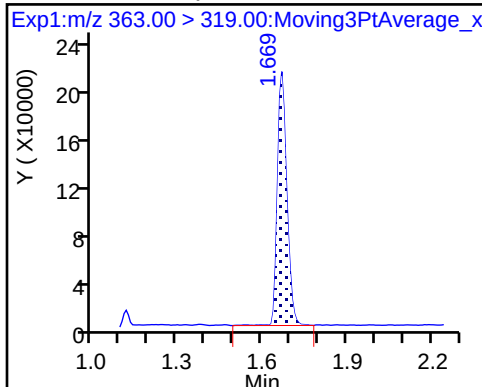
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

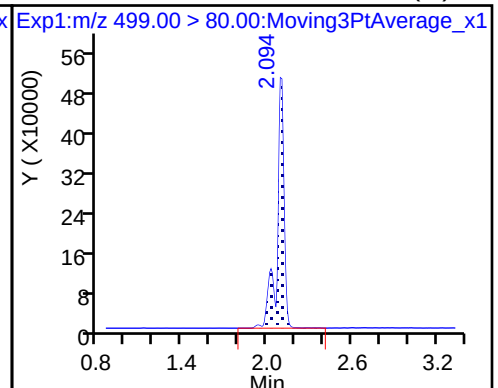
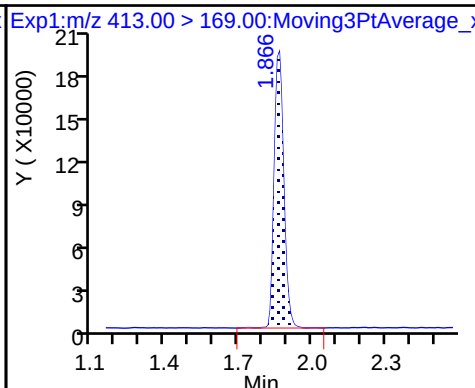
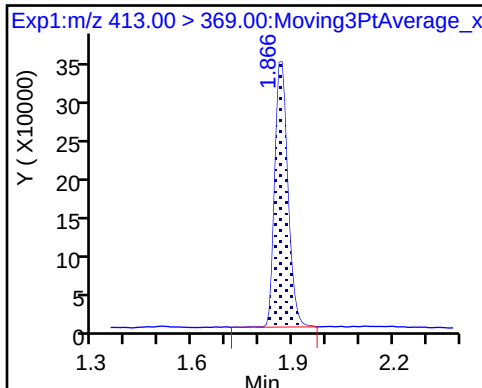
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

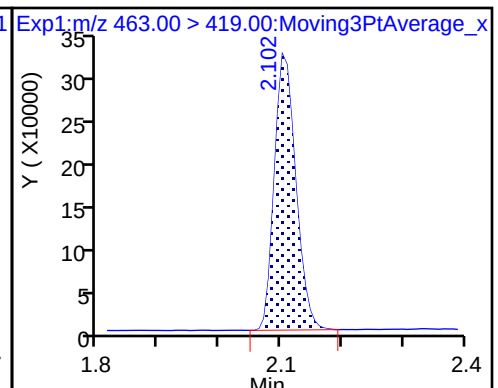
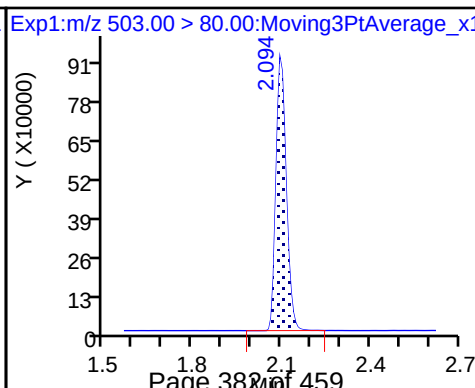
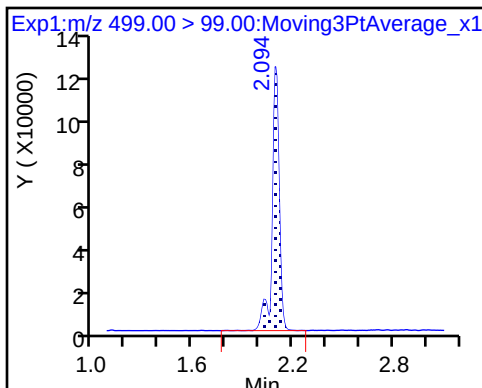
8 Perfluorooctane sulfonic acid (M)



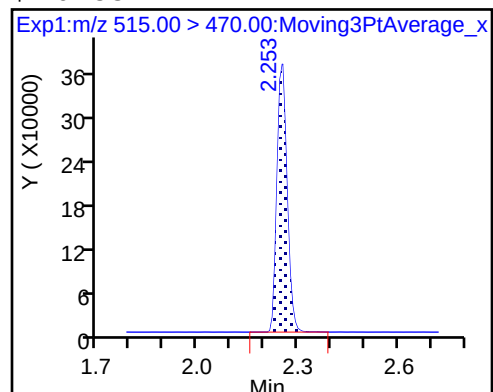
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

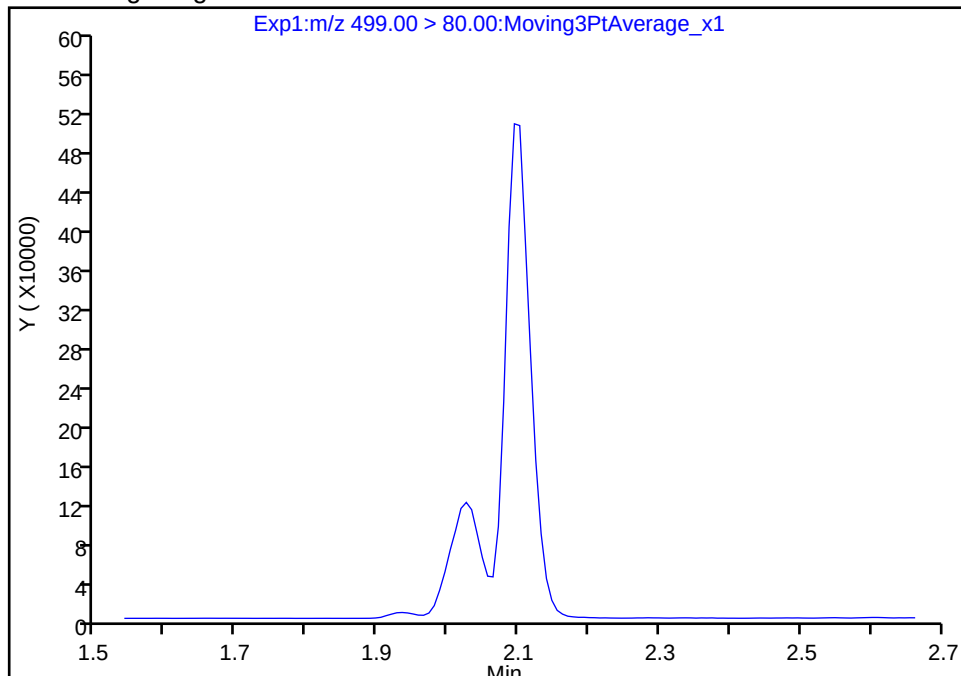
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_065.d
Injection Date: 13-Apr-2018 03:15:54 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 37
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

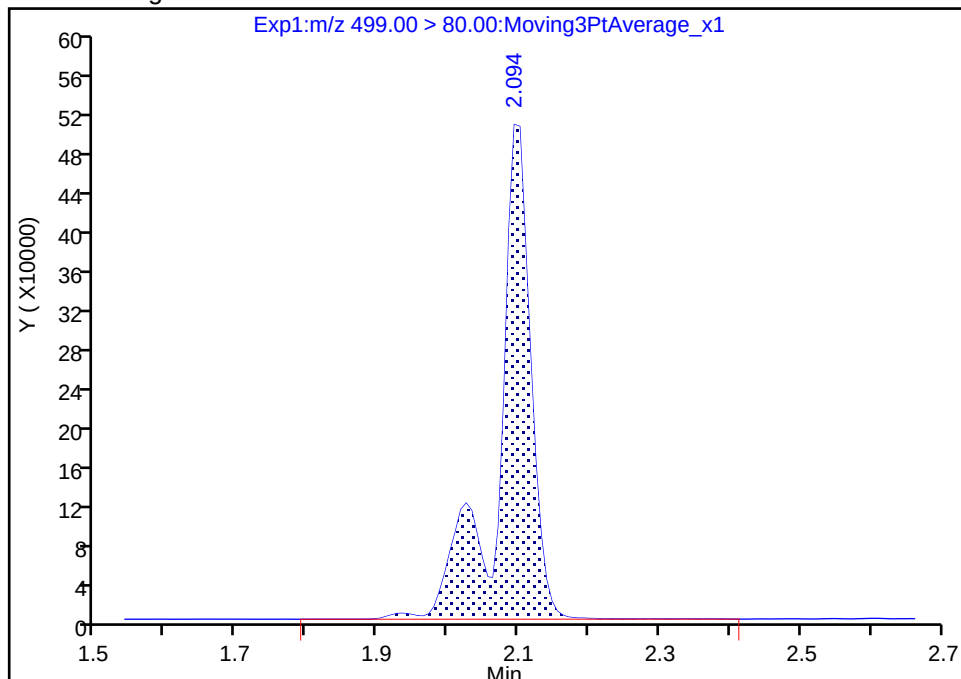
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.09
Area: 1622036
Amount: 19.800970
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 13-Apr-2018 09:58:24

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-216791/1-A
 Matrix: Water Lab File ID: 2018.04.12_537AA_031.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 00:37
 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.: 217814 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	83		70-130
STL00996	13C2 PFDA	94		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_031.d
 Lims ID: MB 320-216791/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 13-Apr-2018 00:37:03 ALS Bottle#: 21 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-216791/1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

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	1.525	0.0	1.000	835435	8.27		9256	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.889	-0.007		949828	10.0		5734	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.124	-0.007		2322770	28.7		4591	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.269	0.0	1.000	755733	9.36		7713	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_031.d

Injection Date: 13-Apr-2018 00:37:03

Instrument ID: A8_N

Lims ID: MB 320-216791/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 21

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

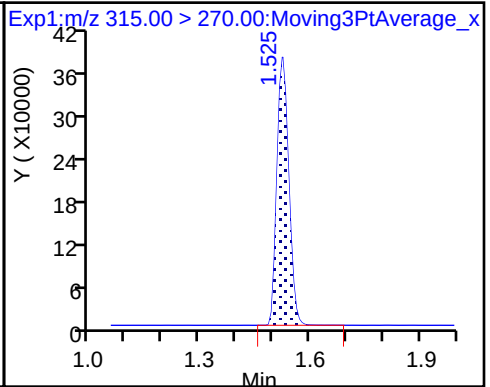
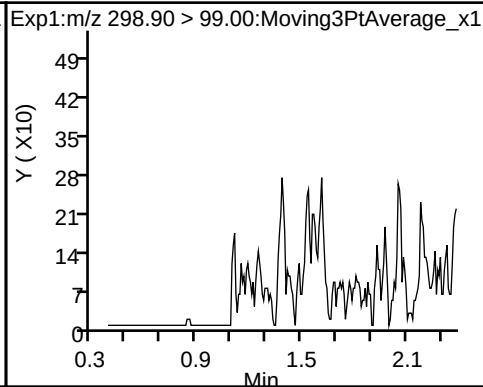
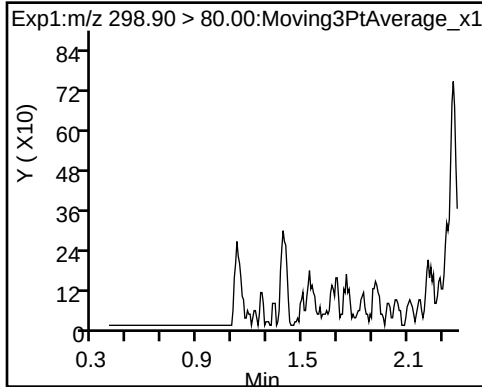
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

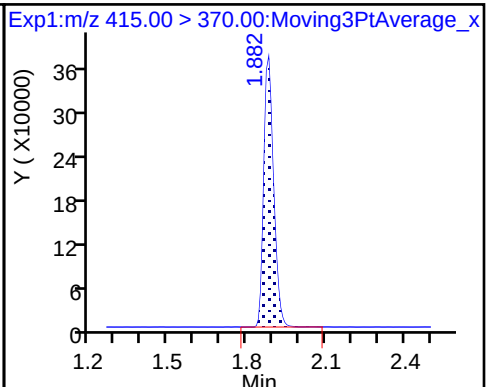
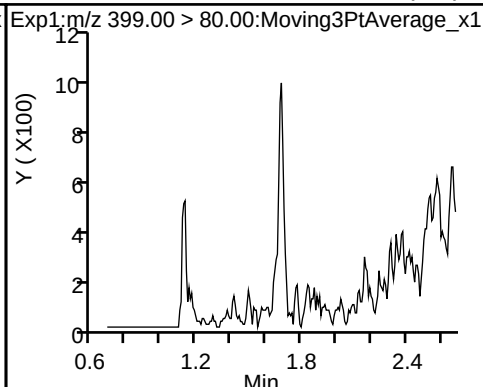
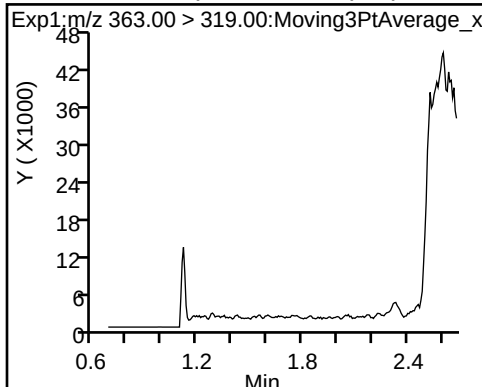
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

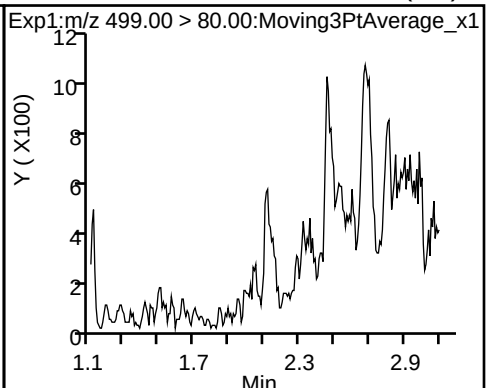
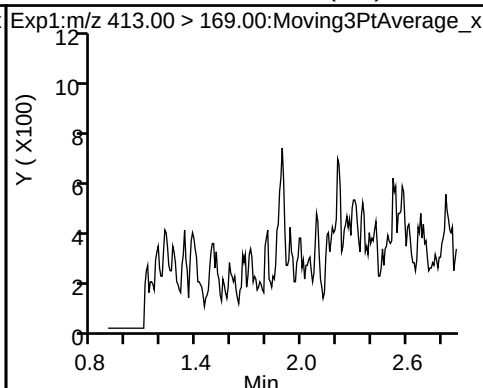
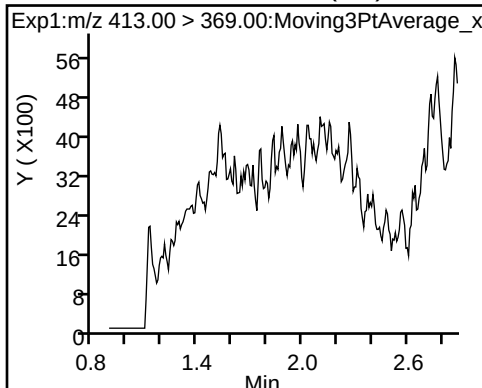
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

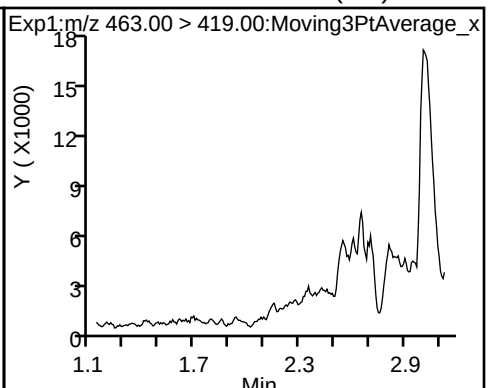
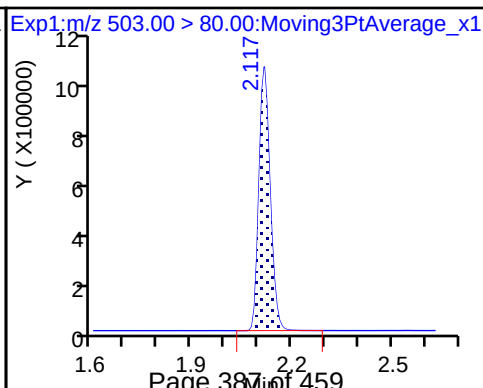
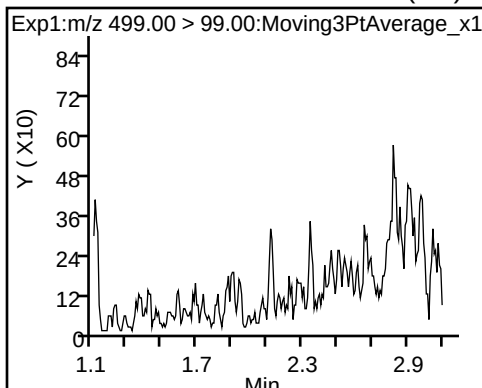
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

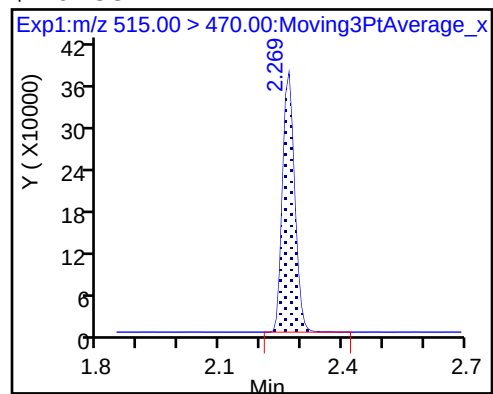


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_031.d
Lims ID: MB 320-216791/1-A
Client ID:
Sample Type: MB
Inject. Date: 13-Apr-2018 00:37:03 ALS Bottle#: 21 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-216791/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.27	82.73
\$ 10 13C2 PFDA	10.0	9.36	93.55

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-216792/1-A
 Matrix: Water Lab File ID: 2018.04.12_537AA_049.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 02:01
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217818 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	90		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_049.d
 Lims ID: MB 320-216792/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 13-Apr-2018 02:01:08 ALS Bottle#: 35 Worklist Smp#: 21
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-216792/1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:11:31 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: XAWRK028

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	895245	9.08		9781	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.866	0.0		927774	10.0		5463	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2237326	28.7		3982	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.261	-0.008	1.000	708293	8.98		6408	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_049.d

Injection Date: 13-Apr-2018 02:01:08

Instrument ID: A8_N

Lims ID: MB 320-216792/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 35

Worklist Smp#: 21

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

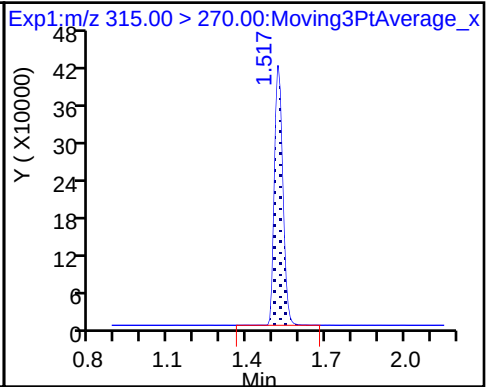
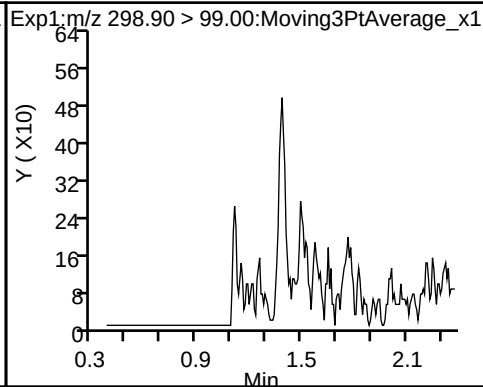
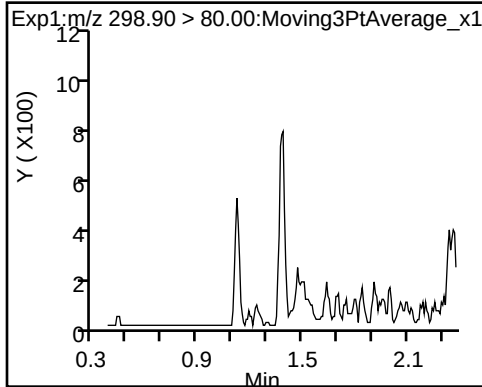
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

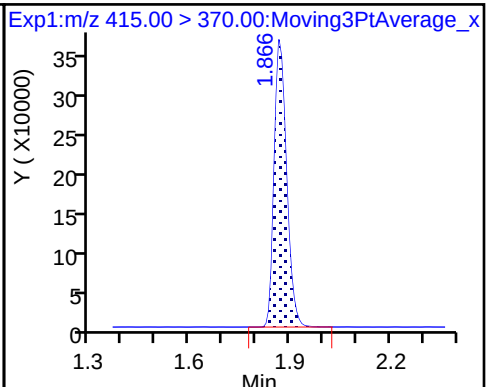
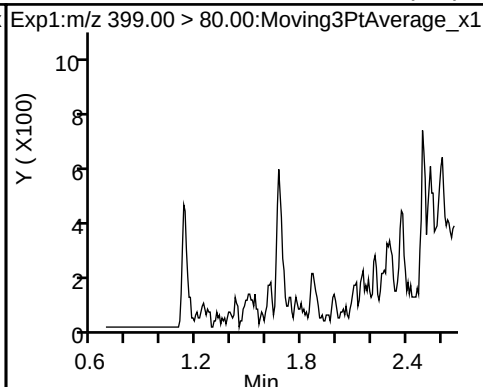
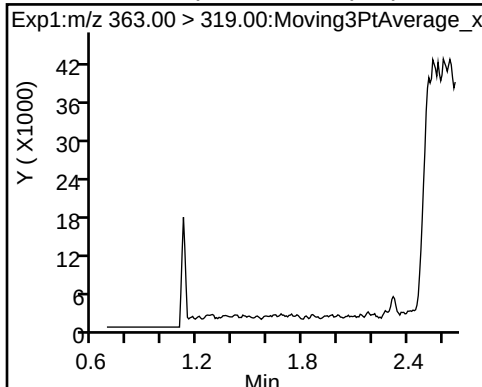
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

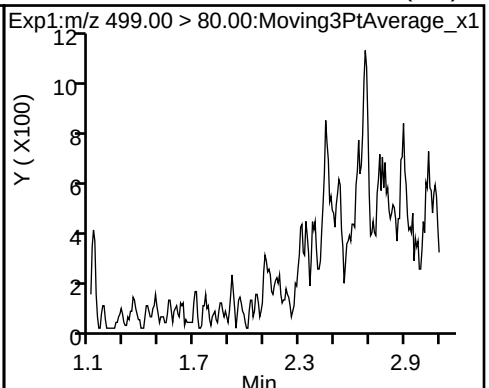
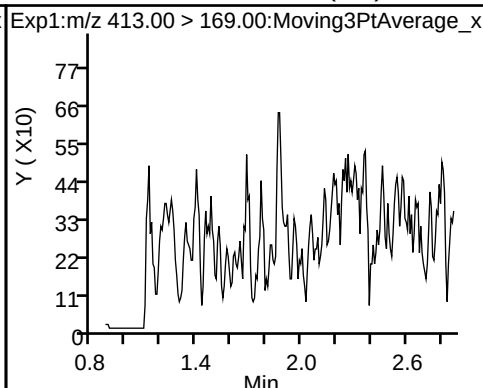
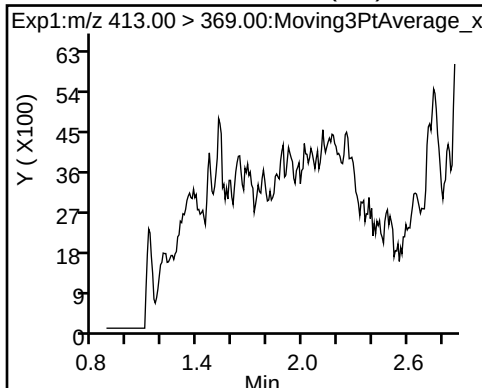
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

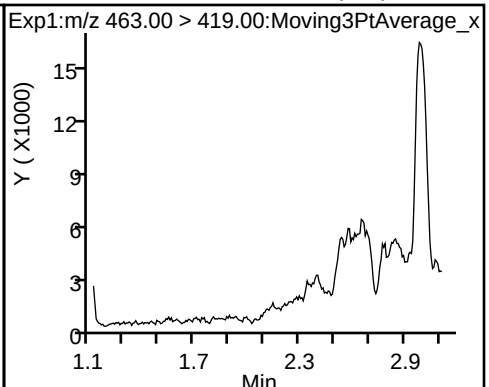
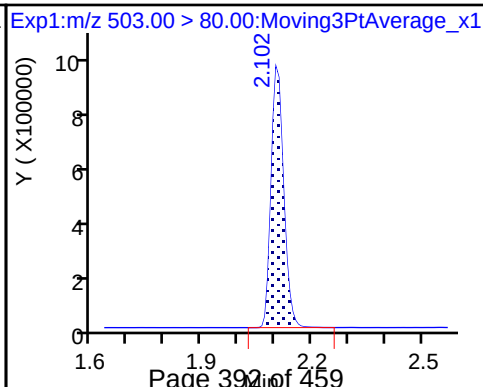
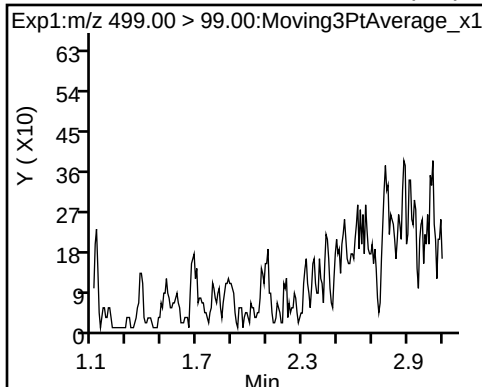
5 Perfluorooctanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

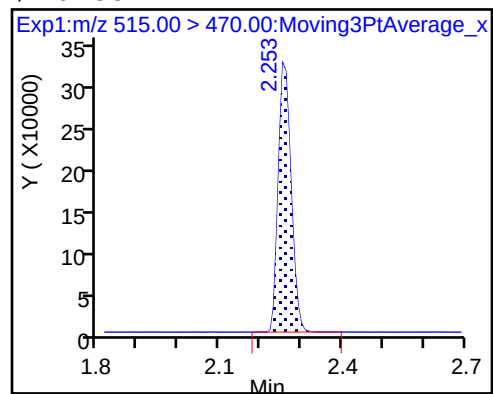


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_049.d
Lims ID: MB 320-216792/1-A
Client ID:
Sample Type: MB
Inject. Date: 13-Apr-2018 02:01:08 ALS Bottle#: 35 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-216792/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:11:31 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: XAWRK028

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.08	90.76
\$ 10 13C2 PFDA	10.0	8.98	89.77

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-216791/2-A
 Matrix: Water Lab File ID: 2018.04.12_537AA_032.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 00:41
 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.: 217814 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	132	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	67.8		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	62.6		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	105		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	32.0		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	303		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	93		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_032.d
 Lims ID: LCS 320-216791/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 13-Apr-2018 00:41:45 ALS Bottle#: 22 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-216791/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: roycea

Date: 13-Apr-2018 09:25:11

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	1.388	-0.007	1.000	6576564	75.7		10071	
298.90 > 99.00	1.381	1.388	-0.007	1.000	4927734		1.33(0.00-0.00)	10491	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.525	-0.008	1.000	1006889	9.53		9400	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.684	-0.007	1.000	853699	8.00		30.5	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.684	-0.007	1.000	3562570	26.3		4991	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.889	-0.015		993342	10.0		5431	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.889	-0.015	1.000	1788752	17.0		261	
413.00 > 169.00	1.874	1.889	-0.015	1.000	972580		1.84(0.00-0.00)	1250	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.094	0.015	1.000	2901417	33.0		2908	a
499.00 > 99.00	2.109	2.094	0.015	1.000	631804		4.59(0.00-0.00)	1620	a
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.124	-0.015		2367322	28.7		4643	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.132	-0.015	1.000	1308823	15.6		232	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.269	-0.007	1.000	789843	9.35		7864	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_032.d

Injection Date: 13-Apr-2018 00:41:45

Instrument ID: A8_N

Lims ID: LCS 320-216791/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 22

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

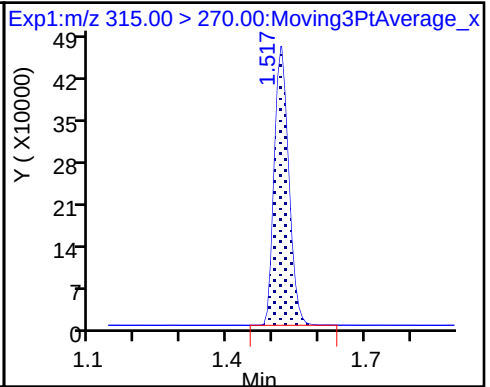
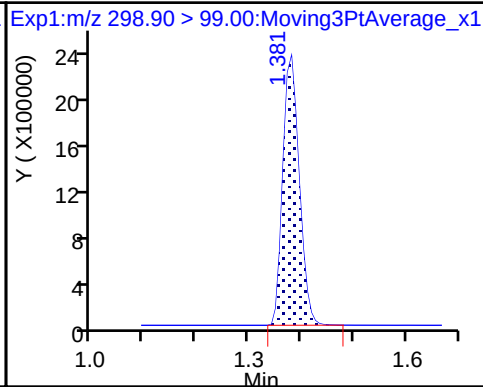
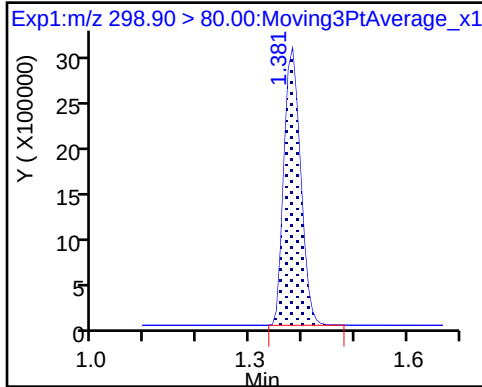
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

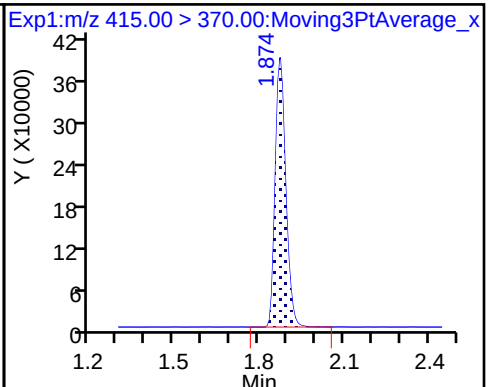
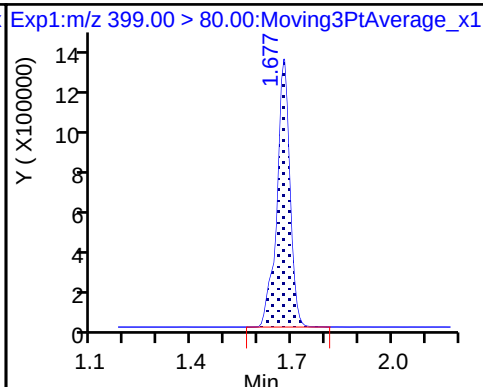
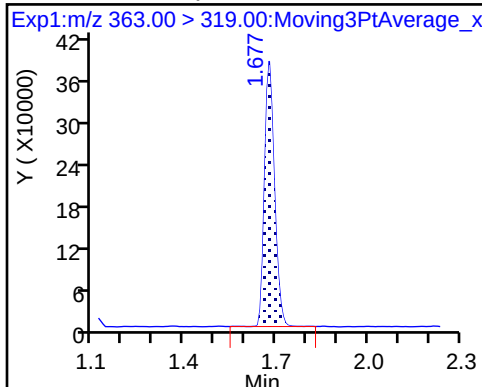
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

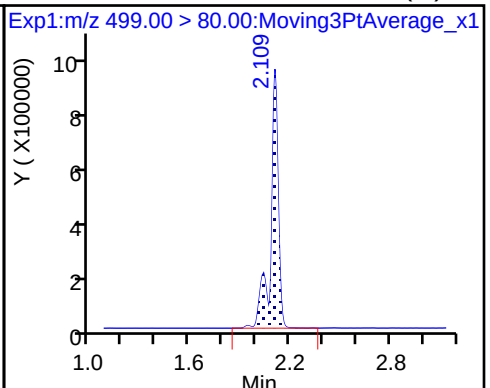
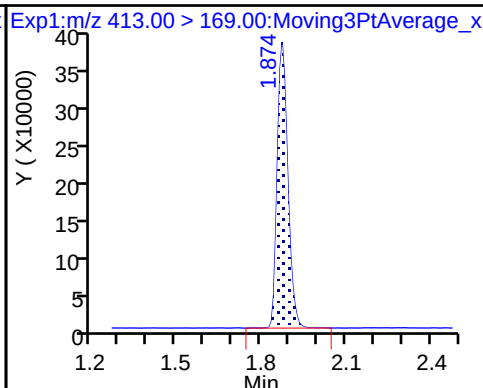
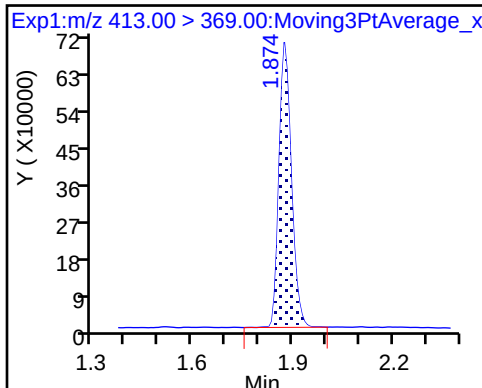
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

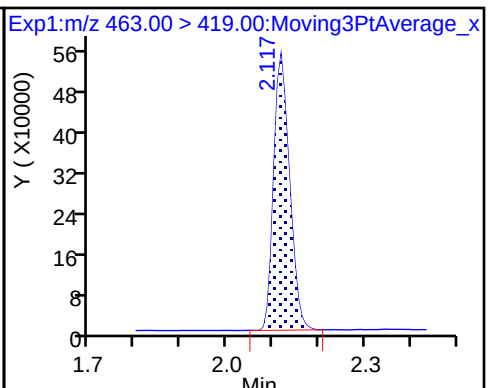
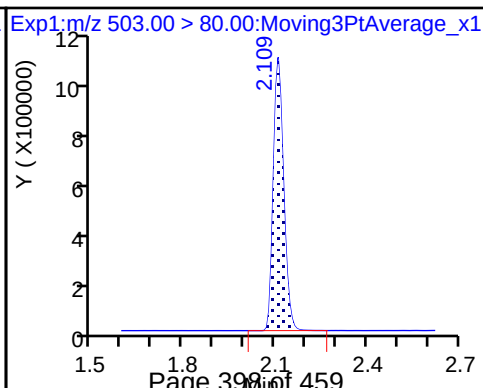
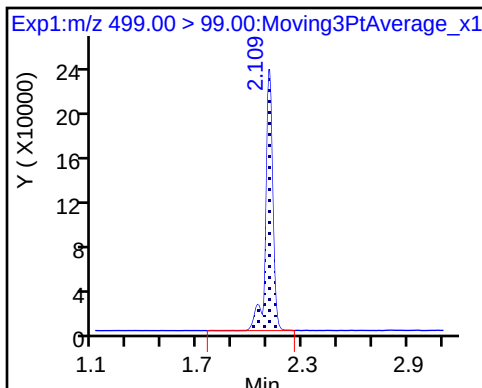
8 Perfluorooctane sulfonic acid (M)



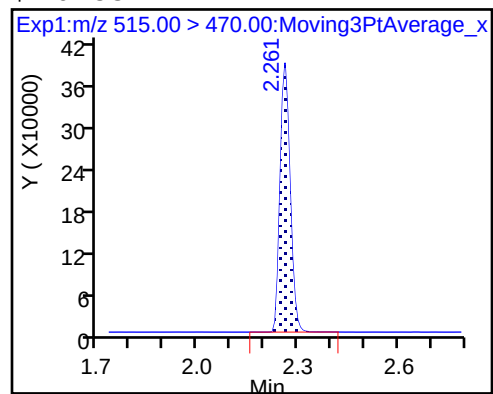
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_032.d
Lims ID: LCS 320-216791/2-A
Client ID:
Sample Type: LCS
Inject. Date: 13-Apr-2018 00:41:45 ALS Bottle#: 22 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-216791/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: roycea

Date: 13-Apr-2018 09:25:11

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.53	95.34
\$ 10 13C2 PFDA	10.0	9.35	93.49

TestAmerica Sacramento

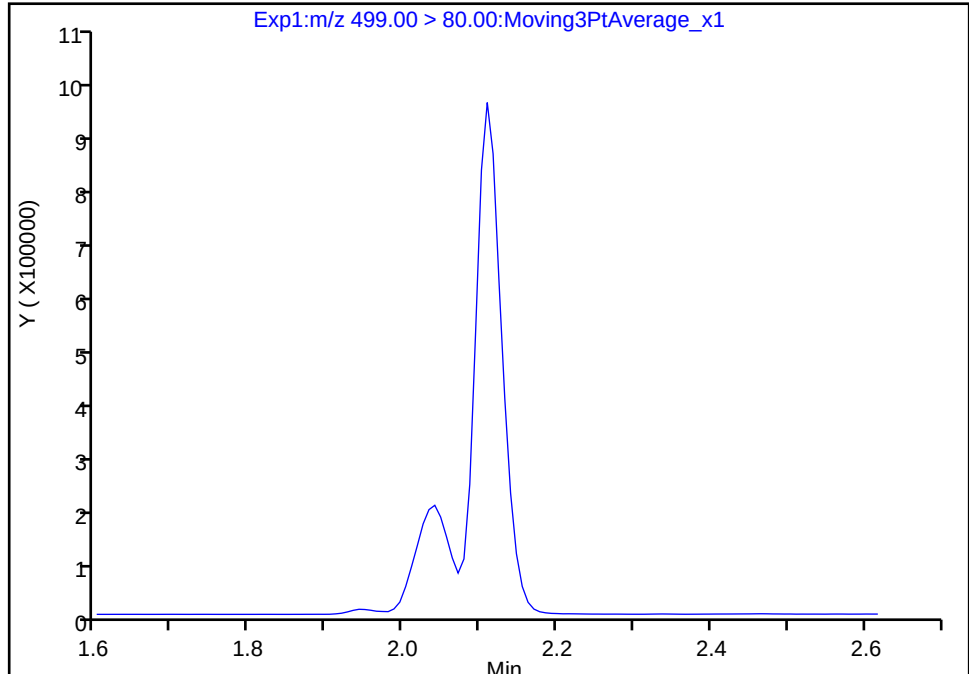
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_032.d
Injection Date: 13-Apr-2018 00:41:45 Instrument ID: A8_N
Lims ID: LCS 320-216791/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 22 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

