Navy_CLEAN_PFAS_FOIA_request_covers.indd

Naval Facilities Engineering Command

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 320-33939-1

Naval Air Station Willow Grove
Willow Grove, Pennsylvania

August 2019

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

N00158_000730
WILLOW_GROVE_NAS
SSIC 5000-33c

LABORATORY DATA PACKAGE, 320-33939-1, NAWC WARMINSTER NAS WILLOW GROVE PA

12/19/2017

TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-33939-1

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
12/19/2017 8:42 AM

David R Alltucker, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4383
david.alltucker@testamericainc.com
12/19/2017

Table of Contents

Cover Title Page 1

Data Summaries 4

Definitions 4

Case Narrative 5

Detection Summary 6

Client Sample Results 8

Default Detection Limits 13

Surrogate Summary 14

QC Sample Results 15

QC Association 16

Chronicle 17

Certification Summary 20

Method Summary 21

Sample Summary 22

Manual Integration Summary 23

Reagent Traceability 29

COAs 39

Organic Sample Data 93

LCMS 93

Method 537 DOD 93

Method 537 DOD QC Summary 94

Method 537 DOD Sample Data 103

Standards Data 199

Method 537 DOD ICAL Data 199

Method 537 DOD CCAL Data 238

Raw QC Data 283

Table of Contents

Method 537 DOD Blank Data 283

Method 537 DOD LCS/LCSD Data 288

Method 537 DOD Run Logs 304

Method 537 DOD Prep Data 308

Shipping and Receiving Documents 331

Client Chain of Custody 332

Sample Receipt Checklist 333

Qualifiers

LCMS

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	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
320-33939-1

Receipt
The samples were received on 12/6/2017 10:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.2º C.

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

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

Organic Prep
Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-199025.

Method(s) 537: The following sample WGNA-120517-RW-0263 (320-33939-13) had a received pH of 6.

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: 320-33939-1

Client Sample ID: WGNA-120517-RW-0617 — Lab Sample ID: 320-33939-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	29	J M	40	6.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	34		20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	15	J	30	5.6	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	11		10	1.9	ng/L	1		537	Total/NA
Perfluorobutanesulfonic acid (PFBS)	59	J	91	16	ng/L	1		537	Total/NA

Client Sample ID: WGNA-120517-FRB-0617 — Lab Sample ID: 320-33939-2

No Detections.

Client Sample ID: WGNA-120517-RW-4820 — Lab Sample ID: 320-33939-3

No Detections.

Client Sample ID: WGNA-120517-FRB-4820 — Lab Sample ID: 320-33939-4

No Detections.

Client Sample ID: NAWC-120517-RW-285 — Lab Sample ID: 320-33939-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	19	J M	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	11	J	20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	13	J	30	5.5	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.2	J	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-120517-FRB-285 — Lab Sample ID: 320-33939-6

No Detections.

Client Sample ID: NAWC-120517-RW-135 — Lab Sample ID: 320-33939-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	14	J M	41	6.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	11	J	20	2.8	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.5	J	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-120517-FRB-135 — Lab Sample ID: 320-33939-8

No Detections.

Client Sample ID: NAWC-120517-RW-356 — Lab Sample ID: 320-33939-9

No Detections.

Client Sample ID: NAWC-120517-FRB-356 — Lab Sample ID: 320-33939-10

No Detections.

Client Sample ID: NAWC-120517-RW-357 — Lab Sample ID: 320-33939-11

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 320-33939-1

Client Sample ID: NAWC-120517-RW-357 (Continued) — Lab Sample ID: 320-33939-11

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	11	J M	41	6.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	13	J	20	2.9	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.5	J	31	5.6	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.5	J	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-120517-FRB-357 — Lab Sample ID: 320-33939-12

No Detections.

Client Sample ID: WGNA-120517-RW-0263 — Lab Sample ID: 320-33939-13

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	21	J M	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	28		20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	11	J	30	5.5	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.2	J	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: WGNA-120517-FRB-0263 — Lab Sample ID: 320-33939-14

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

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

TestAmerica Job ID: 320-33939-1

Client Sample ID: WGNA-120517-RW-0617

Lab Sample ID: 320-33939-1
Date Collected: 12/05/17 08:10
Matrix: Water
Date Received: 12/06/17 10:45

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	29	J M	40	6.9	ng/L		12/08/17 11:56	12/12/17 09:56	1
Perfluorooctanoic acid (PFOA)	34		20	2.8	ng/L		12/08/17 11:56	12/12/17 09:56	1
Perfluorononanoic acid (PFNA)	20	U	24	8.1	ng/L		12/08/17 11:56	12/12/17 09:56	1
Perfluorohexanesulfonic acid (PFHxS)	15	J	30	5.6	ng/L		12/08/17 11:56	12/12/17 09:56	1
Perfluoroheptanoic acid (PFHpA)	11		10	1.9	ng/L		12/08/17 11:56	12/12/17 09:56	1
Perfluorobutanesulfonic acid (PFBS)	59	J	91	16	ng/L		12/08/17 11:56	12/12/17 09:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*96*		*70 - 130*	*12/08/17 11:56*	*12/12/17 09:56*	*1*
13C2 PFDA	*107*		*70 - 130*	*12/08/17 11:56*	*12/12/17 09:56*	*1*

Client Sample ID: WGNA-120517-FRB-0617

Lab Sample ID: 320-33939-2
Date Collected: 12/05/17 08:05
Matrix: Water
Date Received: 12/06/17 10:45

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		12/08/17 11:56	12/12/17 10:00	1
Perfluorooctanoic acid (PFOA)	8.1	U	20	2.8	ng/L		12/08/17 11:56	12/12/17 10:00	1
Perfluorononanoic acid (PFNA)	20	U	24	8.1	ng/L		12/08/17 11:56	12/12/17 10:00	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.6	ng/L		12/08/17 11:56	12/12/17 10:00	1
Perfluoroheptanoic acid (PFHpA)	4.1	U	10	1.9	ng/L		12/08/17 11:56	12/12/17 10:00	1
Perfluorobutanesulfonic acid (PFBS)	37	U	91	16	ng/L		12/08/17 11:56	12/12/17 10:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*104*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:00*	*1*
13C2 PFDA	*97*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:00*	*1*

Client Sample ID: WGNA-120517-RW-4820

Lab Sample ID: 320-33939-3
Date Collected: 12/05/17 08:40
Matrix: Water
Date Received: 12/06/17 10:45

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	41	7.0	ng/L		12/08/17 11:56	12/12/17 10:05	1
Perfluorooctanoic acid (PFOA)	8.2	U	21	2.9	ng/L		12/08/17 11:56	12/12/17 10:05	1
Perfluorononanoic acid (PFNA)	21	U	25	8.2	ng/L		12/08/17 11:56	12/12/17 10:05	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	31	5.7	ng/L		12/08/17 11:56	12/12/17 10:05	1
Perfluoroheptanoic acid (PFHpA)	4.1	U	10	2.0	ng/L		12/08/17 11:56	12/12/17 10:05	1
Perfluorobutanesulfonic acid (PFBS)	37	U	93	17	ng/L		12/08/17 11:56	12/12/17 10:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*103*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:05*	*1*
13C2 PFDA	*102*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:05*	*1*

Client Sample Results

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

TestAmerica Job ID: 320-33939-1

Client Sample ID: WGNA-120517-FRB-4820

Lab Sample ID: 320-33939-4
Date Collected: 12/05/17 08:35
Matrix: Water
Date Received: 12/06/17 10:45

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		12/08/17 11:56	12/12/17 10:10	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		12/08/17 11:56	12/12/17 10:10	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		12/08/17 11:56	12/12/17 10:10	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		12/08/17 11:56	12/12/17 10:10	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		12/08/17 11:56	12/12/17 10:10	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		12/08/17 11:56	12/12/17 10:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*109*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:10*	*1*
13C2 PFDA	*107*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:10*	*1*

Client Sample ID: NAWC-120517-RW-285

Lab Sample ID: 320-33939-5
Date Collected: 12/05/17 09:10
Matrix: Water
Date Received: 12/06/17 10:45

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**19**	**J M**	40	6.8	ng/L		12/08/17 11:56	12/12/17 10:14	1
Perfluorooctanoic acid (PFOA)	**11**	**J**	20	2.8	ng/L		12/08/17 11:56	12/12/17 10:14	1
Perfluorononanoic acid (PFNA)	20	U M	24	8.0	ng/L		12/08/17 11:56	12/12/17 10:14	1
Perfluorohexanesulfonic acid (PFHxS)	**13**	**J**	30	5.5	ng/L		12/08/17 11:56	12/12/17 10:14	1
Perfluoroheptanoic acid (PFHpA)	**4.2**	**J**	10	1.9	ng/L		12/08/17 11:56	12/12/17 10:14	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		12/08/17 11:56	12/12/17 10:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*98*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:14*	*1*
13C2 PFDA	*101*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:14*	*1*

Client Sample ID: NAWC-120517-FRB-285

Lab Sample ID: 320-33939-6
Date Collected: 12/05/17 09:05
Matrix: Water
Date Received: 12/06/17 10:45

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		12/08/17 11:56	12/12/17 10:19	1
Perfluorooctanoic acid (PFOA)	8.1	U	20	2.8	ng/L		12/08/17 11:56	12/12/17 10:19	1
Perfluorononanoic acid (PFNA)	20	U	24	8.1	ng/L		12/08/17 11:56	12/12/17 10:19	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.6	ng/L		12/08/17 11:56	12/12/17 10:19	1
Perfluoroheptanoic acid (PFHpA)	4.1	U	10	1.9	ng/L		12/08/17 11:56	12/12/17 10:19	1
Perfluorobutanesulfonic acid (PFBS)	37	U	91	16	ng/L		12/08/17 11:56	12/12/17 10:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*103*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:19*	*1*
13C2 PFDA	*110*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:19*	*1*

Client Sample Results

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

TestAmerica Job ID: 320-33939-1

Client Sample ID: NAWC-120517-RW-135

Lab Sample ID: 320-33939-7
Date Collected: 12/05/17 10:40
Matrix: Water
Date Received: 12/06/17 10:45

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**14**	**J M**	41	6.9	ng/L		12/08/17 11:56	12/12/17 10:24	1
Perfluorooctanoic acid (PFOA)	**11**	**J**	20	2.8	ng/L		12/08/17 11:56	12/12/17 10:24	1
Perfluorononanoic acid (PFNA)	20	U M	24	8.1	ng/L		12/08/17 11:56	12/12/17 10:24	1
Perfluorohexanesulfonic acid (PFHxS)	12	U M	30	5.6	ng/L		12/08/17 11:56	12/12/17 10:24	1
Perfluoroheptanoic acid (PFHpA)	**3.5**	**J**	10	1.9	ng/L		12/08/17 11:56	12/12/17 10:24	1
Perfluorobutanesulfonic acid (PFBS)	37	U	91	16	ng/L		12/08/17 11:56	12/12/17 10:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*103*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:24*	*1*
13C2 PFDA	*99*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:24*	*1*

Client Sample ID: NAWC-120517-FRB-135

Lab Sample ID: 320-33939-8
Date Collected: 12/05/17 10:35
Matrix: Water
Date Received: 12/06/17 10:45

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		12/08/17 11:56	12/12/17 10:38	1
Perfluorooctanoic acid (PFOA)	7.9	U	20	2.8	ng/L		12/08/17 11:56	12/12/17 10:38	1
Perfluorononanoic acid (PFNA)	20	U	24	7.9	ng/L		12/08/17 11:56	12/12/17 10:38	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		12/08/17 11:56	12/12/17 10:38	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	9.9	1.9	ng/L		12/08/17 11:56	12/12/17 10:38	1
Perfluorobutanesulfonic acid (PFBS)	36	U	89	16	ng/L		12/08/17 11:56	12/12/17 10:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*107*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:38*	*1*
13C2 PFDA	*100*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:38*	*1*

Client Sample ID: NAWC-120517-RW-356

Lab Sample ID: 320-33939-9
Date Collected: 12/05/17 11:10
Matrix: Water
Date Received: 12/06/17 10:45

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	6.9	ng/L		12/08/17 11:56	12/12/17 10:42	1
Perfluorooctanoic acid (PFOA)	8.1	U	20	2.8	ng/L		12/08/17 11:56	12/12/17 10:42	1
Perfluorononanoic acid (PFNA)	20	U	24	8.1	ng/L		12/08/17 11:56	12/12/17 10:42	1
Perfluorohexanesulfonic acid (PFHxS)	12	U M	30	5.6	ng/L		12/08/17 11:56	12/12/17 10:42	1
Perfluoroheptanoic acid (PFHpA)	4.0	U M	10	1.9	ng/L		12/08/17 11:56	12/12/17 10:42	1
Perfluorobutanesulfonic acid (PFBS)	36	U M	91	16	ng/L		12/08/17 11:56	12/12/17 10:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:42*	*1*
13C2 PFDA	*101*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:42*	*1*

Client Sample Results

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

TestAmerica Job ID: 320-33939-1

Client Sample ID: NAWC-120517-FRB-356

Lab Sample ID: 320-33939-10
Date Collected: 12/05/17 11:05
Matrix: Water
Date Received: 12/06/17 10:45

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		12/08/17 11:56	12/12/17 10:47	1
Perfluorooctanoic acid (PFOA)	8.1	U	20	2.8	ng/L		12/08/17 11:56	12/12/17 10:47	1
Perfluorononanoic acid (PFNA)	20	U	24	8.1	ng/L		12/08/17 11:56	12/12/17 10:47	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.6	ng/L		12/08/17 11:56	12/12/17 10:47	1
Perfluoroheptanoic acid (PFHpA)	4.1	U	10	1.9	ng/L		12/08/17 11:56	12/12/17 10:47	1
Perfluorobutanesulfonic acid (PFBS)	37	U	91	16	ng/L		12/08/17 11:56	12/12/17 10:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*104*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:47*	*1*
13C2 PFDA	*99*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:47*	*1*

Client Sample ID: NAWC-120517-RW-357

Lab Sample ID: 320-33939-11
Date Collected: 12/05/17 13:10
Matrix: Water
Date Received: 12/06/17 10:45

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**11**	**J M**	41	6.9	ng/L		12/08/17 11:56	12/12/17 10:52	1
Perfluorooctanoic acid (PFOA)	**13**	**J**	20	2.9	ng/L		12/08/17 11:56	12/12/17 10:52	1
Perfluorononanoic acid (PFNA)	20	U M	24	8.2	ng/L		12/08/17 11:56	12/12/17 10:52	1
Perfluorohexanesulfonic acid (PFHxS)	**9.5**	**J**	31	5.6	ng/L		12/08/17 11:56	12/12/17 10:52	1
Perfluoroheptanoic acid (PFHpA)	**4.5**	**J**	10	1.9	ng/L		12/08/17 11:56	12/12/17 10:52	1
Perfluorobutanesulfonic acid (PFBS)	37	U	92	16	ng/L		12/08/17 11:56	12/12/17 10:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*105*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:52*	*1*
13C2 PFDA	*98*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:52*	*1*

Client Sample ID: NAWC-120517-FRB-357

Lab Sample ID: 320-33939-12
Date Collected: 12/05/17 13:05
Matrix: Water
Date Received: 12/06/17 10:45

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		12/08/17 11:56	12/12/17 10:56	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		12/08/17 11:56	12/12/17 10:56	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		12/08/17 11:56	12/12/17 10:56	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		12/08/17 11:56	12/12/17 10:56	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		12/08/17 11:56	12/12/17 10:56	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		12/08/17 11:56	12/12/17 10:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*102*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:56*	*1*
13C2 PFDA	*101*		*70 - 130*	*12/08/17 11:56*	*12/12/17 10:56*	*1*

Client Sample Results

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

TestAmerica Job ID: 320-33939-1

Client Sample ID: WGNA-120517-RW-0263

Lab Sample ID: 320-33939-13
Date Collected: 12/05/17 16:40
Matrix: Water
Date Received: 12/06/17 10:45

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**21**	**J M**	40	6.8	ng/L		12/08/17 11:56	12/12/17 11:01	1
Perfluorooctanoic acid (PFOA)	**28**		20	2.8	ng/L		12/08/17 11:56	12/12/17 11:01	1
Perfluorononanoic acid (PFNA)	20	U M	24	8.0	ng/L		12/08/17 11:56	12/12/17 11:01	1
Perfluorohexanesulfonic acid (PFHxS)	**11**	**J**	30	5.5	ng/L		12/08/17 11:56	12/12/17 11:01	1
Perfluoroheptanoic acid (PFHpA)	**8.2**	**J**	10	1.9	ng/L		12/08/17 11:56	12/12/17 11:01	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		12/08/17 11:56	12/12/17 11:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*108*		*70 - 130*	*12/08/17 11:56*	*12/12/17 11:01*	*1*
13C2 PFDA	*95*		*70 - 130*	*12/08/17 11:56*	*12/12/17 11:01*	*1*

Client Sample ID: WGNA-120517-FRB-0263

Lab Sample ID: 320-33939-14
Date Collected: 12/05/17 16:35
Matrix: Water
Date Received: 12/06/17 10:45

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		12/08/17 11:56	12/12/17 11:06	1
Perfluorooctanoic acid (PFOA)	8.1	U	20	2.8	ng/L		12/08/17 11:56	12/12/17 11:06	1
Perfluorononanoic acid (PFNA)	20	U	24	8.1	ng/L		12/08/17 11:56	12/12/17 11:06	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		12/08/17 11:56	12/12/17 11:06	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		12/08/17 11:56	12/12/17 11:06	1
Perfluorobutanesulfonic acid (PFBS)	36	U	91	16	ng/L		12/08/17 11:56	12/12/17 11:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*70 - 130*	*12/08/17 11:56*	*12/12/17 11:06*	*1*
13C2 PFDA	*117*		*70 - 130*	*12/08/17 11:56*	*12/12/17 11:06*	*1*

Default Detection Limits

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

TestAmerica Job ID: 320-33939-1

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

Prep: 537

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

Surrogate Summary

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

TestAmerica Job ID: 320-33939-1

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

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)									
Lab Sample ID	**Client Sample ID**	**PFHxA (70-130)**	**PFDA (70-130)**								
320-33939-1	WGNA-120517-RW-0617	96	107								
320-33939-2	WGNA-120517-FRB-0617	104	97								
320-33939-3	WGNA-120517-RW-4820	103	102								
320-33939-4	WGNA-120517-FRB-4820	109	107								
320-33939-5	NAWC-120517-RW-285	98	101								
320-33939-6	NAWC-120517-FRB-285	103	110								
320-33939-7	NAWC-120517-RW-135	103	99								
320-33939-8	NAWC-120517-FRB-135	107	100								
320-33939-9	NAWC-120517-RW-356	101	101								
320-33939-10	NAWC-120517-FRB-356	104	99								
320-33939-11	NAWC-120517-RW-357	105	98								
320-33939-12	NAWC-120517-FRB-357	102	101								
320-33939-13	WGNA-120517-RW-0263	108	95								
320-33939-14	WGNA-120517-FRB-0263	101	117								
LCS 320-199025/2-A	Lab Control Sample	104	105								
LCSD 320-199025/3-A	Lab Control Sample Dup	111	109								
MB 320-199025/1-A	Method Blank	99	103								

Surrogate Legend

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

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

Lab Sample ID: MB 320-199025/1-A
Matrix: Water
Analysis Batch: 199464

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 199025

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		12/08/17 11:56	12/12/17 09:42	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		12/08/17 11:56	12/12/17 09:42	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		12/08/17 11:56	12/12/17 09:42	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		12/08/17 11:56	12/12/17 09:42	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		12/08/17 11:56	12/12/17 09:42	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		12/08/17 11:56	12/12/17 09:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*99*		*70 - 130*	*12/08/17 11:56*	*12/12/17 09:42*	*1*
13C2 PFDA	*103*		*70 - 130*	*12/08/17 11:56*	*12/12/17 09:42*	*1*

Lab Sample ID: LCS 320-199025/2-A
Matrix: Water
Analysis Batch: 199464

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 199025

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	222	232	M	ng/L		104	70 - 130
Perfluorooctanoic acid (PFOA)	111	117		ng/L		105	70 - 130
Perfluorononanoic acid (PFNA)	111	109		ng/L		99	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	167	186		ng/L		111	70 - 130
Perfluoroheptanoic acid (PFHpA)	55.6	63.2		ng/L		114	70 - 130
Perfluorobutanesulfonic acid (PFBS)	500	524		ng/L		105	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*104*		*70 - 130*
13C2 PFDA	*105*		*70 - 130*

Lab Sample ID: LCSD 320-199025/3-A
Matrix: Water
Analysis Batch: 199464

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 199025

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	222	231	M	ng/L		104	70 - 130	0	30
Perfluorooctanoic acid (PFOA)	111	120		ng/L		108	70 - 130	3	30
Perfluorononanoic acid (PFNA)	111	114		ng/L		102	70 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	167	183		ng/L		110	70 - 130	2	30
Perfluoroheptanoic acid (PFHpA)	55.6	64.9		ng/L		117	70 - 130	3	30
Perfluorobutanesulfonic acid (PFBS)	500	541		ng/L		108	70 - 130	3	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*111*		*70 - 130*
13C2 PFDA	*109*		*70 - 130*

QC Association Summary

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

TestAmerica Job ID: 320-33939-1

LCMS

Prep Batch: 199025

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-33939-1	WGNA-120517-RW-0617	Total/NA	Water	537	
320-33939-2	WGNA-120517-FRB-0617	Total/NA	Water	537	
320-33939-3	WGNA-120517-RW-4820	Total/NA	Water	537	
320-33939-4	WGNA-120517-FRB-4820	Total/NA	Water	537	
320-33939-5	NAWC-120517-RW-285	Total/NA	Water	537	
320-33939-6	NAWC-120517-FRB-285	Total/NA	Water	537	
320-33939-7	NAWC-120517-RW-135	Total/NA	Water	537	
320-33939-8	NAWC-120517-FRB-135	Total/NA	Water	537	
320-33939-9	NAWC-120517-RW-356	Total/NA	Water	537	
320-33939-10	NAWC-120517-FRB-356	Total/NA	Water	537	
320-33939-11	NAWC-120517-RW-357	Total/NA	Water	537	
320-33939-12	NAWC-120517-FRB-357	Total/NA	Water	537	
320-33939-13	WGNA-120517-RW-0263	Total/NA	Water	537	
320-33939-14	WGNA-120517-FRB-0263	Total/NA	Water	537	
MB 320-199025/1-A	Method Blank	Total/NA	Water	537	
LCS 320-199025/2-A	Lab Control Sample	Total/NA	Water	537	
LCSD 320-199025/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 199464

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-33939-1	WGNA-120517-RW-0617	Total/NA	Water	537	199025
320-33939-2	WGNA-120517-FRB-0617	Total/NA	Water	537	199025
320-33939-3	WGNA-120517-RW-4820	Total/NA	Water	537	199025
320-33939-4	WGNA-120517-FRB-4820	Total/NA	Water	537	199025
320-33939-5	NAWC-120517-RW-285	Total/NA	Water	537	199025
320-33939-6	NAWC-120517-FRB-285	Total/NA	Water	537	199025
320-33939-7	NAWC-120517-RW-135	Total/NA	Water	537	199025
MB 320-199025/1-A	Method Blank	Total/NA	Water	537	199025
LCS 320-199025/2-A	Lab Control Sample	Total/NA	Water	537	199025
LCSD 320-199025/3-A	Lab Control Sample Dup	Total/NA	Water	537	199025

Analysis Batch: 199466

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-33939-8	NAWC-120517-FRB-135	Total/NA	Water	537	199025
320-33939-9	NAWC-120517-RW-356	Total/NA	Water	537	199025
320-33939-10	NAWC-120517-FRB-356	Total/NA	Water	537	199025
320-33939-11	NAWC-120517-RW-357	Total/NA	Water	537	199025
320-33939-12	NAWC-120517-FRB-357	Total/NA	Water	537	199025
320-33939-13	WGNA-120517-RW-0263	Total/NA	Water	537	199025
320-33939-14	WGNA-120517-FRB-0263	Total/NA	Water	537	199025

Lab Chronicle

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

TestAmerica Job ID: 320-33939-1

Client Sample ID: WGNA-120517-RW-0617 — Lab Sample ID: 320-33939-1

Date Collected: 12/05/17 08:10 — **Matrix: Water**
Date Received: 12/06/17 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			199025	12/08/17 11:56	KMK	TAL SAC
Total/NA	Analysis	537		1	199464	12/12/17 09:56	ABH	TAL SAC

Client Sample ID: WGNA-120517-FRB-0617 — Lab Sample ID: 320-33939-2

Date Collected: 12/05/17 08:05 — **Matrix: Water**
Date Received: 12/06/17 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			199025	12/08/17 11:56	KMK	TAL SAC
Total/NA	Analysis	537		1	199464	12/12/17 10:00	ABH	TAL SAC

Client Sample ID: WGNA-120517-RW-4820 — Lab Sample ID: 320-33939-3

Date Collected: 12/05/17 08:40 — **Matrix: Water**
Date Received: 12/06/17 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			199025	12/08/17 11:56	KMK	TAL SAC
Total/NA	Analysis	537		1	199464	12/12/17 10:05	ABH	TAL SAC

Client Sample ID: WGNA-120517-FRB-4820 — Lab Sample ID: 320-33939-4

Date Collected: 12/05/17 08:35 — **Matrix: Water**
Date Received: 12/06/17 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			199025	12/08/17 11:56	KMK	TAL SAC
Total/NA	Analysis	537		1	199464	12/12/17 10:10	ABH	TAL SAC

Client Sample ID: NAWC-120517-RW-285 — Lab Sample ID: 320-33939-5

Date Collected: 12/05/17 09:10 — **Matrix: Water**
Date Received: 12/06/17 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			199025	12/08/17 11:56	KMK	TAL SAC
Total/NA	Analysis	537		1	199464	12/12/17 10:14	ABH	TAL SAC

Client Sample ID: NAWC-120517-FRB-285 — Lab Sample ID: 320-33939-6

Date Collected: 12/05/17 09:05 — **Matrix: Water**
Date Received: 12/06/17 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			199025	12/08/17 11:56	KMK	TAL SAC
Total/NA	Analysis	537		1	199464	12/12/17 10:19	ABH	TAL SAC

Client Sample ID: NAWC-120517-RW-135 Lab Sample ID: 320-33939-7

Date Collected: 12/05/17 10:40 **Matrix: Water**
Date Received: 12/06/17 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			199025	12/08/17 11:56	KMK	TAL SAC
Total/NA	Analysis	537		1	199464	12/12/17 10:24	ABH	TAL SAC

Client Sample ID: NAWC-120517-FRB-135 Lab Sample ID: 320-33939-8

Date Collected: 12/05/17 10:35 **Matrix: Water**
Date Received: 12/06/17 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			199025	12/08/17 11:56	KMK	TAL SAC
Total/NA	Analysis	537		1	199466	12/12/17 10:38	ABH	TAL SAC

Client Sample ID: NAWC-120517-RW-356 Lab Sample ID: 320-33939-9

Date Collected: 12/05/17 11:10 **Matrix: Water**
Date Received: 12/06/17 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			199025	12/08/17 11:56	KMK	TAL SAC
Total/NA	Analysis	537		1	199466	12/12/17 10:42	ABH	TAL SAC

Client Sample ID: NAWC-120517-FRB-356 Lab Sample ID: 320-33939-10

Date Collected: 12/05/17 11:05 **Matrix: Water**
Date Received: 12/06/17 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			199025	12/08/17 11:56	KMK	TAL SAC
Total/NA	Analysis	537		1	199466	12/12/17 10:47	ABH	TAL SAC

Client Sample ID: NAWC-120517-RW-357 Lab Sample ID: 320-33939-11

Date Collected: 12/05/17 13:10 **Matrix: Water**
Date Received: 12/06/17 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			199025	12/08/17 11:56	KMK	TAL SAC
Total/NA	Analysis	537		1	199466	12/12/17 10:52	ABH	TAL SAC

Client Sample ID: NAWC-120517-FRB-357 Lab Sample ID: 320-33939-12

Date Collected: 12/05/17 13:05 **Matrix: Water**
Date Received: 12/06/17 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			199025	12/08/17 11:56	KMK	TAL SAC
Total/NA	Analysis	537		1	199466	12/12/17 10:56	ABH	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 320-33939-1

Client Sample ID: WGNA-120517-RW-0263 — Lab Sample ID: 320-33939-13

Date Collected: 12/05/17 16:40 — **Matrix: Water**
Date Received: 12/06/17 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			199025	12/08/17 11:56	KMK	TAL SAC
Total/NA	Analysis	537		1	199466	12/12/17 11:01	ABH	TAL SAC

Client Sample ID: WGNA-120517-FRB-0263 — Lab Sample ID: 320-33939-14

Date Collected: 12/05/17 16:35 — **Matrix: Water**
Date Received: 12/06/17 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			199025	12/08/17 11:56	KMK	TAL SAC
Total/NA	Analysis	537		1	199466	12/12/17 11:06	ABH	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: 320-33939-1
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	UST-055	12-18-17 *
Arizona	State Program	9	AZ0708	08-11-18
Arkansas DEQ	State Program	6	88-0691	06-17-18
California	State Program	9	2897	01-31-18
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	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	12-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-18
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-18
New Hampshire	NELAP	1	2997	04-18-18
New Jersey	NELAP	2	CA005	06-30-18
New York	NELAP	2	11666	04-01-18
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-18
Texas	NELAP	6	T104704399	05-31-18
US Fish & Wildlife	Federal		LE148388-0	07-31-18
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-18
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-28-19

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

Method Summary

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

TestAmerica Job ID: 320-33939-1

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

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

TestAmerica Job ID: 320-33939-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-33939-1	WGNA-120517-RW-0617	Water	12/05/17 08:10	12/06/17 10:45
320-33939-2	WGNA-120517-FRB-0617	Water	12/05/17 08:05	12/06/17 10:45
320-33939-3	WGNA-120517-RW-4820	Water	12/05/17 08:40	12/06/17 10:45
320-33939-4	WGNA-120517-FRB-4820	Water	12/05/17 08:35	12/06/17 10:45
320-33939-5	NAWC-120517-RW-285	Water	12/05/17 09:10	12/06/17 10:45
320-33939-6	NAWC-120517-FRB-285	Water	12/05/17 09:05	12/06/17 10:45
320-33939-7	NAWC-120517-RW-135	Water	12/05/17 10:40	12/06/17 10:45
320-33939-8	NAWC-120517-FRB-135	Water	12/05/17 10:35	12/06/17 10:45
320-33939-9	NAWC-120517-RW-356	Water	12/05/17 11:10	12/06/17 10:45
320-33939-10	NAWC-120517-FRB-356	Water	12/05/17 11:05	12/06/17 10:45
320-33939-11	NAWC-120517-RW-357	Water	12/05/17 13:10	12/06/17 10:45
320-33939-12	NAWC-120517-FRB-357	Water	12/05/17 13:05	12/06/17 10:45
320-33939-13	WGNA-120517-RW-0263	Water	12/05/17 16:40	12/06/17 10:45
320-33939-14	WGNA-120517-FRB-0263	Water	12/05/17 16:35	12/06/17 10:45

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 192908

Lab Sample ID: IC 320-192908/4 Client Sample ID:

Date Analyzed: 11/03/17 13:37 Lab File ID: 2017.11.03_537XICAL_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.16	Assign Peak	phomsopha t	11/06/17 07:17

Lab Sample ID: IC 320-192908/5 Client Sample ID:

Date Analyzed: 11/03/17 13:42 Lab File ID: 2017.11.03_537XICAL_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.16	Assign Peak	phomsopha t	11/06/17 07:18

Lab Sample ID: IC 320-192908/7 ICISAV Client Sample ID:

Date Analyzed: 11/03/17 13:52 Lab File ID: 2017.11.03_537XICAL_007.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.16	Assign Peak	phomsopha t	11/06/17 07:20

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 199462

Lab Sample ID: CCVL 320-199462/1 Client Sample ID:

Date Analyzed: 12/12/17 08:41 Lab File ID: 2017.12.12_537A_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Assign Peak	hannigana	12/12/17 11:51

537

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 199464

Lab Sample ID: CCV 320-199464/12 CCVIS Client Sample ID:

Date Analyzed: 12/12/17 09:32 Lab File ID: 2017.12.12_537A_015.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.09	Assign Peak	hannigana	12/12/17 12:08

Lab Sample ID: LCS 320-199025/2-A Client Sample ID:

Date Analyzed: 12/12/17 09:46 Lab File ID: 2017.12.12_537A_018.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.09	Assign Peak	hannigana	12/12/17 12:09

Lab Sample ID: LCSD 320-199025/3-A Client Sample ID:

Date Analyzed: 12/12/17 09:51 Lab File ID: 2017.12.12_537A_019.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.09	Assign Peak	hannigana	12/12/17 12:09

Lab Sample ID: 320-33939-1 Client Sample ID: WGNA-120517-RW-0617

Date Analyzed: 12/12/17 09:56 Lab File ID: 2017.12.12_537A_020.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.09	Assign Peak	hannigana	12/12/17 12:10

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 199464

Lab Sample ID: 320-33939-5 Client Sample ID: NAWC-120517-RW-285

Date Analyzed: 12/12/17 10:14 Lab File ID: 2017.12.12_537A_024.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorononanoic acid (PFNA)	2.09	Assign Peak	hannigana	12/12/17 14:38
Perfluorooctanesulfonic acid (PFOS)	2.09	Assign Peak	hannigana	12/12/17 12:14

Lab Sample ID: 320-33939-7 Client Sample ID: NAWC-120517-RW-135

Date Analyzed: 12/12/17 10:24 Lab File ID: 2017.12.12_537A_026.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	1.63	Assign Peak	hannigana	12/12/17 12:15
Perfluorooctanesulfonic acid (PFOS)	2.08	Assign Peak	hannigana	12/12/17 12:15
Perfluorononanoic acid (PFNA)	2.09	Assign Peak	hannigana	12/12/17 14:41

Lab Sample ID: CCV 320-199464/24 CCVIS Client Sample ID:

Date Analyzed: 12/12/17 10:28 Lab File ID: 2017.12.12_537A_027.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.08	Assign Peak	hannigana	12/12/17 12:16

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 199466

Lab Sample ID: CCV 320-199466/24 CCVIS Client Sample ID:

Date Analyzed: 12/12/17 10:28 Lab File ID: 2017.12.12_537A_027.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.08	Assign Peak	hannigana	12/12/17 12:16

Lab Sample ID: 320-33939-9 Client Sample ID: NAWC-120517-RW-356

Date Analyzed: 12/12/17 10:42 Lab File ID: 2017.12.12_537A_030.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.36	Assign Peak	hannigana	12/12/17 12:18
Perfluoroheptanoic acid (PFHpA)	1.62	Assign Peak	hannigana	12/12/17 14:43
Perfluorohexanesulfonic acid (PFHxS)	1.62	Assign Peak	hannigana	12/12/17 14:43
Perfluorooctanesulfonic acid (PFOS)	1.97	Assign Peak	hannigana	12/12/17 12:18

Lab Sample ID: 320-33939-11 Client Sample ID: NAWC-120517-RW-357

Date Analyzed: 12/12/17 10:52 Lab File ID: 2017.12.12_537A_032.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.07	Assign Peak	hannigana	12/12/17 13:33
Perfluorononanoic acid (PFNA)	2.08	Assign Peak	hannigana	12/12/17 13:34

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 199466

Lab Sample ID: 320-33939-13 Client Sample ID: WGNA-120517-RW-0263

Date Analyzed: 12/12/17 11:01 Lab File ID: 2017.12.12_537A_034.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	1.98	Assign Peak	hannigana	12/12/17 13:36
Perfluorononanoic acid (PFNA)	2.08	Assign Peak	hannigana	12/12/17 13:36

Lab Sample ID: CCV 320-199466/33 CCVIS Client Sample ID:

Date Analyzed: 12/12/17 11:10 Lab File ID: 2017.12.12_537A_036.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.07	Assign Peak	hannigana	12/12/17 13:38

537

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-HSP_00023	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	Perfluorobutane Sulfonate	1250.1 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL
.LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutane Sulfonate	90 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
..LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutane Sulfonate	2 mg/mL
							Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
...LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutane Sulfonate	1 g/g
							Perfluorobutanesulfonic acid (PFBS)	1 g/g
..LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
...LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
..LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
...LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
..LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537_PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
...LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
..LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537_PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
...LC537_PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
..LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
...LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
LC537-ICV_00028	01/05/18	08/02/17	MeOH/H2O, Lot 067374	10 mL	LC537-IS_00045	1000 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
.LC537-IS_00045	01/05/18	07/05/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00019	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFOS_00019	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-ICV_00028	01/05/18	08/02/17	MeOH/H2O, Lot 067374	10 mL	LC537-SU_00046	1000 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
					LC537ICIM_00019	20 uL	Perfluorobutanesulfonic acid (PFBS)	100.119 ng/mL
							Perfluoroheptanoic acid (PFHpA)	9.99613 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	20.0761 ng/mL
							Perfluorononanoic acid (PFNA)	20.1272 ng/mL
							Perfluorooctanoic acid (PFOA)	20.4843 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	19.698 ng/mL
.LC537-SU_00046	01/05/18	07/05/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	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_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LC537ICIM_00019	01/25/18	08/01/17	Methanol, Lot 090285	25 mL	LC537-PFBS2_00008	0.6 mL	Perfluorobutanesulfonic acid (PFBS)	50.0597 ug/mL
					LC537-PFHpA2_00011	0.061 mL	Perfluoroheptanoic acid (PFHpA)	4.99806 ug/mL
					LC537-PFHxS2_00008	0.122 mL	Perfluorohexanesulfonic acid (PFHxS)	10.038 ug/mL
					LC537-PFNA2_00009	0.126 mL	Perfluorononanoic acid (PFNA)	10.0636 ug/mL
					LC537-PFOA2_00010	0.122 mL	Perfluorooctanoic acid (PFOA)	10.2421 ug/mL
					LC537-PFOS2_00010	0.124 mL	Perfluorooctanesulfonic acid (PFOS)	9.849 ug/mL
..LC537-PFBS2_00008	01/25/18	07/25/17	Methanol, Lot 090285	20 mL	LC537_PFBS2_00002	0.0418 g	Perfluorobutanesulfonic acid (PFBS)	2085.82 ug/mL
...LC537_PFBS2_00002	09/08/22	Santa Cruz Biotechnology, Lot F0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	0.998 g/g
..LC537-PFHpA2_00011	01/25/18	07/25/17	Methanol, Lot 09092	31 mL	LC537_PFHpA2_00002	0.0635 g	Perfluoroheptanoic acid (PFHpA)	2048.39 ug/mL
...LC537_PFHpA2_00002	06/13/22	Afla Aesar, Lot 10200390			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	1 g/g
..LC537-PFHxS2_00008	01/25/18	07/25/17	Methanol, Lot 090285	21 mL	LC537_PFHxS2_00002	0.0475 g	Perfluorohexanesulfonic acid (PFHxS)	2056.98 ug/mL
...LC537_PFHxS2_00002	06/08/22	Santa Cruz Biotechnology, Lot G2516			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
..LC537-PFNA2_00009	01/25/18	07/25/17	Methanol, Lot 090285	21 mL	LC537_PFNA2_00002	0.0421 g	Perfluorononanoic acid (PFNA)	1996.74 ug/mL
...LC537_PFNA2_00002	06/14/22	Aldrich, Lot MKCC0699			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.996 g/g
..LC537-PFOA2_00010	01/25/18	08/01/17	Methanol, Lot 090285	20 mL	LC537_PFOA2_00002	0.0424 g	Perfluorooctanoic acid (PFOA)	2098.8 ug/mL
...LC537_PFOA2_00002	06/09/22	Afla Aesar, Lot 10199078			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.99 g/g
..LC537-PFOS2_00010	01/25/18	08/01/17	Methanol, Lot 090285	22 mL	LC537_PFOS2_00002	0.0561 g	Perfluorooctanesulfonic acid (PFOS)	1985.68 ug/mL
...LC537_PFOS2_00002	06/14/22	Sigma, Lot BCBQ0108V			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.7787 g/g
LC537-IS_00053	05/27/18	11/27/17	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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-L1_00020	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-MSP_00029	60 uL	Perfluorobutanesulfonic acid (PFBS)	9.0018 ng/mL
							Perfluoroheptanoic acid (PFHpA)	1.00036 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	3.00103 ng/mL
							Perfluorononanoic acid (PFNA)	2.0006 ng/mL
							Perfluorooctanoic acid (PFOA)	2.00191 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.00146 ng/mL
					LC537-SU_00049	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-MSP_00029	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	166.7 uL	Perfluorobutanesulfonic acid (PFBS)	750.15 ng/mL
							Perfluoroheptanoic acid (PFHpA)	83.3637 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	250.086 ng/mL
							Perfluorononanoic acid (PFNA)	166.716 ng/mL
							Perfluorooctanoic acid (PFOA)	166.826 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	333.455 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537_PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537_PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537_PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-SU_00049	02/04/18	08/04/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	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_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L2_00020	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	80 uL	Perfluorobutanesulfonic acid (PFBS)	20.0016 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.22277 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	6.66817 ng/mL
							Perfluorononanoic acid (PFNA)	4.44524 ng/mL
							Perfluorooctanoic acid (PFOA)	4.44816 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	8.89106 ng/mL
					LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00049	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537_PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537_PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537_PFOA_00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19		sigma alrich, Lot SZBE107XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00007	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00021	12/12/21		Wellington Laboratories, Lot MPFOS1216		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00049	02/04/18	08/04/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	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_00013	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L3_00023	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	180 uL	Perfluorobutanesulfonic acid (PFBS)	45.0036 ng/mL
							Perfluoroheptanoic acid (PFHpA)	5.00122 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	15.0034 ng/mL
							Perfluorononanoic acid (PFNA)	10.0018 ng/mL
							Perfluorooctanoic acid (PFOA)	10.0084 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	20.0049 ng/mL
					LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00049	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537_PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537_PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537_PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00049	02/04/18	08/04/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	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_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L4_00020	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	360 uL	Perfluorobutanesulfonic acid (PFBS)	90.0072 ng/mL
							Perfluoroheptanoic acid (PFHpA)	10.0024 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexanesulfonic acid (PFHxS)	30.0067 ng/mL
							Perfluorononanoic acid (PFNA)	20.0036 ng/mL
							Perfluorooctanoic acid (PFOA)	20.0167 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	40.0098 ng/mL
					LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00049	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537_PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537_PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537_PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00049	02/04/18	08/04/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	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_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L5_00024	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	540 uL	Perfluorobutanesulfonic acid (PFBS)	135.011 ng/mL
							Perfluoroheptanoic acid (PFHpA)	15.0037 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.0101 ng/mL
							Perfluorononanoic acid (PFNA)	30.0053 ng/mL
							Perfluorooctanoic acid (PFOA)	30.0251 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	60.0146 ng/mL
					LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00049	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537_PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537_PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537_PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00049	02/04/18	08/04/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	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_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L6_00020	02/04/18	08/14/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00025	720 uL	Perfluorobutanesulfonic acid (PFBS)	180.014 ng/mL
							Perfluoroheptanoic acid (PFHpA)	20.0049 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	60.0135 ng/mL
							Perfluorononanoic acid (PFNA)	40.0071 ng/mL
							Perfluorooctanoic acid (PFOA)	40.0334 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	80.0195 ng/mL
					LC537-IS_00048	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00049	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00025	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	277.8 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.923 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.76 ng/mL
							Perfluorononanoic acid (PFNA)	277.827 ng/mL
							Perfluorooctanoic acid (PFOA)	278.01 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	555.691 ng/mL
..LC537SPIM_00023	02/10/18	08/10/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00008	450 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537-PFHpA_00015	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0016 ug/mL
					LC537-PFHxS_00010	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0043 ug/mL
					LC537-PFNA_00013	200 uL	Perfluorononanoic acid (PFNA)	20.002 ug/mL
					LC537-PFOA_00013	200 uL	Perfluorooctanoic acid (PFOA)	20.0151 ug/mL
					LC537-PFOS_00008	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0066 ug/mL
...LC537-PFBS_00008	02/10/18	08/10/17	Methanol, Lot 090285	49.6 mL	LC537_PFBS_00002	0.0992 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00015	02/10/18	08/10/17	Methanol, Lot 090285	48.7 mL	LC537_PFHpA_00002	0.0492 g	Perfluoroheptanoic acid (PFHpA)	1.00016 mg/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00010	02/10/18	08/10/17	Methanol, Lot 090285	55.92 mL	LC537_PFHxS_00002	0.123 g	Perfluorohexanesulfonic acid (PFHxS)	2.00029 mg/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00013	02/10/18	08/10/17	Methanol, Lot 090285	62.3 mL	LC537_PFNA_00002	0.0647 g	Perfluorononanoic acid (PFNA)	1000.1 ug/mL
....LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00013	02/10/18	08/10/17	Methanol, Lot 090285	22.76 mL	LC537_PFOA_00003	0.0228 g	Perfluorooctanoic acid (PFOA)	1.00076 mg/mL
....LC537_PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00008	02/10/18	08/10/17	Methanol, Lot 090285	44.43 mL	LC537_PFOS_00003	0.0488 g	Perfluorooctanesulfonic acid (PFOS)	1.00016 mg/mL
....LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00048	02/04/18	08/04/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00021	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00007	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00049	02/04/18	08/04/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	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_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-SU_00056	05/27/18	11/27/17	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_PFBS_00002

r: 4/1/15 SPV

SIGMA-ALDRICH®

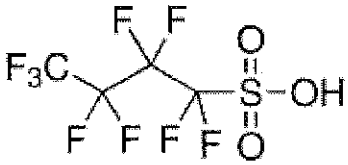
sigma-aldrich.com

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

Certificate of Analysis

Product Name:
Nonafluorobutane-1-sulfonic acid - 97%

Product Number:	**562629**
Batch Number:	**MKBP8842V**
Brand:	ALDRICH
CAS Number:	375-73-5
MDL Number:	MFCD01320794
Formula:	C4HF9O3S
Formula Weight:	300.10 g/mol
Storage Temperature:	Store at 2 - 8 °C
Quality Release Date:	11 OCT 2013



PFBS

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

Jamie Gleason

Jamie Gleason, Manager
Quality Control
Milwaukee, Wisconsin US

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

Reagent

LC537_PFBS2_00002

Γ: 6.8.17 SKV

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)	≥ 97%	101.3%
Infrared Spectrum	Conforms to structure	Complies

Reagent

LC537_PFHpA_00002

r: 4/1/15 SRV

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

PFHpA

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

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

Reagent

LC537_PFHpA2_00002

Alfa Aesar

Certificate of analysis

r: 6.13.17 SW

PFHp 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_PFHxS_00002

r: 4/1/15 SKW

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:	TRIDECAFLUOROHEXANE-1-SULFONIC ACID POTASSIUM SALT >= 98.0 % T
Product Number:	50929
Batch Number:	BCBL3545V
Brand:	Aldrich
CAS Number:	3871-99-6
Formula:	$C_6F_{13}KO_3S$
Formula Weight:	438.20
Quality Release Date:	20 JUN 2013

PFH_xS-K

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

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

$$MW\ corr = \frac{(K\ form) - (K) + (H)}{(438.20 - 39.10 + 1.01)} = 0.91307$$

$$438.20\ (K\ form)$$

(anion form)

Purity = 90.94 % w/m.w correction

SKW 4/1/15

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

Reagent

LC537_PFHxS2_00002

n: 6.8.17 SKW

CERTIFICATE OF ANALYSIS

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

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

$PFH_x S\text{-}K$

$C_6F_{13}SO_3K$ 438.201

$C_6F_{13}SO_3H$ 400.111

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

Purity & MW correction = 90.9%

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

Reagent

LC537_PFNA_00002

r: 4/1/15 SKV

Certificate of Analysis

Apr 2, 2015 (JST)

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

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

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

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

Customer service:

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

PFNA

Reagent

LC537_PFNA2_00002

P: 6.14.17 SKV

SIGMA-ALDRICH®

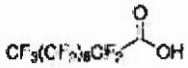
sigma-aldrich.com

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

Certificate of Analysis

Product Name:
Perfluorononanoic acid – 97%

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



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

Michael Grady, Manager
Quality Control
Milwaukee, WI US

PFNA

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

Version Number: 1

Reagent

LC537_PFOA_00003

r: 11/30/16 SKV
PFOA

SIGMA-ALDRICH

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

Certificate of Analysis

Product Name:	PENTADECAFLUOROOCTANOIC ACID analytical standard
Product Number:	33824
Batch Number:	BCBS1198V
Brand:	Sigma-Aldrich
CAS Number:	335-67-1
Formula:	$CF_3(CF_2)_6COOH$
Formula Weight:	414.07
Expiration Date:	OCT 2023
Quality Release Date:	12 MAY 2016

TEST	SPECIFICATION	RESULT
PURITY (HPLC AREA %)	≥ 98.0%	100.0%
IDENTIFICATION (LC-MS)	IDENTITY CONFORMS	CONFORMS

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

Reagent

LC537_PFOA2_00002

Alfa Aesar

Certificate of analysis

r: 6/9/17 SKV

PFOA

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

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_PFOS_00003

r: 11/30/16 SK
PFOS

SIGMA-ALDRICH

CERTIFICATE OF ANALYSIS

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

Seelze, 22.04.2014/524107/14/08646

Order-No.:
Customer-No.:

Order-Code:

Quantity:

Production Date: 17.Apr.2014
Expiry Date: 17.Apr.2019

Article/Product: 33829 Batch : SZBE107XV

Heptadecafluorooctanesulfonic acid potassium salt OEKANAL®

Reference Material (RM)

1. General Information

Formula: C8F17KO3S
CAS-No.: [2795-39-3]
Usage : PFOS

Molar mass: 538.22 g/Mole
Recomm. storage temp.: roomtemp.

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

2. Batch Analysis

Identity	complying
Assay (LC-MS)	98 %
Date of Analysis	22.Apr.2014

3. Advice and Remarks

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

Sigma-Aldrich Laborchemikalien GmbH
Quality Management SA-LC

This document was produced electronically and is valid without a signature

Reagent

LC537_PFOS2_00002

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

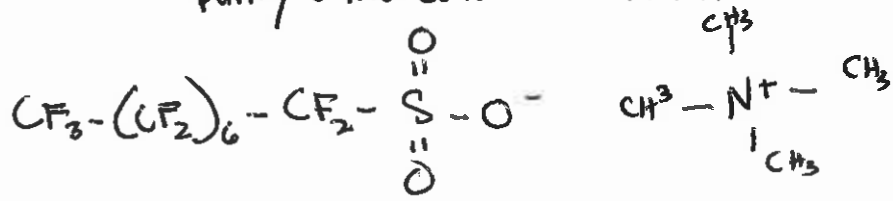
TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE TO OFF WHITE	OFF-WHITE
APPEARANCE (FORM)	POWDER OR POWDER WITH CHUNK(S)	POWDER
CARBON CONTENT	29.77 % - 31.29 %	29.97 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

Purity & MW correction = 77.87%



	$C_8F_{17}SO_3^+H$	$C_8H_{20}N$
C = 12.011	96.088	96.088
F = 18.998	322.966	—
S = 32.066	32.066	—
O = 15.999	47.997	—
H = 1.008	1.008	20.160
N = 14.007	—	14.007
	500.125	130.255

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

LCM2PFOA_00007

r: 5/6/17 SKV

WELLINGTON LABORATORIES

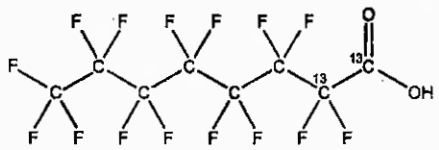
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2PFOA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]octanoic acid

LOT NUMBER: M2PFOA0216

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_6HF_{15}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

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

CHEMICAL PURITY: >98%
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

ISOTOPIC PURITY: ≥99% ^{13}C (1,2-$^{13}C_2$)

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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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 ±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:

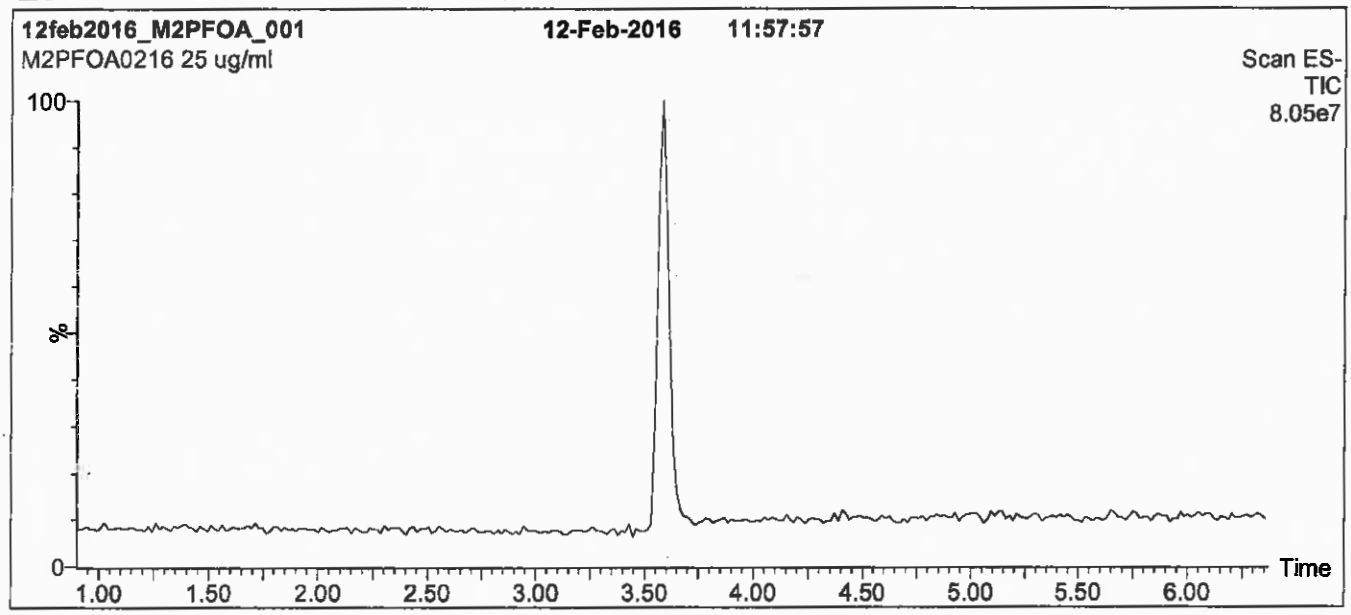
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

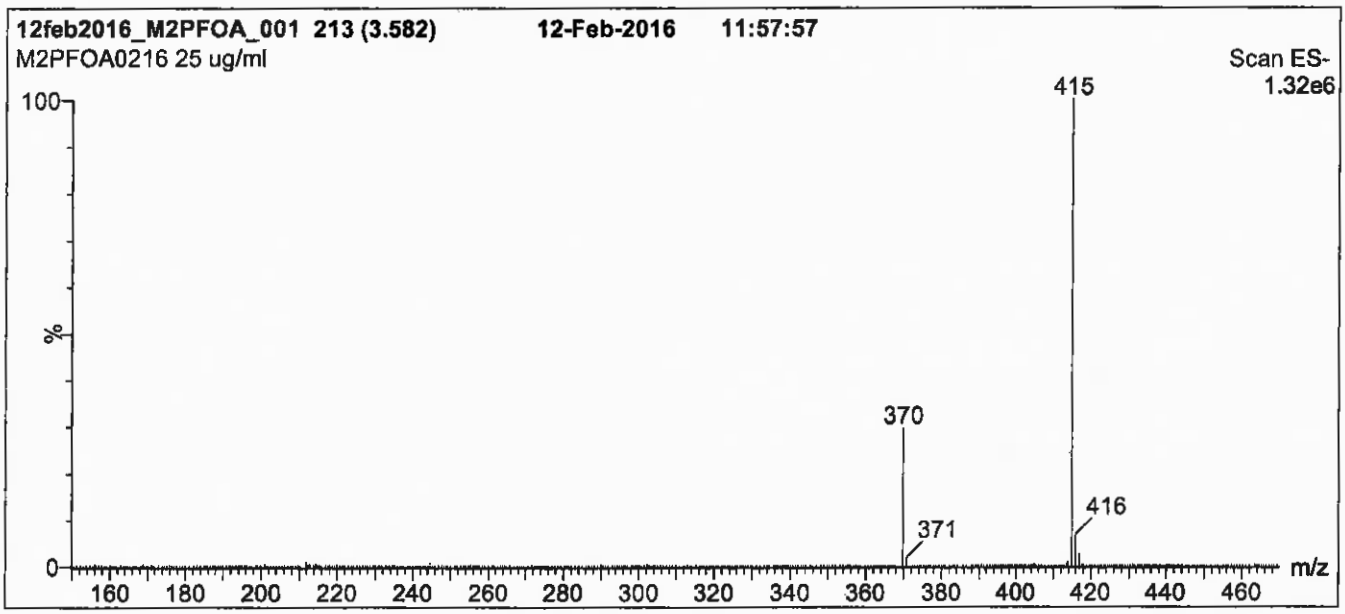
CALA

ANAB ACCREDITED

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 RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc 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

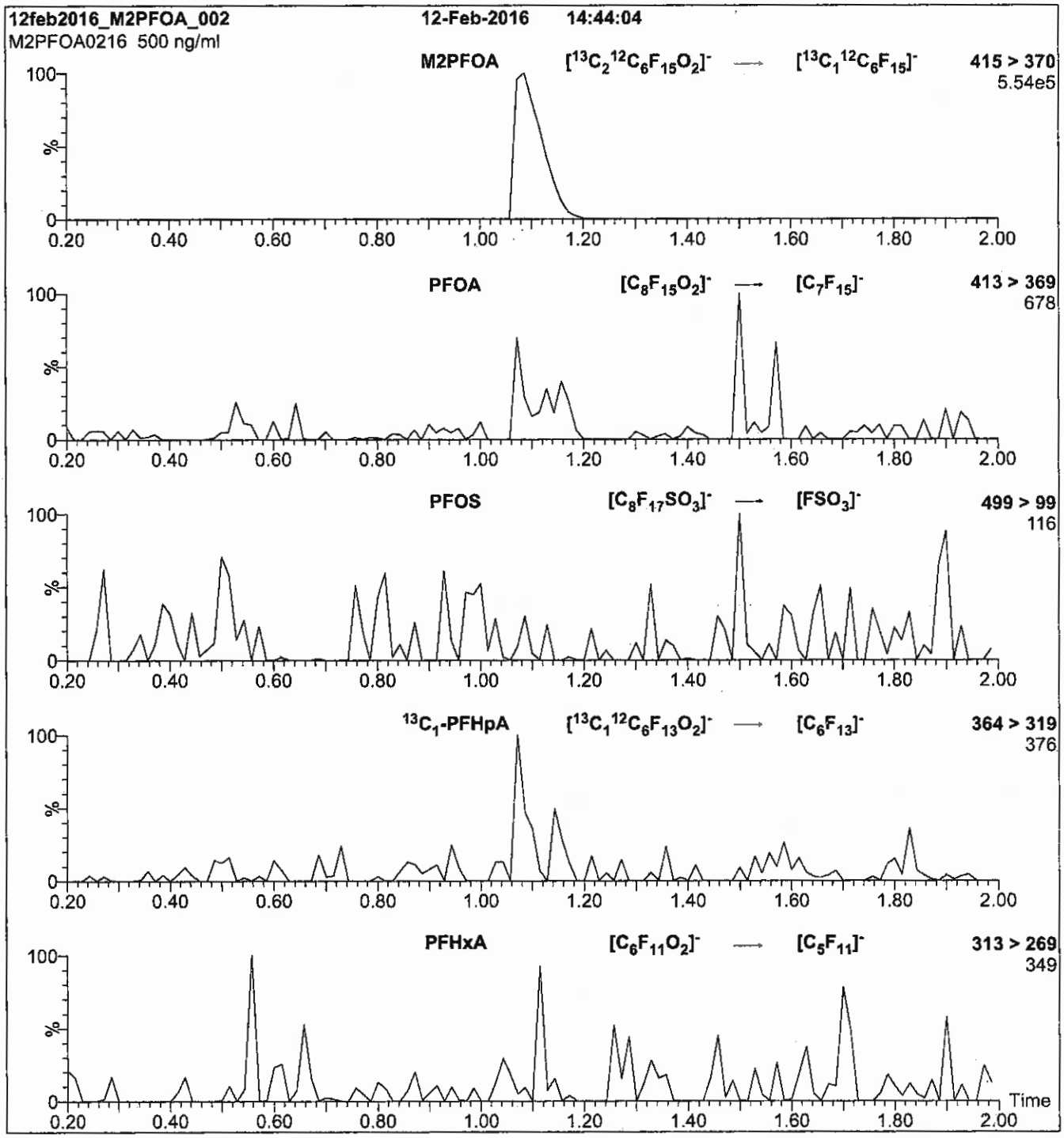
Flow: 300 µl/min

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 µl/min

MS Parameters

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

Reagent

LCMPFDA_00012

R: SBC 12/21/16

814255
ID: LCMPFDA_00012
Exp: 09/30/21 Prpd: SBC
13C2-Perfluornodecanoic a

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDA
LOT NUMBER: MPFDA0916
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid

STRUCTURE:
CAS #: Not available

MOLECULAR FORMULA: $^{13}C_2{}^{12}C_8HF_{19}O_2$
MOLECULAR WEIGHT: 516.07
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy) 09/30/2016
EXPIRY DATE: (mm/dd/yyyy) 09/30/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of $^{13}C_1$-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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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 ±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:

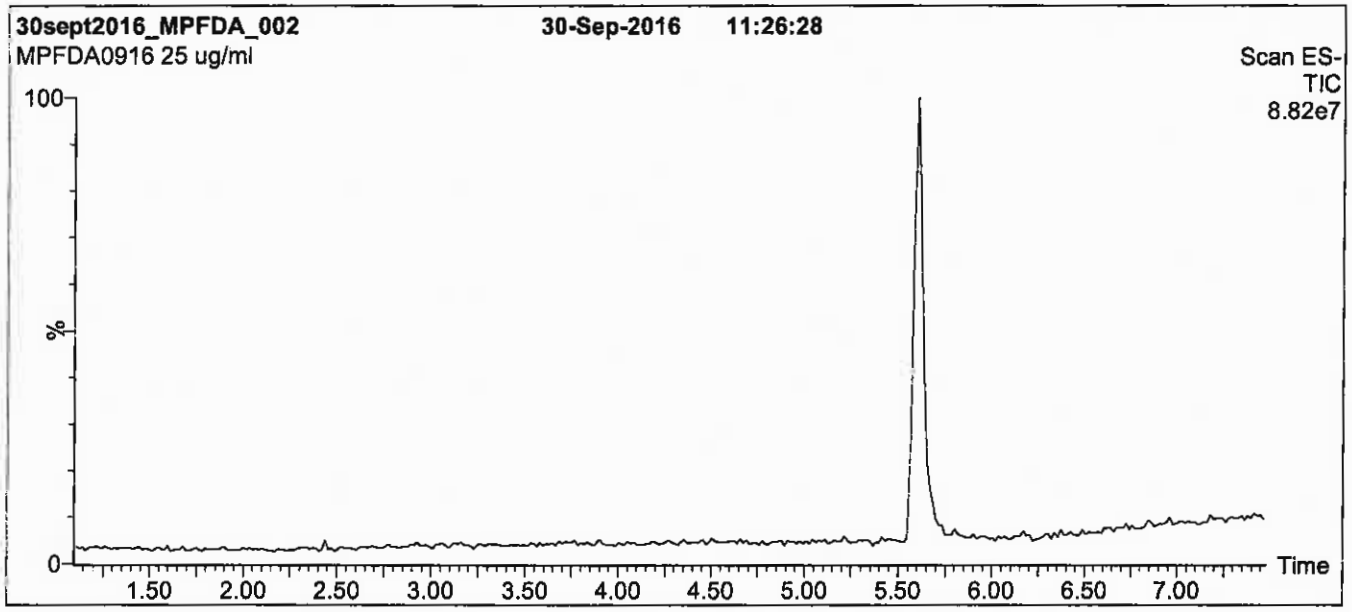
At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

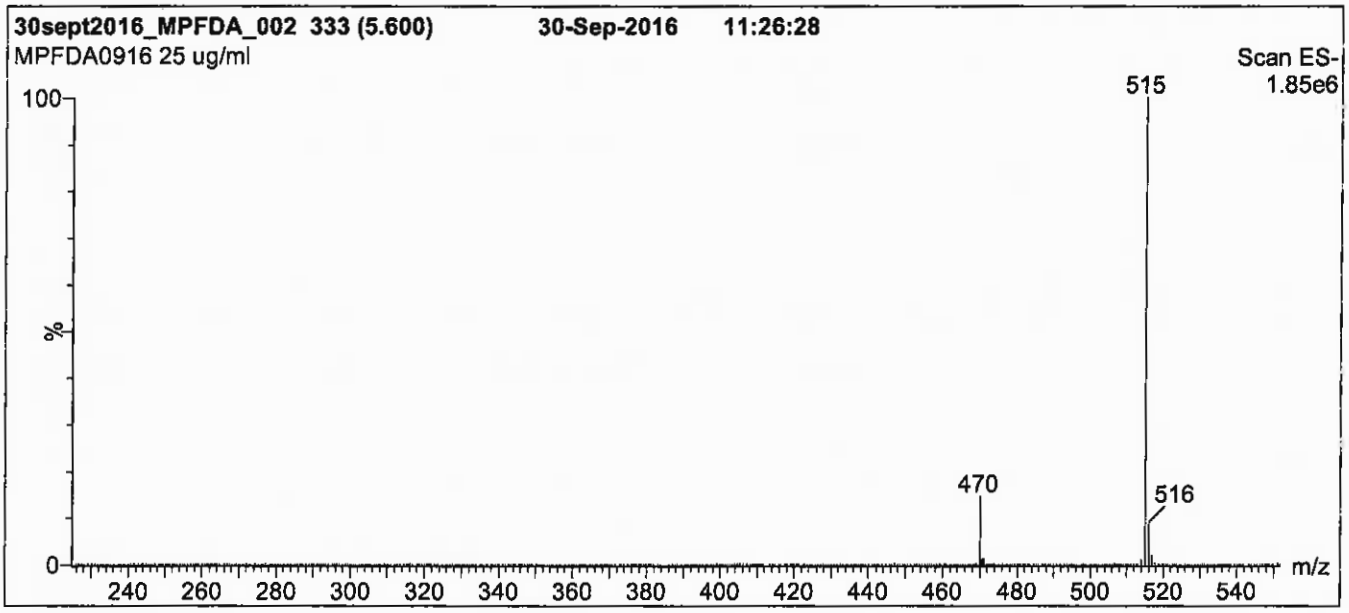
QUALITY MANAGEMENT:

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 RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc 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

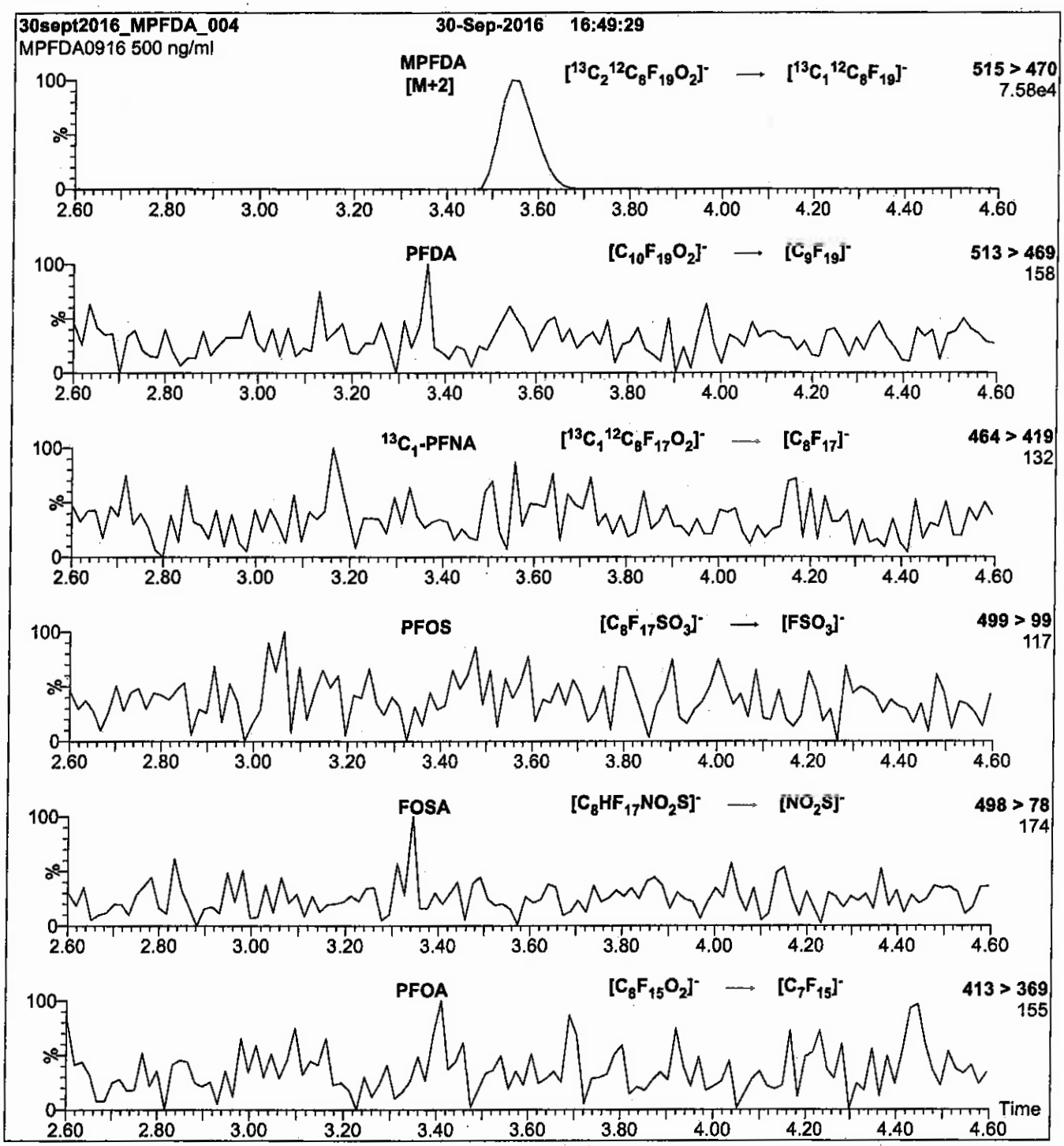
Flow: 300 µl/min

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 µl (500 ng/ml MPFDA)	**MS Parameters**
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)	Collision Gas (mbar) = 3.31e-3 Collision Energy (eV) = 13
Flow:	300 µl/min	

Reagent

LCMPFHxA_00013

R: SBC 12/21/16

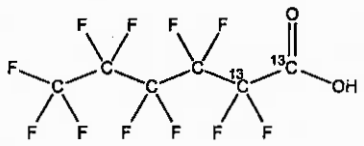
814258

ID: LCMPFHxA_00013
Exp: 04/08/21 Prpd: SBC
13C2-Perfluorohexanoic ac

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	MPFHxA	**LOT NUMBER:**	MPFHxA0416
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]hexanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_4HF_{11}O_2$	**MOLECULAR WEIGHT:**	316.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C
LAST TESTED: (mm/dd/yyyy)	04/08/2016		(1,2-$^{13}C_2$)
EXPIRY DATE: (mm/dd/yyyy)	04/08/2021		
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:** 04/29/2016 (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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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 ±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:

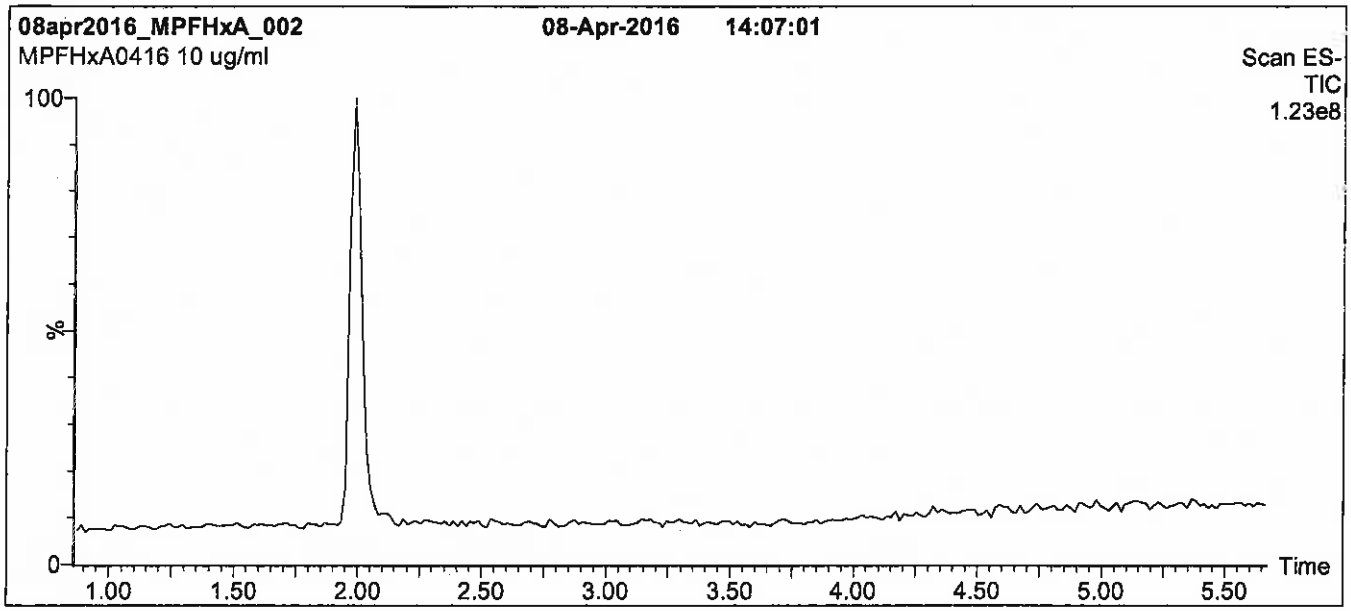
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

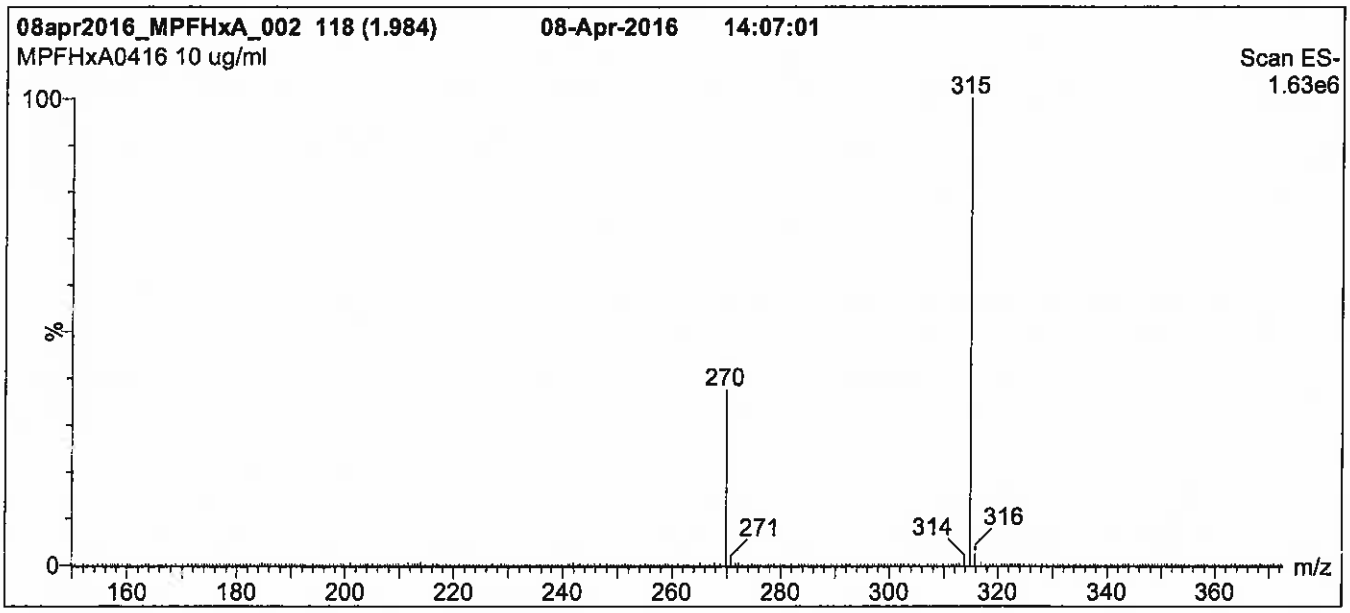
CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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 RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions over 0.5 min.
Time: 10 min

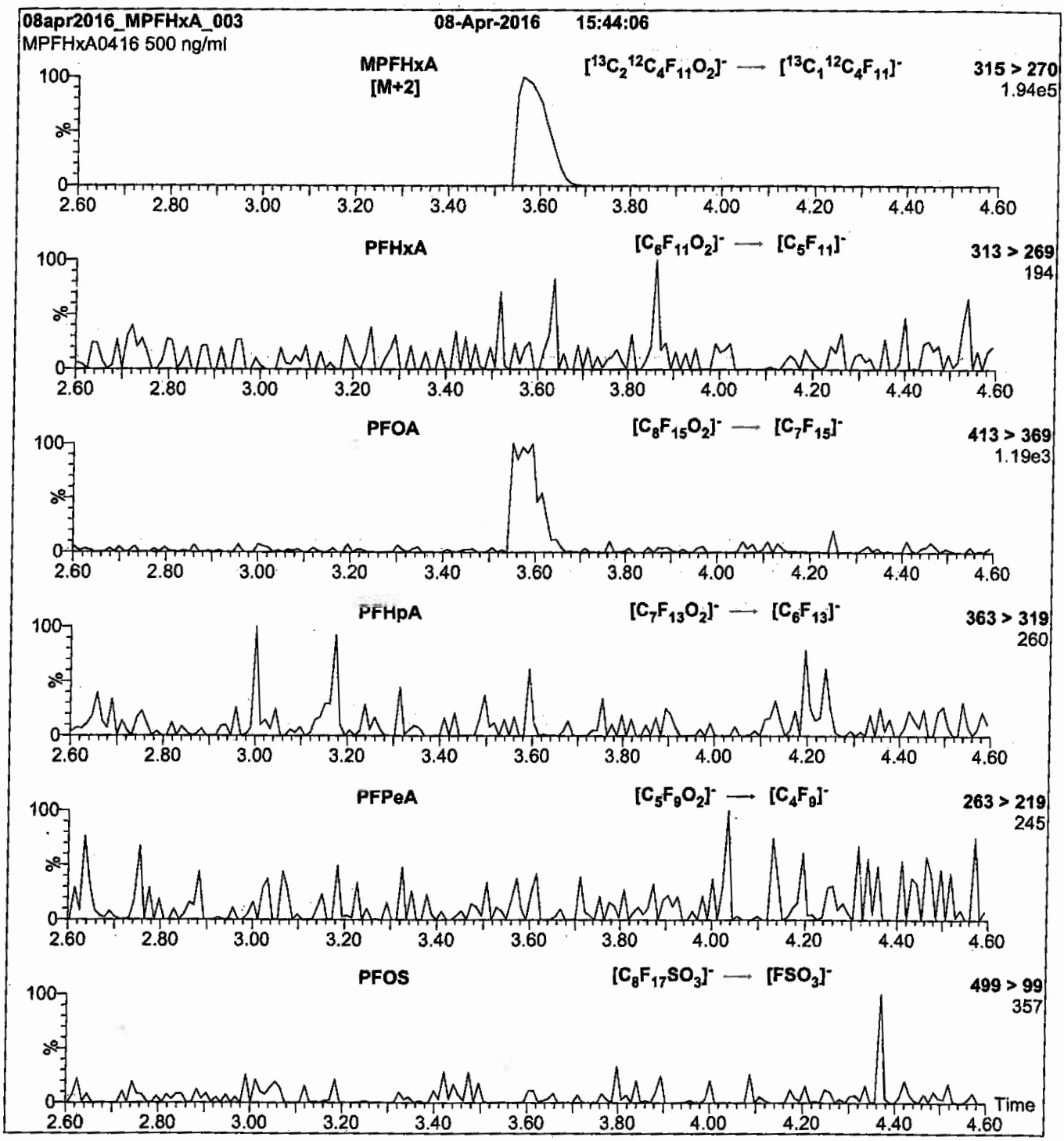
Flow: 300 µl/min

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 µl/min

MS Parameters

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

Reagent

LCMPFHxA_00015

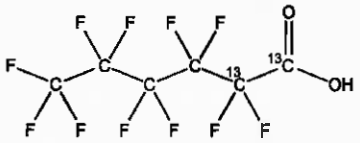
r: 5/8/17 SKJ

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxA
LOT NUMBER: MPFHxA1116
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]hexanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_4HF_{11}O_2$
MOLECULAR WEIGHT: 316.04
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy) 11/22/2016
EXPIRY DATE: (mm/dd/yyyy) 11/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/13/2016 (mm/dd/yyyy)

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

INTENDED USE:

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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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 ±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:

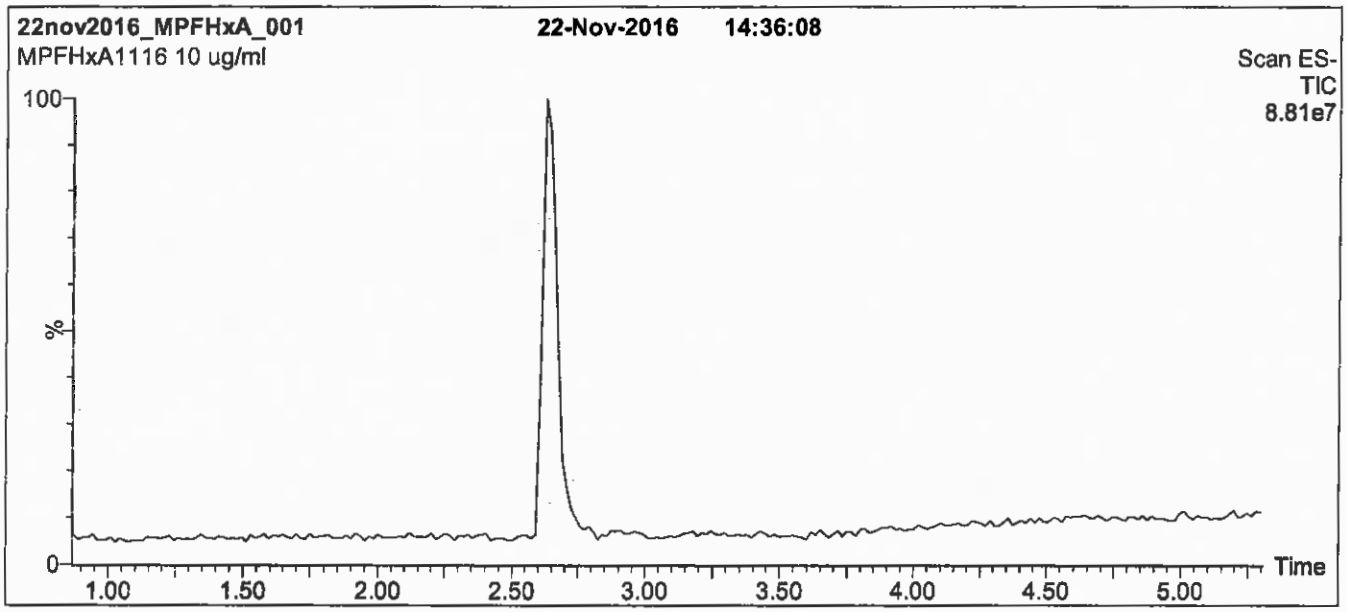
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

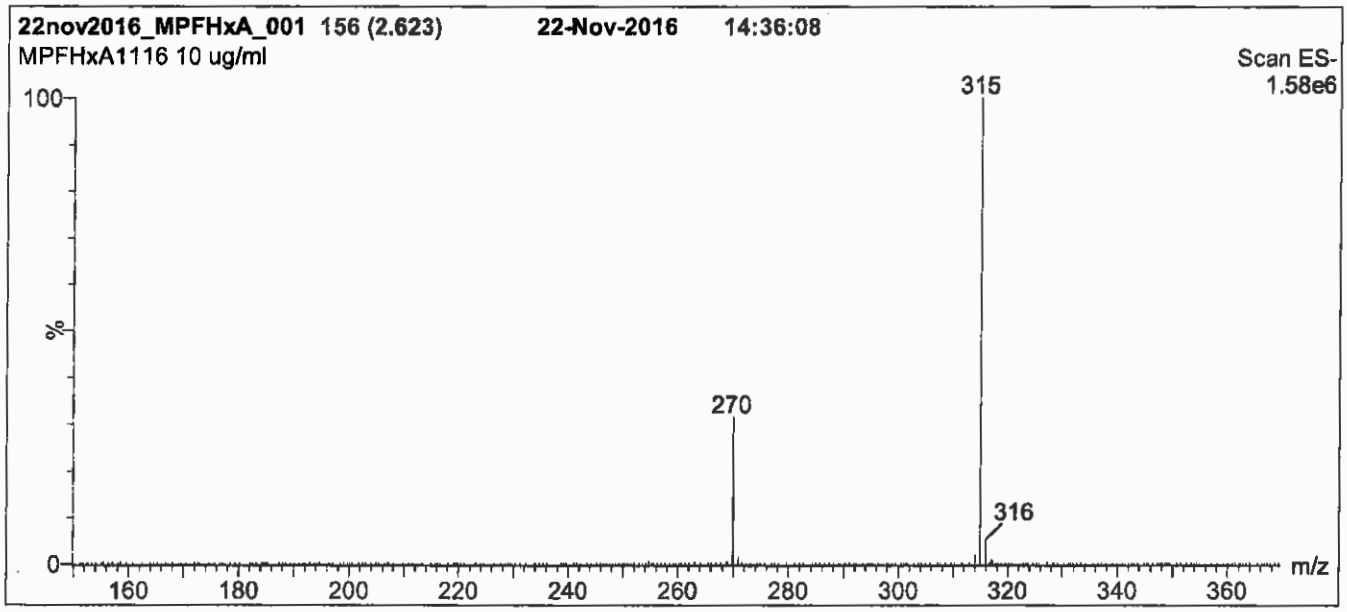
CALA

ANAB ACCREDITED

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 RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc 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

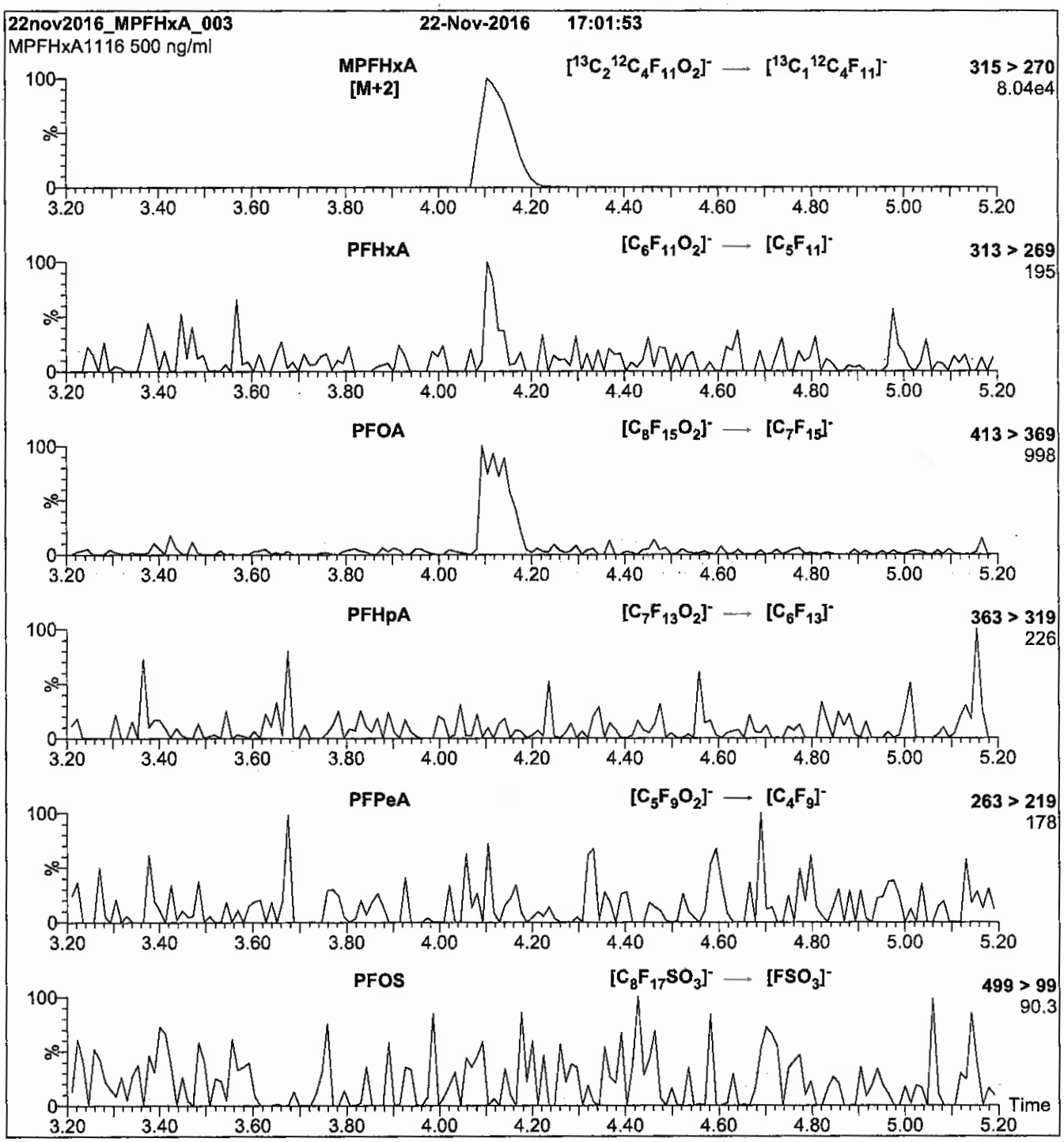
Flow: 300 µl/min

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)	**MS Parameters**
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)	Collision Gas (mbar) = 3.46e-3 Collision Energy (eV) = 10
Flow:	300 µl/min	

Reagent

LCMPFOS_00019

R: SBC 12/21/16

814253
ID: LCMPFOS_00019
Exp: 08/03/21 Prpd: SBC
13C4-Perfluorooctanesulfo

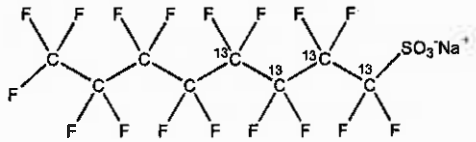
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0816

COMPOUND: Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $^{13}C_4{}^{12}C_4F_{17}SO_3Na$ **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% ^{13}C (1,2,3,4-$^{13}C_4$)

LAST TESTED: (mm/dd/yyyy) 08/03/2016

EXPIRY DATE: (mm/dd/yyyy) 08/03/2021

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.8% Sodium perfluoro-1-[1,2,3-$^{13}C_3$]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 08/05/2016 (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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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 ±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:

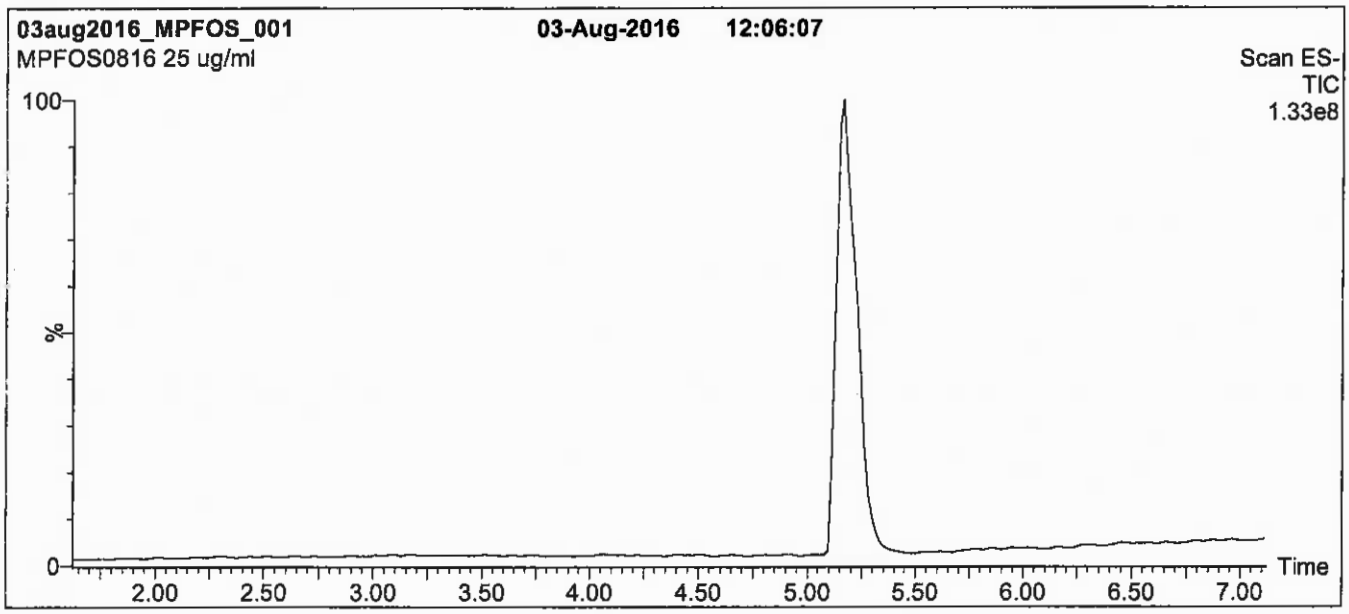
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

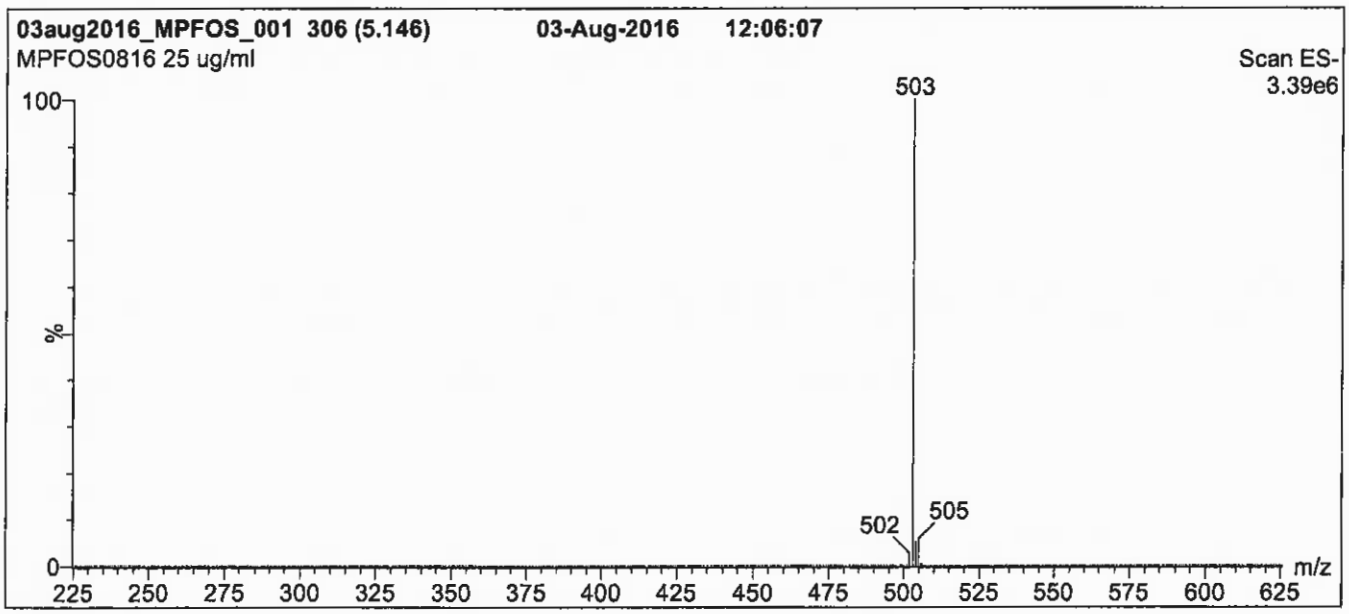
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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 RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H_2O
(both with 10 mM NH_4OAc 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

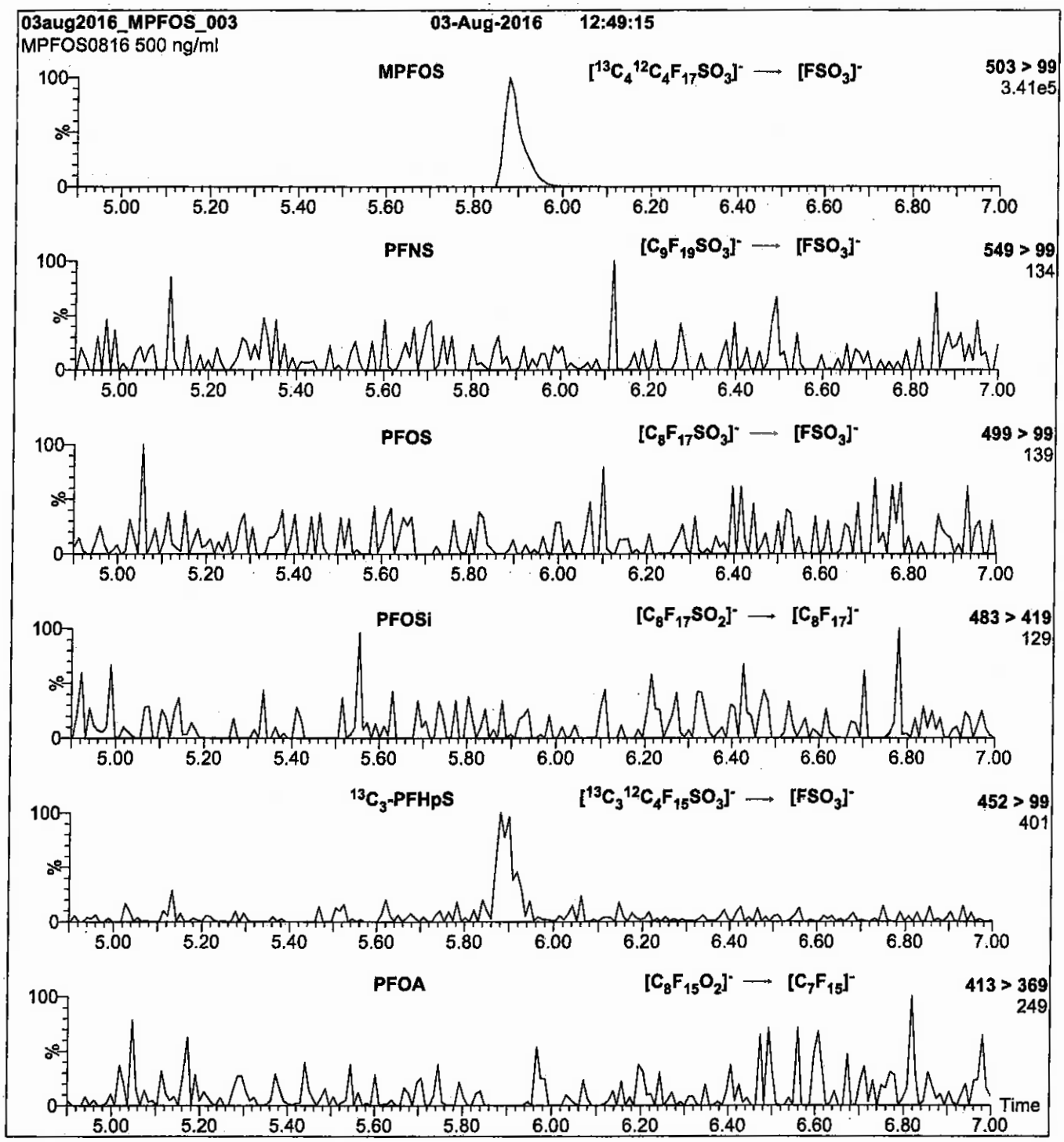
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 40

Reagent

LCMPFOS_00021

r: 5/8/17 SKV

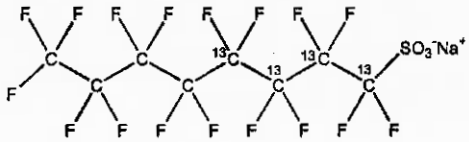
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS1216

COMPOUND: Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $^{13}C_4{}^{12}C_4F_{17}SO_3Na$ **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% ^{13}C (1,2,3,4-$^{13}C_4$)

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

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-$^{13}C_3$]heptanesulfonate.

