NAVFAC
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 320-30866-1

Naval Air Warfare Center Warminster
Warminster, Pennsylvania

August 2019

N62269_001144
WARMINSTER_NAWC
SSIC 5000-33c

LABORATORY DATA PACKAGE, 320-30866-1, NAS WILLOW GROVE NAWC WARMINSTER PA

08/31/2017

TESTAMERICA LABORATORIES INC

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 320-30866-1

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
8/31/2017 3:24 PM

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08/31/2017

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Qualifiers

LCMS

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.
Q	One or more quality control criteria failed.

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
320-30866-1

Receipt
The samples were received on 8/18/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.5º C.

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

Method(s) 537: Surrogate recovery for the following samples was outside control limits: WGNA-081717-RW-3607 (320-30866-1[MS]), WGNA-081717-FRB-0560 (320-30866-6), (LCS 320-180966/2-A) and (MB 320-180966/1-A). Re-analysis was performed with concurring results. The original analysis has been reported.

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

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

Detection Summary

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

TestAmerica Job ID: 320-30866-1

Client Sample ID: WGNA-081717-RW-3607 — Lab Sample ID: 320-30866-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	24	J M	38	6.4	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	28		19	2.6	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.9	J	28	5.2	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	7.5	J	9.4	1.8	ng/L	1		537	Total/NA

Client Sample ID: WGNA-081717-FRB-3607 — Lab Sample ID: 320-30866-2

No Detections.

Client Sample ID: NAWC-081717-RW-336 — Lab Sample ID: 320-30866-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	6.1	J M	19	2.7	ng/L	1		537	Total/NA

Client Sample ID: NAWC-081717-FRB-336 — Lab Sample ID: 320-30866-4

No Detections.

Client Sample ID: WGNA-081717-RW-0560 — Lab Sample ID: 320-30866-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	30	J M	38	6.5	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	26		19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	17	J	29	5.3	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.2	J	9.6	1.8	ng/L	1		537	Total/NA

Client Sample ID: WGNA-081717-FRB-0560 — Lab Sample ID: 320-30866-6

No Detections.

Client Sample ID: WGNA-081717-RW-3409 — Lab Sample ID: 320-30866-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	21	J M	39	6.7	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	15	J	20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.8	J	29	5.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.6	J	9.8	1.9	ng/L	1		537	Total/NA

Client Sample ID: WGNA-081717-FRB-3409 — Lab Sample ID: 320-30866-8

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: WGNA-081717-RW-3607 — Lab Sample ID: 320-30866-1

Date Collected: 08/17/17 13:40 — **Matrix: Water**
Date Received: 08/18/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**24**	**J M**	38	6.4	ng/L		08/24/17 09:54	08/28/17 23:50	1
Perfluorooctanoic acid (PFOA)	**28**		19	2.6	ng/L		08/24/17 09:54	08/28/17 23:50	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		08/24/17 09:54	08/28/17 23:50	1
Perfluorohexanesulfonic acid (PFHxS)	**7.9**	**J**	28	5.2	ng/L		08/24/17 09:54	08/28/17 23:50	1
Perfluoroheptanoic acid (PFHpA)	**7.5**	**J**	9.4	1.8	ng/L		08/24/17 09:54	08/28/17 23:50	1
Perfluorobutanesulfonic acid (PFBS)	34	U	85	15	ng/L		08/24/17 09:54	08/28/17 23:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*82*		*70 - 130*	*08/24/17 09:54*	*08/28/17 23:50*	*1*
13C2 PFDA	*115*		*70 - 130*	*08/24/17 09:54*	*08/28/17 23:50*	*1*

Client Sample ID: WGNA-081717-FRB-3607 — Lab Sample ID: 320-30866-2

Date Collected: 08/17/17 13:30 — **Matrix: Water**
Date Received: 08/18/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	39	6.6	ng/L		08/24/17 09:54	08/29/17 00:04	1
Perfluorooctanoic acid (PFOA)	7.8	U	20	2.7	ng/L		08/24/17 09:54	08/29/17 00:04	1
Perfluorononanoic acid (PFNA)	20	U	23	7.8	ng/L		08/24/17 09:54	08/29/17 00:04	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.4	ng/L		08/24/17 09:54	08/29/17 00:04	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	1.9	ng/L		08/24/17 09:54	08/29/17 00:04	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		08/24/17 09:54	08/29/17 00:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*98*		*70 - 130*	*08/24/17 09:54*	*08/29/17 00:04*	*1*
13C2 PFDA	*109*		*70 - 130*	*08/24/17 09:54*	*08/29/17 00:04*	*1*

Client Sample ID: NAWC-081717-RW-336 — Lab Sample ID: 320-30866-3

Date Collected: 08/17/17 14:20 — **Matrix: Water**
Date Received: 08/18/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U M	39	6.6	ng/L		08/24/17 09:54	08/29/17 00:09	1
Perfluorooctanoic acid (PFOA)	**6.1**	**J M**	19	2.7	ng/L		08/24/17 09:54	08/29/17 00:09	1
Perfluorononanoic acid (PFNA)	19	U	23	7.8	ng/L		08/24/17 09:54	08/29/17 00:09	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.3	ng/L		08/24/17 09:54	08/29/17 00:09	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	1.8	ng/L		08/24/17 09:54	08/29/17 00:09	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L		08/24/17 09:54	08/29/17 00:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*70 - 130*	*08/24/17 09:54*	*08/29/17 00:09*	*1*
13C2 PFDA	*124*		*70 - 130*	*08/24/17 09:54*	*08/29/17 00:09*	*1*

Client Sample ID: NAWC-081717-FRB-336 — Lab Sample ID: 320-30866-4

Date Collected: 08/17/17 14:10 — **Matrix: Water**
Date Received: 08/18/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	39	6.6	ng/L		08/24/17 09:54	08/29/17 00:14	1
Perfluorooctanoic acid (PFOA)	7.8	U	19	2.7	ng/L		08/24/17 09:54	08/29/17 00:14	1
Perfluorononanoic acid (PFNA)	19	U	23	7.8	ng/L		08/24/17 09:54	08/29/17 00:14	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.3	ng/L		08/24/17 09:54	08/29/17 00:14	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	1.8	ng/L		08/24/17 09:54	08/29/17 00:14	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L		08/24/17 09:54	08/29/17 00:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*94*		*70 - 130*	*08/24/17 09:54*	*08/29/17 00:14*	*1*
13C2 PFDA	*116*		*70 - 130*	*08/24/17 09:54*	*08/29/17 00:14*	*1*

Client Sample ID: WGNA-081717-RW-0560 — Lab Sample ID: 320-30866-5

Date Collected: 08/17/17 15:35 — **Matrix: Water**
Date Received: 08/18/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**30**	**J M**	38	6.5	ng/L		08/24/17 09:54	08/29/17 00:19	1
Perfluorooctanoic acid (PFOA)	**26**		19	2.7	ng/L		08/24/17 09:54	08/29/17 00:19	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		08/24/17 09:54	08/29/17 00:19	1
Perfluorohexanesulfonic acid (PFHxS)	**17**	**J**	29	5.3	ng/L		08/24/17 09:54	08/29/17 00:19	1
Perfluoroheptanoic acid (PFHpA)	**5.2**	**J**	9.6	1.8	ng/L		08/24/17 09:54	08/29/17 00:19	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	15	ng/L		08/24/17 09:54	08/29/17 00:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*70 - 130*	*08/24/17 09:54*	*08/29/17 00:19*	*1*
13C2 PFDA	*112*		*70 - 130*	*08/24/17 09:54*	*08/29/17 00:19*	*1*

Client Sample ID: WGNA-081717-FRB-0560 — Lab Sample ID: 320-30866-6

Date Collected: 08/17/17 15:25 — **Matrix: Water**
Date Received: 08/18/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	38	6.5	ng/L		08/24/17 09:54	08/29/17 00:23	1
Perfluorooctanoic acid (PFOA)	7.7	U	19	2.7	ng/L		08/24/17 09:54	08/29/17 00:23	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		08/24/17 09:54	08/29/17 00:23	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	29	5.3	ng/L		08/24/17 09:54	08/29/17 00:23	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.6	1.8	ng/L		08/24/17 09:54	08/29/17 00:23	1
Perfluorobutanesulfonic acid (PFBS)	34	U	86	15	ng/L		08/24/17 09:54	08/29/17 00:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*94*		*70 - 130*	*08/24/17 09:54*	*08/29/17 00:23*	*1*
13C2 PFDA	*151*	*Q*	*70 - 130*	*08/24/17 09:54*	*08/29/17 00:23*	*1*

Client Sample ID: WGNA-081717-RW-3409 — Lab Sample ID: 320-30866-7

Date Collected: 08/17/17 16:10 **Matrix: Water**
Date Received: 08/18/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**21**	**J M**	39	6.7	ng/L		08/24/17 09:54	08/29/17 00:28	1
Perfluorooctanoic acid (PFOA)	**15**	**J**	20	2.8	ng/L		08/24/17 09:54	08/29/17 00:28	1
Perfluorononanoic acid (PFNA)	20	U	24	7.9	ng/L		08/24/17 09:54	08/29/17 00:28	1
Perfluorohexanesulfonic acid (PFHxS)	**8.8**	**J**	29	5.4	ng/L		08/24/17 09:54	08/29/17 00:28	1
Perfluoroheptanoic acid (PFHpA)	**5.6**	**J**	9.8	1.9	ng/L		08/24/17 09:54	08/29/17 00:28	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		08/24/17 09:54	08/29/17 00:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*70 - 130*	*08/24/17 09:54*	*08/29/17 00:28*	*1*
13C2 PFDA	*126*		*70 - 130*	*08/24/17 09:54*	*08/29/17 00:28*	*1*

Client Sample ID: WGNA-081717-FRB-3409 — Lab Sample ID: 320-30866-8

Date Collected: 08/17/17 16:00 **Matrix: Water**
Date Received: 08/18/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	39	6.6	ng/L		08/24/17 09:54	08/29/17 00:33	1
Perfluorooctanoic acid (PFOA)	7.8	U	19	2.7	ng/L		08/24/17 09:54	08/29/17 00:33	1
Perfluorononanoic acid (PFNA)	19	U	23	7.8	ng/L		08/24/17 09:54	08/29/17 00:33	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.4	ng/L		08/24/17 09:54	08/29/17 00:33	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	1.8	ng/L		08/24/17 09:54	08/29/17 00:33	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		08/24/17 09:54	08/29/17 00:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*100*		*70 - 130*	*08/24/17 09:54*	*08/29/17 00:33*	*1*
13C2 PFDA	*115*		*70 - 130*	*08/24/17 09:54*	*08/29/17 00:33*	*1*

Default Detection Limits

Client: Tetra Tech, Inc. TestAmerica Job ID: 320-30866-1
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

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

Prep: 537

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

Surrogate Summary

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

TestAmerica Job ID: 320-30866-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
		3C2 PFHx	3C2 PFDA
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
320-30866-1	WGNA-081717-RW-3607	82	115
320-30866-1 MS	WGNA-081717-RW-3607	88	131 Q
320-30866-1 MSD	WGNA-081717-RW-3607	86	116
320-30866-2	WGNA-081717-FRB-3607	98	109
320-30866-3	NAWC-081717-RW-336	89	124
320-30866-4	NAWC-081717-FRB-336	94	116
320-30866-5	WGNA-081717-RW-0560	87	112
320-30866-6	WGNA-081717-FRB-0560	94	151 Q
320-30866-7	WGNA-081717-RW-3409	88	126
320-30866-8	WGNA-081717-FRB-3409	100	115
LCS 320-180966/2-A	Lab Control Sample	99	134 Q
MB 320-180966/1-A	Method Blank	97	151 Q

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

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

Lab Sample ID: MB 320-180966/1-A **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 181720 **Prep Batch: 180966**

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		08/24/17 09:54	08/28/17 22:58	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		08/24/17 09:54	08/28/17 22:58	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		08/24/17 09:54	08/28/17 22:58	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		08/24/17 09:54	08/28/17 22:58	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		08/24/17 09:54	08/28/17 22:58	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		08/24/17 09:54	08/28/17 22:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*97*		*70 - 130*	*08/24/17 09:54*	*08/28/17 22:58*	*1*
13C2 PFDA	*151*	*Q*	*70 - 130*	*08/24/17 09:54*	*08/28/17 22:58*	*1*

Lab Sample ID: LCS 320-180966/2-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 181720 **Prep Batch: 180966**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	133	129	M	ng/L		96	70 - 130
Perfluorooctanoic acid (PFOA)	66.7	68.3		ng/L		102	70 - 130
Perfluorononanoic acid (PFNA)	66.7	68.0		ng/L		102	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	100	98.6		ng/L		99	70 - 130
Perfluoroheptanoic acid (PFHpA)	33.3	37.9		ng/L		114	70 - 130
Perfluorobutanesulfonic acid (PFBS)	300	318		ng/L		106	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*99*		*70 - 130*
13C2 PFDA	*134*	*Q*	*70 - 130*

Lab Sample ID: 320-30866-1 MS **Client Sample ID: WGNA-081717-RW-3607**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 181721 **Prep Batch: 180966**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	24	J M	130	149	M	ng/L		96	70 - 130
Perfluorooctanoic acid (PFOA)	28		65.3	92.0		ng/L		98	70 - 130
Perfluorononanoic acid (PFNA)	19	U	65.2	71.1		ng/L		109	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	7.9	J	97.8	106		ng/L		100	70 - 130
Perfluoroheptanoic acid (PFHpA)	7.5	J	32.6	40.9		ng/L		103	70 - 130
Perfluorobutanesulfonic acid (PFBS)	34	U	293	322		ng/L		110	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
13C2 PFHxA	*88*		*70 - 130*
13C2 PFDA	*131*	*Q*	*70 - 130*

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

Lab Sample ID: 320-30866-1 MSD **Client Sample ID: WGNA-081717-RW-3607**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 181721 **Prep Batch: 180966**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	24	J M	126	145	M	ng/L		97	70 - 130	3	30
Perfluorooctanoic acid (PFOA)	28		62.8	86.8		ng/L		94	70 - 130	6	30
Perfluorononanoic acid (PFNA)	19	U	62.7	68.6		ng/L		109	70 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	7.9	J	94.1	97.6		ng/L		95	70 - 130	8	30
Perfluoroheptanoic acid (PFHpA)	7.5	J	31.4	35.6		ng/L		90	70 - 130	14	30
Perfluorobutanesulfonic acid (PFBS)	34	U	282	300		ng/L		106	70 - 130	7	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C2 PFHxA	*86*		*70 - 130*
13C2 PFDA	*116*		*70 - 130*

LCMS

Prep Batch: 180966

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-30866-1	WGNA-081717-RW-3607	Total/NA	Water	537	
320-30866-2	WGNA-081717-FRB-3607	Total/NA	Water	537	
320-30866-3	NAWC-081717-RW-336	Total/NA	Water	537	
320-30866-4	NAWC-081717-FRB-336	Total/NA	Water	537	
320-30866-5	WGNA-081717-RW-0560	Total/NA	Water	537	
320-30866-6	WGNA-081717-FRB-0560	Total/NA	Water	537	
320-30866-7	WGNA-081717-RW-3409	Total/NA	Water	537	
320-30866-8	WGNA-081717-FRB-3409	Total/NA	Water	537	
MB 320-180966/1-A	Method Blank	Total/NA	Water	537	
LCS 320-180966/2-A	Lab Control Sample	Total/NA	Water	537	
320-30866-1 MS	WGNA-081717-RW-3607	Total/NA	Water	537	
320-30866-1 MSD	WGNA-081717-RW-3607	Total/NA	Water	537	

Analysis Batch: 181720

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-180966/1-A	Method Blank	Total/NA	Water	537	180966
LCS 320-180966/2-A	Lab Control Sample	Total/NA	Water	537	180966

Analysis Batch: 181721

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-30866-1	WGNA-081717-RW-3607	Total/NA	Water	537	180966
320-30866-2	WGNA-081717-FRB-3607	Total/NA	Water	537	180966
320-30866-3	NAWC-081717-RW-336	Total/NA	Water	537	180966
320-30866-4	NAWC-081717-FRB-336	Total/NA	Water	537	180966
320-30866-5	WGNA-081717-RW-0560	Total/NA	Water	537	180966
320-30866-6	WGNA-081717-FRB-0560	Total/NA	Water	537	180966
320-30866-7	WGNA-081717-RW-3409	Total/NA	Water	537	180966
320-30866-8	WGNA-081717-FRB-3409	Total/NA	Water	537	180966
320-30866-1 MS	WGNA-081717-RW-3607	Total/NA	Water	537	180966
320-30866-1 MSD	WGNA-081717-RW-3607	Total/NA	Water	537	180966

Lab Chronicle

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

TestAmerica Job ID: 320-30866-1

Client Sample ID: WGNA-081717-RW-3607
Lab Sample ID: 320-30866-1
Date Collected: 08/17/17 13:40
Matrix: Water
Date Received: 08/18/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			180966	08/24/17 09:54	J1S	TAL SAC
Total/NA	Analysis	537		1	181721	08/28/17 23:50	JRB	TAL SAC

Client Sample ID: WGNA-081717-FRB-3607
Lab Sample ID: 320-30866-2
Date Collected: 08/17/17 13:30
Matrix: Water
Date Received: 08/18/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			180966	08/24/17 09:54	J1S	TAL SAC
Total/NA	Analysis	537		1	181721	08/29/17 00:04	JRB	TAL SAC

Client Sample ID: NAWC-081717-RW-336
Lab Sample ID: 320-30866-3
Date Collected: 08/17/17 14:20
Matrix: Water
Date Received: 08/18/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			180966	08/24/17 09:54	J1S	TAL SAC
Total/NA	Analysis	537		1	181721	08/29/17 00:09	JRB	TAL SAC

Client Sample ID: NAWC-081717-FRB-336
Lab Sample ID: 320-30866-4
Date Collected: 08/17/17 14:10
Matrix: Water
Date Received: 08/18/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			180966	08/24/17 09:54	J1S	TAL SAC
Total/NA	Analysis	537		1	181721	08/29/17 00:14	JRB	TAL SAC

Client Sample ID: WGNA-081717-RW-0560
Lab Sample ID: 320-30866-5
Date Collected: 08/17/17 15:35
Matrix: Water
Date Received: 08/18/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			180966	08/24/17 09:54	J1S	TAL SAC
Total/NA	Analysis	537		1	181721	08/29/17 00:19	JRB	TAL SAC

Client Sample ID: WGNA-081717-FRB-0560
Lab Sample ID: 320-30866-6
Date Collected: 08/17/17 15:25
Matrix: Water
Date Received: 08/18/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			180966	08/24/17 09:54	J1S	TAL SAC
Total/NA	Analysis	537		1	181721	08/29/17 00:23	JRB	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 320-30866-1

Client Sample ID: WGNA-081717-RW-3409

Lab Sample ID: 320-30866-7

Date Collected: 08/17/17 16:10

Matrix: Water

Date Received: 08/18/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			180966	08/24/17 09:54	J1S	TAL SAC
Total/NA	Analysis	537		1	181721	08/29/17 00:28	JRB	TAL SAC

Client Sample ID: WGNA-081717-FRB-3409

Lab Sample ID: 320-30866-8

Date Collected: 08/17/17 16:00

Matrix: Water

Date Received: 08/18/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			180966	08/24/17 09:54	J1S	TAL SAC
Total/NA	Analysis	537		1	181721	08/29/17 00:33	JRB	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: Tetra Tech, Inc. TestAmerica Job ID: 320-30866-1
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

Laboratory: TestAmerica Sacramento

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Oregon	NELAP	10	4040	01-28-18

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
537	537	Water	Perfluorobutanesulfonic acid (PFBS)
537	537	Water	Perfluoroheptanoic acid (PFHpA)
537	537	Water	Perfluorohexanesulfonic acid (PFHxS)
537	537	Water	Perfluorononanoic acid (PFNA)
537	537	Water	Perfluorooctanesulfonic acid (PFOS)
537	537	Water	Perfluorooctanoic acid (PFOA)

Method Summary

Client: Tetra Tech, Inc. TestAmerica Job ID: 320-30866-1
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

Client: Tetra Tech, Inc.
TestAmerica Job ID: 320-30866-1
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-30866-1	WGNA-081717-RW-3607	Water	08/17/17 13:40	08/18/17 09:30
320-30866-2	WGNA-081717-FRB-3607	Water	08/17/17 13:30	08/18/17 09:30
320-30866-3	NAWC-081717-RW-336	Water	08/17/17 14:20	08/18/17 09:30
320-30866-4	NAWC-081717-FRB-336	Water	08/17/17 14:10	08/18/17 09:30
320-30866-5	WGNA-081717-RW-0560	Water	08/17/17 15:35	08/18/17 09:30
320-30866-6	WGNA-081717-FRB-0560	Water	08/17/17 15:25	08/18/17 09:30
320-30866-7	WGNA-081717-RW-3409	Water	08/17/17 16:10	08/18/17 09:30
320-30866-8	WGNA-081717-FRB-3409	Water	08/17/17 16:00	08/18/17 09:30

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 181689

Lab Sample ID: IC 320-181689/2 Client Sample ID:

Date Analyzed: 08/28/17 16:12 Lab File ID: 2017.08.28_537ICAL_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.72	Baseline	barnettj	08/29/17 09:44
Perfluorooctanoic acid (PFOA)	1.94	Baseline	barnettj	08/29/17 09:44
Perfluorooctanesulfonic acid (PFOS)	2.19	Assign Peak	phomsopha t	08/28/17 18:46

Lab Sample ID: IC 320-181689/3 Client Sample ID:

Date Analyzed: 08/28/17 16:16 Lab File ID: 2017.08.28_537ICAL_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.19	Assign Peak	phomsopha t	08/28/17 18:46

Lab Sample ID: IC 320-181689/4 Client Sample ID:

Date Analyzed: 08/28/17 16:21 Lab File ID: 2017.08.28_537ICAL_006.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.19	Assign Peak	phomsopha t	08/28/17 18:47

Lab Sample ID: IC 320-181689/5 ICISAV Client Sample ID:

Date Analyzed: 08/28/17 16:26 Lab File ID: 2017.08.28_537ICAL_007.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.19	Assign Peak	phomsopha t	08/28/17 18:47

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 181689

Lab Sample ID: IC 320-181689/6 Client Sample ID:

Date Analyzed: 08/28/17 16:31 Lab File ID: 2017.08.28_537ICAL_008.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.19	Assign Peak	phomsopha t	08/28/17 18:48

Lab Sample ID: IC 320-181689/7 Client Sample ID:

Date Analyzed: 08/28/17 16:36 Lab File ID: 2017.08.28_537ICAL_009.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.19	Assign Peak	phomsopha t	08/28/17 18:48

Lab Sample ID: CCVL 320-181689/9 Client Sample ID:

Date Analyzed: 08/28/17 16:45 Lab File ID: 2017.08.28_537ICAL_011.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.92	Baseline	barnettj	08/29/17 09:47

Lab Sample ID: ICV 320-181689/11 Client Sample ID:

Date Analyzed: 08/28/17 16:54 Lab File ID: 2017.08.28_537ICAL_013.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.19	Missed Peak	barnettj	08/29/17 13:22

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 181720

Lab Sample ID: CCV 320-181720/10 CCVIS Client Sample ID:

Date Analyzed: 08/28/17 22:48 Lab File ID: 2017.08.28_537B_010.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.14	Missed Peak	barnettj	08/29/17 11:24

Lab Sample ID: LCS 320-180966/2-A Client Sample ID:

Date Analyzed: 08/28/17 23:03 Lab File ID: 2017.08.28_537B_013.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.14	Missed Peak	barnettj	08/29/17 13:57

Lab Sample ID: CCV 320-181720/21 CCVIS Client Sample ID:

Date Analyzed: 08/28/17 23:41 Lab File ID: 2017.08.28_537B_021.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.13	Missed Peak	barnettj	08/29/17 11:24

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 181721

Lab Sample ID: CCV 320-181721/21 CCVIS Client Sample ID:

Date Analyzed: 08/28/17 23:41 Lab File ID: 2017.08.28_537B_021.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.13	Missed Peak	barnettj	08/29/17 11:24

Lab Sample ID: 320-30866-1 Client Sample ID: WGNA-081717-RW-3607

Date Analyzed: 08/28/17 23:50 Lab File ID: 2017.08.28_537B_023.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.13	Missed Peak	barnettj	08/29/17 14:02

Lab Sample ID: 320-30866-1 MS Client Sample ID: WGNA-081717-RW-3607 MS

Date Analyzed: 08/28/17 23:55 Lab File ID: 2017.08.28_537B_024.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Missed Peak	barnettj	08/29/17 14:02

Lab Sample ID: 320-30866-1 MSD Client Sample ID: WGNA-081717-RW-3607 MSD

Date Analyzed: 08/29/17 00:00 Lab File ID: 2017.08.28_537B_025.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Missed Peak	barnettj	08/29/17 14:03

537

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 181721

Lab Sample ID: 320-30866-3 Client Sample ID: NAWC-081717-RW-336

Date Analyzed: 08/29/17 00:09 Lab File ID: 2017.08.28_537B_027.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.87	Baseline	barnettj	08/29/17 14:04
Perfluorooctanesulfonic acid (PFOS)	2.13	Incomplete Integration	barnettj	08/29/17 14:05

Lab Sample ID: 320-30866-5 Client Sample ID: WGNA-081717-RW-0560

Date Analyzed: 08/29/17 00:19 Lab File ID: 2017.08.28_537B_029.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Missed Peak	barnettj	08/29/17 14:06

Lab Sample ID: 320-30866-7 Client Sample ID: WGNA-081717-RW-3409

Date Analyzed: 08/29/17 00:28 Lab File ID: 2017.08.28_537B_031.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.13	Missed Peak	barnettj	08/29/17 14:06

Lab Sample ID: CCV 320-181721/33 CCVIS Client Sample ID:

Date Analyzed: 08/29/17 00:38 Lab File ID: 2017.08.28_537B_033.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.13	Missed Peak	barnettj	08/29/17 11:25

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..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_00046	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-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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

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-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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC537-PFOS_00008	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-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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	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-MSP_00027	02/10/18	08/10/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00023	166.7 uL	Perfluorobutane Sulfonate	750.15 ng/mL
							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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	333.455 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-SU_00047	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

Reagent

LC537_PFBS_00002

R: 4/1/15 SPV

SIGMA-ALDRICH®

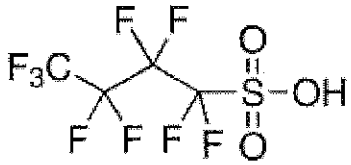
sigma-aldrich.com

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

Reagent

LC537_PFBS2_00002

1:6817 SW

CERTIFICATE OF ANALYSIS

The Power to Question

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

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

Reagent

LC537_PFHpA_00002

P: 4/1/15 SRV

SIGMA-ALDRICH®

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Email USA: techserv@sial.com Outside USA: eurtechserv@sial.com

Certificate of Analysis

PFHpA

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

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

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

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ThermoFisher SCIENTIFIC

Reagent

LC537_PFHxS_00002

R: 4/1/15 SKV

SIGMA-ALDRICH®

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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

PFHxS-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

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

Purity = 90.94 / w/m.w correction

SKV 4/1/15

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%

$PFH_xS\text{-}K$

$C_6F_{13}SO_3K$ 438.201

$C_6F_{13}SO_3H$ 400.111

MW correction = $\frac{400.11}{438.201}$ = 0.91307 $\frac{PFHxS}{CasH\ 355\text{-}46\text{-}4}$

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®

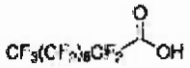
sigma-aldrich.com

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

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

Reagent

LC537_PFOA2_00002

Alfa Aesar

Certificate of analysis

R: 6/9/17 SK

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.

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ThermoFisher SCIENTIFIC

Reagent

LC537_PFOS_00003

r: 11/30/16 SV

PFOS

SIGMA-ALDRICH

CERTIFICATE OF ANALYSIS

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

Seelze, 22.04.2014/524107/14/08646

Order-No.:
Customer-No.:

Order-Code:

Quantity:

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

Article/Product: 33829 Batch : SZBE107XV

Heptadecafluorooctanesulfonic acid potassium salt OEKANAL®

Reference Material (RM)

1. General Information

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

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

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

2. Batch Analysis

Identity	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

Reagent

LC537_PFOS2_00002

V: 6.14.17 SKV

SIGMA-ALDRICH

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

Certificate of Analysis

Product Name:	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

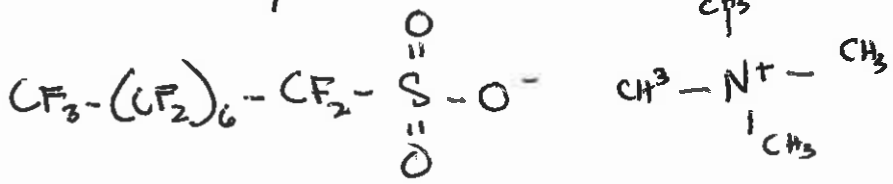
TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE TO OFF WHITE	OFF-WHITE
APPEARANCE (FORM)	POWDER OR POWDER WITH CHUNK(S)	POWDER
CARBON CONTENT	29.77 % - 31.29 %	29.97 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS

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

Reagent

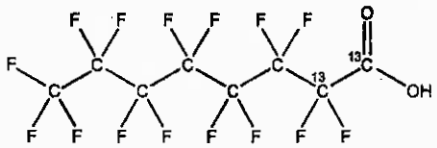
LCM2PFOA_00007

P: 5/6/17 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M2PFOA	**LOT NUMBER:**	M2PFOA0216
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]octanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_6HF_{15}O_2$	**MOLECULAR WEIGHT:**	416.05
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)	02/12/2016		
EXPIRY DATE: (mm/dd/yyyy)	02/12/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ B.G. Chittim **Date:** 02/24/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ 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:

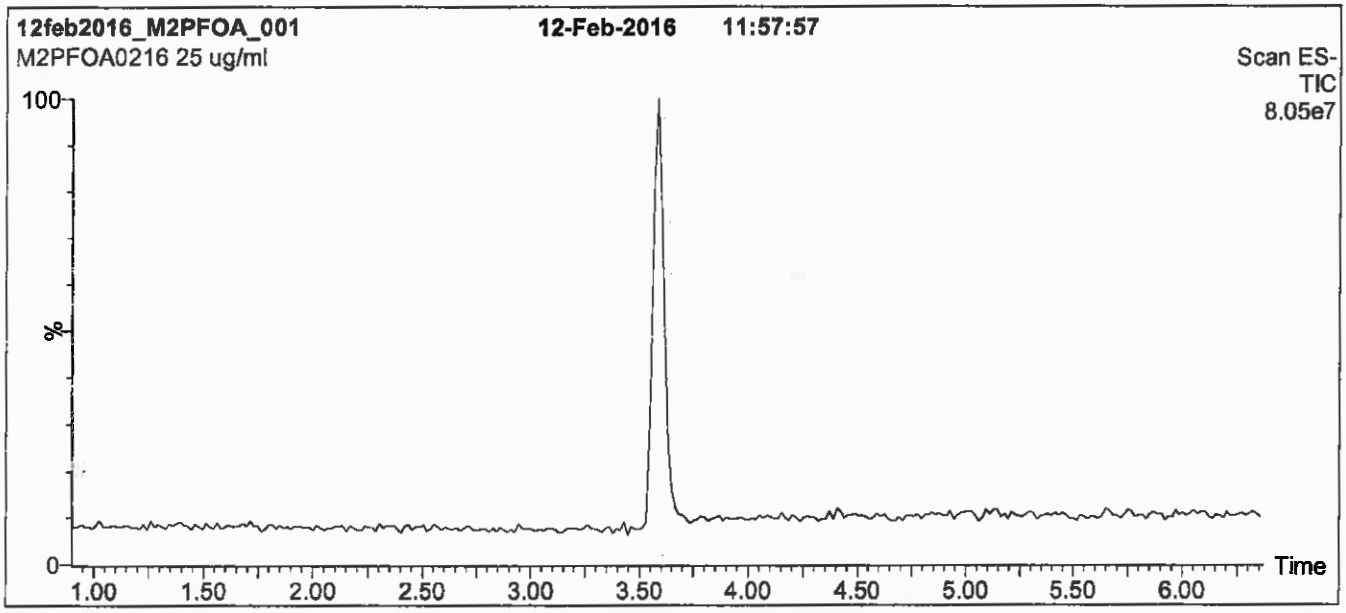
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

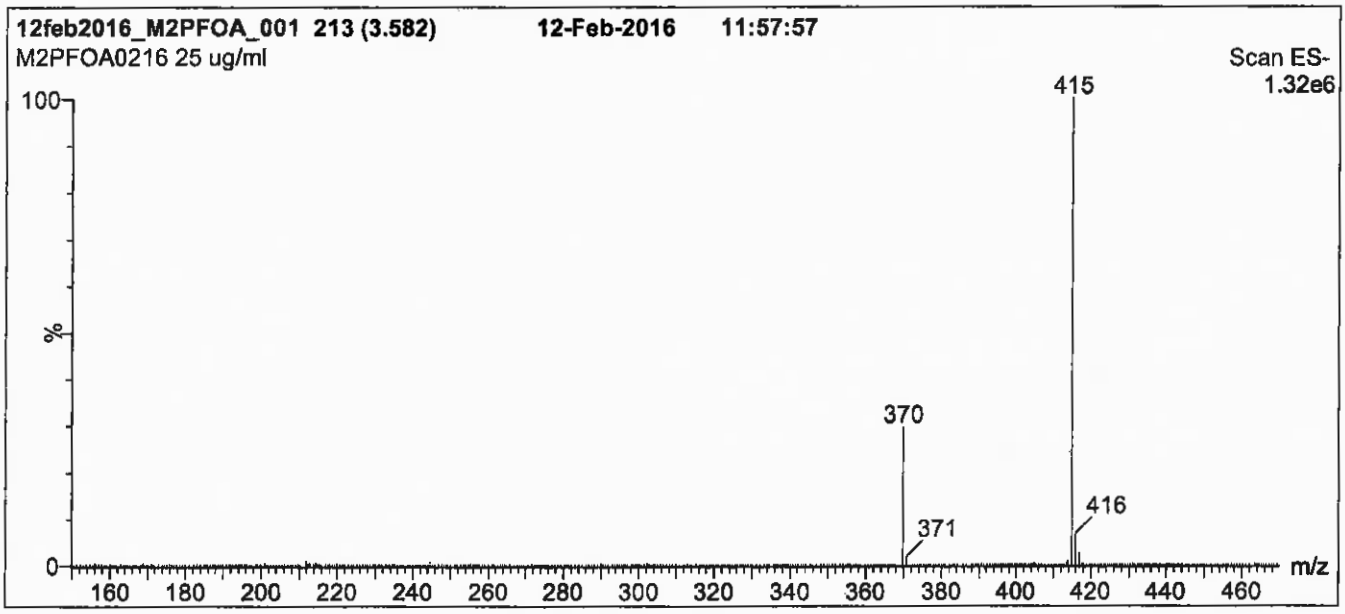
CALA

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

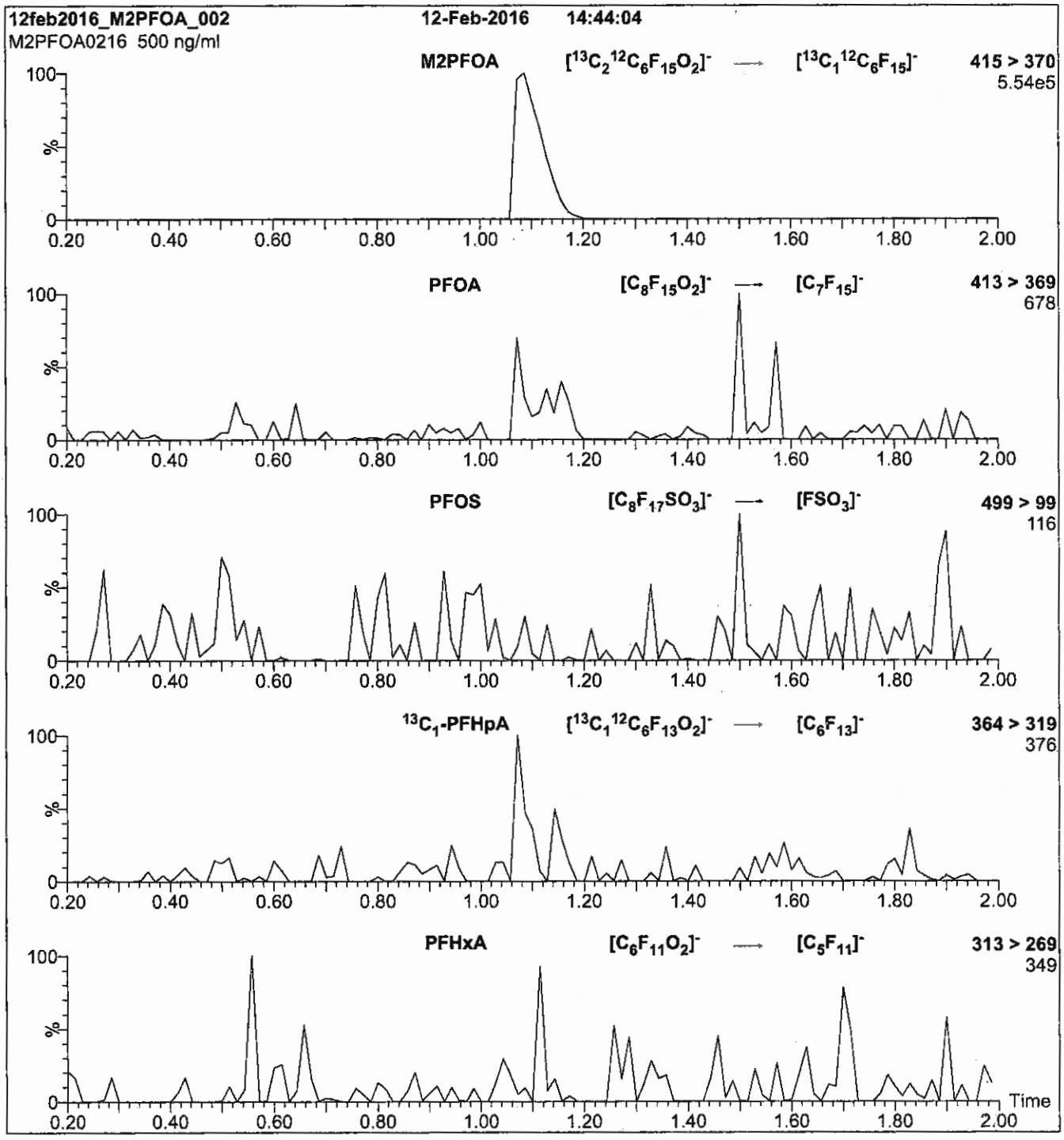
Flow: 300 µl/min

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:

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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.

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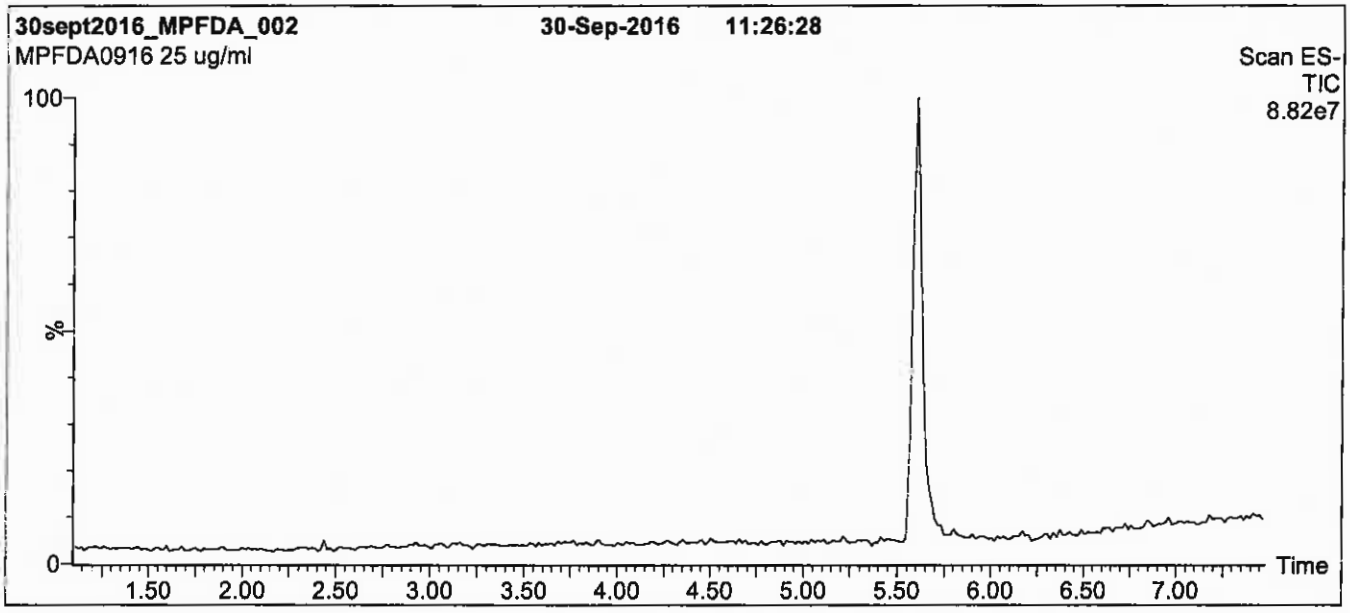
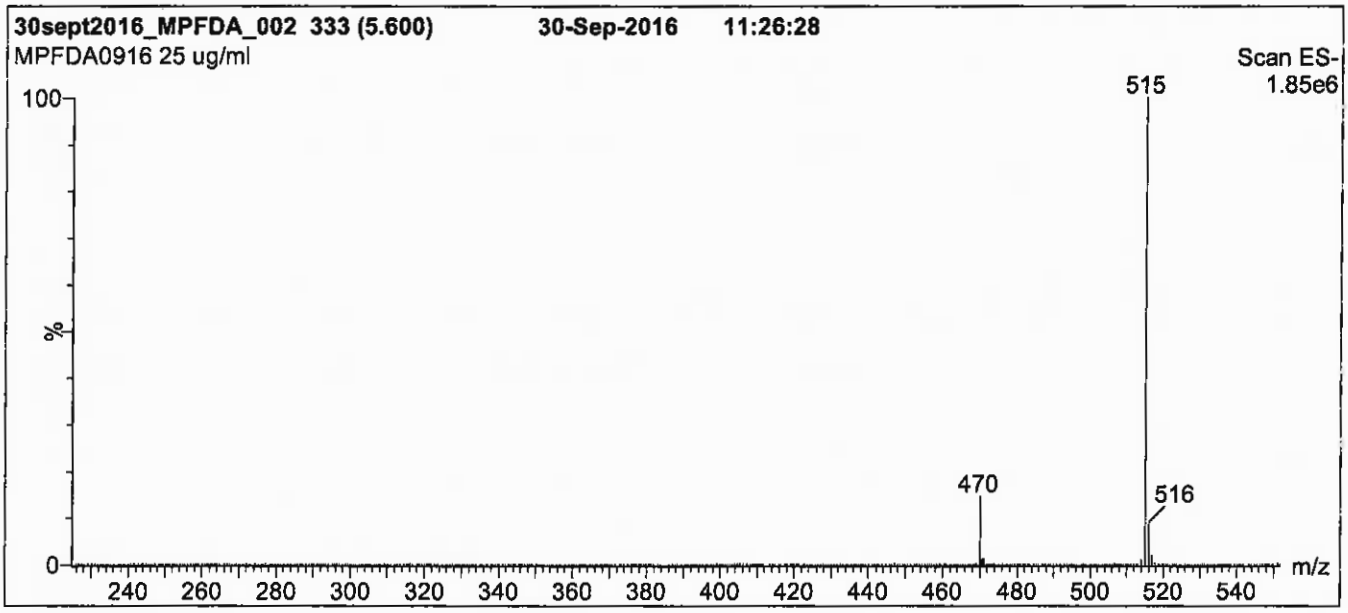
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

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

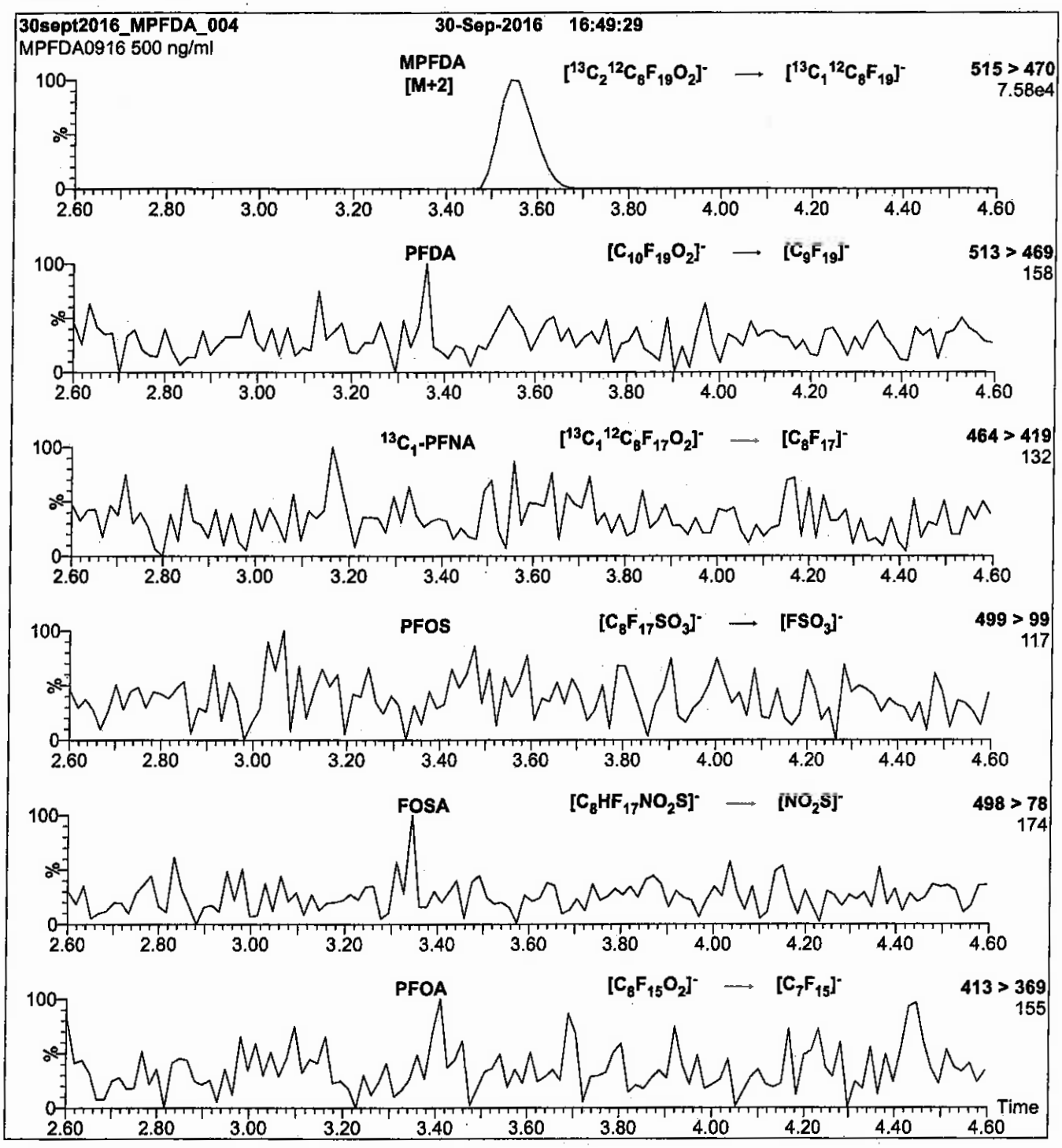
Flow: 300 µl/min

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

Reagent

LCMPFHxA_00013

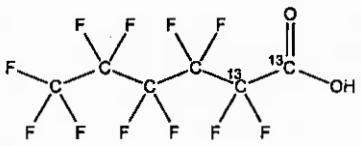
R: SBC 12/21/16

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 ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/08/2016		
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

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SYNTHESIS / CHARACTERIZATION:

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

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.

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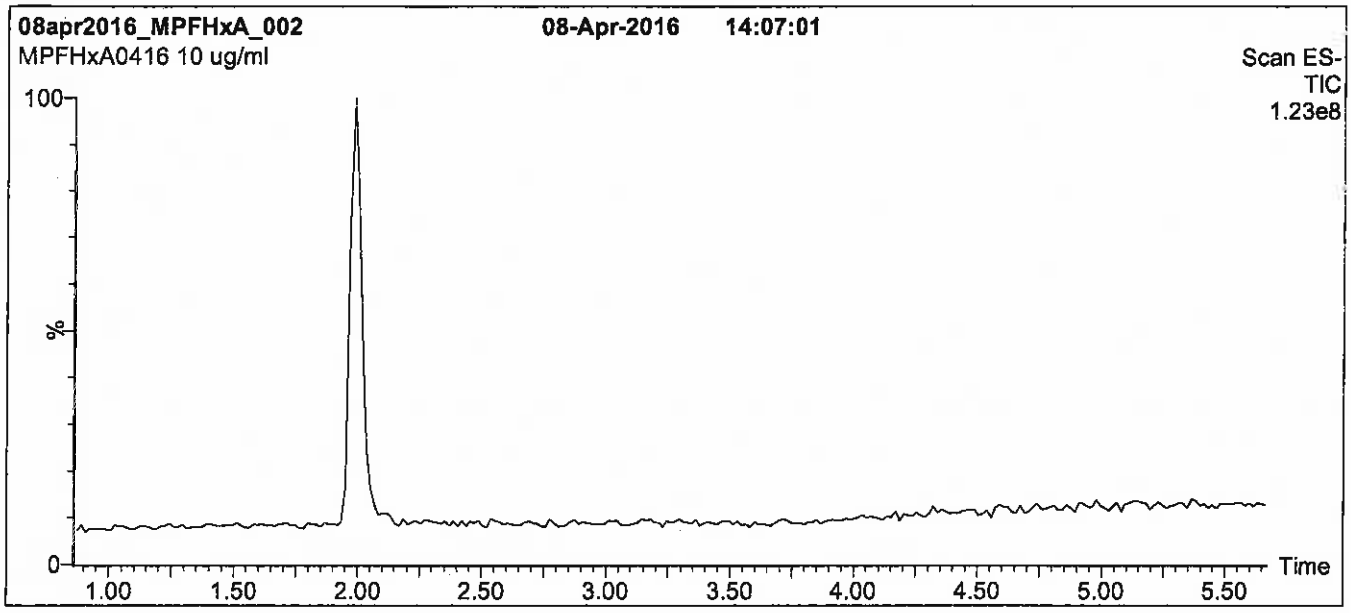
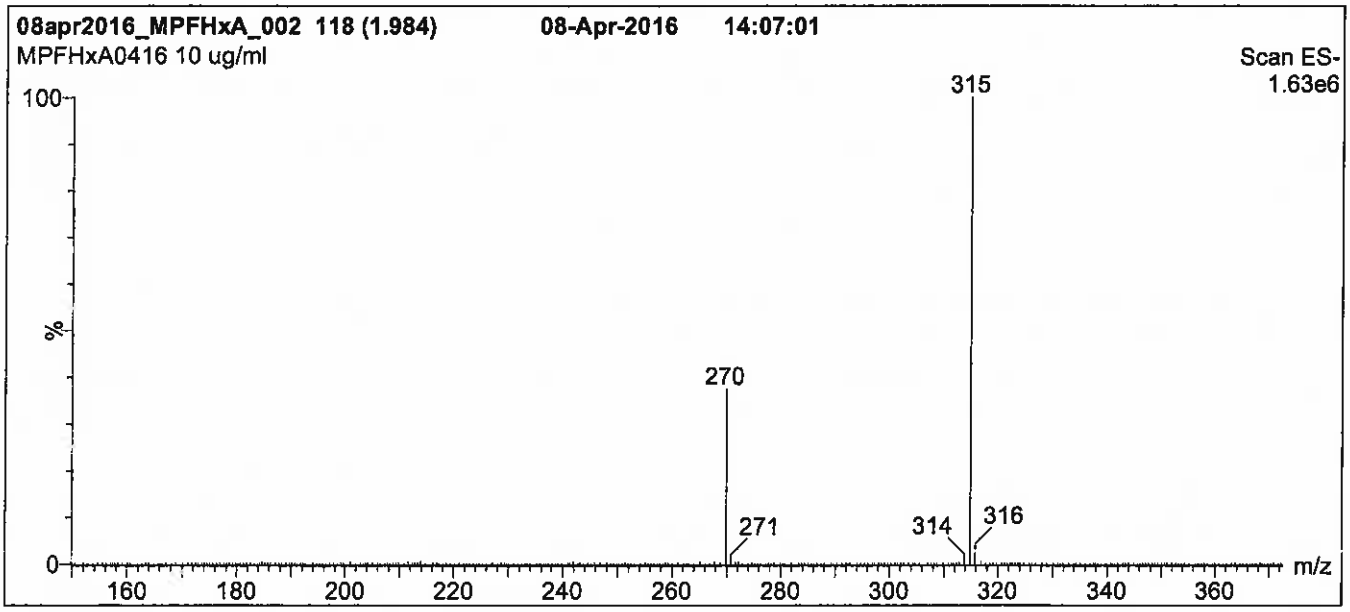
CALA Testing Accreditation No. A1226

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

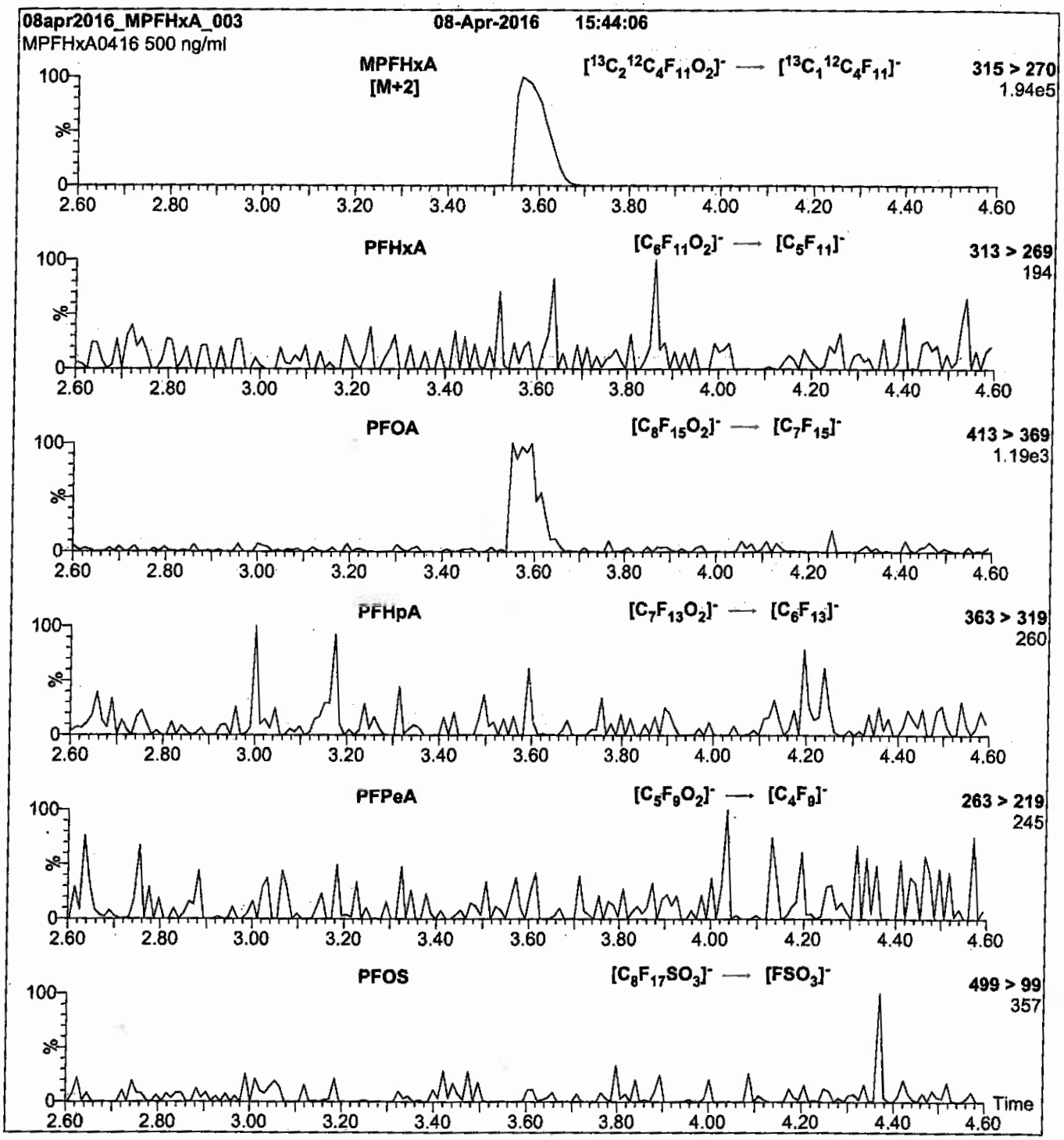
Flow: 300 µl/min

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

LCMPFOS_00019

R: SBC 12/21/16

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

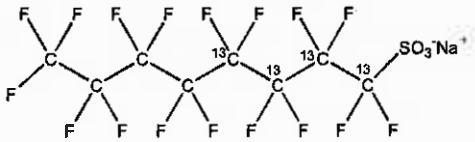
WELLINGTON LABORATORIES

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) 47.8 ± 2.4 µg/ml (MPFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4\text{-}^{13}C_4$)
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:

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CALA Testing Accreditation No. A1226

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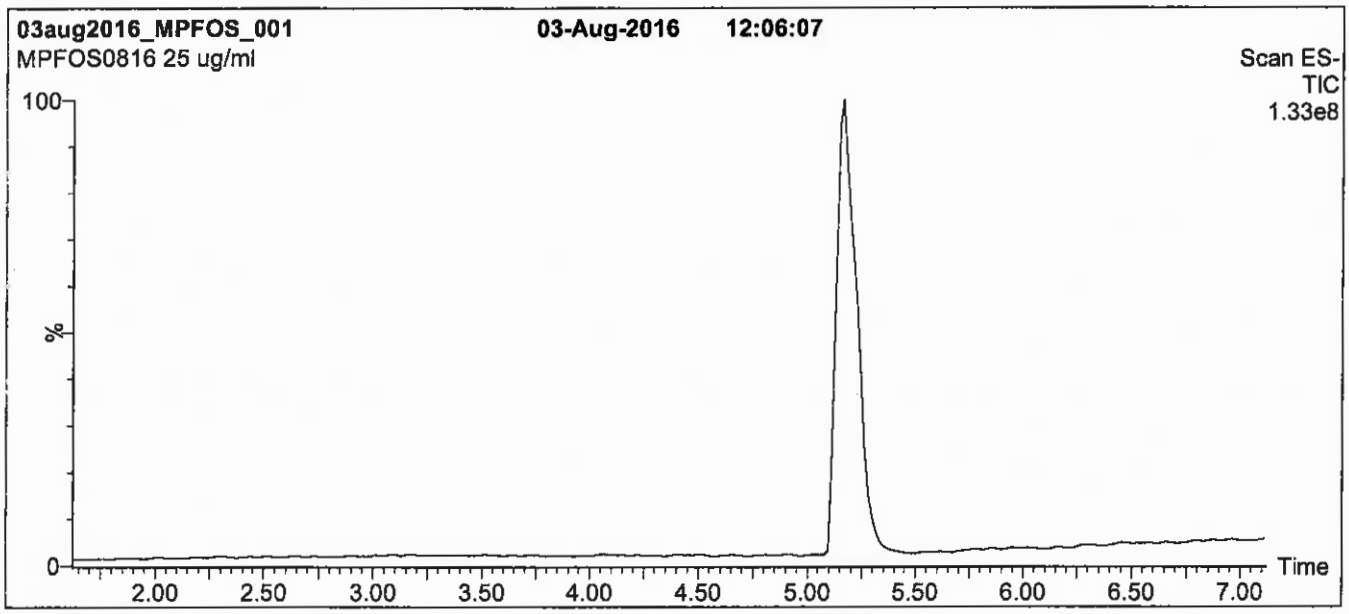
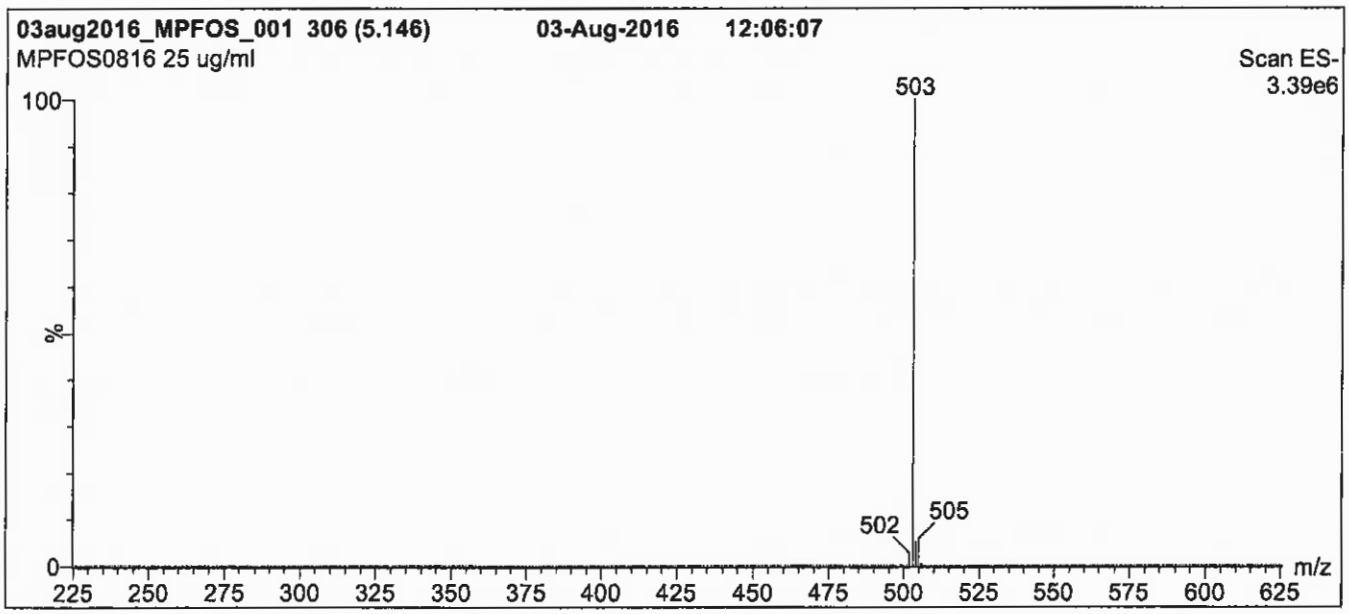




Conditions for Figure 1:

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

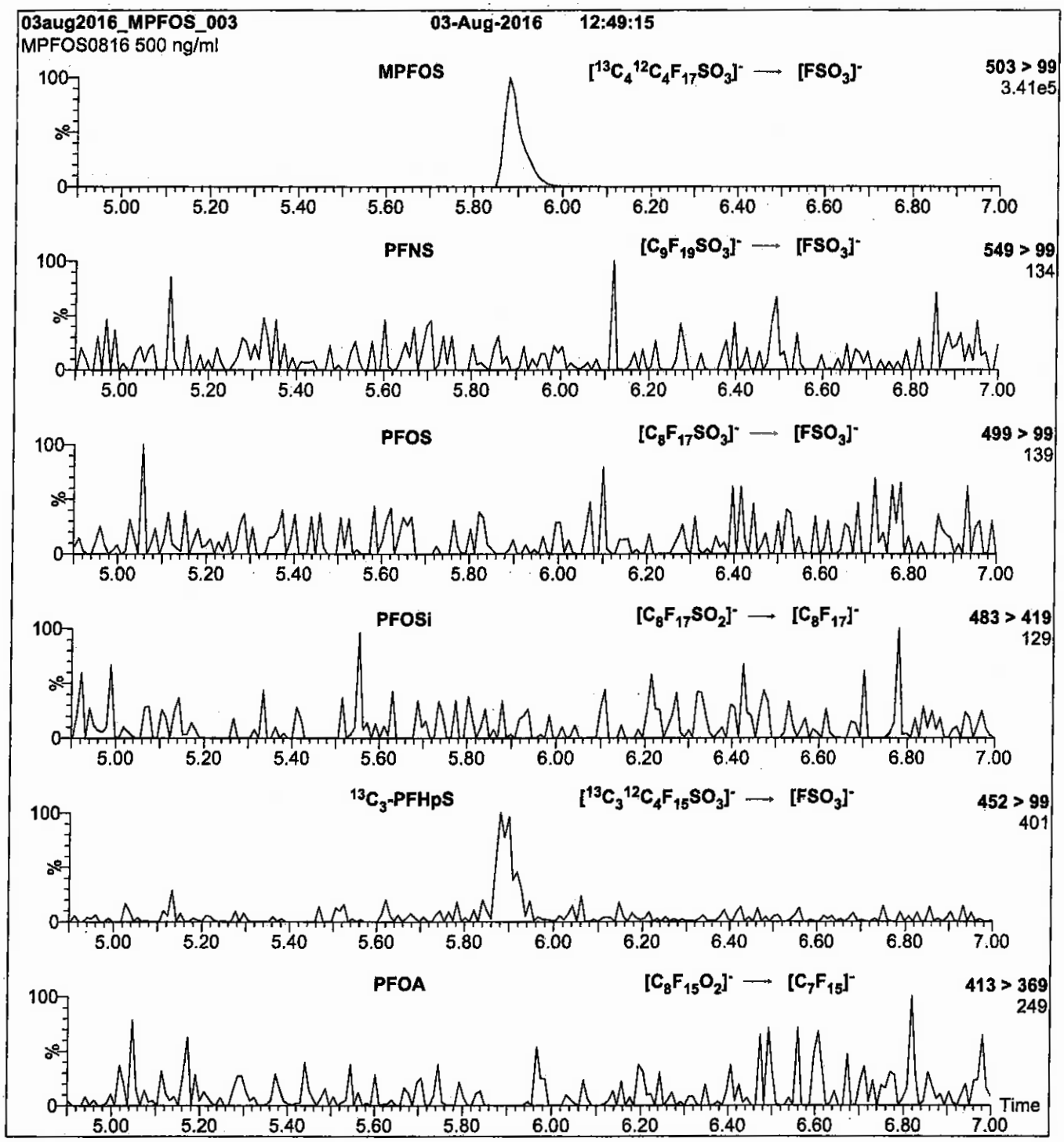
Flow: 300 µl/min

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

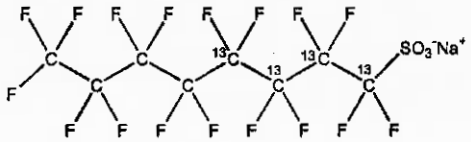
WELLINGTON LABORATORIES

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



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CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4\text{-}^{13}C_4$)
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		

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ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 12/14/2016 (mm/dd/yyyy)

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CALA

ANAB ACCREDITED

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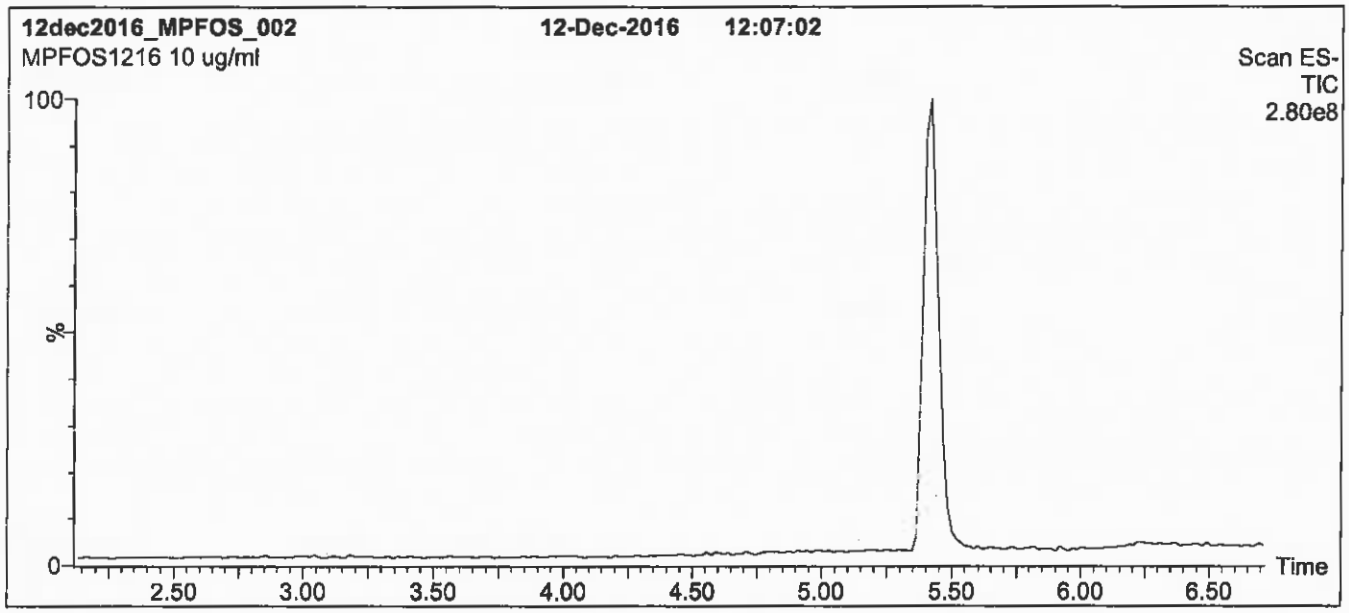

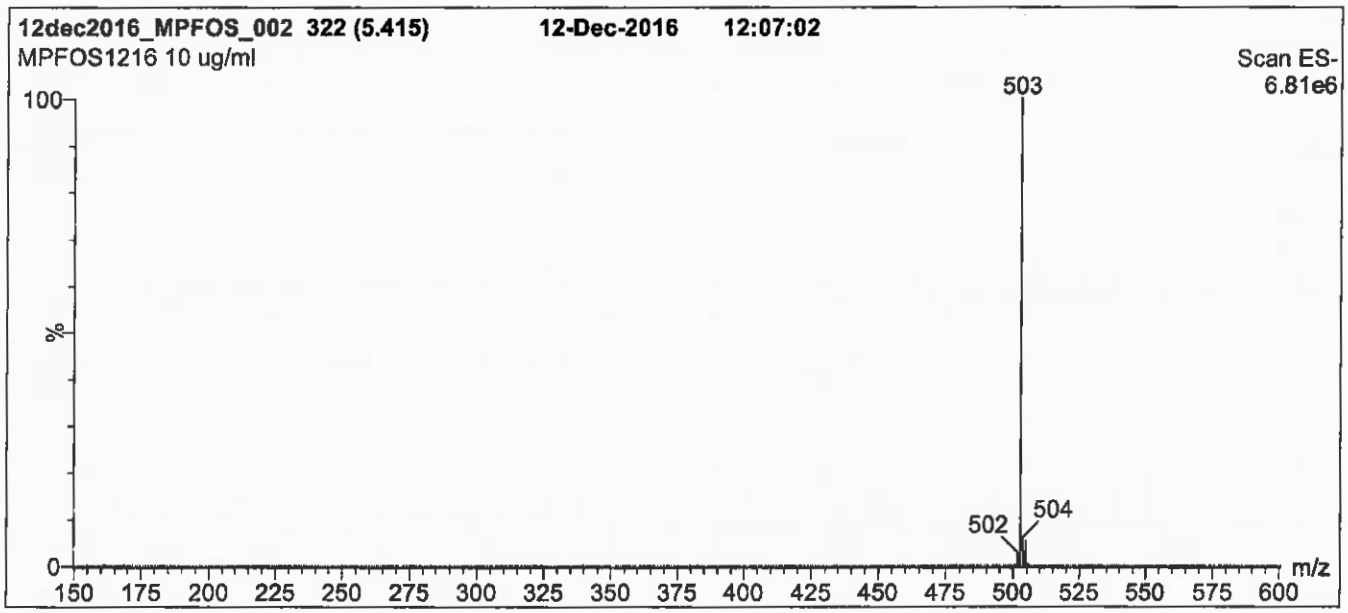

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MS: **Micromass Quattro *micro* API MS**

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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

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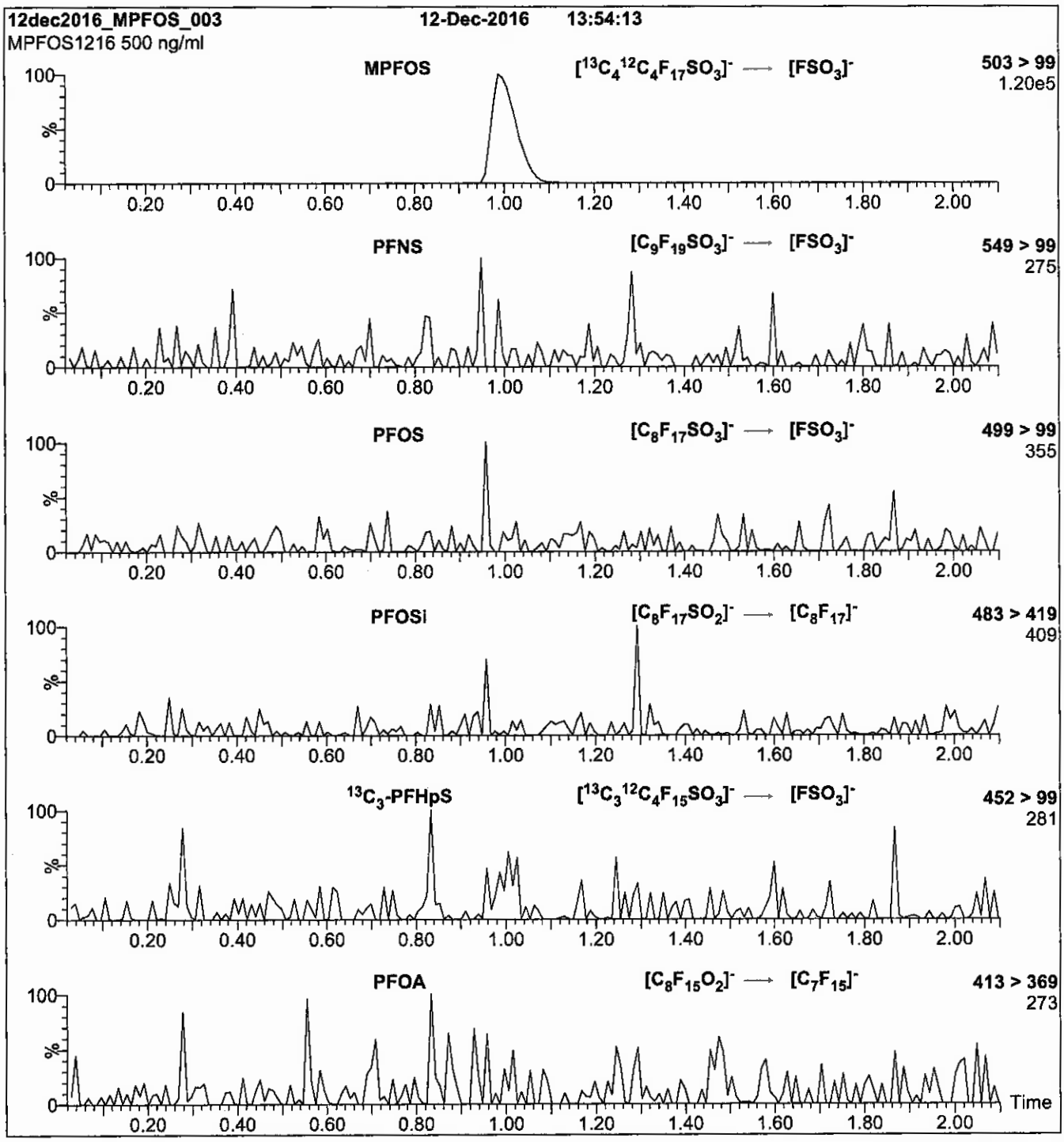


Conditions for Figure 2:

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

Method 537 DOD

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

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-081717-RW-3607	320-30866-1	82	115
WGNA-081717-FRB-3607	320-30866-2	98	109
NAWC-081717-RW-336	320-30866-3	89	124
NAWC-081717-FRB-336	320-30866-4	94	116
WGNA-081717-RW-0560	320-30866-5	87	112
WGNA-081717-FRB-0560	320-30866-6	94	151 Q
WGNA-081717-RW-3409	320-30866-7	88	126
WGNA-081717-FRB-3409	320-30866-8	100	115
	MB 320-180966/1-A	97	151 Q
	LCS 320-180966/2-A	99	134 Q
WGNA-081717-RW-3607 MS	320-30866-1 MS	88	131 Q
WGNA-081717-RW-3607 MSD	320-30866-1 MSD	86	116

	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.: 320-30866-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.08.28_537B_013.d

Lab ID: LCS 320-180966/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	133	129	96	70-130	M
Perfluorooctanoic acid (PFOA)	66.7	68.3	102	70-130	
Perfluorononanoic acid (PFNA)	66.7	68.0	102	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	98.6	99	70-130	
Perfluoroheptanoic acid (PFHpA)	33.3	37.9	114	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	318	106	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.08.28_537B_024.d

Lab ID: 320-30866-1 MS Client ID: WGNA-081717-RW-3607 MS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	130	24 J	149	96	70-130	M
Perfluorooctanoic acid (PFOA)	65.3	28	92.0	98	70-130	
Perfluorononanoic acid (PFNA)	65.2	19 U	71.1	109	70-130	
Perfluorohexanesulfonic acid (PFHxS)	97.8	7.9 J	106	100	70-130	
Perfluoroheptanoic acid (PFHpA)	32.6	7.5 J	40.9	103	70-130	
Perfluorobutanesulfonic acid (PFBS)	293	34 U	322	110	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.08.28_537B_025.d

Lab ID: 320-30866-1 MSD Client ID: WGNA-081717-RW-3607 MSD

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	126	145	97	3	30	70-130	M
Perfluorooctanoic acid (PFOA)	62.8	86.8	94	6	30	70-130	
Perfluorononanoic acid (PFNA)	62.7	68.6	109	4	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	94.1	97.6	95	8	30	70-130	
Perfluoroheptanoic acid (PFHpA)	31.4	35.6	90	14	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	282	300	106	7	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.: 320-30866-1

SDG No.:

Lab File ID: 2017.08.28_537B_012.d Lab Sample ID: MB 320-180966/1-A

Matrix: Water Date Extracted: 08/24/2017 09:54

Instrument ID: A8_N Date Analyzed: 08/28/2017 22:58

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-180966/2-A	2017.08.28_537B_013.d	08/28/2017 23:03
WGNA-081717-RW-3607	320-30866-1	2017.08.28_537B_023.d	08/28/2017 23:50
WGNA-081717-RW-3607 MS	320-30866-1 MS	2017.08.28_537B_024.d	08/28/2017 23:55
WGNA-081717-RW-3607 MSD	320-30866-1 MSD	2017.08.28_537B_025.d	08/29/2017 00:00
WGNA-081717-FRB-3607	320-30866-2	2017.08.28_537B_026.d	08/29/2017 00:04
NAWC-081717-RW-336	320-30866-3	2017.08.28_537B_027.d	08/29/2017 00:09
NAWC-081717-FRB-336	320-30866-4	2017.08.28_537B_028.d	08/29/2017 00:14
WGNA-081717-RW-0560	320-30866-5	2017.08.28_537B_029.d	08/29/2017 00:19
WGNA-081717-FRB-0560	320-30866-6	2017.08.28_537B_030.d	08/29/2017 00:23
WGNA-081717-RW-3409	320-30866-7	2017.08.28_537B_031.d	08/29/2017 00:28
WGNA-081717-FRB-3409	320-30866-8	2017.08.28_537B_032.d	08/29/2017 00:33

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 08/28/2017 16:12

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/28/2017 16:36

Calibration ID: 33857

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		1374205	1.93	4406239	2.19		
UPPER LIMIT		2061308	2.43	6609359	2.69		
LOWER LIMIT		687103	1.43	2203120	1.69		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-181689/9		1323726	1.92	4341124	2.18		
ICV 320-181689/11		1250781	1.92	4615689	2.19		
CCV 320-181720/10 CCVIS		1319358	1.88	4215889	2.14		
MB 320-180966/1-A		1489691	1.88	4561251	2.14		
LCS 320-180966/2-A		1435298	1.88	4510726	2.14		
CCV 320-181720/21 CCVIS		1364683	1.87	4237780	2.13		
CCV 320-181721/21 CCVIS		1364683	1.87	4237780	2.13		
320-30866-1	WGNA-081717-RW-3607	1477916	1.87	4568604	2.12		
320-30866-1 MS	WGNA-081717-RW-3607 MS	1453918	1.87	4554071	2.12		
320-30866-1 MSD	WGNA-081717-RW-3607 MSD	1419282	1.87	4497910	2.12		
320-30866-2	WGNA-081717-FRB-3607	1517108	1.87	4682617	2.13		
320-30866-3	NAWC-081717-RW-336	1455287	1.87	4478059	2.13		
320-30866-4	NAWC-081717-FRB-336	1500282	1.87	4540736	2.13		
320-30866-5	WGNA-081717-RW-0560	1447575	1.87	4489441	2.12		
320-30866-6	WGNA-081717-FRB-0560	1517295	1.87	4650300	2.13		
320-30866-7	WGNA-081717-RW-3409	1550572	1.87	4655960	2.13		
320-30866-8	WGNA-081717-FRB-3409	1471789	1.87	4669966	2.12		
CCV 320-181721/33 CCVIS		1354840	1.87	4336458	2.13		

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.: 320-30866-1

SDG No.:

Sample No.: CCV 320-181720/10 Date Analyzed: 08/28/2017 22:48

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

Lab File ID (Standard): 2017.08.28_537B_010 Heated Purge: (Y/N) N

Calibration ID: 33857

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1319358	1.88	4215889	2.14		
UPPER LIMIT		1847101	2.38	5902245	2.64		
LOWER LIMIT		923551	1.38	2951122	1.64		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-180966/1-A		1489691	1.88	4561251	2.14		
LCS 320-180966/2-A		1435298	1.88	4510726	2.14		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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.: 320-30866-1

SDG No.:

Sample No.: CCV 320-181720/21 Date Analyzed: 08/28/2017 23:41

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

Lab File ID (Standard): 2017.08.28_537B_021 Heated Purge: (Y/N) N

Calibration ID: 33857

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1364683	1.87	4237780	2.13		
UPPER LIMIT		1910556	2.37	5932892	2.63		
LOWER LIMIT		955278	1.37	2966446	1.63		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-180966/1-A		1489691	1.88	4561251	2.14		
LCS 320-180966/2-A		1435298	1.88	4510726	2.14		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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.: 320-30866-1

SDG No.:

Sample No.: CCV 320-181721/21 Date Analyzed: 08/28/2017 23:41

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

Lab File ID (Standard): 2017.08.28_537B_021 Heated Purge: (Y/N) N

Calibration ID: 33857

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1364683	1.87	4237780	2.13		
UPPER LIMIT		1910556	2.37	5932892	2.63		
LOWER LIMIT		955278	1.37	2966446	1.63		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-30866-1	WGNA-081717-RW-3607	1477916	1.87	4568604	2.12		
320-30866-1 MS	WGNA-081717-RW-3607 MS	1453918	1.87	4554071	2.12		
320-30866-1 MSD	WGNA-081717-RW-3607 MSD	1419282	1.87	4497910	2.12		
320-30866-2	WGNA-081717-FRB-3607	1517108	1.87	4682617	2.13		
320-30866-3	NAWC-081717-RW-336	1455287	1.87	4478059	2.13		
320-30866-4	NAWC-081717-FRB-336	1500282	1.87	4540736	2.13		
320-30866-5	WGNA-081717-RW-0560	1447575	1.87	4489441	2.12		
320-30866-6	WGNA-081717-FRB-0560	1517295	1.87	4650300	2.13		
320-30866-7	WGNA-081717-RW-3409	1550572	1.87	4655960	2.13		
320-30866-8	WGNA-081717-FRB-3409	1471789	1.87	4669966	2.12		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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.: 320-30866-1

SDG No.:

Sample No.: CCV 320-181721/33 Date Analyzed: 08/29/2017 00:38

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

Lab File ID (Standard): 2017.08.28_537B_033 Heated Purge: (Y/N) N

Calibration ID: 33857

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1354840	1.87	4336458	2.13		
UPPER LIMIT		1896776	2.37	6071041	2.63		
LOWER LIMIT		948388	1.37	3035521	1.63		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-30866-1	WGNA-081717-RW-3607	1477916	1.87	4568604	2.12		
320-30866-1 MS	WGNA-081717-RW-3607 MS	1453918	1.87	4554071	2.12		
320-30866-1 MSD	WGNA-081717-RW-3607 MSD	1419282	1.87	4497910	2.12		
320-30866-2	WGNA-081717-FRB-3607	1517108	1.87	4682617	2.13		
320-30866-3	NAWC-081717-RW-336	1455287	1.87	4478059	2.13		
320-30866-4	NAWC-081717-FRB-336	1500282	1.87	4540736	2.13		
320-30866-5	WGNA-081717-RW-0560	1447575	1.87	4489441	2.12		
320-30866-6	WGNA-081717-FRB-0560	1517295	1.87	4650300	2.13		
320-30866-7	WGNA-081717-RW-3409	1550572	1.87	4655960	2.13		
320-30866-8	WGNA-081717-FRB-3409	1471789	1.87	4669966	2.12		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-RW-3607 | Lab Sample ID: 320-30866-1

Matrix: Water | Lab File ID: 2017.08.28_537B_023.d

Analysis Method: 537 | Date Collected: 08/17/2017 13:40

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 264.9(mL) | Date Analyzed: 08/28/2017 23:50

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.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	28		19	7.6	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.9	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.5	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	82		70-130
STL00996	13C2 PFDA	115		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_023.d
Lims ID: 320-30866-A-1-A
Client ID: WGNA-081717-RW-3607
Sample Type: Client
Inject. Date: 28-Aug-2017 23:50:40 ALS Bottle#: 17 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30866-a-1-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 14:02:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.443	-0.024	1.000	460579	2.82		252	
298.90 > 99.00	1.419	1.443	-0.024	1.000	316500		1.46(0.00-0.00)	467	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.569	-0.029	1.000	1398749	8.22		10103	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.722	-0.038	1.000	514625	2.09		203	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.722	-0.038	1.000	260788	1.97		42.2	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.927	-0.053		1477916	10.0		9248	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.928	-0.054	1.000	985887	7.35		32.4	
413.00 > 169.00	1.874	1.928	-0.054	1.000	539565		1.83(0.00-0.00)	1095	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.132	2.132	0.0	1.000	928772	6.34		185	M
499.00 > 99.00	2.124	2.132	-0.008	0.996	151767		6.12(0.00-0.00)	106	M
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.186	-0.062		4568604	28.7		871	
$ 10 13C2 PFDA									
515.00 > 470.00	2.299	2.344	-0.045	1.000	941362	11.5		10599	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 29-Aug-2017 14:25:20 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_023.d

Injection Date: 28-Aug-2017 23:50:40 Instrument ID: A8_N

Lims ID: 320-30866-A-1-A Lab Sample ID: 320-30866-1

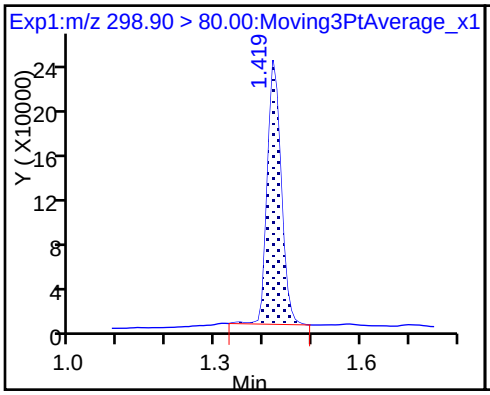
Client ID: WGNA-081717-RW-3607

Operator ID: SACINSTLCMS01 ALS Bottle#: 17 Worklist Smp#: 23

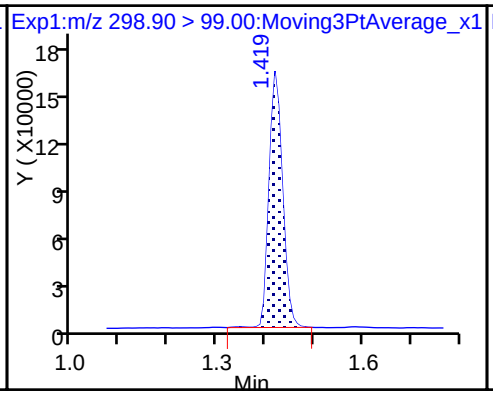
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