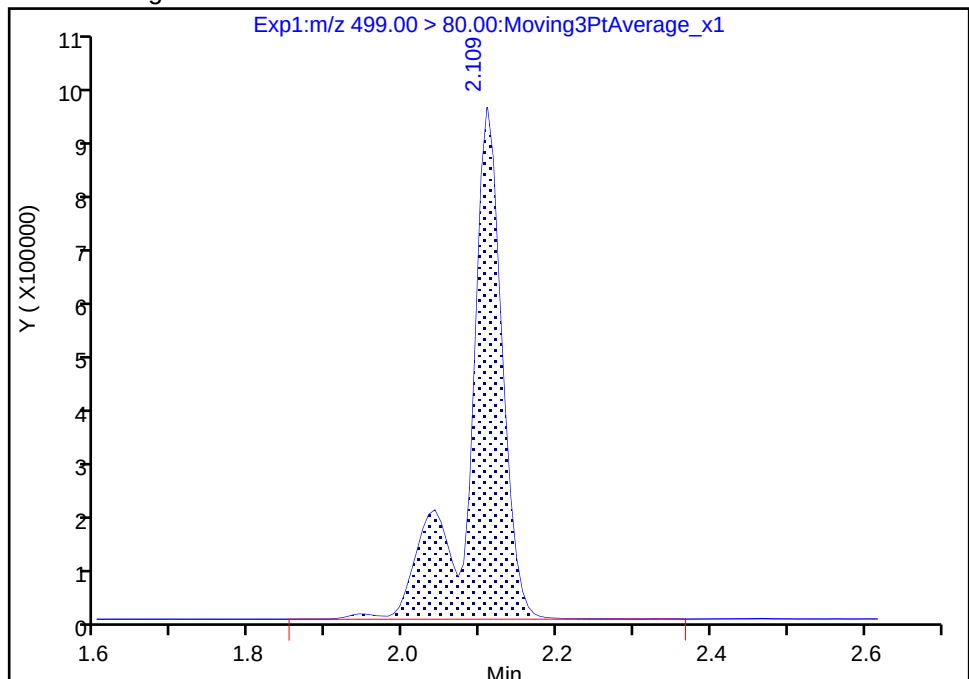
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.11
Area: 2901417
Amount: 32.971983
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 13-Apr-2018 09:25:00

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-216791/3-A
 Matrix: Water Lab File ID: 2018.04.12_537AA_033.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 00:46
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	126	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	65.5		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	62.7		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	102		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	31.0		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	266		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	101		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_033.d
 Lims ID: LCSD 320-216791/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 13-Apr-2018 00:46:25 ALS Bottle#: 23 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-216791/3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: roycea

Date: 13-Apr-2018 09:25:25

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.388	-0.007	1.000	7007922	66.6		9915	
298.90 > 99.00	1.381	1.388	-0.007	1.000	5149999		1.36(0.00-0.00)	9442	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.525	-0.008	1.000	1106293	8.65		10515	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.684	-0.007	1.000	1002202	7.76		38.6	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.684	-0.007	1.000	4194932	25.5		5333	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.889	-0.015		1202728	10.0		6204	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.889	-0.015	1.000	2092357	16.4		310	
413.00 > 169.00	1.874	1.889	-0.015	1.000	1140620		1.83(0.00-0.00)	1377	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.094	0.015	1.000	3372791	31.6		3119	a
499.00 > 99.00	2.109	2.094	0.015	1.000	733408		4.60(0.00-0.00)	2009	a
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.124	-0.015		2870335	28.7		5607	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.132	-0.015	1.000	1587382	15.7		268	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.269	-0.007	1.000	1036314	10.1		10315	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_033.d

Injection Date: 13-Apr-2018 00:46:25

Instrument ID: A8_N

Lims ID: LCSD 320-216791/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 23

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

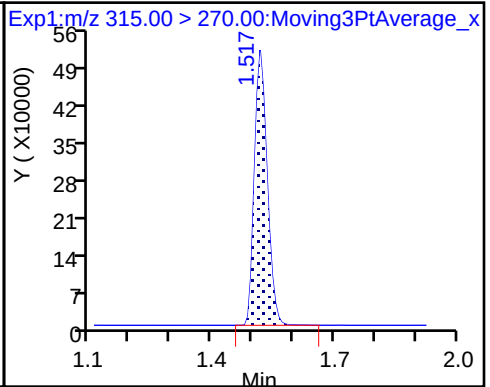
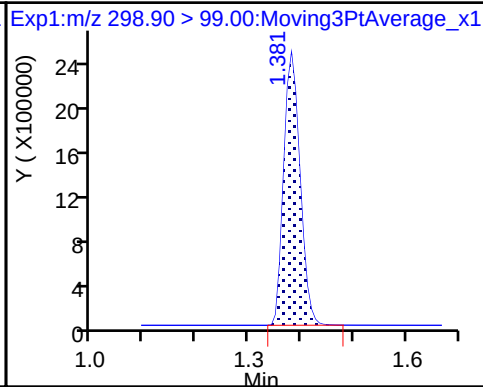
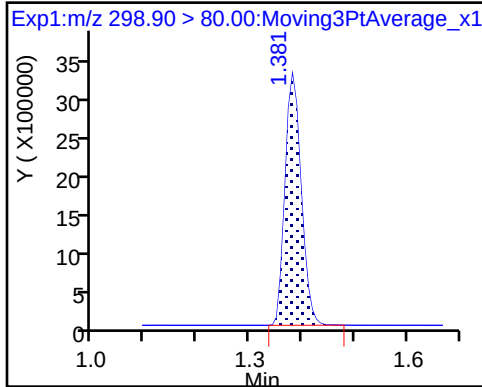
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

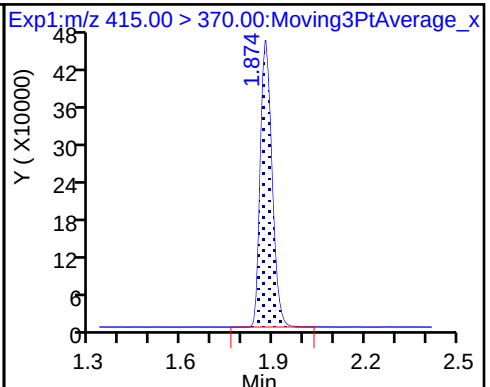
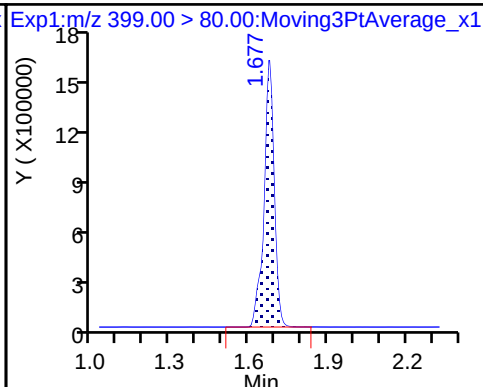
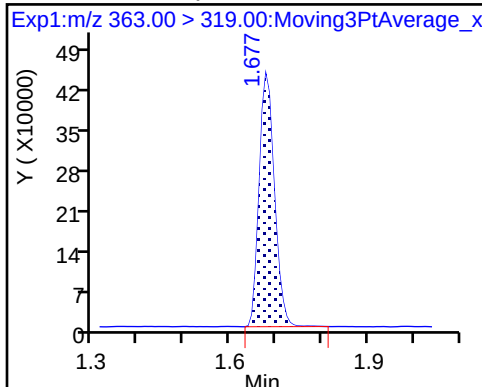
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

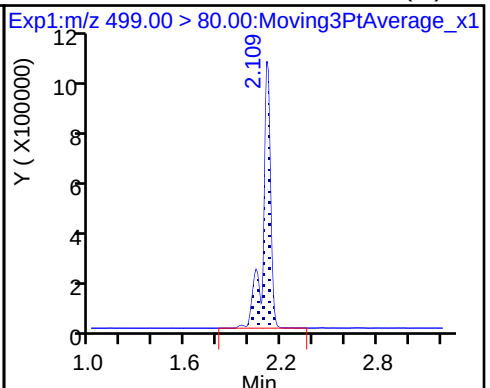
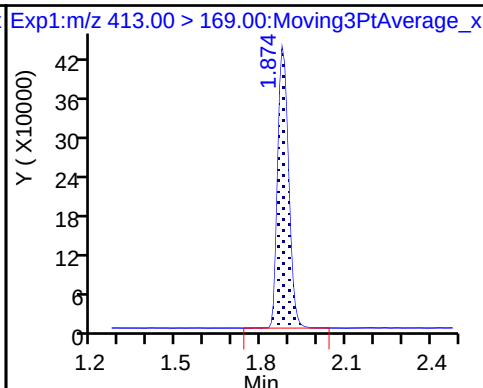
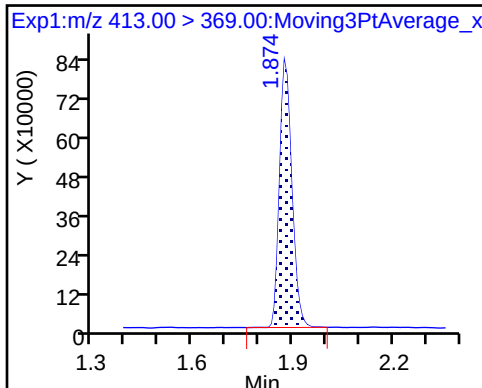
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

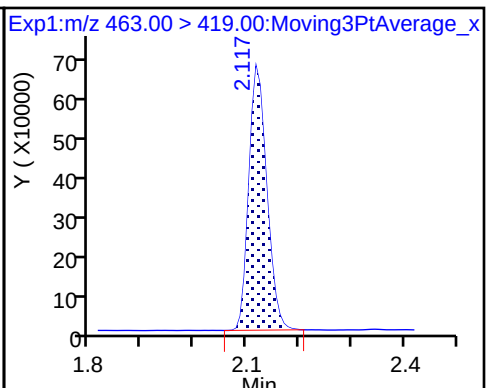
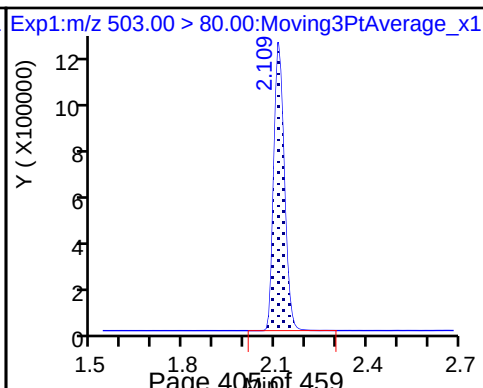
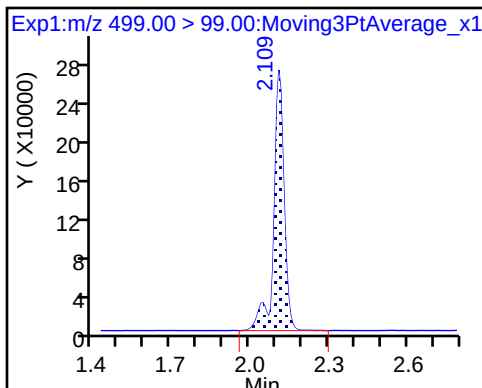
8 Perfluorooctane sulfonic acid (M)



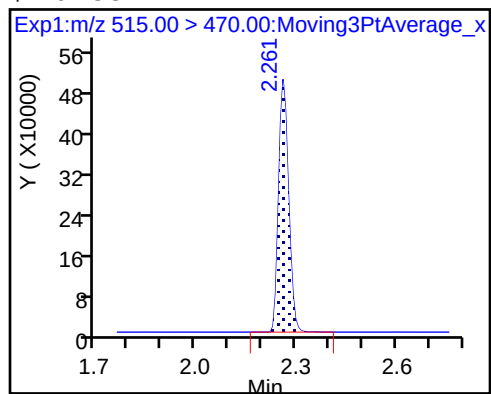
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_033.d
Lims ID: LCSD 320-216791/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 13-Apr-2018 00:46:25 ALS Bottle#: 23 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-216791/3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: roycea

Date: 13-Apr-2018 09:25:25

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.65	86.52
\$ 10 13C2 PFDA	10.0	10.1	101.31

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_033.d

Injection Date: 13-Apr-2018 00:46:25

Instrument ID: A8_N

Lims ID: LCSD 320-216791/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#:

23

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor:

1.0000

Method: 537_A8_N

Limit Group:

LC 537 ICAL

Column:

Detector

EXP1

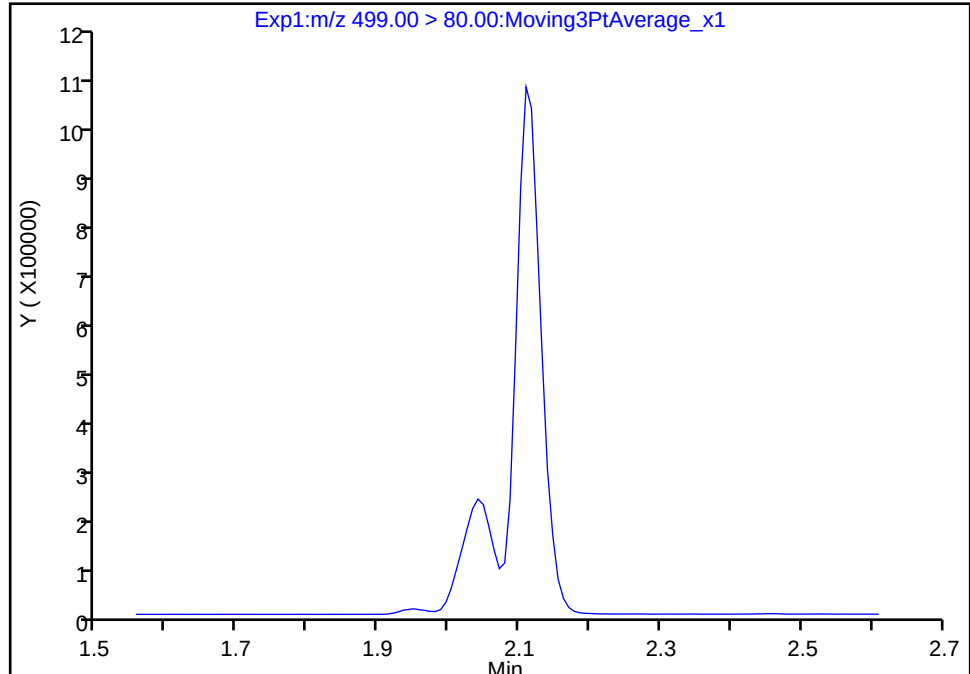
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

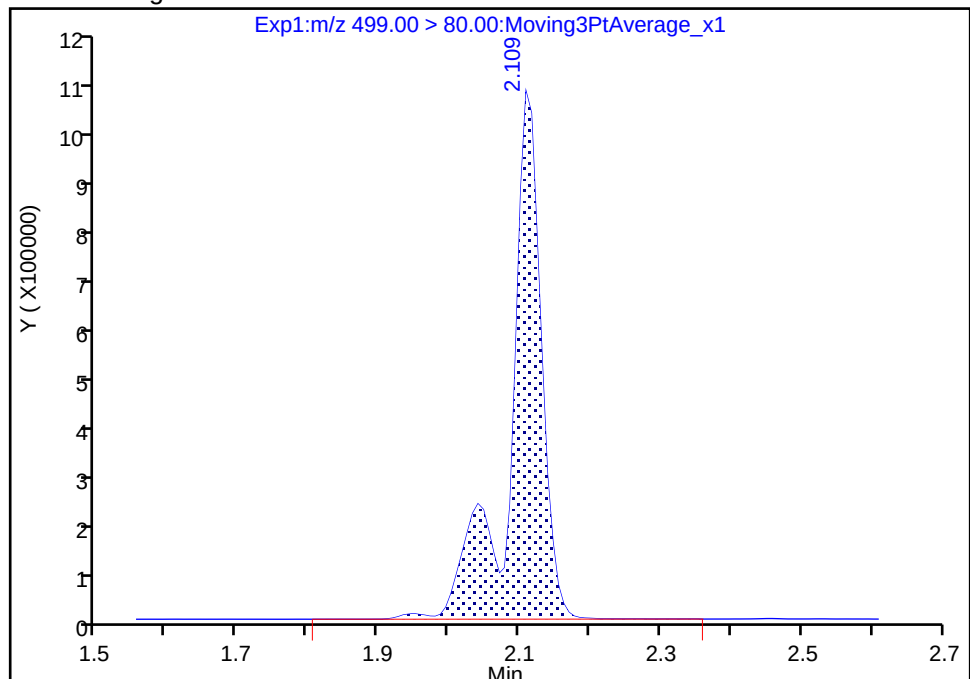
Not Detected

Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.11

Area: 3372791

Amount: 31.611790

Amount Units: ng/ml

Reviewer: roycea, 13-Apr-2018 09:25:14

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LLCS 320-216792/2-A
 Matrix: Water Lab File ID: 2018.04.12_537AA_050.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 02:05
 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.: 217818 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	38.9	J 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)	17.5	J	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	31.7		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	9.59	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	97.1		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		70-130
STL00996	13C2 PFDA	92		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_050.d
 Lims ID: LLCS 320-216792/2-A
 Client ID:
 Sample Type: LLCS
 Inject. Date: 13-Apr-2018 02:05:48 ALS Bottle#: 36 Worklist Smp#: 22
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: llcs 320-216792/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:11:31 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 10:06:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	1906504	24.3		3195	
298.90 > 99.00	1.381	1.381	0.0	1.000	1421810		1.34(0.00-0.00)	3535	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	976850	9.86		9870	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	240012	2.40		7.8	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.677	0.0	1.000	972462	7.93		1287	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.866	0.0		932269	10.0		5052	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.874	-0.008	1.000	472779	4.77		64.7	
413.00 > 169.00	1.866	1.874	-0.008	1.000	251553		1.88(0.00-0.00)	348	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	773510	9.72		712	a
499.00 > 99.00	2.102	2.094	0.008	1.000	173183		4.47(0.00-0.00)	399	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2141422	28.7		4117	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.109	0.0	1.000	343805	4.38		55.1	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.261	-0.008	1.000	730589	9.21		7842	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_050.d

Injection Date: 13-Apr-2018 02:05:48

Instrument ID: A8_N

Lims ID: LLCS 320-216792/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 36

Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

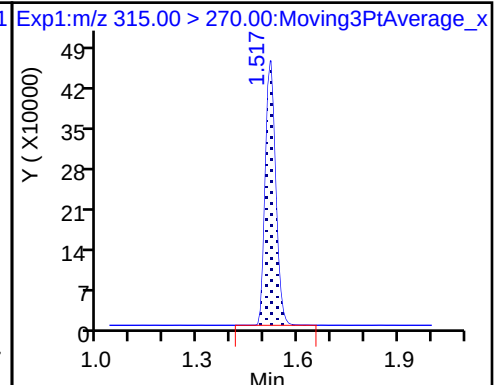
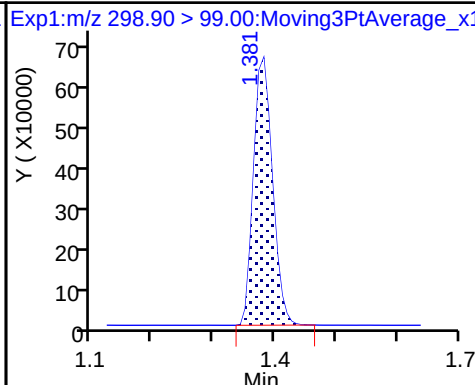
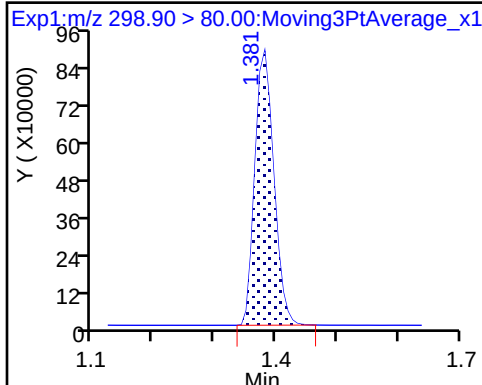
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

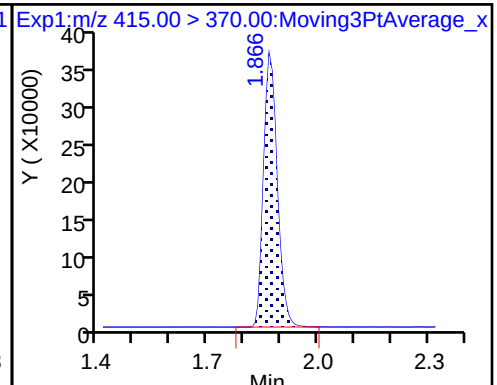
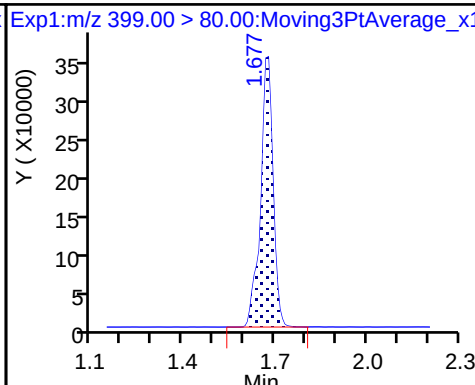
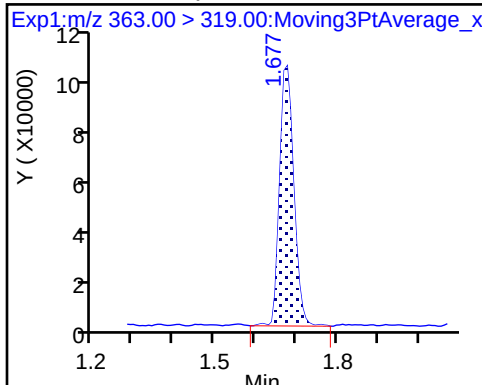
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

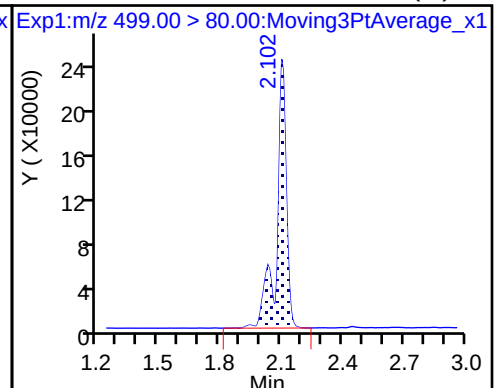
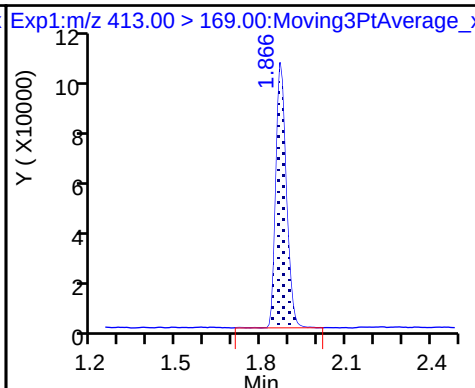
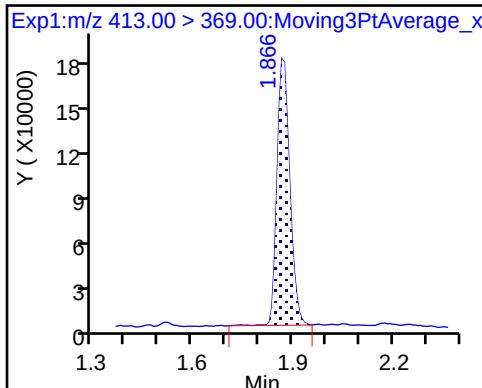
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

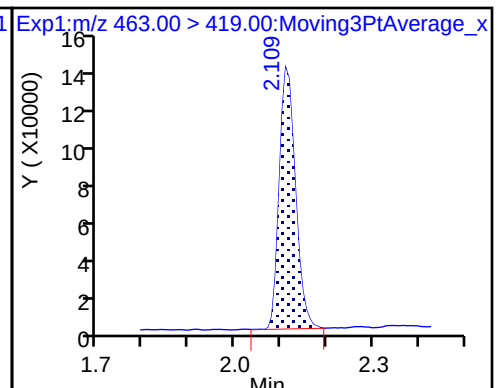
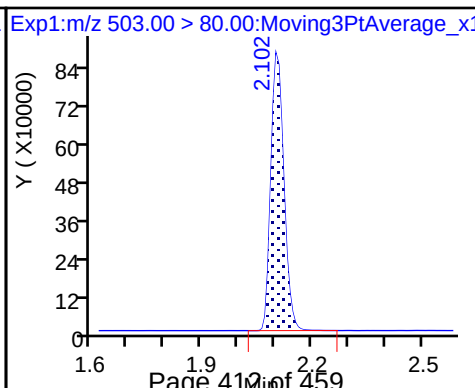
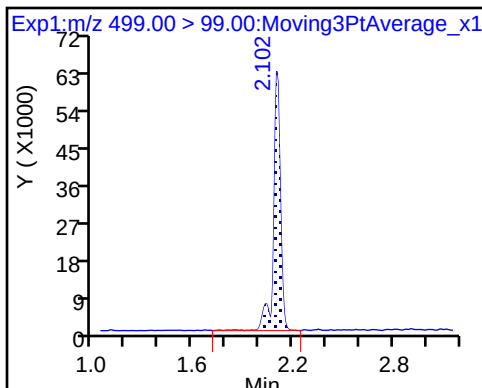
8 Perfluorooctane sulfonic acid (M)



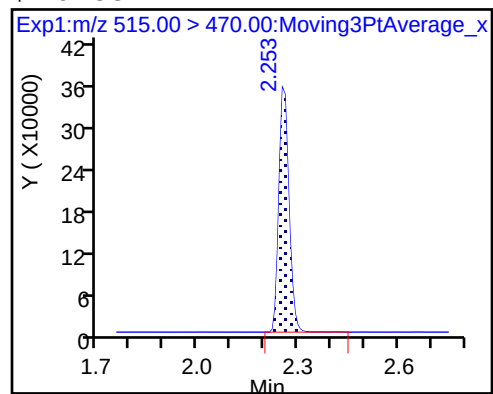
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_050.d
Lims ID: LLCS 320-216792/2-A
Client ID:
Sample Type: LLCS
Inject. Date: 13-Apr-2018 02:05:48 ALS Bottle#: 36 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: llcs 320-216792/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:11:31 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 10:06:41

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.86	98.56
\$ 10 13C2 PFDA	10.0	9.21	92.15

TestAmerica Sacramento

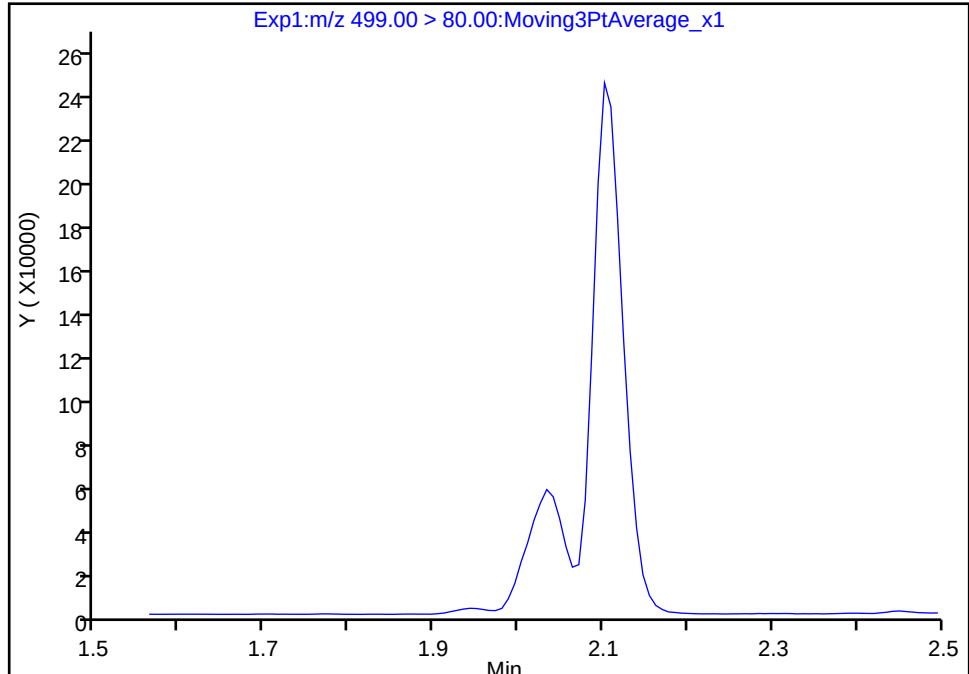
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_050.d
Injection Date: 13-Apr-2018 02:05:48 Instrument ID: A8_N
Lims ID: LLCS 320-216792/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 36 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

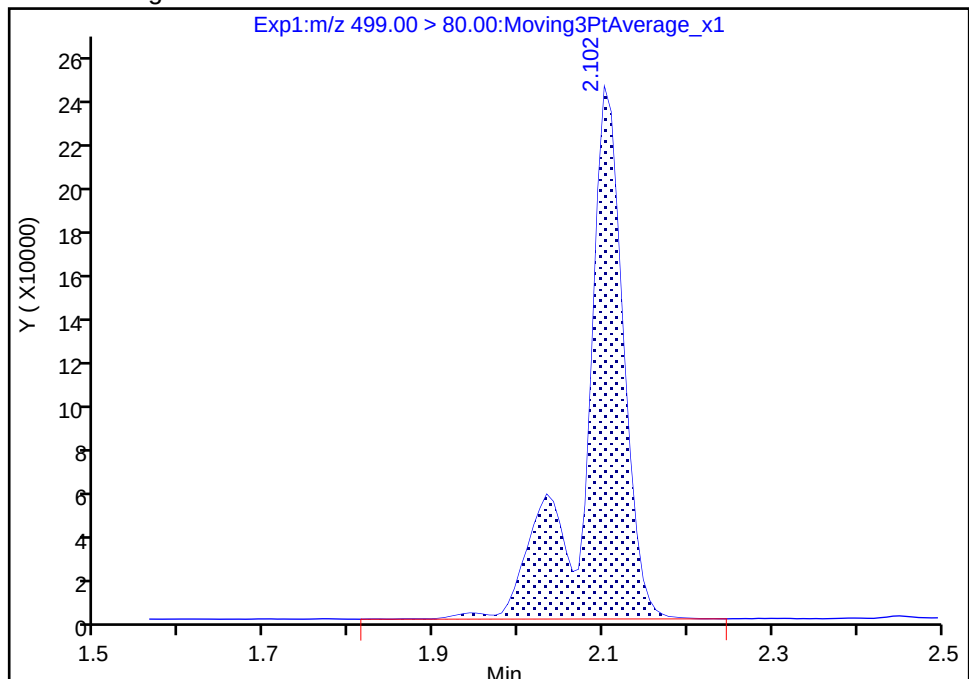
Signal: 1

Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.10
Area: 773510
Amount: 9.717531
Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 10:06:19

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-032819-RW-139 LMS</u>	Lab Sample ID: <u>320-37675-14 LMS</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_056.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 11:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:19</u>
Sample wt/vol: <u>255.7 (mL)</u>	Date Analyzed: <u>04/13/2018 02:33</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>217820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	42.7	M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	28.1		20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19.0	J	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	31.3		29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	13.4		9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	104		88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	97		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_056.d
 Lims ID: 320-37675-A-14-D LMS
 Client ID:
 Sample Type: LMS
 Inject. Date: 13-Apr-2018 02:33:50 ALS Bottle#: 40 Worklist Smp#: 28
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-14-d lms
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 10:09:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.373	1.381	-0.008	1.000	2208015	26.5		2566	
298.90 > 99.00	1.373	1.381	-0.008	1.000	1582441		1.40(0.00-0.00)	3617	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.517	-0.007	1.000	970699	10.1		7943	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.677	-0.008	1.000	333931	3.43		11.2	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.677	-0.008	1.000	1041389	8.01		724	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.874	-0.008		907706	10.0		5629	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.874	-0.008	1.000	693078	7.19		96.6	
413.00 > 169.00	1.866	1.874	-0.008	1.000	390341		1.78(0.00-0.00)	480	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	921209	10.9		613	a
499.00 > 99.00	2.102	2.094	0.008	1.000	193729		4.76(0.00-0.00)	413	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2270226	28.7		2902	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.117	-0.008	1.000	371252	4.86		54.8	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	749276	9.71		7662	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_056.d

Injection Date: 13-Apr-2018 02:33:50

Instrument ID: A8_N

Lims ID: 320-37675-A-14-D LMS

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 40

Worklist Smp#: 28

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

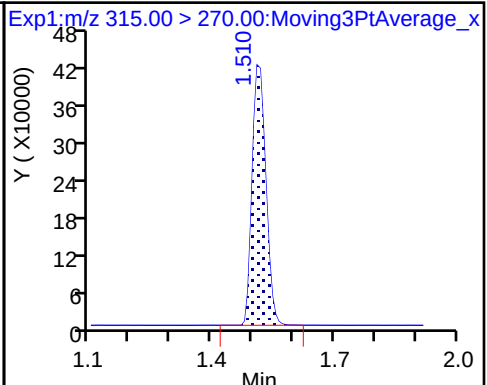
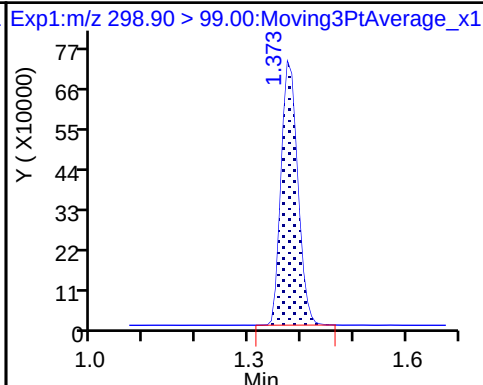
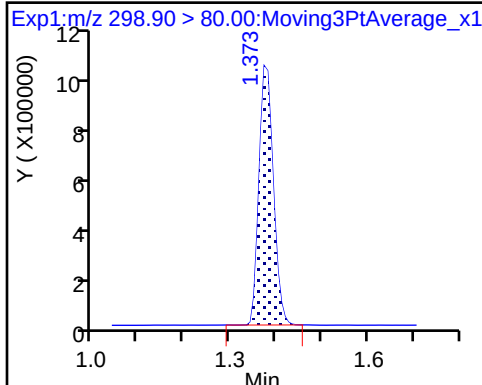
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

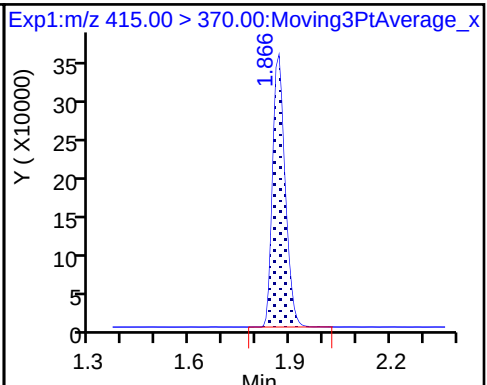
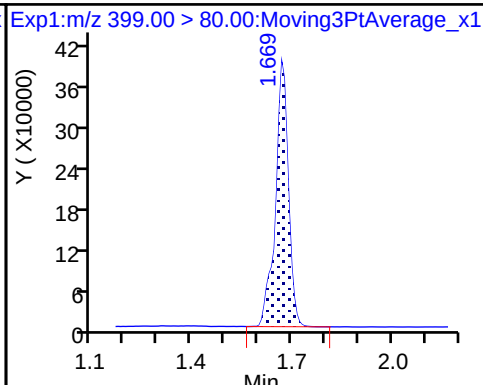
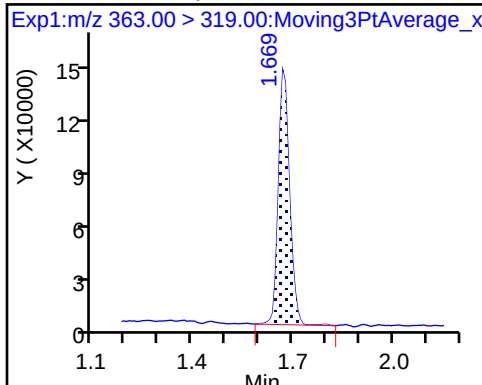
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

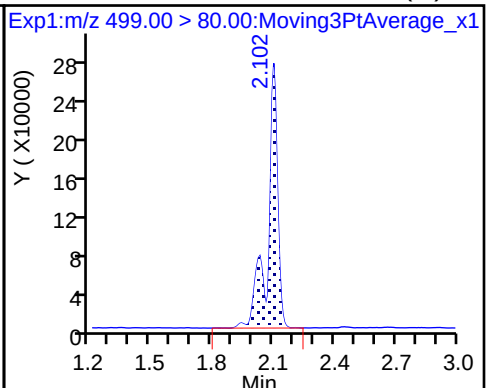
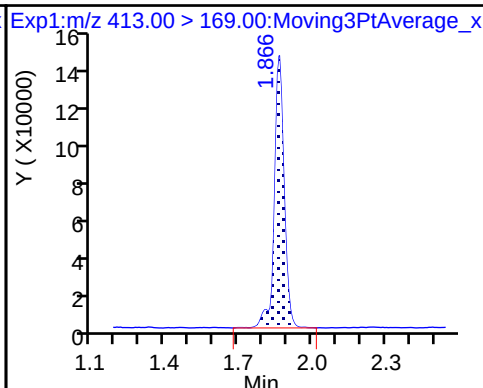
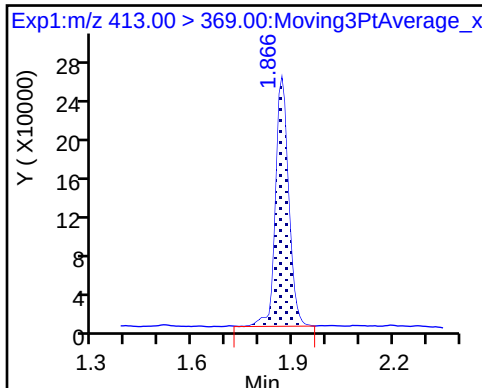
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