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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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 ±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:

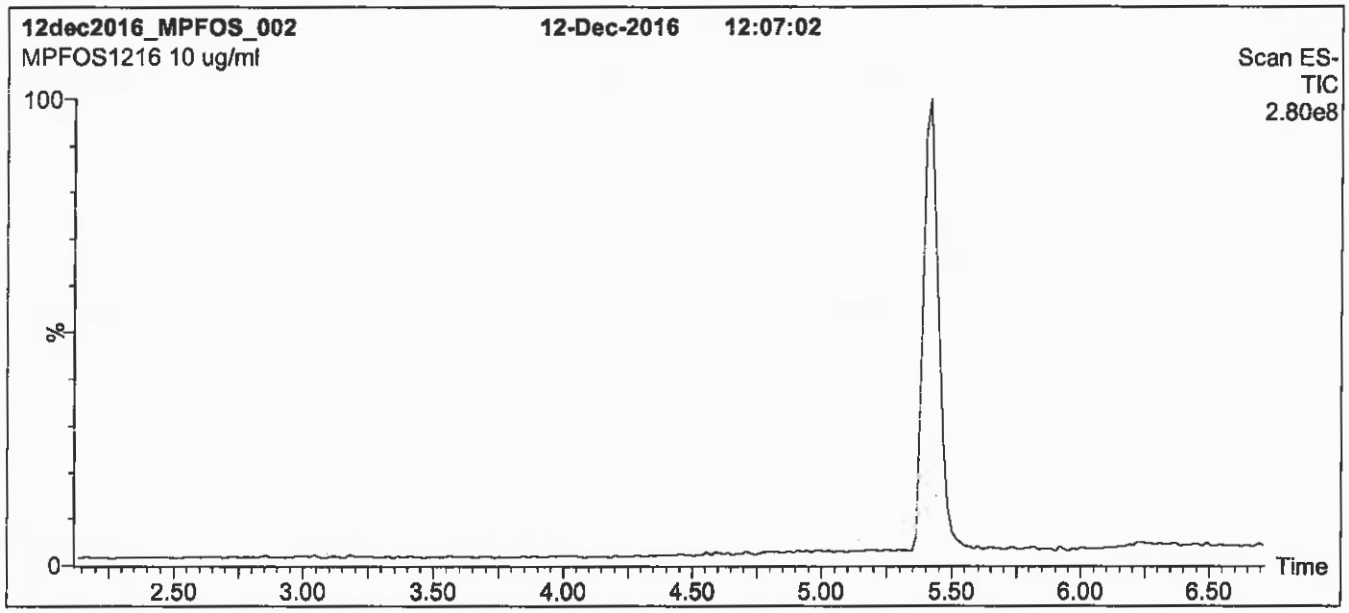
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

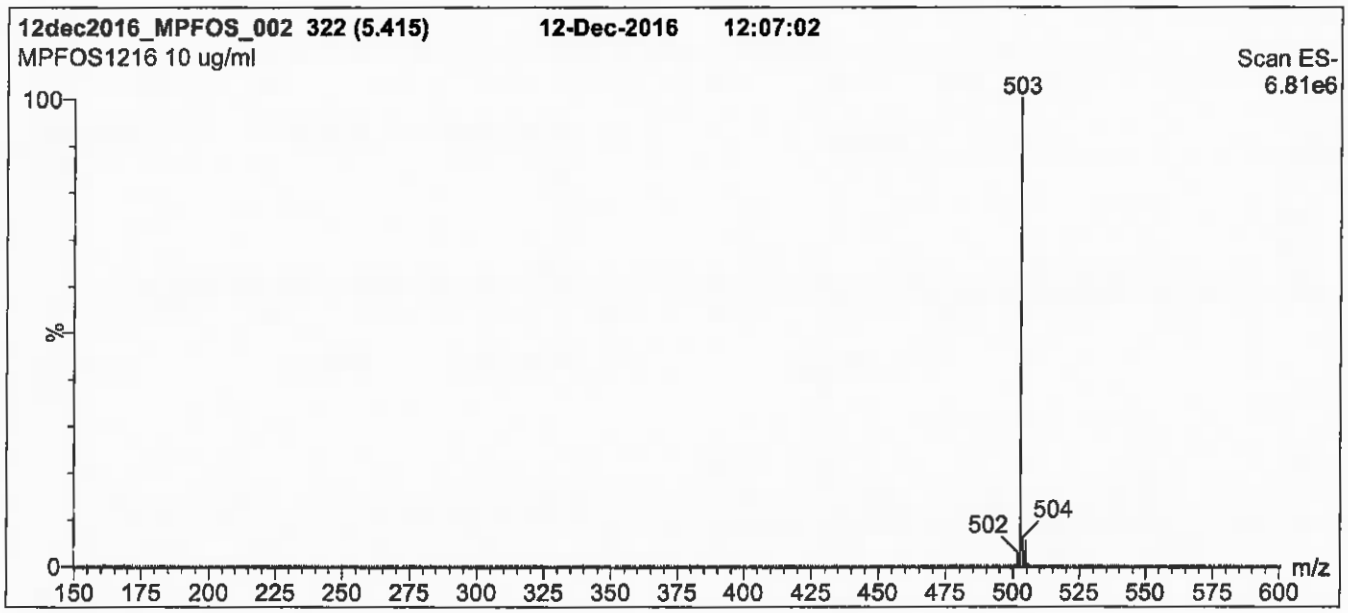
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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 RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc 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

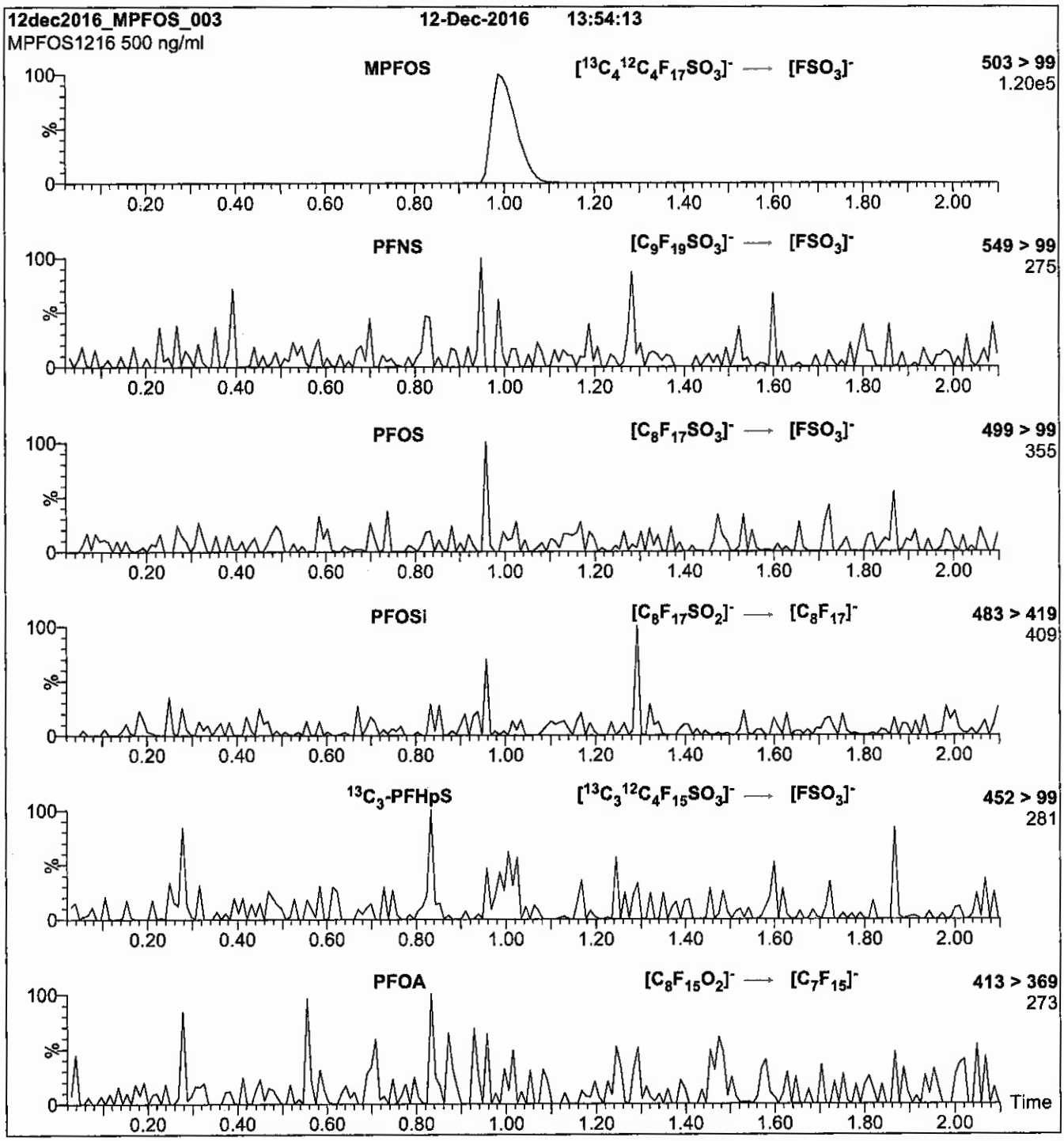
Flow: 300 µl/min

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)	**MS Parameters**
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)	Collision Gas (mbar) = 3.35e-3 Collision Energy (eV) = 40
Flow:	300 µl/min	

Method 537 DOD

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

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-120517-RW-0617	320-33939-1	96	107
WGNA-120517-FRB-0617	320-33939-2	104	97
WGNA-120517-RW-4820	320-33939-3	103	102
WGNA-120517-FRB-4820	320-33939-4	109	107
NAWC-120517-RW-285	320-33939-5	98	101
NAWC-120517-FRB-285	320-33939-6	103	110
NAWC-120517-RW-135	320-33939-7	103	99
NAWC-120517-FRB-135	320-33939-8	107	100
NAWC-120517-RW-356	320-33939-9	101	101
NAWC-120517-FRB-356	320-33939-10	104	99
NAWC-120517-RW-357	320-33939-11	105	98
NAWC-120517-FRB-357	320-33939-12	102	101
WGNA-120517-RW-0263	320-33939-13	108	95
WGNA-120517-FRB-0263	320-33939-14	101	117
	MB 320-199025/1-A	99	103
	LCS 320-199025/2-A	104	105
	LCSD 320-199025/3-A	111	109

	QC LIMITS
PFHxA = 13C2 PFHxA	70-130
PFDA = 13C2 PFDA	70-130

Column to be used to flag recovery values

FORM II 537

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.12.12_537A_018.d

Lab ID: LCS 320-199025/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	222	232	104	70-130	M
Perfluorooctanoic acid (PFOA)	111	117	105	70-130	
Perfluorononanoic acid (PFNA)	111	109	99	70-130	
Perfluorohexanesulfonic acid (PFHxS)	167	186	111	70-130	
Perfluoroheptanoic acid (PFHpA)	55.6	63.2	114	70-130	
Perfluorobutanesulfonic acid (PFBS)	500	524	105	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.12.12_537A_019.d

Lab ID: LCSD 320-199025/3-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	222	231	104	0	30	70-130	M
Perfluorooctanoic acid (PFOA)	111	120	108	3	30	70-130	
Perfluorononanoic acid (PFNA)	111	114	102	4	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	167	183	110	2	30	70-130	
Perfluoroheptanoic acid (PFHpA)	55.6	64.9	117	3	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	500	541	108	3	30	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Lab File ID: 2017.12.12_537A_017.d Lab Sample ID: MB 320-199025/1-A

Matrix: Water Date Extracted: 12/08/2017 11:56

Instrument ID: A8_N Date Analyzed: 12/12/2017 09:42

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-199025/2-A	2017.12.12_537A_018.d	12/12/2017 09:46
	LCSD 320-199025/3-A	2017.12.12_537A_019.d	12/12/2017 09:51
WGNA-120517-RW-0617	320-33939-1	2017.12.12_537A_020.d	12/12/2017 09:56
WGNA-120517-FRB-0617	320-33939-2	2017.12.12_537A_021.d	12/12/2017 10:00
WGNA-120517-RW-4820	320-33939-3	2017.12.12_537A_022.d	12/12/2017 10:05
WGNA-120517-FRB-4820	320-33939-4	2017.12.12_537A_023.d	12/12/2017 10:10
NAWC-120517-RW-285	320-33939-5	2017.12.12_537A_024.d	12/12/2017 10:14
NAWC-120517-FRB-285	320-33939-6	2017.12.12_537A_025.d	12/12/2017 10:19
NAWC-120517-RW-135	320-33939-7	2017.12.12_537A_026.d	12/12/2017 10:24
NAWC-120517-FRB-135	320-33939-8	2017.12.12_537A_029.d	12/12/2017 10:38
NAWC-120517-RW-356	320-33939-9	2017.12.12_537A_030.d	12/12/2017 10:42
NAWC-120517-FRB-356	320-33939-10	2017.12.12_537A_031.d	12/12/2017 10:47
NAWC-120517-RW-357	320-33939-11	2017.12.12_537A_032.d	12/12/2017 10:52
NAWC-120517-FRB-357	320-33939-12	2017.12.12_537A_033.d	12/12/2017 10:56
WGNA-120517-RW-0263	320-33939-13	2017.12.12_537A_034.d	12/12/2017 11:01
WGNA-120517-FRB-0263	320-33939-14	2017.12.12_537A_035.d	12/12/2017 11:06

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 11/03/2017 13:37

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 11/03/2017 14:01

Calibration ID: 36012

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		1535518	1.91	3276559	2.15		
UPPER LIMIT		2303277	2.41	4914839	2.65		
LOWER LIMIT		767759	1.41	1638280	1.65		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-192908/11		1586829	1.91	3305852	2.15		
ICV 320-192908/13		1512045	1.90	3433628	2.14		
CCVL 320-199462/1		1637426	1.85	3337066	2.12		
CCV 320-199464/12 CCVIS		1543512	1.83	3294426	2.09		
MB 320-199025/1-A		1406899	1.82	3063225	2.09		
LCS 320-199025/2-A		1474579	1.83	3211773	2.09		
LCSD 320-199025/3-A		1472542	1.82	3307329	2.09		
320-33939-1	WGNA-120517-RW-0617	1473363	1.82	3220295	2.09		
320-33939-2	WGNA-120517-FRB-0617	1573004	1.82	3233568	2.08		
320-33939-3	WGNA-120517-RW-4820	1531302	1.82	3334745	2.08		
320-33939-4	WGNA-120517-FRB-4820	1475777	1.82	3278446	2.08		
320-33939-5	NAWC-120517-RW-285	1576169	1.82	3441658	2.08		
320-33939-6	NAWC-120517-FRB-285	1542108	1.82	3359476	2.08		
320-33939-7	NAWC-120517-RW-135	1525968	1.82	3188913	2.08		
CCV 320-199464/24 CCVIS		1424361	1.81	3103960	2.08		
CCV 320-199466/24 CCVIS		1424361	1.81	3103960	2.08		
320-33939-8	NAWC-120517-FRB-135	1576598	1.82	3320157	2.08		
320-33939-9	NAWC-120517-RW-356	1515302	1.81	3269688	2.07		
320-33939-10	NAWC-120517-FRB-356	1527901	1.82	3336523	2.08		
320-33939-11	NAWC-120517-RW-357	1491030	1.81	3286588	2.07		
320-33939-12	NAWC-120517-FRB-357	1544449	1.82	3312861	2.08		
320-33939-13	WGNA-120517-RW-0263	1511274	1.81	3307797	2.07		
320-33939-14	WGNA-120517-FRB-0263	1618278	1.81	3606068	2.07		
CCV 320-199466/33 CCVIS		1440416	1.81	3059172	2.07		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Sample No.: CCV 320-199464/12 Date Analyzed: 12/12/2017 09:32

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.12.12_537A_015 Heated Purge: (Y/N) N

Calibration ID: 36012

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1543512	1.83	3294426	2.09		
UPPER LIMIT		2160917	2.33	4612196	2.59		
LOWER LIMIT		1080458	1.33	2306098	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-199025/1-A		1406899	1.82	3063225	2.09		
LCS 320-199025/2-A		1474579	1.83	3211773	2.09		
LCSD 320-199025/3-A		1472542	1.82	3307329	2.09		
320-33939-1	WGNA-120517-RW-0617	1473363	1.82	3220295	2.09		
320-33939-2	WGNA-120517-FRB-0617	1573004	1.82	3233568	2.08		
320-33939-3	WGNA-120517-RW-4820	1531302	1.82	3334745	2.08		
320-33939-4	WGNA-120517-FRB-4820	1475777	1.82	3278446	2.08		
320-33939-5	NAWC-120517-RW-285	1576169	1.82	3441658	2.08		
320-33939-6	NAWC-120517-FRB-285	1542108	1.82	3359476	2.08		
320-33939-7	NAWC-120517-RW-135	1525968	1.82	3188913	2.08		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Sample No.: CCV 320-199464/24 Date Analyzed: 12/12/2017 10:28

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.12.12_537A_027 Heated Purge: (Y/N) N

Calibration ID: 36012

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1424361	1.81	3103960	2.08		
UPPER LIMIT		1994105	2.31	4345544	2.58		
LOWER LIMIT		997053	1.31	2172772	1.58		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-199025/1-A		1406899	1.82	3063225	2.09		
LCS 320-199025/2-A		1474579	1.83	3211773	2.09		
LCSD 320-199025/3-A		1472542	1.82	3307329	2.09		
320-33939-1	WGNA-120517-RW-0617	1473363	1.82	3220295	2.09		
320-33939-2	WGNA-120517-FRB-0617	1573004	1.82	3233568	2.08		
320-33939-3	WGNA-120517-RW-4820	1531302	1.82	3334745	2.08		
320-33939-4	WGNA-120517-FRB-4820	1475777	1.82	3278446	2.08		
320-33939-5	NAWC-120517-RW-285	1576169	1.82	3441658	2.08		
320-33939-6	NAWC-120517-FRB-285	1542108	1.82	3359476	2.08		
320-33939-7	NAWC-120517-RW-135	1525968	1.82	3188913	2.08		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Sample No.: CCV 320-199466/24 Date Analyzed: 12/12/2017 10:28

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.12.12_537A_027 Heated Purge: (Y/N) N

Calibration ID: 36012

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1424361	1.81	3103960	2.08		
UPPER LIMIT		1994105	2.31	4345544	2.58		
LOWER LIMIT		997053	1.31	2172772	1.58		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-33939-8	NAWC-120517-FRB-135	1576598	1.82	3320157	2.08		
320-33939-9	NAWC-120517-RW-356	1515302	1.81	3269688	2.07		
320-33939-10	NAWC-120517-FRB-356	1527901	1.82	3336523	2.08		
320-33939-11	NAWC-120517-RW-357	1491030	1.81	3286588	2.07		
320-33939-12	NAWC-120517-FRB-357	1544449	1.82	3312861	2.08		
320-33939-13	WGNA-120517-RW-0263	1511274	1.81	3307797	2.07		
320-33939-14	WGNA-120517-FRB-0263	1618278	1.81	3606068	2.07		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Sample No.: CCV 320-199466/33 Date Analyzed: 12/12/2017 11:10

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.12.12_537A_036 Heated Purge: (Y/N) N

Calibration ID: 36012

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1440416	1.81	3059172	2.07		
UPPER LIMIT		2016582	2.31	4282841	2.57		
LOWER LIMIT		1008291	1.31	2141420	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-33939-8	NAWC-120517-FRB-135	1576598	1.82	3320157	2.08		
320-33939-9	NAWC-120517-RW-356	1515302	1.81	3269688	2.07		
320-33939-10	NAWC-120517-FRB-356	1527901	1.82	3336523	2.08		
320-33939-11	NAWC-120517-RW-357	1491030	1.81	3286588	2.07		
320-33939-12	NAWC-120517-FRB-357	1544449	1.82	3312861	2.08		
320-33939-13	WGNA-120517-RW-0263	1511274	1.81	3307797	2.07		
320-33939-14	WGNA-120517-FRB-0263	1618278	1.81	3606068	2.07		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: WGNA-120517-RW-0617
Lab Sample ID: 320-33939-1
Matrix: Water
Lab File ID: 2017.12.12_537A_020.d
Analysis Method: 537
Date Collected: 12/05/2017 08:10
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 247.1(mL)
Date Analyzed: 12/12/2017 09:56
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199464
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	29	J M	40	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	34		20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	15	J	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	11		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	59	J	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	107		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_020.d
Lims ID: 320-33939-A-1-A
Client ID: WGNA-120517-RW-0617
Sample Type: Client
Inject. Date: 12-Dec-2017 09:56:10 ALS Bottle#: 12 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-1-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 14:41:28 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:10:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.444	-0.078	1.000	1806190	14.7		2194	
298.90 > 99.00	1.366	1.444	-0.078	1.000	1325384		1.36(0.00-0.00)	2593	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.573	-0.086	1.000	1561645	9.63		9294	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.725	-0.094	1.000	684001	3.64		380	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.725	-0.094	1.000	381499	2.76		70.2	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.913	-0.092		1473363	10.0		7182	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.821	1.914	-0.093	1.000	1149932	8.43		163	
413.00 > 169.00	1.821	1.914	-0.093	1.000	673637		1.71(0.00-0.00)	1556	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.086	2.079	0.007	1.000	745292	7.07		308	M
499.00 > 99.00	2.079	2.079	0.0	0.996	133235		5.59(0.00-0.00)	265	M
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.151	-0.065		3220295	28.7		3505	
9 Perfluorononanoic acid									
463.00 > 419.00	2.094	2.158	-0.064	1.000	173916	1.78		30.7	
$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.312	-0.051	1.000	1208517	10.7		8280	

QC Flag Legend

Review Flags

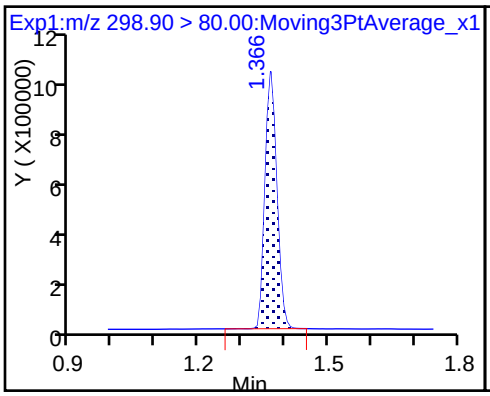
M - Manually Integrated

Report Date: 12-Dec-2017 14:41:57 Chrom Revision: 2.2 16-Aug-2017 16:24:46

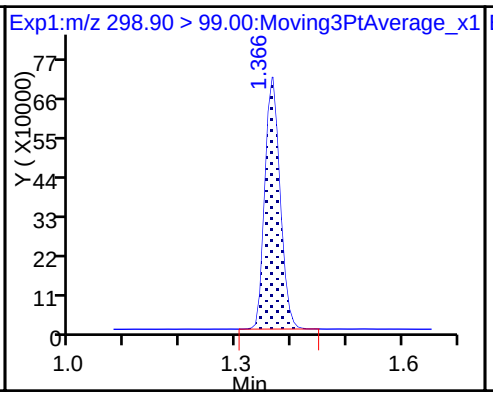
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_020.d				
Injection Date:	12-Dec-2017 09:56:10	Instrument ID:	A8_N		
Lims ID:	320-33939-A-1-A	Lab Sample ID:	320-33939-1		
Client ID:	WGNA-120517-RW-0617				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

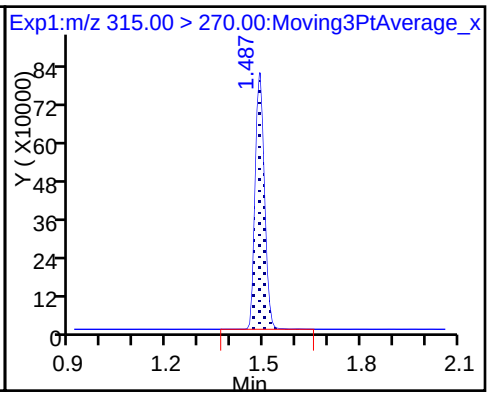
1 Perfluorobutanesulfonic acid



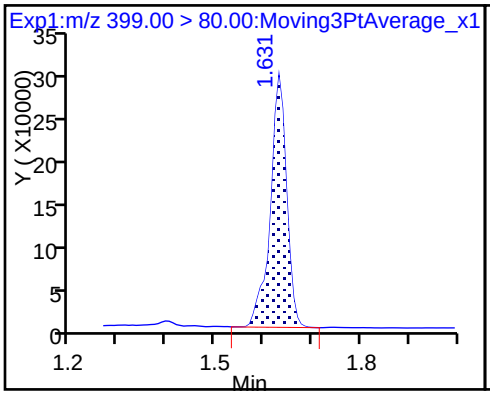
1 Perfluorobutanesulfonic acid



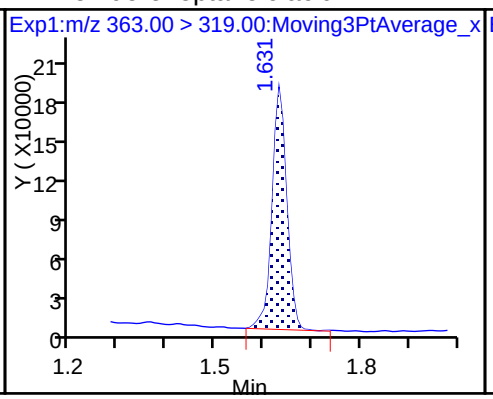
$ 2 13C2 PFHxA



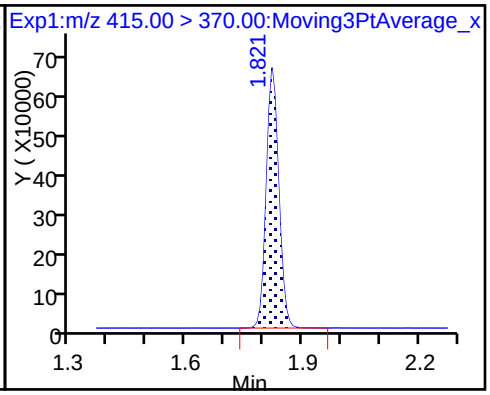
3 Perfluorohexanesulfonic acid



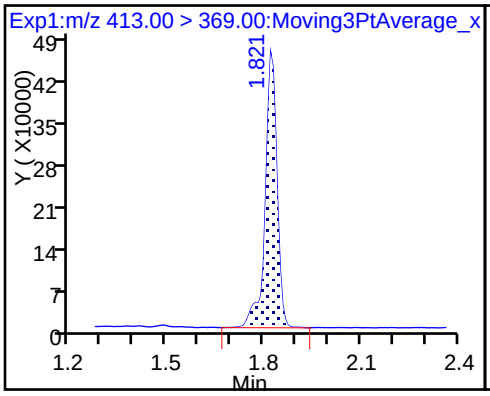
4 Perfluoroheptanoic acid



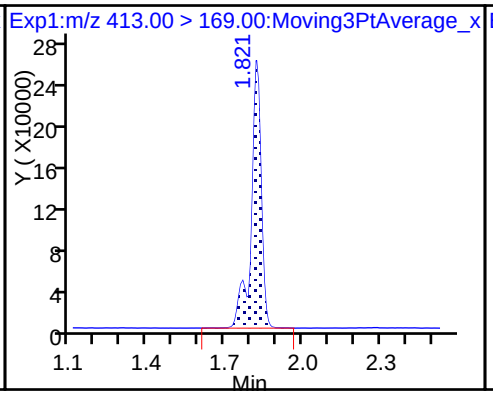
* 6 13C2-PFOA



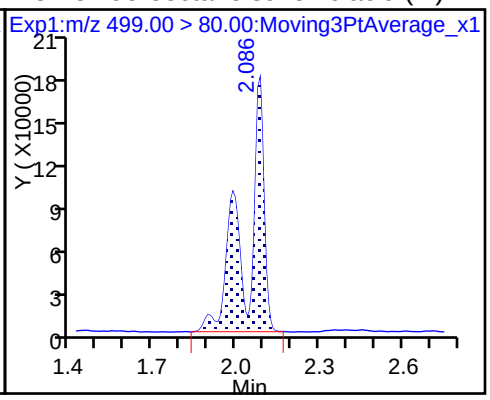
5 Perfluorooctanoic acid



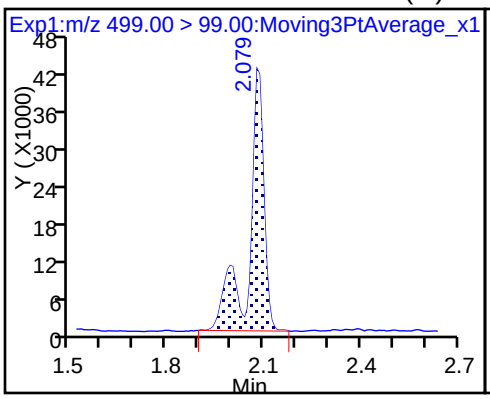
5 Perfluorooctanoic acid



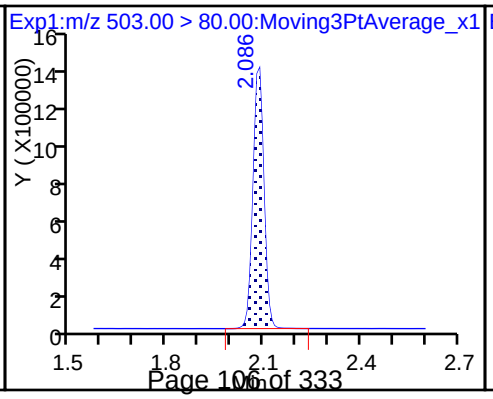
8 Perfluorooctane sulfonic acid (M)



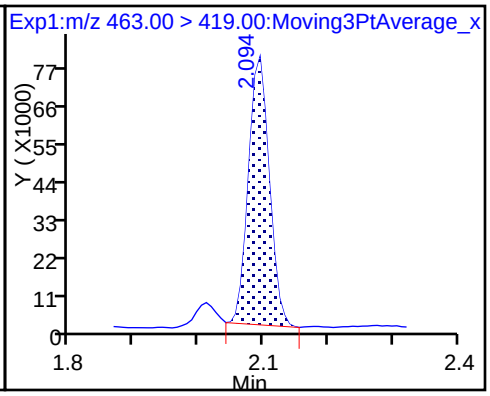
8 Perfluorooctane sulfonic acid (M)



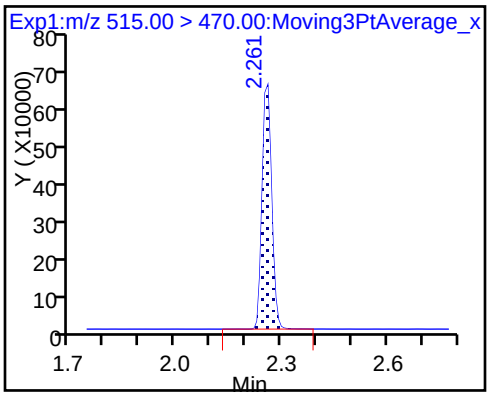
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.261
Y (X10000)
80
70
60
50
40
30
20
10
0
1.7
2.0
2.3
2.6
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_020.d
Lims ID: 320-33939-A-1-A
Client ID: WGNA-120517-RW-0617
Sample Type: Client
Inject. Date: 12-Dec-2017 09:56:10 ALS Bottle#: 12 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-1-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 14:41:28 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:10:27

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.63	96.33
$ 10 13C2 PFDA	10.0	10.7	107.19

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

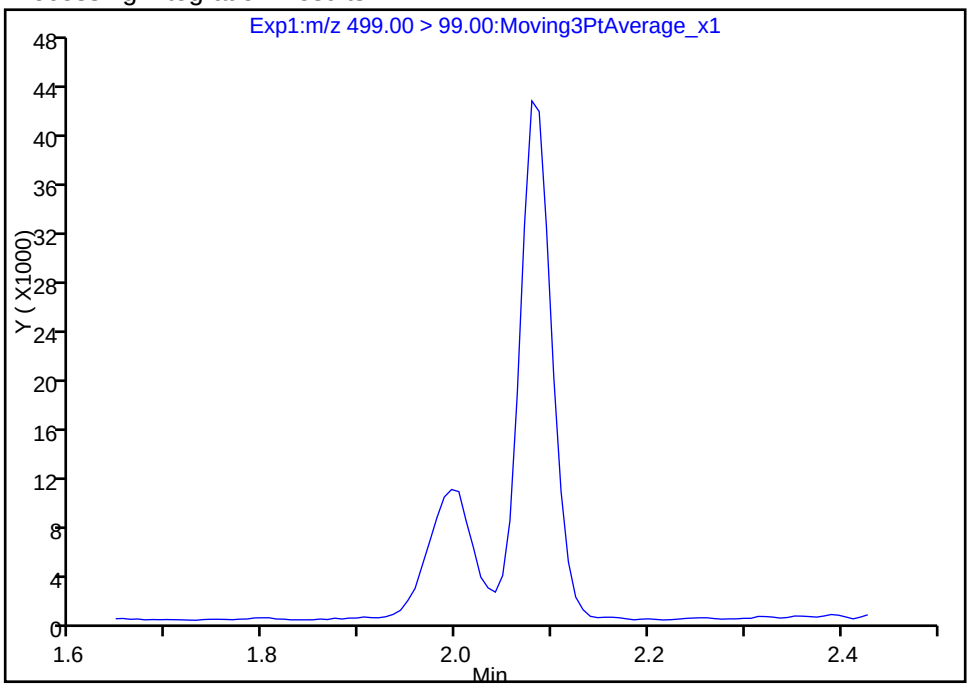
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_020.d				
Injection Date:	12-Dec-2017 09:56:10	Instrument ID:	A8_N		
Lims ID:	320-33939-A-1-A	Lab Sample ID:	320-33939-1		
Client ID:	WGNA-120517-RW-0617				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	17
Injection 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: 2

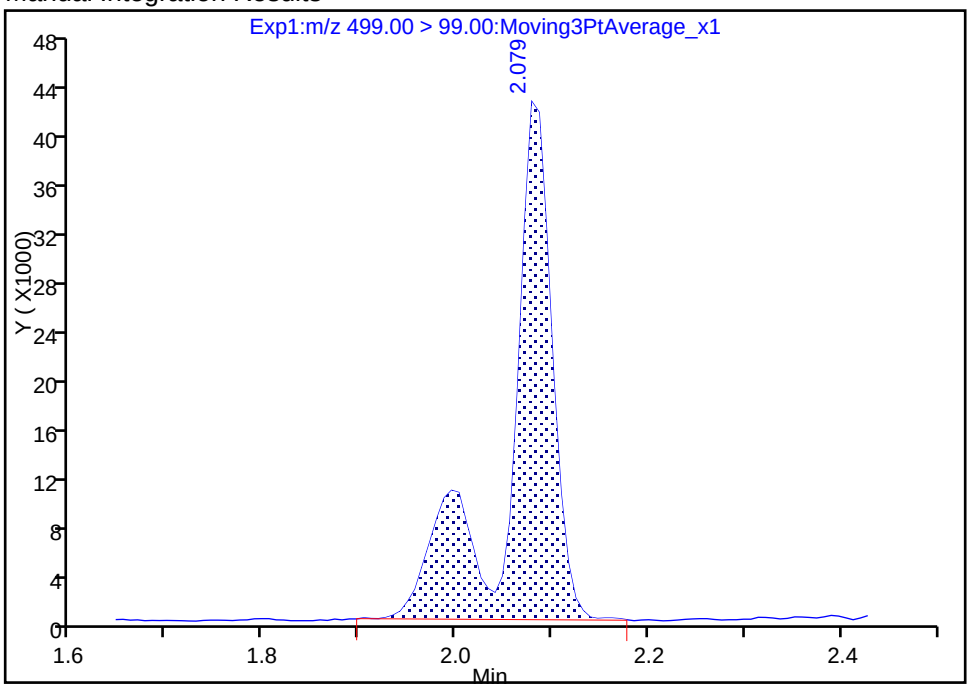
Not Detected
Expected RT: 2.08

Processing Integration Results



Manual Integration Results

RT:	2.08
Area:	133235
Amount:	7.069164
Amount Units:	ng/ml



Reviewer: hannigana, 12-Dec-2017 12:10:07
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

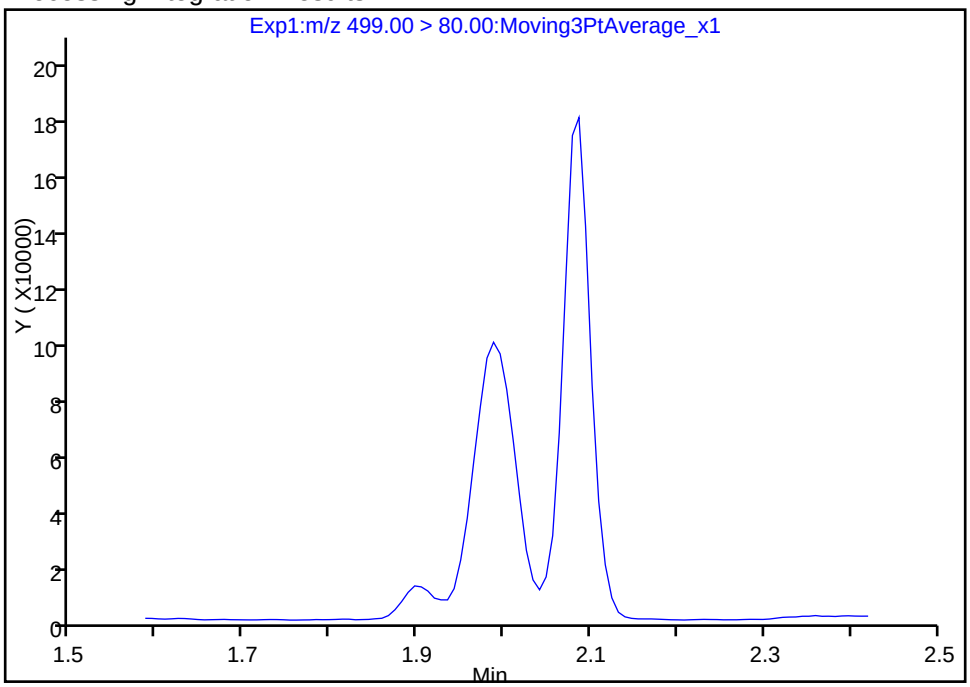
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_020.d				
Injection Date:	12-Dec-2017 09:56:10	Instrument ID:	A8_N		
Lims ID:	320-33939-A-1-A	Lab Sample ID:	320-33939-1		
Client ID:	WGNA-120517-RW-0617				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	17
Injection 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

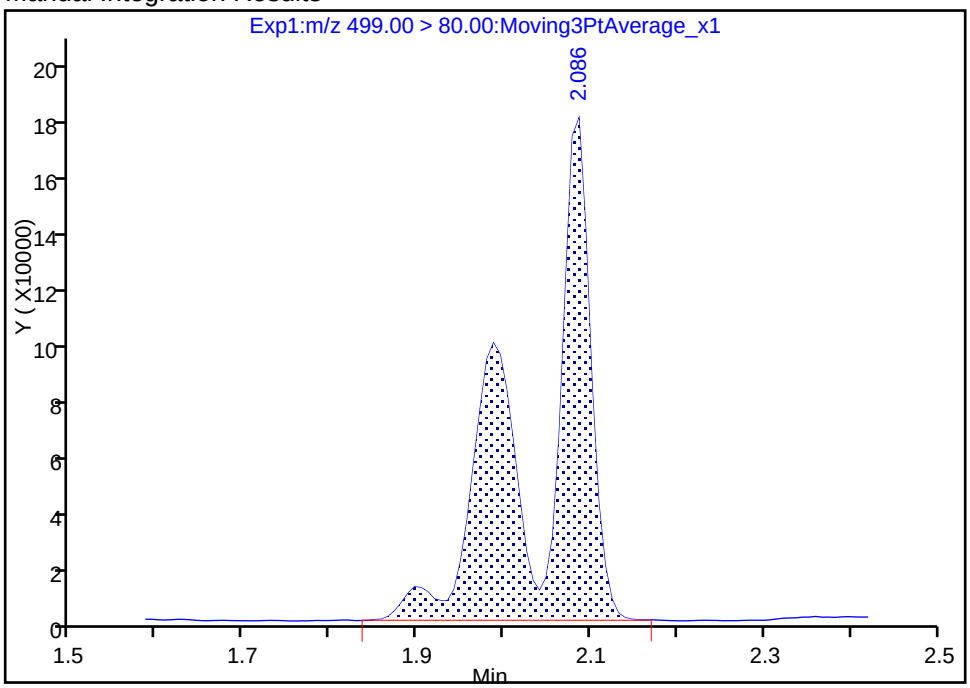
Processing Integration Results

Not Detected
Expected RT: 2.08



Manual Integration Results

RT: 2.09
Area: 745292
Amount: 7.069164
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 12:10:12
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: WGNA-120517-FRB-0617
Lab Sample ID: 320-33939-2
Matrix: Water
Lab File ID: 2017.12.12_537A_021.d
Analysis Method: 537
Date Collected: 12/05/2017 08:05
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 246(mL)
Date Analyzed: 12/12/2017 10:00
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.: 199464
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)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	97		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_021.d
Lims ID: 320-33939-A-2-A
Client ID: WGNA-120517-FRB-0617
Sample Type: Client
Inject. Date: 12-Dec-2017 10:00:51 ALS Bottle#: 13 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-2-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 14:41:28 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:11:57

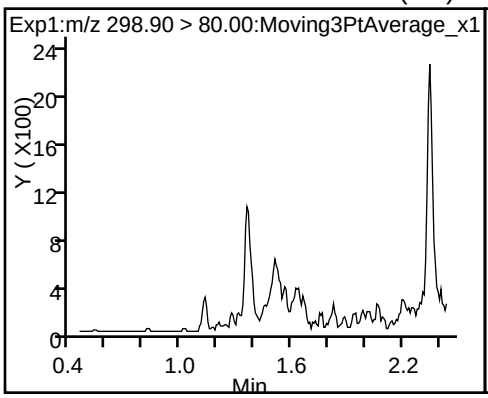
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.573	-0.094	1.000	1802078	10.4		9632	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.913	-0.092		1573004	10.0		8285	
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.151	-0.072		3233568	28.7		8307	
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.312	-0.059	1.000	1172053	9.74		7613	

Report Date: 12-Dec-2017 14:41:58 Chrom Revision: 2.2 16-Aug-2017 16:24:46

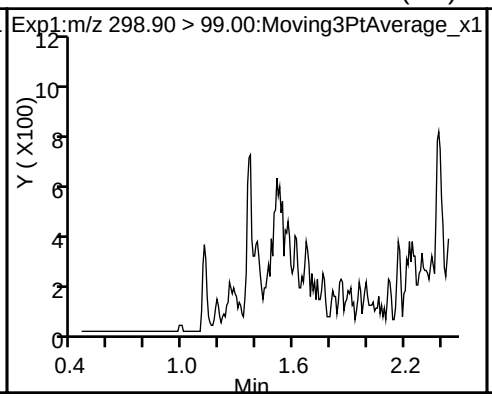
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_021.d				
Injection Date:	12-Dec-2017 10:00:51	Instrument ID:	A8_N		
Lims ID:	320-33939-A-2-A	Lab Sample ID:	320-33939-2		
Client ID:	WGNA-120517-FRB-0617				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

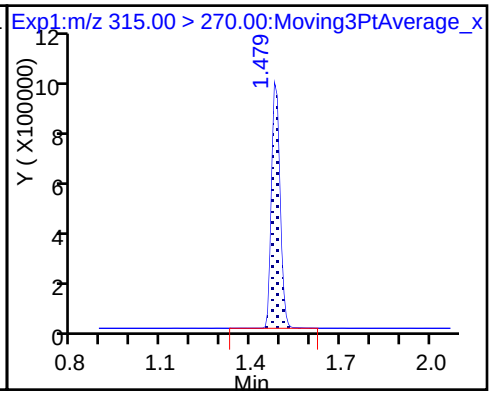
1 Perfluorobutanesulfonic acid (ND)



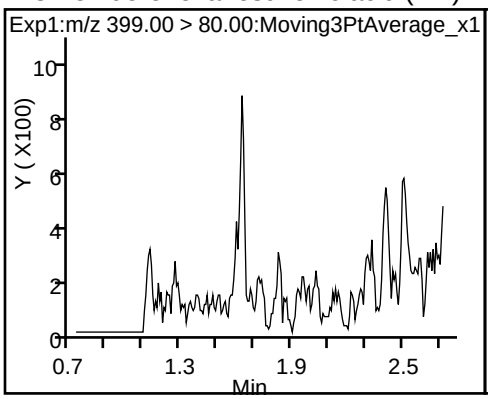
1 Perfluorobutanesulfonic acid (ND)



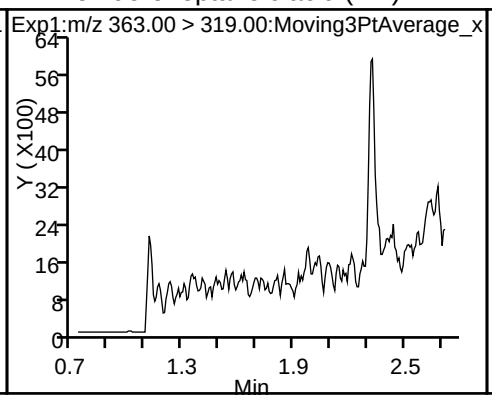
$ 2 13C2 PFHxA



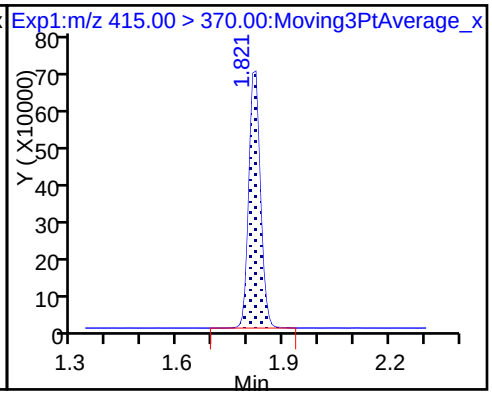
3 Perfluorohexanesulfonic acid (ND)



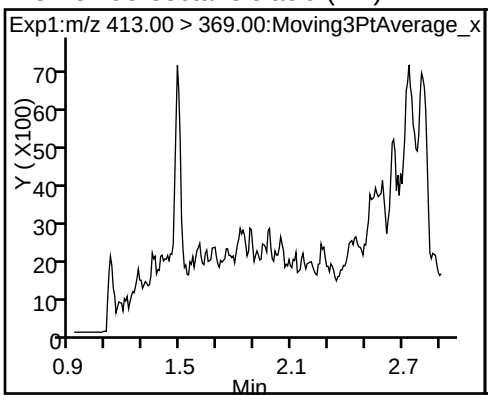
4 Perfluoroheptanoic acid (ND)



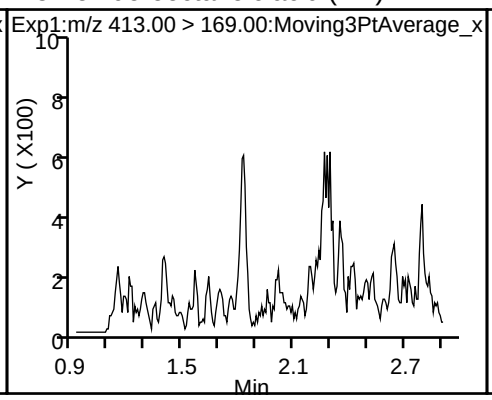
* 6 13C2-PFOA



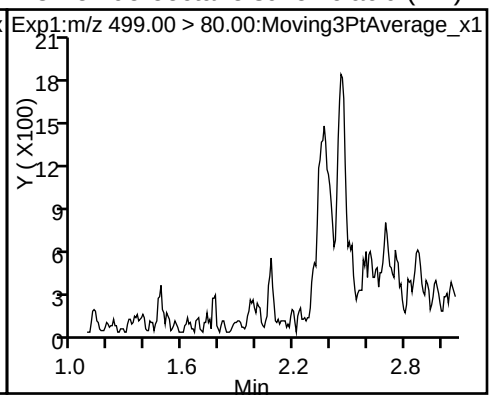
5 Perfluorooctanoic acid (ND)



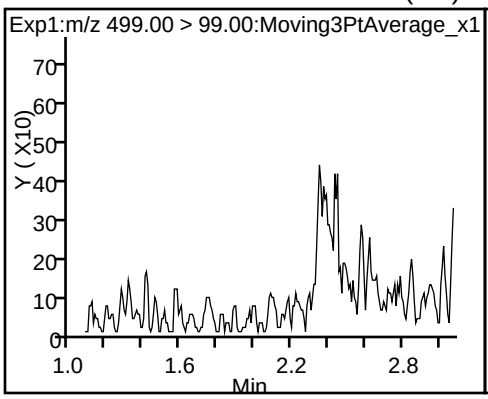
5 Perfluorooctanoic acid (ND)



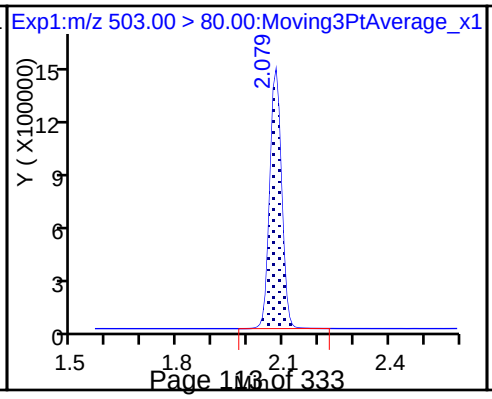
8 Perfluorooctane sulfonic acid (ND)



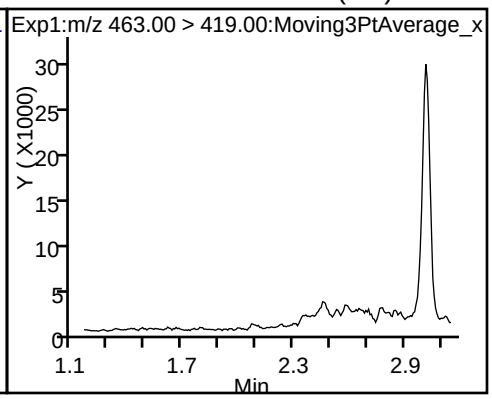
8 Perfluorooctane sulfonic acid (ND)



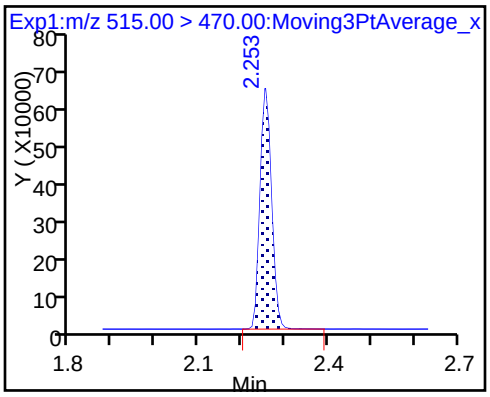
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.253
Y (X10000)
80
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_021.d
Lims ID: 320-33939-A-2-A
Client ID: WGNA-120517-FRB-0617
Sample Type: Client
Inject. Date: 12-Dec-2017 10:00:51 ALS Bottle#: 13 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-2-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 14:41:28 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:11:57

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.4	104.12
$ 10 13C2 PFDA	10.0	9.74	97.37

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: WGNA-120517-RW-4820
Lab Sample ID: 320-33939-3
Matrix: Water
Lab File ID: 2017.12.12_537A_022.d
Analysis Method: 537
Date Collected: 12/05/2017 08:40
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 242.7(mL)
Date Analyzed: 12/12/2017 10:05
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.: 199464
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	8.2	U	21	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	2.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	93	37	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		70-130
STL00996	13C2 PFDA	102		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_022.d
Lims ID: 320-33939-A-3-A
Client ID: WGNA-120517-RW-4820
Sample Type: Client
Inject. Date: 12-Dec-2017 10:05:31 ALS Bottle#: 14 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-3-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 14:41:28 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:12:18

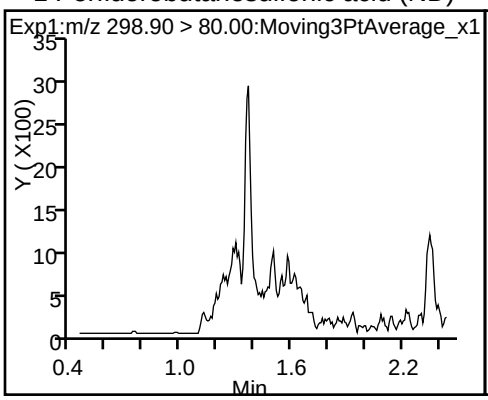
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.573	-0.086	1.000	1742683	10.3		9127	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.913	-0.092		1531302	10.0		7686	
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.151	-0.072		3334745	28.7		7567	
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.312	-0.059	1.000	1197246	10.2		7972	

Report Date: 12-Dec-2017 14:41:59 Chrom Revision: 2.2 16-Aug-2017 16:24:46

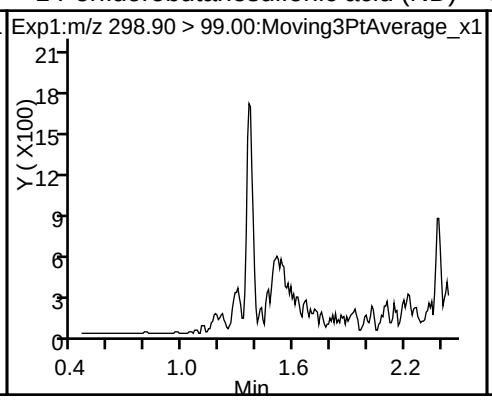
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_022.d				
Injection Date:	12-Dec-2017 10:05:31	Instrument ID:	A8_N		
Lims ID:	320-33939-A-3-A	Lab Sample ID:	320-33939-3		
Client ID:	WGNA-120517-RW-4820				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

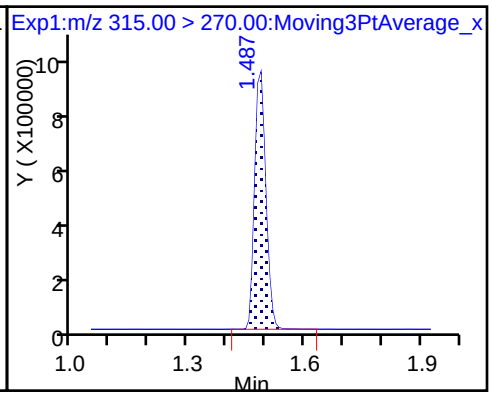
1 Perfluorobutanesulfonic acid (ND)



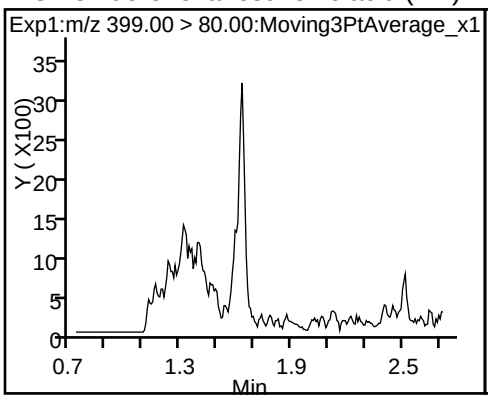
1 Perfluorobutanesulfonic acid (ND)



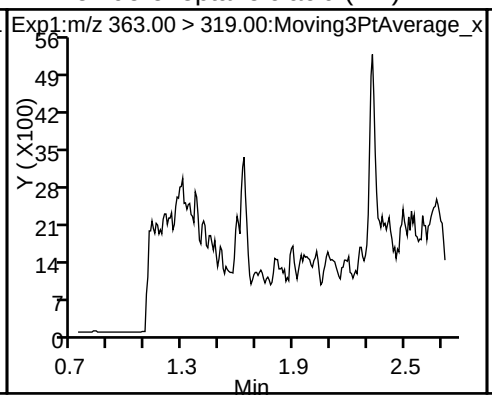
$ 2 13C2 PFHxA



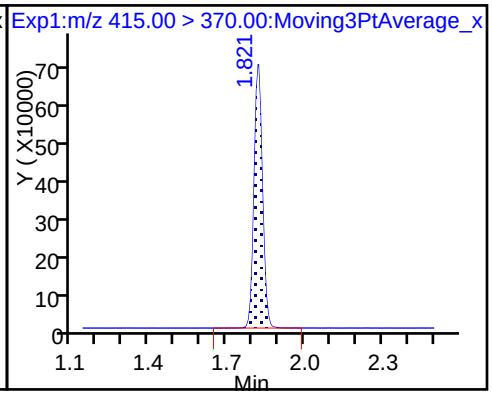
3 Perfluorohexanesulfonic acid (ND)



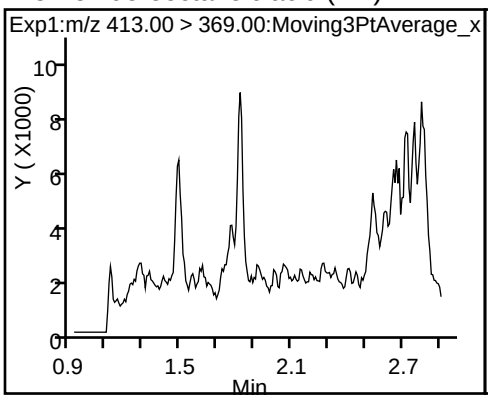
4 Perfluoroheptanoic acid (ND)



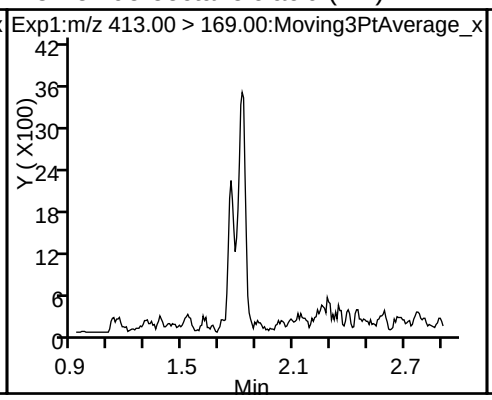
* 6 13C2-PFOA



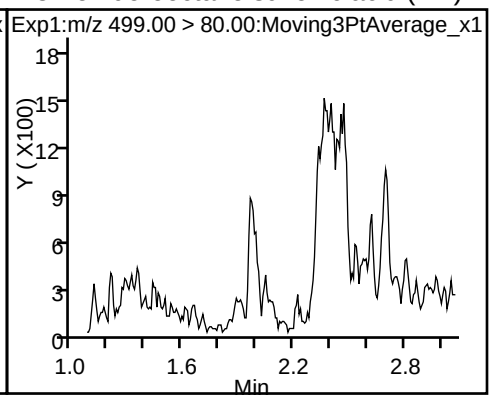
5 Perfluorooctanoic acid (ND)



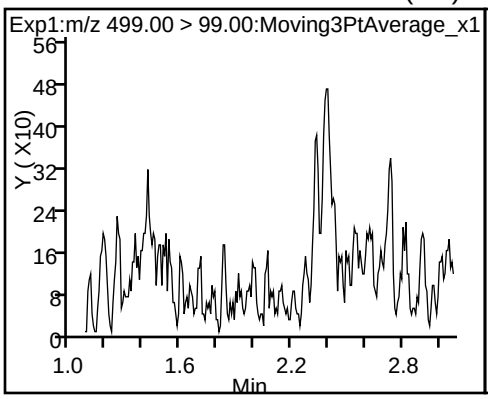
5 Perfluorooctanoic acid (ND)



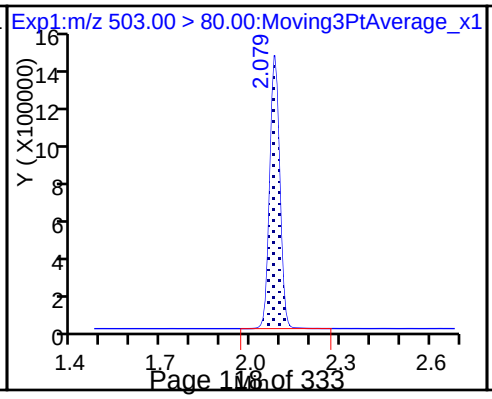
8 Perfluorooctane sulfonic acid (ND)



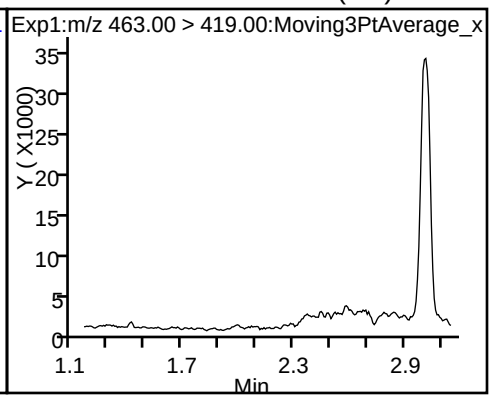
8 Perfluorooctane sulfonic acid (ND)



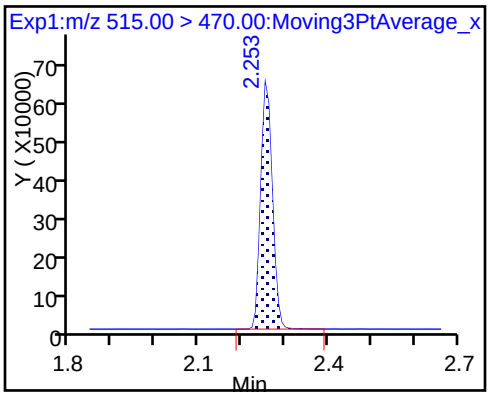
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.253
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_022.d
Lims ID: 320-33939-A-3-A
Client ID: WGNA-120517-RW-4820
Sample Type: Client
Inject. Date: 12-Dec-2017 10:05:31 ALS Bottle#: 14 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-3-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 14:41:28 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:12:18

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.3	103.43
$ 10 13C2 PFDA	10.0	10.2	102.18

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: WGNA-120517-FRB-4820
Lab Sample ID: 320-33939-4
Matrix: Water
Lab File ID: 2017.12.12_537A_023.d
Analysis Method: 537
Date Collected: 12/05/2017 08:35
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 249.8(mL)
Date Analyzed: 12/12/2017 10:10
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.: 199464
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	109		70-130
STL00996	13C2 PFDA	107		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_023.d
Lims ID: 320-33939-A-4-A
Client ID: WGNA-120517-FRB-4820
Sample Type: Client
Inject. Date: 12-Dec-2017 10:10:11 ALS Bottle#: 15 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-4-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 14:41:28 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:12:27

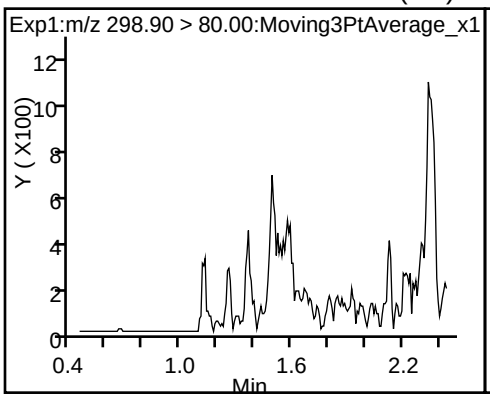
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.573	-0.086	1.000	1770211	10.9		9388	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.913	-0.092		1475777	10.0		7508	
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.151	-0.072		3278446	28.7		9004	
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.312	-0.059	1.000	1206095	10.7		8108	

Report Date: 12-Dec-2017 14:41:59 Chrom Revision: 2.2 16-Aug-2017 16:24:46

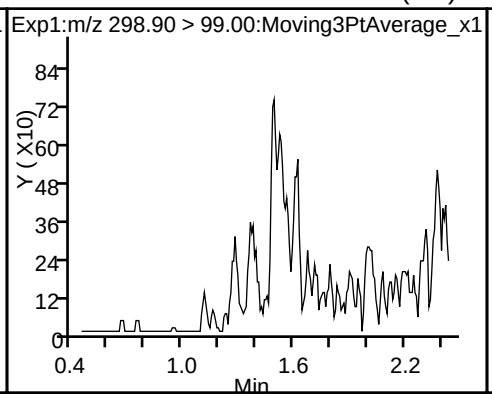
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_023.d				
Injection Date:	12-Dec-2017 10:10:11	Instrument ID:	A8_N		
Lims ID:	320-33939-A-4-A	Lab Sample ID:	320-33939-4		
Client ID:	WGNA-120517-FRB-4820				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	20
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

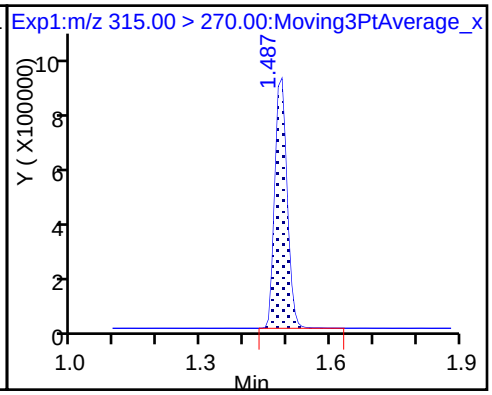
1 Perfluorobutanesulfonic acid (ND)



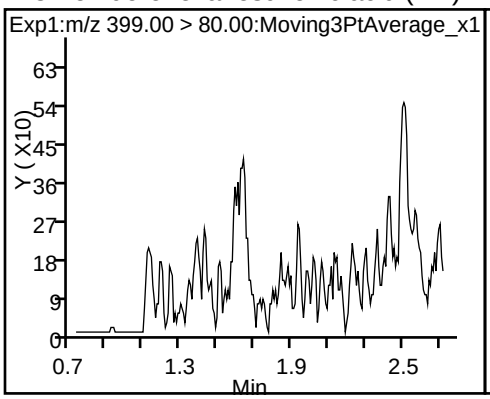
1 Perfluorobutanesulfonic acid (ND)



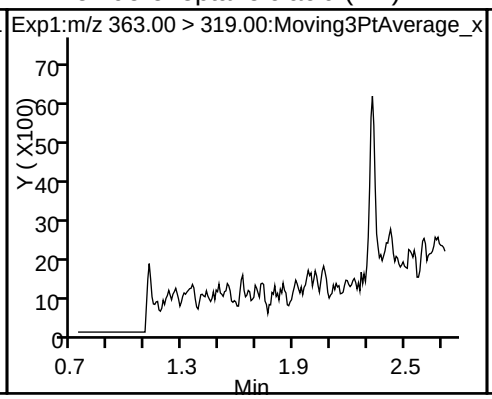
$ 2 13C2 PFHxA



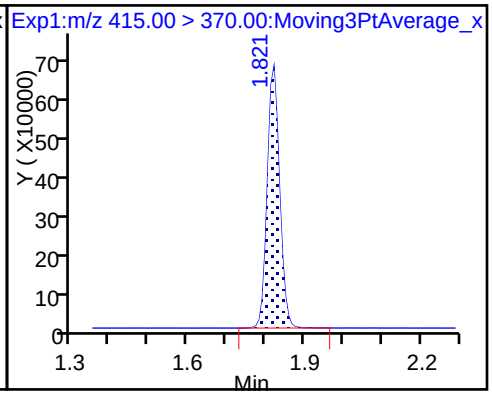
3 Perfluorohexanesulfonic acid (ND)



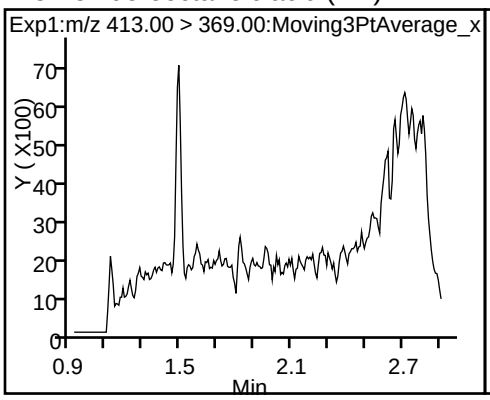
4 Perfluoroheptanoic acid (ND)



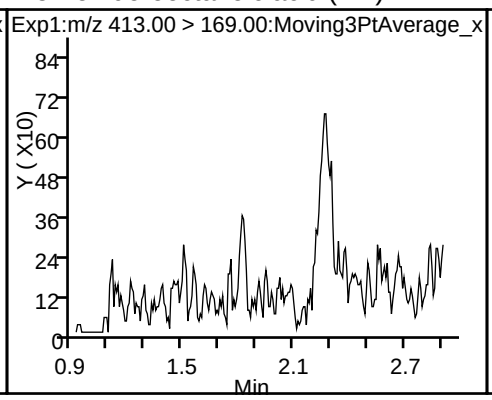
* 6 13C2-PFOA



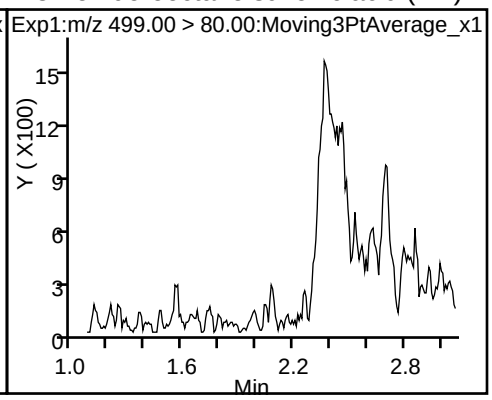
5 Perfluorooctanoic acid (ND)



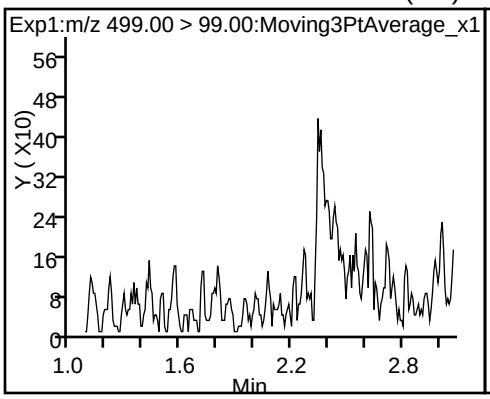
5 Perfluorooctanoic acid (ND)



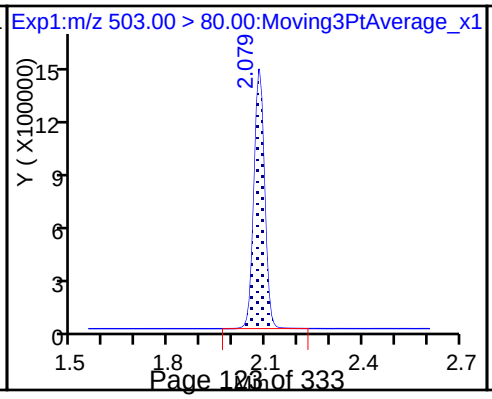
8 Perfluorooctane sulfonic acid (ND)



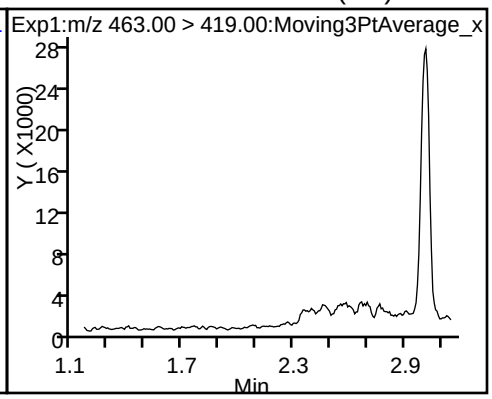
8 Perfluorooctane sulfonic acid (ND)



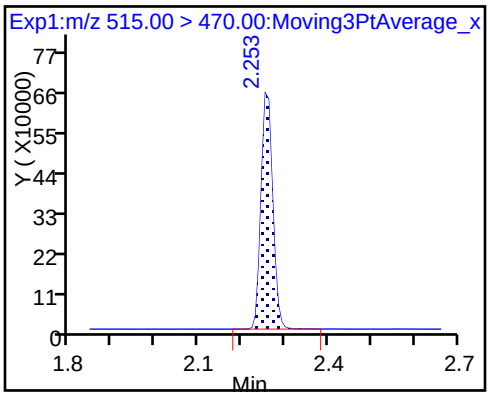
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.253
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_023.d
Lims ID: 320-33939-A-4-A
Client ID: WGNA-120517-FRB-4820
Sample Type: Client
Inject. Date: 12-Dec-2017 10:10:11 ALS Bottle#: 15 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-4-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 14:41:28 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:12:27

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.9	109.02
$ 10 13C2 PFDA	10.0	10.7	106.80

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-RW-285
Lab Sample ID: 320-33939-5
Matrix: Water
Lab File ID: 2017.12.12_537A_024.d
Analysis Method: 537
Date Collected: 12/05/2017 09:10
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 248.8(mL)
Date Analyzed: 12/12/2017 10:14
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.: 199464
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	19	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	11	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)	13	J	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	98		70-130
STL00996	13C2 PFDA	101		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_024.d
Lims ID: 320-33939-A-5-A
Client ID: NAWC-120517-RW-285
Sample Type: Client
Inject. Date: 12-Dec-2017 10:14:53 ALS Bottle#: 16 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-5-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 14:41:28 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:14:49

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.444	-0.078	1.000	151344	1.13		207	
298.90 > 99.00	1.366	1.444	-0.078	1.000	106773		1.42(0.00-0.00)	213	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.573	-0.086	1.000	1701988	9.81		8204	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.725	-0.094	1.000	632213	3.15		657	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.725	-0.094	1.000	156141	1.06		37.9	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.913	-0.092		1576169	10.0		7654	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.821	1.914	-0.093	1.000	402648	2.76		63.6	
413.00 > 169.00	1.821	1.914	-0.093	1.000	248780		1.62(0.00-0.00)	553	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.086	2.079	0.007	1.000	531674	4.72		284	M
499.00 > 99.00	2.079	2.079	0.0	0.996	102225		5.20(0.00-0.00)	248	M
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.151	-0.072		3441658	28.7		6372	
9 Perfluorononanoic acid									M
463.00 > 419.00	2.086	2.158	-0.072	1.000	26988	0.2578		5.0	M
$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.312	-0.051	1.000	1222931	10.1		9089	

QC Flag Legend

Review Flags

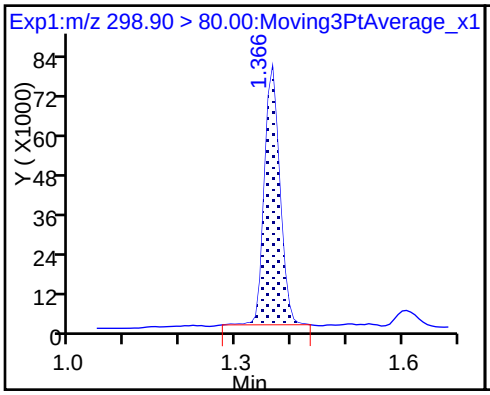
M - Manually Integrated

Report Date: 12-Dec-2017 14:42:00 Chrom Revision: 2.2 16-Aug-2017 16:24:46

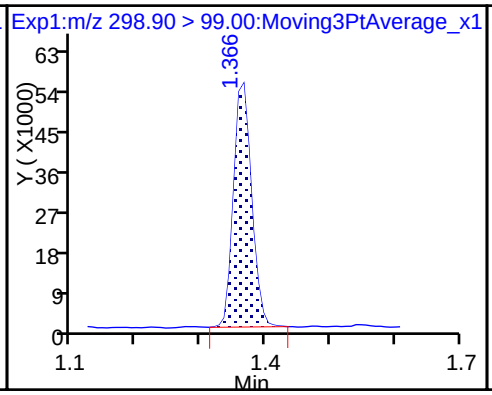
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_024.d				
Injection Date:	12-Dec-2017 10:14:53	Instrument ID:	A8_N		
Lims ID:	320-33939-A-5-A	Lab Sample ID:	320-33939-5		
Client ID:	NAWC-120517-RW-285				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	21
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

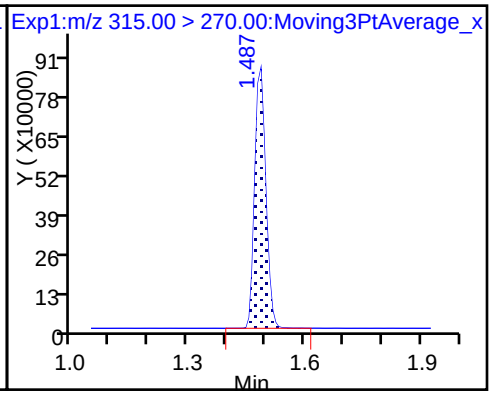
1 Perfluorobutanesulfonic acid



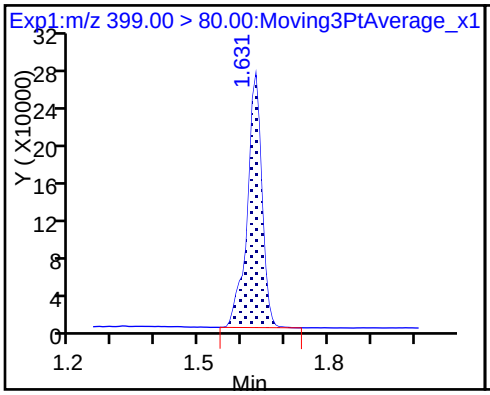
1 Perfluorobutanesulfonic acid



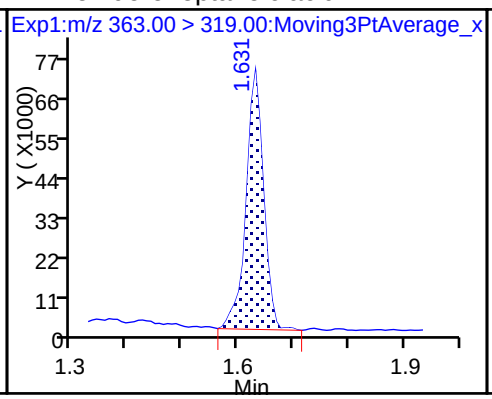
$ 2 13C2 PFHxA



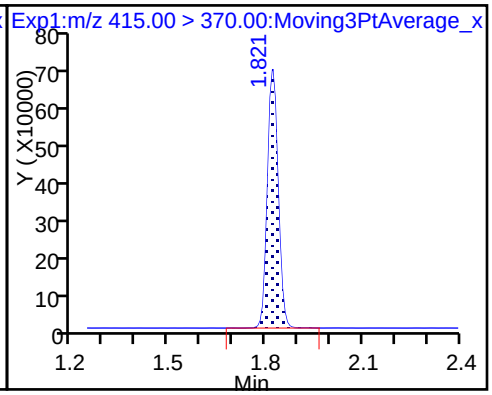
3 Perfluorohexanesulfonic acid



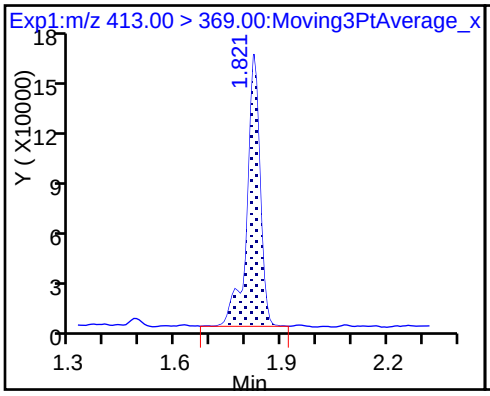
4 Perfluoroheptanoic acid



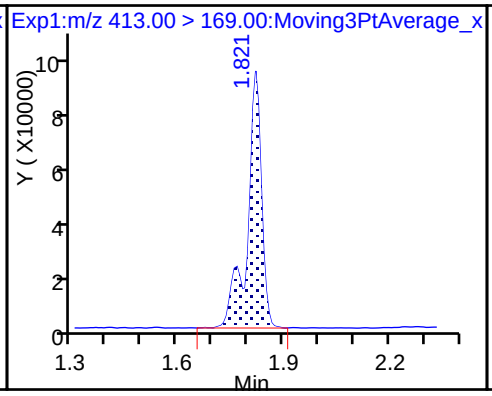
* 6 13C2-PFOA



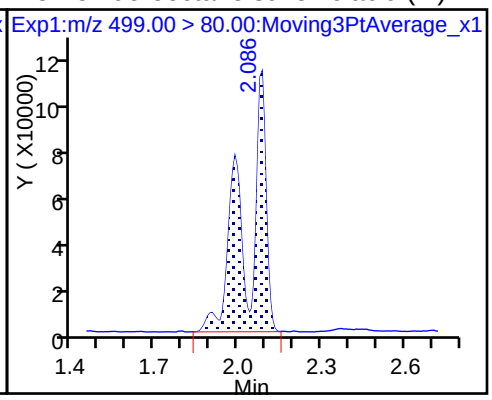
5 Perfluorooctanoic acid



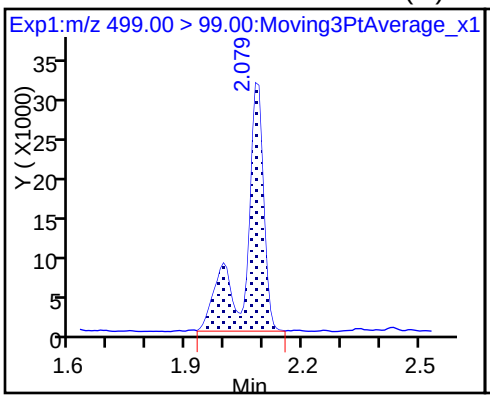
5 Perfluorooctanoic acid



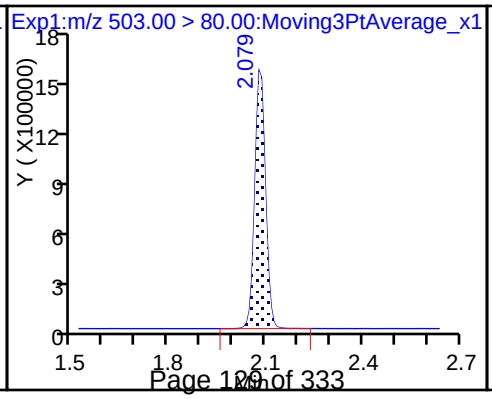
8 Perfluorooctane sulfonic acid (M)



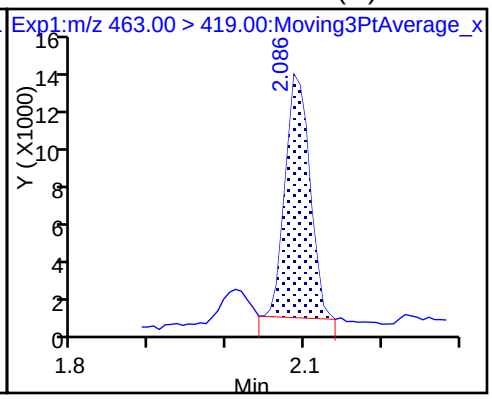
8 Perfluorooctane sulfonic acid (M)



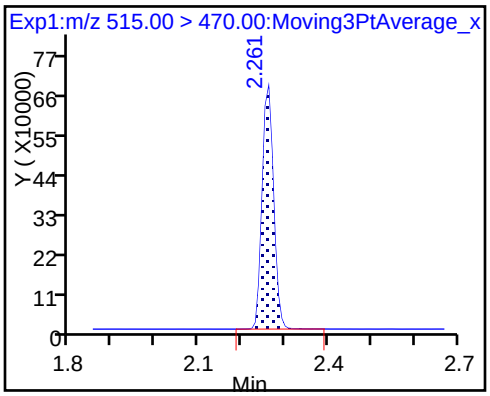
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.261
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_024.d
Lims ID: 320-33939-A-5-A
Client ID: NAWC-120517-RW-285
Sample Type: Client
Inject. Date: 12-Dec-2017 10:14:53 ALS Bottle#: 16 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-5-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 14:41:28 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:14:49

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.81	98.14
$ 10 13C2 PFDA	10.0	10.1	101.40

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

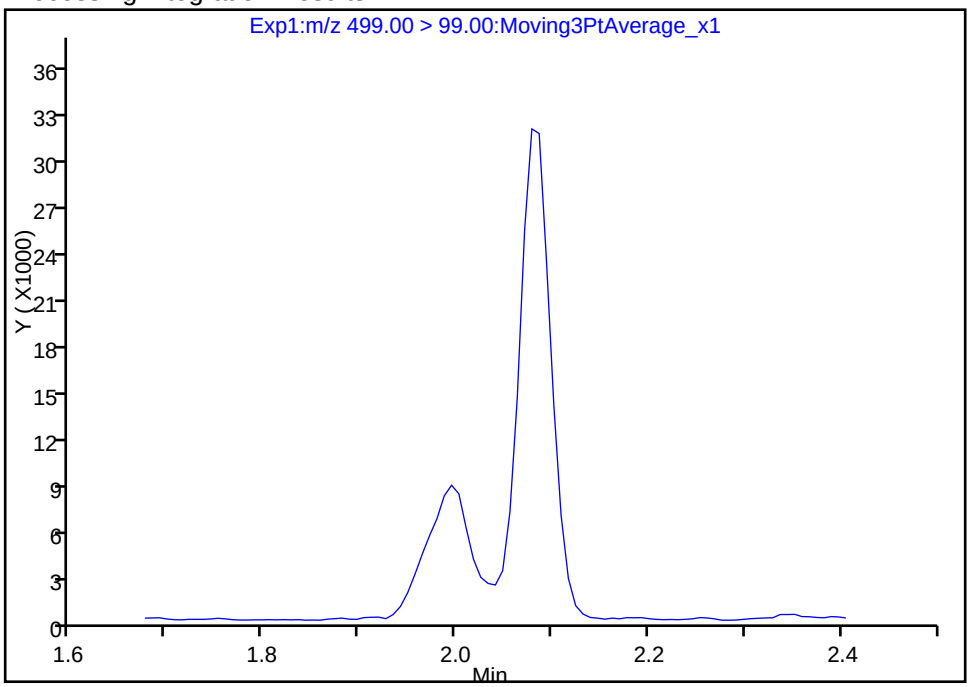
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_024.d				
Injection Date:	12-Dec-2017 10:14:53	Instrument ID:	A8_N		
Lims ID:	320-33939-A-5-A	Lab Sample ID:	320-33939-5		
Client ID:	NAWC-120517-RW-285				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	21
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 2

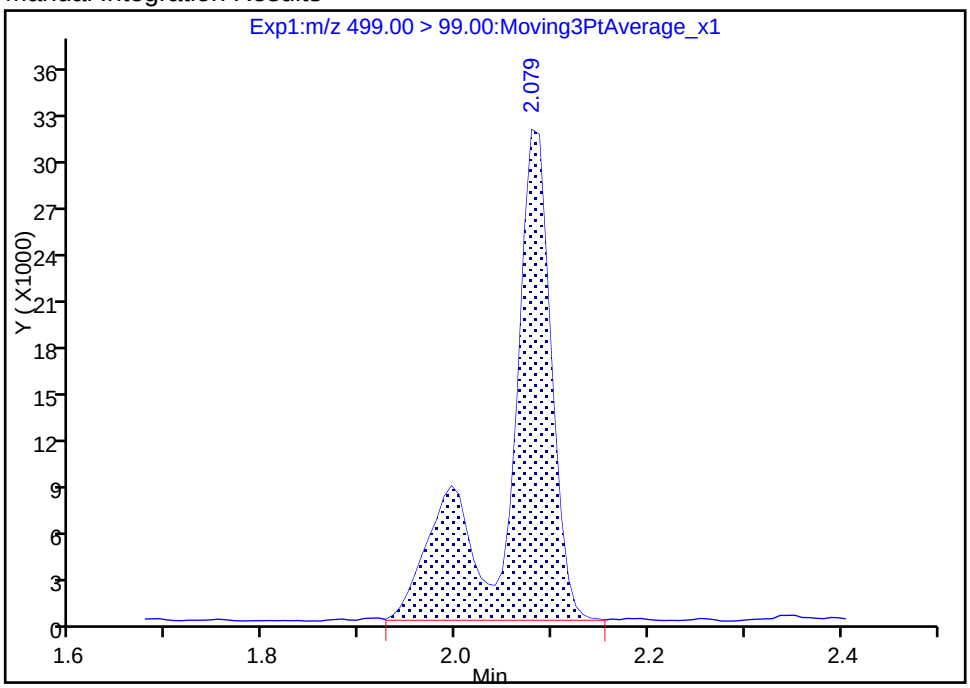
Processing Integration Results

Not Detected
Expected RT: 2.08



Manual Integration Results

RT:	2.08
Area:	102225
Amount:	4.718620
Amount Units:	ng/ml



Reviewer: hannigana, 12-Dec-2017 12:14:24

Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

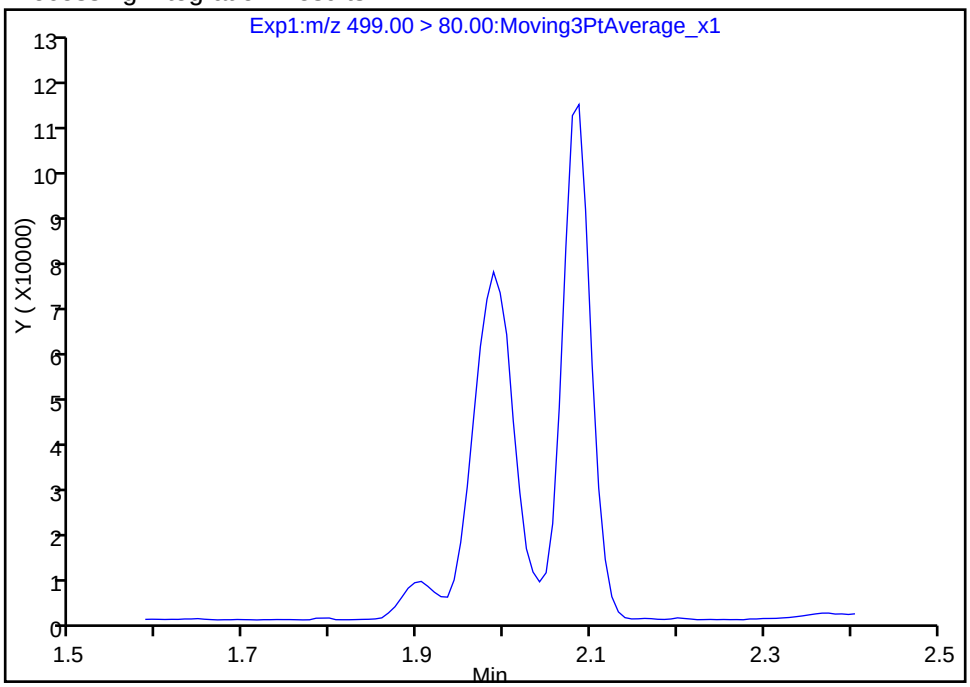
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_024.d				
Injection Date:	12-Dec-2017 10:14:53	Instrument ID:	A8_N		
Lims ID:	320-33939-A-5-A	Lab Sample ID:	320-33939-5		
Client ID:	NAWC-120517-RW-285				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	21
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

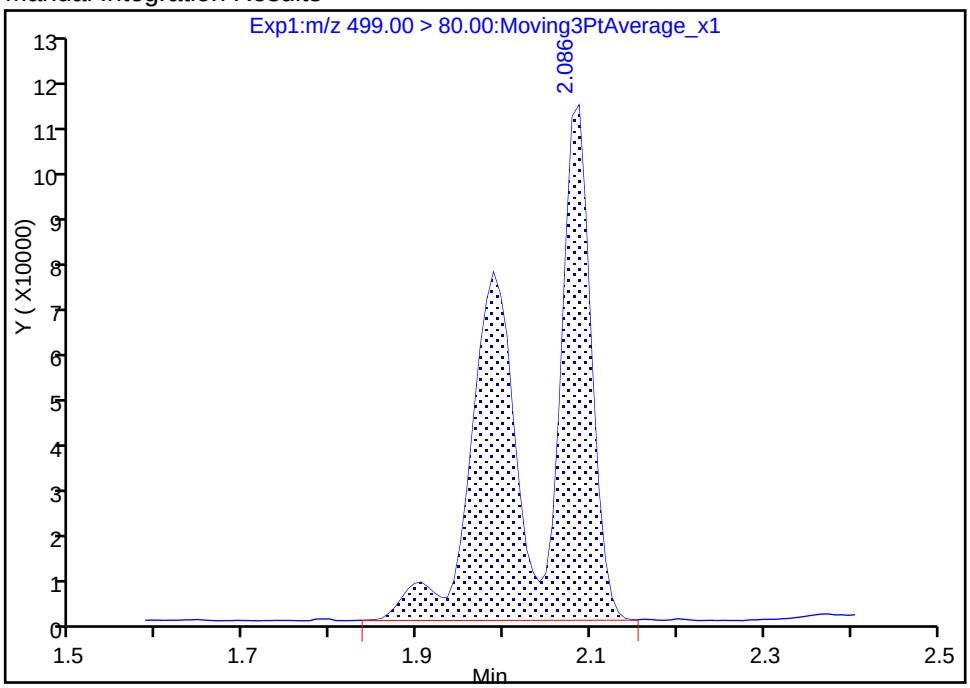
Processing Integration Results

Not Detected
Expected RT: 2.08



Manual Integration Results

RT: 2.09
Area: 531674
Amount: 4.718620
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 12:14:31
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

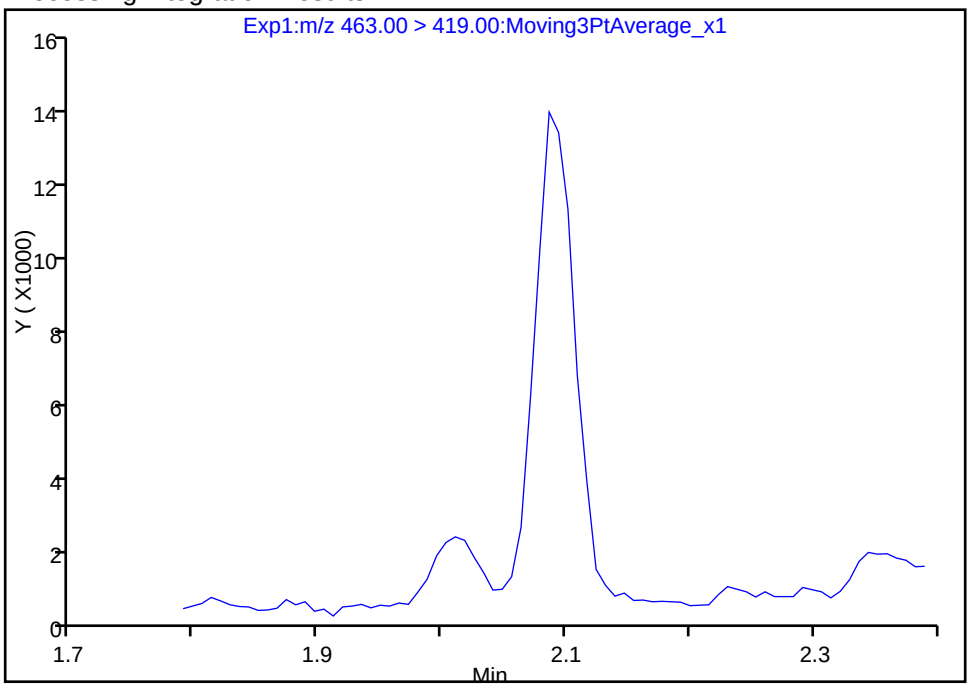
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_024.d				
Injection Date:	12-Dec-2017 10:14:53	Instrument ID:	A8_N		
Lims ID:	320-33939-A-5-A	Lab Sample ID:	320-33939-5		
Client ID:	NAWC-120517-RW-285				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	21
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

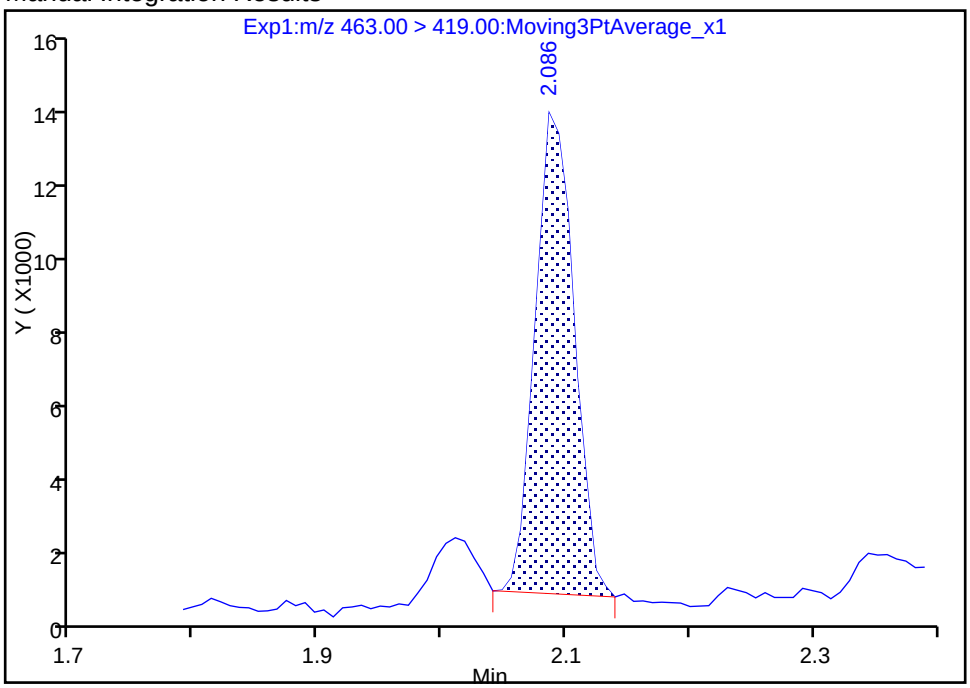
Processing Integration Results

Not Detected
Expected RT: 2.16



Manual Integration Results

RT: 2.09
Area: 26988
Amount: 0.257807
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 14:38:47
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-FRB-285
Lab Sample ID: 320-33939-6
Matrix: Water
Lab File ID: 2017.12.12_537A_025.d
Analysis Method: 537
Date Collected: 12/05/2017 09:05
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 246.1(mL)
Date Analyzed: 12/12/2017 10:19
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199464
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)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		70-130
STL00996	13C2 PFDA	110		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_025.d
Lims ID: 320-33939-A-6-A
Client ID: NAWC-120517-FRB-285
Sample Type: Client
Inject. Date: 12-Dec-2017 10:19:34 ALS Bottle#: 17 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-6-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 14:41:28 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:15:01

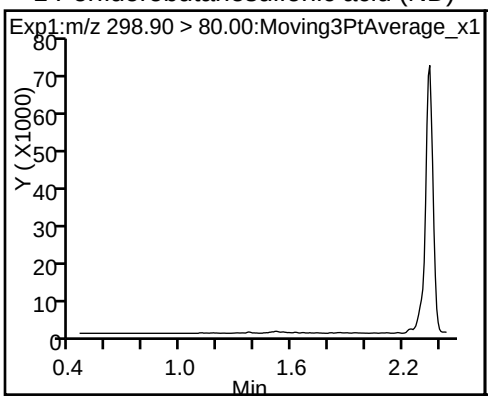
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.573	-0.086	1.000	1742233	10.3		9317	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.913	-0.092		1542108	10.0		8273	
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.151	-0.072		3359476	28.7		7070	
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.312	-0.059	1.000	1303415	11.0		8809	

Report Date: 12-Dec-2017 14:42:01 Chrom Revision: 2.2 16-Aug-2017 16:24:46

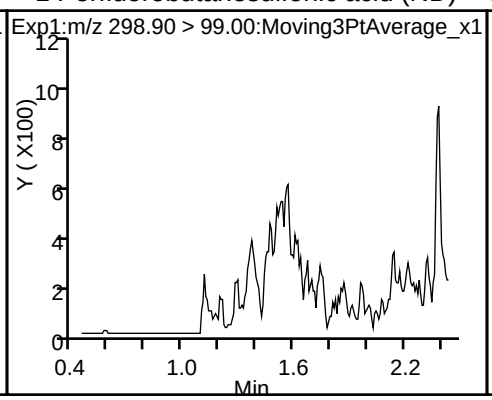
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_025.d				
Injection Date:	12-Dec-2017 10:19:34	Instrument ID:	A8_N		
Lims ID:	320-33939-A-6-A	Lab Sample ID:	320-33939-6		
Client ID:	NAWC-120517-FRB-285				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	22
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

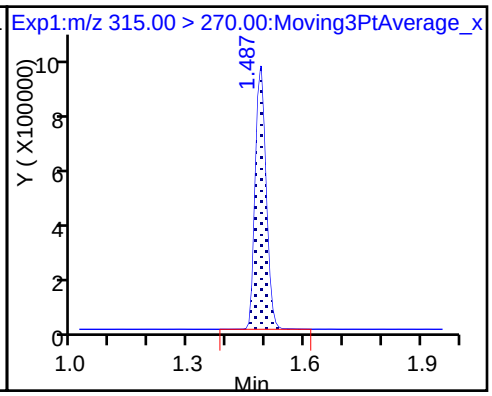
1 Perfluorobutanesulfonic acid (ND)



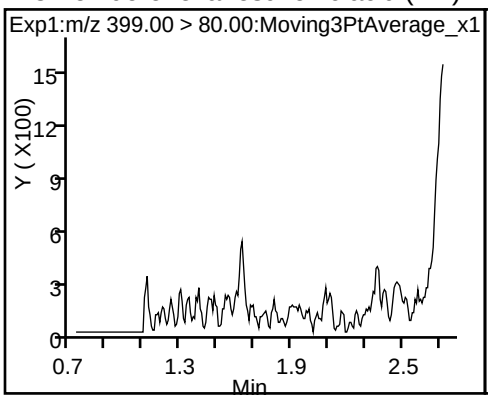
1 Perfluorobutanesulfonic acid (ND)



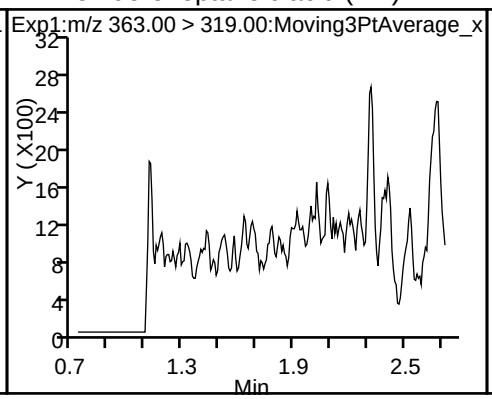
$ 2 13C2 PFHxA



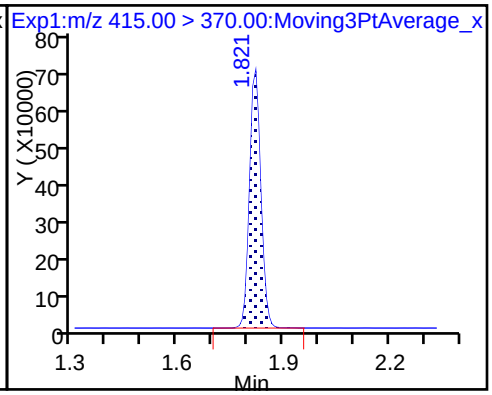
3 Perfluorohexanesulfonic acid (ND)