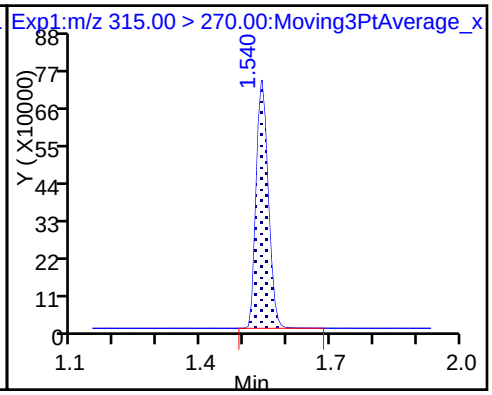
1 Perfluorobutanesulfonic acid



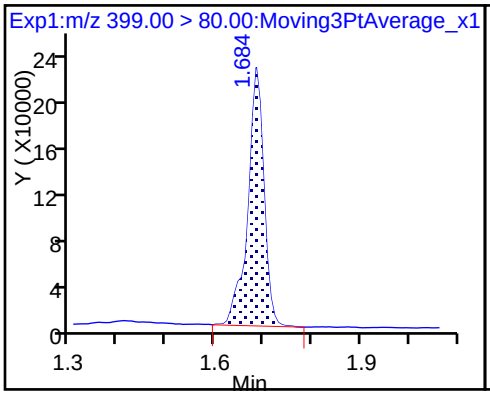
1 Perfluorobutanesulfonic acid



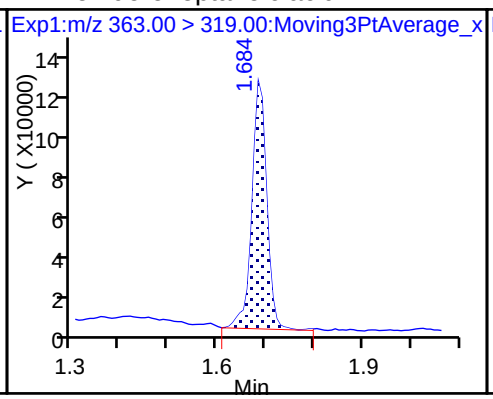
$ 2 13C2 PFHxA



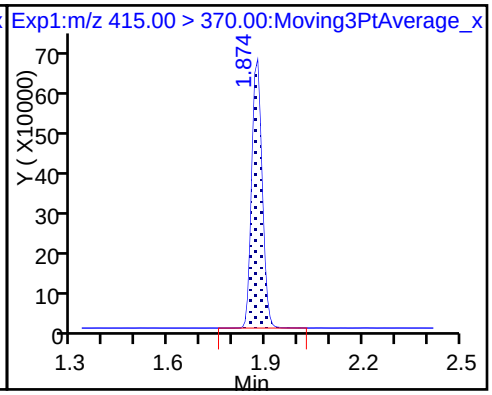
3 Perfluorohexanesulfonic acid



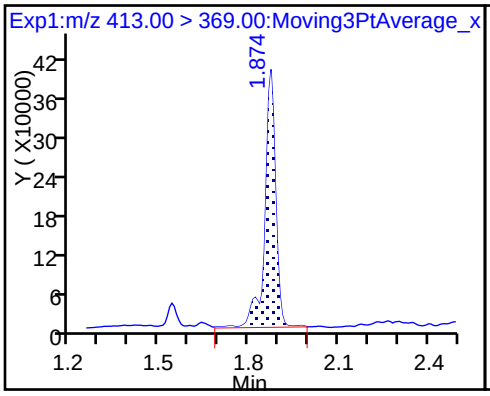
4 Perfluoroheptanoic acid



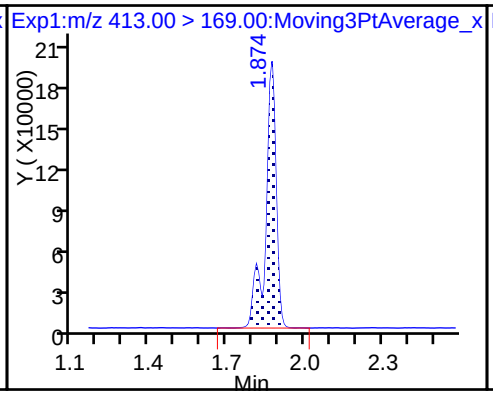
* 6 13C2-PFOA



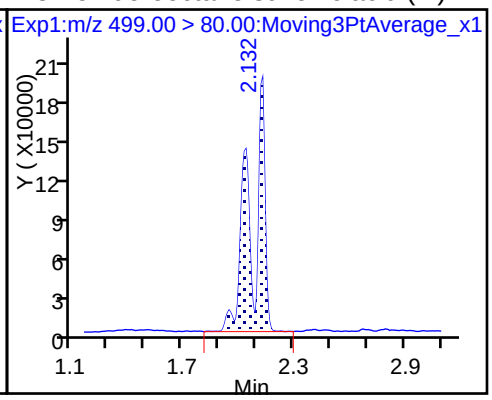
5 Perfluorooctanoic acid



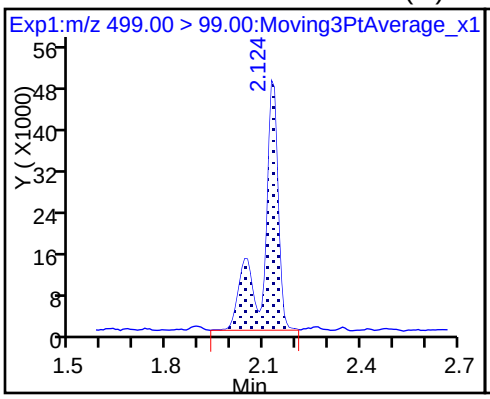
5 Perfluorooctanoic acid



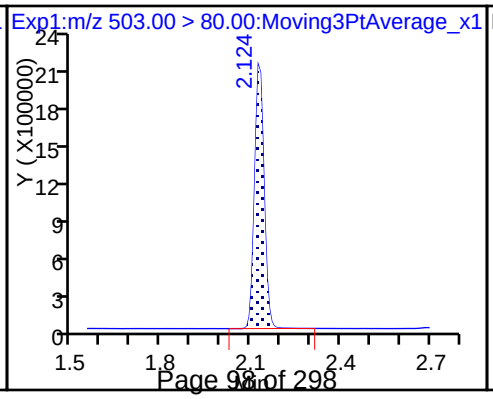
8 Perfluorooctane sulfonic acid (M)



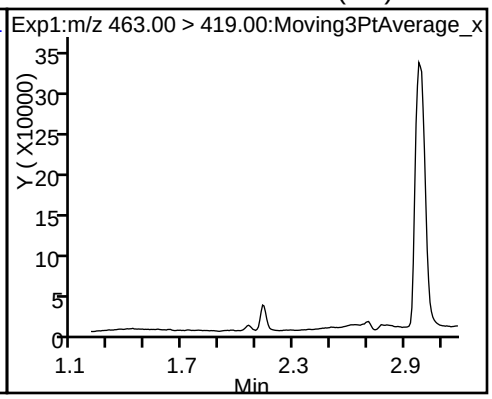
8 Perfluorooctane sulfonic acid (M)



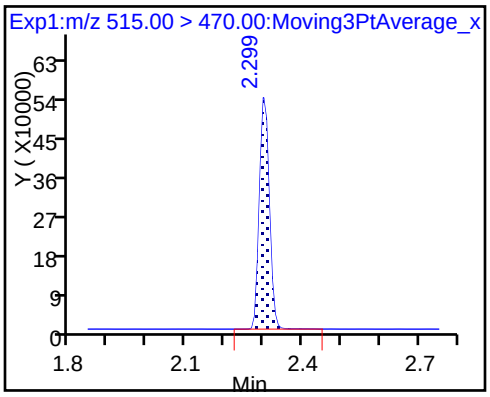
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.299
Y (X10000)
63
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_023.d
Lims ID: 320-30866-A-1-A
Client ID: WGNA-081717-RW-3607
Sample Type: Client
Inject. Date: 28-Aug-2017 23:50:40 ALS Bottle#: 17 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30866-a-1-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 14:02:27

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.22	82.22
$ 10 13C2 PFDA	10.0	11.5	115.15

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

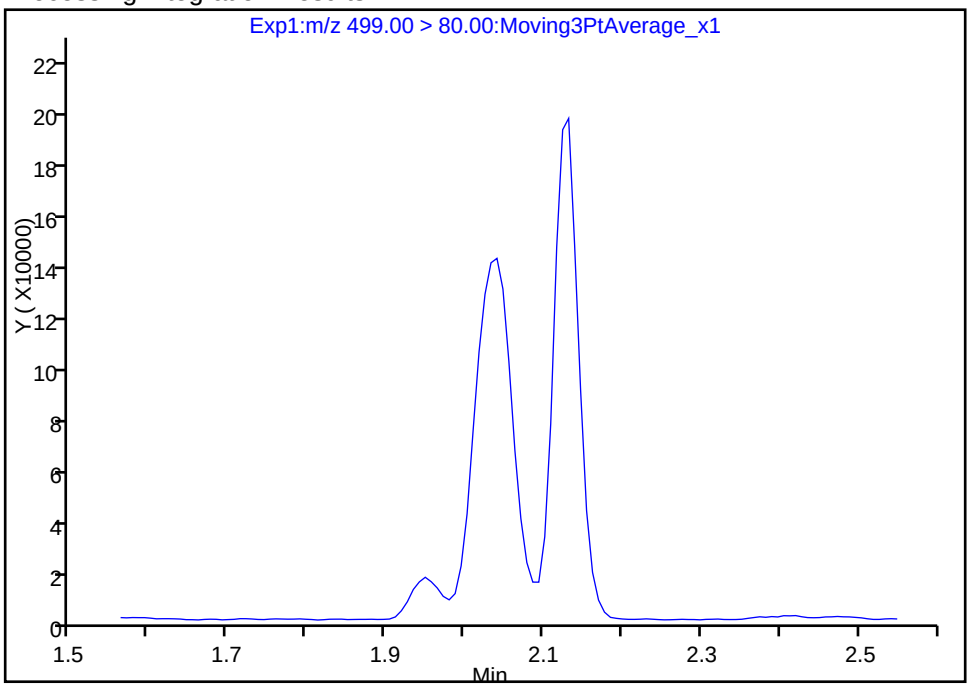
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_023.d				
Injection Date:	28-Aug-2017 23:50:40	Instrument ID:	A8_N		
Lims ID:	320-30866-A-1-A	Lab Sample ID:	320-30866-1		
Client ID:	WGNA-081717-RW-3607				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

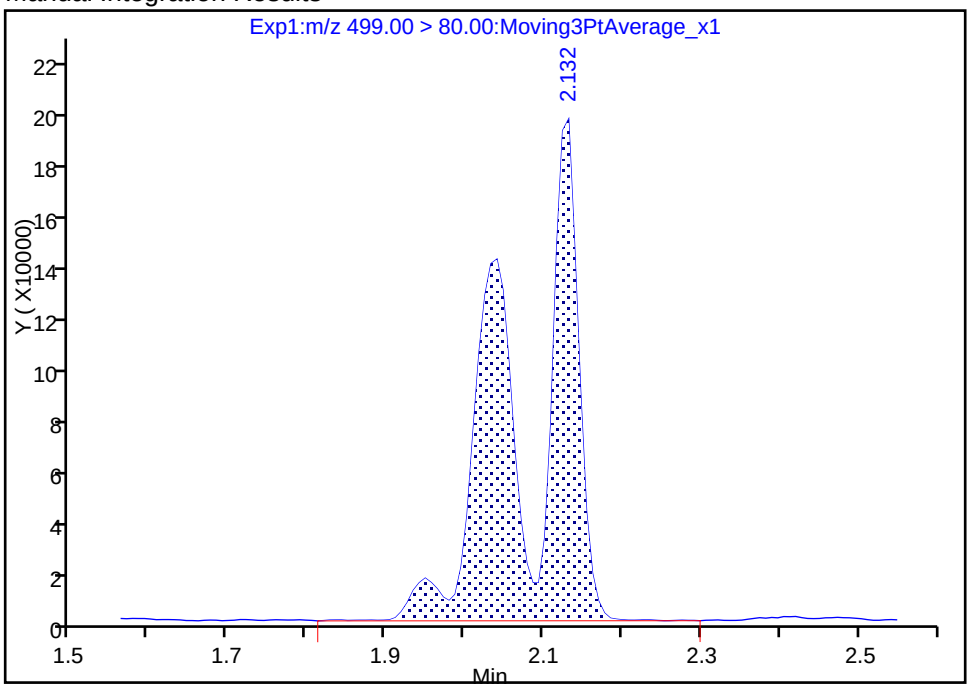
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 928772
Amount: 6.340399
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:01:59
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

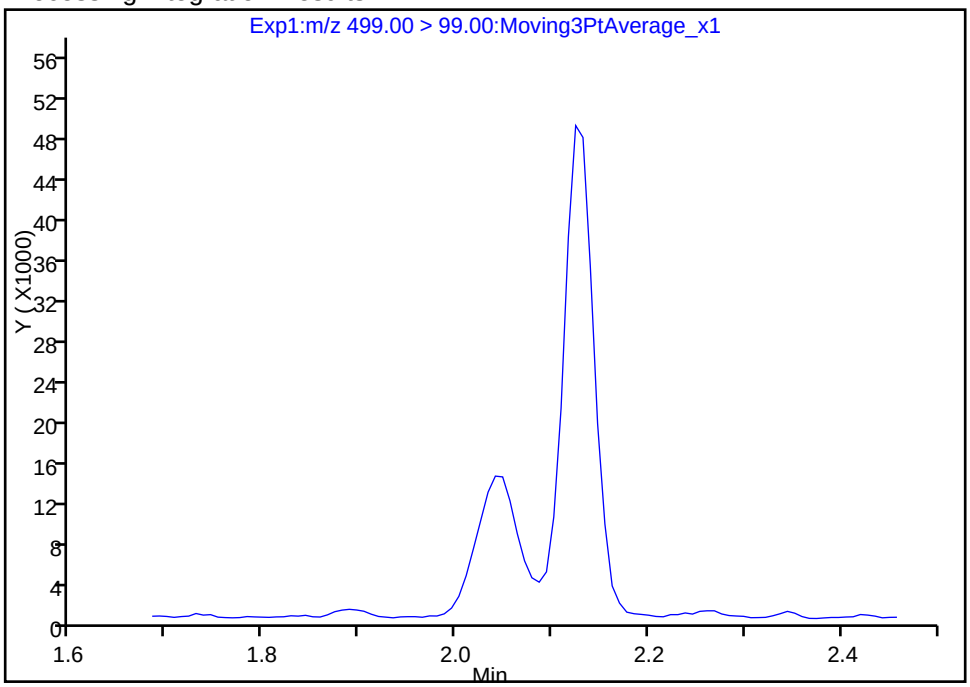
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_023.d				
Injection Date:	28-Aug-2017 23:50:40	Instrument ID:	A8_N		
Lims ID:	320-30866-A-1-A	Lab Sample ID:	320-30866-1		
Client ID:	WGNA-081717-RW-3607				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	23
Injection 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

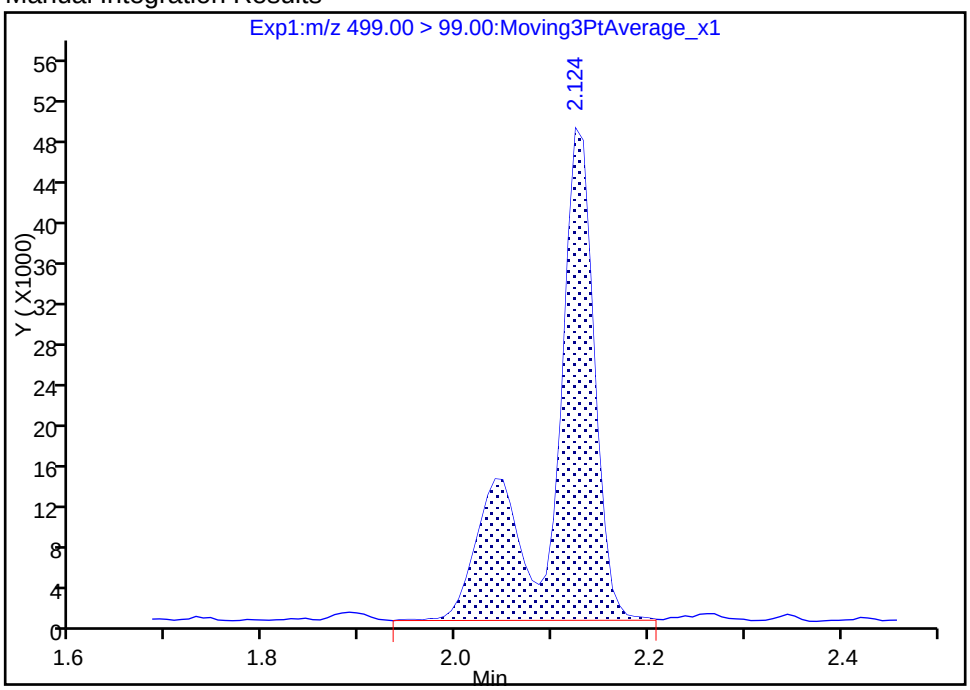
Processing Integration Results

Not Detected
Expected RT: 2.13



Manual Integration Results

RT: 2.12
Area: 151767
Amount: 6.340399
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:02:16
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

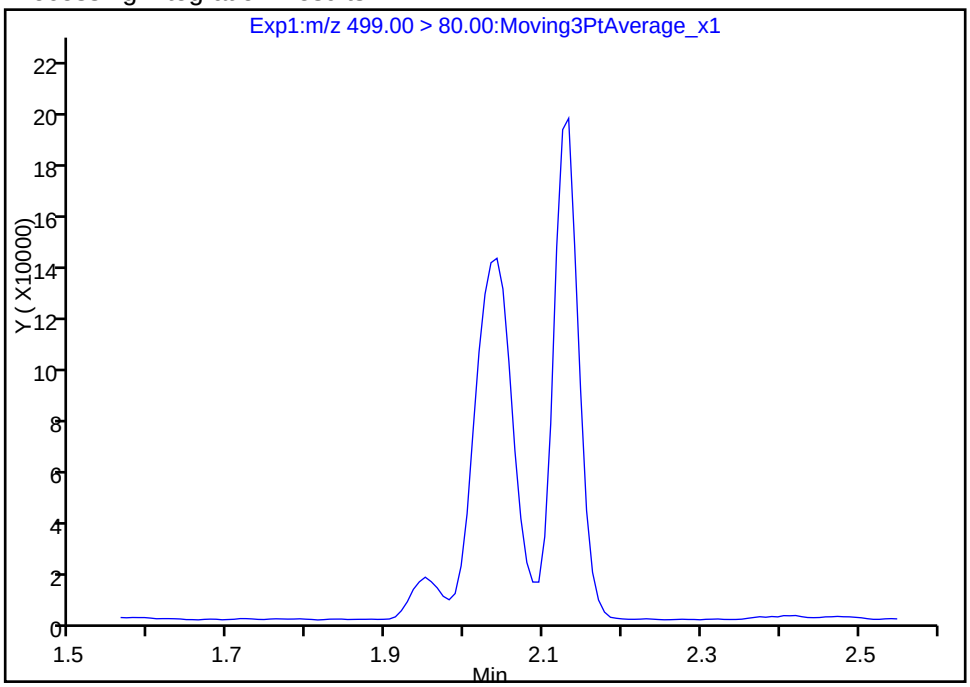
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_023.d				
Injection Date:	28-Aug-2017 23:50:40	Instrument ID:	A8_N		
Lims ID:	320-30866-A-1-A	Lab Sample ID:	320-30866-1		
Client ID:	WGNA-081717-RW-3607				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

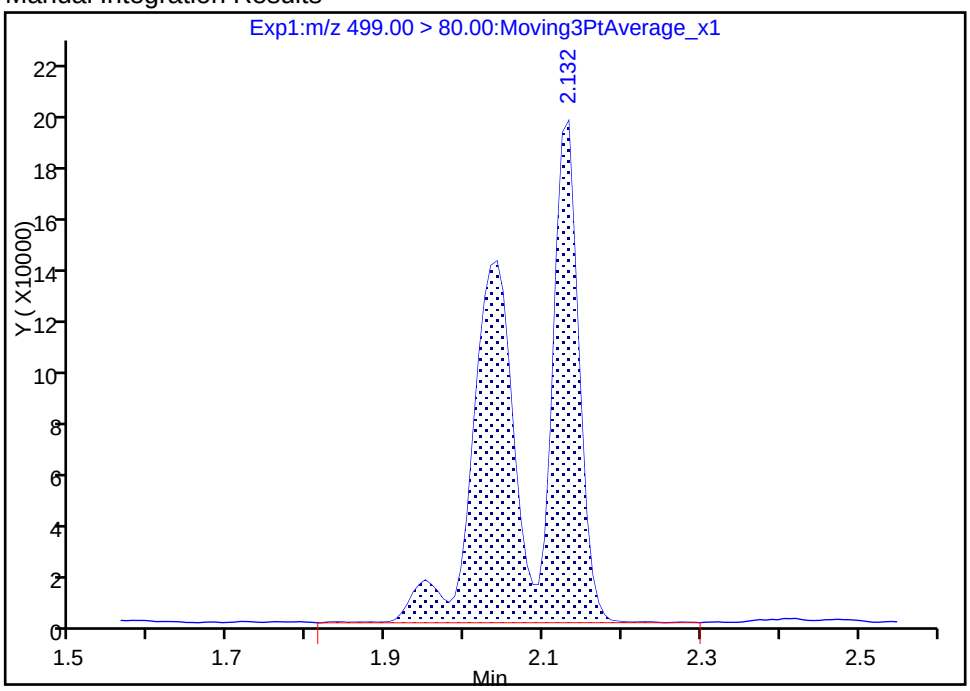
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 928772
Amount: 6.340399
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:02:16
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-FRB-3607 | Lab Sample ID: 320-30866-2

Matrix: Water | Lab File ID: 2017.08.28_537B_026.d

Analysis Method: 537 | Date Collected: 08/17/2017 13:30

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 256.2(mL) | Date Analyzed: 08/29/2017 00:04

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

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

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

Analysis Batch No.: 181721 | Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	109		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_026.d
Lims ID: 320-30866-A-2-A
Client ID: WGNA-081717-FRB-3607
Sample Type: Client
Inject. Date: 29-Aug-2017 00:04:57 ALS Bottle#: 20 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30866-a-2-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.569	-0.029	1.000	1720101	9.85		12400	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.927	-0.053		1517108	10.0		10051	
* 7 13C4 PFOS									
503.00 > 80.00	2.132	2.186	-0.054		4682617	28.7		877	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.344	-0.038	1.000	918541	10.9		9992	

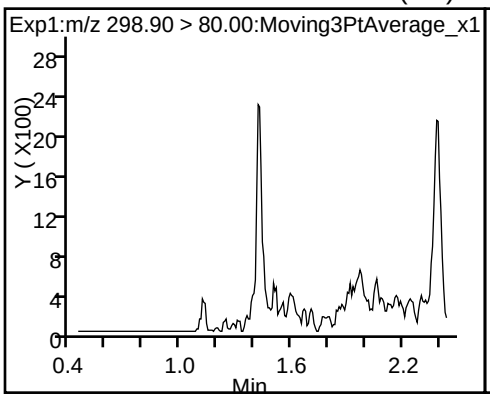
Report Date: 29-Aug-2017 14:25:24 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

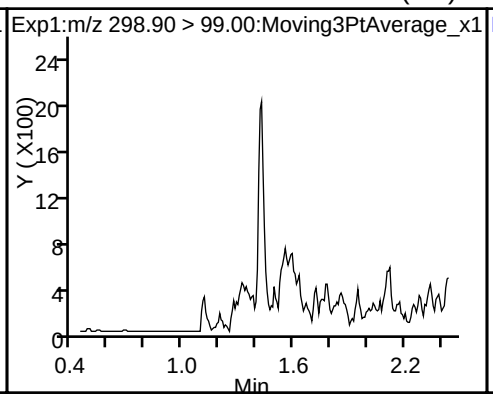
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_026.d

Injection Date:	29-Aug-2017 00:04:57	Instrument ID:	A8_N		
Lims ID:	320-30866-A-2-A	Lab Sample ID:	320-30866-2		
Client ID:	WGNA-081717-FRB-3607				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	26
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

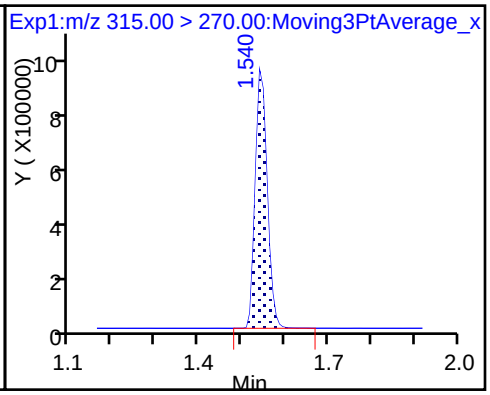
1 Perfluorobutanesulfonic acid (ND)



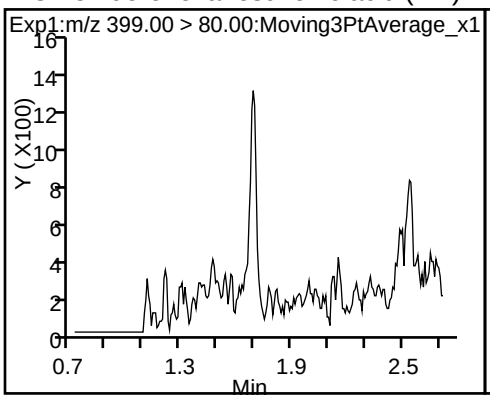
1 Perfluorobutanesulfonic acid (ND)



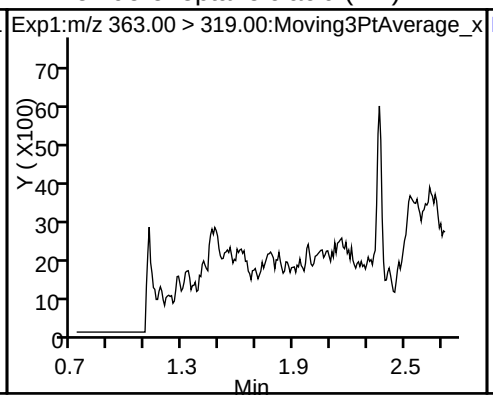
$ 2 13C2 PFHxA



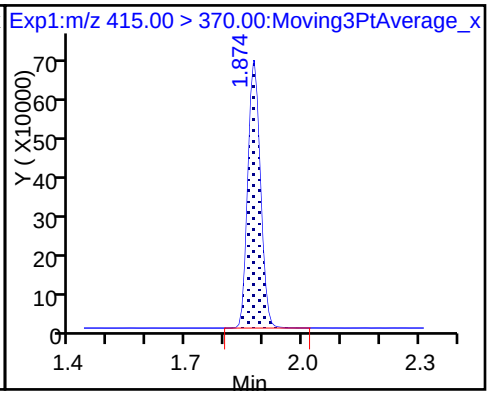
3 Perfluorohexanesulfonic acid (ND)



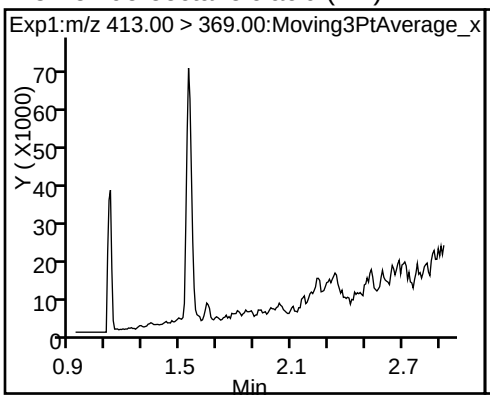
4 Perfluoroheptanoic acid (ND)



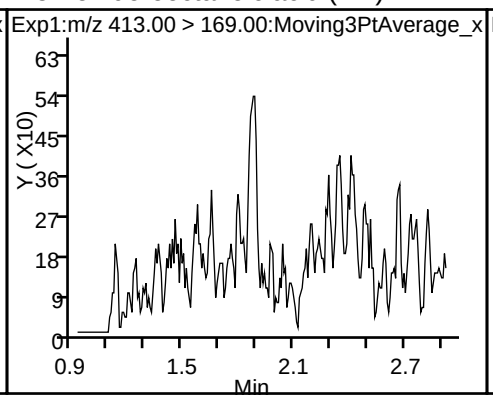
* 6 13C2-PFOA



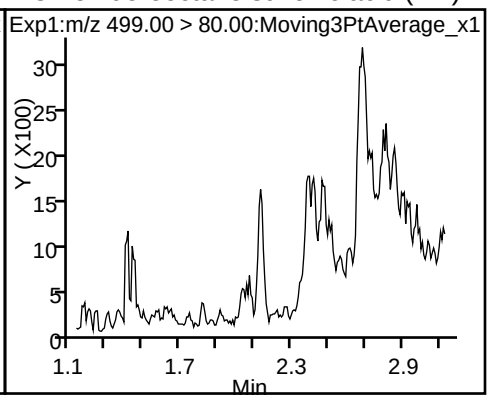
5 Perfluorooctanoic acid (ND)



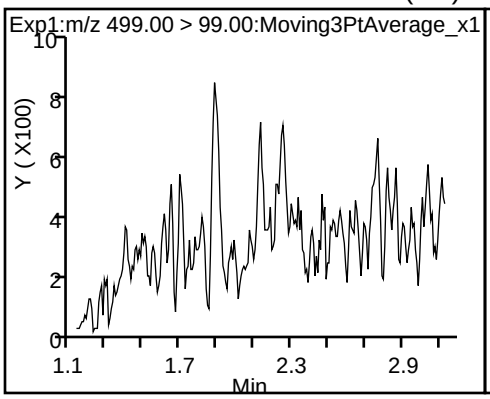
5 Perfluorooctanoic acid (ND)



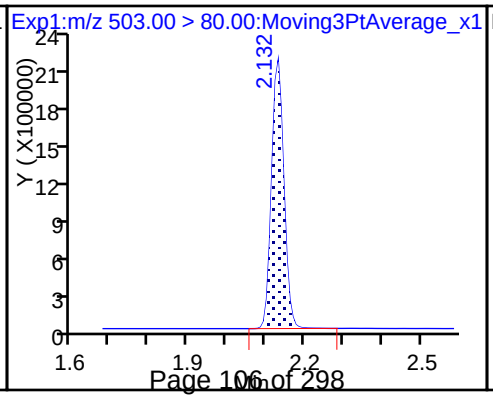
8 Perfluorooctane sulfonic acid (ND)



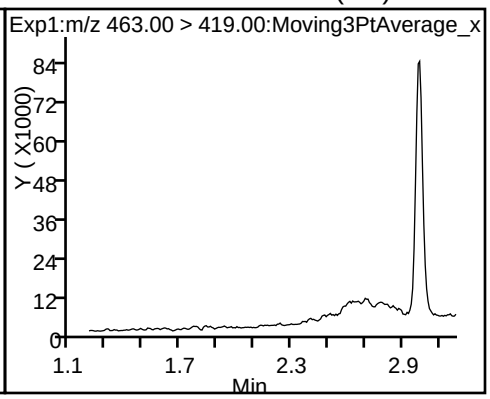
8 Perfluorooctane sulfonic acid (ND)



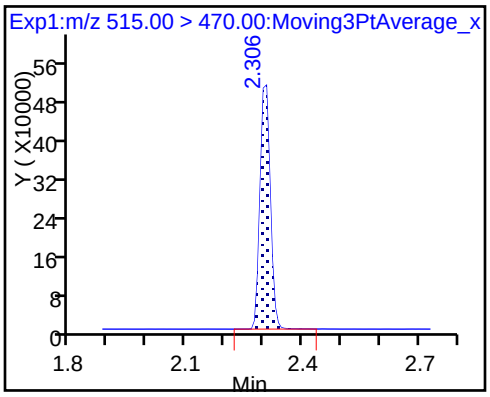
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


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

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_026.d				
Lims ID:	320-30866-A-2-A				
Client ID:	WGNA-081717-FRB-3607				
Sample Type:	Client				
Inject. Date:	29-Aug-2017 00:04:57	ALS Bottle#:	20	Worklist Smp#:	26
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30866-a-2-a				
Misc. Info.:	Plate: 1 Rack: 4				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	29-Aug-2017 14:25:18	Calib Date:	28-Aug-2017 16:36:00		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK019				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.85	98.50
$ 10 13C2 PFDA	10.0	10.9	109.45

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: NAWC-081717-RW-336 | Lab Sample ID: 320-30866-3

Matrix: Water | Lab File ID: 2017.08.28_537B_027.d

Analysis Method: 537 | Date Collected: 08/17/2017 14:20

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 257.2(mL) | Date Analyzed: 08/29/2017 00:09

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

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

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

Analysis Batch No.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	6.1	J M	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	124		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_027.d
Lims ID: 320-30866-A-3-A
Client ID: NAWC-081717-RW-336
Sample Type: Client
Inject. Date: 29-Aug-2017 00:09:42 ALS Bottle#: 21 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30866-a-3-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 14:05:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.569	-0.021	1.000	1496899	8.94		12374	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.927	-0.053		1455287	10.0		8623	
5 Perfluorooctanoic acid									M
413.00 > 369.00	1.874	1.928	-0.054	1.000	206091	1.56		6.5	M
413.00 > 169.00	1.874	1.928	-0.054	1.000	122462		1.68(0.00-0.00)	268	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.132	2.132	0.0	1.000	226786	1.58		56.8	M
499.00 > 99.00	2.132	2.132	0.0	1.000	36023		6.30(0.00-0.00)	29.9	M
* 7 13C4 PFOS									
503.00 > 80.00	2.132	2.186	-0.054		4478059	28.7		745	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.344	-0.038	1.000	999809	12.4		11353	

QC Flag Legend

Review Flags
M - Manually Integrated

Report Date: 29-Aug-2017 14:25:25 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_027.d

Injection Date: 29-Aug-2017 00:09:42 Instrument ID: A8_N

Lims ID: 320-30866-A-3-A Lab Sample ID: 320-30866-3

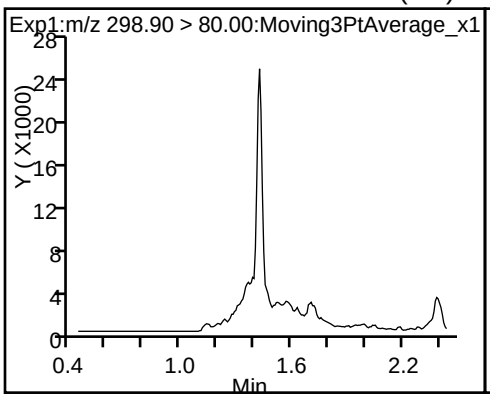
Client ID: NAWC-081717-RW-336

Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 27

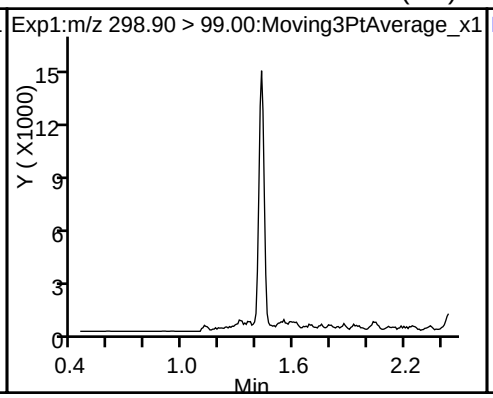
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

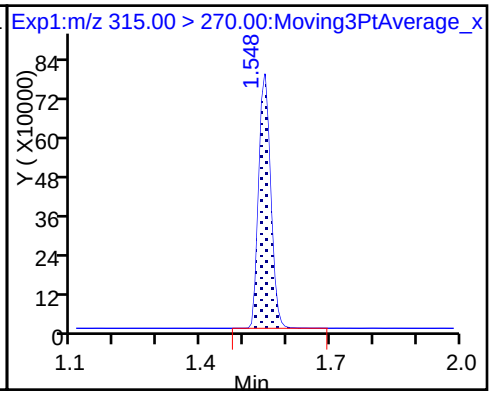
1 Perfluorobutanesulfonic acid (ND)



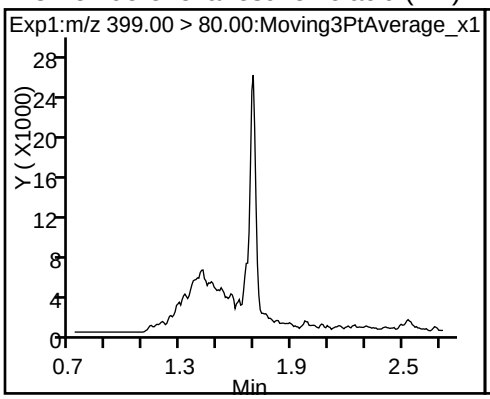
1 Perfluorobutanesulfonic acid (ND)



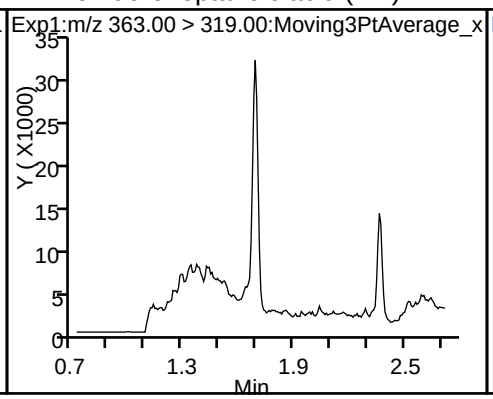
$ 2 13C2 PFHxA



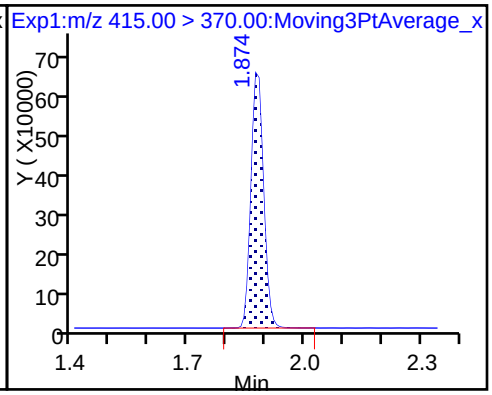
3 Perfluorohexanesulfonic acid (ND)



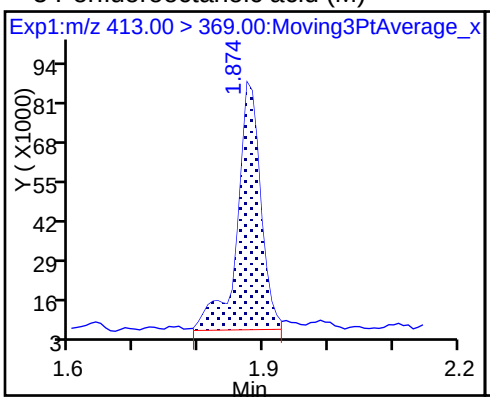
4 Perfluoroheptanoic acid (ND)



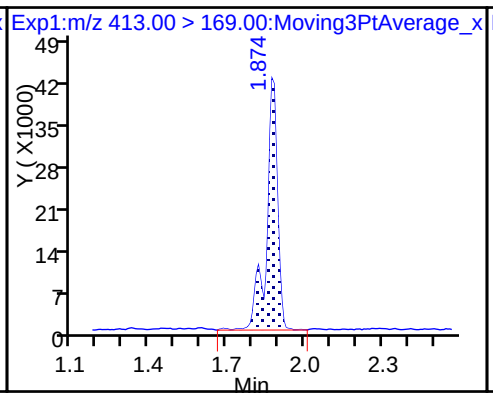
* 6 13C2-PFOA



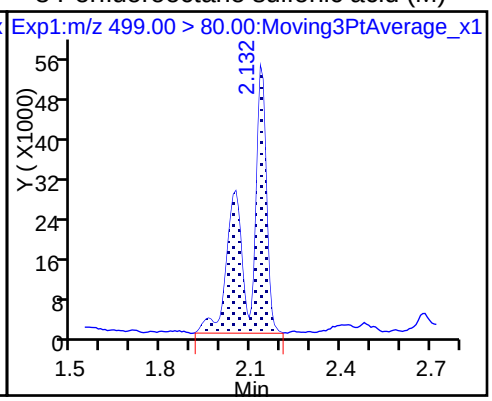
5 Perfluorooctanoic acid (M)



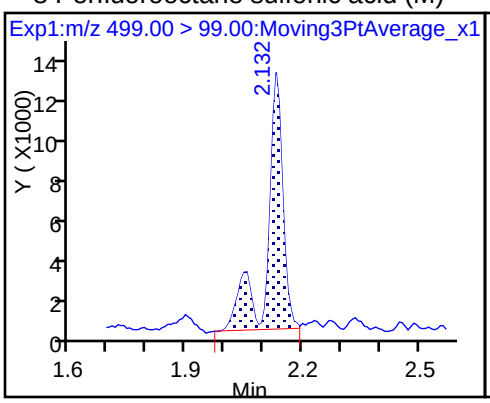
5 Perfluorooctanoic acid



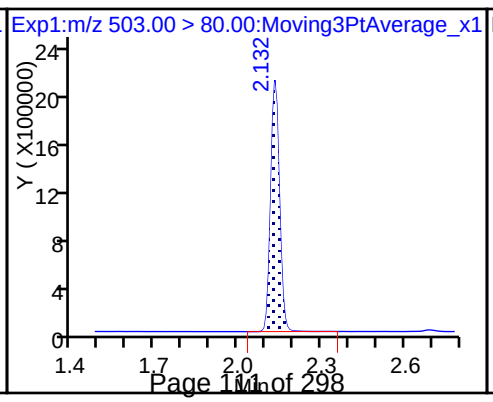
8 Perfluorooctane sulfonic acid (M)



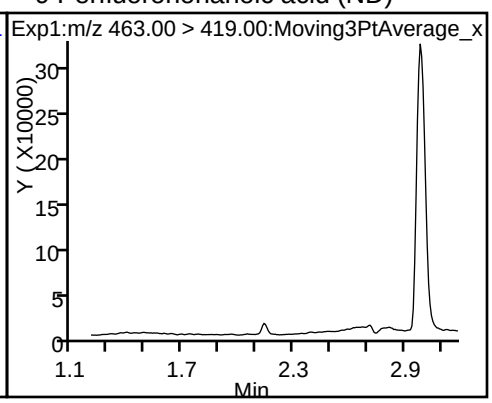
8 Perfluorooctane sulfonic acid (M)



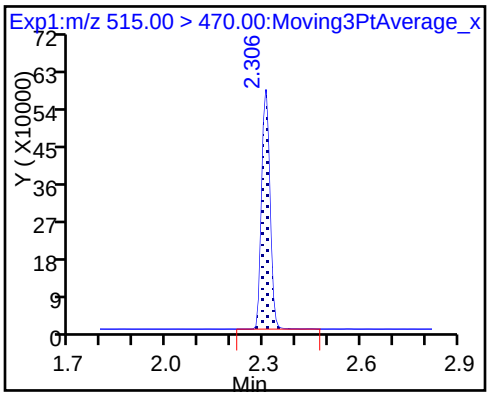
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.306
Y (X10000)
72
63
54
45
36
27
18
9
0
1.7
2.0
2.3
2.6
2.9
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_027.d
Lims ID: 320-30866-A-3-A
Client ID: NAWC-081717-RW-336
Sample Type: Client
Inject. Date: 29-Aug-2017 00:09:42 ALS Bottle#: 21 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30866-a-3-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 14:05:11

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.94	89.36
$ 10 13C2 PFDA	10.0	12.4	124.20

TestAmerica Sacramento

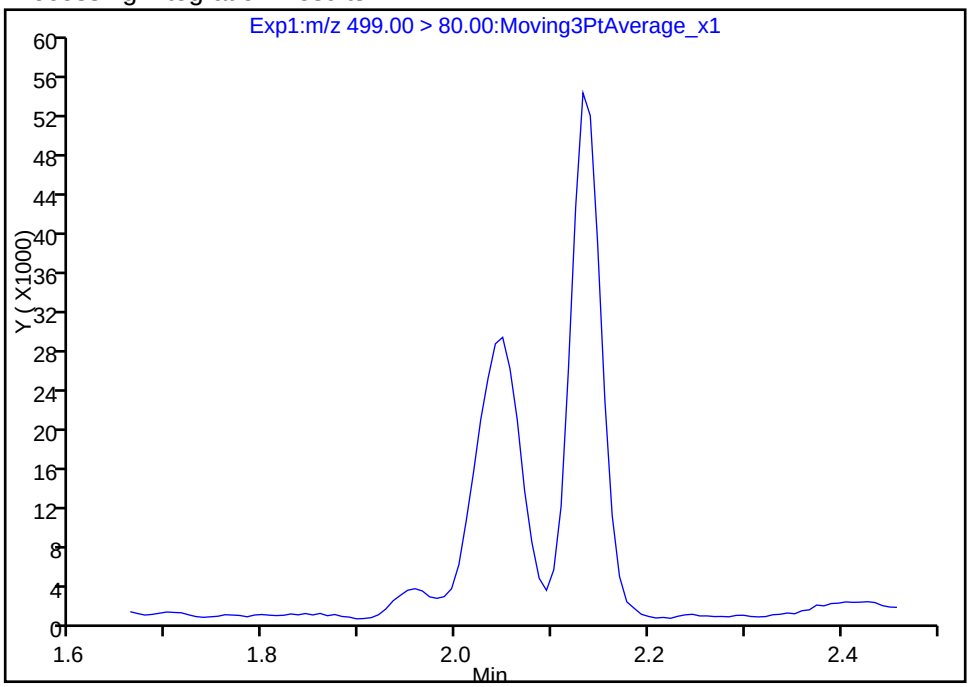
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_027.d				
Injection Date:	29-Aug-2017 00:09:42	Instrument ID:	A8_N		
Lims ID:	320-30866-A-3-A	Lab Sample ID:	320-30866-3		
Client ID:	NAWC-081717-RW-336				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	27
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

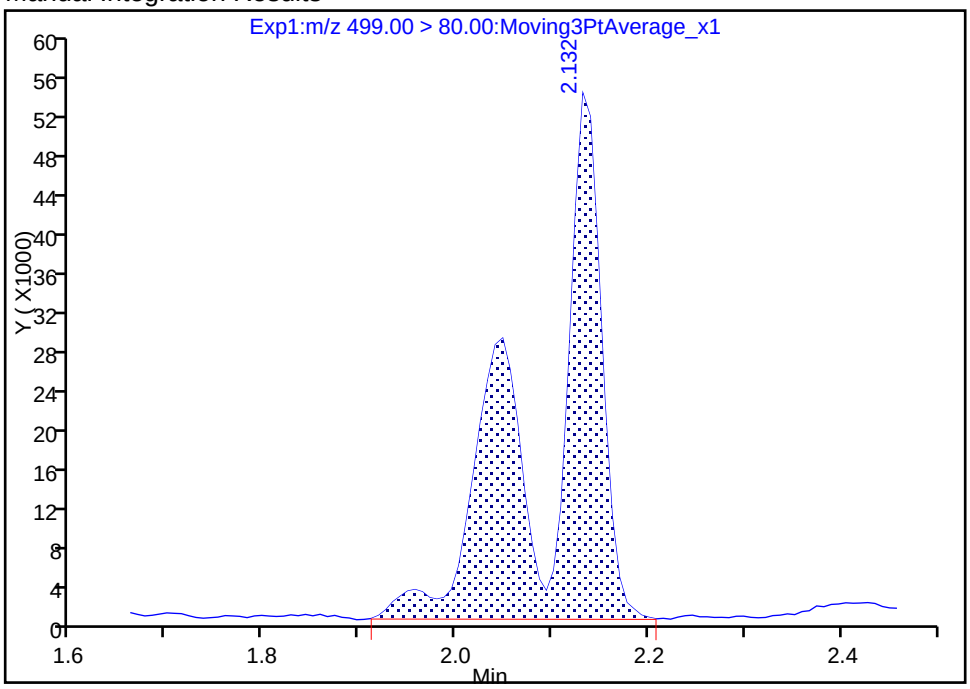
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 226786
Amount: 1.579492
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:04:42
Audit Action: Assigned Compound ID Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

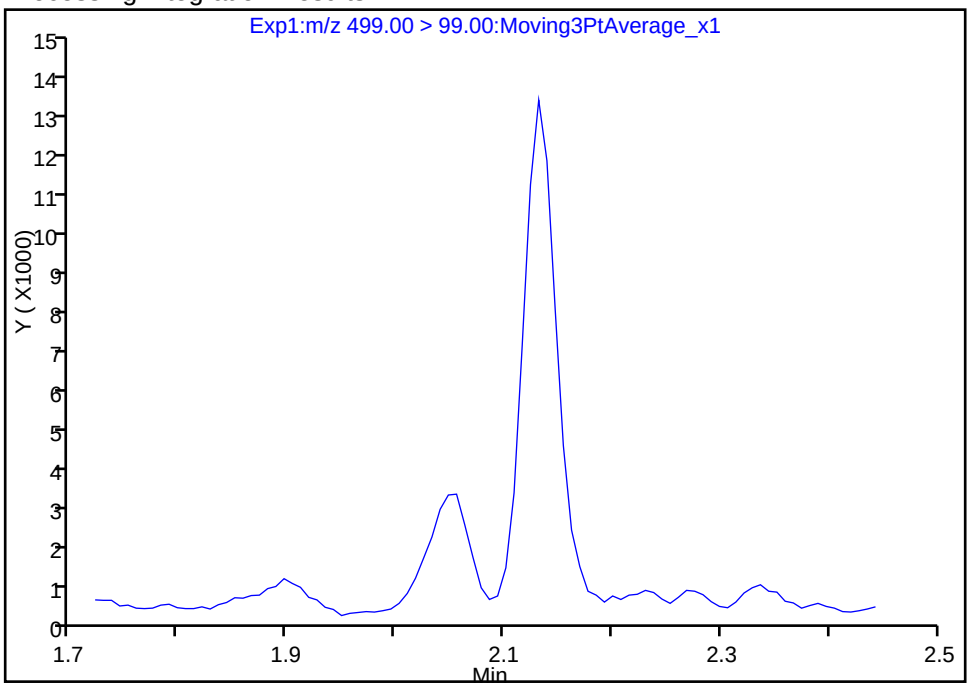
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_027.d				
Injection Date:	29-Aug-2017 00:09:42	Instrument ID:	A8_N		
Lims ID:	320-30866-A-3-A	Lab Sample ID:	320-30866-3		
Client ID:	NAWC-081717-RW-336				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	27
Injection 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

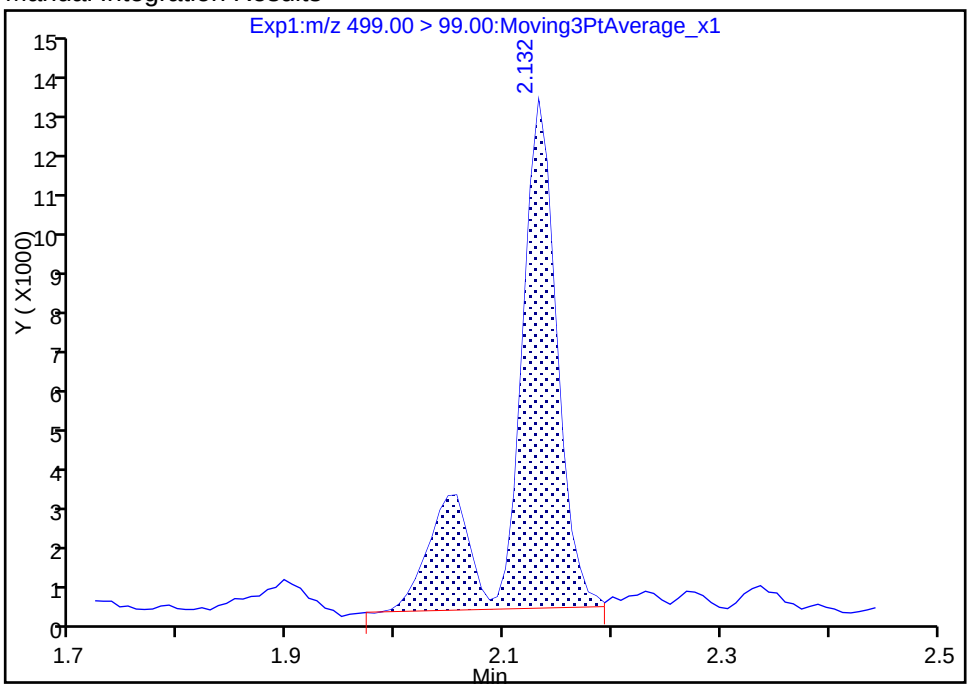
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 36023
Amount: 1.579492
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:05:00
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

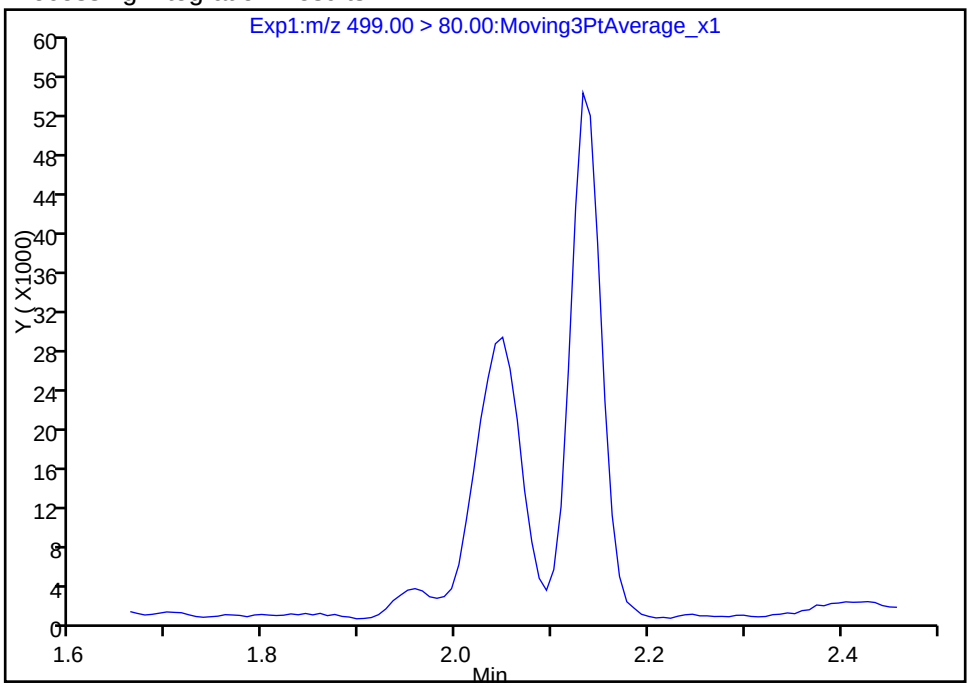
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_027.d				
Injection Date:	29-Aug-2017 00:09:42	Instrument ID:	A8_N		
Lims ID:	320-30866-A-3-A	Lab Sample ID:	320-30866-3		
Client ID:	NAWC-081717-RW-336				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	27
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

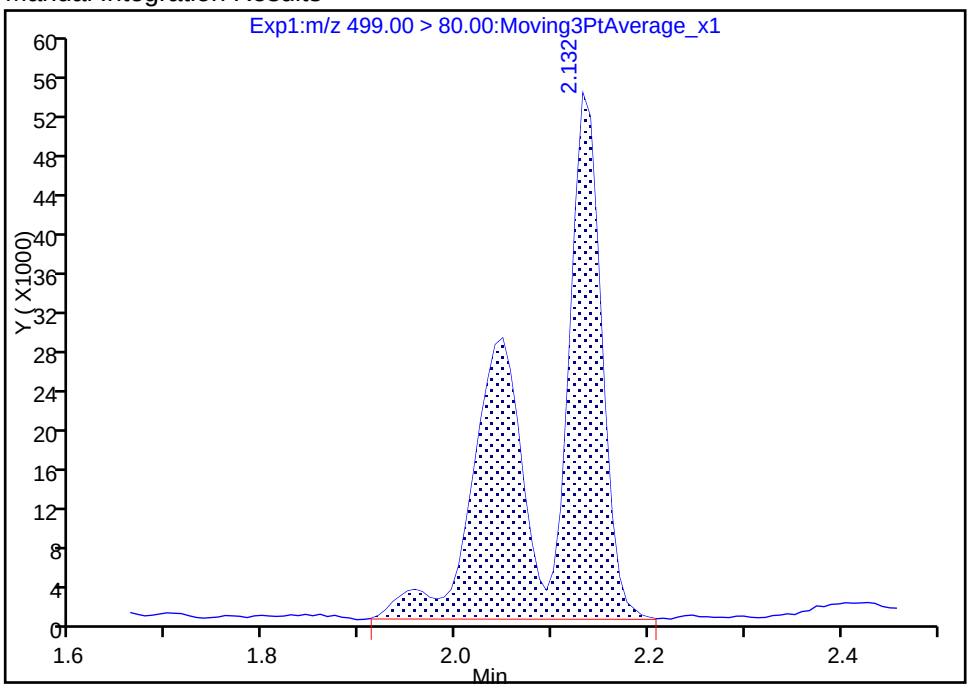
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 226786
Amount: 1.579492
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:05:00
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

TestAmerica Sacramento

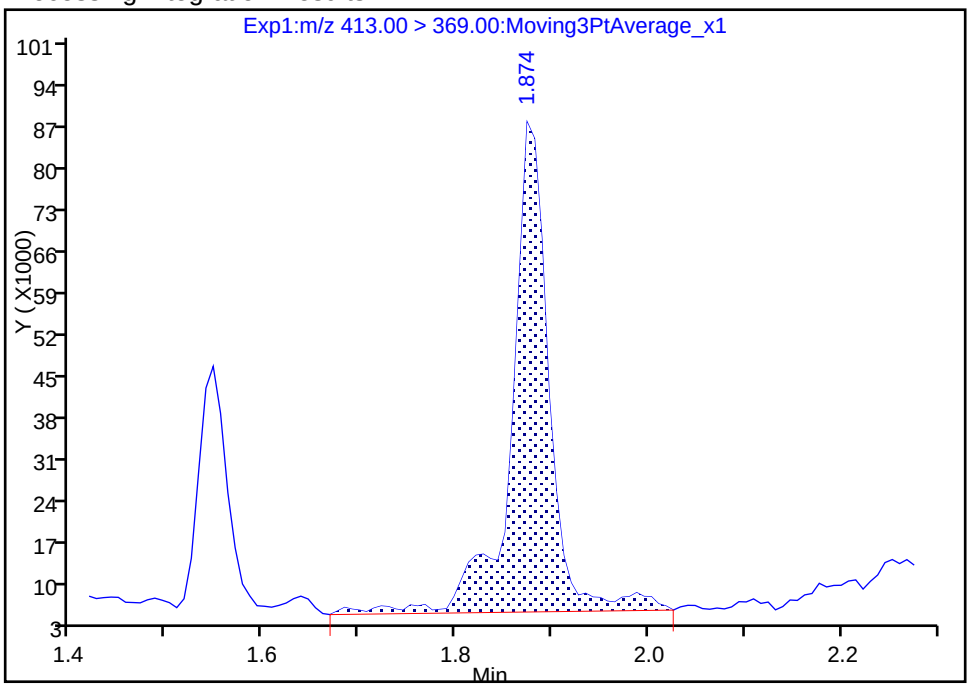
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_027.d				
Injection Date:	29-Aug-2017 00:09:42	Instrument ID:	A8_N		
Lims ID:	320-30866-A-3-A	Lab Sample ID:	320-30866-3		
Client ID:	NAWC-081717-RW-336				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	27
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

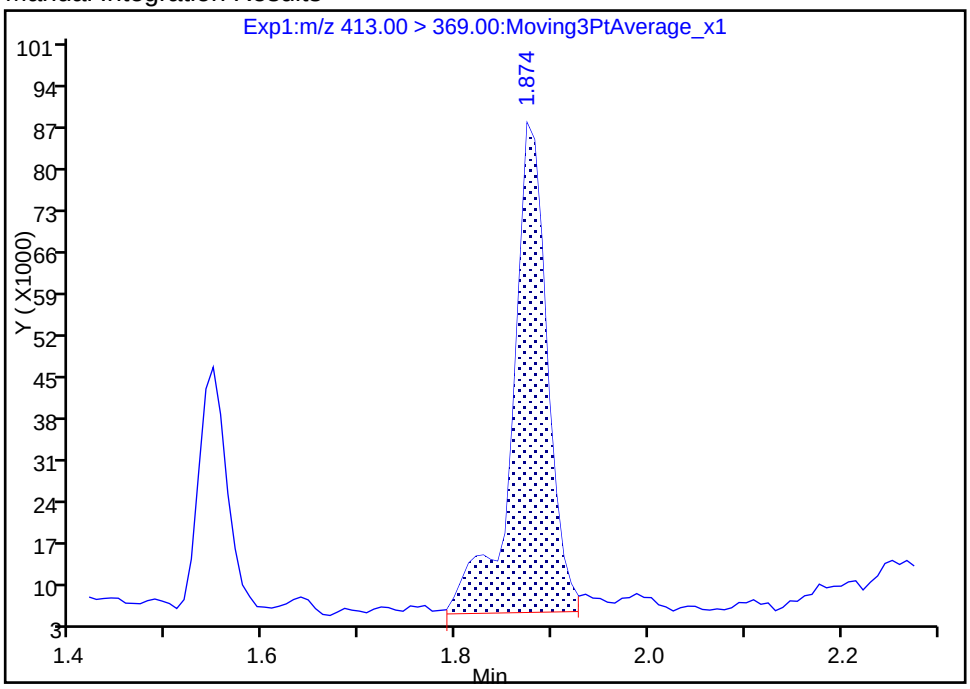
Processing Integration Results

RT: 1.87
Area: 224677
Amount: 1.701659
Amount Units: ng/ml



Manual Integration Results

RT: 1.87
Area: 206091
Amount: 1.560892
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:04:30
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: NAWC-081717-FRB-336 | Lab Sample ID: 320-30866-4

Matrix: Water | Lab File ID: 2017.08.28_537B_028.d

Analysis Method: 537 | Date Collected: 08/17/2017 14:10

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 257.4(mL) | Date Analyzed: 08/29/2017 00:14

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.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	116		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_028.d
Lims ID: 320-30866-A-4-A
Client ID: NAWC-081717-FRB-336
Sample Type: Client
Inject. Date: 29-Aug-2017 00:14:26 ALS Bottle#: 22 Worklist Smp#: 28
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30866-a-4-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 14:05:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.569	-0.021	1.000	1621024	9.39		12244	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.927	-0.053		1500282	10.0		10389	
* 7 13C4 PFOS									
503.00 > 80.00	2.132	2.186	-0.054		4540736	28.7		900	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.344	-0.038	1.000	960004	11.6		11582	

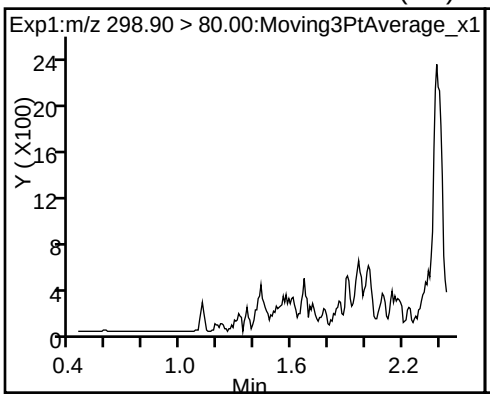
Report Date: 29-Aug-2017 14:25:26 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

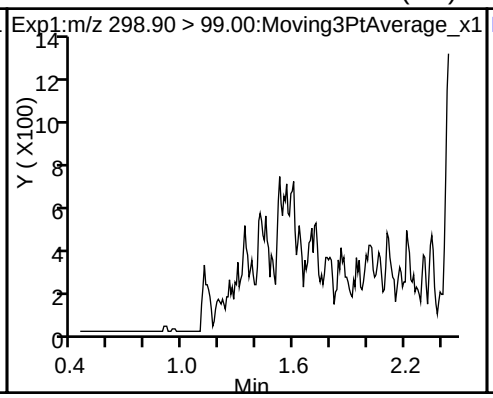
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_028.d

Injection Date:	29-Aug-2017 00:14:26	Instrument ID:	A8_N		
Lims ID:	320-30866-A-4-A	Lab Sample ID:	320-30866-4		
Client ID:	NAWC-081717-FRB-336				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	22	Worklist Smp#:	28
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

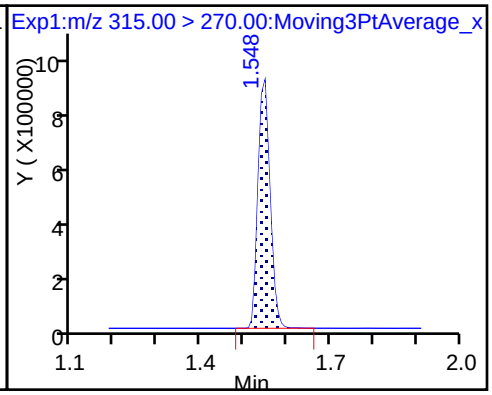
1 Perfluorobutanesulfonic acid (ND)



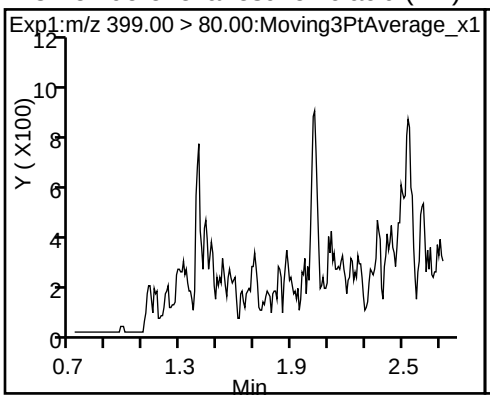
1 Perfluorobutanesulfonic acid (ND)



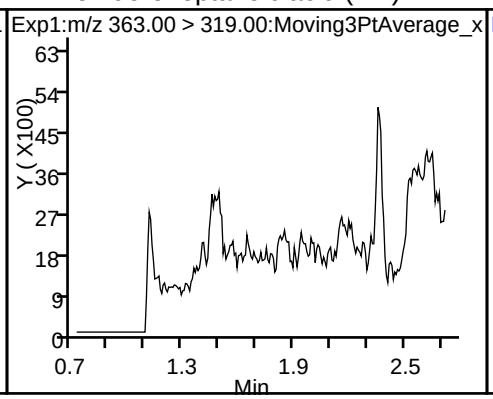
$ 2 13C2 PFHxA



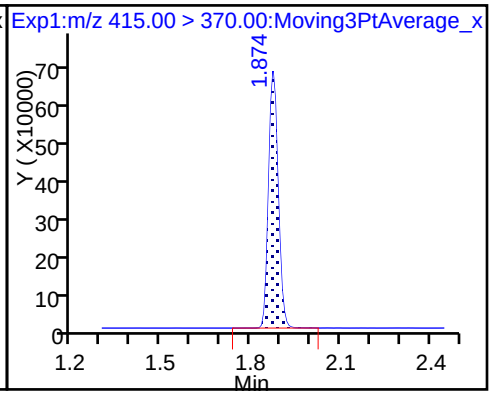
3 Perfluorohexanesulfonic acid (ND)



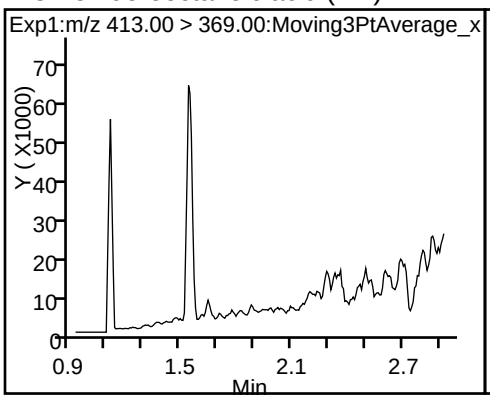
4 Perfluoroheptanoic acid (ND)



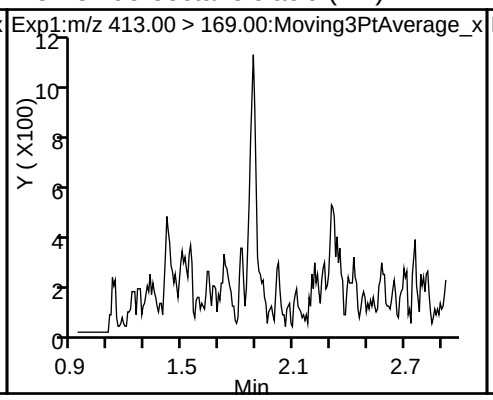
* 6 13C2-PFOA



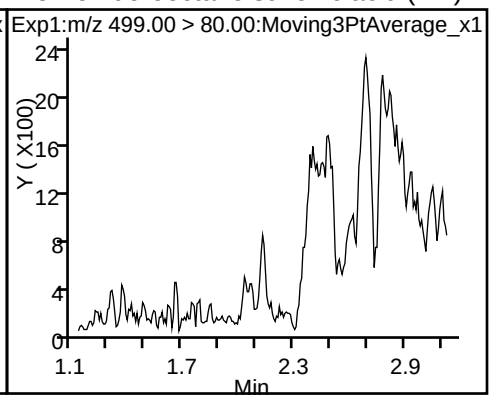
5 Perfluorooctanoic acid (ND)



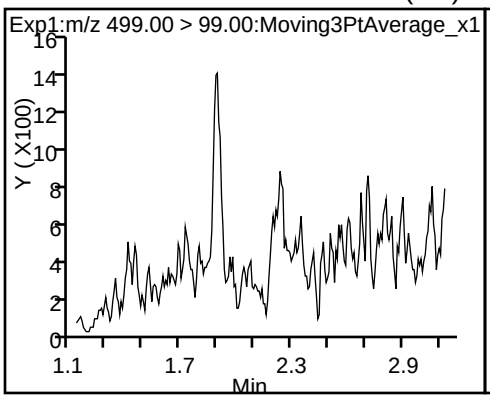
5 Perfluorooctanoic acid (ND)



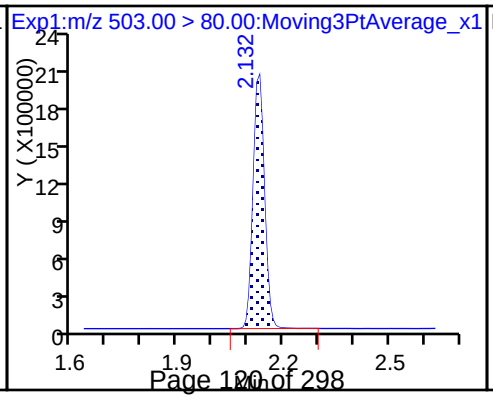
8 Perfluorooctane sulfonic acid (ND)



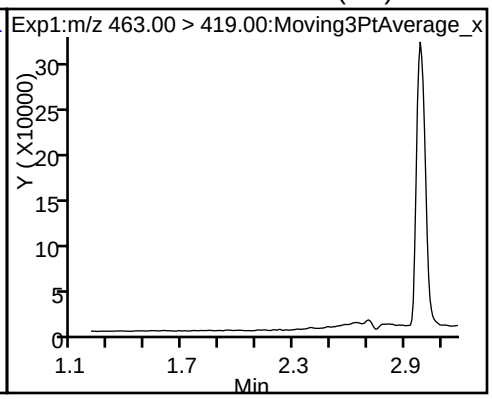
8 Perfluorooctane sulfonic acid (ND)



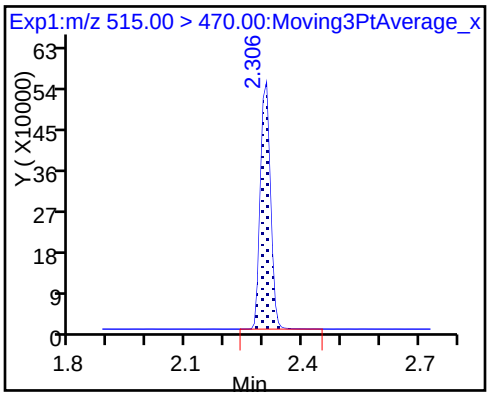
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


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

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_028.d
Lims ID: 320-30866-A-4-A
Client ID: NAWC-081717-FRB-336
Sample Type: Client
Inject. Date: 29-Aug-2017 00:14:26 ALS Bottle#: 22 Worklist Smp#: 28
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30866-a-4-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 14:05:29

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.39	93.86
$ 10 13C2 PFDA	10.0	11.6	115.67

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-RW-0560 Lab Sample ID: 320-30866-5

Matrix: Water Lab File ID: 2017.08.28_537B_029.d

Analysis Method: 537 Date Collected: 08/17/2017 15:35

Extraction Method: 537 Date Extracted: 08/24/2017 09:54

Sample wt/vol: 260(mL) Date Analyzed: 08/29/2017 00:19

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.: 181721 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	30	J M	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	26		19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	17	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.2	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	112		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_029.d
Lims ID: 320-30866-A-5-A
Client ID: WGNA-081717-RW-0560
Sample Type: Client
Inject. Date: 29-Aug-2017 00:19:13 ALS Bottle#: 23 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30866-a-5-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 14:06:16

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.443	-0.024	1.000	572342	3.57		251	
298.90 > 99.00	1.419	1.443	-0.024	1.000	374978		1.53(0.00-0.00)	533	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.569	-0.029	1.000	1452463	8.72		11183	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.722	-0.038	1.000	1084368	4.47		336	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.722	-0.038	1.000	174598	1.35		23.1	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.927	-0.061		1447575	10.0		9205	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.928	-0.054	1.000	888062	6.76		25.8	
413.00 > 169.00	1.874	1.928	-0.054	1.000	496380		1.79(0.00-0.00)	924	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.124	2.132	-0.008	1.000	1130425	7.85		190	M
499.00 > 99.00	2.124	2.132	-0.008	1.000	209437		5.40(0.00-0.00)	143	M
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.186	-0.062		4489441	28.7		762	
$ 10 13C2 PFDA									
515.00 > 470.00	2.299	2.344	-0.045	1.000	898673	11.2		10065	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 29-Aug-2017 14:25:27 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_029.d

Injection Date: 29-Aug-2017 00:19:13 Instrument ID: A8_N

Lims ID: 320-30866-A-5-A Lab Sample ID: 320-30866-5

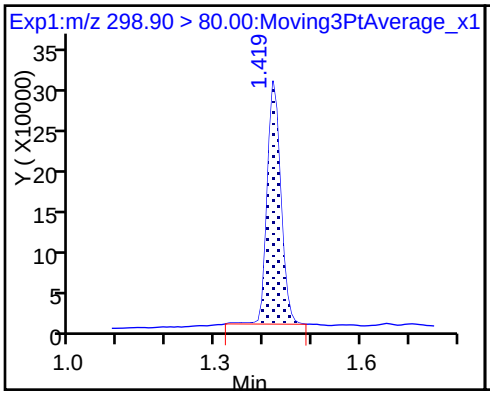
Client ID: WGNA-081717-RW-0560

Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 29

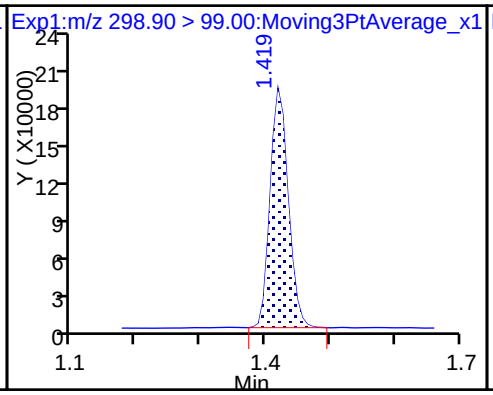
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

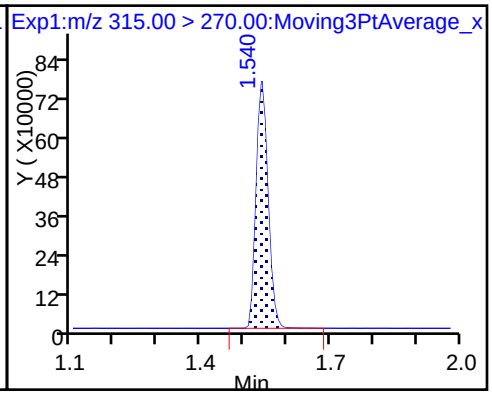
1 Perfluorobutanesulfonic acid



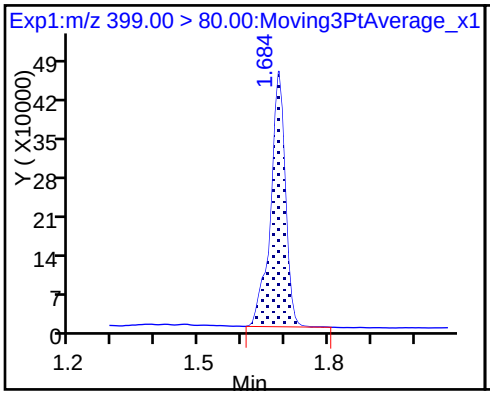
1 Perfluorobutanesulfonic acid



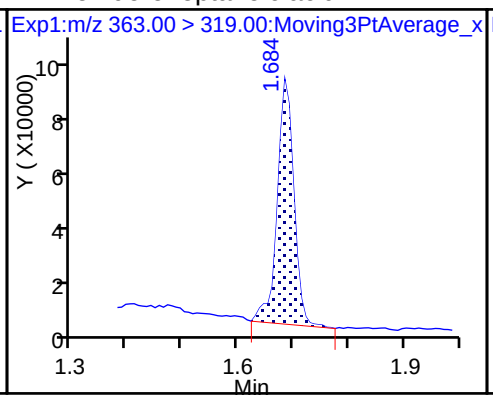
$ 2 13C2 PFHxA



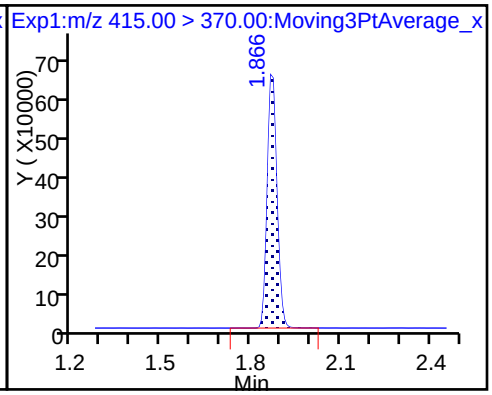
3 Perfluorohexanesulfonic acid



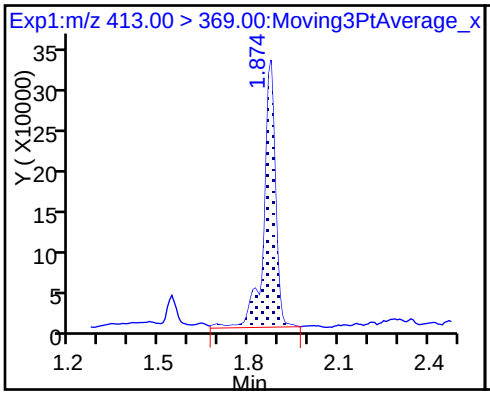
4 Perfluoroheptanoic acid



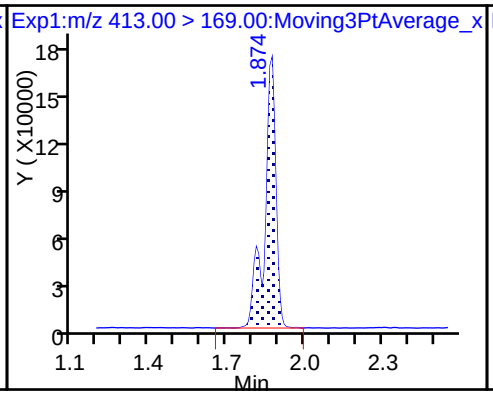
* 6 13C2-PFOA



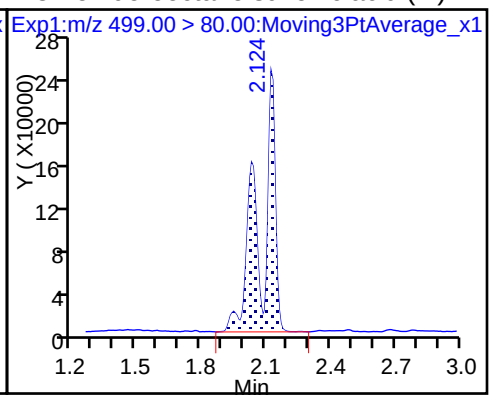
5 Perfluorooctanoic acid



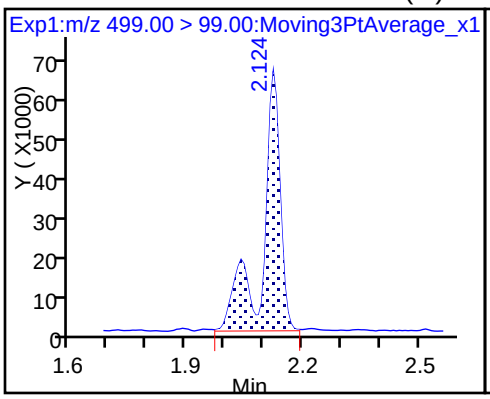
5 Perfluorooctanoic acid



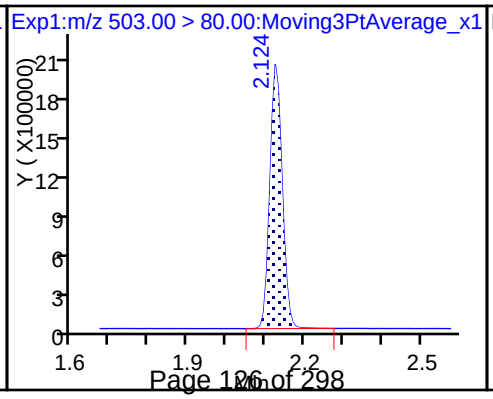
8 Perfluorooctane sulfonic acid (M)



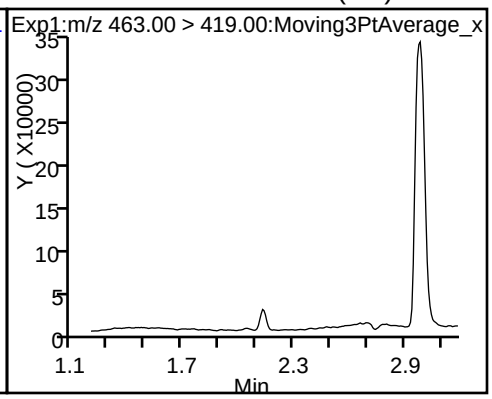
8 Perfluorooctane sulfonic acid (M)



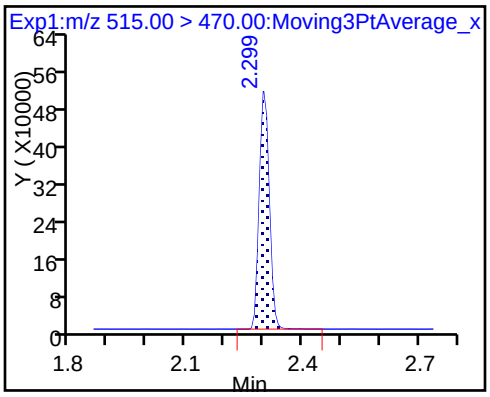
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA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2.299
Y (X10000)
64
56
48
40
32
24
16
8
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_029.d
Lims ID: 320-30866-A-5-A
Client ID: WGNA-081717-RW-0560
Sample Type: Client
Inject. Date: 29-Aug-2017 00:19:13 ALS Bottle#: 23 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30866-a-5-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 14:06:16

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.72	87.17
$ 10 13C2 PFDA	10.0	11.2	112.23

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

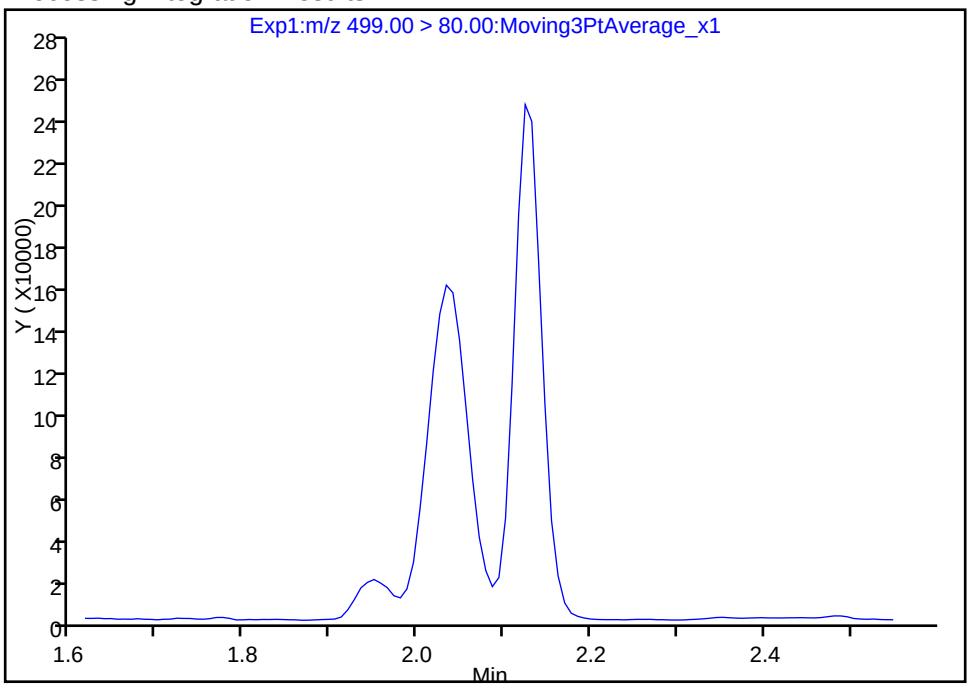
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_029.d				
Injection Date:	29-Aug-2017 00:19:13	Instrument ID:	A8_N		
Lims ID:	320-30866-A-5-A	Lab Sample ID:	320-30866-5		
Client ID:	WGNA-081717-RW-0560				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	23	Worklist Smp#:	29
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

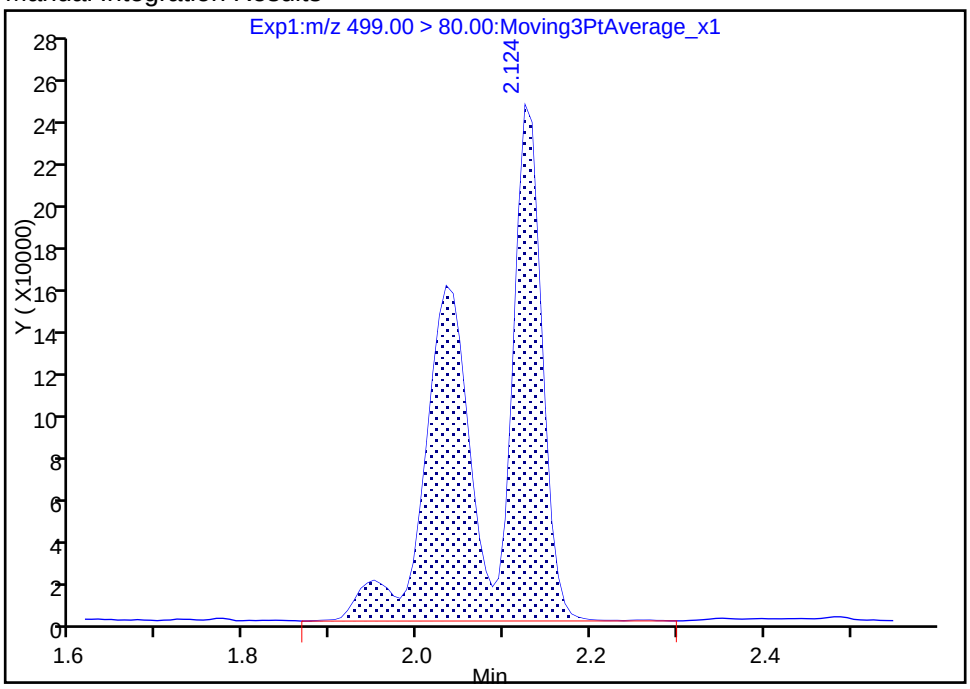
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 1130425
Amount: 7.853088
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:05:48
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

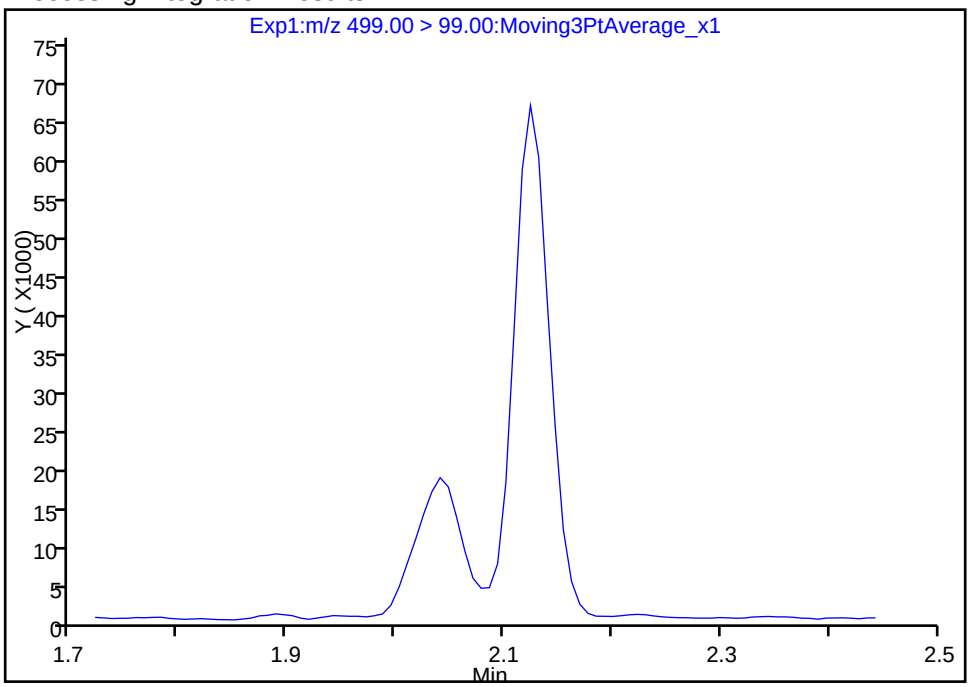
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_029.d				
Injection Date:	29-Aug-2017 00:19:13	Instrument ID:	A8_N		
Lims ID:	320-30866-A-5-A	Lab Sample ID:	320-30866-5		
Client ID:	WGNA-081717-RW-0560				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	23	Worklist Smp#:	29
Injection 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

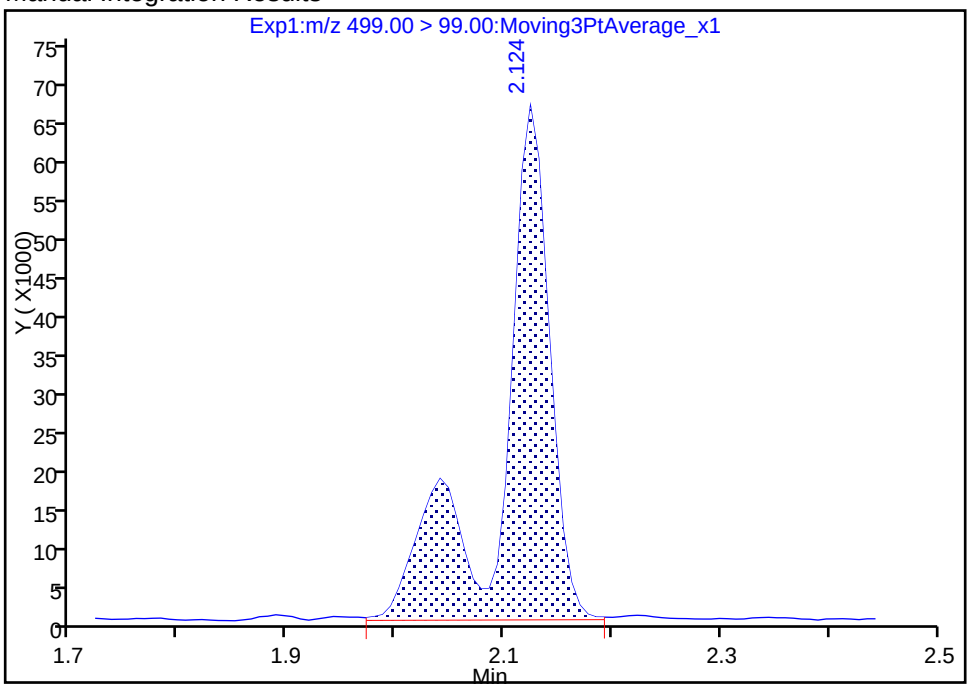
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 209437
Amount: 7.853088
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:06:06
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