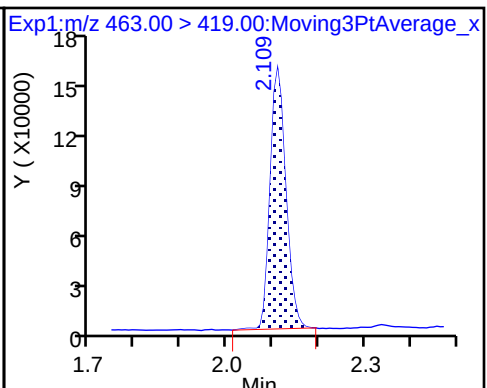
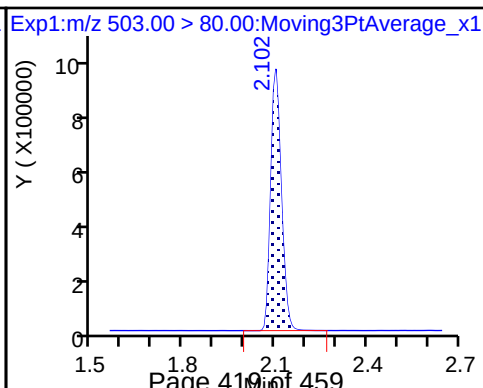
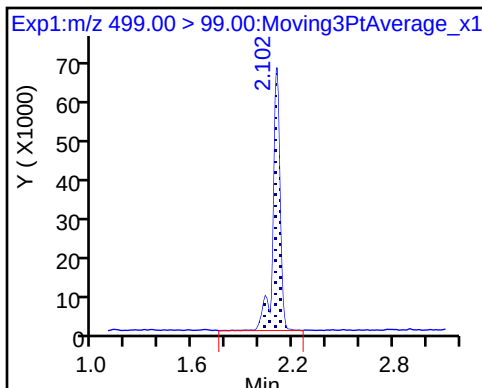
8 Perfluorooctane sulfonic acid (M)



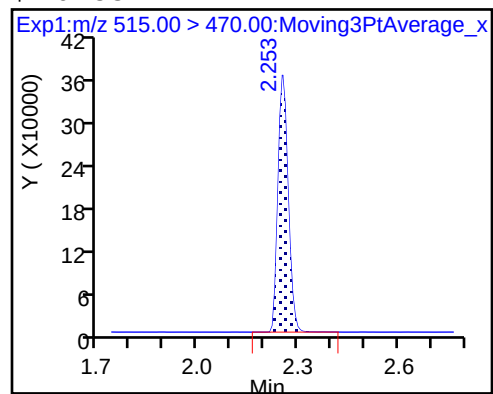
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_056.d
Lims ID: 320-37675-A-14-D LMS
Client ID:
Sample Type: LMS
Inject. Date: 13-Apr-2018 02:33:50 ALS Bottle#: 40 Worklist Smp#: 28
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-14-d lms
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 10:09:32

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.1	100.59
\$ 10 13C2 PFDA	10.0	9.71	97.06

TestAmerica Sacramento

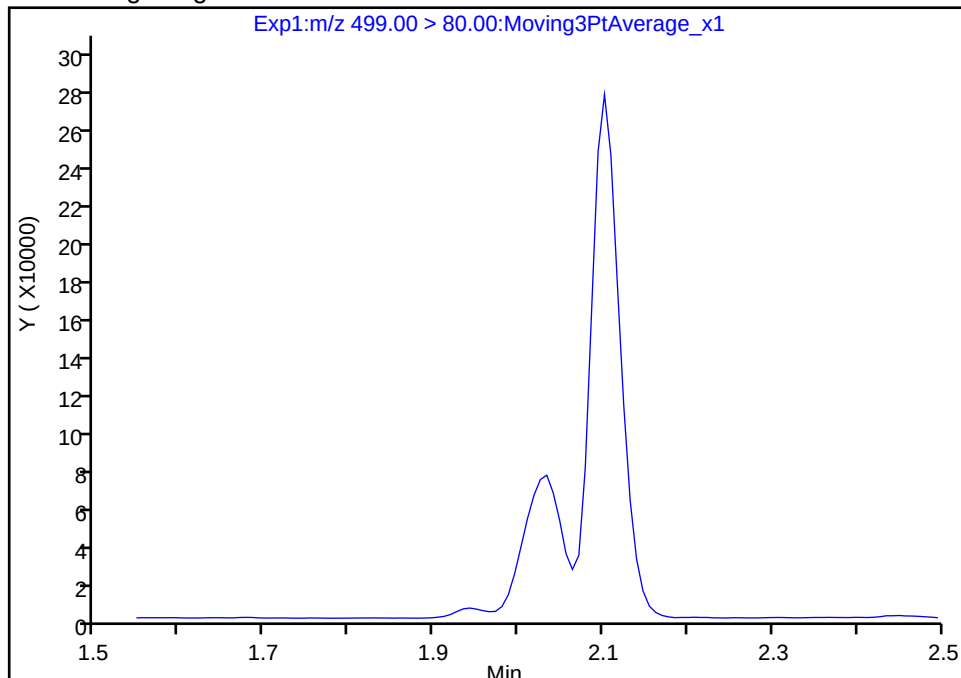
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_056.d
Injection Date: 13-Apr-2018 02:33:50 Instrument ID: A8_N
Lims ID: 320-37675-A-14-D LMS
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 40 Worklist Smp#: 28
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

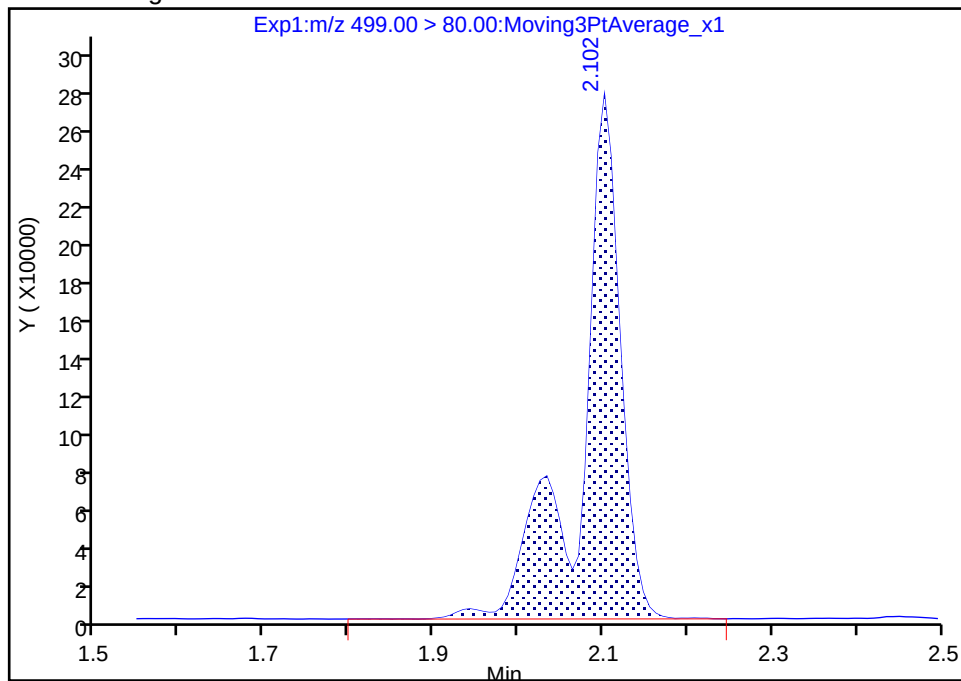
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 921209
Amount: 10.916447
Amount Units: ng/ml



Reviewer: barnettj, 13-Apr-2018 10:09:16

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-032819-RW-139 LMSD Lab Sample ID: 320-37675-14 LMSD
 Matrix: Water Lab File ID: 2018.04.12_537AA_057.d
 Analysis Method: 537 Date Collected: 03/29/2018 11:10
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 252.9(mL) Date Analyzed: 04/13/2018 02:38
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217820 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	41.2	M	40	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	27.4		20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	18.5	J	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	29.4	J	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	13.0		9.9	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	94.4		89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	98		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_057.d
 Lims ID: 320-37675-A-14-E LMSD
 Client ID:
 Sample Type: LMSD
 Inject. Date: 13-Apr-2018 02:38:31 ALS Bottle#: 41 Worklist Smp#: 29
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-14-e lmsd
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 10:09:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	2058053	23.9		2571	
298.90 > 99.00	1.381	1.381	0.0	1.000	1491322		1.38(0.00-0.00)	3417	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	924558	9.32		8588	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.677	0.0	1.000	328764	3.28		10.5	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.677	-0.008	1.000	1000073	7.43		679	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.874	-0.008		932927	10.0		5823	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.874	-0.008	1.000	687080	6.93		93.6	
413.00 > 169.00	1.866	1.874	-0.008	1.000	390685		1.76(0.00-0.00)	496	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	911154	10.4		614	a
499.00 > 99.00	2.102	2.094	0.008	1.000	196577		4.64(0.00-0.00)	399	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2349968	28.7		2962	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.117	-0.008	1.000	367519	4.68		50.2	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	779270	9.82		7955	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_057.d

Injection Date: 13-Apr-2018 02:38:31

Instrument ID: A8_N

Lims ID: 320-37675-A-14-E LMSD

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 41

Worklist Smp#: 29

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

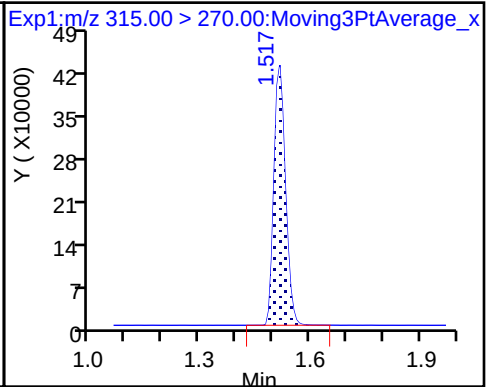
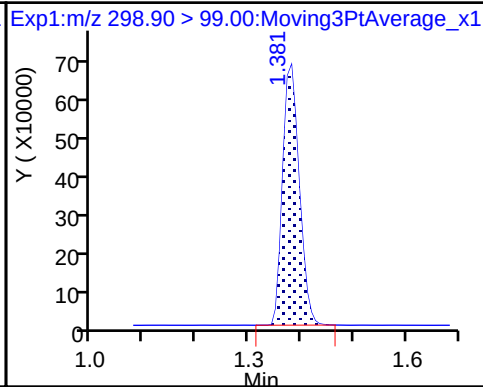
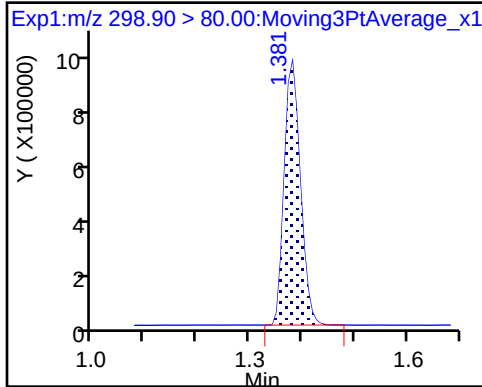
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

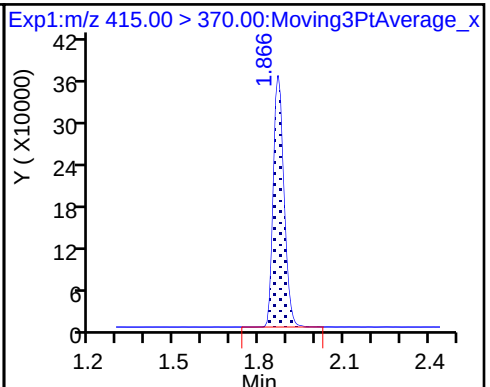
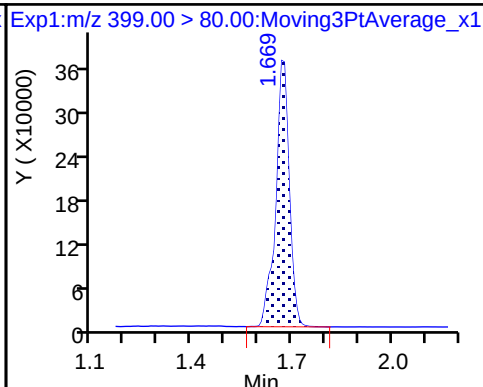
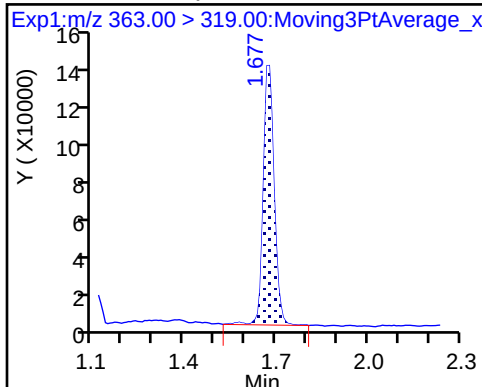
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

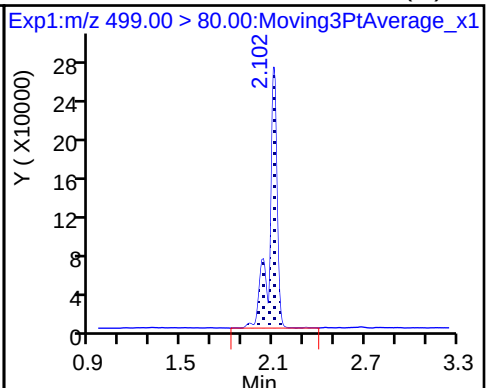
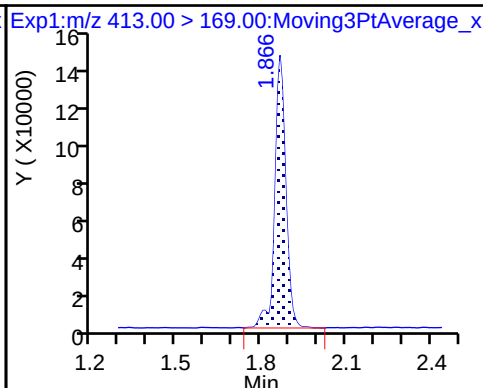
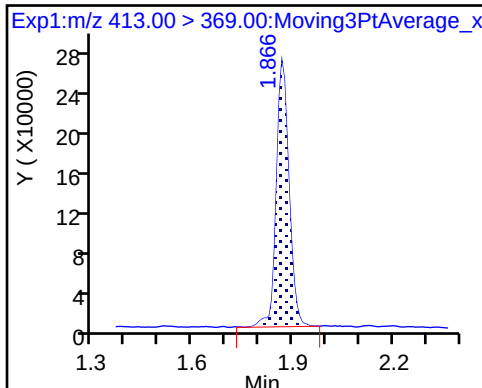
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

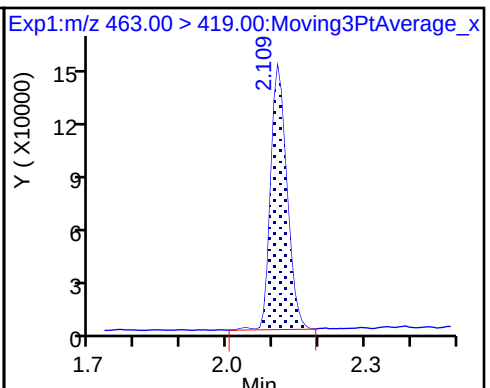
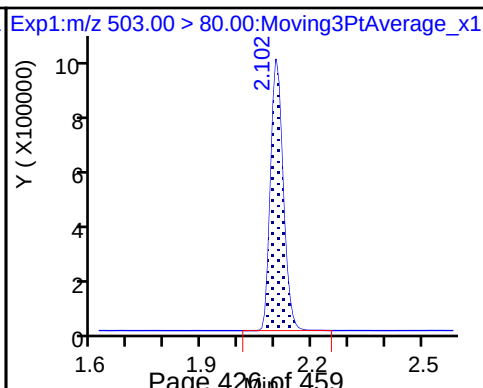
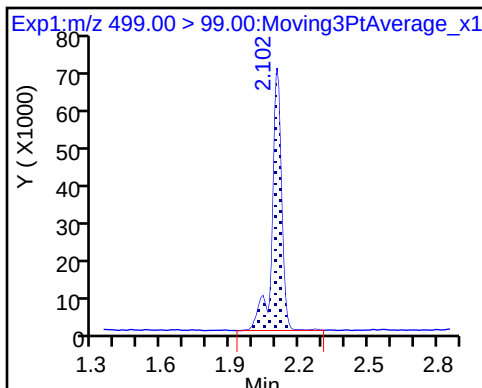
8 Perfluorooctane sulfonic acid (M)



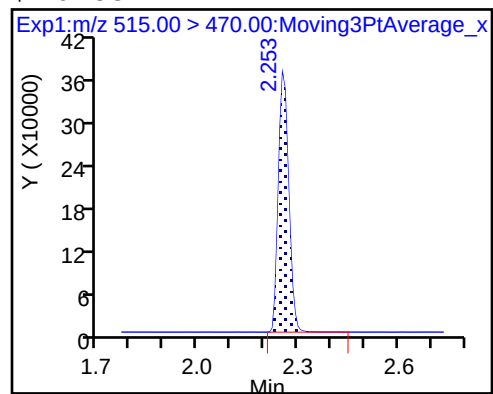
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_057.d
Lims ID: 320-37675-A-14-E LMSD
Client ID:
Sample Type: LMSD
Inject. Date: 13-Apr-2018 02:38:31 ALS Bottle#: 41 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-14-e lmsd
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 10:09:51

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.32	93.21
\$ 10 13C2 PFDA	10.0	9.82	98.22

TestAmerica Sacramento

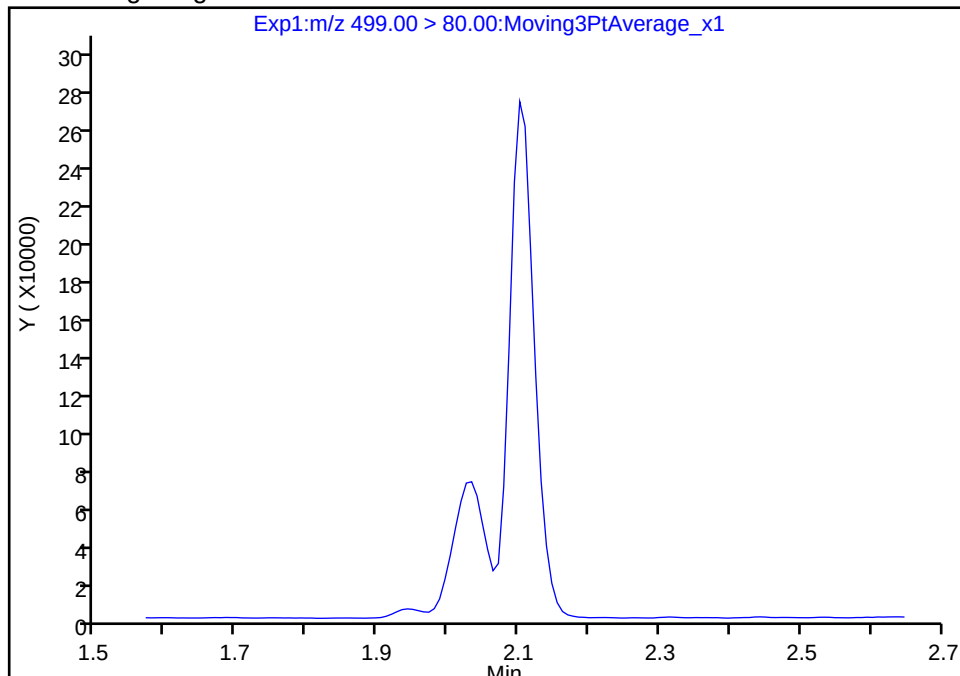
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_057.d
Injection Date: 13-Apr-2018 02:38:31 Instrument ID: A8_N
Lims ID: 320-37675-A-14-E LMSD
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 41 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

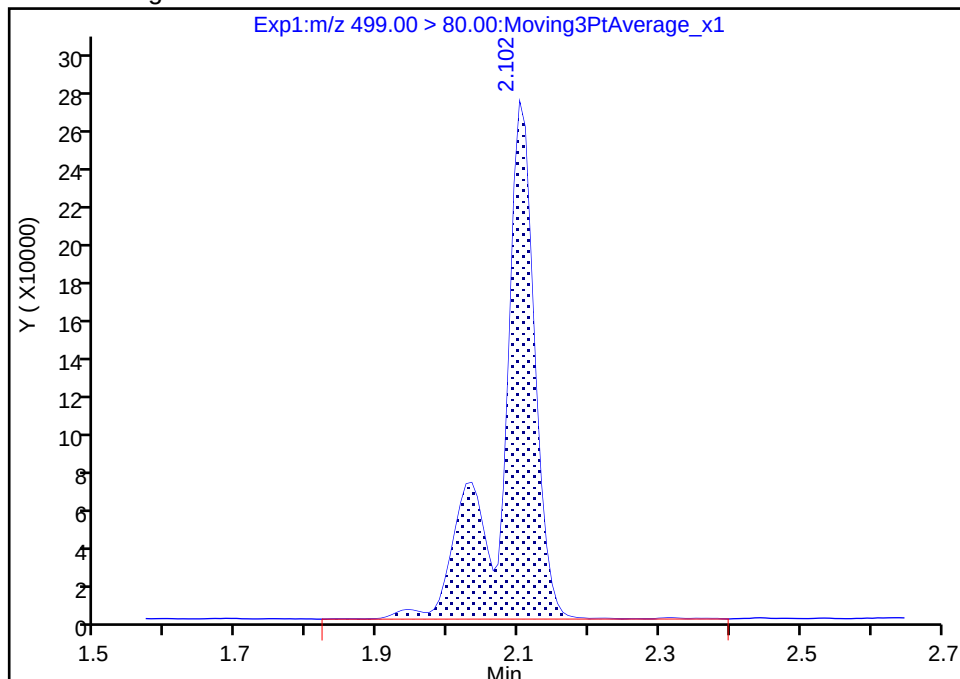
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 911154
Amount: 10.430907
Amount Units: ng/ml



Reviewer: barnettj, 13-Apr-2018 10:09:38
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-37675-1

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 SacramentoJob No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_NStart Date: 04/12/2018 14:48Analysis Batch Number: 217726End Date: 04/12/2018 15:49

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-217726/1		04/12/2018 14:48	1	2018.04.12_537A 004.d	GeminiC18 3x100 3(mm)
CCV 320-217726/2 CCVIS		04/12/2018 14:53	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:02	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:07	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:12	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:16	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:21	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:26	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:30	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:35	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:40	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:44	1		GeminiC18 3x100 3(mm)
CCV 320-217726/14 CCVIS		04/12/2018 15:49	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_NStart Date: 04/13/2018 00:27Analysis Batch Number: 217814End Date: 04/13/2018 01:23

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-217814/1 CCVIS		04/13/2018 00:27	1	2018.04.12_537A A 029.d	GeminiC18 3x100 3(mm)
MB 320-216791/1-A		04/13/2018 00:37	1	2018.04.12_537A A 031.d	GeminiC18 3x100 3(mm)
LCS 320-216791/2-A		04/13/2018 00:41	1	2018.04.12_537A A 032.d	GeminiC18 3x100 3(mm)
LCSD 320-216791/3-A		04/13/2018 00:46	1	2018.04.12_537A A 033.d	GeminiC18 3x100 3(mm)
320-37675-1		04/13/2018 00:51	1	2018.04.12_537A A 034.d	GeminiC18 3x100 3(mm)
320-37675-2		04/13/2018 00:55	1	2018.04.12_537A A 035.d	GeminiC18 3x100 3(mm)
320-37675-3		04/13/2018 01:00	1	2018.04.12_537A A 036.d	GeminiC18 3x100 3(mm)
320-37675-4		04/13/2018 01:05	1	2018.04.12_537A A 037.d	GeminiC18 3x100 3(mm)
320-37675-5		04/13/2018 01:09	1	2018.04.12_537A A 038.d	GeminiC18 3x100 3(mm)
320-37675-6		04/13/2018 01:14	1	2018.04.12_537A A 039.d	GeminiC18 3x100 3(mm)
320-37675-7		04/13/2018 01:19	1	2018.04.12_537A A 040.d	GeminiC18 3x100 3(mm)
CCV 320-217814/13 CCVIS		04/13/2018 01:23	1	2018.04.12_537A A 041.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Start Date: 04/13/2018 01:23Analysis Batch Number: 217816 End Date: 04/13/2018 01:51

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-217816/13 CCVIS		04/13/2018 01:23	1	2018.04.12_537A A 041.d	GeminiC18 3x100 3(mm)
320-37675-8		04/13/2018 01:33	1	2018.04.12_537A A 043.d	GeminiC18 3x100 3(mm)
320-37675-9		04/13/2018 01:37	1	2018.04.12_537A A 044.d	GeminiC18 3x100 3(mm)
320-37675-10		04/13/2018 01:42	1	2018.04.12_537A A 045.d	GeminiC18 3x100 3(mm)
320-37675-11		04/13/2018 01:47	1	2018.04.12_537A A 046.d	GeminiC18 3x100 3(mm)
CCV 320-217816/19 CCVIS		04/13/2018 01:51	1	2018.04.12_537A A 047.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Start Date: 04/13/2018 01:51Analysis Batch Number: 217818 End Date: 04/13/2018 02:19

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-217818/19 CCVIS		04/13/2018 01:51	1	2018.04.12_537A A 047.d	GeminiC18 3x100 3(mm)
MB 320-216792/1-A		04/13/2018 02:01	1	2018.04.12_537A A 049.d	GeminiC18 3x100 3(mm)
LLCS 320-216792/2-A		04/13/2018 02:05	1	2018.04.12_537A A 050.d	GeminiC18 3x100 3(mm)
320-37675-12		04/13/2018 02:10	1	2018.04.12_537A A 051.d	GeminiC18 3x100 3(mm)
320-37675-13		04/13/2018 02:15	1	2018.04.12_537A A 052.d	GeminiC18 3x100 3(mm)
CCV 320-217818/25 CCVIS		04/13/2018 02:19	1	2018.04.12_537A A 053.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_NStart Date: 04/13/2018 02:19Analysis Batch Number: 217820End Date: 04/13/2018 03:15

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-217820/25 CCVIS		04/13/2018 02:19	1	2018.04.12_537A A 053.d	GeminiC18 3x100 3(mm)
320-37675-14		04/13/2018 02:29	1	2018.04.12_537A A 055.d	GeminiC18 3x100 3(mm)
320-37675-14 LMS		04/13/2018 02:33	1	2018.04.12_537A A 056.d	GeminiC18 3x100 3(mm)
320-37675-14 LMSD		04/13/2018 02:38	1	2018.04.12_537A A 057.d	GeminiC18 3x100 3(mm)
320-37675-15		04/13/2018 02:43	1	2018.04.12_537A A 058.d	GeminiC18 3x100 3(mm)
320-37675-16		04/13/2018 02:47	1	2018.04.12_537A A 059.d	GeminiC18 3x100 3(mm)
320-37675-17		04/13/2018 02:52	1	2018.04.12_537A A 060.d	GeminiC18 3x100 3(mm)
320-37675-18		04/13/2018 02:57	1	2018.04.12_537A A 061.d	GeminiC18 3x100 3(mm)
320-37675-19		04/13/2018 03:01	1	2018.04.12_537A A 062.d	GeminiC18 3x100 3(mm)
320-37675-20		04/13/2018 03:06	1	2018.04.12_537A A 063.d	GeminiC18 3x100 3(mm)
320-37675-21		04/13/2018 03:11	1	2018.04.12_537A A 064.d	GeminiC18 3x100 3(mm)
CCV 320-217820/37 CCVIS		04/13/2018 03:15	1	2018.04.12_537A A 065.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216791 Batch Start Date: 04/07/18 08:11 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 04/11/18 17:25

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00067
MB 320-216791/1		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCS 320-216791/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCSD 320-216791/3		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-37675-A-1	WGNA-032918-DUP-31	537, 537	T	280.59 g	28.55 g	252 mL	1.00 mL	7 SU	100 uL
320-37675-A-2	NAWC-032819-RW-286	537, 537	T	281.11 g	27.82 g	253.3 mL	1.00 mL	7 SU	100 uL
320-37675-A-3	NAWC-032819-FRB-286	537, 537	T	274.84 g	28.16 g	246.7 mL	1.00 mL	7 SU	100 uL
320-37675-A-4	WGNA-032819-RW-0518	537, 537	T	282.88 g	30.48 g	252.4 mL	1.00 mL	7 SU	100 uL
320-37675-A-5	WGNA-032819-FRB-0518	537, 537	T	281.85 g	28.39 g	253.5 mL	1.00 mL	7 SU	100 uL
320-37675-A-6	NAWC-032819-RW-010	537, 537	T	277.26 g	28.73 g	248.5 mL	1.00 mL	7 SU	100 uL
320-37675-A-7	NAWC-032819-FRB-010	537, 537	T	283.60 g	28.07 g	255.5 mL	1.00 mL	7 SU	100 uL
320-37675-A-8	NAWC-032819-RW-127	537, 537	T	285.35 g	30.57 g	254.8 mL	1.00 mL	7 SU	100 uL
320-37675-A-9	NAWC-032819-FRB-127	537, 537	T	278.07 g	28.78 g	249.3 mL	1.00 mL	7 SU	100 uL
320-37675-A-10	NAWC-032819-RW-195	537, 537	T	279.50 g	28.42 g	251.1 mL	1.00 mL	7 SU	100 uL
320-37675-A-11	NAWC-032819-FRB-195	537, 537	T	283.84 g	28.05 g	255.8 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00033	LC537-SU 00064	AnalysisComment			
MB 320-216791/1		537, 537			100 uL	Chlorine, ND			
LCS 320-216791/2		537, 537		100 uL	100 uL	Chlorine, ND			
LCSD 320-216791/3		537, 537		100 uL	100 uL	Chlorine, ND			
320-37675-A-1	WGNA-032918-DUP-31	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-2	NAWC-032819-RW-286	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-3	NAWC-032819-FRB-286	537, 537	T		100 uL	Chlorine, ND			

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

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216791 Batch Start Date: 04/07/18 08:11 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 04/11/18 17:25

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00033	LC537-SU 00064	AnalysisComment			
320-37675-A-4	WGNA-032819-RW-0518	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-5	WGNA-032819-FRB-0518	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-6	NAWC-032819-RW-010	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-7	NAWC-032819-FRB-010	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-8	NAWC-032819-RW-127	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-9	NAWC-032819-FRB-127	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-10	NAWC-032819-RW-195	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-11	NAWC-032819-FRB-195	537, 537	T		100 uL	Chlorine, ND			

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

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216791 Batch Start Date: 04/07/18 08:11 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 04/11/18 17:25

Batch Notes	
Analyst ID - Aliquot Step	VPM
Batch Comment	Client labels match TA label, 04/07/18 SKD
Analyst ID - Concentration	KMK/SKD
Analyst ID - Final Volume Step	VPM
Internal Standard ID#	1208799
Manifold ID	3, 4
Methanol ID	1204219
pH Indicator ID	3817
Pipette ID	O43082F
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	JER
Analyst ID - SU Reagent Drop	SKD
Analyst ID - SU Reagent Drop Witness	HJA
Analyst ID - TA Reagent Drop	SKD
Analyst ID - TA Reagent Drop Witness	HJA
SPE Cartridge Lot ID	6369499-12
Trizma ID	SLBR5241V
Reagent Water ID	04/05/18

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.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216792 Batch Start Date: 04/07/18 08:19 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 04/11/18 17:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00067
MB 320-216792/1		537, 537				250 mL	1.00 mL	7 SU	100 uL
LLCS 320-216792/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-37675-A-12	NAWC-032819-RW-048	537, 537	T	272.73 g	27.71 g	245 mL	1.00 mL	7 SU	100 uL
320-37675-A-13	NAWC-032819-FRB-048	537, 537	T	277.24 g	28.50 g	248.7 mL	1.00 mL	7 SU	100 uL
320-37675-A-14	NAWC-032819-RW-139	537, 537	T	277.94 g	28.59 g	249.4 mL	1.00 mL	7 SU	100 uL
320-37675-A-14 LMS	NAWC-032819-RW-139	537, 537	T	284.31 g	28.57 g	255.7 mL	1.00 mL	7 SU	100 uL
320-37675-A-14 LMSD	NAWC-032819-RW-139	537, 537	T	281.86 g	28.92 g	252.9 mL	1.00 mL	7 SU	100 uL
320-37675-A-15	NAWC-032819-FRB-139	537, 537	T	283.20 g	28.57 g	254.6 mL	1.00 mL	7 SU	100 uL
320-37675-A-16	NAWC-032819-RW-117	537, 537	T	286.53 g	30.07 g	256.5 mL	1.00 mL	7 SU	100 uL
320-37675-A-17	NAWC-032819-FRB-117	537, 537	T	286.61 g	28.04 g	258.6 mL	1.00 mL	7 SU	100 uL
320-37675-A-18	NAWC-032819-RW-181	537, 537	T	277.66 g	28.73 g	248.9 mL	1.00 mL	7 SU	100 uL
320-37675-A-19	NAWC-032819-FRB-181	537, 537	T	279.16 g	28.59 g	250.6 mL	1.00 mL	7 SU	100 uL
320-37675-A-20	NAWC-032819-RW-138	537, 537	T	270.92 g	28.89 g	242 mL	1.00 mL	7 SU	100 uL
320-37675-A-21	NAWC-032819-FRB-138	537, 537	T	281.13 g	27.98 g	253.2 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00064	AnalysisComment			
MB 320-216792/1		537, 537			100 uL	Chlorine, ND			
LLCS 320-216792/2		537, 537		100 uL	100 uL	Chlorine, ND			
320-37675-A-12	NAWC-032819-RW-048	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-13	NAWC-032819-FRB-048	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-14	NAWC-032819-RW-139	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-14 LMS	NAWC-032819-RW-139	537, 537	T	100 uL	100 uL	Chlorine, ND			

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

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216792 Batch Start Date: 04/07/18 08:19 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 04/11/18 17:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00064	AnalysisComment			
320-37675-A-14 LMSD	NAWC-032819-RW-1 39	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-37675-A-15	NAWC-032819-FRB- 139	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-16	NAWC-032819-RW-1 17	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-17	NAWC-032819-FRB- 117	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-18	NAWC-032819-RW-1 81	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-19	NAWC-032819-FRB- 181	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-20	NAWC-032819-RW-1 38	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-21	NAWC-032819-FRB- 138	537, 537	T		100 uL	Chlorine, ND			

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

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216792 Batch Start Date: 04/07/18 08:19 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 04/11/18 17:15

Batch Notes	
Analyst ID - Aliquot Step	VPM
Batch Comment	Client labels match TA label, 04/07/18 SKD
Analyst ID - Concentration	SKD/KMK
Analyst ID - Final Volume Step	VPM
Internal Standard ID#	1208799
Manifold ID	4, 2
Methanol ID	1204219
pH Indicator ID	3817
Pipette ID	O43082F
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	JER
Analyst ID - SU Reagent Drop	SKD
Analyst ID - SU Reagent Drop Witness	HJA
Analyst ID - TA Reagent Drop	SKD
Analyst ID - TA Reagent Drop Witness	HJA
SPE Cartridge Lot ID	6369499-12
Trizma ID	SLBR5241V
Reagent Water ID	04/05/18

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.

A8

Job No: 37675 Instrument ID & Date: 4-13-18 ICAL Batch: 217453
 Extraction Batch: 216791 Worklist #: 56657 TALS Batch: 217814, 217816, 217818, 217820
216792

Review Items	--- Level 1 ---			Level 2
	Yes	No	N/A	
Initial Calibration				
1. Is ICAL verified and locked in Chrom & TALS?	✓			✓
2. Is ICV properly linked in TALS?	✓			✓
Continuing Calibration				
1. Low-range CCV injected at start of analytical run? CCV injected after every 10 samples and at the end of the analytical run and alternated between Low-range, Mid-range and High-range?	✓			✓
2. If sequence was not after an ICAL was a low and mid range CCV injected at the start of the analytical run?	✓			✓
3. Native compounds and surrogates in control? Low-range within ±50% of true value Mid and High-range within ±30% of true value	✓			✓
4. Internal Standard areas in control? Areas ≥ 50% of average area of the ICAL and 70-140% of the most recent CCV.	✓			✓
Client Samples & QC Sample Results				
1. Were preparation and analysis done within holding times?	✓			✓
2. Are Chromatograms reviewed and spectra verified?	✓			✓
3. Are positive results within calibration range?	✓			✓
4. Dilutions due to target cpds? Dilutions due to non-targets?			✓	✓
5. All target compounds in MB < 1/3 RL ? (Requires NCM if "no.")	✓			✓
6. Are target constituents in LCS/LCSD within method control limits?	✓			✓
7. Internal Standard areas in control for all samples and QC reported? ±50% from the average area of the ICAL and 70-140% of the most recent CCV	✓			✓
8. Do results (e.g., dilutions/trip blanks) make sense?	✓			✓
9. Are MS/MSD recoveries and RPDs within method control limits?	✓			✓
10. Are all QC samples properly linked in TALS?	✓			✓
11. All manual integrations appropriate and completely documented?	✓			✓
12. Are nonconformances documented as NCMs? <u>122866</u>			✓	✓
13. Are all Chrom graphics uploaded?	✓			✓

1st Level Reviewer / Date: JRB 4-13-18 2nd Level Reviewer / Date: mxw 4/18/2018

NCM # and Comments: Samples 16 and 17 scheduled for RX due to possible sample switch.