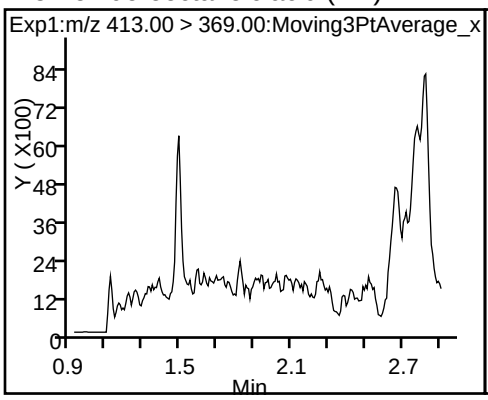
4 Perfluoroheptanoic acid (ND)



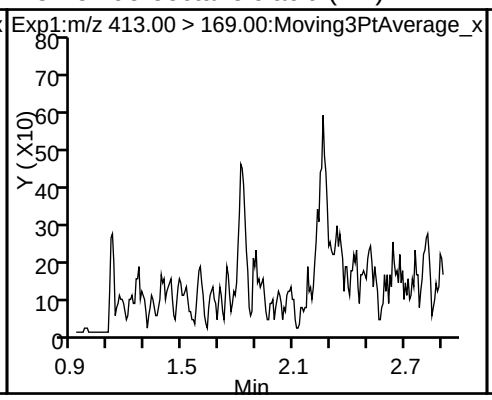
* 6 13C2-PFOA



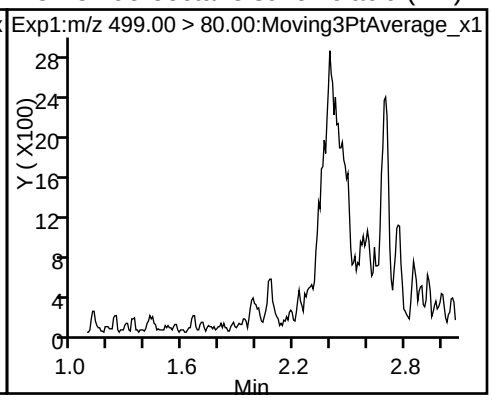
5 Perfluorooctanoic acid (ND)



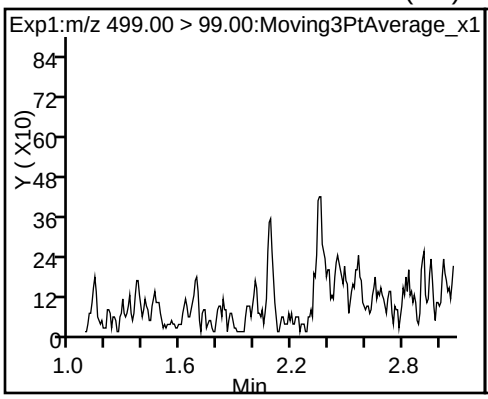
5 Perfluorooctanoic acid (ND)



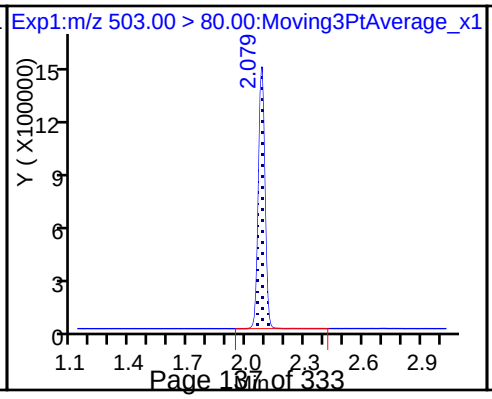
8 Perfluorooctane sulfonic acid (ND)



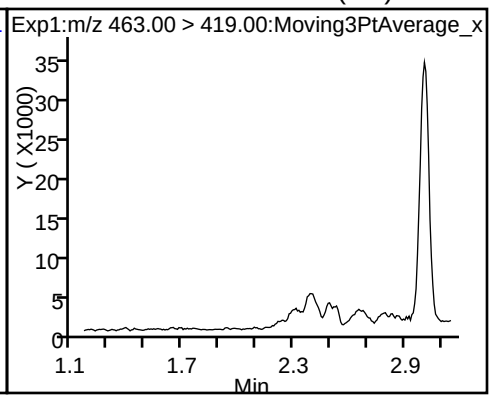
8 Perfluorooctane sulfonic acid (ND)



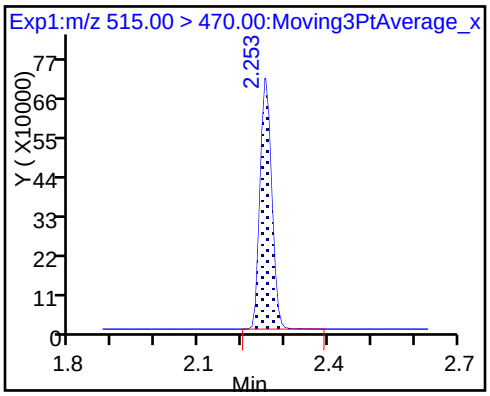
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.253
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_025.d
Lims ID: 320-33939-A-6-A
Client ID: NAWC-120517-FRB-285
Sample Type: Client
Inject. Date: 12-Dec-2017 10:19:34 ALS Bottle#: 17 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-6-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 14:41:28 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:15:01

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.3	102.68
$ 10 13C2 PFDA	10.0	11.0	110.46

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-RW-135
Lab Sample ID: 320-33939-7
Matrix: Water
Lab File ID: 2017.12.12_537A_026.d
Analysis Method: 537
Date Collected: 12/05/2017 10:40
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 246.5(mL)
Date Analyzed: 12/12/2017 10:24
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199464
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	J M	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	11	J	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U M	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		70-130
STL00996	13C2 PFDA	99		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_026.d
Lims ID: 320-33939-A-7-A
Client ID: NAWC-120517-RW-135
Sample Type: Client
Inject. Date: 12-Dec-2017 10:24:13 ALS Bottle#: 18 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-7-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 14:41:28 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:16:00

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.444	-0.078	1.000	226255	1.82		376	
298.90 > 99.00	1.366	1.444	-0.078	1.000	161991		1.40(0.00-0.00)	363	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.573	-0.086	1.000	1735896	10.3		10140	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	1.631	1.725	-0.094	1.000	97914	0.5260		106	M
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.725	-0.094	1.000	124557	0.8712		29.5	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.913	-0.092		1525968	10.0		7908	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.821	1.914	-0.093	1.000	396783	2.81		64.0	
413.00 > 169.00	1.821	1.914	-0.093	1.000	226545		1.75(0.00-0.00)	496	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.079	2.079	0.0	1.000	355683	3.41		219	M
499.00 > 99.00	2.079	2.079	0.0	1.000	63317		5.62(0.00-0.00)	138	M
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.151	-0.072		3188913	28.7		6024	
9 Perfluorononanoic acid									M
463.00 > 419.00	2.086	2.158	-0.072	1.000	43311	0.4273		8.8	M
$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.312	-0.051	1.000	1160786	9.94		7671	

QC Flag Legend

Review Flags

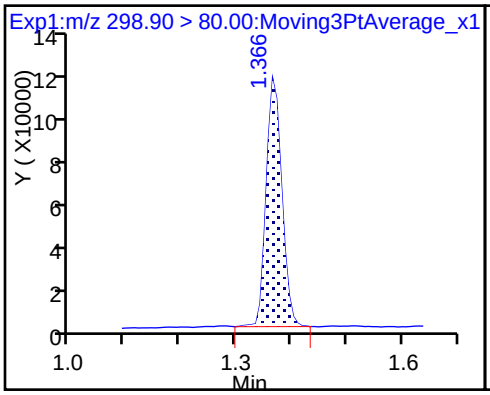
M - Manually Integrated

Report Date: 12-Dec-2017 14:42:02 Chrom Revision: 2.2 16-Aug-2017 16:24:46

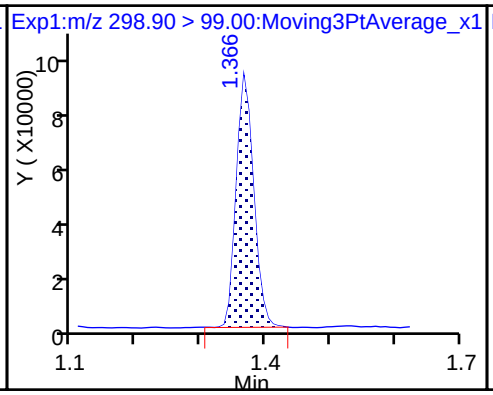
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_026.d				
Injection Date:	12-Dec-2017 10:24:13	Instrument ID:	A8_N		
Lims ID:	320-33939-A-7-A	Lab Sample ID:	320-33939-7		
Client ID:	NAWC-120517-RW-135				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

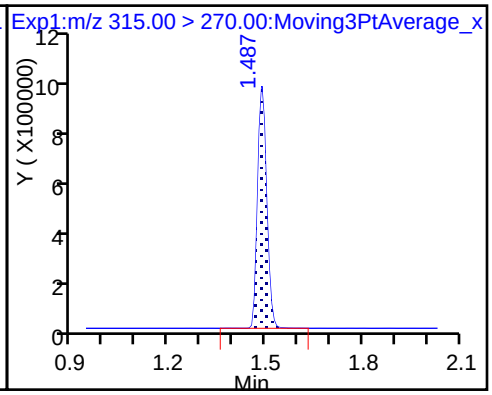
1 Perfluorobutanesulfonic acid



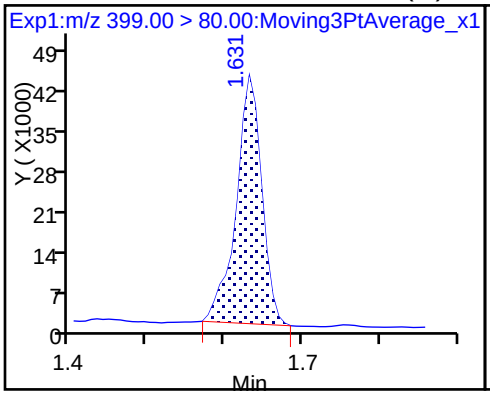
1 Perfluorobutanesulfonic acid



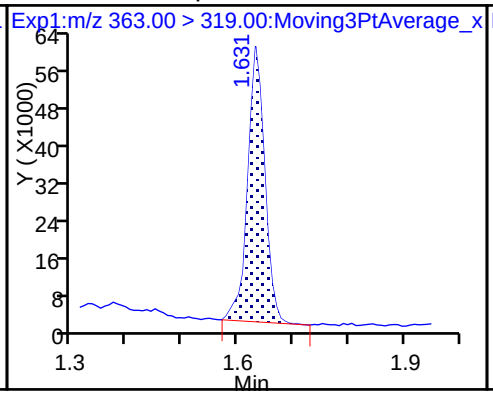
$ 2 13C2 PFHxA



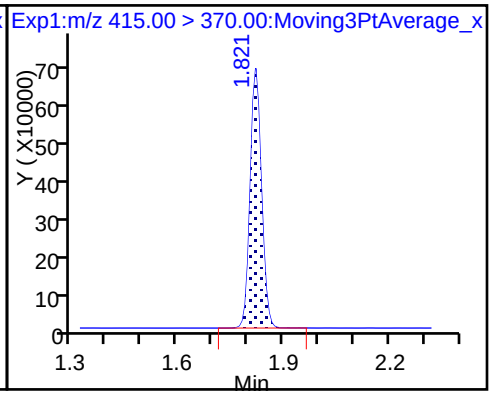
3 Perfluorohexanesulfonic acid (M)



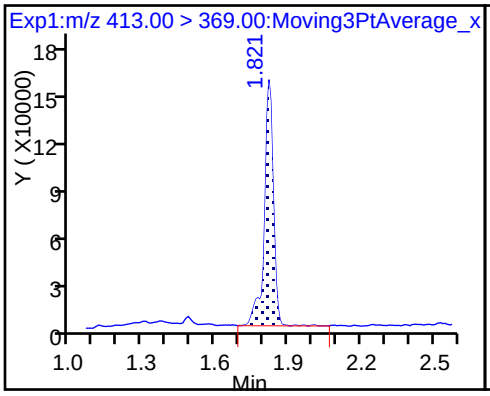
4 Perfluoroheptanoic acid



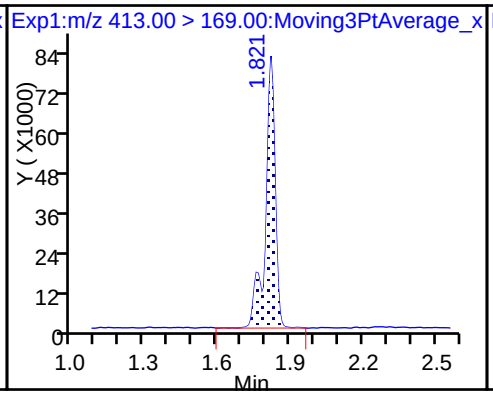
* 6 13C2-PFOA



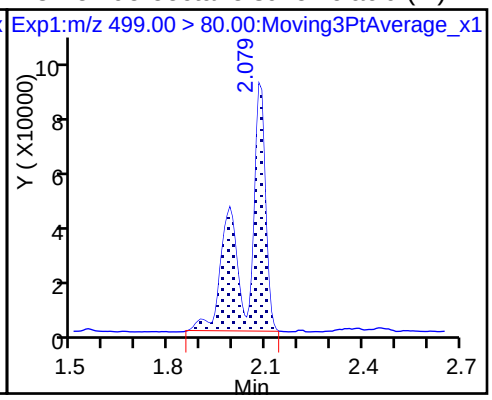
5 Perfluorooctanoic acid



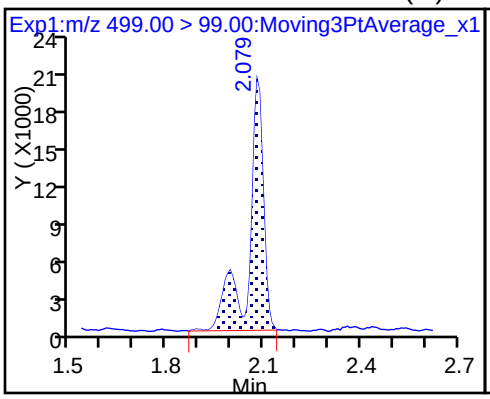
5 Perfluorooctanoic acid



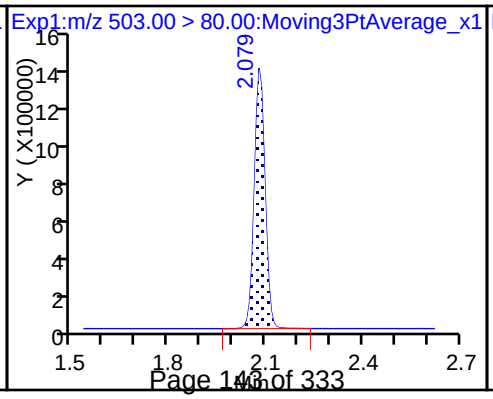
8 Perfluorooctane sulfonic acid (M)



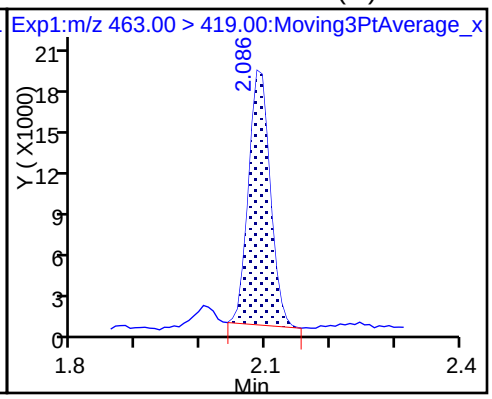
8 Perfluorooctane sulfonic acid (M)



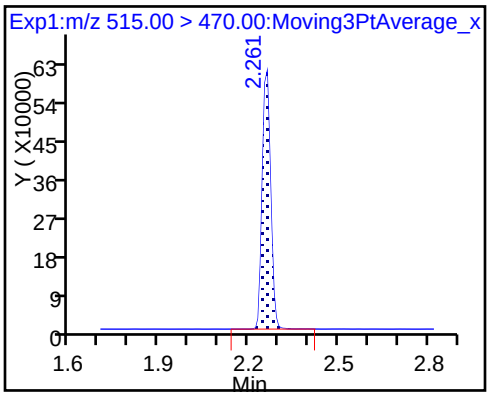
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.261
Y (X10000)
63
54
45
36
27
18
9
0
1.6
1.9
2.2
2.5
2.8
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_026.d
Lims ID: 320-33939-A-7-A
Client ID: NAWC-120517-RW-135
Sample Type: Client
Inject. Date: 12-Dec-2017 10:24:13 ALS Bottle#: 18 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-7-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 14:41:28 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:16:00

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.3	103.39
$ 10 13C2 PFDA	10.0	9.94	99.41

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

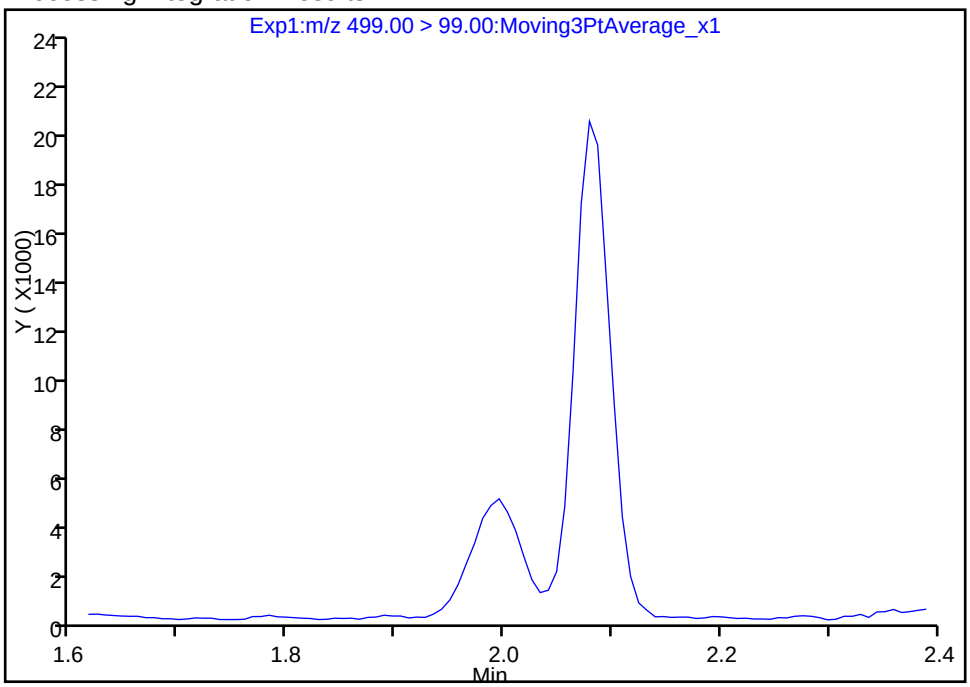
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_026.d				
Injection Date:	12-Dec-2017 10:24:13	Instrument ID:	A8_N		
Lims ID:	320-33939-A-7-A	Lab Sample ID:	320-33939-7		
Client ID:	NAWC-120517-RW-135				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 2

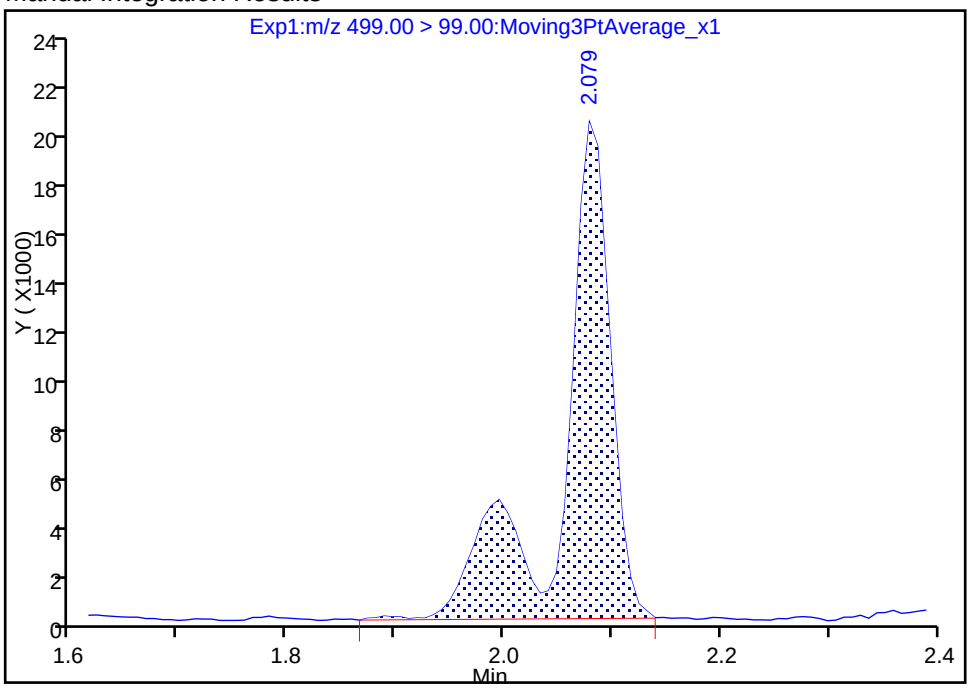
Processing Integration Results

Not Detected
Expected RT: 2.08



Manual Integration Results

RT: 2.08
Area: 63317
Amount: 3.406887
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 12:15:33
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

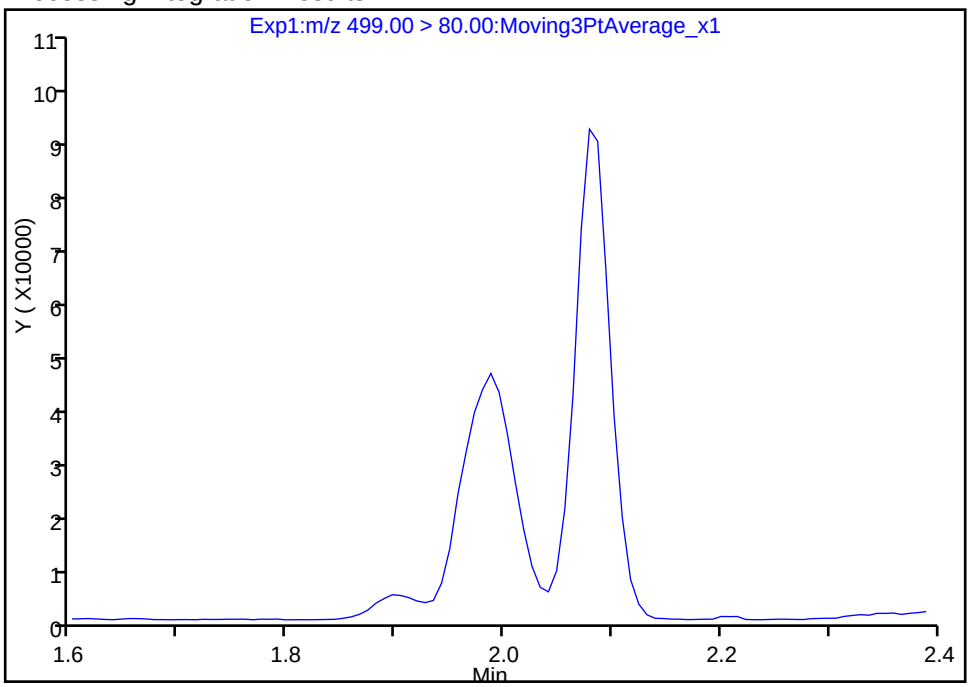
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_026.d				
Injection Date:	12-Dec-2017 10:24:13	Instrument ID:	A8_N		
Lims ID:	320-33939-A-7-A	Lab Sample ID:	320-33939-7		
Client ID:	NAWC-120517-RW-135				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

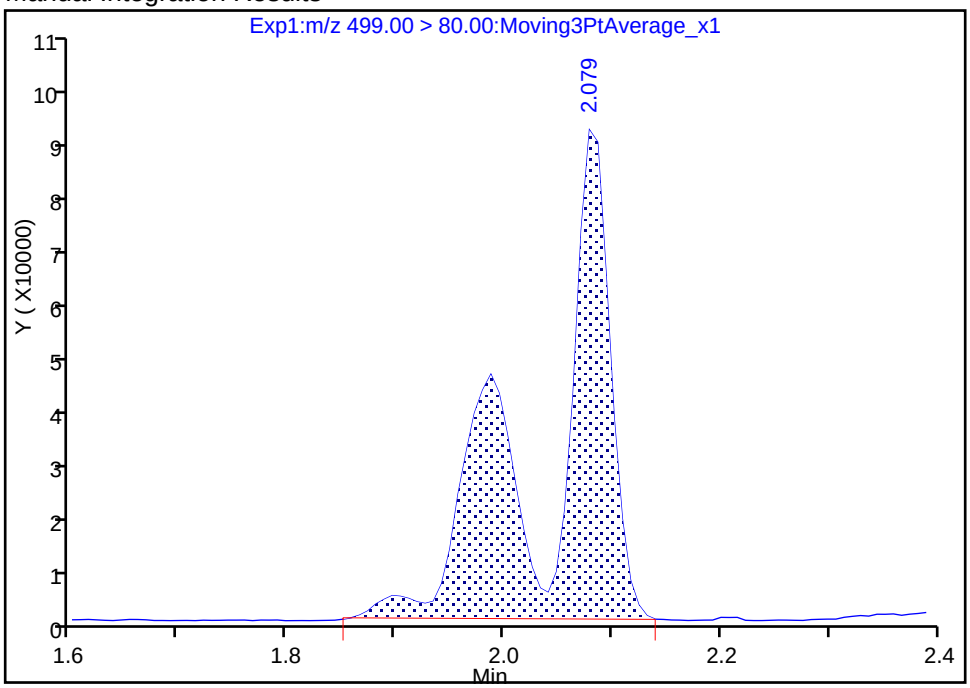
Processing Integration Results

Not Detected
Expected RT: 2.08



Manual Integration Results

RT: 2.08
Area: 355683
Amount: 3.406887
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 12:15:38
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

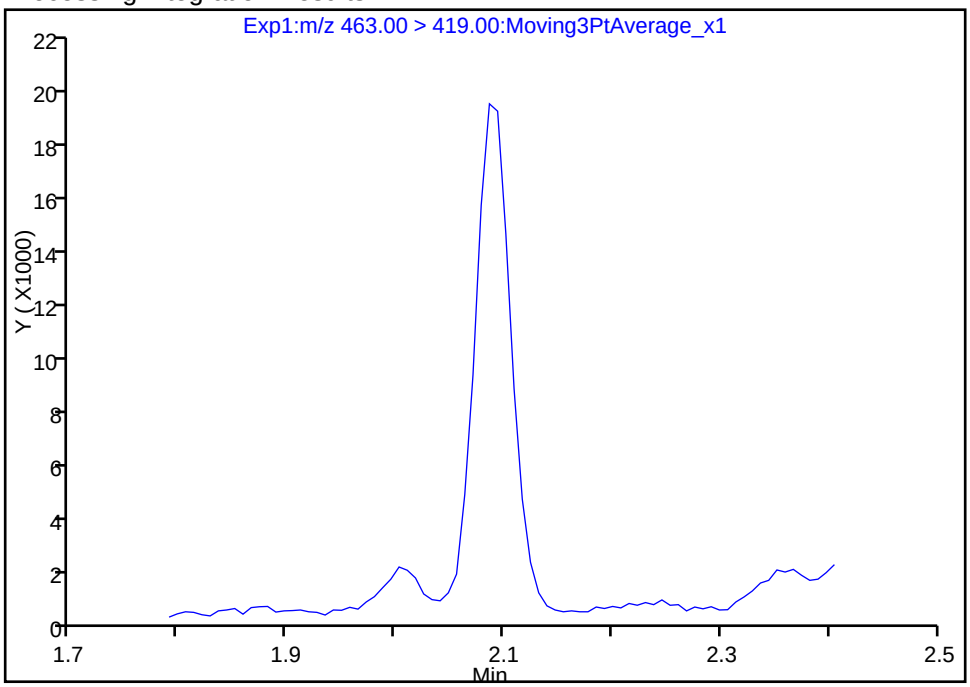
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_026.d				
Injection Date:	12-Dec-2017 10:24:13	Instrument ID:	A8_N		
Lims ID:	320-33939-A-7-A	Lab Sample ID:	320-33939-7		
Client ID:	NAWC-120517-RW-135				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

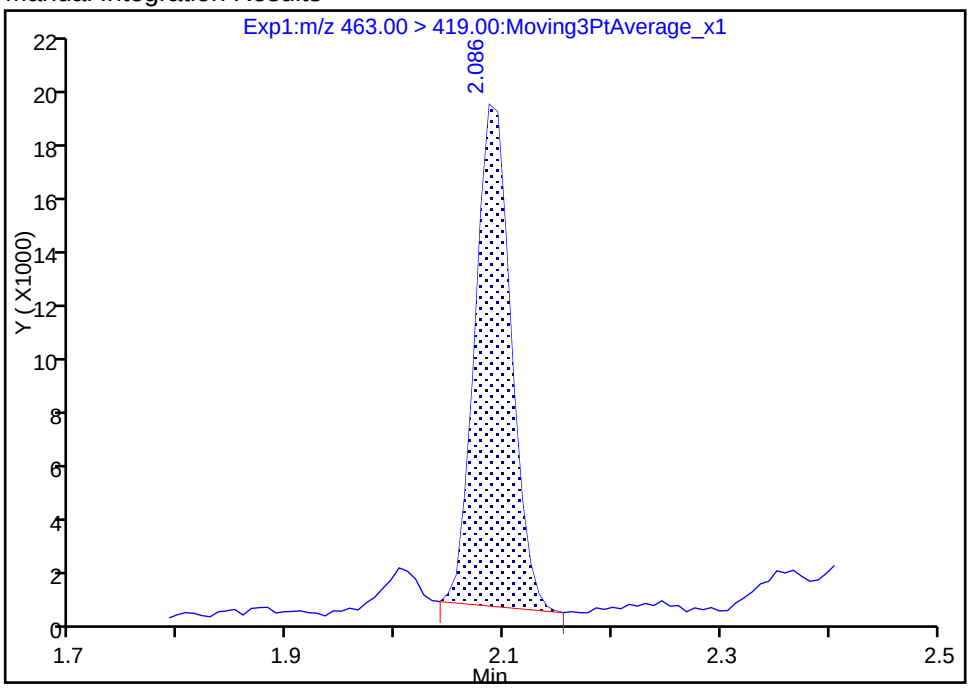
Processing Integration Results

Not Detected
Expected RT: 2.16



Manual Integration Results

RT: 2.09
Area: 43311
Amount: 0.427346
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 14:41:20
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

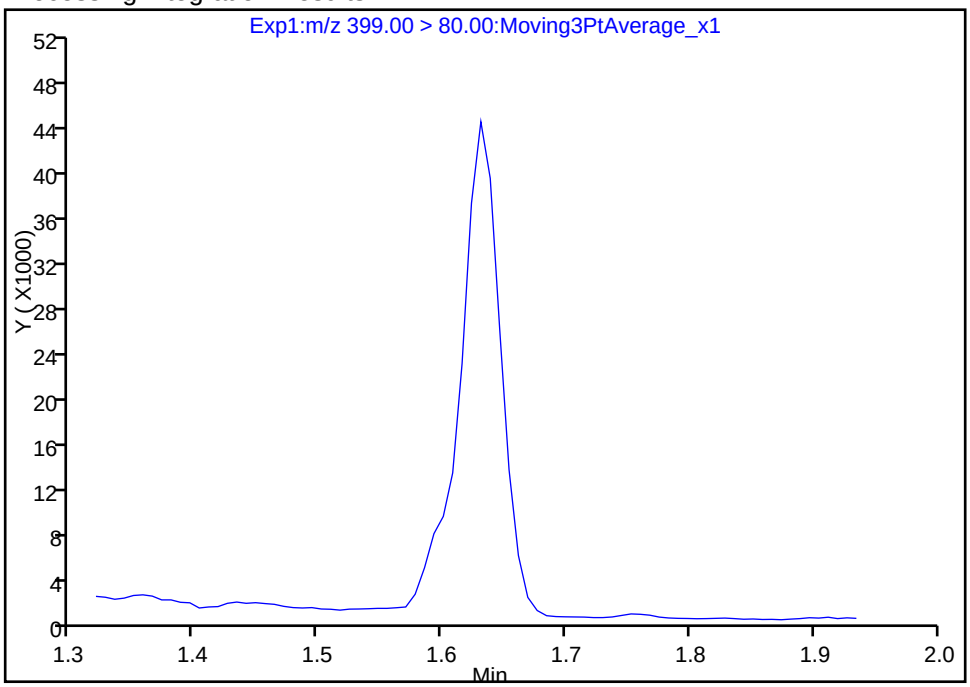
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_026.d				
Injection Date:	12-Dec-2017 10:24:13	Instrument ID:	A8_N		
Lims ID:	320-33939-A-7-A	Lab Sample ID:	320-33939-7		
Client ID:	NAWC-120517-RW-135				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

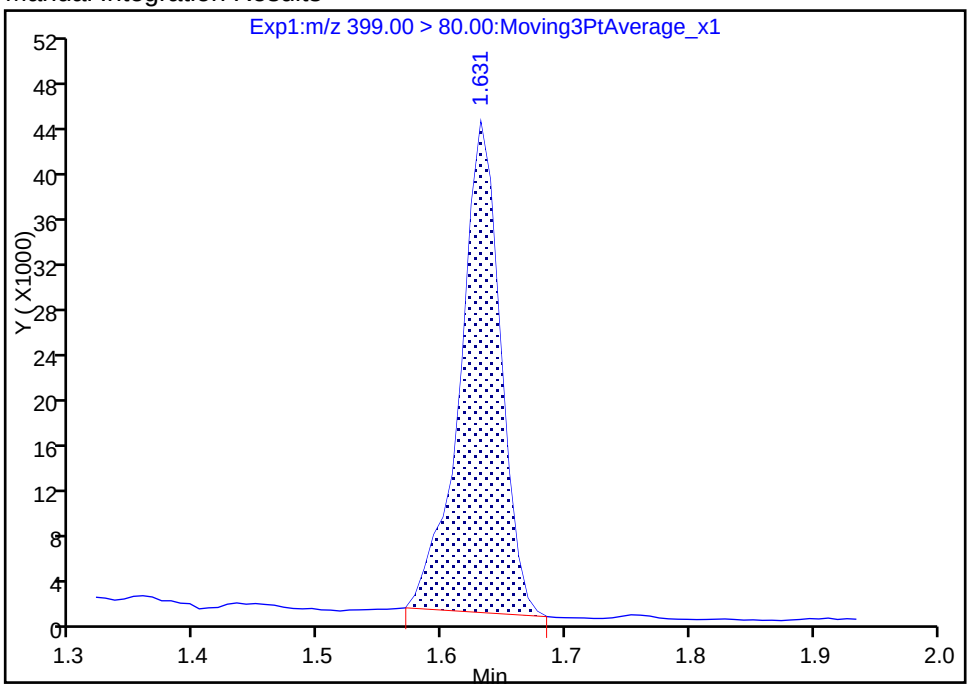
Processing Integration Results

Not Detected
Expected RT: 1.72



Manual Integration Results

RT: 1.63
Area: 97914
Amount: 0.526012
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 12:15:20
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-FRB-135
Lab Sample ID: 320-33939-8
Matrix: Water
Lab File ID: 2017.12.12_537A_029.d
Analysis Method: 537
Date Collected: 12/05/2017 10:35
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 252.2(mL)
Date Analyzed: 12/12/2017 10:38
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199466
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.9	U	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
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	107		70-130
STL00996	13C2 PFDA	100		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_029.d
Lims ID: 320-33939-A-8-A
Client ID: NAWC-120517-FRB-135
Sample Type: Client
Inject. Date: 12-Dec-2017 10:38:11 ALS Bottle#: 19 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-8-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:50 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:16:58

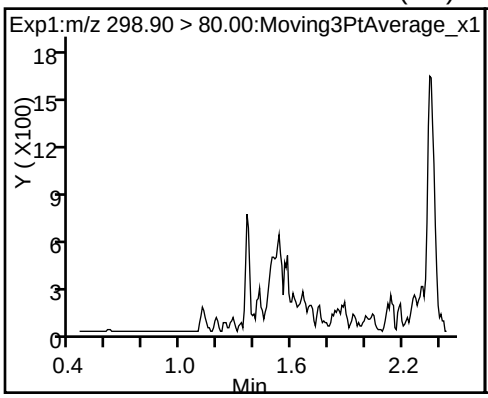
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.573	-0.086	1.000	1850804	10.7		9700	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.913	-0.092		1576598	10.0		7887	
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.151	-0.072		3320157	28.7		9137	
$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.312	-0.051	1.000	1202341	9.97		8215	

Report Date: 12-Dec-2017 13:39:53 Chrom Revision: 2.2 16-Aug-2017 16:24:46

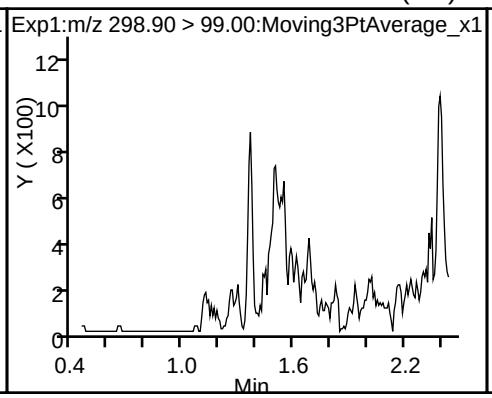
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_029.d				
Injection Date:	12-Dec-2017 10:38:11	Instrument ID:	A8_N		
Lims ID:	320-33939-A-8-A	Lab Sample ID:	320-33939-8		
Client ID:	NAWC-120517-FRB-135				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	19	Worklist Smp#:	26
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

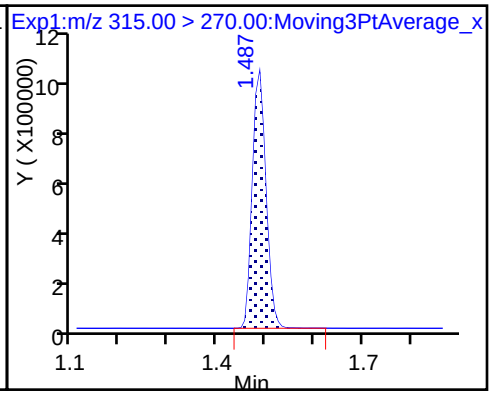
1 Perfluorobutanesulfonic acid (ND)



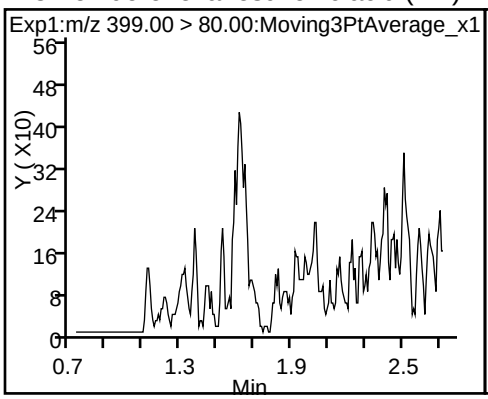
1 Perfluorobutanesulfonic acid (ND)



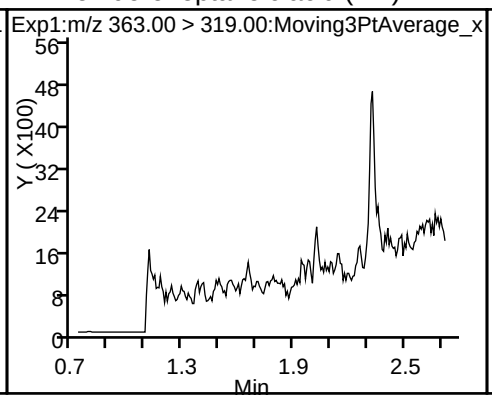
$ 2 13C2 PFHxA



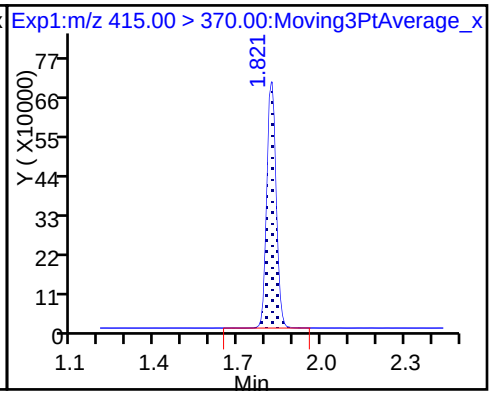
3 Perfluorohexanesulfonic acid (ND)



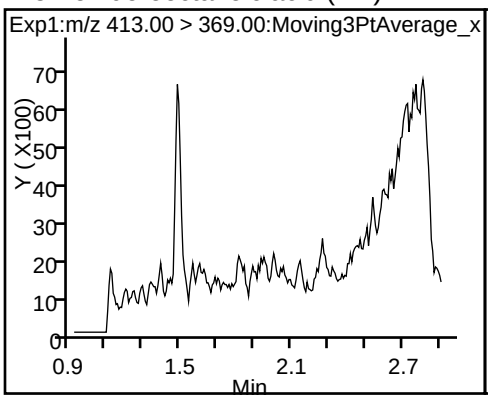
4 Perfluoroheptanoic acid (ND)



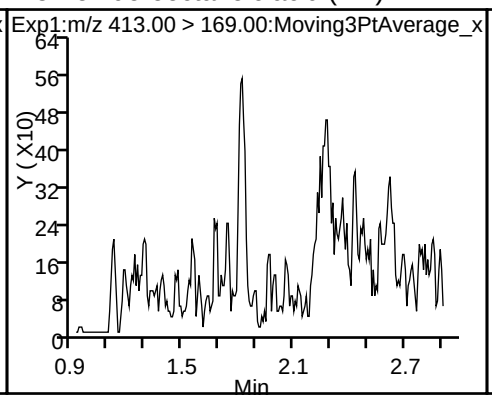
* 6 13C2-PFOA



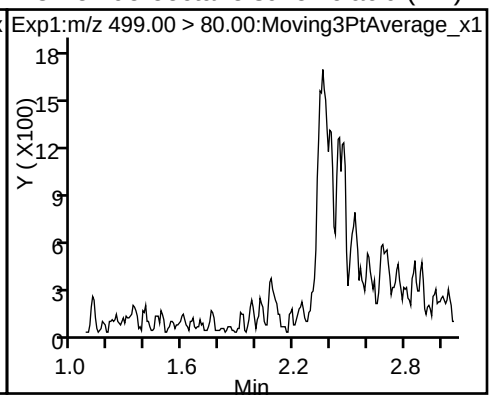
5 Perfluorooctanoic acid (ND)



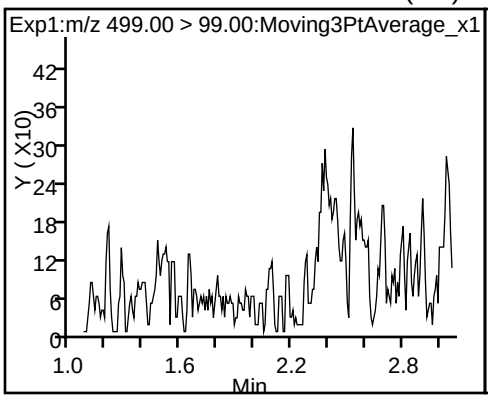
5 Perfluorooctanoic acid (ND)



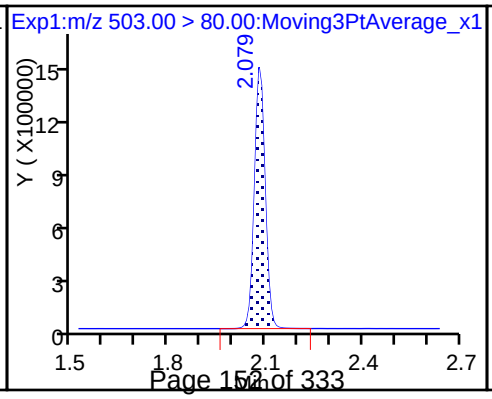
8 Perfluorooctane sulfonic acid (ND)



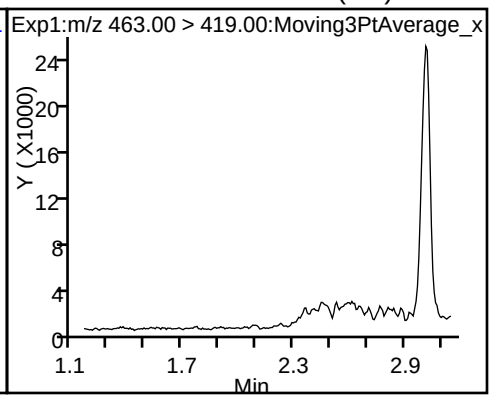
8 Perfluorooctane sulfonic acid (ND)



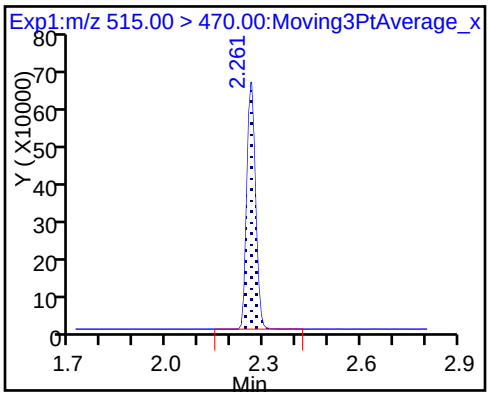
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.261
Y (X10000)
80
70
60
50
40
30
20
10
0
1.7
2.0
2.3
2.6
2.9
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_029.d
Lims ID: 320-33939-A-8-A
Client ID: NAWC-120517-FRB-135
Sample Type: Client
Inject. Date: 12-Dec-2017 10:38:11 ALS Bottle#: 19 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-8-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:50 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:16:58

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.7	106.69
$ 10 13C2 PFDA	10.0	9.97	99.66

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-RW-356
Lab Sample ID: 320-33939-9
Matrix: Water
Lab File ID: 2017.12.12_537A_030.d
Analysis Method: 537
Date Collected: 12/05/2017 11:10
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 247.5(mL)
Date Analyzed: 12/12/2017 10:42
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199466
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U M	40	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 M	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U M	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U M	91	36	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\20171212-51632.b\2017.12.12_537A_030.d
Lims ID: 320-33939-A-9-A
Client ID: NAWC-120517-RW-356
Sample Type: Client
Inject. Date: 12-Dec-2017 10:42:51 ALS Bottle#: 20 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-9-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 14:44:10 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:17:31

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	1.358	1.444	-0.086	1.000	15327	0.1201		33.8	M
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.573	-0.094	1.000	1688728	10.1		9265	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	1.624	1.725	-0.101	1.000	33220	0.1741		59.6	M
4 Perfluoroheptanoic acid									M
363.00 > 319.00	1.624	1.725	-0.101	1.000	21893	0.1542		7.0	M
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.913	-0.100		1515302	10.0		7439	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.914	-0.101	1.000	75793	0.5403		13.3	
413.00 > 169.00	1.813	1.914	-0.101	1.000	43867		1.73(0.00-0.00)	88.0	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	1.973	2.079	-0.106	1.000	31855	0.2976		18.3	M
499.00 > 99.00	2.071	2.079	-0.008	1.050	4622		6.89(0.00-0.00)	9.7	M
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.151	-0.080		3269688	28.7		8263	
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.312	-0.059	1.000	1170488	10.1		7583	

QC Flag Legend

Review Flags

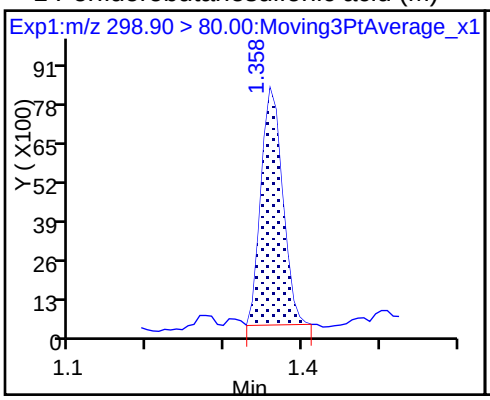
M - Manually Integrated

Report Date: 12-Dec-2017 14:44:42 Chrom Revision: 2.2 16-Aug-2017 16:24:46

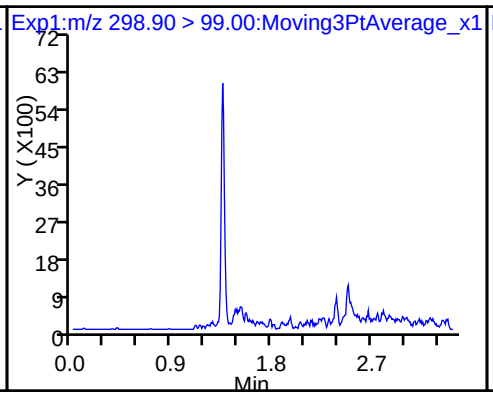
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_030.d				
Injection Date:	12-Dec-2017 10:42:51	Instrument ID:	A8_N		
Lims ID:	320-33939-A-9-A	Lab Sample ID:	320-33939-9		
Client ID:	NAWC-120517-RW-356				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	27
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

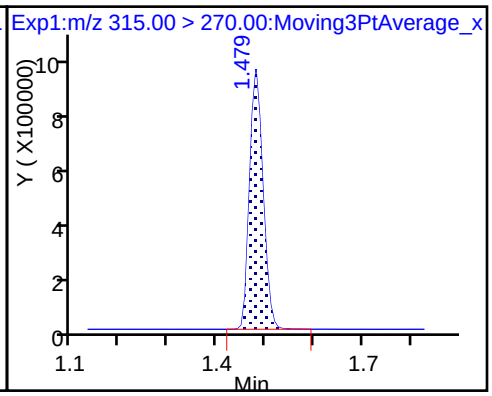
1 Perfluorobutanesulfonic acid (M)



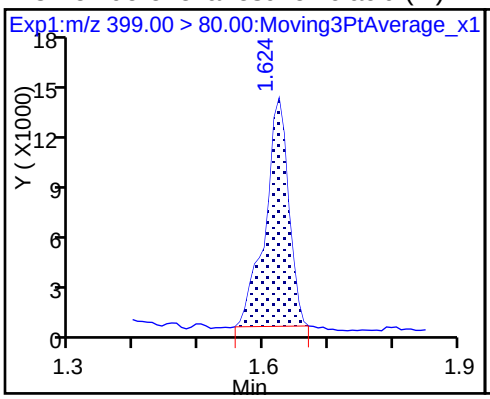
1 Perfluorobutanesulfonic acid



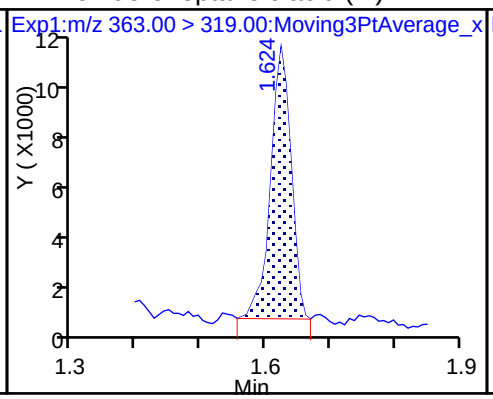
$ 2 13C2 PFHxA



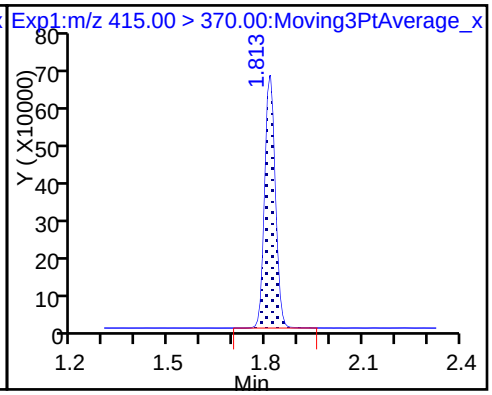
3 Perfluorohexanesulfonic acid (M)



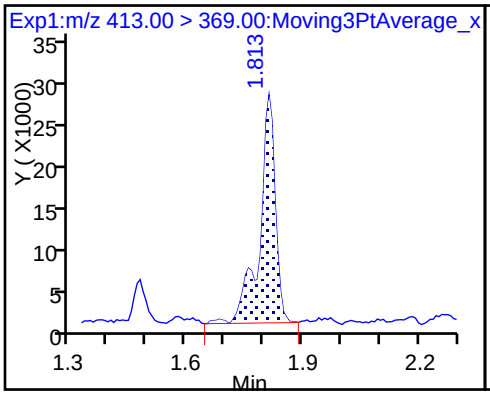
4 Perfluoroheptanoic acid (M)



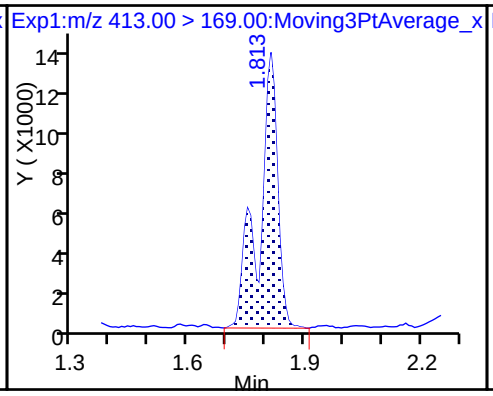
* 6 13C2-PFOA



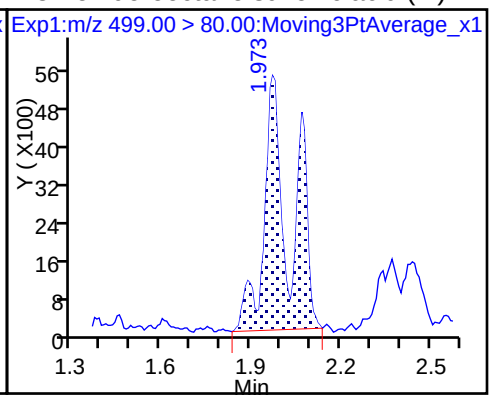
5 Perfluorooctanoic acid



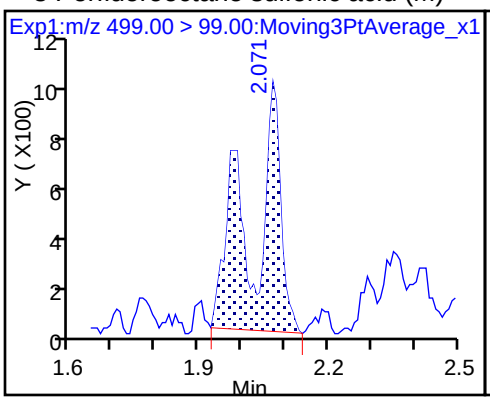
5 Perfluorooctanoic acid



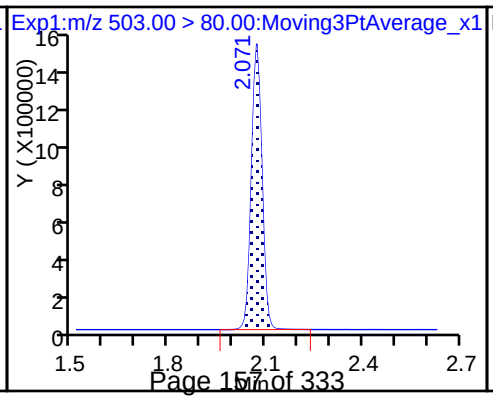
8 Perfluorooctane sulfonic acid (M)



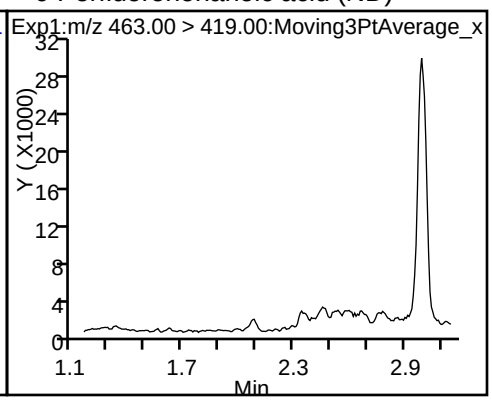
8 Perfluorooctane sulfonic acid (M)



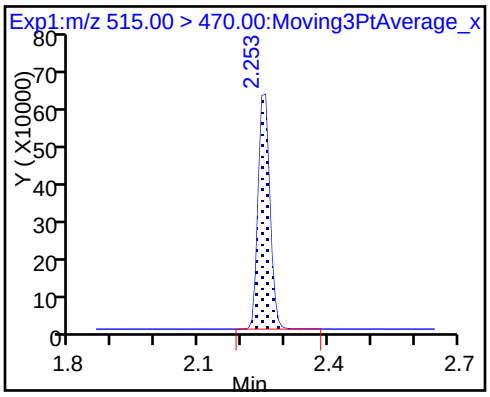
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.253
Y (X10000)
80
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_030.d
Lims ID: 320-33939-A-9-A
Client ID: NAWC-120517-RW-356
Sample Type: Client
Inject. Date: 12-Dec-2017 10:42:51 ALS Bottle#: 20 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-9-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 14:44:10 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:17:31

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.1	101.29
$ 10 13C2 PFDA	10.0	10.1	100.95

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

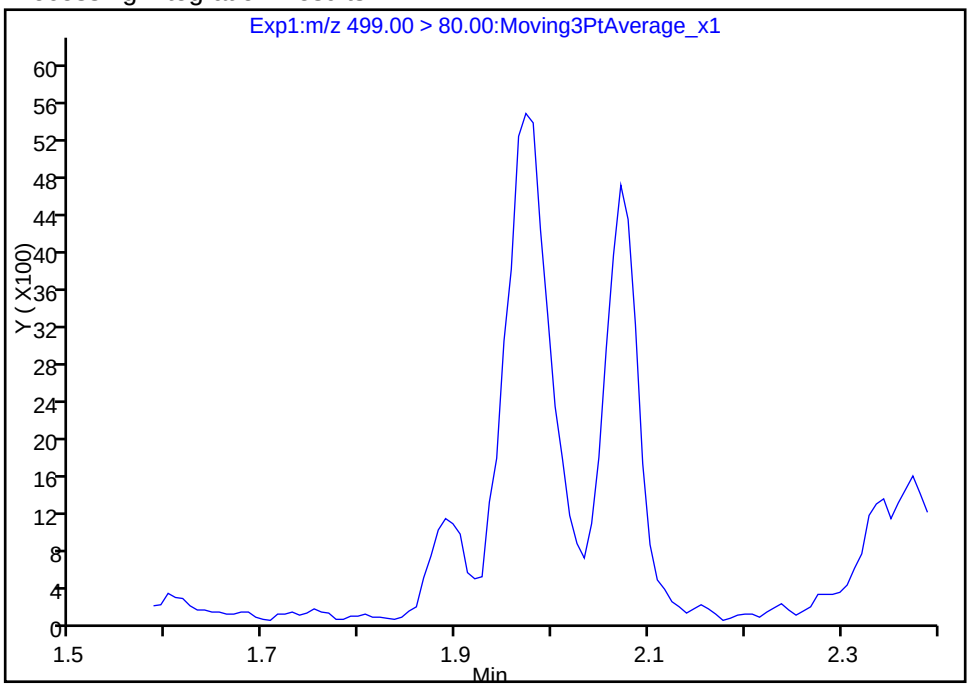
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_030.d				
Injection Date:	12-Dec-2017 10:42:51	Instrument ID:	A8_N		
Lims ID:	320-33939-A-9-A	Lab Sample ID:	320-33939-9		
Client ID:	NAWC-120517-RW-356				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	27
Injection 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

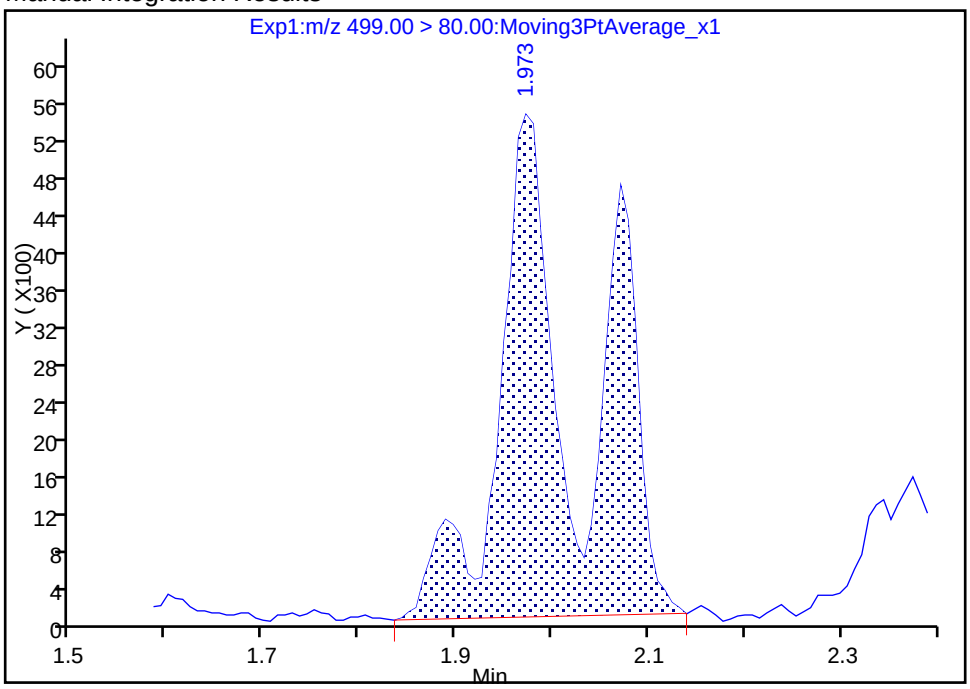
Processing Integration Results

Not Detected
Expected RT: 2.08



Manual Integration Results

RT: 1.97
Area: 31855
Amount: 0.297583
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 12:17:20
Audit Action: Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

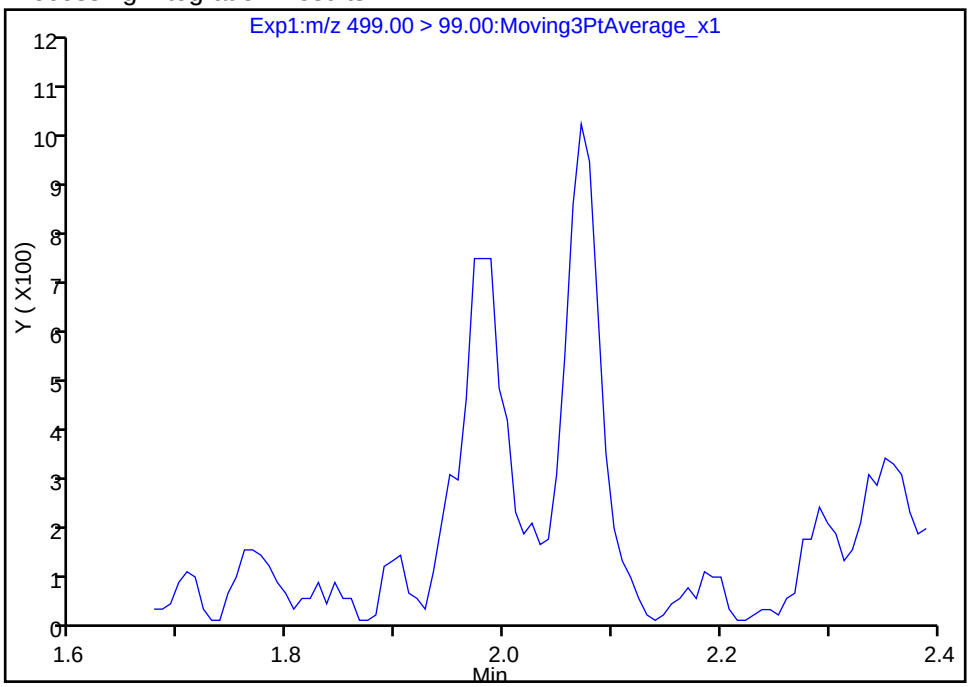
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_030.d				
Injection Date:	12-Dec-2017 10:42:51	Instrument ID:	A8_N		
Lims ID:	320-33939-A-9-A	Lab Sample ID:	320-33939-9		
Client ID:	NAWC-120517-RW-356				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	27
Injection 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: 2

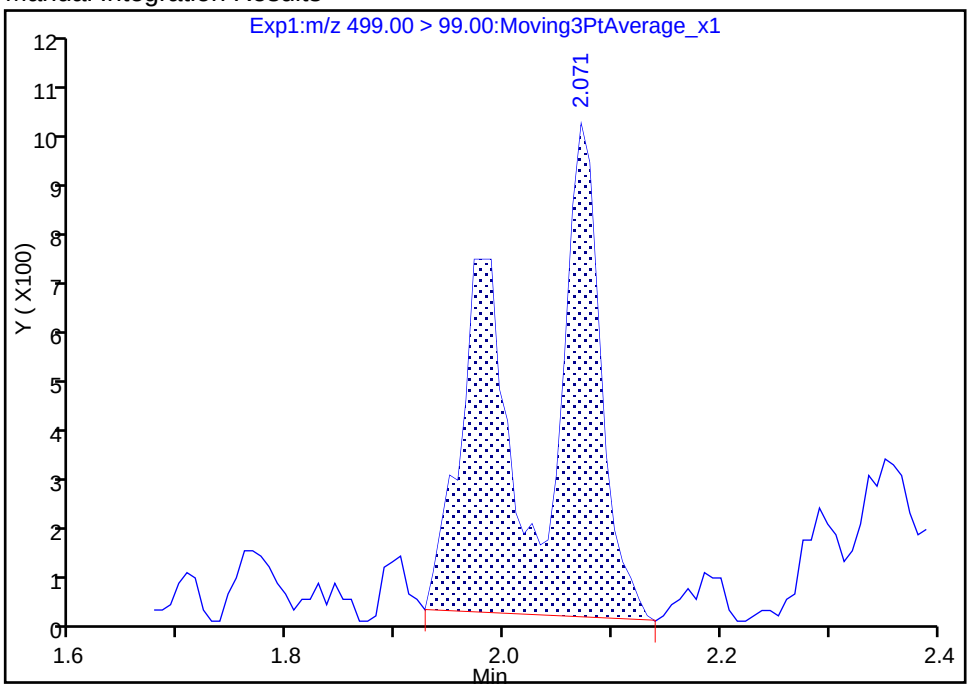
Processing Integration Results

Not Detected
Expected RT: 2.08



Manual Integration Results

RT: 2.07
Area: 4622
Amount: 0.297583
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 12:17:20
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

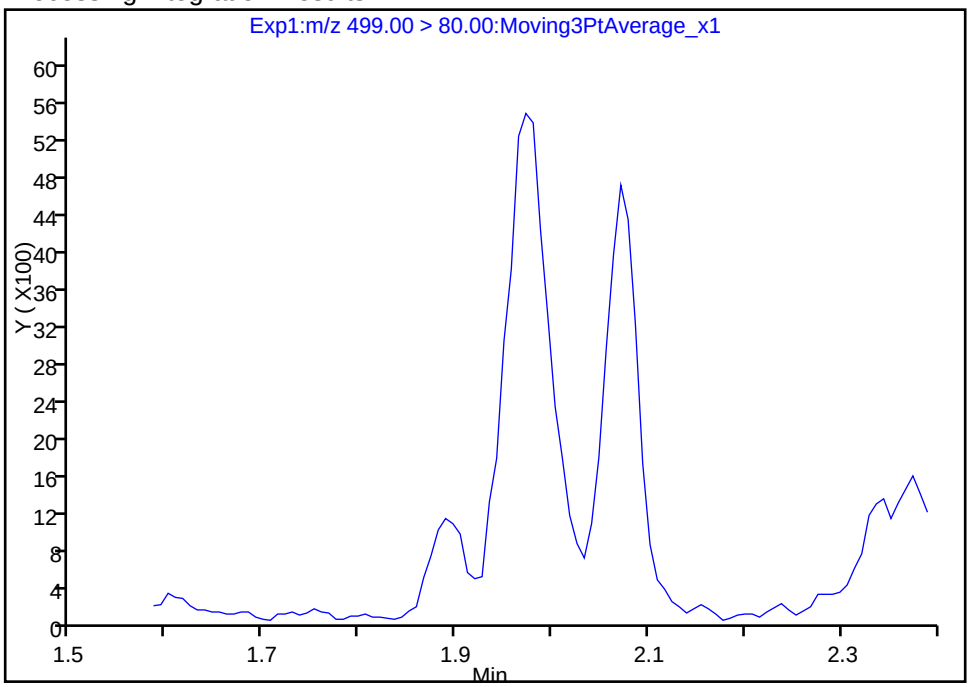
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_030.d				
Injection Date:	12-Dec-2017 10:42:51	Instrument ID:	A8_N		
Lims ID:	320-33939-A-9-A	Lab Sample ID:	320-33939-9		
Client ID:	NAWC-120517-RW-356				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	27
Injection 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

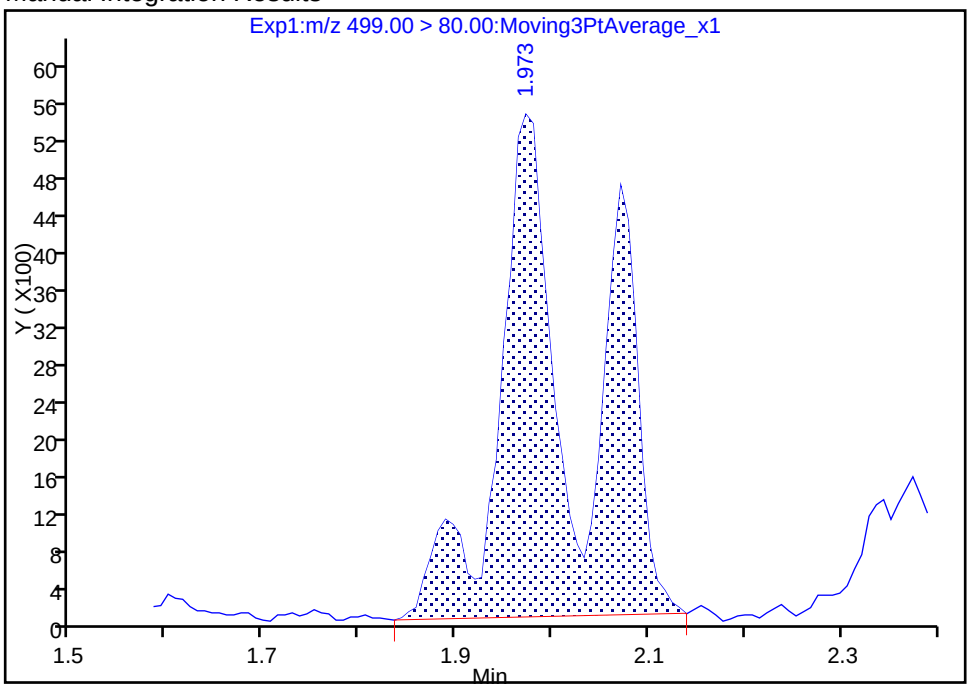
Processing Integration Results

Not Detected
Expected RT: 2.08



Manual Integration Results

RT: 1.97
Area: 31855
Amount: 0.297583
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 12:18:08
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

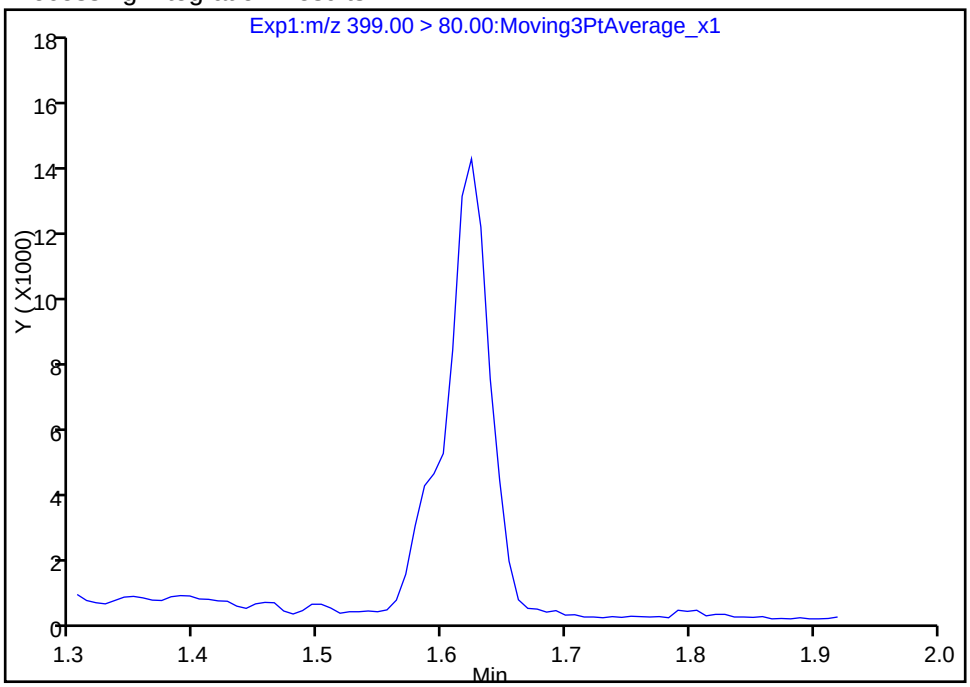
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_030.d				
Injection Date:	12-Dec-2017 10:42:51	Instrument ID:	A8_N		
Lims ID:	320-33939-A-9-A	Lab Sample ID:	320-33939-9		
Client ID:	NAWC-120517-RW-356				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	27
Injection 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

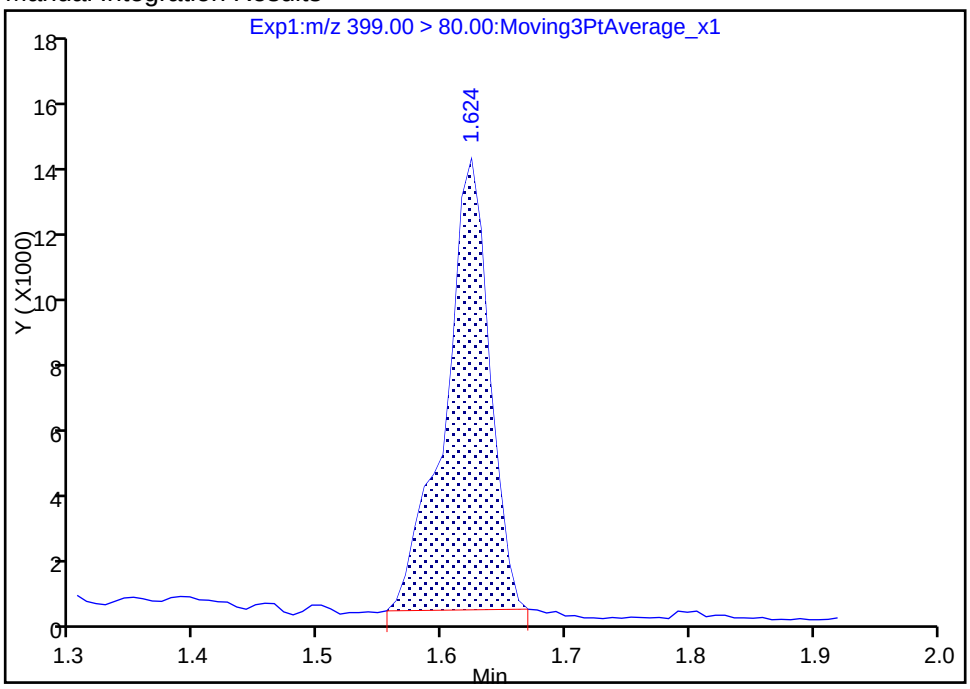
Processing Integration Results

Not Detected
Expected RT: 1.72



Manual Integration Results

RT: 1.62
Area: 33220
Amount: 0.174055
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 14:43:36
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

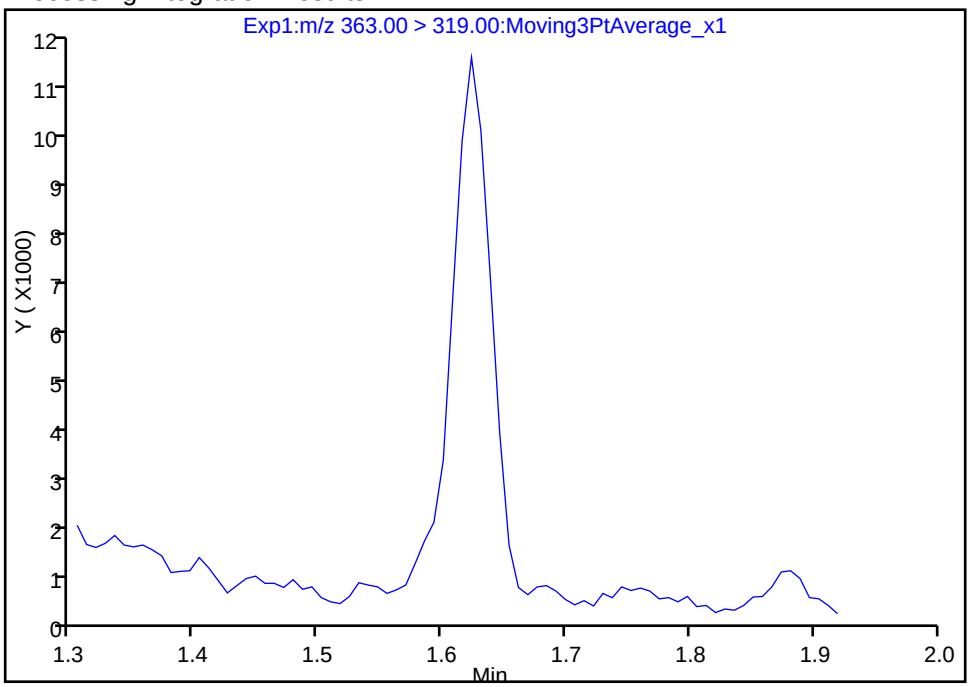
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_030.d				
Injection Date:	12-Dec-2017 10:42:51	Instrument ID:	A8_N		
Lims ID:	320-33939-A-9-A	Lab Sample ID:	320-33939-9		
Client ID:	NAWC-120517-RW-356				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	27
Injection 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

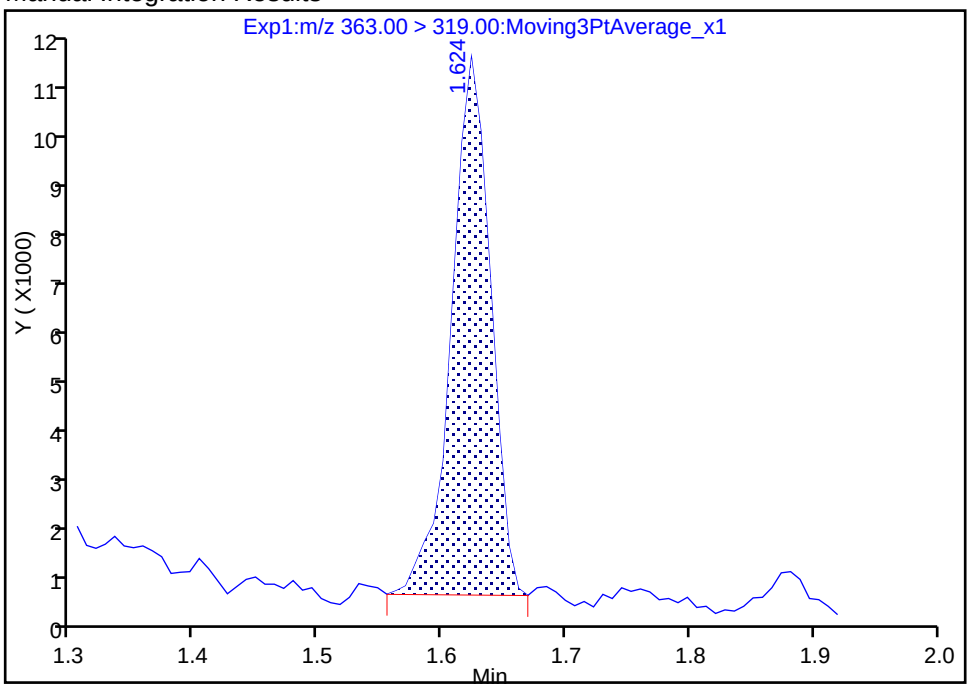
Not Detected
Expected RT: 1.72

Processing Integration Results



Manual Integration Results

RT: 1.62
Area: 21893
Amount: 0.154208
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 14:43:48
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

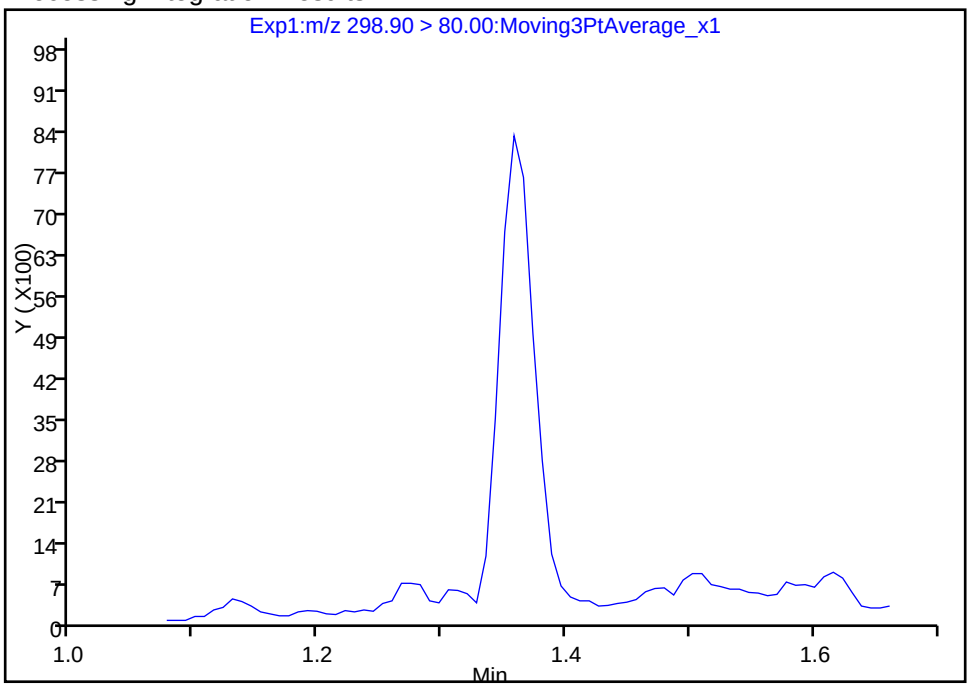
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_030.d				
Injection Date:	12-Dec-2017 10:42:51	Instrument ID:	A8_N		
Lims ID:	320-33939-A-9-A	Lab Sample ID:	320-33939-9		
Client ID:	NAWC-120517-RW-356				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	27
Injection 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

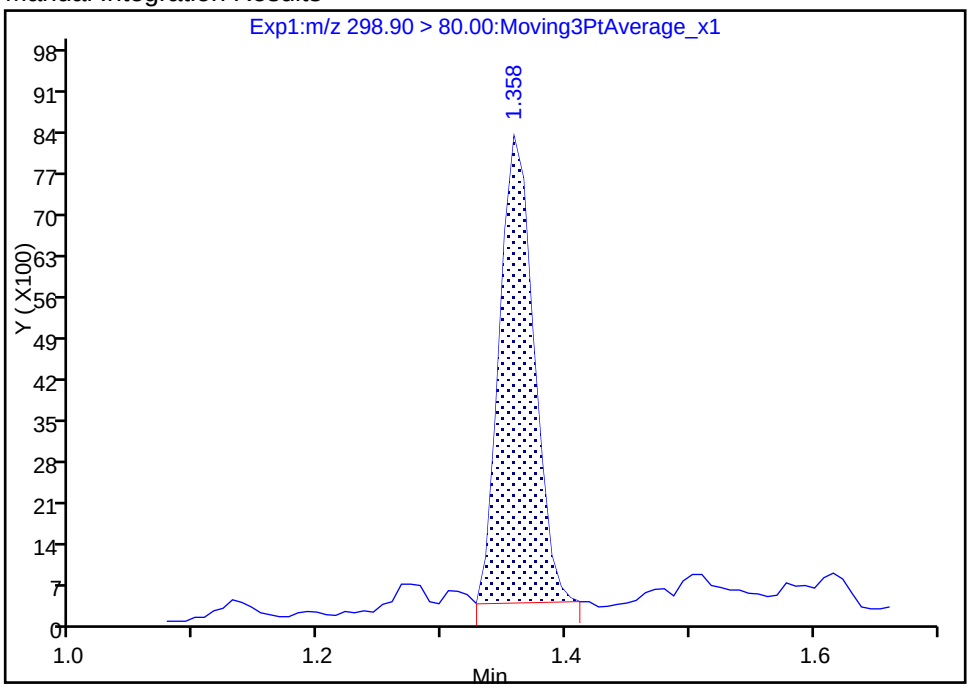
Not Detected
Expected RT: 1.44

Processing Integration Results



Manual Integration Results

RT: 1.36
Area: 15327
Amount: 0.120131
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 12:18:57
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-FRB-356
Lab Sample ID: 320-33939-10
Matrix: Water
Lab File ID: 2017.12.12_537A_031.d
Analysis Method: 537
Date Collected: 12/05/2017 11:05
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 246.3(mL)
Date Analyzed: 12/12/2017 10:47
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199466
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)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	99		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_031.d
Lims ID: 320-33939-A-10-A
Client ID: NAWC-120517-FRB-356
Sample Type: Client
Inject. Date: 12-Dec-2017 10:47:32 ALS Bottle#: 21 Worklist Smp#: 28
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-10-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:50 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 13:31:56

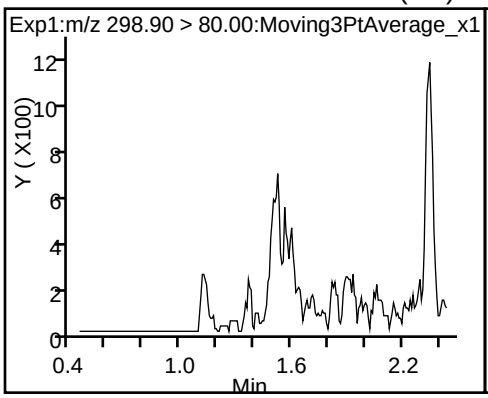
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.573	-0.086	1.000	1755408	10.4		9425	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.913	-0.092		1527901	10.0		7658	
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.151	-0.072		3336523	28.7		9673	
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.312	-0.059	1.000	1153495	9.87		6997	

Report Date: 12-Dec-2017 13:39:54 Chrom Revision: 2.2 16-Aug-2017 16:24:46

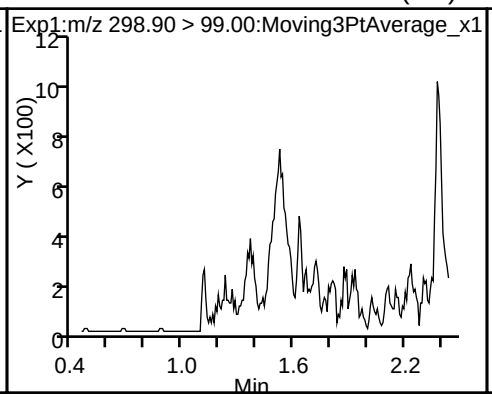
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_031.d				
Injection Date:	12-Dec-2017 10:47:32	Instrument ID:	A8_N		
Lims ID:	320-33939-A-10-A	Lab Sample ID:	320-33939-10		
Client ID:	NAWC-120517-FRB-356				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	28
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

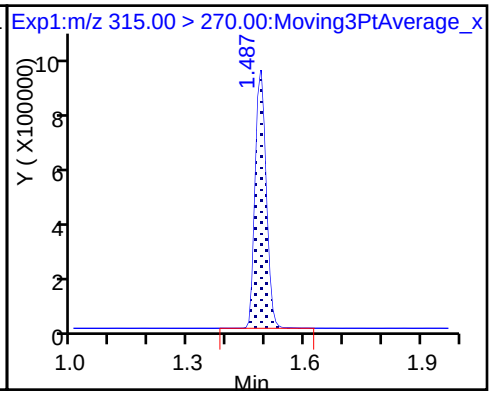
1 Perfluorobutanesulfonic acid (ND)



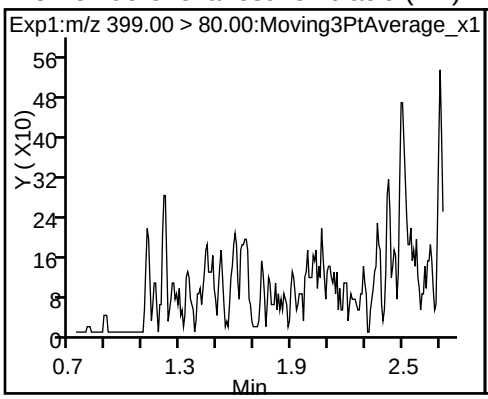
1 Perfluorobutanesulfonic acid (ND)



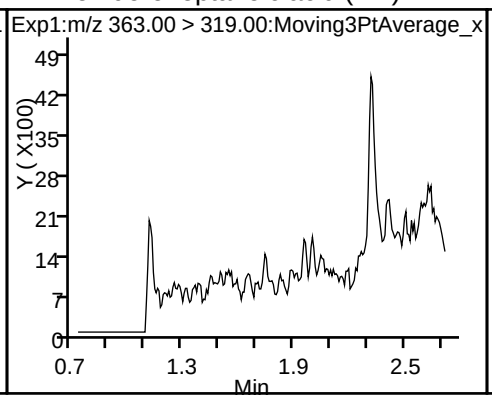
$ 2 13C2 PFHxA



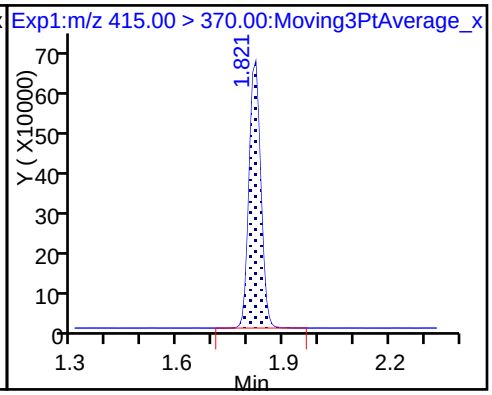
3 Perfluorohexanesulfonic acid (ND)



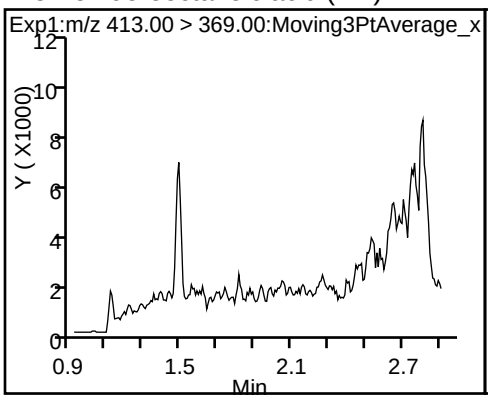
4 Perfluoroheptanoic acid (ND)



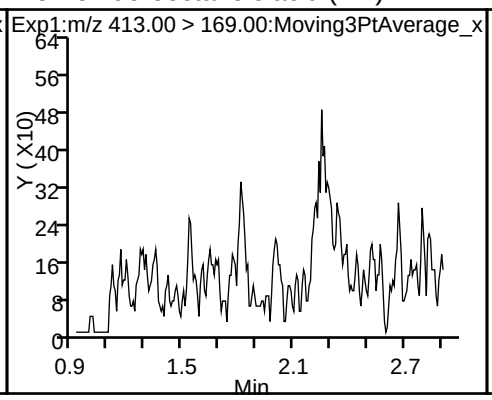
* 6 13C2-PFOA



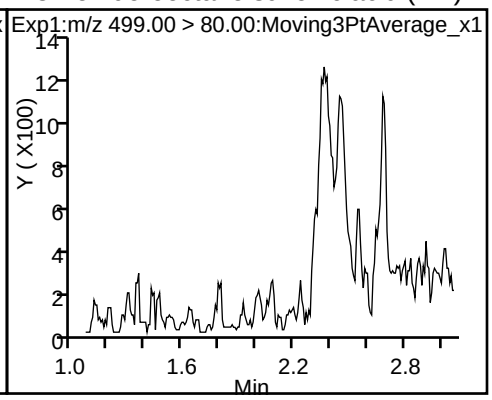
5 Perfluorooctanoic acid (ND)



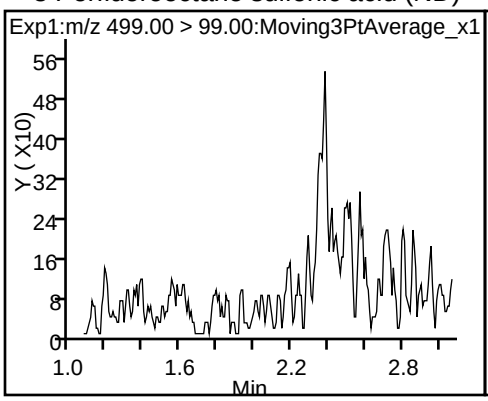
5 Perfluorooctanoic acid (ND)



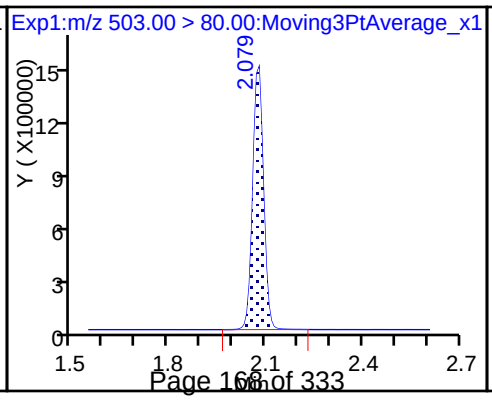
8 Perfluorooctane sulfonic acid (ND)



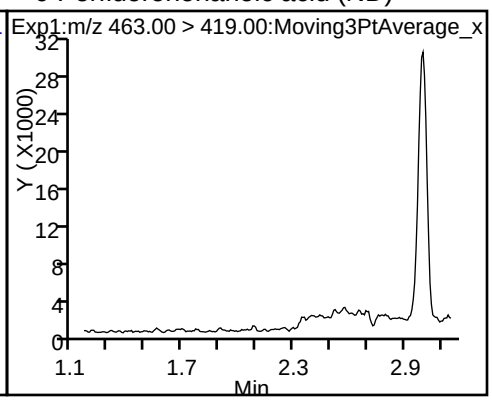
8 Perfluorooctane sulfonic acid (ND)



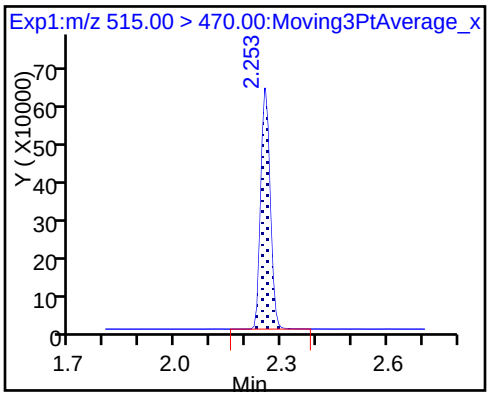
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.253
Y (X10000)
70
60
50
40
30
20
10
0
1.7
2.0
2.3
2.6
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_031.d
Lims ID: 320-33939-A-10-A
Client ID: NAWC-120517-FRB-356
Sample Type: Client
Inject. Date: 12-Dec-2017 10:47:32 ALS Bottle#: 21 Worklist Smp#: 28
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-10-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:50 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 13:31:56

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.4	104.42
$ 10 13C2 PFDA	10.0	9.87	98.66

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-RW-357
Lab Sample ID: 320-33939-11
Matrix: Water
Lab File ID: 2017.12.12_537A_032.d
Analysis Method: 537
Date Collected: 12/05/2017 13:10
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 245.2(mL)
Date Analyzed: 12/12/2017 10:52
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199466
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J M	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	20	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.5	J	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.5	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	105		70-130
STL00996	13C2 PFDA	98		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_032.d
Lims ID: 320-33939-A-11-A
Client ID: NAWC-120517-RW-357
Sample Type: Client
Inject. Date: 12-Dec-2017 10:52:14 ALS Bottle#: 22 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-11-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:50 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 13:33:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.444	-0.086	1.000	140224	1.09		194	
298.90 > 99.00	1.358	1.444	-0.086	1.000	98222		1.43(0.00-0.00)	241	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.573	-0.094	1.000	1714939	10.5		9587	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.725	-0.101	1.000	449110	2.34		362	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.725	-0.101	1.000	155174	1.11		37.4	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.913	-0.100		1491030	10.0		7342	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.914	-0.101	1.000	427319	3.10		72.7	
413.00 > 169.00	1.813	1.914	-0.101	1.000	256174		1.67(0.00-0.00)	534	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.071	2.079	-0.008	1.000	297803	2.77		143	M
499.00 > 99.00	2.071	2.079	-0.008	1.000	50849		5.86(0.00-0.00)	114	M
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.151	-0.080		3286588	28.7		5198	
9 Perfluorononanoic acid									M
463.00 > 419.00	2.079	2.158	-0.079	1.000	28897	0.2918		6.0	M
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.312	-0.059	1.000	1121992	9.83		8103	

QC Flag Legend

Review Flags

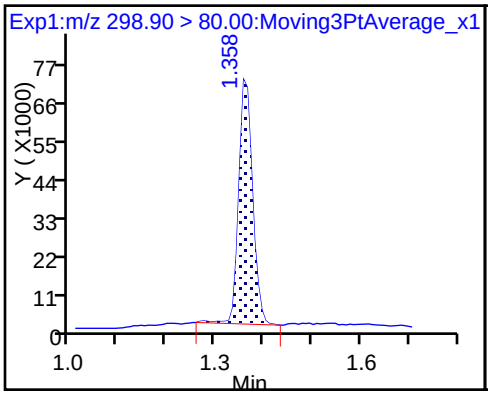
M - Manually Integrated

Report Date: 12-Dec-2017 13:39:55 Chrom Revision: 2.2 16-Aug-2017 16:24:46

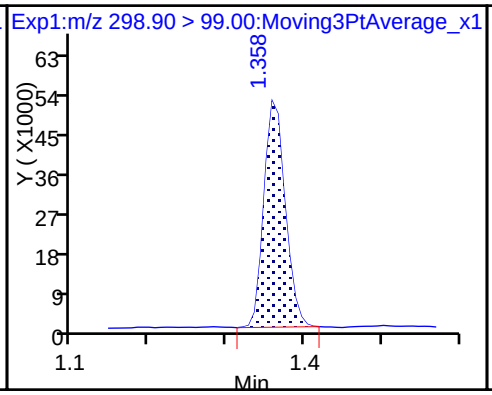
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_032.d				
Injection Date:	12-Dec-2017 10:52:14	Instrument ID:	A8_N		
Lims ID:	320-33939-A-11-A	Lab Sample ID:	320-33939-11		
Client ID:	NAWC-120517-RW-357				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	22	Worklist Smp#:	29
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