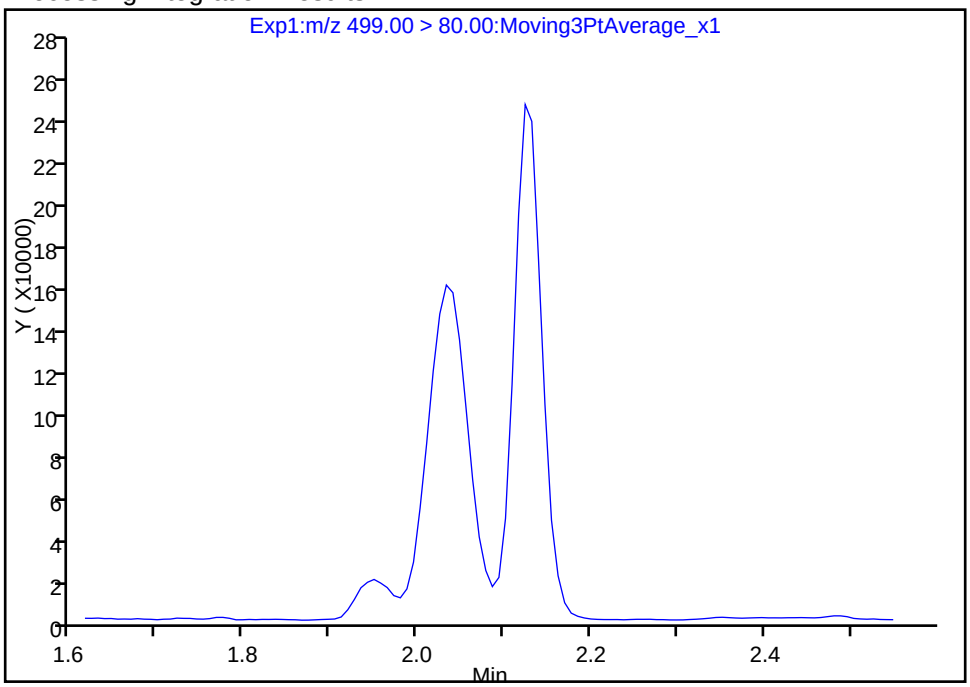
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_029.d				
Injection Date:	29-Aug-2017 00:19:13	Instrument ID:	A8_N		
Lims ID:	320-30866-A-5-A	Lab Sample ID:	320-30866-5		
Client ID:	WGNA-081717-RW-0560				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	23	Worklist Smp#:	29
Injection 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

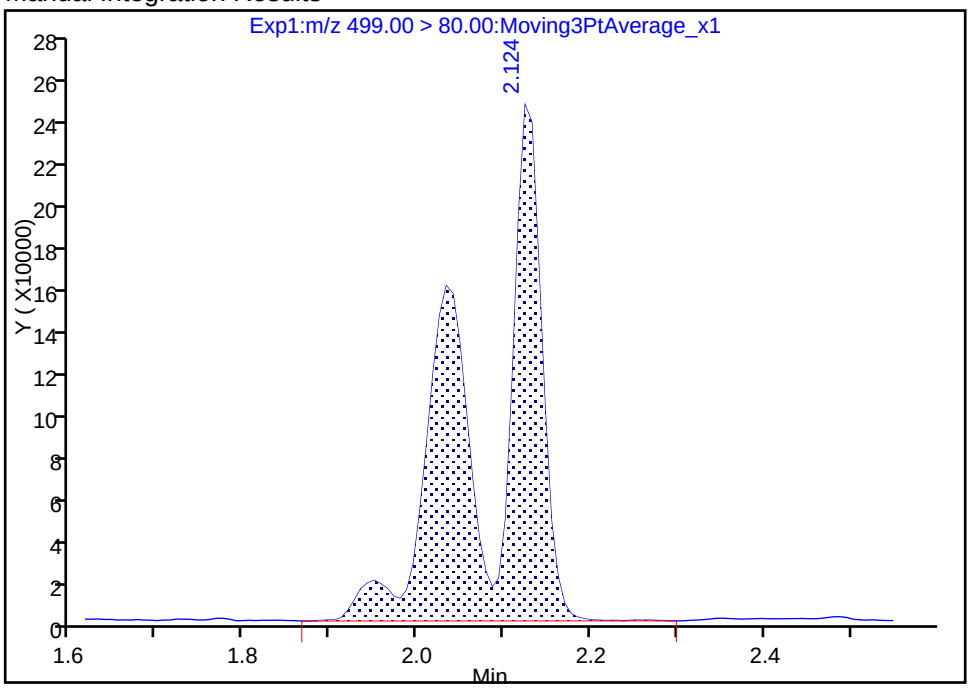
Processing Integration Results

Not Detected
Expected RT: 2.13



Manual Integration Results

RT: 2.12
Area: 1130425
Amount: 7.853088
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:06:06
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-FRB-0560 | Lab Sample ID: 320-30866-6

Matrix: Water | Lab File ID: 2017.08.28_537B_030.d

Analysis Method: 537 | Date Collected: 08/17/2017 15:25

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 261.1(mL) | Date Analyzed: 08/29/2017 00:23

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.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	151	Q	70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_030.d
Lims ID: 320-30866-A-6-A
Client ID: WGNA-081717-FRB-0560
Sample Type: Client
Inject. Date: 29-Aug-2017 00:23:58 ALS Bottle#: 24 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30866-a-6-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.569	-0.029	1.000	1648178	9.44		13505	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.927	-0.053		1517295	10.0		10193	
* 7 13C4 PFOS									
503.00 > 80.00	2.132	2.186	-0.054		4650300	28.7		678	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.344	-0.038	1.000	1269296	15.1		13425	

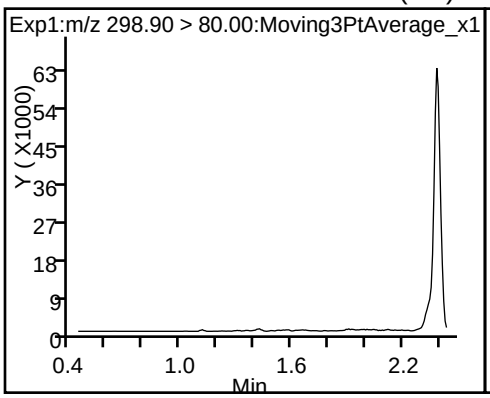
Report Date: 29-Aug-2017 14:25:28 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

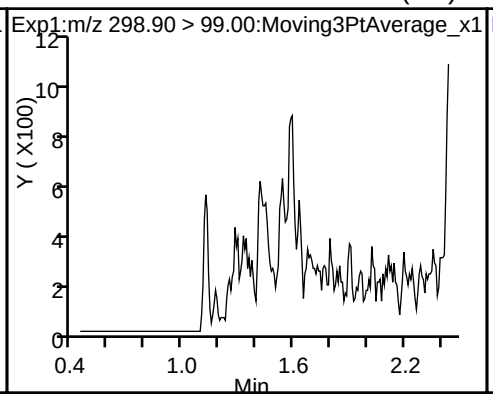
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_030.d

Injection Date:	29-Aug-2017 00:23:58	Instrument ID:	A8_N		
Lims ID:	320-30866-A-6-A	Lab Sample ID:	320-30866-6		
Client ID:	WGNA-081717-FRB-0560				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	24	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

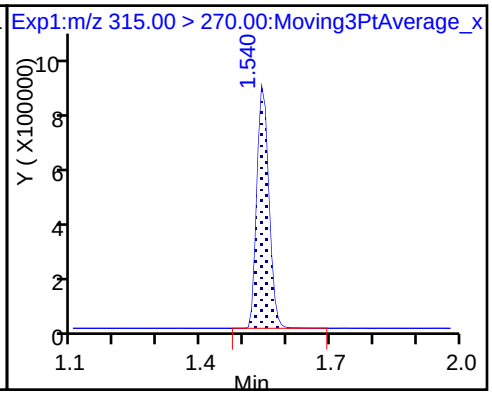
1 Perfluorobutanesulfonic acid (ND)



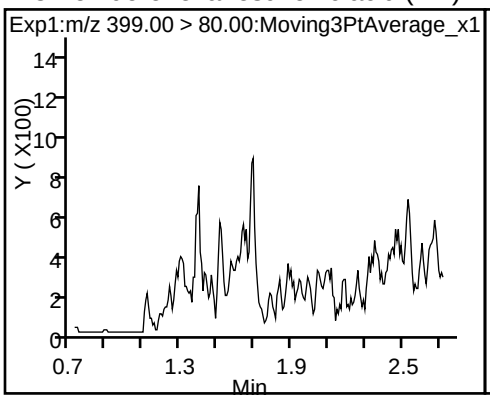
1 Perfluorobutanesulfonic acid (ND)



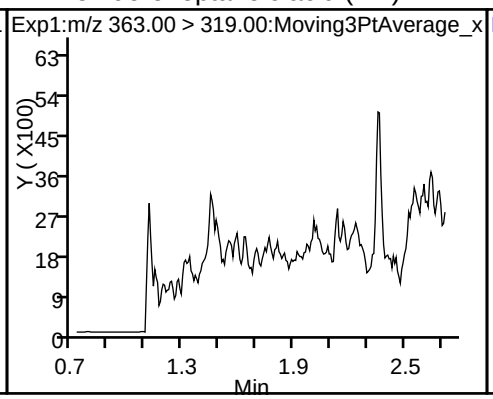
$ 2 13C2 PFHxA



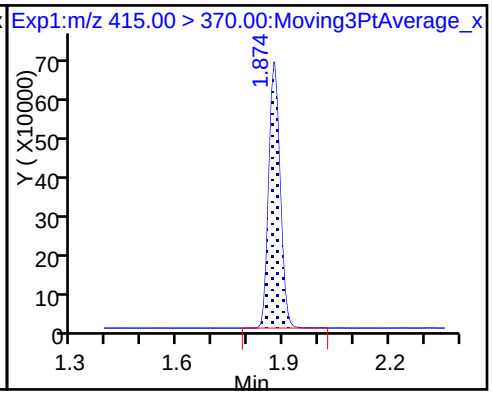
3 Perfluorohexanesulfonic acid (ND)



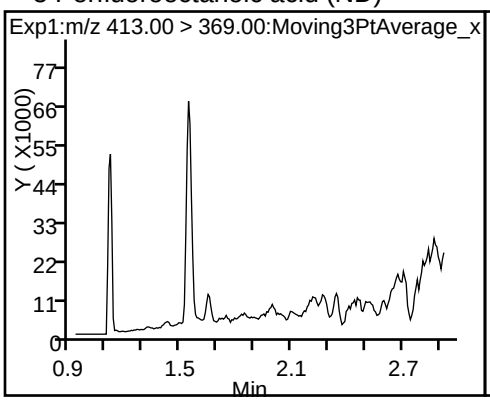
4 Perfluoroheptanoic acid (ND)



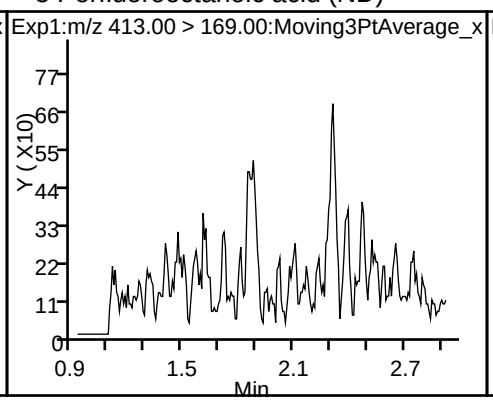
* 6 13C2-PFOA



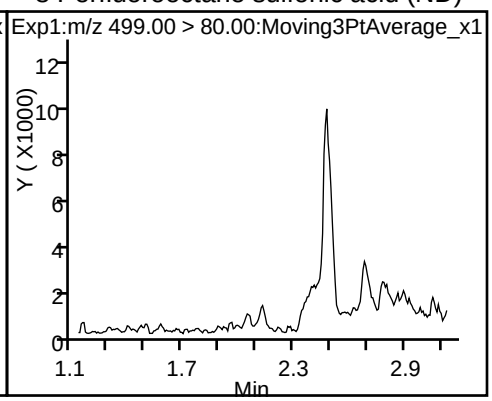
5 Perfluorooctanoic acid (ND)



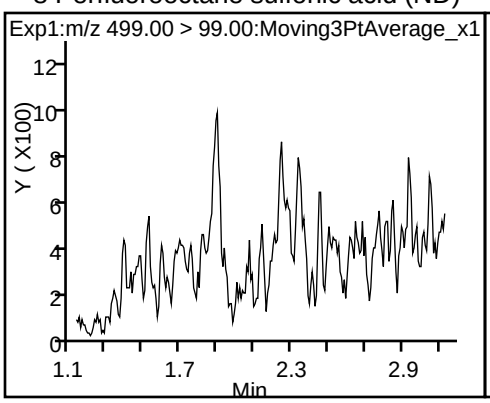
5 Perfluorooctanoic acid (ND)



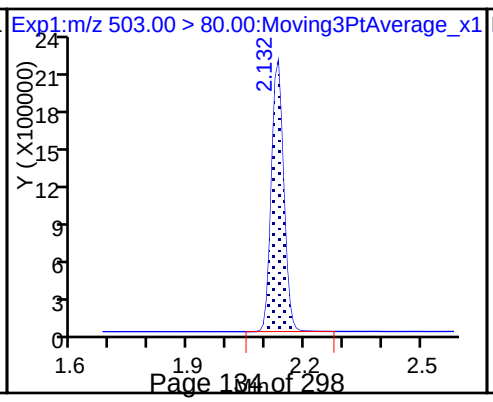
8 Perfluorooctane sulfonic acid (ND)



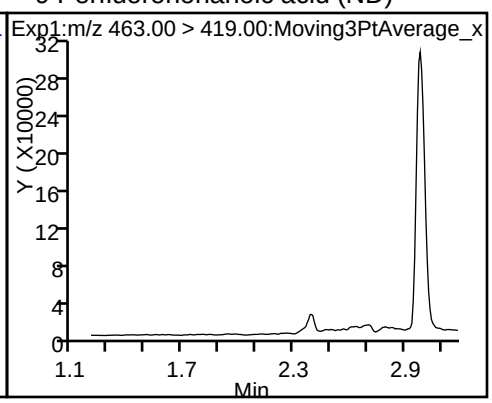
8 Perfluorooctane sulfonic acid (ND)



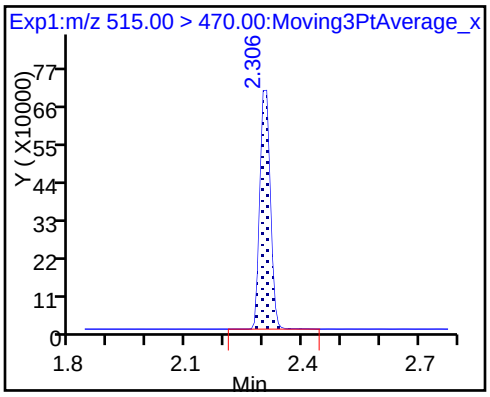
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA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2.306
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\20170829-47240.b\2017.08.28_537B_030.d				
Lims ID:	320-30866-A-6-A				
Client ID:	WGNA-081717-FRB-0560				
Sample Type:	Client				
Inject. Date:	29-Aug-2017 00:23:58	ALS Bottle#:	24	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30866-a-6-a				
Misc. Info.:	Plate: 1 Rack: 4				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	29-Aug-2017 14:25:18	Calib Date:	28-Aug-2017 16:36:00		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK019				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.44	94.37
$ 10 13C2 PFDA	10.0	15.1	151.23

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-RW-3409 | Lab Sample ID: 320-30866-7

Matrix: Water | Lab File ID: 2017.08.28_537B_031.d

Analysis Method: 537 | Date Collected: 08/17/2017 16:10

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 254.3(mL) | Date Analyzed: 08/29/2017 00:28

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

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

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

Analysis Batch No.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	21	J M	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.8	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.6	J	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	126		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_031.d
Lims ID: 320-30866-A-7-A
Client ID: WGNA-081717-RW-3409
Sample Type: Client
Inject. Date: 29-Aug-2017 00:28:44 ALS Bottle#: 25 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30866-a-7-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 14:07:03

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.426	1.443	-0.017	1.000	417818	2.51		155	
298.90 > 99.00	1.419	1.443	-0.024	0.995	276041		1.51(0.00-0.00)	401	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.569	-0.029	1.000	1567389	8.78		10242	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.722	-0.038	1.000	560884	2.23		162	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.722	-0.038	1.000	195920	1.41		27.1	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.927	-0.053		1550572	10.0		9328	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.928	-0.054	1.000	536415	3.81		16.3	
413.00 > 169.00	1.874	1.928	-0.054	1.000	308361		1.74(0.00-0.00)	642	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.132	2.132	0.0	1.000	811869	5.44		130	M
499.00 > 99.00	2.132	2.132	0.0	1.000	136769		5.94(0.00-0.00)	103	M
* 7 13C4 PFOS									
503.00 > 80.00	2.132	2.186	-0.054		4655960	28.7		706	
9 Perfluorononanoic acid									
463.00 > 419.00	2.140	2.195	-0.055	1.000	48192	0.5144		1.6	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.344	-0.038	1.000	1081018	12.6		12106	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 29-Aug-2017 14:25:29 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_031.d

Injection Date: 29-Aug-2017 00:28:44 Instrument ID: A8_N

Lims ID: 320-30866-A-7-A Lab Sample ID: 320-30866-7

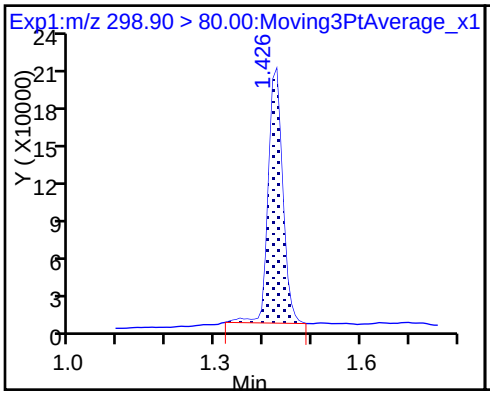
Client ID: WGNA-081717-RW-3409

Operator ID: SACINSTLCMS01 ALS Bottle#: 25 Worklist Smp#: 31

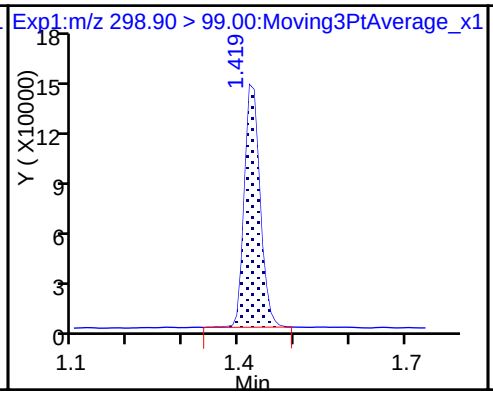
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

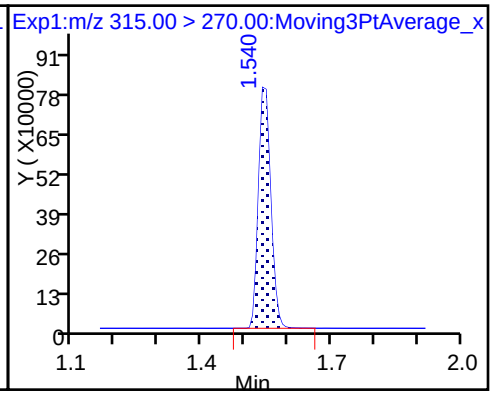
1 Perfluorobutanesulfonic acid



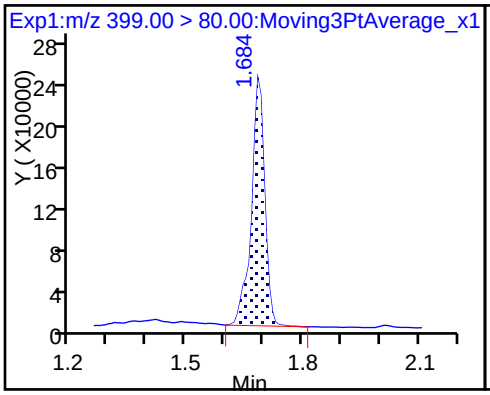
1 Perfluorobutanesulfonic acid



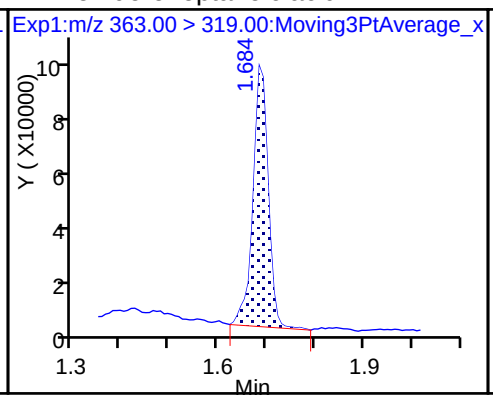
$ 2 13C2 PFHxA



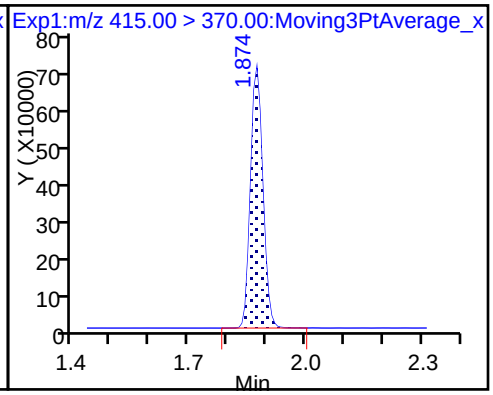
3 Perfluorohexanesulfonic acid



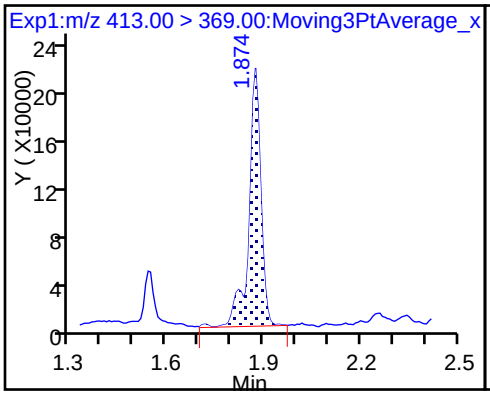
4 Perfluoroheptanoic acid



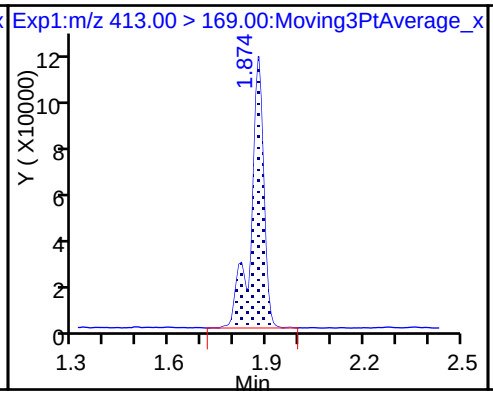
* 6 13C2-PFOA



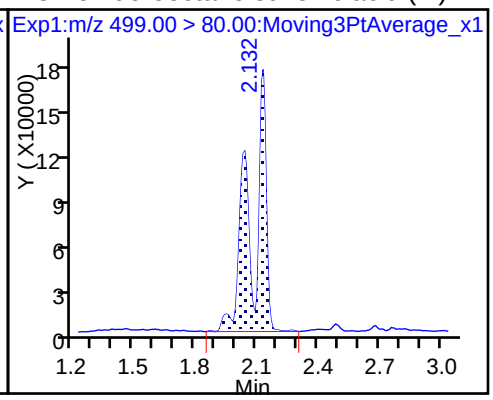
5 Perfluorooctanoic acid



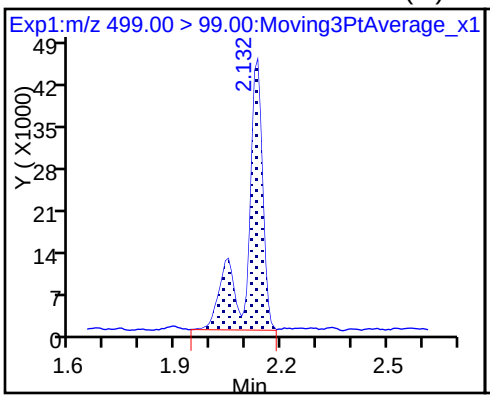
5 Perfluorooctanoic acid



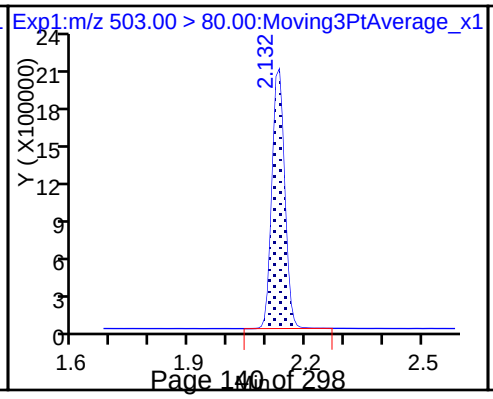
8 Perfluorooctane sulfonic acid (M)



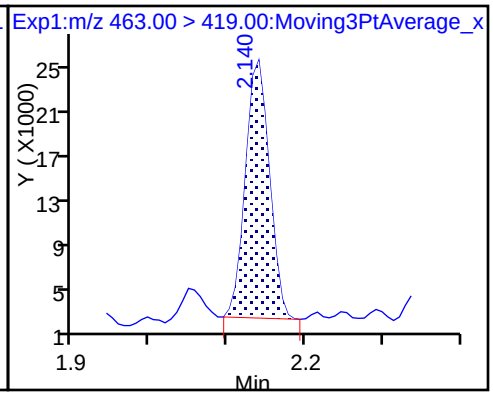
8 Perfluorooctane sulfonic acid (M)



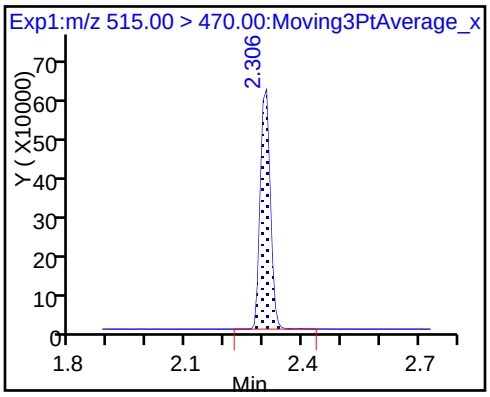
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 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

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_031.d
Lims ID: 320-30866-A-7-A
Client ID: WGNA-081717-RW-3409
Sample Type: Client
Inject. Date: 29-Aug-2017 00:28:44 ALS Bottle#: 25 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30866-a-7-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 14:07:03

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.78	87.82
$ 10 13C2 PFDA	10.0	12.6	126.03

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

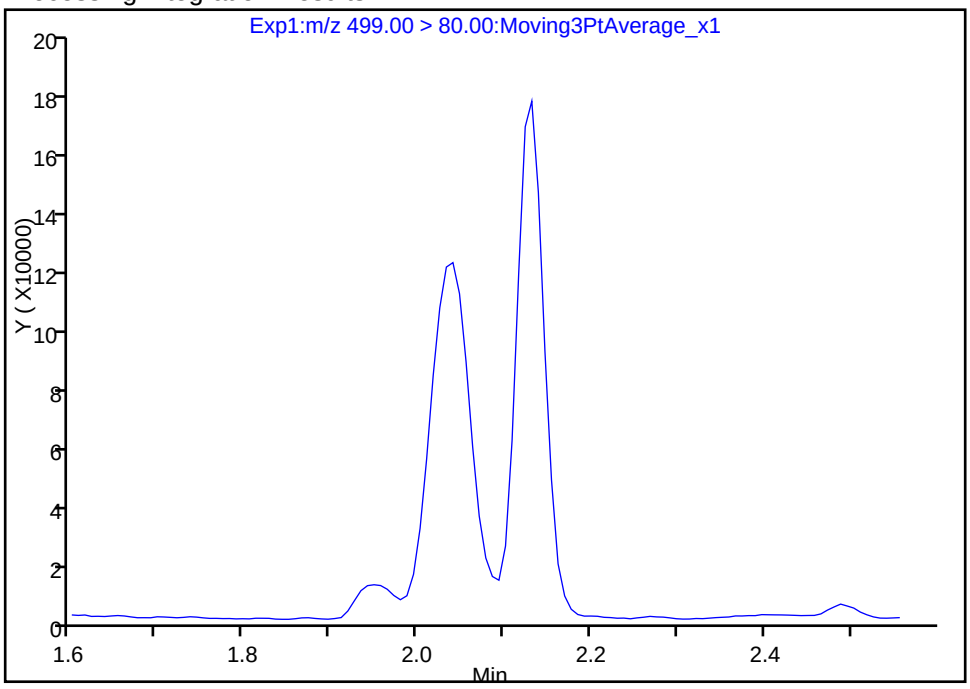
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_031.d				
Injection Date:	29-Aug-2017 00:28:44	Instrument ID:	A8_N		
Lims ID:	320-30866-A-7-A	Lab Sample ID:	320-30866-7		
Client ID:	WGNA-081717-RW-3409				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	25	Worklist Smp#:	31
Injection 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

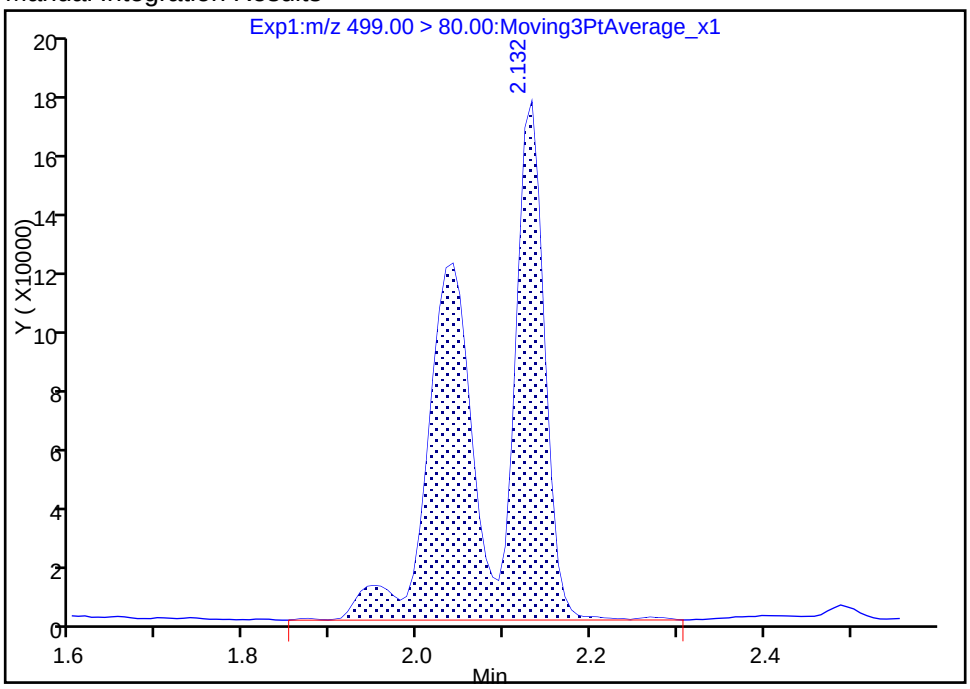
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 811869
Amount: 5.438357
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:06:30
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

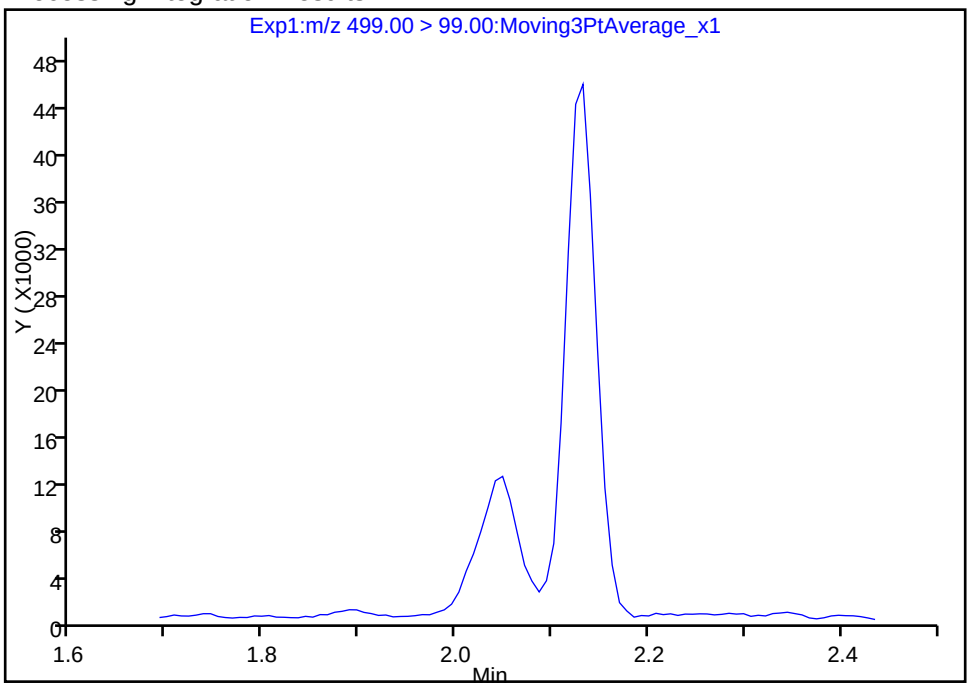
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_031.d				
Injection Date:	29-Aug-2017 00:28:44	Instrument ID:	A8_N		
Lims ID:	320-30866-A-7-A	Lab Sample ID:	320-30866-7		
Client ID:	WGNA-081717-RW-3409				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	25	Worklist Smp#:	31
Injection 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

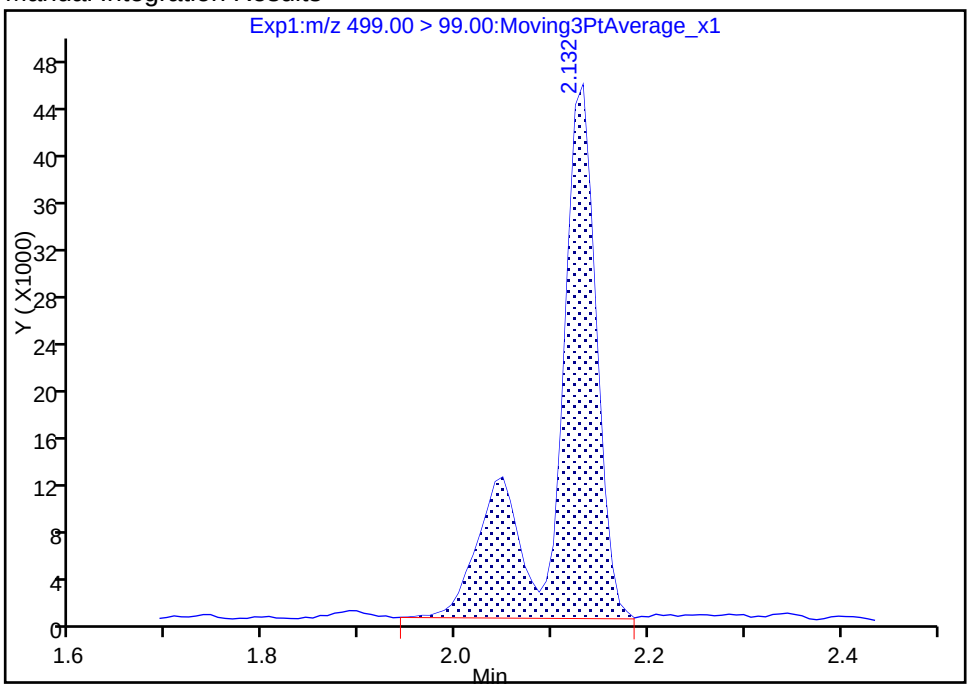
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 136769
Amount: 5.438357
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:06:46
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

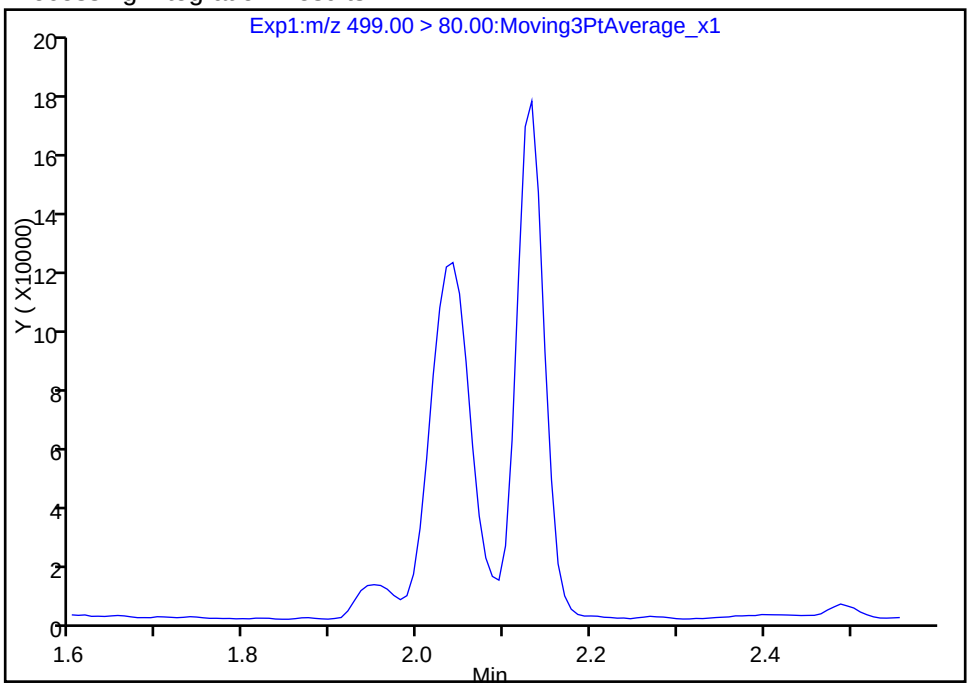
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_031.d				
Injection Date:	29-Aug-2017 00:28:44	Instrument ID:	A8_N		
Lims ID:	320-30866-A-7-A	Lab Sample ID:	320-30866-7		
Client ID:	WGNA-081717-RW-3409				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	25	Worklist Smp#:	31
Injection 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

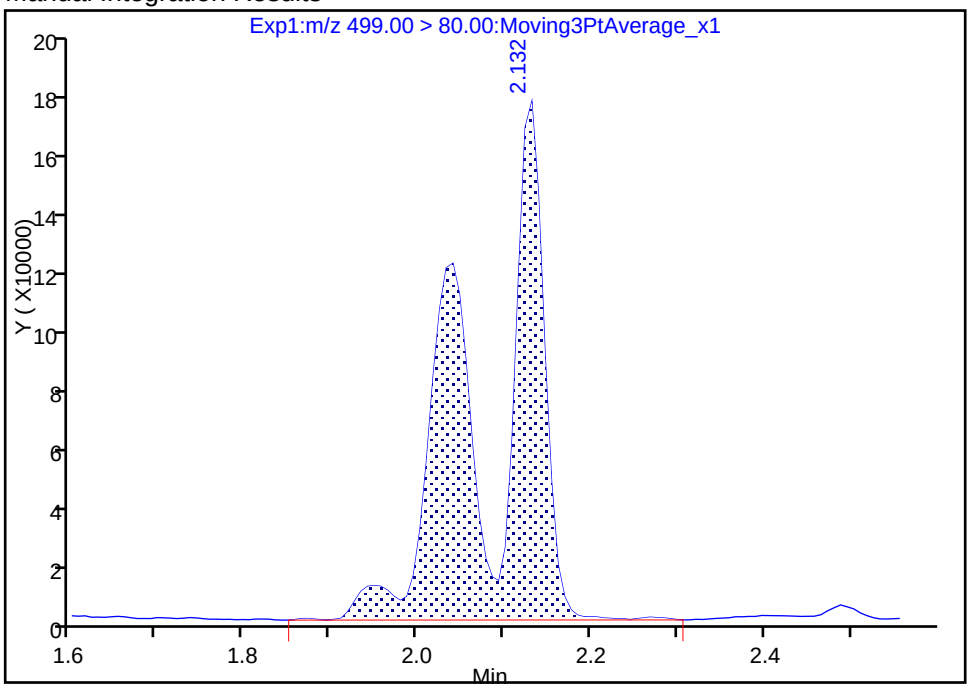
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 811869
Amount: 5.438357
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:06:46
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-FRB-3409 | Lab Sample ID: 320-30866-8

Matrix: Water | Lab File ID: 2017.08.28_537B_032.d

Analysis Method: 537 | Date Collected: 08/17/2017 16:00

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 257(mL) | Date Analyzed: 08/29/2017 00:33

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

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

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

Analysis Batch No.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	115		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_032.d
Lims ID: 320-30866-A-8-A
Client ID: WGNA-081717-FRB-3409
Sample Type: Client
Inject. Date: 29-Aug-2017 00:33:29 ALS Bottle#: 26 Worklist Smp#: 32
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30866-a-8-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.569	-0.029	1.000	1694791	10.0		12507	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.927	-0.053		1471789	10.0		8342	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.186	-0.062		4669966	28.7		854	
$ 10 13C2 PFDA									
515.00 > 470.00	2.299	2.344	-0.045	1.000	936412	11.5		9285	

Report Date: 29-Aug-2017 14:25:31 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_032.d

Injection Date: 29-Aug-2017 00:33:29 Instrument ID: A8_N

Lims ID: 320-30866-A-8-A Lab Sample ID: 320-30866-8

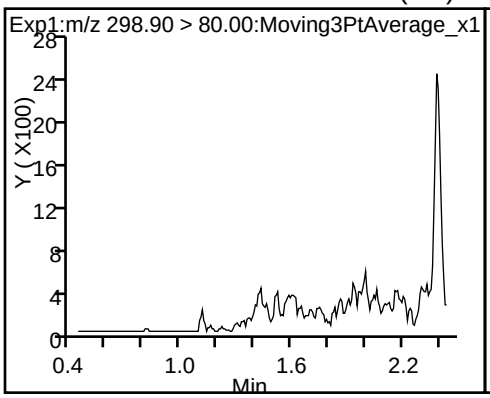
Client ID: WGNA-081717-FRB-3409

Operator ID: SACINSTLCMS01 ALS Bottle#: 26 Worklist Smp#: 32

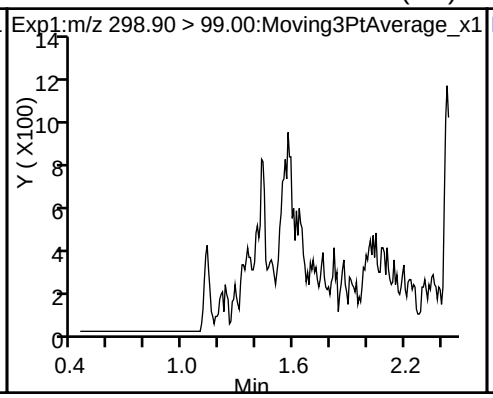
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

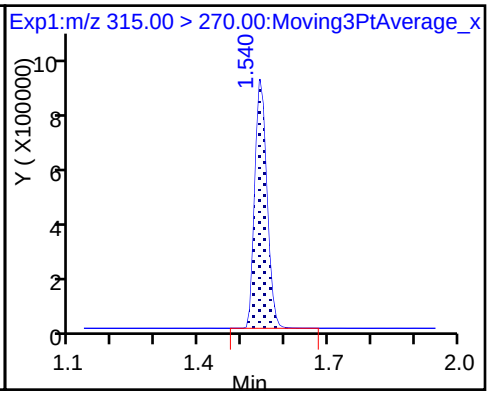
1 Perfluorobutanesulfonic acid (ND)



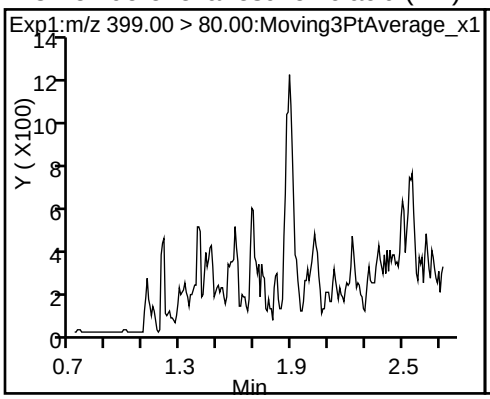
1 Perfluorobutanesulfonic acid (ND)



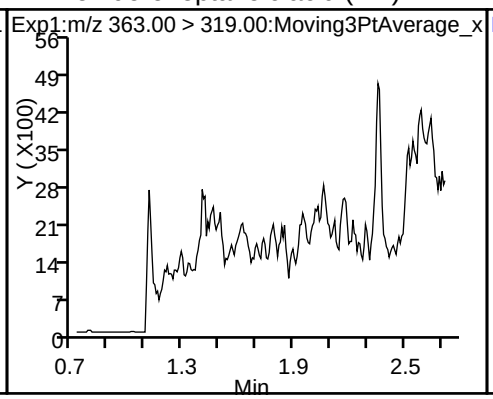
$ 2 13C2 PFHxA



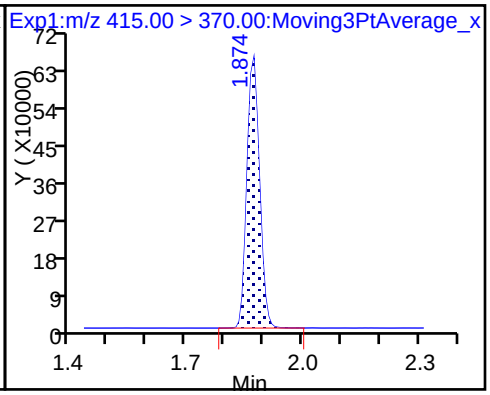
3 Perfluorohexanesulfonic acid (ND)



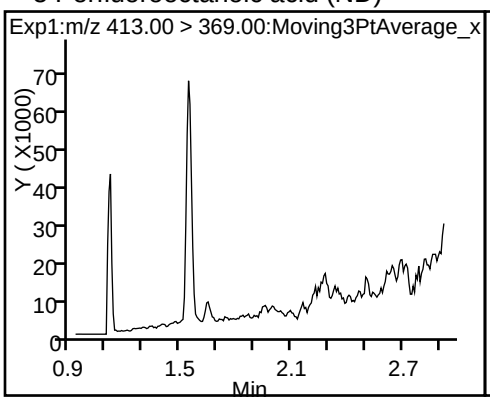
4 Perfluoroheptanoic acid (ND)



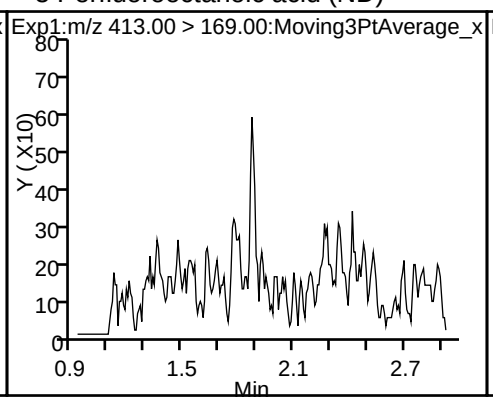
* 6 13C2-PFOA



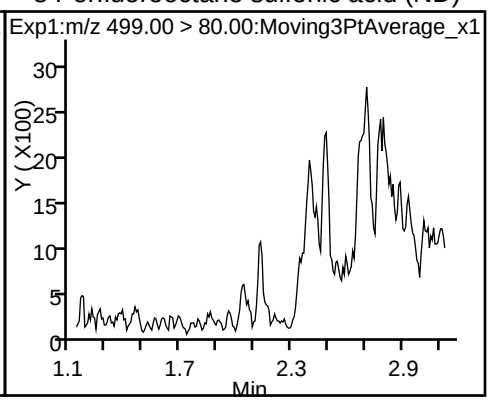
5 Perfluorooctanoic acid (ND)



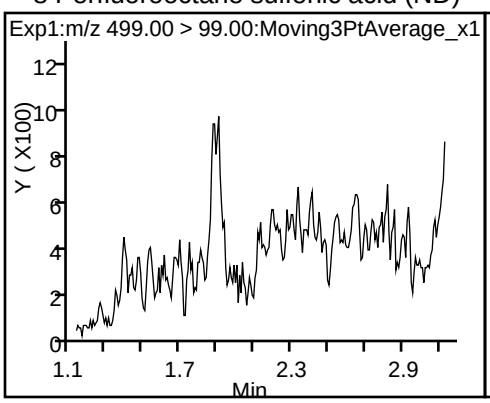
5 Perfluorooctanoic acid (ND)



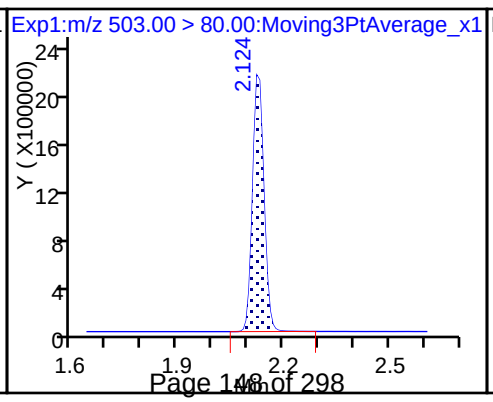
8 Perfluorooctane sulfonic acid (ND)



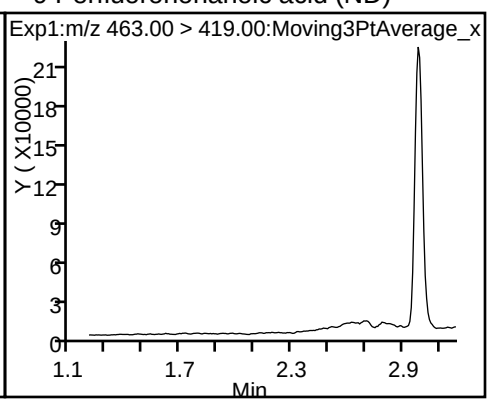
8 Perfluorooctane sulfonic acid (ND)



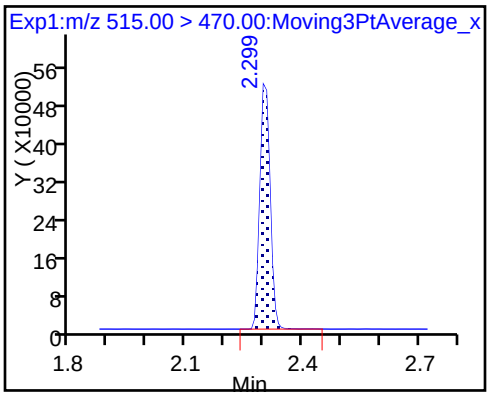
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.299
Y (X10000)
56
48
40
32
24
16
8
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_032.d				
Lims ID:	320-30866-A-8-A				
Client ID:	WGNA-081717-FRB-3409				
Sample Type:	Client				
Inject. Date:	29-Aug-2017 00:33:29	ALS Bottle#:	26	Worklist Smp#:	32
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-30866-a-8-a				
Misc. Info.:	Plate: 1 Rack: 4				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	29-Aug-2017 14:25:18	Calib Date:	28-Aug-2017 16:36:00		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK019				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.0	100.04
$ 10 13C2 PFDA	10.0	11.5	115.02

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

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1 Analy Batch No.: 181689

SDG No.:

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

Calibration Start Date: 08/28/2017 16:12 Calibration End Date: 08/28/2017 16:36 Calibration ID: 33857

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-181689/2	2017.08.28_537ICAL_004.d
Level 2	IC 320-181689/3	2017.08.28_537ICAL_005.d
Level 3	IC 320-181689/4	2017.08.28_537ICAL_006.d
Level 4	IC 320-181689/5	2017.08.28_537ICAL_007.d
Level 5	IC 320-181689/6	2017.08.28_537ICAL_008.d
Level 6	IC 320-181689/7	2017.08.28_537ICAL_009.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	0.9809 0.7472	1.0538	0.9901	0.8853	0.8006	QuaF		1.0304	-0.001602						0.9990		0.9600
Perfluoroheptanoic acid (PFHpA)	0.8070 0.8922	0.8909	0.9326	0.8826	0.8881	Ave		0.8822				4.6		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.5168 1.5221	1.5535	1.6130	1.5757	1.5081	Ave		1.5482				2.6		30.0			
Perfluorooctanoic acid (PFOA)	0.8725 0.8992	0.8994	0.9062	0.9044	0.9509	Ave		0.9054				2.8		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.8498 0.9596	0.8974	0.9212	0.9522	0.9373	Ave		0.9196				4.4		30.0			
Perfluorononanoic acid (PFNA)	0.5524 0.6090	0.6013	0.6421	0.6088	0.6115	Ave		0.6042				4.8		30.0			
13C2 PFHxA	1.0685 1.1647	1.1179	1.1909	1.1737	1.1909	Ave		1.1511				4.2		30.0			
13C2 PFDA	0.5058 0.5693	0.5453	0.5700	0.5685	0.5601	Ave		0.5532				4.5		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.: 320-30866-1 Analy Batch No.: 181689

SDG No.:

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

Calibration Start Date: 08/28/2017 16:12 Calibration End Date: 08/28/2017 16:36 Calibration ID: 33857

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-181689/2	2017.08.28_537ICAL_004.d
Level 2	IC 320-181689/3	2017.08.28_537ICAL_005.d
Level 3	IC 320-181689/4	2017.08.28_537ICAL_006.d
Level 4	IC 320-181689/5	2017.08.28_537ICAL_007.d
Level 5	IC 320-181689/6	2017.08.28_537ICAL_008.d
Level 6	IC 320-181689/7	2017.08.28_537ICAL_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	QuaF	1394569 19649569	3317676	6863053	12060559	16752716	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PFOA	Ave	118133 2357891	278620	621521	1185886	1836051	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	718953 13344574	1630557	3727422	7156650	10520613	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PFOA	Ave	255581 4755508	562912	1208545	2431849	3934066	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	537090 11216718	1255917	2838344	5766727	8718144	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PFOA	Ave	161720 3218606	376105	855804	1635893	2528200	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PFOA	Ave	1563477 1538651	1572903	1586933	1576697	1641063	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PFOA	Ave	740193 752126	767194	759573	763691	771788	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.: 320-30866-1 Analy Batch No.: 181689

SDG No.:

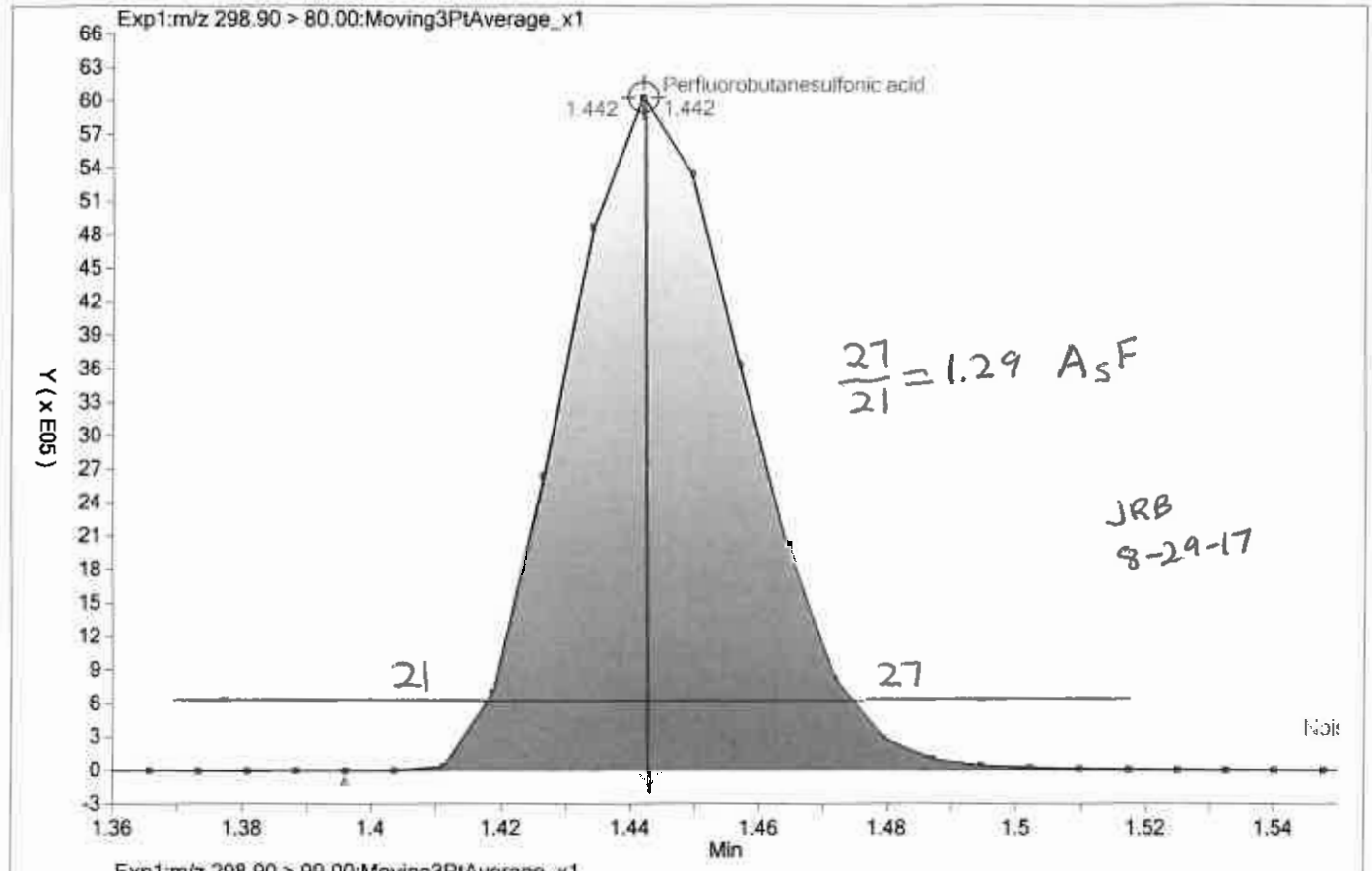
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/28/2017 16:12 Calibration End Date: 08/28/2017 16:36 Calibration ID: 33857

Calibration Files:

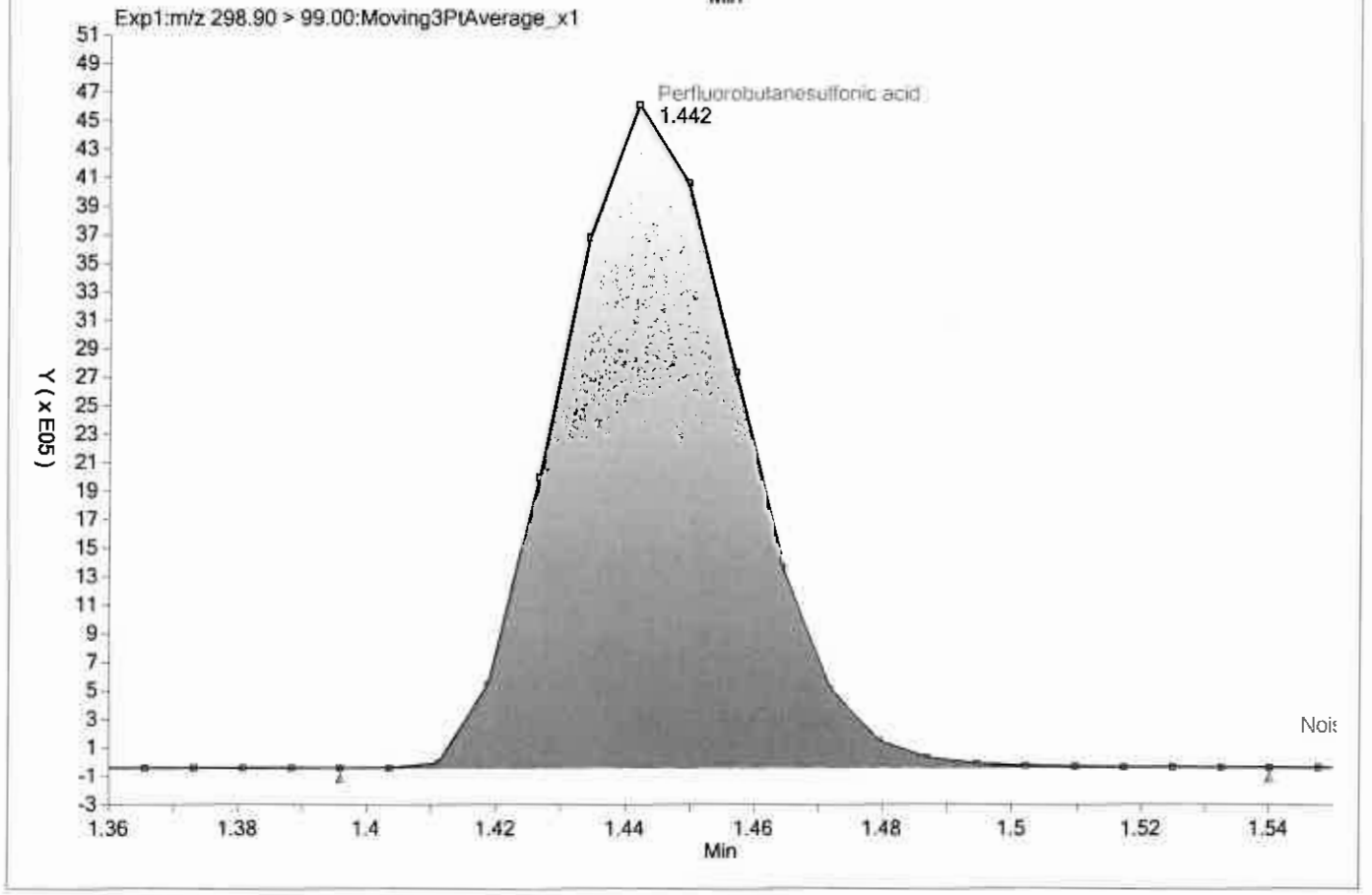
LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-181689/2	2017.08.28_537ICAL_004.d
Level 2	IC 320-181689/3	2017.08.28_537ICAL_005.d
Level 3	IC 320-181689/4	2017.08.28_537ICAL_006.d
Level 4	IC 320-181689/5	2017.08.28_537ICAL_007.d
Level 5	IC 320-181689/6	2017.08.28_537ICAL_008.d
Level 6	IC 320-181689/7	2017.08.28_537ICAL_009.d

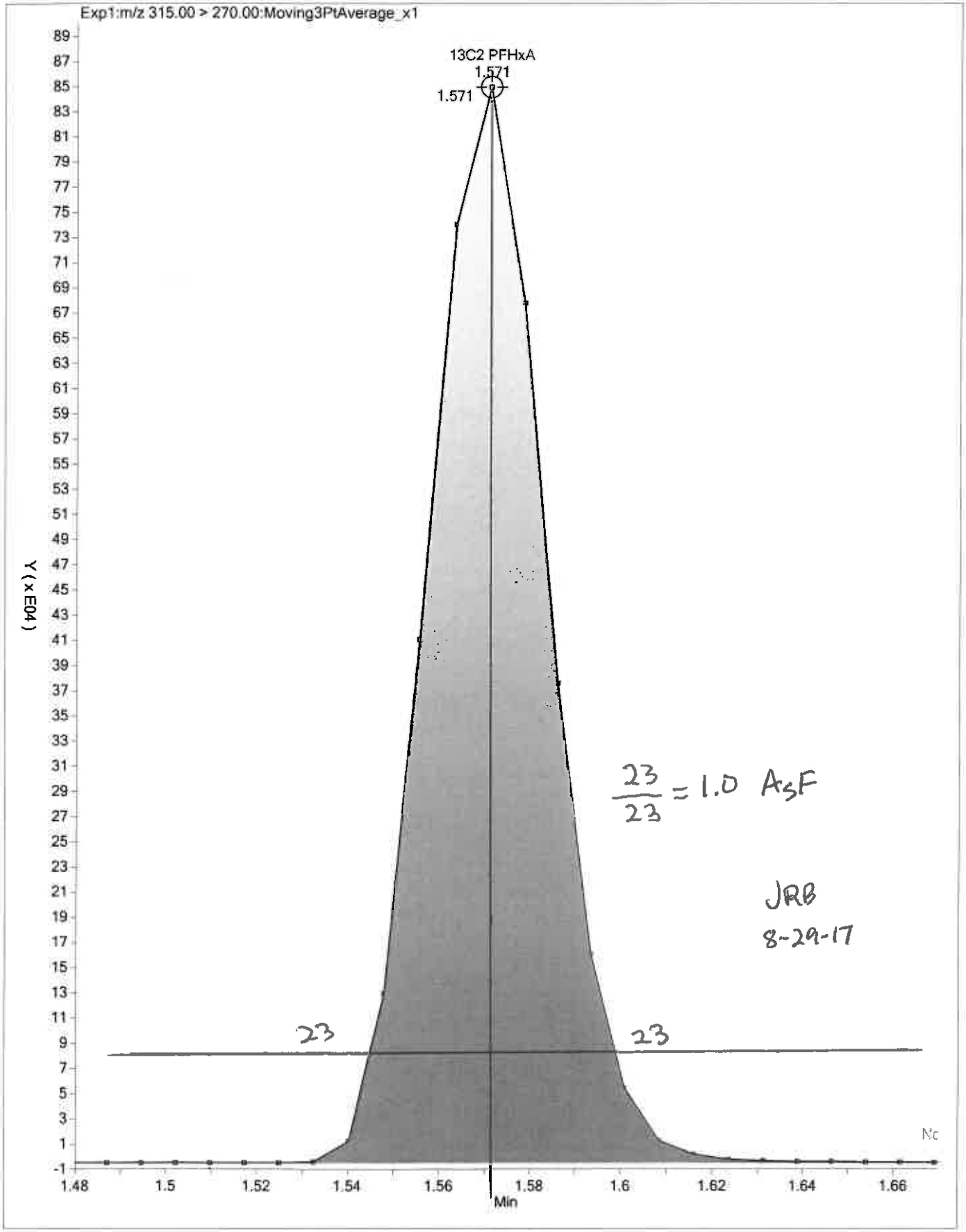
ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	-3.5	5.7	3.6	-0.1	-2.2	1.2	50	50	50	50	50	50
Perfluoroheptanoic acid (PFHpA)	-8.5	1.0	5.7	0.0	0.7	1.1	50	50	50	50	50	50
Perfluorohexanesulfonic acid (PFHxS)	-2.0	0.3	4.2	1.8	-2.6	-1.7	50	50	50	50	50	50
Perfluorooctanoic acid (PFOA)	-3.6	-0.7	0.1	-0.1	5.0	-0.7	50	50	50	50	50	50
Perfluorooctanesulfonic acid (PFOS)	-7.6	-2.4	0.2	3.6	1.9	4.3	50	50	50	50	50	50
Perfluorononanoic acid (PFNA)	-8.6	-0.5	6.3	0.8	1.2	0.8	50	50	50	50	50	50
13C2 PFHxA	-7.2	-2.9	3.5	2.0	3.5	1.2	30	30	30	30	30	30
13C2 PFDA	-8.6	-1.4	3.0	2.8	1.3	2.9	30	30	30	30	30	30



$\frac{27}{21} = 1.29$ A_SF

JRB
8-29-17




Exp1:m/z 315.00 > 270.00:Moving3PtAverage_x1
13C2 PFHxA
1.571
1.571
Y (xE04)
Min
23
23
23/23 = 1.0 ASF
JRB
8-29-17

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_004.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 28-Aug-2017 16:12:10 ALS Bottle#: 1 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L1_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 09:50:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: phomsophat Date: 28-Aug-2017 18:46:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.443	-0.001	1.000	1394569	8.69		1447	
298.90 > 99.00	1.442	1.443	-0.001	1.000	971973		1.43(0.00-0.00)	1829	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.569	0.001	1.000	1563477	9.28		11058	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.722	0.0	1.000	718953	2.94		982	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	1.722	1.722	0.0	1.000	118133	0.9151		29.4	M
* 6 13C2-PFOA									
415.00 > 370.00	1.935	1.927	0.008		1463313	10.0		9445	
5 Perfluorooctanoic acid									M
413.00 > 369.00	1.935	1.928	0.007	1.000	255581	1.93		8.7	M
413.00 > 169.00	1.935	1.928	0.007	1.000	146538		1.74(0.00-0.00)	229	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.193	2.185	0.008	1.000	537090	3.70		151	M
499.00 > 99.00	2.193	2.185	0.008	1.000	115569		4.65(0.00-0.00)	126	M
* 7 13C4 PFOS									
503.00 > 80.00	2.193	2.186	0.007		4529877	28.7		837	
9 Perfluorononanoic acid									
463.00 > 419.00	2.200	2.195	0.005	1.000	161720	1.83		9.4	
$ 10 13C2 PFDA									
515.00 > 470.00	2.344	2.344	0.0	1.000	740193	9.14		7578	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L1_00020 Amount Added: 1.00 Units: mL

Report Date: 29-Aug-2017 09:50:19 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_004.d

Injection Date: 28-Aug-2017 16:12:10 Instrument ID: A8_N

Lims ID: IC L1

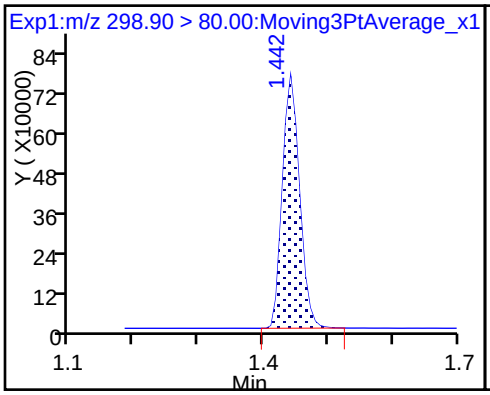
Client ID:

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

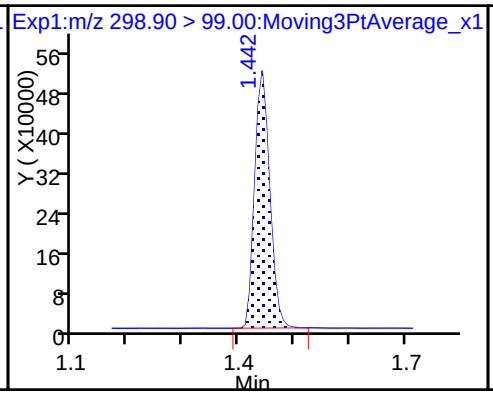
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

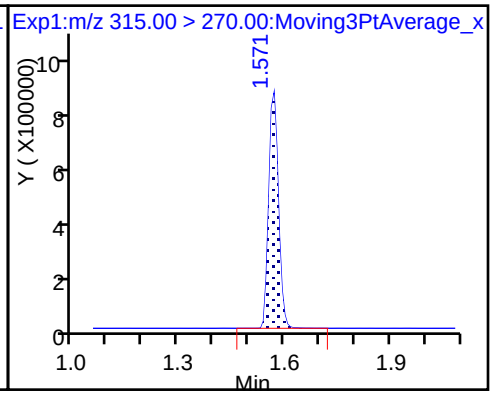
1 Perfluorobutanesulfonic acid



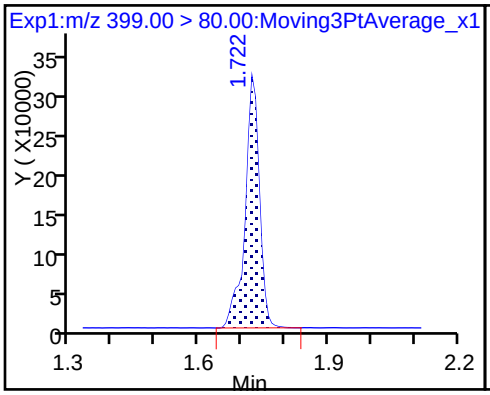
1 Perfluorobutanesulfonic acid



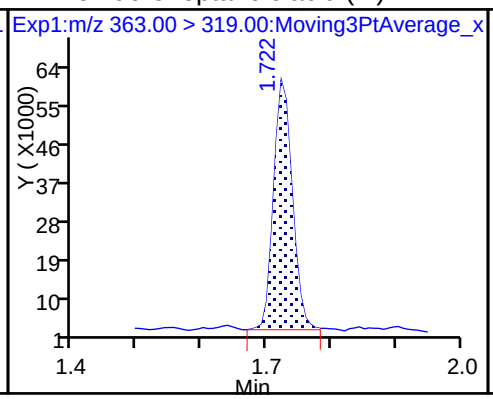
$ 2 13C2 PFHxA



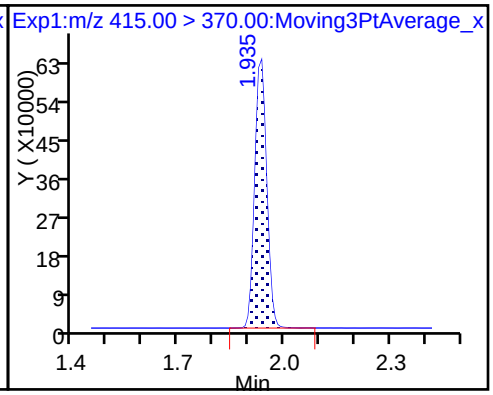
3 Perfluorohexanesulfonic acid



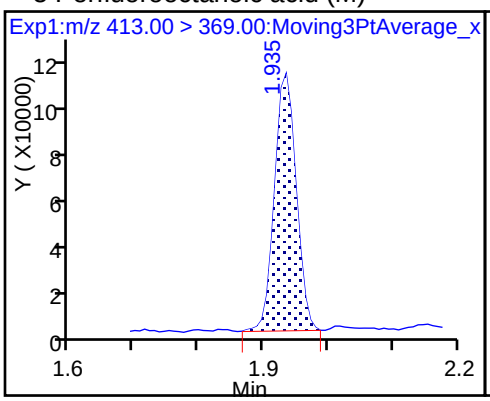
4 Perfluoroheptanoic acid (M)



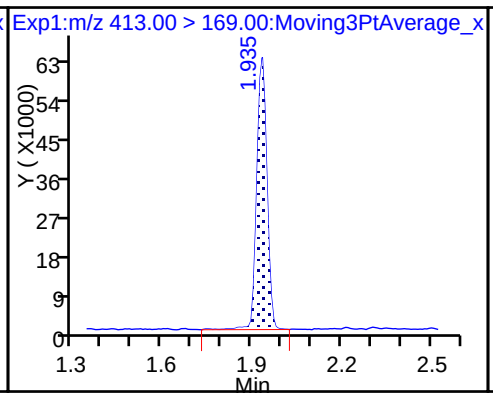
* 6 13C2-PFOA



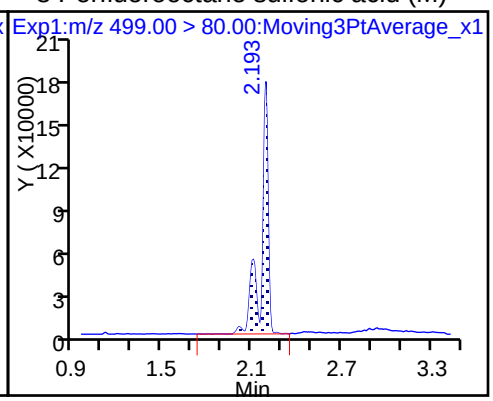
5 Perfluorooctanoic acid (M)



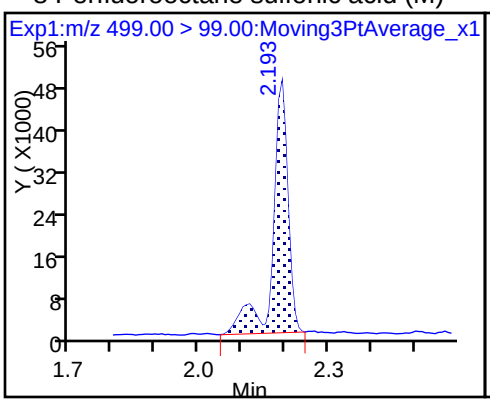
5 Perfluorooctanoic acid



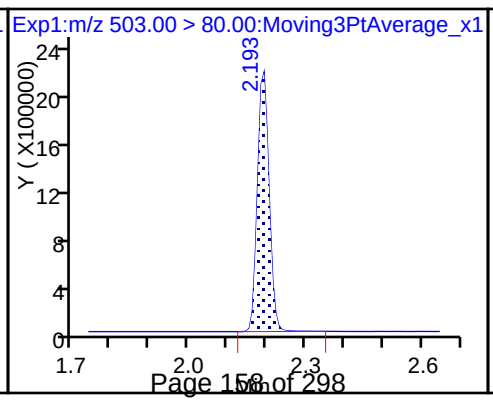
8 Perfluorooctane sulfonic acid (M)



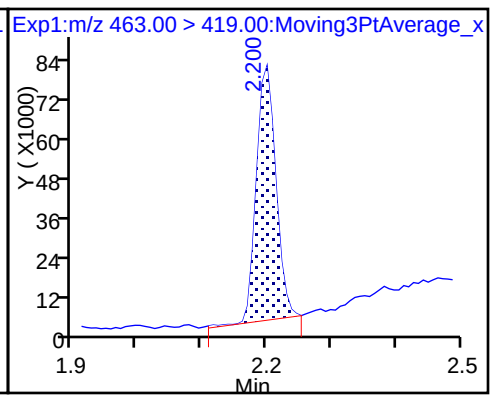
8 Perfluorooctane sulfonic acid (M)



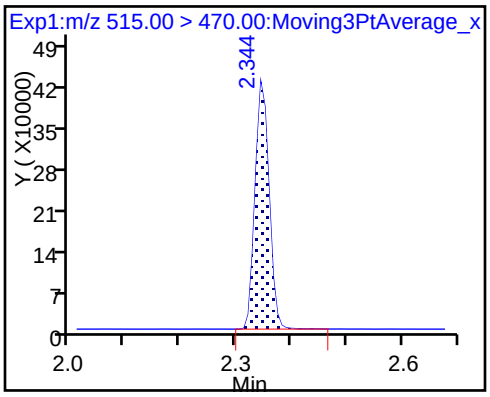
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.344
Y (X10000)
49
42
35
28
21
14
7
0
2.0
2.3
2.6
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

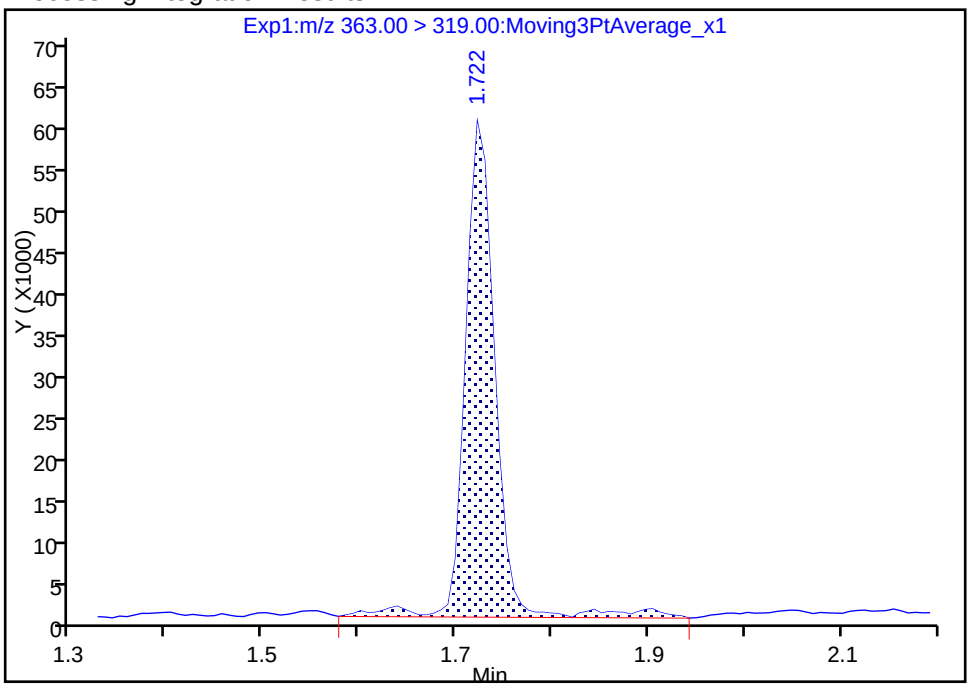
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_004.d
Injection Date: 28-Aug-2017 16:12:10 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

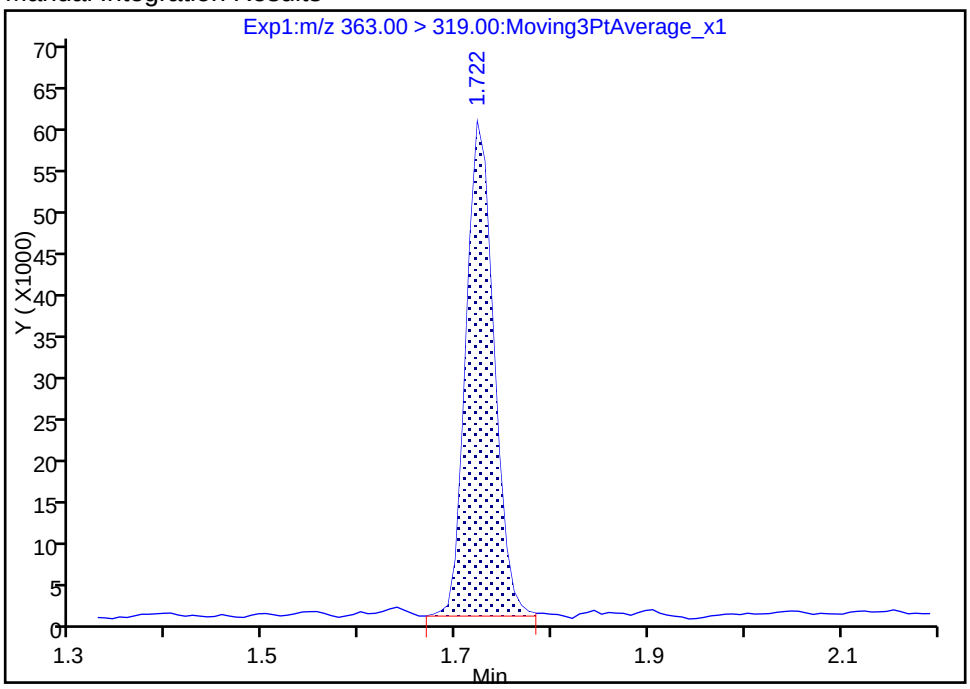
Processing Integration Results

RT: 1.72
Area: 128192
Amount: 0.980263
Amount Units: ng/ml



Manual Integration Results

RT: 1.72
Area: 118133
Amount: 0.915071
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 09:44:29
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

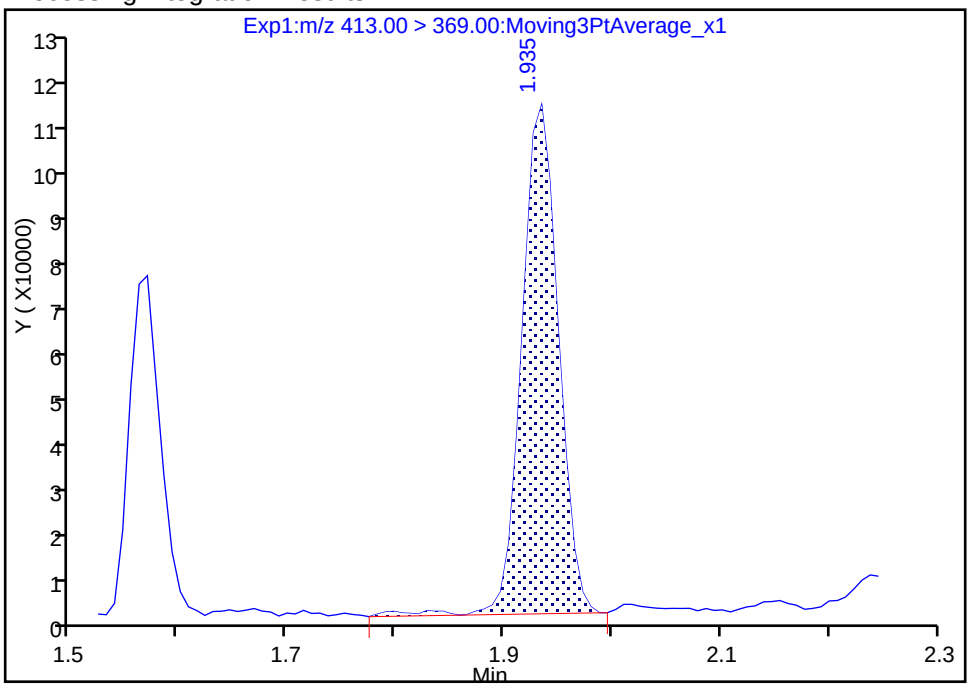
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_004.d
Injection Date: 28-Aug-2017 16:12:10 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

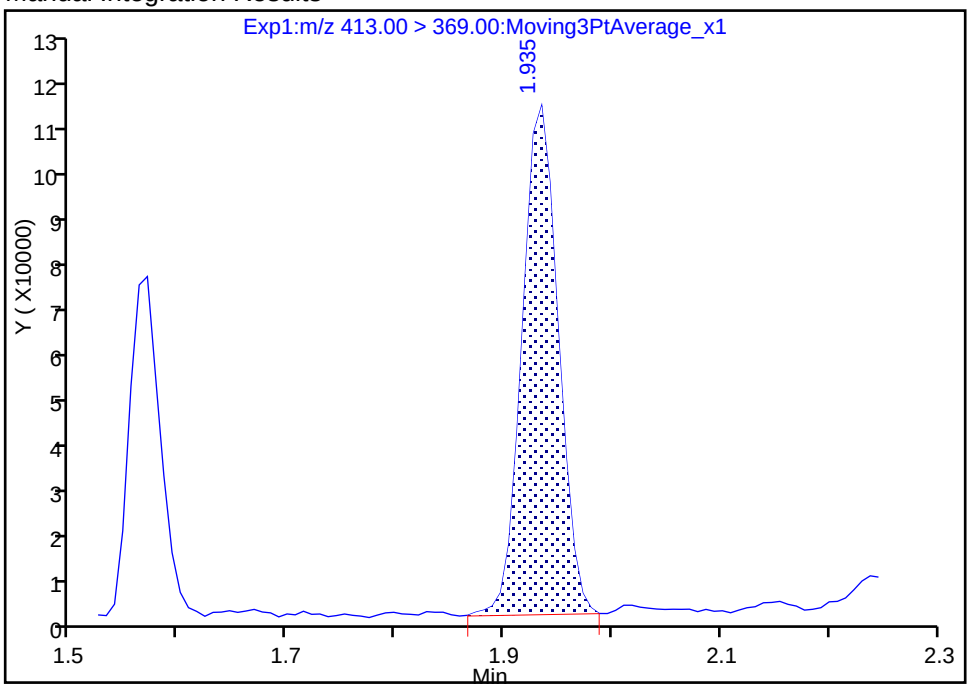
Processing Integration Results

RT: 1.93
Area: 258835
Amount: 1.949613
Amount Units: ng/ml



Manual Integration Results

RT: 1.93
Area: 255581
Amount: 1.929039
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 09:44:48
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

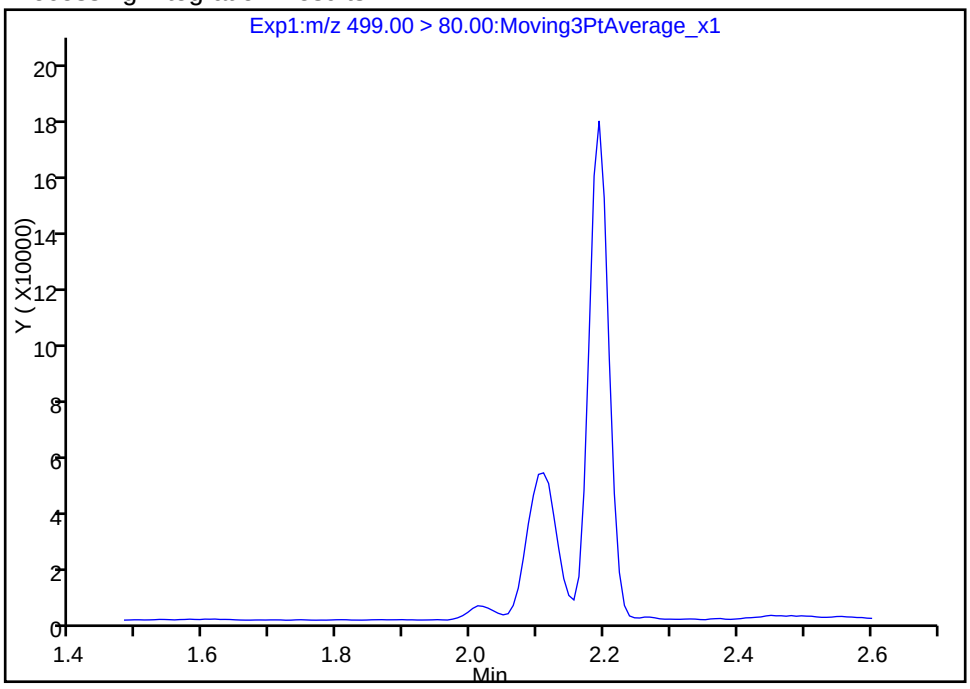
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_004.d
Injection Date: 28-Aug-2017 16:12:10 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

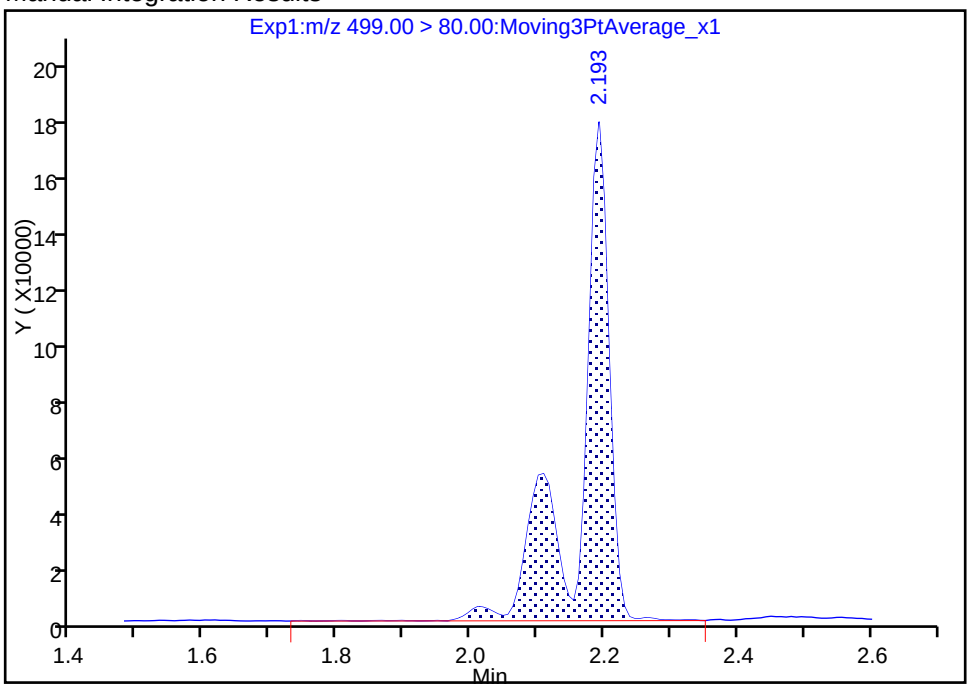
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 537090
Amount: 3.697870
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:46:20
Audit Action: Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