A8

Instrument ID & Date: 4/11/18 Worklist#: 56557

ICAL Batch: 217453, 217454 Calibration ID number: 38530, 38531

Review Items	Level 1			Level 2
	Yes	No	N/A	
Initial Calibration				
1. Mass calibration, as needed, verified by full scan of PFC stock standard. All PFC ions used for quantitation are within 0.3 m/z of true mass?	✓			✓
2. Responses increase with increasing concentration?	✓			✓
3. Fit used (circle): <u>Average</u> Linear (1/x ²) Linear Quadratic (6 points minimum)				
4. Meets fit criteria? Intercept ≤ ½ RL RSD ≤ 30% for Average R ² ≥ 0.990 for Linear R ² ≥ 0.990 for Quadratic NOTE: "Force through Zero" must be used and weighted if needed	✓			✓
5. If quadratic fit used the curve does not "bend over".			✓	
6. Feed calibration points into the calculated curve. Are points ≤ MRL within ±50% of true value? Are points > MRL within ±30% of true value?	✓			✓
7. Any carryover from the high calibration point must be ≤ 1/3 RL	✓			✓
8. Asymmetry check meets criteria for the first two eluting peaks? (0.8 - 1.5).	✓			✓
9. Is the asymmetry check scanned and linked in TALS to the calibration point?	✓			✓
10. Is ICV (2 nd source) ± 30% of true value?	✓			✓
11. Is ICV (2 nd source) internal standards ±50% of average area of the ICAL?	✓			✓
12. ICAL locked in Chrom and uploaded to TALS?	✓			
13. ICAL locked in TALS and scanned?				✓

1st Level Reviewer / Date: JRB 4-11-18

2nd Level Reviewer / Date: CBW 4-11-18

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 12APR2018_537B

Worklist Number: 56657

Instrument Name: A8_N

Chrom Method: 537_A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b

QC Batching: Enabled

Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 217814
# 1 CCV L5	# 1 CCV L5
# 2 RB	# 2 RB
# 3 MB 320-216791/1-A	# 3 MB 320-216791/1-A
# 4 LCS 320-216791/2-A	# 4 LCS 320-216791/2-A
# 5 LCSD 320-216791/3-A	# 5 LCSD 320-216791/3-A
# 6 320-37675-A-1-A	# 6 320-37675-A-1-A
# 7 320-37675-A-2-A	# 7 320-37675-A-2-A
# 8 320-37675-A-3-A	# 8 320-37675-A-3-A
# 9 320-37675-A-4-A	# 9 320-37675-A-4-A
#10 320-37675-A-5-A	#10 320-37675-A-5-A
#11 320-37675-A-6-A	#11 320-37675-A-6-A
#12 320-37675-A-7-A	#12 320-37675-A-7-A
#13 CCV L3	#13 CCV L3

QC Batch: 2	LC 537 ICAL Raw Batch: 217816
#13 CCV L3	#13 CCV L3
#14 RB	#14 RB
#15 320-37675-A-8-A	#15 320-37675-A-8-A
#16 320-37675-A-9-A	#16 320-37675-A-9-A
#17 320-37675-A-10-A	#17 320-37675-A-10-A
#18 320-37675-A-11-A	#18 320-37675-A-11-A
#19 CCV L5	#19 CCV L5

QC Batch: 3	LC 537 ICAL Raw Batch: 217818
#19 CCV L5	#19 CCV L5
#20 RB	#20 RB
#21 MB 320-216792/1-A	#21 MB 320-216792/1-A
#22 LLCS 320-216792/2-A	#22 LLCS 320-216792/2-A
#23 320-37675-A-12-A	#23 320-37675-A-12-A
#24 320-37675-A-13-A	#24 320-37675-A-13-A
#25 CCV L5	#25 CCV L5

QC Batch: 4	LC 537 ICAL Raw Batch: 217820
#25 CCV L5	#25 CCV L5
#26 RB	#26 RB
#27 320-37675-A-14-A	#27 320-37675-A-14-A
#28 320-37675-A-14-D LMS	#28 320-37675-A-14-D LMS
#29 320-37675-A-14-E LMSD	#29 320-37675-A-14-E LMSD
#30 320-37675-A-15-A	#30 320-37675-A-15-A
#31 320-37675-A-16-A	#31 320-37675-A-16-A
#32 320-37675-A-17-A	#32 320-37675-A-17-A
#33 320-37675-A-18-A	#33 320-37675-A-18-A
#34 320-37675-A-19-A	#34 320-37675-A-19-A
#35 320-37675-A-20-A	#35 320-37675-A-20-A
#36 320-37675-A-21-A	#36 320-37675-A-21-A
#37 CCV L3	#37 CCV L3
#38 RB	#38 RB

CCV L in AB 217726

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 12APR2018_537B

Worklist Num: 56657

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b

Analysis Type: SemiVOA

Creator: Hannigan, Alyssa B

Inj Volume: 2.00

Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCV L5	320-0056657-001	CCVIS	13-Apr-2018 00:27:43	2018.04.12_537AA_029.d	5	1.0		sv
RB	320-0056657-002	RB	13-Apr-2018 00:32:24	2018.04.12_537AA_030.d	8	1.0		sv
MB 320-216791/1-A	320-0056657-003	MB	13-Apr-2018 00:37:03	2018.04.12_537AA_031.d	21	1.0		sv
LCS 320-216791/2-A	320-0056657-004	LCS	13-Apr-2018 00:41:45	2018.04.12_537AA_032.d	22	1.0		sv
LCSD 320-216791/3-A	320-0056657-005	LCSD	13-Apr-2018 00:46:25	2018.04.12_537AA_033.d	23	1.0		sv
320-37675-A-1-A	320-0056657-006	Client	13-Apr-2018 00:51:05	2018.04.12_537AA_034.d	24	1.0	WGNA-032918-DUP-31	sv
320-37675-A-2-A	320-0056657-007	Client	13-Apr-2018 00:55:45	2018.04.12_537AA_035.d	25	1.0	NAWC-032819-RW-286	sv
320-37675-A-3-A	320-0056657-008	Client	13-Apr-2018 01:00:24	2018.04.12_537AA_036.d	26	1.0	NAWC-032819-FRB-286	sv
320-37675-A-4-A	320-0056657-009	Client	13-Apr-2018 01:05:04	2018.04.12_537AA_037.d	27	1.0	WGNA-032819-RW-0518	sv
320-37675-A-5-A	320-0056657-010	Client	13-Apr-2018 01:09:44	2018.04.12_537AA_038.d	28	1.0	WGNA-032819-FRB-0518	sv
320-37675-A-6-A	320-0056657-011	Client	13-Apr-2018 01:14:26	2018.04.12_537AA_039.d	29	1.0	NAWC-032819-RW-010	sv
320-37675-A-7-A	320-0056657-012	Client	13-Apr-2018 01:19:06	2018.04.12_537AA_040.d	30	1.0	NAWC-032819-FRB-010	sv
CCV L3	320-0056657-013	CCVIS	13-Apr-2018 01:23:46	2018.04.12_537AA_041.d	3	1.0		sv
RB	320-0056657-014	RB	13-Apr-2018 01:28:27	2018.04.12_537AA_042.d	8	1.0		sv
320-37675-A-8-A	320-0056657-015	Client	13-Apr-2018 01:33:06	2018.04.12_537AA_043.d	31	1.0	NAWC-032819-RW-127	sv
320-37675-A-9-A	320-0056657-016	Client	13-Apr-2018 01:37:46	2018.04.12_537AA_044.d	32	1.0	NAWC-032819-FRB-127	sv
320-37675-A-10-A	320-0056657-017	Client	13-Apr-2018 01:42:27	2018.04.12_537AA_045.d	33	1.0	NAWC-032819-RW-195	sv
320-37675-A-11-A	320-0056657-018	Client	13-Apr-2018 01:47:07	2018.04.12_537AA_046.d	34	1.0	NAWC-032819-FRB-195	sv
CCV L5	320-0056657-019	CCVIS	13-Apr-2018 01:51:47	2018.04.12_537AA_047.d	5	1.0		sv
RB	320-0056657-020	RB	13-Apr-2018 01:56:27	2018.04.12_537AA_048.d	8	1.0		sv
MB 320-216792/1-A	320-0056657-021	MB	13-Apr-2018 02:01:08	2018.04.12_537AA_049.d	35	1.0		sv
LLCS 320-216792/2-A	320-0056657-022	LLCS	13-Apr-2018 02:05:48	2018.04.12_537AA_050.d	36	1.0		sv
320-37675-A-12-A	320-0056657-023	Client	13-Apr-2018 02:10:28	2018.04.12_537AA_051.d	37	1.0	NAWC-032819-RW-048	sv
320-37675-A-13-A	320-0056657-024	Client	13-Apr-2018 02:15:10	2018.04.12_537AA_052.d	38	1.0	NAWC-032819-FRB-048	sv
CCV L5	320-0056657-025	CCVIS	13-Apr-2018 02:19:51	2018.04.12_537AA_053.d	5	1.0		sv

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
RB	320-0056657-026	RB	13-Apr-2018 02:24:32	2018.04.12_537AA_054.d	8	1.0		sv
320-37675-A-14-A	320-0056657-027	Client	13-Apr-2018 02:29:11	2018.04.12_537AA_055.d	39	1.0	NAWC-032819-RW-139	sv
320-37675-A-14-D LMS	320-0056657-028	LMS	13-Apr-2018 02:33:50	2018.04.12_537AA_056.d	40	1.0		sv
320-37675-A-14-E LMSD	320-0056657-029	LMSD	13-Apr-2018 02:38:31	2018.04.12_537AA_057.d	41	1.0		sv
320-37675-A-15-A	320-0056657-030	Client	13-Apr-2018 02:43:10	2018.04.12_537AA_058.d	42	1.0	NAWC-032819-FRB-139	sv
320-37675-A-16-A	320-0056657-031	Client	13-Apr-2018 02:47:51	2018.04.12_537AA_059.d	43	1.0	NAWC-032819-RW-117	sv
320-37675-A-17-A	320-0056657-032	Client	13-Apr-2018 02:52:31	2018.04.12_537AA_060.d	44	1.0	NAWC-032819-FRB-117	sv
320-37675-A-18-A	320-0056657-033	Client	13-Apr-2018 02:57:11	2018.04.12_537AA_061.d	45	1.0	NAWC-032819-RW-181	sv
320-37675-A-19-A	320-0056657-034	Client	13-Apr-2018 03:01:50	2018.04.12_537AA_062.d	46	1.0	NAWC-032819-FRB-181	sv
320-37675-A-20-A	320-0056657-035	Client	13-Apr-2018 03:06:31	2018.04.12_537AA_063.d	47	1.0	NAWC-032819-RW-138	sv
320-37675-A-21-A	320-0056657-036	Client	13-Apr-2018 03:11:13	2018.04.12_537AA_064.d	48	1.0	NAWC-032819-FRB-138	sv
CCV L3	320-0056657-037	CCVIS	13-Apr-2018 03:15:54	2018.04.12_537AA_065.d	3	1.0		sv
RB	320-0056657-038	RB	13-Apr-2018 03:20:33	2018.04.12_537AA_066.d	8	1.0		sv

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 12APR2018_537A

Worklist Num: 56633

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180412-56633.b

Analysis Type: SemiVOA

Creator: Royce, Amani A

Inj Volume: 2.00

Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCVL	320-0056633-001	CCVL	12-Apr-2018 14:48:43	2018.04.12_537A_004.d	2	1.0		sv
CCV L5	320-0056633-002	CCVIS	12-Apr-2018 14:53:23	2018.04.12_537A_005.d	5	1.0		sv
RB	320-0056633-003	RB	12-Apr-2018 14:58:03	2018.04.12_537A_006.d	8	1.0		sv
MB 320-216980/1-A	320-0056633-004	MB	12-Apr-2018 15:02:44	2018.04.12_537A_007.d	1	1.0		sv
LCS 320-216980/2-A	320-0056633-005	LCS	12-Apr-2018 15:07:24	2018.04.12_537A_008.d	2	1.0		sv
320-37934-A-1-A	320-0056633-006	Client	12-Apr-2018 15:12:04	2018.04.12_537A_009.d	3	1.0	DUP-046	sv
320-37934-A-2-A	320-0056633-007	Client	12-Apr-2018 15:16:45	2018.04.12_537A_010.d	4	1.0	WS-054	sv
320-37934-A-3-A	320-0056633-008	Client	12-Apr-2018 15:21:26	2018.04.12_537A_011.d	5	1.0	WS-115	sv
320-37934-A-4-A	320-0056633-009	Client	12-Apr-2018 15:26:06	2018.04.12_537A_012.d	6	1.0	WS-011	sv
320-37934-A-5-A	320-0056633-010	Client	12-Apr-2018 15:30:47	2018.04.12_537A_013.d	7	1.0	WS-015	sv
320-37934-A-5-B MS	320-0056633-011	MS	12-Apr-2018 15:35:28	2018.04.12_537A_014.d	8	1.0	WS-015	sv
320-37934-A-5-C MSD	320-0056633-012	MSD	12-Apr-2018 15:40:08	2018.04.12_537A_015.d	9	1.0	WS-015	sv
320-37934-A-6-A	320-0056633-013	Client	12-Apr-2018 15:44:48	2018.04.12_537A_016.d	10	1.0	WS-032	sv
CCV L3	320-0056633-014	CCVIS	12-Apr-2018 15:49:29	2018.04.12_537A_017.d	3	1.0		sv
RB	320-0056633-015	RB	12-Apr-2018 15:54:09	2018.04.12_537A_018.d	8	1.0		sv
320-37934-A-7-A	320-0056633-016	Client	12-Apr-2018 15:58:48	2018.04.12_537A_019.d	11	1.0	WS-057	sv
320-37934-A-8-A	320-0056633-017	Client	12-Apr-2018 16:03:29	2018.04.12_537A_020.d	12	1.0	FIELD BLANK-04-04-2018	sv
320-37934-A-9-A	320-0056633-018	Client	12-Apr-2018 16:08:10	2018.04.12_537A_021.d	13	1.0	WS-110A	sv
320-37934-A-10-A	320-0056633-019	Client	12-Apr-2018 16:12:51	2018.04.12_537A_022.d	14	1.0	WS-034	sv
320-37934-A-11-A	320-0056633-020	Client	12-Apr-2018 16:17:32	2018.04.12_537A_023.d	15	1.0	WS-108	sv
320-37934-A-12-A	320-0056633-021	Client	12-Apr-2018 16:22:14	2018.04.12_537A_024.d	16	1.0	WS-009	sv
320-37936-A-1-A	320-0056633-022	Client	12-Apr-2018 16:26:56	2018.04.12_537A_025.d	17	1.0	WS-137	sv
320-37937-A-1-A	320-0056633-023	Client	12-Apr-2018 16:31:36	2018.04.12_537A_026.d	18	1.0	POET-6-MID	sv
320-37937-A-2-A	320-0056633-024	Client	12-Apr-2018 16:36:16	2018.04.12_537A_027.d	19	1.0	WS-096	sv
320-37937-A-3-A	320-0056633-025	Client	12-Apr-2018 16:40:57	2018.04.12_537A_028.d	20	1.0	DUP-047	sv

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCV L5	320-0056633-026	CCVIS	12-Apr-2018 16:45:38	2018.04.12_537A_029.d	5	1.0		sv
RB	320-0056633-027	RB	12-Apr-2018 16:50:17	2018.04.12_537A_030.d	8	1.0		sv

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Kouchari, Shamiran

Batch Number: 320-216791 ✓

Method Code: 320-537_Prep-320

Batch Open: 4/7/2018 8:11:00AM

Batch End: 4/11/2018 5:25:00PM

Extraction of Perfluorinated Alkyl Acids

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmt FinAmt	Rcvd	PHs Adj1 Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-216791/1 N/A	N/A		250 mL 1.00 mL	7		N/A	N/A	N/A	Chlorine, ND	MB 320-216791/1-A
2 LCS-320-216791/2 N/A	N/A		250 mL 1.00 mL	7		N/A	N/A	N/A	Chlorine, ND	LCS 320-216791/2-A
3 LCSD-320-216791/3 N/A	N/A		250 mL 1.00 mL	7		N/A	N/A	N/A	Chlorine, ND	LCSD 320-216791/3-A
4 320-37675-A-1 (537_DOD5)	N/A (320-37675-1)	280.59 g 28.55 g	252 mL 1.00 mL	7		4/3/18	16_Days	4	Chlorine, ND	320-37675-A-1-A
5 320-37675-A-2 (537_DOD5)	N/A (320-37675-1)	281.11 g 27.82 g	253.3 mL 1.00 mL	7		4/3/18	16_Days	4	Chlorine, ND	320-37675-A-2-A
6 320-37675-A-3 (537_DOD5)	N/A (320-37675-1)	274.84 g 28.16 g	246.7 mL 1.00 mL	7		4/3/18	16_Days	4	Chlorine, ND	320-37675-A-3-A
7 320-37675-A-4 (537_DOD5)	N/A (320-37675-1)	282.88 g 30.48 g	252.4 mL 1.00 mL	7		4/3/18	16_Days	4	Chlorine, ND	320-37675-A-4-A
8 320-37675-A-5 (537_DOD5)	N/A (320-37675-1)	281.85 g 28.39 g	253.5 mL 1.00 mL	7		4/3/18	16_Days	4	Chlorine, ND	320-37675-A-5-A
9 320-37675-A-6 (537_DOD5)	N/A (320-37675-1)	277.26 g 28.73 g	248.5 mL 1.00 mL	7		4/3/18	16_Days	4	Chlorine, ND	320-37675-A-6-A
10 320-37675-A-7 (537_DOD5)	N/A (320-37675-1)	283.60 g 28.07 g	255.5 mL 1.00 mL	7		4/3/18	16_Days	4	Chlorine, ND	320-37675-A-7-A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Method Code: 320-537_Prep-320

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Batch End: 4/11/2018 5:25:00PM

11	320-37675-A-8 (537_DOD5)	N/A (320-37675-1)	285.35 g 30.57 g	254.8 mL 1.00 mL	7			4/3/18	16_Days	4	Chlorine, ND	
12	320-37675-A-9 (537_DOD5)	N/A (320-37675-1)	278.07 g 28.78 g	249.3 mL 1.00 mL	7			4/3/18	16_Days	4	Chlorine, ND	
13	320-37675-A-10 (537_DOD5)	N/A (320-37675-1)	279.50 g 28.42 g	251.1 mL 1.00 mL	7			4/3/18	16_Days	4	Chlorine, ND	
14	320-37675-A-11 (537_DOD5)	N/A (320-37675-1)	283.84 g 28.05 g	255.8 mL 1.00 mL	7			4/3/18	16_Days	4	Chlorine, ND	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Method Code: 320-537_Prep-320

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Batch End: 4/11/2018 5:25:00PM

Batch Notes	
Manifold ID 3, 4	
pH Indicator ID 3817	
Trizma ID SLBR5241V	
SPE Cartridge Lot ID 6369499-12	
Methanol ID 1204219	
Reagent Water ID 04/05/18	
Internal Standard ID# 1208799	
Pipette ID 043082F	
Analyst ID - TA Reagent Drop SKD	
Analyst ID - TA Reagent Drop Witness HJA	
Analyst ID - SU Reagent Drop SKD	
Analyst ID - SU Reagent Drop Witness HJA	
Analyst ID - IS Reagent Drop VPM	
Analyst ID - IS Reagent Drop Witness JER	
Analyst ID - Concentration KMK/SKD	
Analyst ID - Aliquot Step VPM	
Analyst ID - Final Volume Step VPM	
Batch Comment Client labels match TA label, 04/07/18 SKD	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Method Code: 320-537_Prep-320

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Batch End:

Batch Notes	
Manifold ID 3, 4	
pH Indicator ID 3817	
Trizma ID SLBR5241V	
SPE Cartridge Lot ID 6369499-12	
Methanol ID 1204219	
Reagent Water ID 04/05/18	
Internal Standard ID# 1208299	
Pipette ID O43082F	
Analyst ID - TA Reagent Drop SKD	
Analyst ID - TA Reagent Drop Witness HJA	
Analyst ID - SU Reagent Drop SKD	
Analyst ID - SU Reagent Drop Witness HAJ	
Analyst ID - IS Reagent Drop UPM	
Analyst ID - IS Reagent Drop Witness JER	
Analyst ID - Concentration KMK/SKD	
Analyst ID - Aliquot Step UPM	
Analyst ID - Final Volume Step UPM	
Batch Comment Client labels match TA label, 04/07/18 SKD	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Method Code: 320-537_Prep-320

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Batch End:

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Method Code: 320-537_Prep-320

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-216791/1	LC537-SU_00064	100 uL	1.00 mL	SKD 4/7/18	HSD 4-7-18
LCS 320-216791/2	LC537-MSP_00033	100 uL	1.00 mL		
LCS 320-216791/2	LC537-SU_00064	100 uL	1.00 mL		
LCSD 320-216791/3	LC537-MSP_00033	100 uL	1.00 mL		
LCSD 320-216791/3	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-1	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-2	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-3	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-4	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-5	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-6	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-7	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-8	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-9	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-10	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-11	LC537-SU_00064	100 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Method Code: 320-537_Prep-320

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Batch End:

Reagent	Other Reagents:		Lot#:
	Amount/Units		

Preparation Batch Number(s) 216791

Test 537-prep

Earliest Holding Time 4/12/18

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

1st Level Reviewer: VPM

Date: 4/11/18

2nd Level Reviewer: [Signature]

Date: 4/11/18

Comments: _____

Shipping and Receiving Documents

Chain of Custody Record

320-37675 Chain of Custody

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

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-37675-1

Login Number: 37675

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-032918-DUP-31","537","RES","320-37675-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.7","DL","","TRG","","","40","LOQ","YES","-99","","252","1.00","16",""
"WGNA-032918-DUP-31","537","RES","320-37675-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","5.4","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","252","1.00","7.9",""
"WGNA-032918-DUP-31","537","RES","320-37675-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","252","1.00","12",""
"WGNA-032918-DUP-31","537","RES","320-37675-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","89","LOQ","YES","-99","","252","1.00","36",""
"WGNA-032918-DUP-31","537","RES","320-37675-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","9.9","LOQ","YES","-99","","252","1.00","4.0",""
"WGNA-032918-DUP-31","537","RES","320-37675-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES","-99","","252","1.00","20",""
"WGNA-032918-DUP-31","537","RES","320-37675-1","TALSAC","STL00993","13C2
PFHxA","38","ng/L","","-99","DL","","SURRE","95","","-99","LOQ","YES","39.7","","252","1.00","0",""
"WGNA-032918-DUP-31","537","RES","320-37675-1","TALSAC","STL00996","13C2
PFDA","37","ng/L","","-99","DL","","SURRE","93","","-99","LOQ","YES","39.7","","252","1.00","0",""
"NAWC-032819-RW-195","537","RES","320-37675-10","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","14","ng/L","J M","6.8","DL","","TRG","","","40","LOQ","YES","-99","","251.1","1.00","16",""
"NAWC-032819-RW-195","537","RES","320-37675-10","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","12","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","251.1","1.00","8.0",""
"NAWC-032819-RW-195","537","RES","320-37675-10","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","251.1","1.00","12",""
"NAWC-032819-RW-195","537","RES","320-37675-10","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","251.1","1.00","36",""
"NAWC-032819-RW-195","537","RES","320-37675-10","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.2","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES","-99","","251.1","1.00","4.0",""
"NAWC-032819-RW-195","537","RES","320-37675-10","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U M","8.0","DL","","TRG","","","24","LOQ","YES","-99","","251.1","1.00","20",""
"NAWC-032819-RW-195","537","RES","320-37675-10","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","-99","DL","","SURRE","97","","-99","LOQ","YES","39.8","","251.1","1.00","0",""
"NAWC-032819-RW-195","537","RES","320-37675-10","TALSAC","STL00996","13C2
PFDA","36","ng/L","","-99","DL","","SURRE","91","","-99","LOQ","YES","39.8","","251.1","1.00","0",""
"NAWC-032819-FRB-195","537","RES","320-37675-11","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.6","DL","","TRG","","","39","LOQ","YES","-99","","255.8","1.00","16",""
"NAWC-032819-FRB-195","537","RES","320-37675-11","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.8","ng/L","U","2.7","DL","","TRG","","","20","LOQ","YES","-99","","255.8","1.00","7.8",""
"NAWC-032819-FRB-195","537","RES","320-37675-11","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","29","LOQ","YES","-99","","255.8","1.00","12",""
"NAWC-032819-FRB-195","537","RES","320-37675-11","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","255.8","1.00","35",""
"NAWC-032819-FRB-195","537","RES","320-37675-11","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.9","ng/L","U","1.9","DL","","TRG","","","9.8","LOQ","YES","-99","","255.8","1.00","3.9",""
"NAWC-032819-FRB-195","537","RES","320-37675-11","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES","-99","","255.8","1.00","20",""
"NAWC-032819-FRB-195","537","RES","320-37675-11","TALSAC","STL00993","13C2
PFHxA","38","ng/L","","-99","DL","","SURRE","97","","-99","LOQ","YES","39.1","","255.8","1.00","0",""
"NAWC-032819-FRB-195","537","RES","320-37675-11","TALSAC","STL00996","13C2
PFDA","37","ng/L","","-99","DL","","SURRE","94","","-99","LOQ","YES","39.1","","255.8","1.00","0",""
"NAWC-032819-RW-048","537","RES","320-37675-12","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U M","6.9","DL","","TRG","","","41","LOQ","YES","-99","","245","1.00","16",""
"NAWC-032819-RW-048","537","RES","320-37675-12","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","4.8","ng/L","J","2.9","DL","","TRG","","","20","LOQ","YES","-99","","245","1.00","8.2",""
"NAWC-032819-RW-048","537","RES","320-37675-12","TALSAC","355-46-4","Perfluorohexanesulfonic acid

(PFHxS)","12","ng/L","U M","5.6","DL","","","TRG","","","31","LOQ","YES","-99","","","245","1.00","12","","
"NAWC-032819-RW-048","537","RES","320-37675-12","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","37","ng/L","U M","16","DL","","","TRG","","","92","LOQ","YES","-99","","","245","1.00","37","","
"NAWC-032819-RW-048","537","RES","320-37675-12","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.1","ng/L","U","1.9","DL","","","TRG","","","10","LOQ","YES","-99","","","245","1.00","4.1","","
"NAWC-032819-RW-048","537","RES","320-37675-12","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.2","DL","","","TRG","","","24","LOQ","YES","-99","","","245","1.00","20","","
"NAWC-032819-RW-048","537","RES","320-37675-12","TALSAC","STL00993","13C2
PFHxA","37","ng/L","","","-99","DL","","","SURR","91","","","-99","LOQ","YES","40.8","","","245","1.00","0","","
"NAWC-032819-RW-048","537","RES","320-37675-12","TALSAC","STL00996","13C2
PFDA","39","ng/L","","","-99","DL","","","SURR","96","","","-99","LOQ","YES","40.8","","","245","1.00","0","","
"NAWC-032819-FRB-048","537","RES","320-37675-13","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.8","DL","","","TRG","","","40","LOQ","YES","-99","","","248.7","1.00","16","","
"NAWC-032819-FRB-048","537","RES","320-37675-13","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.0","ng/L","U","2.8","DL","","","TRG","","","20","LOQ","YES","-99","","","248.7","1.00","8.0","","
"NAWC-032819-FRB-048","537","RES","320-37675-13","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.5","DL","","","TRG","","","30","LOQ","YES","-99","","","248.7","1.00","12","","
"NAWC-032819-FRB-048","537","RES","320-37675-13","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","","TRG","","","90","LOQ","YES","-99","","","248.7","1.00","36","","
"NAWC-032819-FRB-048","537","RES","320-37675-13","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","U","1.9","DL","","","TRG","","","10","LOQ","YES","-99","","","248.7","1.00","4.0","","
"NAWC-032819-FRB-048","537","RES","320-37675-13","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","","TRG","","","24","LOQ","YES","-99","","","248.7","1.00","20","","
"NAWC-032819-FRB-048","537","RES","320-37675-13","TALSAC","STL00993","13C2
PFHxA","38","ng/L","","","-99","DL","","","SURR","94","","","-99","LOQ","YES","40.2","","","248.7","1.00","0","","
"NAWC-032819-FRB-048","537","RES","320-37675-13","TALSAC","STL00996","13C2
PFDA","38","ng/L","","","-99","DL","","","SURR","94","","","-99","LOQ","YES","40.2","","","248.7","1.00","0","","
"NAWC-032819-RW-139","537","RES","320-37675-14","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U M","6.8","DL","","","TRG","","","40","LOQ","YES","-99","","","249.4","1.00","16","","
"NAWC-032819-RW-139","537","RES","320-37675-14","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","9.5","ng/L","J","2.8","DL","","","TRG","","","20","LOQ","YES","-99","","","249.4","1.00","8.0","","
"NAWC-032819-RW-139","537","RES","320-37675-14","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U M","5.5","DL","","","TRG","","","30","LOQ","YES","-99","","","249.4","1.00","12","","
"NAWC-032819-RW-139","537","RES","320-37675-14","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","","TRG","","","90","LOQ","YES","-99","","","249.4","1.00","36","","
"NAWC-032819-RW-139","537","RES","320-37675-14","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","J M","1.9","DL","","","TRG","","","10","LOQ","YES","-99","","","249.4","1.00","4.0","","
"NAWC-032819-RW-139","537","RES","320-37675-14","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U M","8.0","DL","","","TRG","","","24","LOQ","YES","-99","","","249.4","1.00","20","","
"NAWC-032819-RW-139","537","RES","320-37675-14","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","","-99","DL","","","SURR","87","","","-99","LOQ","YES","40.1","","","249.4","1.00","0","","
"NAWC-032819-RW-139","537","RES","320-37675-14","TALSAC","STL00996","13C2
PFDA","40","ng/L","","","-99","DL","","","SURR","100","","","-99","LOQ","YES","40.1","","","249.4","1.00","0","","
"NAWC-032819-RW-139MS","537","RES","320-37675-14MS","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","42.7","ng/L","M","6.6","DL","","","SPK","109","","","39","LOQ","YES","39.3","NAWC-032819-RW-
139","255.7","1.00","16","","
"NAWC-032819-RW-139MS","537","RES","320-37675-14MS","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","28.1","ng/L","","","2.7","DL","","","SPK","95","","","20","LOQ","YES","19.6","NAWC-032819-RW-
139","255.7","1.00","7.8","","
"NAWC-032819-RW-139MS","537","RES","320-37675-14MS","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","31.3","ng/L","","","5.4","DL","","","SPK","106","","","29","LOQ","YES","29.7","NAWC-032819-RW-
139","255.7","1.00","12","","
"NAWC-032819-RW-139MS","537","RES","320-37675-14MS","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","104","ng/L","","","16","DL","","","SPK","118","","","88","LOQ","YES","88.2","NAWC-032819-RW-

139","255.7","1.00","35",""
"NAWC-032819-RW-139MS","537","RES","320-37675-14MS","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","13.4","ng/L","","1.9","DL","","SPK","96","","9.8","LOQ","YES","9.78","NAWC-032819-RW-139","255.7","1.00","3.9",""
"NAWC-032819-RW-139MS","537","RES","320-37675-14MS","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19.0","ng/L","J","7.8","DL","","SPK","97","","23","LOQ","YES","19.6","NAWC-032819-RW-139","255.7","1.00","20",""
"NAWC-032819-RW-139MS","537","RES","320-37675-14MS","TALSAC","STL00993","13C2 PFHxA","39.3","ng/L","","-99","DL","","SURRE","101","","-99","LOQ","YES","39.1","NAWC-032819-RW-139","255.7","1.00","0",""
"NAWC-032819-RW-139MS","537","RES","320-37675-14MS","TALSAC","STL00996","13C2 PFDA","38.0","ng/L","","-99","DL","","SURRE","97","","-99","LOQ","YES","39.1","NAWC-032819-RW-139","255.7","1.00","0",""
"NAWC-032819-RW-139MSD","537","RES","320-37675-14MSD","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","41.2","ng/L","M","6.7","DL","","SPK","104","3","40","LOQ","YES","39.8","NAWC-032819-RW-139","252.9","1.00","16",""
"NAWC-032819-RW-139MSD","537","RES","320-37675-14MSD","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","27.4","ng/L","","2.8","DL","","SPK","91","3","20","LOQ","YES","19.8","NAWC-032819-RW-139","252.9","1.00","7.9",""
"NAWC-032819-RW-139MSD","537","RES","320-37675-14MSD","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","29.4","ng/L","J","5.4","DL","","SPK","98","6","30","LOQ","YES","30.0","NAWC-032819-RW-139","252.9","1.00","12",""
"NAWC-032819-RW-139MSD","537","RES","320-37675-14MSD","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","94.4","ng/L","","16","DL","","SPK","106","9","89","LOQ","YES","89.1","NAWC-032819-RW-139","252.9","1.00","36",""
"NAWC-032819-RW-139MSD","537","RES","320-37675-14MSD","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","13.0","ng/L","","1.9","DL","","SPK","91","3","9.9","LOQ","YES","9.89","NAWC-032819-RW-139","252.9","1.00","4.0",""
"NAWC-032819-RW-139MSD","537","RES","320-37675-14MSD","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","18.5","ng/L","J","7.9","DL","","SPK","94","3","24","LOQ","YES","19.8","NAWC-032819-RW-139","252.9","1.00","20",""
"NAWC-032819-RW-139MSD","537","RES","320-37675-14MSD","TALSAC","STL00993","13C2 PFHxA","36.9","ng/L","","-99","DL","","SURRE","93","","-99","LOQ","YES","39.5","NAWC-032819-RW-139","252.9","1.00","0",""
"NAWC-032819-RW-139MSD","537","RES","320-37675-14MSD","TALSAC","STL00996","13C2 PFDA","38.8","ng/L","","-99","DL","","SURRE","98","","-99","LOQ","YES","39.5","NAWC-032819-RW-139","252.9","1.00","0",""
"NAWC-032819-FRB-139","537","RES","320-37675-15","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.7","DL","","TRG","","","39","LOQ","YES","-99","","254.6","1.00","16",""
"NAWC-032819-FRB-139","537","RES","320-37675-15","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.9","ng/L","U","2.7","DL","","TRG","","","20","LOQ","YES","-99","","254.6","1.00","7.9",""
"NAWC-032819-FRB-139","537","RES","320-37675-15","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","29","LOQ","YES","-99","","254.6","1.00","12",""
"NAWC-032819-FRB-139","537","RES","320-37675-15","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","254.6","1.00","35",""
"NAWC-032819-FRB-139","537","RES","320-37675-15","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.9","ng/L","U","1.9","DL","","TRG","","","9.8","LOQ","YES","-99","","254.6","1.00","3.9",""
"NAWC-032819-FRB-139","537","RES","320-37675-15","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES","-99","","254.6","1.00","20",""
"NAWC-032819-FRB-139","537","RES","320-37675-15","TALSAC","STL00993","13C2 PFHxA","38","ng/L","","-99","DL","","SURRE","98","","-99","LOQ","YES","39.3","","254.6","1.00","0",""
"NAWC-032819-FRB-139","537","RES","320-37675-15","TALSAC","STL00996","13C2 PFDA","38","ng/L","","-99","DL","","SURRE","98","","-99","LOQ","YES","39.3","","254.6","1.00","0",""
"NAWC-032819-RW-117","537","RES","320-37675-16","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS),"16","ng/L","U","6.6","DL","","","TRG","","","39","LOQ","YES",-99","","256.5","1.00","16",""
"NAWC-032819-RW-117","537","RES","320-37675-16","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"7.8","ng/L","U","2.7","DL","","","TRG","","","19","LOQ","YES",-99","","256.5","1.00","7.8",""
"NAWC-032819-RW-117","537","RES","320-37675-16","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"12","ng/L","U","5.4","DL","","","TRG","","","29","LOQ","YES",-99","","256.5","1.00","12",""
"NAWC-032819-RW-117","537","RES","320-37675-16","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"35","ng/L","U","16","DL","","","TRG","","","88","LOQ","YES",-99","","256.5","1.00","35",""
"NAWC-032819-RW-117","537","RES","320-37675-16","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"3.9","ng/L","U","1.9","DL","","","TRG","","","9.7","LOQ","YES",-99","","256.5","1.00","3.9",""
"NAWC-032819-RW-117","537","RES","320-37675-16","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"19","ng/L","U","7.8","DL","","","TRG","","","23","LOQ","YES",-99","","256.5","1.00","19",""
"NAWC-032819-RW-117","537","RES","320-37675-16","TALSAC","STL00993","13C2
PFHxA","38","ng/L","","","-99","DL","","","SURR","97","","","-99","LOQ","YES","39.0","","","256.5","1.00","0",""
"NAWC-032819-RW-117","537","RES","320-37675-16","TALSAC","STL00996","13C2
PFDA","38","ng/L","","","-99","DL","","","SURR","98","","","-99","LOQ","YES","39.0","","","256.5","1.00","0",""
"NAWC-032819-FRB-117","537","RES","320-37675-17","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"28","ng/L","J M","6.6","DL","","","TRG","","","39","LOQ","YES",-99","","258.6","1.00","15",""
"NAWC-032819-FRB-117","537","RES","320-37675-17","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"20","ng/L","","","2.7","DL","","","TRG","","","19","LOQ","YES",-99","","258.6","1.00","7.7",""
"NAWC-032819-FRB-117","537","RES","320-37675-17","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"15","ng/L","J","5.3","DL","","","TRG","","","29","LOQ","YES",-99","","258.6","1.00","12",""
"NAWC-032819-FRB-117","537","RES","320-37675-17","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"35","ng/L","U","16","DL","","","TRG","","","87","LOQ","YES",-99","","258.6","1.00","35",""
"NAWC-032819-FRB-117","537","RES","320-37675-17","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"4.9","ng/L","J","1.8","DL","","","TRG","","","9.7","LOQ","YES",-99","","258.6","1.00","3.9",""
"NAWC-032819-FRB-117","537","RES","320-37675-17","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"19","ng/L","U","7.7","DL","","","TRG","","","23","LOQ","YES",-99","","258.6","1.00","19",""
"NAWC-032819-FRB-117","537","RES","320-37675-17","TALSAC","STL00993","13C2
PFHxA","37","ng/L","","","-99","DL","","","SURR","96","","","-99","LOQ","YES","38.7","","","258.6","1.00","0",""
"NAWC-032819-FRB-117","537","RES","320-37675-17","TALSAC","STL00996","13C2
PFDA","34","ng/L","","","-99","DL","","","SURR","88","","","-99","LOQ","YES","38.7","","","258.6","1.00","0",""
"NAWC-032819-RW-181","537","RES","320-37675-18","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"16","ng/L","U","6.8","DL","","","TRG","","","40","LOQ","YES",-99","","248.9","1.00","16",""
"NAWC-032819-RW-181","537","RES","320-37675-18","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"5.2","ng/L","J","2.8","DL","","","TRG","","","20","LOQ","YES",-99","","248.9","1.00","8.0",""
"NAWC-032819-RW-181","537","RES","320-37675-18","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"12","ng/L","U","5.5","DL","","","TRG","","","30","LOQ","YES",-99","","248.9","1.00","12",""
"NAWC-032819-RW-181","537","RES","320-37675-18","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"36","ng/L","U","16","DL","","","TRG","","","90","LOQ","YES",-99","","248.9","1.00","36",""
"NAWC-032819-RW-181","537","RES","320-37675-18","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"4.0","ng/L","U","1.9","DL","","","TRG","","","10","LOQ","YES",-99","","248.9","1.00","4.0",""
"NAWC-032819-RW-181","537","RES","320-37675-18","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"20","ng/L","U","8.0","DL","","","TRG","","","24","LOQ","YES",-99","","248.9","1.00","20",""
"NAWC-032819-RW-181","537","RES","320-37675-18","TALSAC","STL00993","13C2
PFHxA","38","ng/L","","","-99","DL","","","SURR","94","","","-99","LOQ","YES","40.2","","","248.9","1.00","0",""
"NAWC-032819-RW-181","537","RES","320-37675-18","TALSAC","STL00996","13C2
PFDA","34","ng/L","","","-99","DL","","","SURR","86","","","-99","LOQ","YES","40.2","","","248.9","1.00","0",""
"NAWC-032819-FRB-181","537","RES","320-37675-19","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"16","ng/L","U","6.8","DL","","","TRG","","","40","LOQ","YES",-99","","250.6","1.00","16",""
"NAWC-032819-FRB-181","537","RES","320-37675-19","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"8.0","ng/L","U","2.8","DL","","","TRG","","","20","LOQ","YES",-99","","250.6","1.00","8.0",""
"NAWC-032819-FRB-181","537","RES","320-37675-19","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"12","ng/L","U","5.5","DL","","","TRG","","","30","LOQ","YES",-99","","250.6","1.00","12",""
"NAWC-032819-FRB-181","537","RES","320-37675-19","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250.6","1.00","36",""
"NAWC-032819-FRB-181","537","RES","320-37675-19","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","250.6","1.00","4.0",""
"NAWC-032819-FRB-181","537","RES","320-37675-19","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","250.6","1.00","20",""
"NAWC-032819-FRB-181","537","RES","320-37675-19","TALSAC","STL00993","13C2
PFHxA","40","ng/L","","-99","DL","","SURR","100","","-99","LOQ","YES","39.9","","250.6","1.00","0",""
"NAWC-032819-FRB-181","537","RES","320-37675-19","TALSAC","STL00996","13C2
PFDA","42","ng/L","","-99","DL","","SURR","104","","-99","LOQ","YES","39.9","","250.6","1.00","0",""
"NAWC-032819-RW-286","537","RES","320-37675-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","17","ng/L","J M","6.7","DL","","TRG","","","39","LOQ","YES","-99","","253.3","1.00","16",""
"NAWC-032819-RW-286","537","RES","320-37675-2","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","18","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","253.3","1.00","7.9",""
"NAWC-032819-RW-286","537","RES","320-37675-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","5.8","ng/L","J","5.4","DL","","TRG","","","30","LOQ","YES","-99","","253.3","1.00","12",""
"NAWC-032819-RW-286","537","RES","320-37675-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","89","LOQ","YES","-99","","253.3","1.00","36",""
"NAWC-032819-RW-286","537","RES","320-37675-2","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.7","ng/L","J","1.9","DL","","TRG","","","9.9","LOQ","YES","-99","","253.3","1.00","3.9",""
"NAWC-032819-RW-286","537","RES","320-37675-2","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U M","7.9","DL","","TRG","","","24","LOQ","YES","-99","","253.3","1.00","20",""
"NAWC-032819-RW-286","537","RES","320-37675-2","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","39.5","","253.3","1.00","0",""
"NAWC-032819-RW-286","537","RES","320-37675-2","TALSAC","STL00996","13C2
PFDA","40","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","39.5","","253.3","1.00","0",""
"NAWC-032819-RW-138","537","RES","320-37675-20","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","8.0","ng/L","J M","7.0","DL","","TRG","","","41","LOQ","YES","-99","","242","1.00","17",""
"NAWC-032819-RW-138","537","RES","320-37675-20","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","30","ng/L","","2.9","DL","","TRG","","","21","LOQ","YES","-99","","242","1.00","8.3",""
"NAWC-032819-RW-138","537","RES","320-37675-20","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U M","5.7","DL","","TRG","","","31","LOQ","YES","-99","","242","1.00","12",""
"NAWC-032819-RW-138","537","RES","320-37675-20","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","37","ng/L","U","17","DL","","TRG","","","93","LOQ","YES","-99","","242","1.00","37",""
"NAWC-032819-RW-138","537","RES","320-37675-20","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","7.4","ng/L","J","2.0","DL","","TRG","","","10","LOQ","YES","-99","","242","1.00","4.1",""
"NAWC-032819-RW-138","537","RES","320-37675-20","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","21","ng/L","U M","8.3","DL","","TRG","","","25","LOQ","YES","-99","","242","1.00","21",""
"NAWC-032819-RW-138","537","RES","320-37675-20","TALSAC","STL00993","13C2
PFHxA","41","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","41.3","","242","1.00","0",""
"NAWC-032819-RW-138","537","RES","320-37675-20","TALSAC","STL00996","13C2
PFDA","41","ng/L","","-99","DL","","SURR","99","","-99","LOQ","YES","41.3","","242","1.00","0",""
"NAWC-032819-FRB-138","537","RES","320-37675-21","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.7","DL","","TRG","","","39","LOQ","YES","-99","","253.2","1.00","16",""
"NAWC-032819-FRB-138","537","RES","320-37675-21","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.9","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","253.2","1.00","7.9",""
"NAWC-032819-FRB-138","537","RES","320-37675-21","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","30","LOQ","YES","-99","","253.2","1.00","12",""
"NAWC-032819-FRB-138","537","RES","320-37675-21","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","89","LOQ","YES","-99","","253.2","1.00","36",""
"NAWC-032819-FRB-138","537","RES","320-37675-21","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.9","ng/L","U","1.9","DL","","TRG","","","9.9","LOQ","YES","-99","","253.2","1.00","3.9",""
"NAWC-032819-FRB-138","537","RES","320-37675-21","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES","-99","","253.2","1.00","20",""
"NAWC-032819-FRB-138","537","RES","320-37675-21","TALSAC","STL00993","13C2