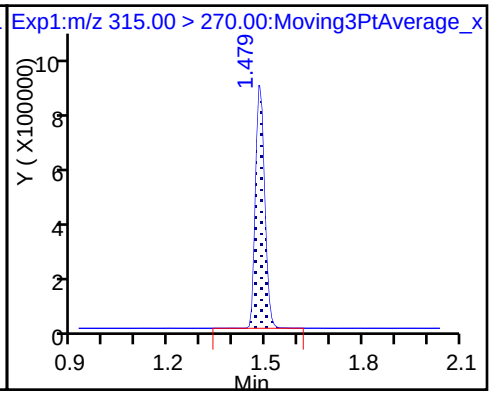
1 Perfluorobutanesulfonic acid



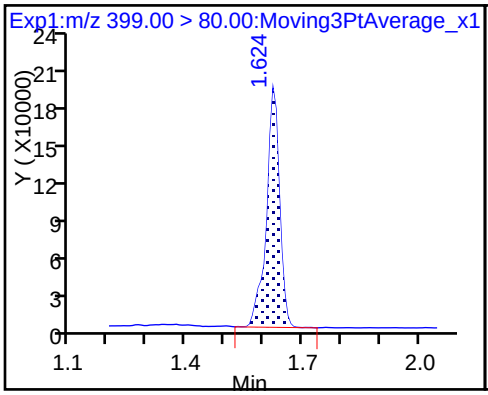
1 Perfluorobutanesulfonic acid



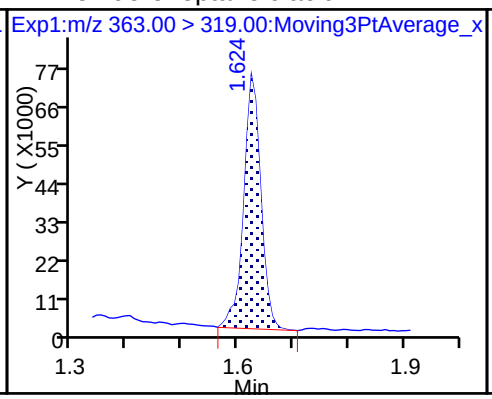
$ 2 13C2 PFHxA



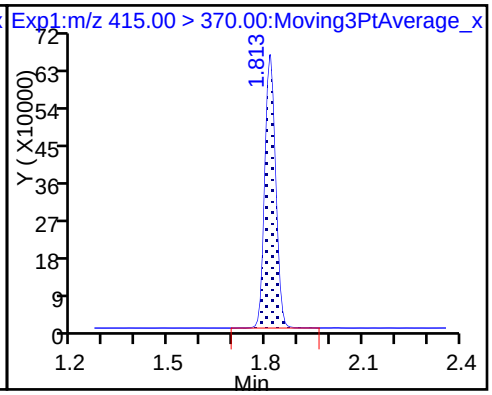
3 Perfluorohexanesulfonic acid



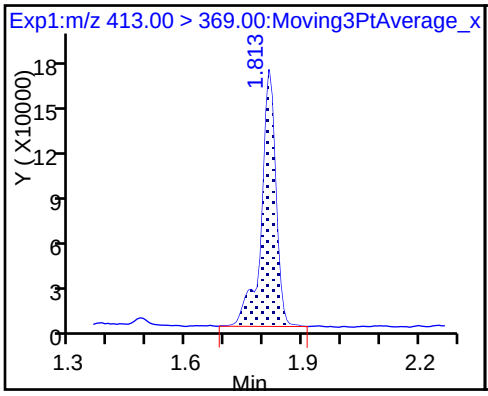
4 Perfluoroheptanoic acid



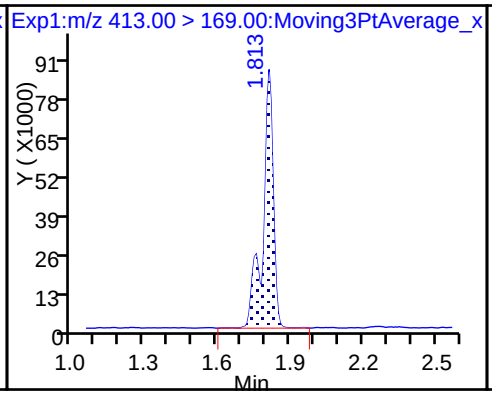
* 6 13C2-PFOA



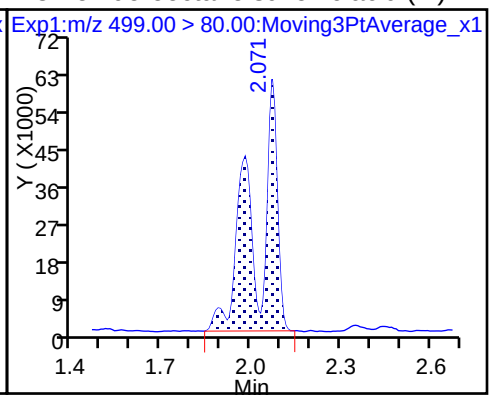
5 Perfluorooctanoic acid



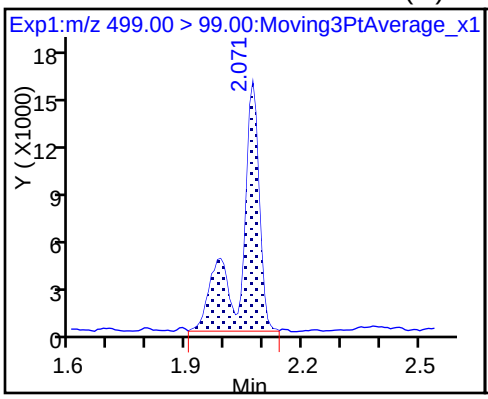
5 Perfluorooctanoic acid



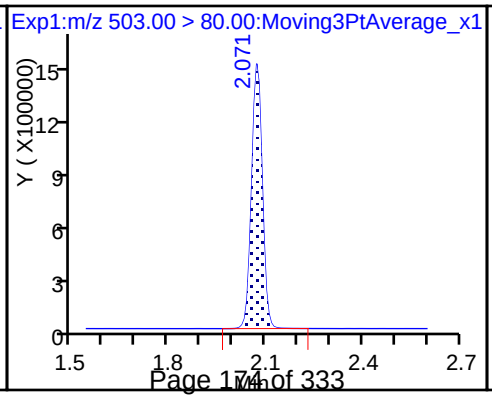
8 Perfluorooctane sulfonic acid (M)



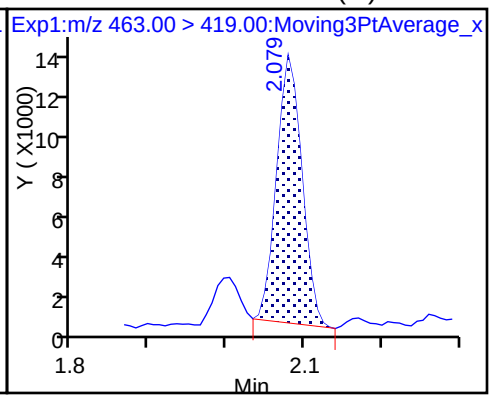
8 Perfluorooctane sulfonic acid (M)



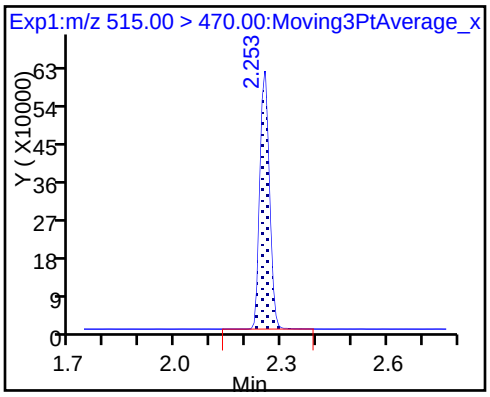
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.253
Y (X10000)
63
54
45
36
27
18
9
0
1.7
2.0
2.3
2.6
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_032.d
Lims ID: 320-33939-A-11-A
Client ID: NAWC-120517-RW-357
Sample Type: Client
Inject. Date: 12-Dec-2017 10:52:14 ALS Bottle#: 22 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-11-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:50 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 13:33:40

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.5	104.53
$ 10 13C2 PFDA	10.0	9.83	98.34

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

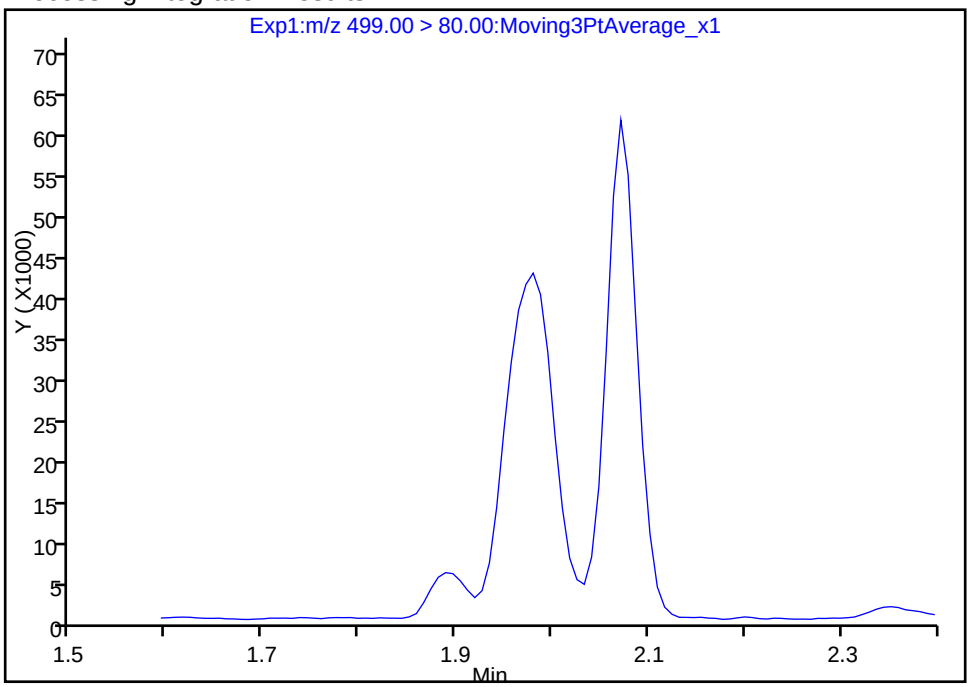
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_032.d				
Injection Date:	12-Dec-2017 10:52:14	Instrument ID:	A8_N		
Lims ID:	320-33939-A-11-A	Lab Sample ID:	320-33939-11		
Client ID:	NAWC-120517-RW-357				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	22	Worklist Smp#:	29
Injection 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

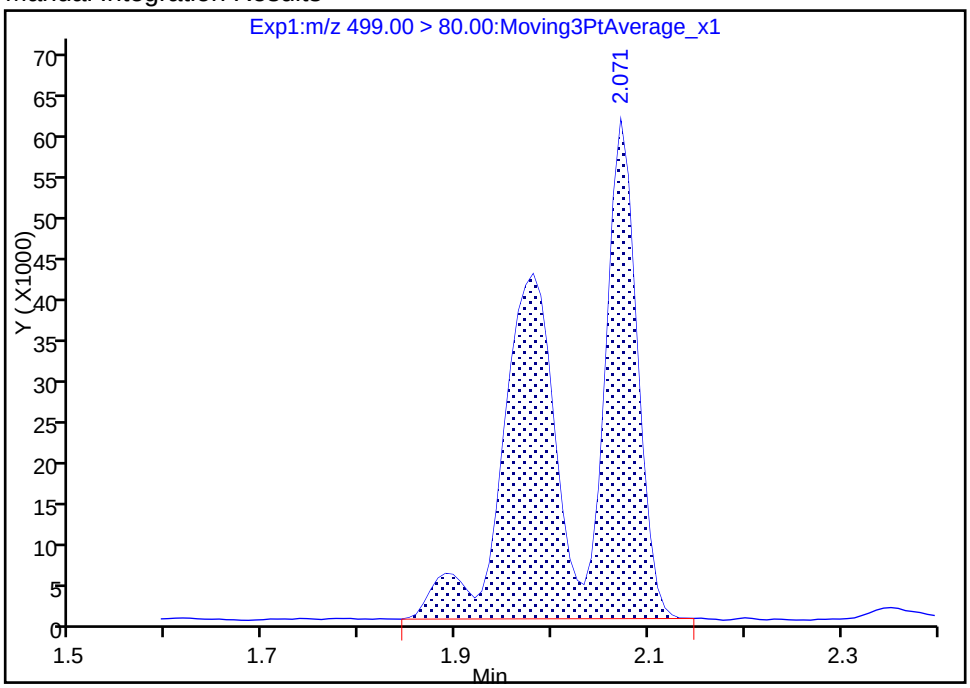
Processing Integration Results

Not Detected
Expected RT: 2.08



Manual Integration Results

RT: 2.07
Area: 297803
Amount: 2.767713
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 13:33:07
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_032.d				
Injection Date:	12-Dec-2017 10:52:14	Instrument ID:	A8_N		
Lims ID:	320-33939-A-11-A	Lab Sample ID:	320-33939-11		
Client ID:	NAWC-120517-RW-357				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	22	Worklist Smp#:	29
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

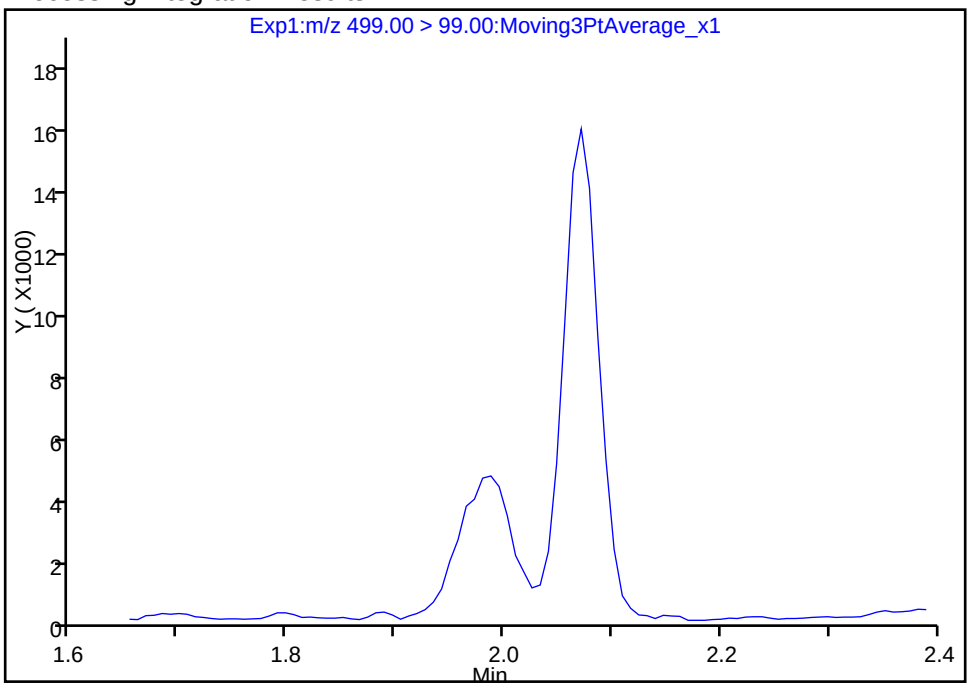
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

Processing Integration Results

Not Detected

Expected RT: 2.08



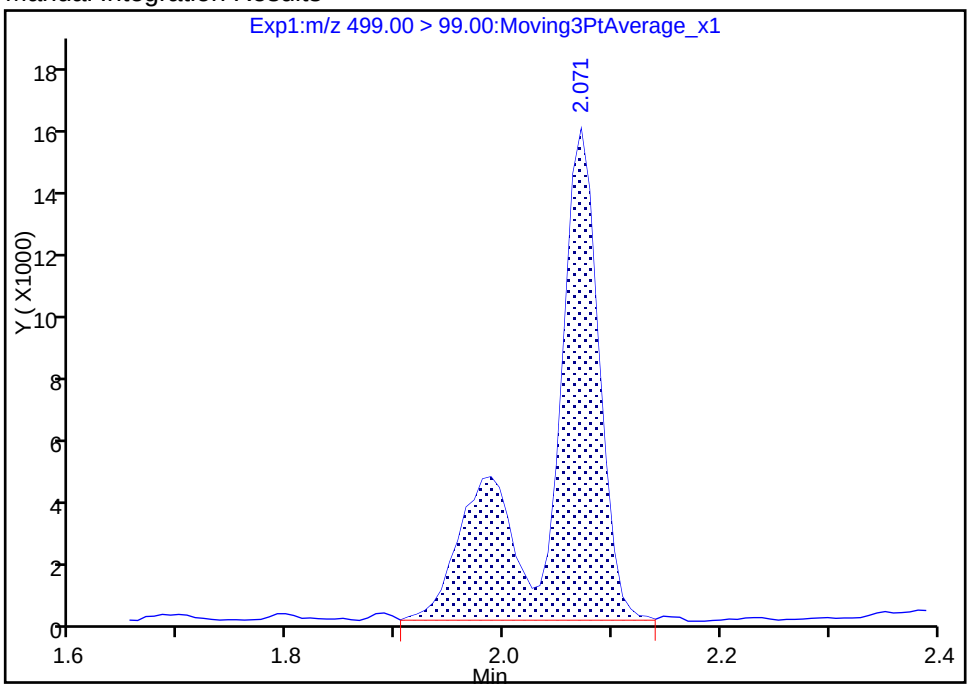
Manual Integration Results

RT: 2.07

Area: 50849

Amount: 2.767713

Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 13:33:22

Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

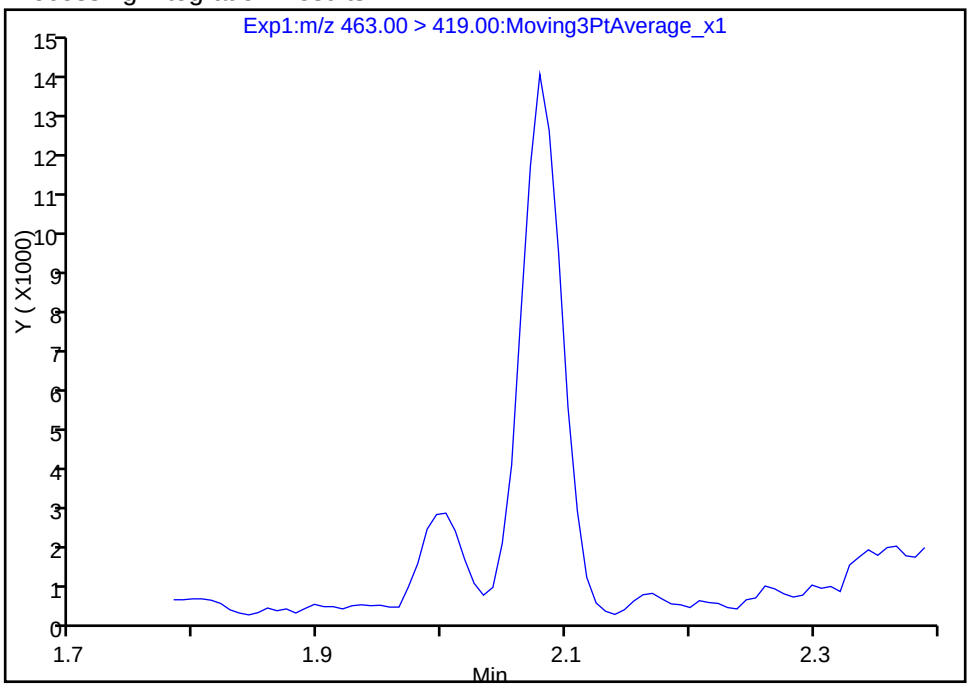
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_032.d				
Injection Date:	12-Dec-2017 10:52:14	Instrument ID:	A8_N		
Lims ID:	320-33939-A-11-A	Lab Sample ID:	320-33939-11		
Client ID:	NAWC-120517-RW-357				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	22	Worklist Smp#:	29
Injection 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

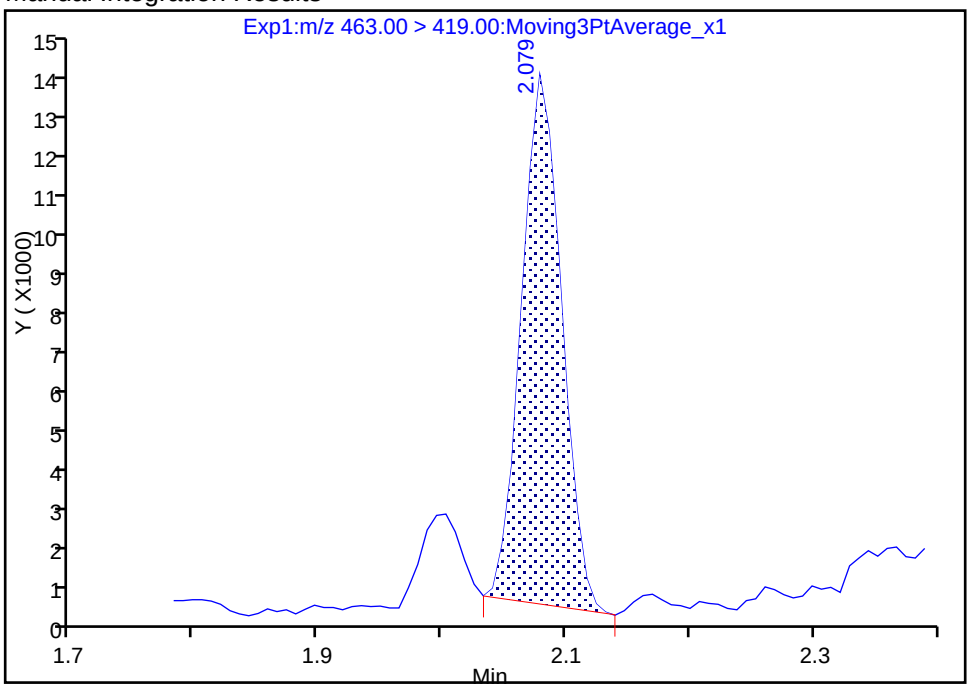
Processing Integration Results

Not Detected
Expected RT: 2.16



Manual Integration Results

RT: 2.08
Area: 28897
Amount: 0.291805
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 13:34:52
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-FRB-357
Lab Sample ID: 320-33939-12
Matrix: Water
Lab File ID: 2017.12.12_537A_033.d
Analysis Method: 537
Date Collected: 12/05/2017 13:05
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 249.3(mL)
Date Analyzed: 12/12/2017 10:56
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199466
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	102		70-130
STL00996	13C2 PFDA	101		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_033.d
Lims ID: 320-33939-A-12-A
Client ID: NAWC-120517-FRB-357
Sample Type: Client
Inject. Date: 12-Dec-2017 10:56:54 ALS Bottle#: 23 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-12-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:50 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 13:35:52

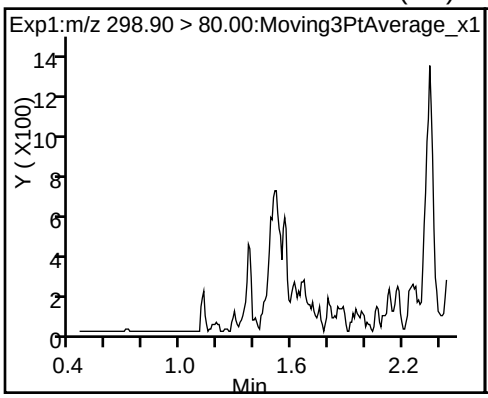
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.573	-0.086	1.000	1731112	10.2		9580	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.913	-0.092		1544449	10.0		7156	
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.151	-0.072		3312861	28.7		9887	
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.312	-0.059	1.000	1188115	10.1		8176	

Report Date: 12-Dec-2017 13:39:56 Chrom Revision: 2.2 16-Aug-2017 16:24:46

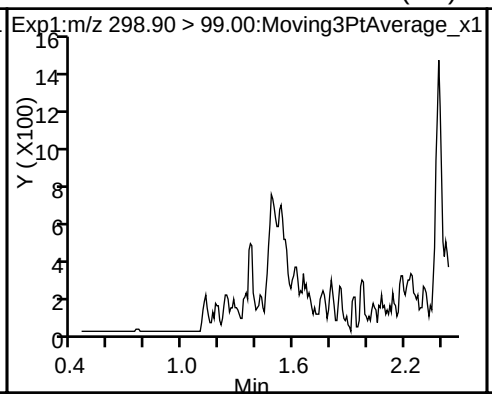
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_033.d				
Injection Date:	12-Dec-2017 10:56:54	Instrument ID:	A8_N		
Lims ID:	320-33939-A-12-A	Lab Sample ID:	320-33939-12		
Client ID:	NAWC-120517-FRB-357				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	23	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

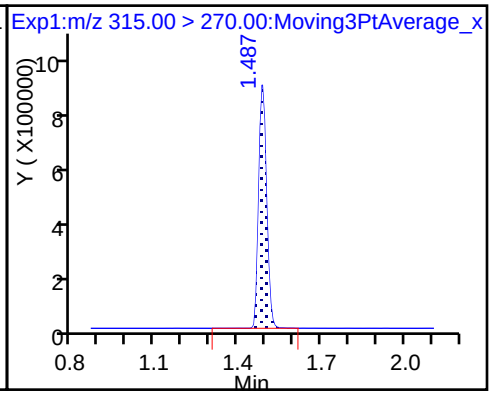
1 Perfluorobutanesulfonic acid (ND)



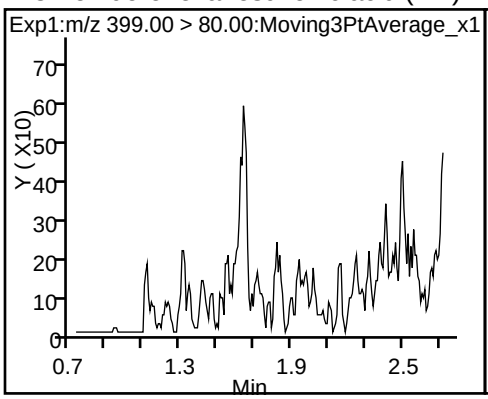
1 Perfluorobutanesulfonic acid (ND)



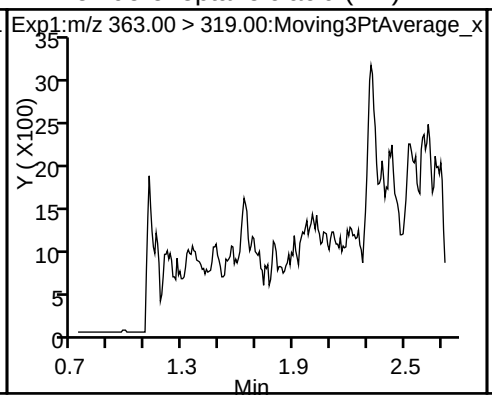
$ 2 13C2 PFHxA



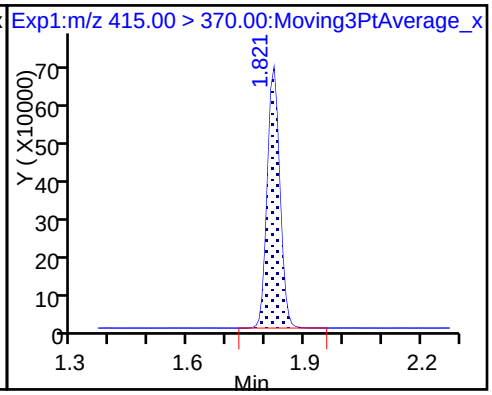
3 Perfluorohexanesulfonic acid (ND)



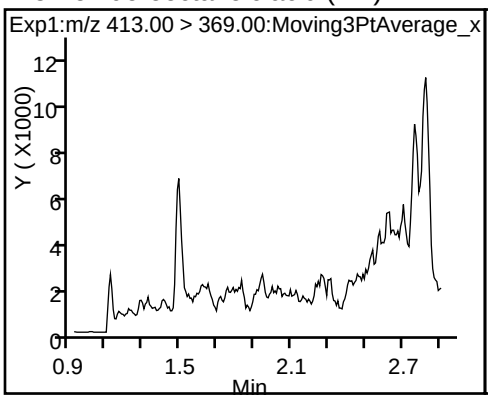
4 Perfluoroheptanoic acid (ND)



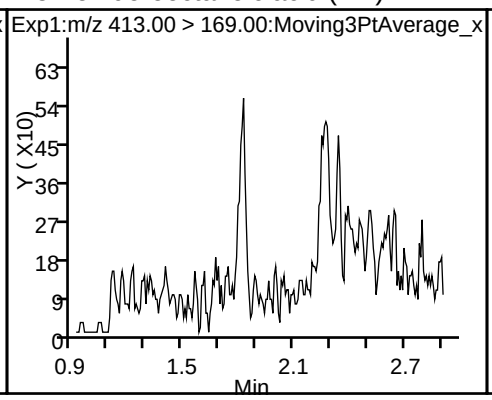
* 6 13C2-PFOA



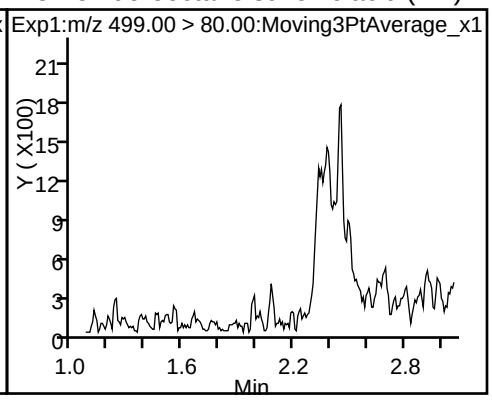
5 Perfluorooctanoic acid (ND)



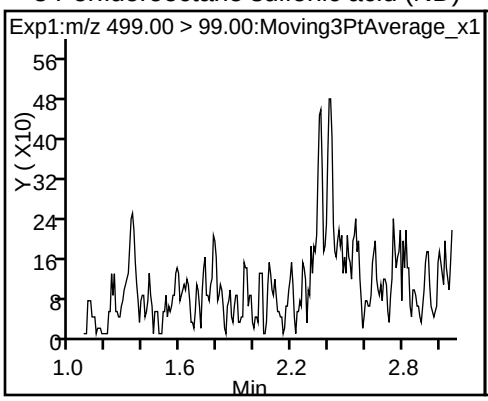
5 Perfluorooctanoic acid (ND)



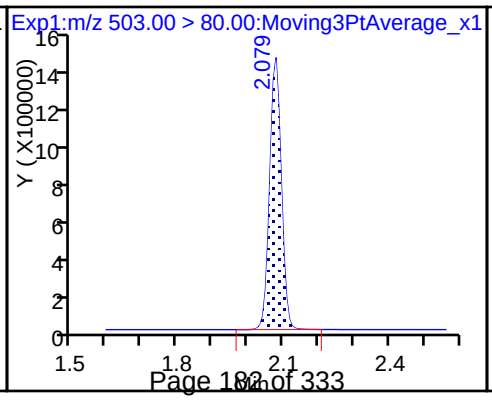
8 Perfluorooctane sulfonic acid (ND)



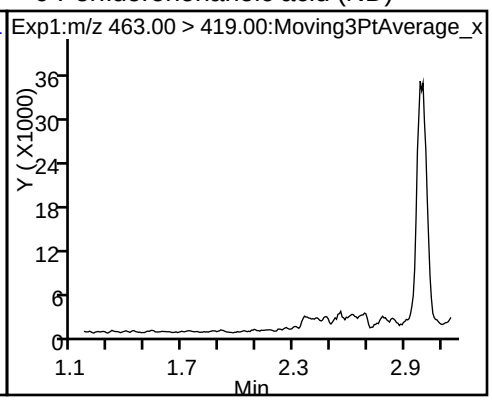
8 Perfluorooctane sulfonic acid (ND)



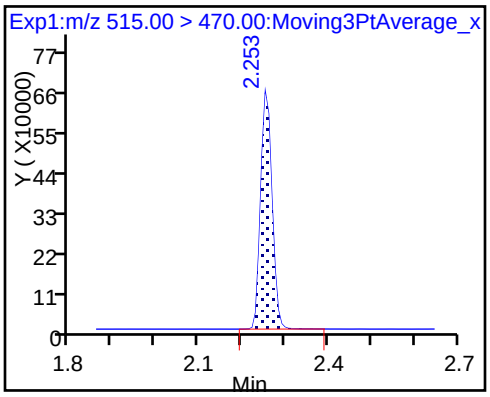
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.253
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_033.d
Lims ID: 320-33939-A-12-A
Client ID: NAWC-120517-FRB-357
Sample Type: Client
Inject. Date: 12-Dec-2017 10:56:54 ALS Bottle#: 23 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-12-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:50 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 13:35:52

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.2	101.87
$ 10 13C2 PFDA	10.0	10.1	100.53

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: WGNA-120517-RW-0263
Lab Sample ID: 320-33939-13
Matrix: Water
Lab File ID: 2017.12.12_537A_034.d
Analysis Method: 537
Date Collected: 12/05/2017 16:40
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 251.2(mL)
Date Analyzed: 12/12/2017 11:01
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199466
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	21	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	28		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.2	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	108		70-130
STL00996	13C2 PFDA	95		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_034.d
Lims ID: 320-33939-A-13-A
Client ID: WGNA-120517-RW-0263
Sample Type: Client
Inject. Date: 12-Dec-2017 11:01:36 ALS Bottle#: 24 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-13-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:50 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 13:36:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.444	-0.078	1.000	364347	2.83		662	
298.90 > 99.00	1.366	1.444	-0.078	1.000	259478		1.40(0.00-0.00)	558	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.573	-0.094	1.000	1788762	10.8		8865	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.725	-0.101	1.000	553979	2.87		477	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.725	-0.101	1.000	290353	2.05		59.3	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.913	-0.100		1511274	10.0		7227	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.914	-0.101	1.000	975027	6.97		154	
413.00 > 169.00	1.813	1.914	-0.101	1.000	598853		1.63(0.00-0.00)	1065	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	1.980	2.079	-0.099	1.000	573537	5.30		274	M
499.00 > 99.00	2.071	2.079	-0.008	1.046	81688		7.02(0.00-0.00)	133	M
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.151	-0.080		3307797	28.7		5462	
9 Perfluorononanoic acid									M
463.00 > 419.00	2.079	2.158	-0.079	1.000	31240	0.3112		6.4	M
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.312	-0.059	1.000	1093789	9.46		7588	

QC Flag Legend

Review Flags

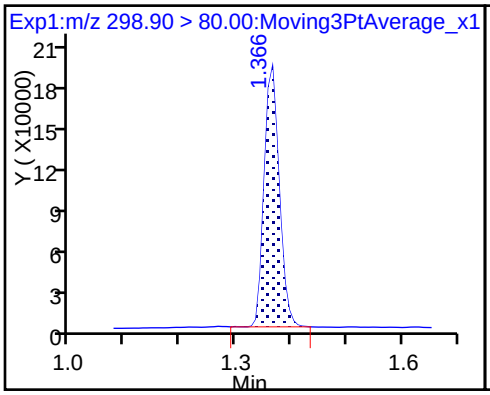
M - Manually Integrated

Report Date: 12-Dec-2017 13:39:56 Chrom Revision: 2.2 16-Aug-2017 16:24:46

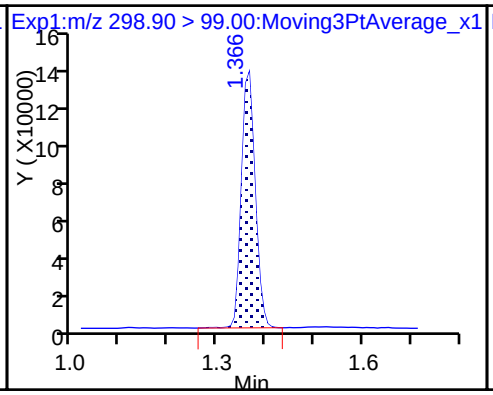
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_034.d				
Injection Date:	12-Dec-2017 11:01:36	Instrument ID:	A8_N		
Lims ID:	320-33939-A-13-A	Lab Sample ID:	320-33939-13		
Client ID:	WGNA-120517-RW-0263				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	24	Worklist Smp#:	31
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

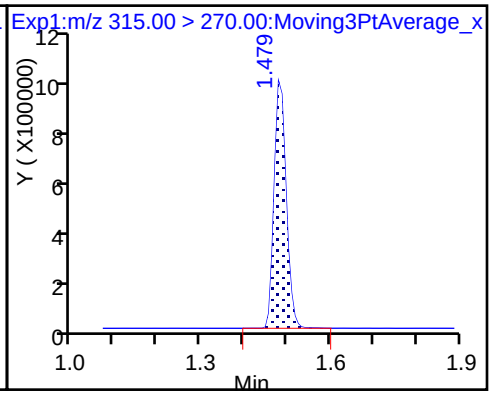
1 Perfluorobutanesulfonic acid



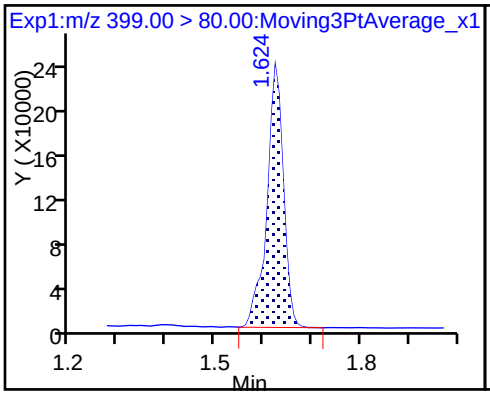
1 Perfluorobutanesulfonic acid



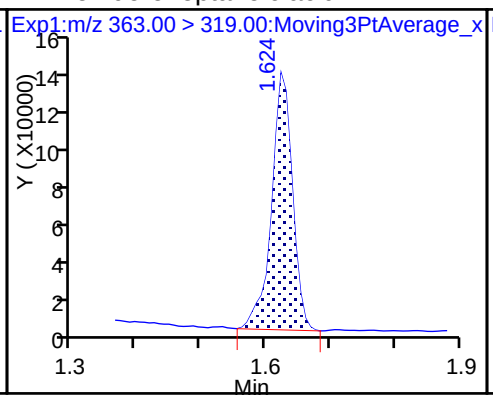
$ 2 13C2 PFHxA



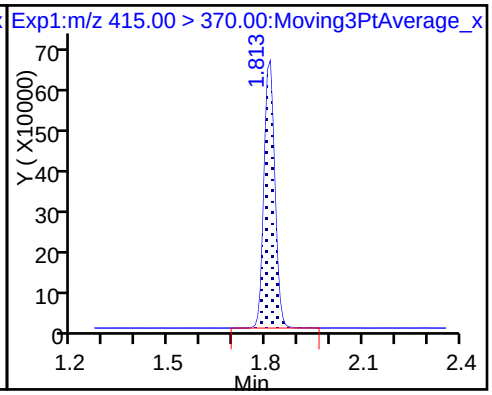
3 Perfluorohexanesulfonic acid



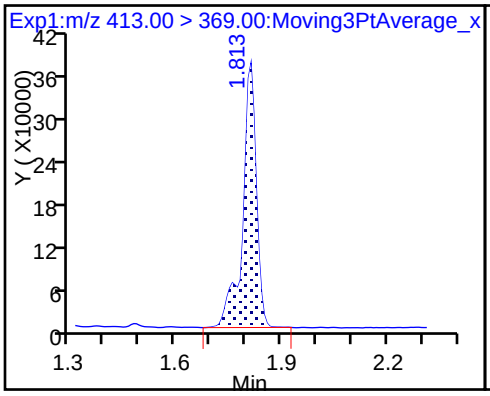
4 Perfluoroheptanoic acid



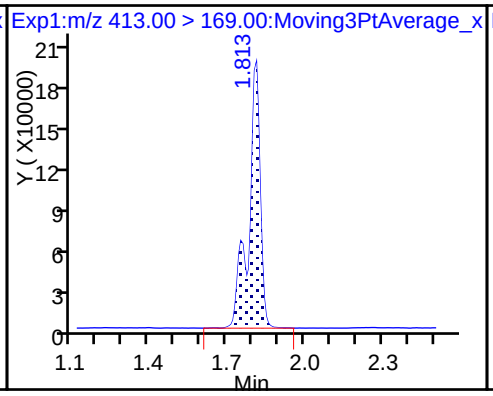
* 6 13C2-PFOA



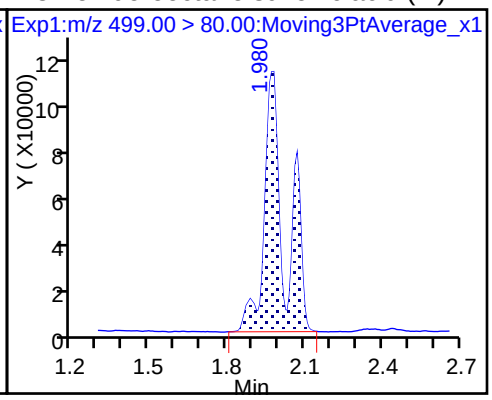
5 Perfluorooctanoic acid



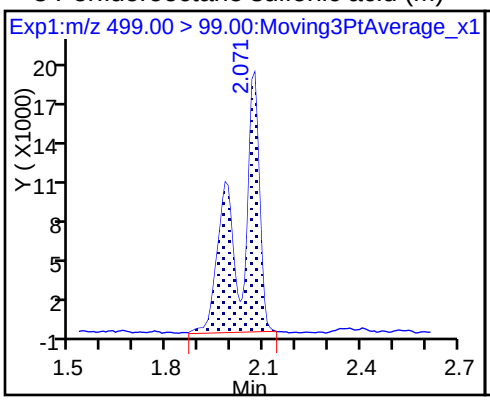
5 Perfluorooctanoic acid



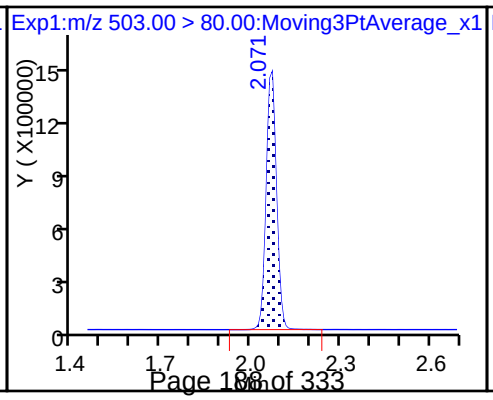
8 Perfluorooctane sulfonic acid (M)



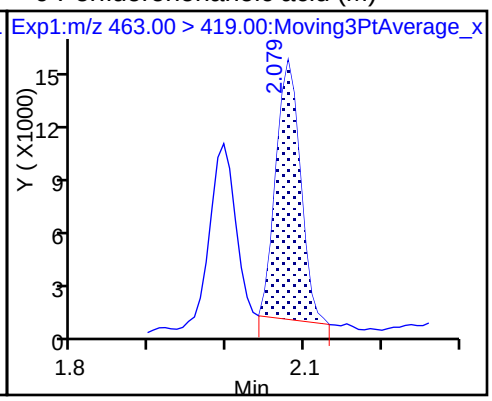
8 Perfluorooctane sulfonic acid (M)



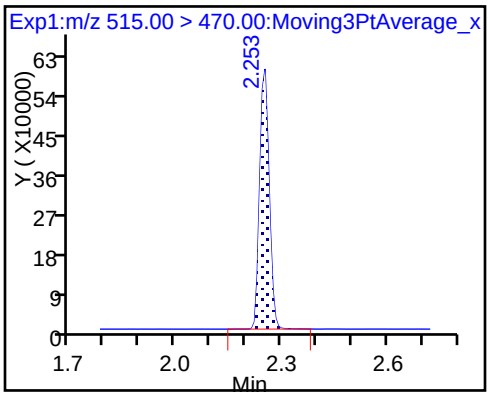
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.253
Y (X10000)
63
54
45
36
27
18
9
0
1.7
2.0
2.3
2.6
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_034.d
Lims ID: 320-33939-A-13-A
Client ID: WGNA-120517-RW-0263
Sample Type: Client
Inject. Date: 12-Dec-2017 11:01:36 ALS Bottle#: 24 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-13-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:50 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 13:36:56

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.8	107.57
$ 10 13C2 PFDA	10.0	9.46	94.58

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

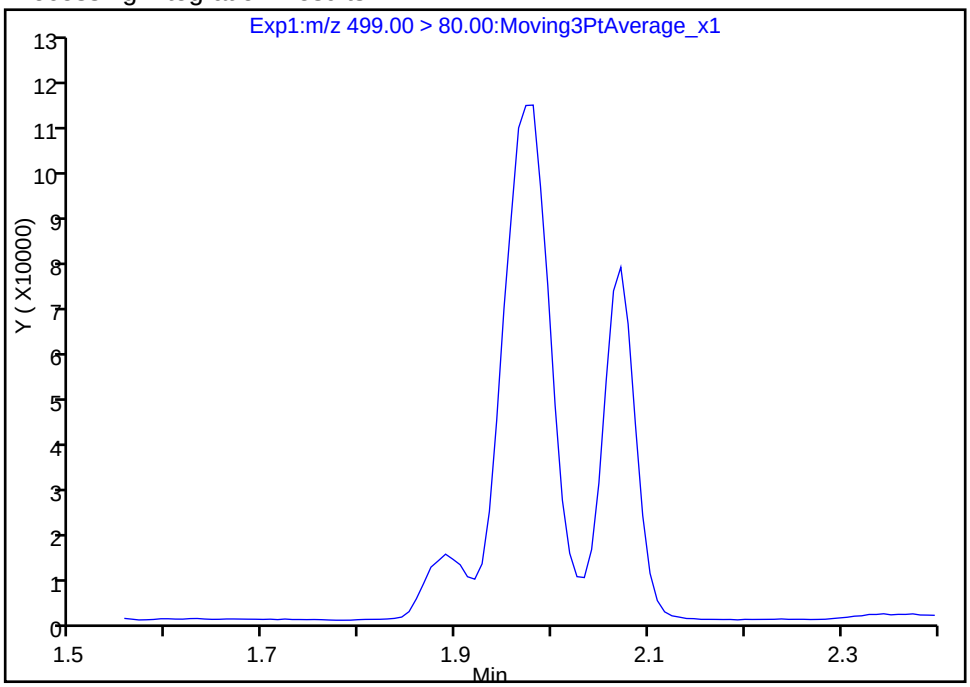
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_034.d				
Injection Date:	12-Dec-2017 11:01:36	Instrument ID:	A8_N		
Lims ID:	320-33939-A-13-A	Lab Sample ID:	320-33939-13		
Client ID:	WGNA-120517-RW-0263				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	24	Worklist Smp#:	31
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

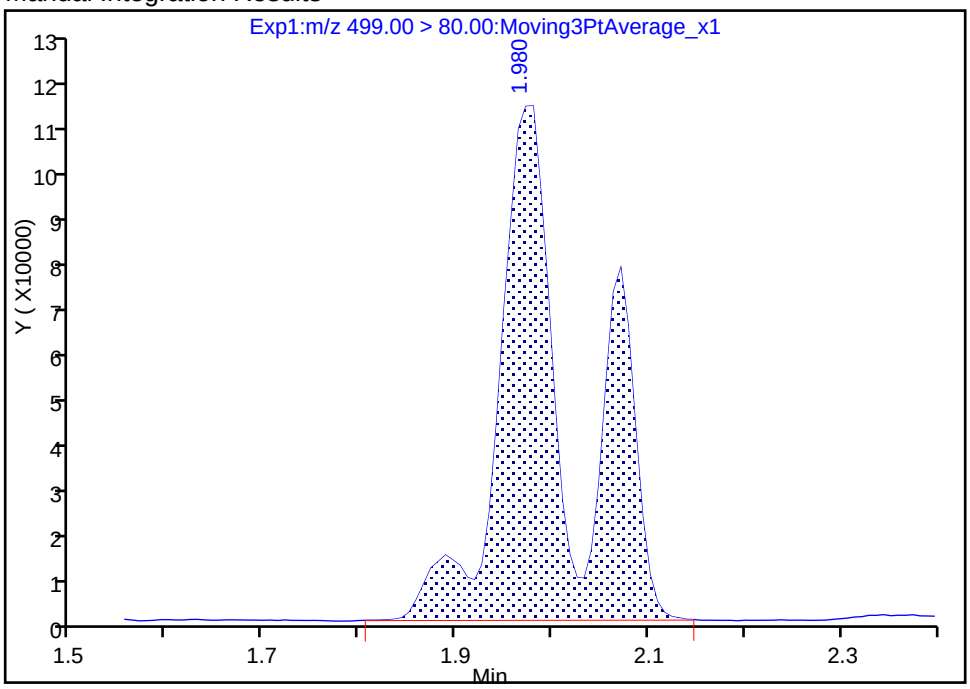
Processing Integration Results

Not Detected
Expected RT: 2.08



Manual Integration Results

RT: 1.98
Area: 573537
Amount: 5.296145
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 13:36:08
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

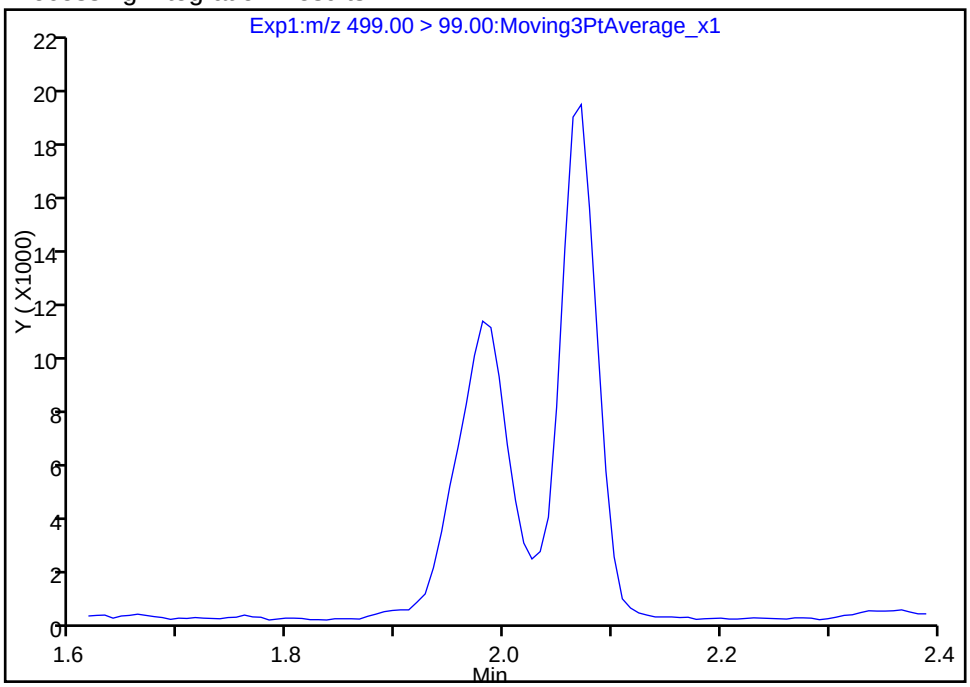
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_034.d				
Injection Date:	12-Dec-2017 11:01:36	Instrument ID:	A8_N		
Lims ID:	320-33939-A-13-A	Lab Sample ID:	320-33939-13		
Client ID:	WGNA-120517-RW-0263				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	24	Worklist Smp#:	31
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 2

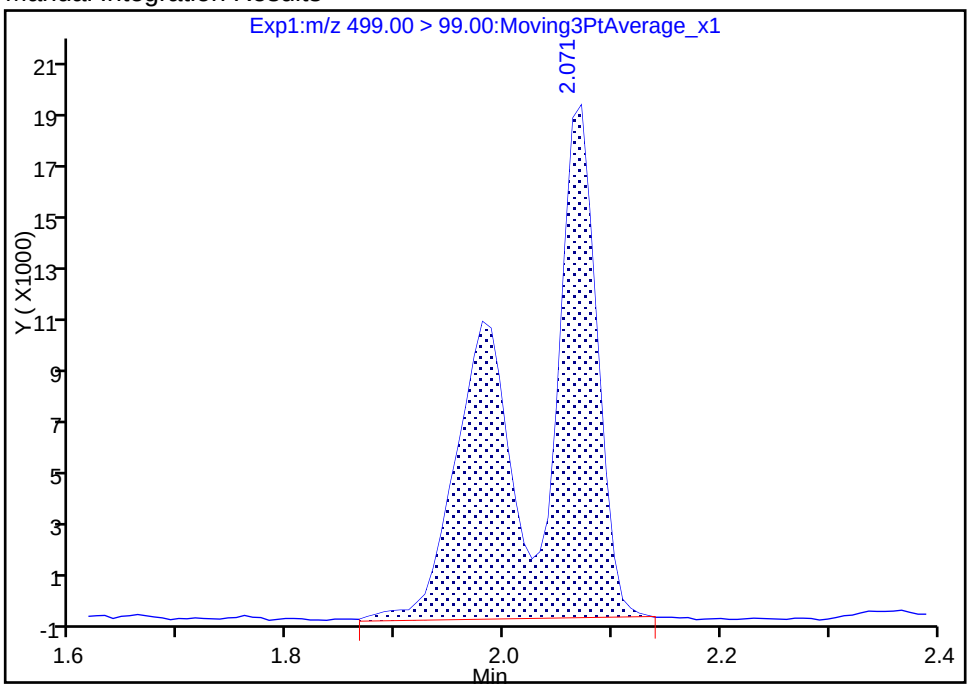
Processing Integration Results

Not Detected
Expected RT: 2.08



Manual Integration Results

RT: 2.07
Area: 81688
Amount: 5.296145
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 13:36:17
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

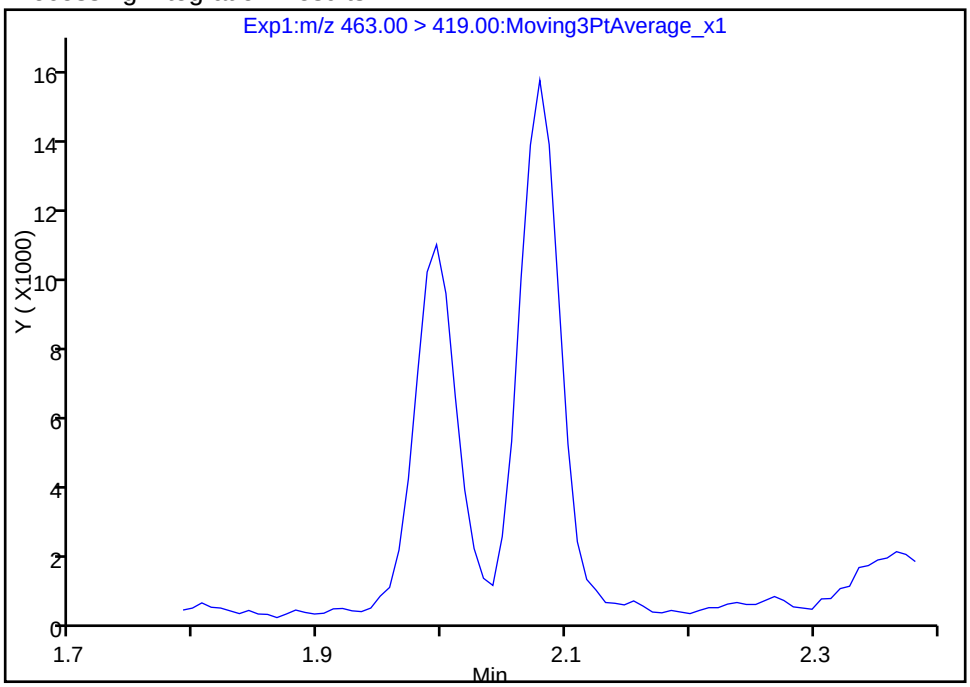
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_034.d				
Injection Date:	12-Dec-2017 11:01:36	Instrument ID:	A8_N		
Lims ID:	320-33939-A-13-A	Lab Sample ID:	320-33939-13		
Client ID:	WGNA-120517-RW-0263				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	24	Worklist Smp#:	31
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

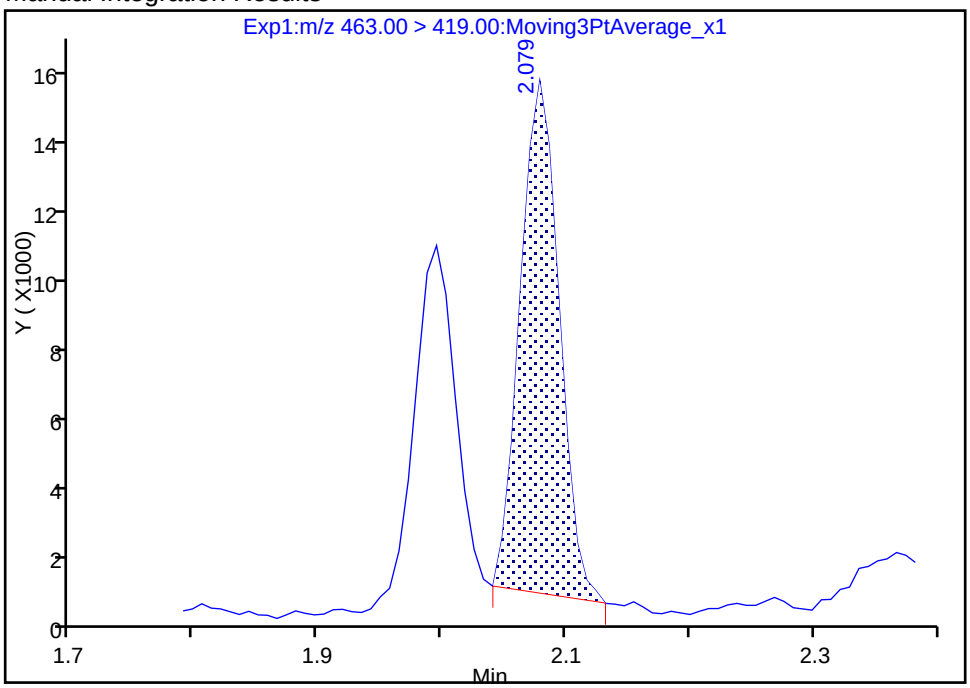
Processing Integration Results

Not Detected
Expected RT: 2.16



Manual Integration Results

RT: 2.08
Area: 31240
Amount: 0.311240
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 13:36:29
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: WGNA-120517-FRB-0263
Lab Sample ID: 320-33939-14
Matrix: Water
Lab File ID: 2017.12.12_537A_035.d
Analysis Method: 537
Date Collected: 12/05/2017 16:35
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 248.4(mL)
Date Analyzed: 12/12/2017 11:06
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.: 199466
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)	8.1	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	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	117		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_035.d
Lims ID: 320-33939-A-14-A
Client ID: WGNA-120517-FRB-0263
Sample Type: Client
Inject. Date: 12-Dec-2017 11:06:16 ALS Bottle#: 25 Worklist Smp#: 32
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-14-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:50 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 13:37:49

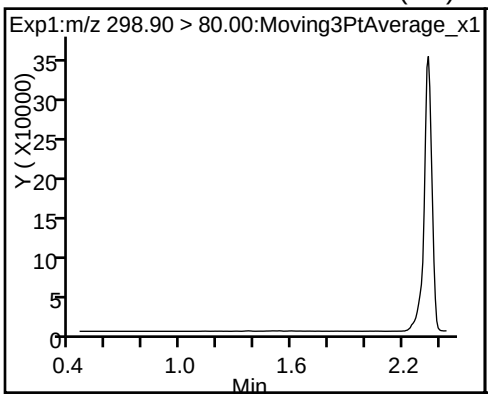
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.573	-0.086	1.000	1802799	10.1		8655	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.913	-0.100		1618278	10.0		8633	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.151	-0.080		3606068	28.7		5260	
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.312	-0.059	1.000	1452745	11.7		8843	

Report Date: 12-Dec-2017 13:39:57 Chrom Revision: 2.2 16-Aug-2017 16:24:46

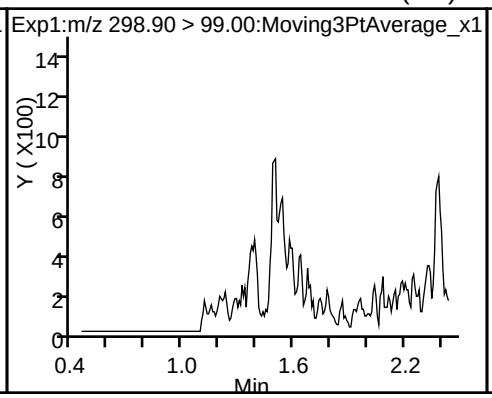
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_035.d				
Injection Date:	12-Dec-2017 11:06:16	Instrument ID:	A8_N		
Lims ID:	320-33939-A-14-A	Lab Sample ID:	320-33939-14		
Client ID:	WGNA-120517-FRB-0263				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	25	Worklist Smp#:	32
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

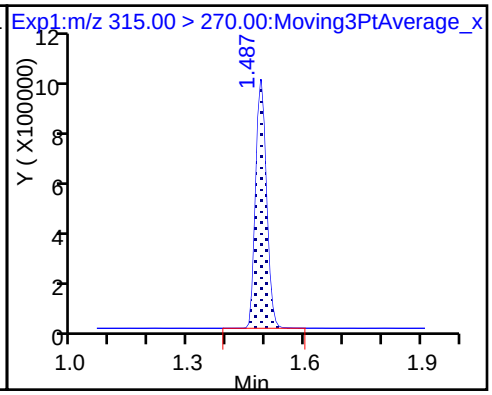
1 Perfluorobutanesulfonic acid (ND)



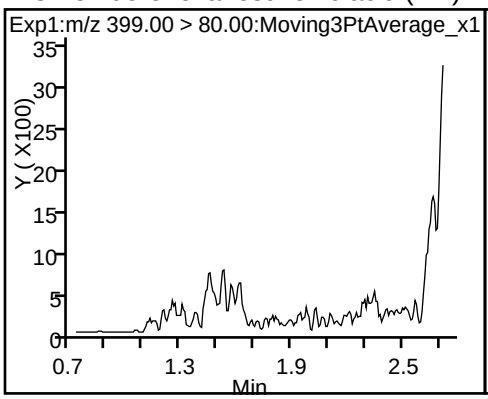
1 Perfluorobutanesulfonic acid (ND)



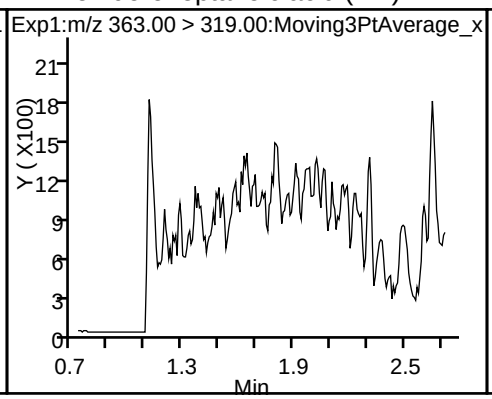
$ 2 13C2 PFHxA



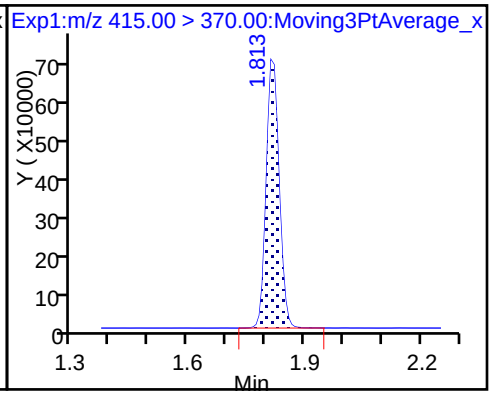
3 Perfluorohexanesulfonic acid (ND)



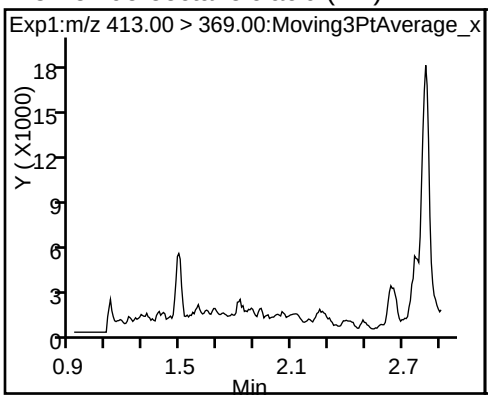
4 Perfluoroheptanoic acid (ND)



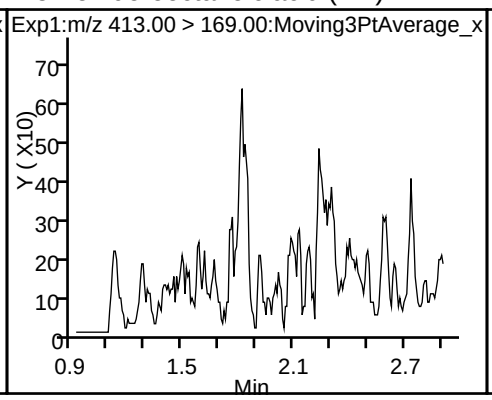
* 6 13C2-PFOA



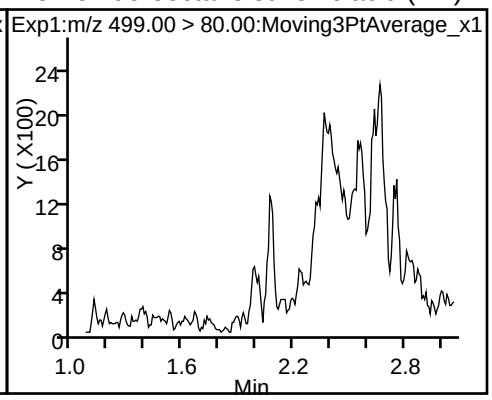
5 Perfluorooctanoic acid (ND)



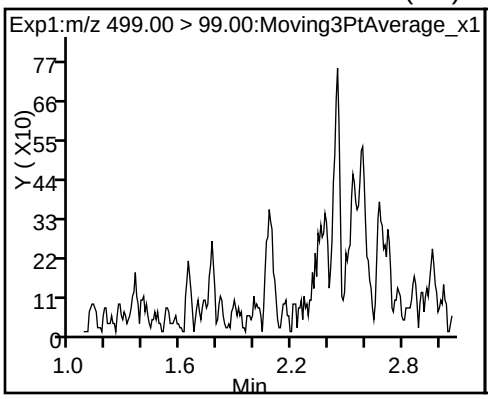
5 Perfluorooctanoic acid (ND)



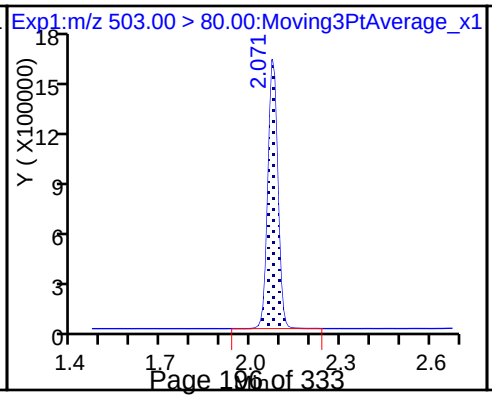
8 Perfluorooctane sulfonic acid (ND)



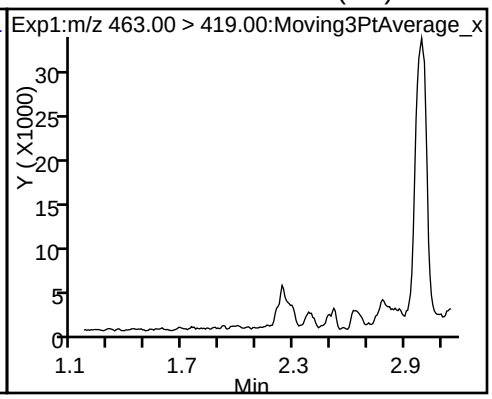
8 Perfluorooctane sulfonic acid (ND)



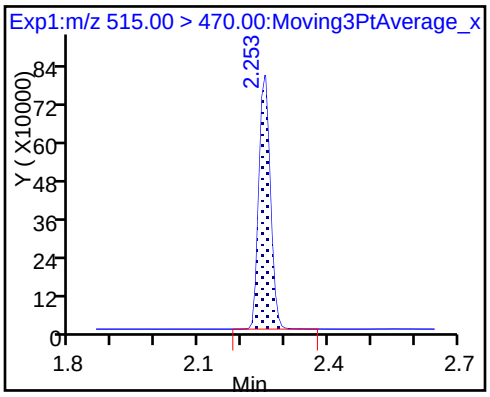
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.253
Y (X10000)
84
72
60
48
36
24
12
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_035.d
Lims ID: 320-33939-A-14-A
Client ID: WGNA-120517-FRB-0263
Sample Type: Client
Inject. Date: 12-Dec-2017 11:06:16 ALS Bottle#: 25 Worklist Smp#: 32
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-33939-a-14-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:50 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 13:37:49

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.1	101.25
$ 10 13C2 PFDA	10.0	11.7	117.32

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

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1 Analy Batch No.: 192908

SDG No.:

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

Calibration Start Date: 11/03/2017 13:37 Calibration End Date: 11/03/2017 14:01 Calibration ID: 36012

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-192908/4	2017.11.03_537XICAL_004.d
Level 2	IC 320-192908/5	2017.11.03_537XICAL_005.d
Level 3	IC 320-192908/6	2017.11.03_537XICAL_006.d
Level 4	IC 320-192908/7	2017.11.03_537XICAL_007.d
Level 5	IC 320-192908/8	2017.11.03_537XICAL_008.d
Level 6	IC 320-192908/9	2017.11.03_537XICAL_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)	1.0397 0.8468	1.0767	1.0898	0.9577	0.9303	QuaF		1.1193	-0.001498						0.9990		0.9600
Perfluoroheptanoic acid (PFHpA)	0.9433 0.9848	0.9187	0.9551	0.9185	0.9011	Ave		0.9369				3.2		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.6459 1.6841	1.6355	1.7405	1.6631	1.6755	Ave		1.6741				2.2		30.0			
Perfluorooctanoic acid (PFOA)	0.9757 0.9799	0.8919	0.9000	0.8953	0.9117	Ave		0.9258				4.4		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.8958 0.9902	0.9213	0.9281	0.9268	0.9715	Ave		0.9389				3.7		30.0			
Perfluorononanoic acid (PFNA)	0.6610 0.7042	0.6285	0.6624	0.6810	0.6478	Ave		0.6642				3.9		30.0			
13C2 PFHxA	1.0891 1.1664	1.0526	1.1042	1.1123	1.0772	Ave		1.1003				3.5		30.0			
13C2 PFDA	0.7748 0.8159	0.7295	0.7569	0.7811	0.7330	Ave		0.7652				4.3		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.: 320-33939-1 Analy Batch No.: 192908

SDG No.:

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

Calibration Start Date: 11/03/2017 13:37 Calibration End Date: 11/03/2017 14:01 Calibration ID: 36012

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-192908/4	2017.11.03_537XICAL_004.d
Level 2	IC 320-192908/5	2017.11.03_537XICAL_005.d
Level 3	IC 320-192908/6	2017.11.03_537XICAL_006.d
Level 4	IC 320-192908/7	2017.11.03_537XICAL_007.d
Level 5	IC 320-192908/8	2017.11.03_537XICAL_008.d
Level 6	IC 320-192908/9	2017.11.03_537XICAL_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	QuaF	1076553 16699152	2591121	5461974	10142530	14011858	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	143455 2810797	331548	736034	1420703	2102676	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	568156 11071993	1312135	2908204	5871843	8413133	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	296934 5597122	644149	1388033	2771271	4257225	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	412315 8679676	985487	2067792	4363079	6504279	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PF OA	Ave	201053 4019666	453612	1020851	2106479	3023088	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PF OA	Ave	1655691 1664260	1708988	1701491	1719911	1675220	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	1177922 1164156	1184358	1166275	1207887	1139992	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD
QuaF = Quadratic ISTD forced zero

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

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1 Analy Batch No.: 192908

SDG No.:

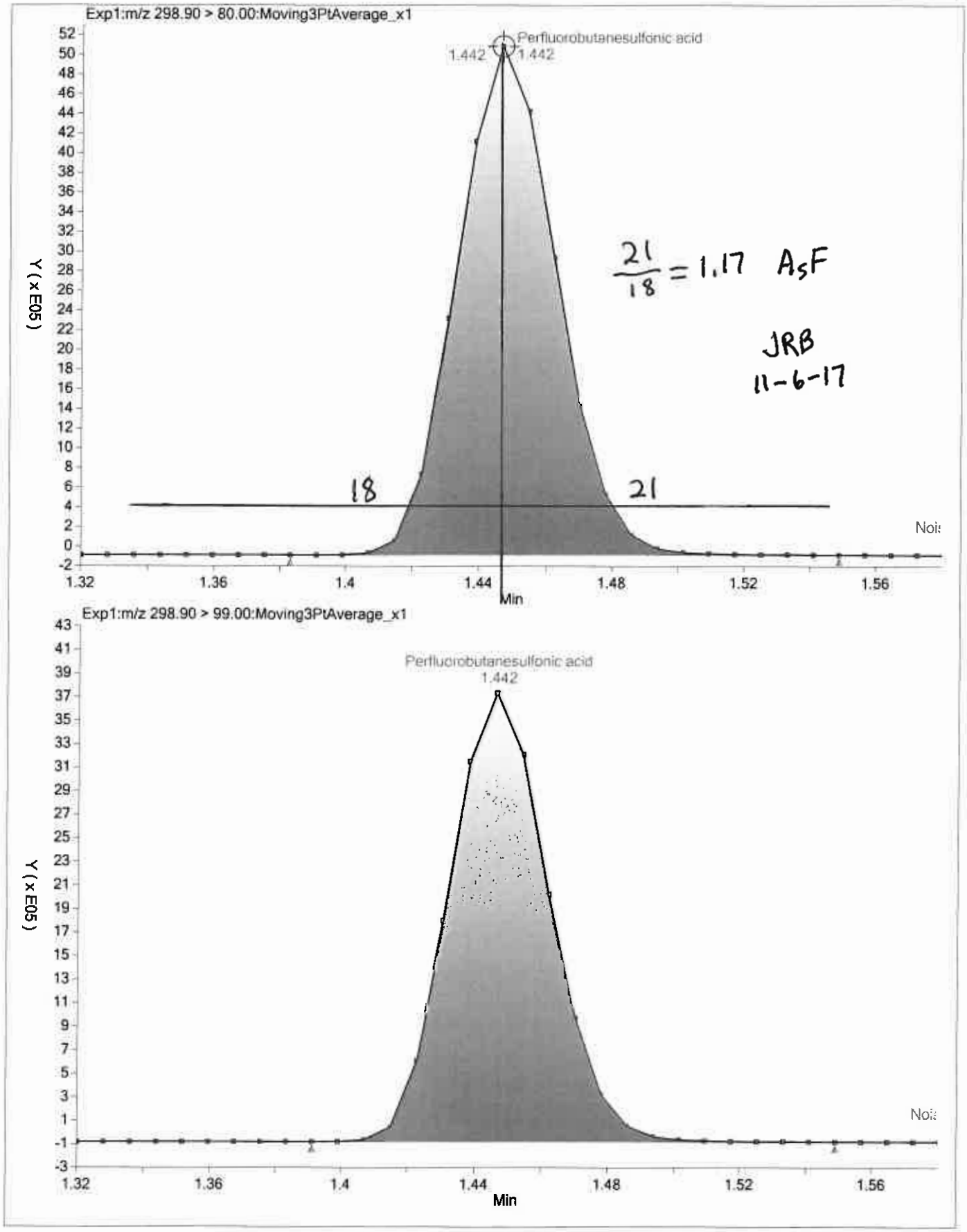
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/03/2017 13:37 Calibration End Date: 11/03/2017 14:01 Calibration ID: 36012

Calibration Files:

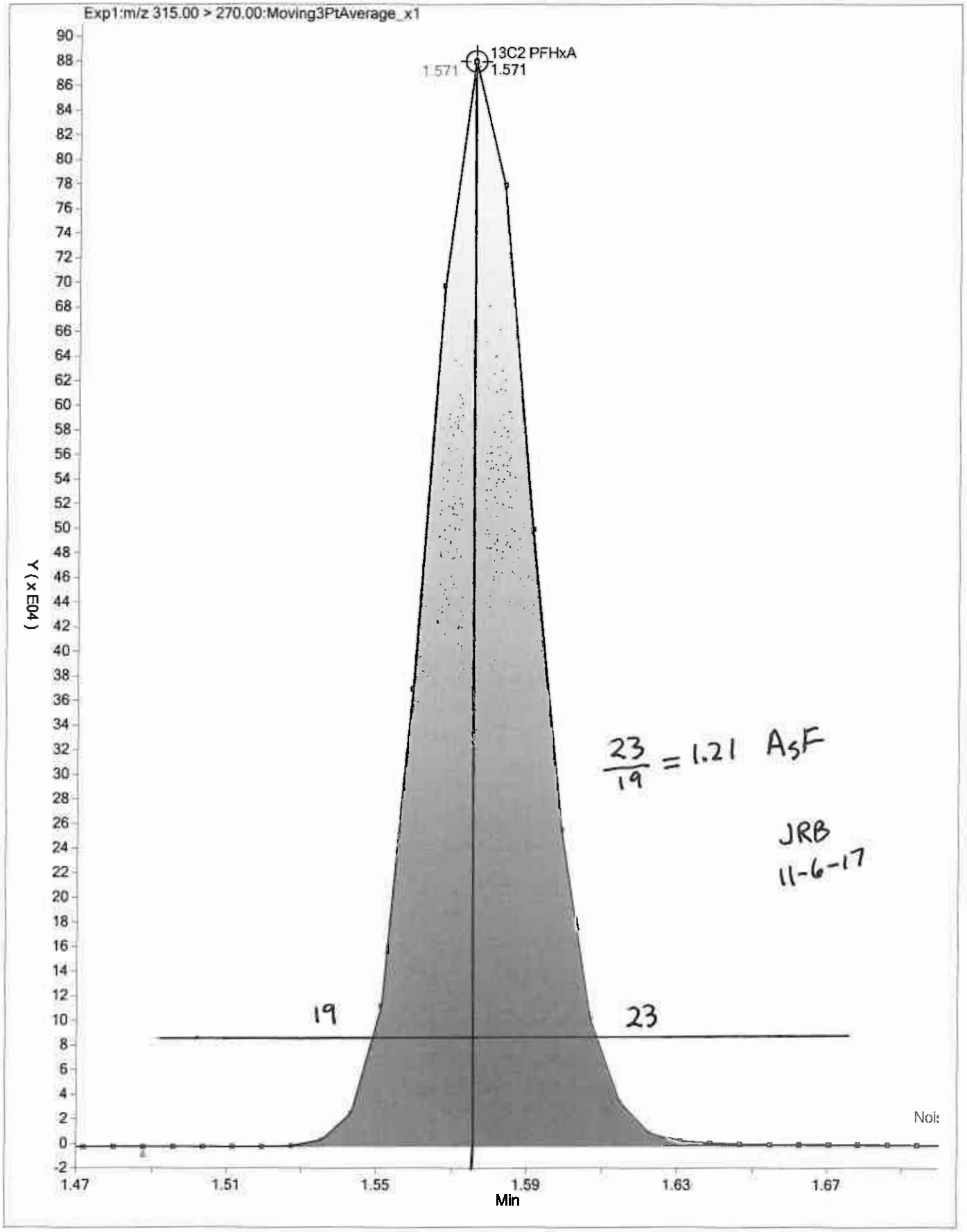
LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-192908/4	2017.11.03_537XICAL_004.d
Level 2	IC 320-192908/5	2017.11.03_537XICAL_005.d
Level 3	IC 320-192908/6	2017.11.03_537XICAL_006.d
Level 4	IC 320-192908/7	2017.11.03_537XICAL_007.d
Level 5	IC 320-192908/8	2017.11.03_537XICAL_008.d
Level 6	IC 320-192908/9	2017.11.03_537XICAL_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)	-6.0	-1.2	3.9	-3.1	1.9	-0.5	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	0.7	-1.9	1.9	-2.0	-3.8	5.1	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-1.7	-2.3	4.0	-0.7	0.1	0.6	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	5.4	-3.7	-2.8	-3.3	-1.5	5.8	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-4.6	-1.9	-1.2	-1.3	3.5	5.5	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-0.5	-5.4	-0.3	2.5	-2.5	6.0	50	30	30	30	30	30
13C2 PFHxA	-1.0	-4.3	0.4	1.1	-2.1	6.0	30	30	30	30	30	30
13C2 PFDA	1.3	-4.7	-1.1	2.1	-4.2	6.6	30	30	30	30	30	30



$\frac{21}{18} = 1.17$ AsF

JRB
11-6-17


Exp1:m/z 315.00 > 270.00:Moving3PtAverage_x1
13C2 PFHxA
1.571
1.571
Y (x E04)
Min
1.47
1.51
1.55
1.59
1.63
1.67
19
23
23/19 = 1.21 AsF
JRB
11-6-17
Nois

TestAmerica Laboratories
Istd/Surrogate Recovery Report

Worklist Name: 03NOV2017_537A_ICAL Worklist Num: 49975
Instrument: A8_N Method: 537_A8_N
Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b
Limit Group: LC 537 ICAL
Analysis Type: SemiVOA
Inj Volume: 2.00 Inj Vol Units: ul

Lims Batch: 192908
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			2864400 1.87	6253426 2.11
# 1 RB 03-Nov-2017 13:23:59			1.94 1485386 51.9	2.16 3471256 55.5
# 2 RB 03-Nov-2017 13:28:38			1.93 1511056 52.8	2.16 3340239 53.4
# 3 RB 03-Nov-2017 13:33:19			1.92 1483949 51.8	2.16 3285228 52.5
IS Std				
# 4 IC L1 03-Nov-2017 13:37:59	1.58 98.98	2.31 101.30	1.92 1520258> 100.0*	2.16 3298877> 100.0*
# 5 IC L2 03-Nov-2017 13:42:39	1.58 95.66	2.31 95.33	1.92 1623614> 106.8*	2.16 3450592> 104.6*
# 6 IC L3 03-Nov-2017 13:47:20	1.57 100.40	2.31 98.91	1.91 1540946> 101.4*	2.15 3194016> 96.8*
# 7 IC L4 03-Nov-2017 13:52:00	1.57 101.10	2.31 102.10	1.91 1546307> 101.7*	2.16 3374600> 102.3*
# 8 IC L5 03-Nov-2017 13:56:41	1.57 97.90	2.31 95.80	1.91 1555174> 102.3*	2.15 3199479> 97.0*
# 9 IC L6 03-Nov-2017 14:01:24	1.57 106.00	2.31 106.60	1.90 1426806> 93.9*	2.15 3141787> 95.2*
IS Std			1540946 1.91	3194016 2.15
#10 RB 03-Nov-2017 14:06:04			1.91 1395383 90.6	2.15 3212781 100.6
IS Std			1546307 1.91	3374600 2.16
#11 CCVL 03-Nov-2017 14:10:44	1.58 97.03	2.31 97.49	1.91 1586829 102.6	2.15 3305852 98.0
IS Std			1586829 1.91	3305852 2.15
#12 RB 03-Nov-2017 14:15:23			1.90 1415042 89.2	2.14 3122656 94.5
IS Std			1546307 1.91	3374600 2.16
#13 ICV 03-Nov-2017 14:20:03	1.57 94.41	2.31 96.59	1.90 1512045 97.8	2.14 3433628 101.7
IS Std			1395100 1.91	3254950 2.15
#14 RB 03-Nov-2017 14:24:44			1.91 1395100 100.0	2.15 3254950 100.0

13C2-PFOA

$$RPD = \frac{1623614 - 1426806}{\left(\frac{1623614 + 1426806}{2}\right)}(100) = 12.9$$

13C4-PFOS

$$RPD = \frac{3450592 - 3141787}{\left(\frac{3450592 + 3141787}{2}\right)}(100) = 9.37$$

JRB
11-6-17

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_004.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 03-Nov-2017 13:37:59 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L1_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-Nov-2017 15:52:07 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: phomsophat Date: 06-Nov-2017 07:18:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.444	0.005	1.000	1076553	8.46		654	
298.90 > 99.00	1.449	1.444	0.005	1.000	763262		1.41(0.00-0.00)	2025	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.573	0.005	1.000	1655691	9.90		8732	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.730	1.725	0.005	1.000	568156	2.95		1122	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.730	1.725	0.005	1.000	143455	1.01		42.2	
* 6 13C2-PFOA									
415.00 > 370.00	1.920	1.913	0.007		1520258	10.0		6863	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.920	1.914	0.006	1.000	296934	2.11		53.5	
413.00 > 169.00	1.920	1.914	0.006	1.000	149720		1.98(0.00-0.00)	184	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.155	2.147	0.008	1.000	412315	3.82		235	M
499.00 > 99.00	2.155	2.147	0.008	1.000	85347		4.83(0.00-0.00)	209	M
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.151	0.004		3298877	28.7		5279	
9 Perfluorononanoic acid									
463.00 > 419.00	2.162	2.158	0.004	1.000	201053	1.99		67.8	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.312	0.002	1.000	1177922	10.1		7012	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L1_00020 Amount Added: 1.00 Units: mL

Report Date: 07-Nov-2017 15:52:07 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_004.d

Injection Date: 03-Nov-2017 13:37:59 Instrument ID: A8_N

Lims ID: IC L1

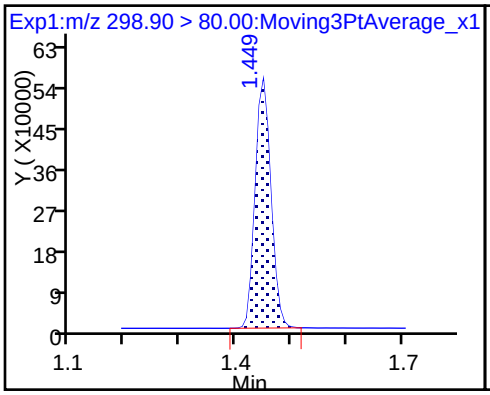
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4

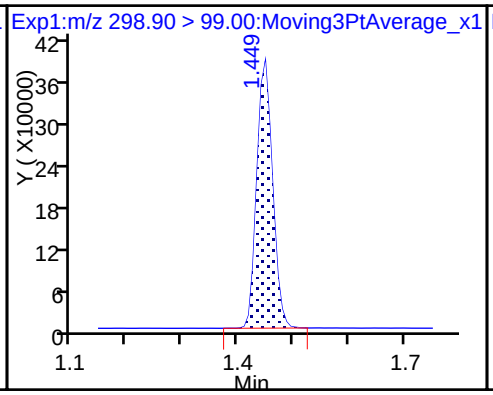
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

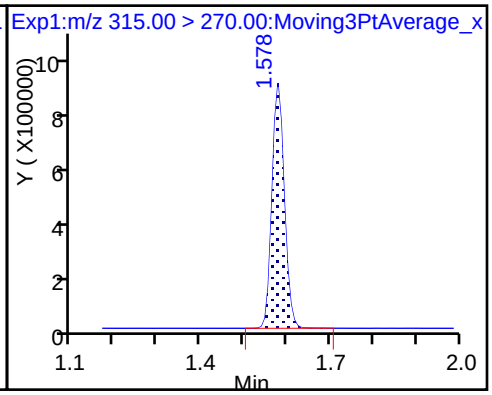
1 Perfluorobutanesulfonic acid



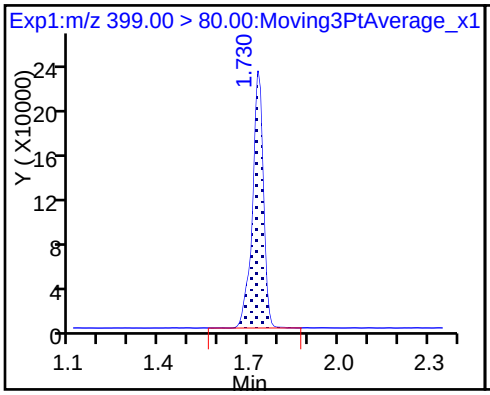
1 Perfluorobutanesulfonic acid



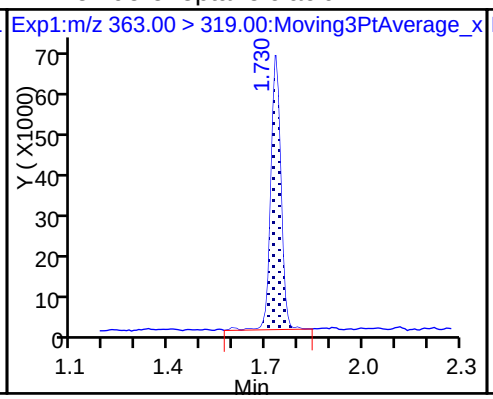
$ 2 13C2 PFHxA



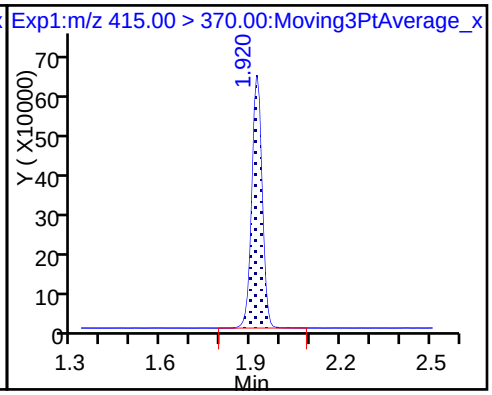
3 Perfluorohexanesulfonic acid



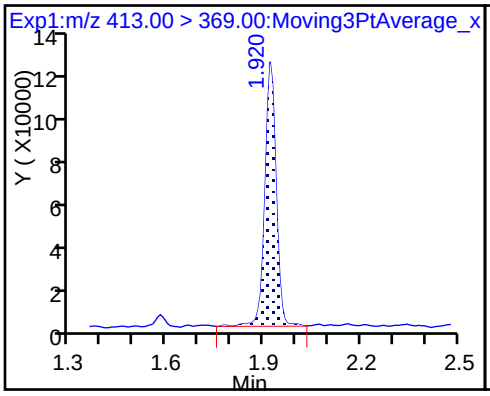
4 Perfluoroheptanoic acid



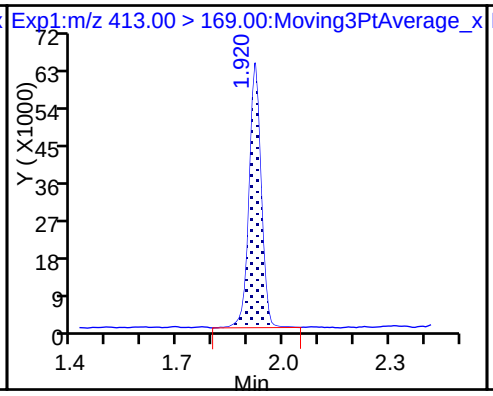
* 6 13C2-PFOA



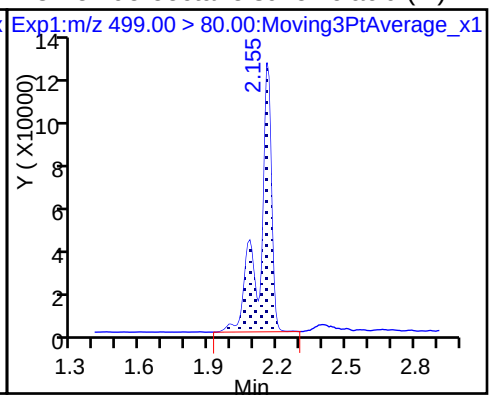
5 Perfluorooctanoic acid



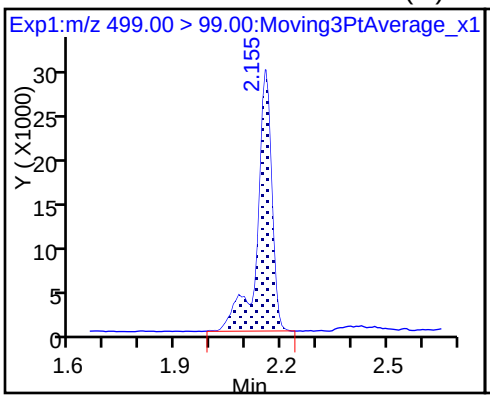
5 Perfluorooctanoic acid



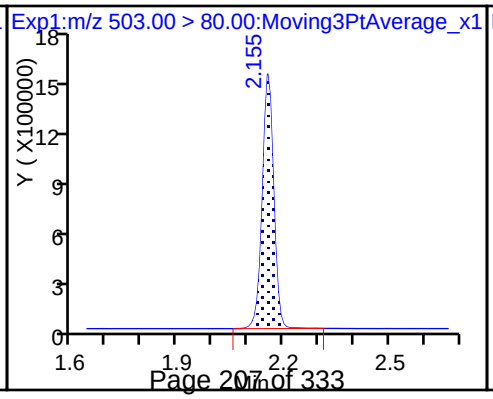
8 Perfluorooctane sulfonic acid (M)



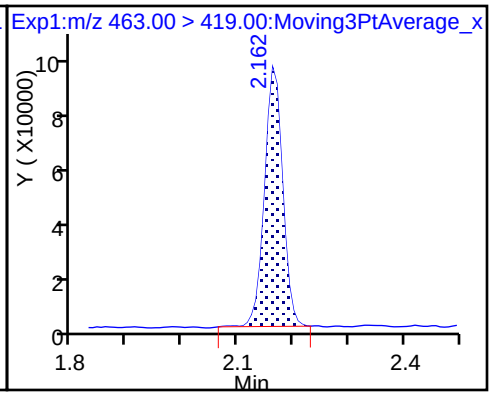
8 Perfluorooctane sulfonic acid (M)



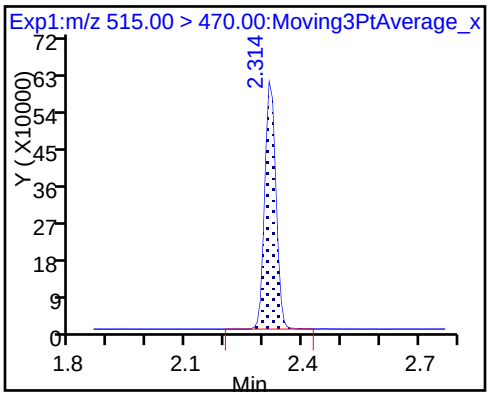
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
72
63
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

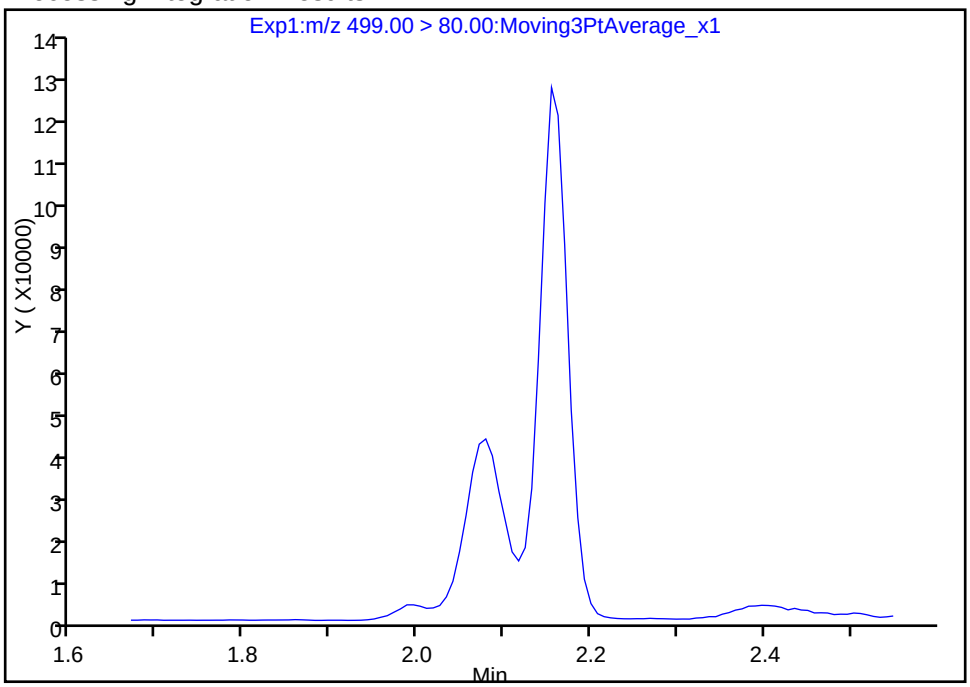
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_004.d				
Injection Date:	03-Nov-2017 13:37:59	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

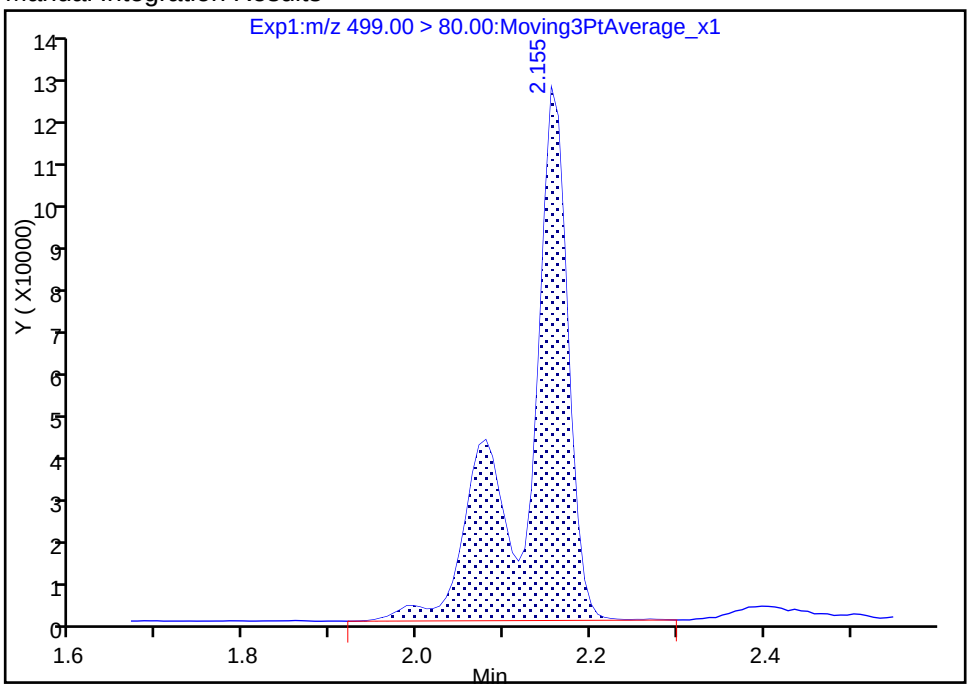
Not Detected
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 412315
Amount: 3.817687
Amount Units: ng/ml



Reviewer: phomsophat, 06-Nov-2017 07:17:28
Audit Action: Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_004.d				
Injection Date:	03-Nov-2017 13:37:59	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

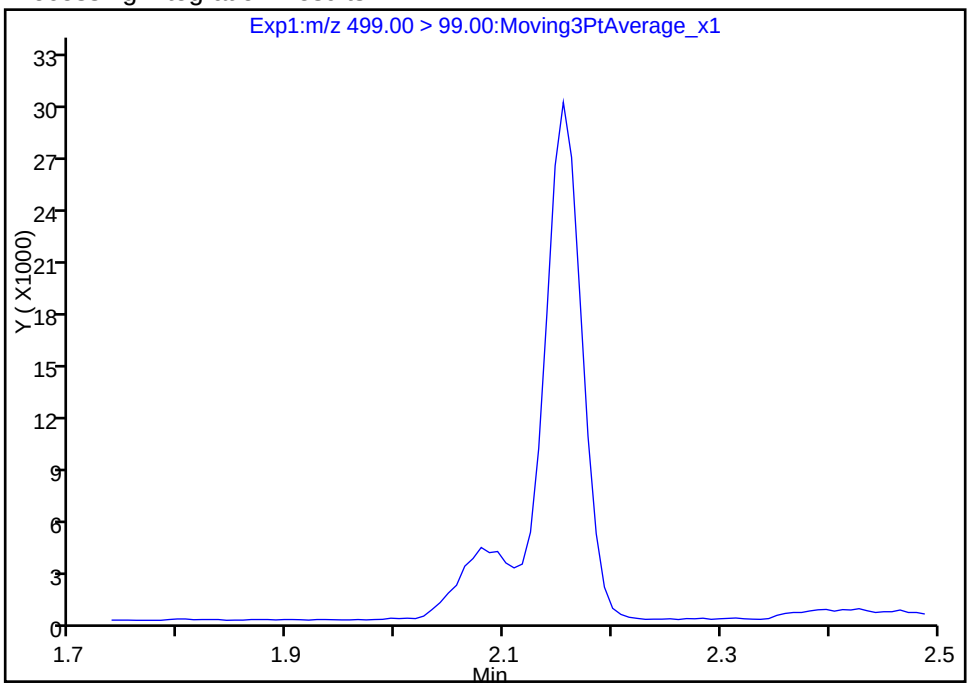
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

Processing Integration Results

Not Detected

Expected RT: 2.15



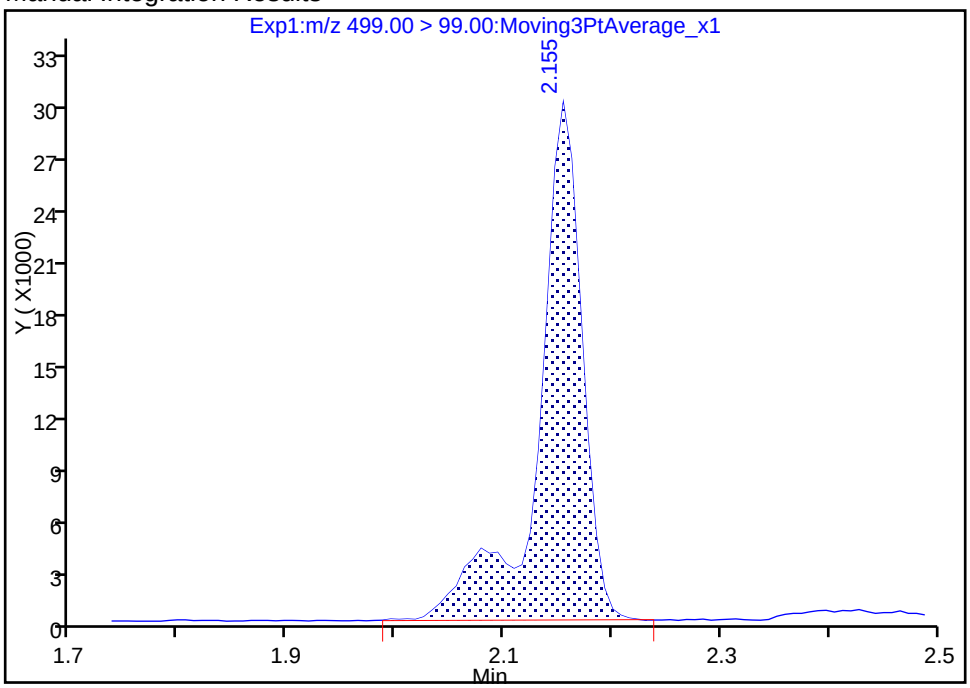
Manual Integration Results

RT: 2.15

Area: 85347

Amount: 3.817687

Amount Units: ng/ml



Reviewer: phomsophat, 06-Nov-2017 07:17:37

Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

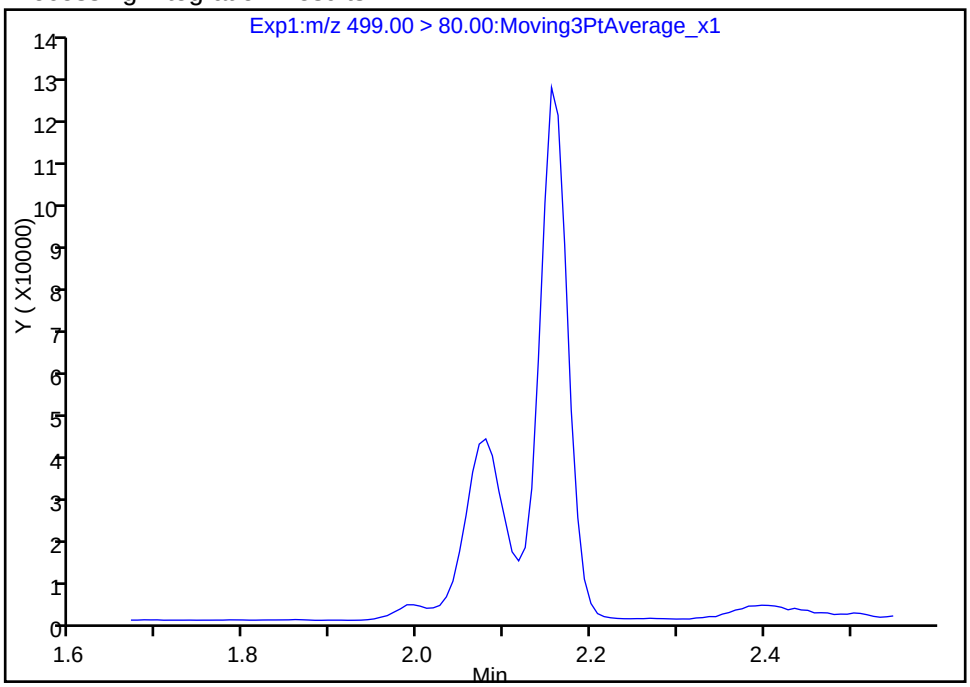
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_004.d				
Injection Date:	03-Nov-2017 13:37:59	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