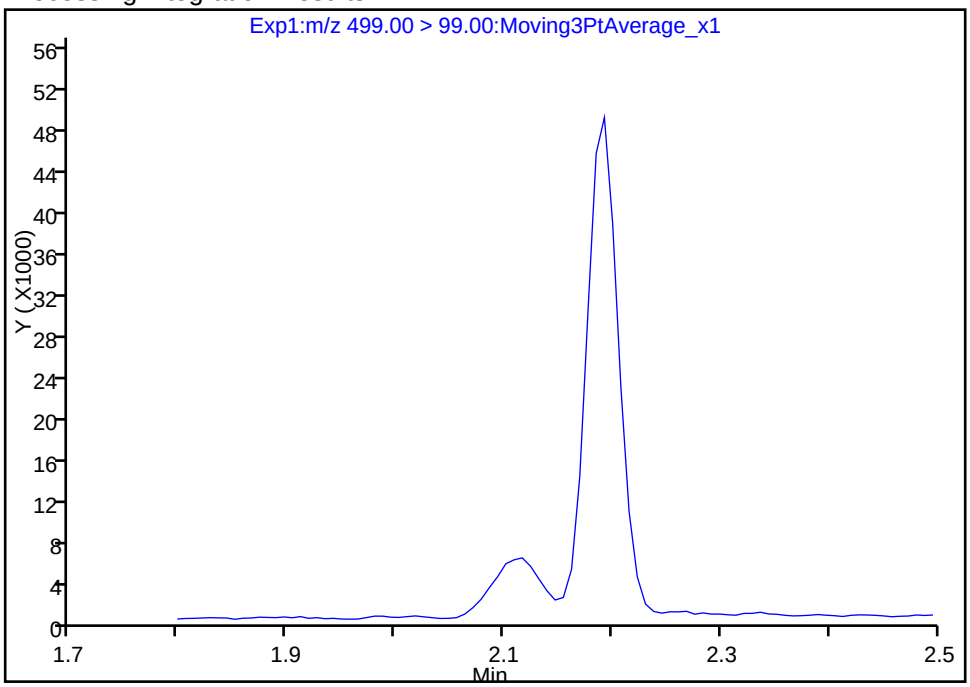
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_004.d
Injection Date: 28-Aug-2017 16:12:10 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

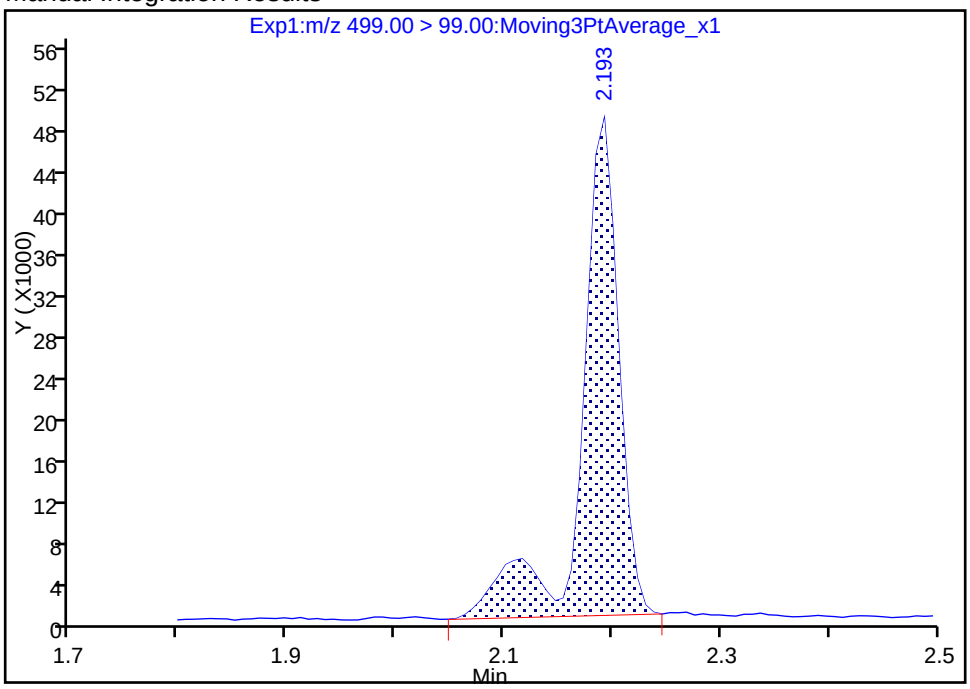
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 115569
Amount: 3.697870
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:46:30
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

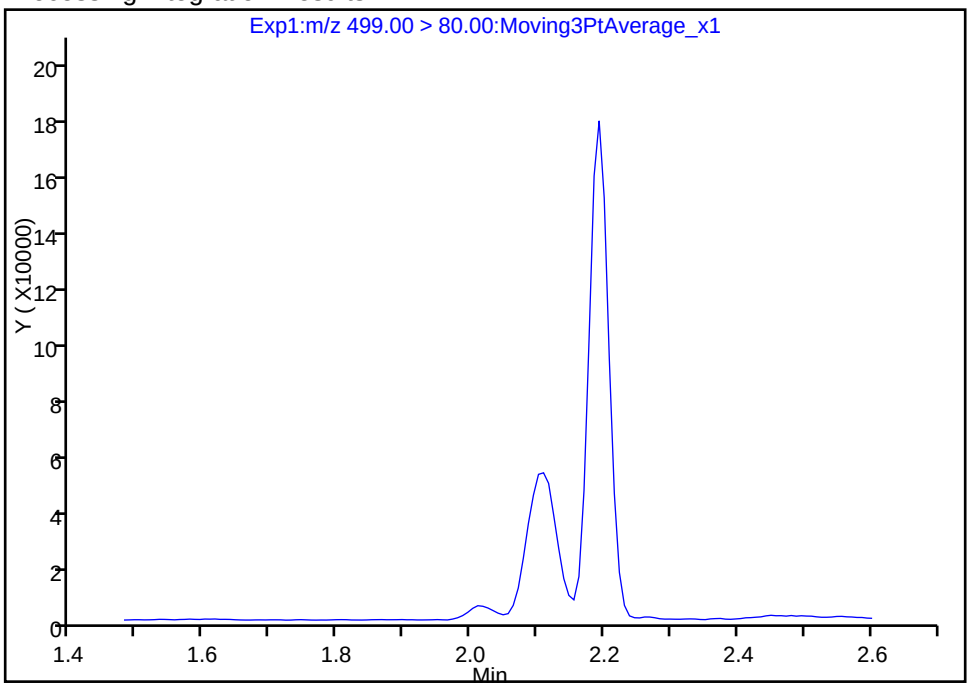
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_004.d
Injection Date: 28-Aug-2017 16:12:10 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

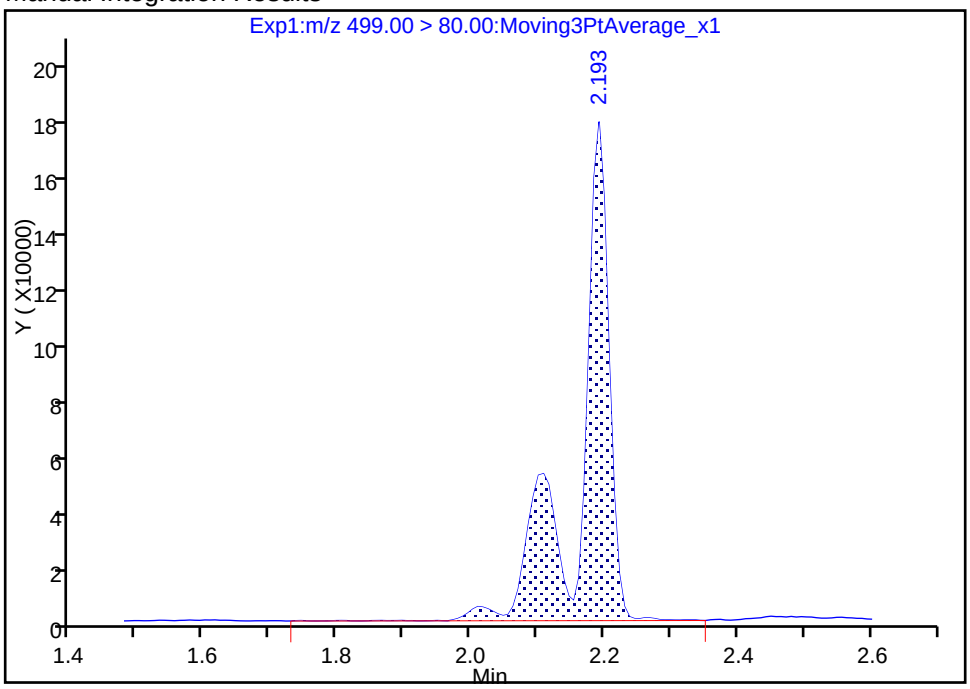
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 537090
Amount: 3.697870
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:46:30
Audit Action: Manually Integrated Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_005.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 28-Aug-2017 16:16:56 ALS Bottle#: 2 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L2_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 09:50:21 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: phomsophat Date: 28-Aug-2017 18:47:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.443	-0.001	1.000	3317676	21.2		2919	
298.90 > 99.00	1.442	1.443	-0.001	1.000	2273819		1.46(0.00-0.00)	3502	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.563	1.569	-0.006	1.000	1572903	9.71		10741	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.722	0.0	1.000	278620	2.24		70.5	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.722	0.0	1.000	1630557	6.69		1950	
* 6 13C2-PFOA									
415.00 > 370.00	1.927	1.927	0.0		1406983	10.0		7807	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.927	1.928	-0.001	1.000	562912	4.42		20.3	
413.00 > 169.00	1.927	1.928	-0.001	1.000	317249		1.77(0.00-0.00)	484	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.193	2.185	0.008	1.000	1255917	8.68		379	M
499.00 > 99.00	2.185	2.185	0.0	0.997	263897		4.76(0.00-0.00)	277	M
* 7 13C4 PFOS									
503.00 > 80.00	2.185	2.186	-0.001		4514231	28.7		825	
9 Perfluorononanoic acid									
463.00 > 419.00	2.193	2.195	-0.002	1.000	376105	4.42		23.6	
$ 10 13C2 PFDA									
515.00 > 470.00	2.344	2.344	0.0	1.000	767194	9.86		7591	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L2_00020 Amount Added: 1.00 Units: mL

Report Date: 29-Aug-2017 09:50:21 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_005.d

Injection Date: 28-Aug-2017 16:16:56 Instrument ID: A8_N

Lims ID: IC L2

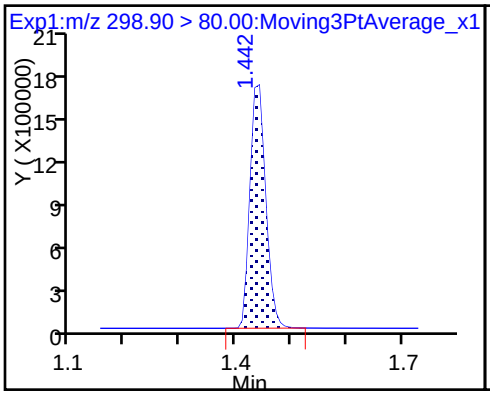
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 3

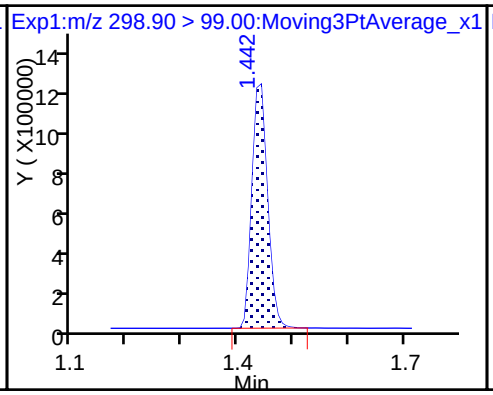
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

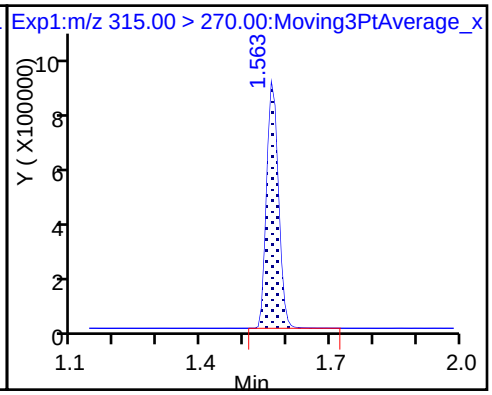
1 Perfluorobutanesulfonic acid



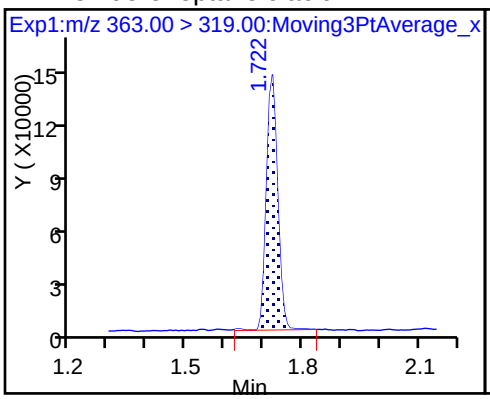
1 Perfluorobutanesulfonic acid



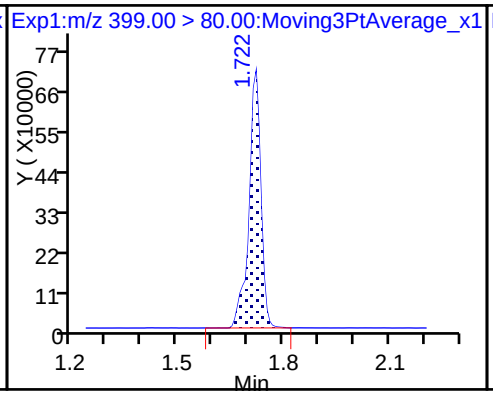
$ 2 13C2 PFHxA



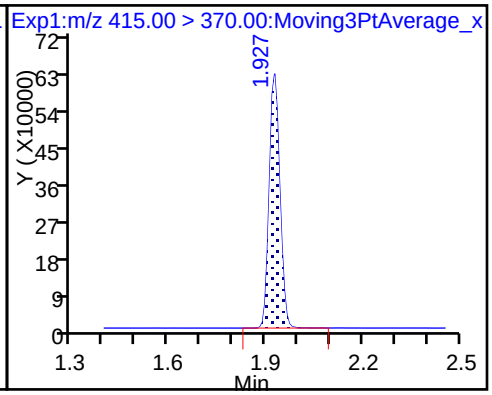
4 Perfluoroheptanoic acid



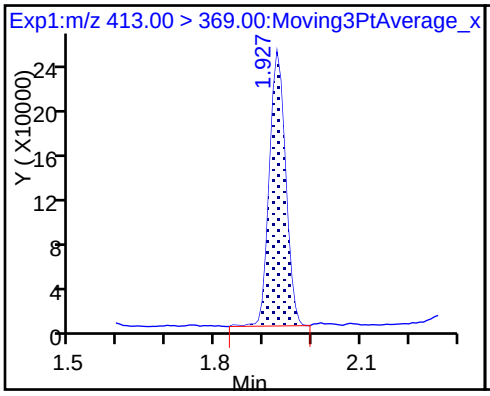
3 Perfluorohexanesulfonic acid



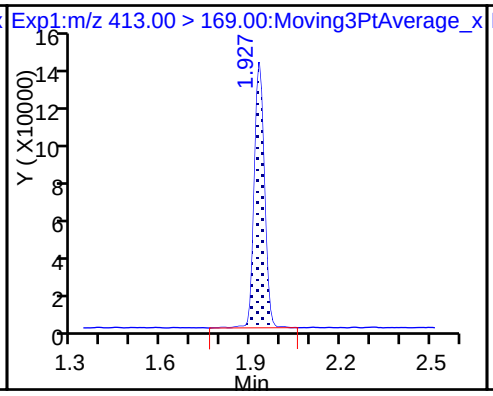
* 6 13C2-PFOA



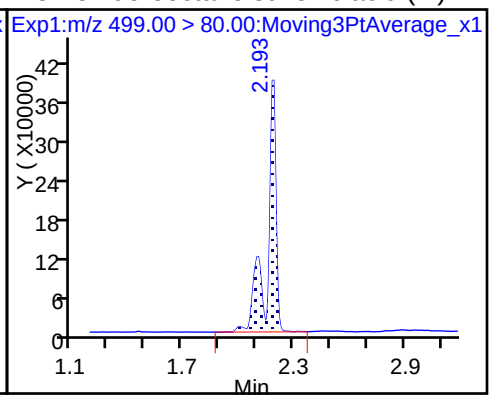
5 Perfluorooctanoic acid



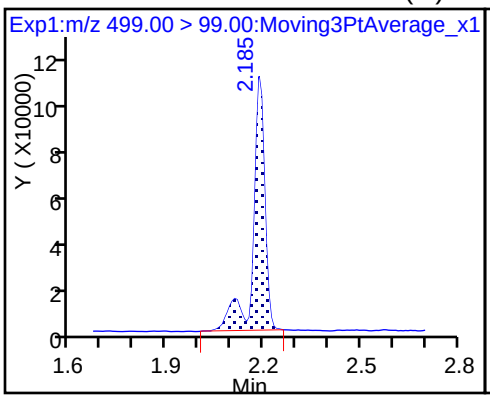
5 Perfluorooctanoic acid



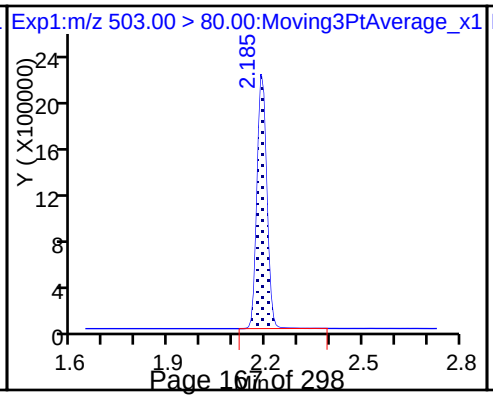
8 Perfluorooctane sulfonic acid (M)



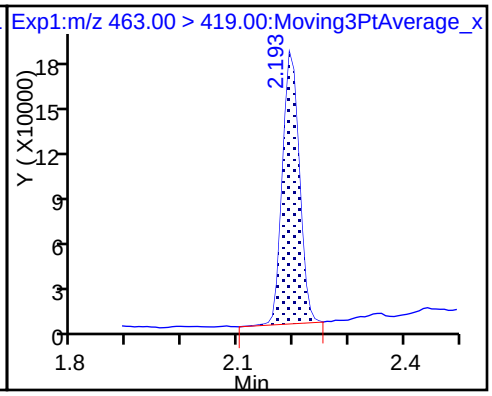
8 Perfluorooctane sulfonic acid (M)



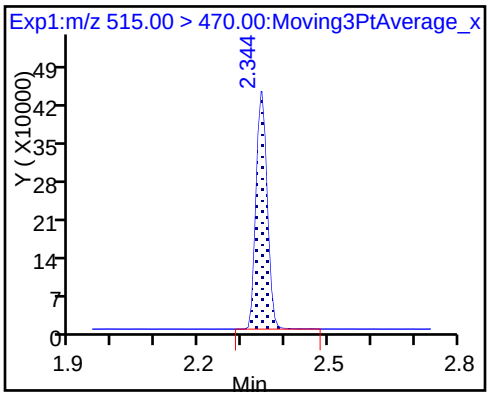
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.344
Y (X10000)
49
42
35
28
21
14
7
0
1.9
2.2
2.5
2.8
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

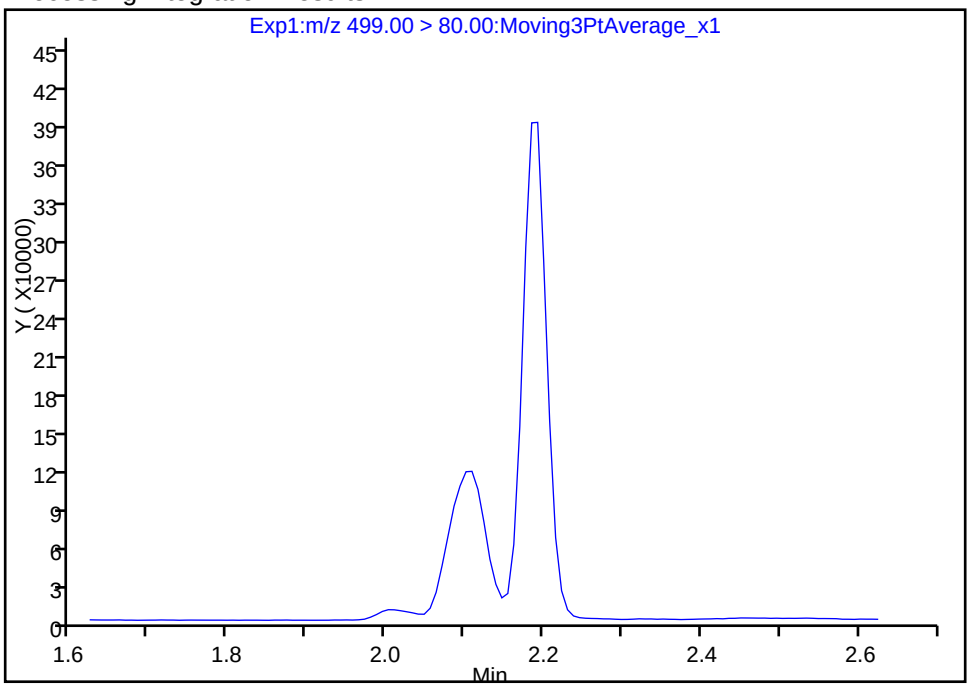
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_005.d
Injection Date: 28-Aug-2017 16:16:56 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

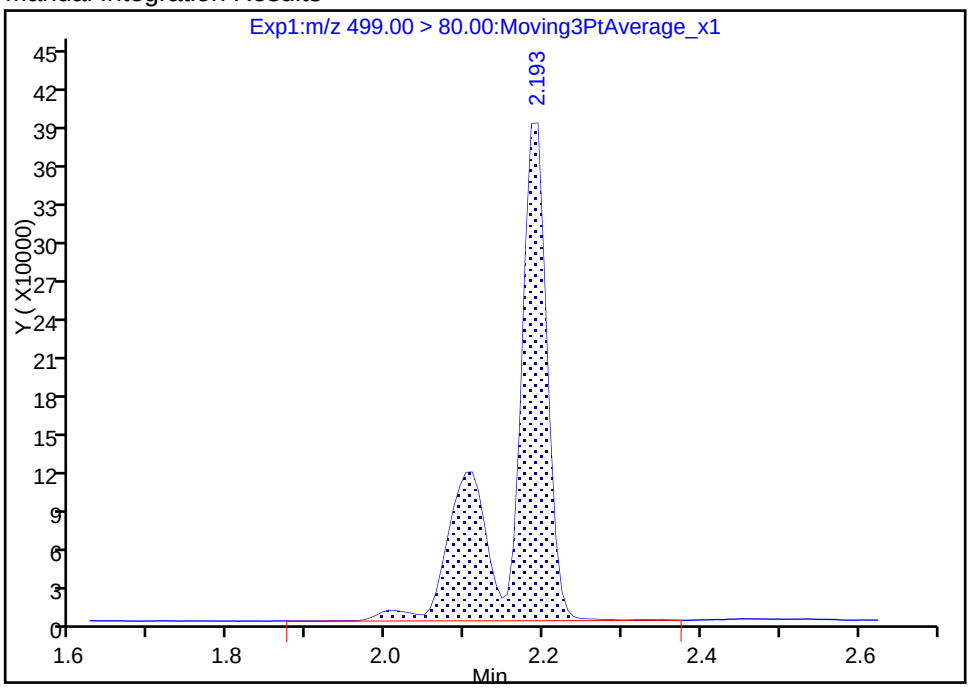
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 1255917
Amount: 8.676971
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:46:45
Audit Action: Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

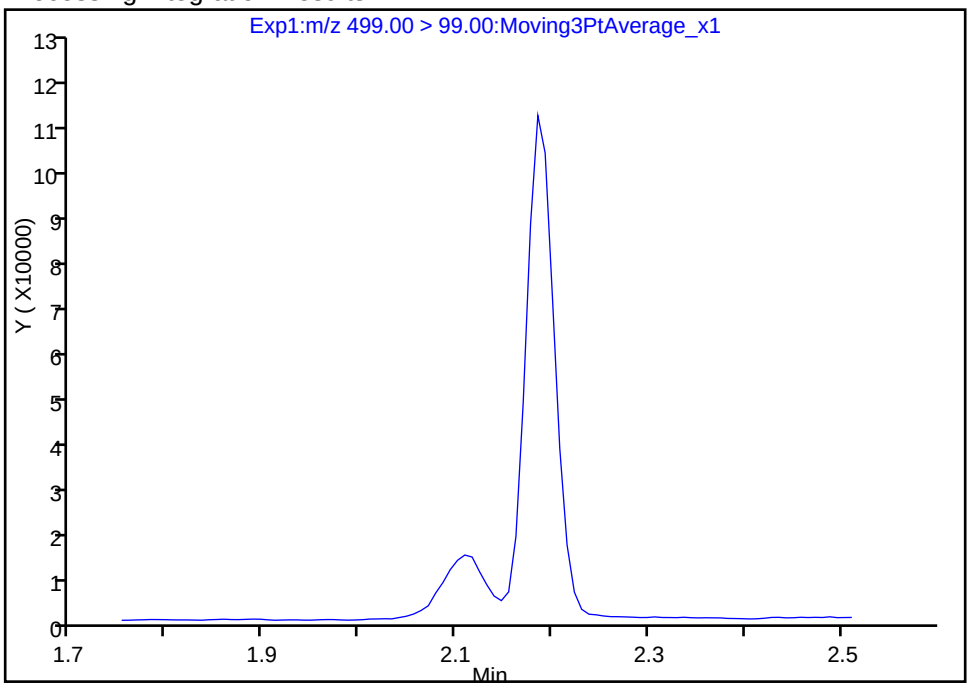
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_005.d
Injection Date: 28-Aug-2017 16:16:56 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

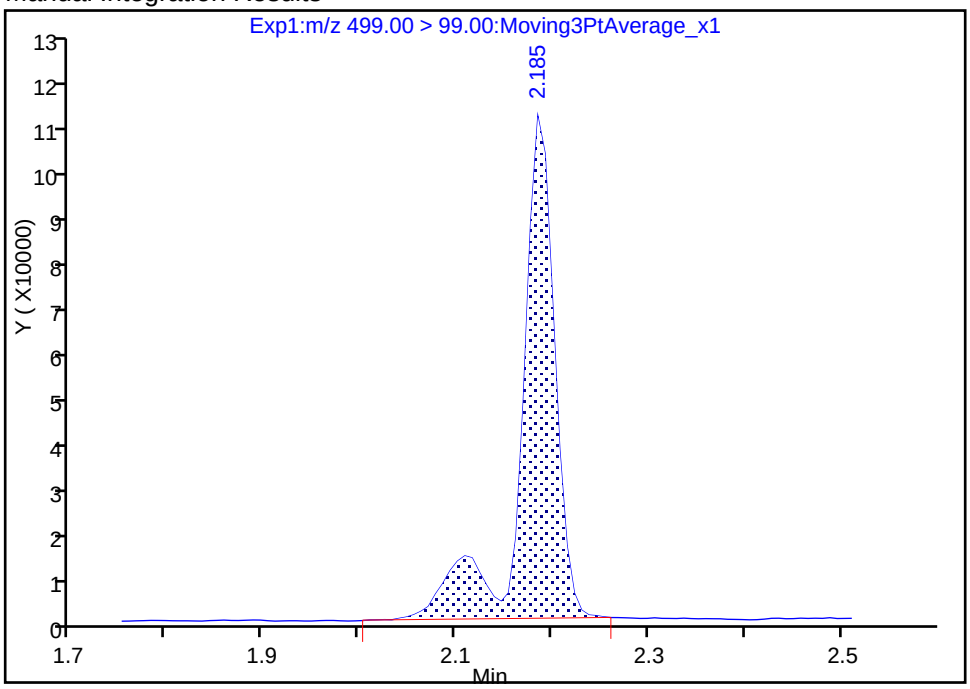
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 263897
Amount: 8.676971
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:46:57
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

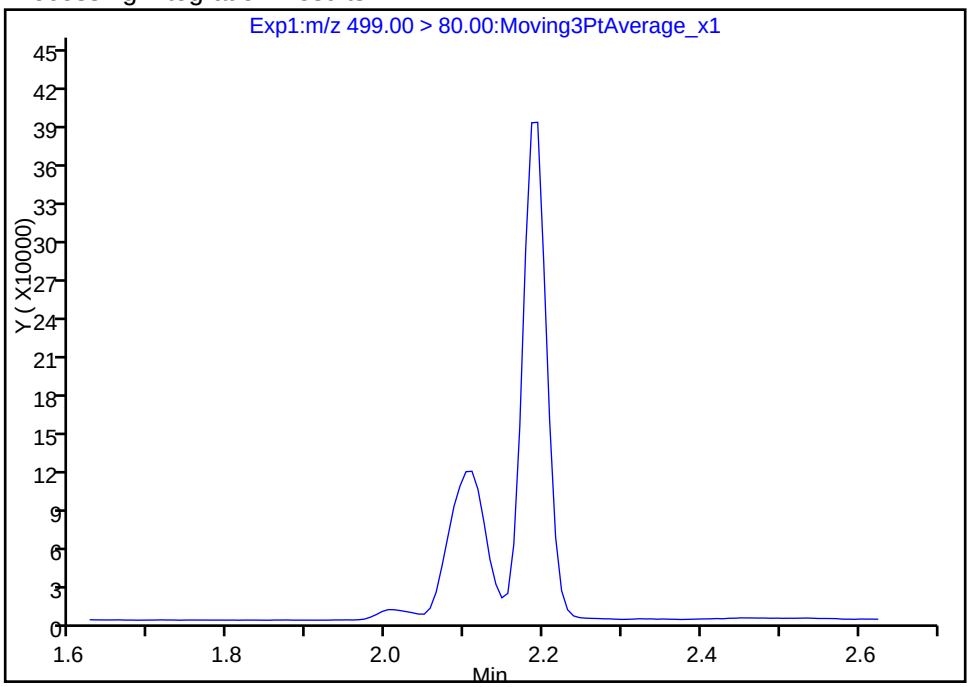
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_005.d
Injection Date: 28-Aug-2017 16:16:56 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

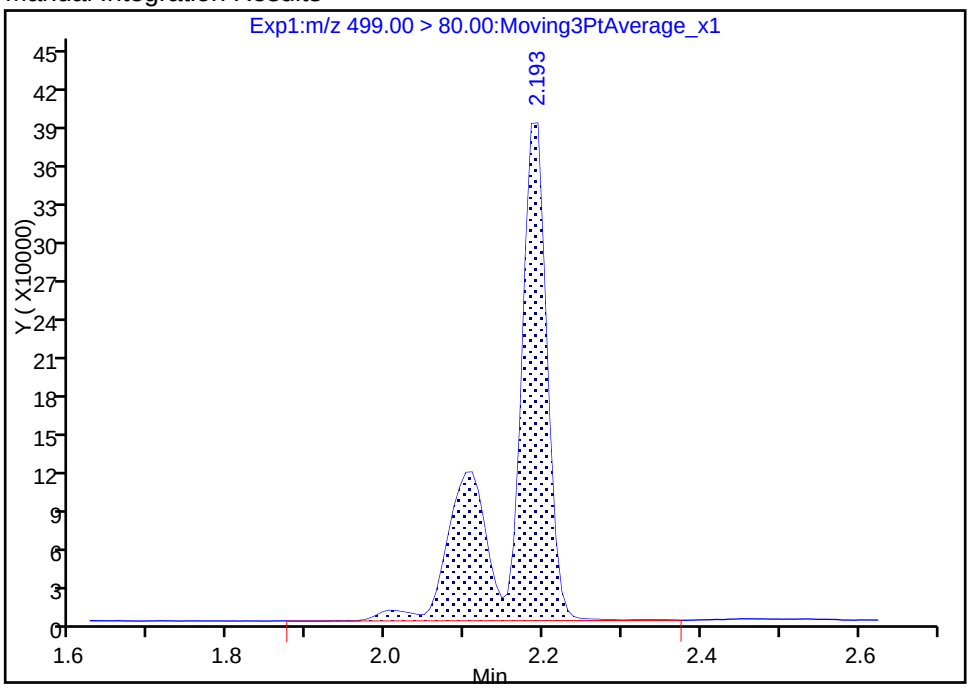
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 1255917
Amount: 8.676971
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:46:57
Audit Action: Manually Integrated Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_006.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 28-Aug-2017 16:21:43 ALS Bottle#: 3 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L3_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 09:50:22 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 09:50:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.443	-0.001	1.000	6863053	46.6		5409	
298.90 > 99.00	1.442	1.443	-0.001	1.000	4900925		1.40(0.00-0.00)	6416	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.569	0.001	1.000	1586933	10.3		10168	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.722	0.0	1.000	3727422	15.6		4344	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.722	0.0	1.000	621521	5.29		159	
* 6 13C2-PFOA									
415.00 > 370.00	1.927	1.927	0.0		1332513	10.0		8349	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.927	1.928	-0.001	1.000	1208545	10.0		45.9	
413.00 > 169.00	1.927	1.928	-0.001	1.000	688244		1.76(0.00-0.00)	1043	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.193	2.185	0.008	1.000	2838344	20.0		808	M
499.00 > 99.00	2.193	2.185	0.008	1.000	590433		4.81(0.00-0.00)	592	M
* 7 13C4 PFOS									
503.00 > 80.00	2.185	2.186	-0.001		4417453	28.7		783	
9 Perfluorononanoic acid									
463.00 > 419.00	2.200	2.195	0.005	1.000	855804	10.6		58.1	
$ 10 13C2 PFDA									
515.00 > 470.00	2.344	2.344	0.0	1.000	759573	10.3		7477	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

Report Date: 29-Aug-2017 09:50:23 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_006.d

Injection Date: 28-Aug-2017 16:21:43 Instrument ID: A8_N

Lims ID: IC L3

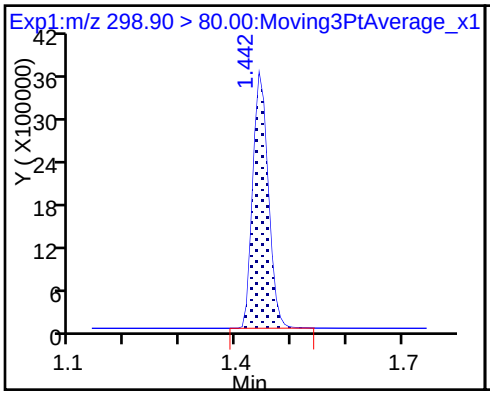
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 4

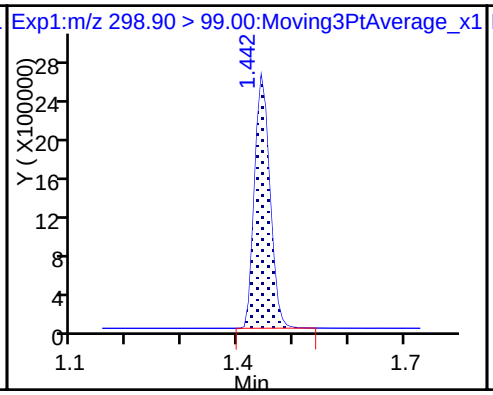
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

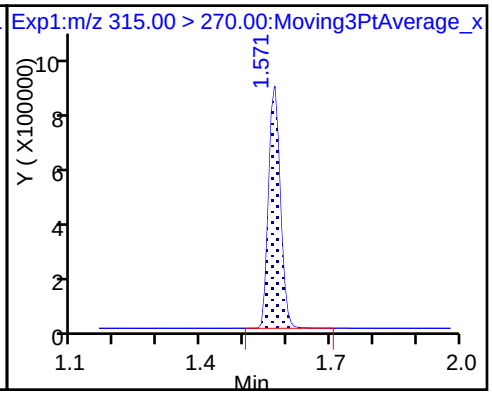
1 Perfluorobutanesulfonic acid



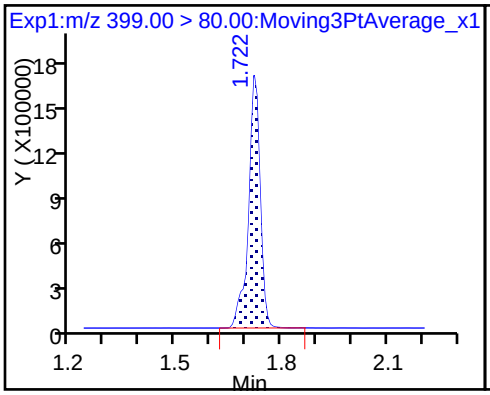
1 Perfluorobutanesulfonic acid



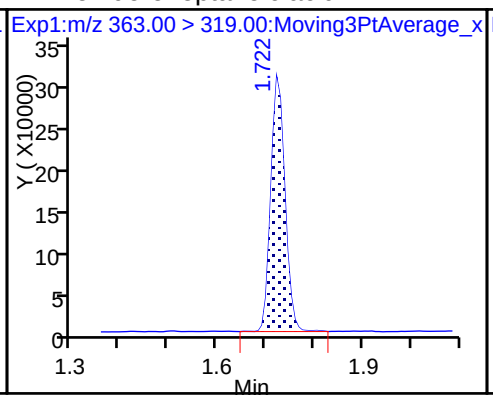
$ 2 13C2 PFHxA



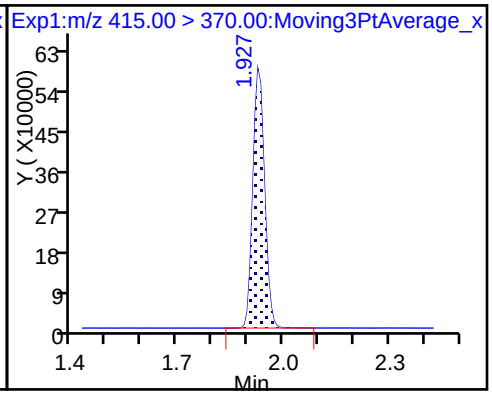
3 Perfluorohexanesulfonic acid



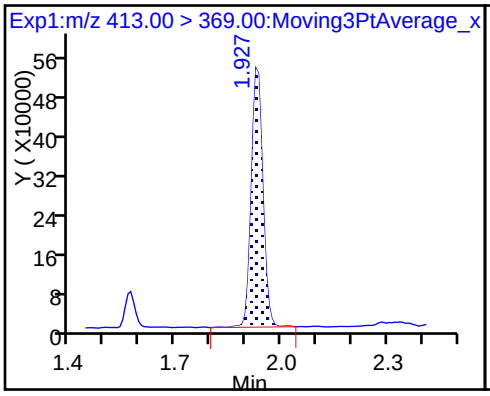
4 Perfluoroheptanoic acid



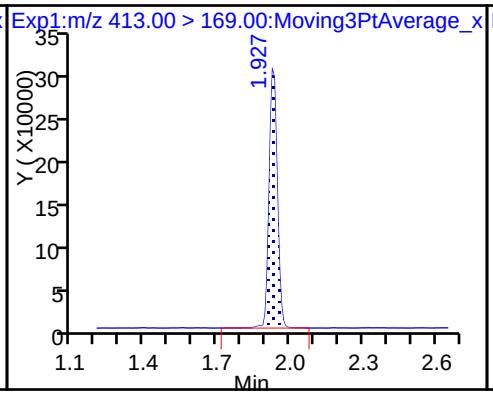
* 6 13C2-PFOA



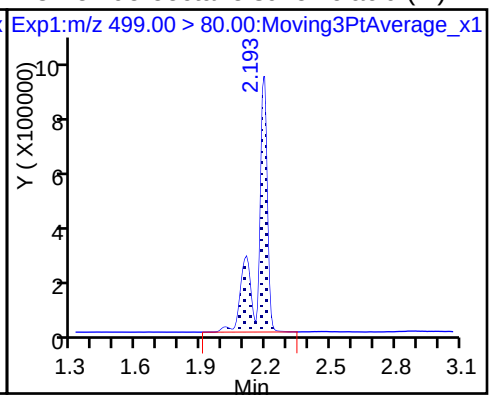
5 Perfluorooctanoic acid



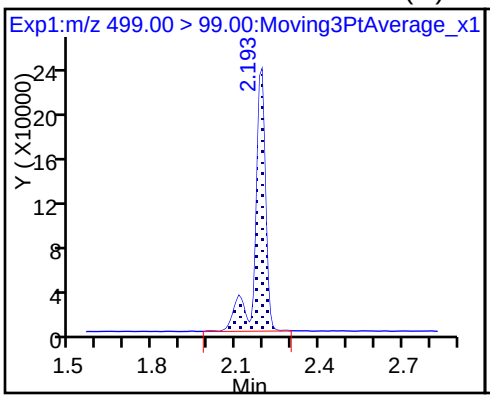
5 Perfluorooctanoic acid



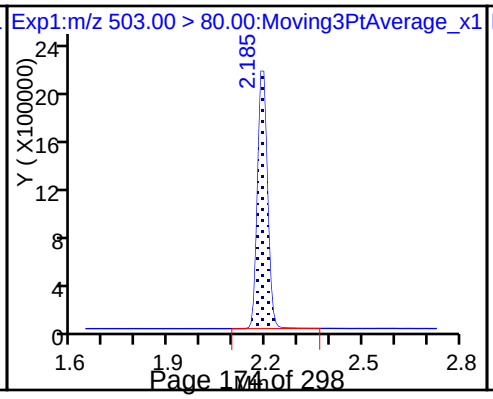
8 Perfluorooctane sulfonic acid (M)



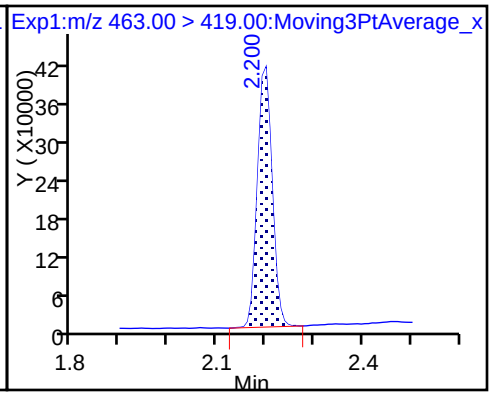
8 Perfluorooctane sulfonic acid (M)



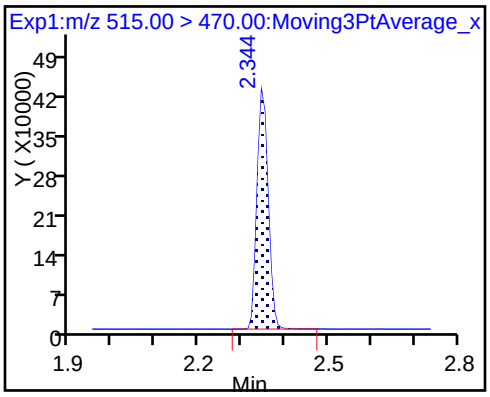
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.344
Y (X10000)
49
42
35
28
21
14
7
0
1.9
2.2
2.5
2.8
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

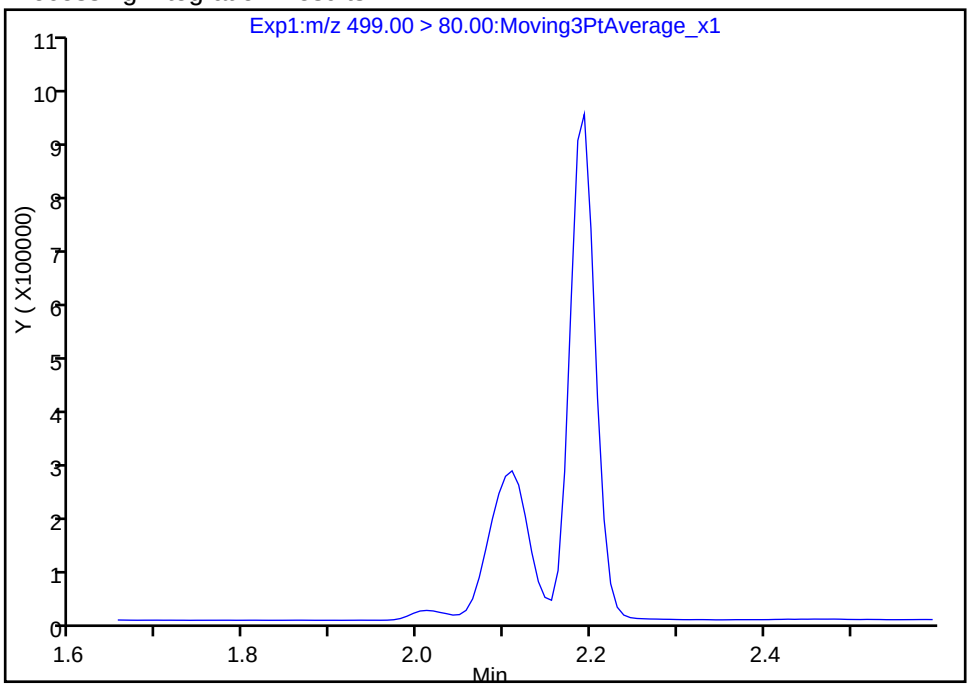
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_006.d
Injection Date: 28-Aug-2017 16:21:43 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

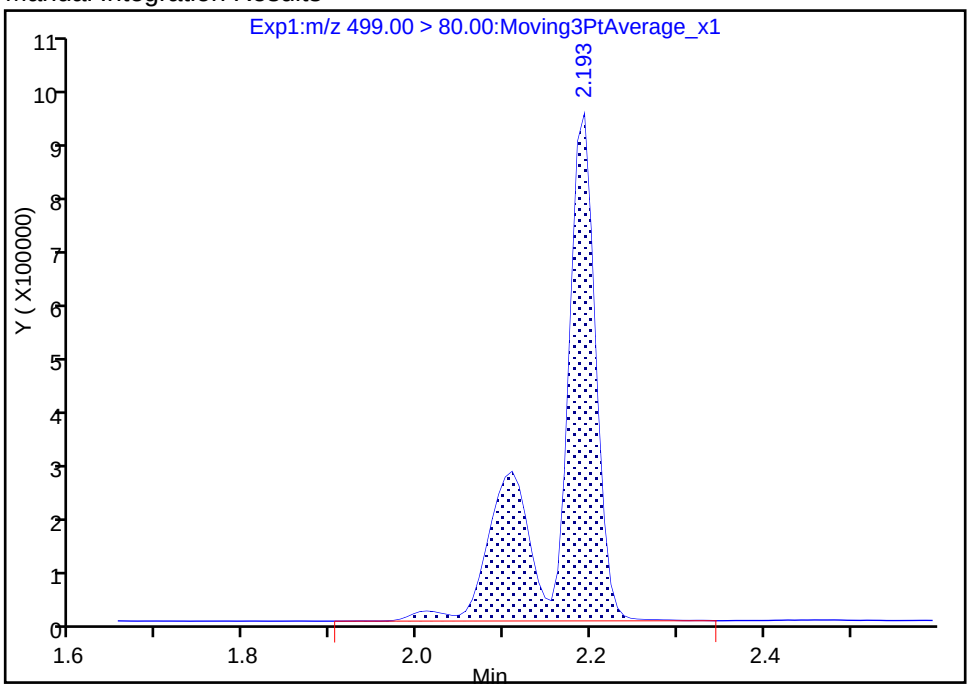
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 2838344
Amount: 20.039371
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:47:11
Audit Action: Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

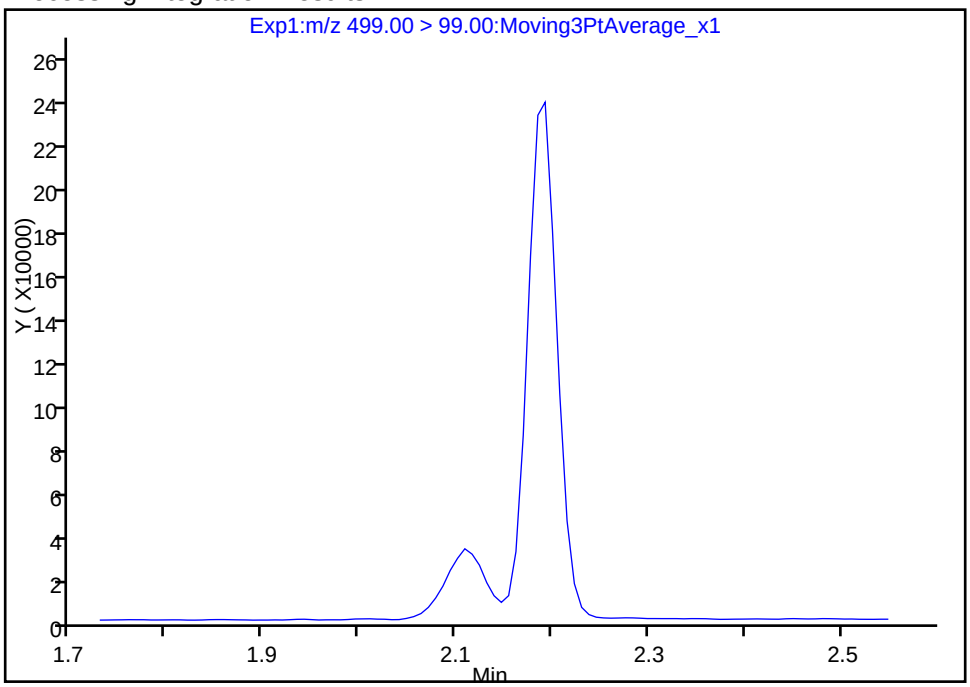
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_006.d
Injection Date: 28-Aug-2017 16:21:43 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

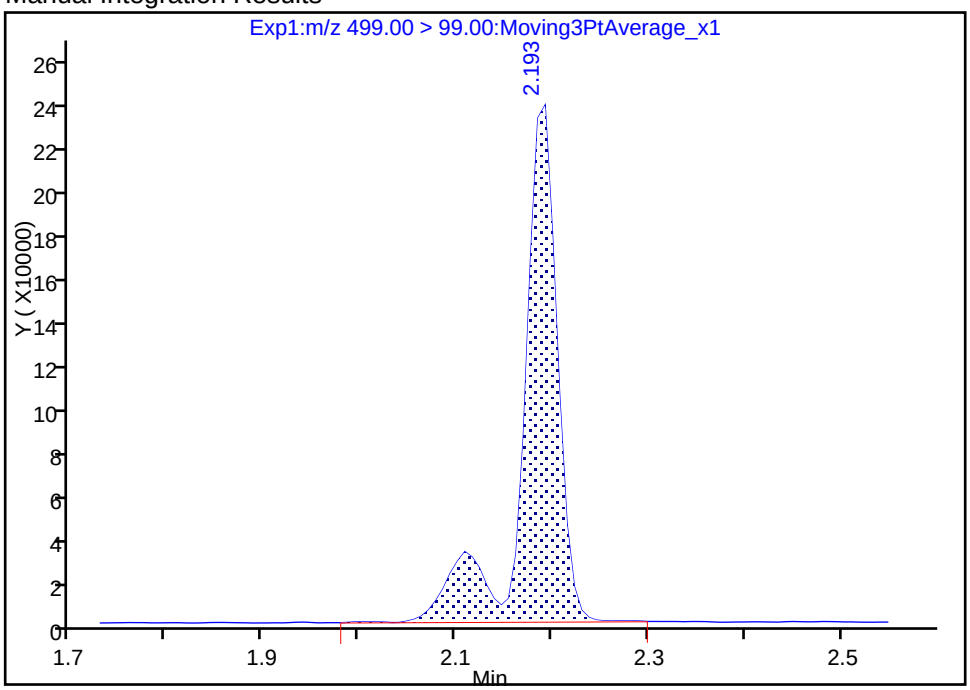
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 590433
Amount: 20.039371
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:47:20
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

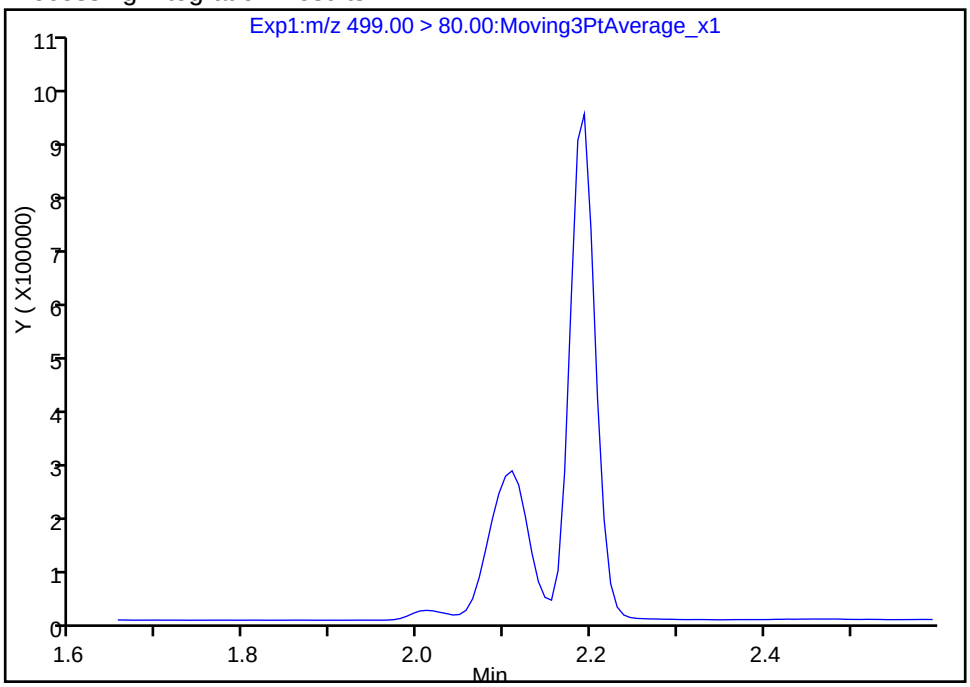
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_006.d
Injection Date: 28-Aug-2017 16:21:43 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

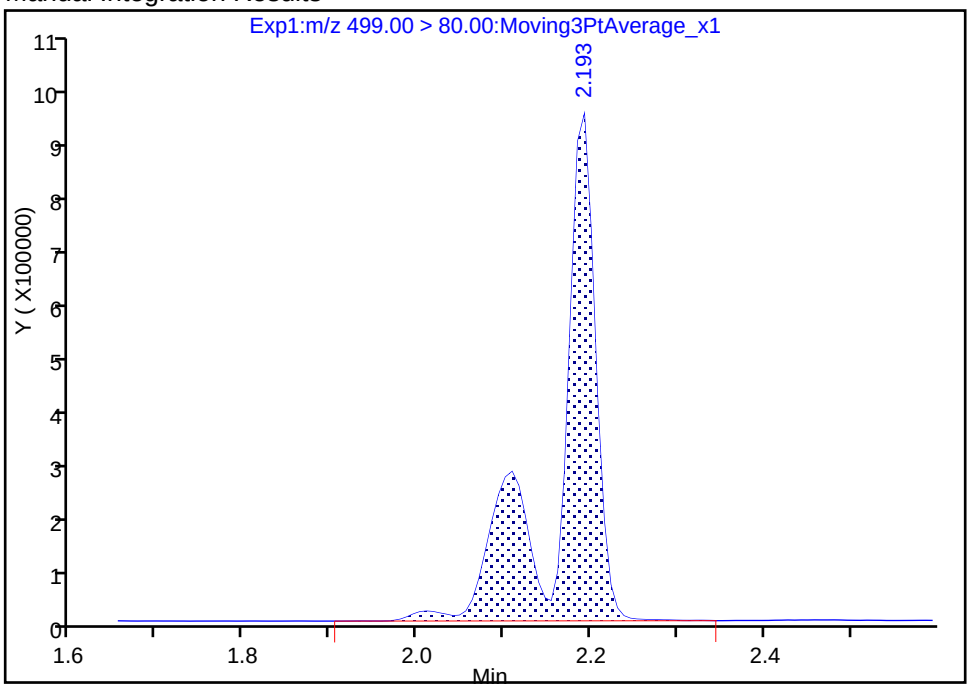
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 2838344
Amount: 20.039371
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:47:20
Audit Action: Manually Integrated Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_007.d
Lims ID: IC L4
Client ID:
Sample Type: ICISAV Calib Level: 4
Inject. Date: 28-Aug-2017 16:26:31 ALS Bottle#: 4 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L4_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 09:52:12 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 09:52:12

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.443	-0.001	1.000	12060559	89.9		6939	
298.90 > 99.00	1.442	1.443	-0.001	1.000	8924480		1.35(0.00-0.00)	8350	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.569	0.001	1.000	1576697	10.2		10347	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.722	0.0	1.000	7156650	30.5		6138	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.722	0.0	1.000	1185886	10.0		295	
* 6 13C2-PFOA									
415.00 > 370.00	1.927	1.927	0.0		1343331	10.0		9849	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.927	1.928	-0.001	1.000	2431849	20.0		85.0	
413.00 > 169.00	1.927	1.928	-0.001	1.000	1384980		1.76(0.00-0.00)	2097	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.193	2.185	0.008	1.000	5766727	41.4		1649	M
499.00 > 99.00	2.185	2.185	0.0	0.997	1132874		5.09(0.00-0.00)	1036	M
* 7 13C4 PFOS									
503.00 > 80.00	2.185	2.186	-0.001		4341086	28.7		740	
9 Perfluorononanoic acid									
463.00 > 419.00	2.193	2.195	-0.002	1.000	1635893	20.2		115	
$ 10 13C2 PFDA									
515.00 > 470.00	2.344	2.344	0.0	1.000	763691	10.3		7704	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L4_00020 Amount Added: 1.00 Units: mL

Report Date: 29-Aug-2017 09:52:13 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_007.d

Injection Date: 28-Aug-2017 16:26:31 Instrument ID: A8_N

Lims ID: IC L4

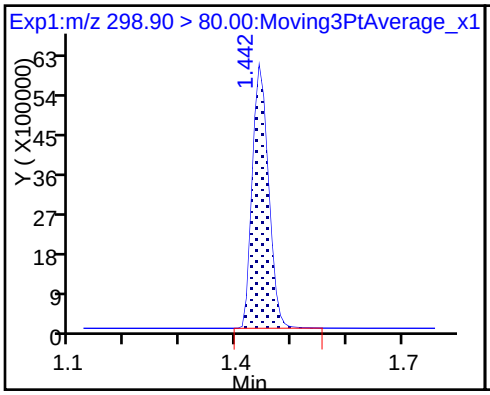
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 5

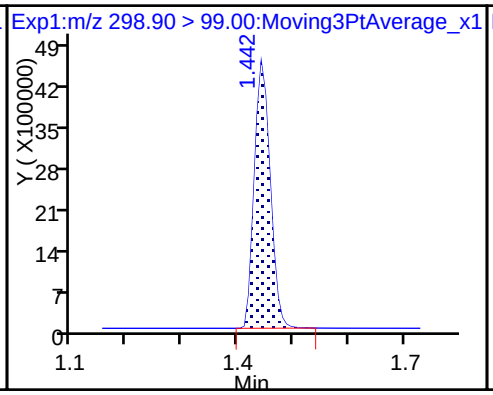
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

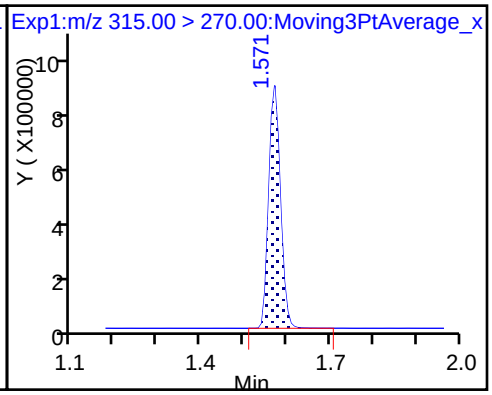
1 Perfluorobutanesulfonic acid



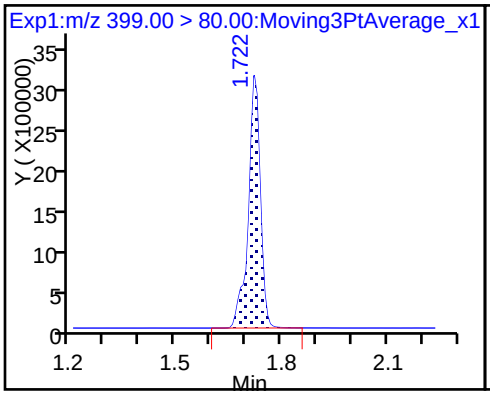
1 Perfluorobutanesulfonic acid



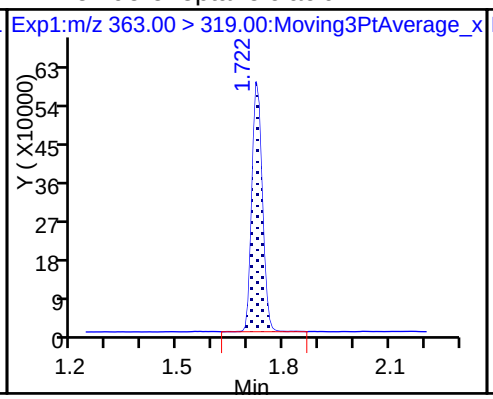
$ 2 13C2 PFHxA



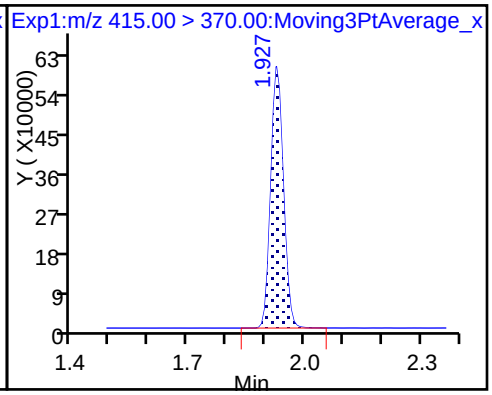
3 Perfluorohexanesulfonic acid



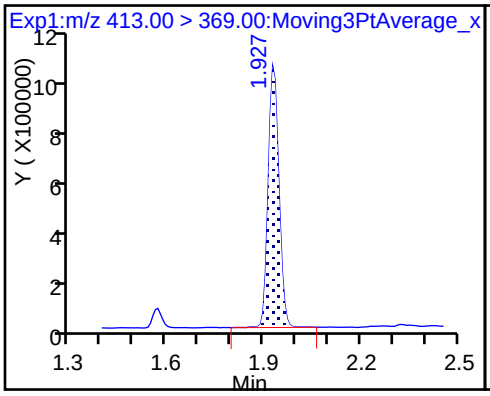
4 Perfluoroheptanoic acid



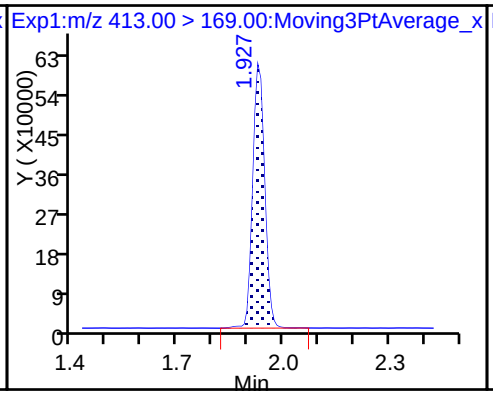
* 6 13C2-PFOA



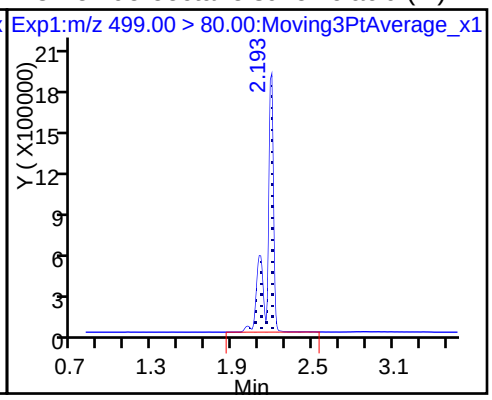
5 Perfluorooctanoic acid



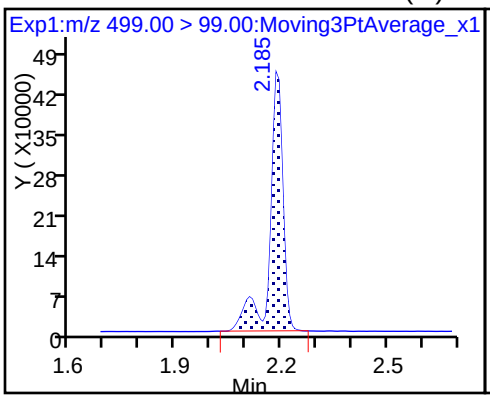
5 Perfluorooctanoic acid



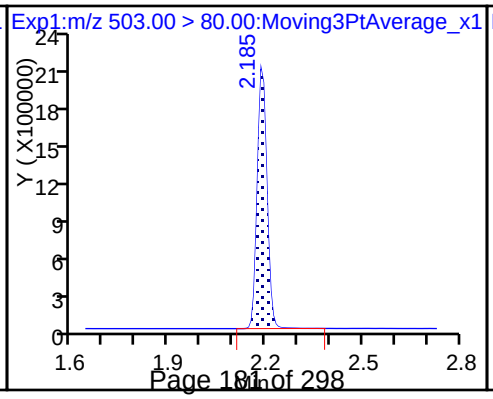
8 Perfluorooctane sulfonic acid (M)



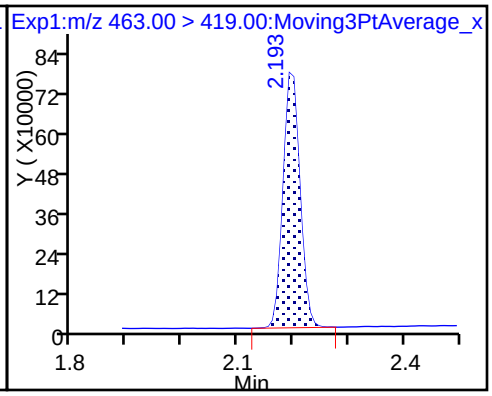
8 Perfluorooctane sulfonic acid (M)



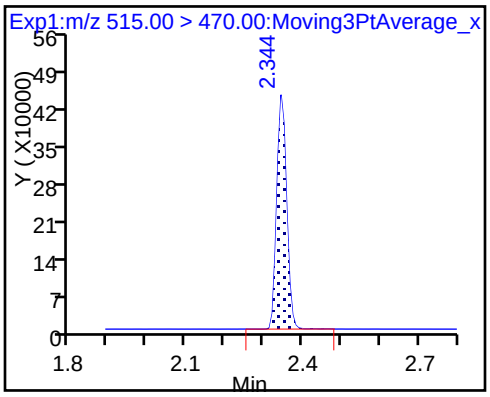
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.344
Y (X10000)
56
49
42
35
28
21
14
7
0
1.8
2.1
2.4
2.7
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

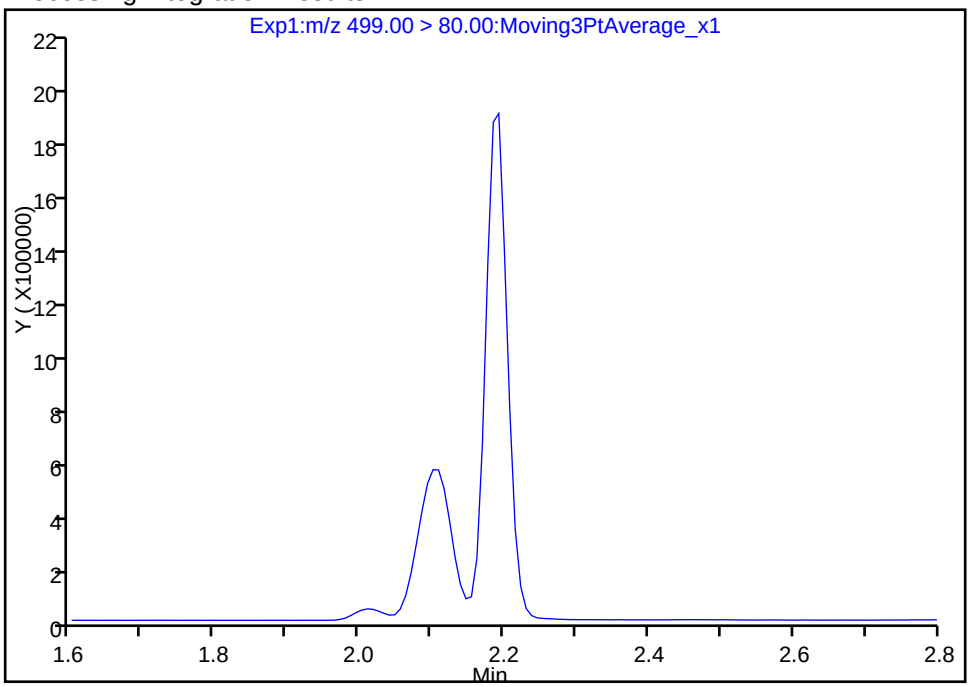
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_007.d
Injection Date: 28-Aug-2017 16:26:31 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

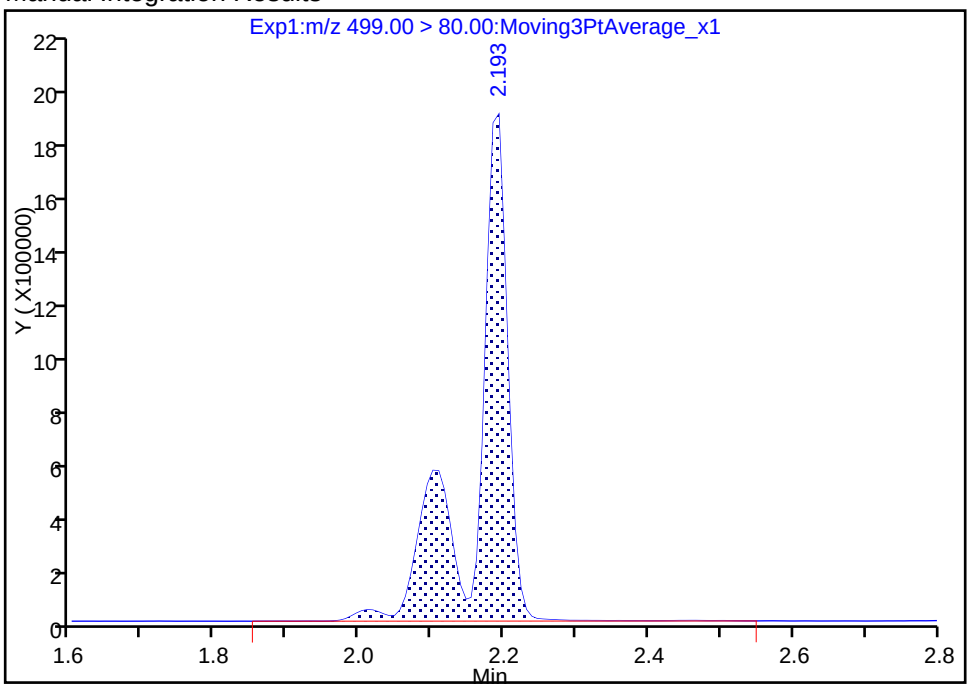
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 5766727
Amount: 41.430674
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:47:34
Audit Action: Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

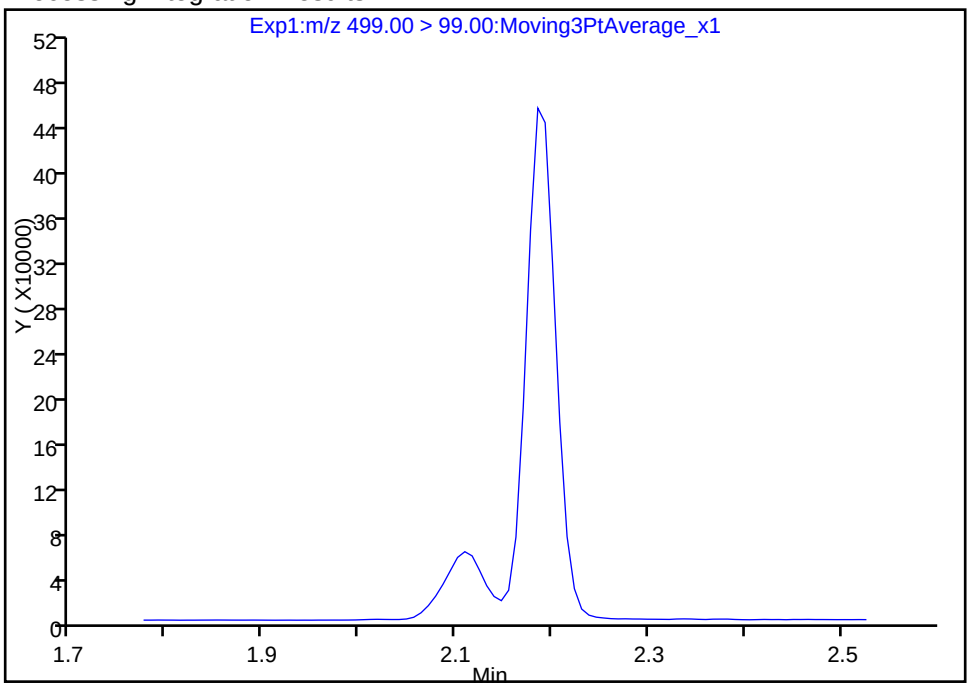
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_007.d
Injection Date: 28-Aug-2017 16:26:31 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

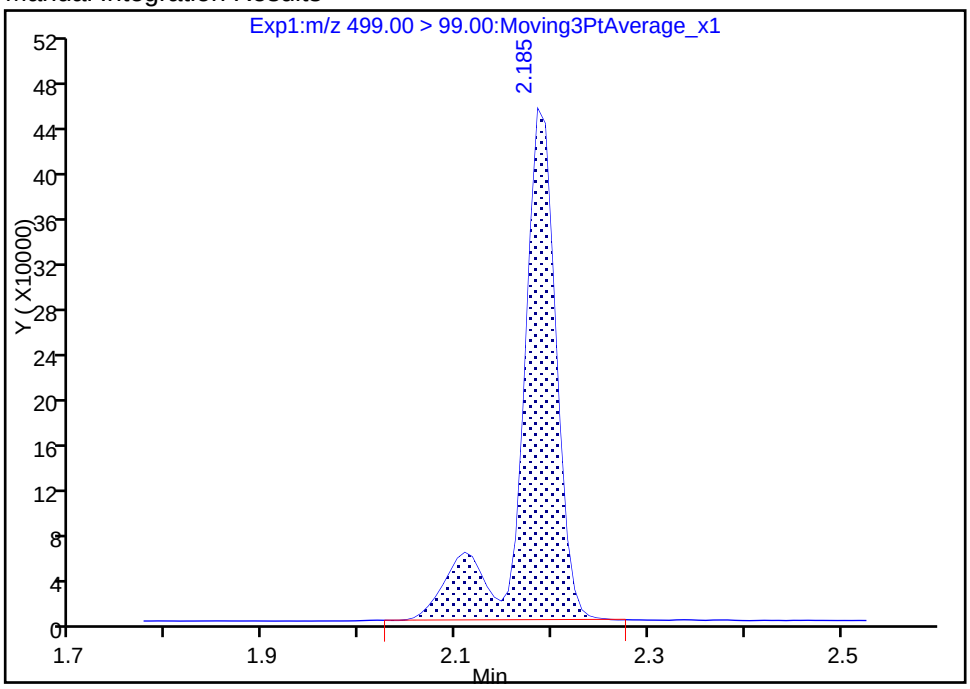
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 1132874
Amount: 41.430674
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:47:47
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

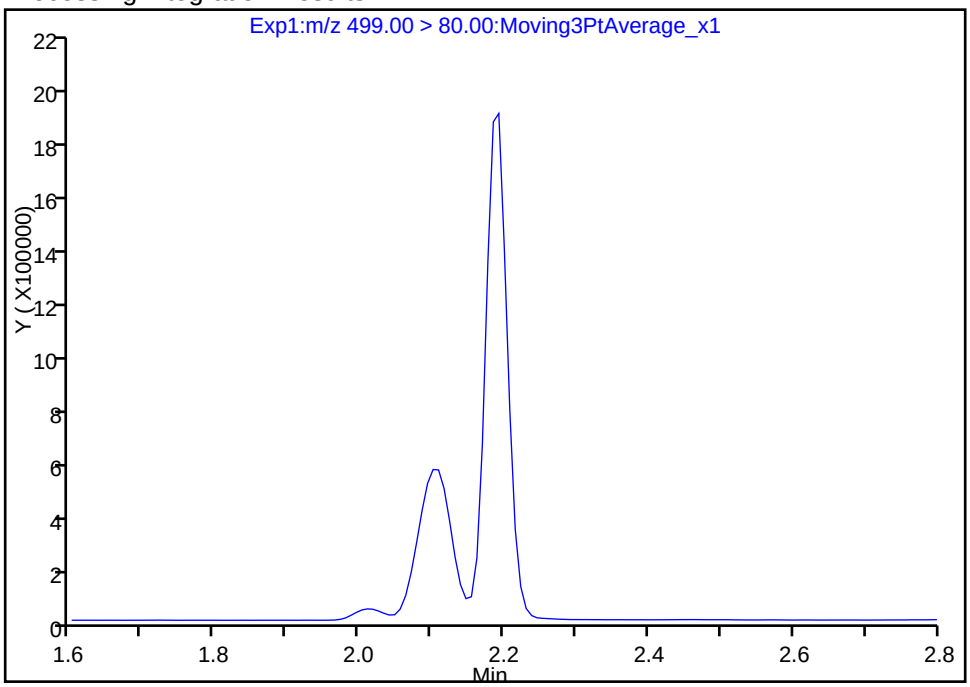
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_007.d
Injection Date: 28-Aug-2017 16:26:31 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

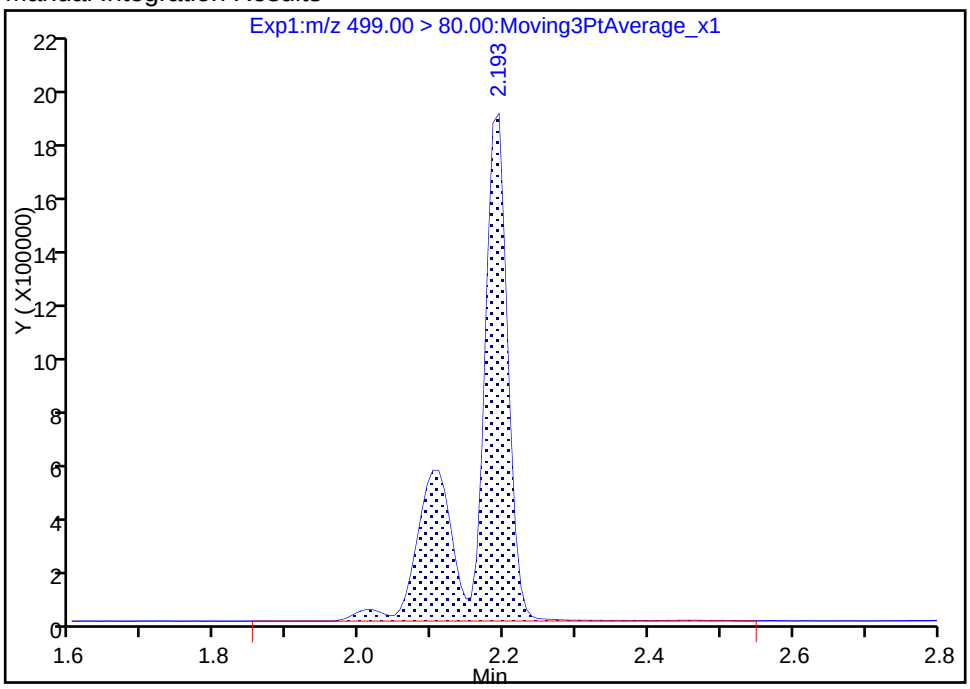
Processing Integration Results

Not Detected
Expected RT: 2.19



Manual Integration Results

RT: 2.19
Area: 5766727
Amount: 41.430674
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:47:47
Audit Action: Manually Integrated Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_008.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 28-Aug-2017 16:31:15 ALS Bottle#: 5 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L5_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 09:50:28 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: phomsophat Date: 28-Aug-2017 18:48:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.449	1.443	0.006	1.000	16752716	132.0		6985	
298.90 > 99.00	1.442	1.443	-0.001	0.995	12435952		1.35(0.00-0.00)	9696	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.569	0.001	1.000	1641063	10.3		11857	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.722	0.0	1.000	10520613	43.8		7514	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.722	0.0	1.000	1836051	15.1		493	
* 6 13C2-PFOA									
415.00 > 370.00	1.927	1.927	0.0		1377973	10.0		9772	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.927	1.928	-0.001	1.000	3934066	31.5		138	
413.00 > 169.00	1.927	1.928	-0.001	1.000	2208665		1.78(0.00-0.00)	3318	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.185	2.185	0.0	1.000	8718144	61.2		2493	M
499.00 > 99.00	2.185	2.185	0.0	1.000	1798063		4.85(0.00-0.00)	1426	M
* 7 13C4 PFOS									
503.00 > 80.00	2.185	2.186	-0.001		4445105	28.7		784	
9 Perfluorononanoic acid									
463.00 > 419.00	2.193	2.195	-0.002	1.000	2528200	30.4		184	
$ 10 13C2 PFDA									
515.00 > 470.00	2.344	2.344	0.0	1.000	771788	10.1		7617	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

Report Date: 29-Aug-2017 09:50:28 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_008.d

Injection Date: 28-Aug-2017 16:31:15 Instrument ID: A8_N

Lims ID: IC L5

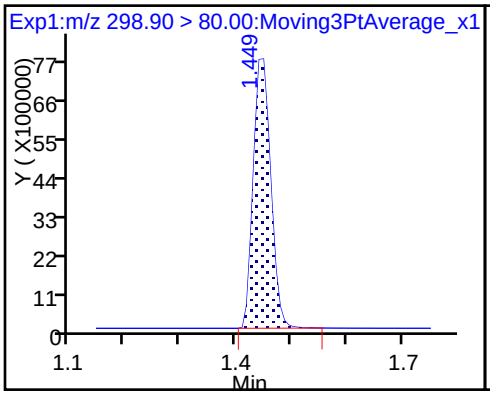
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 6

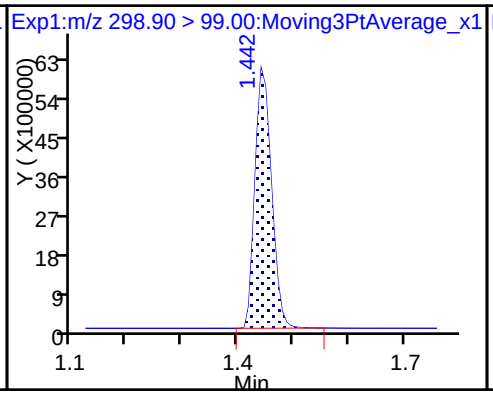
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

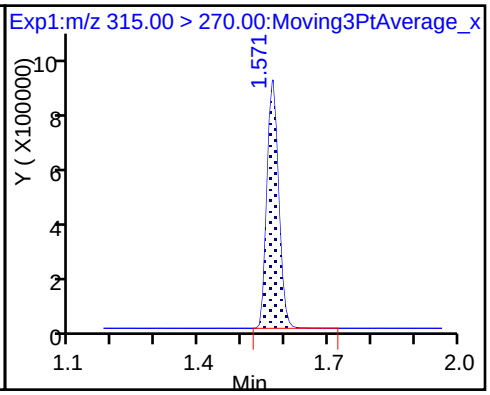
1 Perfluorobutanesulfonic acid



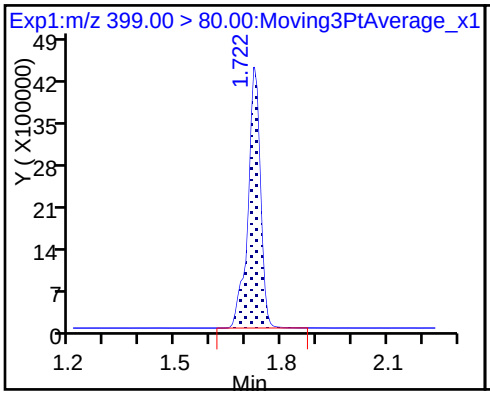
1 Perfluorobutanesulfonic acid



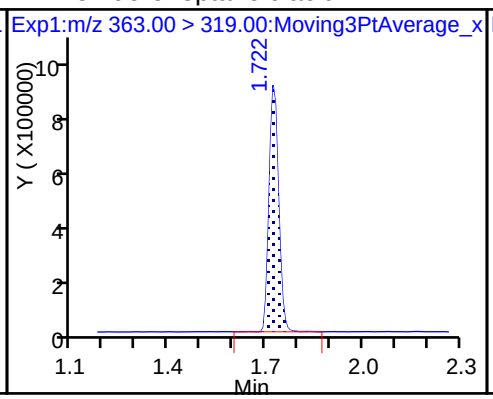
$ 2 13C2 PFHxA



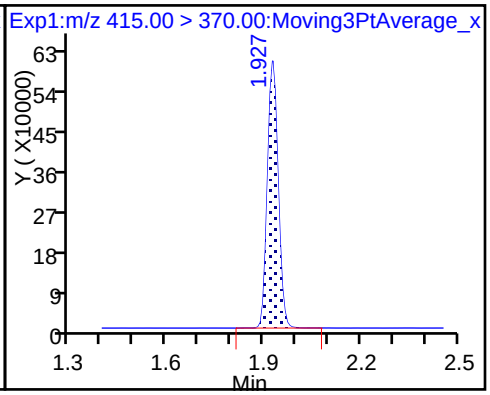
3 Perfluorohexanesulfonic acid



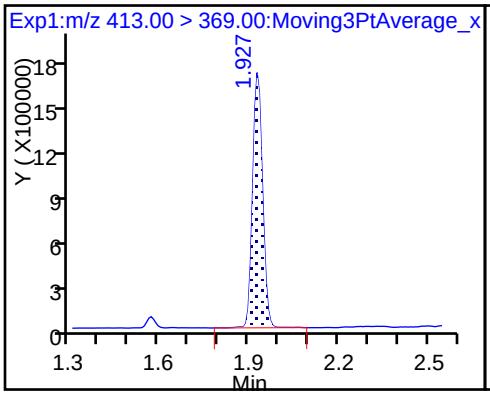
4 Perfluoroheptanoic acid



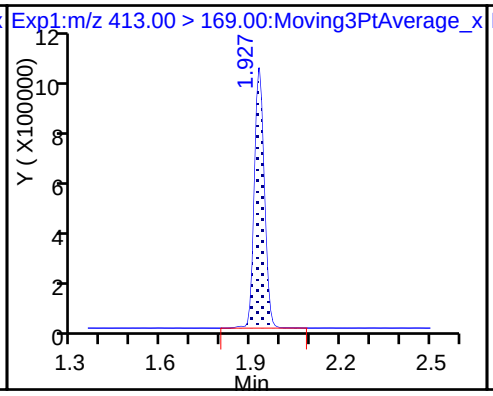
* 6 13C2-PFOA



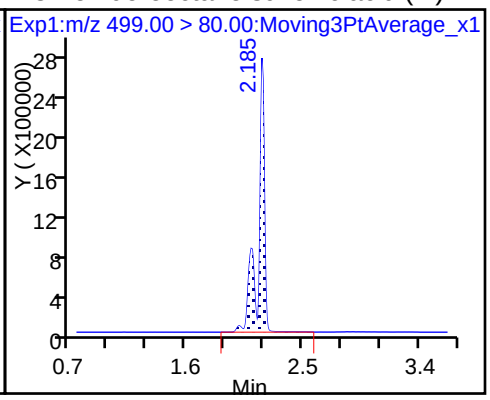
5 Perfluorooctanoic acid



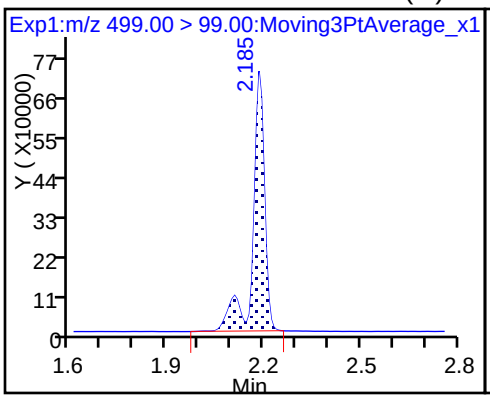
5 Perfluorooctanoic acid



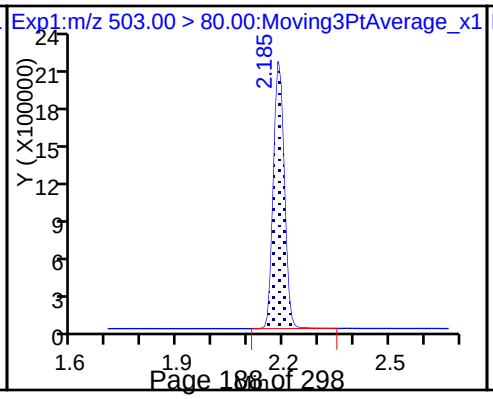
8 Perfluorooctane sulfonic acid (M)



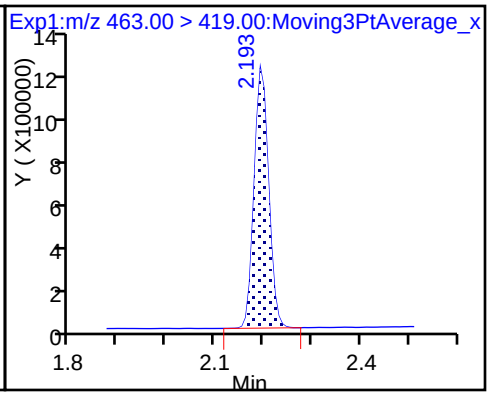
8 Perfluorooctane sulfonic acid (M)



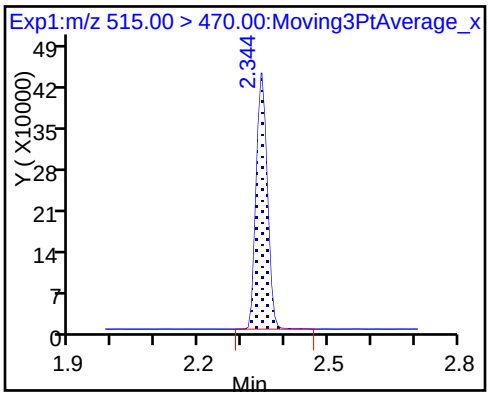
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.344
Y (X10000)
49
42
35
28
21
14
7
0
1.9
2.2
2.5
2.8
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