PFHxA","38","ng/L","",-99","DL","","SURRE","96","",-99","LOQ","YES","39.5","","253.2","1.00","0",""
"NAWC-032819-FRB-138","537","RES","320-37675-21","TALSAC","STL00996","13C2
PFDA","36","ng/L","",-99","DL","","SURRE","91","",-99","LOQ","YES","39.5","","253.2","1.00","0",""
"NAWC-032819-FRB-286","537","RES","320-37675-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.9","DL","","TRG","","","41","LOQ","YES","-99","","246.7","1.00","16",""
"NAWC-032819-FRB-286","537","RES","320-37675-3","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.1","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","246.7","1.00","8.1",""
"NAWC-032819-FRB-286","537","RES","320-37675-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.6","DL","","TRG","","","30","LOQ","YES","-99","","246.7","1.00","12",""
"NAWC-032819-FRB-286","537","RES","320-37675-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","91","LOQ","YES","-99","","246.7","1.00","36",""
"NAWC-032819-FRB-286","537","RES","320-37675-3","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.1","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","246.7","1.00","4.1",""
"NAWC-032819-FRB-286","537","RES","320-37675-3","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.1","DL","","TRG","","","24","LOQ","YES","-99","","246.7","1.00","20",""
"NAWC-032819-FRB-286","537","RES","320-37675-3","TALSAC","STL00993","13C2
PFHxA","41","ng/L","",-99","DL","","SURRE","101","",-99","LOQ","YES","40.5","","246.7","1.00","0",""
"NAWC-032819-FRB-286","537","RES","320-37675-3","TALSAC","STL00996","13C2
PFDA","39","ng/L","",-99","DL","","SURRE","95","",-99","LOQ","YES","40.5","","246.7","1.00","0",""
"WGNA-032819-RW-0518","537","RES","320-37675-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","22","ng/L","J M","6.7","DL","","TRG","","","40","LOQ","YES","-99","","252.4","1.00","16",""
"WGNA-032819-RW-0518","537","RES","320-37675-4","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","23","ng/L","","2.8","DL","","TRG","","","20","LOQ","YES","-99","","252.4","1.00","7.9",""
"WGNA-032819-RW-0518","537","RES","320-37675-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","8.9","ng/L","J","5.4","DL","","TRG","","","30","LOQ","YES","-99","","252.4","1.00","12",""
"WGNA-032819-RW-0518","537","RES","320-37675-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","19","ng/L","J","16","DL","","TRG","","","89","LOQ","YES","-99","","252.4","1.00","36",""
"WGNA-032819-RW-0518","537","RES","320-37675-4","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","5.7","ng/L","J","1.9","DL","","TRG","","","9.9","LOQ","YES","-99","","252.4","1.00","4.0",""
"WGNA-032819-RW-0518","537","RES","320-37675-4","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U M","7.9","DL","","TRG","","","24","LOQ","YES","-99","","252.4","1.00","20",""
"WGNA-032819-RW-0518","537","RES","320-37675-4","TALSAC","STL00993","13C2
PFHxA","42","ng/L","",-99","DL","","SURRE","106","",-99","LOQ","YES","39.6","","252.4","1.00","0",""
"WGNA-032819-RW-0518","537","RES","320-37675-4","TALSAC","STL00996","13C2
PFDA","41","ng/L","",-99","DL","","SURRE","104","",-99","LOQ","YES","39.6","","252.4","1.00","0",""
"WGNA-032819-FRB-0518","537","RES","320-37675-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.7","DL","","TRG","","","39","LOQ","YES","-99","","253.5","1.00","16",""
"WGNA-032819-FRB-0518","537","RES","320-37675-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.9","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","253.5","1.00","7.9",""
"WGNA-032819-FRB-0518","537","RES","320-37675-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","30","LOQ","YES","-99","","253.5","1.00","12",""
"WGNA-032819-FRB-0518","537","RES","320-37675-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","89","LOQ","YES","-99","","253.5","1.00","36",""
"WGNA-032819-FRB-0518","537","RES","320-37675-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.9","ng/L","U","1.9","DL","","TRG","","","9.9","LOQ","YES","-99","","253.5","1.00","3.9",""
"WGNA-032819-FRB-0518","537","RES","320-37675-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES","-99","","253.5","1.00","20",""
"WGNA-032819-FRB-0518","537","RES","320-37675-5","TALSAC","STL00993","13C2
PFHxA","39","ng/L","",-99","DL","","SURRE","100","",-99","LOQ","YES","39.4","","253.5","1.00","0",""
"WGNA-032819-FRB-0518","537","RES","320-37675-5","TALSAC","STL00996","13C2
PFDA","39","ng/L","",-99","DL","","SURRE","98","",-99","LOQ","YES","39.4","","253.5","1.00","0",""
"NAWC-032819-RW-010","537","RES","320-37675-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","27","ng/L","J M","6.8","DL","","TRG","","","40","LOQ","YES","-99","","248.5","1.00","16",""
"NAWC-032819-RW-010","537","RES","320-37675-6","TALSAC","335-67-1","Perfluorooctanoic acid

(PFOA)", "20", "ng/L", "", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "248.5", "1.00", "8.0", ""
"NAWC-032819-RW-010", "537", "RES", "320-37675-6", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "17", "ng/L", "J", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "248.5", "1.00", "12", ""
"NAWC-032819-RW-010", "537", "RES", "320-37675-6", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "91", "LOQ", "YES", "-99", "", "248.5", "1.00", "36", ""
"NAWC-032819-RW-010", "537", "RES", "320-37675-6", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "5.8", "ng/L", "J", "1.9", "DL", "", "TRG", "", "", "10", "LOQ", "YES", "-99", "", "248.5", "1.00", "4.0", ""
"NAWC-032819-RW-010", "537", "RES", "320-37675-6", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "20", "ng/L", "U M", "8.0", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "248.5", "1.00", "20", ""
"NAWC-032819-RW-010", "537", "RES", "320-37675-6", "TALSAC", "STL00993", "13C2
PFHxA", "36", "ng/L", "", "-99", "DL", "", "SURR", "91", "", "-99", "LOQ", "YES", "40.2", "", "248.5", "1.00", "0", ""
"NAWC-032819-RW-010", "537", "RES", "320-37675-6", "TALSAC", "STL00996", "13C2
PFDA", "35", "ng/L", "", "-99", "DL", "", "SURR", "88", "", "-99", "LOQ", "YES", "40.2", "", "248.5", "1.00", "0", ""
"NAWC-032819-FRB-010", "537", "RES", "320-37675-7", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "16", "ng/L", "U", "6.7", "DL", "", "TRG", "", "", "39", "LOQ", "YES", "-99", "", "255.5", "1.00", "16", ""
"NAWC-032819-FRB-010", "537", "RES", "320-37675-7", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "7.8", "ng/L", "U", "2.7", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "255.5", "1.00", "7.8", ""
"NAWC-032819-FRB-010", "537", "RES", "320-37675-7", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "12", "ng/L", "U", "5.4", "DL", "", "TRG", "", "", "29", "LOQ", "YES", "-99", "", "255.5", "1.00", "12", ""
"NAWC-032819-FRB-010", "537", "RES", "320-37675-7", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "35", "ng/L", "U", "16", "DL", "", "TRG", "", "", "88", "LOQ", "YES", "-99", "", "255.5", "1.00", "35", ""
"NAWC-032819-FRB-010", "537", "RES", "320-37675-7", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "3.9", "ng/L", "U", "1.9", "DL", "", "TRG", "", "", "9.8", "LOQ", "YES", "-99", "", "255.5", "1.00", "3.9", ""
"NAWC-032819-FRB-010", "537", "RES", "320-37675-7", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "20", "ng/L", "U", "7.8", "DL", "", "TRG", "", "", "23", "LOQ", "YES", "-99", "", "255.5", "1.00", "20", ""
"NAWC-032819-FRB-010", "537", "RES", "320-37675-7", "TALSAC", "STL00993", "13C2
PFHxA", "39", "ng/L", "", "-99", "DL", "", "SURR", "101", "", "-99", "LOQ", "YES", "39.1", "", "255.5", "1.00", "0", ""
"NAWC-032819-FRB-010", "537", "RES", "320-37675-7", "TALSAC", "STL00996", "13C2
PFDA", "40", "ng/L", "", "-99", "DL", "", "SURR", "101", "", "-99", "LOQ", "YES", "39.1", "", "255.5", "1.00", "0", ""
"NAWC-032819-RW-127", "537", "RES", "320-37675-8", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "16", "ng/L", "U", "6.7", "DL", "", "TRG", "", "", "39", "LOQ", "YES", "-99", "", "254.8", "1.00", "16", ""
"NAWC-032819-RW-127", "537", "RES", "320-37675-8", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "7.8", "ng/L", "U", "2.7", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "254.8", "1.00", "7.8", ""
"NAWC-032819-RW-127", "537", "RES", "320-37675-8", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "12", "ng/L", "U", "5.4", "DL", "", "TRG", "", "", "29", "LOQ", "YES", "-99", "", "254.8", "1.00", "12", ""
"NAWC-032819-RW-127", "537", "RES", "320-37675-8", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "35", "ng/L", "U", "16", "DL", "", "TRG", "", "", "88", "LOQ", "YES", "-99", "", "254.8", "1.00", "35", ""
"NAWC-032819-RW-127", "537", "RES", "320-37675-8", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "3.9", "ng/L", "U", "1.9", "DL", "", "TRG", "", "", "9.8", "LOQ", "YES", "-99", "", "254.8", "1.00", "3.9", ""
"NAWC-032819-RW-127", "537", "RES", "320-37675-8", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "20", "ng/L", "U", "7.8", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "254.8", "1.00", "20", ""
"NAWC-032819-RW-127", "537", "RES", "320-37675-8", "TALSAC", "STL00993", "13C2
PFHxA", "36", "ng/L", "", "-99", "DL", "", "SURR", "93", "", "-99", "LOQ", "YES", "39.2", "", "254.8", "1.00", "0", ""
"NAWC-032819-RW-127", "537", "RES", "320-37675-8", "TALSAC", "STL00996", "13C2
PFDA", "38", "ng/L", "", "-99", "DL", "", "SURR", "96", "", "-99", "LOQ", "YES", "39.2", "", "254.8", "1.00", "0", ""
"NAWC-032819-FRB-127", "537", "RES", "320-37675-9", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "16", "ng/L", "U", "6.8", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "249.3", "1.00", "16", ""
"NAWC-032819-FRB-127", "537", "RES", "320-37675-9", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "8.0", "ng/L", "U", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "249.3", "1.00", "8.0", ""
"NAWC-032819-FRB-127", "537", "RES", "320-37675-9", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "12", "ng/L", "U", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "249.3", "1.00", "12", ""
"NAWC-032819-FRB-127", "537", "RES", "320-37675-9", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "249.3", "1.00", "36", ""
"NAWC-032819-FRB-127", "537", "RES", "320-37675-9", "TALSAC", "375-85-9", "Perfluoroheptanoic acid

(PFHpA),"4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES",-99","","249.3","1.00","4.0","","
"NAWC-032819-FRB-127","537","RES","320-37675-9","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES",-99","","249.3","1.00","20","","
"NAWC-032819-FRB-127","537","RES","320-37675-9","TALSAC","STL00993","13C2
PFHxA","38","ng/L","","-99","DL","","SURRE","95","","-99","LOQ","YES","40.1","","249.3","1.00","0","","
"NAWC-032819-FRB-127","537","RES","320-37675-9","TALSAC","STL00996","13C2
PFDA","40","ng/L","","-99","DL","","SURRE","100","","-99","LOQ","YES","40.1","","249.3","1.00","0","","
"LCS 320-216791/2-A","537","RES","LCS 320-216791/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","132","ng/L","M","6.8","DL","","SPK","100","","40","LOQ","YES","132","","250","1.00","16","","
"LCS 320-216791/2-A","537","RES","LCS 320-216791/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","67.8","ng/L","","2.8","DL","","SPK","103","","20","LOQ","YES","66.0","","250","1.00","8.0","","
"LCS 320-216791/2-A","537","RES","LCS 320-216791/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","105","ng/L","","5.5","DL","","SPK","105","","30","LOQ","YES","100","","250","1.00","12","","
"LCS 320-216791/2-A","537","RES","LCS 320-216791/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","303","ng/L","","16","DL","","SPK","101","","90","LOQ","YES","300","","250","1.00","36","","
"LCS 320-216791/2-A","537","RES","LCS 320-216791/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","32.0","ng/L","","1.9","DL","","SPK","100","","10","LOQ","YES","32.0","","250","1.00","4.0","","
"LCS 320-216791/2-A","537","RES","LCS 320-216791/2-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","62.6","ng/L","","8.0","DL","","SPK","95","","24","LOQ","YES","66.0","","250","1.00","20","","
"LCS 320-216791/2-A","537","RES","LCS 320-216791/2-A","TALSAC","STL00993","13C2
PFHxA","38.1","ng/L","","-99","DL","","SURRE","95","","-99","LOQ","YES","40.0","","250","1.00","0","","
"LCS 320-216791/2-A","537","RES","LCS 320-216791/2-A","TALSAC","STL00996","13C2
PFDA","37.4","ng/L","","-99","DL","","SURRE","93","","-99","LOQ","YES","40.0","","250","1.00","0","","
"LCSD 320-216791/3-A","537","RES","LCSD 320-216791/3-A","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","126","ng/L","M","6.8","DL","","SPK","96","4","40","LOQ","YES","132","LCS 320-216791/2-
A","250","1.00","16","","
"LCSD 320-216791/3-A","537","RES","LCSD 320-216791/3-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","65.5","ng/L","","2.8","DL","","SPK","99","3","20","LOQ","YES","66.0","LCS 320-216791/2-
A","250","1.00","8.0","","
"LCSD 320-216791/3-A","537","RES","LCSD 320-216791/3-A","TALSAC","355-46-4","Perfluorohexanesulfonic
acid (PFHxS)","102","ng/L","","5.5","DL","","SPK","102","3","30","LOQ","YES","100","LCS 320-216791/2-
A","250","1.00","12","","
"LCSD 320-216791/3-A","537","RES","LCSD 320-216791/3-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","266","ng/L","","16","DL","","SPK","89","13","90","LOQ","YES","300","LCS 320-216791/2-
A","250","1.00","36","","
"LCSD 320-216791/3-A","537","RES","LCSD 320-216791/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","31.0","ng/L","","1.9","DL","","SPK","97","3","10","LOQ","YES","32.0","LCS 320-216791/2-
A","250","1.00","4.0","","
"LCSD 320-216791/3-A","537","RES","LCSD 320-216791/3-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","62.7","ng/L","","8.0","DL","","SPK","95","0","24","LOQ","YES","66.0","LCS 320-216791/2-
A","250","1.00","20","","
"LCSD 320-216791/3-A","537","RES","LCSD 320-216791/3-A","TALSAC","STL00993","13C2
PFHxA","34.6","ng/L","","-99","DL","","SURRE","87","","-99","LOQ","YES","40.0","LCS 320-216791/2-
A","250","1.00","0","","
"LCSD 320-216791/3-A","537","RES","LCSD 320-216791/3-A","TALSAC","STL00996","13C2
PFDA","40.5","ng/L","","-99","DL","","SURRE","101","","-99","LOQ","YES","40.0","LCS 320-216791/2-
A","250","1.00","0","","
"LLCS 320-216792/2-A","537","RES","LLCS 320-216792/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","38.9","ng/L","J M","6.8","DL","","SPK","97","","40","LOQ","YES","40.2","","250","1.00","16","","
"LLCS 320-216792/2-A","537","RES","LLCS 320-216792/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","19.1","ng/L","J","2.8","DL","","SPK","95","","20","LOQ","YES","20.0","","250","1.00","8.0","","
"LLCS 320-216792/2-A","537","RES","LLCS 320-216792/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","31.7","ng/L","","5.5","DL","","SPK","105","","30","LOQ","YES","30.3","","250","1.00","12","","
"LLCS 320-216792/2-A","537","RES","LLCS 320-216792/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)","97.1","ng/L","","16","DL","","SPK","108","","90","LOQ","YES","90.2","","250","1.00","36",""
"LLCS 320-216792/2-A","537","RES","LLCS 320-216792/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","9.59","ng/L","J","1.9","DL","","SPK","96","","10","LOQ","YES","10.0","","250","1.00","4.0",""
"LLCS 320-216792/2-A","537","RES","LLCS 320-216792/2-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","17.5","ng/L","J","8.0","DL","","SPK","88","","24","LOQ","YES","20.0","","250","1.00","20",""
"LLCS 320-216792/2-A","537","RES","LLCS 320-216792/2-A","TALSAC","STL00993","13C2
PFHxA","39.4","ng/L","","-99","DL","","SURRE","99","","-99","LOQ","YES","40.0","","250","1.00","0",""
"LLCS 320-216792/2-A","537","RES","LLCS 320-216792/2-A","TALSAC","STL00996","13C2
PFDA","36.9","ng/L","","-99","DL","","SURRE","92","","-99","LOQ","YES","40.0","","250","1.00","0",""
"MB 320-216791/1-A","537","RES","MB 320-216791/1-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 320-216791/1-A","537","RES","MB 320-216791/1-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 320-216791/1-A","537","RES","MB 320-216791/1-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 320-216791/1-A","537","RES","MB 320-216791/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250","1.00","36",""
"MB 320-216791/1-A","537","RES","MB 320-216791/1-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 320-216791/1-A","537","RES","MB 320-216791/1-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 320-216791/1-A","537","RES","MB 320-216791/1-A","TALSAC","STL00993","13C2
PFHxA","33.1","ng/L","","-99","DL","","SURRE","83","","-99","LOQ","YES","40.0","","250","1.00","0",""
"MB 320-216791/1-A","537","RES","MB 320-216791/1-A","TALSAC","STL00996","13C2
PFDA","37.4","ng/L","","-99","DL","","SURRE","94","","-99","LOQ","YES","40.0","","250","1.00","0",""
"MB 320-216792/1-A","537","RES","MB 320-216792/1-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 320-216792/1-A","537","RES","MB 320-216792/1-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 320-216792/1-A","537","RES","MB 320-216792/1-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 320-216792/1-A","537","RES","MB 320-216792/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250","1.00","36",""
"MB 320-216792/1-A","537","RES","MB 320-216792/1-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 320-216792/1-A","537","RES","MB 320-216792/1-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 320-216792/1-A","537","RES","MB 320-216792/1-A","TALSAC","STL00993","13C2
PFHxA","36.3","ng/L","","-99","DL","","SURRE","91","","-99","LOQ","YES","40.0","","250","1.00","0",""
"MB 320-216792/1-A","537","RES","MB 320-216792/1-A","TALSAC","STL00996","13C2
PFDA","35.9","ng/L","","-99","DL","","SURRE","90","","-99","LOQ","YES","40.0","","250","1.00","0",""
"Unknown","Unknown","WGNA-032918-DUP-31","03/29/2018 07:00","AQ","320-37675-
1","FD","","2.4","537","METHOD","RES","04/07/2018 08:11","04/13/2018
00:51","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216791","320-216791","NA","320-
217814","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-RW-195","03/29/2018 10:10","AQ","320-37675-
10","NM","","2.4","537","METHOD","RES","04/07/2018 08:11","04/13/2018
01:42","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216791","320-216791","NA","320-
217816","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-FRB-195","03/29/2018 10:05","AQ","320-37675-
11","FB","","2.4","537","METHOD","RES","04/07/2018 08:11","04/13/2018
01:47","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216791","320-216791","NA","320-
217816","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-RW-048","03/29/2018 10:40","AQ","320-37675-

12","NM","","2.4","537","METHOD","RES","04/07/2018 08:19","04/13/2018
02:10","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216792","320-216792","NA","320-
217818","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-FRB-048","03/29/2018 10:35","AQ","320-37675-
13","FB","","2.4","537","METHOD","RES","04/07/2018 08:19","04/13/2018
02:15","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216792","320-216792","NA","320-
217818","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-RW-139","03/29/2018 11:10","AQ","320-37675-
14","NM","","2.4","537","METHOD","RES","04/07/2018 08:19","04/13/2018
02:29","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216792","320-216792","NA","320-
217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-RW-139MS","03/29/2018 11:10","AQ","320-37675-
14MS","MS","","2.4","537","METHOD","RES","04/07/2018 08:19","04/13/2018
02:33","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216792","320-216792","NA","320-
217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-RW-139MSD","03/29/2018 11:10","AQ","320-37675-
14MSD","MSD","","2.4","537","METHOD","RES","04/07/2018 08:19","04/13/2018
02:38","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216792","320-216792","NA","320-
217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-FRB-139","03/29/2018 11:05","AQ","320-37675-
15","FB","","2.4","537","METHOD","RES","04/07/2018 08:19","04/13/2018
02:43","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216792","320-216792","NA","320-
217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-RW-117","03/29/2018 11:40","AQ","320-37675-
16","NM","","2.4","537","METHOD","RES","04/07/2018 08:19","04/13/2018
02:47","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216792","320-216792","NA","320-
217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-FRB-117","03/29/2018 11:35","AQ","320-37675-
17","FB","","2.4","537","METHOD","RES","04/07/2018 08:19","04/13/2018
02:52","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216792","320-216792","NA","320-
217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-RW-181","03/29/2018 12:10","AQ","320-37675-
18","NM","","2.4","537","METHOD","RES","04/07/2018 08:19","04/13/2018
02:57","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216792","320-216792","NA","320-
217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-FRB-181","03/29/2018 12:05","AQ","320-37675-
19","FB","","2.4","537","METHOD","RES","04/07/2018 08:19","04/13/2018
03:01","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216792","320-216792","NA","320-
217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-RW-286","03/29/2018 08:10","AQ","320-37675-
2","NM","","2.4","537","METHOD","RES","04/07/2018 08:11","04/13/2018
00:55","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216791","320-216791","NA","320-
217814","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-RW-138","03/29/2018 13:10","AQ","320-37675-
20","NM","","2.4","537","METHOD","RES","04/07/2018 08:19","04/13/2018
03:06","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216792","320-216792","NA","320-
217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-FRB-138","03/29/2018 13:05","AQ","320-37675-
21","FB","","2.4","537","METHOD","RES","04/07/2018 08:19","04/13/2018
03:11","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216792","320-216792","NA","320-
217820","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-FRB-286","03/29/2018 08:05","AQ","320-37675-
3","FB","","2.4","537","METHOD","RES","04/07/2018 08:11","04/13/2018
01:00","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216791","320-216791","NA","320-

217814","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","WGNA-032819-RW-0518","03/29/2018 08:40","AQ","320-37675-
4","NM","","2.4","537","METHOD","RES","04/07/2018 08:11","04/13/2018
01:05","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216791","320-216791","NA","320-
217814","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","WGNA-032819-FRB-0518","03/29/2018 08:35","AQ","320-37675-
5","FB","","2.4","537","METHOD","RES","04/07/2018 08:11","04/13/2018
01:09","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216791","320-216791","NA","320-
217814","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-RW-010","03/29/2018 09:10","AQ","320-37675-
6","NM","","2.4","537","METHOD","RES","04/07/2018 08:11","04/13/2018
01:14","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216791","320-216791","NA","320-
217814","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-FRB-010","03/29/2018 09:05","AQ","320-37675-
7","FB","","2.4","537","METHOD","RES","04/07/2018 08:11","04/13/2018
01:19","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216791","320-216791","NA","320-
217814","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-RW-127","03/29/2018 09:40","AQ","320-37675-
8","NM","","2.4","537","METHOD","RES","04/07/2018 08:11","04/13/2018
01:33","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216791","320-216791","NA","320-
217816","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","NAWC-032819-FRB-127","03/29/2018 09:35","AQ","320-37675-
9","FB","","2.4","537","METHOD","RES","04/07/2018 08:11","04/13/2018
01:37","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216791","320-216791","NA","320-
217816","320-37675-1","03/30/2018 09:00","04/18/2018 10:16",""
"Unknown","Unknown","LCS 320-216791/2-A","","AQ","LCS 320-216791/2-
A","LCS","","-99","537","METHOD","RES","04/07/2018 08:11","04/13/2018
00:41","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216791","320-216791","NA","320-
217814","320-37675-1","04/07/2018 08:11","04/18/2018 10:16",""
"Unknown","Unknown","LCSD 320-216791/3-A","","AQ","LCSD 320-216791/3-
A","LCSD","","-99","537","METHOD","RES","04/07/2018 08:11","04/13/2018
00:46","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216791","320-216791","NA","320-
217814","320-37675-1","04/07/2018 08:11","04/18/2018 10:16",""
"Unknown","Unknown","LLCS 320-216792/2-A","","AQ","LLCS 320-216792/2-
A","LCS","","-99","537","METHOD","RES","04/07/2018 08:19","04/13/2018
02:05","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216792","320-216792","NA","320-
217818","320-37675-1","04/07/2018 08:19","04/18/2018 10:16",""
"Unknown","Unknown","MB 320-216791/1-A","","AQ","MB 320-216791/1-
A","MB","","-99","537","METHOD","RES","04/07/2018 08:11","04/13/2018
00:37","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216791","320-216791","NA","320-
217814","320-37675-1","04/07/2018 08:11","04/18/2018 10:16",""
"Unknown","Unknown","MB 320-216792/1-A","","AQ","MB 320-216792/1-
A","MB","","-99","537","METHOD","RES","04/07/2018 08:19","04/13/2018
02:01","TALSAC","COA","WET","NA","1","NA","NA","","100","320-216792","320-216792","NA","320-
217818","320-37675-1","04/07/2018 08:19","04/18/2018 10:16",""



TO: A. FREBOWITZ **DATE:** MAY 24, 2018

FROM: MEGAN RITCHIE **COPIES:** DV FILE

SUBJECT: ORGANIC DATA VALIDATION –POLYFLUOROALKYL SUBSTANCES (PFAS)
NAS JRB WILLOW GROVE
SAMPLE DELIVERY GROUP (SDG) 320-37675-1

SAMPLES:

10/Field Reagent Blank (FRB)		
NAWC-032819-FRB-286	NAWC-032918-FRB-048	NAWC-032918-FRB-138
NAWC-032918-FRB-010	NAWC-032918-FRB-139	WGNA-032918-FRB-0518
NAWC-032918-FRB-127	NAWC-032918-FRB-117	
NAWC-032918-FRB-195	NAWC-032918-FRB-181	
11/Drinking Water		
NAWC-032918-RW-286	NAWC-032918-RW-048	NAWC-032918-RW-138
NAWC-032918-RW-010	NAWC-032918-RW-139	WGNA-032918-RW-0518
NAWC-032918-RW-127	NAWC-032918-RW-117	WGNA-032918-DUP-31
NAWC-032918-RW-195	NAWC-032918-RW-181	

Overview

The sample set for NAS JRB, WE04, Willow Grove, SDG 320-37675-1, consisted of 11 drinking water samples and 10 FRB samples. All samples were analyzed for select per- and polyfluoroalkyl substances (PFAS) including pentadecafluorooctanoic acid (PFOA), perfluorobutane sulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA) and perfluorooctane sulfonic acid (PFOS). One field duplicate sample pair (NAWC-032918-RW-181/WGNA-032918-DUP-31) was included in this SDG.

The samples were collected by Tetra Tech on March 29, 2018 and analyzed by Test America-Sacramento. All sample analyses were conducted in accordance with EPA Method 537 version 1.1 analytical and reporting protocols.

The data contained in this SDG was validated with regard to the following parameters: data completeness, holding times, mass calibration, mass spectral acquisition rate, tune check, instrument sensitivity check, initial/continuing calibrations, ion transitions, laboratory method/FRBs, surrogate spike recoveries, laboratory control sample / laboratory control sample duplicate results, injected internal standard areas and recoveries, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

None.

Minor

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

TO: A. FREBOWITZ
SDG: 320-37675-1

PAGE 2

Notes

The laboratory inadvertently transposed the date in the sample IDs. The samples were collected on March 29, 2018 and the sample IDs should read "-032918", but the laboratory listed them as "-032819". The sample IDs were edited for this report to match the chain-of-custody document.

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-032918-RW-286	NAWC-032918-FRB-286
NAWC-032918-RW-048	NAWC-032918-FRB-048
NAWC-032918-RW-138	NAWC-032918-FRB-138
NAWC-032918-RW-010	NAWC-032918-FRB-010
NAWC-032918-RW-139	NAWC-032918-FRB-139
WGNA-032918-RW-0518	WGNA-032918-FRB-0518
NAWC-032918-RW-127	NAWC-032918-FRB-127
NAWC-032918-RW-117	NAWC-032918-FRB-117
NAWC-032918-RW-195	NAWC-032918-FRB-195
NAWC-032918-RW-181	NAWC-032918-FRB-181

Positive detections were reported for FRB sample NAWC-032918-FRB-117. Samples NAWC-032918-RW-117 and NAWC-032918-FRB-117 were re-extracted outside of holding time to confirm the original results as detections were seen in the FRB sample but not the parent sample. The results were confirmed and the original results are reported. A review of the historical data for RW-117 showed historical detections were similar to the detections in the FRB from this location. This indicates that the samples were inadvertently switched by the field personnel prior to shipment to the laboratory.

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

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

TO: A. FREBOWITZ
SDG: 320-37675-1

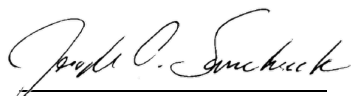
PAGE 3

Executive Summary

Laboratory Performance: No issues.

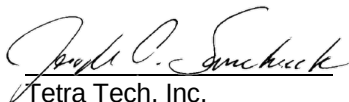
Other Factors Affecting Data Quality: Results below the RL were estimated.

The data for these analyses were reviewed with reference to the Environmental Protection Agency document EPA/600/R-08/092, Method 537, "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)", (September 2009) and the US EPA National Functional Guidelines for Organic Data Review (January 2017) as applicable. The text of this report has been formulated to address only those areas affecting data quality.



Tetra Tech, Inc.
Megan Ritchie
Chemist/Data Validator

for



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: 320-37675-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-032918-FRB-010			NAWC-032918-FRB-048			NAWC-032918-FRB-117			NAWC-032918-FRB-127		
	LAB_ID	320-37675-7			320-37675-13			320-37675-16			320-37675-9		
	SAMP_DATE	3/29/2018			3/29/2018			3/29/2018			3/29/2018		
	QC_TYPE	FB			FB			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID (PFOA)		7.8	U		8	U		7.8	U		8	U	
PERFLUOROBUTANESULFONIC ACID (PFBS)		35	U		36	U		35	U		36	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		3.9	U		4	U		3.9	U		4	U	
PERFLUOROHXANESULFONIC ACID (PFHXS)		12	U		12	U		12	U		12	U	
PERFLUORONONANOIC ACID (PFNA)		20	U		20	U		19	U		20	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		16	U		16	U		16	U		16	U	

PROJ_NO: 08005-WE04 SDG: 320-37675-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-032918-FRB-138			NAWC-032918-FRB-139			NAWC-032918-FRB-181			NAWC-032918-FRB-195		
	LAB_ID	320-37675-21			320-37675-15			320-37675-19			320-37675-11		
	SAMP_DATE	3/29/2018			3/29/2018			3/29/2018			3/29/2018		
	QC_TYPE	FB			FB			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID (PFOA)		7.9	U		7.9	U		8	U		7.8	U	
PERFLUOROBUTANESULFONIC ACID (PFBS)		36	U		35	U		36	U		35	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		3.9	U		3.9	U		4	U		3.9	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: 320-37675-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-032918-FRB-286			NAWC-032918-RW-010			NAWC-032918-RW-048			NAWC-032918-RW-117		
	LAB_ID	320-37675-3			320-37675-6			320-37675-12			320-37675-17		
	SAMP_DATE	3/29/2018			3/29/2018			3/29/2018			3/29/2018		
	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)		8.1	U		20			4.8	J	P	20		
PERFLUOROBUTANESULFONIC ACID (PFBS)		36	U		36	U		37	U		35	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		4.1	U		5.8	J	P	4.1	U		4.9	J	P
PERFLUOROHXANESULFONIC ACID (PFHXS)		12	U		17	J	P	12	U		15	J	P
PERFLUORONONANOIC ACID (PFNA)		20	U		20	U		20	U		19	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		16	U		27	J	P	16	U		28	J	P

PROJ_NO: 08005-WE04 SDG: 320-37675-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-032918-RW-127			NAWC-032918-RW-138			NAWC-032918-RW-139			NAWC-032918-RW-181		
	LAB_ID	320-37675-8			320-37675-20			320-37675-14			320-37675-18		
	SAMP_DATE	3/29/2018			3/29/2018			3/29/2018			3/29/2018		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID (PFOA)		7.8	U		30			9.5	J	P	5.2	J	P
PERFLUOROBUTANESULFONIC ACID (PFBS)		35	U		37	U		36	U		36	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		3.9	U		7.4	J	P	4	J	P	4	U	
PERFLUOROHXANESULFONIC ACID (PFHXS)		12	U		12	U		12	U		12	U	
PERFLUORONONANOIC ACID (PFNA)		20	U		21	U		20	U		20	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		16	U		8	J	P	16	U		16	U	

PROJ_NO: 08005-WE04 SDG: 320-37675-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-032918-RW-195			NAWC-032918-RW-286			WGNA-032918-DUP-31			WGNA-032918-FRB-0518		
	LAB_ID	320-37675-10			320-37675-2			320-37675-1			320-37675-5		
	SAMP_DATE	3/29/2018			3/29/2018			3/29/2018			3/29/2018		
	QC_TYPE	NM			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-032819-RW-181					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID (PFOA)		12	J	P	18	J	P	5.4	J	P	7.9	U	
PERFLUOROBUTANESULFONIC ACID (PFBS)		36	U		36	U		36	U		36	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		4.2	J	P	4.7	J	P	4	U		3.9	U	
PERFLUOROHXANESULFONIC ACID (PFHXS)		12	U		5.8	J	P	12	U		12	U	
PERFLUORONONANOIC ACID (PFNA)		20	U		20	U		20	U		20	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		14	J	P	17	J	P	16	U		16	U	

PROJ_NO: 08005-WE04 SDG: 320-37675-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	WGNA-032918-RW-0518		
	LAB_ID	320-37675-4		
	SAMP_DATE	3/29/2018		
	QC_TYPE	NM		
	UNITS	NG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID (PFOA)		23		
PERFLUOROBUTANESULFONIC ACID (PFBS)		19	J	P
PERFLUOROHEPTANOIC ACID (PFHPA)		5.7	J	P
PERFLUOROHEXANESULFONIC ACID (PFHXS)		8.9	J	P
PERFLUORONONANOIC ACID (PFNA)		20	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		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>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>WGNA-032918-DUP-31</u>	Lab Sample ID: <u>320-37675-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_034.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 07:00</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:11</u>
Sample wt/vol: <u>252 (mL)</u>	Date Analyzed: <u>04/13/2018 00:51</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>217814</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)	5.4	J	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	5.5
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	95		70-130
STL00996	13C2 PFDA	93		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: <u>-032818-</u>	
Client Sample ID: <u>NAWC-032819-RW-286</u>	Lab Sample ID: <u>320-37675-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_035.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 08:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:11</u>
Sample wt/vol: <u>253.3(mL)</u>	Date Analyzed: <u>04/13/2018 00:55</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>217814</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J M	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	18	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	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.7	J	9.9	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	101		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: NAWC-~~032918-~~032819-FRB-286 Lab Sample ID: 320-37675-3

Matrix: Water Lab File ID: 2018.04.12_537AA_036.d

Analysis Method: 537 Date Collected: 03/29/2018 08:05

Extraction Method: 537 Date Extracted: 04/07/2018 08:11

Sample wt/vol: 246.7 (mL) Date Analyzed: 04/13/2018 01:00

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.: 217814 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	8.1	U	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	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	95		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: WGNA-~~032819~~⁻⁰³²⁹¹⁸-RW-0518 Lab Sample ID: 320-37675-4

Matrix: Water Lab File ID: 2018.04.12_537AA_037.d

Analysis Method: 537 Date Collected: 03/29/2018 08:40

Extraction Method: 537 Date Extracted: 04/07/2018 08:11

Sample wt/vol: 252.4 (mL) Date Analyzed: 04/13/2018 01:05

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.: 217814 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	22	J M	40	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	23		20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.9	J	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.7	J	9.9	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	19	J	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	106		70-130
STL00996	13C2 PFDA	104		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: WGNA-~~032819~~-FRB-0518 Lab Sample ID: 320-37675-5