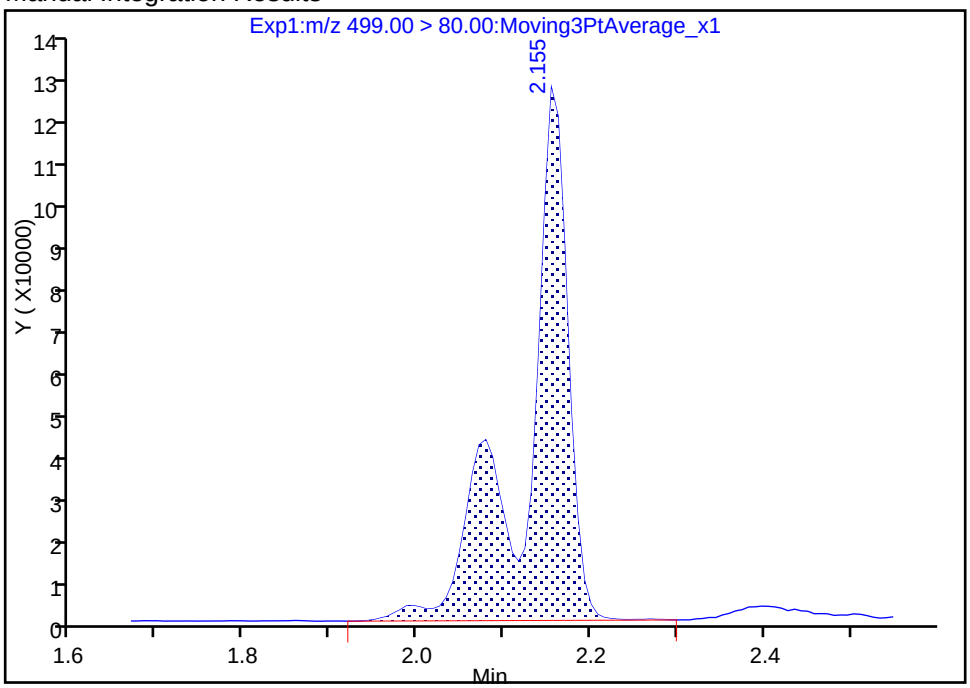
Processing Integration Results

Not Detected
Expected RT: 2.15



Manual Integration Results

RT: 2.15
Area: 412315
Amount: 3.817687
Amount Units: ng/ml



Reviewer: phomsophat, 06-Nov-2017 07:17:37
Audit Action: Manually Integrated Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_005.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 03-Nov-2017 13:42:39 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L2_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-Nov-2017 15:52:08 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: phomsophat Date: 06-Nov-2017 07:18:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.444	0.005	1.000	2591121	19.8		1479	
298.90 > 99.00	1.442	1.444	-0.002	0.995	1874928		1.38(0.00-0.00)	4315	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.573	0.005	1.000	1708988	9.57		8562	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.730	1.725	0.005	1.000	331548	2.18		87.8	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.730	1.725	0.005	1.000	1312135	6.51		2317	
* 6 13C2-PFOA									
415.00 > 370.00	1.920	1.913	0.007		1623614	10.0		6970	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.920	1.914	0.006	1.000	644149	4.29		113	
413.00 > 169.00	1.920	1.914	0.006	1.000	329479		1.96(0.00-0.00)	459	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.155	2.147	0.008	1.000	985487	8.72		578	M
499.00 > 99.00	2.155	2.147	0.008	1.000	200739		4.91(0.00-0.00)	449	M
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.151	0.004		3450592	28.7		5334	
9 Perfluorononanoic acid									
463.00 > 419.00	2.162	2.158	0.004	1.000	453612	4.21		136	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.312	0.002	1.000	1184358	9.53		7573	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L2_00020 Amount Added: 1.00 Units: mL

Report Date: 07-Nov-2017 15:52:08 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_005.d

Injection Date: 03-Nov-2017 13:42:39 Instrument ID: A8_N

Lims ID: IC L2

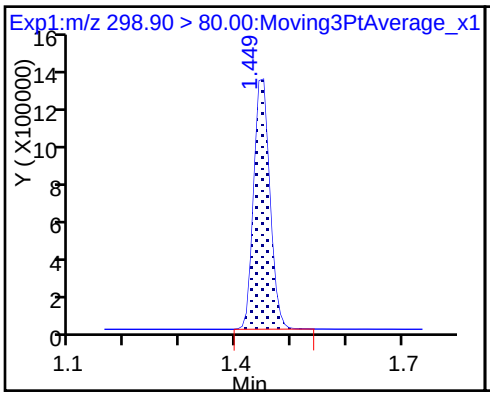
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5

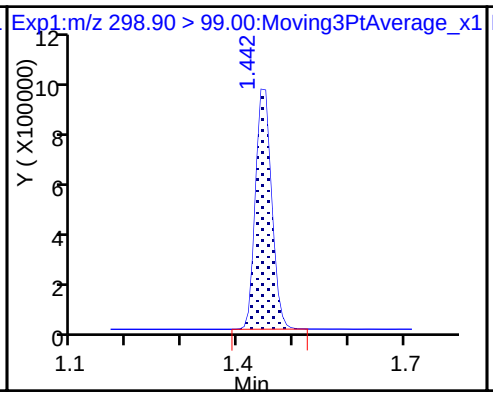
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

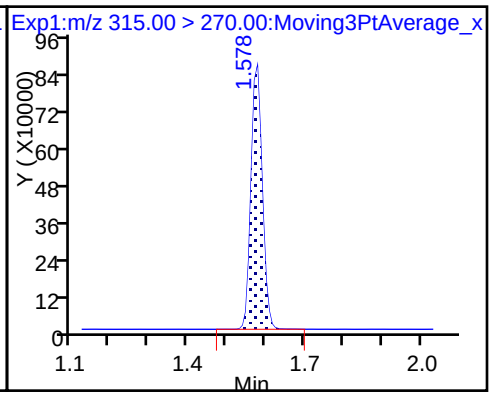
1 Perfluorobutanesulfonic acid



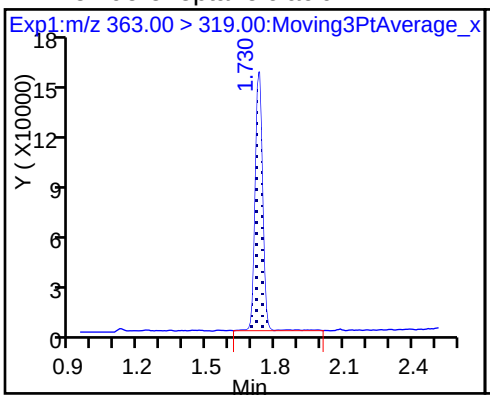
1 Perfluorobutanesulfonic acid



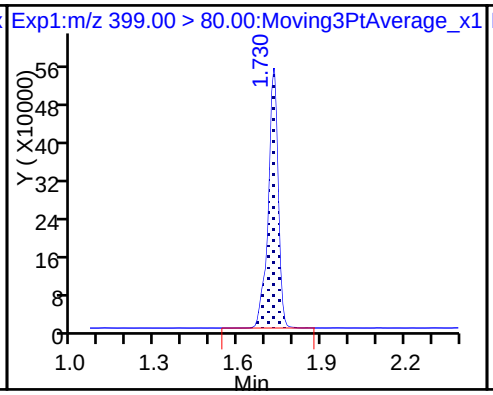
$ 2 13C2 PFHxA



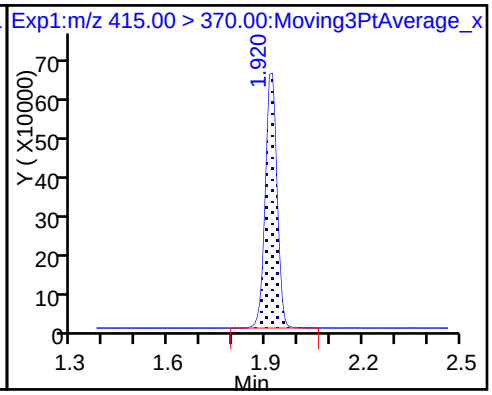
4 Perfluoroheptanoic acid



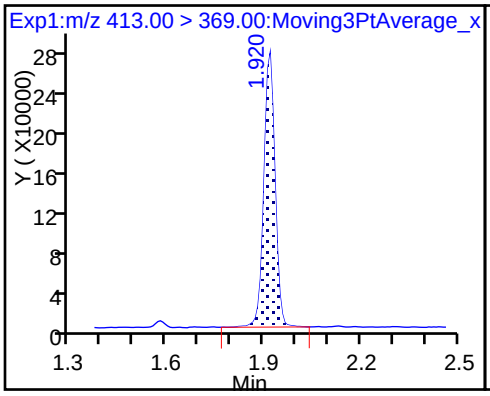
3 Perfluorohexanesulfonic acid



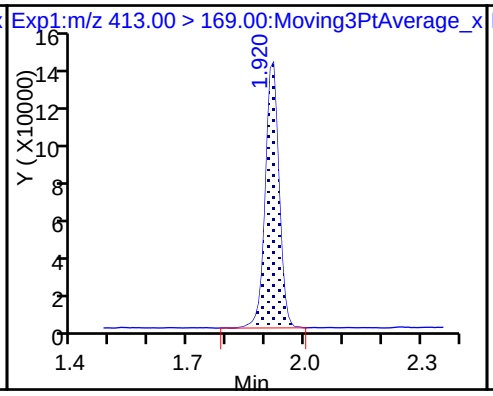
* 6 13C2-PFOA



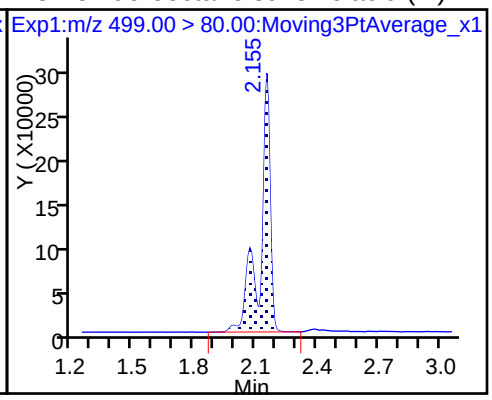
5 Perfluorooctanoic acid



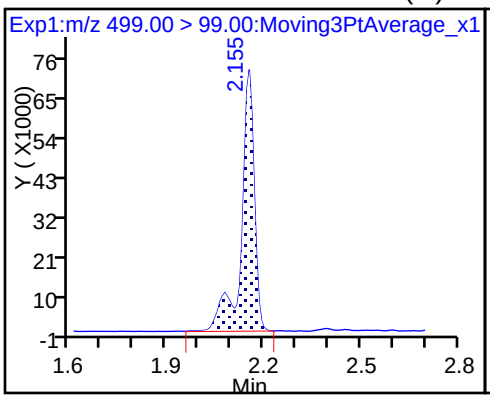
5 Perfluorooctanoic acid



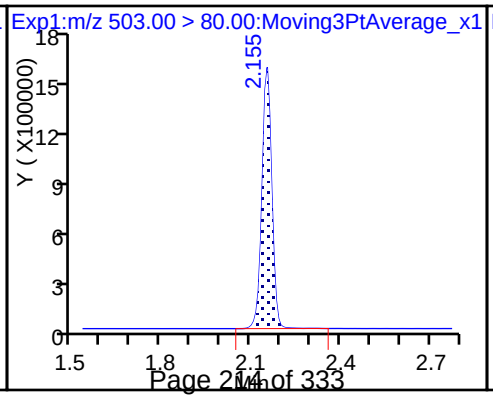
8 Perfluorooctane sulfonic acid (M)



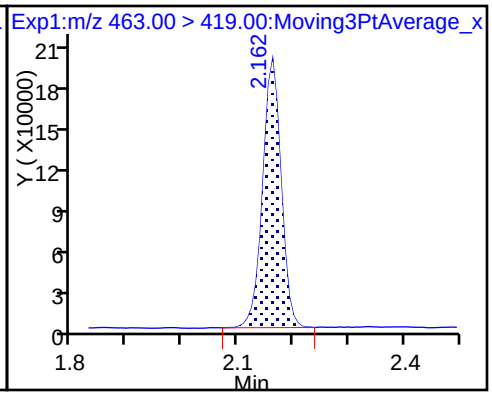
8 Perfluorooctane sulfonic acid (M)



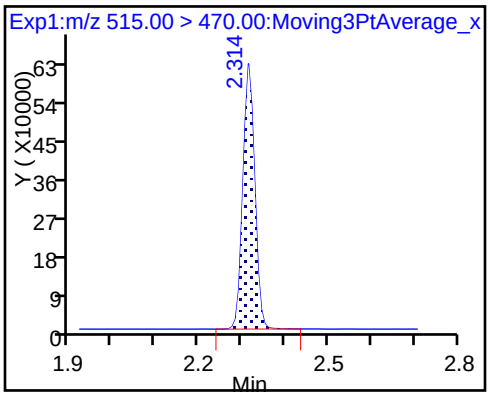
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
63
54
45
36
27
18
9
0
1.9
2.2
2.5
2.8
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

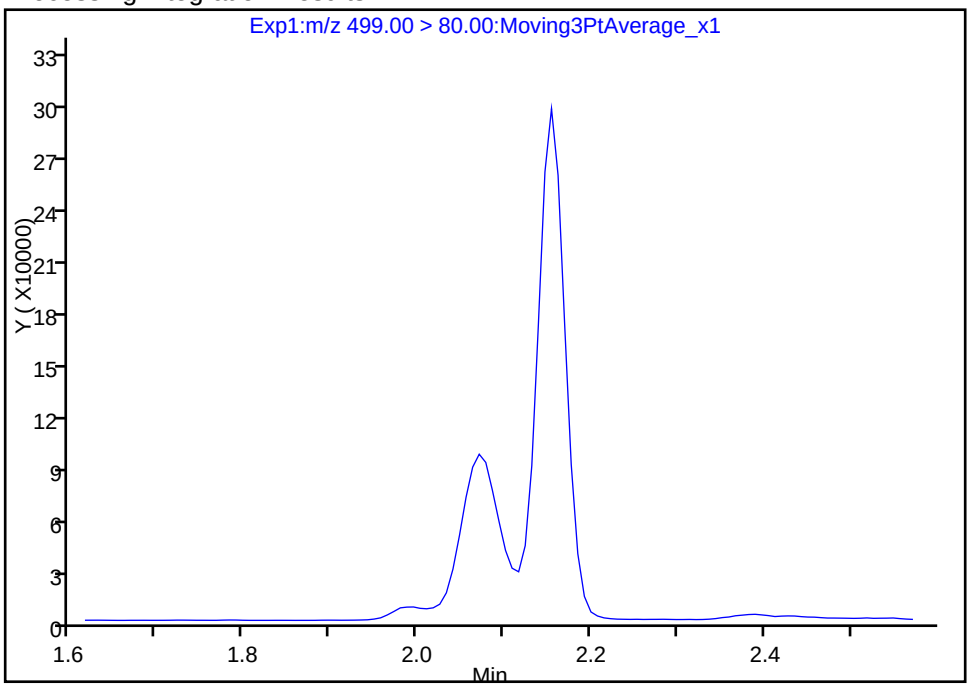
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_005.d				
Injection Date:	03-Nov-2017 13:42:39	Instrument ID:	A8_N		
Lims ID:	IC L2				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

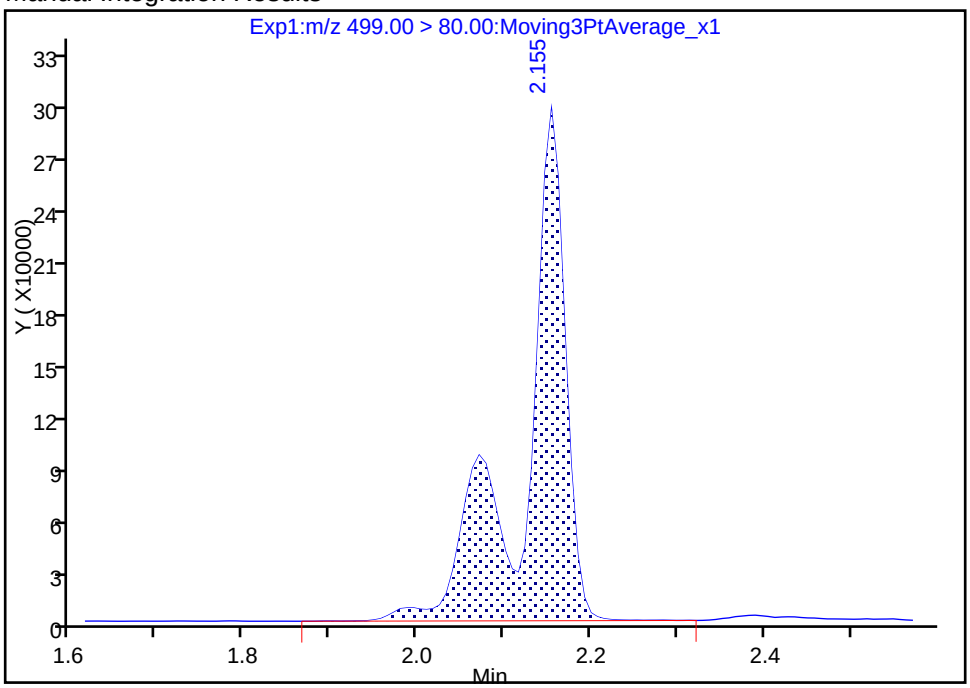
Processing Integration Results

Not Detected
Expected RT: 2.15



Manual Integration Results

RT:	2.15
Area:	985487
Amount:	8.723576
Amount Units:	ng/ml



Reviewer: phomsophat, 06-Nov-2017 07:18:13
Audit Action: Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_005.d				
Injection Date:	03-Nov-2017 13:42:39	Instrument ID:	A8_N		
Lims ID:	IC L2				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

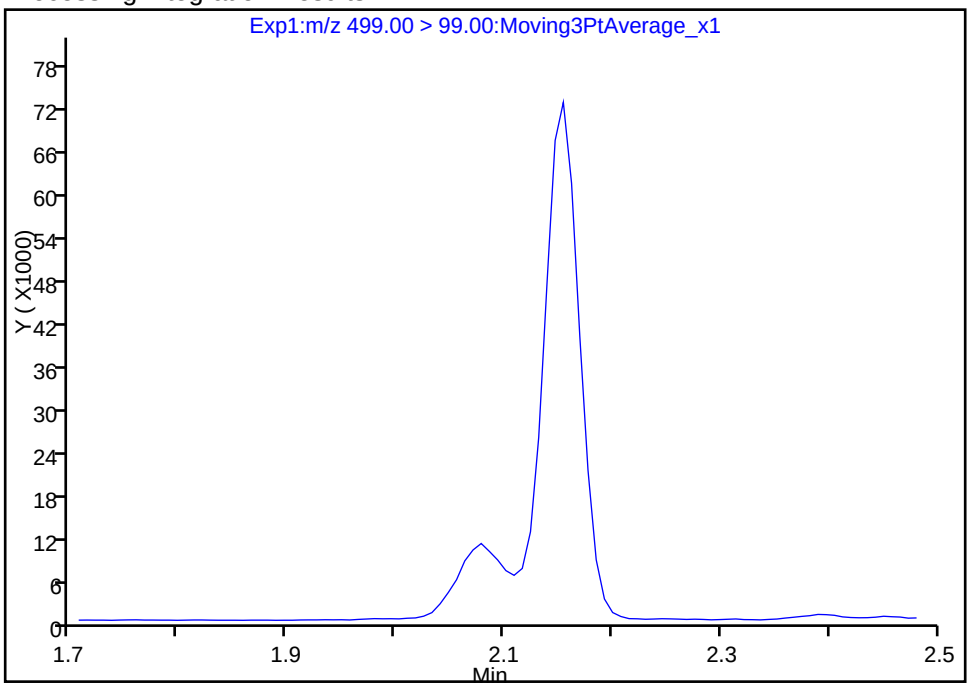
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

Processing Integration Results

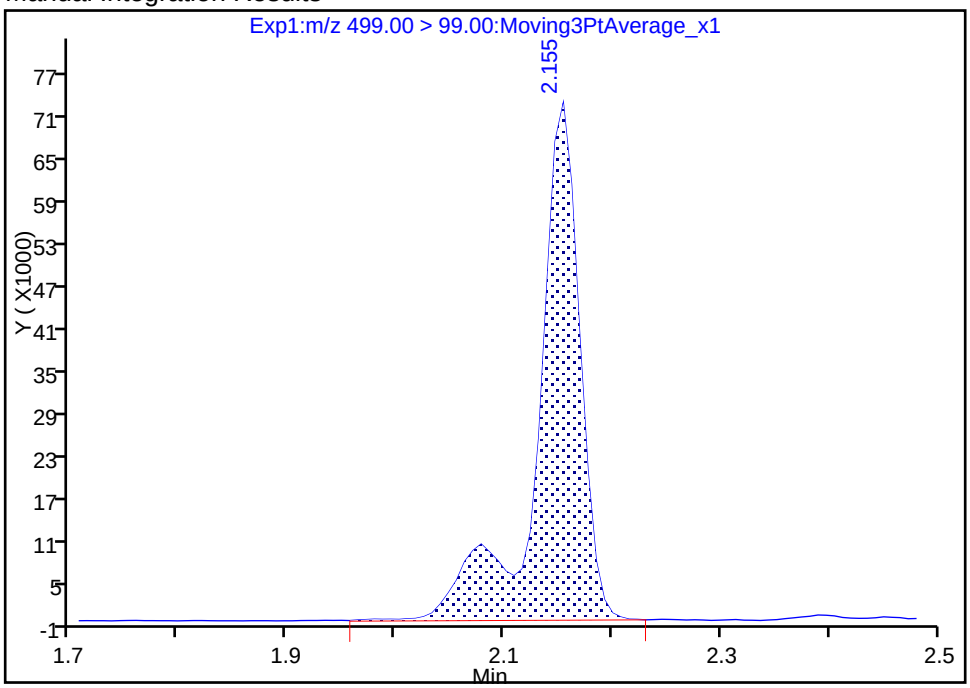
Not Detected

Expected RT: 2.15



Manual Integration Results

RT:	2.15
Area:	200739
Amount:	8.723576
Amount Units:	ng/ml



Reviewer: phomsophat, 06-Nov-2017 07:18:24

Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_005.d				
Injection Date:	03-Nov-2017 13:42:39	Instrument ID:	A8_N		
Lims ID:	IC L2				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

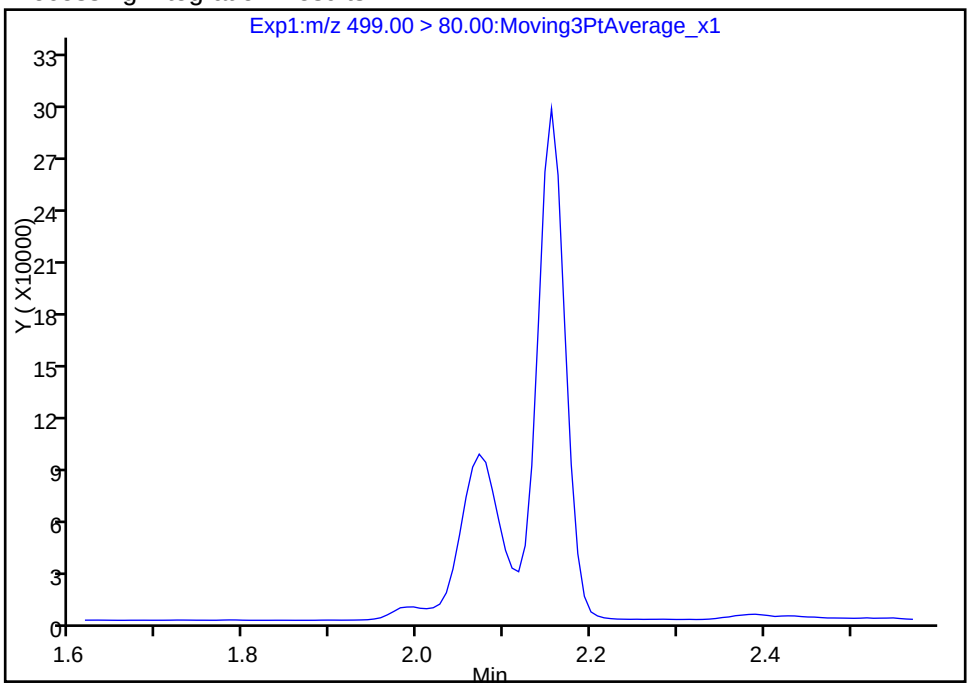
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

Processing Integration Results

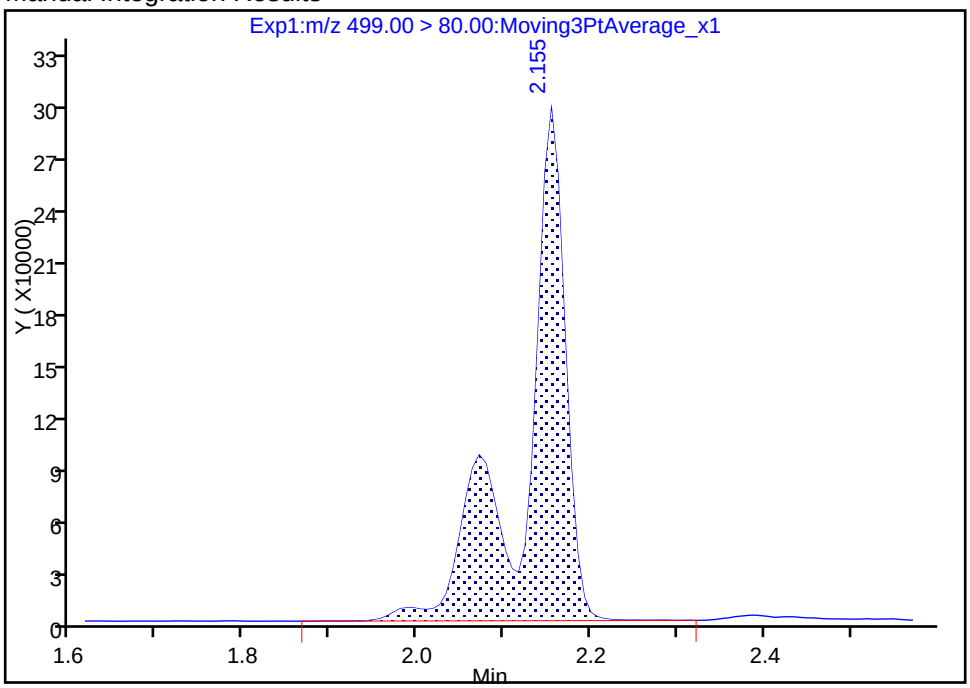
Not Detected

Expected RT: 2.15



Manual Integration Results

RT:	2.15
Area:	985487
Amount:	8.723576
Amount Units:	ng/ml



Reviewer: phomsophat, 06-Nov-2017 07:18:24

Audit Action: Manually Integrated Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_006.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 03-Nov-2017 13:47:20 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L3_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-Nov-2017 15:52:09 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: phomsophat Date: 06-Nov-2017 07:20:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.444	-0.002	1.000	5461974	46.7		3220	
298.90 > 99.00	1.442	1.444	-0.002	1.000	3903438		1.40(0.00-0.00)	8589	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.573	-0.003	1.000	1701491	10.0		9021	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.725	-0.003	1.000	2908204	15.6		5000	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.725	-0.003	1.000	736034	5.10		208	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.913	-0.001		1540946	10.0		6787	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.912	1.914	-0.002	1.000	1388033	9.73		256	
413.00 > 169.00	1.912	1.914	-0.002	1.000	715399		1.94(0.00-0.00)	904	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.147	2.147	0.0	1.000	2067792	19.8		2001	
499.00 > 99.00	2.147	2.147	0.0	1.000	431075		4.80(0.00-0.00)	922	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.151	-0.004		3194016	28.7		4956	
9 Perfluorononanoic acid									
463.00 > 419.00	2.155	2.158	-0.003	1.000	1020851	9.97		302	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.312	-0.006	1.000	1166275	9.89		6310	

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

Report Date: 07-Nov-2017 15:52:09 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_006.d

Injection Date: 03-Nov-2017 13:47:20 Instrument ID: A8_N

Lims ID: IC L3

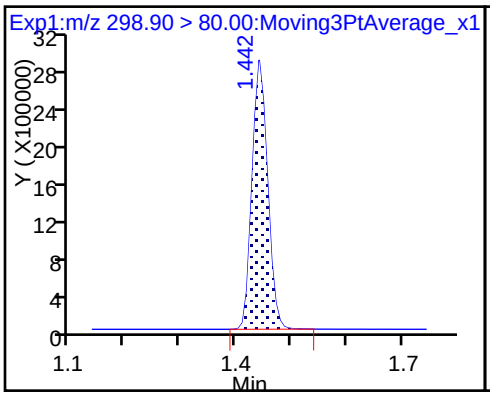
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6

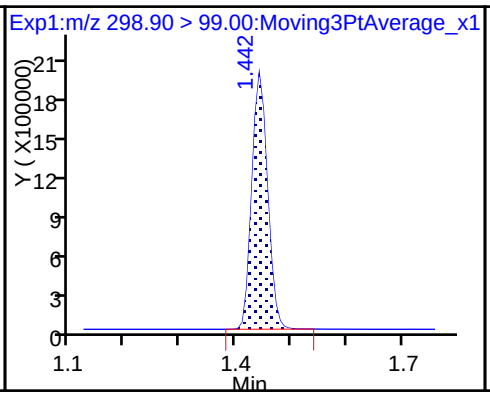
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

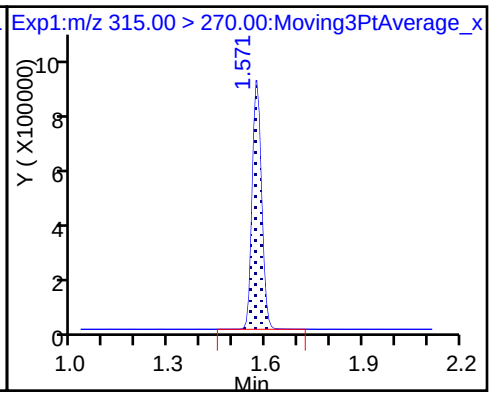
1 Perfluorobutanesulfonic acid



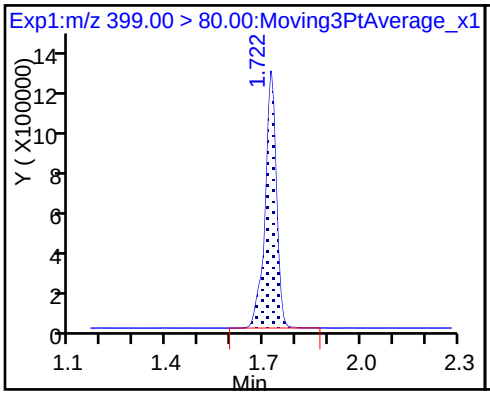
1 Perfluorobutanesulfonic acid



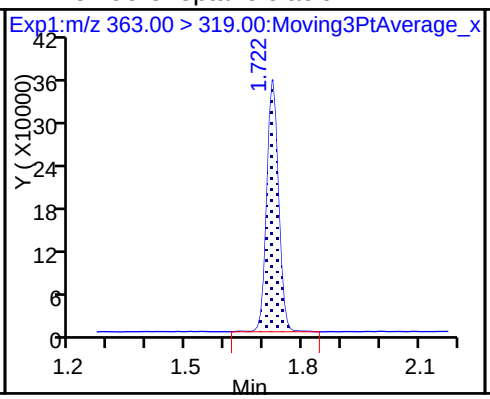
$ 2 13C2 PFHxA



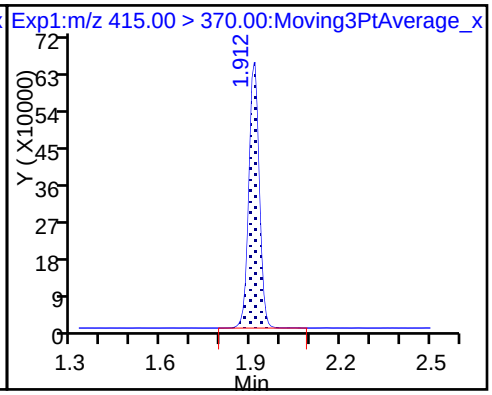
3 Perfluorohexanesulfonic acid



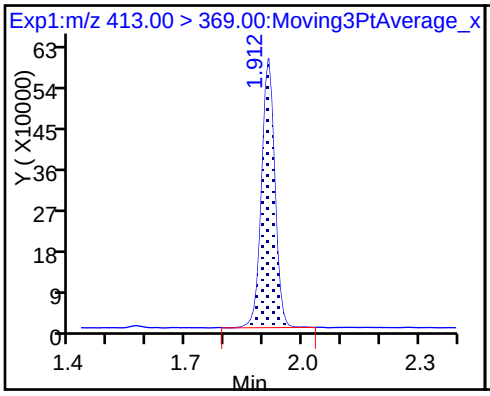
4 Perfluoroheptanoic acid



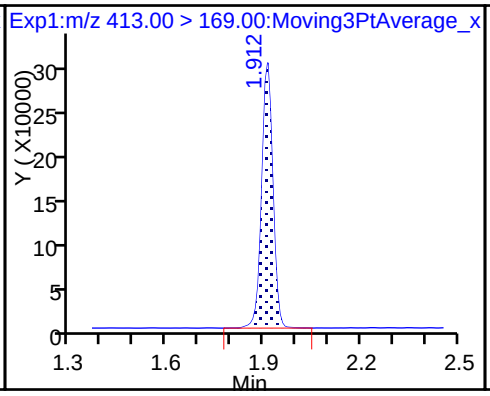
* 6 13C2-PFOA



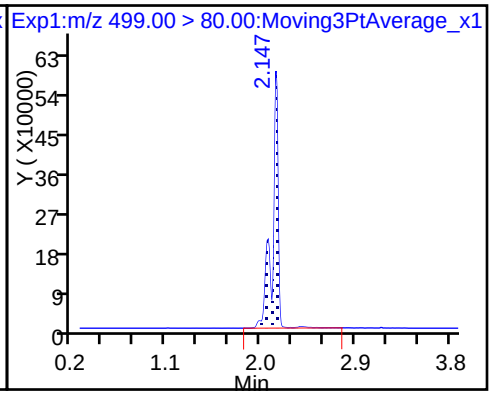
5 Perfluorooctanoic acid



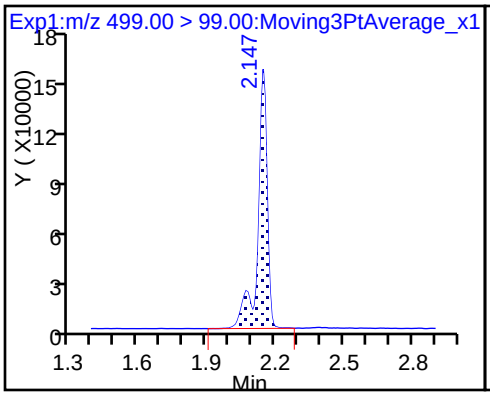
5 Perfluorooctanoic acid



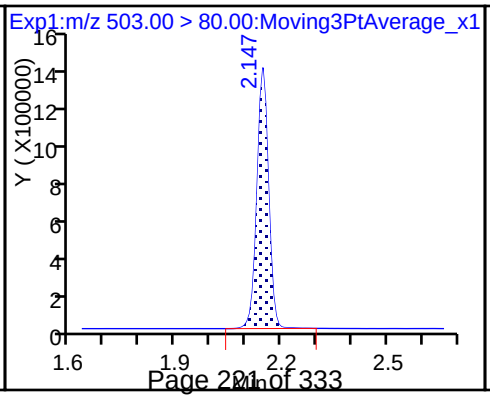
8 Perfluorooctane sulfonic acid



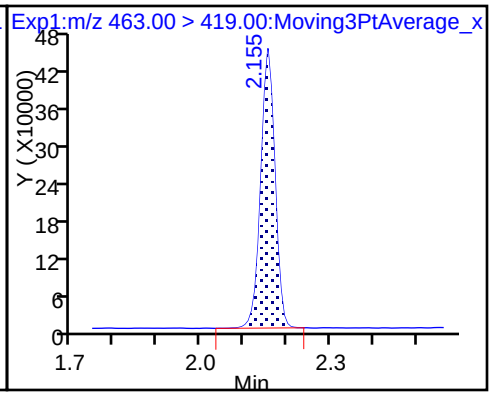
8 Perfluorooctane sulfonic acid



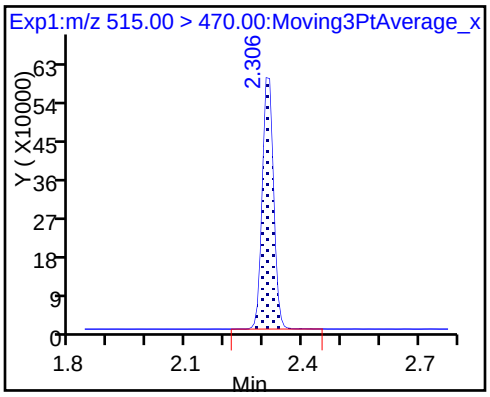
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.306
Y (X10000)
63
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_007.d
Lims ID: IC L4
Client ID:
Sample Type: ICISAV Calib Level: 4
Inject. Date: 03-Nov-2017 13:52:00 ALS Bottle#: 4 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L4_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-Nov-2017 15:52:10 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: phomsophat Date: 06-Nov-2017 07:20:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.444	-0.002	1.000	10142530	87.2		5274	
298.90 > 99.00	1.442	1.444	-0.002	1.000	7408390		1.37(0.00-0.00)	12862	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.573	-0.003	1.000	1719911	10.1		8503	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.725	-0.003	1.000	1420703	9.81		399	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.725	-0.003	1.000	5871843	29.8		7622	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.913	-0.001		1546307	10.0		6563	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.912	1.914	-0.002	1.000	2771271	19.4		505	
413.00 > 169.00	1.912	1.914	-0.002	1.000	1520933		1.82(0.00-0.00)	1919	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.155	2.147	0.008	1.000	4363079	39.5		3896	M
499.00 > 99.00	2.155	2.147	0.008	1.000	902486		4.83(0.00-0.00)	1588	M
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.151	0.004		3374600	28.7		5331	
9 Perfluorononanoic acid									
463.00 > 419.00	2.162	2.158	0.004	1.000	2106479	20.5		638	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.312	0.002	1.000	1207887	10.2		7165	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L4_00020 Amount Added: 1.00 Units: mL

Report Date: 07-Nov-2017 15:52:10 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_007.d

Injection Date: 03-Nov-2017 13:52:00 Instrument ID: A8_N

Lims ID: IC L4

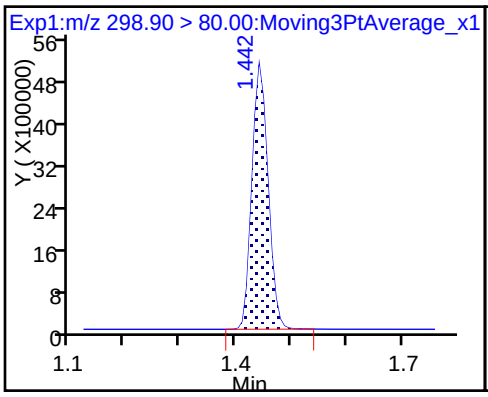
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7

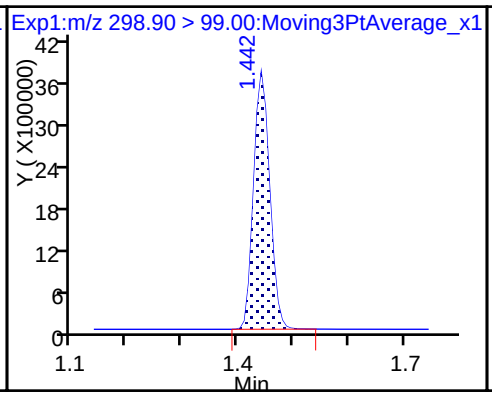
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

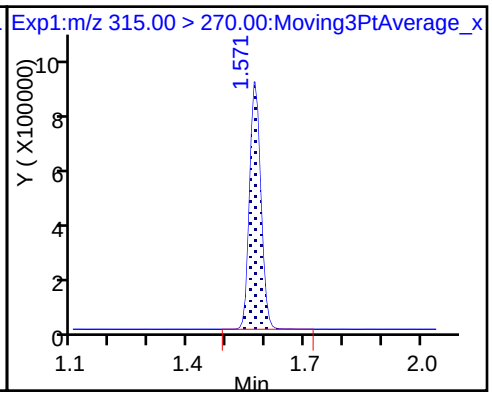
1 Perfluorobutanesulfonic acid



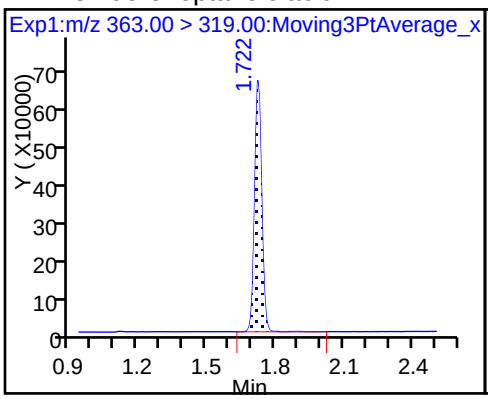
1 Perfluorobutanesulfonic acid



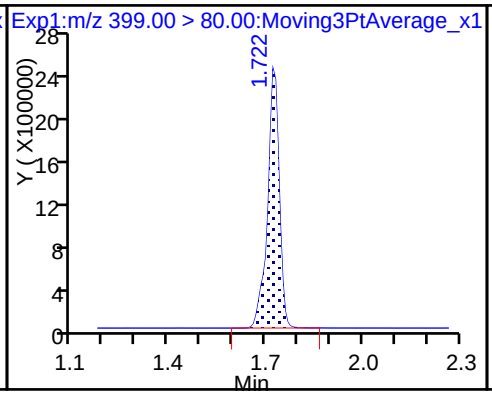
$ 2 13C2 PFHxA



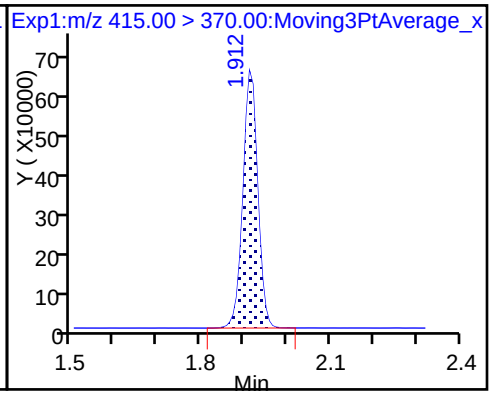
4 Perfluoroheptanoic acid



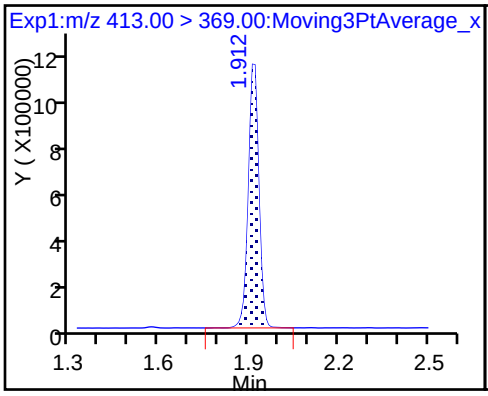
3 Perfluorohexanesulfonic acid



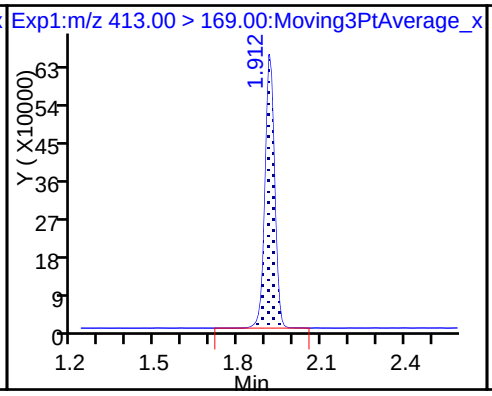
* 6 13C2-PFOA



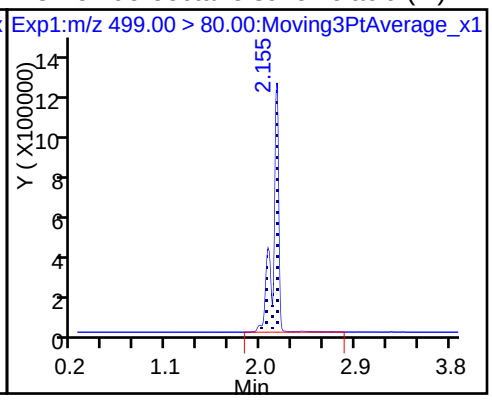
5 Perfluorooctanoic acid



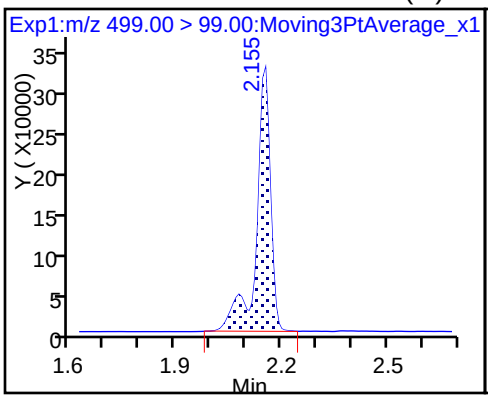
5 Perfluorooctanoic acid



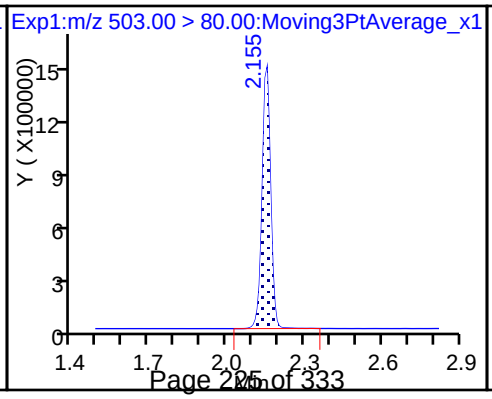
8 Perfluorooctane sulfonic acid (M)



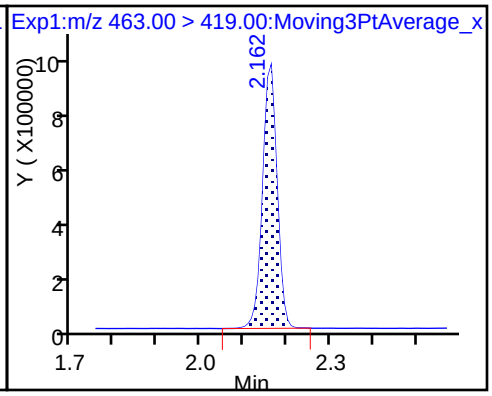
8 Perfluorooctane sulfonic acid (M)



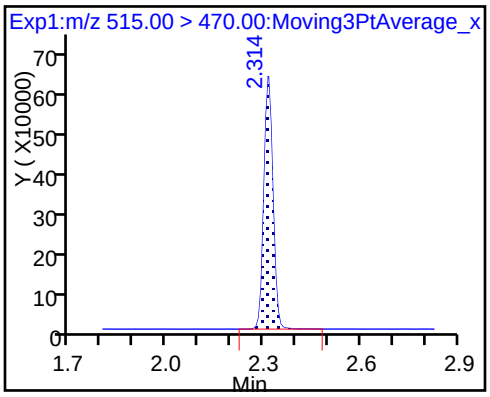
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
70
60
50
40
30
20
10
0
1.7
2.0
2.3
2.6
2.9
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

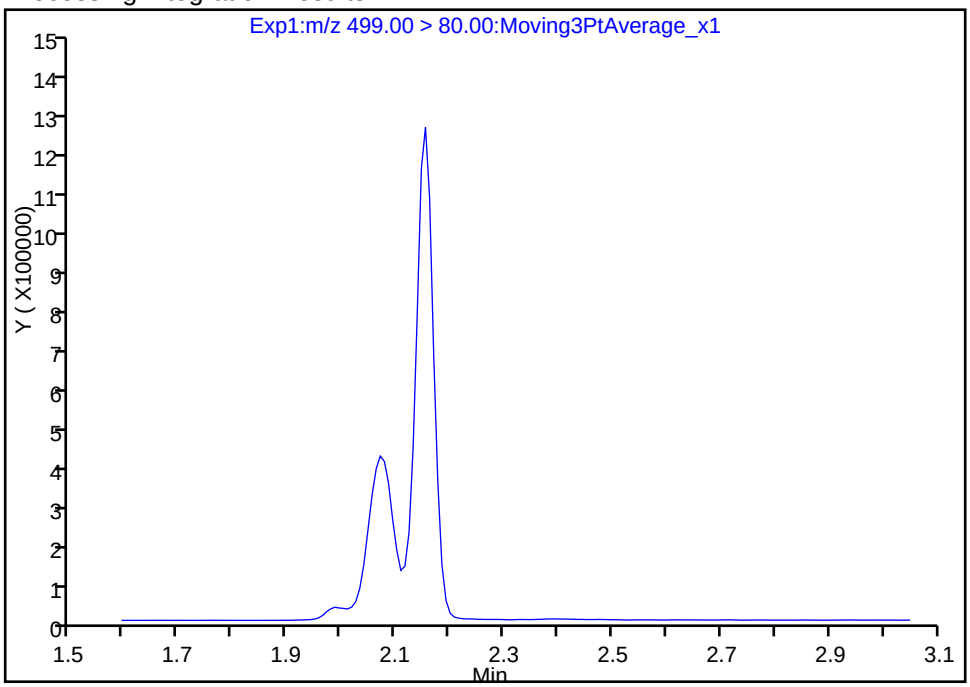
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_007.d				
Injection Date:	03-Nov-2017 13:52:00	Instrument ID:	A8_N		
Lims ID:	IC L4				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	4	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

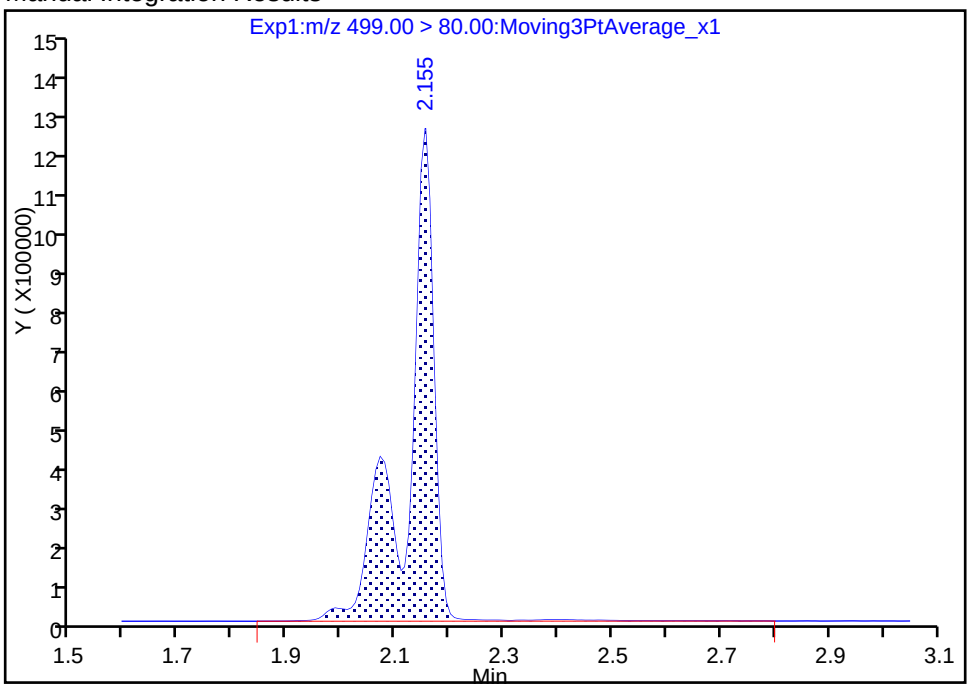
Not Detected
Expected RT: 2.15

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 4363079
Amount: 39.491903
Amount Units: ng/ml



Reviewer: phomsophat, 06-Nov-2017 07:20:12
Audit Action: Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_007.d				
Injection Date:	03-Nov-2017 13:52:00	Instrument ID:	A8_N		
Lims ID:	IC L4				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	4	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

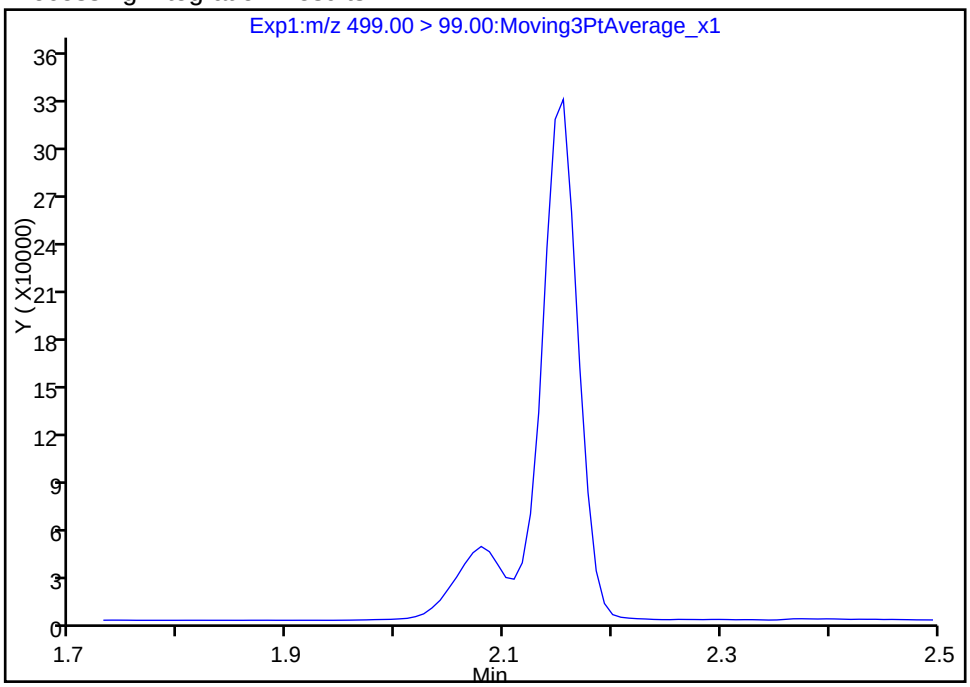
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

Processing Integration Results

Not Detected

Expected RT: 2.15



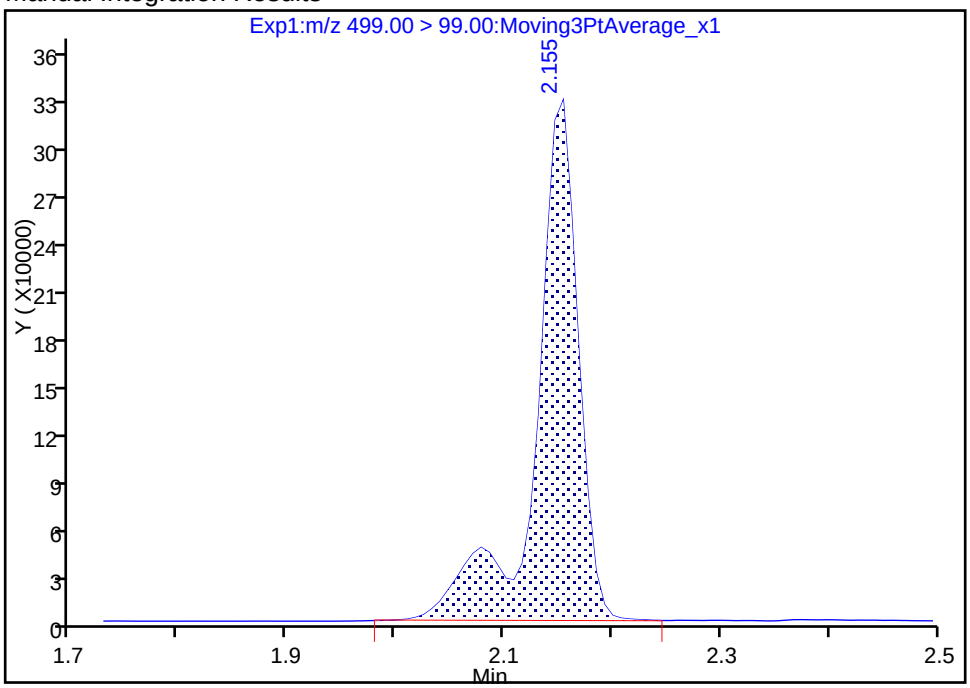
Manual Integration Results

RT: 2.15

Area: 902486

Amount: 39.491903

Amount Units: ng/ml



Reviewer: phomsophat, 06-Nov-2017 07:20:20

Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

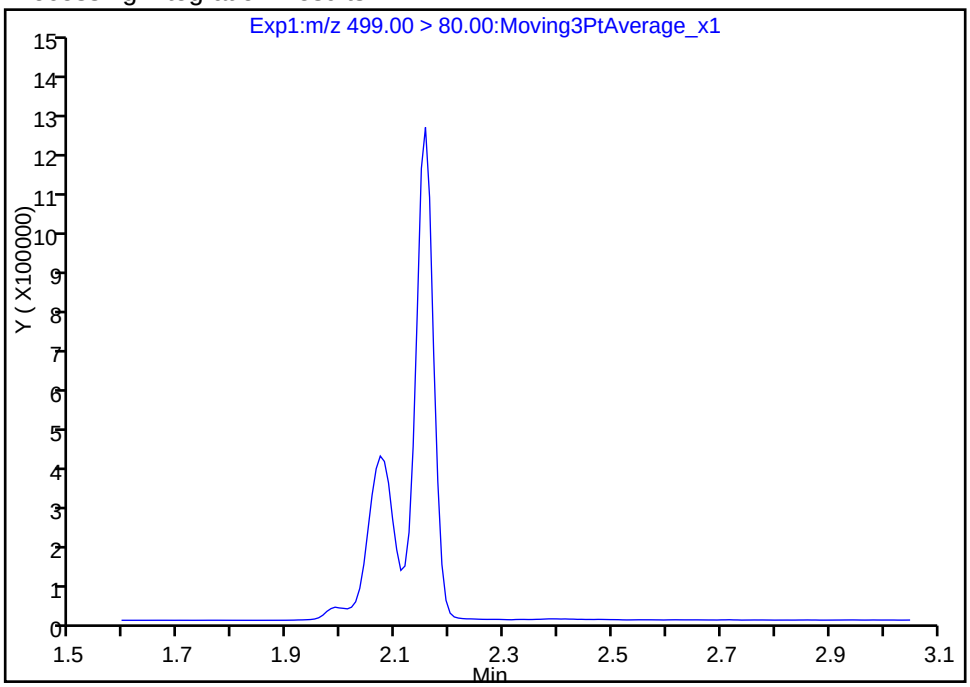
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_007.d				
Injection Date:	03-Nov-2017 13:52:00	Instrument ID:	A8_N		
Lims ID:	IC L4				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	4	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

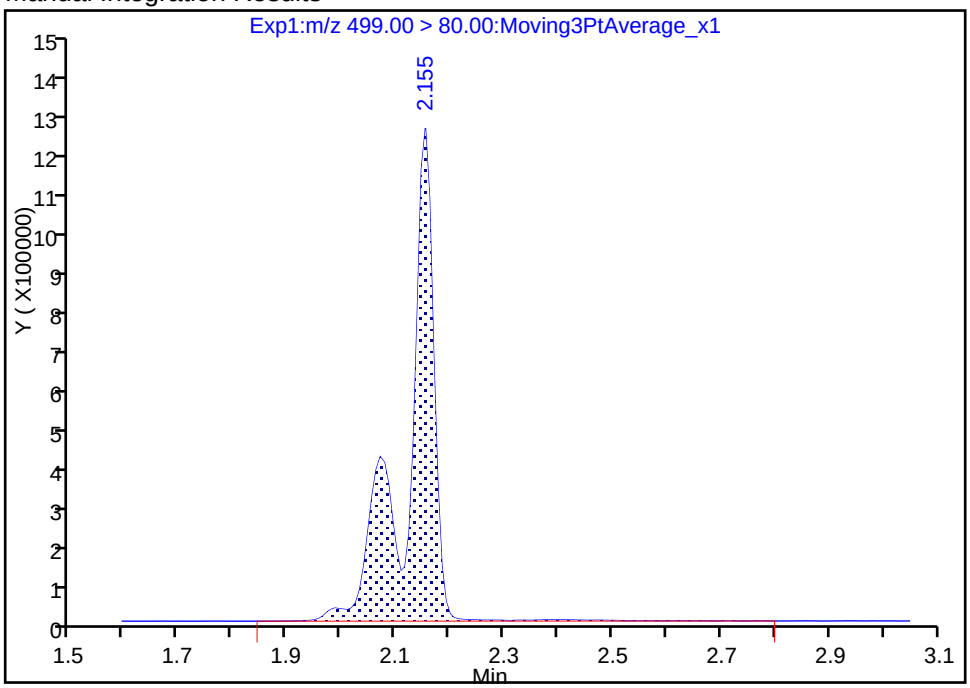
Processing Integration Results

Not Detected
Expected RT: 2.15



Manual Integration Results

RT: 2.15
Area: 4363079
Amount: 39.491903
Amount Units: ng/ml



Reviewer: phomsophat, 06-Nov-2017 07:20:20
Audit Action: Manually Integrated Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_008.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 03-Nov-2017 13:56:41 ALS Bottle#: 5 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L5_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-Nov-2017 15:52:11 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: phomsophat Date: 06-Nov-2017 07:21:19

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.444	-0.002	1.000	14011858	137.5		6452	
298.90 > 99.00	1.442	1.444	-0.002	1.000	10411479		1.35(0.00-0.00)	14800	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.573	-0.003	1.000	1675220	9.79		9525	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.725	-0.003	1.000	8413133	45.0		9078	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.725	-0.003	1.000	2102676	14.4		562	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.913	-0.001		1555174	10.0		6769	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.912	1.914	-0.002	1.000	4257225	29.6		800	
413.00 > 169.00	1.912	1.914	-0.002	1.000	2294552		1.86(0.00-0.00)	2838	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.147	2.147	0.0	1.000	6504279	62.1		5682	
499.00 > 99.00	2.147	2.147	0.0	1.000	1339120		4.86(0.00-0.00)	2329	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.151	-0.004		3199479	28.7		4946	
9 Perfluorononanoic acid									
463.00 > 419.00	2.155	2.158	-0.003	1.000	3023088	29.3		870	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.312	0.002	1.000	1139992	9.58		5885	

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

Report Date: 07-Nov-2017 15:52:11 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_008.d

Injection Date: 03-Nov-2017 13:56:41 Instrument ID: A8_N

Lims ID: IC L5

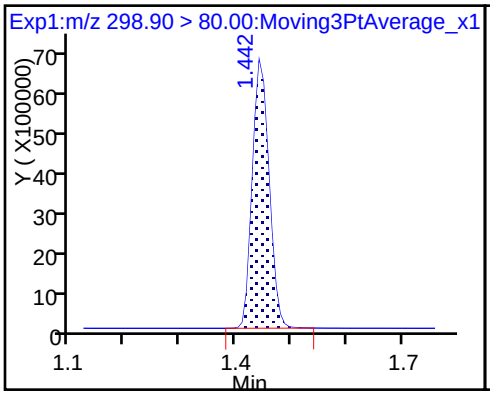
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8

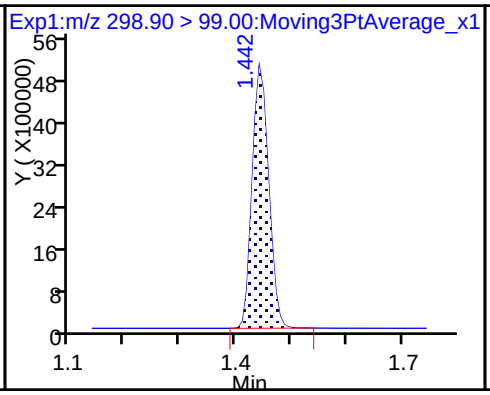
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

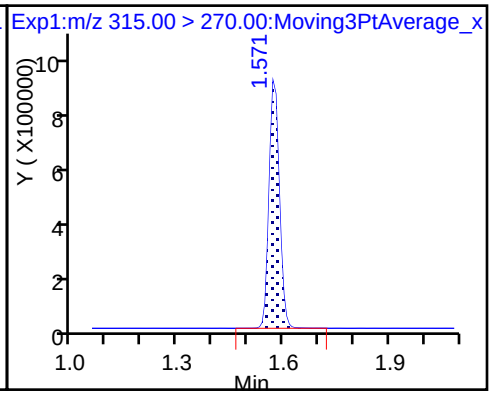
1 Perfluorobutanesulfonic acid



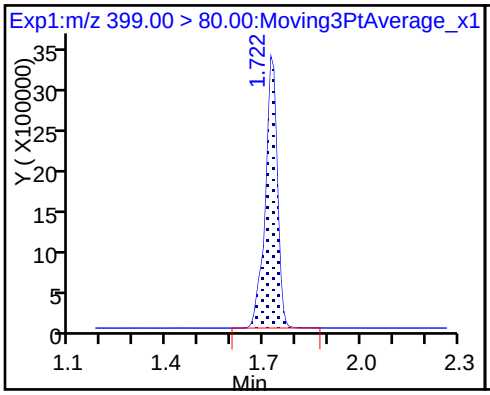
1 Perfluorobutanesulfonic acid



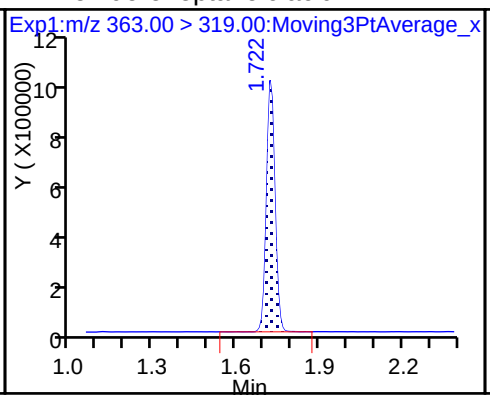
$ 2 13C2 PFHxA



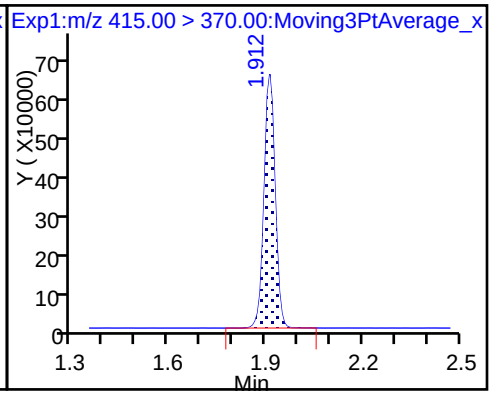
3 Perfluorohexanesulfonic acid



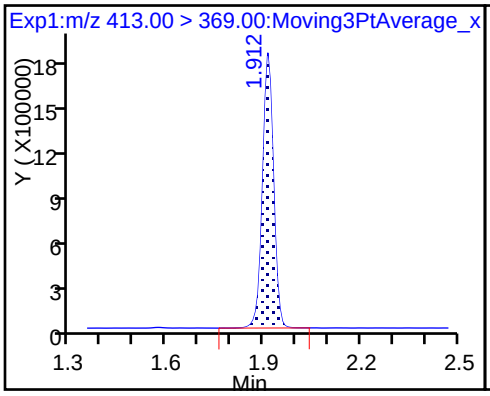
4 Perfluoroheptanoic acid



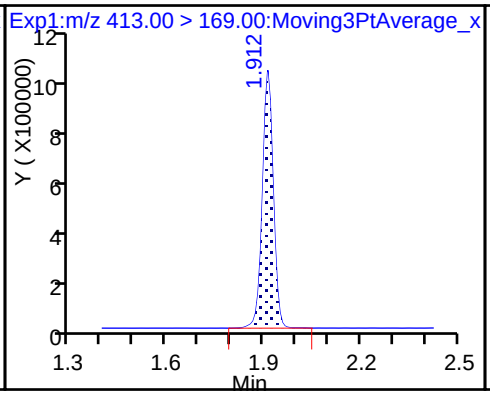
* 6 13C2-PFOA



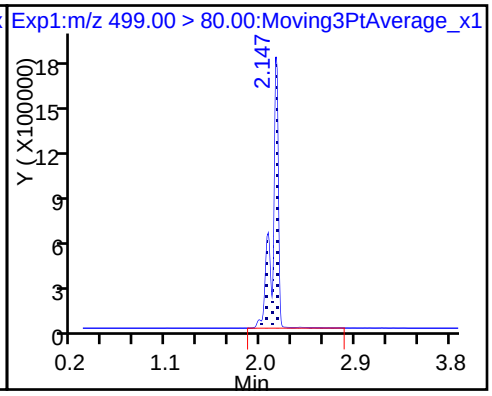
5 Perfluorooctanoic acid



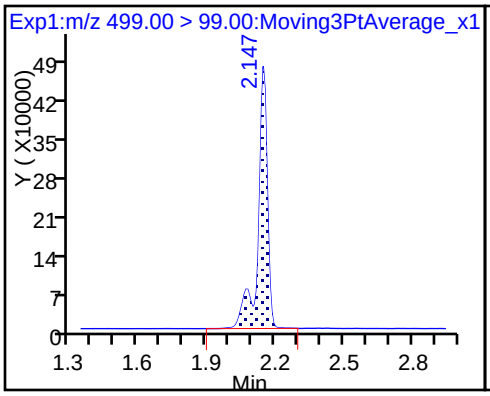
5 Perfluorooctanoic acid



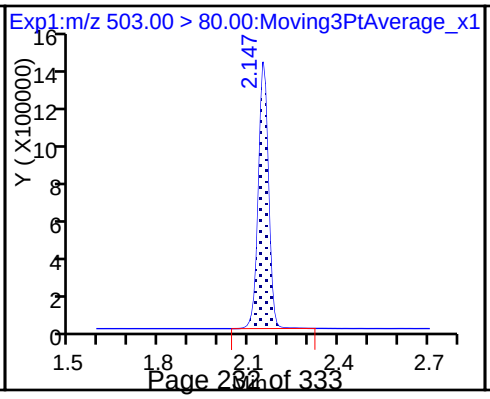
8 Perfluorooctane sulfonic acid



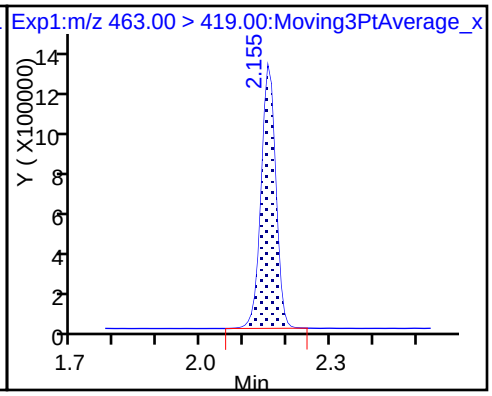
8 Perfluorooctane sulfonic acid



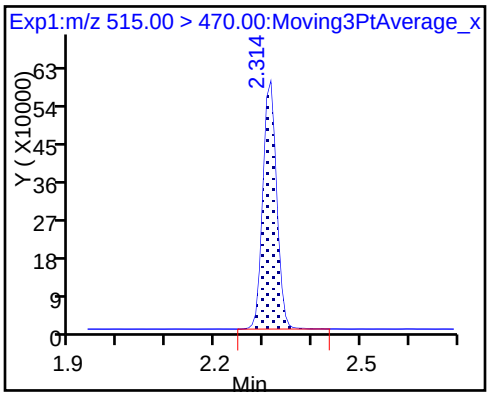
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
63
54
45
36
27
18
9
0
1.9
2.2
2.5
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d
Lims ID: IC L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 03-Nov-2017 14:01:24 ALS Bottle#: 6 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L6_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-Nov-2017 15:52:12 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: phomsophat Date: 06-Nov-2017 07:25:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.444	-0.002	1.000	16699152	179.1		7089	
298.90 > 99.00	1.442	1.444	-0.002	1.000	12929978		1.29(0.00-0.00)	15608	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.573	-0.003	1.000	1664260	10.6		9116	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.725	-0.003	1.000	2810797	21.0		763	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.725	-0.003	1.000	11071993	60.4		10884	
* 6 13C2-PFOA									
415.00 > 370.00	1.904	1.913	-0.009		1426806	10.0		5446	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.912	1.914	-0.002	1.000	5597122	42.4		962	
413.00 > 169.00	1.904	1.914	-0.010	0.996	3028676		1.85(0.00-0.00)	3704	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.147	2.147	0.0	1.000	8679676	84.4		6114	
499.00 > 99.00	2.147	2.147	0.0	1.000	1807143		4.80(0.00-0.00)	2991	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.151	-0.004		3141787	28.7		4961	
9 Perfluorononanoic acid									
463.00 > 419.00	2.155	2.158	-0.003	1.000	4019666	42.4		1149	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.312	-0.006	1.000	1164156	10.7		6124	

Reagents:

LC537-L6_00020 Amount Added: 1.00 Units: mL

Report Date: 07-Nov-2017 15:52:12 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Injection Date: 03-Nov-2017 14:01:24 Instrument ID: A8_N

Lims ID: IC L6

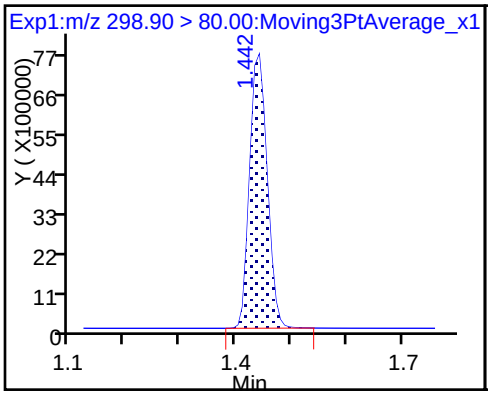
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 9

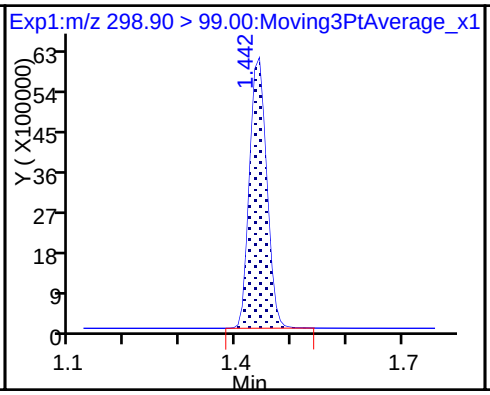
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

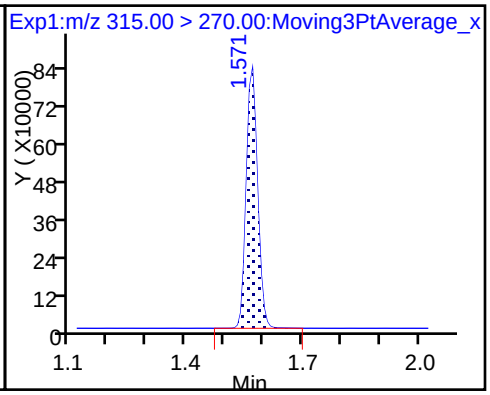
1 Perfluorobutanesulfonic acid



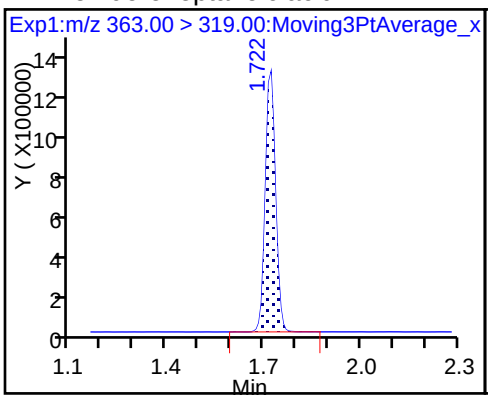
1 Perfluorobutanesulfonic acid



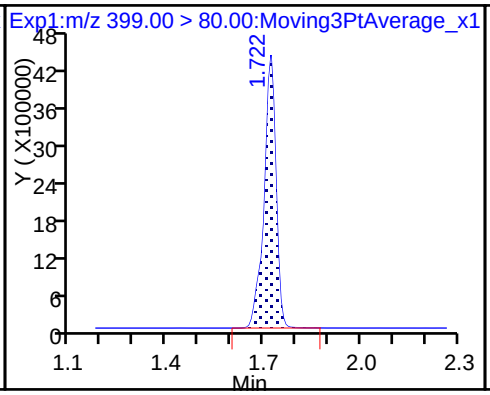
$ 2 13C2 PFHxA



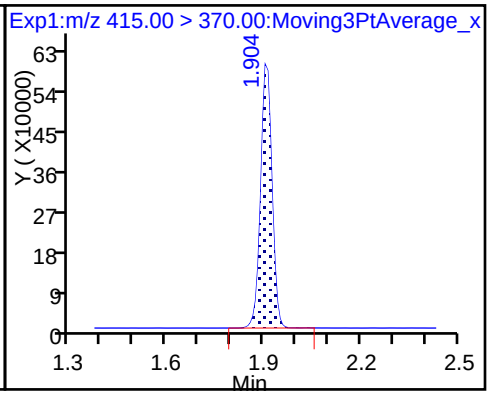
4 Perfluoroheptanoic acid



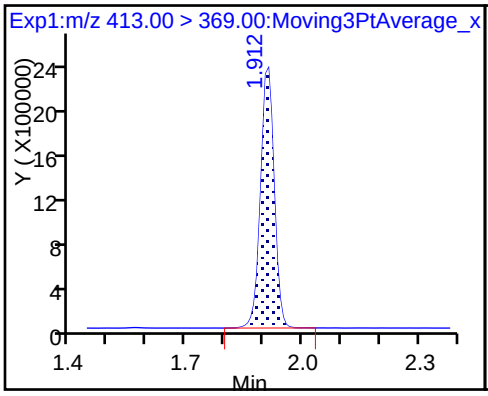
3 Perfluorohexanesulfonic acid



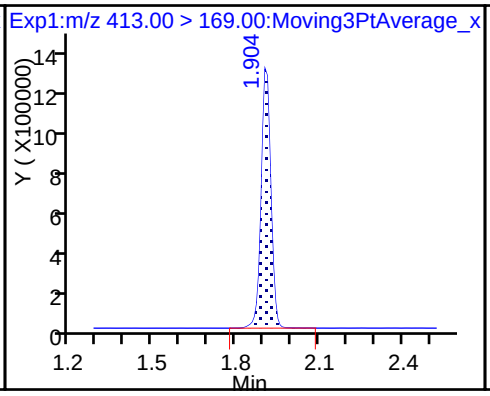
* 6 13C2-PFOA



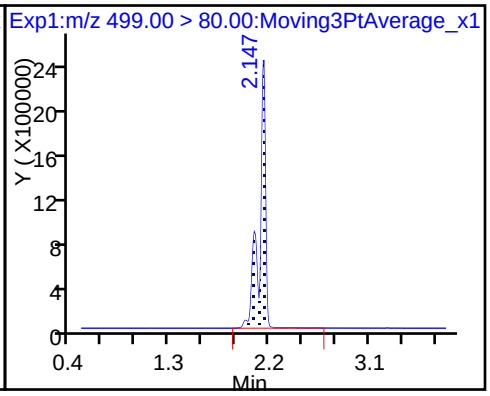
5 Perfluorooctanoic acid



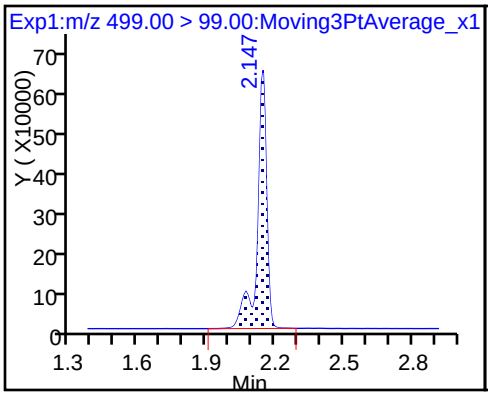
5 Perfluorooctanoic acid



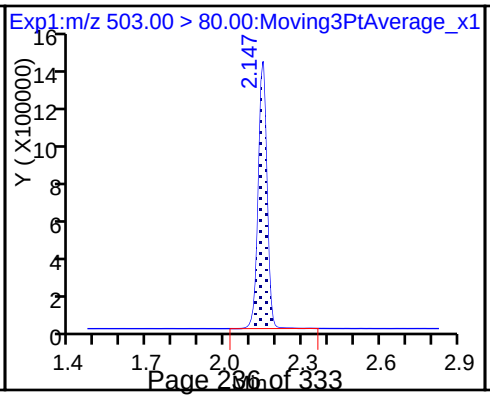
8 Perfluorooctane sulfonic acid



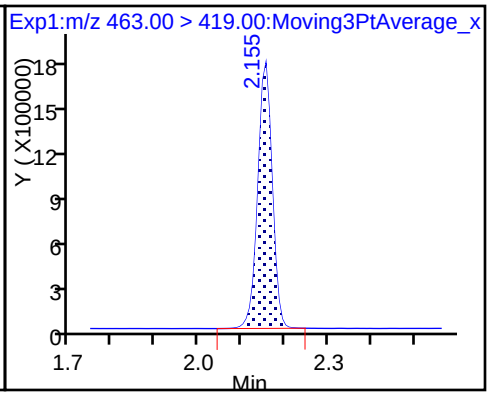
8 Perfluorooctane sulfonic acid



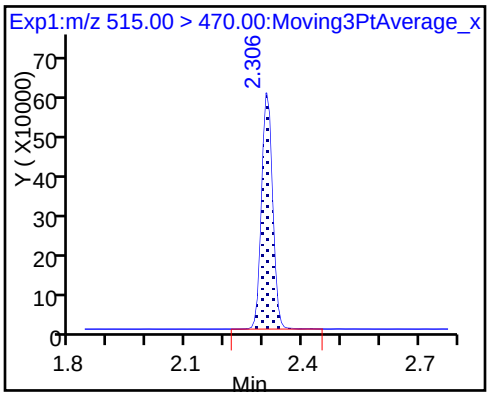
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.306
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Lab Sample ID: CCVL 320-192908/11 Calibration Date: 11/03/2017 14:10

Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 11/03/2017 14:01

Lab File ID: 2017.11.03_537XICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.109		20.4	20.0	1.9	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	0.9382		2.23	2.22	0.1	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.688		6.72	6.67	0.8	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.8825		4.24	4.45	-4.7	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.9176		8.69	8.89	-2.3	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6625		4.43	4.45	-0.2	50.0
13C2 PFHxA	Ave	1.100	1.068		9.70	10.0	-3.0	30.0
13C2 PFDA	Ave	0.7652	0.7460		9.75	10.0	-2.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_011.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 03-Nov-2017 14:10:44 ALS Bottle#: 2 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L2
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-Nov-2017 15:39:07 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: phomsophat Date: 06-Nov-2017 07:26:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.444	0.005	1.000	2556738	20.4		1537	
298.90 > 99.00	1.449	1.444	0.005	1.000	1750170		1.46(0.00-0.00)	4023	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.573	0.005	1.000	1694196	9.70		8915	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.730	1.725	0.005	1.000	1297654	6.72		2410	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.730	1.725	0.005	1.000	330927	2.23		99.4	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.913	-0.001		1586829	10.0		6840	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.912	1.914	-0.002	1.000	622915	4.24		116	
413.00 > 169.00	1.912	1.914	-0.002	1.000	335080		1.86(0.00-0.00)	460	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.155	2.147	0.008	1.000	940397	8.69		528	
499.00 > 99.00	2.147	2.147	0.0	0.996	196397		4.79(0.00-0.00)	430	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.151	-0.004		3305852	28.7		5135	
9 Perfluorononanoic acid									
463.00 > 419.00	2.162	2.158	0.004	1.000	467323	4.43		143	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.312	0.002	1.000	1183747	9.75		6763	

Reagents:

LC537-L2_00020 Amount Added: 1.00 Units: mL

Report Date: 07-Nov-2017 15:39:08 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_011.d

Injection Date: 03-Nov-2017 14:10:44 Instrument ID: A8_N

Lims ID: CCVL

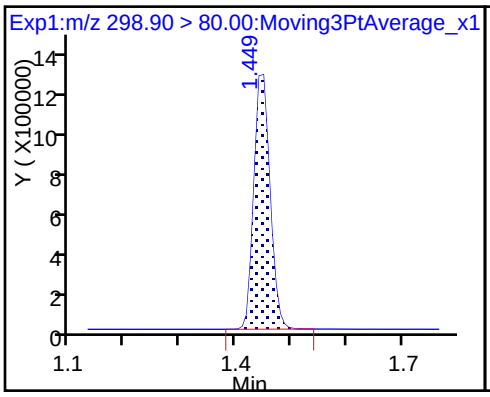
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11

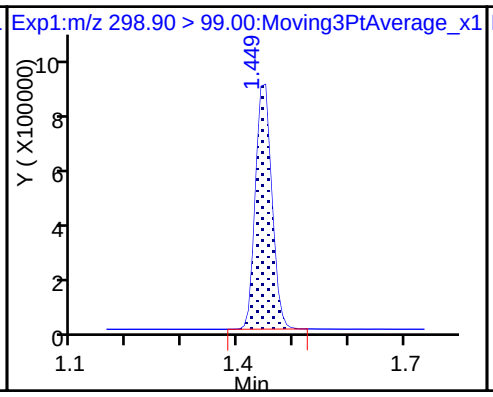
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

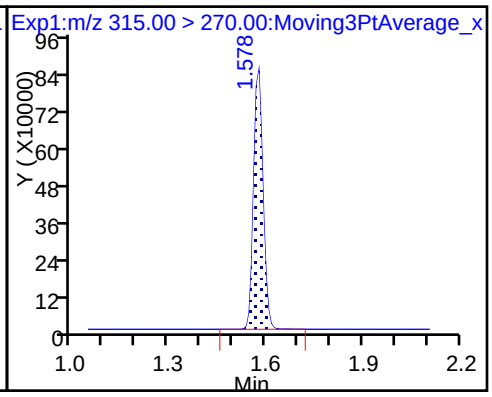
1 Perfluorobutanesulfonic acid



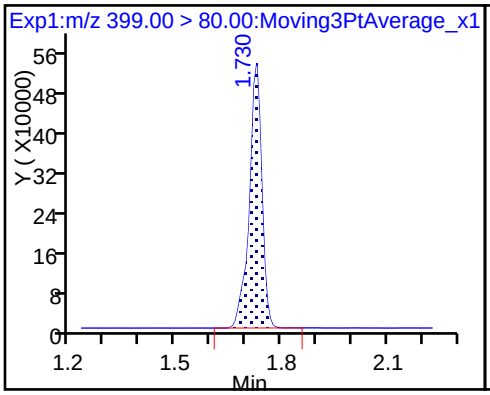
1 Perfluorobutanesulfonic acid



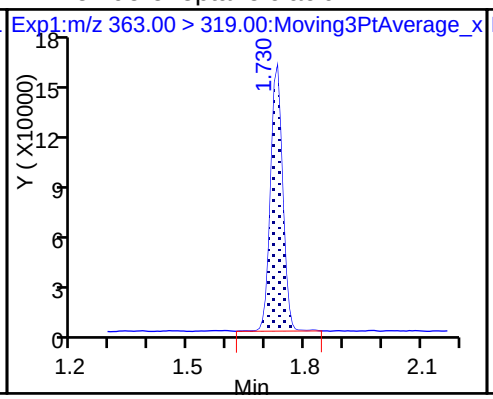
$ 2 13C2 PFHxA



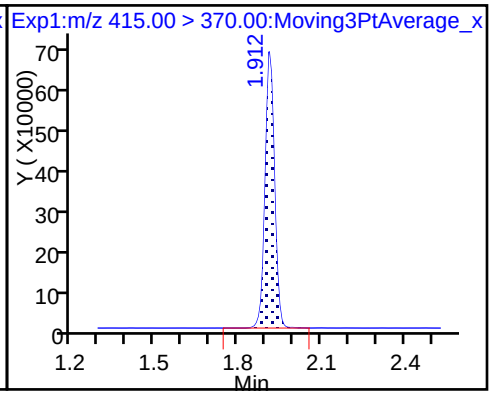
3 Perfluorohexanesulfonic acid



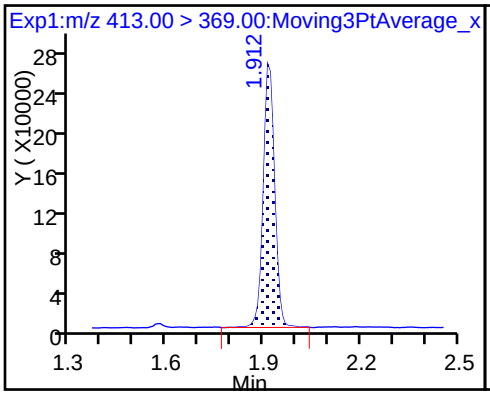
4 Perfluoroheptanoic acid



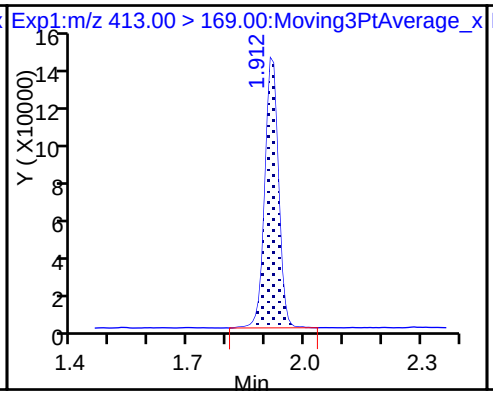
* 6 13C2-PFOA



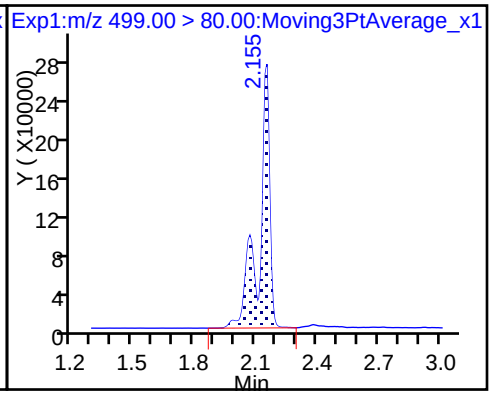
5 Perfluorooctanoic acid



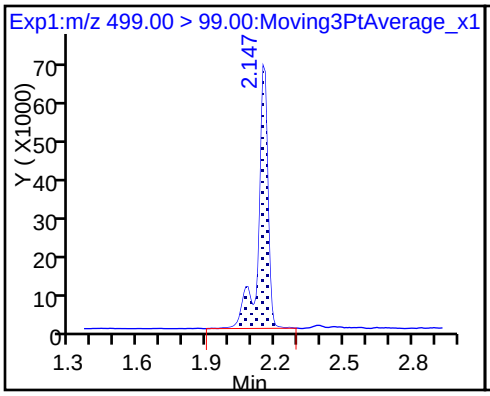
5 Perfluorooctanoic acid



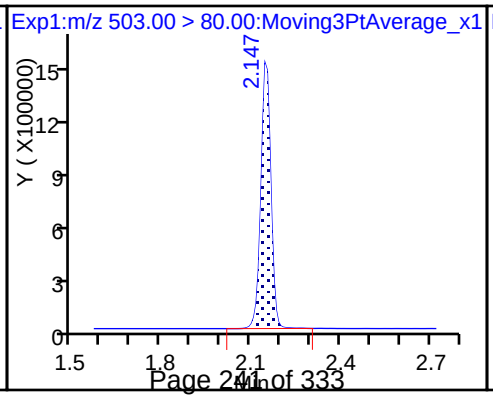
8 Perfluorooctane sulfonic acid



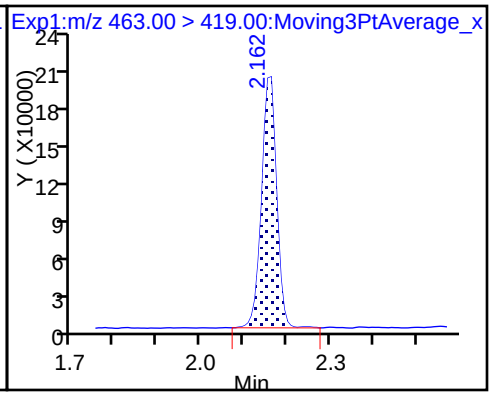
8 Perfluorooctane sulfonic acid



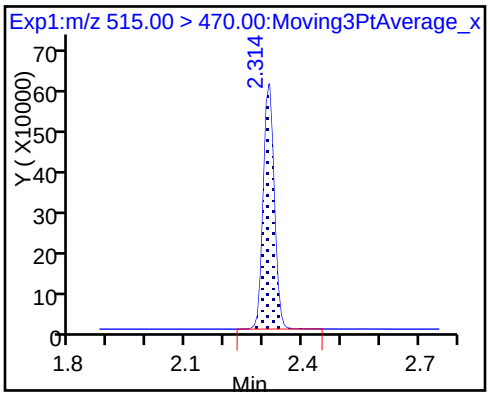
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Lab Sample ID: ICV 320-192908/13 Calibration Date: 11/03/2017 14:20

Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 11/03/2017 14:01

Lab File ID: 2017.11.03_537XICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8310		83.7	100	-16.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	0.8136		8.68	10.0	-13.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.463		17.5	20.1	-12.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.7995		17.7	20.5	-13.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.8637		18.1	19.7	-8.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6428		19.5	20.1	-3.2	30.0
13C2 PFHxA	Ave	1.100	1.039		9.44	10.0	-5.6	30.0
13C2 PFDA	Ave	0.7652	0.7391		9.66	10.0	-3.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_013.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 03-Nov-2017 14:20:03 ALS Bottle#: 7 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 07-Nov-2017 15:39:08 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK021

First Level Reviewer: phomsophat Date: 06-Nov-2017 07:27:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.444	-0.002	1.000	9960387	83.7		4998	
298.90 > 99.00	1.442	1.444	-0.002	1.000	7235967		1.38(0.00-0.00)	13514	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.573	-0.003	1.000	1570629	9.44		8393	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.725	-0.003	1.000	3517469	17.5		5659	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.725	-0.003	1.000	1229696	8.68		345	
* 6 13C2-PFOA									
415.00 > 370.00	1.904	1.913	-0.009		1512045	10.0		7643	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.904	1.914	-0.010	1.000	2476221	17.7		475	
413.00 > 169.00	1.904	1.914	-0.010	1.000	1327388		1.87(0.00-0.00)	1724	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.140	2.147	-0.007	1.000	2036944	18.1		2323	
499.00 > 99.00	2.140	2.147	-0.007	1.000	389736		5.23(0.00-0.00)	830	
* 7 13C4 PFOS									
503.00 > 80.00	2.140	2.151	-0.011		3433628	28.7		5334	
9 Perfluorononanoic acid									
463.00 > 419.00	2.147	2.158	-0.011	1.000	1956116	19.5		652	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.312	-0.006	1.000	1117553	9.66		6230	

Reagents:

LC537-ICV_00028 Amount Added: 1.00 Units: mL

Report Date: 07-Nov-2017 15:39:08 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_013.d

Injection Date: 03-Nov-2017 14:20:03 Instrument ID: A8_N

Lims ID: ICV

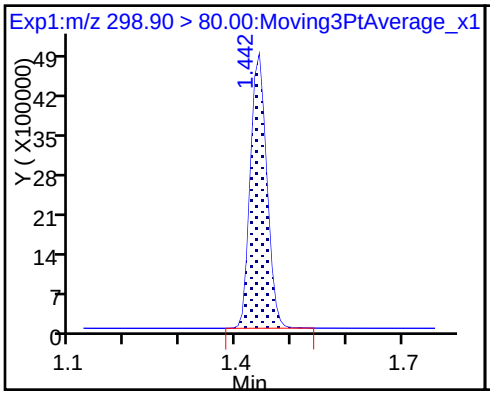
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 13

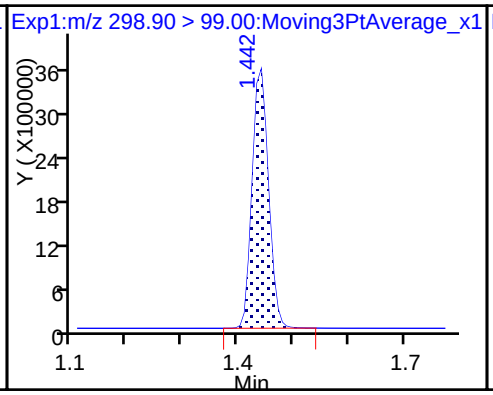
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

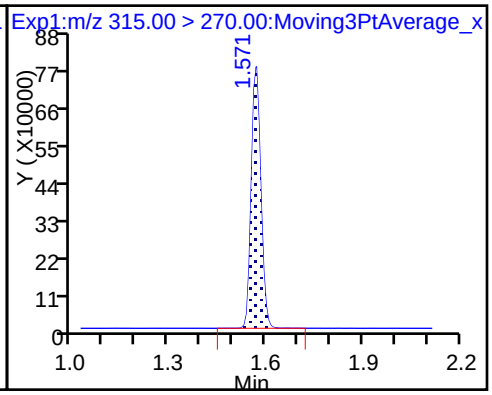
1 Perfluorobutanesulfonic acid



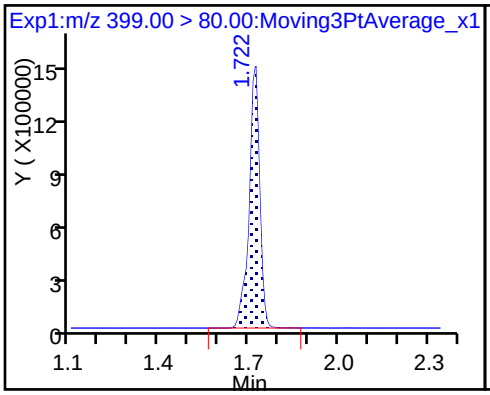
1 Perfluorobutanesulfonic acid



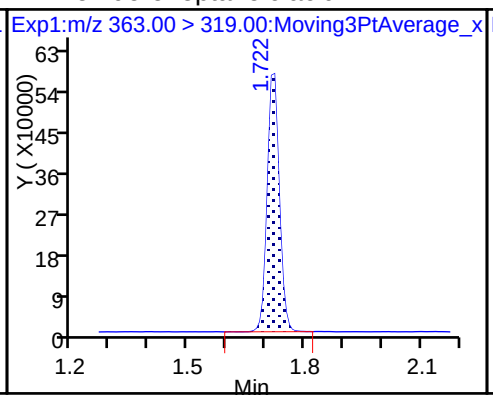
$ 2 13C2 PFHxA



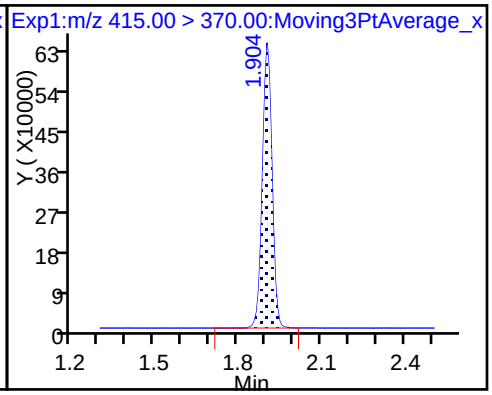
3 Perfluorohexanesulfonic acid



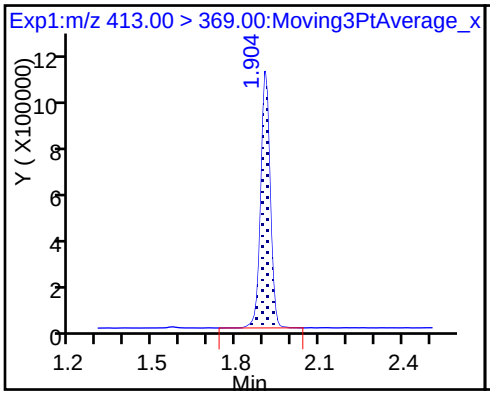
4 Perfluoroheptanoic acid



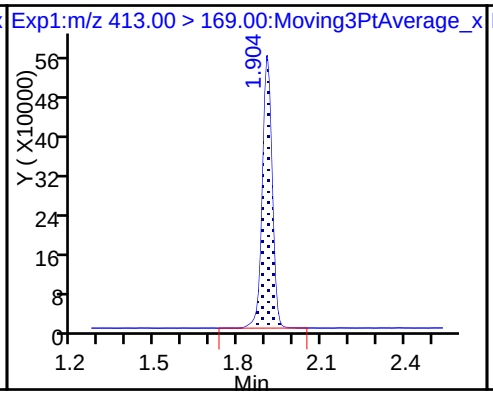
* 6 13C2-PFOA



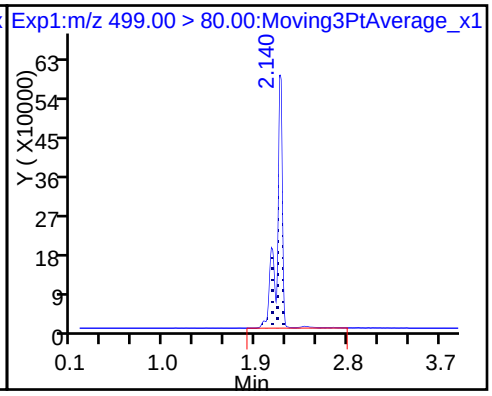
5 Perfluorooctanoic acid



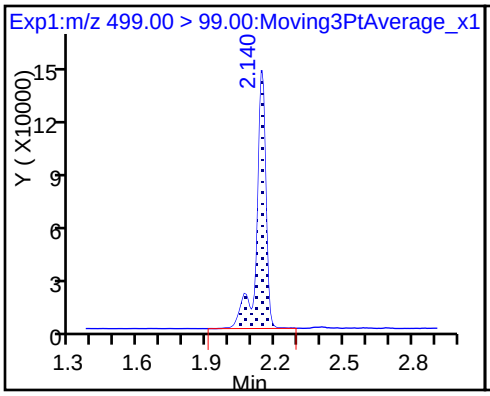
5 Perfluorooctanoic acid



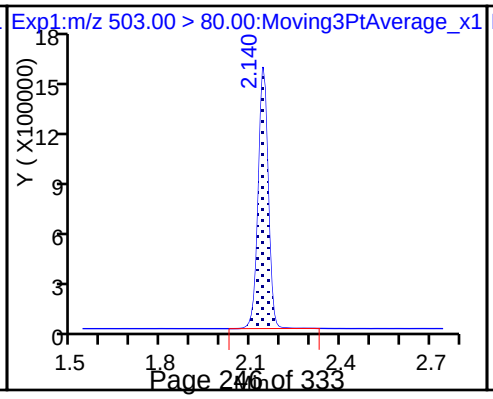
8 Perfluorooctane sulfonic acid



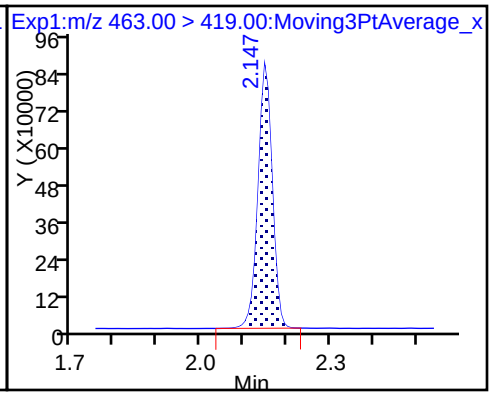
8 Perfluorooctane sulfonic acid



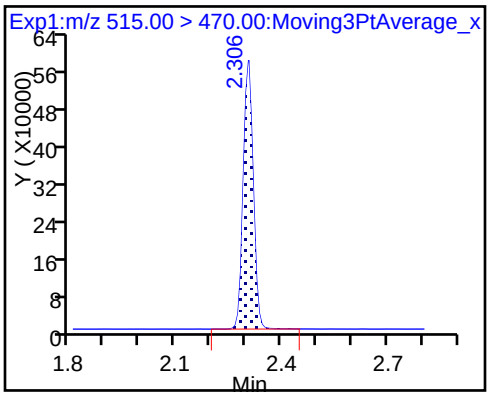
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.306
Y (X10000)
64
56
48
40
32
24
16
8
0
1.8
2.1
2.4
2.7
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Lab Sample ID: CCVL 320-199462/1 Calibration Date: 12/12/2017 08:41

Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 11/03/2017 14:01

Lab File ID: 2017.12.12_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)	QuaF		1.212		22.3	20.0	11.7	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	0.8931		2.12	2.22	-4.7	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.700		6.77	6.67	1.5	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.8900		4.28	4.45	-3.9	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.8991		8.51	8.89	-4.2	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.5926		3.97	4.45	-10.8	50.0
13C2 PFHxA	Ave	1.100	1.038		9.43	10.0	-5.7	30.0
13C2 PFDA	Ave	0.7652	0.7197		9.41	10.0	-5.9	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_004.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 12-Dec-2017 08:41:23 ALS Bottle#: 2 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCVL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 12:12:34 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 11:54:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.373	1.366	0.007	1.000	2821690	22.3		7078	
298.90 > 99.00	1.373	1.366	0.007	1.000	1978476		1.43(0.00-0.00)	5076	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.487	0.015	1.000	1698919	9.43		10488	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.631	0.023	1.000	1318947	6.77		3880	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.631	0.023	1.000	325048	2.12		104	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.821	0.030		1637426	10.0		8384	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.821	0.038	1.000	648266	4.28		119	
413.00 > 169.00	1.851	1.821	0.030	0.996	359895		1.80(0.00-0.00)	1417	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.117	2.086	0.031	1.000	930132	8.51		992	M
499.00 > 99.00	2.117	2.086	0.031	1.000	199606		4.66(0.00-0.00)	835	M
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.086	0.031		3337066	28.7		9489	
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.094	0.030	1.000	431325	3.97		131	
$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.261	0.023	1.000	1178455	9.41		7810	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L2_00020 Amount Added: 1.00 Units: mL

Report Date: 12-Dec-2017 12:12:35 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_004.d

Injection Date: 12-Dec-2017 08:41:23 Instrument ID: A8_N

Lims ID: CCVL

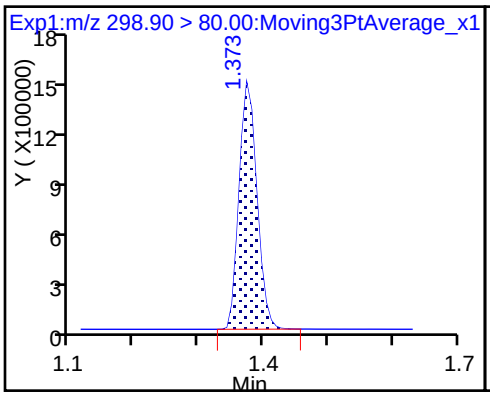
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 1

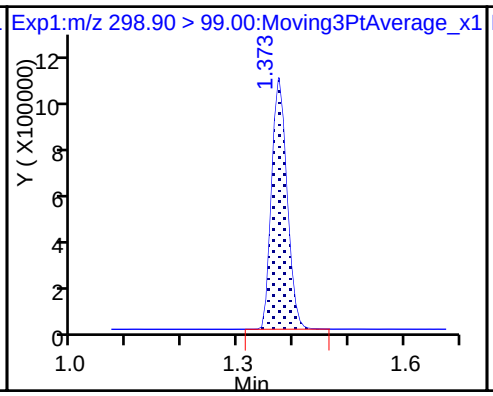
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

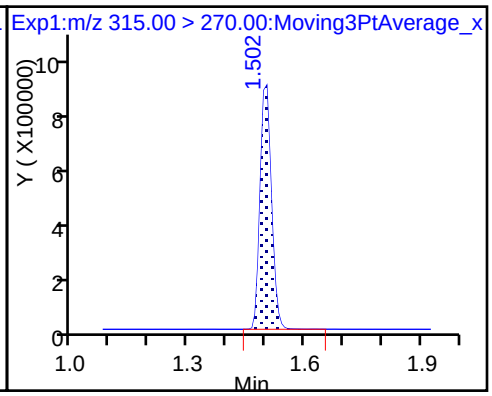
1 Perfluorobutanesulfonic acid



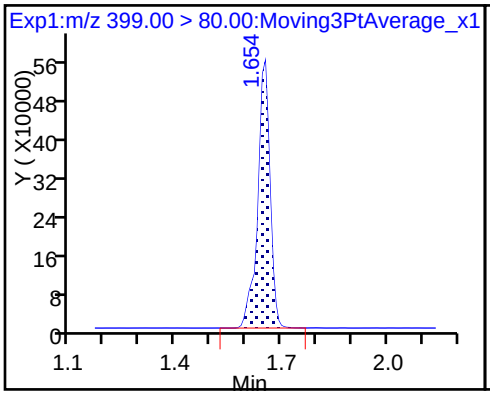
1 Perfluorobutanesulfonic acid



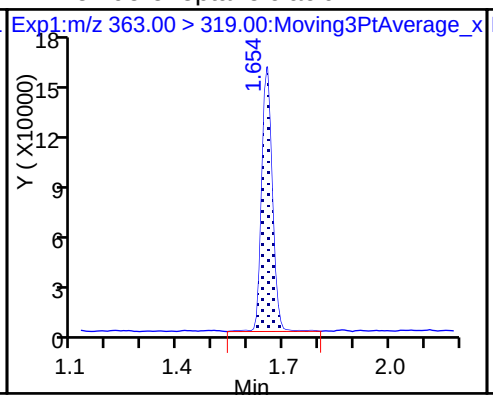
$ 2 13C2 PFHxA



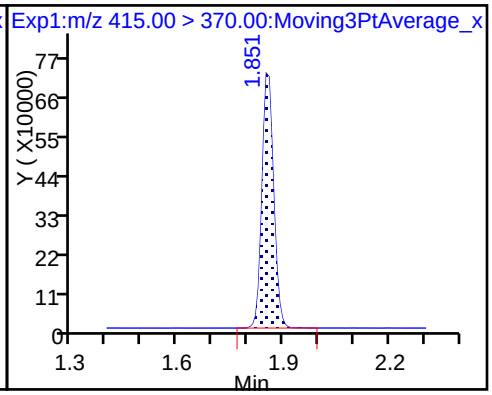
3 Perfluorohexanesulfonic acid



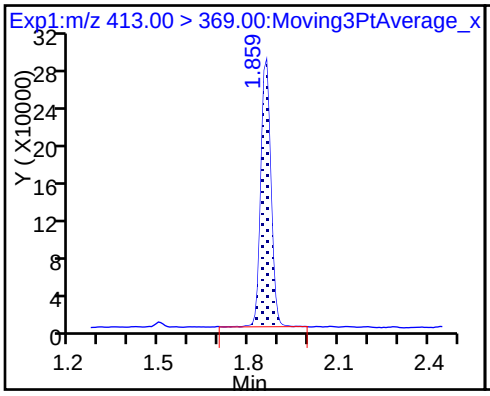
4 Perfluoroheptanoic acid



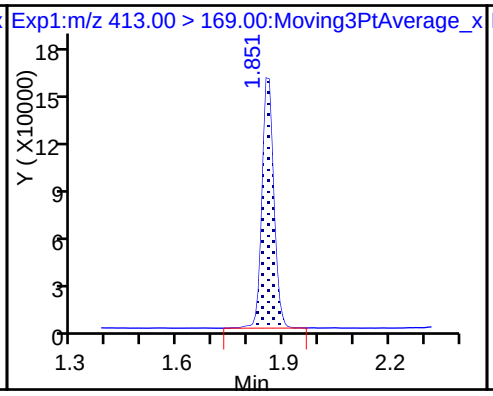
* 6 13C2-PFOA



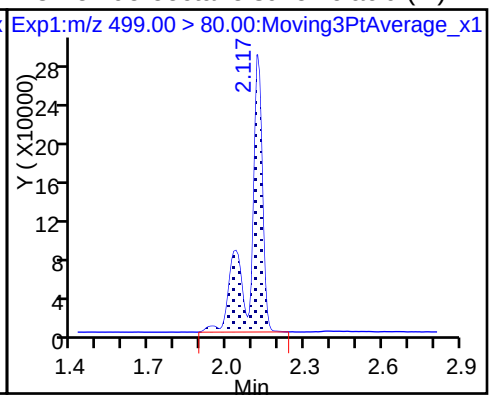
5 Perfluorooctanoic acid



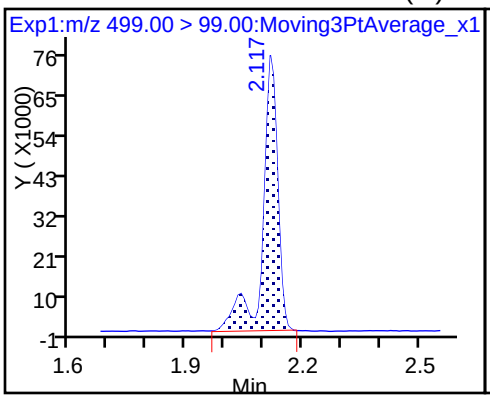
5 Perfluorooctanoic acid



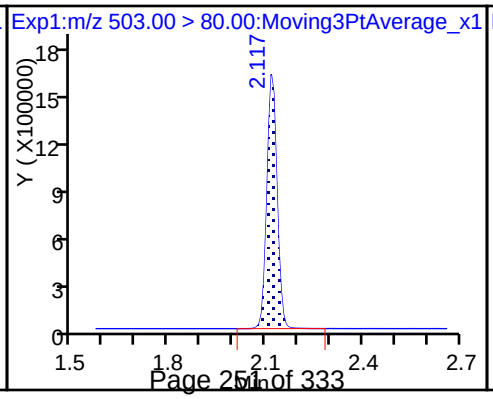
8 Perfluorooctane sulfonic acid (M)



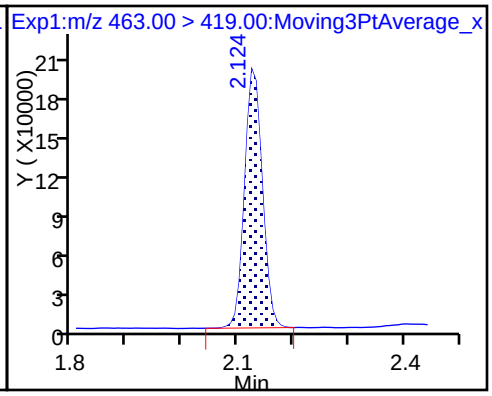
8 Perfluorooctane sulfonic acid (M)



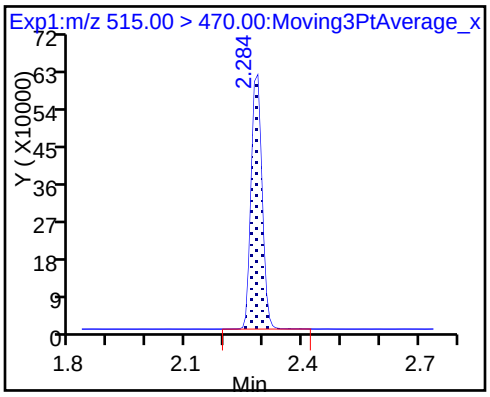
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.284
Y (X10000)
72
63
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

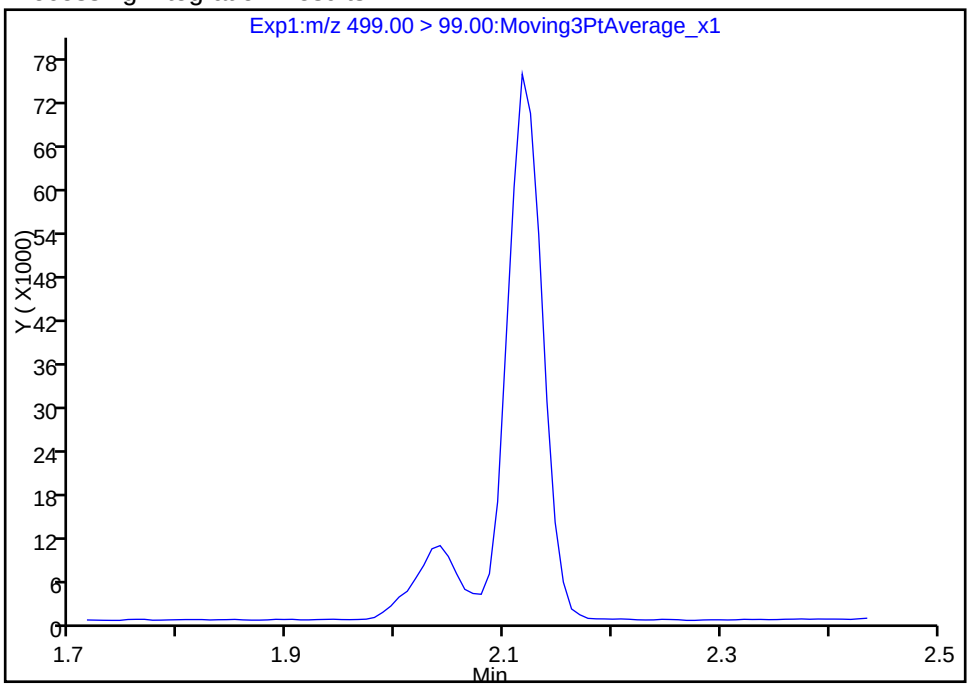
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_004.d				
Injection Date:	12-Dec-2017 08:41:23	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	1
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 2

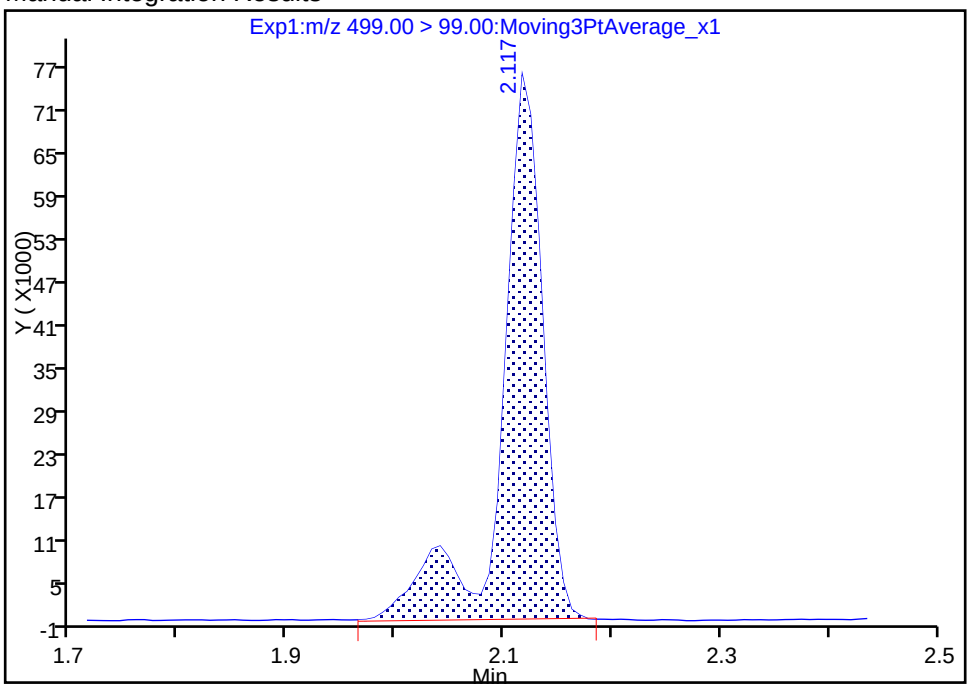
Not Detected
Expected RT: 2.09

Processing Integration Results



RT: 2.12
Area: 199606
Amount: 8.513675
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 12-Dec-2017 11:51:50
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

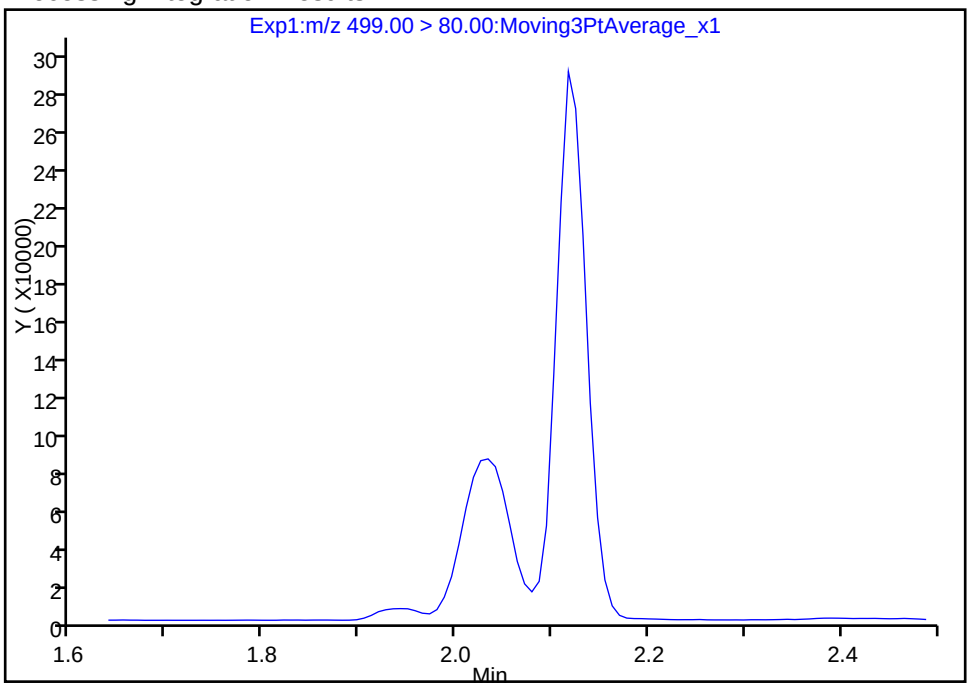
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_004.d				
Injection Date:	12-Dec-2017 08:41:23	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	1
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

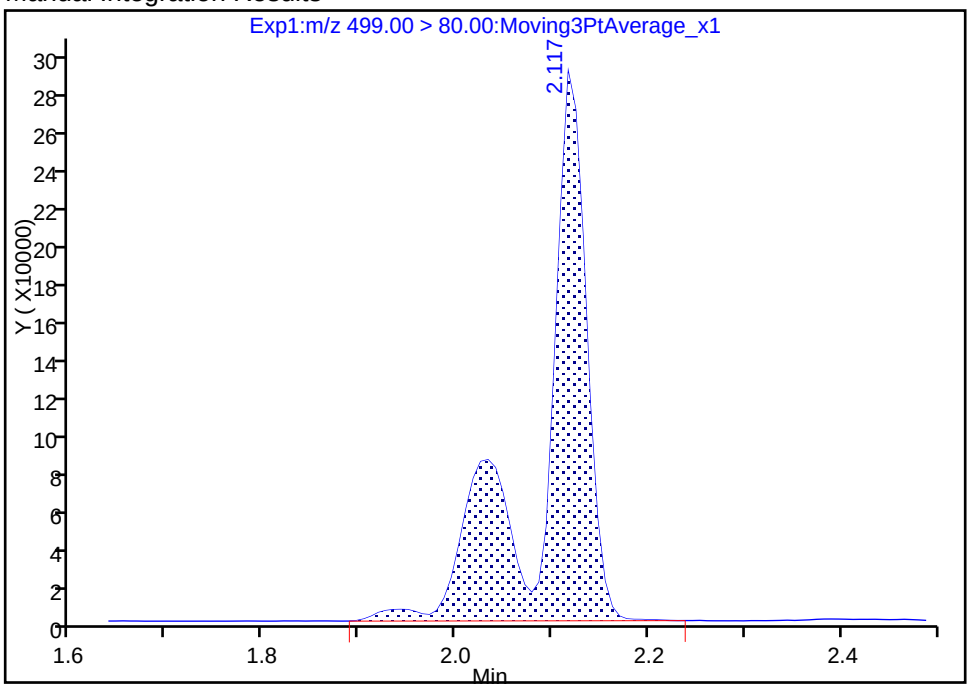
Processing Integration Results

Not Detected
Expected RT: 2.09



Manual Integration Results

RT: 2.12
Area: 930132
Amount: 8.513675
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 11:51:56
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Lab Sample ID: CCV 320-199464/12 Calibration Date: 12/12/2017 09:32

Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 11/03/2017 14:01

Lab File ID: 2017.12.12_537A_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9654		144	135	6.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	0.9390		15.0	15.0	0.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.724		46.3	45.0	3.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.9495		30.8	30.0	2.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.9501		60.7	60.0	1.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6578		29.7	30.0	-1.0	30.0
13C2 PFHxA	Ave	1.100	1.146		10.4	10.0	4.1	30.0
13C2 PFDA	Ave	0.7652	0.7940		10.4	10.0	3.8	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_015.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 12-Dec-2017 09:32:47 ALS Bottle#: 5 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 12:12:42 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:08:15

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.444	-0.078	1.000	14971375	144.3		16770	
298.90 > 99.00	1.366	1.444	-0.078	1.000	11383836		1.32(0.00-0.00)	16078	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.573	-0.086	1.000	1768776	10.4		10780	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.725	-0.094	1.000	8911870	46.3		14025	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.725	-0.094	1.000	2174664	15.0		672	
* 6 13C2-PFOA									
415.00 > 370.00	1.828	1.913	-0.085		1543512	10.0		7992	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.828	1.914	-0.086	1.000	4400429	30.8		729	
413.00 > 169.00	1.828	1.914	-0.086	1.000	2373427		1.85(0.00-0.00)	7072	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.086	2.086	0.0	1.000	6549485	60.7		4290	M
499.00 > 99.00	2.086	2.086	0.0	1.000	1397630		4.69(0.00-0.00)	3884	M
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.151	-0.065		3294426	28.7		8203	
9 Perfluorononanoic acid									
463.00 > 419.00	2.094	2.158	-0.064	1.000	3046394	29.7		1068	
$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.312	-0.051	1.000	1225540	10.4		8507	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

Report Date: 12-Dec-2017 12:12:43 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_015.d

Injection Date: 12-Dec-2017 09:32:47 Instrument ID: A8_N

Lims ID: CCV L5

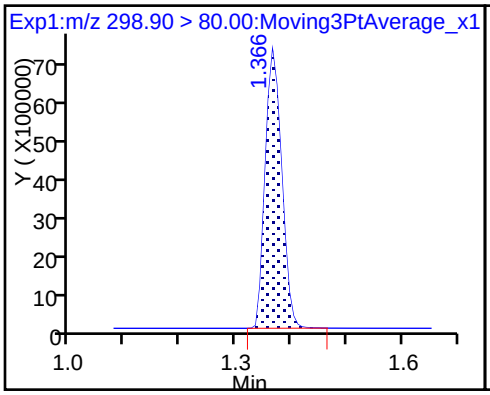
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 12

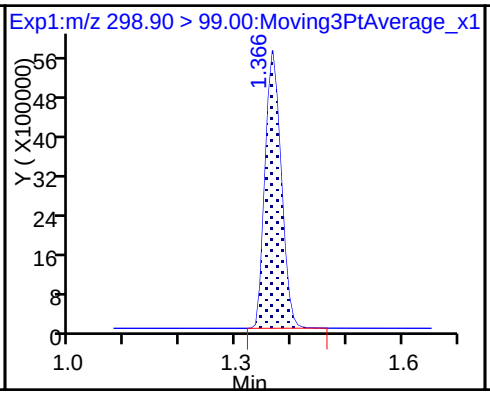
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

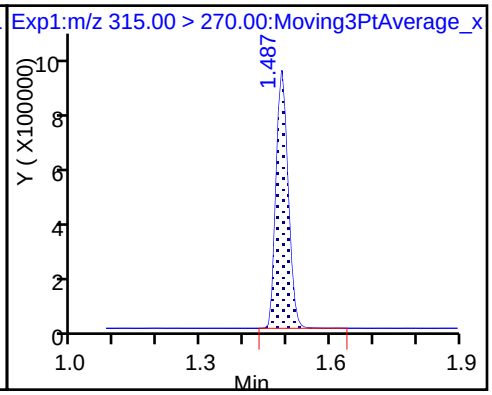
1 Perfluorobutanesulfonic acid



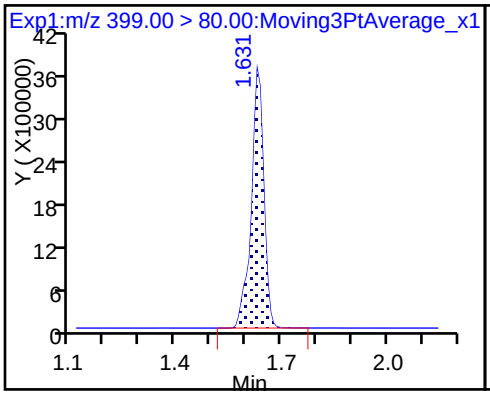
1 Perfluorobutanesulfonic acid



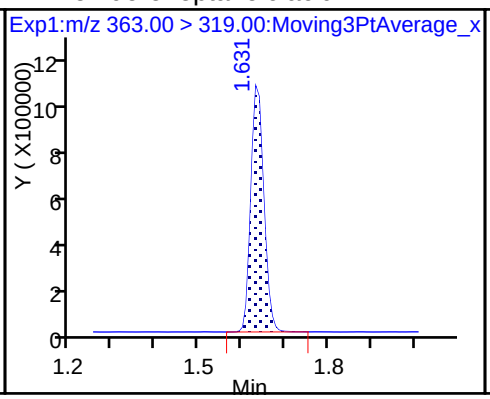
$ 2 13C2 PFHxA



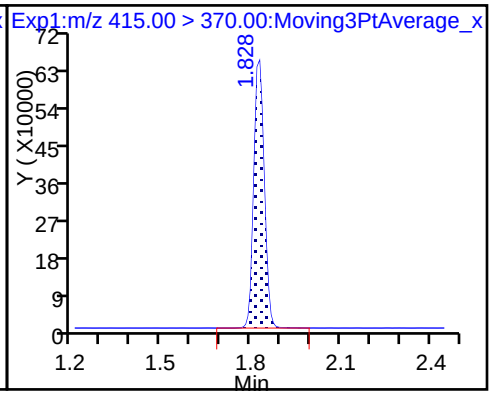
3 Perfluorohexanesulfonic acid



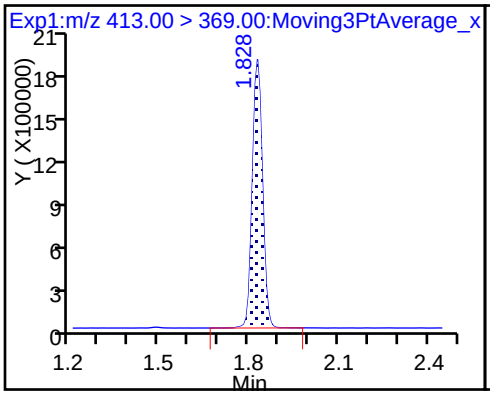
4 Perfluoroheptanoic acid



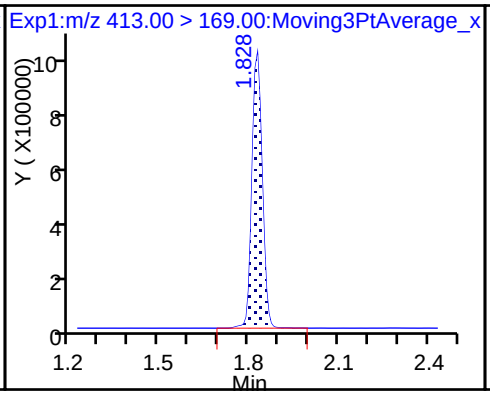
* 6 13C2-PFOA



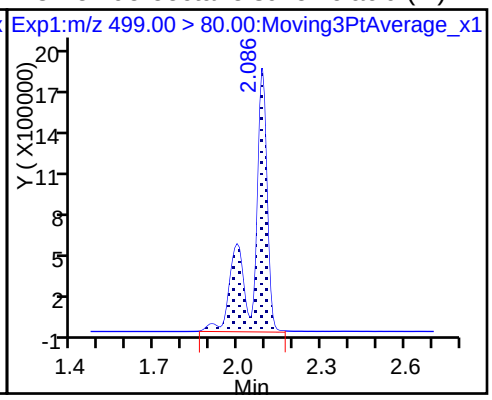
5 Perfluorooctanoic acid



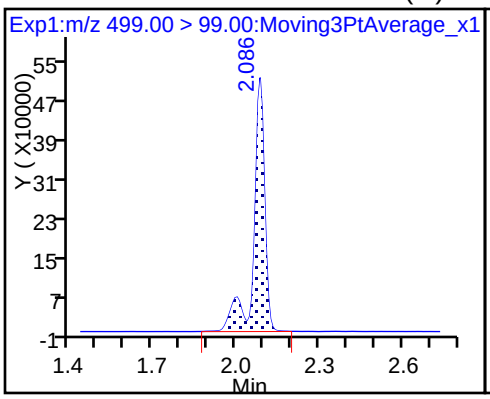
5 Perfluorooctanoic acid



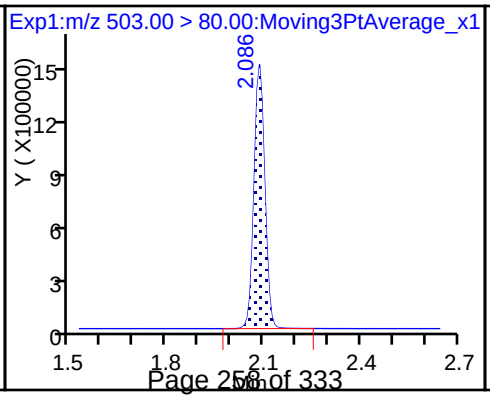
8 Perfluorooctane sulfonic acid (M)



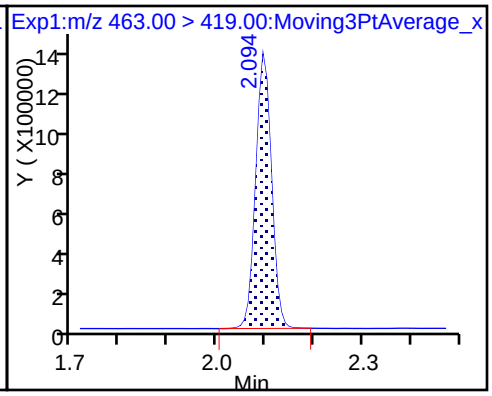
8 Perfluorooctane sulfonic acid (M)



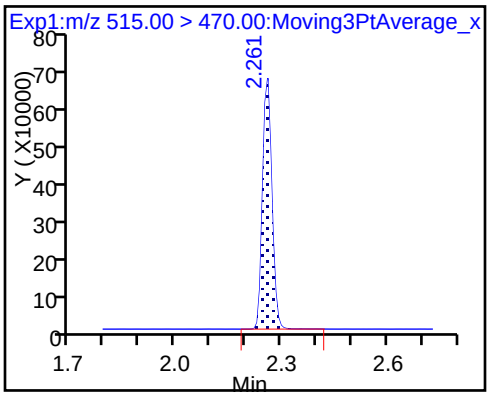
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.261
Y (X10000)
80
70
60
50
40
30
20
10
0
1.7
2.0
2.3
2.6
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

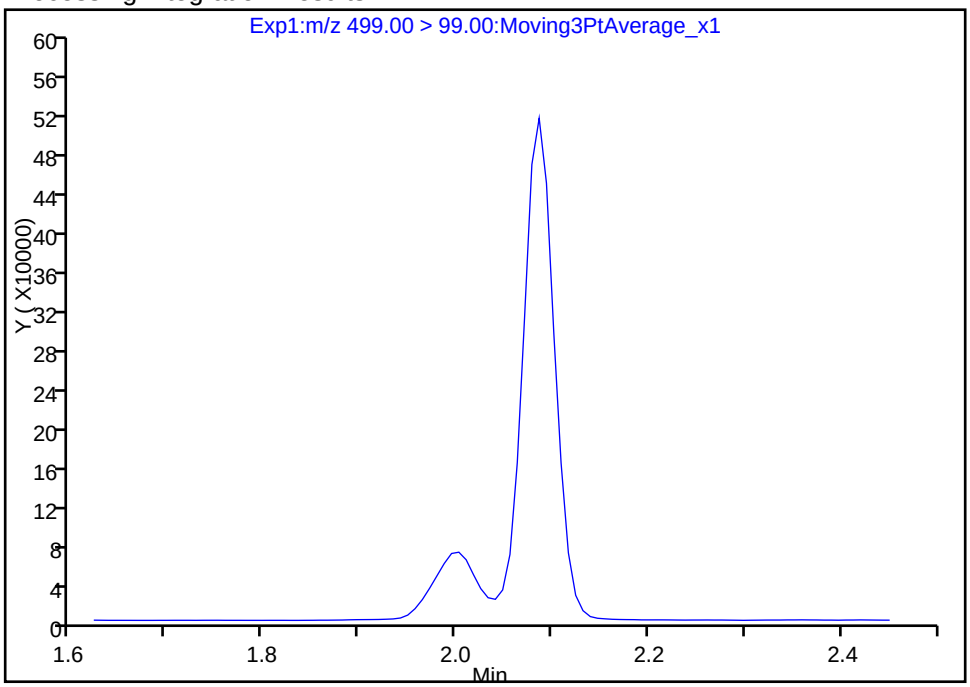
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_015.d				
Injection Date:	12-Dec-2017 09:32:47	Instrument ID:	A8_N		
Lims ID:	CCV L5				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	5	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 2

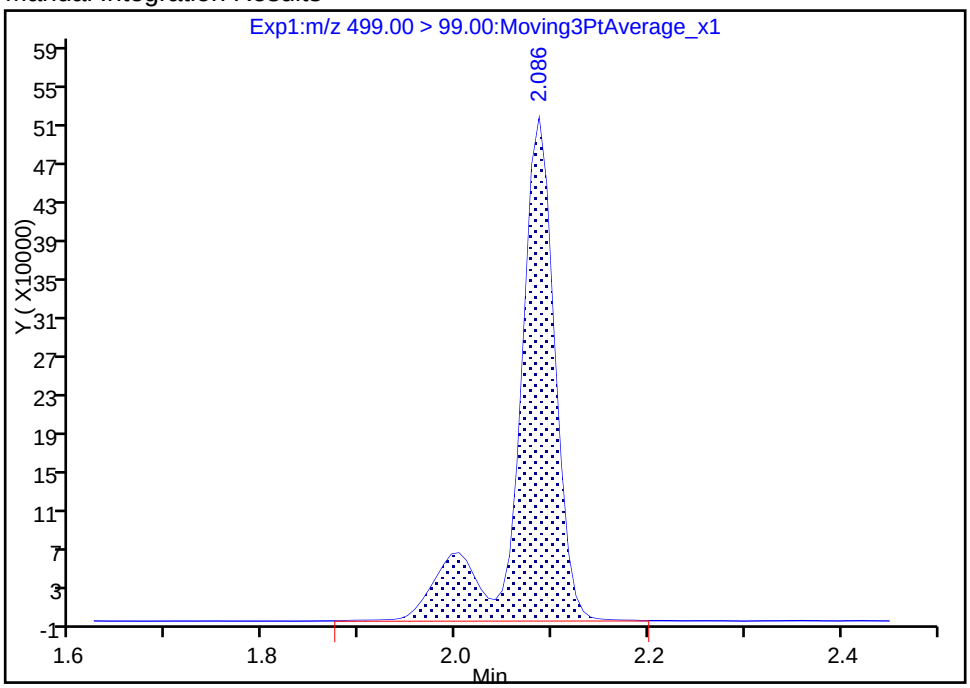
Not Detected
Expected RT: 2.09

Processing Integration Results



Manual Integration Results

RT: 2.09
Area: 1397630
Amount: 60.724602
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 12:07:54
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

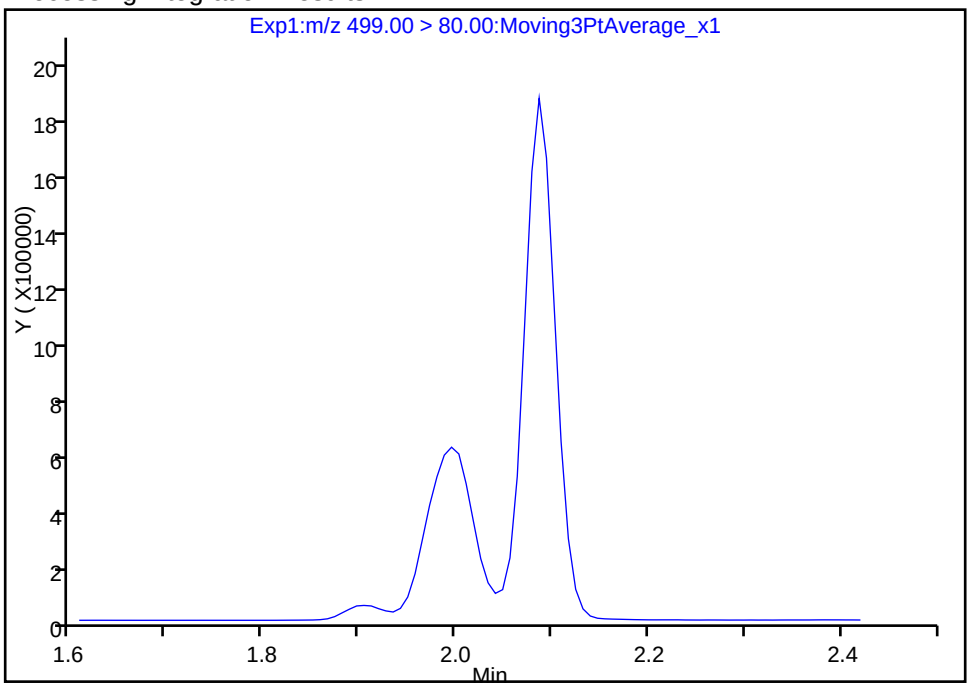
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_015.d				
Injection Date:	12-Dec-2017 09:32:47	Instrument ID:	A8_N		
Lims ID:	CCV L5				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	5	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

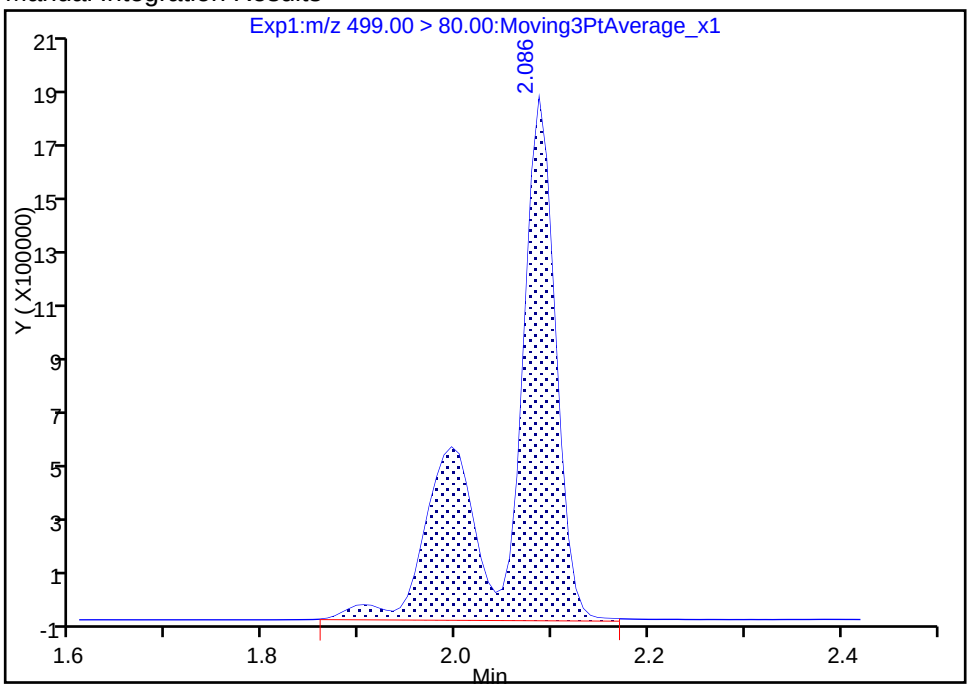
Processing Integration Results

Not Detected
Expected RT: 2.09



Manual Integration Results

RT: 2.09
Area: 6549485
Amount: 60.724602
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 12:08:02
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Lab Sample ID: CCV 320-199464/24 Calibration Date: 12/12/2017 10:28

Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 11/03/2017 14:01

Lab File ID: 2017.12.12_537A_027.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.166		50.3	45.0	11.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	1.002		5.35	5.00	7.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.835		16.4	15.0	9.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.9239		9.99	10.0	-0.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.9046		19.3	20.0	-3.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6401		9.64	10.0	-3.6	30.0
13C2 PFHxA	Ave	1.100	1.200		10.9	10.0	9.1	30.0
13C2 PFDA	Ave	0.7652	0.7590		9.92	10.0	-0.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Lab Sample ID: CCV 320-199466/24 Calibration Date: 12/12/2017 10:28

Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 11/03/2017 14:01

Lab File ID: 2017.12.12_537A_027.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.166		50.3	45.0	11.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	1.002		5.35	5.00	7.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.835		16.4	15.0	9.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.9239		9.99	10.0	-0.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.9046		19.3	20.0	-3.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6401		9.64	10.0	-3.6	30.0
13C2 PFHxA	Ave	1.100	1.200		10.9	10.0	9.1	30.0
13C2 PFDA	Ave	0.7652	0.7590		9.92	10.0	-0.8	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_027.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 12-Dec-2017 10:28:52 ALS Bottle#: 3 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L3
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:50 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:16:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.444	-0.086	1.000	5678373	50.3		12426	
298.90 > 99.00	1.358	1.444	-0.086	1.000	4143123		1.37(0.00-0.00)	9537	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.573	-0.094	1.000	1709228	10.9		9481	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.725	-0.101	1.000	2979594	16.4		8328	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.725	-0.101	1.000	713803	5.35		256	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.913	-0.100		1424361	10.0		6600	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.914	-0.101	1.000	1317023	9.99		278	
413.00 > 169.00	1.813	1.914	-0.101	1.000	705710		1.87(0.00-0.00)	2009	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.079	2.079	0.0	1.000	1958501	19.3		2118	M
499.00 > 99.00	2.079	2.079	0.0	1.000	420702		4.66(0.00-0.00)	1421	M
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.151	-0.072		3103960	28.7		9784	
9 Perfluorononanoic acid									
463.00 > 419.00	2.086	2.158	-0.072	1.000	911906	9.64		383	
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.312	-0.059	1.000	1081138	9.92		6576	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_027.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 12-Dec-2017 10:28:52 ALS Bottle#: 3 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L3
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:50 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:16:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.444	-0.086	1.000	5678373	50.3		12426	
298.90 > 99.00	1.358	1.444	-0.086	1.000	4143123		1.37(0.00-0.00)	9537	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.573	-0.094	1.000	1709228	10.9		9481	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.725	-0.101	1.000	2979594	16.4		8328	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.725	-0.101	1.000	713803	5.35		256	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.913	-0.100		1424361	10.0		6600	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.914	-0.101	1.000	1317023	9.99		278	
413.00 > 169.00	1.813	1.914	-0.101	1.000	705710		1.87(0.00-0.00)	2009	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.079	2.079	0.0	1.000	1958501	19.3		2118	M
499.00 > 99.00	2.079	2.079	0.0	1.000	420702		4.66(0.00-0.00)	1421	M
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.151	-0.072		3103960	28.7		9784	
9 Perfluorononanoic acid									
463.00 > 419.00	2.086	2.158	-0.072	1.000	911906	9.64		383	
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.312	-0.059	1.000	1081138	9.92		6576	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

Report Date: 12-Dec-2017 13:39:51 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_027.d

Injection Date: 12-Dec-2017 10:28:52 Instrument ID: A8_N

Lims ID: CCV L3

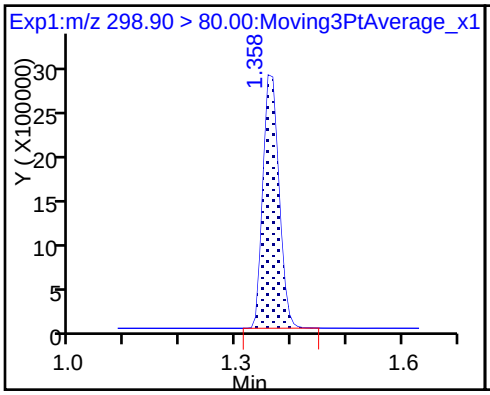
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 24

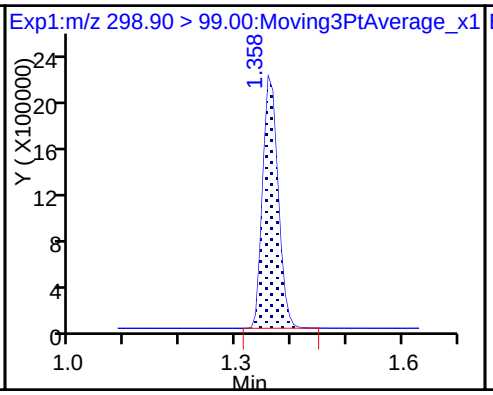
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

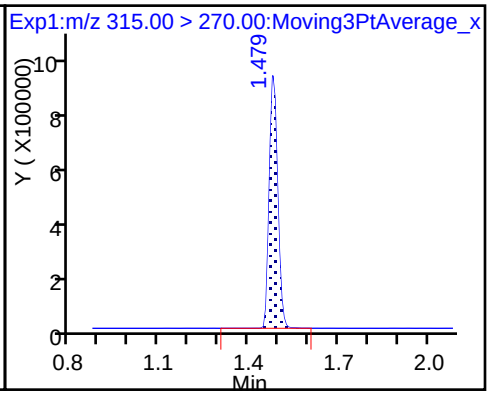
1 Perfluorobutanesulfonic acid



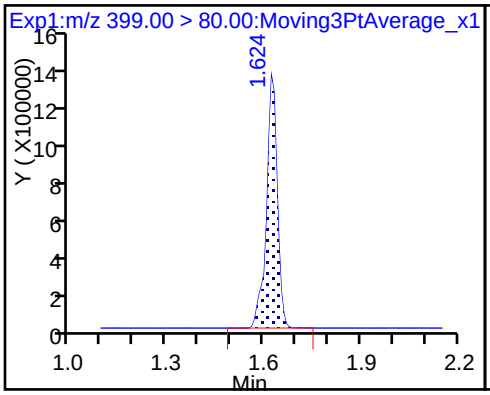
1 Perfluorobutanesulfonic acid



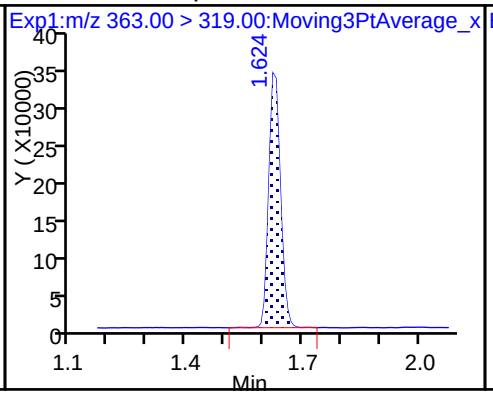
$ 2 13C2 PFHxA



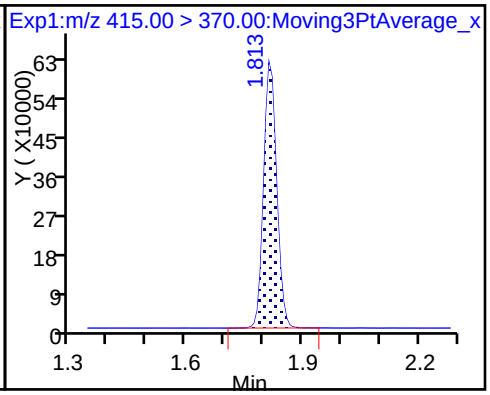
3 Perfluorohexanesulfonic acid



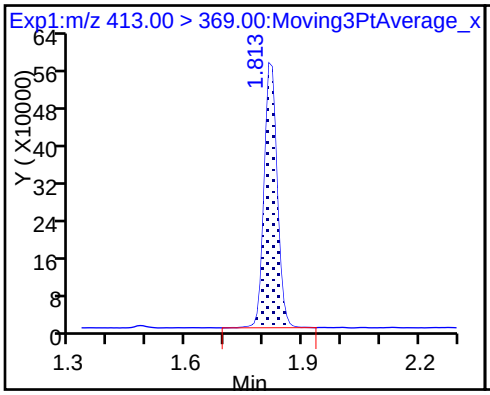
4 Perfluoroheptanoic acid



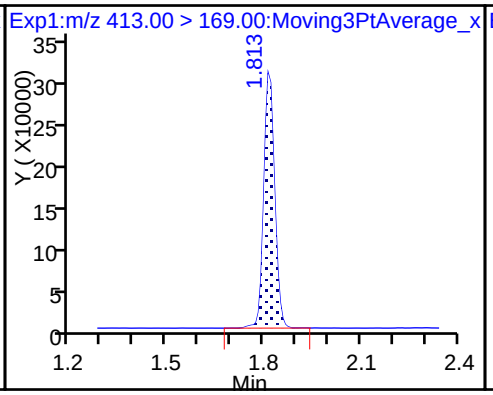
* 6 13C2-PFOA



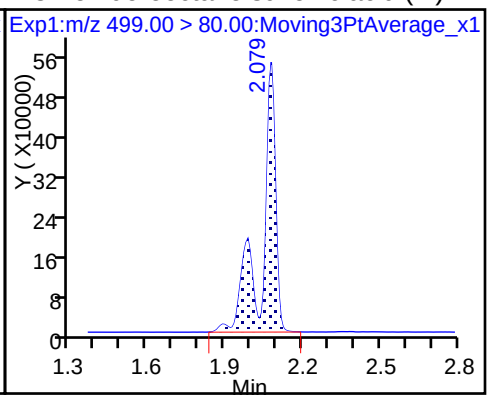
5 Perfluorooctanoic acid



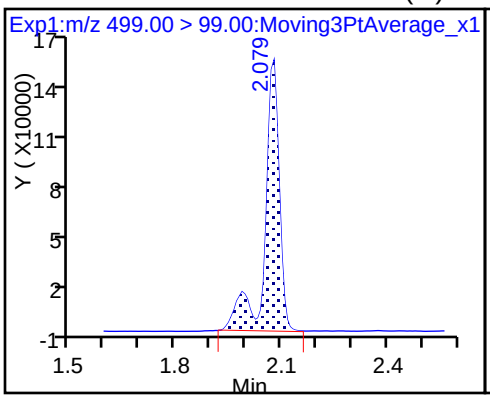
5 Perfluorooctanoic acid



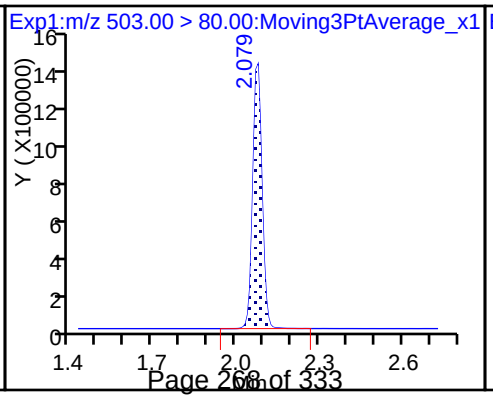
8 Perfluorooctane sulfonic acid (M)



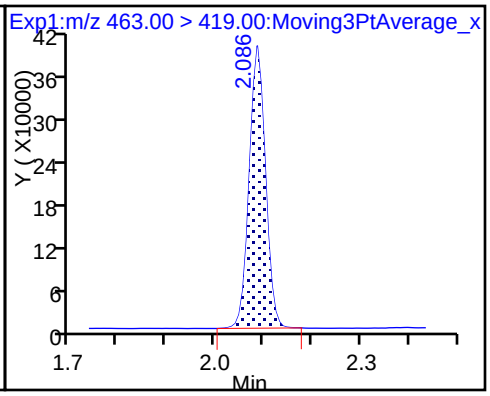
8 Perfluorooctane sulfonic acid (M)



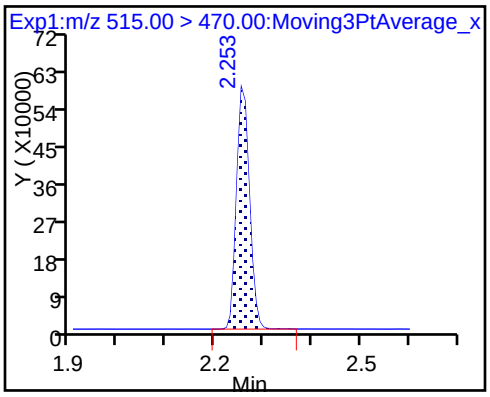
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.253
Y (X10000)
72
63
54
45
36
27
18
9
0
1.9
2.2
2.5
Min

Report Date: 12-Dec-2017 13:39:51 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_027.d

Injection Date: 12-Dec-2017 10:28:52 Instrument ID: A8_N

Lims ID: CCV L3

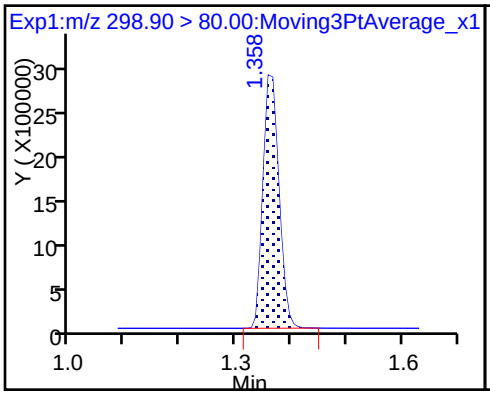
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 24

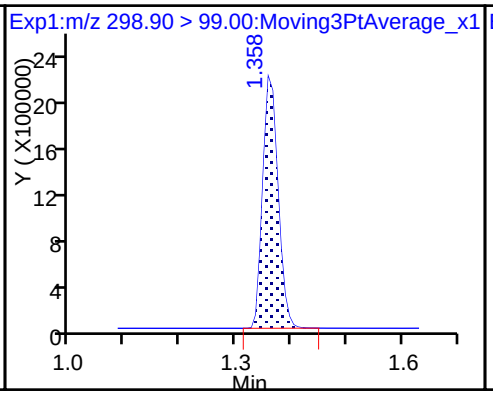
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

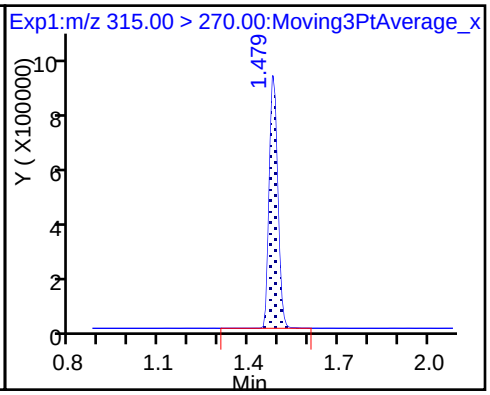
1 Perfluorobutanesulfonic acid



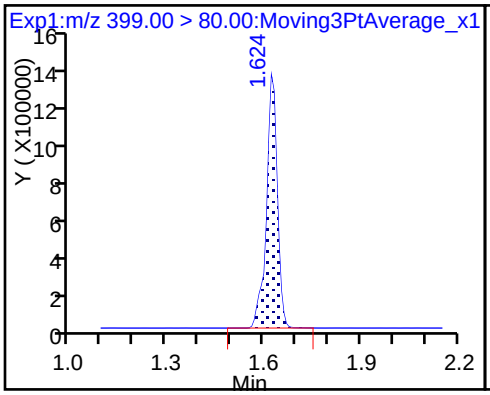
1 Perfluorobutanesulfonic acid



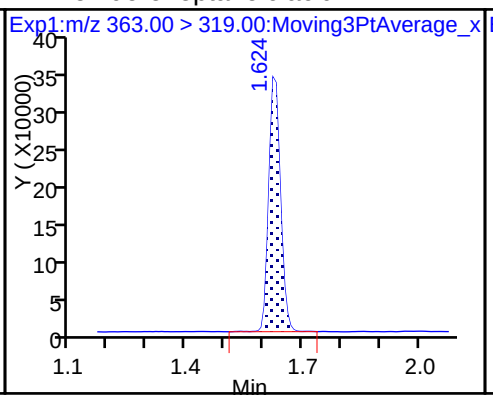
$ 2 13C2 PFHxA



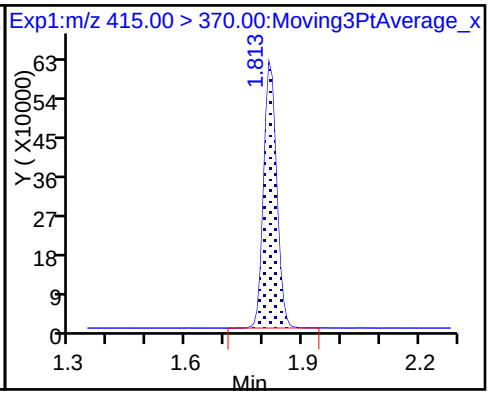
3 Perfluorohexanesulfonic acid



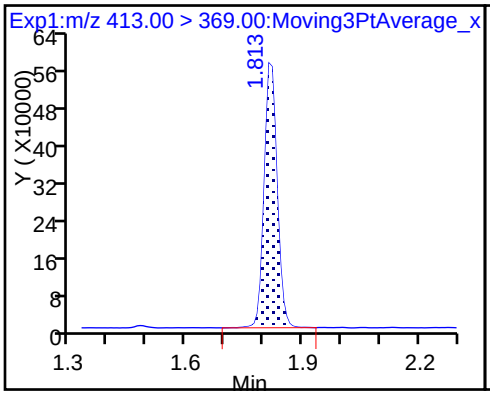
4 Perfluoroheptanoic acid



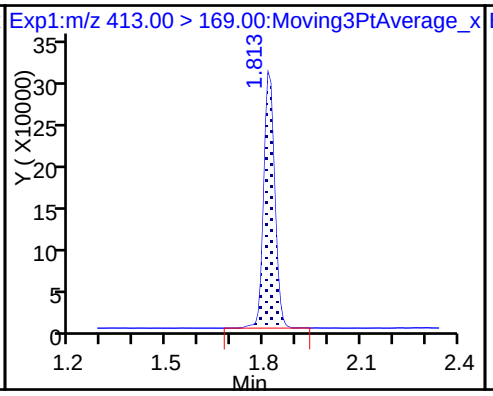
* 6 13C2-PFOA



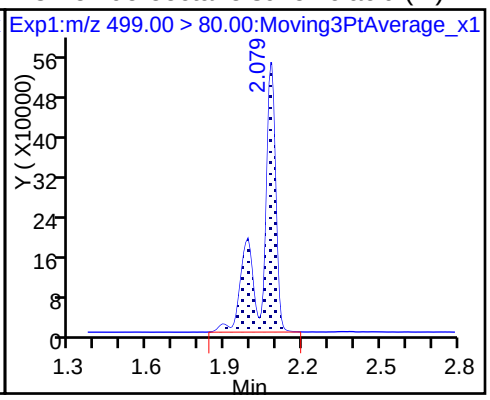
5 Perfluorooctanoic acid



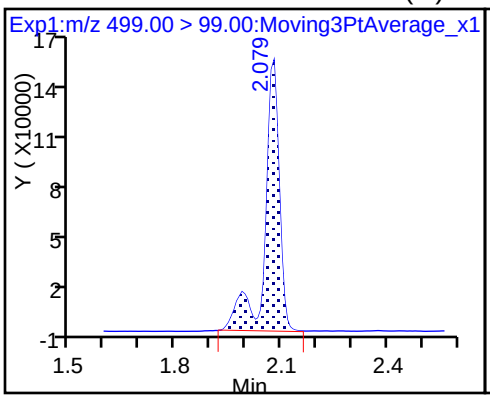
5 Perfluorooctanoic acid



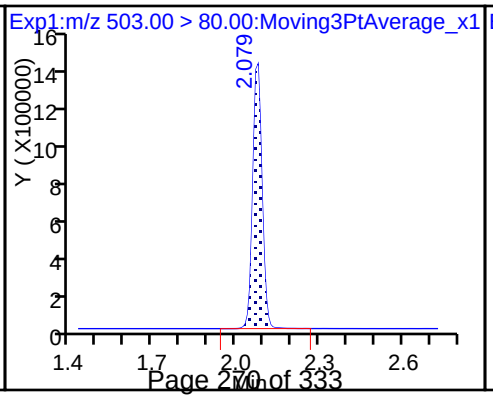
8 Perfluorooctane sulfonic acid (M)



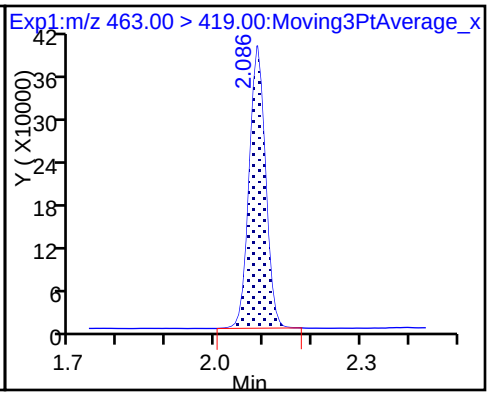
8 Perfluorooctane sulfonic acid (M)



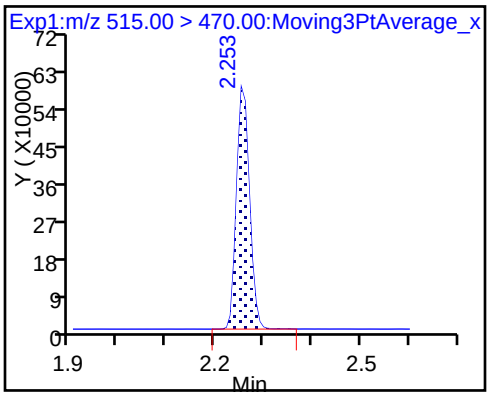
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.253
Y (X10000)
72
63
54
45
36
27
18
9
0
1.9
2.2
2.5
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

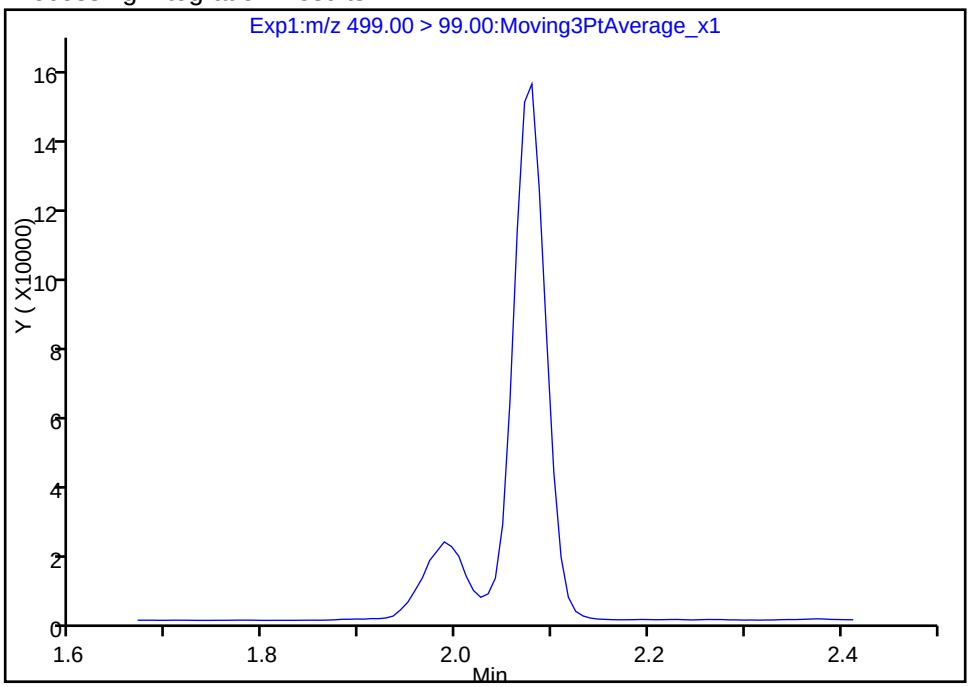
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_027.d				
Injection Date:	12-Dec-2017 10:28:52	Instrument ID:	A8_N		
Lims ID:	CCV L3				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 2

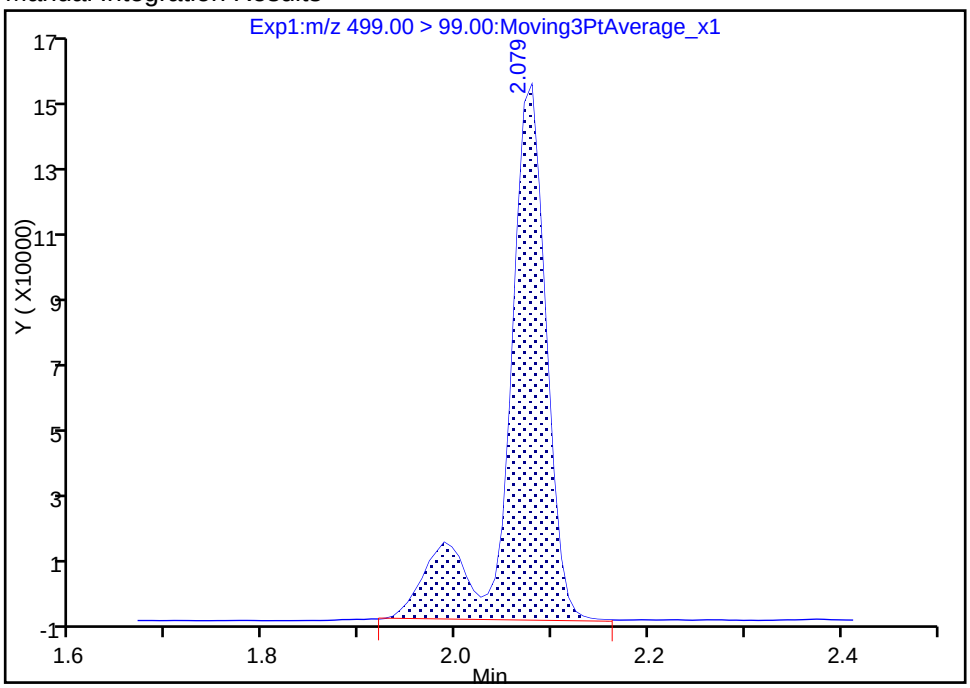
Not Detected
Expected RT: 2.08

Processing Integration Results



Manual Integration Results

RT:	2.08
Area:	420702
Amount:	19.272807
Amount Units:	ng/ml



Reviewer: hannigana, 12-Dec-2017 12:16:25
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

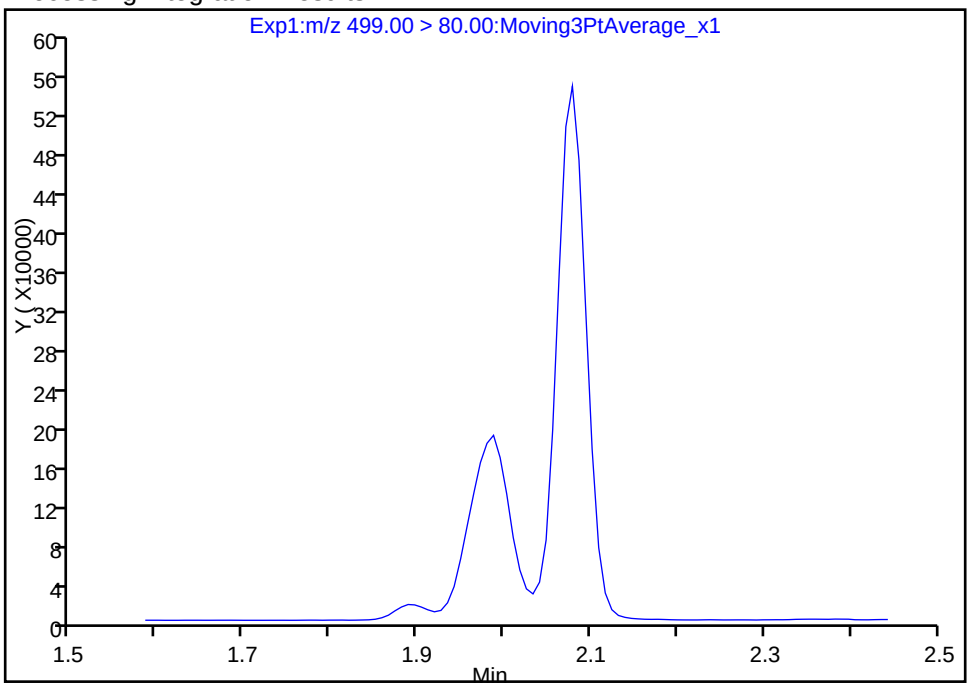
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_027.d				
Injection Date:	12-Dec-2017 10:28:52	Instrument ID:	A8_N		
Lims ID:	CCV L3				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

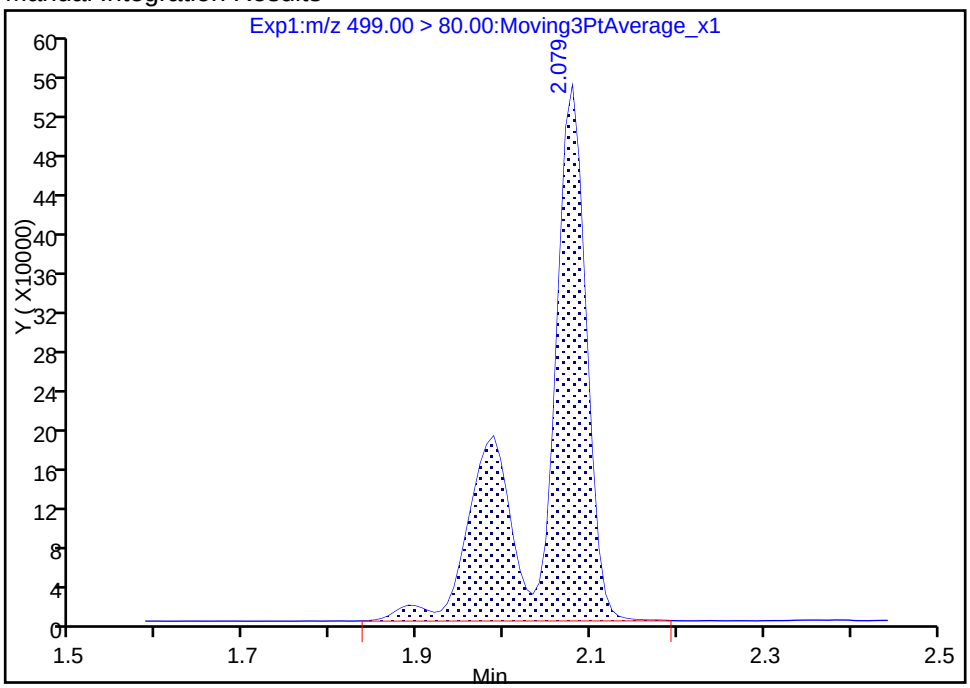
Not Detected
Expected RT: 2.08

Processing Integration Results



RT: 2.08
Area: 1958501
Amount: 19.272807
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 12-Dec-2017 12:16:28
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_027.d				
Injection Date:	12-Dec-2017 10:28:52	Instrument ID:	A8_N		
Lims ID:	CCV L3				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

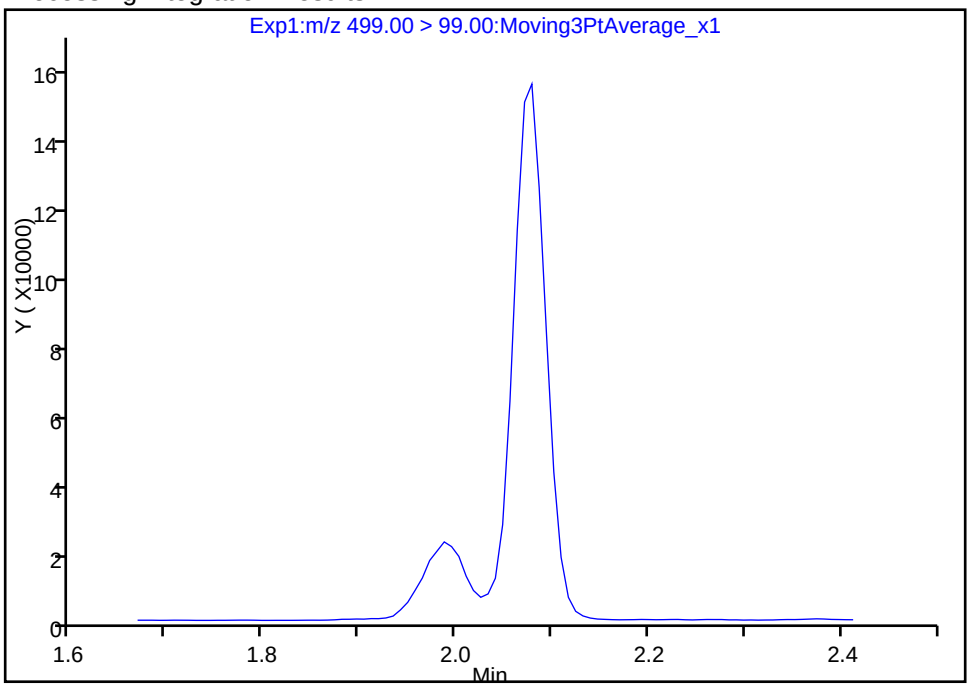
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

Processing Integration Results

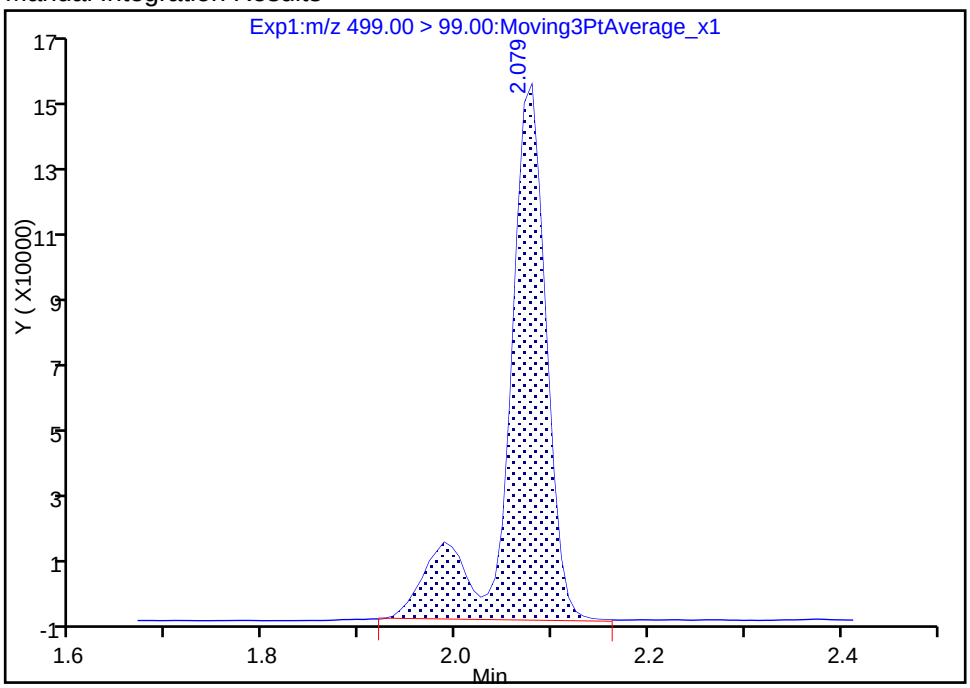
Not Detected

Expected RT: 2.08



Manual Integration Results

RT:	2.08
Area:	420702
Amount:	19.272807
Amount Units:	ng/ml



Reviewer: hannigana, 12-Dec-2017 12:16:25

Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

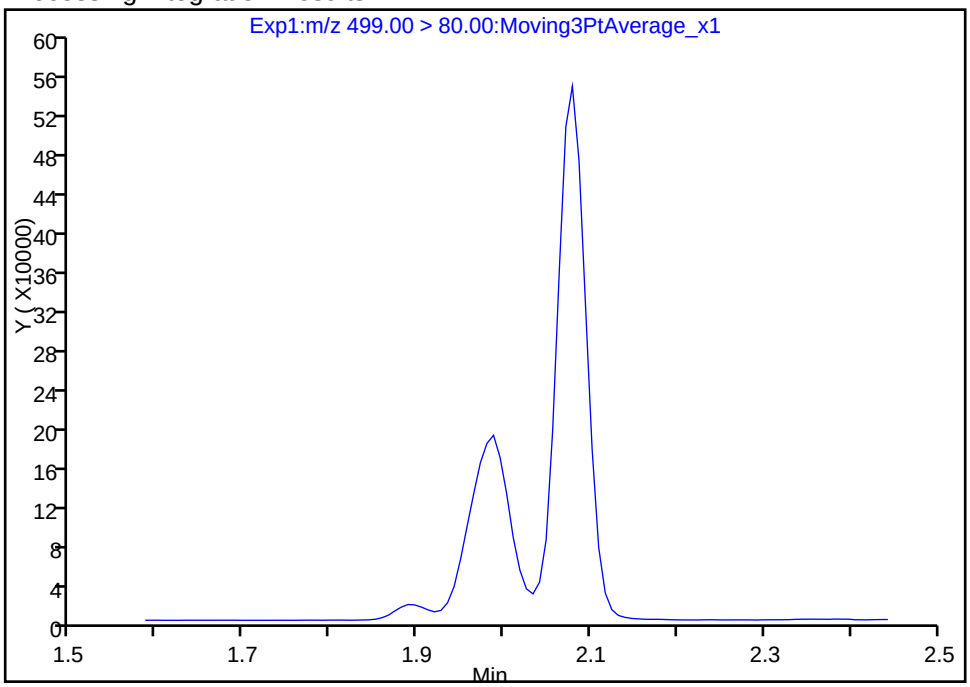
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_027.d				
Injection Date:	12-Dec-2017 10:28:52	Instrument ID:	A8_N		
Lims ID:	CCV L3				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

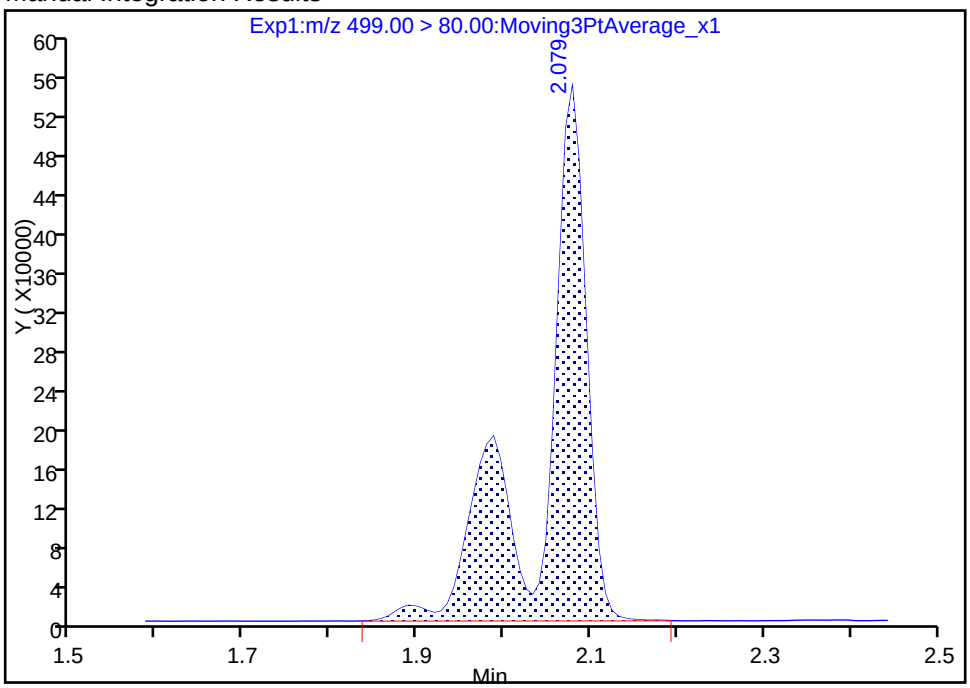
Not Detected
Expected RT: 2.08

Processing Integration Results



Manual Integration Results

RT: 2.08
Area: 1958501
Amount: 19.272807
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 12:16:28
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Lab Sample ID: CCV 320-199466/33 Calibration Date: 12/12/2017 11:10

Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 11/03/2017 14:01

Lab File ID: 2017.12.12_537A_036.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.995		150	135	11.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	0.9705		15.5	15.0	3.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.827		49.1	45.0	9.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.9314		30.2	30.0	0.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.9573		61.2	60.0	2.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6866		31.0	30.0	3.4	30.0
13C2 PFHxA	Ave	1.100	1.189		10.8	10.0	8.0	30.0
13C2 PFDA	Ave	0.7652	0.7782		10.2	10.0	1.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_036.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 12-Dec-2017 11:10:56 ALS Bottle#: 5 Worklist Smp#: 33
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:57 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 13:39:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.444	-0.086	1.000	14329660	150.2		16481	
298.90 > 99.00	1.358	1.444	-0.086	1.000	11141308		1.29(0.00-0.00)	15087	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.573	-0.094	1.000	1712124	10.8		8338	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.725	-0.101	1.000	8770049	49.1		14876	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.725	-0.101	1.000	2097459	15.5		783	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.913	-0.100		1440416	10.0		7942	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.914	-0.101	1.000	4027964	30.2		915	
413.00 > 169.00	1.813	1.914	-0.101	1.000	2177462		1.85(0.00-0.00)	5306	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.071	2.079	-0.008	1.000	6128368	61.2		4294	M
499.00 > 99.00	2.071	2.079	-0.008	1.000	1243923		4.93(0.00-0.00)	2899	M
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.151	-0.080		3059172	28.7		8534	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.158	-0.079	1.000	2967421	31.0		1195	
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.312	-0.059	1.000	1120964	10.2		8213	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

Report Date: 12-Dec-2017 13:39:58 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_036.d

Injection Date: 12-Dec-2017 11:10:56 Instrument ID: A8_N

Lims ID: CCV L5

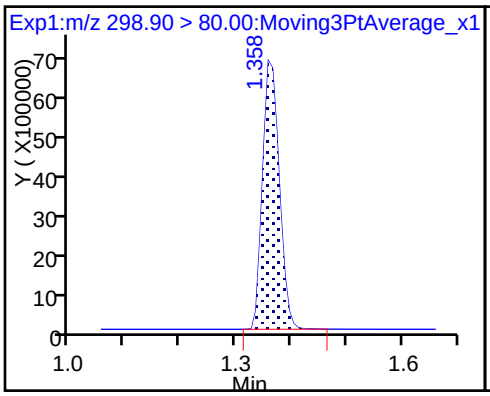
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 33

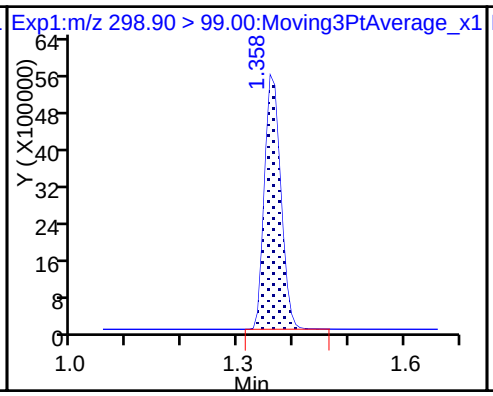
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

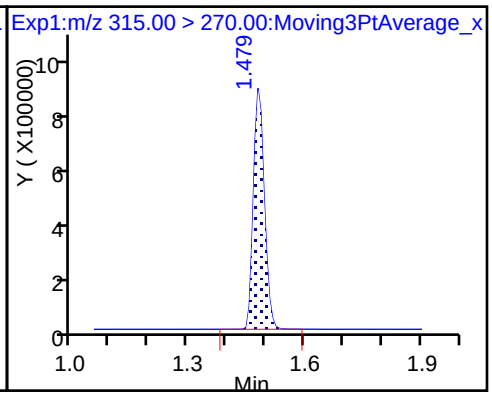
1 Perfluorobutanesulfonic acid



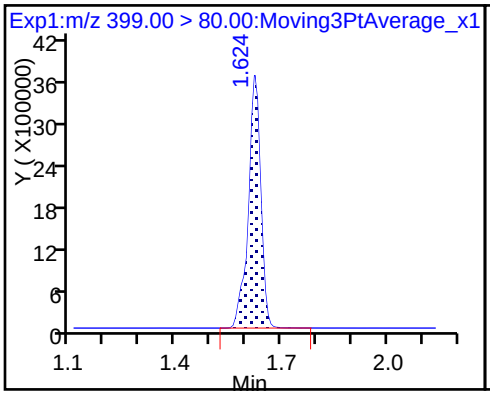
1 Perfluorobutanesulfonic acid



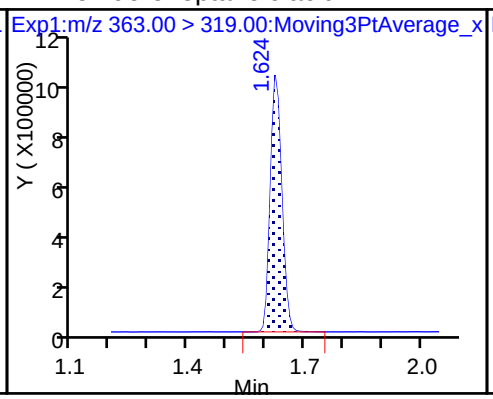
$ 2 13C2 PFHxA



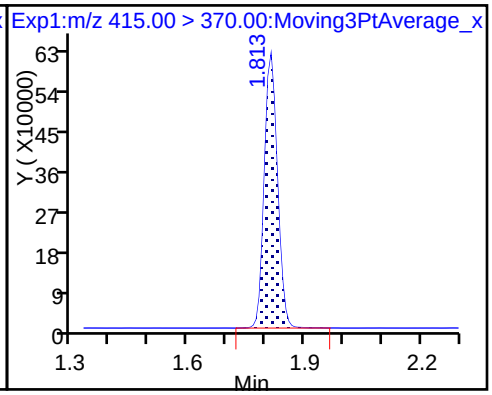
3 Perfluorohexanesulfonic acid



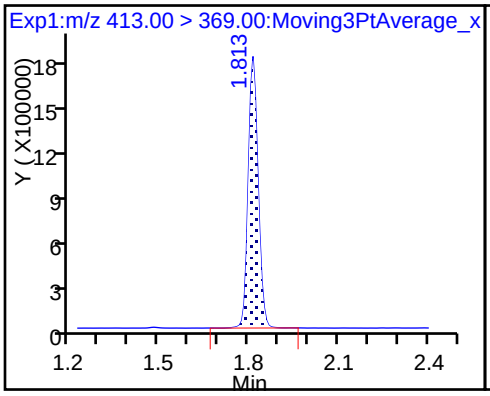
4 Perfluoroheptanoic acid



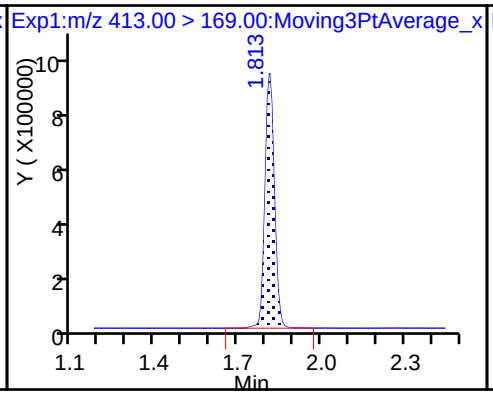
* 6 13C2-PFOA



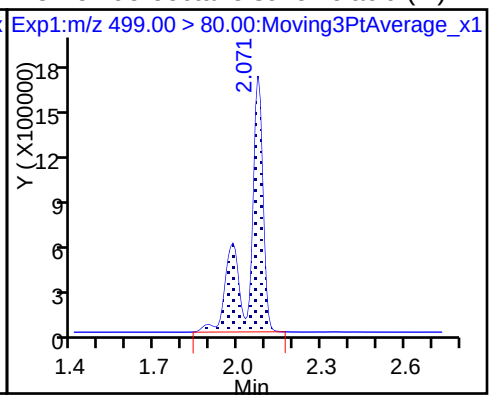
5 Perfluorooctanoic acid



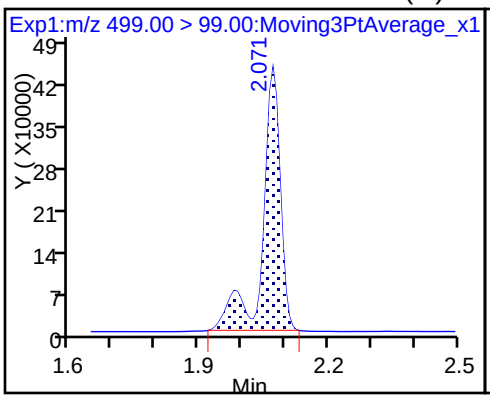
5 Perfluorooctanoic acid



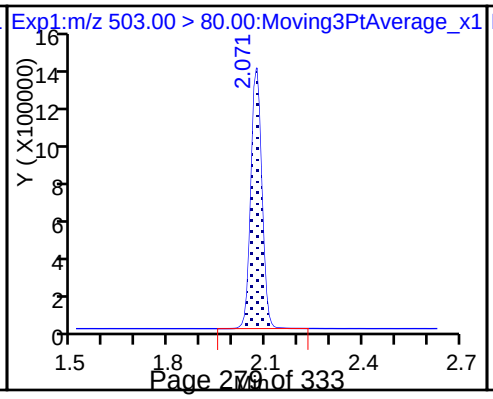
8 Perfluorooctane sulfonic acid (M)



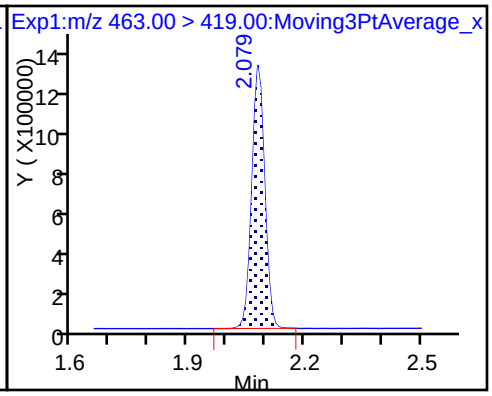
8 Perfluorooctane sulfonic acid (M)



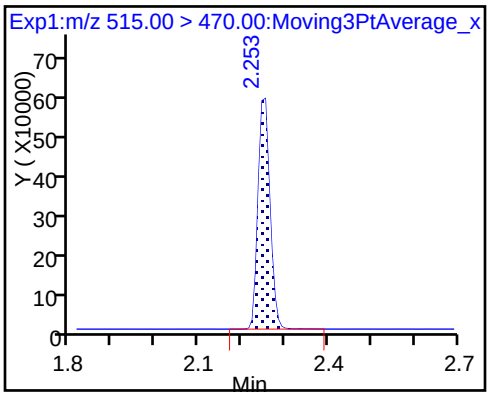
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.253
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

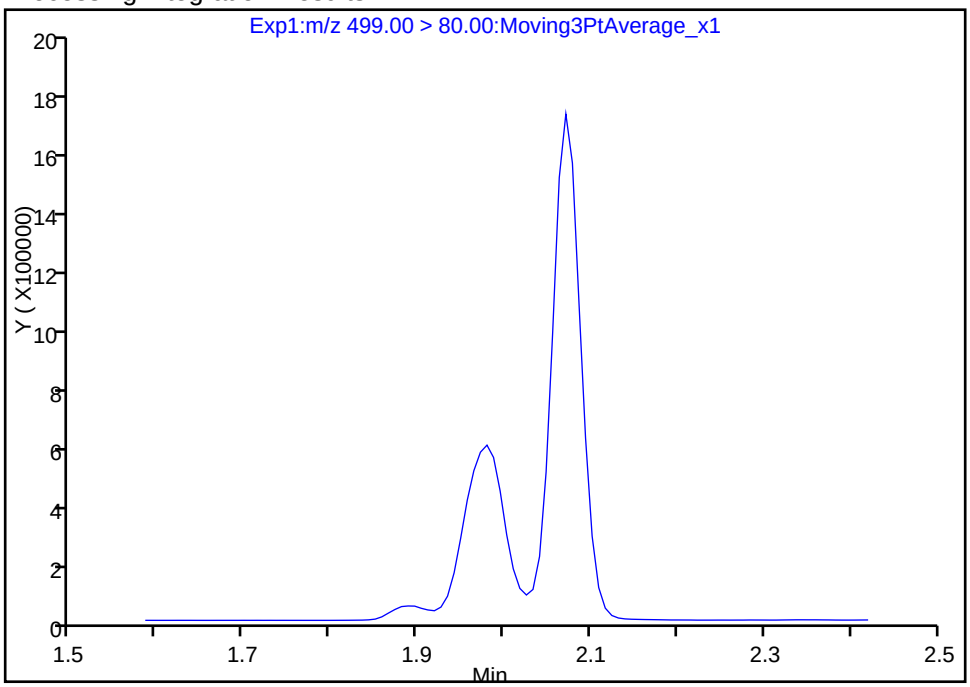
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_036.d				
Injection Date:	12-Dec-2017 11:10:56	Instrument ID:	A8_N		
Lims ID:	CCV L5				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	5	Worklist Smp#:	33
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

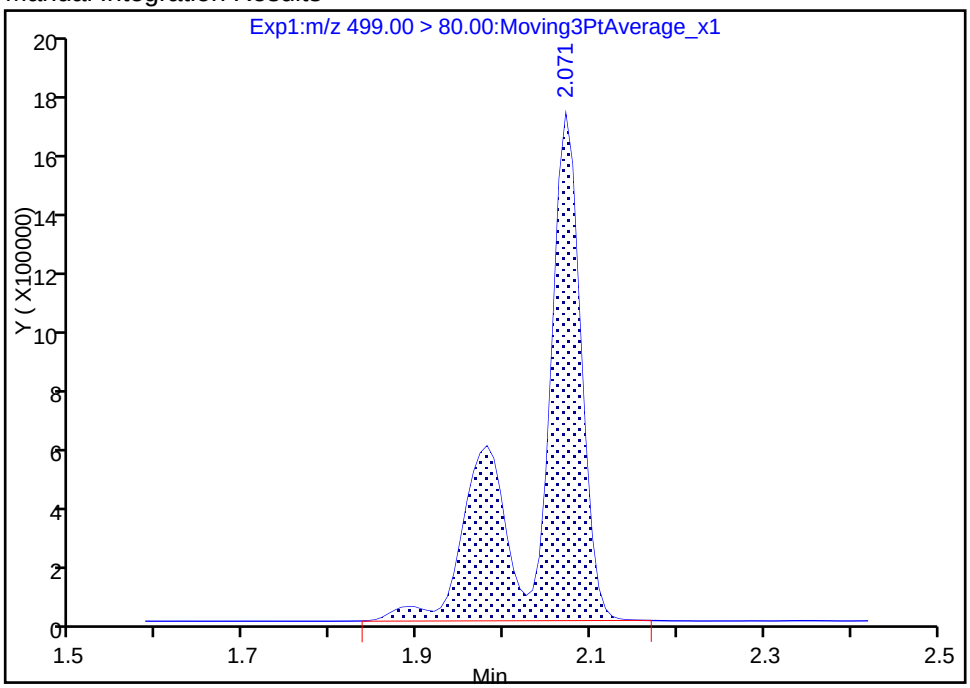
Not Detected
Expected RT: 2.08

Processing Integration Results



Manual Integration Results

RT: 2.07
Area: 6128368
Amount: 61.189686
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 13:38:34
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_036.d				
Injection Date:	12-Dec-2017 11:10:56	Instrument ID:	A8_N		
Lims ID:	CCV L5				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	5	Worklist Smp#:	33
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

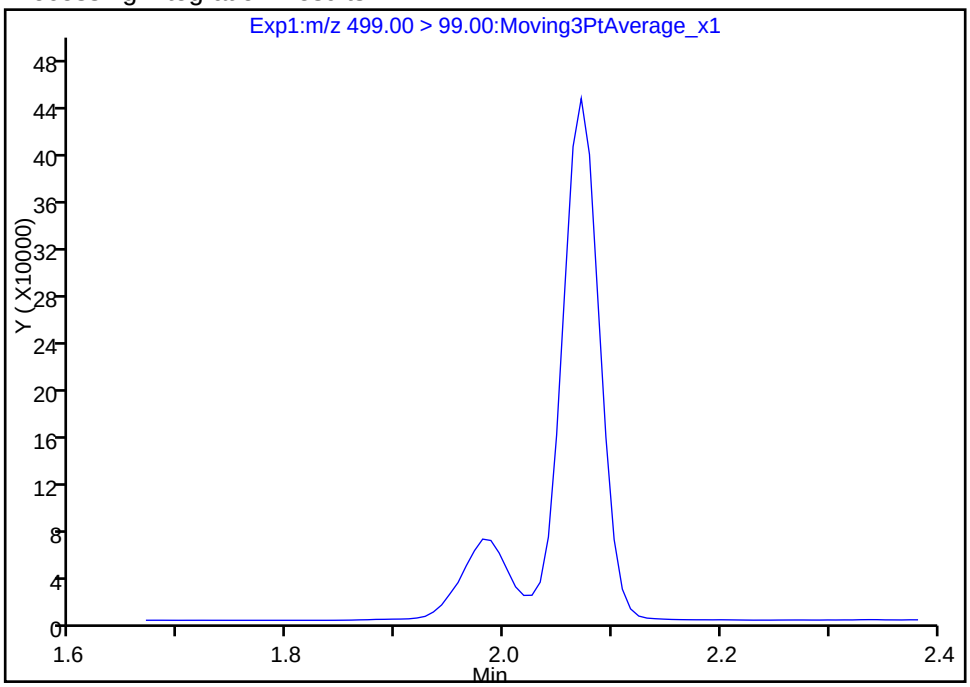
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