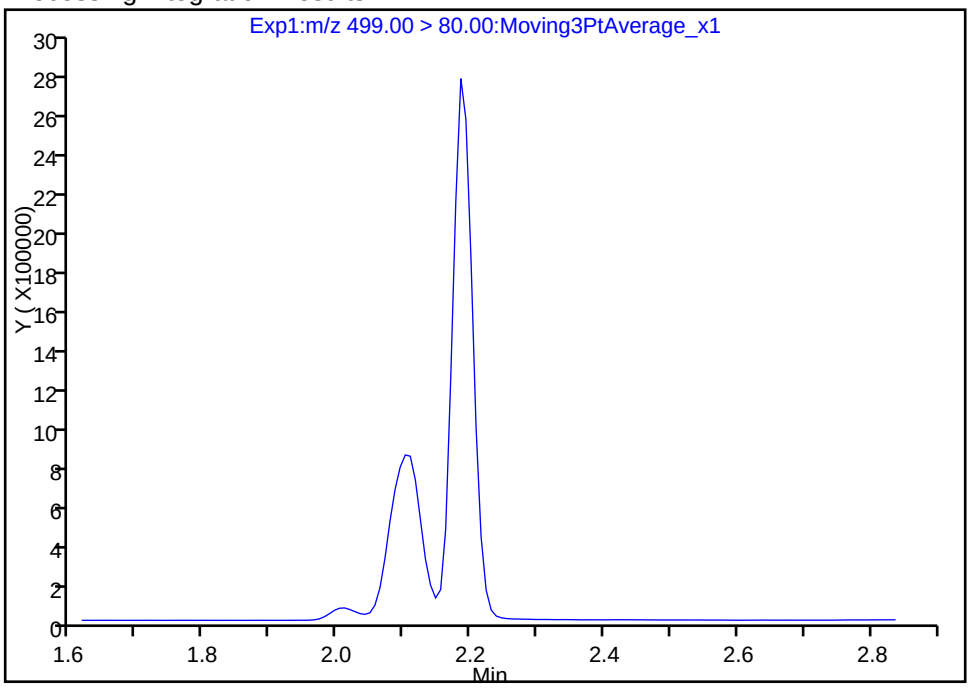
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_008.d
Injection Date: 28-Aug-2017 16:31:15 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

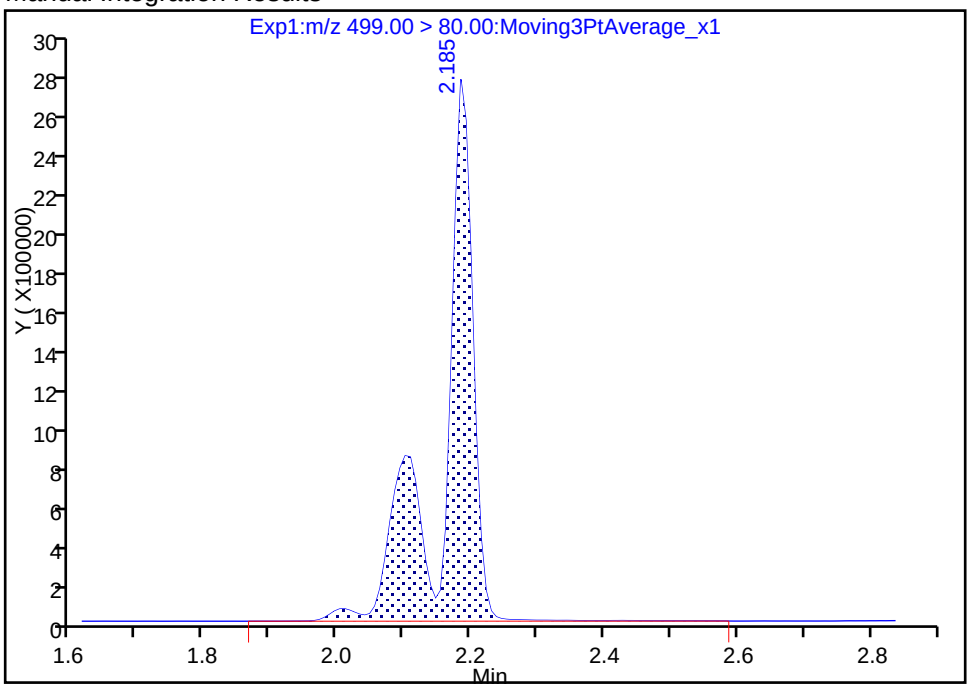
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 8718144
Amount: 61.169230
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:48:14
Audit Action: Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

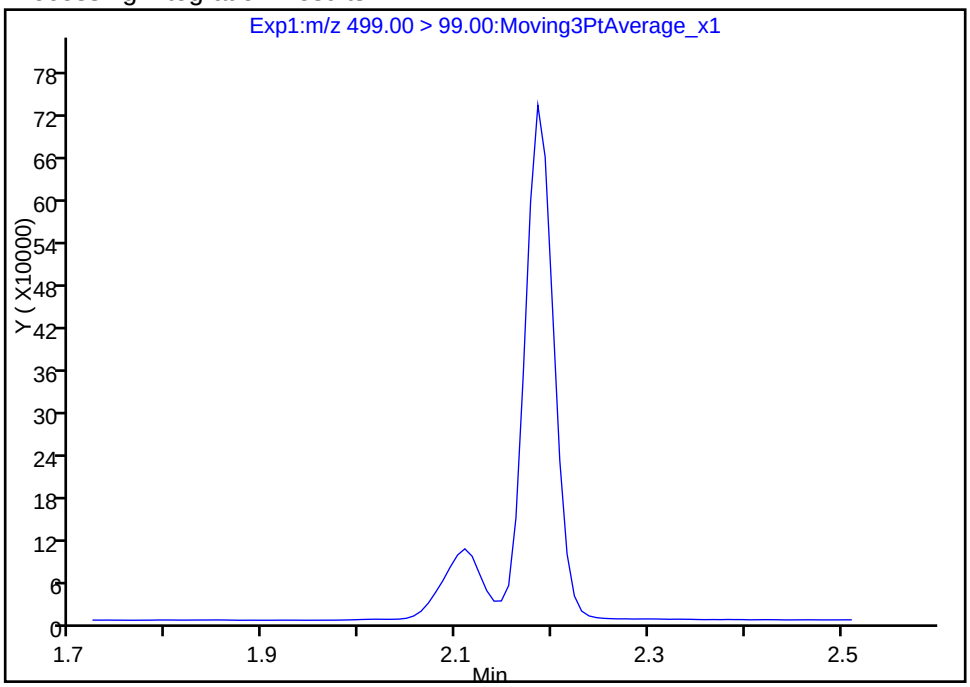
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_008.d
Injection Date: 28-Aug-2017 16:31:15 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

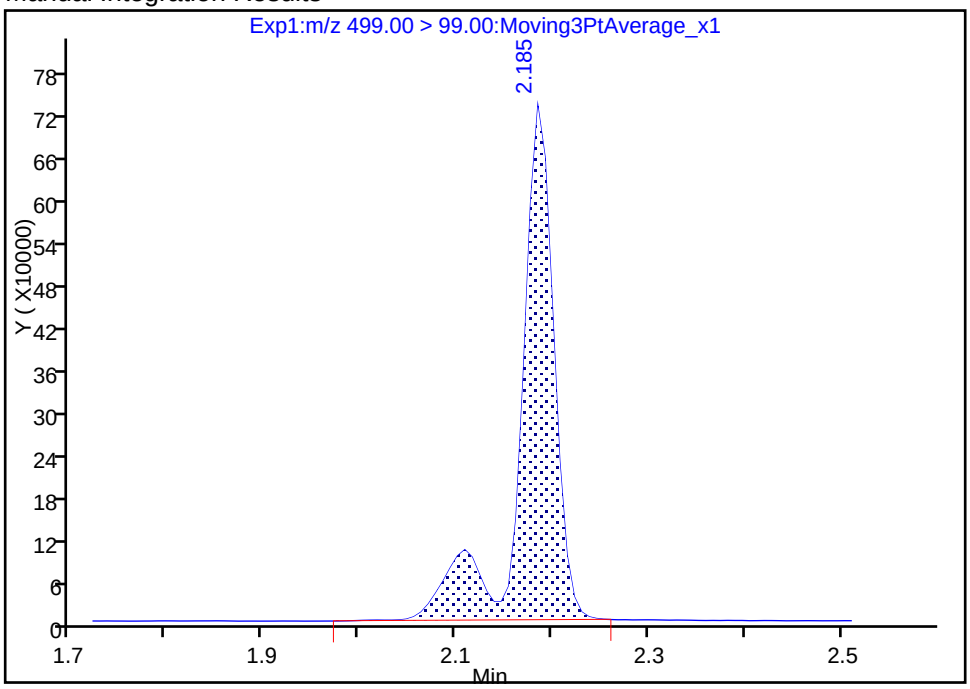
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 1798063
Amount: 61.169230
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:48:26
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

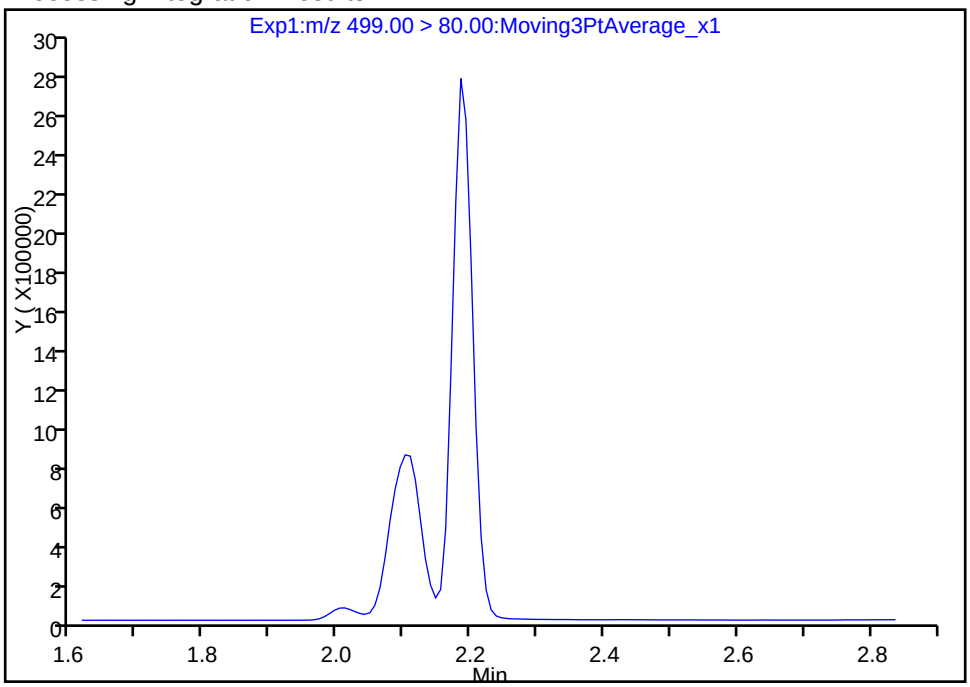
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_008.d
Injection Date: 28-Aug-2017 16:31:15 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

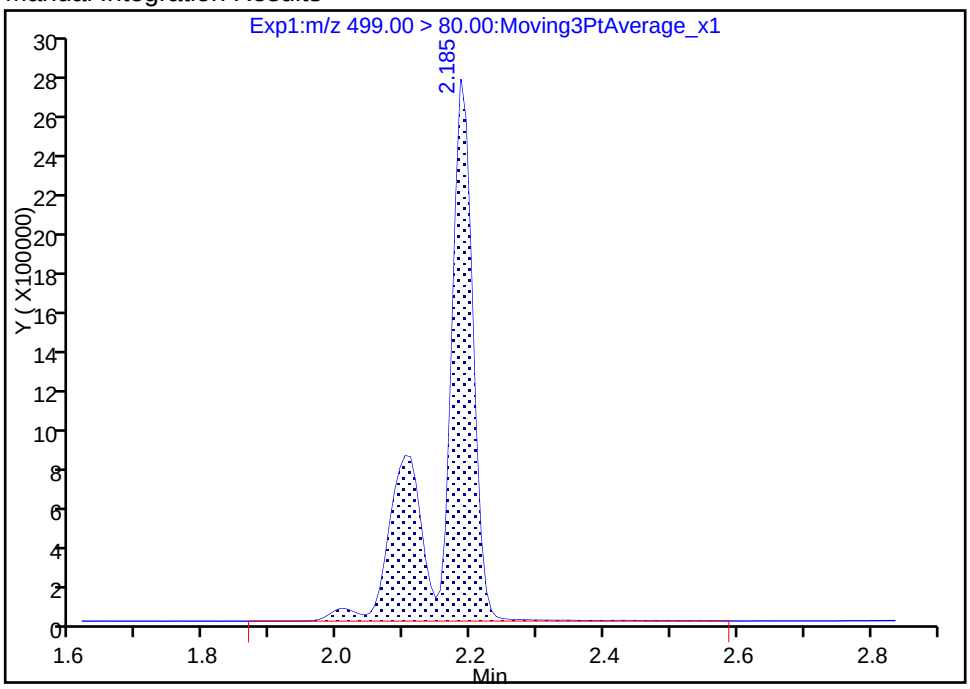
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 8718144
Amount: 61.169230
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:48:26
Audit Action: Manually Integrated Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d
Lims ID: IC L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 28-Aug-2017 16:36:00 ALS Bottle#: 6 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L6_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 09:50:31 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: phomsophat Date: 28-Aug-2017 18:49:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.443	-0.001	1.000	19649569	182.1		7759	
298.90 > 99.00	1.442	1.443	-0.001	1.000	14746575		1.33(0.00-0.00)	9226	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.569	0.001	1.000	1538651	10.1		10492	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.722	0.0	1.000	2357891	20.2		578	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.722	0.0	1.000	13344574	59.0		7564	
* 6 13C2-PFOA									
415.00 > 370.00	1.920	1.927	-0.007		1321116	10.0		10131	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.927	1.928	-0.001	1.000	4755508	39.8		164	
413.00 > 169.00	1.927	1.928	-0.001	1.000	2721327		1.75(0.00-0.00)	3591	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.185	2.185	0.0	1.000	11216718	83.5		2921	M
499.00 > 99.00	2.185	2.185	0.0	1.000	2294110		4.89(0.00-0.00)	2017	M
* 7 13C4 PFOS									
503.00 > 80.00	2.185	2.186	-0.001		4189680	28.7		729	
9 Perfluorononanoic acid									
463.00 > 419.00	2.193	2.195	-0.002	1.000	3218606	40.3		234	
$ 10 13C2 PFDA									
515.00 > 470.00	2.344	2.344	0.0	1.000	752126	10.3		7855	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L6_00020 Amount Added: 1.00 Units: mL

Report Date: 29-Aug-2017 09:50:31 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Injection Date: 28-Aug-2017 16:36:00 Instrument ID: A8_N

Lims ID: IC L6

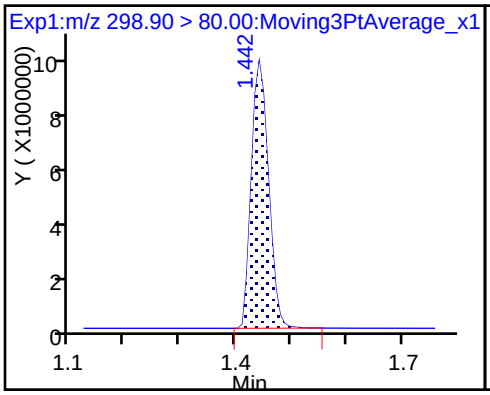
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 7

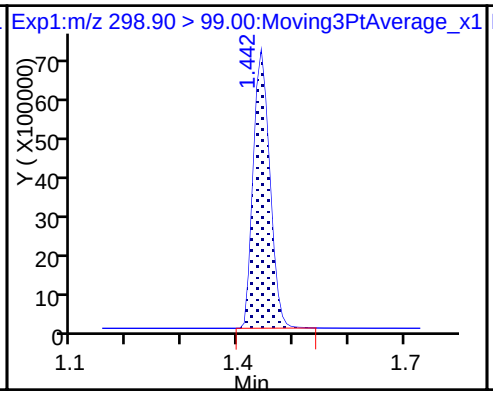
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

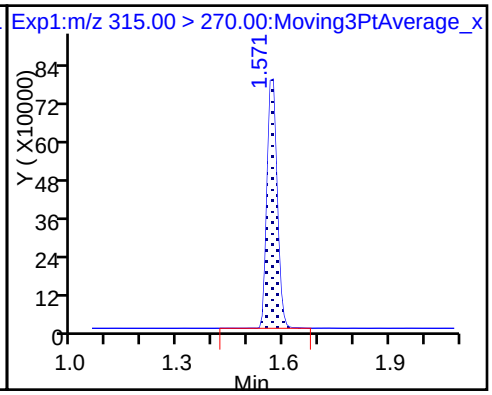
1 Perfluorobutanesulfonic acid



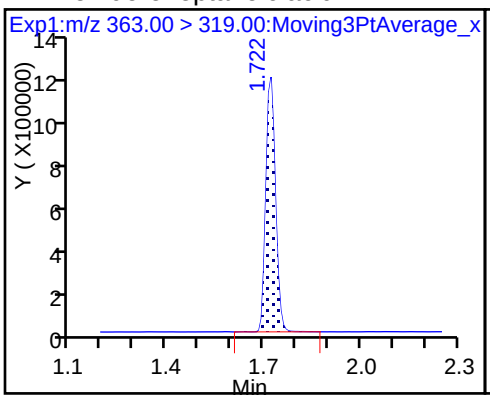
1 Perfluorobutanesulfonic acid



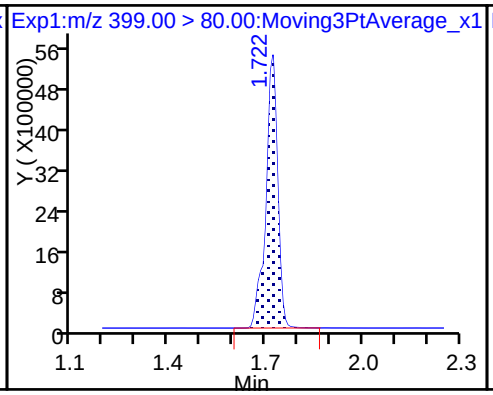
$ 2 13C2 PFHxA



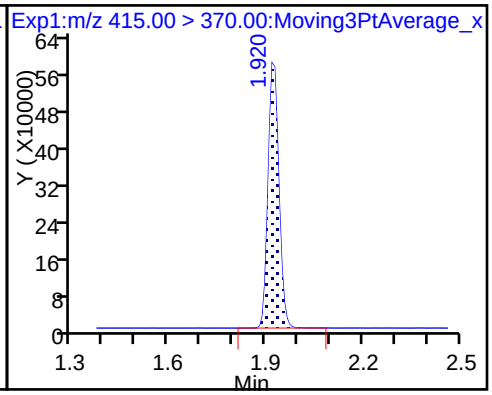
4 Perfluoroheptanoic acid



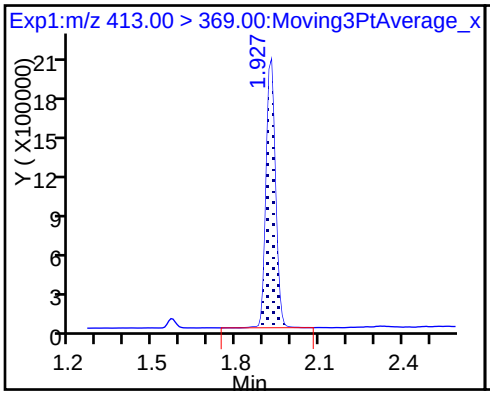
3 Perfluorohexanesulfonic acid



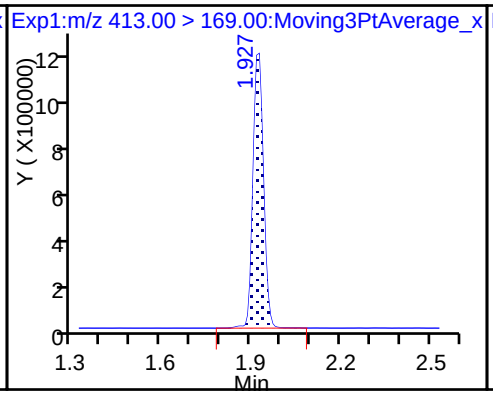
* 6 13C2-PFOA



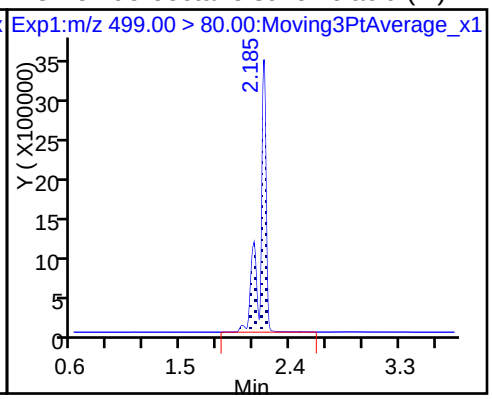
5 Perfluorooctanoic acid



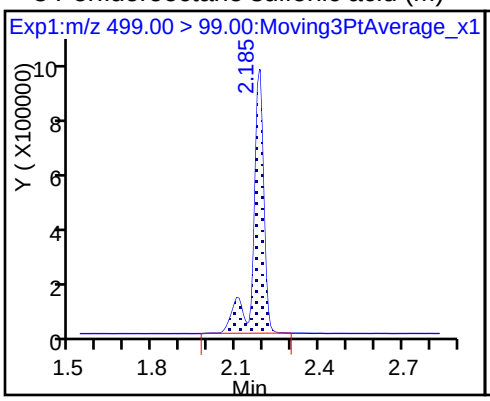
5 Perfluorooctanoic acid



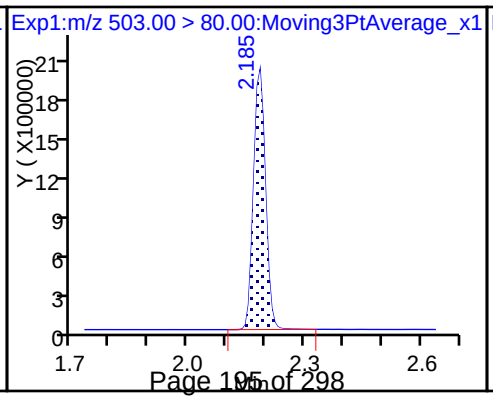
8 Perfluorooctane sulfonic acid (M)



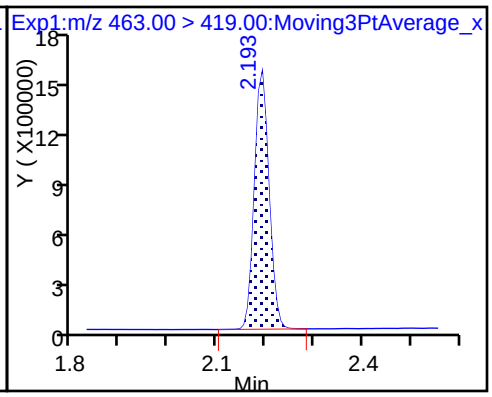
8 Perfluorooctane sulfonic acid (M)



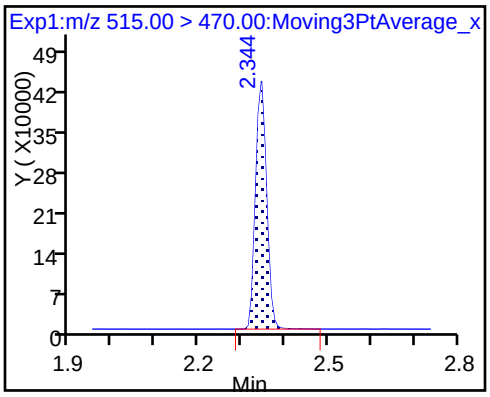
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.344
Y (X10000)
49
42
35
28
21
14
7
0
1.9
2.2
2.5
2.8
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

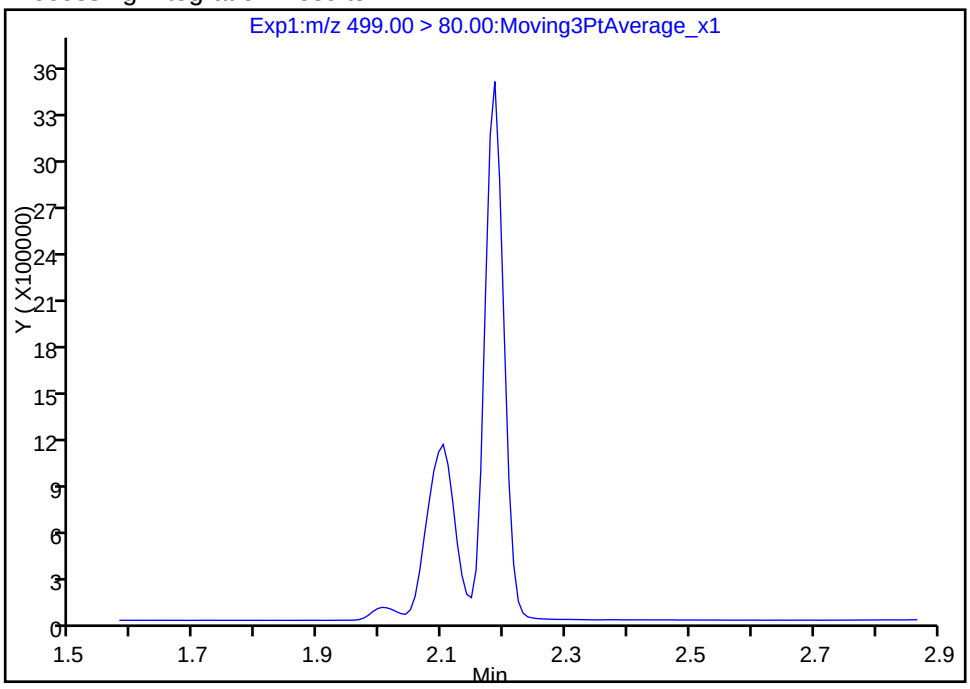
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d
Injection Date: 28-Aug-2017 16:36:00 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

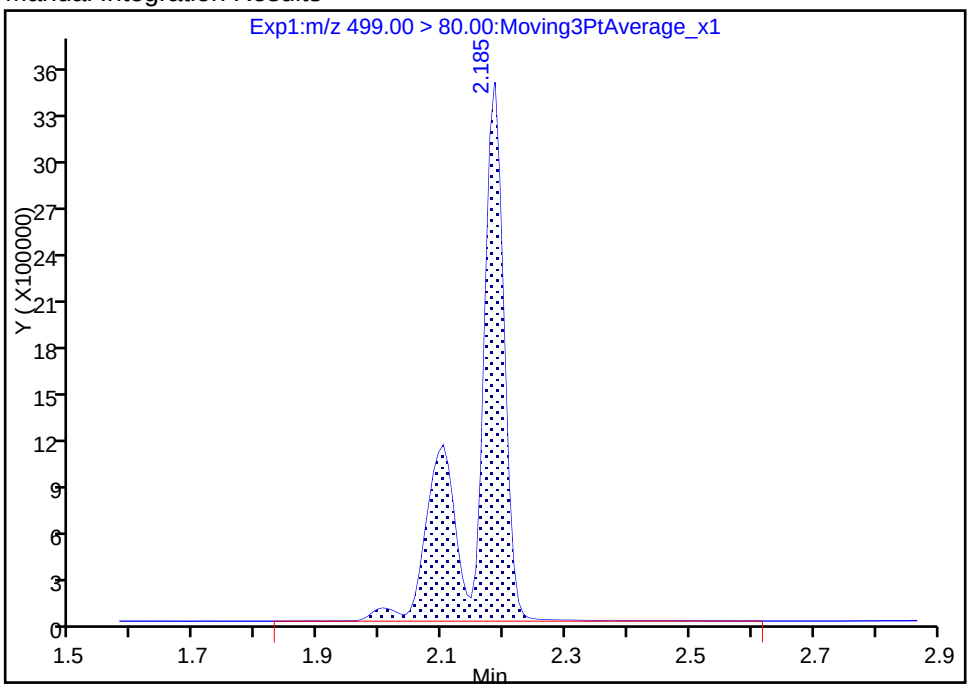
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 11216718
Amount: 83.497976
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:48:42
Audit Action: Assigned Compound ID Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

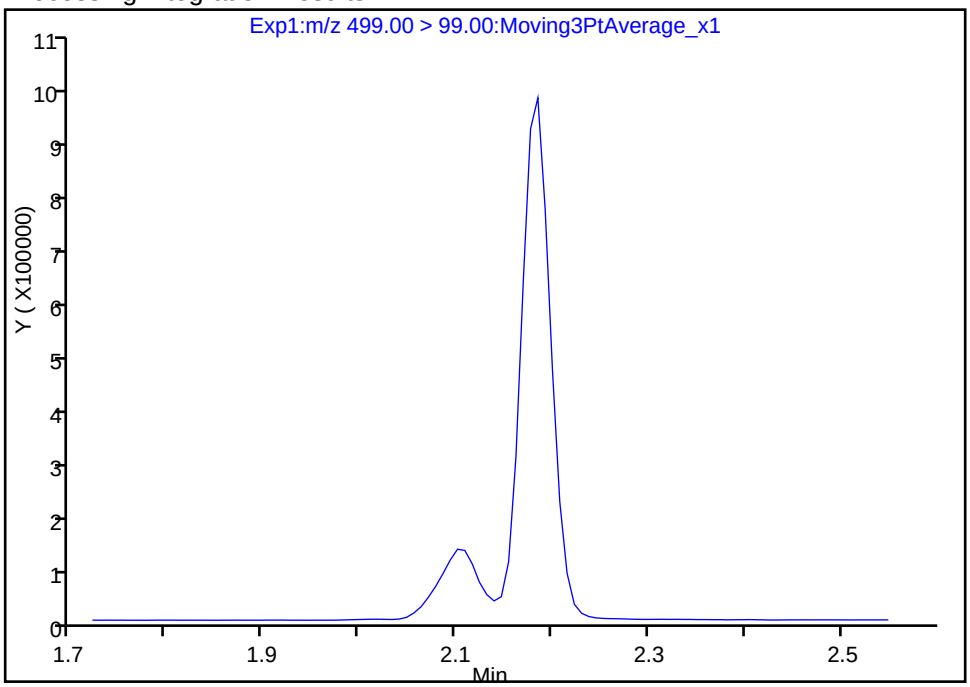
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d
Injection Date: 28-Aug-2017 16:36:00 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

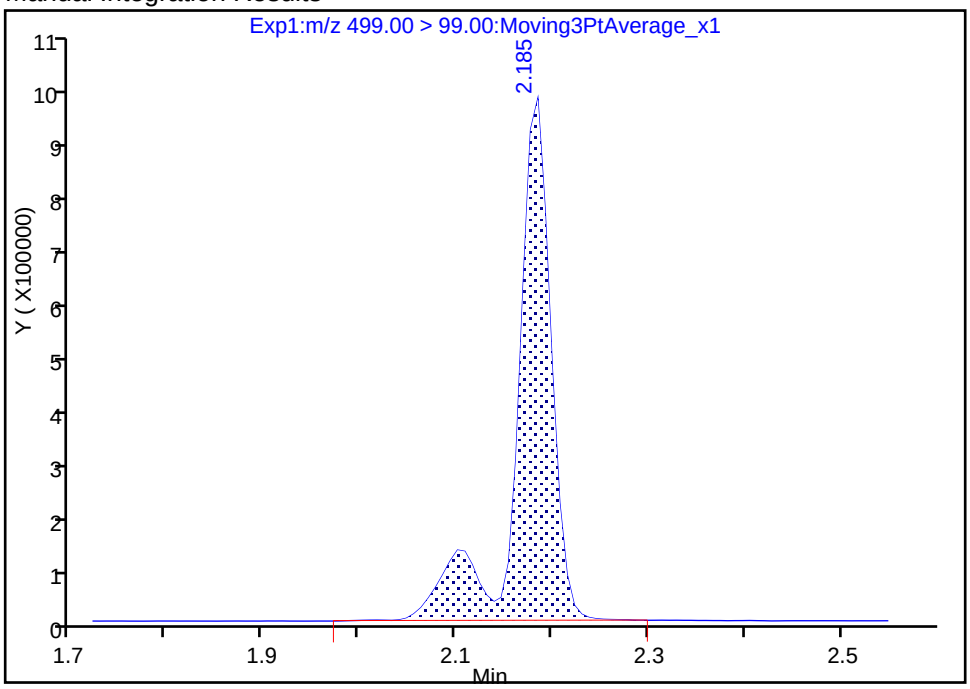
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 2294110
Amount: 83.497976
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:48:56
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

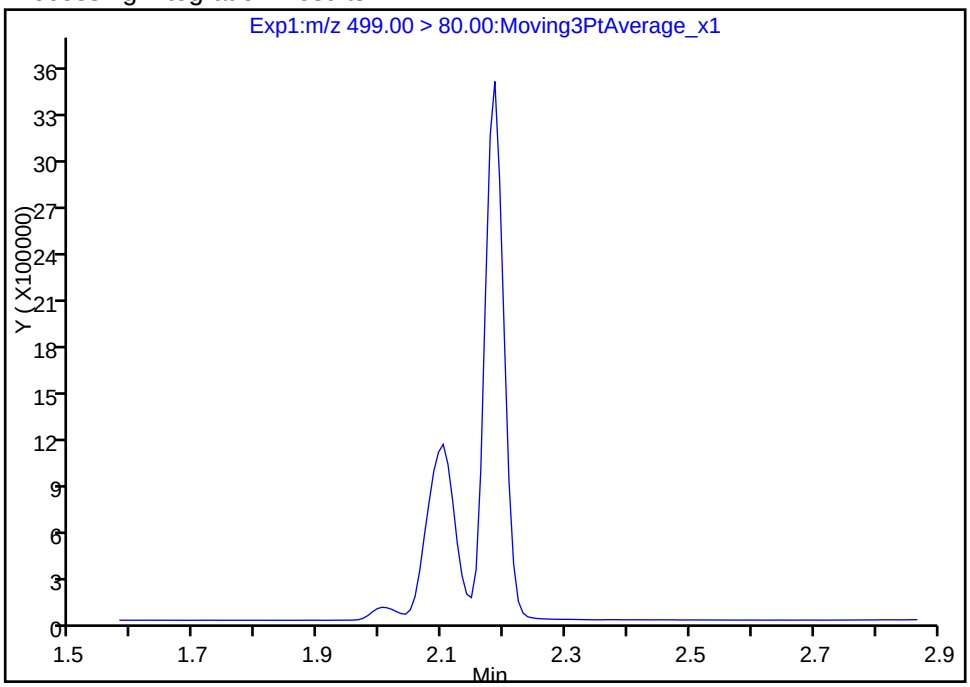
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d
Injection Date: 28-Aug-2017 16:36:00 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

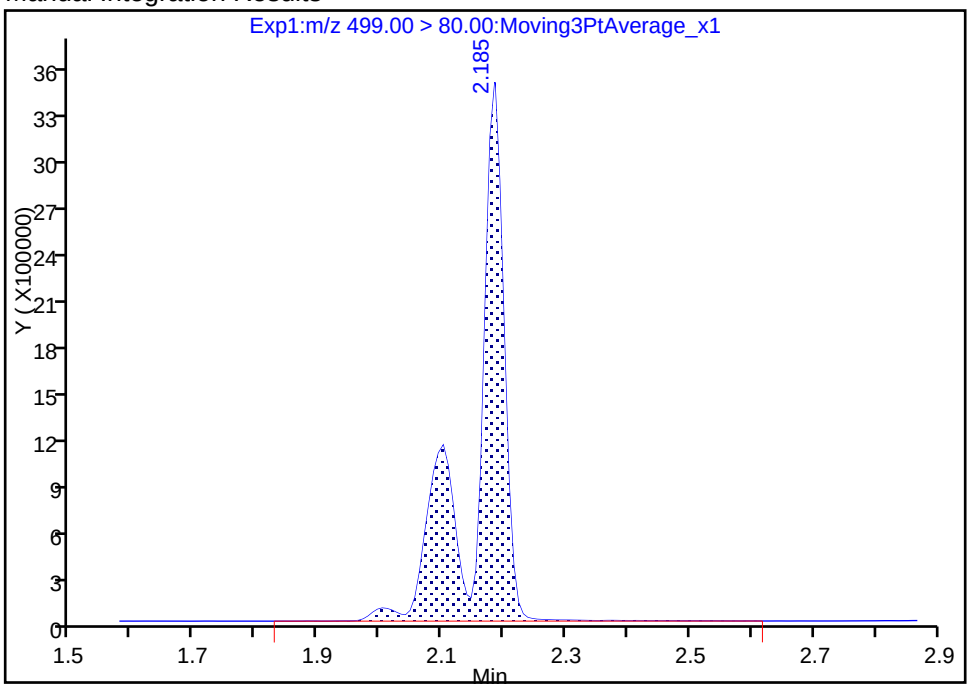
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 11216718
Amount: 83.497976
Amount Units: ng/ml



Reviewer: phomsophat, 28-Aug-2017 18:48:56
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Lab Sample ID: CCVL 320-181689/9 Calibration Date: 08/28/2017 16:45

Instrument ID: A8_N Calib Start Date: 08/28/2017 16:12

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/28/2017 16:36

Lab File ID: 2017.08.28_537ICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.048		21.0	20.0	5.1	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8822	0.9633		2.43	2.22	9.2	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.548	1.650		7.11	6.67	6.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9054	0.9150		4.50	4.45	1.1	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9196	0.9290		8.98	8.89	1.0	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6042	0.6728		4.95	4.45	11.4	50.0
13C2 PFHxA	Ave	1.151	1.140		9.90	10.0	-1.0	30.0
13C2 PFDA	Ave	0.5532	0.5723		10.3	10.0	3.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_011.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 28-Aug-2017 16:45:29 ALS Bottle#: 2 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L2
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 09:50:35 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: phomsophat Date: 28-Aug-2017 18:51:03

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	1.443	-0.001	1.000	3172643	21.0		2634	
298.90 > 99.00	1.434	1.443	-0.009	0.995	2239599		1.42(0.00-0.00)	3750	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.563	1.569	-0.006	1.000	1508739	9.90		11296	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.715	1.722	-0.007	1.000	1665152	7.11		2162	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.715	1.722	-0.007	1.000	283438	2.43		71.8	
* 6 13C2-PFOA									
415.00 > 370.00	1.920	1.927	-0.007		1323726	10.0		8646	
5 Perfluorooctanoic acid									M
413.00 > 369.00	1.920	1.928	-0.008	1.000	538758	4.50		21.3	M
413.00 > 169.00	1.920	1.928	-0.008	1.000	295826		1.82(0.00-0.00)	483	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.177	2.185	-0.008	1.000	1250234	8.98		367	
499.00 > 99.00	2.177	2.185	-0.008	1.000	252516		4.95(0.00-0.00)	259	
* 7 13C4 PFOS									
503.00 > 80.00	2.177	2.186	-0.009		4341124	28.7		717	
9 Perfluorononanoic acid									
463.00 > 419.00	2.185	2.195	-0.010	1.000	395902	4.95		32.1	
$ 10 13C2 PFDA									
515.00 > 470.00	2.337	2.344	-0.007	1.000	757531	10.3		6362	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L2_00020 Amount Added: 1.00 Units: mL

Report Date: 29-Aug-2017 09:50:36 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_011.d

Injection Date: 28-Aug-2017 16:45:29 Instrument ID: A8_N

Lims ID: CCVL

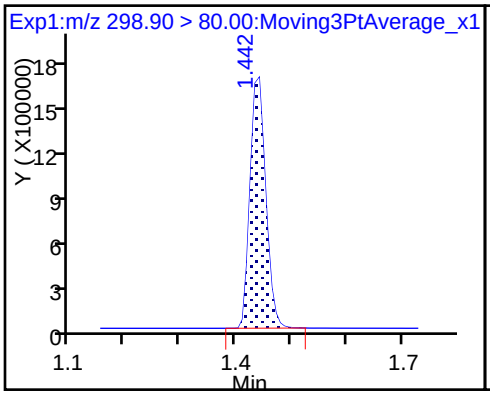
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 9

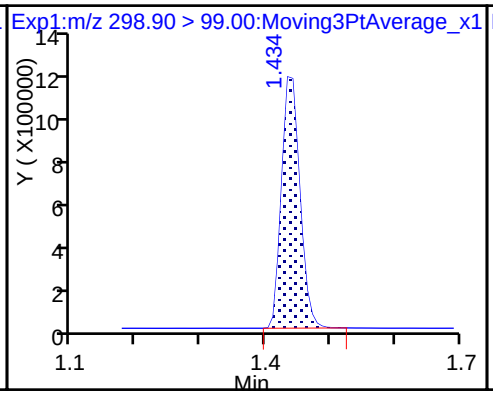
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

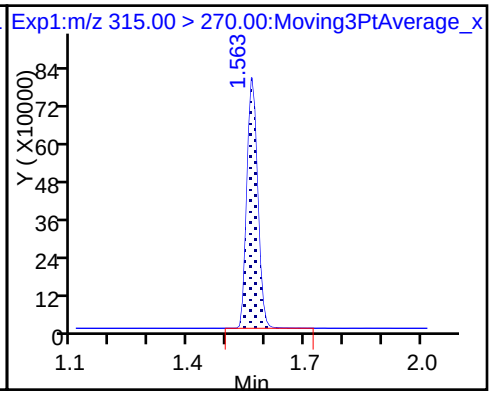
1 Perfluorobutanesulfonic acid



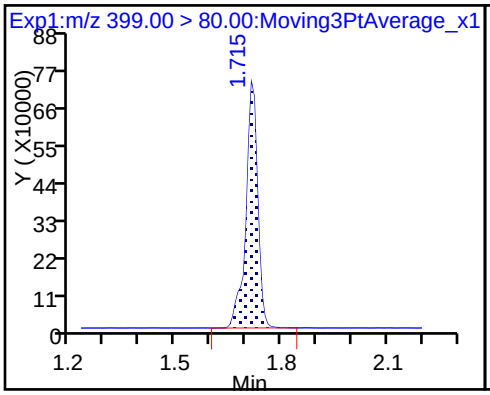
1 Perfluorobutanesulfonic acid



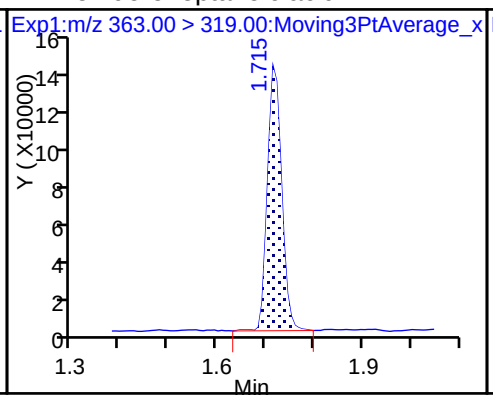
$ 2 13C2 PFHxA



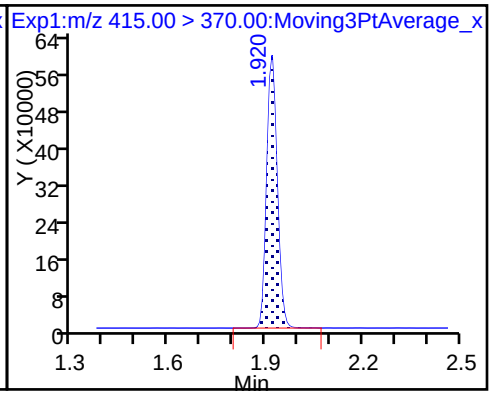
3 Perfluorohexanesulfonic acid



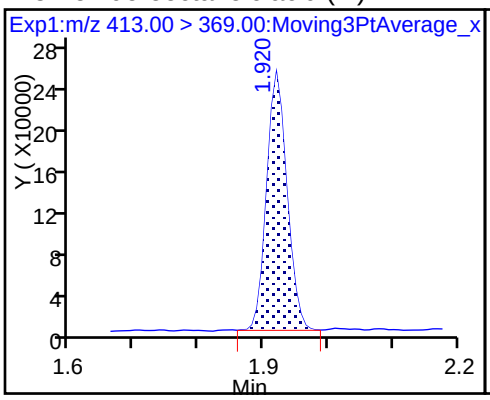
4 Perfluoroheptanoic acid



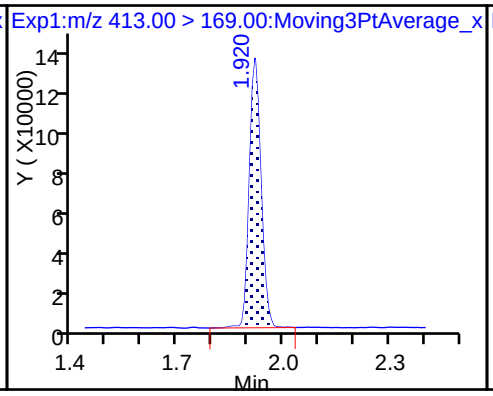
* 6 13C2-PFOA



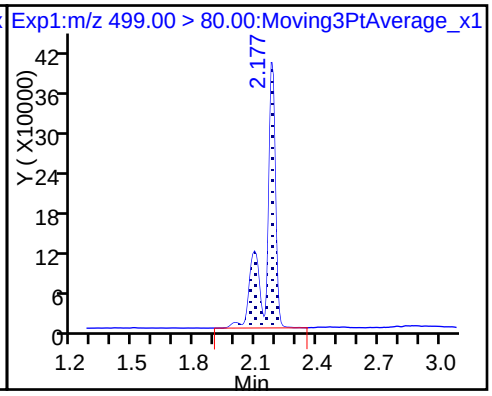
5 Perfluorooctanoic acid (M)



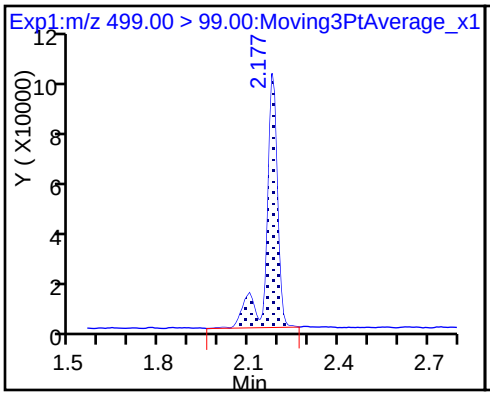
5 Perfluorooctanoic acid



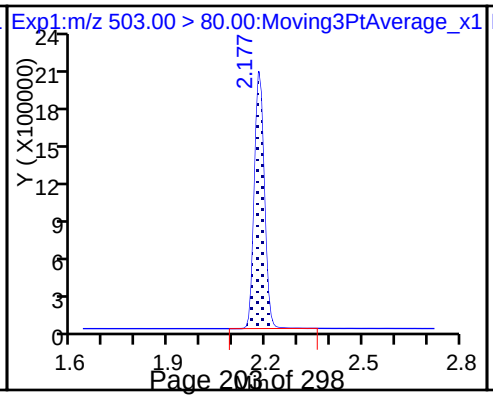
8 Perfluorooctane sulfonic acid



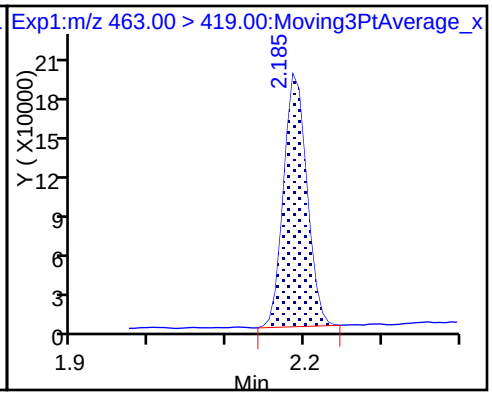
8 Perfluorooctane sulfonic acid



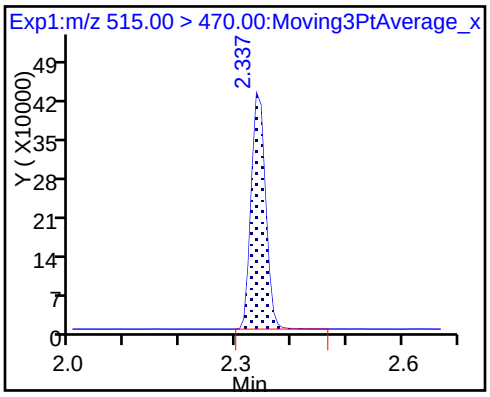
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.337
Y (X10000)
49
42
35
28
21
14
7
0
2.0
2.3
2.6
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

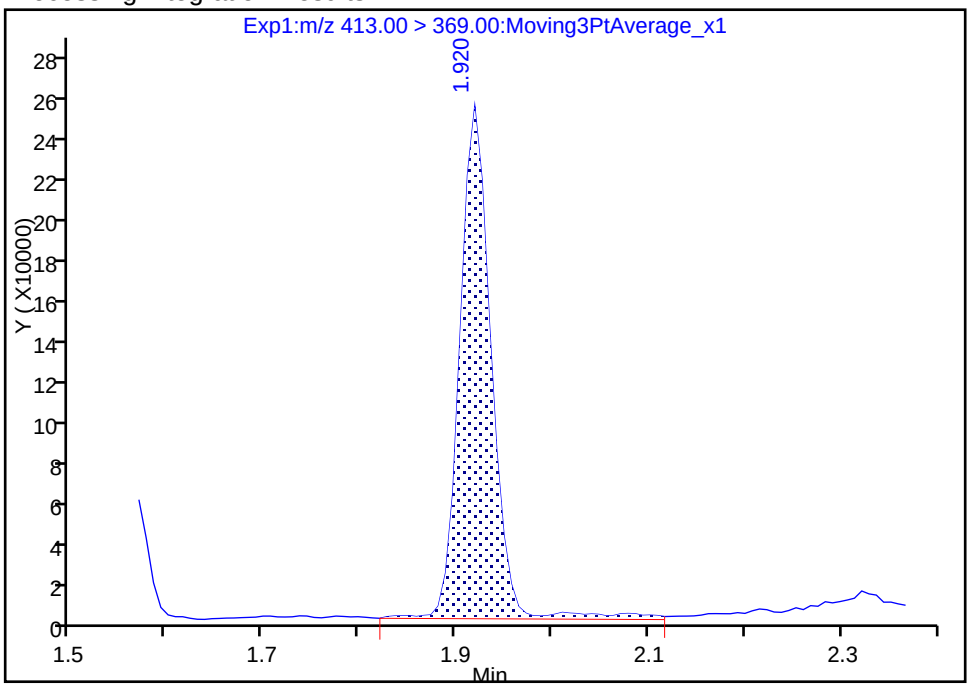
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_011.d
Injection Date: 28-Aug-2017 16:45:29 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

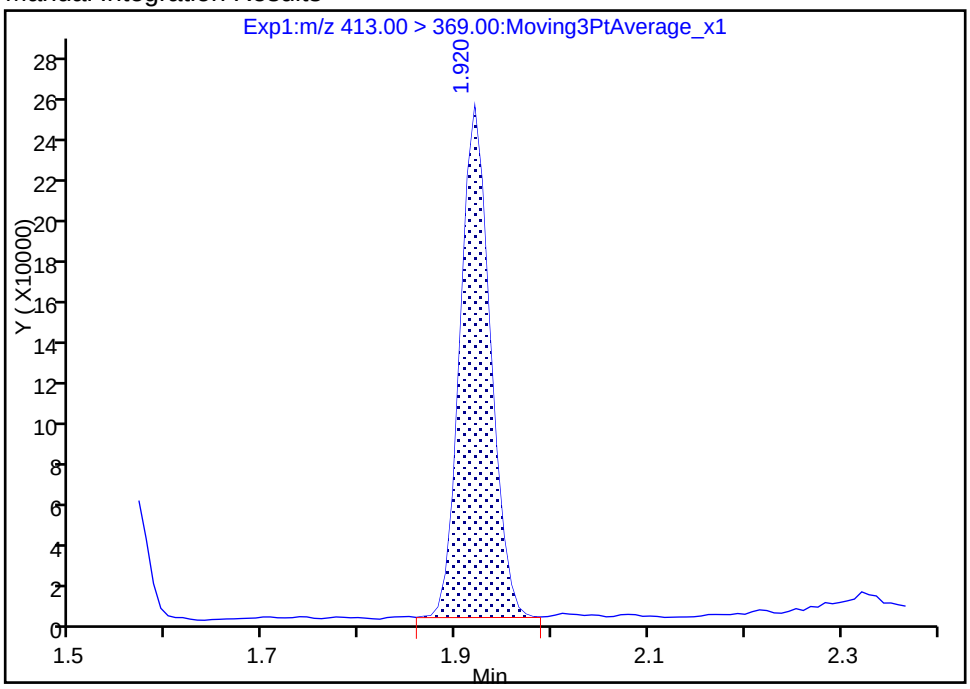
Processing Integration Results

RT: 1.92
Area: 566539
Amount: 4.726955
Amount Units: ng/ml



Manual Integration Results

RT: 1.92
Area: 538758
Amount: 4.495162
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 09:47:21
Audit Action: Manually Integrated Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Lab Sample ID: ICV 320-181689/11 Calibration Date: 08/28/2017 16:54

Instrument ID: A8_N Calib Start Date: 08/28/2017 16:12

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/28/2017 16:36

Lab File ID: 2017.08.28_537ICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9091		106	100	5.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8822	0.9886		11.2	10.0	12.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.548	1.731		22.5	20.1	11.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9054	0.9626		21.8	20.5	6.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9196	1.099		23.5	19.7	19.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6042	0.7599		25.3	20.1	25.8	30.0
13C2 PFHxA	Ave	1.151	1.214		10.5	10.0	5.4	30.0
13C2 PFDA	Ave	0.5532	0.5948		10.8	10.0	7.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_013.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 28-Aug-2017 16:54:58 ALS Bottle#: 7 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 13:22:54 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 13:22:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.443	-0.001	1.000	14648729	105.7		8135	
298.90 > 99.00	1.442	1.443	-0.001	1.000	10795384		1.36(0.00-0.00)	10534	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.563	1.569	-0.006	1.000	1517941	10.5		11705	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.722	0.0	1.000	1236095	11.2		306	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.722	0.0	1.000	5594140	22.5		5304	
* 6 13C2-PFOA									
415.00 > 370.00	1.920	1.927	-0.007		1250781	10.0		8959	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.920	1.928	-0.008	1.000	2466365	21.8		86.8	
413.00 > 169.00	1.920	1.928	-0.008	1.000	1412839		1.75(0.00-0.00)	2523	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.185	2.185	0.0	1.000	3483250	23.5		1041	M
499.00 > 99.00	2.185	2.185	0.0	1.000	641333		5.43(0.00-0.00)	643	M
* 7 13C4 PFOS									
503.00 > 80.00	2.185	2.186	-0.001		4615689	28.7		775	
9 Perfluorononanoic acid									
463.00 > 419.00	2.193	2.195	-0.002	1.000	1913068	25.3		163	
$ 10 13C2 PFDA									
515.00 > 470.00	2.344	2.344	0.0	1.000	743941	10.8		7166	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-ICV_00028 Amount Added: 1.00 Units: mL

Report Date: 29-Aug-2017 13:22:55 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_013.d

Injection Date: 28-Aug-2017 16:54:58 Instrument ID: A8_N

Lims ID: ICV

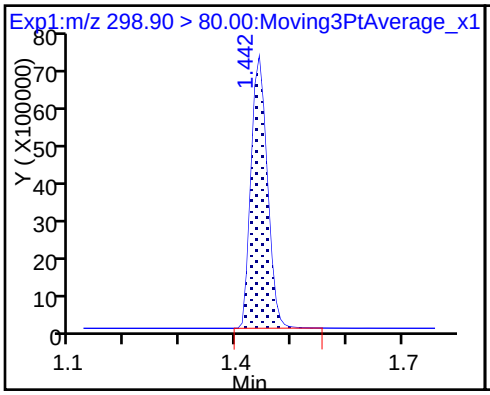
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 11

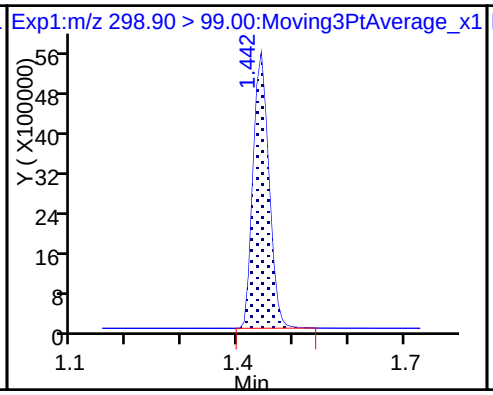
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

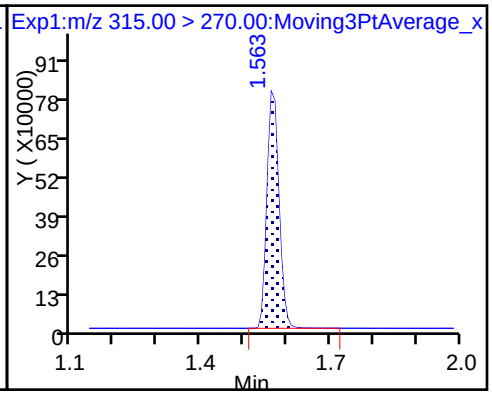
1 Perfluorobutanesulfonic acid



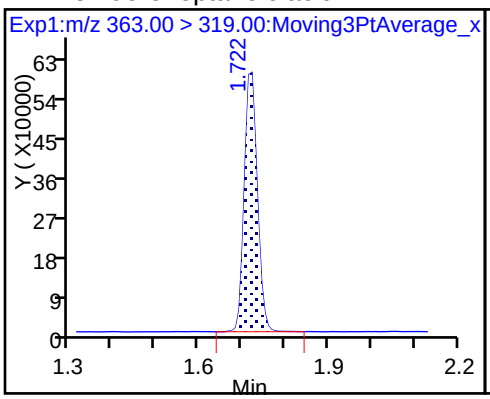
1 Perfluorobutanesulfonic acid



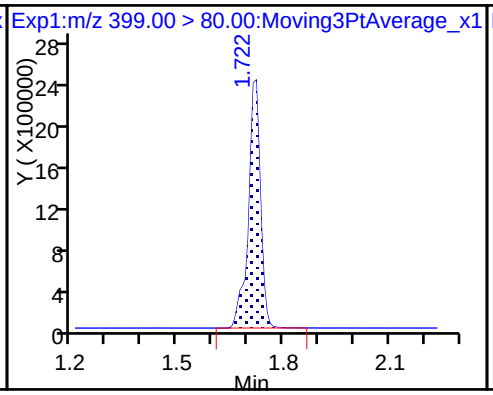
$ 2 13C2 PFHxA



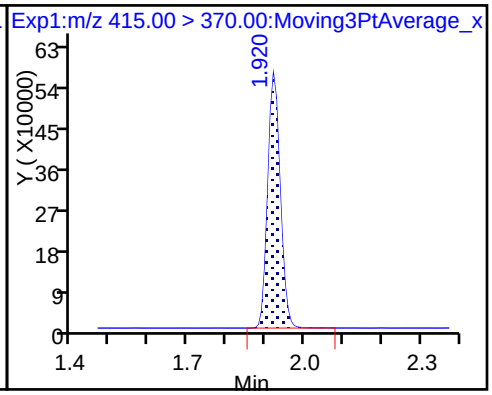
4 Perfluoroheptanoic acid



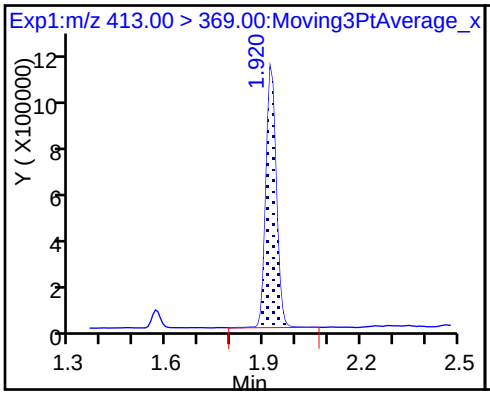
3 Perfluorohexanesulfonic acid



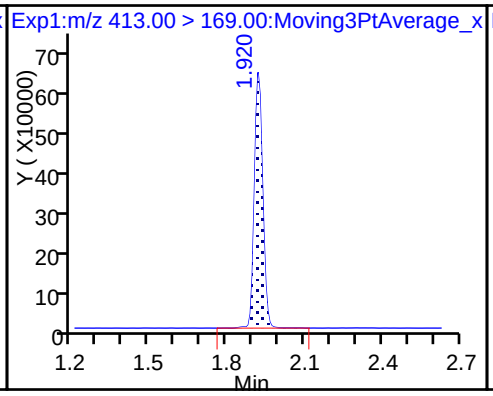
* 6 13C2-PFOA



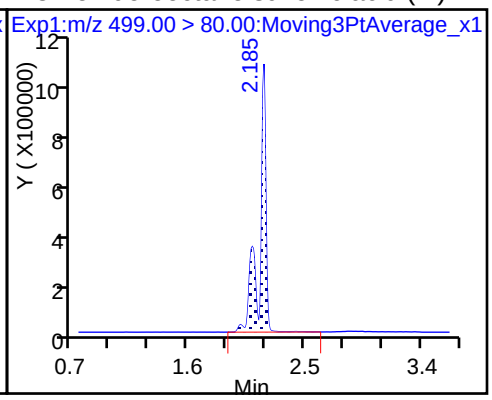
5 Perfluorooctanoic acid



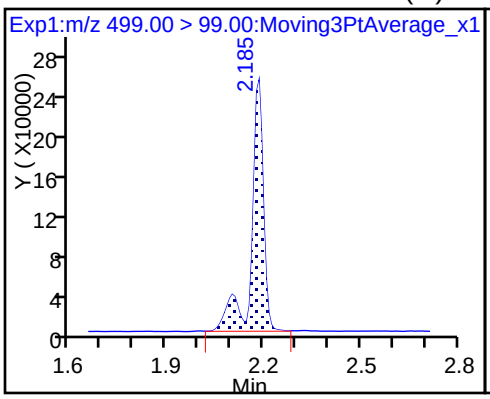
5 Perfluorooctanoic acid



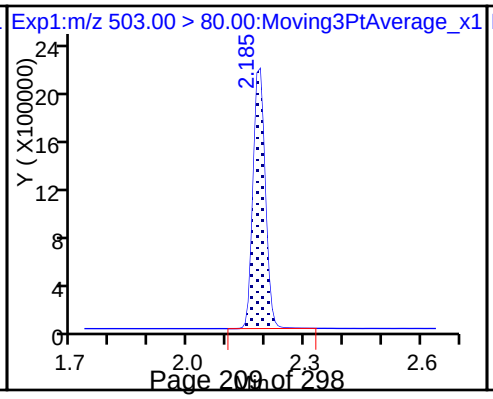
8 Perfluorooctane sulfonic acid (M)



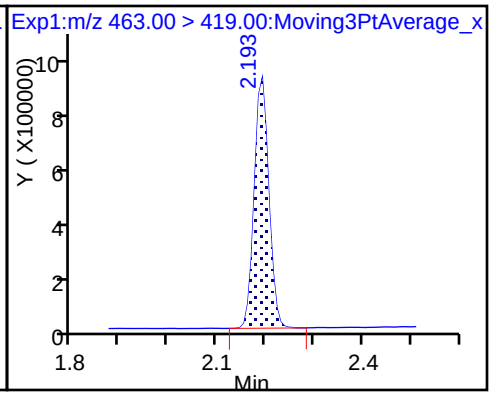
8 Perfluorooctane sulfonic acid (M)



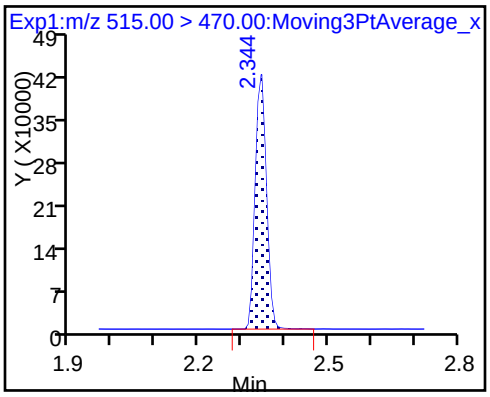
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.344
Y (X10000)
49
42
35
28
21
14
7
0
1.9
2.2
2.5
2.8
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

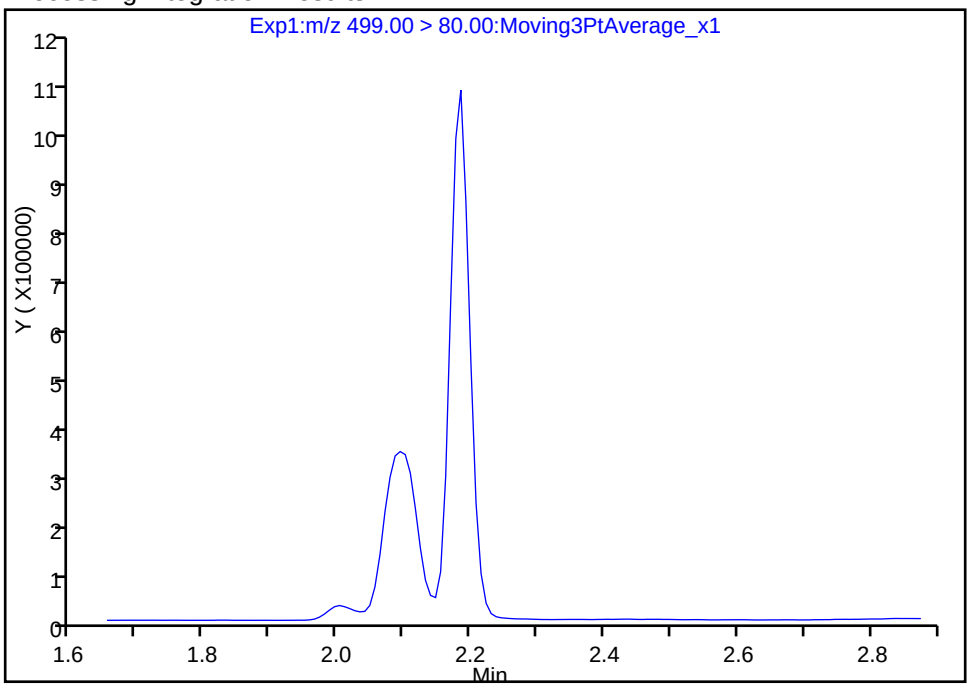
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_013.d
Injection Date: 28-Aug-2017 16:54:58 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

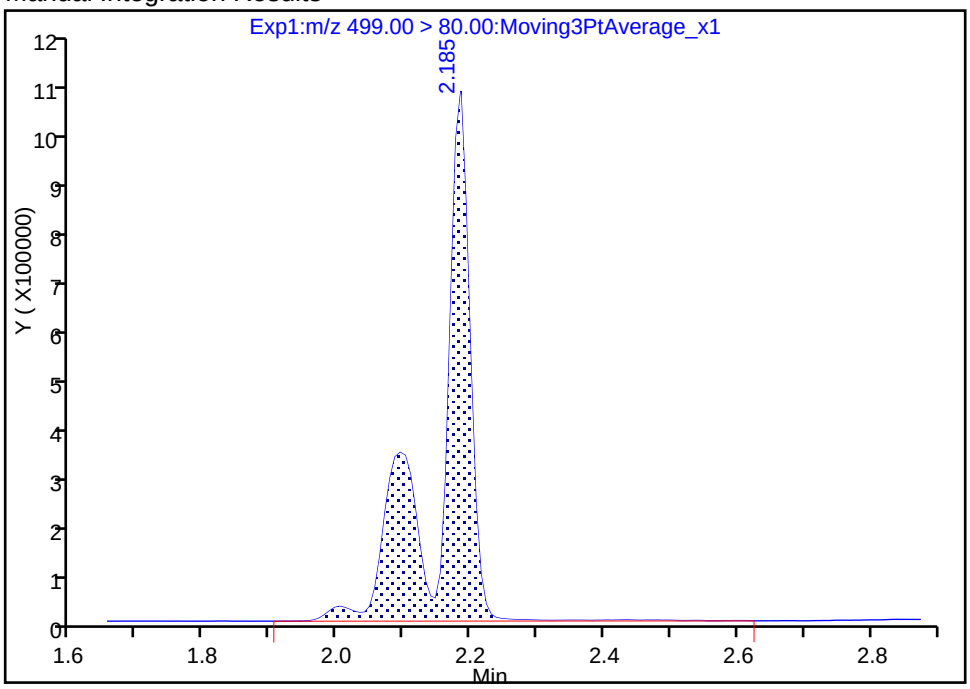
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 3483250
Amount: 23.536350
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 13:22:19
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

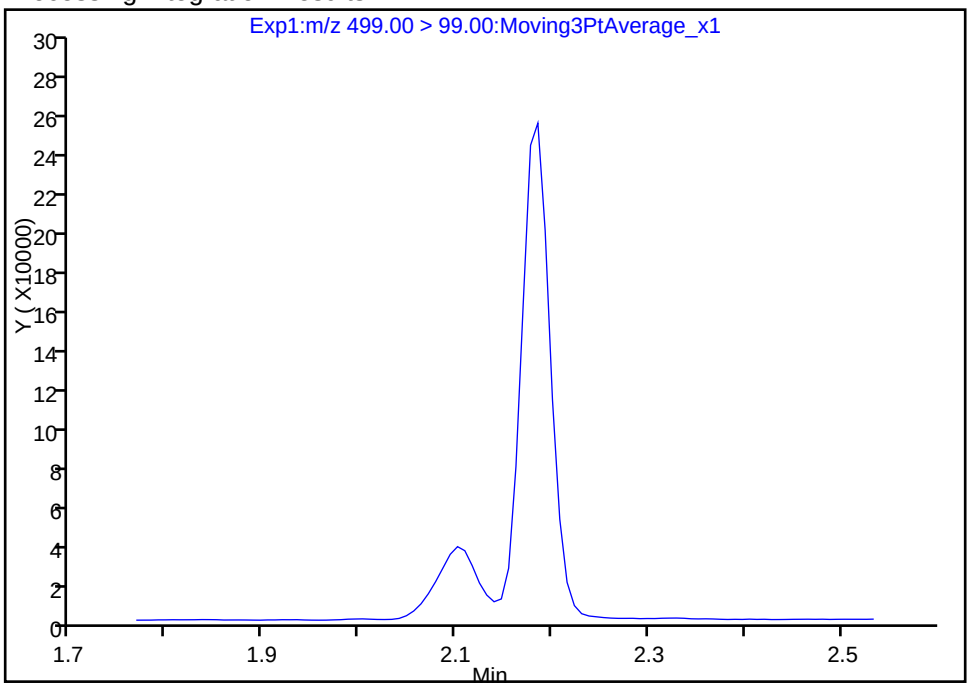
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_013.d
Injection Date: 28-Aug-2017 16:54:58 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

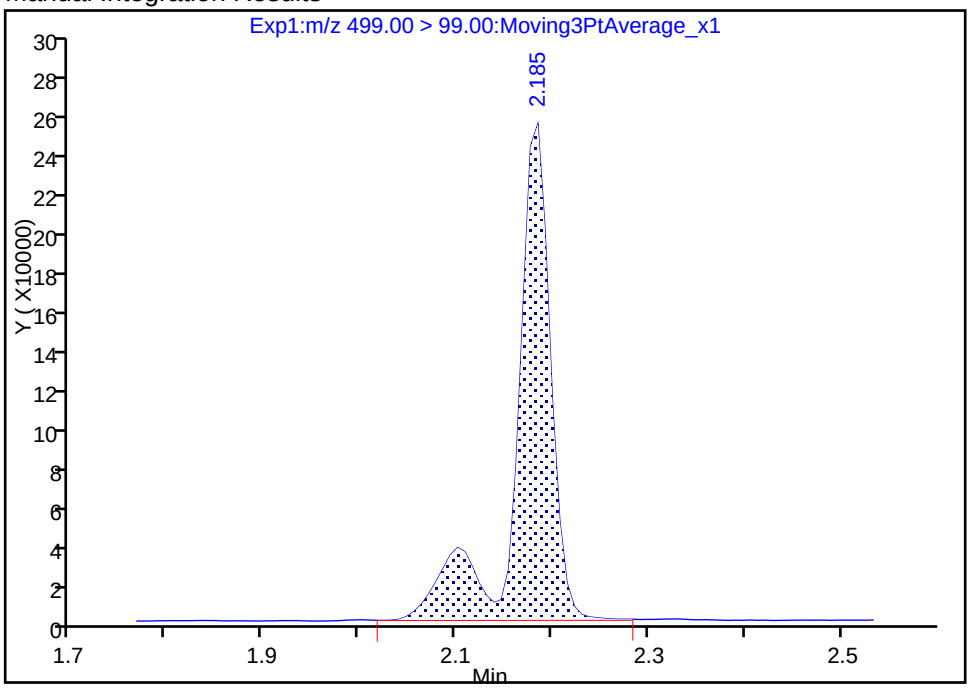
Processing Integration Results

Not Detected
Expected RT: 2.19



Manual Integration Results

RT: 2.19
Area: 641333
Amount: 23.536350
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 13:22:34
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

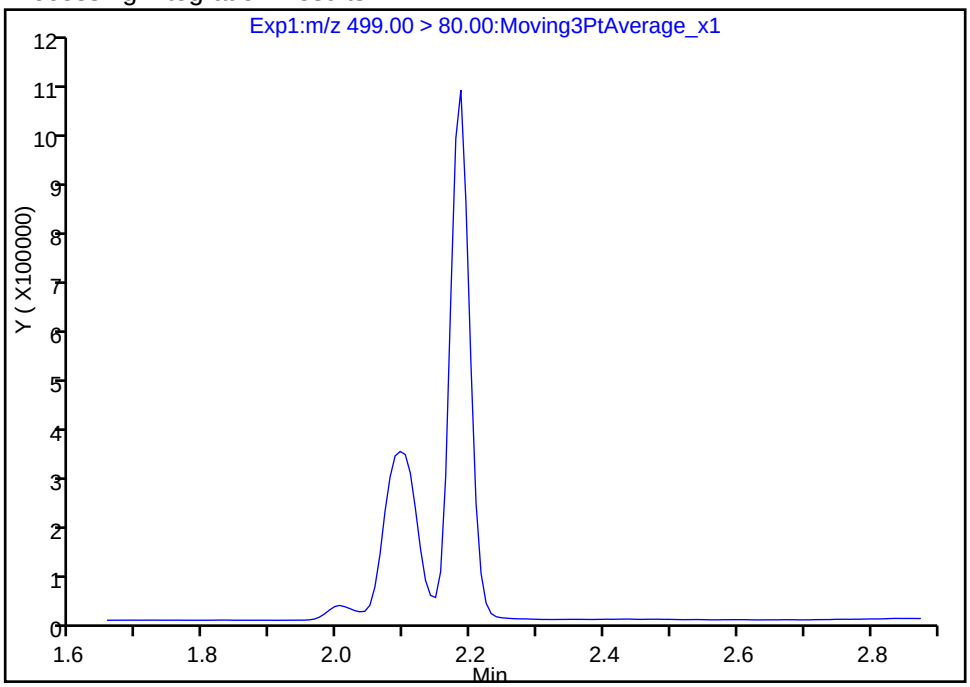
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_013.d
Injection Date: 28-Aug-2017 16:54:58 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

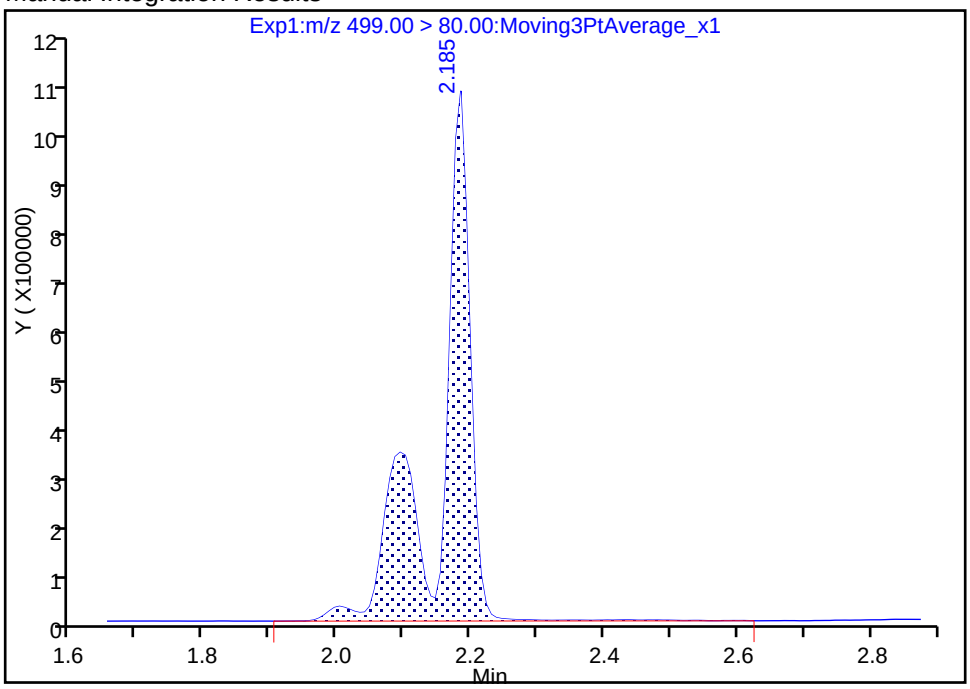
Not Detected
Expected RT: 2.19

Processing Integration Results



Manual Integration Results

RT: 2.19
Area: 3483250
Amount: 23.536350
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 13:22:34
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Lab Sample ID: CCV 320-181720/10 Calibration Date: 08/28/2017 22:48

Instrument ID: A8_N Calib Start Date: 08/28/2017 16:12

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/28/2017 16:36

Lab File ID: 2017.08.28_537B_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8741		149	135	10.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8822	0.9361		15.7	15.0	6.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.548	1.595		46.4	45.0	3.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9054	0.9189		30.4	30.0	1.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9196	0.9313		60.8	60.0	1.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6042	0.6442		32.0	30.0	6.6	30.0
13C2 PFHxA	Ave	1.151	1.291		11.2	10.0	12.2	30.0
13C2 PFDA	Ave	0.5532	0.5825		10.5	10.0	5.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_010.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 28-Aug-2017 22:48:49 ALS Bottle#: 5 Worklist Smp#: 10
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\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:04 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 11:24:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.426	1.443	-0.017	1.000	17347973	149.1		8425	
298.90 > 99.00	1.426	1.443	-0.017	1.000	13034956		1.33(0.00-0.00)	9624	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.569	-0.021	1.000	1703541	11.2		13891	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.722	-0.030	1.000	10553788	46.4		8603	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.722	-0.030	1.000	1853049	15.7		540	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.927	-0.045		1319358	10.0		8456	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.928	-0.046	1.000	3639996	30.4		123	
413.00 > 169.00	1.882	1.928	-0.046	1.000	1871322		1.95(0.00-0.00)	5197	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.140	2.132	0.008	1.000	8215745	60.8		3262	M
499.00 > 99.00	2.140	2.132	0.008	1.000	1727462		4.76(0.00-0.00)	1701	M
* 7 13C4 PFOS									
503.00 > 80.00	2.140	2.186	-0.046		4215889	28.7		893	
9 Perfluorononanoic acid									
463.00 > 419.00	2.147	2.195	-0.048	1.000	2550151	32.0		217	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.344	-0.038	1.000	768470	10.5		9012	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

Report Date: 29-Aug-2017 14:25:05 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_010.d

Injection Date: 28-Aug-2017 22:48:49 Instrument ID: A8_N

Lims ID: CCV L5

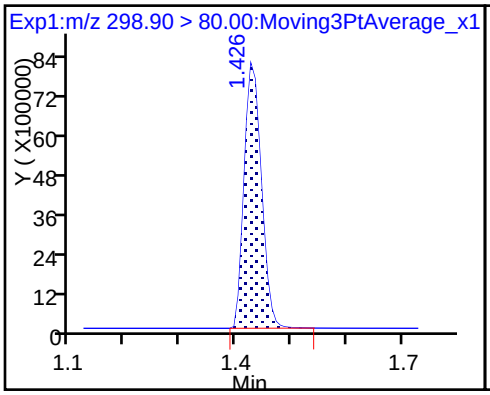
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 10

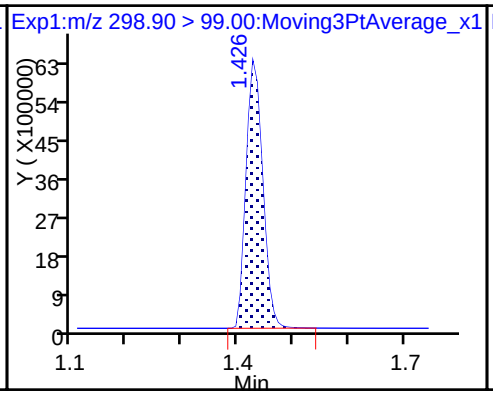
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

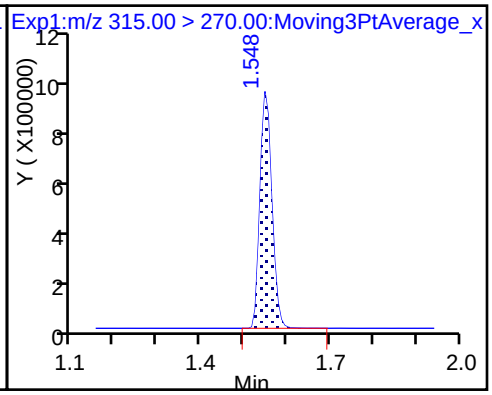
1 Perfluorobutanesulfonic acid



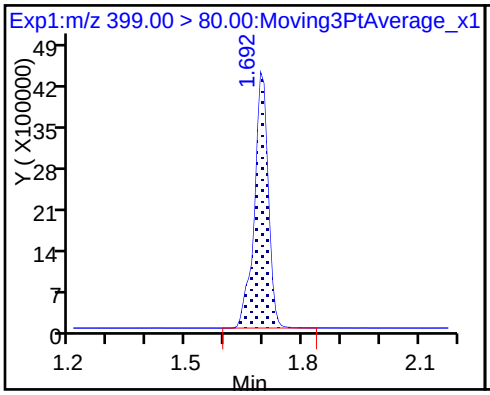
1 Perfluorobutanesulfonic acid



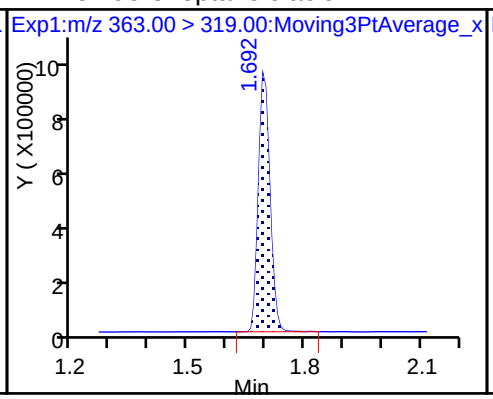
$ 2 13C2 PFHxA



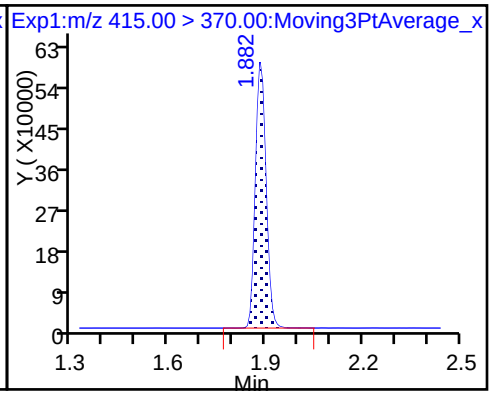
3 Perfluorohexanesulfonic acid



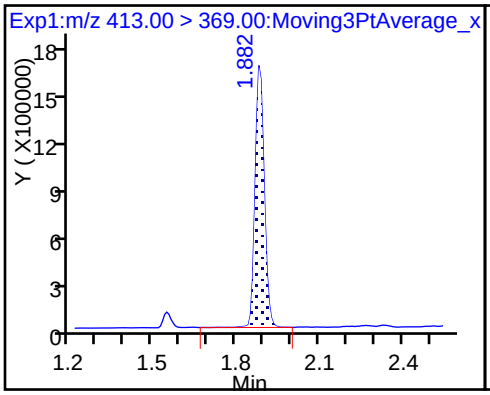
4 Perfluoroheptanoic acid



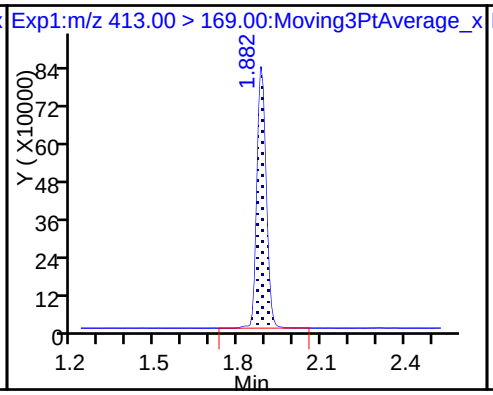
* 6 13C2-PFOA



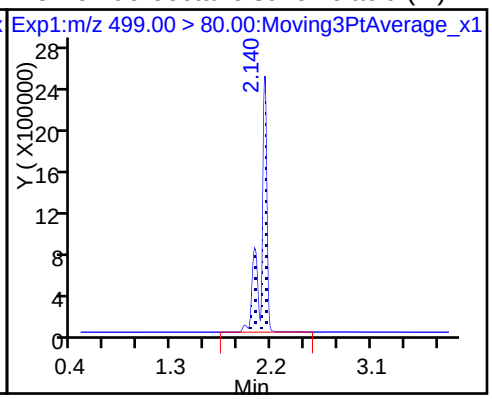
5 Perfluorooctanoic acid



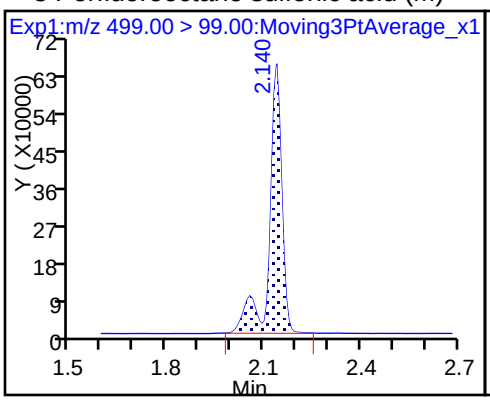
5 Perfluorooctanoic acid



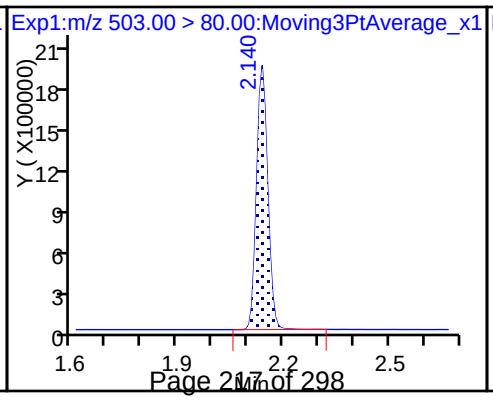
8 Perfluorooctane sulfonic acid (M)



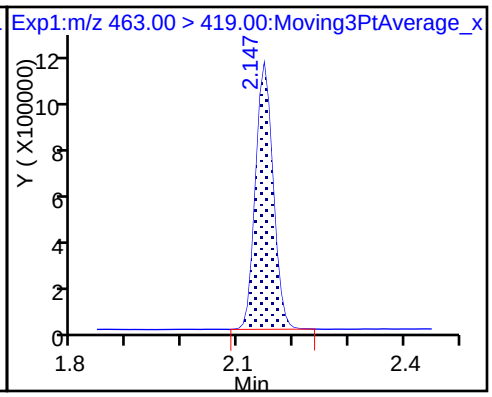
8 Perfluorooctane sulfonic acid (M)



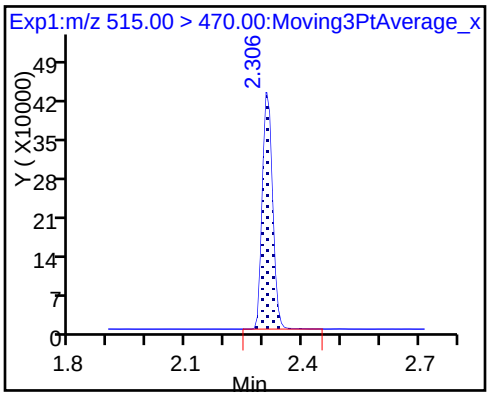
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.306
Y (X10000)
49
42
35
28
21
14
7
0
1.8
2.1
2.4
2.7
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

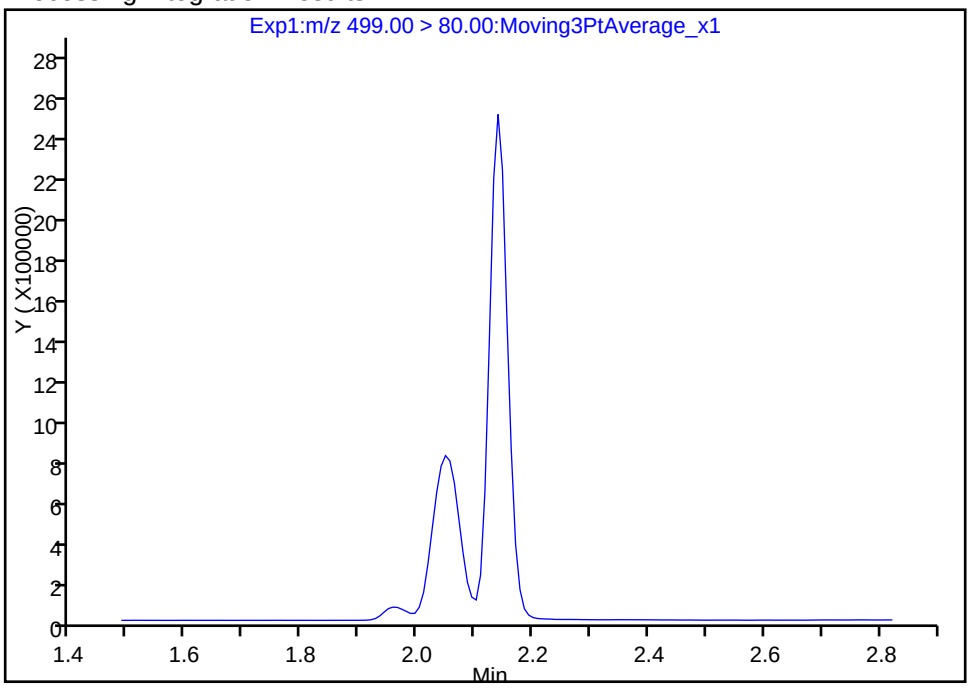
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_010.d
Injection Date: 28-Aug-2017 22:48:49 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