Matrix: Water Lab File ID: 2018.04.12_537AA_038.d

Analysis Method: 537 Date Collected: 03/29/2018 08:35

Extraction Method: 537 Date Extracted: 04/07/2018 08:11

Sample wt/vol: 253.5 (mL) Date Analyzed: 04/13/2018 01:09

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.: 217814 Units: ng/L

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	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.9	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	98		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-~~032918-~~032819-RW-010</u>	Lab Sample ID: <u>320-37675-6</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_039.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 09:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:11</u>
Sample wt/vol: <u>248.5 (mL)</u>	Date Analyzed: <u>04/13/2018 01:14</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>217814</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	27	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	20		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	17	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.8	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	91		70-130
STL00996	13C2 PFDA	88		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: NAWC-~~032819~~-FRB-010 Lab Sample ID: 320-37675-7

Matrix: Water Lab File ID: 2018.04.12_537AA_040.d

Analysis Method: 537 Date Collected: 03/29/2018 09:05

Extraction Method: 537 Date Extracted: 04/07/2018 08:11

Sample wt/vol: 255.5 (mL) Date Analyzed: 04/13/2018 01:19

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

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

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

Analysis Batch No.: 217814 Units: ng/L

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)	7.8	U	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
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	101		70-130
STL00996	13C2 PFDA	101		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: NAWC-~~032918-~~032819-RW-127 Lab Sample ID: 320-37675-8

Matrix: Water Lab File ID: 2018.04.12_537AA_043.d

Analysis Method: 537 Date Collected: 03/29/2018 09:40

Extraction Method: 537 Date Extracted: 04/07/2018 08:11

Sample wt/vol: 254.8 (mL) Date Analyzed: 04/13/2018 01:33

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

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

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

Analysis Batch No.: 217816 Units: ng/L

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)	7.8	U	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.8
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	93		70-130
STL00996	13C2 PFDA	96		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: NAWC-~~032819~~-FRB-127 Lab Sample ID: 320-37675-9

Matrix: Water Lab File ID: 2018.04.12_537AA_044.d

Analysis Method: 537 Date Collected: 03/29/2018 09:35

Extraction Method: 537 Date Extracted: 04/07/2018 08:11

Sample wt/vol: 249.3 (mL) Date Analyzed: 04/13/2018 01:37

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.: 217816 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	95		70-130
STL00996	13C2 PFDA	100		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: NAWC-~~032819~~⁻⁰³²⁹¹⁸-RW-195 Lab Sample ID: 320-37675-10

Matrix: Water Lab File ID: 2018.04.12_537AA_045.d

Analysis Method: 537 Date Collected: 03/29/2018 10:10

Extraction Method: 537 Date Extracted: 04/07/2018 08:11

Sample wt/vol: 251.1 (mL) Date Analyzed: 04/13/2018 01:42

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

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

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

Analysis Batch No.: 217816 Units: ng/L

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)	12	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)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.2	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	97		70-130
STL00996	13C2 PFDA	91		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: NAWC-~~032819~~-FRB-195 Lab Sample ID: 320-37675-11

Matrix: Water Lab File ID: 2018.04.12_537AA_046.d

Analysis Method: 537 Date Collected: 03/29/2018 10:05

Extraction Method: 537 Date Extracted: 04/07/2018 08:11

Sample wt/vol: 255.8 (mL) Date Analyzed: 04/13/2018 01:47

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

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

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

Analysis Batch No.: 217816 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
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	97		70-130
STL00996	13C2 PFDA	94		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: NAWC-~~032918~~-032819-RW-048 Lab Sample ID: 320-37675-12
 Matrix: Water Lab File ID: 2018.04.12_537AA_051.d
 Analysis Method: 537 Date Collected: 03/29/2018 10:40
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 245 (mL) Date Analyzed: 04/13/2018 02:10
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217818 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U M	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	4.8	J	20	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U M	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 M	92	37	16

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: NAWC-~~032819~~-FRB-048 Lab Sample ID: 320-37675-13

Matrix: Water Lab File ID: 2018.04.12_537AA_052.d

Analysis Method: 537 Date Collected: 03/29/2018 10:35

Extraction Method: 537 Date Extracted: 04/07/2018 08:19

Sample wt/vol: 248.7 (mL) Date Analyzed: 04/13/2018 02:15

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

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

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

Analysis Batch No.: 217818 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	94		70-130
STL00996	13C2 PFDA	94		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: NAWC-~~032918-032819~~-RW-139 Lab Sample ID: 320-37675-14

Matrix: Water Lab File ID: 2018.04.12_537AA_055.d

Analysis Method: 537 Date Collected: 03/29/2018 11:10

Extraction Method: 537 Date Extracted: 04/07/2018 08:19

Sample wt/vol: 249.4 (mL) Date Analyzed: 04/13/2018 02:29

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

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

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

Analysis Batch No.: 217820 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	9.5	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)	12	U M	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	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	87		70-130
STL00996	13C2 PFDA	100		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: NAWC-~~032819~~-FRB-139 Lab Sample ID: 320-37675-15

Matrix: Water Lab File ID: 2018.04.12_537AA_058.d

Analysis Method: 537 Date Collected: 03/29/2018 11:05

Extraction Method: 537 Date Extracted: 04/07/2018 08:19

Sample wt/vol: 254.6(mL) Date Analyzed: 04/13/2018 02:43

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.: 217820 Units: ng/L

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	2.7
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	98		70-130
STL00996	13C2 PFDA	98		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: NAWC-032918-FRB-117
~~NAWC-032819-RW-117~~

Matrix: Water

Analysis Method: 537

Extraction Method: 537

Sample wt/vol: 256.5 (mL)

Con. Extract Vol.: 1.00 (mL)

Injection Volume: 2 (uL)

% Moisture: _____

Analysis Batch No.: 217820

Lab Sample ID: 320-37675-16

Lab File ID: 2018.04.12_537AA_059.d

Date Collected: 03/29/2018 11:40

Date Extracted: 04/07/2018 08:19

Date Analyzed: 04/13/2018 02:47

Dilution Factor: 1

GC Column: GeminiC18 3x100 ID: 3 (mm)

GPC Cleanup: (Y/N) N

Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	98		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: NAWC-032918-RW-117 Lab Sample ID: 320-37675-17

Matrix: Water Lab File ID: 2018.04.12_537AA_060.d

Analysis Method: 537 Date Collected: 03/29/2018 11:35

Extraction Method: 537 Date Extracted: 04/07/2018 08:19

Sample wt/vol: 258.6(mL) Date Analyzed: 04/13/2018 02:52

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

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

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

Analysis Batch No.: 217820 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	J M	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	20		19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	15	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.9	J	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: NAWC-~~032819~~⁻⁰³²⁹¹⁸-RW-181 Lab Sample ID: 320-37675-18

Matrix: Water Lab File ID: 2018.04.12_537AA_061.d

Analysis Method: 537 Date Collected: 03/29/2018 12:10

Extraction Method: 537 Date Extracted: 04/07/2018 08:19

Sample wt/vol: 248.9 (mL) Date Analyzed: 04/13/2018 02:57

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.: 217820 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)	5.2	J	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	94		70-130
STL00996	13C2 PFDA	86		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: NAWC-~~032918-~~032819-FRB-181 Lab Sample ID: 320-37675-19

Matrix: Water Lab File ID: 2018.04.12_537AA_062.d

Analysis Method: 537 Date Collected: 03/29/2018 12:05

Extraction Method: 537 Date Extracted: 04/07/2018 08:19

Sample wt/vol: 250.6(mL) Date Analyzed: 04/13/2018 03:01

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

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

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

Analysis Batch No.: 217820 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	100		70-130
STL00996	13C2 PFDA	104		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-~~032918-~~032819-RW-138</u>	Lab Sample ID: <u>320-37675-20</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_063.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 13:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:19</u>
Sample wt/vol: <u>242 (mL)</u>	Date Analyzed: <u>04/13/2018 03:06</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>217820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.0	J M	41	17	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	30		21	8.3	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U M	25	21	8.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U M	31	12	5.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.4	J	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	98		70-130
STL00996	13C2 PFDA	99		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-~~032819~~-FRB-138</u>	Lab Sample ID: <u>320-37675-21</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_064.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 13:05</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:19</u>
Sample wt/vol: <u>253.2 (mL)</u>	Date Analyzed: <u>04/13/2018 03:11</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>217820</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	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.9	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	89	36	16

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

Appendix C

Support Documentation

320-37675 Chain of Custody

Client Contact		Project Manager: Andy Frebowitz		Site Contact: Mary Kay Bond		Date: 3/29/2018		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		Filtered Sample (Y / N) Perform MS / MSD (Y / N) EPA 537 UCL 33		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											
Site: WE04											
P O # 1132358 (through EarthToxics)											
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.					
WGNA-032918-DUP-31		3/29/2018	7:00	G	DW	2	N	N	Y	Duplicate	
NAWC-032918-RW-286		3/29/2018	8:10	G	DW	2	N	N	Y		
NAWC-032918-FRB-286		3/29/2018	8:05	G	DW	2	N	N	Y	Field Reagent Blank	
WGNA-032918-RW-0518		3/29/2018	8:40	G	DW	2	N	N	Y		
WGNA-032918-FRB-0518		3/29/2018	8:35	G	DW	2	N	N	Y	Field Reagent Blank	
NAWC-032918-RW-010		3/29/2018	9:10	G	DW	2	N	N	Y		
NAWC-032918-FRB-010		3/29/2018	9:05	G	DW	2	N	N	Y	Field Reagent Blank	
NAWC-032918-RW-127		3/29/2018	9:40	G	DW	2	N	N	Y		
NAWC-032918-FRB-127		3/29/2018	9:35	G	DW	2	N	N	Y	Field Reagent Blank	
NAWC-032918-RW-195		3/29/2018	10:10	G	DW	2	N	N	Y		
NAWC-032918-FRB-195		3/29/2018	10:05	G	DW	2	N	N	Y	Field Reagent Blank	
NAWC-032918-RW-048		3/29/2018	10:40	G	DW	2	N	N	Y		
NAWC-032918-FRB-048		3/29/2018	10:35	G	DW	2	N	N	Y	Field Reagent Blank	
NAWC-032918-RW-139		3/29/2018	11:10	G	DW	6	N	Y	Y	MS/MSD	
NAWC-032918-FRB-139		3/29/2018	11:05	G	DW	2	N	N	Y	Field Reagent Blank	
NAWC-032918-RW-117		3/29/2018	11:40	G	DW	2	N	N	Y		
NAWC-032918-FRB-117		3/29/2018	11:35	G	DW	2	N	N	Y	Field Reagent Blank	
NAWC-032918-RW-181		3/29/2018	12:10	G	DW	2	N	N	Y		
NAWC-032918-FRB-181		3/29/2018	12:05	G	DW	2	N	N	Y	Field Reagent Blank	
NAWC-032918-RW-138		3/29/2018	13:10	G	DW	2	N	N	Y		
NAWC-032918-FRB-138		3/29/2018	13:05	G	DW	2	N	N	Y	Field Reagent Blank	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other: Trizma							6				
Possible Hazard Identification:							Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the							☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months				
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant/Poison B ☐ Unknown											
Fed Ex Tracking: 7718 7216 8252											
Custody Seals Intact: ☐ Yes ☐ No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: 2.4°C		Corr'd: 2.4°C		Therm ID No: AKZ 300			
Relinquished by: Mary Kay Bond		Company: Tetra Tech		Date/Time: 3/29/2018 16:00		Received by: [Signature]		Company: AIA-SAC			
Relinquished by:		Company:		Date/Time:		Received by:		Date/Time:			
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Date/Time:			

Job Narrative
320-37675-1

Receipt

The samples were received on 3/30/2018 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.4° C and 2.4° 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.

Method(s) 537: The following samples were re-extracted outside of holding time to confirm the original results as detections were seen in the FRB sample but not the parent samples. NAWC-032819-RW-117 (320-37675-16) and NAWC-032819-FRB-117 (320-37675-17) . The results confirmed and the original results are reported.

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 320-216791.

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: NAWC-032819-FRB-117 Lab Sample ID: 320-37675-17

Matrix: Water Lab File ID: 2018.04.12_537AA_060.d

Analysis Method: 537 Date Collected: 03/29/2018 11:35

Extraction Method: 537 Date Extracted: 04/07/2018 08:19

Sample wt/vol: 258.6 (mL) Date Analyzed: 04/13/2018 02:52

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

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

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

Analysis Batch No.: 217820 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	J M	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	20		19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	15	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.9	J	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_060.d
 Lims ID: 320-37675-A-17-A
 Client ID: NAWC-032819-FRB-117
 Sample Type: Client
 Inject. Date: 13-Apr-2018 02:52:31 ALS Bottle#: 44 Worklist Smp#: 32
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-37675-a-17-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 10:10:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	68167	0.8124		57.6	
298.90 > 99.00	1.381	1.381	0.0	1.000	52110		1.31(0.00-0.00)	139	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.517	0.0	1.000	969569	9.59		9724	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.669	1.677	-0.008	1.000	129997	1.27		4.1	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.669	1.677	-0.008	1.000	514571	3.93		277	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.874	-0.008		951026	10.0		5932	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.874	-0.008	1.000	535233	5.30		68.2	
413.00 > 169.00	1.866	1.874	-0.008	1.000	318903		1.68(0.00-0.00)	341	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.094	0.008	1.000	609625	7.17		282	a
499.00 > 99.00	2.102	2.094	0.008	1.000	121299		5.03(0.00-0.00)	225	a
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2287790	28.7		2612	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.117	-0.008	1.000	54576	0.6812		7.6	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	713896	8.83		8155	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_060.d

Injection Date: 13-Apr-2018 02:52:31

Instrument ID: A8_N

Lims ID: 320-37675-A-17-A

Lab Sample ID: 320-37675-17

Client ID: NAWC-032819-FRB-117

Operator ID: SACINSTLCMS01

ALS Bottle#: 44

Worklist Smp#: 32

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

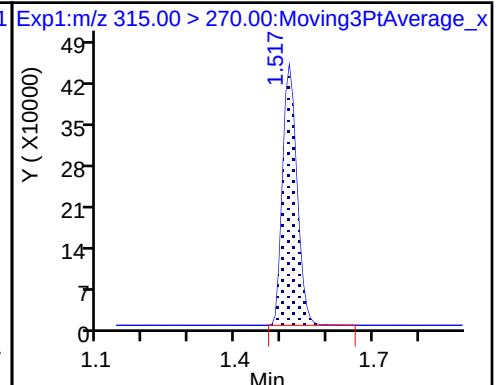
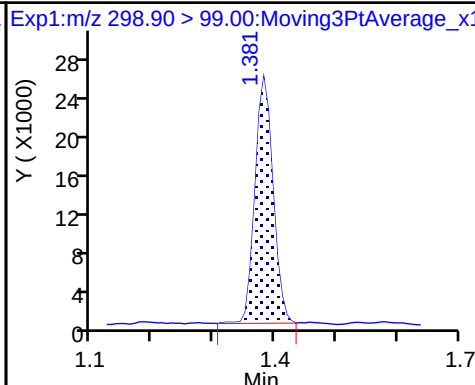
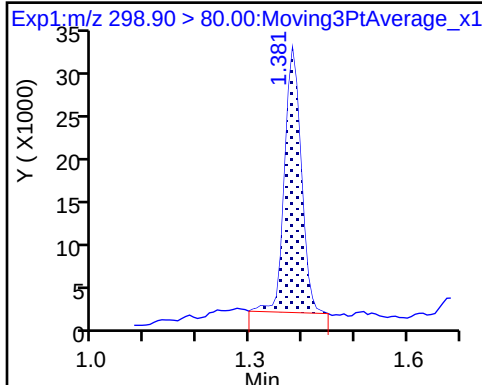
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

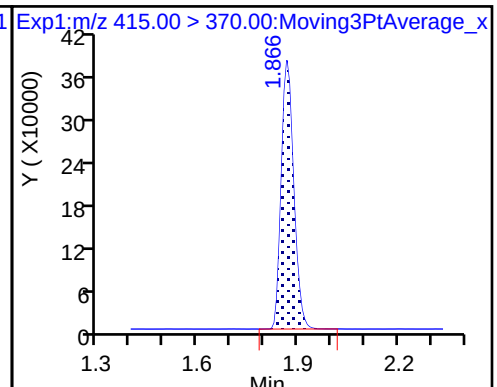
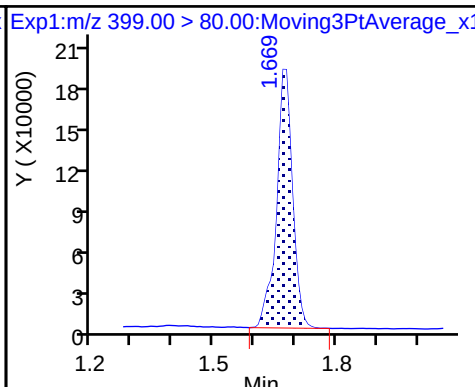
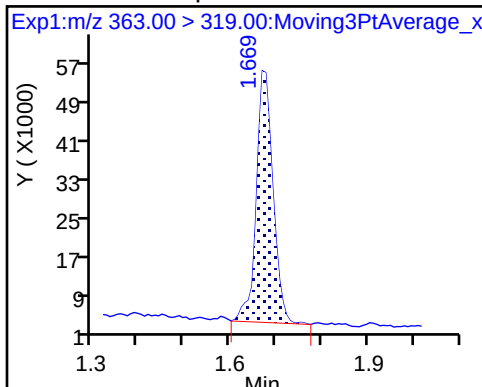
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

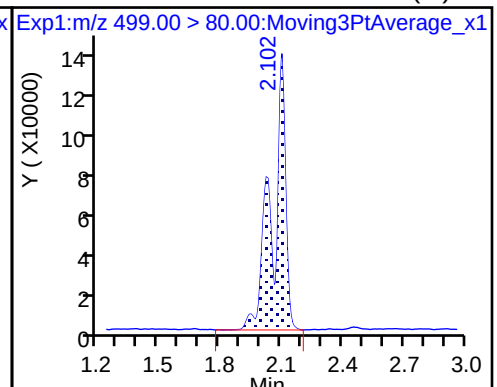
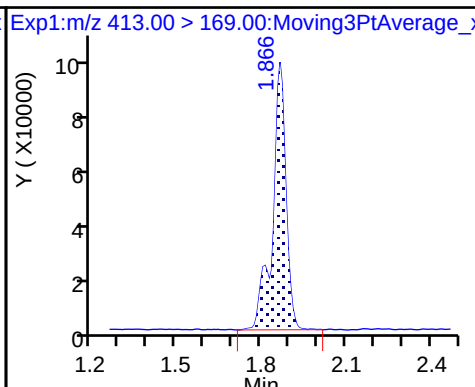
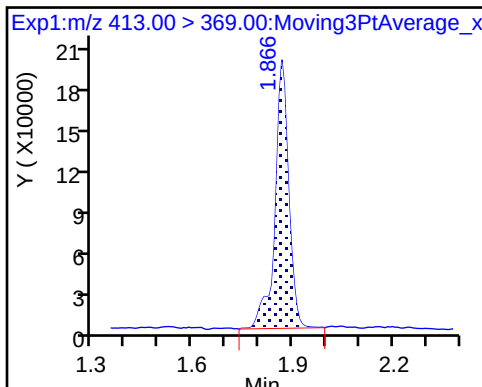
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

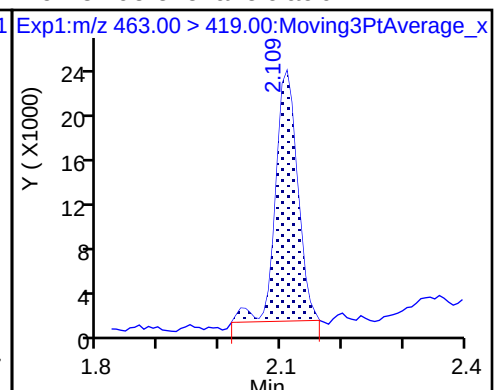
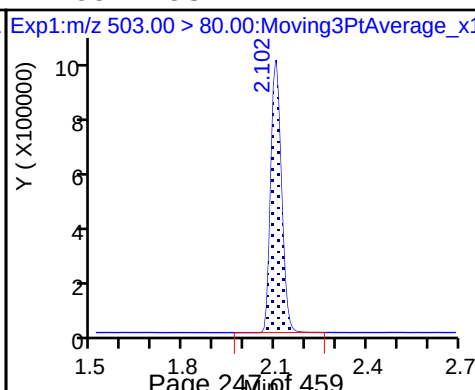
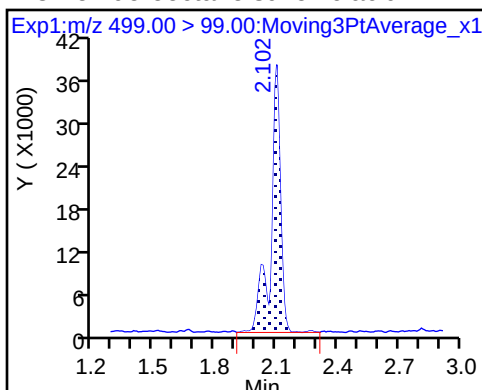
8 Perfluorooctane sulfonic acid (M)



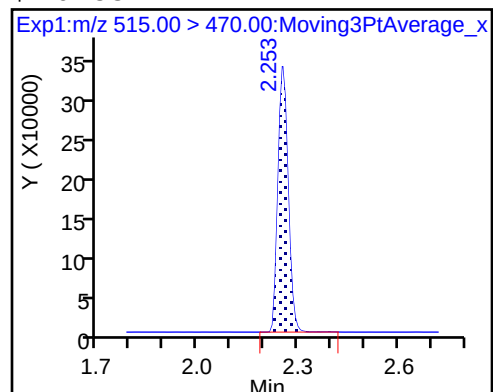
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_060.d
Lims ID: 320-37675-A-17-A
Client ID: NAWC-032819-FRB-117
Sample Type: Client
Inject. Date: 13-Apr-2018 02:52:31 ALS Bottle#: 44 Worklist Smp#: 32
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-37675-a-17-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:12:47 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: XAWRK028

First Level Reviewer: barnettj

Date: 13-Apr-2018 10:10:23

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.59	95.89
\$ 10 13C2 PFDA	10.0	8.83	88.26

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_060.d

Injection Date: 13-Apr-2018 02:52:31

Instrument ID: A8_N

Lims ID: 320-37675-A-17-A

Lab Sample ID: 320-37675-17

Client ID: NAWC-032819-FRB-117

Operator ID: SACINSTLCMS01

ALS Bottle#: 44 Worklist Smp#: 32

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

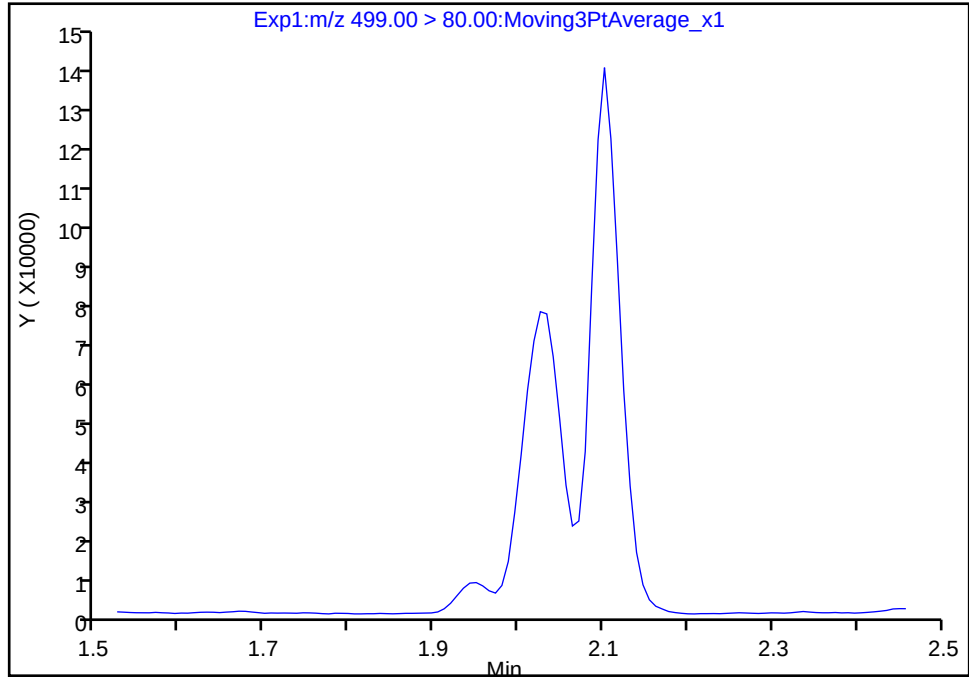
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

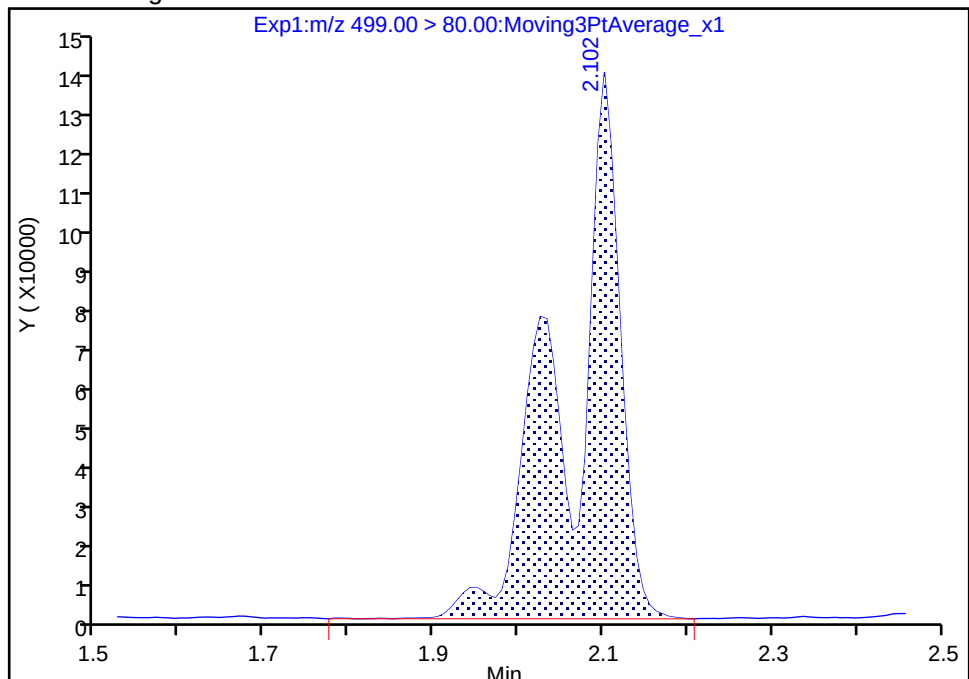
Not Detected

Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.10

Area: 609625

Amount: 7.168675

Amount Units: ng/ml

Reviewer: barnettj, 13-Apr-2018 10:10:08

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

NAS JRB Willow Grove/NAWC Warminster
SDG 320-27675-1

Sample Identification NAWC-032819-FRB-117

Compound PFOS

Compound Area	609625
Internal Standard Amount (ng)	28.7
Dilution Factor	1
Internal Standard Area	2287790
Average RRF	1.0661
Sample Volume(ml)	258.6
Volume Extract (µl)	1000
Injection Volume (µl)	2

Concentration	27.7397 ng/L

Surrogate Compound 13C2 PFDA

Compound Area	713896
Internal Standard Amount (ng)	10
Dilution Factor	1
Internal Standard Area	951026
Average RRF	0.8505
Sample Volume(ml)	258.6
Volume Extract (µl)	1000
Injection Volume (µl)	2

Concentration	17.0651 ng/L

Spike Added	19.3349

Pecent Recovery	88 %

NAS JRB Willow Grove/NAWC Warminster
SDG 320-27675-1

Sample Identification LCS 320-216791/2-A

Compound PFOS

Compound Area 2901417

Internal Standard Amount (ng) 28.7

Dilution Factor 1

Internal Standard Area 2367322

Average RRF 1.0661

Sample Volume(ml) 250

Volume Extract (μl) 1000

Injection Volume (μl) 2

Concentration 132 ng/L

Spike Added 132

Pecent Recovery 100 %

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 04/13/2018 @ 02:19

PFOS

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
59.3	4759332	2115143	28.7	1.0890	2.149331	1.088	2.1

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-37675-1

SDG No.: _____

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-032918-DUP-31	320-37675-1	95	93
NAWC-032819-RW-286	320-37675-2	98	101
NAWC-032819-FRB-286	320-37675-3	101	95
WGNA-032819-RW-0518	320-37675-4	106	104
WGNA-032819-FRB-0518	320-37675-5	100	98
NAWC-032819-RW-010	320-37675-6	91	88
NAWC-032819-FRB-010	320-37675-7	101	101
NAWC-032819-RW-127	320-37675-8	93	96
NAWC-032819-FRB-127	320-37675-9	95	100
NAWC-032819-RW-195	320-37675-10	97	91
NAWC-032819-FRB-195	320-37675-11	97	94
NAWC-032819-RW-048	320-37675-12	91	96
NAWC-032819-FRB-048	320-37675-13	94	94
NAWC-032819-RW-139	320-37675-14	87	100
NAWC-032819-FRB-139	320-37675-15	98	98
NAWC-032819-RW-117	320-37675-16	97	98
NAWC-032819-FRB-117	320-37675-17	96	88
NAWC-032819-RW-181	320-37675-18	94	86
NAWC-032819-FRB-181	320-37675-19	100	104
NAWC-032819-RW-138	320-37675-20	98	99
NAWC-032819-FRB-138	320-37675-21	96	91
	MB 320-216791/1-A	83	94
	MB 320-216792/1-A	91	90
	LCS 320-216791/2-A	95	93
	LCSD 320-216791/3-A	87	101
	LLCS 320-216792/2-A	99	92
NAWC-032819-RW-139 LMS	320-37675-14 LMS	101	97

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-032819-RW-139 LMSD	320-37675-14 LMSD	93	98

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_032.d
 Lab ID: LCS 320-216791/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	132	132	100	70-130	M
Perfluorooctanoic acid (PFOA)	66.0	67.8	103	70-130	
Perfluorononanoic acid (PFNA)	66.0	62.6	95	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	105	105	70-130	
Perfluoroheptanoic acid (PFHpA)	32.0	32.0	100	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	303	101	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_033.d
 Lab ID: LCSD 320-216791/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	132	126	96	4	30	70-130	M
Perfluorooctanoic acid (PFOA)	66.0	65.5	99	3	30	70-130	
Perfluorononanoic acid (PFNA)	66.0	62.7	95	0	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	102	102	3	30	70-130	
Perfluoroheptanoic acid (PFHpA)	32.0	31.0	97	3	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	266	89	13	30	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_050.d
 Lab ID: LLCS 320-216792/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LLCS CONCENTRATION (ng/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	40.2	38.9 J	97	50-150	M
Perfluorooctanoic acid (PFOA)	20.0	19.1 J	95	50-150	
Perfluorononanoic acid (PFNA)	20.0	17.5 J	88	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.3	31.7	105	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	9.59 J	96	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.2	97.1	108	50-150	

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_056.d
 Lab ID: 320-37675-14 LMS Client ID: NAWC-032819-RW-139 LMS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	LMS CONCENTRATION (ng/L)	LMS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	39.3	16 U	42.7	109	50-150	M
Perfluorooctanoic acid (PFOA)	19.6	9.5 J	28.1	95	50-150	
Perfluorononanoic acid (PFNA)	19.6	20 U	19.0 J	97	50-150	
Perfluorohexanesulfonic acid (PFHxS)	29.7	12 U	31.3	106	50-150	
Perfluoroheptanoic acid (PFHpA)	9.78	4.0 J	13.4	96	50-150	
Perfluorobutanesulfonic acid (PFBS)	88.2	36 U	104	118	50-150	

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.04.12_537AA_057.d
 Lab ID: 320-37675-14 LMSD Client ID: NAWC-032819-RW-139 LMSD

COMPOUND	SPIKE ADDED (ng/L)	LMSD CONCENTRATION (ng/L)	LMSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	39.8	41.2	104	3	50	50-150	M
Perfluorooctanoic acid (PFOA)	19.8	27.4	91	3	50	50-150	
Perfluorononanoic acid (PFNA)	19.8	18.5 J	94	3	50	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.0	29.4 J	98	6	50	50-150	
Perfluoroheptanoic acid (PFHpA)	9.89	13.0	91	3	50	50-150	
Perfluorobutanesulfonic acid (PFBS)	89.1	94.4	106	9	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.: 320-37675-1
 SDG No.: _____
 Lab File ID: 2018.04.12_537AA_031.d Lab Sample ID: MB 320-216791/1-A
 Matrix: Water Date Extracted: 04/07/2018 08:11
 Instrument ID: A8_N Date Analyzed: 04/13/2018 00:37
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-216791/2-A	2018.04.12 537AA 032.d	04/13/2018 00:41
	LCSD 320-216791/3-A	2018.04.12 537AA 033.d	04/13/2018 00:46
WGNA-032918-DUP-31	320-37675-1	2018.04.12 537AA 034.d	04/13/2018 00:51
NAWC-032819-RW-286	320-37675-2	2018.04.12 537AA 035.d	04/13/2018 00:55
NAWC-032819-FRB-286	320-37675-3	2018.04.12 537AA 036.d	04/13/2018 01:00
WGNA-032819-RW-0518	320-37675-4	2018.04.12 537AA 037.d	04/13/2018 01:05
WGNA-032819-FRB-0518	320-37675-5	2018.04.12 537AA 038.d	04/13/2018 01:09
NAWC-032819-RW-010	320-37675-6	2018.04.12 537AA 039.d	04/13/2018 01:14
NAWC-032819-FRB-010	320-37675-7	2018.04.12 537AA 040.d	04/13/2018 01:19
NAWC-032819-RW-127	320-37675-8	2018.04.12 537AA 043.d	04/13/2018 01:33
NAWC-032819-FRB-127	320-37675-9	2018.04.12 537AA 044.d	04/13/2018 01:37
NAWC-032819-RW-195	320-37675-10	2018.04.12 537AA 045.d	04/13/2018 01:42
NAWC-032819-FRB-195	320-37675-11	2018.04.12 537AA 046.d	04/13/2018 01:47

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab File ID: 2018.04.12_537AA_049.d Lab Sample ID: MB 320-216792/1-A
 Matrix: Water Date Extracted: 04/07/2018 08:19
 Instrument ID: A8_N Date Analyzed: 04/13/2018 02:01
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-216792/2-A	2018.04.12 537AA 050.d	04/13/2018 02:05
NAWC-032819-RW-048	320-37675-12	2018.04.12 537AA 051.d	04/13/2018 02:10
NAWC-032819-FRB-048	320-37675-13	2018.04.12 537AA 052.d	04/13/2018 02:15
NAWC-032819-RW-139	320-37675-14	2018.04.12 537AA 055.d	04/13/2018 02:29
NAWC-032819-RW-139 LMS	320-37675-14 LMS	2018.04.12 537AA 056.d	04/13/2018 02:33
NAWC-032819-RW-139 LMSD	320-37675-14 LMSD	2018.04.12 537AA 057.d	04/13/2018 02:38
NAWC-032819-FRB-139	320-37675-15	2018.04.12 537AA 058.d	04/13/2018 02:43
NAWC-032819-RW-117	320-37675-16	2018.04.12 537AA 059.d	04/13/2018 02:47
NAWC-032819-FRB-117	320-37675-17	2018.04.12 537AA 060.d	04/13/2018 02:52
NAWC-032819-RW-181	320-37675-18	2018.04.12 537AA 061.d	04/13/2018 02:57
NAWC-032819-FRB-181	320-37675-19	2018.04.12 537AA 062.d	04/13/2018 03:01
NAWC-032819-RW-138	320-37675-20	2018.04.12 537AA 063.d	04/13/2018 03:06
NAWC-032819-FRB-138	320-37675-21	2018.04.12 537AA 064.d	04/13/2018 03:11

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 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 320-217726/1		1007212	1.89	2413051	2.12		
CCV 320-217814/1 CCVIS		945293	1.89	2202701	2.12		
MB 320-216791/1-A		949828	1.88	2322770	2.12		
LCS 320-216791/2-A		993342	1.87	2367322	2.11		
LCSD 320-216791/3-A		1202728	1.87	2870335	2.11		
320-37675-1	WGNA-032918-DUP-31	935283	1.87	2285394	2.11		
320-37675-2	NAWC-032819-RW-286	1004022	1.87	2445606	2.11		
320-37675-3	NAWC-032819-FRB-286	931391	1.87	2287824	2.11		
320-37675-4	WGNA-032819-RW-0518	939190	1.87	2335776	2.11		
320-37675-5	WGNA-032819-FRB-0518	954713	1.87	2370457	2.11		
320-37675-6	NAWC-032819-RW-010	1003975	1.87	2389703	2.11		
320-37675-7	NAWC-032819-FRB-010	998861	1.87	2402516	2.11		
CCV 320-217814/13 CCVIS		947894	1.87	2307891	2.10		
CCV 320-217816/13 CCVIS		947894	1.87	2307891	2.10		
320-37675-8	NAWC-032819-RW-127	915274	1.87	2281073	2.11		
320-37675-9	NAWC-032819-FRB-127	893479	1.87	2204862	2.11		
320-37675-10	NAWC-032819-RW-195	926217	1.87	2305396	2.10		
320-37675-11	NAWC-032819-FRB-195	921584	1.87	2286972	2.10		
CCV 320-217816/19 CCVIS		899573	1.87	2148163	2.10		
CCV 320-217818/19 CCVIS		899573	1.87	2148163	2.10		
MB 320-216792/1-A		927774	1.87	2237326	2.10		
LLCS 320-216792/2-A		932269	1.87	2141422	2.10		
320-37675-12	NAWC-032819-RW-048	933636	1.87	2208683	2.10		
320-37675-13	NAWC-032819-FRB-048	921490	1.87	2241801	2.11		
CCV 320-217818/25 CCVIS		921520	1.87	2115143	2.10		

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.: 320-37675-1
 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						
CCV 320-217820/25 CCVIS		921520	1.87	2115143	2.10		
320-37675-14	NAWC-032819-RW-139	941432	1.87	2279160	2.10		
320-37675-14 LMS	NAWC-032819-RW-139 LMS	907706	1.87	2270226	2.10		
320-37675-14 LMSD	NAWC-032819-RW-139 LMSD	932927	1.87	2349968	2.10		
320-37675-15	NAWC-032819-FRB-139	938492	1.87	2282460	2.10		
320-37675-16	NAWC-032819-RW-117	946733	1.87	2304139	2.10		
320-37675-17	NAWC-032819-FRB-117	951026	1.87	2287790	2.10		
320-37675-18	NAWC-032819-RW-181	960037	1.86	2317950	2.09		
320-37675-19	NAWC-032819-FRB-181	957412	1.87	2371551	2.10		
320-37675-20	NAWC-032819-RW-138	941041	1.87	2361059	2.10		
320-37675-21	NAWC-032819-FRB-138	924480	1.87	2293177	2.10		
CCV 320-217820/37 CCVIS		934501	1.86	2203770	2.09		