Processing Integration Results

Not Detected

Expected RT: 2.08



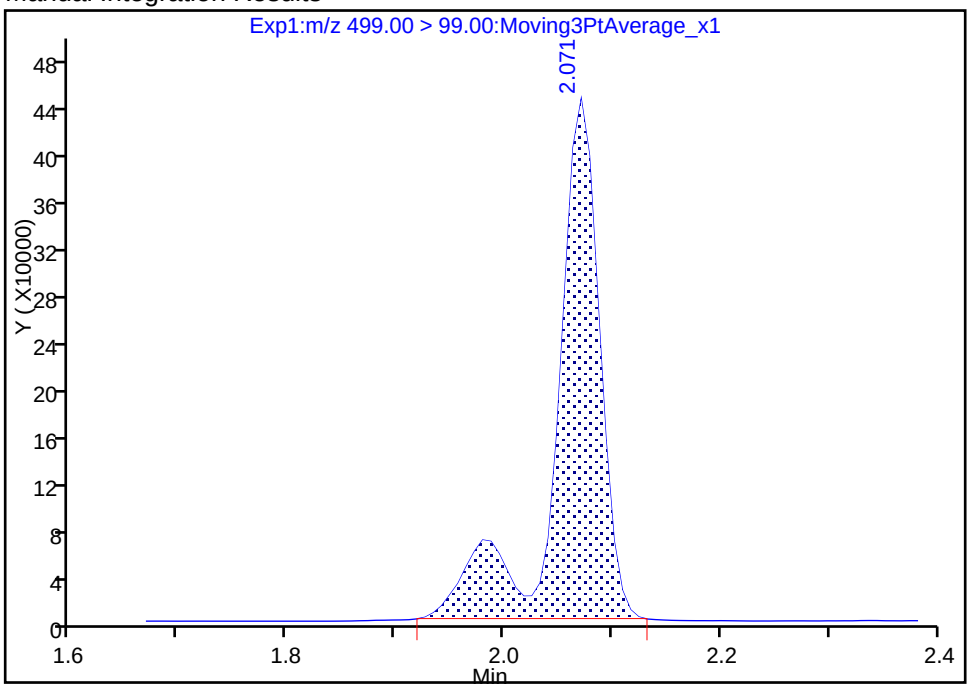
Manual Integration Results

RT: 2.07

Area: 1243923

Amount: 61.189686

Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 13:38:44

Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 320-199025/1-A
Matrix: Water
Lab File ID: 2017.12.12_537A_017.d
Analysis Method: 537
Date Collected:
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 250.00(mL)
Date Analyzed: 12/12/2017 09:42
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.: 199464
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	99		70-130
STL00996	13C2 PFDA	103		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_017.d
Lims ID: MB 320-199025/1-A
Client ID:
Sample Type: MB
Inject. Date: 12-Dec-2017 09:42:07 ALS Bottle#: 9 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-199025/1-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:24 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:08:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.573	-0.086	1.000	1534795	9.91		8567	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.913	-0.092		1406899	10.0		6875	
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.151	-0.065		3063225	28.7		7932	
$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.312	-0.051	1.000	1110021	10.3		7535	

Report Date: 12-Dec-2017 13:39:42 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_017.d

Injection Date: 12-Dec-2017 09:42:07 Instrument ID: A8_N

Lims ID: MB 320-199025/1-A

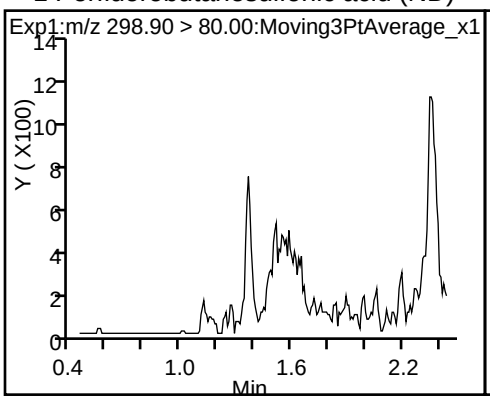
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 14

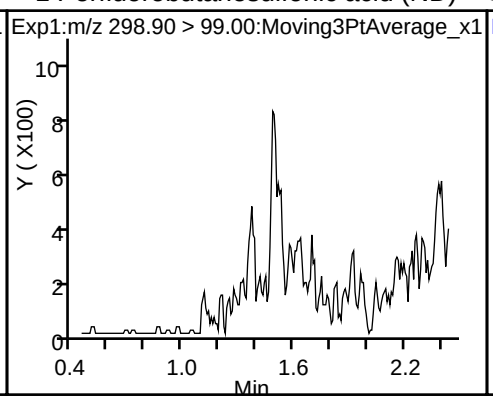
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

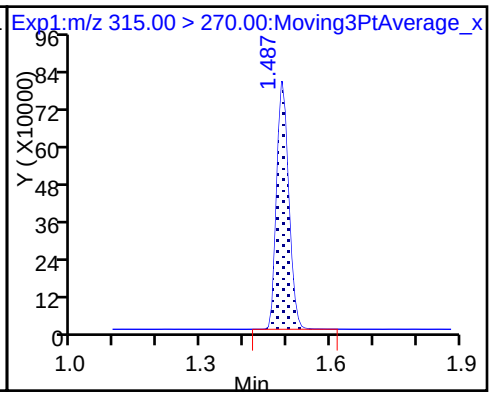
1 Perfluorobutanesulfonic acid (ND)



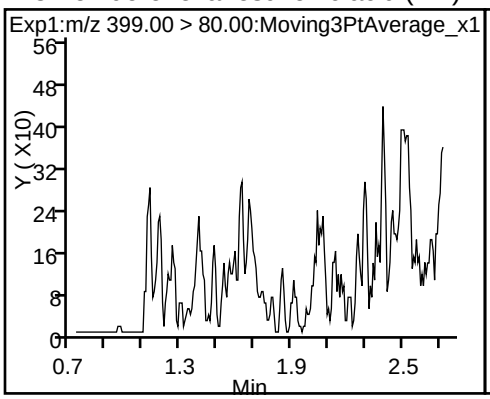
1 Perfluorobutanesulfonic acid (ND)



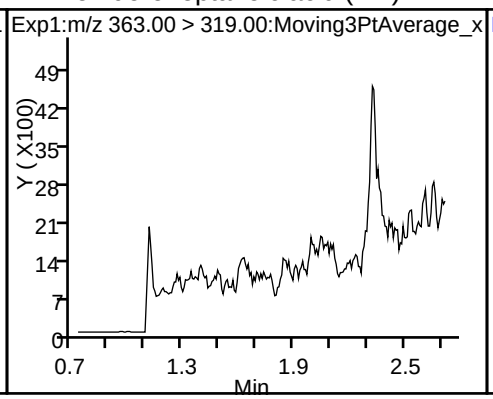
$ 2 13C2 PFHxA



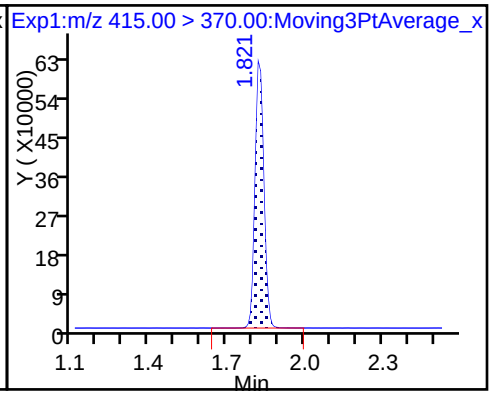
3 Perfluorohexanesulfonic acid (ND)



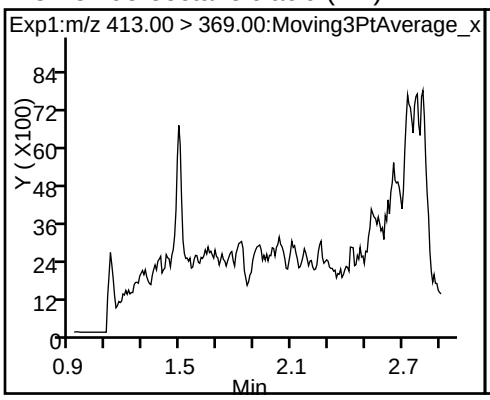
4 Perfluoroheptanoic acid (ND)



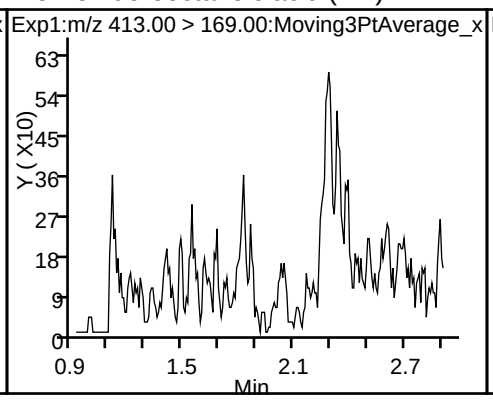
* 6 13C2-PFOA



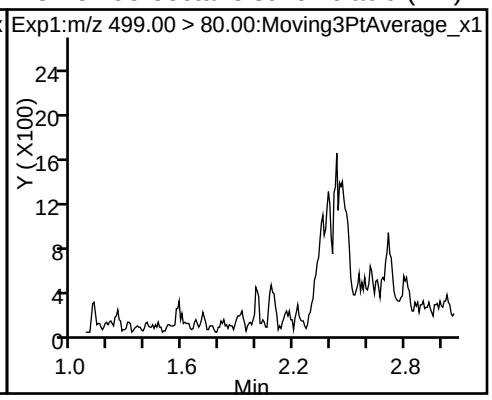
5 Perfluorooctanoic acid (ND)



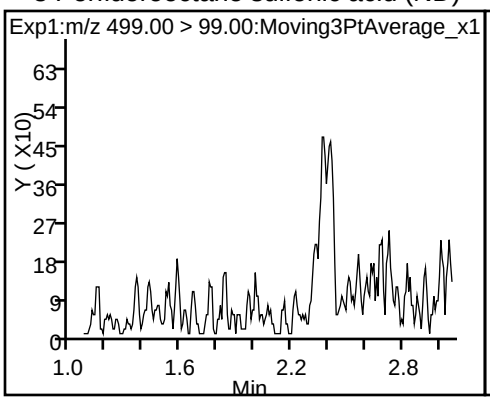
5 Perfluorooctanoic acid (ND)



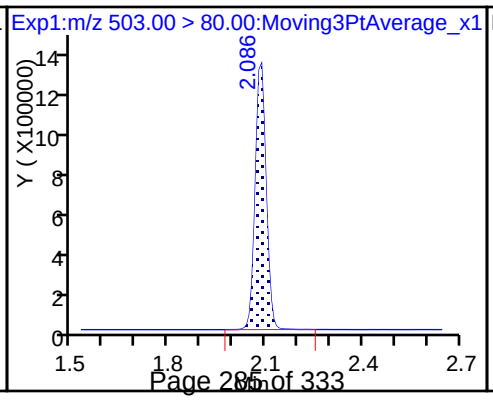
8 Perfluorooctane sulfonic acid (ND)



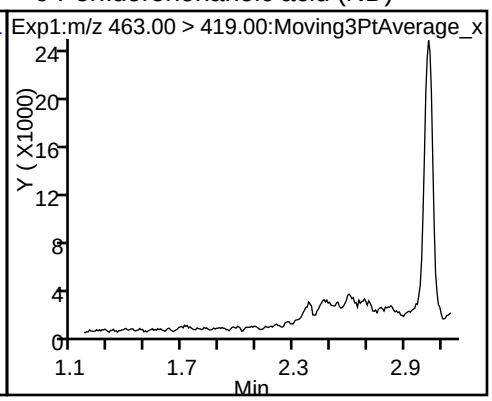
8 Perfluorooctane sulfonic acid (ND)



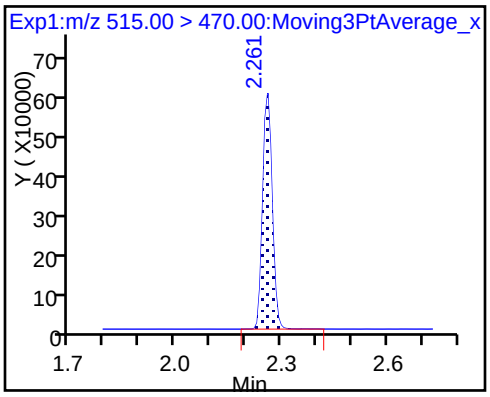
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.261
Y (X10000)
70
60
50
40
30
20
10
0
1.7
2.0
2.3
2.6
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_017.d
Lims ID: MB 320-199025/1-A
Client ID:
Sample Type: MB
Inject. Date: 12-Dec-2017 09:42:07 ALS Bottle#: 9 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-199025/1-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:24 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:08:44

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.91	99.15
$ 10 13C2 PFDA	10.0	10.3	103.11

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCS 320-199025/2-A
Matrix: Water
Lab File ID: 2017.12.12_537A_018.d
Analysis Method: 537
Date Collected:
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 250.00(mL)
Date Analyzed: 12/12/2017 09:46
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.: 199464
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	232	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	117		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	109		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	186		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	63.2		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	524		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	105		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_018.d
Lims ID: LCS 320-199025/2-A
Client ID:
Sample Type: LCS
Inject. Date: 12-Dec-2017 09:46:49 ALS Bottle#: 10 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-199025/2-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:24 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:09:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.444	-0.078	1.000	13550807	131.1		15574	
298.90 > 99.00	1.366	1.444	-0.078	1.000	10397367		1.30(0.00-0.00)	13685	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.573	-0.086	1.000	1691493	10.4		9932	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.639	1.725	-0.086	1.000	8697848	46.4		15371	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.639	1.725	-0.086	1.000	2183720	15.8		701	
* 6 13C2-PFOA									
415.00 > 370.00	1.828	1.913	-0.085		1474579	10.0		7073	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.828	1.914	-0.086	1.000	3986287	29.2		720	
413.00 > 169.00	1.828	1.914	-0.086	1.000	2119295		1.88(0.00-0.00)	6185	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.086	2.079	0.007	1.000	6096937	58.0		4002	M
499.00 > 99.00	2.086	2.079	0.007	1.000	1242123		4.91(0.00-0.00)	3011	M
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.151	-0.065		3211773	28.7		8664	
9 Perfluorononanoic acid									
463.00 > 419.00	2.094	2.158	-0.064	1.000	2680869	27.4		603	
$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.312	-0.051	1.000	1183483	10.5		7658	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 12-Dec-2017 13:39:43 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_018.d

Injection Date: 12-Dec-2017 09:46:49 Instrument ID: A8_N

Lims ID: LCS 320-199025/2-A

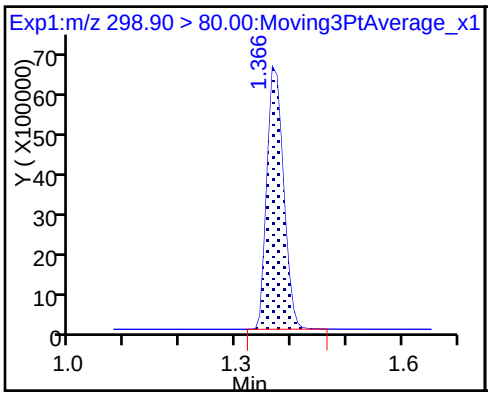
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 15

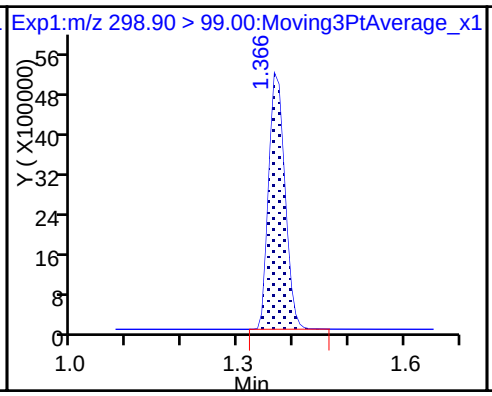
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

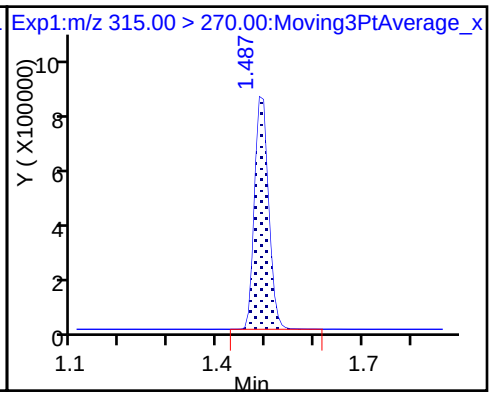
1 Perfluorobutanesulfonic acid



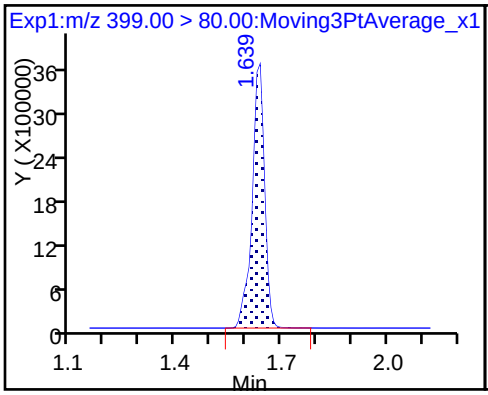
1 Perfluorobutanesulfonic acid



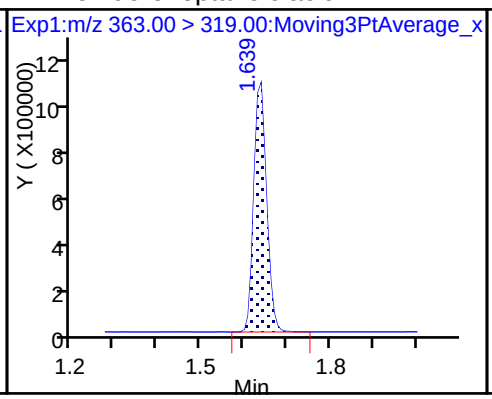
$ 2 13C2 PFHxA



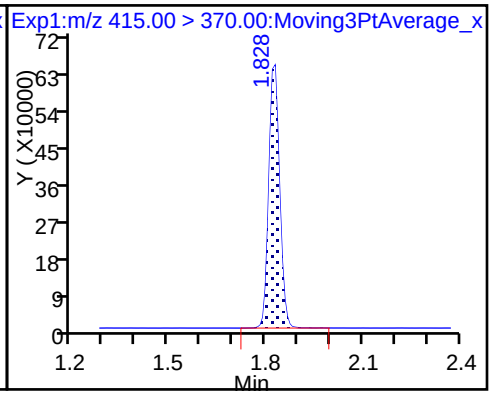
3 Perfluorohexanesulfonic acid



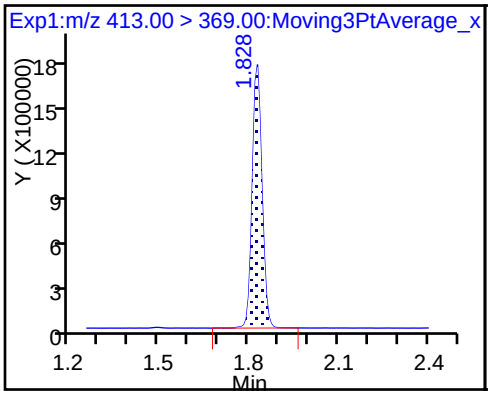
4 Perfluoroheptanoic acid



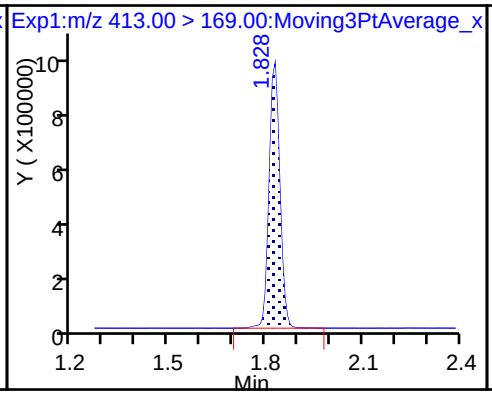
* 6 13C2-PFOA



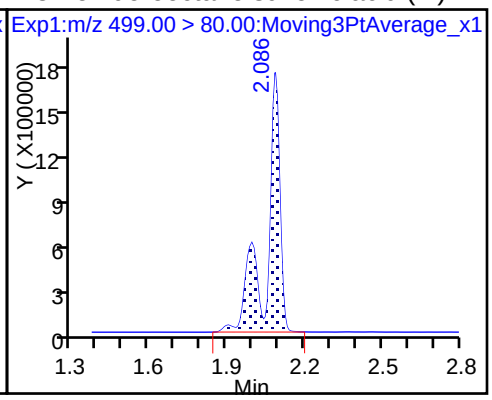
5 Perfluorooctanoic acid



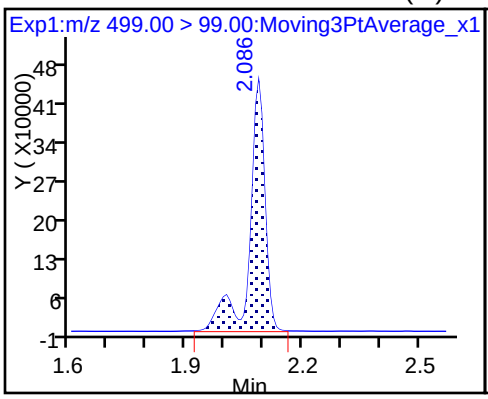
5 Perfluorooctanoic acid



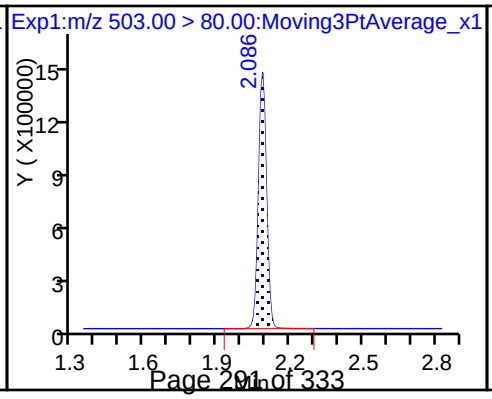
8 Perfluorooctane sulfonic acid (M)



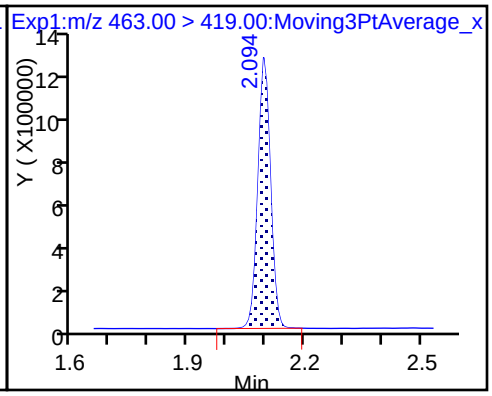
8 Perfluorooctane sulfonic acid (M)



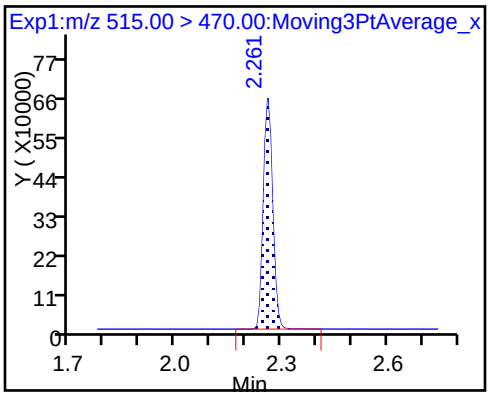
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.261
Y (X10000)
77
66
55
44
33
22
11
0
1.7
2.0
2.3
2.6
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_018.d
Lims ID: LCS 320-199025/2-A
Client ID:
Sample Type: LCS
Inject. Date: 12-Dec-2017 09:46:49 ALS Bottle#: 10 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-199025/2-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:24 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:09:23

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.4	104.25
$ 10 13C2 PFDA	10.0	10.5	104.89

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

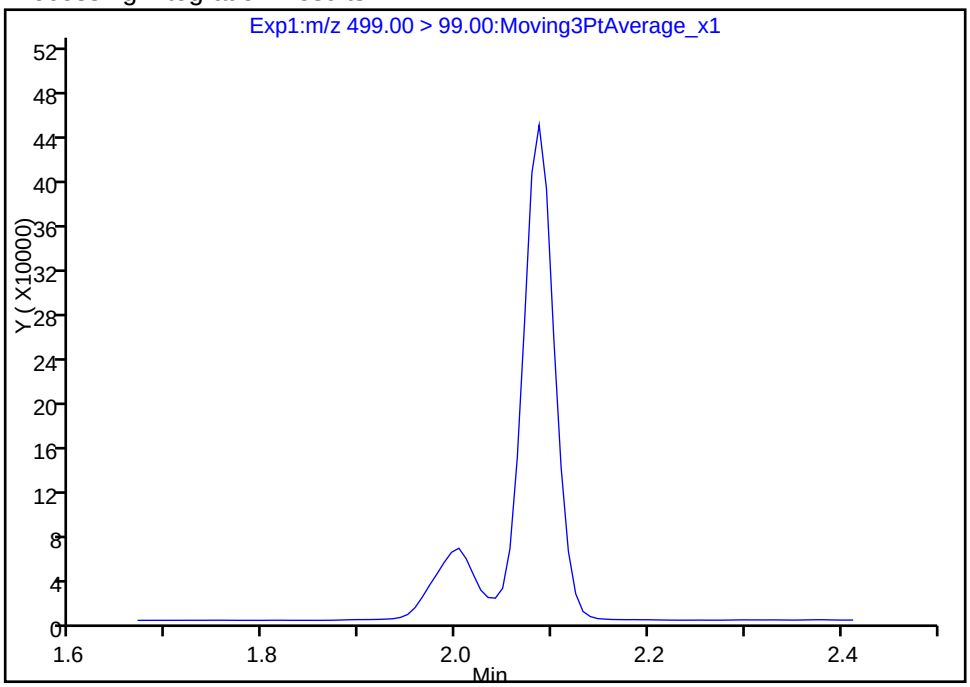
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_018.d				
Injection Date:	12-Dec-2017 09:46:49	Instrument ID:	A8_N		
Lims ID:	LCS 320-199025/2-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 2

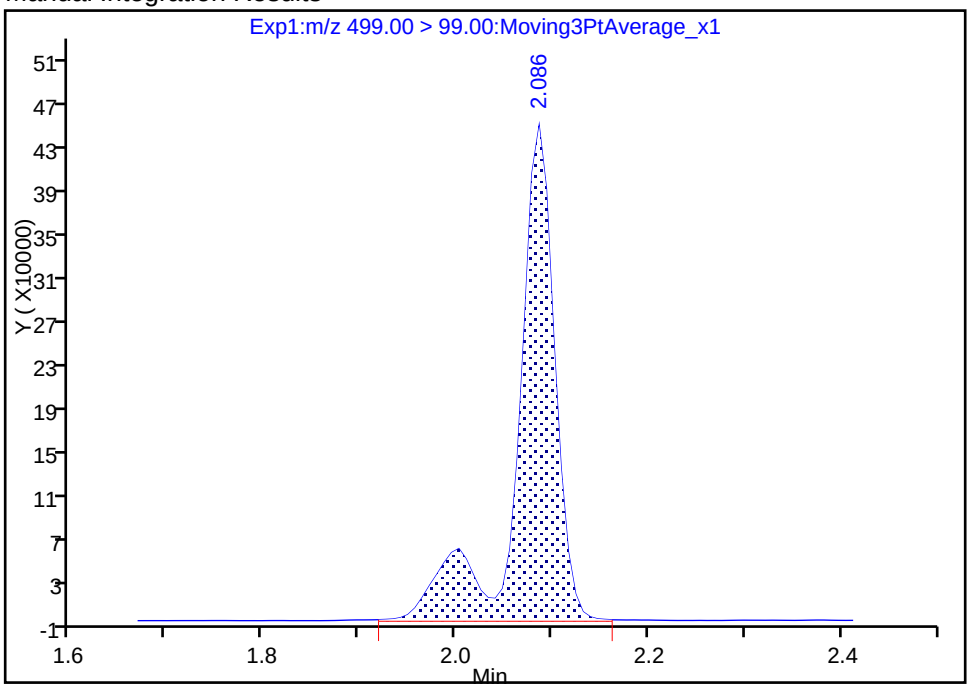
Processing Integration Results

Not Detected
Expected RT: 2.08



Manual Integration Results

RT: 2.09
Area: 1242123
Amount: 57.983463
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 12:08:58
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

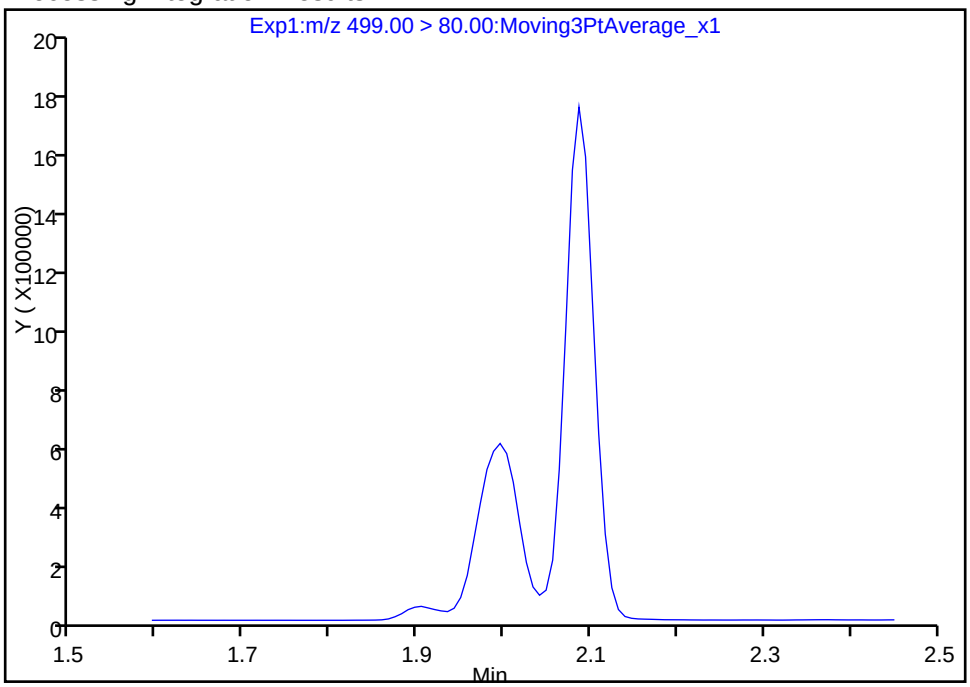
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_018.d				
Injection Date:	12-Dec-2017 09:46:49	Instrument ID:	A8_N		
Lims ID:	LCS 320-199025/2-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

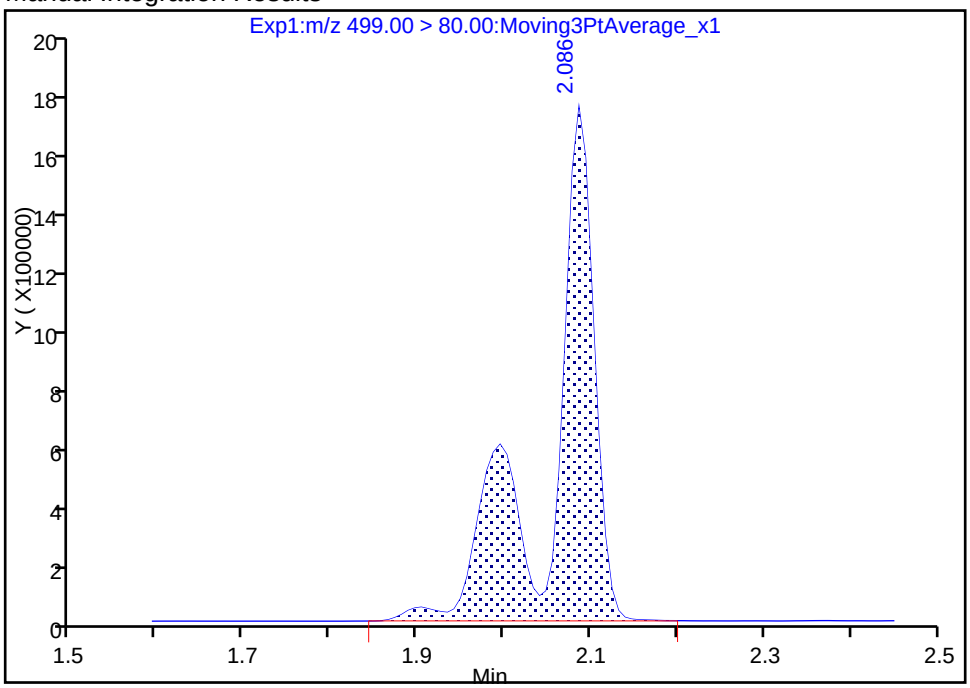
Processing Integration Results

Not Detected
Expected RT: 2.08



Manual Integration Results

RT: 2.09
Area: 6096937
Amount: 57.983463
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 12:09:03
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCSD 320-199025/3-A
Matrix: Water
Lab File ID: 2017.12.12_537A_019.d
Analysis Method: 537
Date Collected:
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 250.00(mL)
Date Analyzed: 12/12/2017 09:51
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199464
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	231	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	120		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	114		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	183		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	64.9		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	541		90	36	16

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_019.d
Lims ID: LCSD 320-199025/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 12-Dec-2017 09:51:30 ALS Bottle#: 11 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-199025/3-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:24 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:09:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.444	-0.078	1.000	14305689	135.4		14760	
298.90 > 99.00	1.366	1.444	-0.078	1.000	10980934		1.30(0.00-0.00)	13853	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.573	-0.086	1.000	1800530	11.1		9831	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.725	-0.094	1.000	8818569	45.7		15886	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.725	-0.094	1.000	2238144	16.2		735	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.913	-0.092		1472542	10.0		7589	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.828	1.914	-0.086	1.000	4093487	30.0		714	
413.00 > 169.00	1.821	1.914	-0.093	0.996	2273632		1.80(0.00-0.00)	6154	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.086	2.079	0.007	1.000	6265165	57.9		3846	M
499.00 > 99.00	2.086	2.079	0.007	1.000	1310041		4.78(0.00-0.00)	3261	M
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.151	-0.065		3307329	28.7		8197	
9 Perfluorononanoic acid									
463.00 > 419.00	2.094	2.158	-0.064	1.000	2780281	28.4		706	
$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.312	-0.051	1.000	1227421	10.9		8259	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 12-Dec-2017 13:39:44 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_019.d

Injection Date: 12-Dec-2017 09:51:30 Instrument ID: A8_N

Lims ID: LCSD 320-199025/3-A

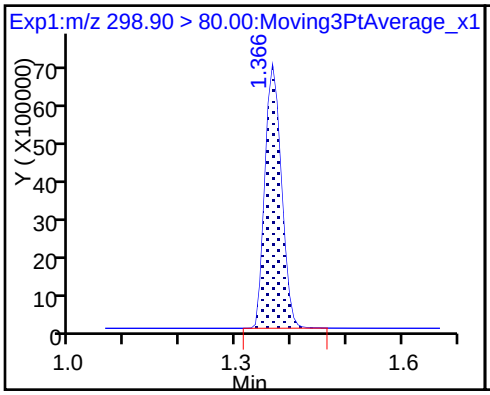
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 16

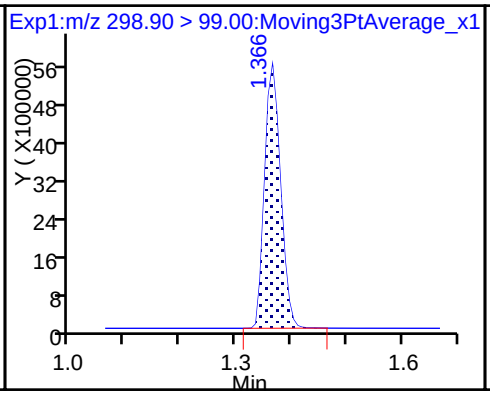
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

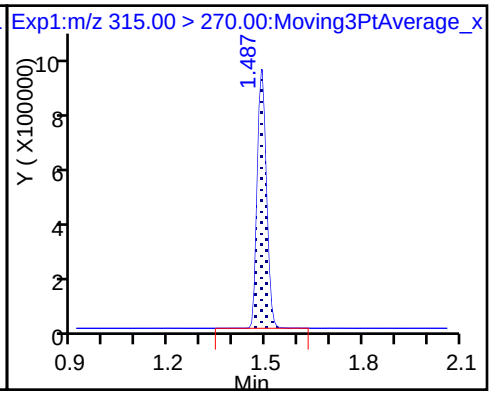
1 Perfluorobutanesulfonic acid



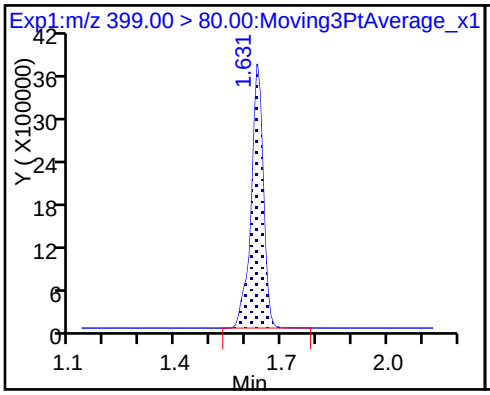
1 Perfluorobutanesulfonic acid



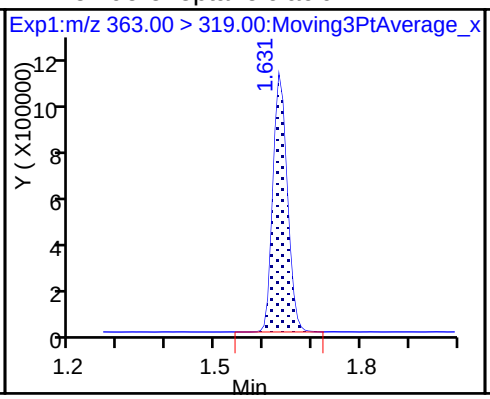
$ 2 13C2 PFHxA



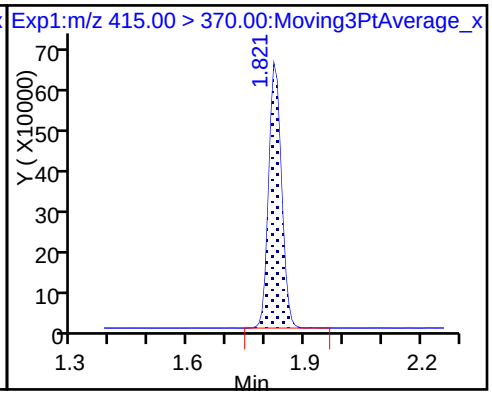
3 Perfluorohexanesulfonic acid



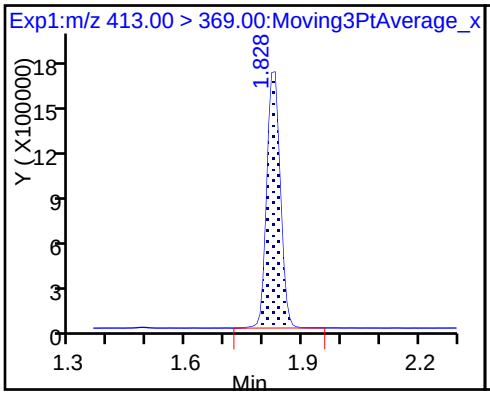
4 Perfluoroheptanoic acid



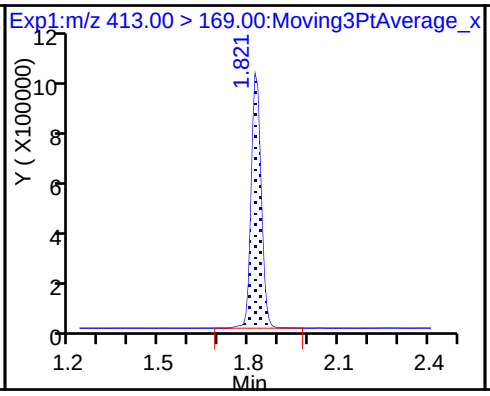
* 6 13C2-PFOA



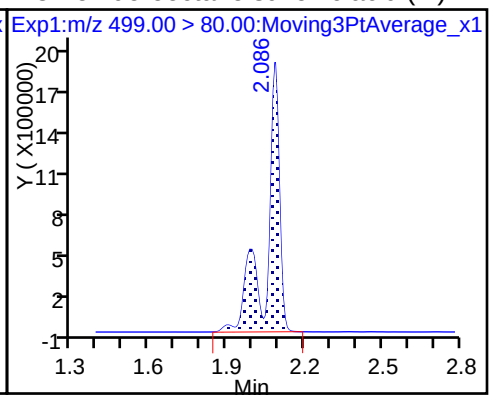
5 Perfluorooctanoic acid



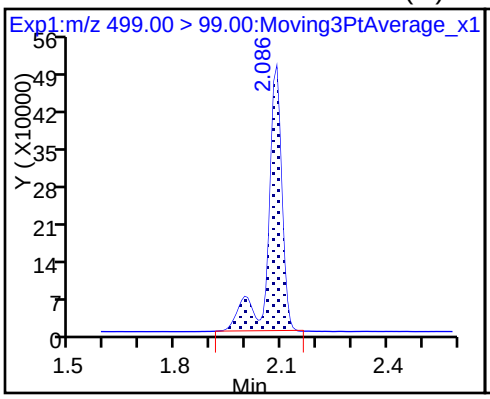
5 Perfluorooctanoic acid



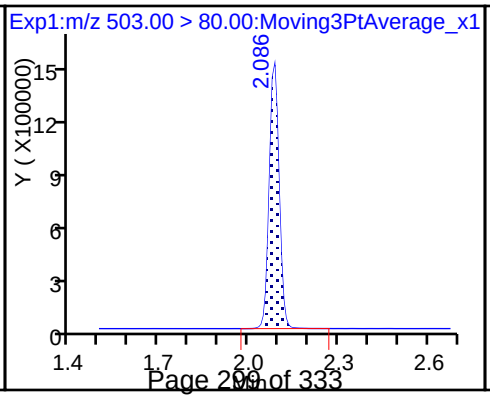
8 Perfluorooctane sulfonic acid (M)



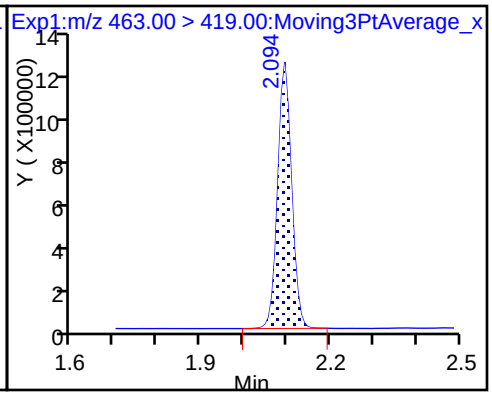
8 Perfluorooctane sulfonic acid (M)



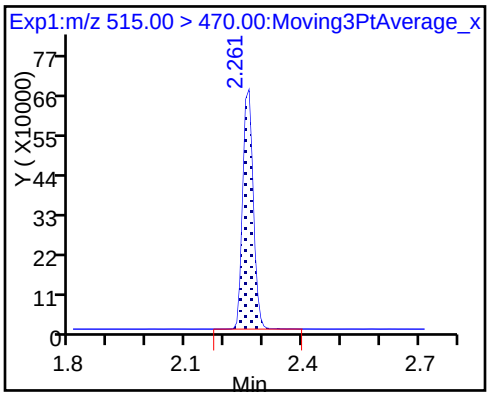
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.261
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_019.d
Lims ID: LCSD 320-199025/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 12-Dec-2017 09:51:30 ALS Bottle#: 11 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-199025/3-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 12-Dec-2017 13:39:24 Calib Date: 03-Nov-2017 14:01:24
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20171106-49975.b\2017.11.03_537XICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK049

First Level Reviewer: hannigana Date: 12-Dec-2017 12:09:52

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	11.1	111.13
$ 10 13C2 PFDA	10.0	10.9	108.93

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

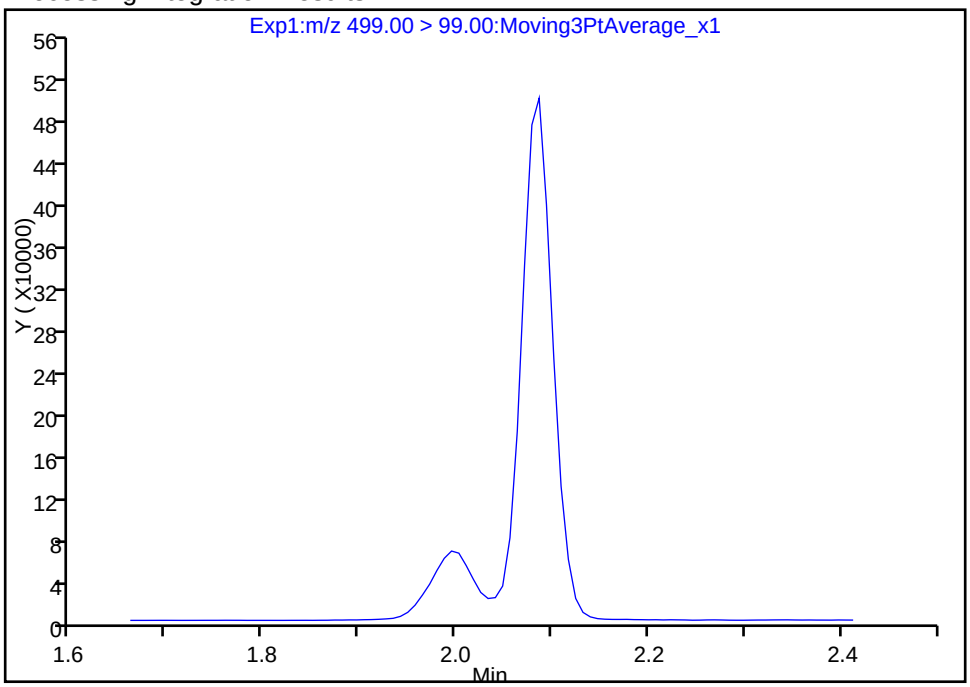
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_019.d				
Injection Date:	12-Dec-2017 09:51:30	Instrument ID:	A8_N		
Lims ID:	LCSD 320-199025/3-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 2

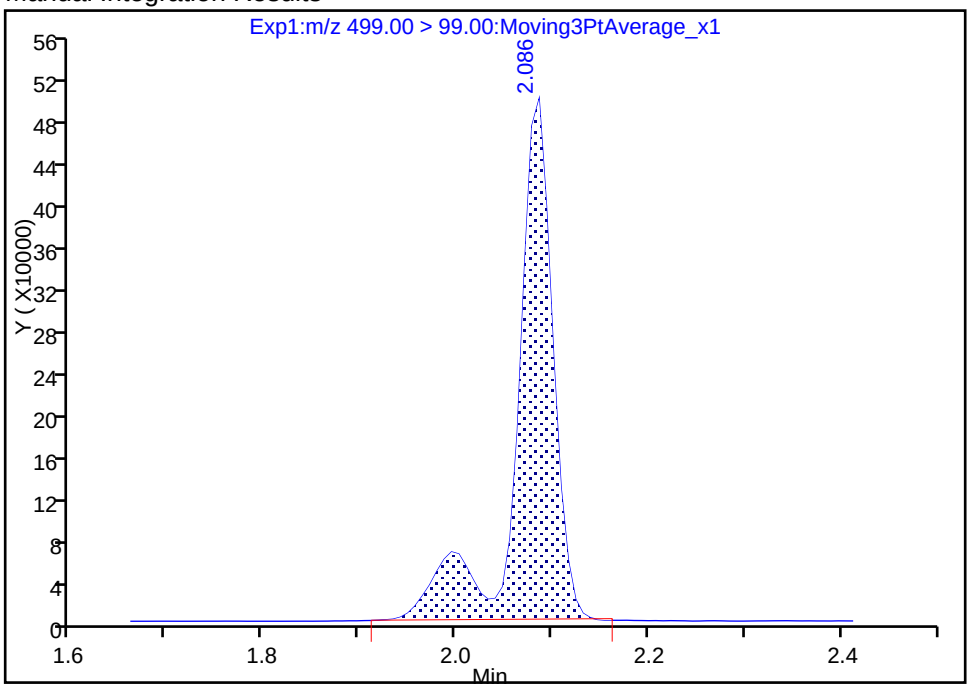
Processing Integration Results

Not Detected
Expected RT: 2.08



Manual Integration Results

RT: 2.09
Area: 1310041
Amount: 57.861861
Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 12:09:37
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b\2017.12.12_537A_019.d				
Injection Date:	12-Dec-2017 09:51:30	Instrument ID:	A8_N		
Lims ID:	LCSD 320-199025/3-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

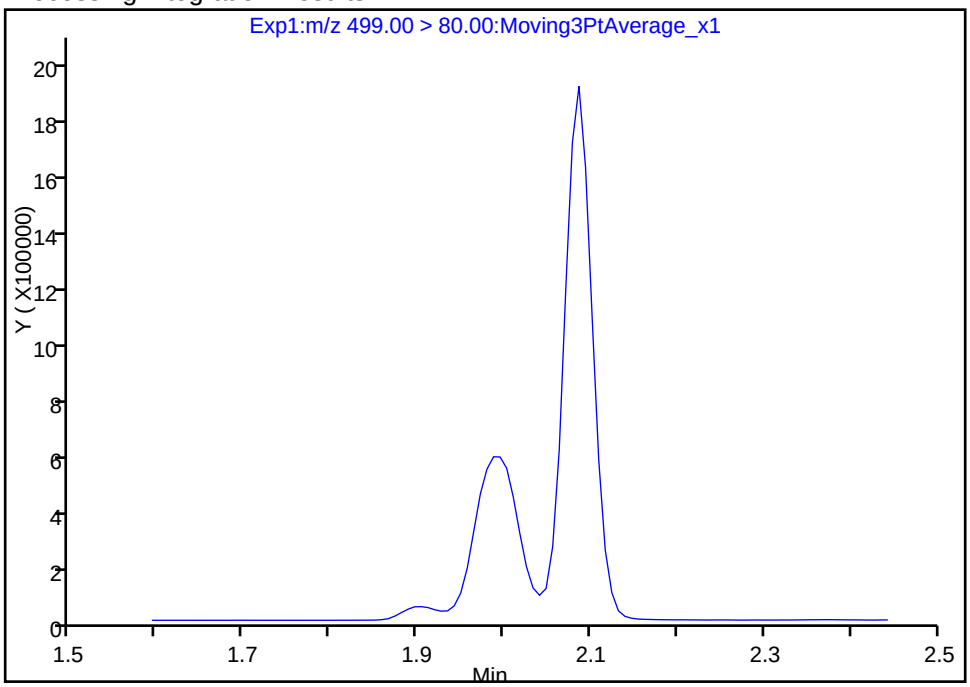
8 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

Processing Integration Results

Not Detected

Expected RT: 2.08



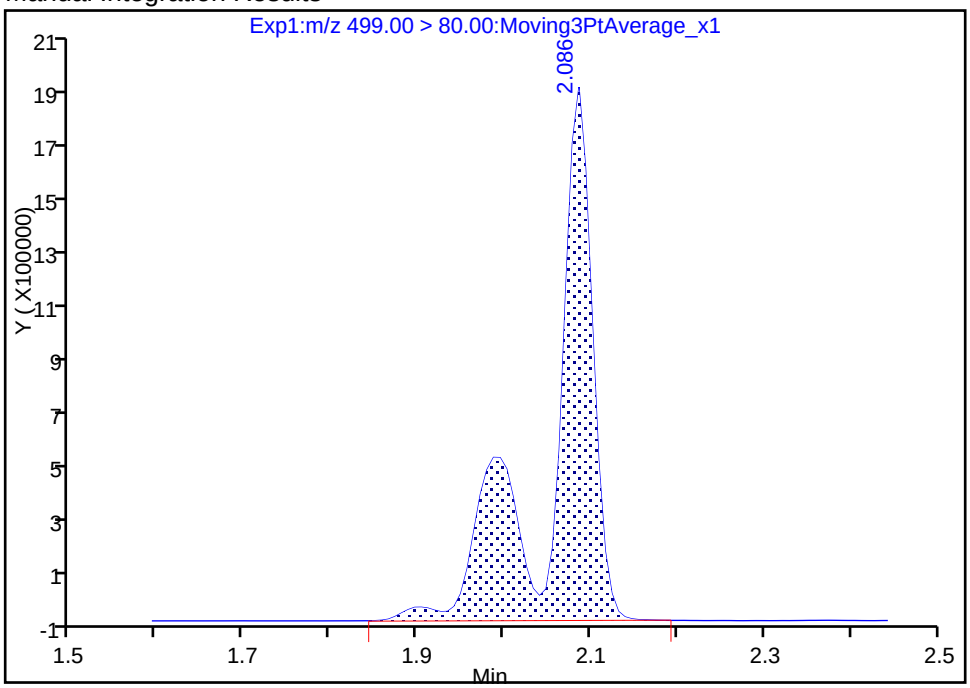
Manual Integration Results

RT: 2.09

Area: 6265165

Amount: 57.861861

Amount Units: ng/ml



Reviewer: hannigana, 12-Dec-2017 12:09:41

Audit Action: Manually Integrated Audit Reason: Assign Peak

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Instrument ID: A8_N Start Date: 11/03/2017 13:37

Analysis Batch Number: 192908 End Date: 11/03/2017 14:24

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-192908/4		11/03/2017 13:37	1	2017.11.03_537X ICAL 004.d	GeminiC18 3x100 3(mm)
IC 320-192908/5		11/03/2017 13:42	1	2017.11.03_537X ICAL 005.d	GeminiC18 3x100 3(mm)
IC 320-192908/6		11/03/2017 13:47	1	2017.11.03_537X ICAL 006.d	GeminiC18 3x100 3(mm)
IC 320-192908/7 ICISAV		11/03/2017 13:52	1	2017.11.03_537X ICAL 007.d	GeminiC18 3x100 3(mm)
IC 320-192908/8		11/03/2017 13:56	1	2017.11.03_537X ICAL 008.d	GeminiC18 3x100 3(mm)
IC 320-192908/9		11/03/2017 14:01	1	2017.11.03_537X ICAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		11/03/2017 14:06	1		GeminiC18 3x100 3(mm)
CCVL 320-192908/11		11/03/2017 14:10	1	2017.11.03_537X ICAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		11/03/2017 14:15	1		GeminiC18 3x100 3(mm)
ICV 320-192908/13		11/03/2017 14:20	1	2017.11.03_537X ICAL 013.d	GeminiC18 3x100 3(mm)
ZZZZZ		11/03/2017 14:24	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Instrument ID: A8_N Start Date: 12/12/2017 08:41

Analysis Batch Number: 199462 End Date: 12/12/2017 09:32

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-199462/1		12/12/2017 08:41	1	2017.12.12_537A 004.d	GeminiC18 3x100 3(mm)
CCV 320-199462/2 CCVIS		12/12/2017 08:46	1		GeminiC18 3x100 3(mm)
CCV 320-199462/12 CCVIS		12/12/2017 09:32	1		GeminiC18 3x100 3(mm)

537

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Instrument ID: A8_N Start Date: 12/12/2017 09:32

Analysis Batch Number: 199464 End Date: 12/12/2017 10:28

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-199464/12 CCVIS		12/12/2017 09:32	1	2017.12.12_537A 015.d	GeminiC18 3x100 3(mm)
MB 320-199025/1-A		12/12/2017 09:42	1	2017.12.12_537A 017.d	GeminiC18 3x100 3(mm)
LCS 320-199025/2-A		12/12/2017 09:46	1	2017.12.12_537A 018.d	GeminiC18 3x100 3(mm)
LCSD 320-199025/3-A		12/12/2017 09:51	1	2017.12.12_537A 019.d	GeminiC18 3x100 3(mm)
320-33939-1		12/12/2017 09:56	1	2017.12.12_537A 020.d	GeminiC18 3x100 3(mm)
320-33939-2		12/12/2017 10:00	1	2017.12.12_537A 021.d	GeminiC18 3x100 3(mm)
320-33939-3		12/12/2017 10:05	1	2017.12.12_537A 022.d	GeminiC18 3x100 3(mm)
320-33939-4		12/12/2017 10:10	1	2017.12.12_537A 023.d	GeminiC18 3x100 3(mm)
320-33939-5		12/12/2017 10:14	1	2017.12.12_537A 024.d	GeminiC18 3x100 3(mm)
320-33939-6		12/12/2017 10:19	1	2017.12.12_537A 025.d	GeminiC18 3x100 3(mm)
320-33939-7		12/12/2017 10:24	1	2017.12.12_537A 026.d	GeminiC18 3x100 3(mm)
CCV 320-199464/24 CCVIS		12/12/2017 10:28	1	2017.12.12_537A 027.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Instrument ID: A8_N Start Date: 12/12/2017 10:28

Analysis Batch Number: 199466 End Date: 12/12/2017 11:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-199466/24 CCVIS		12/12/2017 10:28	1	2017.12.12_537A 027.d	GeminiC18 3x100 3(mm)
320-33939-8		12/12/2017 10:38	1	2017.12.12_537A 029.d	GeminiC18 3x100 3(mm)
320-33939-9		12/12/2017 10:42	1	2017.12.12_537A 030.d	GeminiC18 3x100 3(mm)
320-33939-10		12/12/2017 10:47	1	2017.12.12_537A 031.d	GeminiC18 3x100 3(mm)
320-33939-11		12/12/2017 10:52	1	2017.12.12_537A 032.d	GeminiC18 3x100 3(mm)
320-33939-12		12/12/2017 10:56	1	2017.12.12_537A 033.d	GeminiC18 3x100 3(mm)
320-33939-13		12/12/2017 11:01	1	2017.12.12_537A 034.d	GeminiC18 3x100 3(mm)
320-33939-14		12/12/2017 11:06	1	2017.12.12_537A 035.d	GeminiC18 3x100 3(mm)
CCV 320-199466/33 CCVIS		12/12/2017 11:10	1	2017.12.12_537A 036.d	GeminiC18 3x100 3(mm)

537

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Batch Number: 199025 Batch Start Date: 12/08/17 11:56 Batch Analyst: Kolstad, Kate M

Batch Method: 537 Batch End Date: 12/11/17 17:16

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-HSP 00023
MB 320-199025/1		537, 537				250.00 mL	1.00 mL	7 SU	
LCS 320-199025/2		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
LCSD 320-199025/3		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
320-33939-A-1	WGNA-120517-RW-0617	537, 537	T	274.39 g	27.30 g	247.1 mL	1.00 mL	7 SU	
320-33939-A-2	WGNA-120517-FRB-0617	537, 537	T	273.25 g	27.29 g	246 mL	1.00 mL	7 SU	
320-33939-A-3	WGNA-120517-RW-4820	537, 537	T	270.18 g	27.53 g	242.7 mL	1.00 mL	7 SU	
320-33939-A-4	WGNA-120517-FRB-4820	537, 537	T	276.83 g	27.01 g	249.8 mL	1.00 mL	7 SU	
320-33939-A-5	NAWC-120517-RW-285	537, 537	T	275.91 g	27.09 g	248.8 mL	1.00 mL	7 SU	
320-33939-A-6	NAWC-120517-FRB-285	537, 537	T	273.30 g	27.25 g	246.1 mL	1.00 mL	7 SU	
320-33939-A-7	NAWC-120517-RW-135	537, 537	T	274.49 g	28.03 g	246.5 mL	1.00 mL	7 SU	
320-33939-A-8	NAWC-120517-FRB-135	537, 537	T	279.76 g	27.61 g	252.2 mL	1.00 mL	7 SU	
320-33939-A-9	NAWC-120517-RW-356	537, 537	T	274.97 g	27.47 g	247.5 mL	1.00 mL	7 SU	
320-33939-A-10	NAWC-120517-FRB-356	537, 537	T	273.84 g	27.52 g	246.3 mL	1.00 mL	7 SU	
320-33939-A-11	NAWC-120517-RW-357	537, 537	T	272.37 g	27.20 g	245.2 mL	1.00 mL	7 SU	
320-33939-A-12	NAWC-120517-FRB-357	537, 537	T	276.64 g	27.37 g	249.3 mL	1.00 mL	7 SU	
320-33939-A-13	WGNA-120517-RW-0263	537, 537	T	279.15 g	27.93 g	251.2 mL	1.00 mL	6 SU	
320-33939-A-14	WGNA-120517-FRB-0263	537, 537	T	275.81 g	27.37 g	248.4 mL	1.00 mL	7 SU	

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00053	LC537-SU 00056	AnalysisComment			
MB 320-199025/1		537, 537		100 uL	100 uL	Cl ND			
LCS 320-199025/2		537, 537		100 uL	100 uL	Cl ND			
LCSD 320-199025/3		537, 537		100 uL	100 uL	Cl 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.: 320-33939-1

SDG No.:

Batch Number: 199025 Batch Start Date: 12/08/17 11:56 Batch Analyst: Kolstad, Kate M

Batch Method: 537 Batch End Date: 12/11/17 17:16

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00053	LC537-SU 00056	AnalysisComment			
320-33939-A-1	WGNA-120517-RW-0617	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-2	WGNA-120517-FRB-0617	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-3	WGNA-120517-RW-4820	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-4	WGNA-120517-FRB-4820	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-5	NAWC-120517-RW-285	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-6	NAWC-120517-FRB-285	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-7	NAWC-120517-RW-135	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-8	NAWC-120517-FRB-135	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-9	NAWC-120517-RW-356	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-10	NAWC-120517-FRB-356	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-11	NAWC-120517-RW-357	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-12	NAWC-120517-FRB-357	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-13	WGNA-120517-RW-0263	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-14	WGNA-120517-FRB-0263	537, 537	T	100 uL	100 uL	Cl 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.: 320-33939-1

SDG No.:

Batch Number: 199025 Batch Start Date: 12/08/17 11:56 Batch Analyst: Kolstad, Kate M

Batch Method: 537 Batch End Date: 12/11/17 17:16

Batch Notes	
Analyst ID - Aliquot Step	VPM
Analyst ID - Concentration	CCB/KMK
Analyst ID - Final Volume Step	KMK
Internal Standard ID#	1099353
Manifold ID	3,4
Methanol ID	1095362
pH Indicator ID	4390-01 (Lot 2517)
Pipette ID	M16387D
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	KMK
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	KMK
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	KMK
SPE Cartridge ID	6357081-11
Trizma ID	SLBR4303V
Reagent Water ID	12-4-17

Basis	Basis Description
T	Total/NA

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

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 CCV/Data Review Checklist

Job No: 33932, 33939 Instrument ID & Date: A8 12/12/17 ICAL Batch: 192909, 192908
Extraction Batch: 199024, 199019 Worklist #: 61632 TALS Batch: 199461, 199464, 199466, 199462

Review Items	Level 1 Yes	Level 1 No	Level 1 N/A	Level 2
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? 0 Dilutions due to non-targets? 0	✓			✓
5. All target compounds in MB < 1/3 RL ? **(Requires NCM if "no.")**	✓			✓
6. Are target constituents in LCS/LCSD within method control limits?	✓			✓
7. Internal Standard areas in control for all samples and QC reported? ±50% from the average area of the ICAL and 70-140% of the most recent CCV	✓			✓
8. Do results (e.g., dilutions/trip blanks) make sense?	✓			✓
9. Are MS/MSD recoveries and RPDs within method control limits?	✓			✓
10. Are all QC samples properly linked in TALS?	✓			✓
11. All manual integrations appropriate and completely documented?	✓			✓
12. Are nonconformances documented as NCMs?	✓			✓
13. Are all Chrom graphics uploaded?	✓			✓

1st Level Reviewer / Date: ABH 12/12/2017 CBW 12/13/17 2nd Level Reviewer / Date: MKW 12/15/2017

NCM # and Comments:

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 ICAL Checklist

A8

Instrument ID & Date: 11-3-17 Worklist#: 49975

ICAL Batch: 192908, 192909 Calibration ID number: 36012, 36013

Review Items	Level 1 Yes	Level 1 No	Level 1 N/A	Level 2
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): Average Linear (1/x²)Linear Quadratic (6 points minimum)				
4. Meets fit criteria? Intercept ≤ ½ RL RSD ≤ 30% for Average $R^2 \geq 0.990$ for Linear $R^2 \geq 0.990$ 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 (2nd source) ± 30% of true value?	✓			✓
11. Is ICV (2nd 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 11-6-17 2nd Level Reviewer / Date: MWay 11/6/2017

NCM # and Comments:

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 12DEC2017_537A Worklist Number: 51632
Instrument Name: A8_N Chrom Method: 537_A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b
QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 CS ICAL Raw Batch: 199461	LC 537 ICAL Raw Batch: 199462
# 1 CCVL	# 1 CCVL	# 1 CCVL
# 2 CCV L3	# 2 CCV L3	# 2 CCV L3
# 3 RB	# 3 RB	# 3 RB
# 4 MB 320-199024/1-A	# 4 MB 320-199024/1-A	
# 5 LCS 320-199024/2-A	# 5 LCS 320-199024/2-A	
# 6 LCSD 320-199024/3-A	# 6 LCSD 320-199024/3-A	
# 7 320-33932-A-1-A	# 7 320-33932-A-1-A	
# 8 320-33932-A-2-A	# 8 320-33932-A-2-A	
# 9 320-33932-A-2-B MS	# 9 320-33932-A-2-B MS	
#10 320-33932-A-2-C MSD	#10 320-33932-A-2-C MSD	
#11 320-33932-A-3-A	#11 320-33932-A-3-A	
#12 CCV L5	#12 CCV L5	#12 CCV L5

QC Batch: 2	LC 537 CS ICAL Raw Batch: 199463	LC 537 ICAL Raw Batch: 199464
#12 CCV L5	#12 CCV L5	#12 CCV L5
#13 RB	#13 RB	#13 RB
#14 MB 320-199025/1-A		#14 MB 320-199025/1-A
#15 LCS 320-199025/2-A		#15 LCS 320-199025/2-A
#16 LCSD 320-199025/3-A		#16 LCSD 320-199025/3-A
#17 320-33939-A-1-A		#17 320-33939-A-1-A
#18 320-33939-A-2-A		#18 320-33939-A-2-A
#19 320-33939-A-3-A		#19 320-33939-A-3-A
#20 320-33939-A-4-A		#20 320-33939-A-4-A
#21 320-33939-A-5-A		#21 320-33939-A-5-A
#22 320-33939-A-6-A		#22 320-33939-A-6-A
#23 320-33939-A-7-A		#23 320-33939-A-7-A
#24 CCV L3	#24 CCV L3	#24 CCV L3

QC Batch: 3	LC 537 CS ICAL Raw Batch: 199465	LC 537 ICAL Raw Batch: 199466
#24 CCV L3	#24 CCV L3	#24 CCV L3
#25 RB	#25 RB	#25 RB
#26 320-33939-A-8-A		#26 320-33939-A-8-A
#27 320-33939-A-9-A		#27 320-33939-A-9-A
#28 320-33939-A-10-A		#28 320-33939-A-10-A
#29 320-33939-A-11-A		#29 320-33939-A-11-A
#30 320-33939-A-12-A		#30 320-33939-A-12-A
#31 320-33939-A-13-A		#31 320-33939-A-13-A
#32 320-33939-A-14-A		#32 320-33939-A-14-A
#33 CCV L5	#33 CCV L5	#33 CCV L5
#34 RB	#34 RB	#34 RB

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 12DEC2017_537A Worklist Num: 51632
Instrument: A8_N Method: 537_A8_N
Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b
Anaylysis 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
CCVL	320-0051632-001	CCVL	12-Dec-2017 08:41:23	2017.12.12_537A_004.d	2	1.0		sv
CCV L3	320-0051632-002	CCVIS	12-Dec-2017 08:46:03	2017.12.12_537A_005.d	3	1.0		sv
RB	320-0051632-003	RB	12-Dec-2017 08:50:44	2017.12.12_537A_006.d	8	1.0		sv
MB 320-199024/1-A	320-0051632-004	MB	12-Dec-2017 08:55:23	2017.12.12_537A_007.d	1	1.0		sv
LCS 320-199024/2-A	320-0051632-005	LCS	12-Dec-2017 09:00:04	2017.12.12_537A_008.d	2	1.0		sv
LCSD 320-199024/3-A	320-0051632-006	LCSD	12-Dec-2017 09:04:45	2017.12.12_537A_009.d	3	1.0		sv
320-33932-A-1-A	320-0051632-007	Client	12-Dec-2017 09:09:25	2017.12.12_537A_010.d	4	1.0	GC4Q17-900TurkeyHollowF	sv
320-33932-A-2-A	320-0051632-008	Client	12-Dec-2017 09:14:06	2017.12.12_537A_011.d	5	1.0	GC4Q17-120SchoolHouseF	sv
320-33932-A-2-B MS	320-0051632-009	MS	12-Dec-2017 09:18:46	2017.12.12_537A_012.d	6	1.0	GC4Q17-120SchoolHouseF	sv
320-33932-A-2-C MSD	320-0051632-010	MSD	12-Dec-2017 09:23:26	2017.12.12_537A_013.d	7	1.0	GC4Q17-120SchoolHouseF	sv
320-33932-A-3-A	320-0051632-011	Client	12-Dec-2017 09:28:07	2017.12.12_537A_014.d	8	1.0	FB3-4Q17-112717	sv
CCV L5	320-0051632-012	CCVIS	12-Dec-2017 09:32:47	2017.12.12_537A_015.d	5	1.0		sv
RB	320-0051632-013	RB	12-Dec-2017 09:37:28	2017.12.12_537A_016.d	8	1.0		sv
MB 320-199025/1-A	320-0051632-014	MB	12-Dec-2017 09:42:07	2017.12.12_537A_017.d	9	1.0		sv
LCS 320-199025/2-A	320-0051632-015	LCS	12-Dec-2017 09:46:49	2017.12.12_537A_018.d	10	1.0		sv
LCSD 320-199025/3-A	320-0051632-016	LCSD	12-Dec-2017 09:51:30	2017.12.12_537A_019.d	11	1.0		sv
320-33939-A-1-A	320-0051632-017	Client	12-Dec-2017 09:56:10	2017.12.12_537A_020.d	12	1.0	WGNA-120517-RW-0617	sv
320-33939-A-2-A	320-0051632-018	Client	12-Dec-2017 10:00:51	2017.12.12_537A_021.d	13	1.0	WGNA-120517-FRB-0617	sv
320-33939-A-3-A	320-0051632-019	Client	12-Dec-2017 10:05:31	2017.12.12_537A_022.d	14	1.0	WGNA-120517-RW-4820	sv
320-33939-A-4-A	320-0051632-020	Client	12-Dec-2017 10:10:11	2017.12.12_537A_023.d	15	1.0	WGNA-120517-FRB-4820	sv
320-33939-A-5-A	320-0051632-021	Client	12-Dec-2017 10:14:53	2017.12.12_537A_024.d	16	1.0	NAWC-120517-RW-285	sv
320-33939-A-6-A	320-0051632-022	Client	12-Dec-2017 10:19:34	2017.12.12_537A_025.d	17	1.0	NAWC-120517-FRB-285	sv
320-33939-A-7-A	320-0051632-023	Client	12-Dec-2017 10:24:13	2017.12.12_537A_026.d	18	1.0	NAWC-120517-RW-135	sv
CCV L3	320-0051632-024	CCVIS	12-Dec-2017 10:28:52	2017.12.12_537A_027.d	3	1.0		sv
RB	320-0051632-025	RB	12-Dec-2017 10:33:32	2017.12.12_537A_028.d	8	1.0		sv

Worklist Run Log: 12DEC2017_537A

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
320-33939-A-8-A	320-0051632-026	Client	12-Dec-2017 10:38:11	2017.12.12_537A_029.d	19	1.0	NAWC-120517-FRB-135	sv
320-33939-A-9-A	320-0051632-027	Client	12-Dec-2017 10:42:51	2017.12.12_537A_030.d	20	1.0	NAWC-120517-RW-356	sv
320-33939-A-10-A	320-0051632-028	Client	12-Dec-2017 10:47:32	2017.12.12_537A_031.d	21	1.0	NAWC-120517-FRB-356	sv
320-33939-A-11-A	320-0051632-029	Client	12-Dec-2017 10:52:14	2017.12.12_537A_032.d	22	1.0	NAWC-120517-RW-357	sv
320-33939-A-12-A	320-0051632-030	Client	12-Dec-2017 10:56:54	2017.12.12_537A_033.d	23	1.0	NAWC-120517-FRB-357	sv
320-33939-A-13-A	320-0051632-031	Client	12-Dec-2017 11:01:36	2017.12.12_537A_034.d	24	1.0	WGNA-120517-RW-0263	sv
320-33939-A-14-A	320-0051632-032	Client	12-Dec-2017 11:06:16	2017.12.12_537A_035.d	25	1.0	WGNA-120517-FRB-0263	sv
CCV L5	320-0051632-033	CCVIS	12-Dec-2017 11:10:56	2017.12.12_537A_036.d	5	1.0		sv
RB	320-0051632-034	RB	12-Dec-2017 11:15:37	2017.12.12_537A_037.d	8	1.0		sv

A8 12/12/17

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199024 | Analyst: Kolstad, Kate M | Batch Open: 12/8/2017 11:51:00AM

Method Code: 320-537_Prep-320 | Batch End: 12/11/2017 4:55:00PM

Extraction of Perfluorinated Alkyl Acids

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	MB~320-199024/1 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	CI ND	MB 320-199024/1-A
				1.00 mL								
2	LCS~320-199024/2 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	CI ND	LCS 320-199024/2-A
				1.00 mL								
3	LCSD~320-199024/3 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	CI ND	LCSD 320-199024/3-A
				1.00 mL								
4	320-33932-A-1 (537_DuPont)	N/A (320-33932-1)	274.57 g	247.3 mL	7			12/12/17	8_Days	4	CI ND	320-33932-A-1-A
			27.31 g	1.00 mL								
5	320-33932-A-2 (537_DuPont)	N/A (320-33932-1)	273.32 g	245.7 mL	7			12/12/17	8_Days	4	CI ND	320-33932-A-2-A
			27.61 g	1.00 mL								
6	320-33932-A-2~MS (537_DuPont)	N/A (320-33932-1)	272.85 g	245.2 mL	7			12/12/17	8_Days	4	CI ND	320-33932-A-2-B MS
			27.70 g	1.00 mL								
7	320-33932-A-2~MSD (537_DuPont)	N/A (320-33932-1)	275.08 g	247.8 mL	7			12/12/17	8_Days	4	CI ND	320-33932-A-2-C MSD
			27.27 g	1.00 mL								
8	320-33932-A-3 (537_DuPont)	N/A (320-33932-1)	278.48 g	251.4 mL	7			12/12/17	8_Days	4	CI ND	320-33932-A-3-A
			27.13 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199024 | Analyst: Kolstad, Kate M | Batch Open: 12/8/2017 11:51:00AM

Method Code: 320-537_Prep-320 | Batch End: 12/11/2017 4:55:00PM

Batch Notes

Manifold ID	10
pH Indicator ID	4390-01 (Lot 2517)
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-11
Methanol ID	1095362
Reagent Water ID	12-4-17
Internal Standard ID#	1099353
Pipette ID	M16387D
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	KMK
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	KMK
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	KMK
Analyst ID - Concentration	CCB/KMK
Analyst ID - Aliquot Step	VPM
Analyst ID - Final Volume Step	KMK
Batch Comment	N/A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199024 | Analyst: Kolstad, Kate M | Batch Open: 12/8/2017 11:51:00AM

Method Code: 320-537_Prep-320 | Batch End:

Batch Notes

Manifold ID	10
pH Indicator ID	4390-01 (Lot 2517)
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-11
Methanol ID	1095362
Reagent Water ID	12-4-17
Internal Standard ID#	1099353
Pipette ID	M16387D
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	KMK
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	KMK
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	KMK
Analyst ID - Concentration	LLB/KMK
Analyst ID - Aliquot Step	VPM
Analyst ID - Final Volume Step	KMK
Batch Comment	N/A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199024 | Analyst: Kolstad, Kate M | Batch Open: 12/8/2017 11:51:00AM

Method Code: 320-537_Prep-320 | Batch End:

Comments

320-33932-A-1	Method Comments:	DuPont QAS_LCSD req
320-33932-A-2	Method Comments:	DuPont QAS_LCSD req
320-33932-A-2~MS	Method Comments:	DuPont QAS_LCSD req
320-33932-A-2~MSD	Method Comments:	DuPont QAS_LCSD req
320-33932-A-3	Method Comments:	DuPont QAS_LCSD req

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199024 | Analyst: Kolstad, Kate M | Batch Open: 12/8/2017 11:51:00AM

Method Code: 320-537_Prep-320 | Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-199024/1	LC537-SU_00056	100 uL	1.00 mL	HJA 12-8-17	KMK 12-8-17
LCS 320-199024/2	LC537-MSP_00026	100 uL	1.00 mL		
LCS 320-199024/2	LC537-SU_00056	100 uL	1.00 mL		
LCSD 320-199024/3	LC537-MSP_00026	100 uL	1.00 mL		
LCSD 320-199024/3	LC537-SU_00056	100 uL	1.00 mL		
320-33932-A-1	LC537-SU_00056	100 uL	1.00 mL		
320-33932-A-2	LC537-SU_00056	100 uL	1.00 mL		
320-33932-A-2 MS	LC537-MSP_00026	100 uL	1.00 mL		
320-33932-A-2 MS	LC537-SU_00056	100 uL	1.00 mL		
320-33932-A-2 MSD	LC537-MSP_00026	100 uL	1.00 mL		
320-33932-A-2 MSD	LC537-SU_00056	100 uL	1.00 mL		
320-33932-A-3	LC537-SU_00056	100 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199024 Analyst: Kolstad, Kate M Batch Open: 12/8/2017 11:51:00AM

Method Code: 320-537_Prep-320 Batch End:

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s) 199024 Test 537 DuPont

Earliest Holding Time 12-11-17

Batch Information	1st Level Reviewer	2nd 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	**1st Level Reviewer**	**2nd Level Reviewer**
Samples identified to the correct method	✓	✓
Holding time violation NCM filed	NA	NA
MS/MSD or MS/DU NCM filed	NA	NA
NCM for any anomalies filed	NA	NA
All NCMs include method code, matrix, and prep batch	NA	NA
Method/sample/login/QAS checked and correct	✓	✓
Batch contains no more than 20 live samples	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd 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 Cl 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	**1st Level Reviewer**	**2nd 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: 12/11/17

2nd Level Reviewer: TWR Date: 12/11/17

Comments:

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199025 | Analyst: Kolstad, Kate M | Batch Open: 12/8/2017 11:56:00AM

Method Code: 320-537_Prep-320 | Batch End: 12/11/2017 5:16:00PM

Extraction of Perfluorinated Alkyl Acids

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	MB~320-199025/1 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	CI ND	MB 320-199025/1-A
				1.00 mL								
2	LCS~320-199025/2 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	CI ND	LCS 320-199025/2-A
				1.00 mL								
3	LCSD~320-199025/3 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	CI ND	LCSD 320-199025/3-A
				1.00 mL								
4	320-33939-A-1 (537_DOD5)	N/A (320-33939-1)	274.39 g	247.1 mL	7			12/10/17	16_Days	4	CI ND	320-33939-A-1-A
			27.30 g	1.00 mL								
5	320-33939-A-2 (537_DOD5)	N/A (320-33939-1)	273.25 g	246 mL	7			12/10/17	16_Days	4	CI ND	320-33939-A-2-A
			27.29 g	1.00 mL								
6	320-33939-A-3 (537_DOD5)	N/A (320-33939-1)	270.18 g	242.7 mL	7			12/10/17	16_Days	4	CI ND	320-33939-A-3-A
			27.53 g	1.00 mL								
7	320-33939-A-4 (537_DOD5)	N/A (320-33939-1)	276.83 g	249.8 mL	7			12/10/17	16_Days	4	CI ND	320-33939-A-4-A
			27.01 g	1.00 mL								
8	320-33939-A-5 (537_DOD5)	N/A (320-33939-1)	275.91 g	248.8 mL	7			12/10/17	16_Days	4	CI ND	320-33939-A-5-A
			27.09 g	1.00 mL								
9	320-33939-A-6 (537_DOD5)	N/A (320-33939-1)	273.30 g	246.1 mL	7			12/10/17	16_Days	4	CI ND	320-33939-A-6-A
			27.25 g	1.00 mL								
10	320-33939-A-7 (537_DOD5)	N/A (320-33939-1)	274.49 g	246.5 mL	7			12/10/17	16_Days	4	CI ND	320-33939-A-7-A
			28.03 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199025 | Analyst: Kolstad, Kate M | Batch Open: 12/8/2017 11:56:00AM

Method Code: 320-537_Prep-320 | Batch End: 12/11/2017 5:16:00PM

11	320-33939-A-8 (537_DOD5)	N/A (320-33939-1)	279.76 g	252.2 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-8-A
			27.61 g	1.00 mL								
12	320-33939-A-9 (537_DOD5)	N/A (320-33939-1)	274.97 g	247.5 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-9-A
			27.47 g	1.00 mL								
13	320-33939-A-10 (537_DOD5)	N/A (320-33939-1)	273.84 g	246.3 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-10-A
			27.52 g	1.00 mL								
14	320-33939-A-11 (537_DOD5)	N/A (320-33939-1)	272.37 g	245.2 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-11-A
			27.20 g	1.00 mL								
15	320-33939-A-12 (537_DOD5)	N/A (320-33939-1)	276.64 g	249.3 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-12-A
			27.37 g	1.00 mL								
16	320-33939-A-13 (537_DOD5)	N/A (320-33939-1)	279.15 g	251.2 mL	6			12/10/17	16_Days	4	Cl ND	320-33939-A-13-A
			27.93 g	1.00 mL								
17	320-33939-A-14 (537_DOD5)	N/A (320-33939-1)	275.81 g	248.4 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-14-A
			27.37 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199025 | Analyst: Kolstad, Kate M | Batch Open: 12/8/2017 11:56:00AM

Method Code: 320-537_Prep-320 | Batch End: 12/11/2017 5:16:00PM

Batch Notes

Manifold ID	3,4
pH Indicator ID	4390-01 (Lot 2517)
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-11
Methanol ID	1095362
Reagent Water ID	12-4-17
Internal Standard ID#	1099353
Pipette ID	M16387D
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	KMK
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	KMK
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	KMK
Analyst ID - Concentration	CCB/KMK
Analyst ID - Aliquot Step	VPM
Analyst ID - Final Volume Step	KMK
Batch Comment	N/A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199025 | Analyst: Kolstad, Kate M | Batch Open: 12/8/2017 11:56:00AM

Method Code: 320-537_Prep-320 | Batch End: 12/11/2017 5:16:00PM

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199025 | Analyst: Kolstad, Kate M | Batch Open: 12/8/2017 11:56:00AM

Method Code: 320-537_Prep-320 | Batch End:

Batch Notes

Manifold ID	3, 4
pH Indicator ID	4390-01 (Lot 2517)
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-11
Methanol ID	1095362
Reagent Water ID	12-4-17
Internal Standard ID#	1099353
Pipette ID	M16387D
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	KMK
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	KMK
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	KMK
Analyst ID - Concentration	CB/KMK
Analyst ID - Aliquot Step	VPM
Analyst ID - Final Volume Step	KMK
Batch Comment	N/A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199025 | Analyst: Kolstad, Kate M | Batch Open: 12/8/2017 11:56:00AM

Method Code: 320-537_Prep-320 | Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-199025/1	LC537-SU_00056	100 uL	1.00 mL	HJA 12-8-17	KMK 12-8-17
LCS 320-199025/2	LC537-HSP_00023	100 uL	1.00 mL		
LCS 320-199025/2	LC537-SU_00056	100 uL	1.00 mL		
LCSD 320-199025/3	LC537-HSP_00023	100 uL	1.00 mL		
LCSD 320-199025/3	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-1	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-2	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-3	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-4	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-5	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-6	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-7	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-8	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-9	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-10	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-11	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-12	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-13	LC537-SU_00056	100 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199025 | Analyst: Kolstad, Kate M | Batch Open: 12/8/2017 11:56:00AM

Method Code: 320-537_Prep-320 | Batch End:

320-33939-A-14	LC537-SU_00056	100 uL	1.00 mL	HJA 12-8-17	KMK 12-8-17

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s) 199025 Test 537 Prep

Earliest Holding Time 12-19-17

Batch Information	1st Level Reviewer	2nd 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	**1st Level Reviewer**	**2nd 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	✓	✓
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	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	✓ NA	~~NA~~ ✓ TW 12/11/17
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	**1st Level Reviewer**	**2nd 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: 12/11/17

2nd Level Reviewer: TW2 Date: 12/11/17

Comments:

Shipping and Receiving Documents

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

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

Regulatory Program: ☑ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Andy Frebowitz	Site Contact: Mary Kay Bond	Date: 12/5/2017	COC No:
TetraTech	Tel/Fax: 610.382.1170	Lab Contact: Dave Alltucker	Carrier: FedEx	1 of 1 COCs
234 Mall Boulevard Suite 260	**Analysis Turnaround Time**			Sampler: Mary Kay Bond
King of Prussia, PA 19406	☐ CALENDAR DAYS ☐ WORKING DAYS			**For Lab Use Only:**
610-382-1174	TAT if different from Below 21			Walk-in Client:
610-491-9688	☐ 2 weeks			Lab Sampling:
Project Name: WE04	☐ 1 week			
Site: WE04	☐ 2 days			Job / SDG No.:
P O # 1132358 (through EarthToxics)	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	EPA 537 UCMR3	Sample Specific Notes:
WGNA-120517-RW-0617	12/5/2017	08:10	G	DW	2	N	N	Y	
WGNA-120517-FRB-0617	12/5/2017	08:05	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-120517-RW-4820	12/5/2017	08:40	G	DW	2	N	N	Y	
WGNA-120517-FRB-4820	12/5/2017	08:35	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-120517-RW-285	12/5/2017	09:10	G	DW	2	N	N	Y	
NAWC-120517-FRB-285	12/5/2017	09:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-120517-RW-135	12/5/2017	10:40	G	DW	2	N	N	Y	
NAWC-120517-FRB-135	12/5/2017	10:35	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-120517-RW-356	12/5/2017	11:10	G	DW	2	N	N	Y	
NAWC-120517-FRB-356	12/5/2017	11:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-120517-RW-357	12/5/2017	13:10	G	DW	2	N	N	Y	
NAWC-120517-FRB-357	12/5/2017	13:05	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-120517-RW-0263	12/5/2017	16:40	G	DW	2	N	N	Y	
WGNA-120517-FRB-0263	12/5/2017	16:35	G	DW	2	N	N	Y	Field Reagent Blank

320-33939 Chain of Custody

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

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

Fed Ex Tracking: 7709 0932 5503

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 4.2 Corr'd: — | Therm ID No.: AK-3

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Tetra Tech	12/5/2017 18:00		TAWS	12/06/17 1045
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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

S:\WillowGrove PFOs Private Well\COCs TT\COC 20171205

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-33939-1

Login Number: 33939
List Number: 1
Creator: Aguayo, Alonso

List Source: TestAmerica Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= 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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

"WGNA-120517-RW-0617","537","RES","320-33939-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","29","ng/L","J M","6.9","DL","","TRG","","","40","LOQ","YES","-99","","247.1","1.00","16",""
"WGNA-120517-RW-0617","537","RES","320-33939-1","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","34","ng/L","","2.8","DL","","TRG","","","20","LOQ","YES","-99","","247.1","1.00","8.1",""
"WGNA-120517-RW-0617","537","RES","320-33939-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","15","ng/L","J","5.6","DL","","TRG","","","30","LOQ","YES","-99","","247.1","1.00","12",""
"WGNA-120517-RW-0617","537","RES","320-33939-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","59","ng/L","J","16","DL","","TRG","","","91","LOQ","YES","-99","","247.1","1.00","36",""
"WGNA-120517-RW-0617","537","RES","320-33939-1","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","11","ng/L","","1.9","DL","","TRG","","","10","LOQ","YES","-99","","247.1","1.00","4.0",""
"WGNA-120517-RW-0617","537","RES","320-33939-1","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.1","DL","","TRG","","","24","LOQ","YES","-99","","247.1","1.00","20",""
"WGNA-120517-RW-0617","537","RES","320-33939-1","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","-99","DL","","SURR","96","","-99","LOQ","YES","40.5","","247.1","1.00","0",""
"WGNA-120517-RW-0617","537","RES","320-33939-1","TALSAC","STL00996","13C2
PFDA","43","ng/L","","-99","DL","","SURR","107","","-99","LOQ","YES","40.5","","247.1","1.00","0",""
"NAWC-120517-FRB-356","537","RES","320-33939-10","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.9","DL","","TRG","","","41","LOQ","YES","-99","","246.3","1.00","16",""
"NAWC-120517-FRB-356","537","RES","320-33939-10","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.1","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","246.3","1.00","8.1",""
"NAWC-120517-FRB-356","537","RES","320-33939-10","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.6","DL","","TRG","","","30","LOQ","YES","-99","","246.3","1.00","12",""
"NAWC-120517-FRB-356","537","RES","320-33939-10","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","37","ng/L","U","16","DL","","TRG","","","91","LOQ","YES","-99","","246.3","1.00","37",""
"NAWC-120517-FRB-356","537","RES","320-33939-10","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.1","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","246.3","1.00","4.1",""
"NAWC-120517-FRB-356","537","RES","320-33939-10","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.1","DL","","TRG","","","24","LOQ","YES","-99","","246.3","1.00","20",""
"NAWC-120517-FRB-356","537","RES","320-33939-10","TALSAC","STL00993","13C2
PFHxA","42","ng/L","","-99","DL","","SURR","104","","-99","LOQ","YES","40.6","","246.3","1.00","0",""
"NAWC-120517-FRB-356","537","RES","320-33939-10","TALSAC","STL00996","13C2
PFDA","40","ng/L","","-99","DL","","SURR","99","","-99","LOQ","YES","40.6","","246.3","1.00","0",""
"NAWC-120517-RW-357","537","RES","320-33939-11","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","11","ng/L","J M","6.9","DL","","TRG","","","41","LOQ","YES","-99","","245.2","1.00","16",""
"NAWC-120517-RW-357","537","RES","320-33939-11","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","13","ng/L","J","2.9","DL","","TRG","","","20","LOQ","YES","-99","","245.2","1.00","8.2",""
"NAWC-120517-RW-357","537","RES","320-33939-11","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","9.5","ng/L","J","5.6","DL","","TRG","","","31","LOQ","YES","-99","","245.2","1.00","12",""
"NAWC-120517-RW-357","537","RES","320-33939-11","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","37","ng/L","U","16","DL","","TRG","","","92","LOQ","YES","-99","","245.2","1.00","37",""
"NAWC-120517-RW-357","537","RES","320-33939-11","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.5","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES","-99","","245.2","1.00","4.1",""
"NAWC-120517-RW-357","537","RES","320-33939-11","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U M","8.2","DL","","TRG","","","24","LOQ","YES","-99","","245.2","1.00","20",""
"NAWC-120517-RW-357","537","RES","320-33939-11","TALSAC","STL00993","13C2
PFHxA","43","ng/L","","-99","DL","","SURR","105","","-99","LOQ","YES","40.8","","245.2","1.00","0",""
"NAWC-120517-RW-357","537","RES","320-33939-11","TALSAC","STL00996","13C2
PFDA","40","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","40.8","","245.2","1.00","0",""
"NAWC-120517-FRB-357","537","RES","320-33939-12","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-120517-FRB-357","537","RES","320-33939-12","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-120517-FRB-357","537","RES","320-33939-12","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-120517-FRB-357","537","RES","320-33939-12","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","249.3","1.00","36",""
"NAWC-120517-FRB-357","537","RES","320-33939-12","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-120517-FRB-357","537","RES","320-33939-12","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-120517-FRB-357","537","RES","320-33939-12","TALSAC","STL00993","13C2
PFHxA","41","ng/L","","-99","DL","","SURR","102","","-99","LOQ","YES","40.1","","249.3","1.00","0",""
"NAWC-120517-FRB-357","537","RES","320-33939-12","TALSAC","STL00996","13C2
PFDA","40","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","40.1","","249.3","1.00","0",""
"WGNA-120517-RW-0263","537","RES","320-33939-13","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","21","ng/L","J M","6.8","DL","","TRG","","","40","LOQ","YES","-99","","251.2","1.00","16",""
"WGNA-120517-RW-0263","537","RES","320-33939-13","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","28","ng/L","","2.8","DL","","TRG","","","20","LOQ","YES","-99","","251.2","1.00","8.0",""
"WGNA-120517-RW-0263","537","RES","320-33939-13","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","J","5.5","DL","","TRG","","","30","LOQ","YES","-99","","251.2","1.00","12",""
"WGNA-120517-RW-0263","537","RES","320-33939-13","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","251.2","1.00","36",""
"WGNA-120517-RW-0263","537","RES","320-33939-13","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","8.2","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES","-99","","251.2","1.00","4.0",""
"WGNA-120517-RW-0263","537","RES","320-33939-13","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U M","8.0","DL","","TRG","","","24","LOQ","YES","-99","","251.2","1.00","20",""
"WGNA-120517-RW-0263","537","RES","320-33939-13","TALSAC","STL00993","13C2
PFHxA","43","ng/L","","-99","DL","","SURR","108","","-99","LOQ","YES","39.8","","251.2","1.00","0",""
"WGNA-120517-RW-0263","537","RES","320-33939-13","TALSAC","STL00996","13C2
PFDA","38","ng/L","","-99","DL","","SURR","95","","-99","LOQ","YES","39.8","","251.2","1.00","0",""
"WGNA-120517-FRB-0263","537","RES","320-33939-14","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","248.4","1.00","16",""
"WGNA-120517-FRB-0263","537","RES","320-33939-14","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.1","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","248.4","1.00","8.1",""
"WGNA-120517-FRB-0263","537","RES","320-33939-14","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","248.4","1.00","12",""
"WGNA-120517-FRB-0263","537","RES","320-33939-14","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","91","LOQ","YES","-99","","248.4","1.00","36",""
"WGNA-120517-FRB-0263","537","RES","320-33939-14","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","248.4","1.00","4.0",""
"WGNA-120517-FRB-0263","537","RES","320-33939-14","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.1","DL","","TRG","","","24","LOQ","YES","-99","","248.4","1.00","20",""
"WGNA-120517-FRB-0263","537","RES","320-33939-14","TALSAC","STL00993","13C2
PFHxA","41","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","40.3","","248.4","1.00","0",""
"WGNA-120517-FRB-0263","537","RES","320-33939-14","TALSAC","STL00996","13C2
PFDA","47","ng/L","","-99","DL","","SURR","117","","-99","LOQ","YES","40.3","","248.4","1.00","0",""
"WGNA-120517-FRB-0617","537","RES","320-33939-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.9","DL","","TRG","","","41","LOQ","YES","-99","","246","1.00","16",""
"WGNA-120517-FRB-0617","537","RES","320-33939-2","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.1","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","246","1.00","8.1",""
"WGNA-120517-FRB-0617","537","RES","320-33939-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.6","DL","","TRG","","","30","LOQ","YES","-99","","246","1.00","12",""
"WGNA-120517-FRB-0617","537","RES","320-33939-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","37","ng/L","U","16","DL","","TRG","","","91","LOQ","YES","-99","","246","1.00","37",""
"WGNA-120517-FRB-0617","537","RES","320-33939-2","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.1","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","246","1.00","4.1",""
"WGNA-120517-FRB-0617","537","RES","320-33939-2","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA)","20","ng/L","U","8.1","DL","","TRG","","","24","LOQ","YES","-99","","246","1.00","20","
"WGNA-120517-FRB-0617","537","RES","320-33939-2","TALSAC","STL00993","13C2
PFHxA","42","ng/L","","-99","DL","","SURR","104","","-99","LOQ","YES","40.7","","246","1.00","0","
"WGNA-120517-FRB-0617","537","RES","320-33939-2","TALSAC","STL00996","13C2
PFDA","40","ng/L","","-99","DL","","SURR","97","","-99","LOQ","YES","40.7","","246","1.00","0","
"WGNA-120517-RW-4820","537","RES","320-33939-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","7.0","DL","","TRG","","","41","LOQ","YES","-99","","242.7","1.00","16","
"WGNA-120517-RW-4820","537","RES","320-33939-3","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.2","ng/L","U","2.9","DL","","TRG","","","21","LOQ","YES","-99","","242.7","1.00","8.2","
"WGNA-120517-RW-4820","537","RES","320-33939-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.7","DL","","TRG","","","31","LOQ","YES","-99","","242.7","1.00","12","
"WGNA-120517-RW-4820","537","RES","320-33939-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","37","ng/L","U","17","DL","","TRG","","","93","LOQ","YES","-99","","242.7","1.00","37","
"WGNA-120517-RW-4820","537","RES","320-33939-3","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.1","ng/L","U","2.0","DL","","TRG","","","10","LOQ","YES","-99","","242.7","1.00","4.1","
"WGNA-120517-RW-4820","537","RES","320-33939-3","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","21","ng/L","U","8.2","DL","","TRG","","","25","LOQ","YES","-99","","242.7","1.00","21","
"WGNA-120517-RW-4820","537","RES","320-33939-3","TALSAC","STL00993","13C2
PFHxA","43","ng/L","","-99","DL","","SURR","103","","-99","LOQ","YES","41.2","","242.7","1.00","0","
"WGNA-120517-RW-4820","537","RES","320-33939-3","TALSAC","STL00996","13C2
PFDA","42","ng/L","","-99","DL","","SURR","102","","-99","LOQ","YES","41.2","","242.7","1.00","0","
"WGNA-120517-FRB-4820","537","RES","320-33939-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","249.8","1.00","16","
"WGNA-120517-FRB-4820","537","RES","320-33939-4","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","249.8","1.00","8.0","
"WGNA-120517-FRB-4820","537","RES","320-33939-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","249.8","1.00","12","
"WGNA-120517-FRB-4820","537","RES","320-33939-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","249.8","1.00","36","
"WGNA-120517-FRB-4820","537","RES","320-33939-4","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","249.8","1.00","4.0","
"WGNA-120517-FRB-4820","537","RES","320-33939-4","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","249.8","1.00","20","
"WGNA-120517-FRB-4820","537","RES","320-33939-4","TALSAC","STL00993","13C2
PFHxA","44","ng/L","","-99","DL","","SURR","109","","-99","LOQ","YES","40.0","","249.8","1.00","0","
"WGNA-120517-FRB-4820","537","RES","320-33939-4","TALSAC","STL00996","13C2
PFDA","43","ng/L","","-99","DL","","SURR","107","","-99","LOQ","YES","40.0","","249.8","1.00","0","
"NAWC-120517-RW-285","537","RES","320-33939-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","19","ng/L","J M","6.8","DL","","TRG","","","40","LOQ","YES","-99","","248.8","1.00","16","
"NAWC-120517-RW-285","537","RES","320-33939-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","11","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","248.8","1.00","8.0","
"NAWC-120517-RW-285","537","RES","320-33939-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","13","ng/L","J","5.5","DL","","TRG","","","30","LOQ","YES","-99","","248.8","1.00","12","
"NAWC-120517-RW-285","537","RES","320-33939-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","248.8","1.00","36","
"NAWC-120517-RW-285","537","RES","320-33939-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.2","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES","-99","","248.8","1.00","4.0","
"NAWC-120517-RW-285","537","RES","320-33939-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U M","8.0","DL","","TRG","","","24","LOQ","YES","-99","","248.8","1.00","20","
"NAWC-120517-RW-285","537","RES","320-33939-5","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","40.2","","248.8","1.00","0","
"NAWC-120517-RW-285","537","RES","320-33939-5","TALSAC","STL00996","13C2
PFDA","41","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","40.2","","248.8","1.00","0","
"NAWC-120517-FRB-285","537","RES","320-33939-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS)","16","ng/L","U","6.9","DL","","TRG","","","41","LOQ","YES","-99","","246.1","1.00","16",""
"NAWC-120517-FRB-285","537","RES","320-33939-6","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.1","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","246.1","1.00","8.1",""
"NAWC-120517-FRB-285","537","RES","320-33939-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.6","DL","","TRG","","","30","LOQ","YES","-99","","246.1","1.00","12",""
"NAWC-120517-FRB-285","537","RES","320-33939-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","37","ng/L","U","16","DL","","TRG","","","91","LOQ","YES","-99","","246.1","1.00","37",""
"NAWC-120517-FRB-285","537","RES","320-33939-6","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.1","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","246.1","1.00","4.1",""
"NAWC-120517-FRB-285","537","RES","320-33939-6","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.1","DL","","TRG","","","24","LOQ","YES","-99","","246.1","1.00","20",""
"NAWC-120517-FRB-285","537","RES","320-33939-6","TALSAC","STL00993","13C2
PFHxA","42","ng/L","","-99","DL","","SURR","103","","-99","LOQ","YES","40.6","","246.1","1.00","0",""
"NAWC-120517-FRB-285","537","RES","320-33939-6","TALSAC","STL00996","13C2
PFDA","45","ng/L","","-99","DL","","SURR","110","","-99","LOQ","YES","40.6","","246.1","1.00","0",""
"NAWC-120517-RW-135","537","RES","320-33939-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","J M","6.9","DL","","TRG","","","41","LOQ","YES","-99","","246.5","1.00","16",""
"NAWC-120517-RW-135","537","RES","320-33939-7","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","11","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","246.5","1.00","8.1",""
"NAWC-120517-RW-135","537","RES","320-33939-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U M","5.6","DL","","TRG","","","30","LOQ","YES","-99","","246.5","1.00","12",""
"NAWC-120517-RW-135","537","RES","320-33939-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","37","ng/L","U","16","DL","","TRG","","","91","LOQ","YES","-99","","246.5","1.00","37",""
"NAWC-120517-RW-135","537","RES","320-33939-7","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.5","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES","-99","","246.5","1.00","4.1",""
"NAWC-120517-RW-135","537","RES","320-33939-7","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U M","8.1","DL","","TRG","","","24","LOQ","YES","-99","","246.5","1.00","20",""
"NAWC-120517-RW-135","537","RES","320-33939-7","TALSAC","STL00993","13C2
PFHxA","42","ng/L","","-99","DL","","SURR","103","","-99","LOQ","YES","40.6","","246.5","1.00","0",""
"NAWC-120517-RW-135","537","RES","320-33939-7","TALSAC","STL00996","13C2
PFDA","40","ng/L","","-99","DL","","SURR","99","","-99","LOQ","YES","40.6","","246.5","1.00","0",""
"NAWC-120517-FRB-135","537","RES","320-33939-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.7","DL","","TRG","","","40","LOQ","YES","-99","","252.2","1.00","16",""
"NAWC-120517-FRB-135","537","RES","320-33939-8","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.9","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","252.2","1.00","7.9",""
"NAWC-120517-FRB-135","537","RES","320-33939-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","252.2","1.00","12",""
"NAWC-120517-FRB-135","537","RES","320-33939-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","89","LOQ","YES","-99","","252.2","1.00","36",""
"NAWC-120517-FRB-135","537","RES","320-33939-8","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","9.9","LOQ","YES","-99","","252.2","1.00","4.0",""
"NAWC-120517-FRB-135","537","RES","320-33939-8","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES","-99","","252.2","1.00","20",""
"NAWC-120517-FRB-135","537","RES","320-33939-8","TALSAC","STL00993","13C2
PFHxA","42","ng/L","","-99","DL","","SURR","107","","-99","LOQ","YES","39.7","","252.2","1.00","0",""
"NAWC-120517-FRB-135","537","RES","320-33939-8","TALSAC","STL00996","13C2
PFDA","40","ng/L","","-99","DL","","SURR","100","","-99","LOQ","YES","39.7","","252.2","1.00","0",""
"NAWC-120517-RW-356","537","RES","320-33939-9","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U M","6.9","DL","","TRG","","","40","LOQ","YES","-99","","247.5","1.00","16",""
"NAWC-120517-RW-356","537","RES","320-33939-9","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.1","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","247.5","1.00","8.1",""
"NAWC-120517-RW-356","537","RES","320-33939-9","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U M","5.6","DL","","TRG","","","30","LOQ","YES","-99","","247.5","1.00","12",""
"NAWC-120517-RW-356","537","RES","320-33939-9","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)","36","ng/L","U M","16","DL","","TRG","","","91","LOQ","YES","-99","","247.5","1.00","36","
"NAWC-120517-RW-356","537","RES","320-33939-9","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","U M","1.9","DL","","TRG","","","10","LOQ","YES","-99","","247.5","1.00","4.0","
"NAWC-120517-RW-356","537","RES","320-33939-9","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.1","DL","","TRG","","","24","LOQ","YES","-99","","247.5","1.00","20","
"NAWC-120517-RW-356","537","RES","320-33939-9","TALSAC","STL00993","13C2
PFHxA","41","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","40.4","","247.5","1.00","0","
"NAWC-120517-RW-356","537","RES","320-33939-9","TALSAC","STL00996","13C2
PFDA","41","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","40.4","","247.5","1.00","0","
"LCS 320-199025/2-A","537","RES","LCS 320-199025/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","232","ng/L","M","6.8","DL","","SPK","104","","40","LOQ","YES","222","","250.00","1.00","16","
"LCS 320-199025/2-A","537","RES","LCS 320-199025/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","117","ng/L","","2.8","DL","","SPK","105","","20","LOQ","YES","111","","250.00","1.00","8.0","
"LCS 320-199025/2-A","537","RES","LCS 320-199025/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","186","ng/L","","5.5","DL","","SPK","111","","30","LOQ","YES","167","","250.00","1.00","12","
"LCS 320-199025/2-A","537","RES","LCS 320-199025/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","524","ng/L","","16","DL","","SPK","105","","90","LOQ","YES","500","","250.00","1.00","36","
"LCS 320-199025/2-A","537","RES","LCS 320-199025/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","63.2","ng/L","","1.9","DL","","SPK","114","","10","LOQ","YES","55.6","","250.00","1.00","4.0","
"LCS 320-199025/2-A","537","RES","LCS 320-199025/2-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","109","ng/L","","8.0","DL","","SPK","99","","24","LOQ","YES","111","","250.00","1.00","20","
"LCS 320-199025/2-A","537","RES","LCS 320-199025/2-A","TALSAC","STL00993","13C2
PFHxA","41.7","ng/L","","-99","DL","","SURR","104","","-99","LOQ","YES","40.0","","250.00","1.00","0","
"LCS 320-199025/2-A","537","RES","LCS 320-199025/2-A","TALSAC","STL00996","13C2
PFDA","42.0","ng/L","","-99","DL","","SURR","105","","-99","LOQ","YES","40.0","","250.00","1.00","0","
"LCSD 320-199025/3-A","537","RES","LCSD 320-199025/3-A","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","231","ng/L","M","6.8","DL","","SPK","104","0","40","LOQ","YES","222","LCS 320-199025/2-
A","250.00","1.00","16","
"LCSD 320-199025/3-A","537","RES","LCSD 320-199025/3-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","120","ng/L","","2.8","DL","","SPK","108","3","20","LOQ","YES","111","LCS 320-199025/2-
A","250.00","1.00","8.0","
"LCSD 320-199025/3-A","537","RES","LCSD 320-199025/3-A","TALSAC","355-46-4","Perfluorohexanesulfonic
acid (PFHxS)","183","ng/L","","5.5","DL","","SPK","110","2","30","LOQ","YES","167","LCS 320-199025/2-
A","250.00","1.00","12","
"LCSD 320-199025/3-A","537","RES","LCSD 320-199025/3-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","541","ng/L","","16","DL","","SPK","108","3","90","LOQ","YES","500","LCS 320-199025/2-
A","250.00","1.00","36","
"LCSD 320-199025/3-A","537","RES","LCSD 320-199025/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","64.9","ng/L","","1.9","DL","","SPK","117","3","10","LOQ","YES","55.6","LCS 320-199025/2-
A","250.00","1.00","4.0","
"LCSD 320-199025/3-A","537","RES","LCSD 320-199025/3-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","114","ng/L","","8.0","DL","","SPK","102","4","24","LOQ","YES","111","LCS 320-199025/2-
A","250.00","1.00","20","
"LCSD 320-199025/3-A","537","RES","LCSD 320-199025/3-A","TALSAC","STL00993","13C2
PFHxA","44.5","ng/L","","-99","DL","","SURR","111","","-99","LOQ","YES","40.0","LCS 320-199025/2-
A","250.00","1.00","0","
"LCSD 320-199025/3-A","537","RES","LCSD 320-199025/3-A","TALSAC","STL00996","13C2
PFDA","43.6","ng/L","","-99","DL","","SURR","109","","-99","LOQ","YES","40.0","LCS 320-199025/2-
A","250.00","1.00","0","
"MB 320-199025/1-A","537","RES","MB 320-199025/1-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","250.00","1.00","16","
"MB 320-199025/1-A","537","RES","MB 320-199025/1-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","250.00","1.00","8.0","
"MB 320-199025/1-A","537","RES","MB 320-199025/1-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid

(PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","250.00","1.00","12","
"MB 320-199025/1-A","537","RES","MB 320-199025/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250.00","1.00","36","
"MB 320-199025/1-A","537","RES","MB 320-199025/1-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","250.00","1.00","4.0","
"MB 320-199025/1-A","537","RES","MB 320-199025/1-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","250.00","1.00","20","
"MB 320-199025/1-A","537","RES","MB 320-199025/1-A","TALSAC","STL00993","13C2
PFHxA","39.7","ng/L","","-99","DL","","SURR","99","","-99","LOQ","YES","40.0","","250.00","1.00","0","
"MB 320-199025/1-A","537","RES","MB 320-199025/1-A","TALSAC","STL00996","13C2
PFDA","41.2","ng/L","","-99","DL","","SURR","103","","-99","LOQ","YES","40.0","","250.00","1.00","0","
"Unknown","Unknown","WGNA-120517-RW-0617","12/05/2017 08:10","AQ","320-33939-
1","NM","","4.20","537","METHOD","RES","12/08/2017 11:56","12/12/2017
09:56","TALSAC","COA","WET","NA","1","NA","NA","","100","320-199025","320-199025","NA","320-
199464","320-33939-1","12/06/2017 10:45","12/06/2017 14:40","
"Unknown","Unknown","NAWC-120517-FRB-356","12/05/2017 11:05","AQ","320-33939-
10","FB","","4.20","537","METHOD","RES","12/08/2017 11:56","12/12/2017
10:47","TALSAC","COA","WET","NA","1","NA","NA","","100","320-199025","320-199025","NA","320-
199466","320-33939-1","12/06/2017 10:45","12/06/2017 14:40","
"Unknown","Unknown","NAWC-120517-RW-357","12/05/2017 13:10","AQ","320-33939-
11","NM","","4.20","537","METHOD","RES","12/08/2017 11:56","12/12/2017
10:52","TALSAC","COA","WET","NA","1","NA","NA","","100","320-199025","320-199025","NA","320-
199466","320-33939-1","12/06/2017 10:45","12/06/2017 14:40","
"Unknown","Unknown","NAWC-120517-FRB-357","12/05/2017 13:05","AQ","320-33939-
12","FB","","4.20","537","METHOD","RES","12/08/2017 11:56","12/12/2017
10:56","TALSAC","COA","WET","NA","1","NA","NA","","100","320-199025","320-199025","NA","320-
199466","320-33939-1","12/06/2017 10:45","12/06/2017 14:40","
"Unknown","Unknown","WGNA-120517-RW-0263","12/05/2017 16:40","AQ","320-33939-
13","NM","","4.20","537","METHOD","RES","12/08/2017 11:56","12/12/2017
11:01","TALSAC","COA","WET","NA","1","NA","NA","","100","320-199025","320-199025","NA","320-
199466","320-33939-1","12/06/2017 10:45","12/06/2017 14:40","
"Unknown","Unknown","WGNA-120517-FRB-0263","12/05/2017 16:35","AQ","320-33939-
14","FB","","4.20","537","METHOD","RES","12/08/2017 11:56","12/12/2017
11:06","TALSAC","COA","WET","NA","1","NA","NA","","100","320-199025","320-199025","NA","320-
199466","320-33939-1","12/06/2017 10:45","12/06/2017 14:40","
"Unknown","Unknown","WGNA-120517-FRB-0617","12/05/2017 08:05","AQ","320-33939-
2","FB","","4.20","537","METHOD","RES","12/08/2017 11:56","12/12/2017
10:00","TALSAC","COA","WET","NA","1","NA","NA","","100","320-199025","320-199025","NA","320-
199464","320-33939-1","12/06/2017 10:45","12/06/2017 14:40","
"Unknown","Unknown","WGNA-120517-RW-4820","12/05/2017 08:40","AQ","320-33939-
3","NM","","4.20","537","METHOD","RES","12/08/2017 11:56","12/12/2017
10:05","TALSAC","COA","WET","NA","1","NA","NA","","100","320-199025","320-199025","NA","320-
199464","320-33939-1","12/06/2017 10:45","12/06/2017 14:40","
"Unknown","Unknown","WGNA-120517-FRB-4820","12/05/2017 08:35","AQ","320-33939-
4","FB","","4.20","537","METHOD","RES","12/08/2017 11:56","12/12/2017
10:10","TALSAC","COA","WET","NA","1","NA","NA","","100","320-199025","320-199025","NA","320-
199464","320-33939-1","12/06/2017 10:45","12/06/2017 14:40","
"Unknown","Unknown","NAWC-120517-RW-285","12/05/2017 09:10","AQ","320-33939-
5","NM","","4.20","537","METHOD","RES","12/08/2017 11:56","12/12/2017
10:14","TALSAC","COA","WET","NA","1","NA","NA","","100","320-199025","320-199025","NA","320-
199464","320-33939-1","12/06/2017 10:45","12/06/2017 14:40","
"Unknown","Unknown","NAWC-120517-FRB-285","12/05/2017 09:05","AQ","320-33939-
6","FB","","4.20","537","METHOD","RES","12/08/2017 11:56","12/12/2017
10:19","TALSAC","COA","WET","NA","1","NA","NA","","100","320-199025","320-199025","NA","320-

199464","320-33939-1","12/06/2017 10:45","12/06/2017 14:40",""
"Unknown","Unknown","NAWC-120517-RW-135","12/05/2017 10:40","AQ","320-33939-
7","NM","","4.20","537","METHOD","RES","12/08/2017 11:56","12/12/2017
10:24","TALSAC","COA","WET","NA","1","NA","NA","","100","320-199025","320-199025","NA","320-
199464","320-33939-1","12/06/2017 10:45","12/06/2017 14:40",""
"Unknown","Unknown","NAWC-120517-FRB-135","12/05/2017 10:35","AQ","320-33939-
8","FB","","4.20","537","METHOD","RES","12/08/2017 11:56","12/12/2017
10:38","TALSAC","COA","WET","NA","1","NA","NA","","100","320-199025","320-199025","NA","320-
199466","320-33939-1","12/06/2017 10:45","12/06/2017 14:40",""
"Unknown","Unknown","NAWC-120517-RW-356","12/05/2017 11:10","AQ","320-33939-
9","NM","","4.20","537","METHOD","RES","12/08/2017 11:56","12/12/2017
10:42","TALSAC","COA","WET","NA","1","NA","NA","","100","320-199025","320-199025","NA","320-
199466","320-33939-1","12/06/2017 10:45","12/06/2017 14:40",""
"Unknown","Unknown","LCS 320-199025/2-A","","AQ","LCS 320-199025/2-
A","LCS","","-99","537","METHOD","RES","12/08/2017 11:56","12/12/2017
09:46","TALSAC","COA","WET","NA","1","NA","NA","","100","320-199025","320-199025","NA","320-
199464","320-33939-1","12/08/2017 11:56","12/06/2017 14:40",""
"Unknown","Unknown","LCSD 320-199025/3-A","","AQ","LCSD 320-199025/3-
A","LCSD","","-99","537","METHOD","RES","12/08/2017 11:56","12/12/2017
09:51","TALSAC","COA","WET","NA","1","NA","NA","","100","320-199025","320-199025","NA","320-
199464","320-33939-1","12/08/2017 11:56","12/06/2017 14:40",""
"Unknown","Unknown","MB 320-199025/1-A","","AQ","MB 320-199025/1-
A","MB","","-99","537","METHOD","RES","12/08/2017 11:56","12/12/2017
09:42","TALSAC","COA","WET","NA","1","NA","NA","","100","320-199025","320-199025","NA","320-
199464","320-33939-1","12/08/2017 11:56","12/06/2017 14:40",""

TETRA TECH **INTERNAL CORRESPONDENCE**

TO:	**A. FREBOWITZ**	**DATE:**	**JANUARY 11, 2018**
FROM:	**MEGAN RITCHIE**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION –POLYFLUOROALKYL SUBSTANCES (PFAS)**
NAS JRB WILLOW GROVE
SAMPLE DELIVERY GROUP (SDG) 320-33939-1

SAMPLES: 7/Field Reagent Blank (FRB)

NAWC-120517-FRB-135	WGNA -120517-FRB-0263
NAWC-120517-FRB-285	WGNA -120517-FRB-0617
NAWC-120517-FRB-356	WGNA -120517-FRB-4820
NAWC-120517-FRB-357	

7/Drinking Water

NAWC-120517-RW-135	WGNA -120517-RW-0263
NAWC-120517-RW-285	WGNA -120517-RW-0617
NAWC-120517-RW-356	WGNA -120517-RW-4820
NAWC-120517-RW-357	

Overview

The sample set for NAS JRB Willow Grove, SDG 320-33939-1, consisted of seven (7) drinking water samples and seven (7) FRB samples. All samples were analyzed for select perfluorinated alkyl acids including pentadecafluorooctanoic acid (PFOA), perfluorobutane sulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA) and perfluorooctane sulfonic acid (PFOS). No field duplicate sample pairs were included in this SDG.