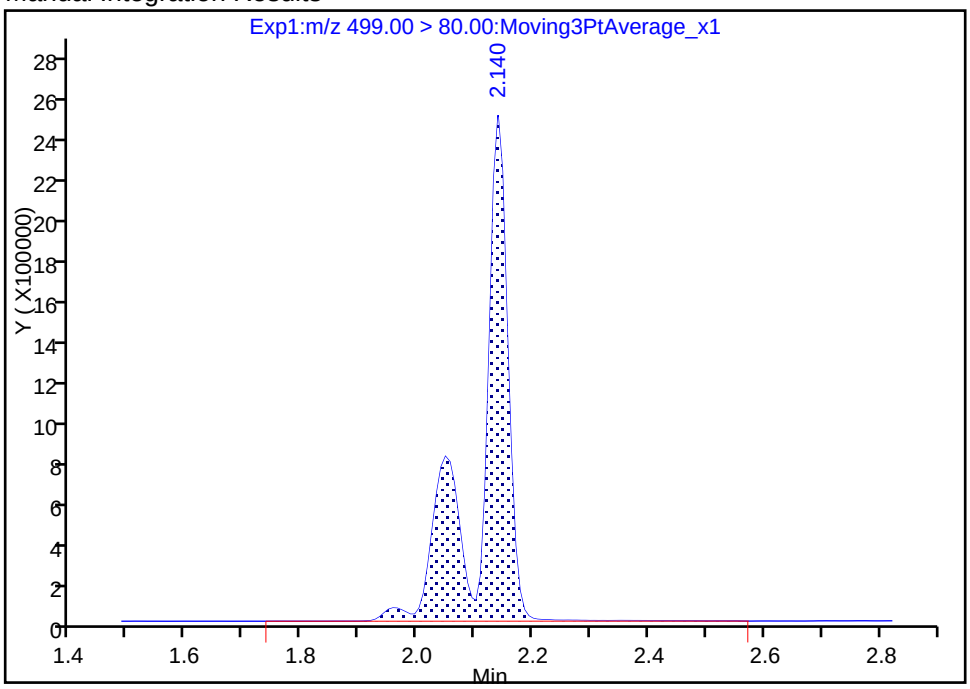
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.14
Area: 8215745
Amount: 60.778333
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 11:23:53
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

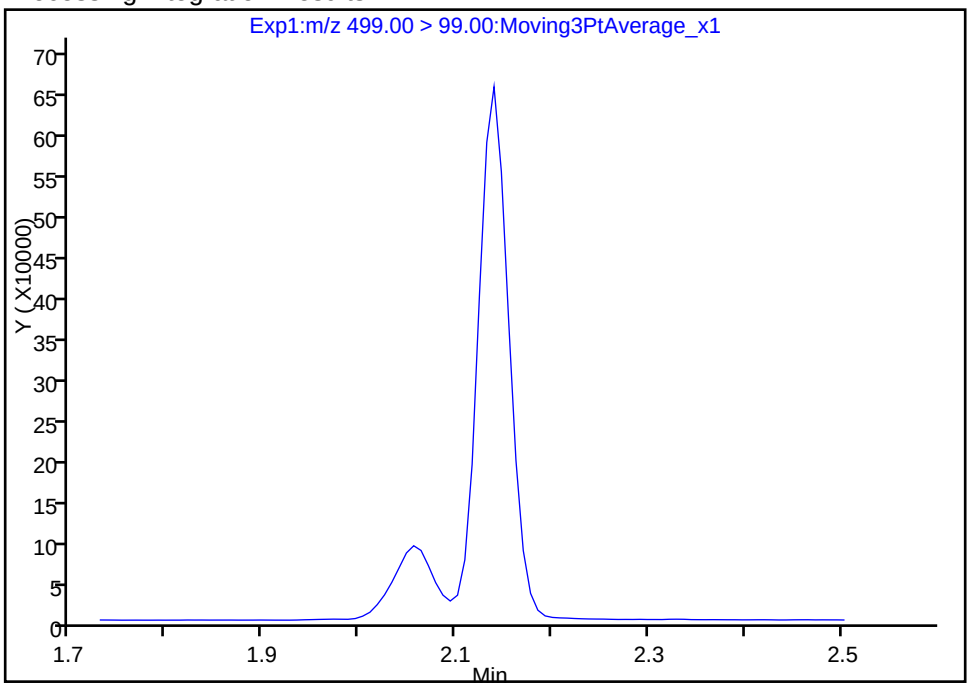
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_010.d
Injection Date: 28-Aug-2017 22:48:49 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

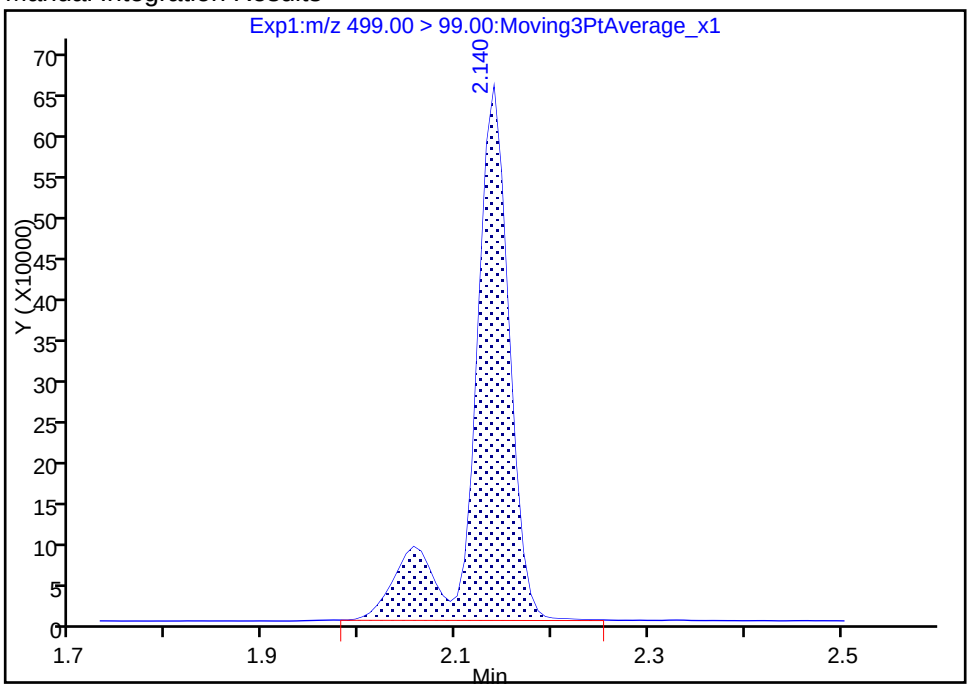
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.14
Area: 1727462
Amount: 60.778333
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 11:24:10
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

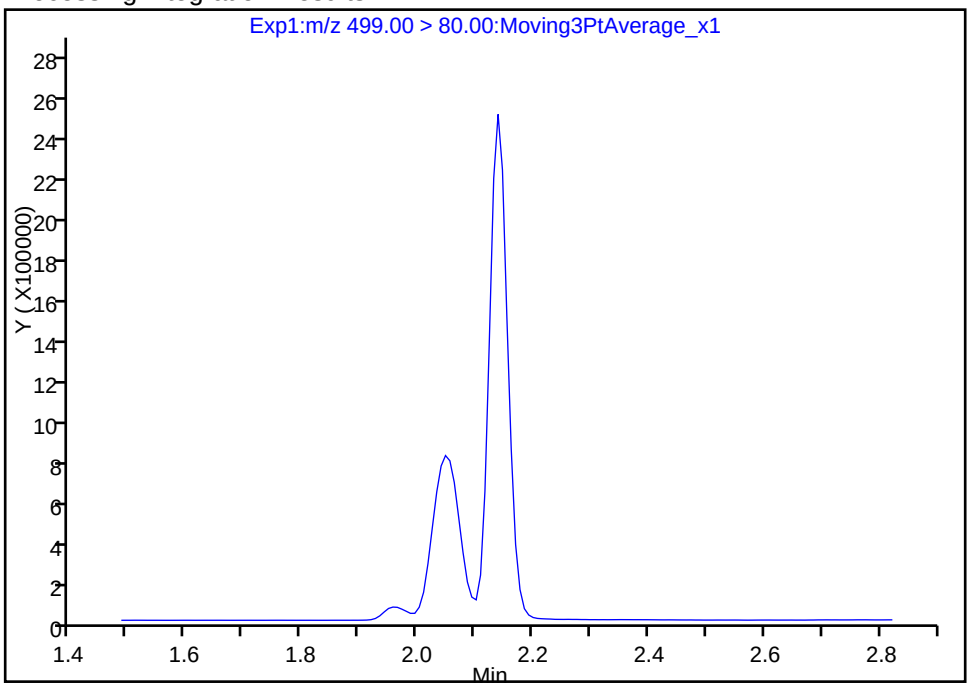
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_010.d
Injection Date: 28-Aug-2017 22:48:49 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

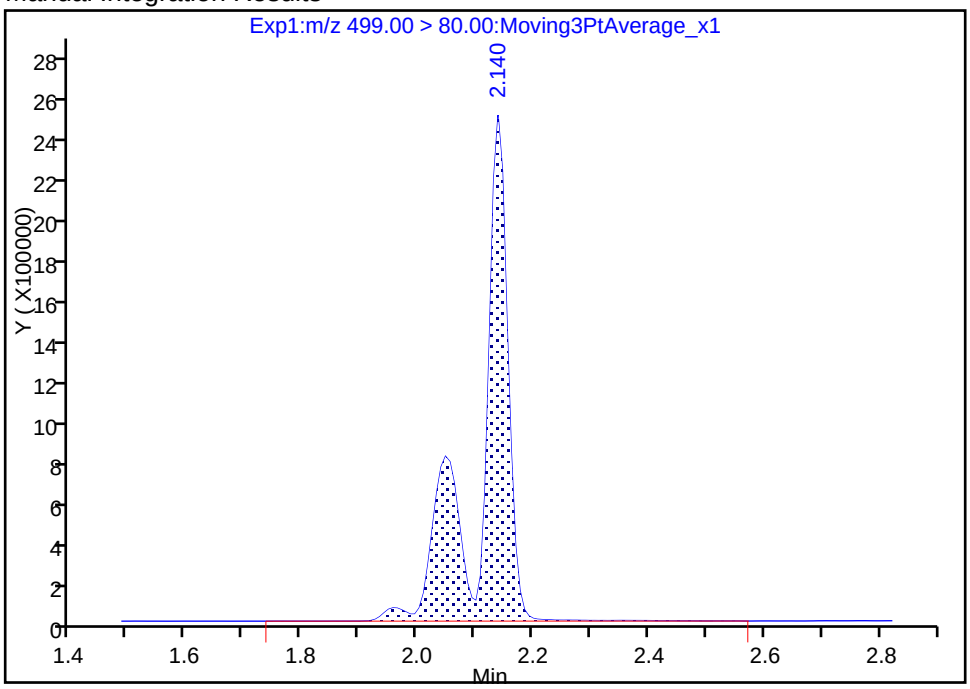
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.14
Area: 8215745
Amount: 60.778333
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 11:24:10
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Lab Sample ID: CCV 320-181720/21 Calibration Date: 08/28/2017 23:41

Instrument ID: A8_N Calib Start Date: 08/28/2017 16:12

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/28/2017 16:36

Lab File ID: 2017.08.28_537B_021.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.142		54.5	45.0	21.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8822	0.9847		5.51	5.00	11.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.548	1.644		15.9	15.0	6.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9054	0.9217		10.2	10.0	1.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9196	0.9340		20.3	20.0	1.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6042	0.6471		10.7	10.0	7.1	30.0
13C2 PFHxA	Ave	1.151	1.249		10.8	10.0	8.5	30.0
13C2 PFDA	Ave	0.5532	0.5705		10.3	10.0	3.1	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Lab Sample ID: CCV 320-181721/21 Calibration Date: 08/28/2017 23:41

Instrument ID: A8_N Calib Start Date: 08/28/2017 16:12

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/28/2017 16:36

Lab File ID: 2017.08.28_537B_021.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.142		54.5	45.0	21.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8822	0.9847		5.51	5.00	11.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.548	1.644		15.9	15.0	6.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9054	0.9217		10.2	10.0	1.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9196	0.9340		20.3	20.0	1.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6042	0.6471		10.7	10.0	7.1	30.0
13C2 PFHxA	Ave	1.151	1.249		10.8	10.0	8.5	30.0
13C2 PFDA	Ave	0.5532	0.5705		10.3	10.0	3.1	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_021.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 28-Aug-2017 23:41:11 ALS Bottle#: 3 Worklist Smp#: 21
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\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 11:24:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.426	1.443	-0.017	1.000	7590994	54.5		6432	
298.90 > 99.00	1.426	1.443	-0.017	1.000	5224684		1.45(0.00-0.00)	7243	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.569	-0.021	1.000	1704262	10.8		15033	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.722	-0.030	1.000	3643505	15.9		4938	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.722	-0.030	1.000	672058	5.51		181	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.927	-0.053		1364683	10.0		8780	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.928	-0.046	1.000	1258932	10.2		41.5	
413.00 > 169.00	1.882	1.928	-0.046	1.000	649354		1.94(0.00-0.00)	2223	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.132	2.132	0.0	1.000	2760765	20.3		1208	M
499.00 > 99.00	2.132	2.132	0.0	1.000	569853		4.84(0.00-0.00)	669	M
* 7 13C4 PFOS									
503.00 > 80.00	2.132	2.186	-0.054		4237780	28.7		815	
9 Perfluorononanoic acid									
463.00 > 419.00	2.140	2.195	-0.055	1.000	883253	10.7		68.1	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.344	-0.038	1.000	778612	10.3		8097	

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\20170829-47240.b\2017.08.28_537B_021.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 28-Aug-2017 23:41:11 ALS Bottle#: 3 Worklist Smp#: 21
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\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 11:24:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.426	1.443	-0.017	1.000	7590994	54.5		6432	
298.90 > 99.00	1.426	1.443	-0.017	1.000	5224684		1.45(0.00-0.00)	7243	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.569	-0.021	1.000	1704262	10.8		15033	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.722	-0.030	1.000	3643505	15.9		4938	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.722	-0.030	1.000	672058	5.51		181	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.927	-0.053		1364683	10.0		8780	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.928	-0.046	1.000	1258932	10.2		41.5	
413.00 > 169.00	1.882	1.928	-0.046	1.000	649354		1.94(0.00-0.00)	2223	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.132	2.132	0.0	1.000	2760765	20.3		1208	M
499.00 > 99.00	2.132	2.132	0.0	1.000	569853		4.84(0.00-0.00)	669	M
* 7 13C4 PFOS									
503.00 > 80.00	2.132	2.186	-0.054		4237780	28.7		815	
9 Perfluorononanoic acid									
463.00 > 419.00	2.140	2.195	-0.055	1.000	883253	10.7		68.1	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.344	-0.038	1.000	778612	10.3		8097	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

Report Date: 29-Aug-2017 14:25:18 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_021.d

Injection Date: 28-Aug-2017 23:41:11 Instrument ID: A8_N

Lims ID: CCV L3

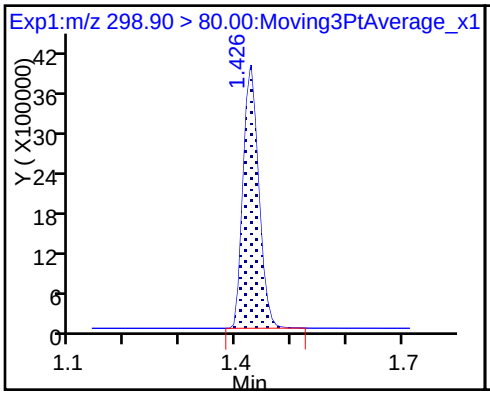
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 21

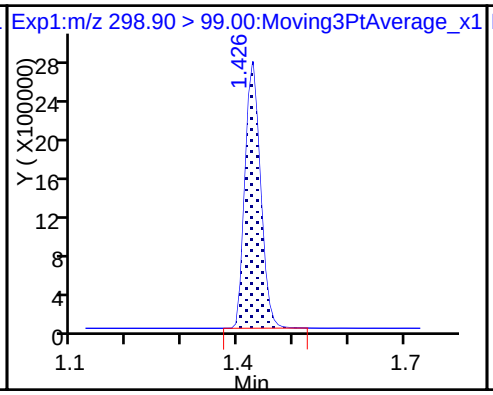
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

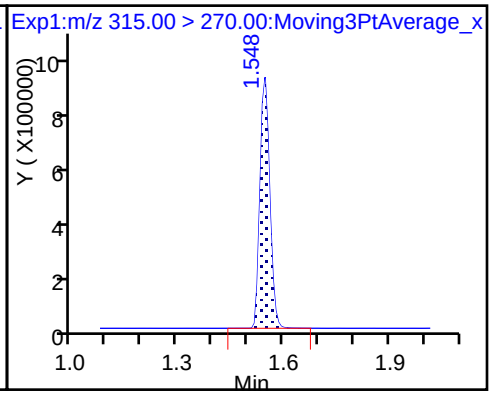
1 Perfluorobutanesulfonic acid



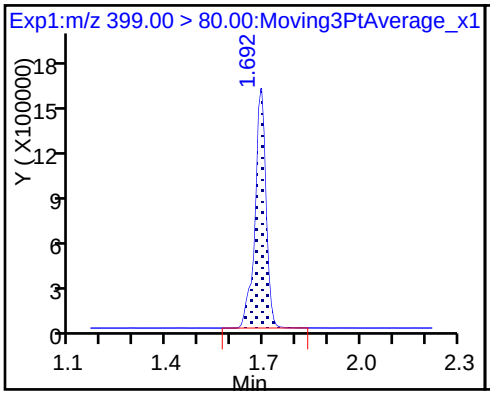
1 Perfluorobutanesulfonic acid



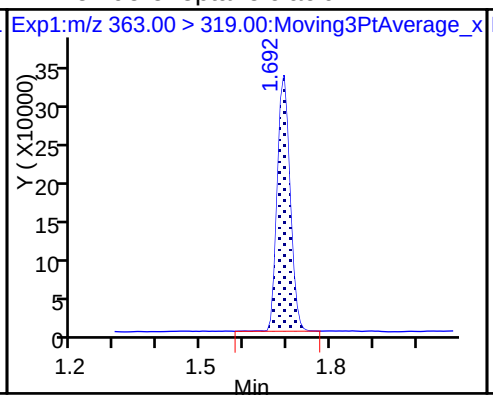
$ 2 13C2 PFHxA



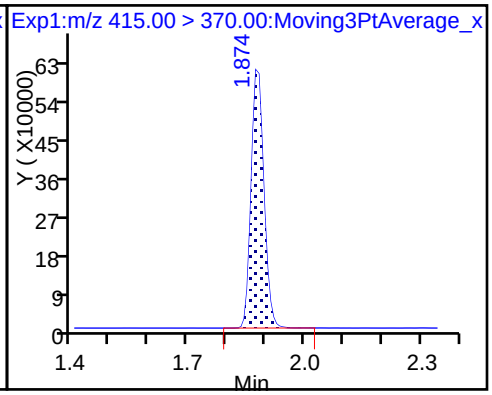
3 Perfluorohexanesulfonic acid



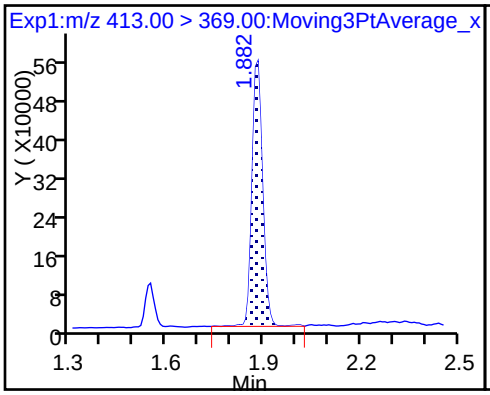
4 Perfluoroheptanoic acid



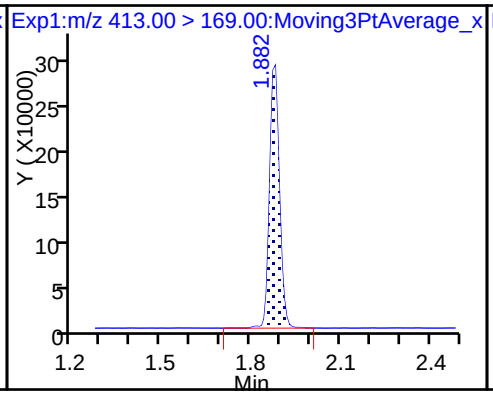
* 6 13C2-PFOA



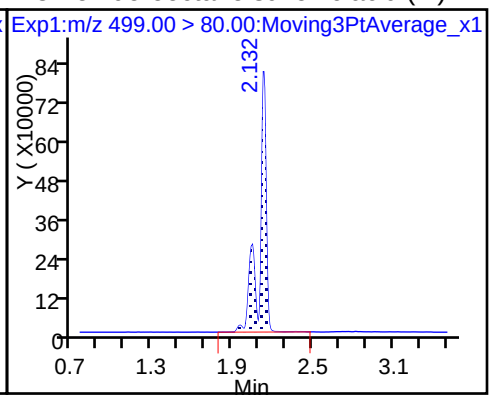
5 Perfluorooctanoic acid



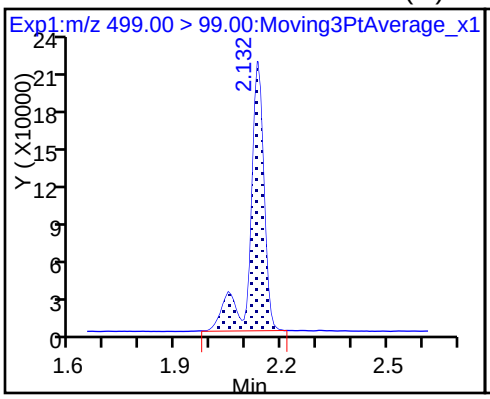
5 Perfluorooctanoic acid



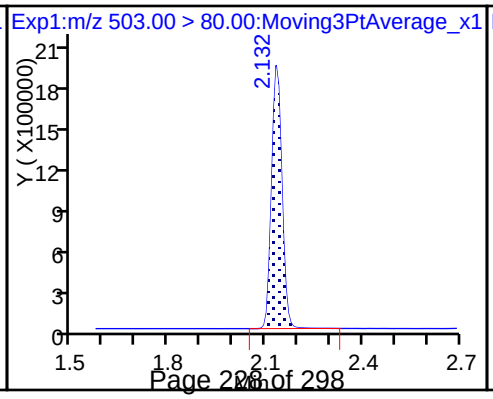
8 Perfluorooctane sulfonic acid (M)



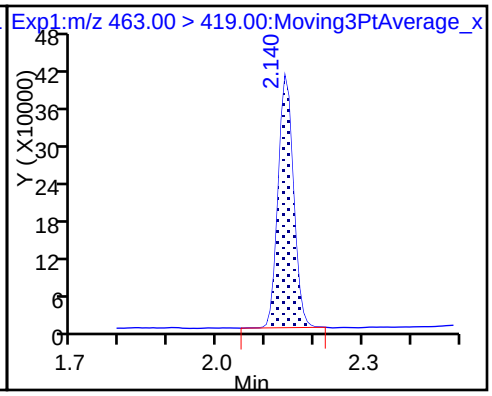
8 Perfluorooctane sulfonic acid (M)



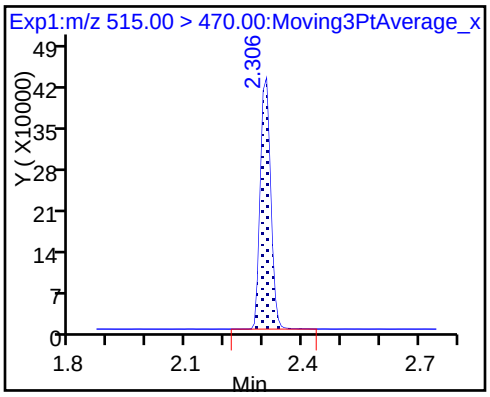
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.306
Y (X10000)
49
42
35
28
21
14
7
0
1.8
2.1
2.4
2.7
Min

Report Date: 29-Aug-2017 14:25:18 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_021.d

Injection Date: 28-Aug-2017 23:41:11 Instrument ID: A8_N

Lims ID: CCV L3

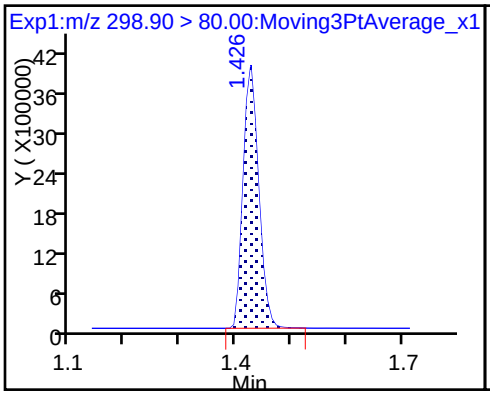
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 21

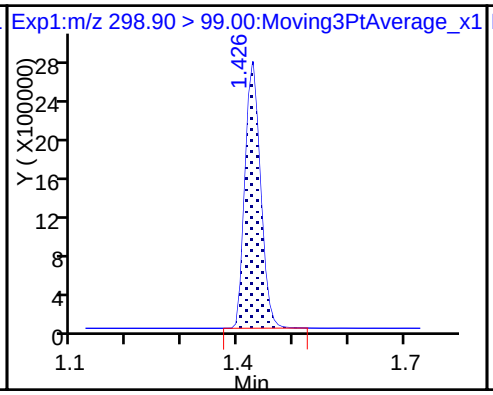
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

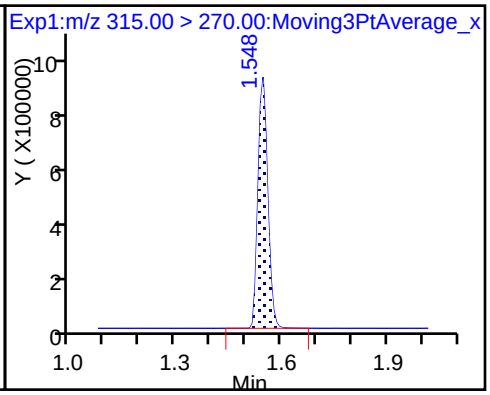
1 Perfluorobutanesulfonic acid



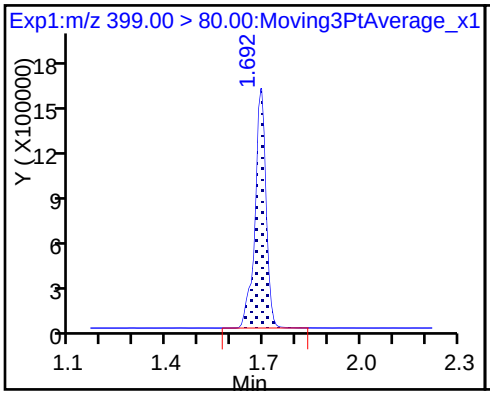
1 Perfluorobutanesulfonic acid



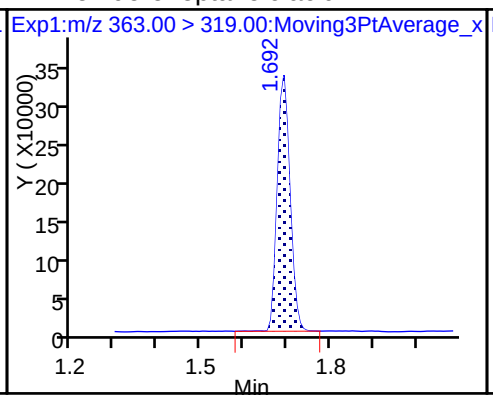
$ 2 13C2 PFHxA



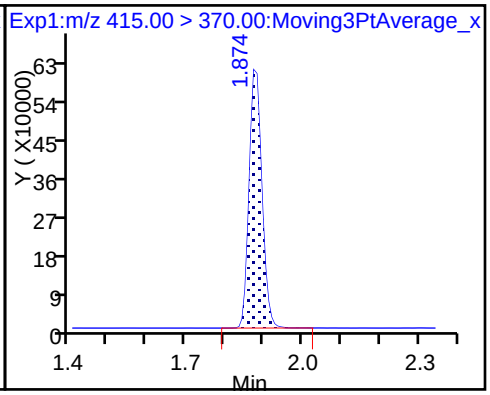
3 Perfluorohexanesulfonic acid



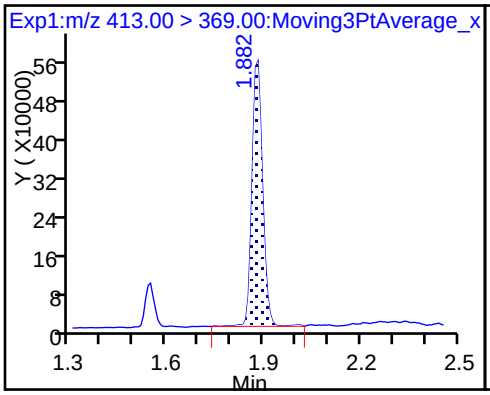
4 Perfluoroheptanoic acid



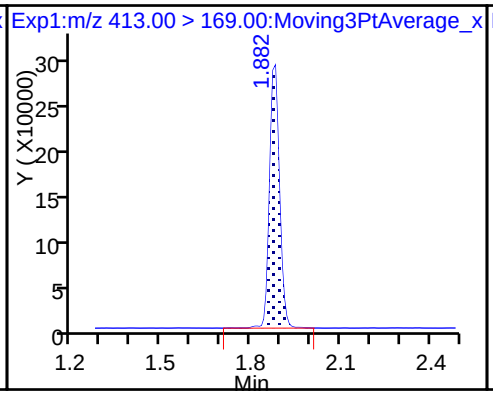
* 6 13C2-PFOA



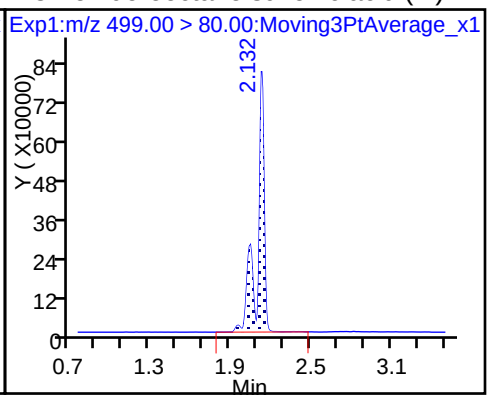
5 Perfluorooctanoic acid



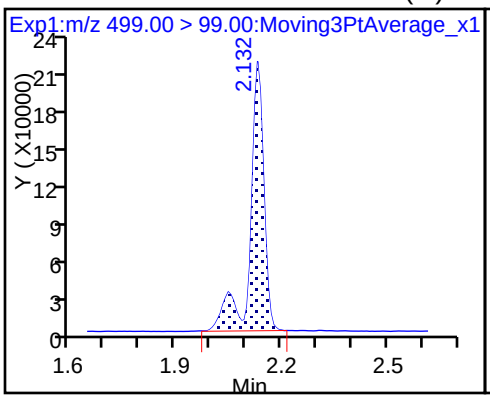
5 Perfluorooctanoic acid



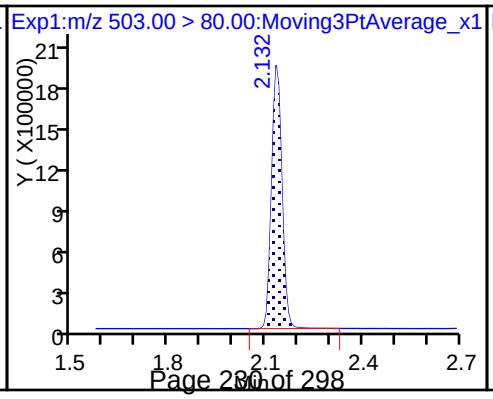
8 Perfluorooctane sulfonic acid (M)



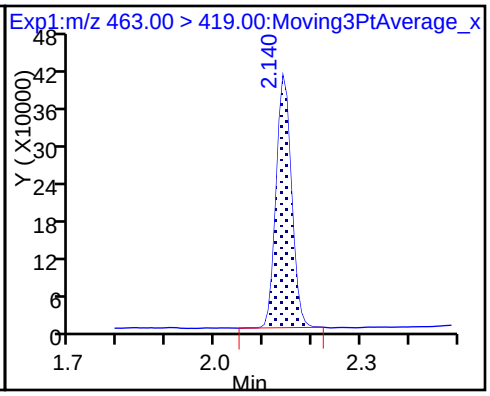
8 Perfluorooctane sulfonic acid (M)



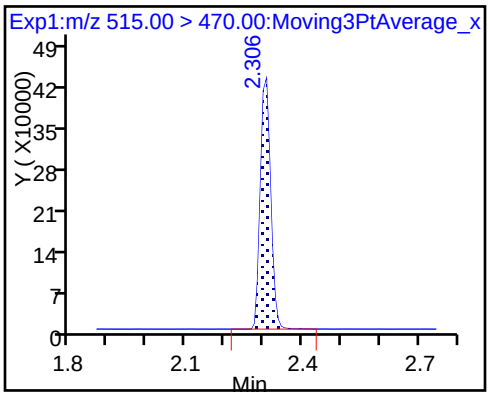
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.306
Y (X10000)
49
42
35
28
21
14
7
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento

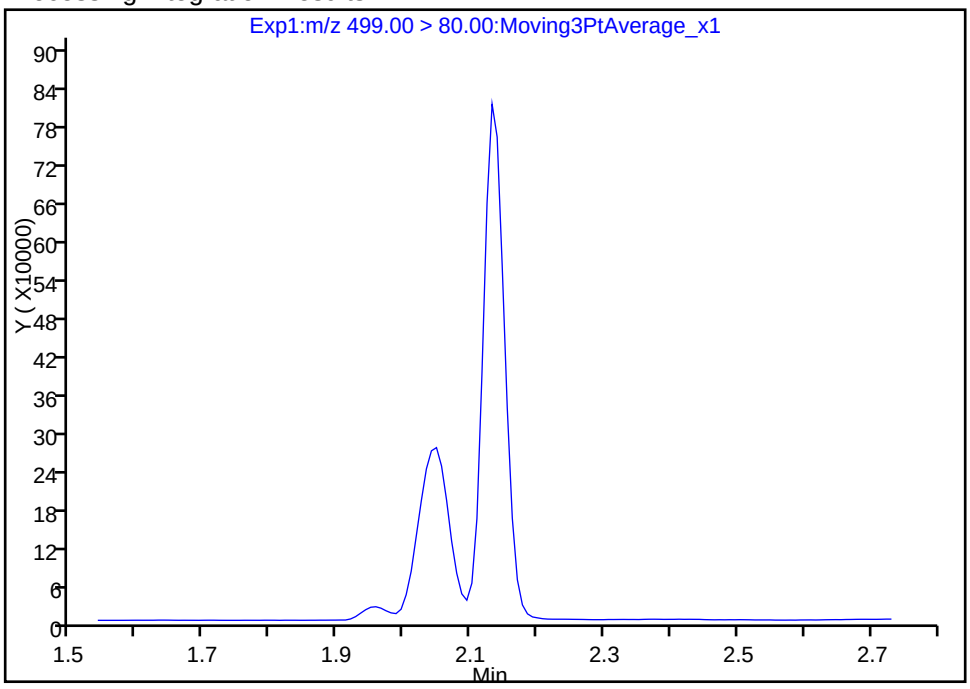
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_021.d
Injection Date: 28-Aug-2017 23:41:11 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

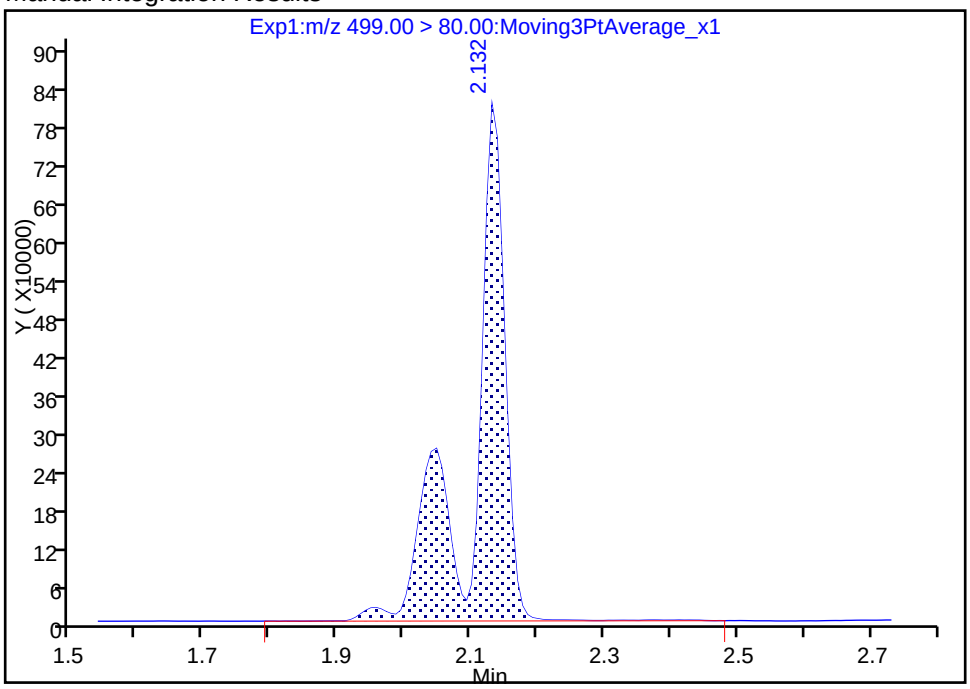
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 2760765
Amount: 20.318050
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 11:24:28
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

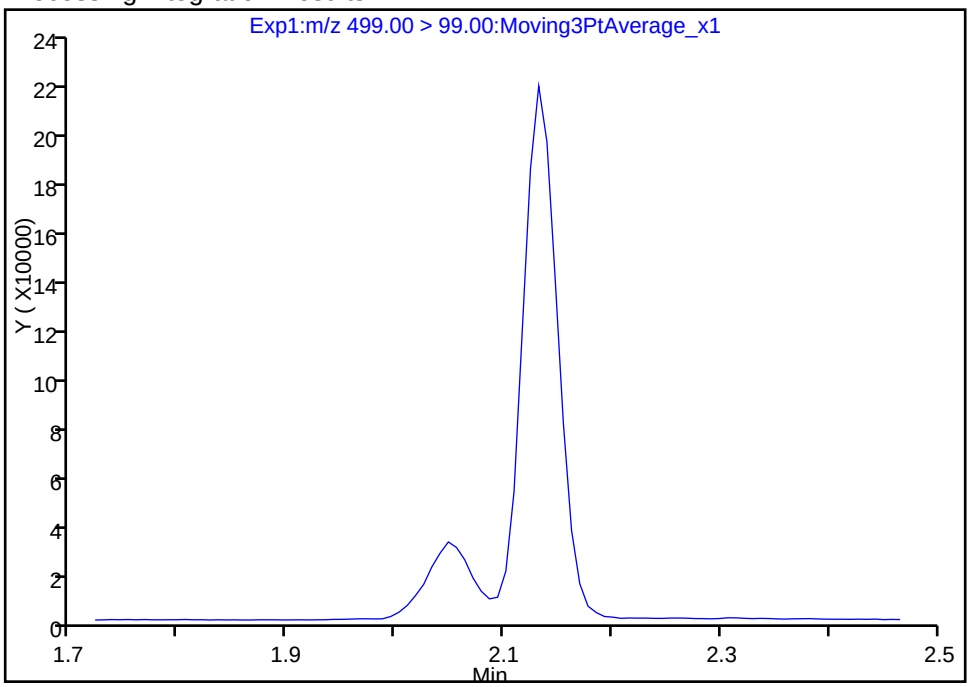
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_021.d
Injection Date: 28-Aug-2017 23:41:11 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

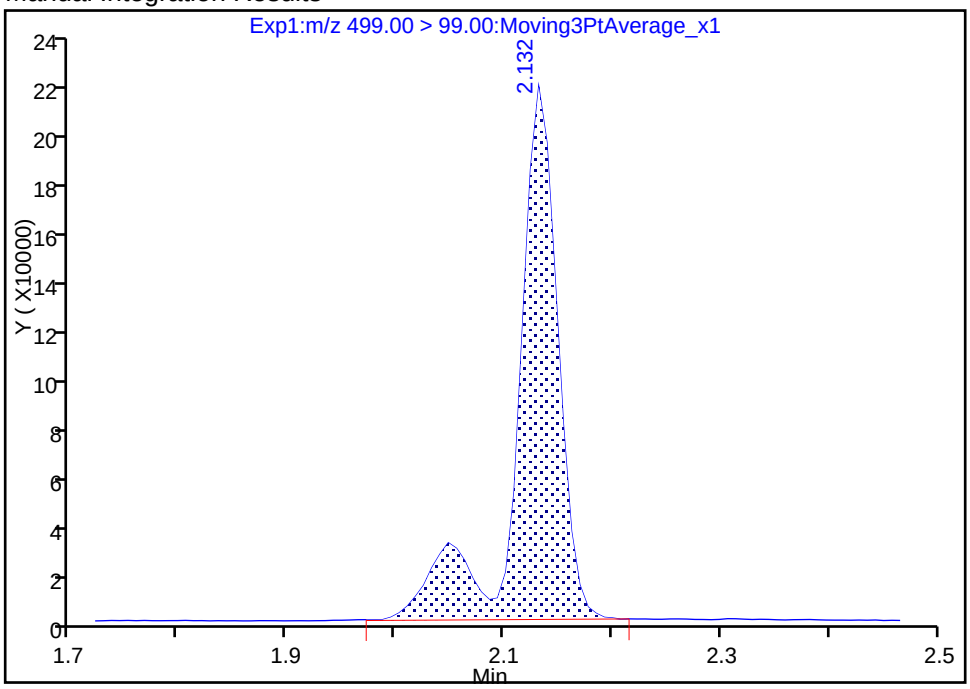
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 569853
Amount: 20.318050
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 11:24:39
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

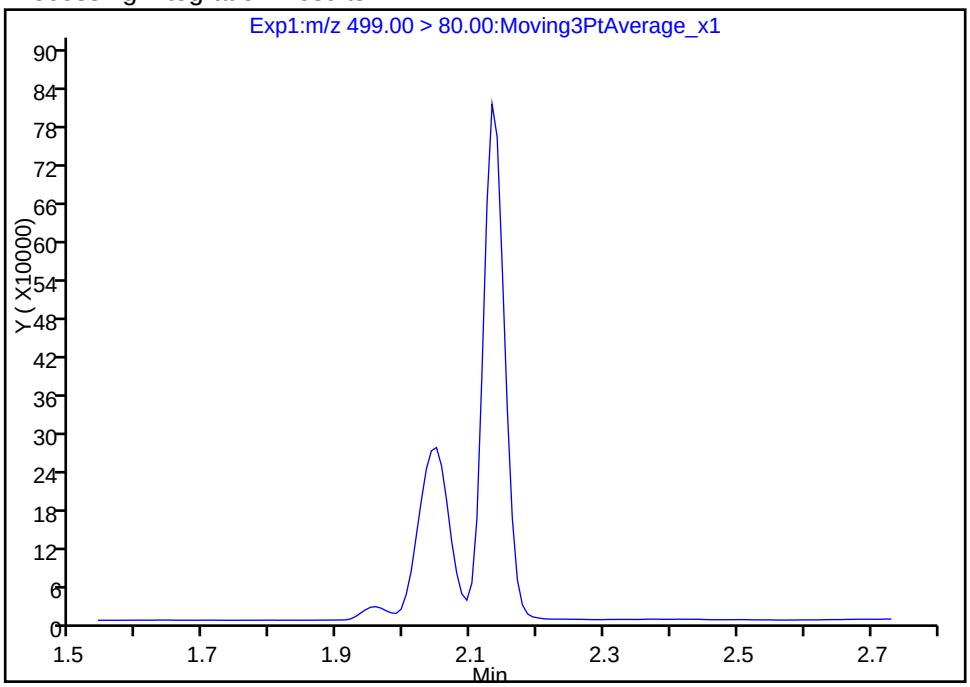
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_021.d
Injection Date: 28-Aug-2017 23:41:11 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

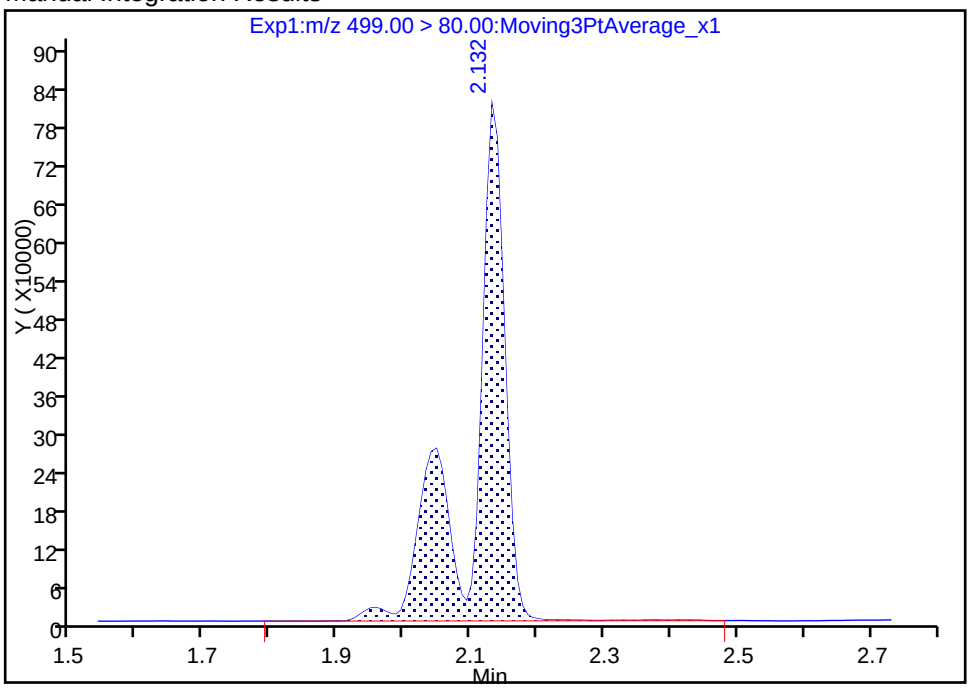
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 2760765
Amount: 20.318050
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 11:24:39
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

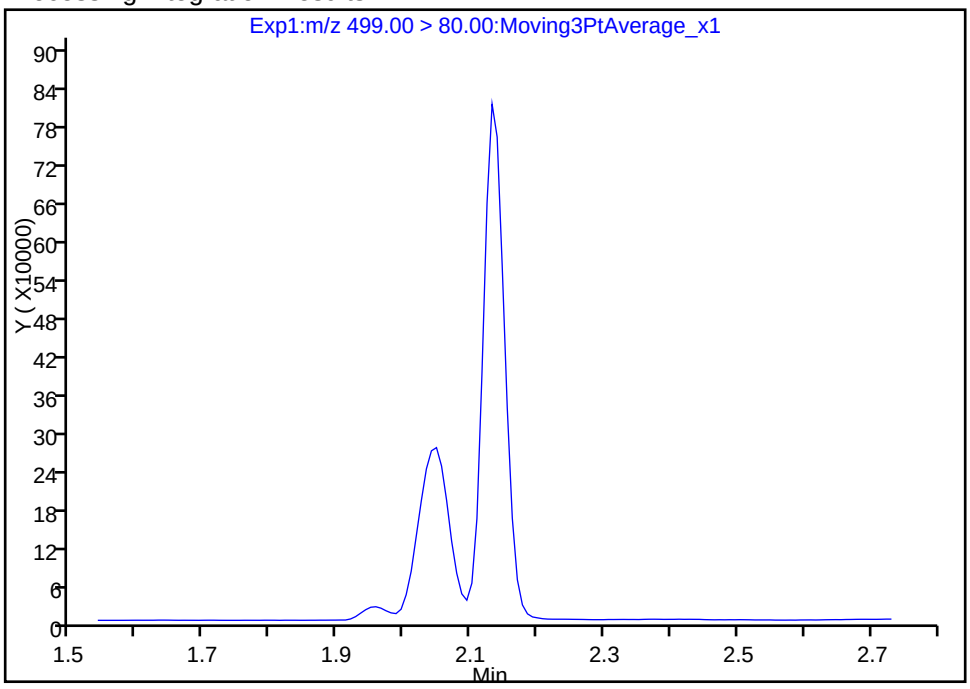
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_021.d
Injection Date: 28-Aug-2017 23:41:11 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

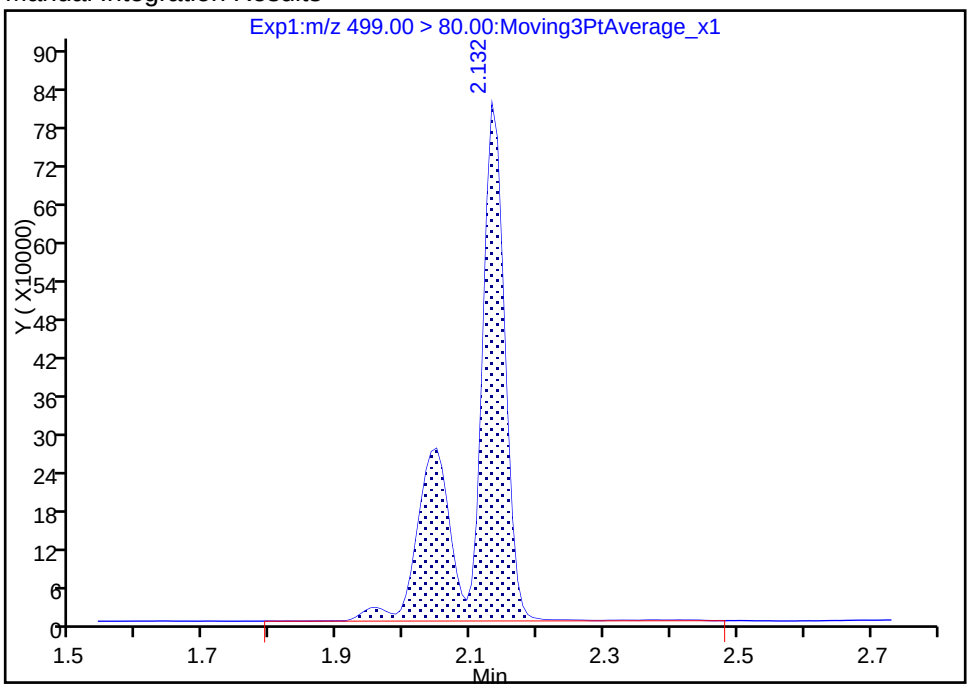
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 2760765
Amount: 20.318050
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 11:24:28
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

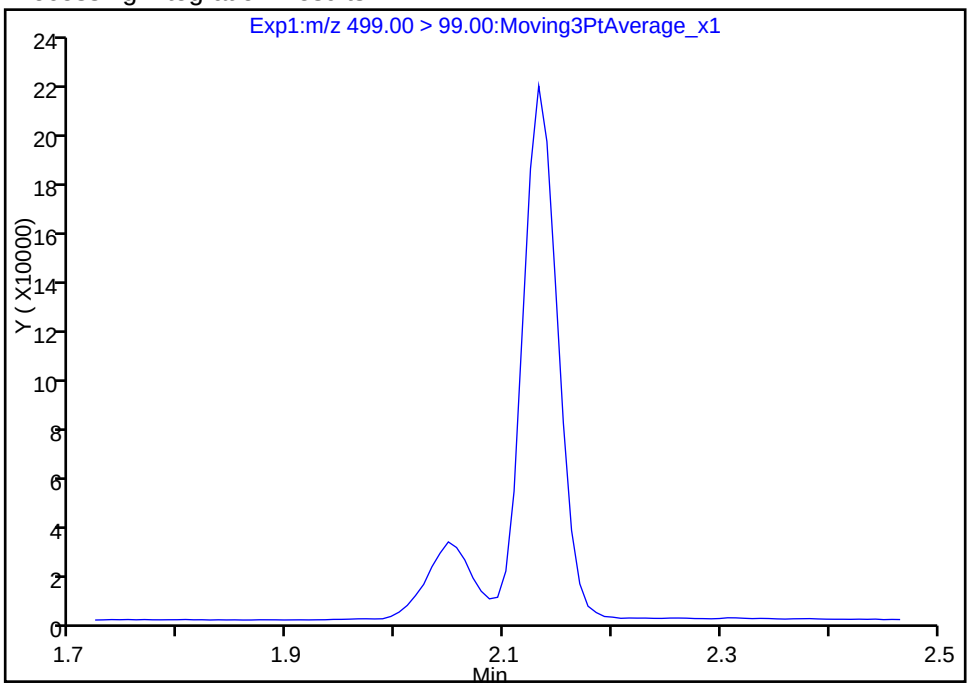
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_021.d
Injection Date: 28-Aug-2017 23:41:11 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

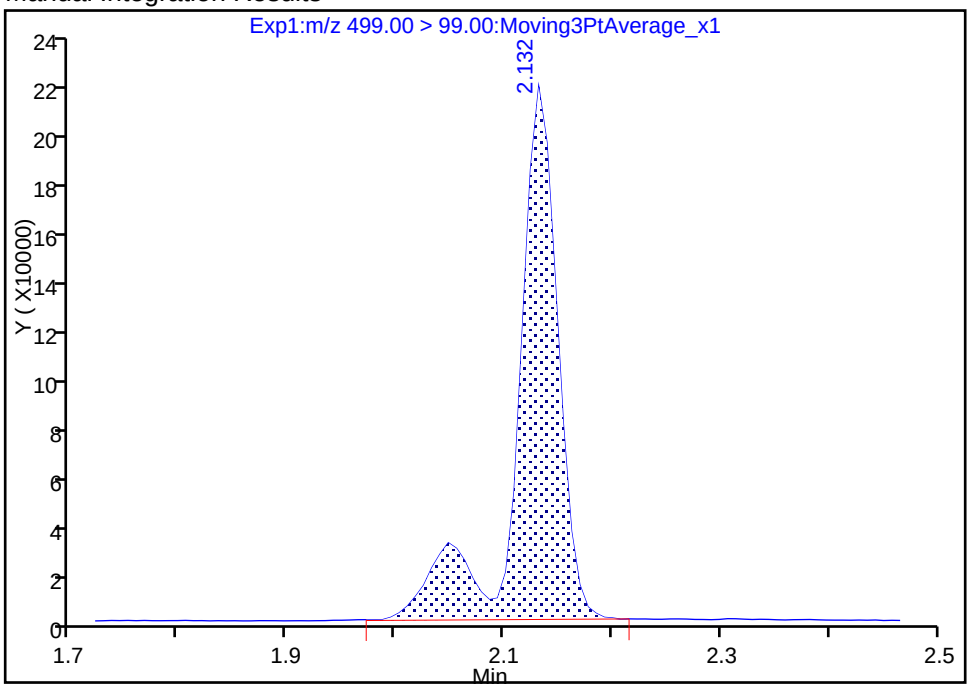
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 569853
Amount: 20.318050
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 11:24:39
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

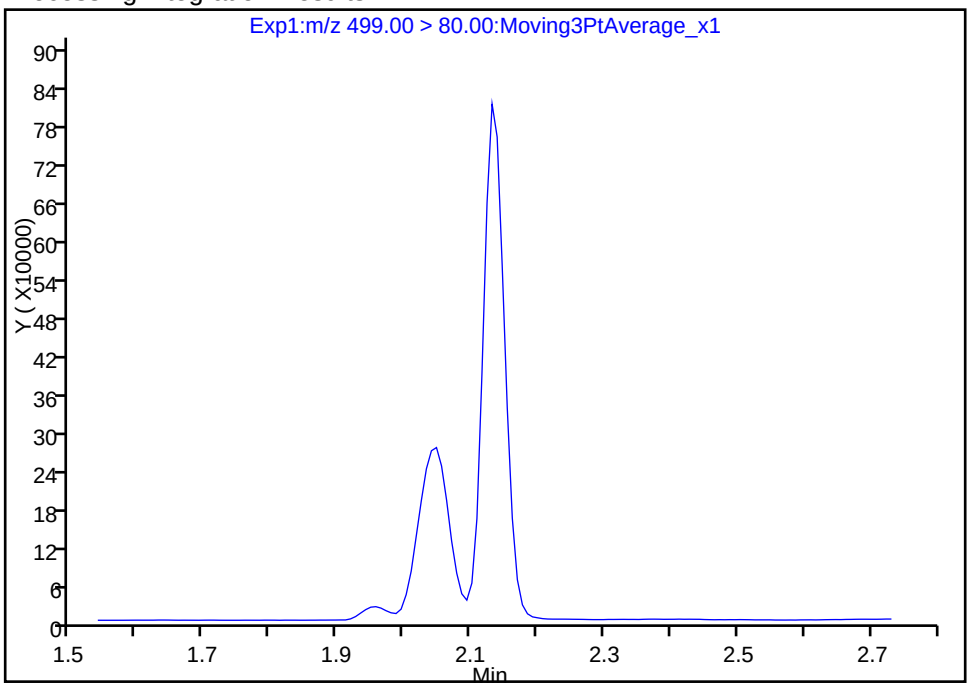
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_021.d
Injection Date: 28-Aug-2017 23:41:11 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

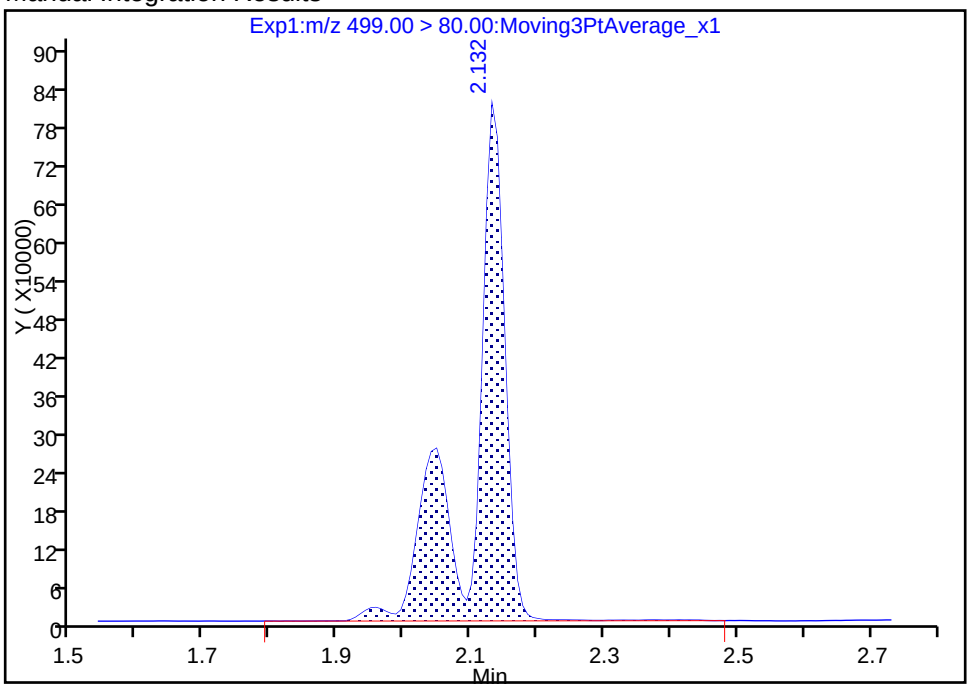
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 2760765
Amount: 20.318050
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 11:24:39
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Lab Sample ID: CCV 320-181721/33 Calibration Date: 08/29/2017 00:38

Instrument ID: A8_N Calib Start Date: 08/28/2017 16:12

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/28/2017 16:36

Lab File ID: 2017.08.28_537B_033.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8485		143	135	5.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8822	0.9723		16.3	15.0	10.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.548	1.584		46.0	45.0	2.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9054	0.9289		30.7	30.0	2.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9196	0.9255		60.4	60.0	0.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6042	0.6528		32.4	30.0	8.0	30.0
13C2 PFHxA	Ave	1.151	1.269		11.0	10.0	10.2	30.0
13C2 PFDA	Ave	0.5532	0.5700		10.3	10.0	3.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_033.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 29-Aug-2017 00:38:14 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\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:31 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 11:25:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.443	-0.024	1.000	17320097	142.9		7607	
298.90 > 99.00	1.419	1.443	-0.024	1.000	12913375		1.34(0.00-0.00)	9338	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.569	-0.029	1.000	1718837	11.0		12867	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.722	-0.038	1.000	10777364	46.0		8493	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.722	-0.038	1.000	1976491	16.3		508	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.927	-0.053		1354840	10.0		9229	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.928	-0.054	1.000	3778746	30.7		129	
413.00 > 169.00	1.874	1.928	-0.054	1.000	2020894		1.87(0.00-0.00)	5016	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.132	2.132	0.0	1.000	8398307	60.4		3054	M
499.00 > 99.00	2.132	2.132	0.0	1.000	1757106		4.78(0.00-0.00)	1541	M
* 7 13C4 PFOS									
503.00 > 80.00	2.132	2.186	-0.054		4336458	28.7		848	
9 Perfluorononanoic acid									
463.00 > 419.00	2.140	2.195	-0.055	1.000	2653709	32.4		200	
$ 10 13C2 PFDA									
515.00 > 470.00	2.299	2.344	-0.045	1.000	772267	10.3		7812	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

Report Date: 29-Aug-2017 14:25:32 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_033.d

Injection Date: 29-Aug-2017 00:38:14 Instrument ID: A8_N

Lims ID: CCV L5

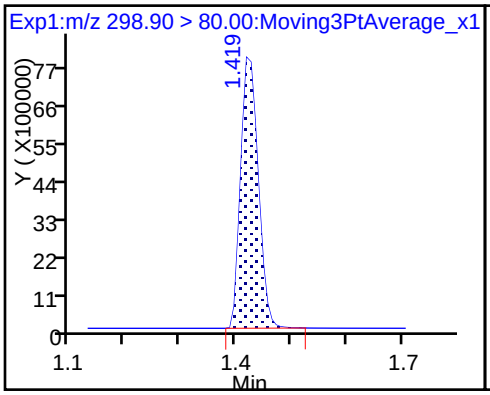
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 33

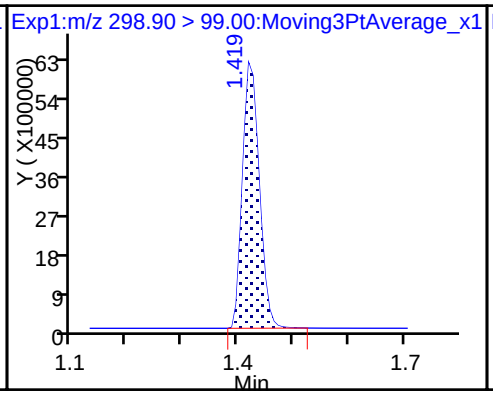
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

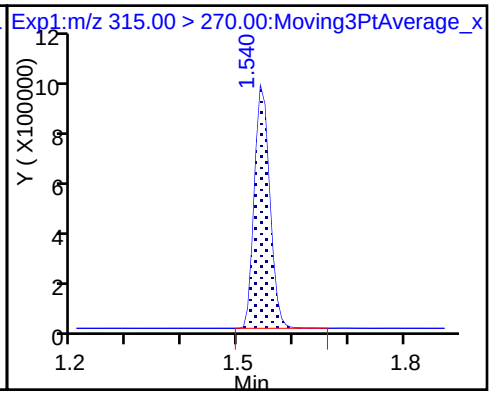
1 Perfluorobutanesulfonic acid



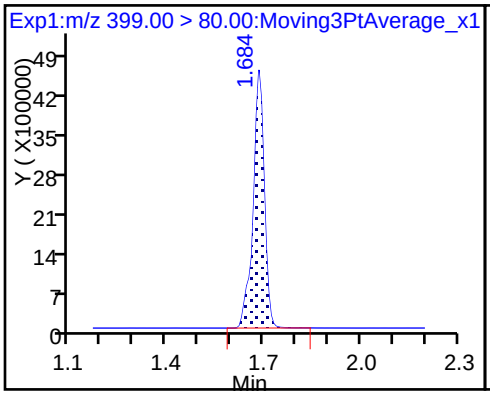
1 Perfluorobutanesulfonic acid



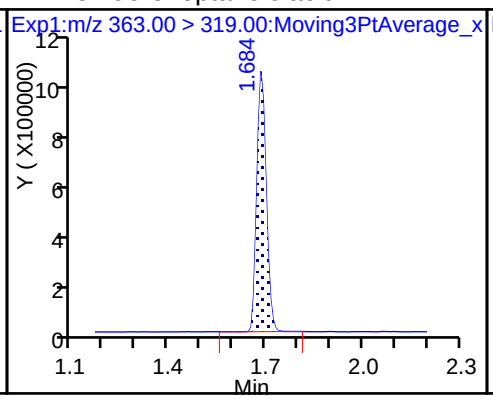
$ 2 13C2 PFHxA



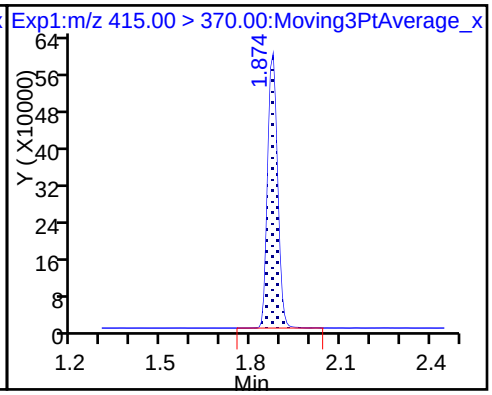
3 Perfluorohexanesulfonic acid



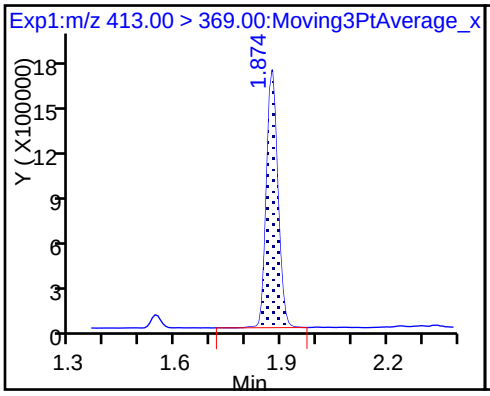
4 Perfluoroheptanoic acid



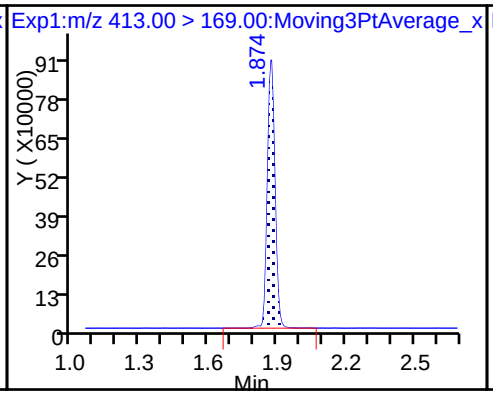
* 6 13C2-PFOA



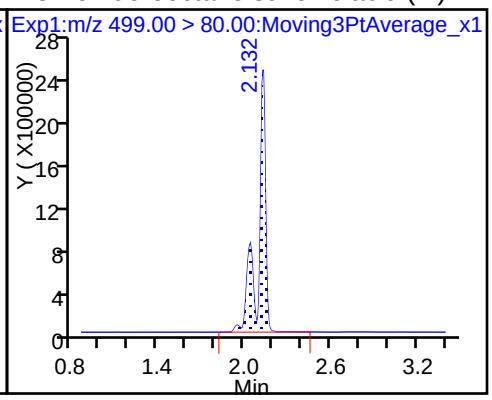
5 Perfluorooctanoic acid



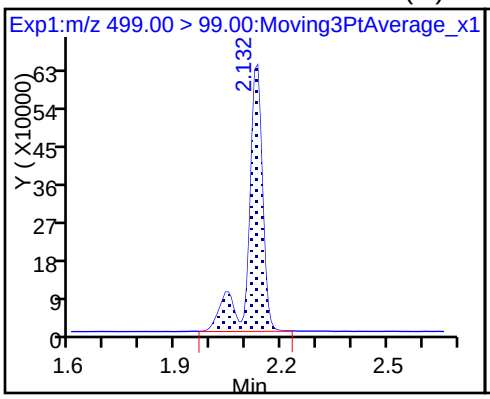
5 Perfluorooctanoic acid



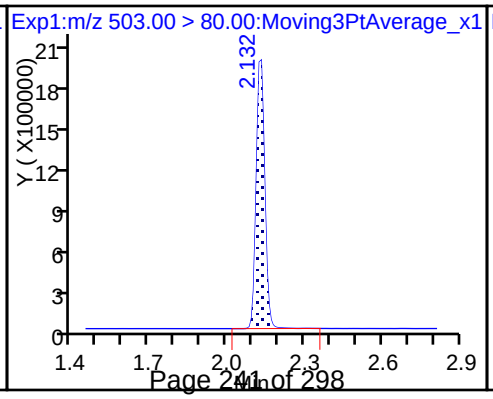
8 Perfluorooctane sulfonic acid (M)



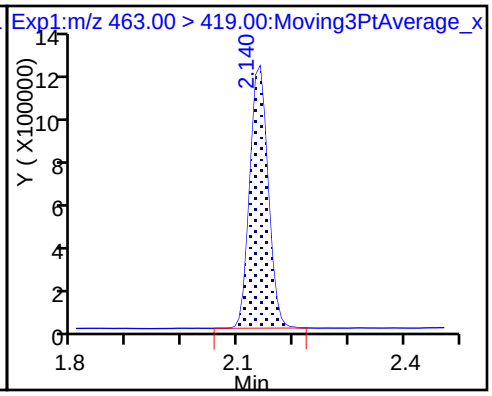
8 Perfluorooctane sulfonic acid (M)



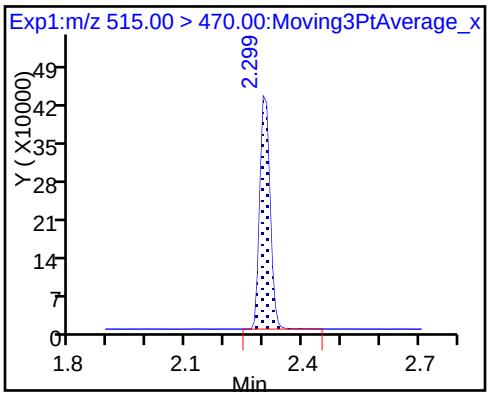
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.299
Y (X10000)
49
42
35
28
21
14
7
0
1.8
2.1
2.4
2.7
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

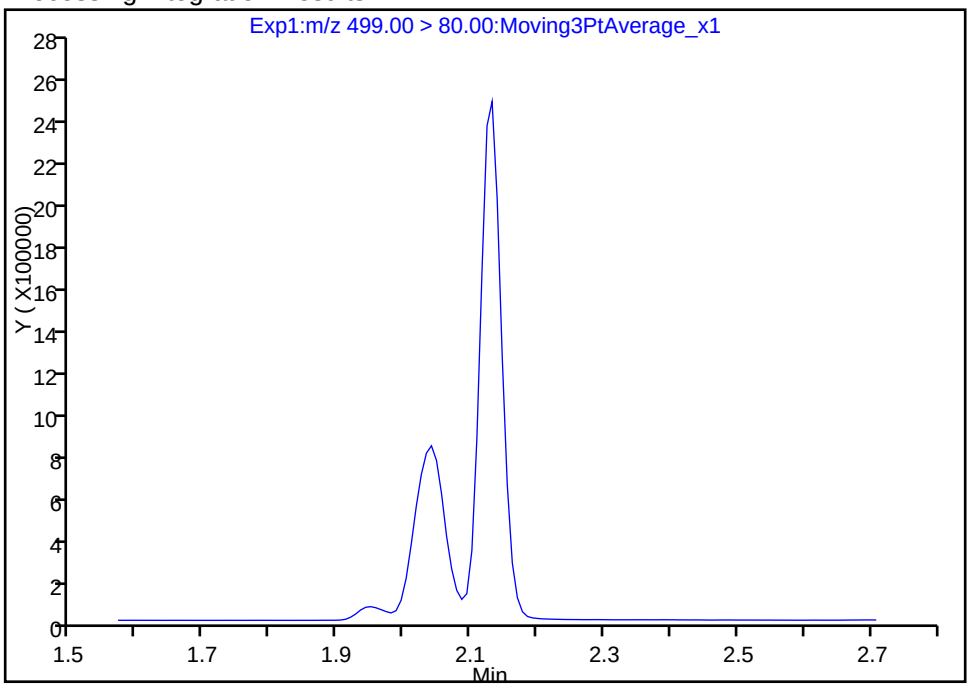
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_033.d
Injection Date: 29-Aug-2017 00:38:14 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 33
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

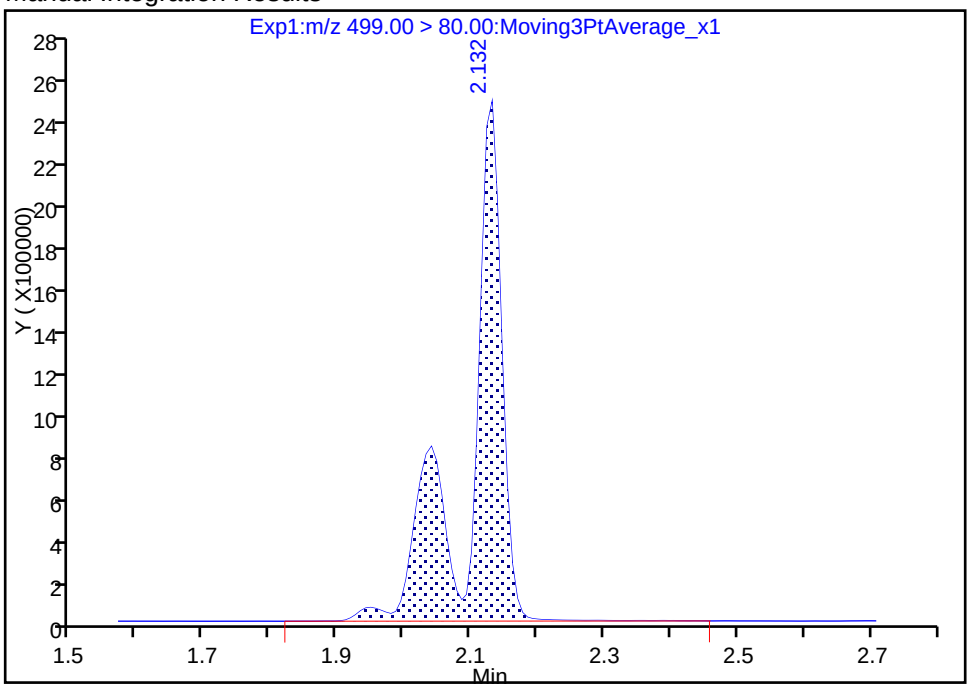
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 8398307
Amount: 60.401483
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 11:24:55
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

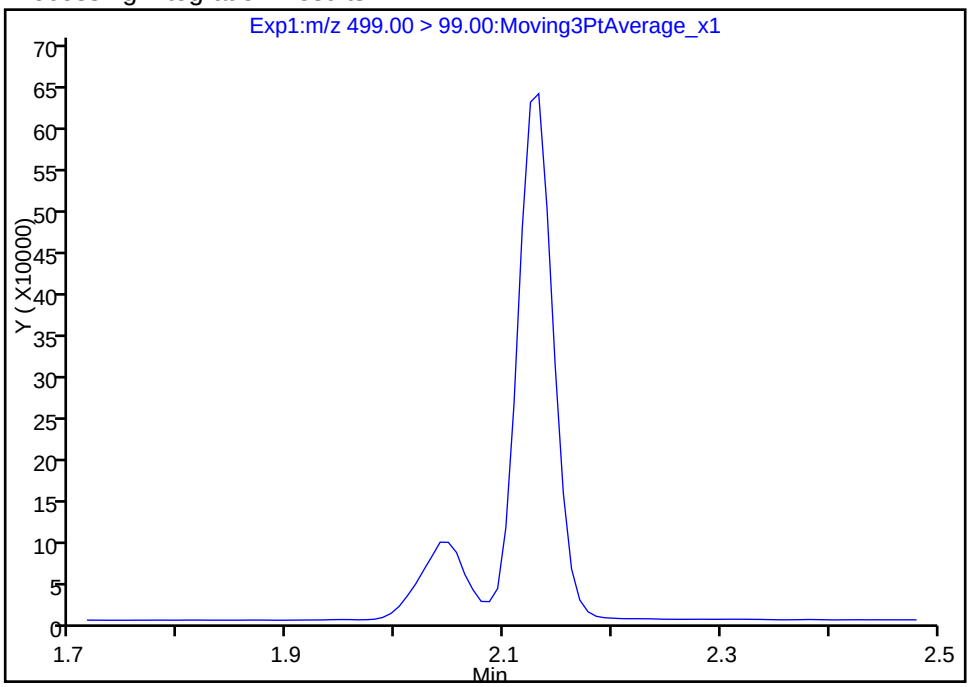
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_033.d
Injection Date: 29-Aug-2017 00:38:14 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 33
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

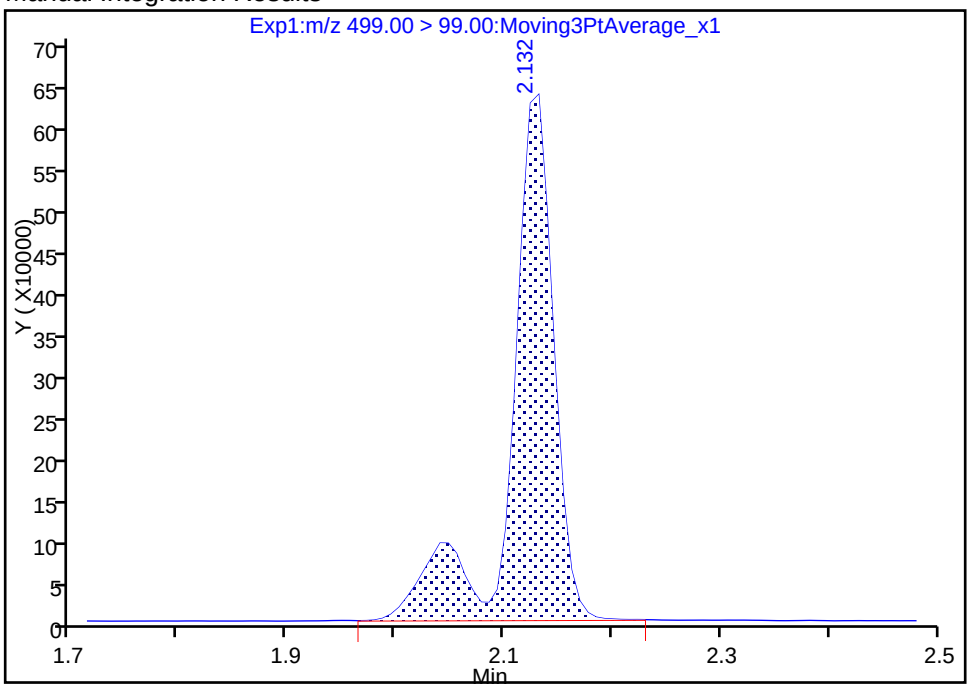
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 1757106
Amount: 60.401483
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 11:25:07
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

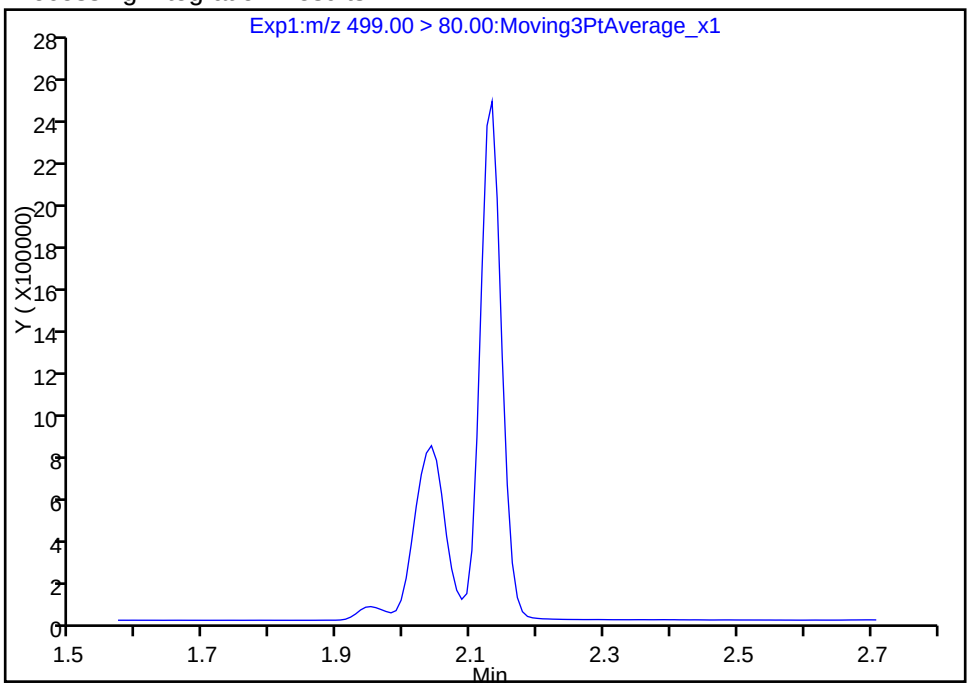
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_033.d
Injection Date: 29-Aug-2017 00:38:14 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 33
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

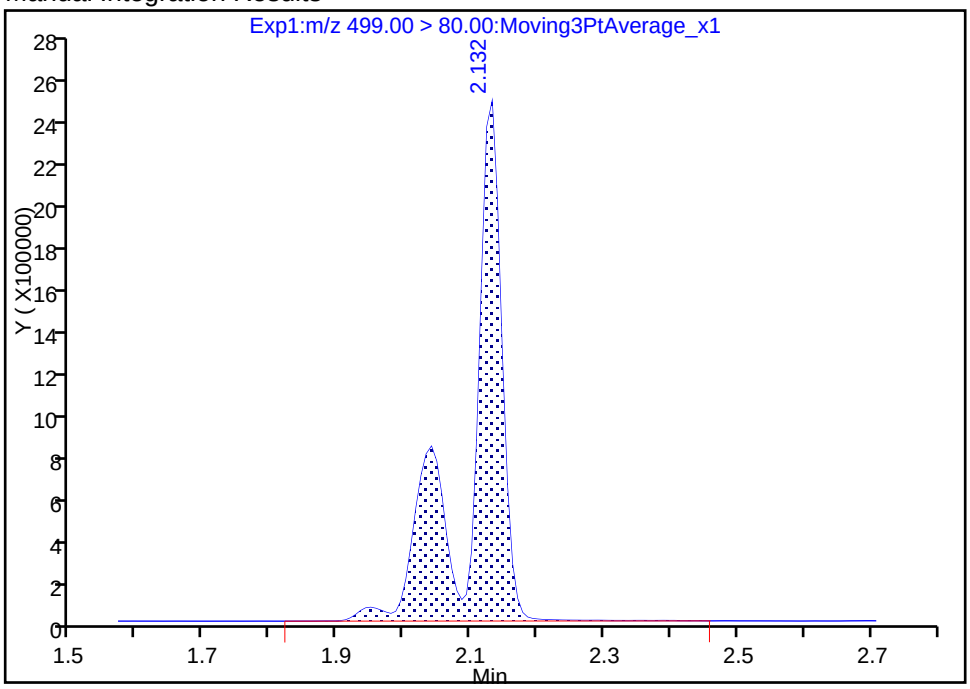
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.13
Area: 8398307
Amount: 60.401483
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 11:25:07
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-180966/1-A

Matrix: Water | Lab File ID: 2017.08.28_537B_012.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 250.00(mL) | Date Analyzed: 08/28/2017 22:58

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

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

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

Analysis Batch No.: 181720 | 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	97		70-130
STL00996	13C2 PFDA	151	Q	70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_012.d
Lims ID: MB 320-180966/1-A
Client ID:
Sample Type: MB
Inject. Date: 28-Aug-2017 22:58:20 ALS Bottle#: 8 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-180966/1-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:04 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.569	-0.021	1.000	1669150	9.73		12321	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.927	-0.045		1489691	10.0		9537	
* 7 13C4 PFOS									
503.00 > 80.00	2.140	2.186	-0.046		4561251	28.7		758	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.344	-0.038	1.000	1245070	15.1		14392	

Report Date: 29-Aug-2017 14:25:07 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_012.d

Injection Date: 28-Aug-2017 22:58:20 Instrument ID: A8_N

Lims ID: MB 320-180966/1-A

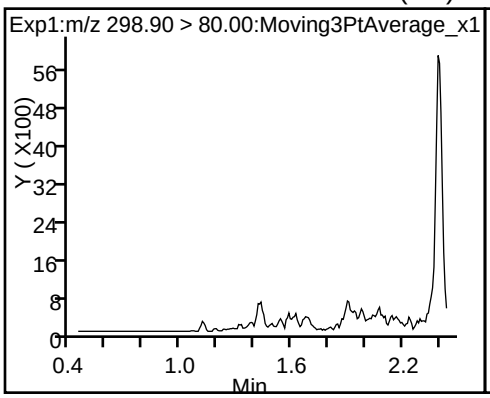
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 8 Worklist Smp#: 12

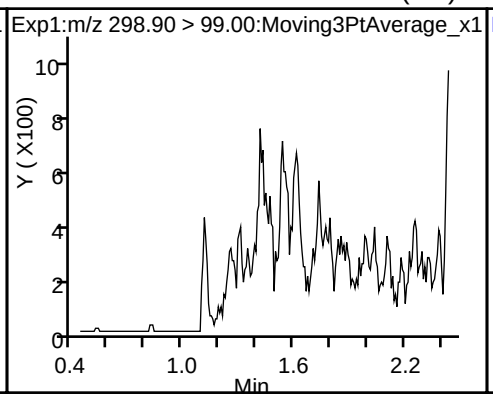
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

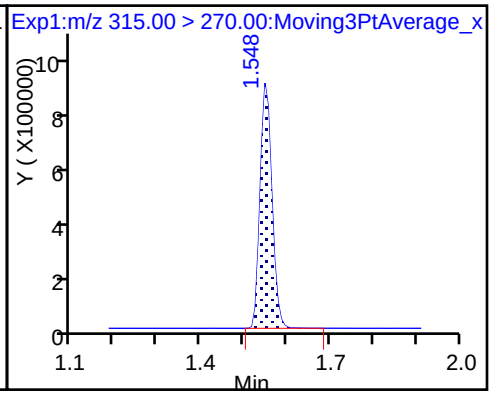
1 Perfluorobutanesulfonic acid (ND)



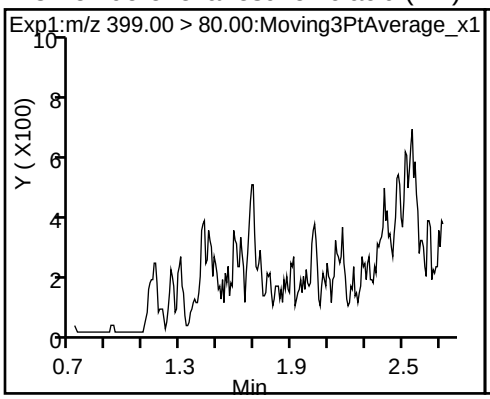
1 Perfluorobutanesulfonic acid (ND)



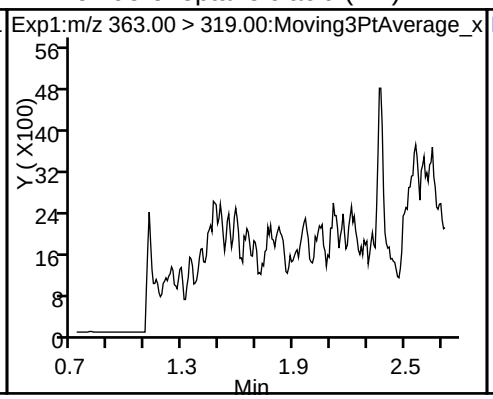
$ 2 13C2 PFHxA



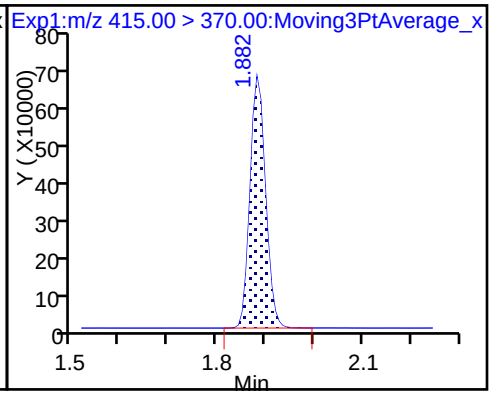
3 Perfluorohexanesulfonic acid (ND)



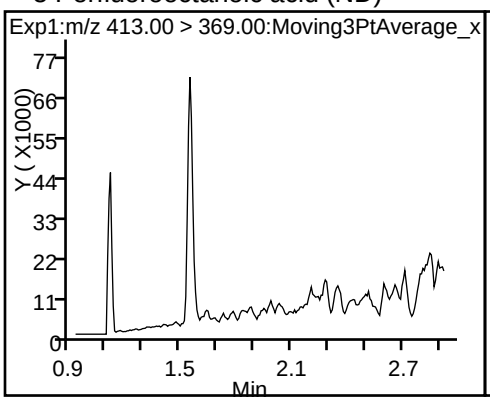
4 Perfluoroheptanoic acid (ND)



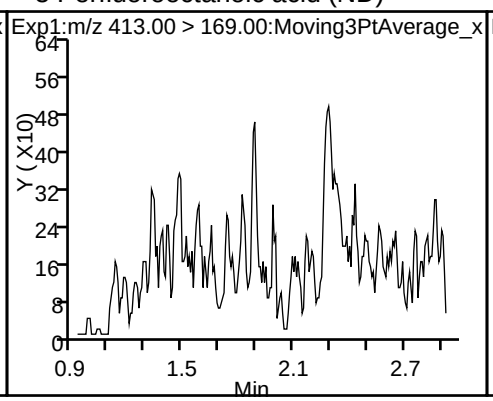
* 6 13C2-PFOA



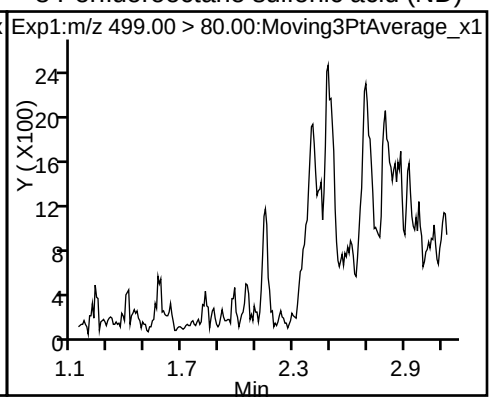
5 Perfluorooctanoic acid (ND)