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

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217814/1 Date Analyzed: 04/13/2018 00:27
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_02 Heated Purge: (Y/N) N
 Calibration ID: 38530

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		945293	1.89	2202701	2.12		
UPPER LIMIT		1323410	2.39	3083781	2.62		
LOWER LIMIT		661705	1.39	1541891	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-216791/1-A		949828	1.88	2322770	2.12		
LCS 320-216791/2-A		993342	1.87	2367322	2.11		
LCSD 320-216791/3-A		1202728	1.87	2870335	2.11		
320-37675-1	WGNA-032918-DUP-31	935283	1.87	2285394	2.11		
320-37675-2	NAWC-032819-RW-286	1004022	1.87	2445606	2.11		
320-37675-3	NAWC-032819-FRB-286	931391	1.87	2287824	2.11		
320-37675-4	WGNA-032819-RW-0518	939190	1.87	2335776	2.11		
320-37675-5	WGNA-032819-FRB-0518	954713	1.87	2370457	2.11		
320-37675-6	NAWC-032819-RW-010	1003975	1.87	2389703	2.11		
320-37675-7	NAWC-032819-FRB-010	998861	1.87	2402516	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.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217814/13 Date Analyzed: 04/13/2018 01:23
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_04 Heated Purge: (Y/N) N
 Calibration ID: 38530

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		947894	1.87	2307891	2.10		
UPPER LIMIT		1327052	2.37	3231047	2.60		
LOWER LIMIT		663526	1.37	1615524	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-216791/1-A		949828	1.88	2322770	2.12		
LCS 320-216791/2-A		993342	1.87	2367322	2.11		
LCSD 320-216791/3-A		1202728	1.87	2870335	2.11		
320-37675-1	WGNA-032918-DUP-31	935283	1.87	2285394	2.11		
320-37675-2	NAWC-032819-RW-286	1004022	1.87	2445606	2.11		
320-37675-3	NAWC-032819-FRB-286	931391	1.87	2287824	2.11		
320-37675-4	WGNA-032819-RW-0518	939190	1.87	2335776	2.11		
320-37675-5	WGNA-032819-FRB-0518	954713	1.87	2370457	2.11		
320-37675-6	NAWC-032819-RW-010	1003975	1.87	2389703	2.11		
320-37675-7	NAWC-032819-FRB-010	998861	1.87	2402516	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.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217816/13 Date Analyzed: 04/13/2018 01:23
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_04 Heated Purge: (Y/N) N
 Calibration ID: 38530

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	947894	1.87	2307891	2.10		
UPPER LIMIT	1327052	2.37	3231047	2.60		
LOWER LIMIT	663526	1.37	1615524	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-37675-8	NAWC-032819-RW-127		915274	1.87	2281073	2.11
320-37675-9	NAWC-032819-FRB-127		893479	1.87	2204862	2.11
320-37675-10	NAWC-032819-RW-195		926217	1.87	2305396	2.10
320-37675-11	NAWC-032819-FRB-195		921584	1.87	2286972	2.10

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

Area Limit = 70%-140% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217816/19 Date Analyzed: 04/13/2018 01:51
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_04 Heated Purge: (Y/N) N
 Calibration ID: 38530

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	899573	1.87	2148163	2.10		
UPPER LIMIT	1259402	2.37	3007428	2.60		
LOWER LIMIT	629701	1.37	1503714	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-37675-8	NAWC-032819-RW-127	915274	1.87	2281073	2.11	
320-37675-9	NAWC-032819-FRB-127	893479	1.87	2204862	2.11	
320-37675-10	NAWC-032819-RW-195	926217	1.87	2305396	2.10	
320-37675-11	NAWC-032819-FRB-195	921584	1.87	2286972	2.10	

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

Area Limit = 70%-140% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217818/19 Date Analyzed: 04/13/2018 01:51
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_04 Heated Purge: (Y/N) N
 Calibration ID: 38530

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	899573	1.87	2148163	2.10		
UPPER LIMIT	1259402	2.37	3007428	2.60		
LOWER LIMIT	629701	1.37	1503714	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-216792/1-A		927774	1.87	2237326	2.10	
LLCS 320-216792/2-A		932269	1.87	2141422	2.10	
320-37675-12	NAWC-032819-RW-048	933636	1.87	2208683	2.10	
320-37675-13	NAWC-032819-FRB-048	921490	1.87	2241801	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.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217818/25 Date Analyzed: 04/13/2018 02:19
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_05 Heated Purge: (Y/N) N
 Calibration ID: 38530

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	921520	1.87	2115143	2.10		
UPPER LIMIT	1290128	2.37	2961200	2.60		
LOWER LIMIT	645064	1.37	1480600	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-216792/1-A		927774	1.87	2237326	2.10	
LLCS 320-216792/2-A		932269	1.87	2141422	2.10	
320-37675-12	NAWC-032819-RW-048	933636	1.87	2208683	2.10	
320-37675-13	NAWC-032819-FRB-048	921490	1.87	2241801	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.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217820/25 Date Analyzed: 04/13/2018 02:19
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_05 Heated Purge: (Y/N) N
 Calibration ID: 38530

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		921520	1.87	2115143	2.10		
UPPER LIMIT		1290128	2.37	2961200	2.60		
LOWER LIMIT		645064	1.37	1480600	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-37675-14	NAWC-032819-RW-139	941432	1.87	2279160	2.10		
320-37675-14 LMS	NAWC-032819-RW-139 LMS	907706	1.87	2270226	2.10		
320-37675-14 LMSD	NAWC-032819-RW-139 LMSD	932927	1.87	2349968	2.10		
320-37675-15	NAWC-032819-FRB-139	938492	1.87	2282460	2.10		
320-37675-16	NAWC-032819-RW-117	946733	1.87	2304139	2.10		
320-37675-17	NAWC-032819-FRB-117	951026	1.87	2287790	2.10		
320-37675-18	NAWC-032819-RW-181	960037	1.86	2317950	2.09		
320-37675-19	NAWC-032819-FRB-181	957412	1.87	2371551	2.10		
320-37675-20	NAWC-032819-RW-138	941041	1.87	2361059	2.10		
320-37675-21	NAWC-032819-FRB-138	924480	1.87	2293177	2.10		

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

Area Limit = 70%-140% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Sample No.: CCV 320-217820/37 Date Analyzed: 04/13/2018 03:15
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.04.12_537AA_06 Heated Purge: (Y/N) N
 Calibration ID: 38530

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		934501	1.86	2203770	2.09		
UPPER LIMIT		1308301	2.36	3085278	2.59		
LOWER LIMIT		654151	1.36	1542639	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-37675-14	NAWC-032819-RW-139	941432	1.87	2279160	2.10		
320-37675-14 LMS	NAWC-032819-RW-139 LMS	907706	1.87	2270226	2.10		
320-37675-14 LMSD	NAWC-032819-RW-139 LMSD	932927	1.87	2349968	2.10		
320-37675-15	NAWC-032819-FRB-139	938492	1.87	2282460	2.10		
320-37675-16	NAWC-032819-RW-117	946733	1.87	2304139	2.10		
320-37675-17	NAWC-032819-FRB-117	951026	1.87	2287790	2.10		
320-37675-18	NAWC-032819-RW-181	960037	1.86	2317950	2.09		
320-37675-19	NAWC-032819-FRB-181	957412	1.87	2371551	2.10		
320-37675-20	NAWC-032819-RW-138	941041	1.87	2361059	2.10		
320-37675-21	NAWC-032819-FRB-138	924480	1.87	2293177	2.10		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

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

Column used to flag values outside QC limits

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

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1 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.: 320-37675-1 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.: 320-37675-1 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

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 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.: 320-37675-1
 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.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-217726/1 Calibration Date: 04/12/2018 14:48
 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: 2018.04.12_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	1.091		20.8	20.0	3.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.529		6.26	6.72	-6.9	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.003		2.02	2.16	-6.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.016		4.21	4.40	-4.3	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.003		8.27	8.79	-5.9	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.7699		4.02	4.40	-8.6	50.0
13C2 PFHxA	Ave	1.063	1.016		9.56	10.0	-4.4	30.0
13C2 PFDA	Ave	0.8505	0.8461		9.95	10.0	-0.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217814/1 Calibration Date: 04/13/2018 00:27
 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: 2018.04.12_537AA_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.052	1.051		135	135	-0.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.071		14.5	14.6	-0.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.648		45.5	45.4	0.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.050		29.3	29.7	-1.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.056		58.8	59.3	-0.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8015		28.3	29.7	-4.9	30.0
13C2 PFHxA	Ave	1.063	1.028		9.67	10.0	-3.3	30.0
13C2 PFDA	Ave	0.8505	0.8168		9.60	10.0	-4.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217814/13 Calibration Date: 04/13/2018 01:23
 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: 2018.04.12_537AA_041.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	1.132		48.5	45.0	7.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.050		4.75	4.86	-2.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.680		15.5	15.1	2.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.051		9.79	9.90	-1.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.068		19.8	19.8	0.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8010		9.41	9.90	-4.9	30.0
13C2 PFHxA	Ave	1.063	1.074		10.1	10.0	1.0	30.0
13C2 PFDA	Ave	0.8505	0.7979		9.38	10.0	-6.2	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217816/19 Calibration Date: 04/13/2018 01:51
 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: 2018.04.12_537AA_047.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	1.083		139	135	2.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.081		14.7	14.6	0.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.709		47.2	45.4	4.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.082		30.2	29.7	1.8	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8552		30.2	29.7	1.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.096		61.0	59.3	2.8	30.0
13C2 PFHxA	Ave	1.063	1.086		10.2	10.0	2.1	30.0
13C2 PFDA	Ave	0.8505	0.8255		9.71	10.0	-2.9	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217818/25 Calibration Date: 04/13/2018 02:19
 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: 2018.04.12_537AA_053.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	1.098		141	135	4.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.071		14.5	14.6	-0.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.747		48.3	45.4	6.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.078		30.1	29.7	1.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.088		60.5	59.3	2.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8382		29.6	29.7	-0.5	30.0
13C2 PFHxA	Ave	1.063	1.058		9.96	10.0	-0.4	30.0
13C2 PFDA	Ave	0.8505	0.8187		9.63	10.0	-3.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Lab Sample ID: CCV 320-217820/37 Calibration Date: 04/13/2018 03:15
 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: 2018.04.12_537AA_065.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	1.204		51.5	45.0	14.5	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.074	1.056		4.78	4.86	-1.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.642	1.705		15.7	15.1	3.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.062	1.007		9.39	9.90	-5.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.066	1.068		19.8	19.8	0.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8424	0.8345		9.81	9.90	-0.9	30.0
13C2 PFHxA	Ave	1.063	1.043		9.81	10.0	-1.9	30.0
13C2 PFDA	Ave	0.8505	0.8029		9.44	10.0	-5.6	30.0

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: _____ Lab Sample ID: MB 320-216791/1-A

Matrix: Water Lab File ID: 2018.04.12_537AA_031.d

Analysis Method: 537 Date Collected: _____

Extraction Method: 537 Date Extracted: 04/07/2018 08:11

Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 00:37

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.: 217814 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	83		70-130
STL00996	13C2 PFDA	94		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: _____ Lab Sample ID: MB 320-216792/1-A

Matrix: Water Lab File ID: 2018.04.12_537AA_049.d

Analysis Method: 537 Date Collected: _____

Extraction Method: 537 Date Extracted: 04/07/2018 08:19

Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 02:01

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

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

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

Analysis Batch No.: 217818 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	90		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Client Sample ID: _____ Lab Sample ID: LCS 320-216791/2-A

Matrix: Water Lab File ID: 2018.04.12_537AA_032.d

Analysis Method: 537 Date Collected: _____

Extraction Method: 537 Date Extracted: 04/07/2018 08:11

Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 00:41

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.: 217814 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	132	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	67.8		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	62.6		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	105		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	32.0		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	303		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	93		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_032.d
 Lims ID: LCS 320-216791/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 13-Apr-2018 00:41:45 ALS Bottle#: 22 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-216791/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: roycea

Date: 13-Apr-2018 09:25:11

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	1.388	-0.007	1.000	6576564	75.7		10071	
298.90 > 99.00	1.381	1.388	-0.007	1.000	4927734		1.33(0.00-0.00)	10491	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.525	-0.008	1.000	1006889	9.53		9400	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.684	-0.007	1.000	853699	8.00		30.5	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.684	-0.007	1.000	3562570	26.3		4991	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.889	-0.015		993342	10.0		5431	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.889	-0.015	1.000	1788752	17.0		261	
413.00 > 169.00	1.874	1.889	-0.015	1.000	972580		1.84(0.00-0.00)	1250	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.094	0.015	1.000	2901417	33.0		2908	a
499.00 > 99.00	2.109	2.094	0.015	1.000	631804		4.59(0.00-0.00)	1620	a
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.124	-0.015		2367322	28.7		4643	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.132	-0.015	1.000	1308823	15.6		232	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.269	-0.007	1.000	789843	9.35		7864	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_032.d

Injection Date: 13-Apr-2018 00:41:45

Instrument ID: A8_N

Lims ID: LCS 320-216791/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 22

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

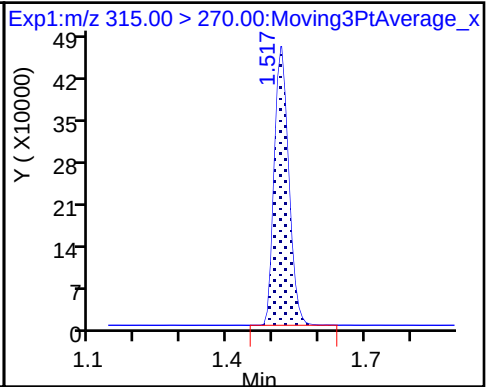
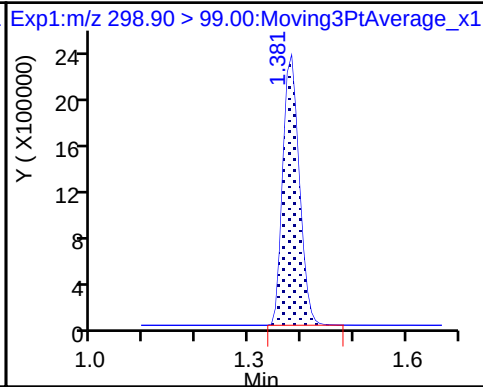
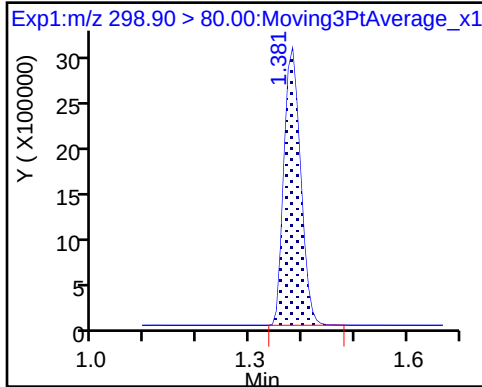
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

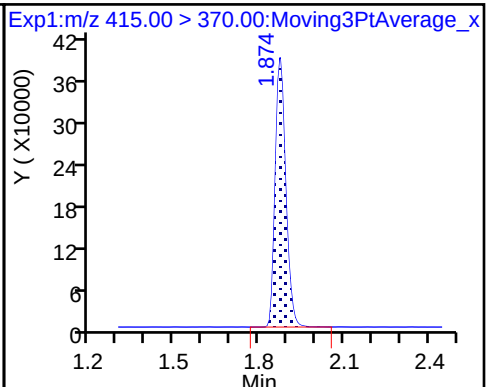
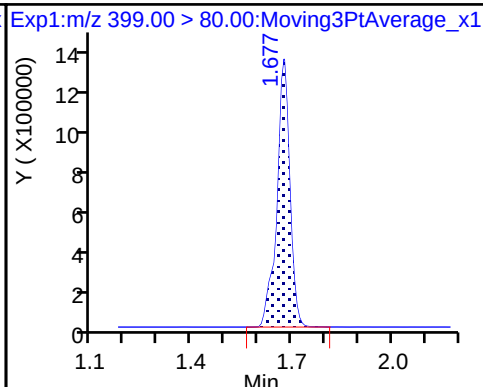
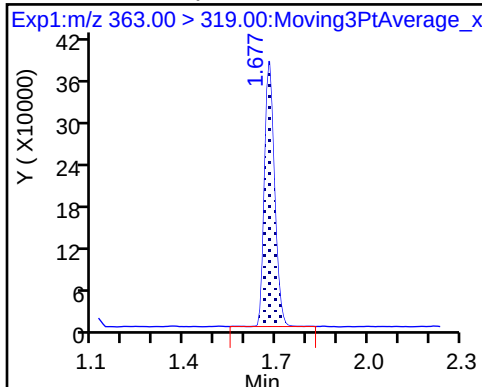
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

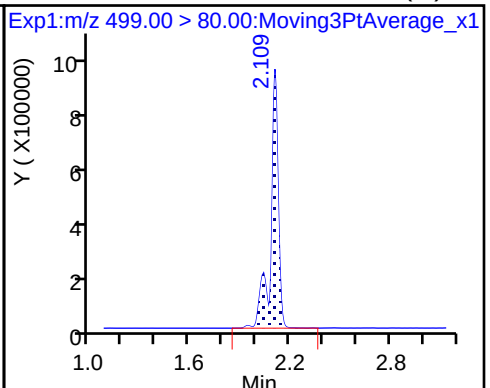
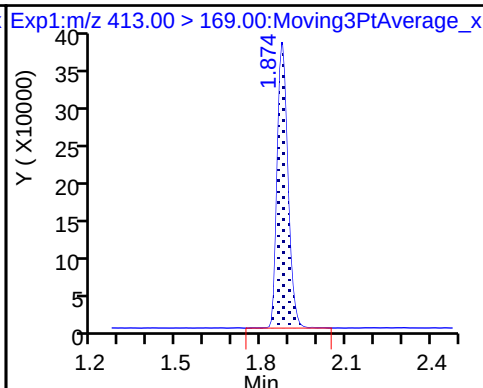
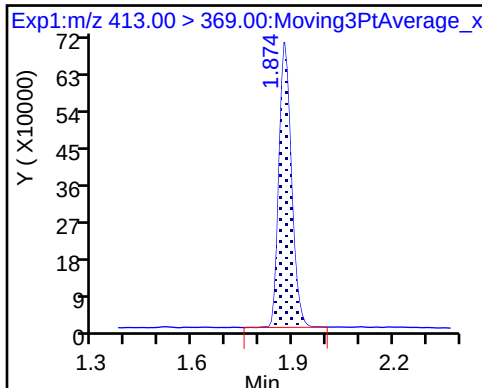
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

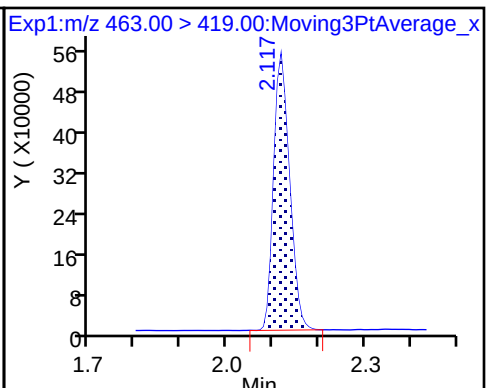
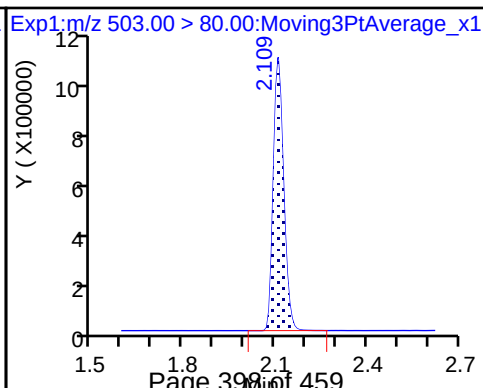
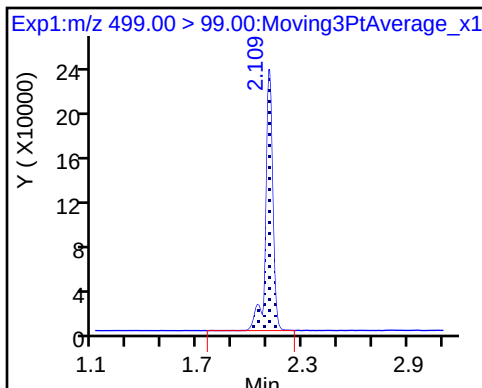
8 Perfluorooctane sulfonic acid (M)



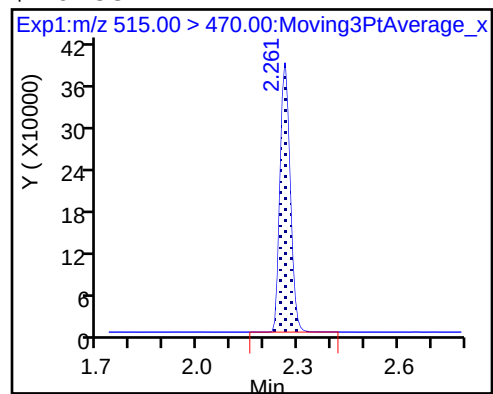
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_032.d
Lims ID: LCS 320-216791/2-A
Client ID:
Sample Type: LCS
Inject. Date: 13-Apr-2018 00:41:45 ALS Bottle#: 22 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-216791/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: roycea

Date: 13-Apr-2018 09:25:11

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.53	95.34
\$ 10 13C2 PFDA	10.0	9.35	93.49

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_032.d

Injection Date: 13-Apr-2018 00:41:45

Instrument ID: A8_N

Lims ID: LCS 320-216791/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 22

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

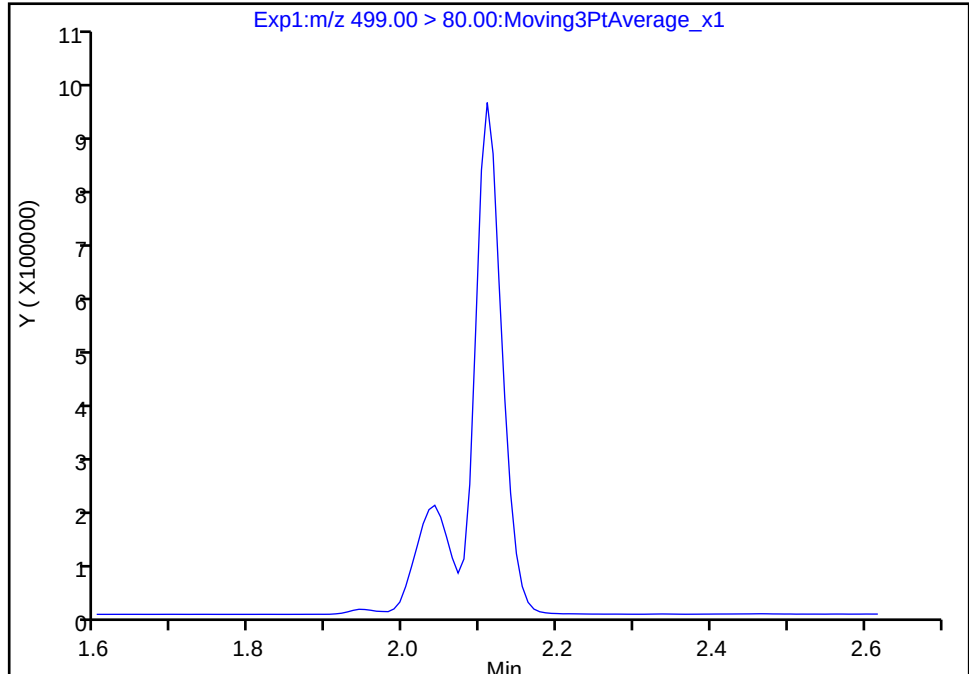
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

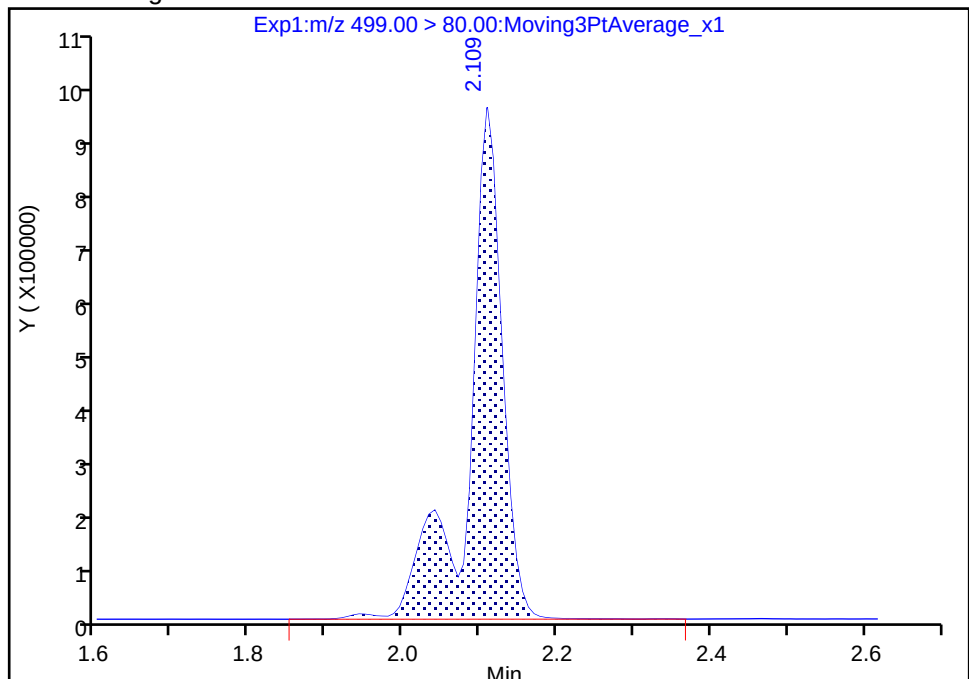
Not Detected

Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.11

Area: 2901417

Amount: 32.971983

Amount Units: ng/ml

Reviewer: roycea, 13-Apr-2018 09:25:00

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-216791/3-A
 Matrix: Water Lab File ID: 2018.04.12_537AA_033.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/07/2018 08:11
 Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 00:46
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 217814 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	126	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	65.5		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	62.7		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	102		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	31.0		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	266		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	101		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_033.d
 Lims ID: LCSD 320-216791/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 13-Apr-2018 00:46:25 ALS Bottle#: 23 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-216791/3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: roycea

Date: 13-Apr-2018 09:25:25

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.388	-0.007	1.000	7007922	66.6		9915	
298.90 > 99.00	1.381	1.388	-0.007	1.000	5149999		1.36(0.00-0.00)	9442	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.525	-0.008	1.000	1106293	8.65		10515	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.677	1.684	-0.007	1.000	1002202	7.76		38.6	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.677	1.684	-0.007	1.000	4194932	25.5		5333	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.889	-0.015		1202728	10.0		6204	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.889	-0.015	1.000	2092357	16.4		310	
413.00 > 169.00	1.874	1.889	-0.015	1.000	1140620		1.83(0.00-0.00)	1377	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.094	0.015	1.000	3372791	31.6		3119	a
499.00 > 99.00	2.109	2.094	0.015	1.000	733408		4.60(0.00-0.00)	2009	a
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.124	-0.015		2870335	28.7		5607	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.132	-0.015	1.000	1587382	15.7		268	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.269	-0.007	1.000	1036314	10.1		10315	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_033.d

Injection Date: 13-Apr-2018 00:46:25

Instrument ID: A8_N

Lims ID: LCSD 320-216791/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 23

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

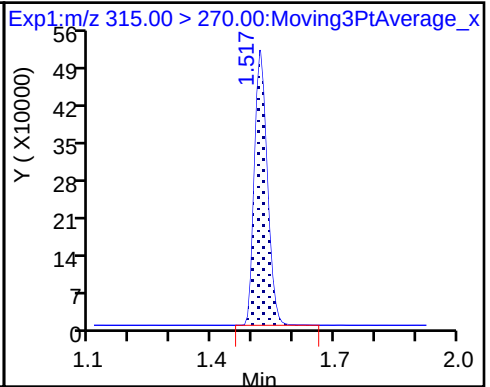
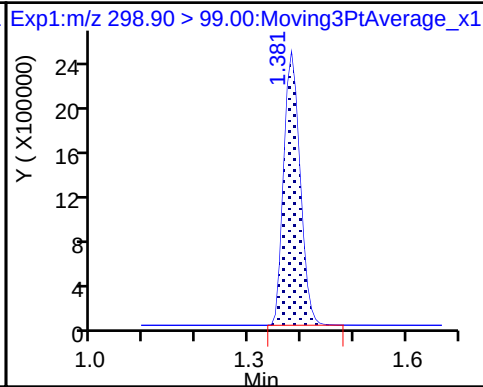
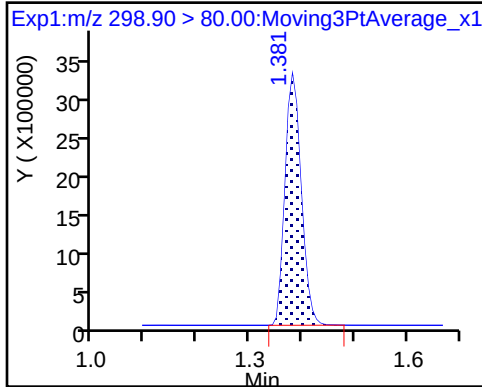
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

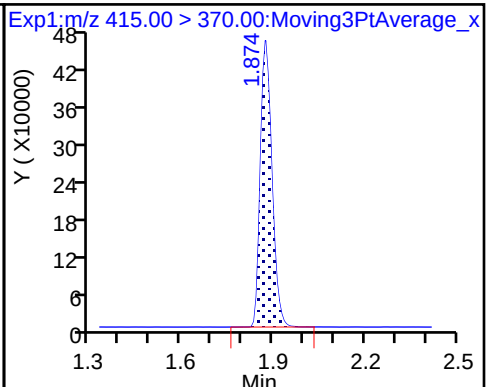
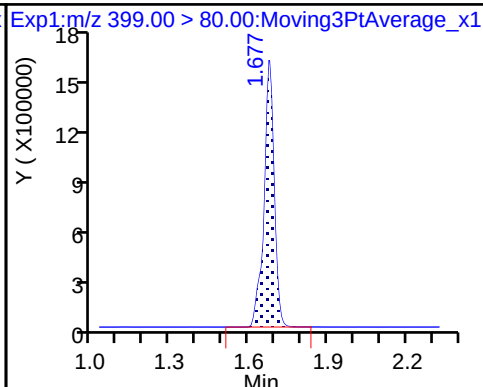
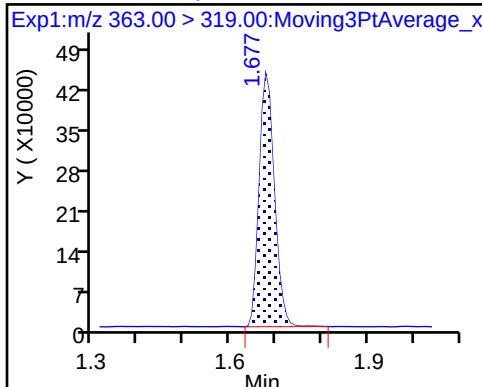
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

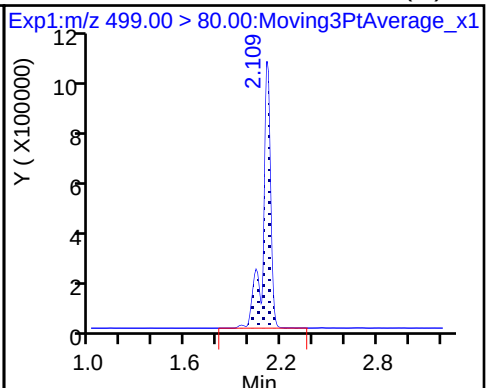
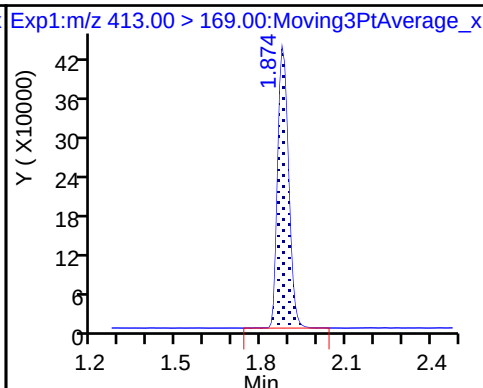
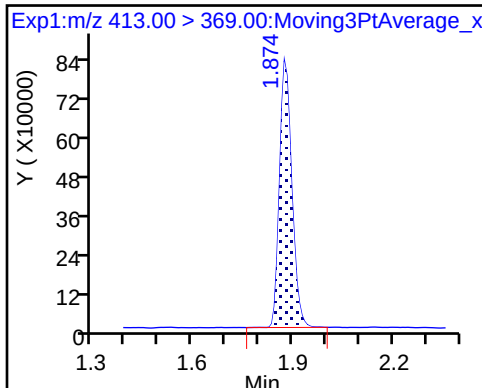
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

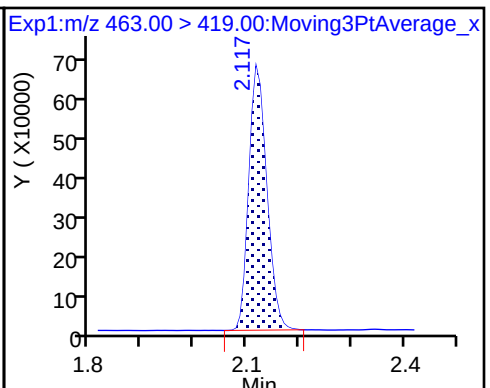
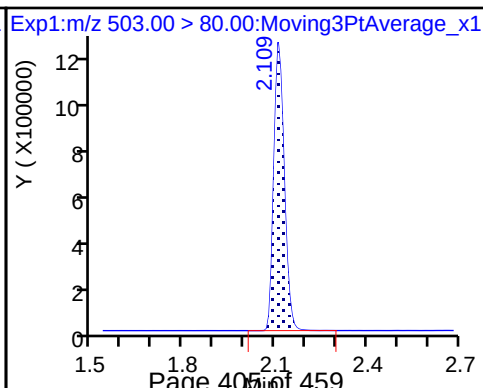
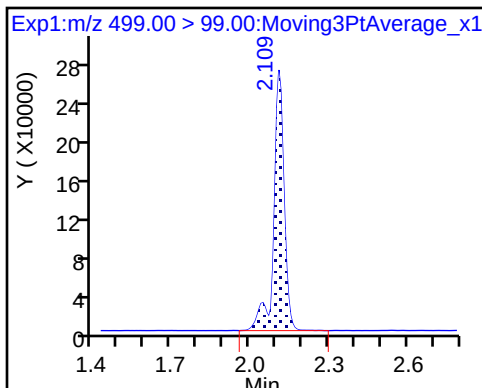
8 Perfluorooctane sulfonic acid (M)



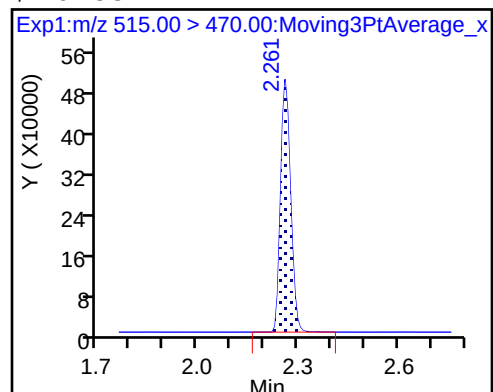
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_033.d
Lims ID: LCSD 320-216791/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 13-Apr-2018 00:46:25 ALS Bottle#: 23 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-216791/3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Method: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 13-Apr-2018 10:01:30 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: XAWRK028

First Level Reviewer: roycea

Date: 13-Apr-2018 09:25:25

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.65	86.52
\$ 10 13C2 PFDA	10.0	10.1	101.31

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b\2018.04.12_537AA_033.d

Injection Date: 13-Apr-2018 00:46:25

Instrument ID: A8_N

Lims ID: LCSD 320-216791/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#:

23

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor:

1.0000

Method: 537_A8_N

Limit Group:

LC 537 ICAL

Column:

Detector

EXP1

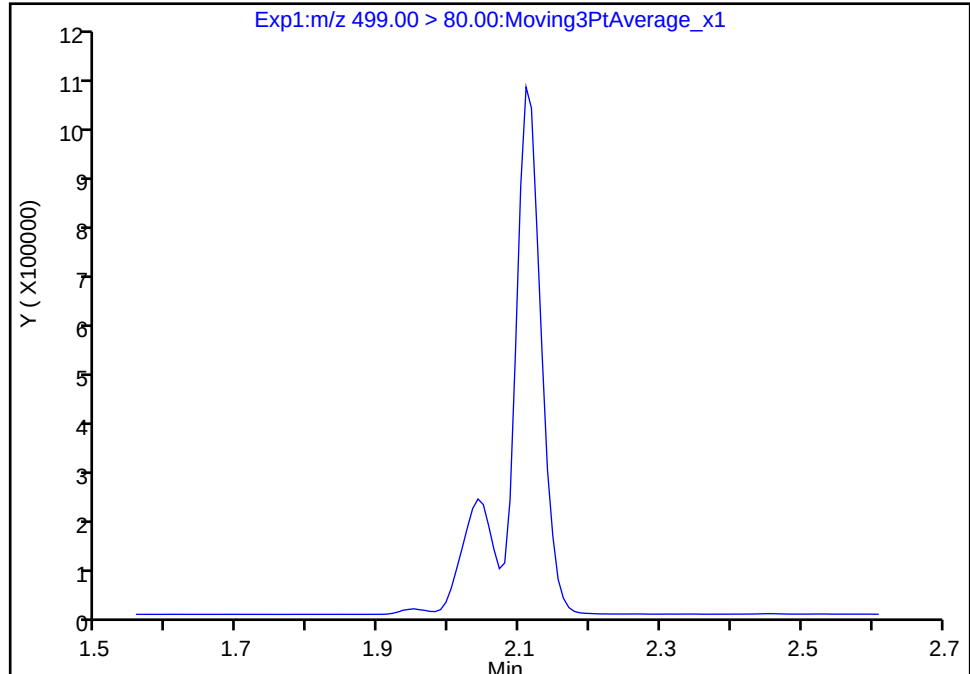
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