The samples were collected by Tetra Tech on December 5, 2017 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, initial/continuing calibrations, laboratory method/FRBs, surrogate spike recoveries, laboratory control sample / laboratory control sample duplicate results, 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).

Notes

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

Sample	Associated FRB
NAWC-120517-RW-135	NAWC-120517-FRB-135
NAWC-120517-RW-285	NAWC-120517-FRB-285
NAWC-120517-RW-356	NAWC-120517-FRB-356
NAWC-120517-RW-357	NAWC-120517-FRB-357
WGNA-120517-RW-0263	WGNA-120517-FRB-0263
WGNA-120517-RW-0617	WGNA-120517-FRB-0617
WGNA-120517-RW-4820	WGNA-120517-FRB-4820

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

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

Executive Summary

Laboratory Performance: 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.

Megan N. Ritchie

Tetra Tech, Inc.
Megan Ritchie
Chemist/Data Validator

Joseph A. Samchuck

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

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

Data Qualifier Definitions

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

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

Appendix A

Qualified Analytical Results

Qualifier Codes:

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

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-120517-FRB-135			NAWC-120517-FRB-285			NAWC-120517-FRB-356			NAWC-120517-FRB-357		
SDG: 320-33939-1	LAB_ID	320-33939-8			320-33939-6			320-33939-10			320-33939-12		
FRACTION: PFAS	SAMP_DATE	12/5/2017			12/5/2017			12/5/2017			12/5/2017		
MEDIA: WATER	QC_TYPE	FB			FB			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		7.9	U		8.1	U		8.1	U		8	U	
PERFLUOROBUTANESULFONIC ACID		36	U		37	U		37	U		36	U	
PERFLUOROHEPTANOIC ACID		4	U		4.1	U		4.1	U		4	U	
PERFLUOROHEXANESULFONIC ACID		12	U		12	U		12	U		12	U	
PERFLUORONONANOIC ACID		20	U		20	U		20	U		20	U	
PERFLUOROOCTANE SULFONIC ACID		16	U		16	U		16	U		16	U	

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-120517-RW-135			NAWC-120517-RW-285			NAWC-120517-RW-356			NAWC-120517-RW-357		
SDG: 320-33939-1	LAB_ID	320-33939-7			320-33939-5			320-33939-9			320-33939-11		
FRACTION: PFAS	SAMP_DATE	12/5/2017			12/5/2017			12/5/2017			12/5/2017		
MEDIA: WATER	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		11	J	P	11	J	P	8.1	U		13	J	P
PERFLUOROBUTANESULFONIC ACID		37	U		36	U		36	U		37	U	
PERFLUOROHEPTANOIC ACID		3.5	J	P	4.2	J	P	4	U		4.5	J	P
PERFLUOROHEXANESULFONIC ACID		12	U		13	J	P	12	U		9.5	J	P
PERFLUORONONANOIC ACID		20	U		20	U		20	U		20	U	
PERFLUOROOCTANE SULFONIC ACID		14	J	P	19	J	P	16	U		11	J	P

PROJ_NO: 08005-WE04	NSAMPLE	WGNA-120517-FRB-0263			WGNA-120517-FRB-0617			WGNA-120517-FRB-4820			WGNA-120517-RW-0263		
SDG: 320-33939-1	LAB_ID	320-33939-14			320-33939-2			320-33939-4			320-33939-13		
FRACTION: PFAS	SAMP_DATE	12/5/2017			12/5/2017			12/5/2017			12/5/2017		
MEDIA: WATER	QC_TYPE	FB			FB			FB			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		8.1	U		8.1	U		8	U		28		
PERFLUOROBUTANESULFONIC ACID		36	U		37	U		36	U		36	U	
PERFLUOROHEPTANOIC ACID		4	U		4.1	U		4	U		8.2	J	P
PERFLUOROHEXANESULFONIC ACID		12	U		12	U		12	U		11	J	P
PERFLUORONONANOIC ACID		20	U		20	U		20	U		20	U	
PERFLUOROOCTANE SULFONIC ACID		16	U		16	U		16	U		21	J	P

PROJ_NO: 08005-WE04	NSAMPLE	WGNA-120517-RW-0617			WGNA-120517-RW-4820		
SDG: 320-33939-1	LAB_ID	320-33939-1			320-33939-3		
FRACTION: PFAS	SAMP_DATE	12/5/2017			12/5/2017		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		34			8.2	U	
PERFLUOROBUTANESULFONIC ACID		59	J	P	37	U	
PERFLUOROHEPTANOIC ACID		11			4.1	U	
PERFLUOROHEXANESULFONIC ACID		15	J	P	12	U	
PERFLUORONONANOIC ACID		20	U		21	U	
PERFLUOROOCTANE SULFONIC ACID		29	J	P	16	U	

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-33939-1

SDG No.:

Client Sample ID: WGNA-120517-RW-0617 | Lab Sample ID: 320-33939-1

Matrix: Water | Lab File ID: 2017.12.12_537A_020.d

Analysis Method: 537 | Date Collected: 12/05/2017 08:10

Extraction Method: 537 | Date Extracted: 12/08/2017 11:56

Sample wt/vol: 247.1(mL) | Date Analyzed: 12/12/2017 09:56

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

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

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

Analysis Batch No.: 199464 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	29	J ~~M~~	40	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	34		20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	15	J	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	11		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	59	J	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	107		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: WGNA-120517-FRB-0617
Lab Sample ID: 320-33939-2
Matrix: Water
Lab File ID: 2017.12.12_537A_021.d
Analysis Method: 537
Date Collected: 12/05/2017 08:05
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 246(mL)
Date Analyzed: 12/12/2017 10:00
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.: 199464
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)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	97		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: WGNA-120517-RW-4820
Lab Sample ID: 320-33939-3
Matrix: Water
Lab File ID: 2017.12.12_537A_022.d
Analysis Method: 537
Date Collected: 12/05/2017 08:40
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 242.7(mL)
Date Analyzed: 12/12/2017 10:05
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.: 199464
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	8.2	U	21	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	2.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	93	37	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		70-130
STL00996	13C2 PFDA	102		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: WGNA-120517-FRB-4820
Lab Sample ID: 320-33939-4
Matrix: Water
Lab File ID: 2017.12.12_537A_023.d
Analysis Method: 537
Date Collected: 12/05/2017 08:35
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 249.8(mL)
Date Analyzed: 12/12/2017 10:10
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.: 199464
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	109		70-130
STL00996	13C2 PFDA	107		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-33939-1

SDG No.:

Client Sample ID: NAWC-120517-RW-285 | Lab Sample ID: 320-33939-5

Matrix: Water | Lab File ID: 2017.12.12_537A_024.d

Analysis Method: 537 | Date Collected: 12/05/2017 09:10

Extraction Method: 537 | Date Extracted: 12/08/2017 11:56

Sample wt/vol: 248.8(mL) | Date Analyzed: 12/12/2017 10:14

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.: 199464 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	19	J ~~M~~	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	11	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)	13	J	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	98		70-130
STL00996	13C2 PFDA	101		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-FRB-285
Lab Sample ID: 320-33939-6
Matrix: Water
Lab File ID: 2017.12.12_537A_025.d
Analysis Method: 537
Date Collected: 12/05/2017 09:05
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 246.1(mL)
Date Analyzed: 12/12/2017 10:19
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199464
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)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		70-130
STL00996	13C2 PFDA	110		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-33939-1

SDG No.:

Client Sample ID: NAWC-120517-RW-135 | Lab Sample ID: 320-33939-7

Matrix: Water | Lab File ID: 2017.12.12_537A_026.d

Analysis Method: 537 | Date Collected: 12/05/2017 10:40

Extraction Method: 537 | Date Extracted: 12/08/2017 11:56

Sample wt/vol: 246.5(mL) | Date Analyzed: 12/12/2017 10:24

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

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

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

Analysis Batch No.: 199464 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	J ~~M~~	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	11	J	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U ~~M~~	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U ~~M~~	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		70-130
STL00996	13C2 PFDA	99		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-FRB-135
Lab Sample ID: 320-33939-8
Matrix: Water
Lab File ID: 2017.12.12_537A_029.d
Analysis Method: 537
Date Collected: 12/05/2017 10:35
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 252.2(mL)
Date Analyzed: 12/12/2017 10:38
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199466
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.9	U	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
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	107		70-130
STL00996	13C2 PFDA	100		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-RW-356
Lab Sample ID: 320-33939-9
Matrix: Water
Lab File ID: 2017.12.12_537A_030.d
Analysis Method: 537
Date Collected: 12/05/2017 11:10
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 247.5(mL)
Date Analyzed: 12/12/2017 10:42
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199466
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U ~~M~~	40	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 ~~M~~	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U ~~M~~	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U ~~M~~	91	36	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.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-FRB-356
Lab Sample ID: 320-33939-10
Matrix: Water
Lab File ID: 2017.12.12_537A_031.d
Analysis Method: 537
Date Collected: 12/05/2017 11:05
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 246.3(mL)
Date Analyzed: 12/12/2017 10:47
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199466
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)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	99		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-33939-1

SDG No.:

Client Sample ID: NAWC-120517-RW-357 | Lab Sample ID: 320-33939-11

Matrix: Water | Lab File ID: 2017.12.12_537A_032.d

Analysis Method: 537 | Date Collected: 12/05/2017 13:10

Extraction Method: 537 | Date Extracted: 12/08/2017 11:56

Sample wt/vol: 245.2(mL) | Date Analyzed: 12/12/2017 10:52

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

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

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

Analysis Batch No.: 199466 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J ~~M~~	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	20	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	20	U ~~M~~	24	20	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.5	J	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.5	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	105		70-130
STL00996	13C2 PFDA	98		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-FRB-357
Lab Sample ID: 320-33939-12
Matrix: Water
Lab File ID: 2017.12.12_537A_033.d
Analysis Method: 537
Date Collected: 12/05/2017 13:05
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 249.3(mL)
Date Analyzed: 12/12/2017 10:56
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199466
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	102		70-130
STL00996	13C2 PFDA	101		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-33939-1

SDG No.:

Client Sample ID: WGNA-120517-RW-0263 | Lab Sample ID: 320-33939-13

Matrix: Water | Lab File ID: 2017.12.12_537A_034.d

Analysis Method: 537 | Date Collected: 12/05/2017 16:40

Extraction Method: 537 | Date Extracted: 12/08/2017 11:56

Sample wt/vol: 251.2(mL) | Date Analyzed: 12/12/2017 11:01

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

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

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

Analysis Batch No.: 199466 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	21	J ~~M~~	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	28		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U ~~M~~	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.2	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	108		70-130
STL00996	13C2 PFDA	95		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: WGNA-120517-FRB-0263
Lab Sample ID: 320-33939-14
Matrix: Water
Lab File ID: 2017.12.12_537A_035.d
Analysis Method: 537
Date Collected: 12/05/2017 16:35
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 248.4(mL)
Date Analyzed: 12/12/2017 11:06
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.: 199466
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)	8.1	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	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	117		70-130

Appendix B

Results as Reported by the Laboratory

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: WGNA-120517-RW-0617
Lab Sample ID: 320-33939-1
Matrix: Water
Lab File ID: 2017.12.12_537A_020.d
Analysis Method: 537
Date Collected: 12/05/2017 08:10
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 247.1(mL)
Date Analyzed: 12/12/2017 09:56
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199464
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	29	J M	40	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	34		20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	15	J	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	11		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	59	J	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	107		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: WGNA-120517-FRB-0617
Lab Sample ID: 320-33939-2
Matrix: Water
Lab File ID: 2017.12.12_537A_021.d
Analysis Method: 537
Date Collected: 12/05/2017 08:05
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 246(mL)
Date Analyzed: 12/12/2017 10:00
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.: 199464
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)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	97		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: WGNA-120517-RW-4820
Lab Sample ID: 320-33939-3
Matrix: Water
Lab File ID: 2017.12.12_537A_022.d
Analysis Method: 537
Date Collected: 12/05/2017 08:40
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 242.7(mL)
Date Analyzed: 12/12/2017 10:05
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.: 199464
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	8.2	U	21	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	2.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	93	37	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		70-130
STL00996	13C2 PFDA	102		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: WGNA-120517-FRB-4820
Lab Sample ID: 320-33939-4
Matrix: Water
Lab File ID: 2017.12.12_537A_023.d
Analysis Method: 537
Date Collected: 12/05/2017 08:35
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 249.8(mL)
Date Analyzed: 12/12/2017 10:10
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.: 199464
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	109		70-130
STL00996	13C2 PFDA	107		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-RW-285
Lab Sample ID: 320-33939-5
Matrix: Water
Lab File ID: 2017.12.12_537A_024.d
Analysis Method: 537
Date Collected: 12/05/2017 09:10
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 248.8(mL)
Date Analyzed: 12/12/2017 10:14
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.: 199464
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	19	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	11	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)	13	J	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	98		70-130
STL00996	13C2 PFDA	101		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-FRB-285
Lab Sample ID: 320-33939-6
Matrix: Water
Lab File ID: 2017.12.12_537A_025.d
Analysis Method: 537
Date Collected: 12/05/2017 09:05
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 246.1(mL)
Date Analyzed: 12/12/2017 10:19
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199464
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)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		70-130
STL00996	13C2 PFDA	110		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-RW-135
Lab Sample ID: 320-33939-7
Matrix: Water
Lab File ID: 2017.12.12_537A_026.d
Analysis Method: 537
Date Collected: 12/05/2017 10:40
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 246.5(mL)
Date Analyzed: 12/12/2017 10:24
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199464
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	J M	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	11	J	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U M	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		70-130
STL00996	13C2 PFDA	99		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-FRB-135
Lab Sample ID: 320-33939-8
Matrix: Water
Lab File ID: 2017.12.12_537A_029.d
Analysis Method: 537
Date Collected: 12/05/2017 10:35
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 252.2(mL)
Date Analyzed: 12/12/2017 10:38
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199466
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.9	U	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
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	107		70-130
STL00996	13C2 PFDA	100		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-RW-356
Lab Sample ID: 320-33939-9
Matrix: Water
Lab File ID: 2017.12.12_537A_030.d
Analysis Method: 537
Date Collected: 12/05/2017 11:10
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 247.5(mL)
Date Analyzed: 12/12/2017 10:42
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199466
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U M	40	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 M	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U M	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U M	91	36	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.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-FRB-356
Lab Sample ID: 320-33939-10
Matrix: Water
Lab File ID: 2017.12.12_537A_031.d
Analysis Method: 537
Date Collected: 12/05/2017 11:05
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 246.3(mL)
Date Analyzed: 12/12/2017 10:47
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199466
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)	37	U	91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	99		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-RW-357
Lab Sample ID: 320-33939-11
Matrix: Water
Lab File ID: 2017.12.12_537A_032.d
Analysis Method: 537
Date Collected: 12/05/2017 13:10
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 245.2(mL)
Date Analyzed: 12/12/2017 10:52
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199466
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J M	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	20	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.5	J	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.5	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	105		70-130
STL00996	13C2 PFDA	98		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: NAWC-120517-FRB-357
Lab Sample ID: 320-33939-12
Matrix: Water
Lab File ID: 2017.12.12_537A_033.d
Analysis Method: 537
Date Collected: 12/05/2017 13:05
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 249.3(mL)
Date Analyzed: 12/12/2017 10:56
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199466
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	102		70-130
STL00996	13C2 PFDA	101		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: WGNA-120517-RW-0263
Lab Sample ID: 320-33939-13
Matrix: Water
Lab File ID: 2017.12.12_537A_034.d
Analysis Method: 537
Date Collected: 12/05/2017 16:40
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 251.2(mL)
Date Analyzed: 12/12/2017 11:01
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199466
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	21	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	28		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.2	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	108		70-130
STL00996	13C2 PFDA	95		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID: WGNA-120517-FRB-0263
Lab Sample ID: 320-33939-14
Matrix: Water
Lab File ID: 2017.12.12_537A_035.d
Analysis Method: 537
Date Collected: 12/05/2017 16:35
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 248.4(mL)
Date Analyzed: 12/12/2017 11:06
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.: 199466
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)	8.1	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	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	117		70-130

Appendix C

Support Documentation

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

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

Regulatory Program: ☑ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Andy Frebowitz	Site Contact: Mary Kay Bond	Date: 12/5/2017	COC No:
TetraTech	Tel/Fax: 610.382.1170	Lab Contact: Dave Alltucker	Carrier: FedEx	1 of 1 COCs
234 Mall Boulevard Suite 260	**Analysis Turnaround Time**			Sampler: Mary Kay Bond
King of Prussia, PA 19406	☐ CALENDAR DAYS ☐ WORKING DAYS			**For Lab Use Only:**
610-382-1174	TAT if different from Below 21			Walk-in Client:
610-491-9688	☐ 2 weeks			Lab Sampling:
Project Name: WE04	☐ 1 week			
Site: WE04	☐ 2 days			Job / SDG No.:
P O # 1132358 (through EarthToxics)	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	EPA 537 UCMR3	Sample Specific Notes:
WGNA-120517-RW-0617	12/5/2017	08:10	G	DW	2	N	N	Y	
WGNA-120517-FRB-0617	12/5/2017	08:05	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-120517-RW-4820	12/5/2017	08:40	G	DW	2	N	N	Y	
WGNA-120517-FRB-4820	12/5/2017	08:35	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-120517-RW-285	12/5/2017	09:10	G	DW	2	N	N	Y	
NAWC-120517-FRB-285	12/5/2017	09:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-120517-RW-135	12/5/2017	10:40	G	DW	2	N	N	Y	
NAWC-120517-FRB-135	12/5/2017	10:35	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-120517-RW-356	12/5/2017	11:10	G	DW	2	N	N	Y	
NAWC-120517-FRB-356	12/5/2017	11:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-120517-RW-357	12/5/2017	13:10	G	DW	2	N	N	Y	
NAWC-120517-FRB-357	12/5/2017	13:05	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-120517-RW-0263	12/5/2017	16:40	G	DW	2	N	N	Y	
WGNA-120517-FRB-0263	12/5/2017	16:35	G	DW	2	N	N	Y	Field Reagent Blank

320-33939 Chain of Custody

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

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

Fed Ex Tracking: 7709 0932 5503

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 4.2 Corr'd: — | Therm ID No.: AK-3

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Tetra Tech	12/5/2017 18:00		TAWS	12/06/17 1045
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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

S:\WillowGrove PFOs Private Well\COCs TT\COC 20171205

Job Narrative
320-33939-1

Receipt
The samples were received on 12/6/2017 10:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.2º C.

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

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

Organic Prep
Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-199025.

Method(s) 537: The following sample WGNA-120517-RW-0263 (320-33939-13) had a received pH of 6.

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

Method Summary

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

TestAmerica Job ID: 320-33939-1

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

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

TestAmerica Job ID: 320-33939-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-33939-1	WGNA-120517-RW-0617	Water	12/05/17 08:10	12/06/17 10:45
320-33939-2	WGNA-120517-FRB-0617	Water	12/05/17 08:05	12/06/17 10:45
320-33939-3	WGNA-120517-RW-4820	Water	12/05/17 08:40	12/06/17 10:45
320-33939-4	WGNA-120517-FRB-4820	Water	12/05/17 08:35	12/06/17 10:45
320-33939-5	NAWC-120517-RW-285	Water	12/05/17 09:10	12/06/17 10:45
320-33939-6	NAWC-120517-FRB-285	Water	12/05/17 09:05	12/06/17 10:45
320-33939-7	NAWC-120517-RW-135	Water	12/05/17 10:40	12/06/17 10:45
320-33939-8	NAWC-120517-FRB-135	Water	12/05/17 10:35	12/06/17 10:45
320-33939-9	NAWC-120517-RW-356	Water	12/05/17 11:10	12/06/17 10:45
320-33939-10	NAWC-120517-FRB-356	Water	12/05/17 11:05	12/06/17 10:45
320-33939-11	NAWC-120517-RW-357	Water	12/05/17 13:10	12/06/17 10:45
320-33939-12	NAWC-120517-FRB-357	Water	12/05/17 13:05	12/06/17 10:45
320-33939-13	WGNA-120517-RW-0263	Water	12/05/17 16:40	12/06/17 10:45
320-33939-14	WGNA-120517-FRB-0263	Water	12/05/17 16:35	12/06/17 10:45

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-120517-RW-0617	320-33939-1	96	107
WGNA-120517-FRB-0617	320-33939-2	104	97
WGNA-120517-RW-4820	320-33939-3	103	102
WGNA-120517-FRB-4820	320-33939-4	109	107
NAWC-120517-RW-285	320-33939-5	98	101
NAWC-120517-FRB-285	320-33939-6	103	110
NAWC-120517-RW-135	320-33939-7	103	99
NAWC-120517-FRB-135	320-33939-8	107	100
NAWC-120517-RW-356	320-33939-9	101	101
NAWC-120517-FRB-356	320-33939-10	104	99
NAWC-120517-RW-357	320-33939-11	105	98
NAWC-120517-FRB-357	320-33939-12	102	101
WGNA-120517-RW-0263	320-33939-13	108	95
WGNA-120517-FRB-0263	320-33939-14	101	117
	MB 320-199025/1-A	99	103
	LCS 320-199025/2-A	104	105
	LCSD 320-199025/3-A	111	109

	QC LIMITS
PFHxA = 13C2 PFHxA	70-130
PFDA = 13C2 PFDA	70-130

Column to be used to flag recovery values

FORM II 537

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.12.12_537A_018.d

Lab ID: LCS 320-199025/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	222	232	104	70-130	M
Perfluorooctanoic acid (PFOA)	111	117	105	70-130	
Perfluorononanoic acid (PFNA)	111	109	99	70-130	
Perfluorohexanesulfonic acid (PFHxS)	167	186	111	70-130	
Perfluoroheptanoic acid (PFHpA)	55.6	63.2	114	70-130	
Perfluorobutanesulfonic acid (PFBS)	500	524	105	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.12.12_537A_019.d

Lab ID: LCSD 320-199025/3-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	222	231	104	0	30	70-130	M
Perfluorooctanoic acid (PFOA)	111	120	108	3	30	70-130	
Perfluorononanoic acid (PFNA)	111	114	102	4	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	167	183	110	2	30	70-130	
Perfluoroheptanoic acid (PFHpA)	55.6	64.9	117	3	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	500	541	108	3	30	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Lab File ID: 2017.12.12_537A_017.d Lab Sample ID: MB 320-199025/1-A

Matrix: Water Date Extracted: 12/08/2017 11:56

Instrument ID: A8_N Date Analyzed: 12/12/2017 09:42

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-199025/2-A	2017.12.12_537A_018.d	12/12/2017 09:46
	LCSD 320-199025/3-A	2017.12.12_537A_019.d	12/12/2017 09:51
WGNA-120517-RW-0617	320-33939-1	2017.12.12_537A_020.d	12/12/2017 09:56
WGNA-120517-FRB-0617	320-33939-2	2017.12.12_537A_021.d	12/12/2017 10:00
WGNA-120517-RW-4820	320-33939-3	2017.12.12_537A_022.d	12/12/2017 10:05
WGNA-120517-FRB-4820	320-33939-4	2017.12.12_537A_023.d	12/12/2017 10:10
NAWC-120517-RW-285	320-33939-5	2017.12.12_537A_024.d	12/12/2017 10:14
NAWC-120517-FRB-285	320-33939-6	2017.12.12_537A_025.d	12/12/2017 10:19
NAWC-120517-RW-135	320-33939-7	2017.12.12_537A_026.d	12/12/2017 10:24
NAWC-120517-FRB-135	320-33939-8	2017.12.12_537A_029.d	12/12/2017 10:38
NAWC-120517-RW-356	320-33939-9	2017.12.12_537A_030.d	12/12/2017 10:42
NAWC-120517-FRB-356	320-33939-10	2017.12.12_537A_031.d	12/12/2017 10:47
NAWC-120517-RW-357	320-33939-11	2017.12.12_537A_032.d	12/12/2017 10:52
NAWC-120517-FRB-357	320-33939-12	2017.12.12_537A_033.d	12/12/2017 10:56
WGNA-120517-RW-0263	320-33939-13	2017.12.12_537A_034.d	12/12/2017 11:01
WGNA-120517-FRB-0263	320-33939-14	2017.12.12_537A_035.d	12/12/2017 11:06

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 11/03/2017 13:37

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 11/03/2017 14:01

Calibration ID: 36012

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		1535518	1.91	3276559	2.15		
UPPER LIMIT		2303277	2.41	4914839	2.65		
LOWER LIMIT		767759	1.41	1638280	1.65		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-192908/11		1586829	1.91	3305852	2.15		
ICV 320-192908/13		1512045	1.90	3433628	2.14		
CCVL 320-199462/1		1637426	1.85	3337066	2.12		
CCV 320-199464/12 CCVIS		1543512	1.83	3294426	2.09		
MB 320-199025/1-A		1406899	1.82	3063225	2.09		
LCS 320-199025/2-A		1474579	1.83	3211773	2.09		
LCSD 320-199025/3-A		1472542	1.82	3307329	2.09		
320-33939-1	WGNA-120517-RW-0617	1473363	1.82	3220295	2.09		
320-33939-2	WGNA-120517-FRB-0617	1573004	1.82	3233568	2.08		
320-33939-3	WGNA-120517-RW-4820	1531302	1.82	3334745	2.08		
320-33939-4	WGNA-120517-FRB-4820	1475777	1.82	3278446	2.08		
320-33939-5	NAWC-120517-RW-285	1576169	1.82	3441658	2.08		
320-33939-6	NAWC-120517-FRB-285	1542108	1.82	3359476	2.08		
320-33939-7	NAWC-120517-RW-135	1525968	1.82	3188913	2.08		
CCV 320-199464/24 CCVIS		1424361	1.81	3103960	2.08		
CCV 320-199466/24 CCVIS		1424361	1.81	3103960	2.08		
320-33939-8	NAWC-120517-FRB-135	1576598	1.82	3320157	2.08		
320-33939-9	NAWC-120517-RW-356	1515302	1.81	3269688	2.07		
320-33939-10	NAWC-120517-FRB-356	1527901	1.82	3336523	2.08		
320-33939-11	NAWC-120517-RW-357	1491030	1.81	3286588	2.07		
320-33939-12	NAWC-120517-FRB-357	1544449	1.82	3312861	2.08		
320-33939-13	WGNA-120517-RW-0263	1511274	1.81	3307797	2.07		
320-33939-14	WGNA-120517-FRB-0263	1618278	1.81	3606068	2.07		
CCV 320-199466/33 CCVIS		1440416	1.81	3059172	2.07		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Sample No.: CCV 320-199464/12 Date Analyzed: 12/12/2017 09:32

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.12.12_537A_015 Heated Purge: (Y/N) N

Calibration ID: 36012

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1543512	1.83	3294426	2.09		
UPPER LIMIT		2160917	2.33	4612196	2.59		
LOWER LIMIT		1080458	1.33	2306098	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-199025/1-A		1406899	1.82	3063225	2.09		
LCS 320-199025/2-A		1474579	1.83	3211773	2.09		
LCSD 320-199025/3-A		1472542	1.82	3307329	2.09		
320-33939-1	WGNA-120517-RW-0617	1473363	1.82	3220295	2.09		
320-33939-2	WGNA-120517-FRB-0617	1573004	1.82	3233568	2.08		
320-33939-3	WGNA-120517-RW-4820	1531302	1.82	3334745	2.08		
320-33939-4	WGNA-120517-FRB-4820	1475777	1.82	3278446	2.08		
320-33939-5	NAWC-120517-RW-285	1576169	1.82	3441658	2.08		
320-33939-6	NAWC-120517-FRB-285	1542108	1.82	3359476	2.08		
320-33939-7	NAWC-120517-RW-135	1525968	1.82	3188913	2.08		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Sample No.: CCV 320-199464/24 Date Analyzed: 12/12/2017 10:28

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.12.12_537A_027 Heated Purge: (Y/N) N

Calibration ID: 36012

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1424361	1.81	3103960	2.08		
UPPER LIMIT		1994105	2.31	4345544	2.58		
LOWER LIMIT		997053	1.31	2172772	1.58		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-199025/1-A		1406899	1.82	3063225	2.09		
LCS 320-199025/2-A		1474579	1.83	3211773	2.09		
LCSD 320-199025/3-A		1472542	1.82	3307329	2.09		
320-33939-1	WGNA-120517-RW-0617	1473363	1.82	3220295	2.09		
320-33939-2	WGNA-120517-FRB-0617	1573004	1.82	3233568	2.08		
320-33939-3	WGNA-120517-RW-4820	1531302	1.82	3334745	2.08		
320-33939-4	WGNA-120517-FRB-4820	1475777	1.82	3278446	2.08		
320-33939-5	NAWC-120517-RW-285	1576169	1.82	3441658	2.08		
320-33939-6	NAWC-120517-FRB-285	1542108	1.82	3359476	2.08		
320-33939-7	NAWC-120517-RW-135	1525968	1.82	3188913	2.08		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Sample No.: CCV 320-199466/24 Date Analyzed: 12/12/2017 10:28

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.12.12_537A_027 Heated Purge: (Y/N) N

Calibration ID: 36012

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1424361	1.81	3103960	2.08		
UPPER LIMIT		1994105	2.31	4345544	2.58		
LOWER LIMIT		997053	1.31	2172772	1.58		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-33939-8	NAWC-120517-FRB-135	1576598	1.82	3320157	2.08		
320-33939-9	NAWC-120517-RW-356	1515302	1.81	3269688	2.07		
320-33939-10	NAWC-120517-FRB-356	1527901	1.82	3336523	2.08		
320-33939-11	NAWC-120517-RW-357	1491030	1.81	3286588	2.07		
320-33939-12	NAWC-120517-FRB-357	1544449	1.82	3312861	2.08		
320-33939-13	WGNA-120517-RW-0263	1511274	1.81	3307797	2.07		
320-33939-14	WGNA-120517-FRB-0263	1618278	1.81	3606068	2.07		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Sample No.: CCV 320-199466/33 Date Analyzed: 12/12/2017 11:10

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2017.12.12_537A_036 Heated Purge: (Y/N) N

Calibration ID: 36012

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1440416	1.81	3059172	2.07		
UPPER LIMIT		2016582	2.31	4282841	2.57		
LOWER LIMIT		1008291	1.31	2141420	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-33939-8	NAWC-120517-FRB-135	1576598	1.82	3320157	2.08		
320-33939-9	NAWC-120517-RW-356	1515302	1.81	3269688	2.07		
320-33939-10	NAWC-120517-FRB-356	1527901	1.82	3336523	2.08		
320-33939-11	NAWC-120517-RW-357	1491030	1.81	3286588	2.07		
320-33939-12	NAWC-120517-FRB-357	1544449	1.82	3312861	2.08		
320-33939-13	WGNA-120517-RW-0263	1511274	1.81	3307797	2.07		
320-33939-14	WGNA-120517-FRB-0263	1618278	1.81	3606068	2.07		

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

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

Column used to flag values outside QC limits

FORM VIII 537

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

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1 Analy Batch No.: 192908

SDG No.:

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

Calibration Start Date: 11/03/2017 13:37 Calibration End Date: 11/03/2017 14:01 Calibration ID: 36012

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-192908/4	2017.11.03_537XICAL_004.d
Level 2	IC 320-192908/5	2017.11.03_537XICAL_005.d
Level 3	IC 320-192908/6	2017.11.03_537XICAL_006.d
Level 4	IC 320-192908/7	2017.11.03_537XICAL_007.d
Level 5	IC 320-192908/8	2017.11.03_537XICAL_008.d
Level 6	IC 320-192908/9	2017.11.03_537XICAL_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)	1.0397 0.8468	1.0767	1.0898	0.9577	0.9303	QuaF		1.1193	-0.001498						0.9990		0.9600
Perfluoroheptanoic acid (PFHpA)	0.9433 0.9848	0.9187	0.9551	0.9185	0.9011	Ave		0.9369				3.2		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.6459 1.6841	1.6355	1.7405	1.6631	1.6755	Ave		1.6741				2.2		30.0			
Perfluorooctanoic acid (PFOA)	0.9757 0.9799	0.8919	0.9000	0.8953	0.9117	Ave		0.9258				4.4		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.8958 0.9902	0.9213	0.9281	0.9268	0.9715	Ave		0.9389				3.7		30.0			
Perfluorononanoic acid (PFNA)	0.6610 0.7042	0.6285	0.6624	0.6810	0.6478	Ave		0.6642				3.9		30.0			
13C2 PFHxA	1.0891 1.1664	1.0526	1.1042	1.1123	1.0772	Ave		1.1003				3.5		30.0			
13C2 PFDA	0.7748 0.8159	0.7295	0.7569	0.7811	0.7330	Ave		0.7652				4.3		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.: 320-33939-1 Analy Batch No.: 192908

SDG No.:

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

Calibration Start Date: 11/03/2017 13:37 Calibration End Date: 11/03/2017 14:01 Calibration ID: 36012

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-192908/4	2017.11.03_537XICAL_004.d
Level 2	IC 320-192908/5	2017.11.03_537XICAL_005.d
Level 3	IC 320-192908/6	2017.11.03_537XICAL_006.d
Level 4	IC 320-192908/7	2017.11.03_537XICAL_007.d
Level 5	IC 320-192908/8	2017.11.03_537XICAL_008.d
Level 6	IC 320-192908/9	2017.11.03_537XICAL_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	QuaF	1076553 16699152	2591121	5461974	10142530	14011858	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	143455 2810797	331548	736034	1420703	2102676	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	568156 11071993	1312135	2908204	5871843	8413133	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	296934 5597122	644149	1388033	2771271	4257225	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	412315 8679676	985487	2067792	4363079	6504279	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PF OA	Ave	201053 4019666	453612	1020851	2106479	3023088	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PF OA	Ave	1655691 1664260	1708988	1701491	1719911	1675220	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	1177922 1164156	1184358	1166275	1207887	1139992	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD
QuaF = Quadratic ISTD forced zero

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

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1 Analy Batch No.: 192908

SDG No.:

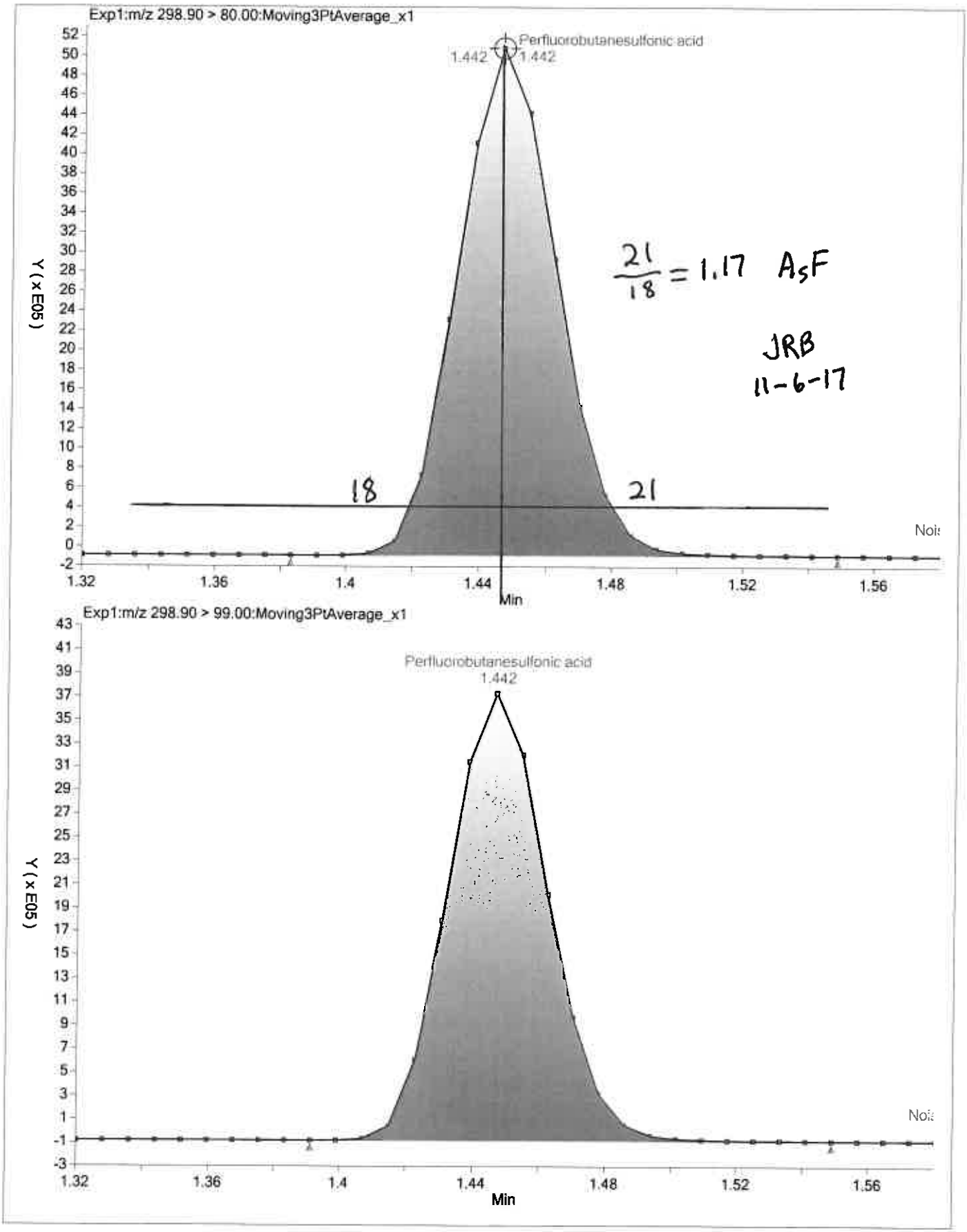
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

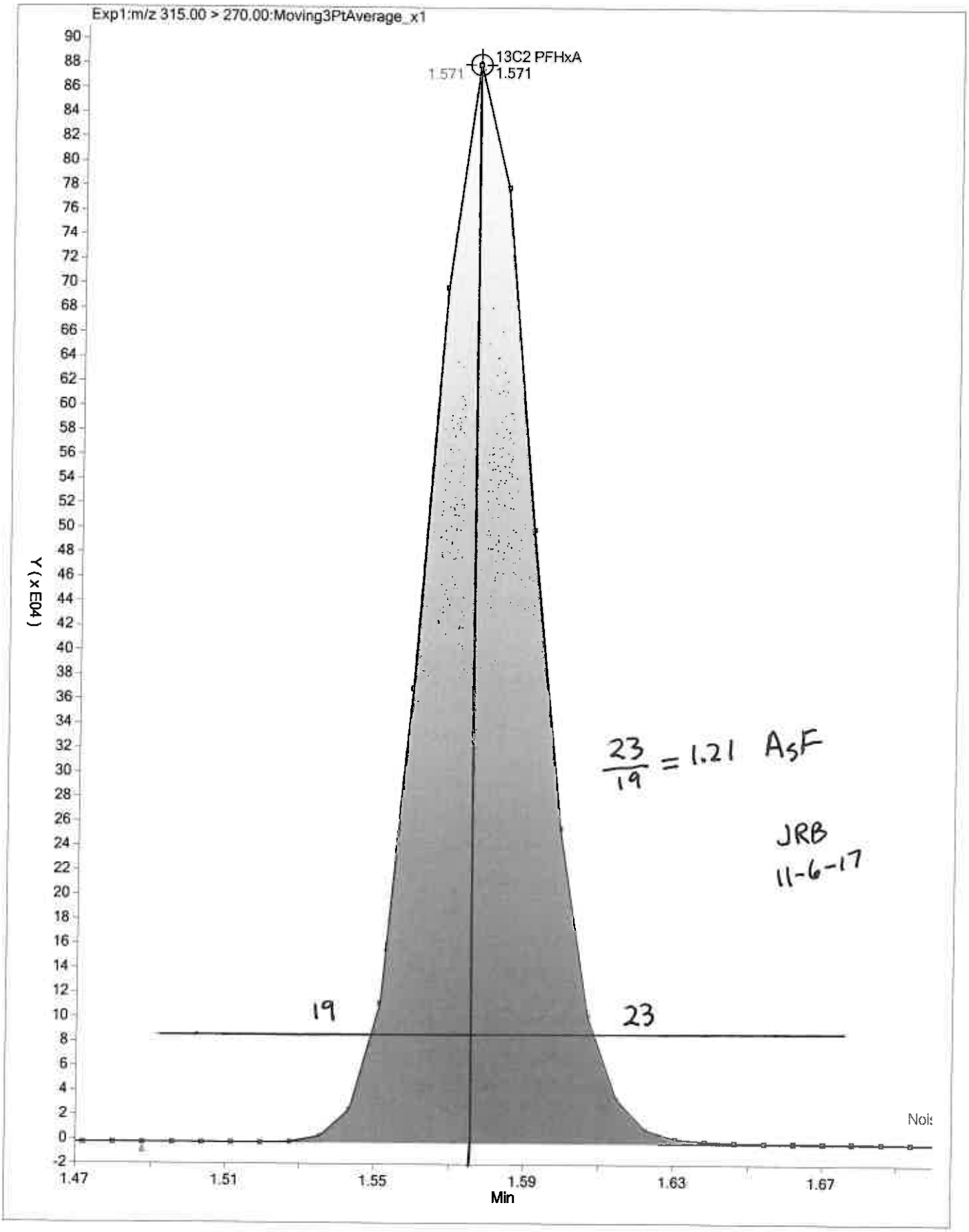
Calibration Start Date: 11/03/2017 13:37 Calibration End Date: 11/03/2017 14:01 Calibration ID: 36012

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-192908/4	2017.11.03_537XICAL_004.d
Level 2	IC 320-192908/5	2017.11.03_537XICAL_005.d
Level 3	IC 320-192908/6	2017.11.03_537XICAL_006.d
Level 4	IC 320-192908/7	2017.11.03_537XICAL_007.d
Level 5	IC 320-192908/8	2017.11.03_537XICAL_008.d
Level 6	IC 320-192908/9	2017.11.03_537XICAL_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)	-6.0	-1.2	3.9	-3.1	1.9	-0.5	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	0.7	-1.9	1.9	-2.0	-3.8	5.1	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-1.7	-2.3	4.0	-0.7	0.1	0.6	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	5.4	-3.7	-2.8	-3.3	-1.5	5.8	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-4.6	-1.9	-1.2	-1.3	3.5	5.5	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-0.5	-5.4	-0.3	2.5	-2.5	6.0	50	30	30	30	30	30
13C2 PFHxA	-1.0	-4.3	0.4	1.1	-2.1	6.0	30	30	30	30	30	30
13C2 PFDA	1.3	-4.7	-1.1	2.1	-4.2	6.6	30	30	30	30	30	30


Exp1:m/z 298.90 > 80.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
1.442
1.442
Y (x E05)
Min
18
21
21/18 = 1.17 AsF
JRB
11-6-17
Exp1:m/z 298.90 > 99.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
1.442
Y (x E05)
Min


Exp1:m/z 315.00 > 270.00:Moving3PtAverage_x1
13C2 PFHxA
1.571
1.571
Y (x E04)
Min
19
23
23/19 = 1.21 AsF
JRB
11-6-17

TestAmerica Laboratories
Istd/Surrogate Recovery Report

Worklist Name: 03NOV2017_537A_ICAL Worklist Num: 49975
Instrument: A8_N Method: 537_A8_N
Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20171106-49975.b
Limit Group: LC 537 ICAL
Analysis Type: SemiVOA
Inj Volume: 2.00 Inj Vol Units: ul

Lims Batch: 192908
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			2864400 1.87	6253426 2.11
# 1 RB 03-Nov-2017 13:23:59			1.94 1485386 51.9	2.16 3471256 55.5
# 2 RB 03-Nov-2017 13:28:38			1.93 1511056 52.8	2.16 3340239 53.4
# 3 RB 03-Nov-2017 13:33:19			1.92 1483949 51.8	2.16 3285228 52.5
IS Std				
# 4 IC L1 03-Nov-2017 13:37:59	1.58 98.98	2.31 101.30	1.92 1520258> 100.0*	2.16 3298877> 100.0*
# 5 IC L2 03-Nov-2017 13:42:39	1.58 95.66	2.31 95.33	1.92 1623614> 106.8*	2.16 3450592> 104.6*
# 6 IC L3 03-Nov-2017 13:47:20	1.57 100.40	2.31 98.91	1.91 1540946> 101.4*	2.15 3194016> 96.8*
# 7 IC L4 03-Nov-2017 13:52:00	1.57 101.10	2.31 102.10	1.91 1546307> 101.7*	2.16 3374600> 102.3*
# 8 IC L5 03-Nov-2017 13:56:41	1.57 97.90	2.31 95.80	1.91 1555174> 102.3*	2.15 3199479> 97.0*
# 9 IC L6 03-Nov-2017 14:01:24	1.57 106.00	2.31 106.60	1.90 1426806> 93.9*	2.15 3141787> 95.2*
IS Std			1540946 1.91	3194016 2.15
#10 RB 03-Nov-2017 14:06:04			1.91 1395383 90.6	2.15 3212781 100.6
IS Std			1546307 1.91	3374600 2.16
#11 CCVL 03-Nov-2017 14:10:44	1.58 97.03	2.31 97.49	1.91 1586829 102.6	2.15 3305852 98.0
IS Std			1586829 1.91	3305852 2.15
#12 RB 03-Nov-2017 14:15:23			1.90 1415042 89.2	2.14 3122656 94.5
IS Std			1546307 1.91	3374600 2.16
#13 ICV 03-Nov-2017 14:20:03	1.57 94.41	2.31 96.59	1.90 1512045 97.8	2.14 3433628 101.7
IS Std			1395100 1.91	3254950 2.15
#14 RB 03-Nov-2017 14:24:44			1.91 1395100 100.0	2.15 3254950 100.0

13C2-PFOA

$$RPD = \frac{1623614 - 1426806}{\left(\frac{1623614 + 1426806}{2}\right)}(100) = 12.9$$

13C4-PFOS

$$RPD = \frac{3450592 - 3141787}{\left(\frac{3450592 + 3141787}{2}\right)}(100) = 9.37$$

JRB
11-6-17

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Lab Sample ID: CCVL 320-192908/11 Calibration Date: 11/03/2017 14:10

Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 11/03/2017 14:01

Lab File ID: 2017.11.03_537XICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.109		20.4	20.0	1.9	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	0.9382		2.23	2.22	0.1	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.688		6.72	6.67	0.8	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.8825		4.24	4.45	-4.7	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.9176		8.69	8.89	-2.3	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6625		4.43	4.45	-0.2	50.0
13C2 PFHxA	Ave	1.100	1.068		9.70	10.0	-3.0	30.0
13C2 PFDA	Ave	0.7652	0.7460		9.75	10.0	-2.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Lab Sample ID: ICV 320-192908/13 Calibration Date: 11/03/2017 14:20

Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 11/03/2017 14:01

Lab File ID: 2017.11.03_537XICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8310		83.7	100	-16.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	0.8136		8.68	10.0	-13.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.463		17.5	20.1	-12.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.7995		17.7	20.5	-13.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.8637		18.1	19.7	-8.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6428		19.5	20.1	-3.2	30.0
13C2 PFHxA	Ave	1.100	1.039		9.44	10.0	-5.6	30.0
13C2 PFDA	Ave	0.7652	0.7391		9.66	10.0	-3.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Lab Sample ID: CCVL 320-199462/1 Calibration Date: 12/12/2017 08:41

Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 11/03/2017 14:01

Lab File ID: 2017.12.12_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)	QuaF		1.212		22.3	20.0	11.7	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	0.8931		2.12	2.22	-4.7	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.700		6.77	6.67	1.5	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.8900		4.28	4.45	-3.9	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.8991		8.51	8.89	-4.2	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.5926		3.97	4.45	-10.8	50.0
13C2 PFHxA	Ave	1.100	1.038		9.43	10.0	-5.7	30.0
13C2 PFDA	Ave	0.7652	0.7197		9.41	10.0	-5.9	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Lab Sample ID: CCV 320-199464/12 Calibration Date: 12/12/2017 09:32

Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 11/03/2017 14:01

Lab File ID: 2017.12.12_537A_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9654		144	135	6.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	0.9390		15.0	15.0	0.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.724		46.3	45.0	3.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.9495		30.8	30.0	2.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.9501		60.7	60.0	1.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6578		29.7	30.0	-1.0	30.0
13C2 PFHxA	Ave	1.100	1.146		10.4	10.0	4.1	30.0
13C2 PFDA	Ave	0.7652	0.7940		10.4	10.0	3.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Lab Sample ID: CCV 320-199464/24 Calibration Date: 12/12/2017 10:28

Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 11/03/2017 14:01

Lab File ID: 2017.12.12_537A_027.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.166		50.3	45.0	11.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	1.002		5.35	5.00	7.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.835		16.4	15.0	9.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.9239		9.99	10.0	-0.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.9046		19.3	20.0	-3.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6401		9.64	10.0	-3.6	30.0
13C2 PFHxA	Ave	1.100	1.200		10.9	10.0	9.1	30.0
13C2 PFDA	Ave	0.7652	0.7590		9.92	10.0	-0.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Lab Sample ID: CCV 320-199466/24 Calibration Date: 12/12/2017 10:28

Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 11/03/2017 14:01

Lab File ID: 2017.12.12_537A_027.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.166		50.3	45.0	11.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	1.002		5.35	5.00	7.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.835		16.4	15.0	9.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.9239		9.99	10.0	-0.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.9046		19.3	20.0	-3.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6401		9.64	10.0	-3.6	30.0
13C2 PFHxA	Ave	1.100	1.200		10.9	10.0	9.1	30.0
13C2 PFDA	Ave	0.7652	0.7590		9.92	10.0	-0.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Lab Sample ID: CCV 320-199466/33 Calibration Date: 12/12/2017 11:10

Instrument ID: A8_N Calib Start Date: 11/03/2017 13:37

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 11/03/2017 14:01

Lab File ID: 2017.12.12_537A_036.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.995		150	135	11.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9369	0.9705		15.5	15.0	3.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.674	1.827		49.1	45.0	9.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9258	0.9314		30.2	30.0	0.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9389	0.9573		61.2	60.0	2.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6642	0.6866		31.0	30.0	3.4	30.0
13C2 PFHxA	Ave	1.100	1.189		10.8	10.0	8.0	30.0
13C2 PFDA	Ave	0.7652	0.7782		10.2	10.0	1.7	30.0

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 320-199025/1-A
Matrix: Water
Lab File ID: 2017.12.12_537A_017.d
Analysis Method: 537
Date Collected:
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 250.00(mL)
Date Analyzed: 12/12/2017 09:42
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.: 199464
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	99		70-130
STL00996	13C2 PFDA	103		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCS 320-199025/2-A
Matrix: Water
Lab File ID: 2017.12.12_537A_018.d
Analysis Method: 537
Date Collected:
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 250.00(mL)
Date Analyzed: 12/12/2017 09:46
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.: 199464
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	232	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	117		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	109		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	186		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	63.2		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	524		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	105		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-33939-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCSD 320-199025/3-A
Matrix: Water
Lab File ID: 2017.12.12_537A_019.d
Analysis Method: 537
Date Collected:
Extraction Method: 537
Date Extracted: 12/08/2017 11:56
Sample wt/vol: 250.00(mL)
Date Analyzed: 12/12/2017 09:51
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 199464
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	231	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	120		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	114		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	183		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	64.9		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	541		90	36	16

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

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Instrument ID: A8_N Start Date: 11/03/2017 13:37

Analysis Batch Number: 192908 End Date: 11/03/2017 14:24

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-192908/4		11/03/2017 13:37	1	2017.11.03_537X ICAL 004.d	GeminiC18 3x100 3(mm)
IC 320-192908/5		11/03/2017 13:42	1	2017.11.03_537X ICAL 005.d	GeminiC18 3x100 3(mm)
IC 320-192908/6		11/03/2017 13:47	1	2017.11.03_537X ICAL 006.d	GeminiC18 3x100 3(mm)
IC 320-192908/7 ICISAV		11/03/2017 13:52	1	2017.11.03_537X ICAL 007.d	GeminiC18 3x100 3(mm)
IC 320-192908/8		11/03/2017 13:56	1	2017.11.03_537X ICAL 008.d	GeminiC18 3x100 3(mm)
IC 320-192908/9		11/03/2017 14:01	1	2017.11.03_537X ICAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		11/03/2017 14:06	1		GeminiC18 3x100 3(mm)
CCVL 320-192908/11		11/03/2017 14:10	1	2017.11.03_537X ICAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		11/03/2017 14:15	1		GeminiC18 3x100 3(mm)
ICV 320-192908/13		11/03/2017 14:20	1	2017.11.03_537X ICAL 013.d	GeminiC18 3x100 3(mm)
ZZZZZ		11/03/2017 14:24	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Instrument ID: A8_N Start Date: 12/12/2017 08:41

Analysis Batch Number: 199462 End Date: 12/12/2017 09:32

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-199462/1		12/12/2017 08:41	1	2017.12.12_537A 004.d	GeminiC18 3x100 3(mm)
CCV 320-199462/2 CCVIS		12/12/2017 08:46	1		GeminiC18 3x100 3(mm)
CCV 320-199462/12 CCVIS		12/12/2017 09:32	1		GeminiC18 3x100 3(mm)

537

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Instrument ID: A8_N Start Date: 12/12/2017 09:32

Analysis Batch Number: 199464 End Date: 12/12/2017 10:28

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-199464/12 CCVIS		12/12/2017 09:32	1	2017.12.12_537A 015.d	GeminiC18 3x100 3(mm)
MB 320-199025/1-A		12/12/2017 09:42	1	2017.12.12_537A 017.d	GeminiC18 3x100 3(mm)
LCS 320-199025/2-A		12/12/2017 09:46	1	2017.12.12_537A 018.d	GeminiC18 3x100 3(mm)
LCSD 320-199025/3-A		12/12/2017 09:51	1	2017.12.12_537A 019.d	GeminiC18 3x100 3(mm)
320-33939-1		12/12/2017 09:56	1	2017.12.12_537A 020.d	GeminiC18 3x100 3(mm)
320-33939-2		12/12/2017 10:00	1	2017.12.12_537A 021.d	GeminiC18 3x100 3(mm)
320-33939-3		12/12/2017 10:05	1	2017.12.12_537A 022.d	GeminiC18 3x100 3(mm)
320-33939-4		12/12/2017 10:10	1	2017.12.12_537A 023.d	GeminiC18 3x100 3(mm)
320-33939-5		12/12/2017 10:14	1	2017.12.12_537A 024.d	GeminiC18 3x100 3(mm)
320-33939-6		12/12/2017 10:19	1	2017.12.12_537A 025.d	GeminiC18 3x100 3(mm)
320-33939-7		12/12/2017 10:24	1	2017.12.12_537A 026.d	GeminiC18 3x100 3(mm)
CCV 320-199464/24 CCVIS		12/12/2017 10:28	1	2017.12.12_537A 027.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Instrument ID: A8_N Start Date: 12/12/2017 10:28

Analysis Batch Number: 199466 End Date: 12/12/2017 11:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-199466/24 CCVIS		12/12/2017 10:28	1	2017.12.12_537A 027.d	GeminiC18 3x100 3(mm)
320-33939-8		12/12/2017 10:38	1	2017.12.12_537A 029.d	GeminiC18 3x100 3(mm)
320-33939-9		12/12/2017 10:42	1	2017.12.12_537A 030.d	GeminiC18 3x100 3(mm)
320-33939-10		12/12/2017 10:47	1	2017.12.12_537A 031.d	GeminiC18 3x100 3(mm)
320-33939-11		12/12/2017 10:52	1	2017.12.12_537A 032.d	GeminiC18 3x100 3(mm)
320-33939-12		12/12/2017 10:56	1	2017.12.12_537A 033.d	GeminiC18 3x100 3(mm)
320-33939-13		12/12/2017 11:01	1	2017.12.12_537A 034.d	GeminiC18 3x100 3(mm)
320-33939-14		12/12/2017 11:06	1	2017.12.12_537A 035.d	GeminiC18 3x100 3(mm)
CCV 320-199466/33 CCVIS		12/12/2017 11:10	1	2017.12.12_537A 036.d	GeminiC18 3x100 3(mm)

537

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-33939-1

SDG No.:

Batch Number: 199025 Batch Start Date: 12/08/17 11:56 Batch Analyst: Kolstad, Kate M

Batch Method: 537 Batch End Date: 12/11/17 17:16

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-HSP 00023
MB 320-199025/1		537, 537				250.00 mL	1.00 mL	7 SU	
LCS 320-199025/2		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
LCSD 320-199025/3		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
320-33939-A-1	WGNA-120517-RW-0617	537, 537	T	274.39 g	27.30 g	247.1 mL	1.00 mL	7 SU	
320-33939-A-2	WGNA-120517-FRB-0617	537, 537	T	273.25 g	27.29 g	246 mL	1.00 mL	7 SU	
320-33939-A-3	WGNA-120517-RW-4820	537, 537	T	270.18 g	27.53 g	242.7 mL	1.00 mL	7 SU	
320-33939-A-4	WGNA-120517-FRB-4820	537, 537	T	276.83 g	27.01 g	249.8 mL	1.00 mL	7 SU	
320-33939-A-5	NAWC-120517-RW-285	537, 537	T	275.91 g	27.09 g	248.8 mL	1.00 mL	7 SU	
320-33939-A-6	NAWC-120517-FRB-285	537, 537	T	273.30 g	27.25 g	246.1 mL	1.00 mL	7 SU	
320-33939-A-7	NAWC-120517-RW-135	537, 537	T	274.49 g	28.03 g	246.5 mL	1.00 mL	7 SU	
320-33939-A-8	NAWC-120517-FRB-135	537, 537	T	279.76 g	27.61 g	252.2 mL	1.00 mL	7 SU	
320-33939-A-9	NAWC-120517-RW-356	537, 537	T	274.97 g	27.47 g	247.5 mL	1.00 mL	7 SU	
320-33939-A-10	NAWC-120517-FRB-356	537, 537	T	273.84 g	27.52 g	246.3 mL	1.00 mL	7 SU	
320-33939-A-11	NAWC-120517-RW-357	537, 537	T	272.37 g	27.20 g	245.2 mL	1.00 mL	7 SU	
320-33939-A-12	NAWC-120517-FRB-357	537, 537	T	276.64 g	27.37 g	249.3 mL	1.00 mL	7 SU	
320-33939-A-13	WGNA-120517-RW-0263	537, 537	T	279.15 g	27.93 g	251.2 mL	1.00 mL	6 SU	
320-33939-A-14	WGNA-120517-FRB-0263	537, 537	T	275.81 g	27.37 g	248.4 mL	1.00 mL	7 SU	

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00053	LC537-SU 00056	AnalysisComment			
MB 320-199025/1		537, 537		100 uL	100 uL	Cl ND			
LCS 320-199025/2		537, 537		100 uL	100 uL	Cl ND			
LCSD 320-199025/3		537, 537		100 uL	100 uL	Cl 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.: 320-33939-1

SDG No.:

Batch Number: 199025 Batch Start Date: 12/08/17 11:56 Batch Analyst: Kolstad, Kate M

Batch Method: 537 Batch End Date: 12/11/17 17:16

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00053	LC537-SU 00056	AnalysisComment			
320-33939-A-1	WGNA-120517-RW-0617	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-2	WGNA-120517-FRB-0617	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-3	WGNA-120517-RW-4820	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-4	WGNA-120517-FRB-4820	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-5	NAWC-120517-RW-285	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-6	NAWC-120517-FRB-285	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-7	NAWC-120517-RW-135	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-8	NAWC-120517-FRB-135	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-9	NAWC-120517-RW-356	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-10	NAWC-120517-FRB-356	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-11	NAWC-120517-RW-357	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-12	NAWC-120517-FRB-357	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-13	WGNA-120517-RW-0263	537, 537	T	100 uL	100 uL	Cl ND			
320-33939-A-14	WGNA-120517-FRB-0263	537, 537	T	100 uL	100 uL	Cl 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.: 320-33939-1

SDG No.:

Batch Number: 199025 Batch Start Date: 12/08/17 11:56 Batch Analyst: Kolstad, Kate M

Batch Method: 537 Batch End Date: 12/11/17 17:16

Batch Notes	
Analyst ID - Aliquot Step	VPM
Analyst ID - Concentration	CCB/KMK
Analyst ID - Final Volume Step	KMK
Internal Standard ID#	1099353
Manifold ID	3,4
Methanol ID	1095362
pH Indicator ID	4390-01 (Lot 2517)
Pipette ID	M16387D
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	KMK
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	KMK
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	KMK
SPE Cartridge ID	6357081-11
Trizma ID	SLBR4303V
Reagent Water ID	12-4-17

Basis	Basis Description
T	Total/NA

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

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 CCV/Data Review Checklist

Job No: 33932, 33939 Instrument ID & Date: A8 12/12/17 ICAL Batch: 192909, 192908
Extraction Batch: 199024, 199025 Worklist #: 51632 TALS Batch: 199461, 199464, 199466, 199462

Review Items	Level 1 Yes	Level 1 No	Level 1 N/A	Level 2
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? 0 Dilutions due to non-targets? 0	✓			✓
5. All target compounds in MB < 1/3 RL ? **(Requires NCM if "no.")**	✓			✓
6. Are target constituents in LCS/LCSD within method control limits?	✓			✓
7. Internal Standard areas in control for all samples and QC reported? ±50% from the average area of the ICAL and 70-140% of the most recent CCV	✓			✓
8. Do results (e.g., dilutions/trip blanks) make sense?	✓			✓
9. Are MS/MSD recoveries and RPDs within method control limits?	✓			✓
10. Are all QC samples properly linked in TALS?	✓			✓
11. All manual integrations appropriate and completely documented?	✓			✓
12. Are nonconformances documented as NCMs?	✓			✓
13. Are all Chrom graphics uploaded?	✓			✓

1st Level Reviewer / Date: ABH 12/12/2017 CBW 12/13/17 2nd Level Reviewer / Date: MKW 12/15/2017

NCM # and Comments:

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 ICAL Checklist

A8

Instrument ID & Date: 11-3-17 Worklist#: 49975

ICAL Batch: 192908, 192909 Calibration ID number: 36012, 36013

Review Items	--- Level 1 --- Yes	No	N/A	Level 2
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): Average Linear (1/x²)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 (2nd source) ± 30% of true value?	✓			✓
11. Is ICV (2nd 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 11-6-17 2nd Level Reviewer / Date: [illegible] 11/6/2017

NCM # and Comments:

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 12DEC2017_537A Worklist Number: 51632
Instrument Name: A8_N Chrom Method: 537_A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b
QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 CS ICAL Raw Batch: 199461	LC 537 ICAL Raw Batch: 199462
# 1 CCVL	# 1 CCVL	# 1 CCVL
# 2 CCV L3	# 2 CCV L3	# 2 CCV L3
# 3 RB	# 3 RB	# 3 RB
# 4 MB 320-199024/1-A	# 4 MB 320-199024/1-A	
# 5 LCS 320-199024/2-A	# 5 LCS 320-199024/2-A	
# 6 LCSD 320-199024/3-A	# 6 LCSD 320-199024/3-A	
# 7 320-33932-A-1-A	# 7 320-33932-A-1-A	
# 8 320-33932-A-2-A	# 8 320-33932-A-2-A	
# 9 320-33932-A-2-B MS	# 9 320-33932-A-2-B MS	
#10 320-33932-A-2-C MSD	#10 320-33932-A-2-C MSD	
#11 320-33932-A-3-A	#11 320-33932-A-3-A	
#12 CCV L5	#12 CCV L5	#12 CCV L5

QC Batch: 2	LC 537 CS ICAL Raw Batch: 199463	LC 537 ICAL Raw Batch: 199464
#12 CCV L5	#12 CCV L5	#12 CCV L5
#13 RB	#13 RB	#13 RB
#14 MB 320-199025/1-A		#14 MB 320-199025/1-A
#15 LCS 320-199025/2-A		#15 LCS 320-199025/2-A
#16 LCSD 320-199025/3-A		#16 LCSD 320-199025/3-A
#17 320-33939-A-1-A		#17 320-33939-A-1-A
#18 320-33939-A-2-A		#18 320-33939-A-2-A
#19 320-33939-A-3-A		#19 320-33939-A-3-A
#20 320-33939-A-4-A		#20 320-33939-A-4-A
#21 320-33939-A-5-A		#21 320-33939-A-5-A
#22 320-33939-A-6-A		#22 320-33939-A-6-A
#23 320-33939-A-7-A		#23 320-33939-A-7-A
#24 CCV L3	#24 CCV L3	#24 CCV L3

QC Batch: 3	LC 537 CS ICAL Raw Batch: 199465	LC 537 ICAL Raw Batch: 199466
#24 CCV L3	#24 CCV L3	#24 CCV L3
#25 RB	#25 RB	#25 RB
#26 320-33939-A-8-A		#26 320-33939-A-8-A
#27 320-33939-A-9-A		#27 320-33939-A-9-A
#28 320-33939-A-10-A		#28 320-33939-A-10-A
#29 320-33939-A-11-A		#29 320-33939-A-11-A
#30 320-33939-A-12-A		#30 320-33939-A-12-A
#31 320-33939-A-13-A		#31 320-33939-A-13-A
#32 320-33939-A-14-A		#32 320-33939-A-14-A
#33 CCV L5	#33 CCV L5	#33 CCV L5
#34 RB	#34 RB	#34 RB

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 12DEC2017_537A
Instrument: A8_N
Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20171212-51632.b
Anaylysis Type: SemiVOA
Inj Volume: 2.00

Worklist Num: 51632
Method: 537_A8_N
Creator: Hannigan, Alyssa B
Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCVL	320-0051632-001	CCVL	12-Dec-2017 08:41:23	2017.12.12_537A_004.d	2	1.0		sv
CCV L3	320-0051632-002	CCVIS	12-Dec-2017 08:46:03	2017.12.12_537A_005.d	3	1.0		sv
RB	320-0051632-003	RB	12-Dec-2017 08:50:44	2017.12.12_537A_006.d	8	1.0		sv
MB 320-199024/1-A	320-0051632-004	MB	12-Dec-2017 08:55:23	2017.12.12_537A_007.d	1	1.0		sv
LCS 320-199024/2-A	320-0051632-005	LCS	12-Dec-2017 09:00:04	2017.12.12_537A_008.d	2	1.0		sv
LCSD 320-199024/3-A	320-0051632-006	LCSD	12-Dec-2017 09:04:45	2017.12.12_537A_009.d	3	1.0		sv
320-33932-A-1-A	320-0051632-007	Client	12-Dec-2017 09:09:25	2017.12.12_537A_010.d	4	1.0	GC4Q17-900TurkeyHollowF	sv
320-33932-A-2-A	320-0051632-008	Client	12-Dec-2017 09:14:06	2017.12.12_537A_011.d	5	1.0	GC4Q17-120SchoolHouseF	sv
320-33932-A-2-B MS	320-0051632-009	MS	12-Dec-2017 09:18:46	2017.12.12_537A_012.d	6	1.0	GC4Q17-120SchoolHouseF	sv
320-33932-A-2-C MSD	320-0051632-010	MSD	12-Dec-2017 09:23:26	2017.12.12_537A_013.d	7	1.0	GC4Q17-120SchoolHouseF	sv
320-33932-A-3-A	320-0051632-011	Client	12-Dec-2017 09:28:07	2017.12.12_537A_014.d	8	1.0	FB3-4Q17-112717	sv
CCV L5	320-0051632-012	CCVIS	12-Dec-2017 09:32:47	2017.12.12_537A_015.d	5	1.0		sv
RB	320-0051632-013	RB	12-Dec-2017 09:37:28	2017.12.12_537A_016.d	8	1.0		sv
MB 320-199025/1-A	320-0051632-014	MB	12-Dec-2017 09:42:07	2017.12.12_537A_017.d	9	1.0		sv
LCS 320-199025/2-A	320-0051632-015	LCS	12-Dec-2017 09:46:49	2017.12.12_537A_018.d	10	1.0		sv
LCSD 320-199025/3-A	320-0051632-016	LCSD	12-Dec-2017 09:51:30	2017.12.12_537A_019.d	11	1.0		sv
320-33939-A-1-A	320-0051632-017	Client	12-Dec-2017 09:56:10	2017.12.12_537A_020.d	12	1.0	WGNA-120517-RW-0617	sv
320-33939-A-2-A	320-0051632-018	Client	12-Dec-2017 10:00:51	2017.12.12_537A_021.d	13	1.0	WGNA-120517-FRB-0617	sv
320-33939-A-3-A	320-0051632-019	Client	12-Dec-2017 10:05:31	2017.12.12_537A_022.d	14	1.0	WGNA-120517-RW-4820	sv
320-33939-A-4-A	320-0051632-020	Client	12-Dec-2017 10:10:11	2017.12.12_537A_023.d	15	1.0	WGNA-120517-FRB-4820	sv
320-33939-A-5-A	320-0051632-021	Client	12-Dec-2017 10:14:53	2017.12.12_537A_024.d	16	1.0	NAWC-120517-RW-285	sv
320-33939-A-6-A	320-0051632-022	Client	12-Dec-2017 10:19:34	2017.12.12_537A_025.d	17	1.0	NAWC-120517-FRB-285	sv
320-33939-A-7-A	320-0051632-023	Client	12-Dec-2017 10:24:13	2017.12.12_537A_026.d	18	1.0	NAWC-120517-RW-135	sv
CCV L3	320-0051632-024	CCVIS	12-Dec-2017 10:28:52	2017.12.12_537A_027.d	3	1.0		sv
RB	320-0051632-025	RB	12-Dec-2017 10:33:32	2017.12.12_537A_028.d	8	1.0		sv

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
320-33939-A-8-A	320-0051632-026	Client	12-Dec-2017 10:38:11	2017.12.12_537A_029.d	19	1.0	NAWC-120517-FRB-135	sv
320-33939-A-9-A	320-0051632-027	Client	12-Dec-2017 10:42:51	2017.12.12_537A_030.d	20	1.0	NAWC-120517-RW-356	sv
320-33939-A-10-A	320-0051632-028	Client	12-Dec-2017 10:47:32	2017.12.12_537A_031.d	21	1.0	NAWC-120517-FRB-356	sv
320-33939-A-11-A	320-0051632-029	Client	12-Dec-2017 10:52:14	2017.12.12_537A_032.d	22	1.0	NAWC-120517-RW-357	sv
320-33939-A-12-A	320-0051632-030	Client	12-Dec-2017 10:56:54	2017.12.12_537A_033.d	23	1.0	NAWC-120517-FRB-357	sv
320-33939-A-13-A	320-0051632-031	Client	12-Dec-2017 11:01:36	2017.12.12_537A_034.d	24	1.0	WGNA-120517-RW-0263	sv
320-33939-A-14-A	320-0051632-032	Client	12-Dec-2017 11:06:16	2017.12.12_537A_035.d	25	1.0	WGNA-120517-FRB-0263	sv
CCV L5	320-0051632-033	CCVIS	12-Dec-2017 11:10:56	2017.12.12_537A_036.d	5	1.0		sv
RB	320-0051632-034	RB	12-Dec-2017 11:15:37	2017.12.12_537A_037.d	8	1.0		sv

A8 12/12/17

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199024

Method Code: 320-537_Prep-320

Analyst: Kolstad, Kate M

Batch Open: 12/8/2017 11:51:00AM

Batch End: 12/11/2017 4:55:00PM

Extraction of Perfluorinated Alkyl Acids

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	MB~320-199024/1 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	CI ND	MB 320-199024/1-A
				1.00 mL								
2	LCS~320-199024/2 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	CI ND	LCS 320-199024/2-A
				1.00 mL								
3	LCSD~320-199024/3 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	CI ND	LCSD 320-199024/3-A
				1.00 mL								
4	320-33932-A-1 (537_DuPont)	N/A (320-33932-1)	274.57 g	247.3 mL	7			12/12/17	8_Days	4	CI ND	320-33932-A-1-A
			27.31 g	1.00 mL								
5	320-33932-A-2 (537_DuPont)	N/A (320-33932-1)	273.32 g	245.7 mL	7			12/12/17	8_Days	4	CI ND	320-33932-A-2-A
			27.61 g	1.00 mL								
6	320-33932-A-2~MS (537_DuPont)	N/A (320-33932-1)	272.85 g	245.2 mL	7			12/12/17	8_Days	4	CI ND	320-33932-A-2-B MS
			27.70 g	1.00 mL								
7	320-33932-A-2~MSD (537_DuPont)	N/A (320-33932-1)	275.08 g	247.8 mL	7			12/12/17	8_Days	4	CI ND	320-33932-A-2-C MSD
			27.27 g	1.00 mL								
8	320-33932-A-3 (537_DuPont)	N/A (320-33932-1)	278.48 g	251.4 mL	7			12/12/17	8_Days	4	CI ND	320-33932-A-3-A
			27.13 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199024

Method Code: 320-537_Prep-320

Analyst: Kolstad, Kate M

Batch Open: 12/8/2017 11:51:00AM

Batch End: 12/11/2017 4:55:00PM

Batch Notes

Manifold ID	10
pH Indicator ID	4390-01 (Lot 2517)
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-11
Methanol ID	1095362
Reagent Water ID	12-4-17
Internal Standard ID#	1099353
Pipette ID	M16387D
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	KMK
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	KMK
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	KMK
Analyst ID - Concentration	CCB/KMK
Analyst ID - Aliquot Step	VPM
Analyst ID - Final Volume Step	KMK
Batch Comment	N/A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199024

Method Code: 320-537_Prep-320

Analyst: Kolstad, Kate M

Batch Open: 12/8/2017 11:51:00AM

Batch End:

Batch Notes

Manifold ID	10
pH Indicator ID	4390-01 (Lot 2517)
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-11
Methanol ID	1095362
Reagent Water ID	12-4-17
Internal Standard ID#	1099353
Pipette ID	M16387D
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	KMK
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	KMK
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	KMK
Analyst ID - Concentration	LLB/KMK
Analyst ID - Aliquot Step	VPM
Analyst ID - Final Volume Step	KMK
Batch Comment	N/A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199024

Method Code: 320-537_Prep-320

Analyst: Kolstad, Kate M

Batch Open: 12/8/2017 11:51:00AM

Batch End:

Comments

320-33932-A-1	Method Comments:	DuPont QAS_LCSD req
320-33932-A-2	Method Comments:	DuPont QAS_LCSD req
320-33932-A-2~MS	Method Comments:	DuPont QAS_LCSD req
320-33932-A-2~MSD	Method Comments:	DuPont QAS_LCSD req
320-33932-A-3	Method Comments:	DuPont QAS_LCSD req

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199024

Method Code: 320-537_Prep-320

Analyst: Kolstad, Kate M

Batch Open: 12/8/2017 11:51:00AM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-199024/1	LC537-SU_00056	100 uL	1.00 mL	HJA 12-8-17	KMK 12-8-17
LCS 320-199024/2	LC537-MSP_00026	100 uL	1.00 mL		
LCS 320-199024/2	LC537-SU_00056	100 uL	1.00 mL		
LCSD 320-199024/3	LC537-MSP_00026	100 uL	1.00 mL		
LCSD 320-199024/3	LC537-SU_00056	100 uL	1.00 mL		
320-33932-A-1	LC537-SU_00056	100 uL	1.00 mL		
320-33932-A-2	LC537-SU_00056	100 uL	1.00 mL		
320-33932-A-2 MS	LC537-MSP_00026	100 uL	1.00 mL		
320-33932-A-2 MS	LC537-SU_00056	100 uL	1.00 mL		
320-33932-A-2 MSD	LC537-MSP_00026	100 uL	1.00 mL		
320-33932-A-2 MSD	LC537-SU_00056	100 uL	1.00 mL		
320-33932-A-3	LC537-SU_00056	100 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199024

Analyst: Kolstad, Kate M

Batch Open: 12/8/2017 11:51:00AM

Method Code: 320-537_Prep-320

Batch End:

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s) 199024 Test 537 DuPont

Earliest Holding Time 12-11-17

Batch Information	1st Level Reviewer	2nd 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	**1st Level Reviewer**	**2nd Level Reviewer**
Samples identified to the correct method	✓	✓
Holding time violation NCM filed	NA	NA
MS/MSD or MS/DU NCM filed	NA	NA
NCM for any anomalies filed	NA	NA
All NCMs include method code, matrix, and prep batch	NA	NA
Method/sample/login/QAS checked and correct	✓	✓
Batch contains no more than 20 live samples	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd 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 Cl 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	**1st Level Reviewer**	**2nd 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: 12/11/17

2nd Level Reviewer: TWR Date: 12/11/17

Comments:

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199025

Method Code: 320-537_Prep-320

Analyst: Kolstad, Kate M

Batch Open: 12/8/2017 11:56:00AM

Batch End: 12/11/2017 5:16:00PM

Extraction of Perfluorinated Alkyl Acids

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-199025/1 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	Cl ND	MB 320-199025/1-A
				1.00 mL								
2	LCS~320-199025/2 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	Cl ND	LCS 320-199025/2-A
				1.00 mL								
3	LCSD~320-199025/3 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	Cl ND	LCSD 320-199025/3-A
				1.00 mL								
4	320-33939-A-1 (537_DOD5)	N/A (320-33939-1)	274.39 g	247.1 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-1-A
			27.30 g	1.00 mL								
5	320-33939-A-2 (537_DOD5)	N/A (320-33939-1)	273.25 g	246 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-2-A
			27.29 g	1.00 mL								
6	320-33939-A-3 (537_DOD5)	N/A (320-33939-1)	270.18 g	242.7 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-3-A
			27.53 g	1.00 mL								
7	320-33939-A-4 (537_DOD5)	N/A (320-33939-1)	276.83 g	249.8 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-4-A
			27.01 g	1.00 mL								
8	320-33939-A-5 (537_DOD5)	N/A (320-33939-1)	275.91 g	248.8 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-5-A
			27.09 g	1.00 mL								
9	320-33939-A-6 (537_DOD5)	N/A (320-33939-1)	273.30 g	246.1 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-6-A
			27.25 g	1.00 mL								
10	320-33939-A-7 (537_DOD5)	N/A (320-33939-1)	274.49 g	246.5 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-7-A
			28.03 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199025

Analyst: Kolstad, Kate M

Batch Open: 12/8/2017 11:56:00AM

Method Code: 320-537_Prep-320

Batch End: 12/11/2017 5:16:00PM

11	320-33939-A-8 (537_DOD5)	N/A (320-33939-1)	279.76 g 27.61 g	252.2 mL 1.00 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-8-A
12	320-33939-A-9 (537_DOD5)	N/A (320-33939-1)	274.97 g 27.47 g	247.5 mL 1.00 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-9-A
13	320-33939-A-10 (537_DOD5)	N/A (320-33939-1)	273.84 g 27.52 g	246.3 mL 1.00 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-10-A
14	320-33939-A-11 (537_DOD5)	N/A (320-33939-1)	272.37 g 27.20 g	245.2 mL 1.00 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-11-A
15	320-33939-A-12 (537_DOD5)	N/A (320-33939-1)	276.64 g 27.37 g	249.3 mL 1.00 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-12-A
16	320-33939-A-13 (537_DOD5)	N/A (320-33939-1)	279.15 g 27.93 g	251.2 mL 1.00 mL	6			12/10/17	16_Days	4	Cl ND	320-33939-A-13-A
17	320-33939-A-14 (537_DOD5)	N/A (320-33939-1)	275.81 g 27.37 g	248.4 mL 1.00 mL	7			12/10/17	16_Days	4	Cl ND	320-33939-A-14-A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199025

Method Code: 320-537_Prep-320

Analyst: Kolstad, Kate M

Batch Open: 12/8/2017 11:56:00AM

Batch End: 12/11/2017 5:16:00PM

Batch Notes

Manifold ID	3,4
pH Indicator ID	4390-01 (Lot 2517)
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-11
Methanol ID	1095362
Reagent Water ID	12-4-17
Internal Standard ID#	1099353
Pipette ID	M16387D
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	KMK
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	KMK
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	KMK
Analyst ID - Concentration	CCB/KMK
Analyst ID - Aliquot Step	VPM
Analyst ID - Final Volume Step	KMK
Batch Comment	N/A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199025

Method Code: 320-537_Prep-320

Analyst: Kolstad, Kate M

Batch Open: 12/8/2017 11:56:00AM

Batch End: 12/11/2017 5:16:00PM

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199025

Analyst: Kolstad, Kate M

Batch Open: 12/8/2017 11:56:00AM

Method Code: 320-537_Prep-320

Batch End:

Batch Notes

Manifold ID	3, 4
pH Indicator ID	4390-01 (Lot 2517)
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-11
Methanol ID	1095362
Reagent Water ID	12-4-17
Internal Standard ID#	1099353
Pipette ID	M16387D
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	KMK
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	KMK
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	KMK
Analyst ID - Concentration	CB/KMK
Analyst ID - Aliquot Step	VPM
Analyst ID - Final Volume Step	KMK
Batch Comment	N/A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199025

Method Code: 320-537_Prep-320

Analyst: Kolstad, Kate M

Batch Open: 12/8/2017 11:56:00AM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-199025/1	LC537-SU_00056	100 uL	1.00 mL	HJA 12-8-17	KMK 12-8-17
LCS 320-199025/2	LC537-HSP_00023	100 uL	1.00 mL		
LCS 320-199025/2	LC537-SU_00056	100 uL	1.00 mL		
LCSD 320-199025/3	LC537-HSP_00023	100 uL	1.00 mL		
LCSD 320-199025/3	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-1	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-2	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-3	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-4	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-5	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-6	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-7	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-8	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-9	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-10	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-11	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-12	LC537-SU_00056	100 uL	1.00 mL		
320-33939-A-13	LC537-SU_00056	100 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-199025

Analyst: Kolstad, Kate M

Batch Open: 12/8/2017 11:56:00AM

Method Code: 320-537_Prep-320

Batch End:

320-33939-A-14	LC537-SU_00056	100 uL	1.00 mL	HJA 12-8-17	KMK 12-8-17

Other Reagents:

Reagent	Amount/Units	Lot#:

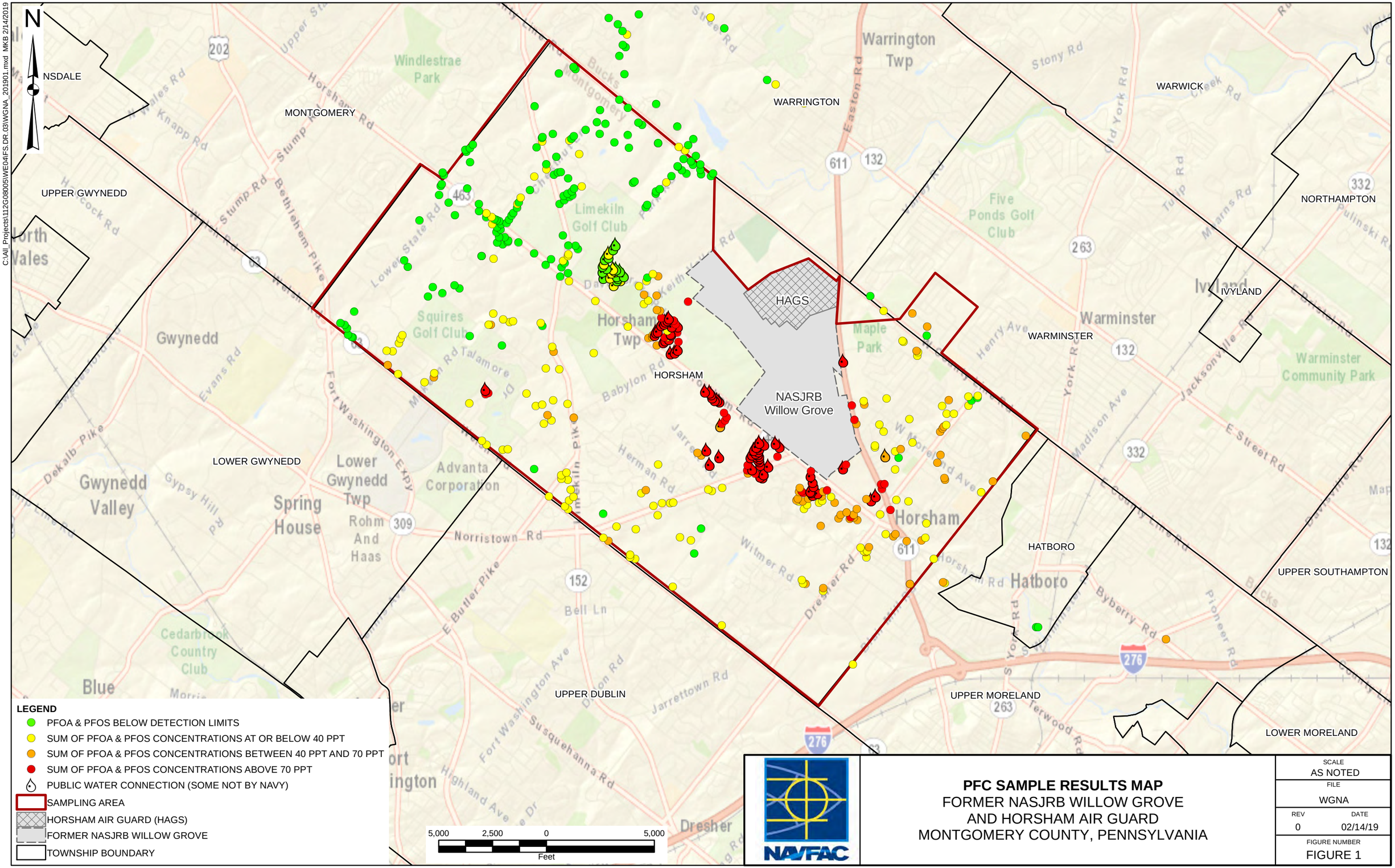
NAS JRB WG PFAS
SDG 320-33939-1

SAMPLE IDENTIFICATION	WGNA120517-RW-0617	
COMPOUND	Perfluorooctane sulfonic acid (PFOS)	
COMPOUND AREA	745292	
INTERNAL STANDARD AMOUNT (ng/ml)	28.7	
DILUTION FACTOR	1	
INTERNAL STANDARD AREA	3220295	
AVERAGE RRF	0.9389	
SAMPLE VOLUME (ml)	247.1	
VOLUME EXTRACT (ml)	1	
VOLUME INJECTED (µl)	1	
ml to L	1000	
CONCENTRATION =	28.63	ng/L

745292 x 28.7ng/ml x 1000ml x 1/(3220295 x 0.9389 x 274.1ml x 1L)

Preliminary Data - For Official Use Only

C:\All_Projects\112G08005\WE04\FS.DR.03\WGNA_201901.mxd MKB 2/14/2019



NAVFAC

PFC SAMPLE RESULTS MAP
FORMER NASJRB WILLOW GROVE
AND HORSHAM AIR GUARD
MONTGOMERY COUNTY, PENNSYLVANIA

SCALE	AS NOTED
FILE	WGNA
REV	0
DATE	02/14/19
FIGURE NUMBER	FIGURE 1