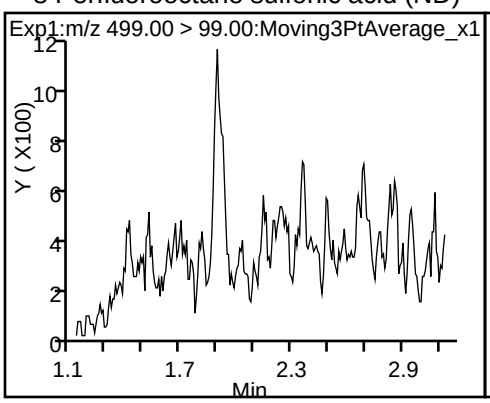
5 Perfluorooctanoic acid (ND)



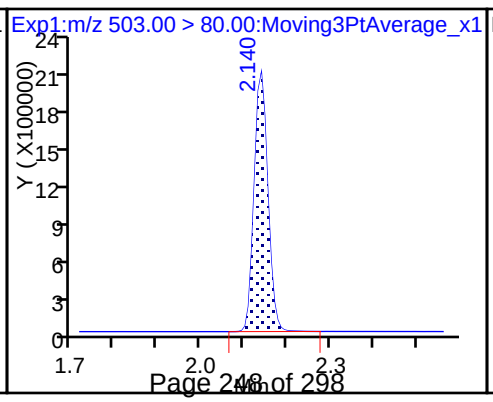
8 Perfluorooctane sulfonic acid (ND)



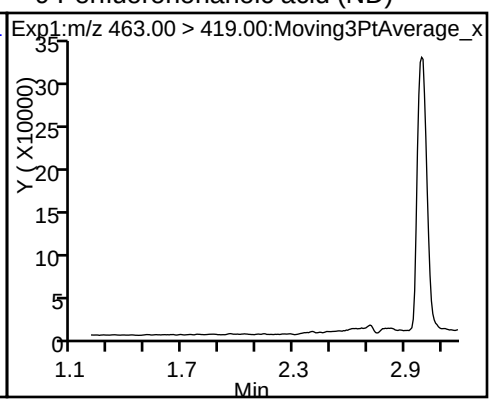
8 Perfluorooctane sulfonic acid (ND)



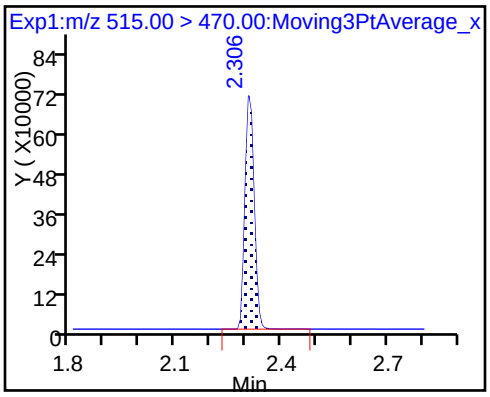
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.306
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\20170829-47240.b\2017.08.28_537B_012.d
Lims ID: MB 320-180966/1-A
Client ID:
Sample Type: MB
Inject. Date: 28-Aug-2017 22:58:20 ALS Bottle#: 8 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-180966/1-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:04 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.73	97.34
$ 10 13C2 PFDA	10.0	15.1	151.09

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 320-180966/2-A

Matrix: Water | Lab File ID: 2017.08.28_537B_013.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 250.00(mL) | Date Analyzed: 08/28/2017 23:03

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

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

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

Analysis Batch No.: 181720 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	129	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	68.3		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	68.0		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	98.6		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	37.9		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	318		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		70-130
STL00996	13C2 PFDA	134	Q	70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_013.d
Lims ID: LCS 320-180966/2-A
Client ID:
Sample Type: LCS
Inject. Date: 28-Aug-2017 23:03:05 ALS Bottle#: 9 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ps 320-180966/2-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:04 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 13:57:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.426	1.443	-0.017	1.000	11302822	79.6		7208	
298.90 > 99.00	1.426	1.443	-0.017	1.000	7967589		1.42(0.00-0.00)	7192	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.569	-0.021	1.000	1636814	9.91		13625	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.722	-0.030	1.000	6000285	24.6		6109	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.722	-0.030	1.000	1215737	9.48		333	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.927	-0.045		1435298	10.0		8057	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.928	-0.046	1.000	2223965	17.1		88.8	
413.00 > 169.00	1.882	1.928	-0.046	1.000	1109878		2.00(0.00-0.00)	2977	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.140	2.132	0.008	1.000	4653040	32.2		2089	M
499.00 > 99.00	2.140	2.132	0.008	1.000	966857		4.81(0.00-0.00)	892	M
* 7 13C4 PFOS									
503.00 > 80.00	2.140	2.186	-0.046		4510726	28.7		767	
9 Perfluorononanoic acid									
463.00 > 419.00	2.147	2.195	-0.048	1.000	1473526	17.0		55.7	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.344	-0.038	1.000	1063393	13.4		11598	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 29-Aug-2017 14:25:08 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_013.d

Injection Date: 28-Aug-2017 23:03:05 Instrument ID: A8_N

Lims ID: LCS 320-180966/2-A

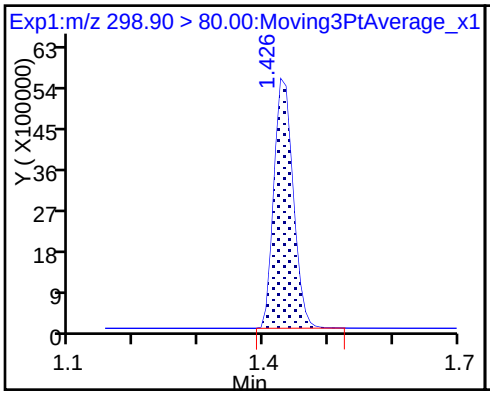
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 13

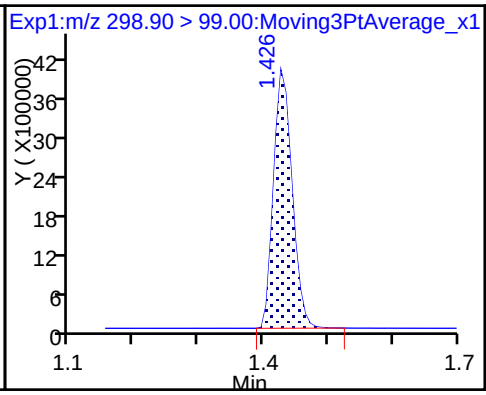
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

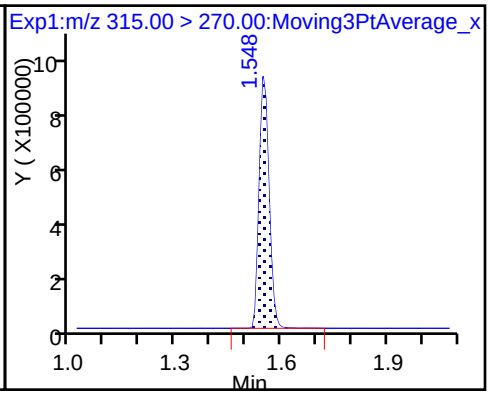
1 Perfluorobutanesulfonic acid



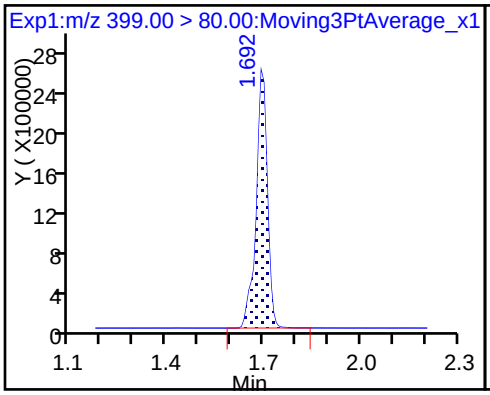
1 Perfluorobutanesulfonic acid



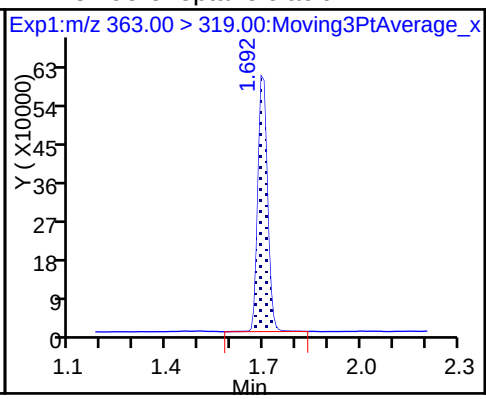
$ 2 13C2 PFHxA



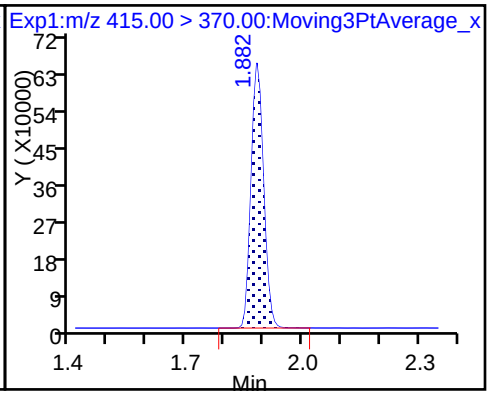
3 Perfluorohexanesulfonic acid



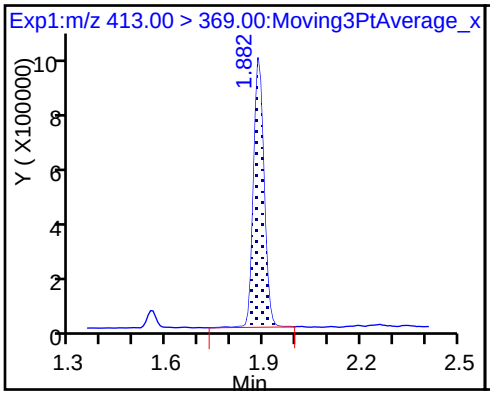
4 Perfluoroheptanoic acid



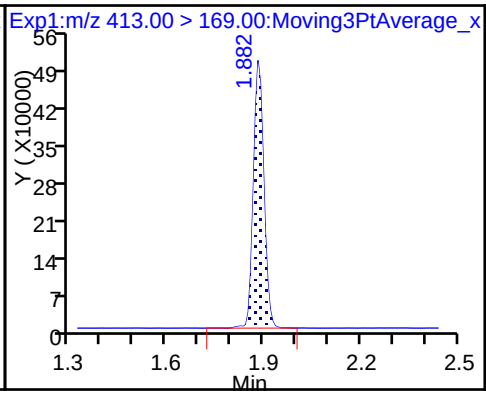
* 6 13C2-PFOA



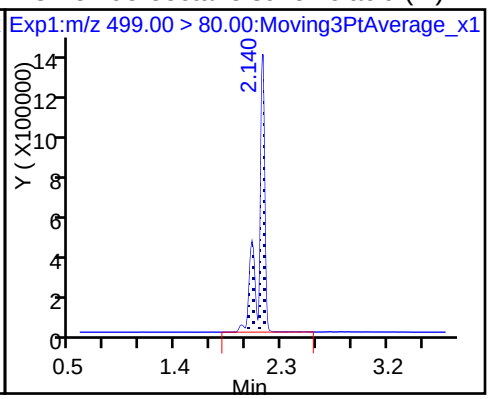
5 Perfluorooctanoic acid



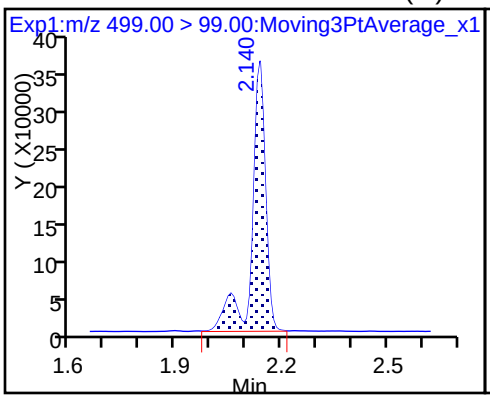
5 Perfluorooctanoic acid



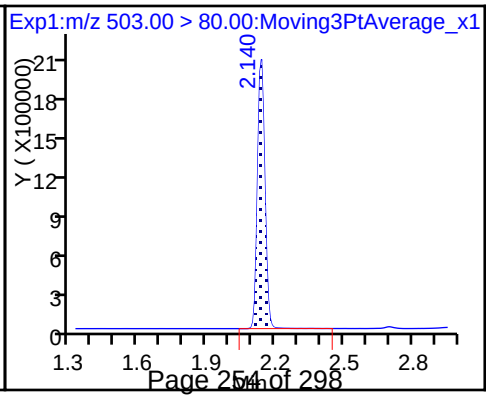
8 Perfluorooctane sulfonic acid (M)



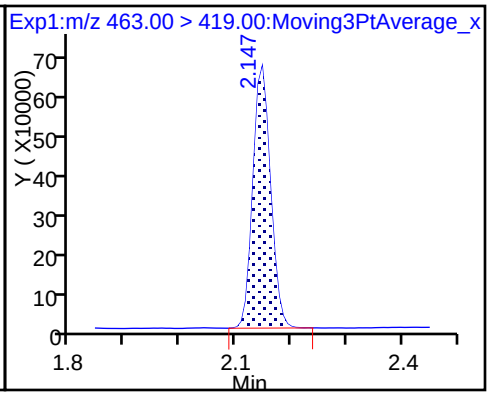
8 Perfluorooctane sulfonic acid (M)



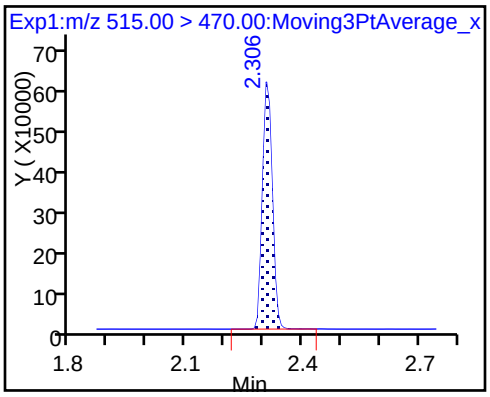
* 7 13C4 PFOS



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

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_013.d
Lims ID: LCS 320-180966/2-A
Client ID:
Sample Type: LCS
Inject. Date: 28-Aug-2017 23:03:05 ALS Bottle#: 9 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ps 320-180966/2-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:04 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 13:57:34

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.91	99.07
$ 10 13C2 PFDA	10.0	13.4	133.93

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

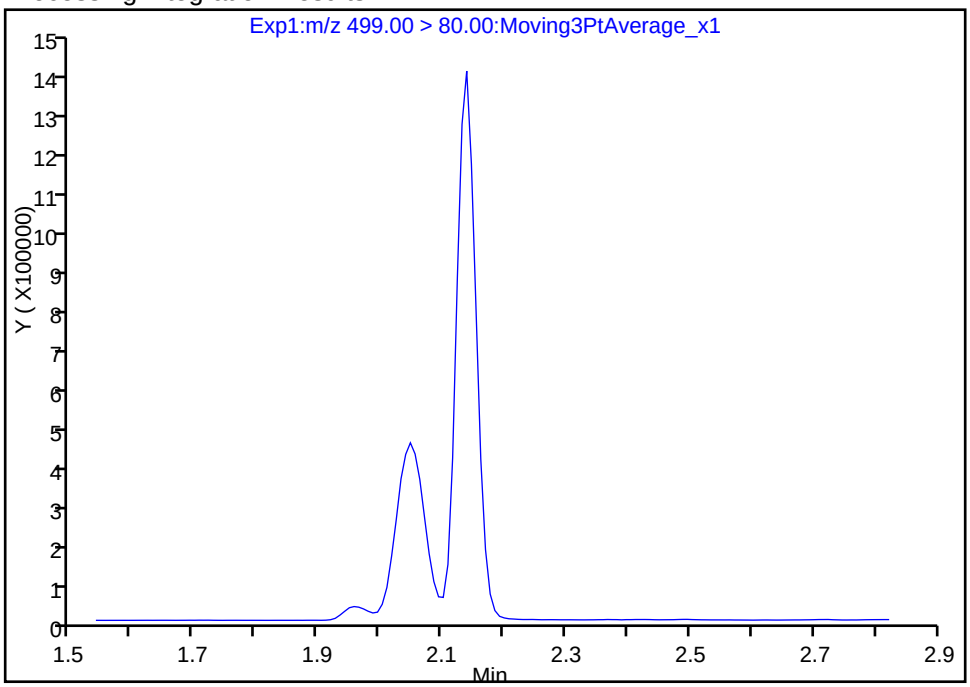
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_013.d
Injection Date: 28-Aug-2017 23:03:05 Instrument ID: A8_N
Lims ID: LCS 320-180966/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

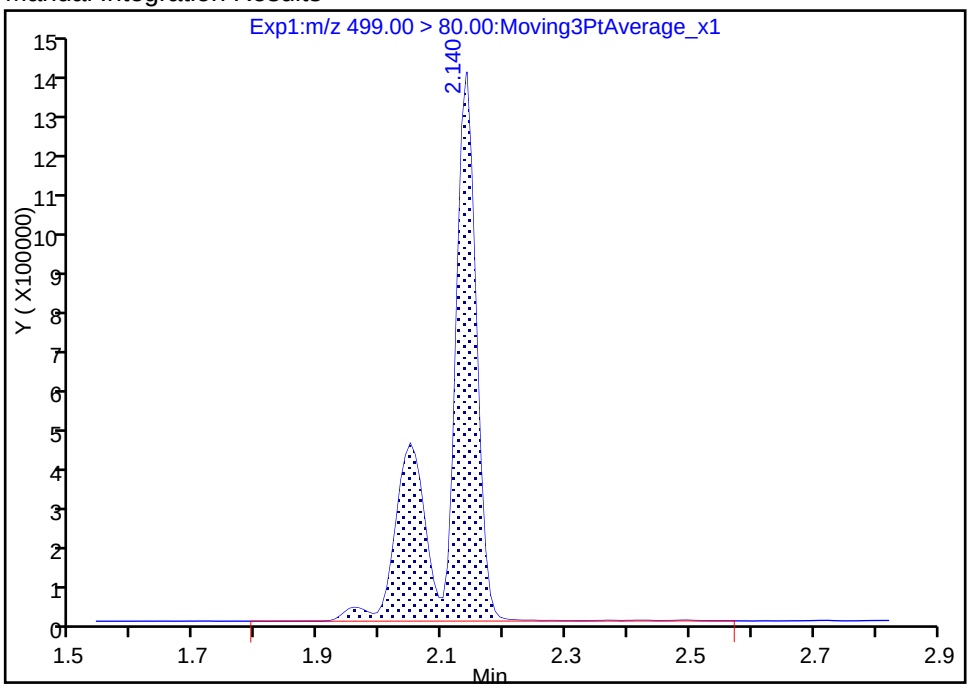
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.14
Area: 4653040
Amount: 32.172243
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 13:57:14
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

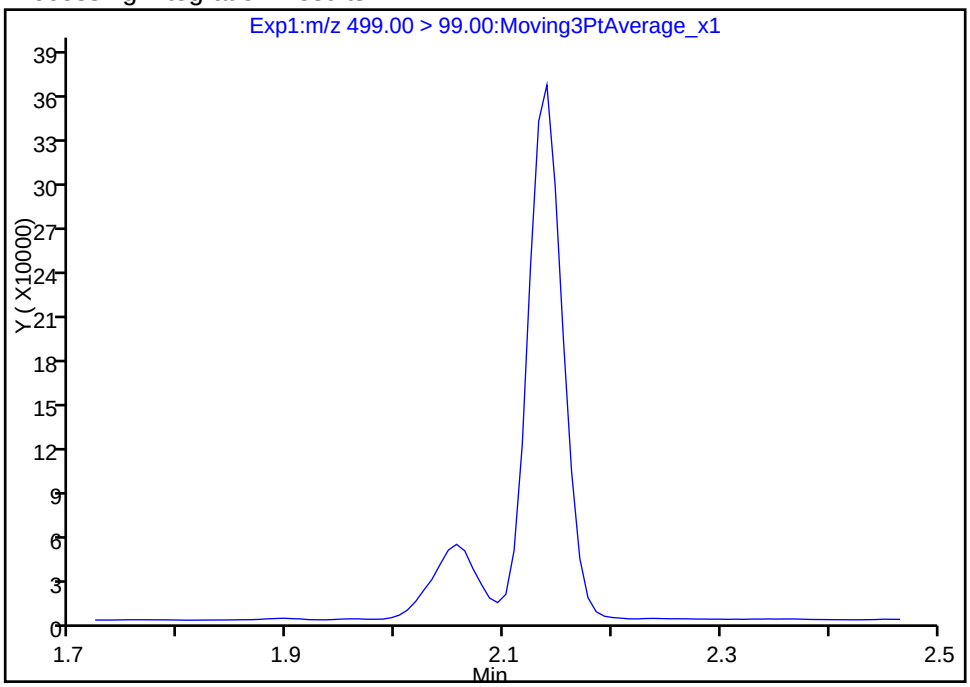
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_013.d
Injection Date: 28-Aug-2017 23:03:05 Instrument ID: A8_N
Lims ID: LCS 320-180966/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

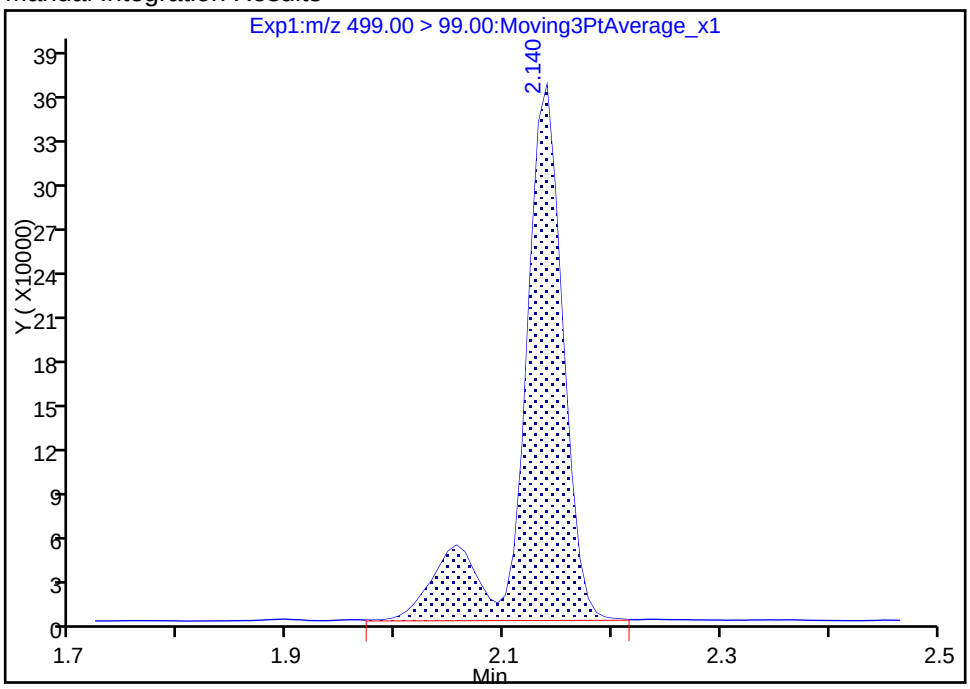
Processing Integration Results

Not Detected
Expected RT: 2.13



Manual Integration Results

RT: 2.14
Area: 966857
Amount: 32.172243
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 13:57:28
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

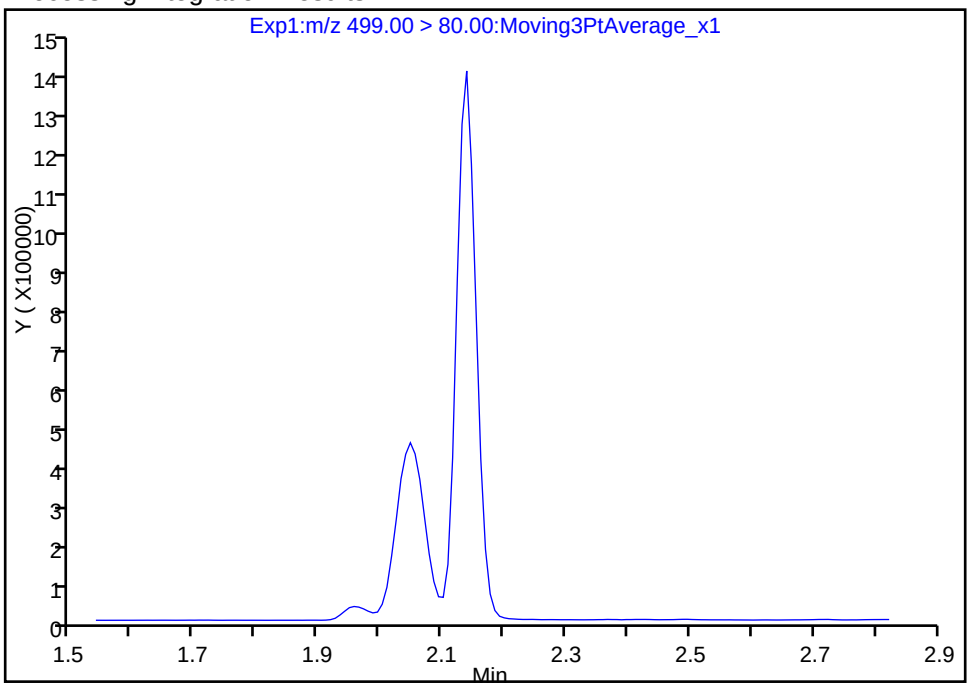
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_013.d
Injection Date: 28-Aug-2017 23:03:05 Instrument ID: A8_N
Lims ID: LCS 320-180966/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

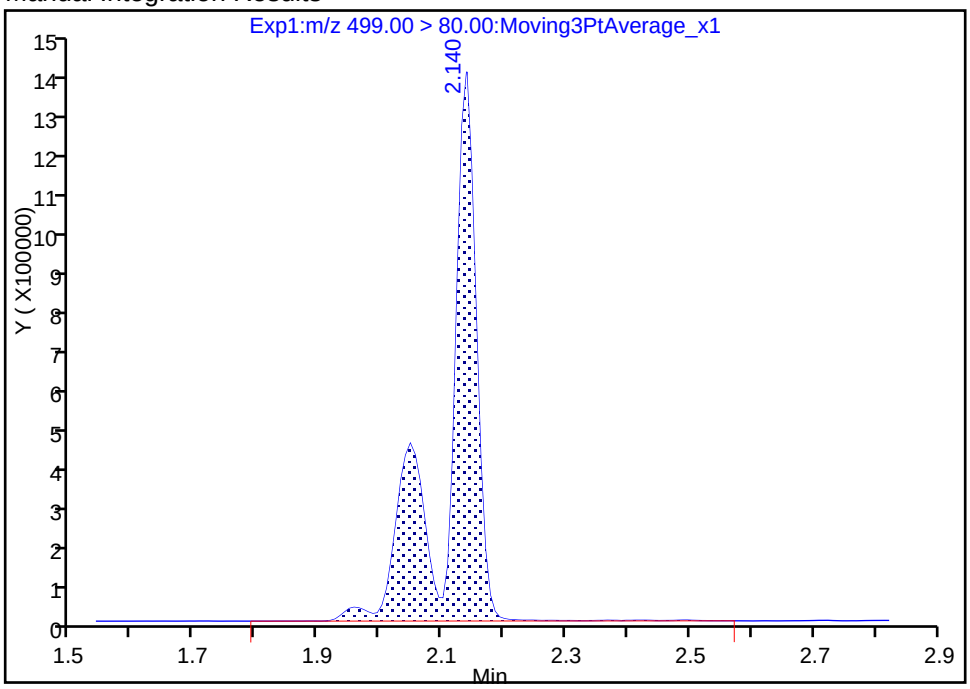
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.14
Area: 4653040
Amount: 32.172243
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 13:57:28
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-RW-3607 MS Lab Sample ID: 320-30866-1 MS

Matrix: Water Lab File ID: 2017.08.28_537B_024.d

Analysis Method: 537 Date Collected: 08/17/2017 13:40

Extraction Method: 537 Date Extracted: 08/24/2017 09:54

Sample wt/vol: 255.6(mL) Date Analyzed: 08/28/2017 23:55

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.: 181721 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	149	M	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	92.0		20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	71.1		23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	106		29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	40.9		9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	322		88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	131	Q	70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_024.d
Lims ID: 320-30866-A-1-B MS
Client ID: WGNA-081717-RW-3607
Sample Type: MS
Inject. Date: 28-Aug-2017 23:55:25 ALS Bottle#: 18 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30866-a-1-b ms
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 14:03:00

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.443	-0.024	1.000	11744966	82.3		4683	
298.90 > 99.00	1.419	1.443	-0.024	1.000	7928939		1.48(0.00-0.00)	7104	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.569	-0.029	1.000	1477131	8.83		10965	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.722	-0.038	1.000	6640394	27.0		2268	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.722	-0.038	1.000	1358740	10.5		229	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.927	-0.061		1453918	10.0		9419	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.928	-0.054	1.000	3100410	23.5		105	
413.00 > 169.00	1.866	1.928	-0.062	0.996	1640951		1.89(0.00-0.00)	3485	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.124	2.132	-0.008	1.000	5564407	38.1		1507	M
499.00 > 99.00	2.124	2.132	-0.008	1.000	1075346		5.17(0.00-0.00)	808	M
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.186	-0.062		4554071	28.7		752	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.195	-0.063	1.000	1596776	18.2		45.7	
$ 10 13C2 PFDA									
515.00 > 470.00	2.299	2.344	-0.045	1.000	1057207	13.1		11656	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 29-Aug-2017 14:25:21 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_024.d

Injection Date: 28-Aug-2017 23:55:25 Instrument ID: A8_N

Lims ID: 320-30866-A-1-B MS

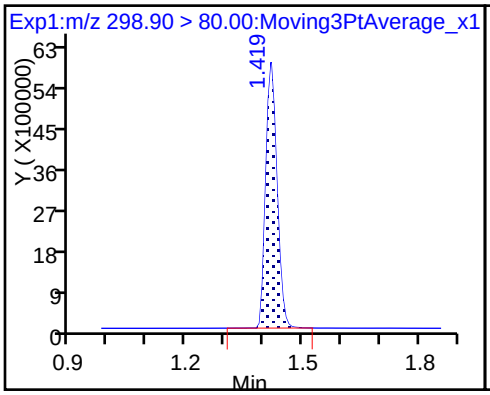
Client ID: WGNA-081717-RW-3607

Operator ID: SACINSTLCMS01 ALS Bottle#: 18 Worklist Smp#: 24

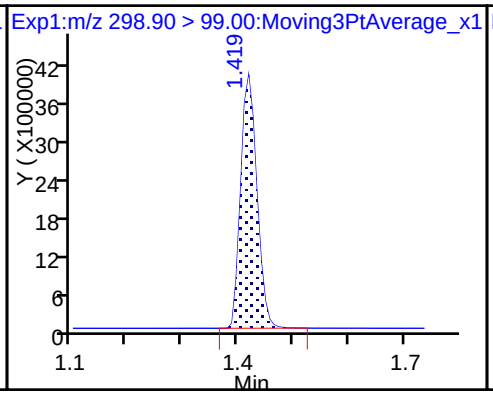
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

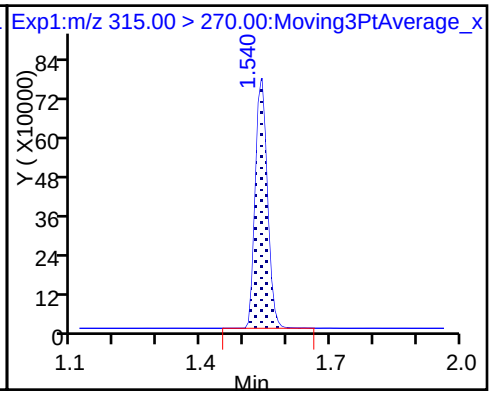
1 Perfluorobutanesulfonic acid



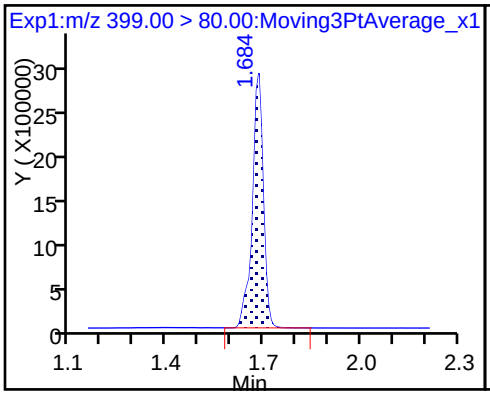
1 Perfluorobutanesulfonic acid



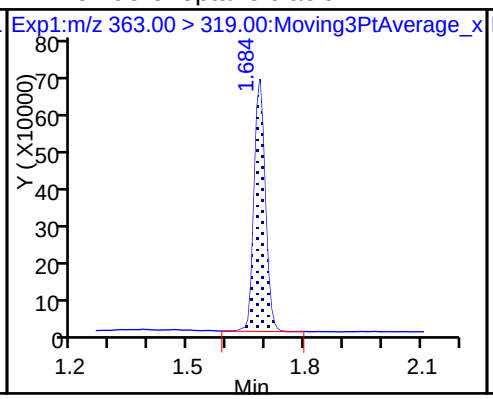
$ 2 13C2 PFHxA



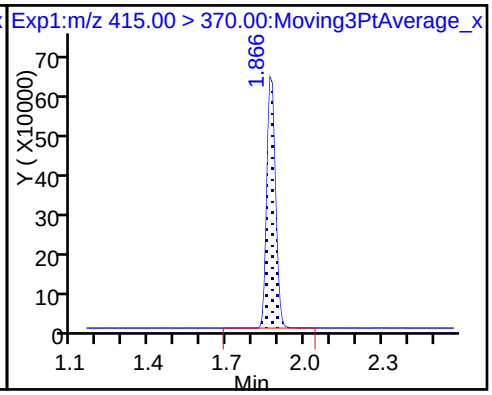
3 Perfluorohexanesulfonic acid



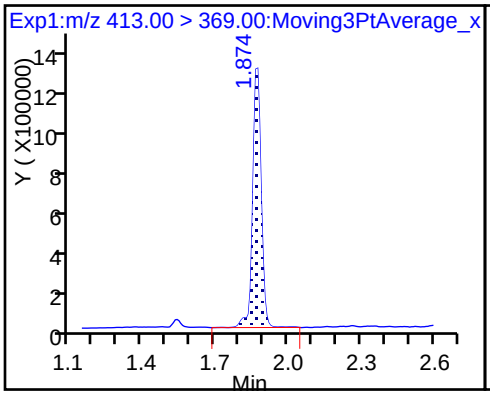
4 Perfluoroheptanoic acid



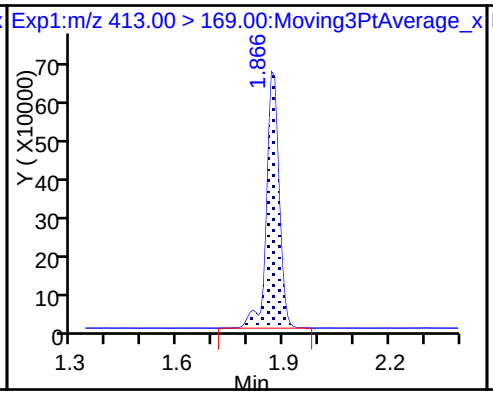
* 6 13C2-PFOA



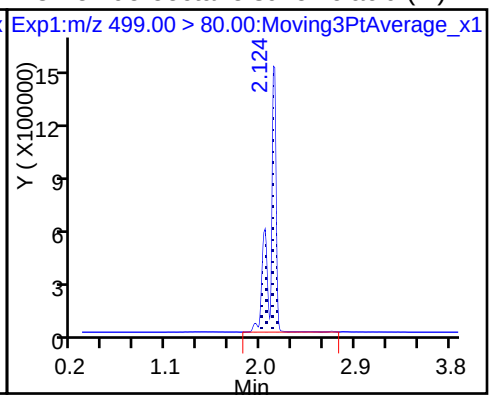
5 Perfluorooctanoic acid



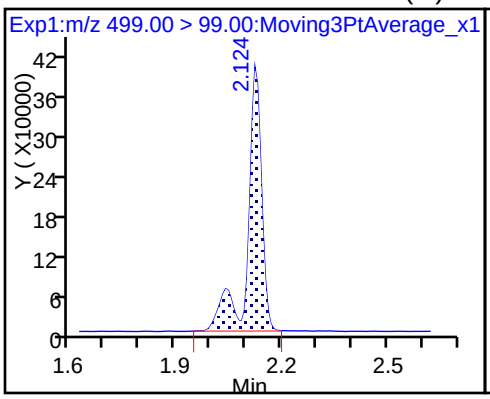
5 Perfluorooctanoic acid



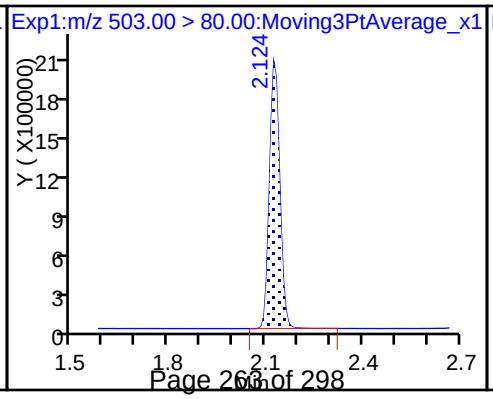
8 Perfluorooctane sulfonic acid (M)



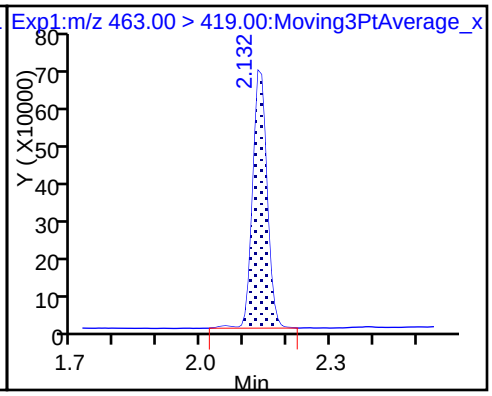
8 Perfluorooctane sulfonic acid (M)



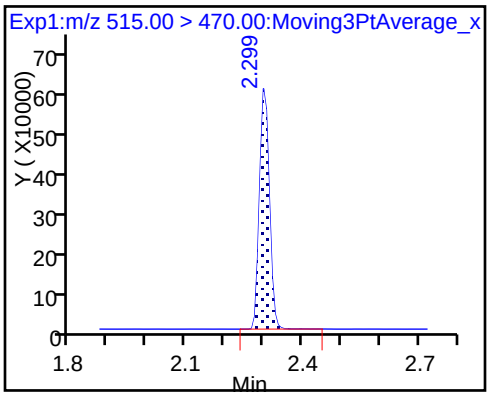
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.299
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\20170829-47240.b\2017.08.28_537B_024.d
Lims ID: 320-30866-A-1-B MS
Client ID: WGNA-081717-RW-3607
Sample Type: MS
Inject. Date: 28-Aug-2017 23:55:25 ALS Bottle#: 18 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30866-a-1-b ms
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 14:03:00

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.83	88.26
$ 10 13C2 PFDA	10.0	13.1	131.45

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

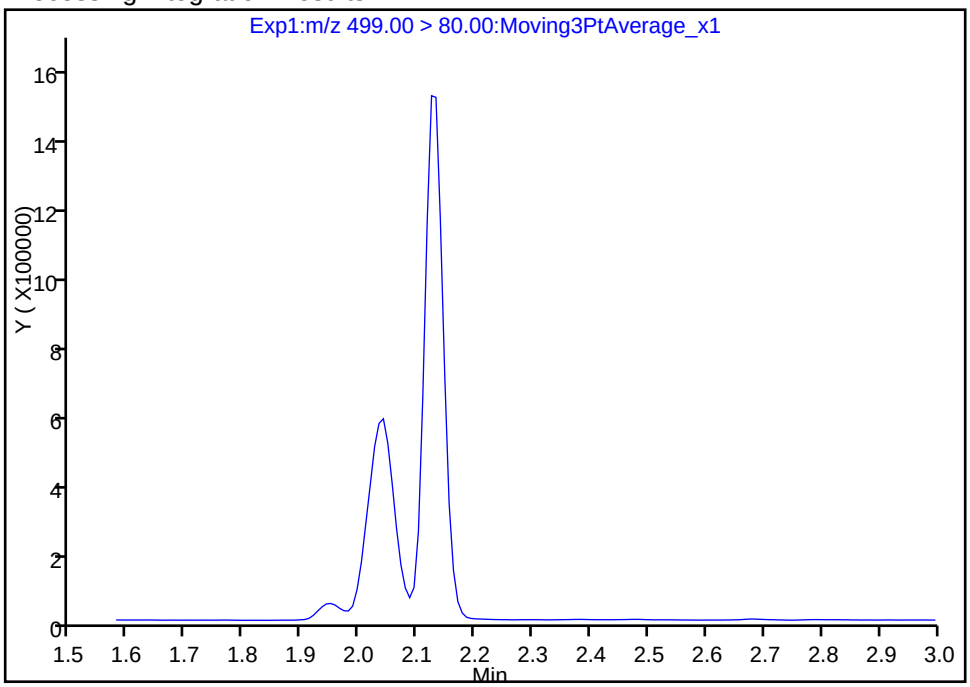
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_024.d				
Injection Date:	28-Aug-2017 23:55:25	Instrument ID:	A8_N		
Lims ID:	320-30866-A-1-B MS				
Client ID:	WGNA-081717-RW-3607				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. 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

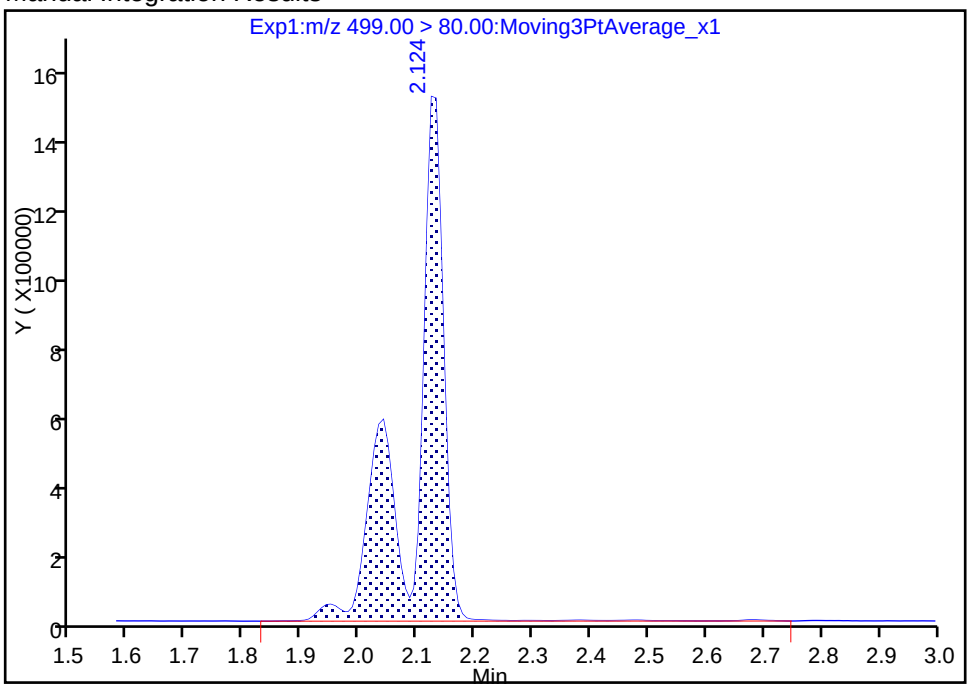
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 5564407
Amount: 38.107468
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:02:39
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

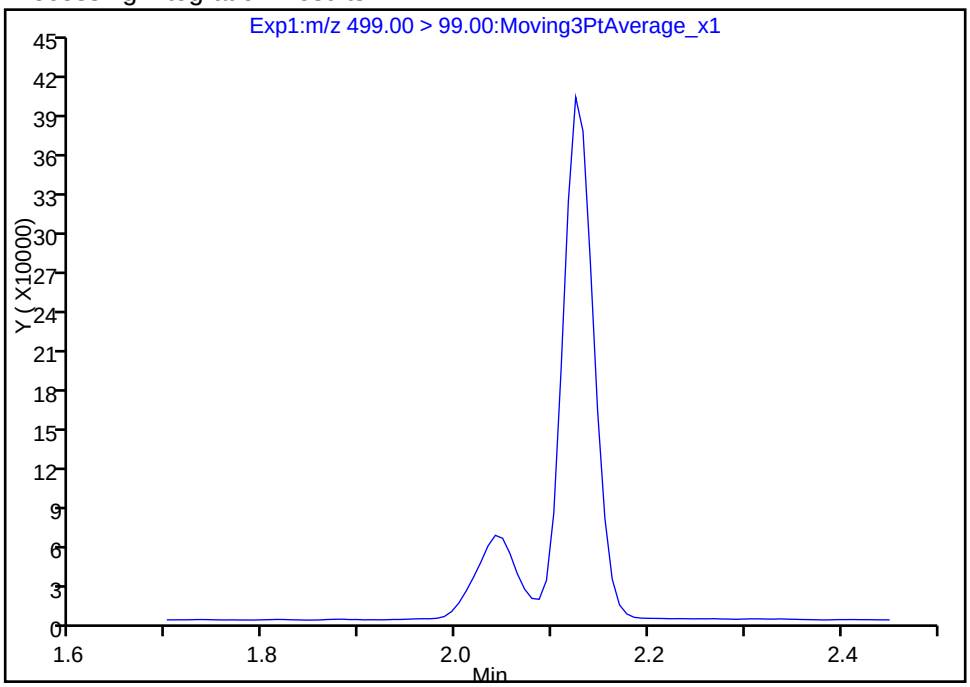
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_024.d				
Injection Date:	28-Aug-2017 23:55:25	Instrument ID:	A8_N		
Lims ID:	320-30866-A-1-B MS				
Client ID:	WGNA-081717-RW-3607				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. 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

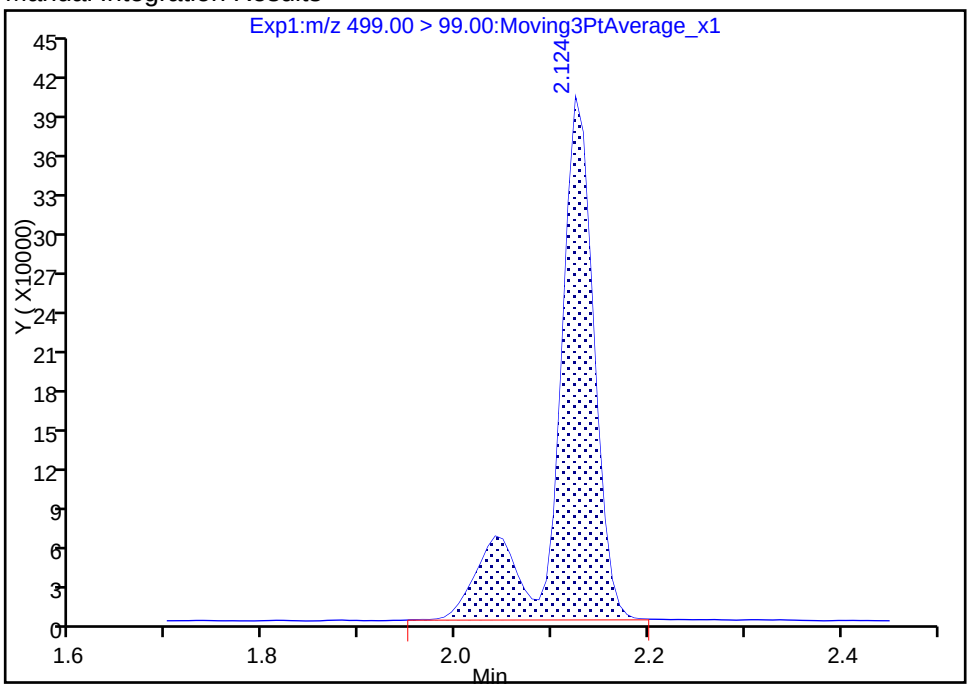
Not Detected
Expected RT: 2.13

Processing Integration Results



RT: 2.12
Area: 1075346
Amount: 38.107468
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 29-Aug-2017 14:02:52
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

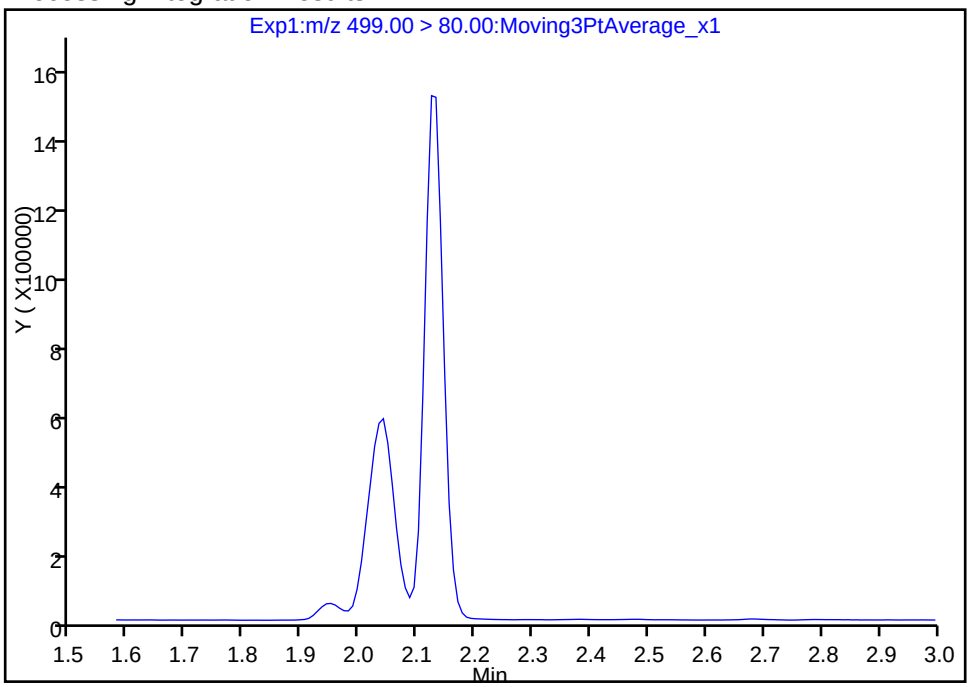
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_024.d
Injection Date: 28-Aug-2017 23:55:25 Instrument ID: A8_N
Lims ID: 320-30866-A-1-B MS
Client ID: WGNA-081717-RW-3607
Operator ID: SACINSTLCMS01 ALS Bottle#: 18 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

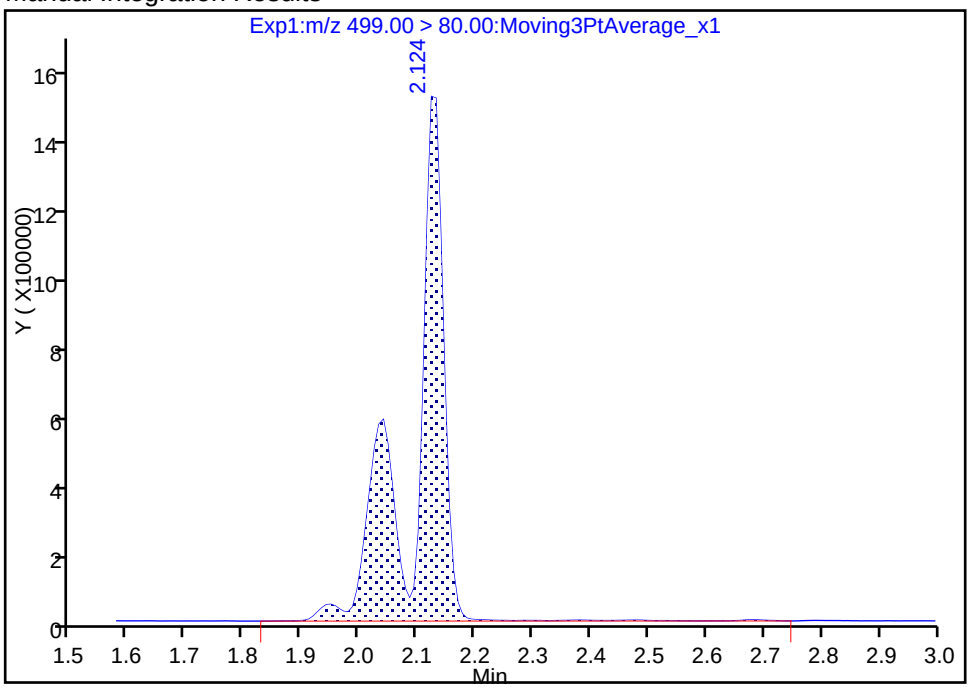
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 5564407
Amount: 38.107468
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:02:52
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-RW-3607 MSD Lab Sample ID: 320-30866-1 MSD

Matrix: Water Lab File ID: 2017.08.28_537B_025.d

Analysis Method: 537 Date Collected: 08/17/2017 13:40

Extraction Method: 537 Date Extracted: 08/24/2017 09:54

Sample wt/vol: 265.7(mL) Date Analyzed: 08/29/2017 00:00

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.: 181721 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	145	M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	86.8		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	68.6		23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	97.6		28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	35.6		9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	300		85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	116		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_025.d
Lims ID: 320-30866-A-1-C MSD
Client ID: WGNA-081717-RW-3607
Sample Type: MSD
Inject. Date: 29-Aug-2017 00:00:11 ALS Bottle#: 19 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30866-a-1-c msd
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 14:03:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.443	-0.024	1.000	11271015	79.6		4832	
298.90 > 99.00	1.419	1.443	-0.024	1.000	7971415		1.41(0.00-0.00)	7208	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.569	-0.029	1.000	1412341	8.64		11185	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.722	-0.038	1.000	6299690	25.9		2191	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.722	-0.038	1.000	1199258	9.46		211	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.927	-0.061		1419282	10.0		8886	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.928	-0.054	1.000	2968795	23.1		98.5	
413.00 > 169.00	1.874	1.928	-0.054	1.000	1608171		1.85(0.00-0.00)	3421	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.124	2.132	-0.008	1.000	5560350	38.6		1401	M
499.00 > 99.00	2.124	2.132	-0.008	1.000	1091704		5.09(0.00-0.00)	847	M
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.186	-0.062		4497910	28.7		779	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.195	-0.063	1.000	1563951	18.2		65.0	
$ 10 13C2 PFDA									
515.00 > 470.00	2.299	2.344	-0.045	1.000	907342	11.6		9923	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 29-Aug-2017 14:25:23 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_025.d

Injection Date: 29-Aug-2017 00:00:11 Instrument ID: A8_N

Lims ID: 320-30866-A-1-C MSD

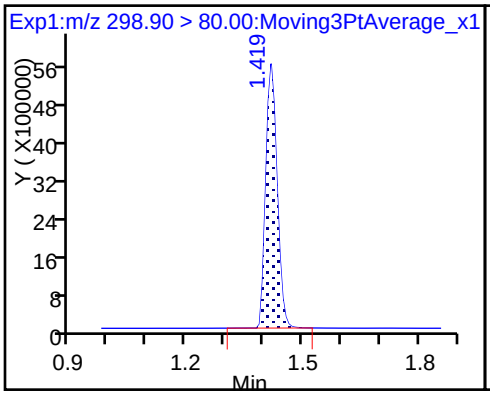
Client ID: WGNA-081717-RW-3607

Operator ID: SACINSTLCMS01 ALS Bottle#: 19 Worklist Smp#: 25

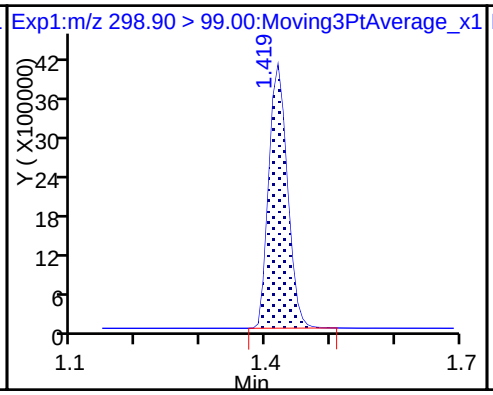
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

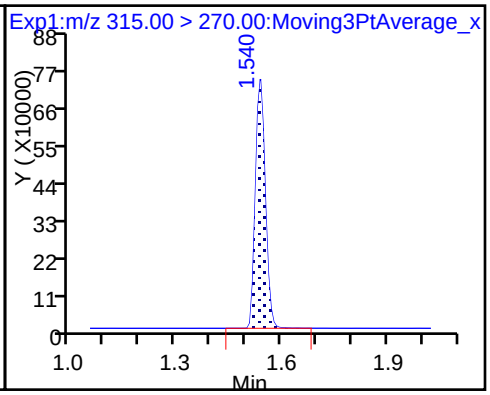
1 Perfluorobutanesulfonic acid



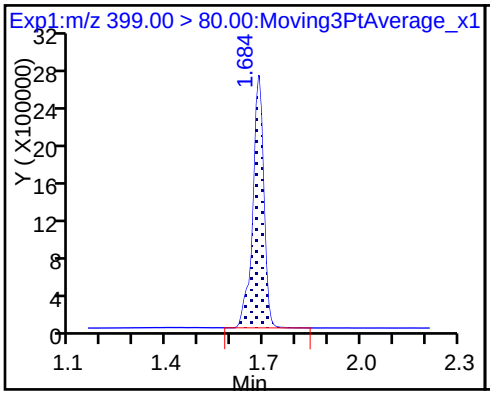
1 Perfluorobutanesulfonic acid



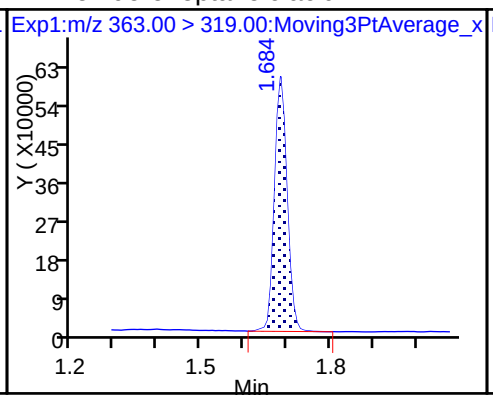
$ 2 13C2 PFHxA



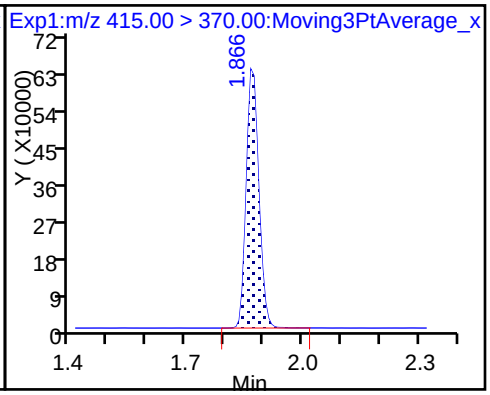
3 Perfluorohexanesulfonic acid



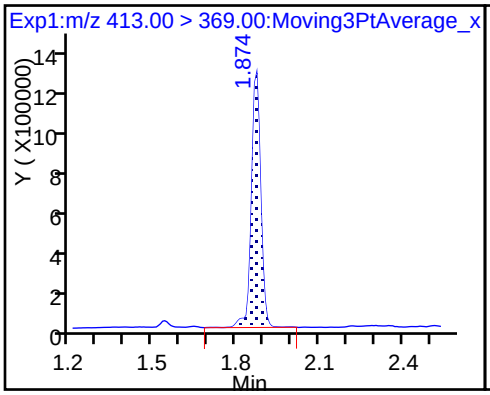
4 Perfluoroheptanoic acid



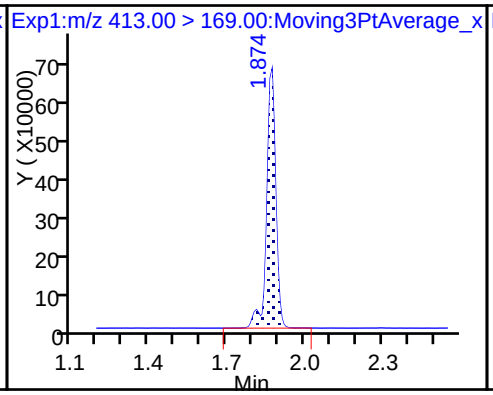
* 6 13C2-PFOA



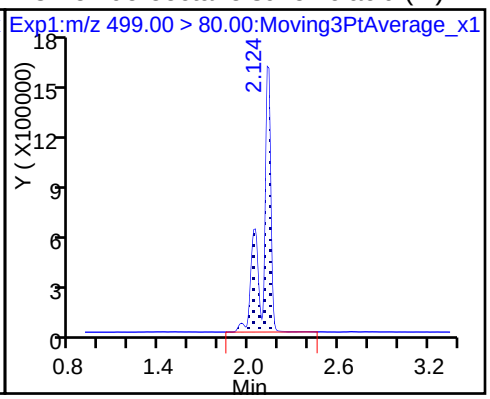
5 Perfluorooctanoic acid



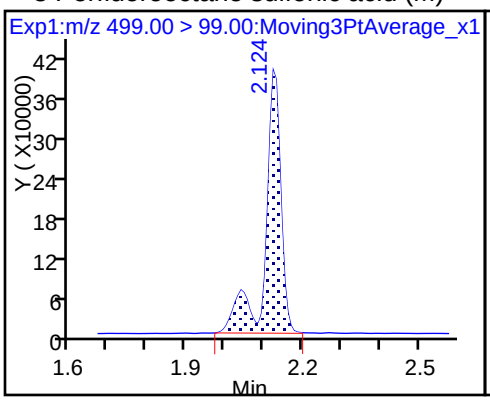
5 Perfluorooctanoic acid



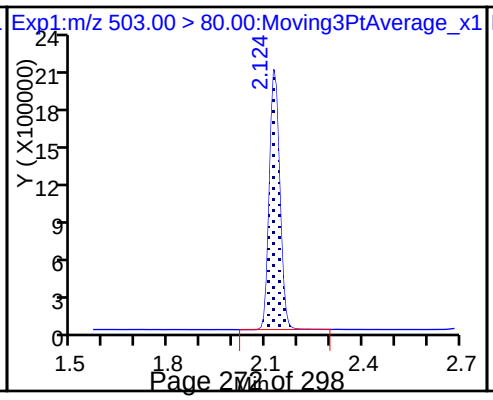
8 Perfluorooctane sulfonic acid (M)



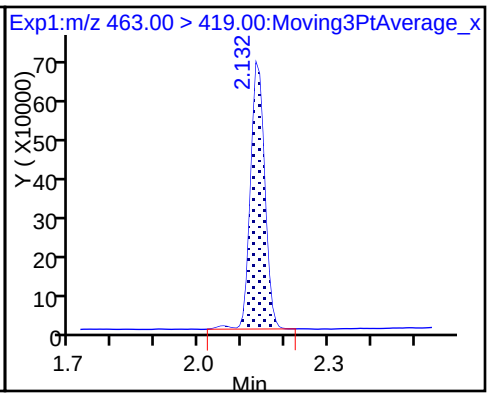
8 Perfluorooctane sulfonic acid (M)



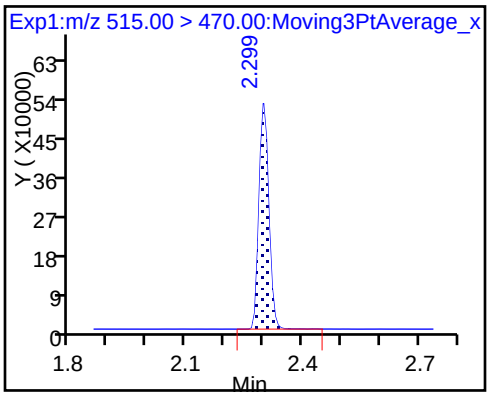
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.299
Y (X10000)
63
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_025.d
Lims ID: 320-30866-A-1-C MSD
Client ID: WGNA-081717-RW-3607
Sample Type: MSD
Inject. Date: 29-Aug-2017 00:00:11 ALS Bottle#: 19 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-30866-a-1-c msd
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2017 14:25:18 Calib Date: 28-Aug-2017 16:36:00
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170828-47230.b\2017.08.28_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 29-Aug-2017 14:03:48

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.64	86.45
$ 10 13C2 PFDA	10.0	11.6	115.57

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

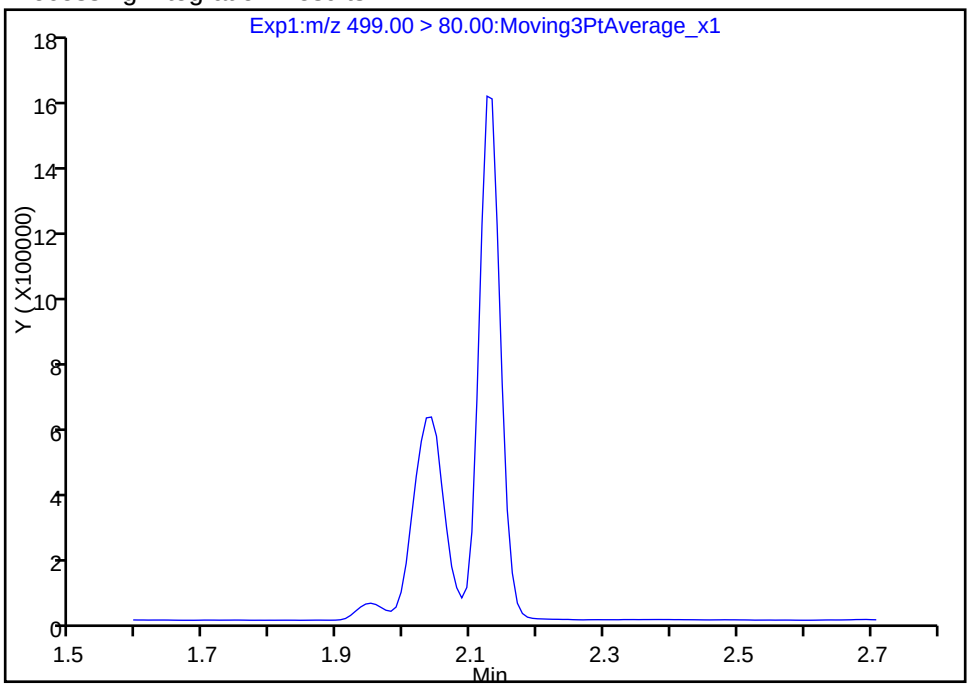
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_025.d				
Injection Date:	29-Aug-2017 00:00:11	Instrument ID:	A8_N		
Lims ID:	320-30866-A-1-C MSD				
Client ID:	WGNA-081717-RW-3607				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	19	Worklist Smp#:	25
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

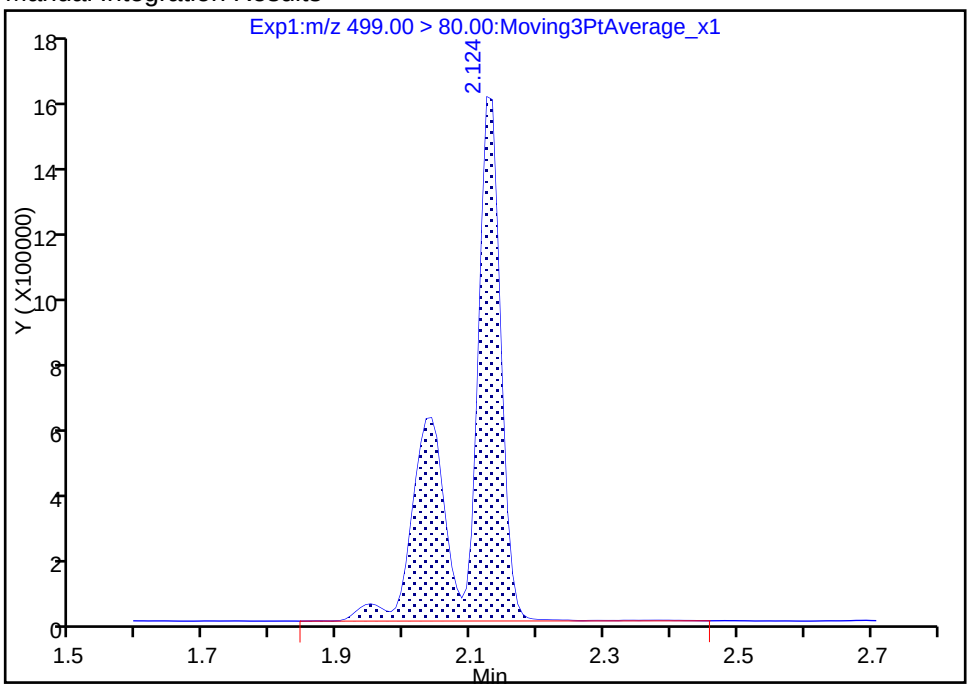
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 5560350
Amount: 38.555148
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:03:09
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

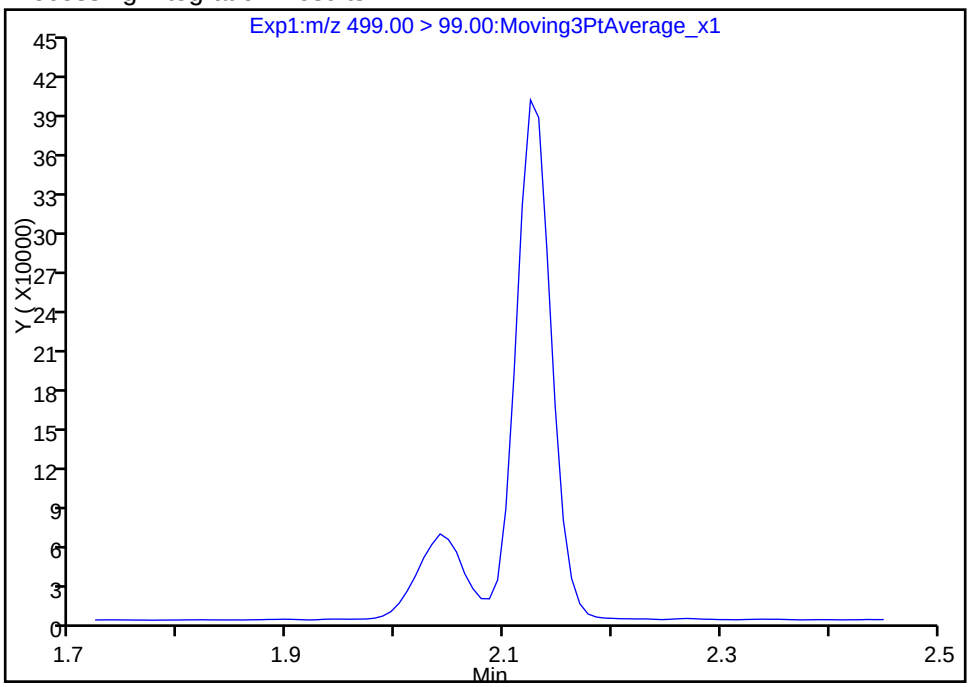
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_025.d				
Injection Date:	29-Aug-2017 00:00:11	Instrument ID:	A8_N		
Lims ID:	320-30866-A-1-C MSD				
Client ID:	WGNA-081717-RW-3607				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	19	Worklist Smp#:	25
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 2

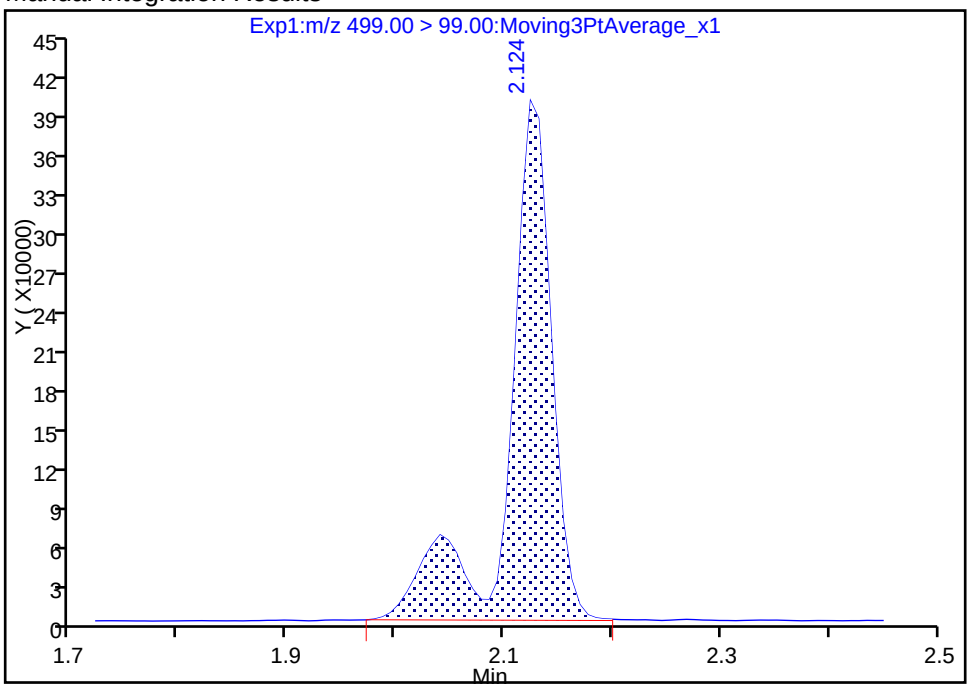
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 1091704
Amount: 38.555148
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:03:35
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

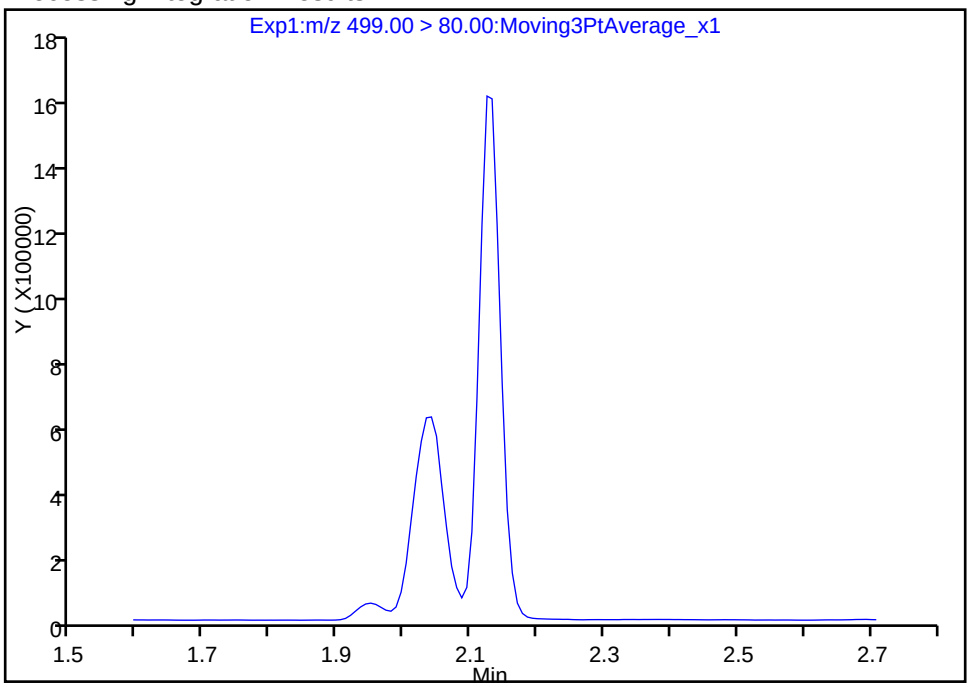
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b\2017.08.28_537B_025.d				
Injection Date:	29-Aug-2017 00:00:11	Instrument ID:	A8_N		
Lims ID:	320-30866-A-1-C MSD				
Client ID:	WGNA-081717-RW-3607				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	19	Worklist Smp#:	25
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

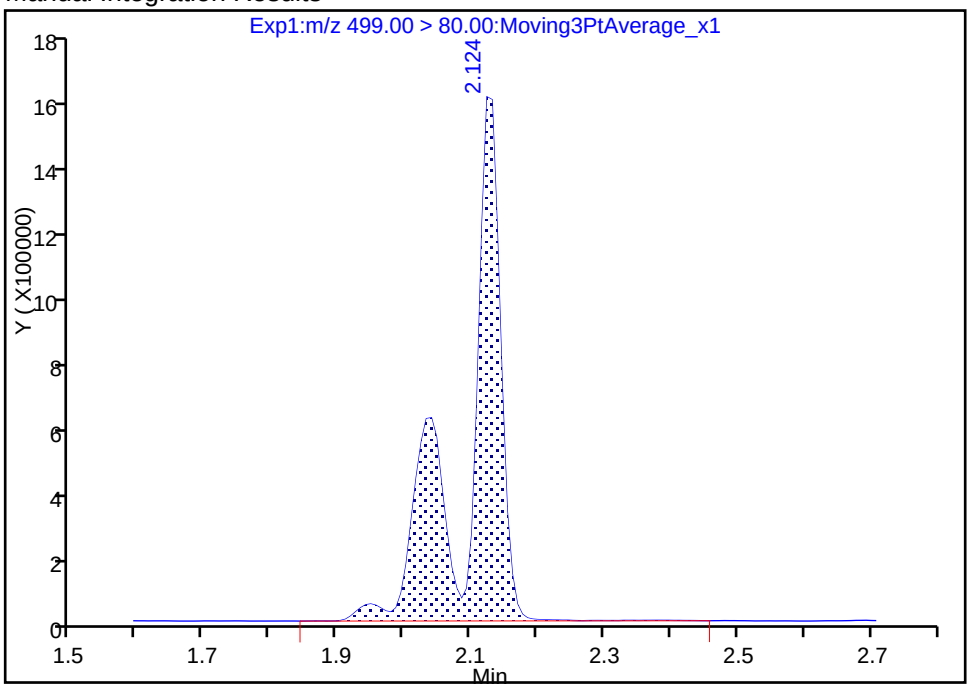
Not Detected
Expected RT: 2.13

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 5560350
Amount: 38.555148
Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2017 14:03:35
Audit Action: Manually Integrated Audit Reason: Missed Peak

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Instrument ID: A8_N Start Date: 08/28/2017 16:12

Analysis Batch Number: 181689 End Date: 08/28/2017 16:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-181689/2		08/28/2017 16:12	1	2017.08.28_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-181689/3		08/28/2017 16:16	1	2017.08.28_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-181689/4		08/28/2017 16:21	1	2017.08.28_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-181689/5 ICISAV		08/28/2017 16:26	1	2017.08.28_537I CAL 007.d	GeminiC18 3x100 3(mm)
IC 320-181689/6		08/28/2017 16:31	1	2017.08.28_537I CAL 008.d	GeminiC18 3x100 3(mm)
IC 320-181689/7		08/28/2017 16:36	1	2017.08.28_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 16:40	1		GeminiC18 3x100 3(mm)
CCVL 320-181689/9		08/28/2017 16:45	1	2017.08.28_537I CAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 16:50	1		GeminiC18 3x100 3(mm)
ICV 320-181689/11		08/28/2017 16:54	1	2017.08.28_537I CAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Instrument ID: A8_N Start Date: 08/28/2017 22:48

Analysis Batch Number: 181720 End Date: 08/28/2017 23:41

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-181720/10 CCVIS		08/28/2017 22:48	1	2017.08.28_537B 010.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 22:53	1		GeminiC18 3x100 3(mm)
MB 320-180966/1-A		08/28/2017 22:58	1	2017.08.28_537B 012.d	GeminiC18 3x100 3(mm)
LCS 320-180966/2-A		08/28/2017 23:03	1	2017.08.28_537B 013.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 23:07	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 23:12	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 23:17	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 23:22	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 23:26	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 23:31	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 23:36	1		GeminiC18 3x100 3(mm)
CCV 320-181720/21 CCVIS		08/28/2017 23:41	1	2017.08.28_537B _021.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Instrument ID: A8_N Start Date: 08/28/2017 23:41

Analysis Batch Number: 181721 End Date: 08/29/2017 00:38

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-181721/21 CCVIS		08/28/2017 23:41	1	2017.08.28_537B_021.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 23:45	1		GeminiC18 3x100 3(mm)
320-30866-1		08/28/2017 23:50	1	2017.08.28_537B_023.d	GeminiC18 3x100 3(mm)
320-30866-1 MS		08/28/2017 23:55	1	2017.08.28_537B_024.d	GeminiC18 3x100 3(mm)
320-30866-1 MSD		08/29/2017 00:00	1	2017.08.28_537B_025.d	GeminiC18 3x100 3(mm)
320-30866-2		08/29/2017 00:04	1	2017.08.28_537B_026.d	GeminiC18 3x100 3(mm)
320-30866-3		08/29/2017 00:09	1	2017.08.28_537B_027.d	GeminiC18 3x100 3(mm)
320-30866-4		08/29/2017 00:14	1	2017.08.28_537B_028.d	GeminiC18 3x100 3(mm)
320-30866-5		08/29/2017 00:19	1	2017.08.28_537B_029.d	GeminiC18 3x100 3(mm)
320-30866-6		08/29/2017 00:23	1	2017.08.28_537B_030.d	GeminiC18 3x100 3(mm)
320-30866-7		08/29/2017 00:28	1	2017.08.28_537B_031.d	GeminiC18 3x100 3(mm)
320-30866-8		08/29/2017 00:33	1	2017.08.28_537B_032.d	GeminiC18 3x100 3(mm)
CCV 320-181721/33 CCVIS		08/29/2017 00:38	1	2017.08.28_537B_033.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Batch Number: 180966 Batch Start Date: 08/24/17 09:53 Batch Analyst: Santos, Jonathan

Batch Method: 537 Batch End Date: 08/28/17 14:04

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00046
MB 320-180966/1		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
LCS 320-180966/2		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
320-30866-A-1	WGNA-081717-RW-3607	537, 537	T	293.06 g	28.19 g	264.9 mL	1.00 mL	7 SU	100 uL
320-30866-A-1 MS	WGNA-081717-RW-3607	537, 537	T	284.33 g	28.70 g	255.6 mL	1.00 mL	7 SU	100 uL
320-30866-A-1 MSD	WGNA-081717-RW-3607	537, 537	T	294.20 g	28.47 g	265.7 mL	1.00 mL	7 SU	100 uL
320-30866-A-2	WGNA-081717-FRB-3607	537, 537	T	284.40 g	28.24 g	256.2 mL	1.00 mL	7 SU	100 uL
320-30866-A-3	NAWC-081717-RW-336	537, 537	T	285.48 g	28.24 g	257.2 mL	1.00 mL	7 SU	100 uL
320-30866-A-4	NAWC-081717-FRB-336	537, 537	T	285.92 g	28.53 g	257.4 mL	1.00 mL	7 SU	100 uL
320-30866-A-5	WGNA-081717-RW-0560	537, 537	T	288.75 g	28.78 g	260 mL	1.00 mL	7 SU	100 uL
320-30866-A-6	WGNA-081717-FRB-0560	537, 537	T	289.06 g	27.94 g	261.1 mL	1.00 mL	7 SU	100 uL
320-30866-A-7	WGNA-081717-RW-3409	537, 537	T	282.94 g	28.66 g	254.3 mL	1.00 mL	7 SU	100 uL
320-30866-A-8	WGNA-081717-FRB-3409	537, 537	T	285.48 g	28.48 g	257 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00027	LC537-SU 00047	AnalysisComment			
MB 320-180966/1		537, 537			100 uL	ch nd			
LCS 320-180966/2		537, 537		100 uL	100 uL	ch nd			
320-30866-A-1	WGNA-081717-RW-3607	537, 537	T		100 uL	ch nd			
320-30866-A-1 MS	WGNA-081717-RW-3607	537, 537	T	100 uL	100 uL	ch nd			
320-30866-A-1 MSD	WGNA-081717-RW-3607	537, 537	T	100 uL	100 uL	ch nd			
320-30866-A-2	WGNA-081717-FRB-3607	537, 537	T		100 uL	ch nd			
320-30866-A-3	NAWC-081717-RW-336	537, 537	T		100 uL	ch nd			
320-30866-A-4	NAWC-081717-FRB-336	537, 537	T		100 uL	ch 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.: 320-30866-1

SDG No.:

Batch Number: 180966 Batch Start Date: 08/24/17 09:53 Batch Analyst: Santos, Jonathan

Batch Method: 537 Batch End Date: 08/28/17 14:04

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00027	LC537-SU 00047	AnalysisComment			
320-30866-A-5	WGNA-081717-RW-0560	537, 537	T		100 uL	ch nd			
320-30866-A-6	WGNA-081717-FRB-0560	537, 537	T		100 uL	ch nd			
320-30866-A-7	WGNA-081717-RW-3409	537, 537	T		100 uL	ch nd			
320-30866-A-8	WGNA-081717-FRB-3409	537, 537	T		100 uL	ch nd			

Batch Notes	
Batch Comment	IS: 1002798
Manifold ID	3, 7
Methanol ID	1010867
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	CCB
Analyst ID - IS Reagent Drop Witness	TN
Analyst ID - SU Reagent Drop	NSH
Analyst ID - SU Reagent Drop Witness	JNS
Analyst ID - TA Reagent Drop	NSH
Analyst ID - TA Reagent Drop Witness	JNS
SPE Cartridge ID	6357081-03
Trizma ID	SLBR4303V
Reagent Water ID	8/21/17

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

A8

Job No: 307543086 6 Instrument ID & Date: 8-28-17 ICAL Batch: 181689

Extraction Batch: 180966 Worklist #: 47240, 47279 TALS Batch: 181720, 181721, 181900

Review Items	--- Level 1 --- Yes	No	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? 181894	✓			✓
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? 1 Dilutions due to non-targets? ___	✓			✓
5. All target compounds in MB < 1/3 RL ? **(Requires NCM if "no.")**	✓			✓
6. Are target constituents in LCS/LCSD within method control limits?	✓			✓
7. Internal Standard areas in control for all samples and QC reported? ±50% from the average area of the ICAL and 70-140% of the most recent CCV	✓			✓
8. Do results (e.g., dilutions/trip blanks) make sense?	✓			✓
9. Are MS/MSD recoveries and RPDs within method control limits?	✓			✓
10. Are all QC samples properly linked in TALS?	✓			✓
11. All manual integrations appropriate and completely documented?	✓			✓
12. Are nonconformances documented as NCMs?	✓			✓
13. Are all Chrom graphics uploaded?	✓			✓

1st Level Reviewer / Date: JRB 8-30-17 2nd Level Reviewer / Date: [signature] 8/31/2017

8/31/2017 new

NCM # and Comments: 99335

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 ICAL Checklist

A8

Instrument ID & Date: 8-28-17 Worklist#: 47230

ICAL Batch: 181689, 181690 Calibration ID number: 33857, 33858

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 $R^2 \geq 0.990$ 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 8-29-17 2nd Level Reviewer / Date: MWuf 8/29/2017

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 28AUG2017_537B Worklist Number: 47240
Instrument Name: A8_N Chrom Method: 537_A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47240.b
QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 181719
# 1 CCV L3	# 1 CCV L3
# 2 RB	# 2 RB
# 3 MB 320-180381/1-A	# 3 MB 320-180381/1-A
# 4 LLCS 320-180381/2-A	# 4 LLCS 320-180381/2-A
# 5 LLCSD 320-180381/3-A	# 5 LLCSD 320-180381/3-A
# 6 440-190352-A-1-A	# 6 440-190352-A-1-A
# 7 440-190352-A-2-A	# 7 440-190352-A-2-A
# 8 440-190352-A-3-A	# 8 440-190352-A-3-A
# 9 440-190352-A-4-A	# 9 440-190352-A-4-A
#10 CCV L5	#10 CCV L5

QC Batch: 2	LC 537 ICAL Raw Batch: 181720
#10 CCV L5	#10 CCV L5
#11 RB	#11 RB
#12 MB 320-180966/1-A	#12 MB 320-180966/1-A
#13 LCS 320-180966/2-A	#13 LCS 320-180966/2-A
#14 320-30754-A-1-A	#14 320-30754-A-1-A
#15 320-30754-A-2-A	#15 320-30754-A-2-A
#16 320-30754-A-3-A	#16 320-30754-A-3-A
#17 320-30754-A-4-A	#17 320-30754-A-4-A
#18 320-30754-A-5-A	#18 320-30754-A-5-A
#19 320-30754-A-6-A	#19 320-30754-A-6-A
#20 320-30754-A-7-A	#20 320-30754-A-7-A
#21 CCV L3	#21 CCV L3

QC Batch: 3	LC 537 ICAL Raw Batch: 181721	LC 537 CS ICAL Raw Batch: 181792
#21 CCV L3	#21 CCV L3	
#22 RB	#22 RB	
#23 320-30866-A-1-A	#23 320-30866-A-1-A	
#24 320-30866-A-1-B MS	#24 320-30866-A-1-B MS	
#25 320-30866-A-1-C MSD	#25 320-30866-A-1-C MSD	
#26 320-30866-A-2-A	#26 320-30866-A-2-A	
#27 320-30866-A-3-A	#27 320-30866-A-3-A	
#28 320-30866-A-4-A	#28 320-30866-A-4-A	
#29 320-30866-A-5-A	#29 320-30866-A-5-A	
#30 320-30866-A-6-A	#30 320-30866-A-6-A	
#31 320-30866-A-7-A	#31 320-30866-A-7-A	
#32 320-30866-A-8-A	#32 320-30866-A-8-A	
#33 CCV L5	#33 CCV L5	#33 CCV L5

QC Batch: 4	LC 537 ICAL Raw Batch: 181722	LC 537 CS ICAL Raw Batch: 181723
#33 CCV L5	#33 CCV L5	#33 CCV L5
#34 RB		#34 RB
#35 MB 320-181172/1-A		#35 MB 320-181172/1-A
#36 LLCS 320-181172/2-A		#36 LLCS 320-181172/2-A
#37 LLCSD 320-181172/3-A		#37 LLCSD 320-181172/3-A
#38 320-30968-A-1-A		#38 320-30968-A-1-A

QC Batch: 4	LC 537 ICAL Raw Batch: 181722	LC 537 CS ICAL Raw Batch: 181723
#39 320-30968-A-2-A		#39 320-30968-A-2-A
#40 320-30968-A-3-A		#40 320-30968-A-3-A
#41 320-30968-A-3-B LMS		#41 320-30968-A-3-B LMS
#42 320-30968-A-3-C LMSD		#42 320-30968-A-3-C LMSD
#43 320-30968-A-4-A		#43 320-30968-A-4-A
#44 320-30968-A-5-A		#44 320-30968-A-5-A
#45 CCV L3		#45 CCV L3

QC Batch: 5	LC 537 CS ICAL Raw Batch: 181725
#45 CCV L3	#45 CCV L3
#46 RB	#46 RB
#47 320-30968-A-6-A	#47 320-30968-A-6-A
#48 MB 320-180308/1-A	#48 MB 320-180308/1-A
#49 LCS 320-180308/2-A	#49 LCS 320-180308/2-A
#50 LCSD 320-180308/3-A	#50 LCSD 320-180308/3-A
#51 320-30818-A-1-A	#51 320-30818-A-1-A
#52 320-30818-A-2-A	#52 320-30818-A-2-A
#53 320-30818-A-2-B MS	#53 320-30818-A-2-B MS
#54 320-30818-A-2-C MSD	#54 320-30818-A-2-C MSD
#55 320-30818-A-3-A	#55 320-30818-A-3-A
#56 320-30818-A-4-A	#56 320-30818-A-4-A
#57 CCV L5	#57 CCV L5