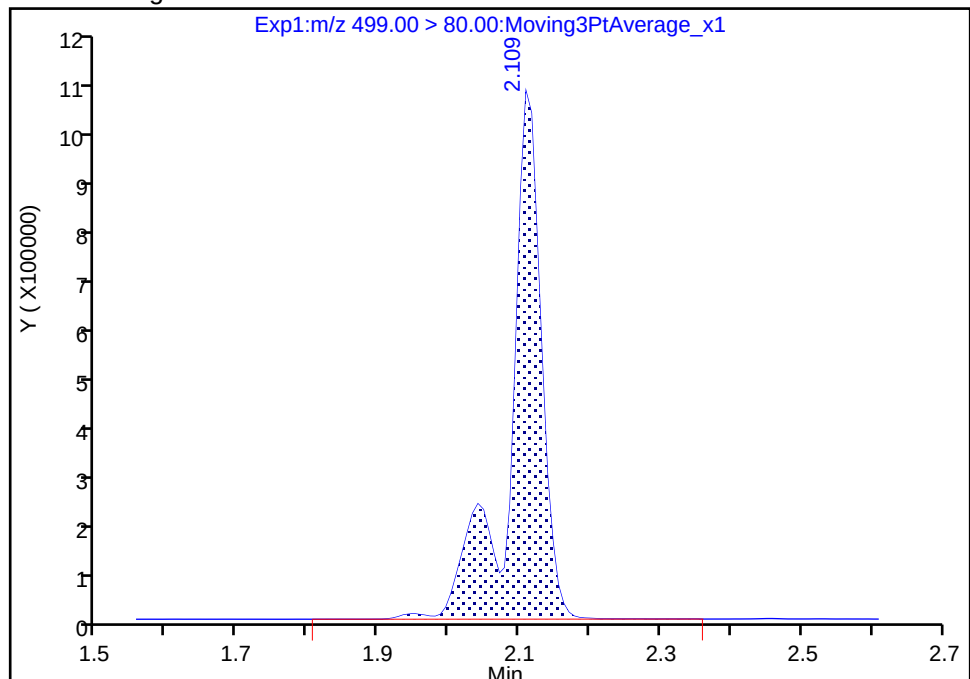
Not Detected

Expected RT: 2.09

Processing Integration Results



Manual Integration Results



RT: 2.11

Area: 3372791

Amount: 31.611790

Amount Units: ng/ml

Reviewer: roycea, 13-Apr-2018 09:25:14

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LLCS 320-216792/2-A
 Matrix: Water Lab File ID: 2018.04.12_537AA_050.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 04/07/2018 08:19
 Sample wt/vol: 250 (mL) Date Analyzed: 04/13/2018 02:05
 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.: 217818 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	38.9	J 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)	17.5	J	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	31.7		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	9.59	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	97.1		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		70-130
STL00996	13C2 PFDA	92		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-032819-RW-139 LMS</u>	Lab Sample ID: <u>320-37675-14 LMS</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_056.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 11:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:19</u>
Sample wt/vol: <u>255.7 (mL)</u>	Date Analyzed: <u>04/13/2018 02:33</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>217820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	42.7	M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	28.1		20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19.0	J	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	31.3		29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	13.4		9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	104		88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	97		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-37675-1</u>
SDG No.: _____	
Client Sample ID: <u>NAWC-032819-RW-139 LMSD</u>	Lab Sample ID: <u>320-37675-14 LMSD</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.04.12_537AA_057.d</u>
Analysis Method: <u>537</u>	Date Collected: <u>03/29/2018 11:10</u>
Extraction Method: <u>537</u>	Date Extracted: <u>04/07/2018 08:19</u>
Sample wt/vol: <u>252.9(mL)</u>	Date Analyzed: <u>04/13/2018 02:38</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>217820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	41.2	M	40	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	27.4		20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	18.5	J	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	29.4	J	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	13.0		9.9	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	94.4		89	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	98		70-130

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-37675-1

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 SacramentoJob No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_NStart Date: 04/12/2018 14:48Analysis Batch Number: 217726End Date: 04/12/2018 15:49

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-217726/1		04/12/2018 14:48	1	2018.04.12_537A 004.d	GeminiC18 3x100 3(mm)
CCV 320-217726/2 CCVIS		04/12/2018 14:53	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:02	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:07	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:12	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:16	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:21	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:26	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:30	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:35	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:40	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/12/2018 15:44	1		GeminiC18 3x100 3(mm)
CCV 320-217726/14 CCVIS		04/12/2018 15:49	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_NStart Date: 04/13/2018 00:27Analysis Batch Number: 217814End Date: 04/13/2018 01:23

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-217814/1 CCVIS		04/13/2018 00:27	1	2018.04.12_537A A 029.d	GeminiC18 3x100 3(mm)
MB 320-216791/1-A		04/13/2018 00:37	1	2018.04.12_537A A 031.d	GeminiC18 3x100 3(mm)
LCS 320-216791/2-A		04/13/2018 00:41	1	2018.04.12_537A A 032.d	GeminiC18 3x100 3(mm)
LCSD 320-216791/3-A		04/13/2018 00:46	1	2018.04.12_537A A 033.d	GeminiC18 3x100 3(mm)
320-37675-1		04/13/2018 00:51	1	2018.04.12_537A A 034.d	GeminiC18 3x100 3(mm)
320-37675-2		04/13/2018 00:55	1	2018.04.12_537A A 035.d	GeminiC18 3x100 3(mm)
320-37675-3		04/13/2018 01:00	1	2018.04.12_537A A 036.d	GeminiC18 3x100 3(mm)
320-37675-4		04/13/2018 01:05	1	2018.04.12_537A A 037.d	GeminiC18 3x100 3(mm)
320-37675-5		04/13/2018 01:09	1	2018.04.12_537A A 038.d	GeminiC18 3x100 3(mm)
320-37675-6		04/13/2018 01:14	1	2018.04.12_537A A 039.d	GeminiC18 3x100 3(mm)
320-37675-7		04/13/2018 01:19	1	2018.04.12_537A A 040.d	GeminiC18 3x100 3(mm)
CCV 320-217814/13 CCVIS		04/13/2018 01:23	1	2018.04.12_537A A 041.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Start Date: 04/13/2018 01:23Analysis Batch Number: 217816 End Date: 04/13/2018 01:51

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-217816/13 CCVIS		04/13/2018 01:23	1	2018.04.12_537A A 041.d	GeminiC18 3x100 3(mm)
320-37675-8		04/13/2018 01:33	1	2018.04.12_537A A 043.d	GeminiC18 3x100 3(mm)
320-37675-9		04/13/2018 01:37	1	2018.04.12_537A A 044.d	GeminiC18 3x100 3(mm)
320-37675-10		04/13/2018 01:42	1	2018.04.12_537A A 045.d	GeminiC18 3x100 3(mm)
320-37675-11		04/13/2018 01:47	1	2018.04.12_537A A 046.d	GeminiC18 3x100 3(mm)
CCV 320-217816/19 CCVIS		04/13/2018 01:51	1	2018.04.12_537A A 047.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_N Start Date: 04/13/2018 01:51Analysis Batch Number: 217818 End Date: 04/13/2018 02:19

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-217818/19 CCVIS		04/13/2018 01:51	1	2018.04.12_537A A 047.d	GeminiC18 3x100 3(mm)
MB 320-216792/1-A		04/13/2018 02:01	1	2018.04.12_537A A 049.d	GeminiC18 3x100 3(mm)
LLCS 320-216792/2-A		04/13/2018 02:05	1	2018.04.12_537A A 050.d	GeminiC18 3x100 3(mm)
320-37675-12		04/13/2018 02:10	1	2018.04.12_537A A 051.d	GeminiC18 3x100 3(mm)
320-37675-13		04/13/2018 02:15	1	2018.04.12_537A A 052.d	GeminiC18 3x100 3(mm)
CCV 320-217818/25 CCVIS		04/13/2018 02:19	1	2018.04.12_537A A 053.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-37675-1

SDG No.: _____

Instrument ID: A8_NStart Date: 04/13/2018 02:19Analysis Batch Number: 217820End Date: 04/13/2018 03:15

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-217820/25 CCVIS		04/13/2018 02:19	1	2018.04.12_537A A 053.d	GeminiC18 3x100 3(mm)
320-37675-14		04/13/2018 02:29	1	2018.04.12_537A A 055.d	GeminiC18 3x100 3(mm)
320-37675-14 LMS		04/13/2018 02:33	1	2018.04.12_537A A 056.d	GeminiC18 3x100 3(mm)
320-37675-14 LMSD		04/13/2018 02:38	1	2018.04.12_537A A 057.d	GeminiC18 3x100 3(mm)
320-37675-15		04/13/2018 02:43	1	2018.04.12_537A A 058.d	GeminiC18 3x100 3(mm)
320-37675-16		04/13/2018 02:47	1	2018.04.12_537A A 059.d	GeminiC18 3x100 3(mm)
320-37675-17		04/13/2018 02:52	1	2018.04.12_537A A 060.d	GeminiC18 3x100 3(mm)
320-37675-18		04/13/2018 02:57	1	2018.04.12_537A A 061.d	GeminiC18 3x100 3(mm)
320-37675-19		04/13/2018 03:01	1	2018.04.12_537A A 062.d	GeminiC18 3x100 3(mm)
320-37675-20		04/13/2018 03:06	1	2018.04.12_537A A 063.d	GeminiC18 3x100 3(mm)
320-37675-21		04/13/2018 03:11	1	2018.04.12_537A A 064.d	GeminiC18 3x100 3(mm)
CCV 320-217820/37 CCVIS		04/13/2018 03:15	1	2018.04.12_537A A 065.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216791 Batch Start Date: 04/07/18 08:11 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 04/11/18 17:25

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00067
MB 320-216791/1		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCS 320-216791/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCSD 320-216791/3		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-37675-A-1	WGNA-032918-DUP-31	537, 537	T	280.59 g	28.55 g	252 mL	1.00 mL	7 SU	100 uL
320-37675-A-2	NAWC-032819-RW-286	537, 537	T	281.11 g	27.82 g	253.3 mL	1.00 mL	7 SU	100 uL
320-37675-A-3	NAWC-032819-FRB-286	537, 537	T	274.84 g	28.16 g	246.7 mL	1.00 mL	7 SU	100 uL
320-37675-A-4	WGNA-032819-RW-0518	537, 537	T	282.88 g	30.48 g	252.4 mL	1.00 mL	7 SU	100 uL
320-37675-A-5	WGNA-032819-FRB-0518	537, 537	T	281.85 g	28.39 g	253.5 mL	1.00 mL	7 SU	100 uL
320-37675-A-6	NAWC-032819-RW-010	537, 537	T	277.26 g	28.73 g	248.5 mL	1.00 mL	7 SU	100 uL
320-37675-A-7	NAWC-032819-FRB-010	537, 537	T	283.60 g	28.07 g	255.5 mL	1.00 mL	7 SU	100 uL
320-37675-A-8	NAWC-032819-RW-127	537, 537	T	285.35 g	30.57 g	254.8 mL	1.00 mL	7 SU	100 uL
320-37675-A-9	NAWC-032819-FRB-127	537, 537	T	278.07 g	28.78 g	249.3 mL	1.00 mL	7 SU	100 uL
320-37675-A-10	NAWC-032819-RW-195	537, 537	T	279.50 g	28.42 g	251.1 mL	1.00 mL	7 SU	100 uL
320-37675-A-11	NAWC-032819-FRB-195	537, 537	T	283.84 g	28.05 g	255.8 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00033	LC537-SU 00064	AnalysisComment			
MB 320-216791/1		537, 537			100 uL	Chlorine, ND			
LCS 320-216791/2		537, 537		100 uL	100 uL	Chlorine, ND			
LCSD 320-216791/3		537, 537		100 uL	100 uL	Chlorine, ND			
320-37675-A-1	WGNA-032918-DUP-31	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-2	NAWC-032819-RW-286	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-3	NAWC-032819-FRB-286	537, 537	T		100 uL	Chlorine, ND			

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

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216791 Batch Start Date: 04/07/18 08:11 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 04/11/18 17:25

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00033	LC537-SU 00064	AnalysisComment			
320-37675-A-4	WGNA-032819-RW-0518	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-5	WGNA-032819-FRB-0518	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-6	NAWC-032819-RW-010	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-7	NAWC-032819-FRB-010	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-8	NAWC-032819-RW-127	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-9	NAWC-032819-FRB-127	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-10	NAWC-032819-RW-195	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-11	NAWC-032819-FRB-195	537, 537	T		100 uL	Chlorine, ND			

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

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216791 Batch Start Date: 04/07/18 08:11 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 04/11/18 17:25

Batch Notes	
Analyst ID - Aliquot Step	VPM
Batch Comment	Client labels match TA label, 04/07/18 SKD
Analyst ID - Concentration	KMK/SKD
Analyst ID - Final Volume Step	VPM
Internal Standard ID#	1208799
Manifold ID	3, 4
Methanol ID	1204219
pH Indicator ID	3817
Pipette ID	O43082F
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	JER
Analyst ID - SU Reagent Drop	SKD
Analyst ID - SU Reagent Drop Witness	HJA
Analyst ID - TA Reagent Drop	SKD
Analyst ID - TA Reagent Drop Witness	HJA
SPE Cartridge Lot ID	6369499-12
Trizma ID	SLBR5241V
Reagent Water ID	04/05/18

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.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216792 Batch Start Date: 04/07/18 08:19 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 04/11/18 17:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00067
MB 320-216792/1		537, 537				250 mL	1.00 mL	7 SU	100 uL
LLCS 320-216792/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-37675-A-12	NAWC-032819-RW-048	537, 537	T	272.73 g	27.71 g	245 mL	1.00 mL	7 SU	100 uL
320-37675-A-13	NAWC-032819-FRB-048	537, 537	T	277.24 g	28.50 g	248.7 mL	1.00 mL	7 SU	100 uL
320-37675-A-14	NAWC-032819-RW-139	537, 537	T	277.94 g	28.59 g	249.4 mL	1.00 mL	7 SU	100 uL
320-37675-A-14 LMS	NAWC-032819-RW-139	537, 537	T	284.31 g	28.57 g	255.7 mL	1.00 mL	7 SU	100 uL
320-37675-A-14 LMSD	NAWC-032819-RW-139	537, 537	T	281.86 g	28.92 g	252.9 mL	1.00 mL	7 SU	100 uL
320-37675-A-15	NAWC-032819-FRB-139	537, 537	T	283.20 g	28.57 g	254.6 mL	1.00 mL	7 SU	100 uL
320-37675-A-16	NAWC-032819-RW-117	537, 537	T	286.53 g	30.07 g	256.5 mL	1.00 mL	7 SU	100 uL
320-37675-A-17	NAWC-032819-FRB-117	537, 537	T	286.61 g	28.04 g	258.6 mL	1.00 mL	7 SU	100 uL
320-37675-A-18	NAWC-032819-RW-181	537, 537	T	277.66 g	28.73 g	248.9 mL	1.00 mL	7 SU	100 uL
320-37675-A-19	NAWC-032819-FRB-181	537, 537	T	279.16 g	28.59 g	250.6 mL	1.00 mL	7 SU	100 uL
320-37675-A-20	NAWC-032819-RW-138	537, 537	T	270.92 g	28.89 g	242 mL	1.00 mL	7 SU	100 uL
320-37675-A-21	NAWC-032819-FRB-138	537, 537	T	281.13 g	27.98 g	253.2 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00064	AnalysisComment			
MB 320-216792/1		537, 537			100 uL	Chlorine, ND			
LLCS 320-216792/2		537, 537		100 uL	100 uL	Chlorine, ND			
320-37675-A-12	NAWC-032819-RW-048	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-13	NAWC-032819-FRB-048	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-14	NAWC-032819-RW-139	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-14 LMS	NAWC-032819-RW-139	537, 537	T	100 uL	100 uL	Chlorine, ND			

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

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216792 Batch Start Date: 04/07/18 08:19 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 04/11/18 17:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00064	AnalysisComment			
320-37675-A-14 LMSD	NAWC-032819-RW-1 39	537, 537	T	100 uL	100 uL	Chlorine, ND			
320-37675-A-15	NAWC-032819-FRB- 139	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-16	NAWC-032819-RW-1 17	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-17	NAWC-032819-FRB- 117	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-18	NAWC-032819-RW-1 81	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-19	NAWC-032819-FRB- 181	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-20	NAWC-032819-RW-1 38	537, 537	T		100 uL	Chlorine, ND			
320-37675-A-21	NAWC-032819-FRB- 138	537, 537	T		100 uL	Chlorine, ND			

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

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-37675-1

SDG No.: _____

Batch Number: 216792 Batch Start Date: 04/07/18 08:19 Batch Analyst: Kouchari, ShamiranBatch Method: 537 Batch End Date: 04/11/18 17:15

Batch Notes	
Analyst ID - Aliquot Step	VPM
Batch Comment	Client labels match TA label, 04/07/18 SKD
Analyst ID - Concentration	SKD/KMK
Analyst ID - Final Volume Step	VPM
Internal Standard ID#	1208799
Manifold ID	4, 2
Methanol ID	1204219
pH Indicator ID	3817
Pipette ID	O43082F
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	JER
Analyst ID - SU Reagent Drop	SKD
Analyst ID - SU Reagent Drop Witness	HJA
Analyst ID - TA Reagent Drop	SKD
Analyst ID - TA Reagent Drop Witness	HJA
SPE Cartridge Lot ID	6369499-12
Trizma ID	SLBR5241V
Reagent Water ID	04/05/18

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.

A8

Job No: 37675 Instrument ID & Date: 4-13-18 ICAL Batch: 217453
 Extraction Batch: 216791 Worklist #: 56657 TALS Batch: 217814, 217816, 217818, 217820
216792

Review Items	--- Level 1 ---			Level 2
	Yes	No	N/A	
Initial Calibration				
1. Is ICAL verified and locked in Chrom & TALS?	✓			✓
2. Is ICV properly linked in TALS?	✓			✓
Continuing Calibration				
1. Low-range CCV injected at start of analytical run? CCV injected after every 10 samples and at the end of the analytical run and alternated between Low-range, Mid-range and High-range?	✓			✓
2. If sequence was not after an ICAL was a low and mid range CCV injected at the start of the analytical run?	✓			✓
3. Native compounds and surrogates in control? Low-range within $\pm 50\%$ of true value Mid and High-range within $\pm 30\%$ of true value	✓			✓
4. Internal Standard areas in control? Areas $\geq 50\%$ of average area of the ICAL and 70-140% of the most recent CCV.	✓			✓
Client Samples & QC Sample Results				
1. Were preparation and analysis done within holding times?	✓			✓
2. Are Chromatograms reviewed and spectra verified?	✓			✓
3. Are positive results within calibration range?	✓			✓
4. Dilutions due to target cpds? Dilutions due to non-targets?			✓	✓
5. All target compounds in MB < 1/3 RL? (Requires NCM if "no.")	✓			✓
6. Are target constituents in LCS/LCSD within method control limits?	✓			✓
7. Internal Standard areas in control for all samples and QC reported? $\pm 50\%$ from the average area of the ICAL and 70-140% of the most recent CCV	✓			✓
8. Do results (e.g., dilutions/trip blanks) make sense?	✓			✓
9. Are MS/MSD recoveries and RPDs within method control limits?	✓			✓
10. Are all QC samples properly linked in TALS?	✓			✓
11. All manual integrations appropriate and completely documented?	✓			✓
12. Are nonconformances documented as NCMs? <u>122866</u>			✓	✓
13. Are all Chrom graphics uploaded?	✓			✓

1st Level Reviewer / Date: JRB 4-13-18 2nd Level Reviewer / Date: mxw 4/18/2018

NCM # and Comments: Samples 16 and 17 scheduled for RX due to possible sample switch.

A8

Instrument ID & Date: 4/11/18 Worklist#: 56557

ICAL Batch: 217453, 217454 Calibration ID number: 38530, 38531

Review Items	Level 1			Level 2
	Yes	No	N/A	
Initial Calibration				
1. Mass calibration, as needed, verified by full scan of PFC stock standard. All PFC ions used for quantitation are within 0.3 m/z of true mass?	✓			✓
2. Responses increase with increasing concentration?	✓			✓
3. Fit used (circle): <u>Average</u> Linear (1/x ²) Linear Quadratic (6 points minimum)				
4. Meets fit criteria? Intercept ≤ ½ RL RSD ≤ 30% for Average R ² ≥ 0.990 for Linear R ² ≥ 0.990 for Quadratic NOTE: "Force through Zero" must be used and weighted if needed	✓			✓
5. If quadratic fit used the curve does not "bend over".			✓	
6. Feed calibration points into the calculated curve. Are points ≤ MRL within ±50% of true value? Are points > MRL within ±30% of true value?	✓			✓
7. Any carryover from the high calibration point must be ≤ 1/3 RL	✓			✓
8. Asymmetry check meets criteria for the first two eluting peaks? (0.8 - 1.5).	✓			✓
9. Is the asymmetry check scanned and linked in TALS to the calibration point?	✓			✓
10. Is ICV (2 nd source) ± 30% of true value?	✓			✓
11. Is ICV (2 nd source) internal standards ±50% of average area of the ICAL?	✓			✓
12. ICAL locked in Chrom and uploaded to TALS?	✓			
13. ICAL locked in TALS and scanned?				✓

1st Level Reviewer / Date: JRB 4-11-18

2nd Level Reviewer / Date: CBW 4-11-18

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 12APR2018_537B

Worklist Number: 56657

Instrument Name: A8_N

Chrom Method: 537_A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b

QC Batching: Enabled

Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 217814
# 1 CCV L5	# 1 CCV L5
# 2 RB	# 2 RB
# 3 MB 320-216791/1-A	# 3 MB 320-216791/1-A
# 4 LCS 320-216791/2-A	# 4 LCS 320-216791/2-A
# 5 LCSD 320-216791/3-A	# 5 LCSD 320-216791/3-A
# 6 320-37675-A-1-A	# 6 320-37675-A-1-A
# 7 320-37675-A-2-A	# 7 320-37675-A-2-A
# 8 320-37675-A-3-A	# 8 320-37675-A-3-A
# 9 320-37675-A-4-A	# 9 320-37675-A-4-A
#10 320-37675-A-5-A	#10 320-37675-A-5-A
#11 320-37675-A-6-A	#11 320-37675-A-6-A
#12 320-37675-A-7-A	#12 320-37675-A-7-A
#13 CCV L3	#13 CCV L3

QC Batch: 2	LC 537 ICAL Raw Batch: 217816
#13 CCV L3	#13 CCV L3
#14 RB	#14 RB
#15 320-37675-A-8-A	#15 320-37675-A-8-A
#16 320-37675-A-9-A	#16 320-37675-A-9-A
#17 320-37675-A-10-A	#17 320-37675-A-10-A
#18 320-37675-A-11-A	#18 320-37675-A-11-A
#19 CCV L5	#19 CCV L5

QC Batch: 3	LC 537 ICAL Raw Batch: 217818
#19 CCV L5	#19 CCV L5
#20 RB	#20 RB
#21 MB 320-216792/1-A	#21 MB 320-216792/1-A
#22 LLCS 320-216792/2-A	#22 LLCS 320-216792/2-A
#23 320-37675-A-12-A	#23 320-37675-A-12-A
#24 320-37675-A-13-A	#24 320-37675-A-13-A
#25 CCV L5	#25 CCV L5

QC Batch: 4	LC 537 ICAL Raw Batch: 217820
#25 CCV L5	#25 CCV L5
#26 RB	#26 RB
#27 320-37675-A-14-A	#27 320-37675-A-14-A
#28 320-37675-A-14-D LMS	#28 320-37675-A-14-D LMS
#29 320-37675-A-14-E LMSD	#29 320-37675-A-14-E LMSD
#30 320-37675-A-15-A	#30 320-37675-A-15-A
#31 320-37675-A-16-A	#31 320-37675-A-16-A
#32 320-37675-A-17-A	#32 320-37675-A-17-A
#33 320-37675-A-18-A	#33 320-37675-A-18-A
#34 320-37675-A-19-A	#34 320-37675-A-19-A
#35 320-37675-A-20-A	#35 320-37675-A-20-A
#36 320-37675-A-21-A	#36 320-37675-A-21-A
#37 CCV L3	#37 CCV L3
#38 RB	#38 RB

CCV L in AB 217726

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 12APR2018_537B

Worklist Num: 56657

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180413-56657.b

Analysis Type: SemiVOA

Creator: Hannigan, Alyssa B

Inj Volume: 2.00

Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCV L5	320-0056657-001	CCVIS	13-Apr-2018 00:27:43	2018.04.12_537AA_029.d	5	1.0		sv
RB	320-0056657-002	RB	13-Apr-2018 00:32:24	2018.04.12_537AA_030.d	8	1.0		sv
MB 320-216791/1-A	320-0056657-003	MB	13-Apr-2018 00:37:03	2018.04.12_537AA_031.d	21	1.0		sv
LCS 320-216791/2-A	320-0056657-004	LCS	13-Apr-2018 00:41:45	2018.04.12_537AA_032.d	22	1.0		sv
LCSD 320-216791/3-A	320-0056657-005	LCSD	13-Apr-2018 00:46:25	2018.04.12_537AA_033.d	23	1.0		sv
320-37675-A-1-A	320-0056657-006	Client	13-Apr-2018 00:51:05	2018.04.12_537AA_034.d	24	1.0	WGNA-032918-DUP-31	sv
320-37675-A-2-A	320-0056657-007	Client	13-Apr-2018 00:55:45	2018.04.12_537AA_035.d	25	1.0	NAWC-032819-RW-286	sv
320-37675-A-3-A	320-0056657-008	Client	13-Apr-2018 01:00:24	2018.04.12_537AA_036.d	26	1.0	NAWC-032819-FRB-286	sv
320-37675-A-4-A	320-0056657-009	Client	13-Apr-2018 01:05:04	2018.04.12_537AA_037.d	27	1.0	WGNA-032819-RW-0518	sv
320-37675-A-5-A	320-0056657-010	Client	13-Apr-2018 01:09:44	2018.04.12_537AA_038.d	28	1.0	WGNA-032819-FRB-0518	sv
320-37675-A-6-A	320-0056657-011	Client	13-Apr-2018 01:14:26	2018.04.12_537AA_039.d	29	1.0	NAWC-032819-RW-010	sv
320-37675-A-7-A	320-0056657-012	Client	13-Apr-2018 01:19:06	2018.04.12_537AA_040.d	30	1.0	NAWC-032819-FRB-010	sv
CCV L3	320-0056657-013	CCVIS	13-Apr-2018 01:23:46	2018.04.12_537AA_041.d	3	1.0		sv
RB	320-0056657-014	RB	13-Apr-2018 01:28:27	2018.04.12_537AA_042.d	8	1.0		sv
320-37675-A-8-A	320-0056657-015	Client	13-Apr-2018 01:33:06	2018.04.12_537AA_043.d	31	1.0	NAWC-032819-RW-127	sv
320-37675-A-9-A	320-0056657-016	Client	13-Apr-2018 01:37:46	2018.04.12_537AA_044.d	32	1.0	NAWC-032819-FRB-127	sv
320-37675-A-10-A	320-0056657-017	Client	13-Apr-2018 01:42:27	2018.04.12_537AA_045.d	33	1.0	NAWC-032819-RW-195	sv
320-37675-A-11-A	320-0056657-018	Client	13-Apr-2018 01:47:07	2018.04.12_537AA_046.d	34	1.0	NAWC-032819-FRB-195	sv
CCV L5	320-0056657-019	CCVIS	13-Apr-2018 01:51:47	2018.04.12_537AA_047.d	5	1.0		sv
RB	320-0056657-020	RB	13-Apr-2018 01:56:27	2018.04.12_537AA_048.d	8	1.0		sv
MB 320-216792/1-A	320-0056657-021	MB	13-Apr-2018 02:01:08	2018.04.12_537AA_049.d	35	1.0		sv
LLCS 320-216792/2-A	320-0056657-022	LLCS	13-Apr-2018 02:05:48	2018.04.12_537AA_050.d	36	1.0		sv
320-37675-A-12-A	320-0056657-023	Client	13-Apr-2018 02:10:28	2018.04.12_537AA_051.d	37	1.0	NAWC-032819-RW-048	sv
320-37675-A-13-A	320-0056657-024	Client	13-Apr-2018 02:15:10	2018.04.12_537AA_052.d	38	1.0	NAWC-032819-FRB-048	sv
CCV L5	320-0056657-025	CCVIS	13-Apr-2018 02:19:51	2018.04.12_537AA_053.d	5	1.0		sv

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
RB	320-0056657-026	RB	13-Apr-2018 02:24:32	2018.04.12_537AA_054.d	8	1.0		sv
320-37675-A-14-A	320-0056657-027	Client	13-Apr-2018 02:29:11	2018.04.12_537AA_055.d	39	1.0	NAWC-032819-RW-139	sv
320-37675-A-14-D LMS	320-0056657-028	LMS	13-Apr-2018 02:33:50	2018.04.12_537AA_056.d	40	1.0		sv
320-37675-A-14-E LMSD	320-0056657-029	LMSD	13-Apr-2018 02:38:31	2018.04.12_537AA_057.d	41	1.0		sv
320-37675-A-15-A	320-0056657-030	Client	13-Apr-2018 02:43:10	2018.04.12_537AA_058.d	42	1.0	NAWC-032819-FRB-139	sv
320-37675-A-16-A	320-0056657-031	Client	13-Apr-2018 02:47:51	2018.04.12_537AA_059.d	43	1.0	NAWC-032819-RW-117	sv
320-37675-A-17-A	320-0056657-032	Client	13-Apr-2018 02:52:31	2018.04.12_537AA_060.d	44	1.0	NAWC-032819-FRB-117	sv
320-37675-A-18-A	320-0056657-033	Client	13-Apr-2018 02:57:11	2018.04.12_537AA_061.d	45	1.0	NAWC-032819-RW-181	sv
320-37675-A-19-A	320-0056657-034	Client	13-Apr-2018 03:01:50	2018.04.12_537AA_062.d	46	1.0	NAWC-032819-FRB-181	sv
320-37675-A-20-A	320-0056657-035	Client	13-Apr-2018 03:06:31	2018.04.12_537AA_063.d	47	1.0	NAWC-032819-RW-138	sv
320-37675-A-21-A	320-0056657-036	Client	13-Apr-2018 03:11:13	2018.04.12_537AA_064.d	48	1.0	NAWC-032819-FRB-138	sv
CCV L3	320-0056657-037	CCVIS	13-Apr-2018 03:15:54	2018.04.12_537AA_065.d	3	1.0		sv
RB	320-0056657-038	RB	13-Apr-2018 03:20:33	2018.04.12_537AA_066.d	8	1.0		sv

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 12APR2018_537A

Worklist Num: 56633

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180412-56633.b

Analysis Type: SemiVOA

Creator: Royce, Amani A

Inj Volume: 2.00

Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCVL	320-0056633-001	CCVL	12-Apr-2018 14:48:43	2018.04.12_537A_004.d	2	1.0		sv
CCV L5	320-0056633-002	CCVIS	12-Apr-2018 14:53:23	2018.04.12_537A_005.d	5	1.0		sv
RB	320-0056633-003	RB	12-Apr-2018 14:58:03	2018.04.12_537A_006.d	8	1.0		sv
MB 320-216980/1-A	320-0056633-004	MB	12-Apr-2018 15:02:44	2018.04.12_537A_007.d	1	1.0		sv
LCS 320-216980/2-A	320-0056633-005	LCS	12-Apr-2018 15:07:24	2018.04.12_537A_008.d	2	1.0		sv
320-37934-A-1-A	320-0056633-006	Client	12-Apr-2018 15:12:04	2018.04.12_537A_009.d	3	1.0	DUP-046	sv
320-37934-A-2-A	320-0056633-007	Client	12-Apr-2018 15:16:45	2018.04.12_537A_010.d	4	1.0	WS-054	sv
320-37934-A-3-A	320-0056633-008	Client	12-Apr-2018 15:21:26	2018.04.12_537A_011.d	5	1.0	WS-115	sv
320-37934-A-4-A	320-0056633-009	Client	12-Apr-2018 15:26:06	2018.04.12_537A_012.d	6	1.0	WS-011	sv
320-37934-A-5-A	320-0056633-010	Client	12-Apr-2018 15:30:47	2018.04.12_537A_013.d	7	1.0	WS-015	sv
320-37934-A-5-B MS	320-0056633-011	MS	12-Apr-2018 15:35:28	2018.04.12_537A_014.d	8	1.0	WS-015	sv
320-37934-A-5-C MSD	320-0056633-012	MSD	12-Apr-2018 15:40:08	2018.04.12_537A_015.d	9	1.0	WS-015	sv
320-37934-A-6-A	320-0056633-013	Client	12-Apr-2018 15:44:48	2018.04.12_537A_016.d	10	1.0	WS-032	sv
CCV L3	320-0056633-014	CCVIS	12-Apr-2018 15:49:29	2018.04.12_537A_017.d	3	1.0		sv
RB	320-0056633-015	RB	12-Apr-2018 15:54:09	2018.04.12_537A_018.d	8	1.0		sv
320-37934-A-7-A	320-0056633-016	Client	12-Apr-2018 15:58:48	2018.04.12_537A_019.d	11	1.0	WS-057	sv
320-37934-A-8-A	320-0056633-017	Client	12-Apr-2018 16:03:29	2018.04.12_537A_020.d	12	1.0	FIELD BLANK-04-04-2018	sv
320-37934-A-9-A	320-0056633-018	Client	12-Apr-2018 16:08:10	2018.04.12_537A_021.d	13	1.0	WS-110A	sv
320-37934-A-10-A	320-0056633-019	Client	12-Apr-2018 16:12:51	2018.04.12_537A_022.d	14	1.0	WS-034	sv
320-37934-A-11-A	320-0056633-020	Client	12-Apr-2018 16:17:32	2018.04.12_537A_023.d	15	1.0	WS-108	sv
320-37934-A-12-A	320-0056633-021	Client	12-Apr-2018 16:22:14	2018.04.12_537A_024.d	16	1.0	WS-009	sv
320-37936-A-1-A	320-0056633-022	Client	12-Apr-2018 16:26:56	2018.04.12_537A_025.d	17	1.0	WS-137	sv
320-37937-A-1-A	320-0056633-023	Client	12-Apr-2018 16:31:36	2018.04.12_537A_026.d	18	1.0	POET-6-MID	sv
320-37937-A-2-A	320-0056633-024	Client	12-Apr-2018 16:36:16	2018.04.12_537A_027.d	19	1.0	WS-096	sv
320-37937-A-3-A	320-0056633-025	Client	12-Apr-2018 16:40:57	2018.04.12_537A_028.d	20	1.0	DUP-047	sv

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCV L5	320-0056633-026	CCVIS	12-Apr-2018 16:45:38	2018.04.12_537A_029.d	5	1.0		sv
RB	320-0056633-027	RB	12-Apr-2018 16:50:17	2018.04.12_537A_030.d	8	1.0		sv

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791 ✓
Method Code: 320-537_Prep-320

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Batch End: 4/11/2018 5:25:00PM

Extraction of Perfluorinated Alkyl Acids

4/12/18

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1 Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-216791/1 N/A	N/A		250 mL	7		N/A	N/A	N/A	Chlorine, ND	
			1.00 mL							
2 LCS-320-216791/2 N/A	N/A		250 mL	7		N/A	N/A	N/A	Chlorine, ND	
			1.00 mL							
3 LCSD-320-216791/3 N/A	N/A		250 mL	7		N/A	N/A	N/A	Chlorine, ND	
			1.00 mL							
4 320-37675-A-1 (537_DOD5)	N/A (320-37675-1)	280.59 g	252 mL	7		4/3/18	16_Days	4	Chlorine, ND	
		28.55 g	1.00 mL							
5 320-37675-A-2 (537_DOD5)	N/A (320-37675-1)	281.11 g	253.3 mL	7		4/3/18	16_Days	4	Chlorine, ND	
		27.82 g	1.00 mL							
6 320-37675-A-3 (537_DOD5)	N/A (320-37675-1)	274.84 g	246.7 mL	7		4/3/18	16_Days	4	Chlorine, ND	
		28.16 g	1.00 mL							
7 320-37675-A-4 (537_DOD5)	N/A (320-37675-1)	282.88 g	252.4 mL	7		4/3/18	16_Days	4	Chlorine, ND	
		30.48 g	1.00 mL							
8 320-37675-A-5 (537_DOD5)	N/A (320-37675-1)	281.85 g	253.5 mL	7		4/3/18	16_Days	4	Chlorine, ND	
		28.39 g	1.00 mL							
9 320-37675-A-6 (537_DOD5)	N/A (320-37675-1)	277.26 g	248.5 mL	7		4/3/18	16_Days	4	Chlorine, ND	
		28.73 g	1.00 mL							
10 320-37675-A-7 (537_DOD5)	N/A (320-37675-1)	283.60 g	255.5 mL	7		4/3/18	16_Days	4	Chlorine, ND	
		28.07 g	1.00 mL							

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Method Code: 320-537_Prep-320

Batch End: 4/11/2018 5:25:00PM

11	320-37675-A-8 (537_DOD5)	N/A (320-37675-1)	285.35 g	254.8 mL	7		4/3/18	16_Days	4	Chlorine, ND	
			30.57 g	1.00 mL							
12	320-37675-A-9 (537_DOD5)	N/A (320-37675-1)	278.07 g	249.3 mL	7		4/3/18	16_Days	4	Chlorine, ND	
			28.78 g	1.00 mL							
13	320-37675-A-10 (537_DOD5)	N/A (320-37675-1)	279.50 g	251.1 mL	7		4/3/18	16_Days	4	Chlorine, ND	
			28.42 g	1.00 mL							
14	320-37675-A-11 (537_DOD5)	N/A (320-37675-1)	283.84 g	255.8 mL	7		4/3/18	16_Days	4	Chlorine, ND	
			28.05 g	1.00 mL							

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Method Code: 320-537_Prep-320

Batch End: 4/11/2018 5:25:00PM

Batch Notes

Manifold ID 3, 4

pH Indicator ID 3817

Trizma ID SLBR5241V

SPE Cartridge Lot ID 6369499-12

Methanol ID 1204219

Reagent Water ID 04/05/18

Internal Standard ID# 1208799

Pipette ID O43082F

Analyst ID - TA Reagent Drop SKD

Analyst ID - TA Reagent Drop HJA

Witness

Analyst ID - SU Reagent Drop SKD

Analyst ID - SU Reagent Drop HJA

Witness

Analyst ID - IS Reagent Drop VPM

Analyst ID - IS Reagent Drop JER

Witness

Analyst ID - Concentration KMK/SKD

Analyst ID - Aliquot Step VPM

Analyst ID - Final Volume Step VPM

Batch Comment Client labels match TA label, 04/07/18 SKD

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Method Code: 320-537_Prep-320

Batch End:

Batch Notes

Manifold ID 3, 4

pH Indicator ID 3817

Trizma ID SLBR5241V

SPE Cartridge Lot ID 6369499-12

Methanol ID 1204219

Reagent Water ID 04/05/18

Internal Standard ID# 1208799

Pipette ID O43082F

Analyst ID - TA Reagent Drop SKD

Analyst ID - TA Reagent Drop HJA

Witness

Analyst ID - SU Reagent Drop SKD

Analyst ID - SU Reagent Drop HAJ

Witness

Analyst ID - IS Reagent Drop VPM

Analyst ID - IS Reagent Drop JER

Witness

Analyst ID - Concentration KMK/SKD

Analyst ID - Aliquot Step VPM

Analyst ID - Final Volume Step VPM

Batch Comment Client labels match TA label, 04/07/18 SKD

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-216791

Analyst: Kouchari, Shamiran

Batch Open: 4/7/2018 8:11:00AM

Method Code: 320-537_Prep-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-216791/1	LC537-SU_00064	100 uL	1.00 mL	SKD 4/7/18	HSD 4-7-18
LCS 320-216791/2	LC537-MSP_00033	100 uL	1.00 mL		
LCS 320-216791/2	LC537-SU_00064	100 uL	1.00 mL		
LCSD 320-216791/3	LC537-MSP_00033	100 uL	1.00 mL		
LCSD 320-216791/3	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-1	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-2	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-3	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-4	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-5	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-6	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-7	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-8	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-9	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-10	LC537-SU_00064	100 uL	1.00 mL		
320-37675-A-11	LC537-SU_00064	100 uL	1.00 mL		

Page 454 of 459

C:\AI\ Projects\112008005\WECA\F5.DR.03\WGNA_201901.mxd MKB 2/14/2019