QC Batch: 6	LC 537 CS ICAL Raw Batch: 181793
#57 CCV L5	#57 CCV L5
#58 RB	#58 RB
#59 320-30819-A-1-A	#59 320-30819-A-1-A
#60 320-30819-A-1-B MS	#60 320-30819-A-1-B MS
#61 320-30819-A-1-C MSD	#61 320-30819-A-1-C MSD
#62 320-30819-A-2-A	#62 320-30819-A-2-A
#63 320-30819-A-3-A	#63 320-30819-A-3-A
#64 320-30819-A-4-A	#64 320-30819-A-4-A
#65 320-30819-A-5-A	#65 320-30819-A-5-A
#66 320-30819-A-6-A	#66 320-30819-A-6-A
#67 CCV L3	#67 CCV L3
#68 RB	#68 RB

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 29AUG2017_537A Worklist Number: 47279
Instrument Name: A8_N Chrom Method: 537_A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170829-47279.b
QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 181894	LC 537 CS ICAL Raw Batch: 181895
# 1 RINSE	# 1 RINSE	
# 2 RINSE	# 2 RINSE	
# 3 RINSE	# 3 RINSE	
# 4 CCVL	# 4 CCVL	# 4 CCVL
# 5 CCV L5	# 5 CCV L5	
# 6 RB	# 6 RB	
# 7 LCSD 320-180529/3-A	# 7 LCSD 320-180529/3-A	
# 8 320-30815-A-3-A	# 8 320-30815-A-3-A	
# 9 320-30815-A-5-A	# 9 320-30815-A-5-A	
#10 CCV L3	#10 CCV L3	#10 CCV L3

QC Batch: 2	LC 537 CS ICAL Raw Batch: 181896	LC 537 ICAL Raw Batch: 181897
#10 CCV L3	#10 CCV L3	#10 CCV L3
#11 RB	#11 RB	
#12 MB 320-180818/1-A	#12 MB 320-180818/1-A	
#13 LLCS 320-180818/2-A	#13 LLCS 320-180818/2-A	
#14 LLCSD 320-180818/3-A	#14 LLCSD 320-180818/3-A	
#15 320-30837-A-1-A	#15 320-30837-A-1-A	
#16 320-30837-A-1-D LMS	#16 320-30837-A-1-D LMS	
#17 320-30837-A-1-E LMSD	#17 320-30837-A-1-E LMSD	
#18 320-30837-A-2-A	#18 320-30837-A-2-A	
#19 320-30837-A-3-A	#19 320-30837-A-3-A	
#20 320-30837-A-4-A	#20 320-30837-A-4-A	
#21 CCV L5	#21 CCV L5	

QC Batch: 3	LC 537 CS ICAL Raw Batch: 181898	LC 537 ICAL Raw Batch: 181899
#21 CCV L5	#21 CCV L5	
#22 RB	#22 RB	
#23 320-30859-A-1-A	#23 320-30859-A-1-A	
#24 320-30859-A-1-D LMS	#24 320-30859-A-1-D LMS	
#25 320-30859-A-1-E LMSD	#25 320-30859-A-1-E LMSD	
#26 320-30859-A-2-A	#26 320-30859-A-2-A	
#27 320-30859-A-3-A	#27 320-30859-A-3-A	
#28 320-30859-A-4-A	#28 320-30859-A-4-A	
#29 320-30859-A-5-A	#29 320-30859-A-5-A	
#30 320-30859-A-6-A	#30 320-30859-A-6-A	
#31 320-30859-A-7-A	#31 320-30859-A-7-A	
#32 CCV L3	#32 CCV L3	#32 CCV L3

QC Batch: 4	LC 537 ICAL Raw Batch: 181900	LC 537 CS ICAL Raw Batch: 181901
#32 CCV L3	#32 CCV L3	#32 CCV L3
#33 RB	#33 RB	
#34 MB 320-180966/1-A	#34 MB 320-180966/1-A	
#35 LCS 320-180966/2-A	#35 LCS 320-180966/2-A	
#36 320-30754-A-2-A	#36 320-30754-A-2-A	
#37 320-30754-A-6-A	#37 320-30754-A-6-A	
#38 320-30866-A-1-A	#38 320-30866-A-1-A	

QC Batch: 4	LC 537 ICAL Raw Batch: 181900	LC 537 CS ICAL Raw Batch: 181901
#39 320-30866-A-1-B MS	#39 320-30866-A-1-B MS	
#40 320-30866-A-1-C MSD	#40 320-30866-A-1-C MSD	
#41 320-30866-A-6-A	#41 320-30866-A-6-A	
#42 CCV L5	#42 CCV L5	#42 CCV L5

QC Batch: 5	LC 537 ICAL Raw Batch: 181902	LC 537 CS ICAL Raw Batch: 181903
#42 CCV L5	#42 CCV L5	#42 CCV L5
#43 RB		#43 RB
#44 320-30968-A-3-A		#44 320-30968-A-3-A
#45 320-30968-A-3-B LMS		#45 320-30968-A-3-B LMS
#46 320-30968-A-3-C LMSD		#46 320-30968-A-3-C LMSD
#47 320-30968-A-4-A		#47 320-30968-A-4-A
#48 320-30968-A-6-A		#48 320-30968-A-6-A
#49 CCV L3		#49 CCV L3
#50 RB		#50 RB

101

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

AB 8/28/17

Batch Number: 320-180966

Analyst: Santos, Jonathan

Batch Open: 8/24/2017 9:53:00AM

Method Code: 320-537_Prep-320

Batch End: 8-28-17 14:04

Extraction of Perfluorinated Alkyl Acids

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB-320-180966/1 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	ch nd RI Case 4-8	MB 320-180966/1-A
				1.00 mL								
2	LCS-320-180966/2 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	ch nd RI 4-9	LCS 320-180966/2-A
				1.00 mL								
3	320-30754-A-1 (537_DOD5)	WE04 (320-30754-1)	287.27 g	259.1 mL	7			8/22/17	16_Days	4	ch nd	320-30754-A-1-A
			28.18 g	1.00 mL								
4	320-30754-A-2 (537_DOD5)	WE04 (320-30754-1)	282.80 g	254.6 mL	7			8/22/17	16_Days	4	ch nd	320-30754-A-2-A
			28.18 g	1.00 mL								
5	320-30754-A-3 (537_DOD5)	WE04 (320-30754-1)	288.22 g	261.4 mL	7			8/22/17	16_Days	4	ch nd 5X	320-30754-A-3-A
			26.81 g	1.00 mL								
6	320-30754-A-4 (537_DOD5)	WE04 (320-30754-1)	287.27 g	259.3 mL	7			8/22/17	16_Days	4	ch nd	320-30754-A-4-A
			27.94 g	1.00 mL								
7	320-30754-A-5 (537_DOD5)	WE04 (320-30754-1)	286.23 g	257.8 mL	7			8/22/17	16_Days	4	ch nd	320-30754-A-5-A
			28.45 g	1.00 mL								
8	320-30754-A-6 (537_DOD5)	WE04 (320-30754-1)	286.71 g	258.7 mL	7			8/22/17	16_Days	4	ch nd RI 4-15	320-30754-A-6-A
			28.04 g	1.00 mL								
9	320-30754-A-7 (537_DOD5)	WE04 (320-30754-1)	287.24 g	258.9 mL	7			8/22/17	16_Days	4	ch nd	320-30754-A-7-A
			28.39 g	1.00 mL								
10	320-30866-A-1 (537_DOD5)	N/A (320-30866-1)	293.06 g	264.9 mL	7			8/24/17	16_Days	4	ch nd RI 4-17	320-30866-A-1-A
			28.19 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-180966 Analyst: Santos, Jonathan Batch Open: 8/24/2017 9:53:00AM

Method Code: 320-537_Prep-320 Batch End:

11	320-30866-A-1~MS (537_DOD5)	N/A (320-30866-1)	284.33 g / 28.70 g	255.6 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd 4-18 RI	320-30866-A-1-B MS
12	320-30866-A-1~MSD (537_DOD5)	N/A (320-30866-1)	294.20 g / 28.47 g	265.7 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd 4-19 RI	320-30866-A-1-C MSD
13	320-30866-A-2 (537_DOD5)	N/A (320-30866-1)	284.40 g / 28.24 g	256.2 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd	320-30866-A-2-A
14	320-30866-A-3 (537_DOD5)	N/A (320-30866-1)	285.48 g / 28.24 g	257.2 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd	320-30866-A-3-A
15	320-30866-A-4 (537_DOD5)	N/A (320-30866-1)	285.92 g / 28.53 g	257.4 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd	320-30866-A-4-A
16	320-30866-A-5 (537_DOD5)	N/A (320-30866-1)	288.75 g / 28.78 g	260 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd	320-30866-A-5-A
17	320-30866-A-6 (537_DOD5)	N/A (320-30866-1)	289.06 g / 27.94 g	261.1 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd 4-24 RI	320-30866-A-6-A
18	320-30866-A-7 (537_DOD5)	N/A (320-30866-1)	282.94 g / 28.66 g	254.3 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd	320-30866-A-7-A
19	320-30866-A-8 (537_DOD5)	N/A (320-30866-1)	285.48 g / 28.48 g	257 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd	320-30866-A-8-A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-180966 | Analyst: Santos, Jonathan | Batch Open: 8/24/2017 9:53:00AM

Method Code: 320-537_Prep-320 | Batch End:

Batch Notes

Manifold ID	3, 7
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-03
Methanol ID	1010867
Reagent Water ID	8/21/17
Pipette ID	H14930F
Analyst ID - TA Reagent Drop	JSH
Analyst ID - TA Reagent Drop Witness	JNS
Analyst ID - SU Reagent Drop	JSH
Analyst ID - SU Reagent Drop Witness	JNS
Analyst ID - IS Reagent Drop	CAB
Analyst ID - IS Reagent Drop Witness	JUSTIN
Batch Comment	IS: 1002798

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-180966 Analyst: Santos, Jonathan Batch Open: 8/24/2017 9:53:00AM

Method Code: 320-537_Prep-320 Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-180966/1	LC537-SU_00047	100 uL	1.00 mL	NSH 8/24/17	JNS 8/24/17
LCS 320-180966/2	LC537-MSP_00027	100 uL	1.00 mL		
LCS 320-180966/2	LC537-SU_00047	100 uL	1.00 mL		
320-30754-A-1	LC537-SU_00047	100 uL	1.00 mL		
320-30754-A-2	LC537-SU_00047	100 uL	1.00 mL		
320-30754-A-3	LC537-SU_00047	100 uL	1.00 mL		
320-30754-A-4	LC537-SU_00047	100 uL	1.00 mL		
320-30754-A-5	LC537-SU_00047	100 uL	1.00 mL		
320-30754-A-6	LC537-SU_00047	100 uL	1.00 mL		
320-30754-A-7	LC537-SU_00047	100 uL	1.00 mL		
320-30866-A-1	LC537-SU_00047	100 uL	1.00 mL		
320-30866-A-1 MS	LC537-MSP_00027	100 uL	1.00 mL		
320-30866-A-1 MS	LC537-SU_00047	100 uL	1.00 mL		
320-30866-A-1 MSD	LC537-MSP_00027	100 uL	1.00 mL		
320-30866-A-1 MSD	LC537-SU_00047	100 uL	1.00 mL		
320-30866-A-2	LC537-SU_00047	100 uL	1.00 mL		
320-30866-A-3	LC537-SU_00047	100 uL	1.00 mL		
320-30866-A-4	LC537-SU_00047	100 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-180966 Analyst: Santos, Jonathan Batch Open: 8/24/2017 9:53:00AM

Method Code: 320-537_Prep-320 Batch End:

320-30866-A-5	LC537-SU_00047	100 uL	1.00 mL	NSH 8/24/17	JNS 8/24/17
320-30866-A-6	LC537-SU_00047	100 uL	1.00 mL		
320-30866-A-7	LC537-SU_00047	100 uL	1.00 mL		
320-30866-A-8	LC537-SU_00047	100 uL	1.00 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 180966 Test: 537 Prep

Earliest Holding Time: ~~8/31/17~~ 8/28/17 JNS 8/26/17

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	NA	NA
Method/sample/login/QAS checked and correct	✓	✓
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 correctly in TALS	✓	✓
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	
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	✓	✓

1st Level Reviewer: JNS Date: 8/28/17

2nd Level Reviewer: [illegible] Date: 8/31/2017

Comments:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Test America – Sacramento

Sample Dilution Record

Method ID 537 **Job #** See below

Analyst (Print Name) Thep Phomsopha **Analyst Initials** TP

Date 8/29/17

Sample#	Original F.V. (uL)	Aliquot (uL)	Dilution F.V. (uL)	Dilution Factor
30754-3	1000	60	300	5X

Comments:
brought up to volume with LCS37-LO_00009

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: 8/17/2017	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			

320-30866 Chain of Custody

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-081717-RW-3607	8/17/2017	13:40	G	DW	6	N	N	Y	MS/MSD
WGNA-081717-FRB-3607	8/17/2017	13:30	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-081717-RW-336	8/17/2017	14:20	G	DW	2	N	N	Y	
NAWC-081717-FRB-336	8/17/2017	14:10	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-081717-RW-0560	8/17/2017	15:35	G	DW	2	N	N	Y	
WGNA-081717-FRB-0560	8/17/2017	15:25	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-081717-RW-3409	8/17/2017	16:10	G	DW	2	N	N	Y	
WGNA-081717-FRB-3409	8/17/2017	16:00	G	DW	2	N	N	Y	Field Reagent Blank

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

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

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison 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: 7449 6194 4400

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 3.5 Corr'd: — | Therm ID No.: AM-1

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Mary Kay Bond	Tetra Tech	8/17/2017 18:00		TAus	8/18/17 0930
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

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-30866-1

Login Number: 30866
List Number: 1
Creator: Edman, Connor M

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-081717-RW-3607","537","RES","320-30866-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","24","ng/L","J M","6.4","DL","","TRG","","","38","LOQ","YES","-99","","264.9","1.00","15",""
"WGNA-081717-RW-3607","537","RES","320-30866-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","28","ng/L","","2.6","DL","","TRG","","","19","LOQ","YES","-99","","264.9","1.00","7.6",""
"WGNA-081717-RW-3607","537","RES","320-30866-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","7.9","ng/L","J","5.2","DL","","TRG","","","28","LOQ","YES","-99","","264.9","1.00","11",""
"WGNA-081717-RW-3607","537","RES","320-30866-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","34","ng/L","U","15","DL","","TRG","","","85","LOQ","YES","-99","","264.9","1.00","34",""
"WGNA-081717-RW-3607","537","RES","320-30866-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","7.5","ng/L","J","1.8","DL","","TRG","","","9.4","LOQ","YES","-99","","264.9","1.00","3.8",""
"WGNA-081717-RW-3607","537","RES","320-30866-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U","7.6","DL","","TRG","","","23","LOQ","YES","-99","","264.9","1.00","19",""
"WGNA-081717-RW-3607","537","RES","320-30866-1","TALSAC","STL00993","13C2 PFHxA","31","ng/L","","-99","DL","","SURR","82","","-99","LOQ","YES","37.8","","264.9","1.00","0",""
"WGNA-081717-RW-3607","537","RES","320-30866-1","TALSAC","STL00996","13C2 PFDA","43","ng/L","","-99","DL","","SURR","115","","-99","LOQ","YES","37.8","","264.9","1.00","0",""
"WGNA-081717-RW-3607MS","537","RES","320-30866-1MS","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","149","ng/L","M","6.7","DL","","SPK","96","","39","LOQ","YES","130","WGNA-081717-RW-3607","255.6","1.00","16",""
"WGNA-081717-RW-3607MS","537","RES","320-30866-1MS","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","92.0","ng/L","","2.7","DL","","SPK","98","","20","LOQ","YES","65.3","WGNA-081717-RW-3607","255.6","1.00","7.8",""
"WGNA-081717-RW-3607MS","537","RES","320-30866-1MS","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","106","ng/L","","5.4","DL","","SPK","100","","29","LOQ","YES","97.8","WGNA-081717-RW-3607","255.6","1.00","12",""
"WGNA-081717-RW-3607MS","537","RES","320-30866-1MS","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","322","ng/L","","16","DL","","SPK","110","","88","LOQ","YES","293","WGNA-081717-RW-3607","255.6","1.00","35",""
"WGNA-081717-RW-3607MS","537","RES","320-30866-1MS","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","40.9","ng/L","","1.9","DL","","SPK","103","","9.8","LOQ","YES","32.6","WGNA-081717-RW-3607","255.6","1.00","3.9",""
"WGNA-081717-RW-3607MS","537","RES","320-30866-1MS","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","71.1","ng/L","","7.8","DL","","SPK","109","","23","LOQ","YES","65.2","WGNA-081717-RW-3607","255.6","1.00","20",""
"WGNA-081717-RW-3607MS","537","RES","320-30866-1MS","TALSAC","STL00993","13C2 PFHxA","34.5","ng/L","","-99","DL","","SURR","88","","-99","LOQ","YES","39.1","WGNA-081717-RW-3607","255.6","1.00","0",""
"WGNA-081717-RW-3607MS","537","RES","320-30866-1MS","TALSAC","STL00996","13C2 PFDA","51.4","ng/L","Q","-99","DL","","SURR","131","","-99","LOQ","YES","39.1","WGNA-081717-RW-3607","255.6","1.00","0",""
"WGNA-081717-RW-3607MSD","537","RES","320-30866-1MSD","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","145","ng/L","M","6.4","DL","","SPK","97","3","38","LOQ","YES","126","WGNA-081717-RW-3607","265.7","1.00","15",""
"WGNA-081717-RW-3607MSD","537","RES","320-30866-1MSD","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","86.8","ng/L","","2.6","DL","","SPK","94","6","19","LOQ","YES","62.8","WGNA-081717-RW-3607","265.7","1.00","7.5",""
"WGNA-081717-RW-3607MSD","537","RES","320-30866-1MSD","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","97.6","ng/L","","5.2","DL","","SPK","95","8","28","LOQ","YES","94.1","WGNA-081717-RW-3607","265.7","1.00","11",""
"WGNA-081717-RW-3607MSD","537","RES","320-30866-1MSD","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","300","ng/L","","15","DL","","SPK","106","7","85","LOQ","YES","282","WGNA-081717-RW-3607","265.7","1.00","34",""
"WGNA-081717-RW-3607MSD","537","RES","320-30866-1MSD","TALSAC","375-85-9","Perfluoroheptanoic acid

(PFHpA)","35.6","ng/L","","1.8","DL","","SPK","90","14","9.4","LOQ","YES","31.4","WGNA-081717-RW-3607","265.7","1.00","3.8",""
"WGNA-081717-RW-3607MSD","537","RES","320-30866-1MSD","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","68.6","ng/L","","7.5","DL","","SPK","109","4","23","LOQ","YES","62.7","WGNA-081717-RW-3607","265.7","1.00","19",""
"WGNA-081717-RW-3607MSD","537","RES","320-30866-1MSD","TALSAC","STL00993","13C2 PFHxA","32.5","ng/L","","-99","DL","","SURR","86","","-99","LOQ","YES","37.6","WGNA-081717-RW-3607","265.7","1.00","0",""
"WGNA-081717-RW-3607MSD","537","RES","320-30866-1MSD","TALSAC","STL00996","13C2 PFDA","43.5","ng/L","","-99","DL","","SURR","116","","-99","LOQ","YES","37.6","WGNA-081717-RW-3607","265.7","1.00","0",""
"WGNA-081717-FRB-3607","537","RES","320-30866-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.6","DL","","TRG","","","39","LOQ","YES","-99","","256.2","1.00","16",""
"WGNA-081717-FRB-3607","537","RES","320-30866-2","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.8","ng/L","U","2.7","DL","","TRG","","","20","LOQ","YES","-99","","256.2","1.00","7.8",""
"WGNA-081717-FRB-3607","537","RES","320-30866-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","29","LOQ","YES","-99","","256.2","1.00","12",""
"WGNA-081717-FRB-3607","537","RES","320-30866-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","256.2","1.00","35",""
"WGNA-081717-FRB-3607","537","RES","320-30866-2","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.9","ng/L","U","1.9","DL","","TRG","","","9.8","LOQ","YES","-99","","256.2","1.00","3.9",""
"WGNA-081717-FRB-3607","537","RES","320-30866-2","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES","-99","","256.2","1.00","20",""
"WGNA-081717-FRB-3607","537","RES","320-30866-2","TALSAC","STL00993","13C2 PFHxA","38","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","39.0","","256.2","1.00","0",""
"WGNA-081717-FRB-3607","537","RES","320-30866-2","TALSAC","STL00996","13C2 PFDA","43","ng/L","","-99","DL","","SURR","109","","-99","LOQ","YES","39.0","","256.2","1.00","0",""
"NAWC-081717-RW-336","537","RES","320-30866-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U M","6.6","DL","","TRG","","","39","LOQ","YES","-99","","257.2","1.00","16",""
"NAWC-081717-RW-336","537","RES","320-30866-3","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","6.1","ng/L","J M","2.7","DL","","TRG","","","19","LOQ","YES","-99","","257.2","1.00","7.8",""
"NAWC-081717-RW-336","537","RES","320-30866-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.3","DL","","TRG","","","29","LOQ","YES","-99","","257.2","1.00","12",""
"NAWC-081717-RW-336","537","RES","320-30866-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U","16","DL","","TRG","","","87","LOQ","YES","-99","","257.2","1.00","35",""
"NAWC-081717-RW-336","537","RES","320-30866-3","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.9","ng/L","U","1.8","DL","","TRG","","","9.7","LOQ","YES","-99","","257.2","1.00","3.9",""
"NAWC-081717-RW-336","537","RES","320-30866-3","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES","-99","","257.2","1.00","19",""
"NAWC-081717-RW-336","537","RES","320-30866-3","TALSAC","STL00993","13C2 PFHxA","35","ng/L","","-99","DL","","SURR","89","","-99","LOQ","YES","38.9","","257.2","1.00","0",""
"NAWC-081717-RW-336","537","RES","320-30866-3","TALSAC","STL00996","13C2 PFDA","48","ng/L","","-99","DL","","SURR","124","","-99","LOQ","YES","38.9","","257.2","1.00","0",""
"NAWC-081717-FRB-336","537","RES","320-30866-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.6","DL","","TRG","","","39","LOQ","YES","-99","","257.4","1.00","16",""
"NAWC-081717-FRB-336","537","RES","320-30866-4","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.8","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES","-99","","257.4","1.00","7.8",""
"NAWC-081717-FRB-336","537","RES","320-30866-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.3","DL","","TRG","","","29","LOQ","YES","-99","","257.4","1.00","12",""
"NAWC-081717-FRB-336","537","RES","320-30866-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U","16","DL","","TRG","","","87","LOQ","YES","-99","","257.4","1.00","35",""
"NAWC-081717-FRB-336","537","RES","320-30866-4","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.9","ng/L","U","1.8","DL","","TRG","","","9.7","LOQ","YES","-99","","257.4","1.00","3.9",""
"NAWC-081717-FRB-336","537","RES","320-30866-4","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA)","19","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES","-99","","257.4","1.00","19",""
"NAWC-081717-FRB-336","537","RES","320-30866-4","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","-99","DL","","SURR","94","","-99","LOQ","YES","38.9","","257.4","1.00","0",""
"NAWC-081717-FRB-336","537","RES","320-30866-4","TALSAC","STL00996","13C2
PFDA","45","ng/L","","-99","DL","","SURR","116","","-99","LOQ","YES","38.9","","257.4","1.00","0",""
"WGNA-081717-RW-0560","537","RES","320-30866-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","30","ng/L","J M","6.5","DL","","TRG","","","38","LOQ","YES","-99","","260","1.00","15",""
"WGNA-081717-RW-0560","537","RES","320-30866-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","26","ng/L","","2.7","DL","","TRG","","","19","LOQ","YES","-99","","260","1.00","7.7",""
"WGNA-081717-RW-0560","537","RES","320-30866-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","17","ng/L","J","5.3","DL","","TRG","","","29","LOQ","YES","-99","","260","1.00","12",""
"WGNA-081717-RW-0560","537","RES","320-30866-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","15","DL","","TRG","","","87","LOQ","YES","-99","","260","1.00","35",""
"WGNA-081717-RW-0560","537","RES","320-30866-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","5.2","ng/L","J","1.8","DL","","TRG","","","9.6","LOQ","YES","-99","","260","1.00","3.8",""
"WGNA-081717-RW-0560","537","RES","320-30866-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES","-99","","260","1.00","19",""
"WGNA-081717-RW-0560","537","RES","320-30866-5","TALSAC","STL00993","13C2
PFHxA","34","ng/L","","-99","DL","","SURR","87","","-99","LOQ","YES","38.5","","260","1.00","0",""
"WGNA-081717-RW-0560","537","RES","320-30866-5","TALSAC","STL00996","13C2
PFDA","43","ng/L","","-99","DL","","SURR","112","","-99","LOQ","YES","38.5","","260","1.00","0",""
"WGNA-081717-FRB-0560","537","RES","320-30866-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.5","DL","","TRG","","","38","LOQ","YES","-99","","261.1","1.00","15",""
"WGNA-081717-FRB-0560","537","RES","320-30866-6","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.7","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES","-99","","261.1","1.00","7.7",""
"WGNA-081717-FRB-0560","537","RES","320-30866-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.3","DL","","TRG","","","29","LOQ","YES","-99","","261.1","1.00","11",""
"WGNA-081717-FRB-0560","537","RES","320-30866-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","TRG","","","86","LOQ","YES","-99","","261.1","1.00","34",""
"WGNA-081717-FRB-0560","537","RES","320-30866-6","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.8","ng/L","U","1.8","DL","","TRG","","","9.6","LOQ","YES","-99","","261.1","1.00","3.8",""
"WGNA-081717-FRB-0560","537","RES","320-30866-6","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES","-99","","261.1","1.00","19",""
"WGNA-081717-FRB-0560","537","RES","320-30866-6","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","-99","DL","","SURR","94","","-99","LOQ","YES","38.3","","261.1","1.00","0",""
"WGNA-081717-FRB-0560","537","RES","320-30866-6","TALSAC","STL00996","13C2
PFDA","58","ng/L","Q","-99","DL","","SURR","151","","-99","LOQ","YES","38.3","","261.1","1.00","0",""
"WGNA-081717-RW-3409","537","RES","320-30866-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","21","ng/L","J M","6.7","DL","","TRG","","","39","LOQ","YES","-99","","254.3","1.00","16",""
"WGNA-081717-RW-3409","537","RES","320-30866-7","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","15","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","254.3","1.00","7.9",""
"WGNA-081717-RW-3409","537","RES","320-30866-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","8.8","ng/L","J","5.4","DL","","TRG","","","29","LOQ","YES","-99","","254.3","1.00","12",""
"WGNA-081717-RW-3409","537","RES","320-30866-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","254.3","1.00","35",""
"WGNA-081717-RW-3409","537","RES","320-30866-7","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","5.6","ng/L","J","1.9","DL","","TRG","","","9.8","LOQ","YES","-99","","254.3","1.00","3.9",""
"WGNA-081717-RW-3409","537","RES","320-30866-7","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES","-99","","254.3","1.00","20",""
"WGNA-081717-RW-3409","537","RES","320-30866-7","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","88","","-99","LOQ","YES","39.3","","254.3","1.00","0",""
"WGNA-081717-RW-3409","537","RES","320-30866-7","TALSAC","STL00996","13C2
PFDA","50","ng/L","","-99","DL","","SURR","126","","-99","LOQ","YES","39.3","","254.3","1.00","0",""
"WGNA-081717-FRB-3409","537","RES","320-30866-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS)","16","ng/L","U","6.6","DL","","TRG","","","39","LOQ","YES","-99","","257","1.00","16",""
"WGNA-081717-FRB-3409","537","RES","320-30866-8","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.8","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES","-99","","257","1.00","7.8",""
"WGNA-081717-FRB-3409","537","RES","320-30866-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","29","LOQ","YES","-99","","257","1.00","12",""
"WGNA-081717-FRB-3409","537","RES","320-30866-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","257","1.00","35",""
"WGNA-081717-FRB-3409","537","RES","320-30866-8","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.9","ng/L","U","1.8","DL","","TRG","","","9.7","LOQ","YES","-99","","257","1.00","3.9",""
"WGNA-081717-FRB-3409","537","RES","320-30866-8","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES","-99","","257","1.00","19",""
"WGNA-081717-FRB-3409","537","RES","320-30866-8","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","-99","DL","","SURR","100","","-99","LOQ","YES","38.9","","257","1.00","0",""
"WGNA-081717-FRB-3409","537","RES","320-30866-8","TALSAC","STL00996","13C2
PFDA","45","ng/L","","-99","DL","","SURR","115","","-99","LOQ","YES","38.9","","257","1.00","0",""
"LCS 320-180966/2-A","537","RES","LCS 320-180966/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","129","ng/L","M","6.8","DL","","SPK","96","","40","LOQ","YES","133","","250.00","1.00","16",""
"LCS 320-180966/2-A","537","RES","LCS 320-180966/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","68.3","ng/L","","2.8","DL","","SPK","102","","20","LOQ","YES","66.7","","250.00","1.00","8.0",""
"LCS 320-180966/2-A","537","RES","LCS 320-180966/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","98.6","ng/L","","5.5","DL","","SPK","99","","30","LOQ","YES","100","","250.00","1.00","12",""
"LCS 320-180966/2-A","537","RES","LCS 320-180966/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","318","ng/L","","16","DL","","SPK","106","","90","LOQ","YES","300","","250.00","1.00","36",""
"LCS 320-180966/2-A","537","RES","LCS 320-180966/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","37.9","ng/L","","1.9","DL","","SPK","114","","10","LOQ","YES","33.3","","250.00","1.00","4.0",""
"LCS 320-180966/2-A","537","RES","LCS 320-180966/2-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","68.0","ng/L","","8.0","DL","","SPK","102","","24","LOQ","YES","66.7","","250.00","1.00","20",""
"LCS 320-180966/2-A","537","RES","LCS 320-180966/2-A","TALSAC","STL00993","13C2
PFHxA","39.6","ng/L","","-99","DL","","SURR","99","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"LCS 320-180966/2-A","537","RES","LCS 320-180966/2-A","TALSAC","STL00996","13C2
PFDA","53.6","ng/L","Q","-99","DL","","SURR","134","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"MB 320-180966/1-A","537","RES","MB 320-180966/1-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 320-180966/1-A","537","RES","MB 320-180966/1-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 320-180966/1-A","537","RES","MB 320-180966/1-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 320-180966/1-A","537","RES","MB 320-180966/1-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 320-180966/1-A","537","RES","MB 320-180966/1-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 320-180966/1-A","537","RES","MB 320-180966/1-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 320-180966/1-A","537","RES","MB 320-180966/1-A","TALSAC","STL00993","13C2
PFHxA","38.9","ng/L","","-99","DL","","SURR","97","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"MB 320-180966/1-A","537","RES","MB 320-180966/1-A","TALSAC","STL00996","13C2
PFDA","60.4","ng/L","Q","-99","DL","","SURR","151","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"Unknown","Unknown","WGNA-081717-RW-3607","08/17/2017 13:40","AQ","320-30866-
1","NM","","3.50","537","METHOD","RES","08/24/2017 09:54","08/28/2017
23:50","TALSAC","COA","WET","NA","1","NA","NA","","100","320-180966","320-180966","NA","320-
181721","320-30866-1","08/18/2017 09:30","08/31/2017 00:00",""
"Unknown","Unknown","WGNA-081717-RW-3607MS","08/17/2017 13:40","AQ","320-30866-
1MS","MS","","3.50","537","METHOD","RES","08/24/2017 09:54","08/28/2017
23:55","TALSAC","COA","WET","NA","1","NA","NA","","100","320-180966","320-180966","NA","320-

181721","320-30866-1","08/18/2017 09:30","08/31/2017 00:00",""
"Unknown","Unknown","WGNA-081717-RW-3607MSD","08/17/2017 13:40","AQ","320-30866-
1MSD","MSD","","3.50","537","METHOD","RES","08/24/2017 09:54","08/29/2017
00:00","TALSAC","COA","WET","NA","1","NA","NA","","100","320-180966","320-180966","NA","320-
181721","320-30866-1","08/18/2017 09:30","08/31/2017 00:00",""
"Unknown","Unknown","WGNA-081717-FRB-3607","08/17/2017 13:30","AQ","320-30866-
2","FB","","3.50","537","METHOD","RES","08/24/2017 09:54","08/29/2017
00:04","TALSAC","COA","WET","NA","1","NA","NA","","100","320-180966","320-180966","NA","320-
181721","320-30866-1","08/18/2017 09:30","08/31/2017 00:00",""
"Unknown","Unknown","NAWC-081717-RW-336","08/17/2017 14:20","AQ","320-30866-
3","NM","","3.50","537","METHOD","RES","08/24/2017 09:54","08/29/2017
00:09","TALSAC","COA","WET","NA","1","NA","NA","","100","320-180966","320-180966","NA","320-
181721","320-30866-1","08/18/2017 09:30","08/31/2017 00:00",""
"Unknown","Unknown","NAWC-081717-FRB-336","08/17/2017 14:10","AQ","320-30866-
4","FB","","3.50","537","METHOD","RES","08/24/2017 09:54","08/29/2017
00:14","TALSAC","COA","WET","NA","1","NA","NA","","100","320-180966","320-180966","NA","320-
181721","320-30866-1","08/18/2017 09:30","08/31/2017 00:00",""
"Unknown","Unknown","WGNA-081717-RW-0560","08/17/2017 15:35","AQ","320-30866-
5","NM","","3.50","537","METHOD","RES","08/24/2017 09:54","08/29/2017
00:19","TALSAC","COA","WET","NA","1","NA","NA","","100","320-180966","320-180966","NA","320-
181721","320-30866-1","08/18/2017 09:30","08/31/2017 00:00",""
"Unknown","Unknown","WGNA-081717-FRB-0560","08/17/2017 15:25","AQ","320-30866-
6","FB","","3.50","537","METHOD","RES","08/24/2017 09:54","08/29/2017
00:23","TALSAC","COA","WET","NA","1","NA","NA","","100","320-180966","320-180966","NA","320-
181721","320-30866-1","08/18/2017 09:30","08/31/2017 00:00",""
"Unknown","Unknown","WGNA-081717-RW-3409","08/17/2017 16:10","AQ","320-30866-
7","NM","","3.50","537","METHOD","RES","08/24/2017 09:54","08/29/2017
00:28","TALSAC","COA","WET","NA","1","NA","NA","","100","320-180966","320-180966","NA","320-
181721","320-30866-1","08/18/2017 09:30","08/31/2017 00:00",""
"Unknown","Unknown","WGNA-081717-FRB-3409","08/17/2017 16:00","AQ","320-30866-
8","FB","","3.50","537","METHOD","RES","08/24/2017 09:54","08/29/2017
00:33","TALSAC","COA","WET","NA","1","NA","NA","","100","320-180966","320-180966","NA","320-
181721","320-30866-1","08/18/2017 09:30","08/31/2017 00:00",""
"Unknown","Unknown","LCS 320-180966/2-A","","AQ","LCS 320-180966/2-
A","LCS","","-99","537","METHOD","RES","08/24/2017 09:54","08/28/2017
23:03","TALSAC","COA","WET","NA","1","NA","NA","","100","320-180966","320-180966","NA","320-
181720","320-30866-1","08/24/2017 09:54","08/31/2017 00:00",""
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A","MB","","-99","537","METHOD","RES","08/24/2017 09:54","08/28/2017
22:58","TALSAC","COA","WET","NA","1","NA","NA","","100","320-180966","320-180966","NA","320-
181720","320-30866-1","08/24/2017 09:54","08/31/2017 00:00",""

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. FREBOWITZ** **DATE:** **SEPTEMBER 18, 2017**

FROM: **TERRI L. SOLOMON** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION –POLYFLUOROALKYL SUBSTANCES (PFAS)**
NAS JRB WILLOW GROVE
SAMPLE DELIVERY GROUP (SDG) 320-30866-1

SAMPLES: 4/Field Reagent Blank (FRB)

WGNA-081717-FRB-3607	WGNA-081717-FRB-226
WGNA-081717-FRB-0560	WGNA-081717-FRB-3409

4/Drinking Water

WGNA-081717-RW-3607	WGNA-081717-RW-226
WGNA-081717-RW-0560	WGNA-081717-RW-3409

Overview

The sample set for NAS JRB Willow Grove, SDG 320-30866-1, consisted of four (4) drinking water samples and four (4) FRB samples. All samples were analyzed for select perfluorinated alkyl acids including pentadecafluorooctanoic acid (PFOA), perfluorobutane sulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA) and perfluorooctane sulfonic acid (PFOS). No field duplicate pairs were included in this SDG.

The samples were collected by Tetra Tech on August 17, 2017 and analyzed by TestAmerica-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 results, matrix spike / matrix spike 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

The following surrogate recovery was above the 130% quality control limit. The sample was reanalyzed by the laboratory with similar recoveries and the original analysis was reported. No validation actions were required as the sample results were nondetects.

Sample	Surrogate
WGNA-081717-FRB-0560	13C2 Perfluorodecanoic acid

Samples with detections and their associated FRBs are summarized below. No detected results were present in any FRBs.

Sample	Associated FRB
WGNA-081717-RW-3607	WGNA-081717-FRB-3607
WGNA-081717-RW-336	WGNA-081717-FRB-336
WGNA-081717-RW-0560	WGNA-081717-FRB-0560
WGNA-081717-3409	WGNA-081717-FRB-3409

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

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

Executive Summary

Laboratory Performance: None.

Other Factors Affecting Data Quality: Results below the RL were estimated.

The data for these analyses were reviewed with reference to the Environmental Protection Agency document EPA/600/R-08/092, Method 537, "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)", (September 2009) and the US EPA National Functional Guidelines for Organic Data Review (January 2017) as applicable. The text of this report has been formulated to address only those areas affecting data quality.

Tetra Tech, Inc.
Terri L. Solomon
Chemist/Data Validator

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

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

Data Qualifier Definitions

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

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

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 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-081717-FRB-336			NAWC-081717-RW-336			WGNA-081717-FRB-0560			WGNA-081717-FRB-3409		
SDG: 320-30866-1	LAB_ID	320-30866-4			320-30866-3			320-30866-6			320-30866-8		
FRACTION: PFAS	SAMP_DATE	8/17/2017			8/17/2017			8/17/2017			8/17/2017		
MEDIA: WATER	QC_TYPE	FB			NM			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		7.8	U		6.1	J	P	7.7	U		7.8	U	
PERFLUOROBUTANESULFONIC ACID		35	U		35	U		34	U		35	U	
PERFLUOROHEPTANOIC ACID		3.9	U		3.9	U		3.8	U		3.9	U	
PERFLUOROHEXANESULFONIC ACID		12	U		12	U		11	U		12	U	
PERFLUORONONANOIC ACID		19	U		19	U		19	U		19	U	
PERFLUOROOCTANE SULFONIC ACID		16	U		16	U		15	U		16	U	

PROJ_NO: 08005-WE04	NSAMPLE	WGNA-081717-FRB-3607			WGNA-081717-RW-0560			WGNA-081717-RW-3409			WGNA-081717-RW-3607		
SDG: 320-30866-1	LAB_ID	320-30866-2			320-30866-5			320-30866-7			320-30866-1		
FRACTION: PFAS	SAMP_DATE	8/17/2017			8/17/2017			8/17/2017			8/17/2017		
MEDIA: WATER	QC_TYPE	FB			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		7.8	U		26			15	J	P	28		
PERFLUOROBUTANESULFONIC ACID		35	U		35	U		35	U		34	U	
PERFLUOROHEPTANOIC ACID		3.9	U		5.2	J	P	5.6	J	P	7.5	J	P
PERFLUOROHEXANESULFONIC ACID		12	U		17	J	P	8.8	J	P	7.9	J	P
PERFLUORONONANOIC ACID		20	U		19	U		20	U		19	U	
PERFLUOROOCTANE SULFONIC ACID		16	U		30	J	P	21	J	P	24	J	P

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-RW-3607 | Lab Sample ID: 320-30866-1

Matrix: Water | Lab File ID: 2017.08.28_537B_023.d

Analysis Method: 537 | Date Collected: 08/17/2017 13:40

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 264.9(mL) | Date Analyzed: 08/28/2017 23:50

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.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	28		19	7.6	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.9	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.5	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	82		70-130
STL00996	13C2 PFDA	115		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-FRB-3607 | Lab Sample ID: 320-30866-2

Matrix: Water | Lab File ID: 2017.08.28_537B_026.d

Analysis Method: 537 | Date Collected: 08/17/2017 13:30

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 256.2(mL) | Date Analyzed: 08/29/2017 00:04

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

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

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

Analysis Batch No.: 181721 | Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	109		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: NAWC-081717-RW-336 | Lab Sample ID: 320-30866-3

Matrix: Water | Lab File ID: 2017.08.28_537B_027.d

Analysis Method: 537 | Date Collected: 08/17/2017 14:20

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 257.2(mL) | Date Analyzed: 08/29/2017 00:09

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

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

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

Analysis Batch No.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U ~~M~~	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	6.1	J ~~M~~	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	124		70-130

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: NAWC-081717-FRB-336 | Lab Sample ID: 320-30866-4

Matrix: Water | Lab File ID: 2017.08.28_537B_028.d

Analysis Method: 537 | Date Collected: 08/17/2017 14:10

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 257.4(mL) | Date Analyzed: 08/29/2017 00:14

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

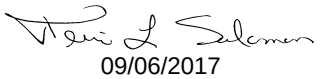
Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	116		70-130



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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-RW-0560 | Lab Sample ID: 320-30866-5

Matrix: Water | Lab File ID: 2017.08.28_537B_029.d

Analysis Method: 537 | Date Collected: 08/17/2017 15:35

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 260(mL) | Date Analyzed: 08/29/2017 00:19

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.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	30	J ~~M~~	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	26		19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	17	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.2	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	112		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-FRB-0560 | Lab Sample ID: 320-30866-6

Matrix: Water | Lab File ID: 2017.08.28_537B_030.d

Analysis Method: 537 | Date Collected: 08/17/2017 15:25

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 261.1(mL) | Date Analyzed: 08/29/2017 00:23

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.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	151	Q	70-130

Dawn L Salerno

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-RW-3409 | Lab Sample ID: 320-30866-7

Matrix: Water | Lab File ID: 2017.08.28_537B_031.d

Analysis Method: 537 | Date Collected: 08/17/2017 16:10

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 254.3(mL) | Date Analyzed: 08/29/2017 00:28

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

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

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

Analysis Batch No.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	21	J ~~M~~	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.8	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.6	J	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	126		70-130

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-FRB-3409 | Lab Sample ID: 320-30866-8

Matrix: Water | Lab File ID: 2017.08.28_537B_032.d

Analysis Method: 537 | Date Collected: 08/17/2017 16:00

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 257(mL) | Date Analyzed: 08/29/2017 00:33

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

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

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

Analysis Batch No.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	115		70-130

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Appendix B

Results as Reported by the Laboratory

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-RW-3607 | Lab Sample ID: 320-30866-1

Matrix: Water | Lab File ID: 2017.08.28_537B_023.d

Analysis Method: 537 | Date Collected: 08/17/2017 13:40

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 264.9(mL) | Date Analyzed: 08/28/2017 23:50

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.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	28		19	7.6	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.9	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.5	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	82		70-130
STL00996	13C2 PFDA	115		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-FRB-3607 | Lab Sample ID: 320-30866-2

Matrix: Water | Lab File ID: 2017.08.28_537B_026.d

Analysis Method: 537 | Date Collected: 08/17/2017 13:30

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 256.2(mL) | Date Analyzed: 08/29/2017 00:04

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

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

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

Analysis Batch No.: 181721 | Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	109		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: NAWC-081717-RW-336 | Lab Sample ID: 320-30866-3

Matrix: Water | Lab File ID: 2017.08.28_537B_027.d

Analysis Method: 537 | Date Collected: 08/17/2017 14:20

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 257.2(mL) | Date Analyzed: 08/29/2017 00:09

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

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

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

Analysis Batch No.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	6.1	J M	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	124		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: NAWC-081717-FRB-336 | Lab Sample ID: 320-30866-4

Matrix: Water | Lab File ID: 2017.08.28_537B_028.d

Analysis Method: 537 | Date Collected: 08/17/2017 14:10

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 257.4(mL) | Date Analyzed: 08/29/2017 00:14

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.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	116		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-RW-0560 Lab Sample ID: 320-30866-5

Matrix: Water Lab File ID: 2017.08.28_537B_029.d

Analysis Method: 537 Date Collected: 08/17/2017 15:35

Extraction Method: 537 Date Extracted: 08/24/2017 09:54

Sample wt/vol: 260(mL) Date Analyzed: 08/29/2017 00:19

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.: 181721 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	30	J M	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	26		19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	17	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.2	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	112		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-FRB-0560 | Lab Sample ID: 320-30866-6

Matrix: Water | Lab File ID: 2017.08.28_537B_030.d

Analysis Method: 537 | Date Collected: 08/17/2017 15:25

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 261.1(mL) | Date Analyzed: 08/29/2017 00:23

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.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	U	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	151	Q	70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-RW-3409 | Lab Sample ID: 320-30866-7

Matrix: Water | Lab File ID: 2017.08.28_537B_031.d

Analysis Method: 537 | Date Collected: 08/17/2017 16:10

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 254.3(mL) | Date Analyzed: 08/29/2017 00:28

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

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

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

Analysis Batch No.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	21	J M	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	8.8	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.6	J	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	126		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: WGNA-081717-FRB-3409 | Lab Sample ID: 320-30866-8

Matrix: Water | Lab File ID: 2017.08.28_537B_032.d

Analysis Method: 537 | Date Collected: 08/17/2017 16:00

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 257(mL) | Date Analyzed: 08/29/2017 00:33

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

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

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

Analysis Batch No.: 181721 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	115		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: 8/17/2017	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			

320-30866 Chain of Custody

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-081717-RW-3607	8/17/2017	13:40	G	DW	6	N	N	Y	MS/MSD
WGNA-081717-FRB-3607	8/17/2017	13:30	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-081717-RW-336	8/17/2017	14:20	G	DW	2	N	N	Y	
NAWC-081717-FRB-336	8/17/2017	14:10	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-081717-RW-0560	8/17/2017	15:35	G	DW	2	N	N	Y	
WGNA-081717-FRB-0560	8/17/2017	15:25	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-081717-RW-3409	8/17/2017	16:10	G	DW	2	N	N	Y	
WGNA-081717-FRB-3409	8/17/2017	16:00	G	DW	2	N	N	Y	Field Reagent Blank

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

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

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison 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: 7449 6194 4400

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 3.5 Corr'd: — | Therm ID No.: AM-1

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Mary Kay Bond	Tetra Tech	8/17/2017 18:00		TAls	8/18/17 0930
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

Job Narrative
320-30866-1

Receipt
The samples were received on 8/18/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.5º C.

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

Method(s) 537: Surrogate recovery for the following samples was outside control limits: WGNA-081717-RW-3607 (320-30866-1[MS]), WGNA-081717-FRB-0560 (320-30866-6), (LCS 320-180966/2-A) and (MB 320-180966/1-A). Re-analysis was performed with concurring results. The original analysis has been reported.

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

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

Method Summary

Client: Tetra Tech, Inc. TestAmerica Job ID: 320-30866-1
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

Client: Tetra Tech, Inc.
TestAmerica Job ID: 320-30866-1
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-30866-1	WGNA-081717-RW-3607	Water	08/17/17 13:40	08/18/17 09:30
320-30866-2	WGNA-081717-FRB-3607	Water	08/17/17 13:30	08/18/17 09:30
320-30866-3	NAWC-081717-RW-336	Water	08/17/17 14:20	08/18/17 09:30
320-30866-4	NAWC-081717-FRB-336	Water	08/17/17 14:10	08/18/17 09:30
320-30866-5	WGNA-081717-RW-0560	Water	08/17/17 15:35	08/18/17 09:30
320-30866-6	WGNA-081717-FRB-0560	Water	08/17/17 15:25	08/18/17 09:30
320-30866-7	WGNA-081717-RW-3409	Water	08/17/17 16:10	08/18/17 09:30
320-30866-8	WGNA-081717-FRB-3409	Water	08/17/17 16:00	08/18/17 09:30

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-081717-RW-3607	320-30866-1	82	115
WGNA-081717-FRB-3607	320-30866-2	98	109
NAWC-081717-RW-336	320-30866-3	89	124
NAWC-081717-FRB-336	320-30866-4	94	116
WGNA-081717-RW-0560	320-30866-5	87	112
WGNA-081717-FRB-0560	320-30866-6	94	151 Q
WGNA-081717-RW-3409	320-30866-7	88	126
WGNA-081717-FRB-3409	320-30866-8	100	115
	MB 320-180966/1-A	97	151 Q
	LCS 320-180966/2-A	99	134 Q
WGNA-081717-RW-3607 MS	320-30866-1 MS	88	131 Q
WGNA-081717-RW-3607 MSD	320-30866-1 MSD	86	116

	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.: 320-30866-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.08.28_537B_013.d

Lab ID: LCS 320-180966/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	133	129	96	70-130	M
Perfluorooctanoic acid (PFOA)	66.7	68.3	102	70-130	
Perfluorononanoic acid (PFNA)	66.7	68.0	102	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	98.6	99	70-130	
Perfluoroheptanoic acid (PFHpA)	33.3	37.9	114	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	318	106	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.08.28_537B_024.d

Lab ID: 320-30866-1 MS Client ID: WGNA-081717-RW-3607 MS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	130	24 J	149	96	70-130	M
Perfluorooctanoic acid (PFOA)	65.3	28	92.0	98	70-130	
Perfluorononanoic acid (PFNA)	65.2	19 U	71.1	109	70-130	
Perfluorohexanesulfonic acid (PFHxS)	97.8	7.9 J	106	100	70-130	
Perfluoroheptanoic acid (PFHpA)	32.6	7.5 J	40.9	103	70-130	
Perfluorobutanesulfonic acid (PFBS)	293	34 U	322	110	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.08.28_537B_025.d

Lab ID: 320-30866-1 MSD Client ID: WGNA-081717-RW-3607 MSD

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	126	145	97	3	30	70-130	M
Perfluorooctanoic acid (PFOA)	62.8	86.8	94	6	30	70-130	
Perfluorononanoic acid (PFNA)	62.7	68.6	109	4	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	94.1	97.6	95	8	30	70-130	
Perfluoroheptanoic acid (PFHpA)	31.4	35.6	90	14	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	282	300	106	7	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.: 320-30866-1

SDG No.:

Lab File ID: 2017.08.28_537B_012.d Lab Sample ID: MB 320-180966/1-A

Matrix: Water Date Extracted: 08/24/2017 09:54

Instrument ID: A8_N Date Analyzed: 08/28/2017 22:58

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-180966/2-A	2017.08.28_537B_013.d	08/28/2017 23:03
WGNA-081717-RW-3607	320-30866-1	2017.08.28_537B_023.d	08/28/2017 23:50
WGNA-081717-RW-3607 MS	320-30866-1 MS	2017.08.28_537B_024.d	08/28/2017 23:55
WGNA-081717-RW-3607 MSD	320-30866-1 MSD	2017.08.28_537B_025.d	08/29/2017 00:00
WGNA-081717-FRB-3607	320-30866-2	2017.08.28_537B_026.d	08/29/2017 00:04
NAWC-081717-RW-336	320-30866-3	2017.08.28_537B_027.d	08/29/2017 00:09
NAWC-081717-FRB-336	320-30866-4	2017.08.28_537B_028.d	08/29/2017 00:14
WGNA-081717-RW-0560	320-30866-5	2017.08.28_537B_029.d	08/29/2017 00:19
WGNA-081717-FRB-0560	320-30866-6	2017.08.28_537B_030.d	08/29/2017 00:23
WGNA-081717-RW-3409	320-30866-7	2017.08.28_537B_031.d	08/29/2017 00:28
WGNA-081717-FRB-3409	320-30866-8	2017.08.28_537B_032.d	08/29/2017 00:33

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30866-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-180966/1-A

Matrix: Water | Lab File ID: 2017.08.28_537B_012.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 08/24/2017 09:54

Sample wt/vol: 250.00(mL) | Date Analyzed: 08/28/2017 22:58

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

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

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

Analysis Batch No.: 181720 | 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	97		70-130
STL00996	13C2 PFDA	151	Q	70-130

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 08/28/2017 16:12

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/28/2017 16:36

Calibration ID: 33857

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		1374205	1.93	4406239	2.19		
UPPER LIMIT		2061308	2.43	6609359	2.69		
LOWER LIMIT		687103	1.43	2203120	1.69		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-181689/9		1323726	1.92	4341124	2.18		
ICV 320-181689/11		1250781	1.92	4615689	2.19		
CCV 320-181720/10 CCVIS		1319358	1.88	4215889	2.14		
MB 320-180966/1-A		1489691	1.88	4561251	2.14		
LCS 320-180966/2-A		1435298	1.88	4510726	2.14		
CCV 320-181720/21 CCVIS		1364683	1.87	4237780	2.13		
CCV 320-181721/21 CCVIS		1364683	1.87	4237780	2.13		
320-30866-1	WGNA-081717-RW-3607	1477916	1.87	4568604	2.12		
320-30866-1 MS	WGNA-081717-RW-3607 MS	1453918	1.87	4554071	2.12		
320-30866-1 MSD	WGNA-081717-RW-3607 MSD	1419282	1.87	4497910	2.12		
320-30866-2	WGNA-081717-FRB-3607	1517108	1.87	4682617	2.13		
320-30866-3	NAWC-081717-RW-336	1455287	1.87	4478059	2.13		
320-30866-4	NAWC-081717-FRB-336	1500282	1.87	4540736	2.13		
320-30866-5	WGNA-081717-RW-0560	1447575	1.87	4489441	2.12		
320-30866-6	WGNA-081717-FRB-0560	1517295	1.87	4650300	2.13		
320-30866-7	WGNA-081717-RW-3409	1550572	1.87	4655960	2.13		
320-30866-8	WGNA-081717-FRB-3409	1471789	1.87	4669966	2.12		
CCV 320-181721/33 CCVIS		1354840	1.87	4336458	2.13		

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.: 320-30866-1

SDG No.:

Sample No.: CCV 320-181720/10 Date Analyzed: 08/28/2017 22:48

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

Lab File ID (Standard): 2017.08.28_537B_010 Heated Purge: (Y/N) N

Calibration ID: 33857

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1319358	1.88	4215889	2.14		
UPPER LIMIT		1847101	2.38	5902245	2.64		
LOWER LIMIT		923551	1.38	2951122	1.64		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-180966/1-A		1489691	1.88	4561251	2.14		
LCS 320-180966/2-A		1435298	1.88	4510726	2.14		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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.: 320-30866-1

SDG No.:

Sample No.: CCV 320-181720/21 Date Analyzed: 08/28/2017 23:41

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

Lab File ID (Standard): 2017.08.28_537B_021 Heated Purge: (Y/N) N

Calibration ID: 33857

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1364683	1.87	4237780	2.13		
UPPER LIMIT		1910556	2.37	5932892	2.63		
LOWER LIMIT		955278	1.37	2966446	1.63		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-180966/1-A		1489691	1.88	4561251	2.14		
LCS 320-180966/2-A		1435298	1.88	4510726	2.14		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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.: 320-30866-1

SDG No.:

Sample No.: CCV 320-181721/21 Date Analyzed: 08/28/2017 23:41

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

Lab File ID (Standard): 2017.08.28_537B_021 Heated Purge: (Y/N) N

Calibration ID: 33857

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1364683	1.87	4237780	2.13		
UPPER LIMIT		1910556	2.37	5932892	2.63		
LOWER LIMIT		955278	1.37	2966446	1.63		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-30866-1	WGNA-081717-RW-3607	1477916	1.87	4568604	2.12		
320-30866-1 MS	WGNA-081717-RW-3607 MS	1453918	1.87	4554071	2.12		
320-30866-1 MSD	WGNA-081717-RW-3607 MSD	1419282	1.87	4497910	2.12		
320-30866-2	WGNA-081717-FRB-3607	1517108	1.87	4682617	2.13		
320-30866-3	NAWC-081717-RW-336	1455287	1.87	4478059	2.13		
320-30866-4	NAWC-081717-FRB-336	1500282	1.87	4540736	2.13		
320-30866-5	WGNA-081717-RW-0560	1447575	1.87	4489441	2.12		
320-30866-6	WGNA-081717-FRB-0560	1517295	1.87	4650300	2.13		
320-30866-7	WGNA-081717-RW-3409	1550572	1.87	4655960	2.13		
320-30866-8	WGNA-081717-FRB-3409	1471789	1.87	4669966	2.12		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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.: 320-30866-1

SDG No.:

Sample No.: CCV 320-181721/33 Date Analyzed: 08/29/2017 00:38

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

Lab File ID (Standard): 2017.08.28_537B_033 Heated Purge: (Y/N) N

Calibration ID: 33857

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1354840	1.87	4336458	2.13		
UPPER LIMIT		1896776	2.37	6071041	2.63		
LOWER LIMIT		948388	1.37	3035521	1.63		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-30866-1	WGNA-081717-RW-3607	1477916	1.87	4568604	2.12		
320-30866-1 MS	WGNA-081717-RW-3607 MS	1453918	1.87	4554071	2.12		
320-30866-1 MSD	WGNA-081717-RW-3607 MSD	1419282	1.87	4497910	2.12		
320-30866-2	WGNA-081717-FRB-3607	1517108	1.87	4682617	2.13		
320-30866-3	NAWC-081717-RW-336	1455287	1.87	4478059	2.13		
320-30866-4	NAWC-081717-FRB-336	1500282	1.87	4540736	2.13		
320-30866-5	WGNA-081717-RW-0560	1447575	1.87	4489441	2.12		
320-30866-6	WGNA-081717-FRB-0560	1517295	1.87	4650300	2.13		
320-30866-7	WGNA-081717-RW-3409	1550572	1.87	4655960	2.13		
320-30866-8	WGNA-081717-FRB-3409	1471789	1.87	4669966	2.12		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
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.: 320-30866-1 Analy Batch No.: 181689

SDG No.:

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

Calibration Start Date: 08/28/2017 16:12 Calibration End Date: 08/28/2017 16:36 Calibration ID: 33857

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-181689/2	2017.08.28_537ICAL_004.d
Level 2	IC 320-181689/3	2017.08.28_537ICAL_005.d
Level 3	IC 320-181689/4	2017.08.28_537ICAL_006.d
Level 4	IC 320-181689/5	2017.08.28_537ICAL_007.d
Level 5	IC 320-181689/6	2017.08.28_537ICAL_008.d
Level 6	IC 320-181689/7	2017.08.28_537ICAL_009.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	0.9809 0.7472	1.0538	0.9901	0.8853	0.8006	QuaF		1.0304	-0.001602						0.9990		0.9600
Perfluoroheptanoic acid (PFHpA)	0.8070 0.8922	0.8909	0.9326	0.8826	0.8881	Ave		0.8822				4.6		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.5168 1.5221	1.5535	1.6130	1.5757	1.5081	Ave		1.5482				2.6		30.0			
Perfluorooctanoic acid (PFOA)	0.8725 0.8992	0.8994	0.9062	0.9044	0.9509	Ave		0.9054				2.8		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.8498 0.9596	0.8974	0.9212	0.9522	0.9373	Ave		0.9196				4.4		30.0			
Perfluorononanoic acid (PFNA)	0.5524 0.6090	0.6013	0.6421	0.6088	0.6115	Ave		0.6042				4.8		30.0			
13C2 PFHxA	1.0685 1.1647	1.1179	1.1909	1.1737	1.1909	Ave		1.1511				4.2		30.0			
13C2 PFDA	0.5058 0.5693	0.5453	0.5700	0.5685	0.5601	Ave		0.5532				4.5		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.: 320-30866-1 Analy Batch No.: 181689

SDG No.:

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

Calibration Start Date: 08/28/2017 16:12 Calibration End Date: 08/28/2017 16:36 Calibration ID: 33857

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-181689/2	2017.08.28_537ICAL_004.d
Level 2	IC 320-181689/3	2017.08.28_537ICAL_005.d
Level 3	IC 320-181689/4	2017.08.28_537ICAL_006.d
Level 4	IC 320-181689/5	2017.08.28_537ICAL_007.d
Level 5	IC 320-181689/6	2017.08.28_537ICAL_008.d
Level 6	IC 320-181689/7	2017.08.28_537ICAL_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	QuaF	1394569 19649569	3317676	6863053	12060559	16752716	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PFOA	Ave	118133 2357891	278620	621521	1185886	1836051	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	718953 13344574	1630557	3727422	7156650	10520613	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PFOA	Ave	255581 4755508	562912	1208545	2431849	3934066	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	537090 11216718	1255917	2838344	5766727	8718144	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PFOA	Ave	161720 3218606	376105	855804	1635893	2528200	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PFOA	Ave	1563477 1538651	1572903	1586933	1576697	1641063	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PFOA	Ave	740193 752126	767194	759573	763691	771788	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.: 320-30866-1 Analy Batch No.: 181689

SDG No.:

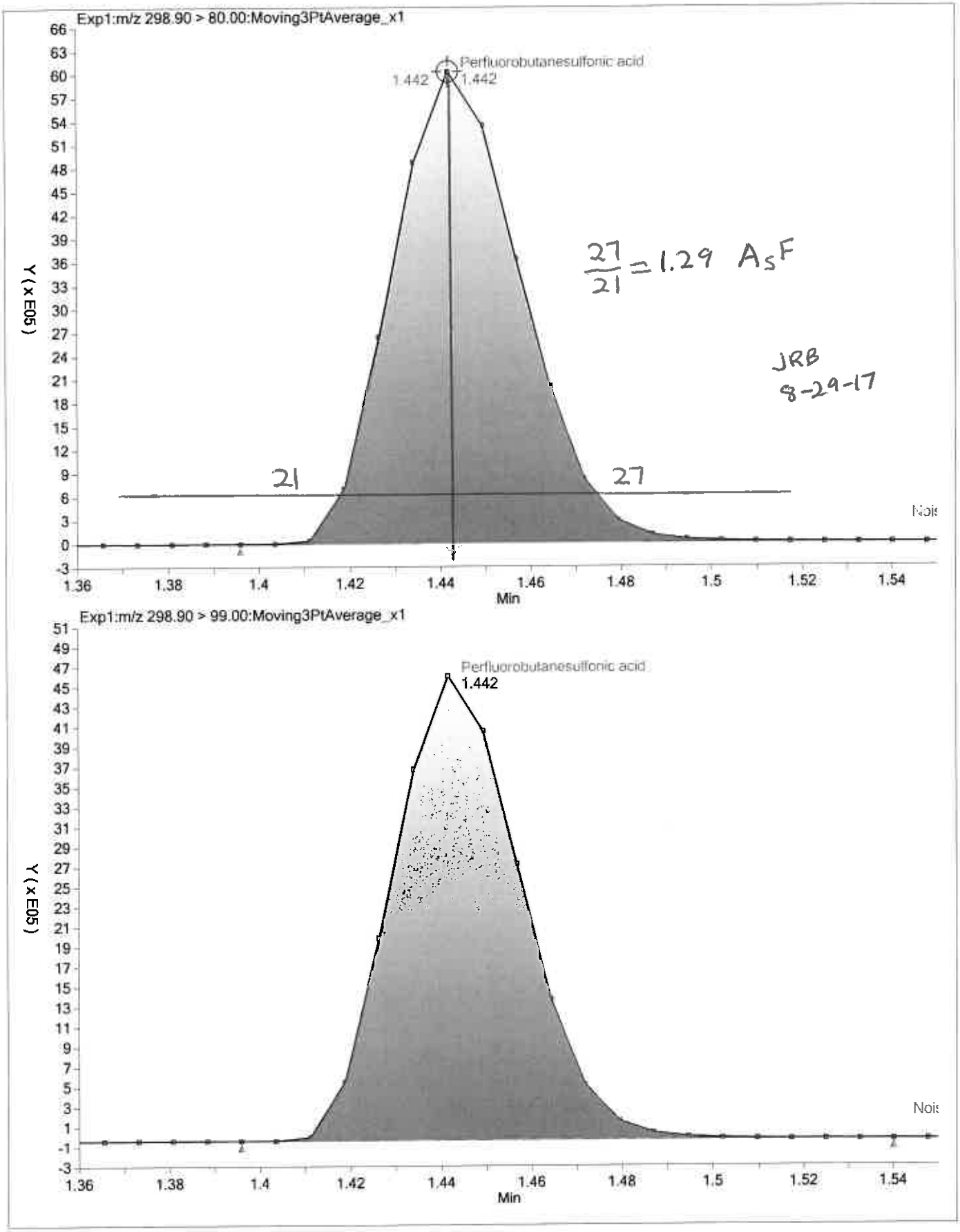
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/28/2017 16:12 Calibration End Date: 08/28/2017 16:36 Calibration ID: 33857

Calibration Files:

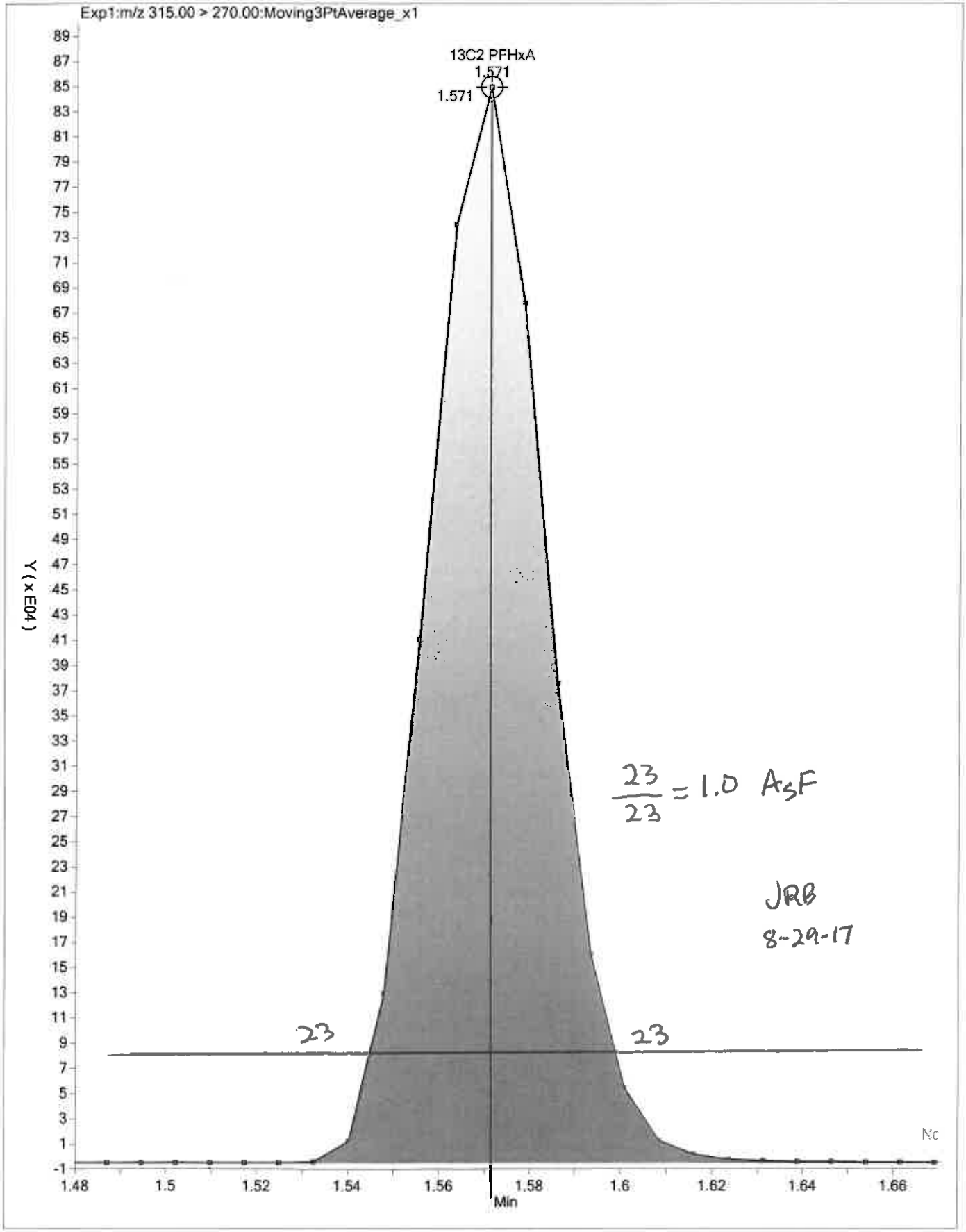
LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-181689/2	2017.08.28_537ICAL_004.d
Level 2	IC 320-181689/3	2017.08.28_537ICAL_005.d
Level 3	IC 320-181689/4	2017.08.28_537ICAL_006.d
Level 4	IC 320-181689/5	2017.08.28_537ICAL_007.d
Level 5	IC 320-181689/6	2017.08.28_537ICAL_008.d
Level 6	IC 320-181689/7	2017.08.28_537ICAL_009.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	-3.5	5.7	3.6	-0.1	-2.2	1.2	50	50	50	50	50	50
Perfluoroheptanoic acid (PFHpA)	-8.5	1.0	5.7	0.0	0.7	1.1	50	50	50	50	50	50
Perfluorohexanesulfonic acid (PFHxS)	-2.0	0.3	4.2	1.8	-2.6	-1.7	50	50	50	50	50	50
Perfluorooctanoic acid (PFOA)	-3.6	-0.7	0.1	-0.1	5.0	-0.7	50	50	50	50	50	50
Perfluorooctanesulfonic acid (PFOS)	-7.6	-2.4	0.2	3.6	1.9	4.3	50	50	50	50	50	50
Perfluorononanoic acid (PFNA)	-8.6	-0.5	6.3	0.8	1.2	0.8	50	50	50	50	50	50
13C2 PFHxA	-7.2	-2.9	3.5	2.0	3.5	1.2	30	30	30	30	30	30
13C2 PFDA	-8.6	-1.4	3.0	2.8	1.3	2.9	30	30	30	30	30	30



$\frac{27}{21} = 1.29$ A_SF

JRB
8-29-17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13C2 PFHxA
1.571
1.571
Y (xE04)
Min
23
23
23/23 = 1.0 ASF
JRB
8-29-17

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Lab Sample ID: CCVL 320-181689/9 Calibration Date: 08/28/2017 16:45

Instrument ID: A8_N Calib Start Date: 08/28/2017 16:12

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/28/2017 16:36

Lab File ID: 2017.08.28_537ICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.048		21.0	20.0	5.1	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8822	0.9633		2.43	2.22	9.2	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.548	1.650		7.11	6.67	6.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9054	0.9150		4.50	4.45	1.1	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9196	0.9290		8.98	8.89	1.0	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6042	0.6728		4.95	4.45	11.4	50.0
13C2 PFHxA	Ave	1.151	1.140		9.90	10.0	-1.0	30.0
13C2 PFDA	Ave	0.5532	0.5723		10.3	10.0	3.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Lab Sample ID: ICV 320-181689/11 Calibration Date: 08/28/2017 16:54

Instrument ID: A8_N Calib Start Date: 08/28/2017 16:12

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/28/2017 16:36

Lab File ID: 2017.08.28_537ICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.9091		106	100	5.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8822	0.9886		11.2	10.0	12.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.548	1.731		22.5	20.1	11.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9054	0.9626		21.8	20.5	6.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9196	1.099		23.5	19.7	19.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6042	0.7599		25.3	20.1	25.8	30.0
13C2 PFHxA	Ave	1.151	1.214		10.5	10.0	5.4	30.0
13C2 PFDA	Ave	0.5532	0.5948		10.8	10.0	7.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Lab Sample ID: CCV 320-181720/10 Calibration Date: 08/28/2017 22:48

Instrument ID: A8_N Calib Start Date: 08/28/2017 16:12

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/28/2017 16:36

Lab File ID: 2017.08.28_537B_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8741		149	135	10.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8822	0.9361		15.7	15.0	6.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.548	1.595		46.4	45.0	3.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9054	0.9189		30.4	30.0	1.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9196	0.9313		60.8	60.0	1.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6042	0.6442		32.0	30.0	6.6	30.0
13C2 PFHxA	Ave	1.151	1.291		11.2	10.0	12.2	30.0
13C2 PFDA	Ave	0.5532	0.5825		10.5	10.0	5.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Lab Sample ID: CCV 320-181720/21 Calibration Date: 08/28/2017 23:41

Instrument ID: A8_N Calib Start Date: 08/28/2017 16:12

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/28/2017 16:36

Lab File ID: 2017.08.28_537B_021.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.142		54.5	45.0	21.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8822	0.9847		5.51	5.00	11.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.548	1.644		15.9	15.0	6.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9054	0.9217		10.2	10.0	1.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9196	0.9340		20.3	20.0	1.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6042	0.6471		10.7	10.0	7.1	30.0
13C2 PFHxA	Ave	1.151	1.249		10.8	10.0	8.5	30.0
13C2 PFDA	Ave	0.5532	0.5705		10.3	10.0	3.1	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Lab Sample ID: CCV 320-181721/21 Calibration Date: 08/28/2017 23:41

Instrument ID: A8_N Calib Start Date: 08/28/2017 16:12

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/28/2017 16:36

Lab File ID: 2017.08.28_537B_021.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.142		54.5	45.0	21.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8822	0.9847		5.51	5.00	11.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.548	1.644		15.9	15.0	6.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9054	0.9217		10.2	10.0	1.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9196	0.9340		20.3	20.0	1.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6042	0.6471		10.7	10.0	7.1	30.0
13C2 PFHxA	Ave	1.151	1.249		10.8	10.0	8.5	30.0
13C2 PFDA	Ave	0.5532	0.5705		10.3	10.0	3.1	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Lab Sample ID: CCV 320-181721/33 Calibration Date: 08/29/2017 00:38

Instrument ID: A8_N Calib Start Date: 08/28/2017 16:12

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/28/2017 16:36

Lab File ID: 2017.08.28_537B_033.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		0.8485		143	135	5.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8822	0.9723		16.3	15.0	10.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.548	1.584		46.0	45.0	2.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9054	0.9289		30.7	30.0	2.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9196	0.9255		60.4	60.0	0.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6042	0.6528		32.4	30.0	8.0	30.0
13C2 PFHxA	Ave	1.151	1.269		11.0	10.0	10.2	30.0
13C2 PFDA	Ave	0.5532	0.5700		10.3	10.0	3.0	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Instrument ID: A8_N Start Date: 08/28/2017 16:12

Analysis Batch Number: 181689 End Date: 08/28/2017 16:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-181689/2		08/28/2017 16:12	1	2017.08.28_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-181689/3		08/28/2017 16:16	1	2017.08.28_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-181689/4		08/28/2017 16:21	1	2017.08.28_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-181689/5 ICISAV		08/28/2017 16:26	1	2017.08.28_537I CAL 007.d	GeminiC18 3x100 3(mm)
IC 320-181689/6		08/28/2017 16:31	1	2017.08.28_537I CAL 008.d	GeminiC18 3x100 3(mm)
IC 320-181689/7		08/28/2017 16:36	1	2017.08.28_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 16:40	1		GeminiC18 3x100 3(mm)
CCVL 320-181689/9		08/28/2017 16:45	1	2017.08.28_537I CAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 16:50	1		GeminiC18 3x100 3(mm)
ICV 320-181689/11		08/28/2017 16:54	1	2017.08.28_537I CAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Instrument ID: A8_N Start Date: 08/28/2017 22:48

Analysis Batch Number: 181720 End Date: 08/28/2017 23:41

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-181720/10 CCVIS		08/28/2017 22:48	1	2017.08.28_537B 010.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 22:53	1		GeminiC18 3x100 3(mm)
MB 320-180966/1-A		08/28/2017 22:58	1	2017.08.28_537B 012.d	GeminiC18 3x100 3(mm)
LCS 320-180966/2-A		08/28/2017 23:03	1	2017.08.28_537B 013.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 23:07	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 23:12	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 23:17	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 23:22	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 23:26	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 23:31	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 23:36	1		GeminiC18 3x100 3(mm)
CCV 320-181720/21 CCVIS		08/28/2017 23:41	1	2017.08.28_537B _021.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Instrument ID: A8_N Start Date: 08/28/2017 23:41

Analysis Batch Number: 181721 End Date: 08/29/2017 00:38

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-181721/21 CCVIS		08/28/2017 23:41	1	2017.08.28_537B_021.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2017 23:45	1		GeminiC18 3x100 3(mm)
320-30866-1		08/28/2017 23:50	1	2017.08.28_537B_023.d	GeminiC18 3x100 3(mm)
320-30866-1 MS		08/28/2017 23:55	1	2017.08.28_537B_024.d	GeminiC18 3x100 3(mm)
320-30866-1 MSD		08/29/2017 00:00	1	2017.08.28_537B_025.d	GeminiC18 3x100 3(mm)
320-30866-2		08/29/2017 00:04	1	2017.08.28_537B_026.d	GeminiC18 3x100 3(mm)
320-30866-3		08/29/2017 00:09	1	2017.08.28_537B_027.d	GeminiC18 3x100 3(mm)
320-30866-4		08/29/2017 00:14	1	2017.08.28_537B_028.d	GeminiC18 3x100 3(mm)
320-30866-5		08/29/2017 00:19	1	2017.08.28_537B_029.d	GeminiC18 3x100 3(mm)
320-30866-6		08/29/2017 00:23	1	2017.08.28_537B_030.d	GeminiC18 3x100 3(mm)
320-30866-7		08/29/2017 00:28	1	2017.08.28_537B_031.d	GeminiC18 3x100 3(mm)
320-30866-8		08/29/2017 00:33	1	2017.08.28_537B_032.d	GeminiC18 3x100 3(mm)
CCV 320-181721/33 CCVIS		08/29/2017 00:38	1	2017.08.28_537B_033.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30866-1

SDG No.:

Batch Number: 180966 Batch Start Date: 08/24/17 09:53 Batch Analyst: Santos, Jonathan

Batch Method: 537 Batch End Date: 08/28/17 14:04

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00046
MB 320-180966/1		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
LCS 320-180966/2		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
320-30866-A-1	WGNA-081717-RW-3607	537, 537	T	293.06 g	28.19 g	264.9 mL	1.00 mL	7 SU	100 uL
320-30866-A-1 MS	WGNA-081717-RW-3607	537, 537	T	284.33 g	28.70 g	255.6 mL	1.00 mL	7 SU	100 uL
320-30866-A-1 MSD	WGNA-081717-RW-3607	537, 537	T	294.20 g	28.47 g	265.7 mL	1.00 mL	7 SU	100 uL
320-30866-A-2	WGNA-081717-FRB-3607	537, 537	T	284.40 g	28.24 g	256.2 mL	1.00 mL	7 SU	100 uL
320-30866-A-3	NAWC-081717-RW-336	537, 537	T	285.48 g	28.24 g	257.2 mL	1.00 mL	7 SU	100 uL
320-30866-A-4	NAWC-081717-FRB-336	537, 537	T	285.92 g	28.53 g	257.4 mL	1.00 mL	7 SU	100 uL
320-30866-A-5	WGNA-081717-RW-0560	537, 537	T	288.75 g	28.78 g	260 mL	1.00 mL	7 SU	100 uL
320-30866-A-6	WGNA-081717-FRB-0560	537, 537	T	289.06 g	27.94 g	261.1 mL	1.00 mL	7 SU	100 uL
320-30866-A-7	WGNA-081717-RW-3409	537, 537	T	282.94 g	28.66 g	254.3 mL	1.00 mL	7 SU	100 uL
320-30866-A-8	WGNA-081717-FRB-3409	537, 537	T	285.48 g	28.48 g	257 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00027	LC537-SU 00047	AnalysisComment			
MB 320-180966/1		537, 537			100 uL	ch nd			
LCS 320-180966/2		537, 537		100 uL	100 uL	ch nd			
320-30866-A-1	WGNA-081717-RW-3607	537, 537	T		100 uL	ch nd			
320-30866-A-1 MS	WGNA-081717-RW-3607	537, 537	T	100 uL	100 uL	ch nd			
320-30866-A-1 MSD	WGNA-081717-RW-3607	537, 537	T	100 uL	100 uL	ch nd			
320-30866-A-2	WGNA-081717-FRB-3607	537, 537	T		100 uL	ch nd			
320-30866-A-3	NAWC-081717-RW-336	537, 537	T		100 uL	ch nd			
320-30866-A-4	NAWC-081717-FRB-336	537, 537	T		100 uL	ch 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.: 320-30866-1

SDG No.:

Batch Number: 180966 Batch Start Date: 08/24/17 09:53 Batch Analyst: Santos, Jonathan

Batch Method: 537 Batch End Date: 08/28/17 14:04

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00027	LC537-SU 00047	AnalysisComment			
320-30866-A-5	WGNA-081717-RW-0560	537, 537	T		100 uL	ch nd			
320-30866-A-6	WGNA-081717-FRB-0560	537, 537	T		100 uL	ch nd			
320-30866-A-7	WGNA-081717-RW-3409	537, 537	T		100 uL	ch nd			
320-30866-A-8	WGNA-081717-FRB-3409	537, 537	T		100 uL	ch nd			

Batch Notes	
Batch Comment	IS: 1002798
Manifold ID	3, 7
Methanol ID	1010867
Pipette ID	H14930F
Analyst ID - IS Reagent Drop	CCB
Analyst ID - IS Reagent Drop Witness	TN
Analyst ID - SU Reagent Drop	NSH
Analyst ID - SU Reagent Drop Witness	JNS
Analyst ID - TA Reagent Drop	NSH
Analyst ID - TA Reagent Drop Witness	JNS
SPE Cartridge ID	6357081-03
Prizma ID	SLBR4303V
Reagent Water ID	8/21/17

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.

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

AB 8/28/17

Batch Number: 320-180966

Method Code: 320-537_Prep-320

Analyst: Santos, Jonathan

Batch Open: 8/24/2017 9:53:00AM

Batch End: 8-28-17 14:04

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~320-180966/1 N/A	N/A		250.00 mL 1.00 mL	7			N/A	N/A	N/A	ch nd RI Conc 4-8	MB 320-180966/1-A
2	LCS~320-180966/2 N/A	N/A		250.00 mL 1.00 mL	7			N/A	N/A	N/A	ch nd RI 4-9	LCS 320-180966/2-A
3	320-30754-A-1 (537_DOD5)	WE04 (320-30754-1)	287.27 g 28.18 g	259.1 mL 1.00 mL	7			8/22/17	16_Days	4	ch nd	320-30754-A-1-A
4	320-30754-A-2 (537_DOD5)	WE04 (320-30754-1)	282.80 g 28.18 g	254.6 mL 1.00 mL	7			8/22/17	16_Days	4	ch nd	320-30754-A-2-A
5	320-30754-A-3 (537_DOD5)	WE04 (320-30754-1)	288.22 g 26.81 g	261.4 mL 1.00 mL	7			8/22/17	16_Days	4	ch nd 5X	320-30754-A-3-A
6	320-30754-A-4 (537_DOD5)	WE04 (320-30754-1)	287.27 g 27.94 g	259.3 mL 1.00 mL	7			8/22/17	16_Days	4	ch nd	320-30754-A-4-A
7	320-30754-A-5 (537_DOD5)	WE04 (320-30754-1)	286.23 g 28.45 g	257.8 mL 1.00 mL	7			8/22/17	16_Days	4	ch nd	320-30754-A-5-A
8	320-30754-A-6 (537_DOD5)	WE04 (320-30754-1)	286.71 g 28.04 g	258.7 mL 1.00 mL	7			8/22/17	16_Days	4	ch nd RI 4-15	320-30754-A-6-A
9	320-30754-A-7 (537_DOD5)	WE04 (320-30754-1)	287.24 g 28.39 g	258.9 mL 1.00 mL	7			8/22/17	16_Days	4	ch nd	320-30754-A-7-A
10	320-30866-A-1 (537_DOD5)	N/A (320-30866-1)	293.06 g 28.19 g	264.9 mL 1.00 mL	7			8/24/17	16_Days	4	ch nd RI 4-17	320-30866-A-1-A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-180966 Analyst: Santos, Jonathan Batch Open: 8/24/2017 9:53:00AM

Method Code: 320-537_Prep-320 Batch End:

11	320-30866-A-1~MS (537_DOD5)	N/A (320-30866-1)	284.33 g / 28.70 g	255.6 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd 4-18 RI	320-30866-A-1-B MS
12	320-30866-A-1~MSD (537_DOD5)	N/A (320-30866-1)	294.20 g / 28.47 g	265.7 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd 4-19 RI	320-30866-A-1-C MSD
13	320-30866-A-2 (537_DOD5)	N/A (320-30866-1)	284.40 g / 28.24 g	256.2 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd	320-30866-A-2-A
14	320-30866-A-3 (537_DOD5)	N/A (320-30866-1)	285.48 g / 28.24 g	257.2 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd	320-30866-A-3-A
15	320-30866-A-4 (537_DOD5)	N/A (320-30866-1)	285.92 g / 28.53 g	257.4 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd	320-30866-A-4-A
16	320-30866-A-5 (537_DOD5)	N/A (320-30866-1)	288.75 g / 28.78 g	260 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd	320-30866-A-5-A
17	320-30866-A-6 (537_DOD5)	N/A (320-30866-1)	289.06 g / 27.94 g	261.1 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd 4-24 RI	320-30866-A-6-A
18	320-30866-A-7 (537_DOD5)	N/A (320-30866-1)	282.94 g / 28.66 g	254.3 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd	320-30866-A-7-A
19	320-30866-A-8 (537_DOD5)	N/A (320-30866-1)	285.48 g / 28.48 g	257 mL / 1.00 mL	7			8/24/17	16_Days	4	ch nd	320-30866-A-8-A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-180966

Analyst: Santos, Jonathan

Batch Open: 8/24/2017 9:53:00AM

Method Code: 320-537_Prep-320

Batch End:

Batch Notes

Manifold ID	3, 7
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-03
Methanol ID	1010867
Reagent Water ID	8/21/17
Pipette ID	H14930F
Analyst ID - TA Reagent Drop	JSH
Analyst ID - TA Reagent Drop Witness	JNS
Analyst ID - SU Reagent Drop	JSH
Analyst ID - SU Reagent Drop Witness	JNS
Analyst ID - IS Reagent Drop	CAB
Analyst ID - IS Reagent Drop Witness	JNS TN
Batch Comment	IS: 1002798

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-180966

Analyst: Santos, Jonathan

Batch Open: 8/24/2017 9:53:00AM

Method Code: 320-537_Prep-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-180966/1	LC537-SU_00047	100 uL	1.00 mL	NSH 8/24/17	JNS 8/24/17
LCS 320-180966/2	LC537-MSP_00027	100 uL	1.00 mL		
LCS 320-180966/2	LC537-SU_00047	100 uL	1.00 mL		
320-30754-A-1	LC537-SU_00047	100 uL	1.00 mL		
320-30754-A-2	LC537-SU_00047	100 uL	1.00 mL		
320-30754-A-3	LC537-SU_00047	100 uL	1.00 mL		
320-30754-A-4	LC537-SU_00047	100 uL	1.00 mL		
320-30754-A-5	LC537-SU_00047	100 uL	1.00 mL		
320-30754-A-6	LC537-SU_00047	100 uL	1.00 mL		
320-30754-A-7	LC537-SU_00047	100 uL	1.00 mL		
320-30866-A-1	LC537-SU_00047	100 uL	1.00 mL		
320-30866-A-1 MS	LC537-MSP_00027	100 uL	1.00 mL		
320-30866-A-1 MS	LC537-SU_00047	100 uL	1.00 mL		
320-30866-A-1 MSD	LC537-MSP_00027	100 uL	1.00 mL		
320-30866-A-1 MSD	LC537-SU_00047	100 uL	1.00 mL		
320-30866-A-2	LC537-SU_00047	100 uL	1.00 mL		
320-30866-A-3	LC537-SU_00047	100 uL	1.00 mL		
320-30866-A-4	LC537-SU_00047	100 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-180966

Analyst: Santos, Jonathan

Batch Open: 8/24/2017 9:53:00AM

Method Code: 320-537_Prep-320

Batch End:

320-30866-A-5	LC537-SU_00047	100 uL	1.00 mL	NSH 8/24/17	JNS 8/24/17
320-30866-A-6	LC537-SU_00047	100 uL	1.00 mL		
320-30866-A-7	LC537-SU_00047	100 uL	1.00 mL		
320-30866-A-8	LC537-SU_00047	100 uL	1.00 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

PFAS Calibration Calculations:

Initial Calibration 8/28/2017
Instrument A8_N

Perfluorohexanesulfonic acid

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF
3	718953	4529877	28.7	1.51836	1.5168
6.67	1630557	4514231	28.7	1.55420	1.5535
15	3727422	4417453	28.7	1.61446	1.613
30	7156650	4341086	28.7	1.57715	1.5757
45	10520613	4445105	28.7	1.50948	1.5081
60	13344574	4189680	28.7	1.52354	1.5221
			Average	1.54953	1.5482
			Standard Deviation	0.0406	
			RSD	0.0262	
			%RSD	2.62162	2.6

Continuing Calibration 08/28/2017 @ 22:48
A8_N

Perfluorohexanesulfonic acid

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
45	10553788	4215889	28.7	1.5966	3.1244198	1.595	3

Willow Grove
SDG 320-30866-1

Sample Identification	WGNA-081717-RW-3607	
Compound	Perfluorohexanesulfonic acid	
Compound Area	514625	
Internal Standard Amount (ng)	28.7	
Dilution Factor	1	
Internal Standard Area	4568604	
Average RRF	1.5482	
Sample Volume(ml)	264.9	
Volume Extract (ml)	1	
Injection Volume (µl)	1	
µl to ml	1000.00	
Concentration	7.88	ng/L

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N

WARRINGTON

WARWICK

NORTHAMPTON

IVYLAND

WARMINSTER

HAGS

NASJRB
Willow Grove

HORSHAM

HATBORO

UPPER SOUTHAMPTON

UPPER MORELAND

LEGEND

- PFOA & PFOS BELOW DETECTION LIMITS
- SUM OF PFOA & PFOS CONCENTRATIONS AT OR BELOW 40 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS BETWEEN 40 PPT AND 70 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS ABOVE 70 PPT
- PUBLIC WATER CONNECTION (SOME NOT BY NAVY)
- SAMPLING AREA
- FORMER NAWC WARMINSTER
- TOWNSHIP BOUNDARY

3,000 1,500 0 3,000 6,000
Feet

NAVFAC

PFC SAMPLE RESULTS MAP
FORMER NAWC WAMINSTER
MONTGOMERY COUNTY, PENNSYLVANIA

SCALE	AS NOTED
FILE	NAWC
REV	0
DATE	01/24/19
FIGURE NUMBER	FIGURE 1