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 320-31214-1

Naval Air Warfare Center Warminster
Warminster, Pennsylvania

August 2019

N62269_001143
WARMINSTER_NAWC
SSIC 5000-33c

LABORATORY DATA PACKAGE, 320-31214-1, NAS WILLOW GROVE NAWC WARMINSTER PA

09/12/2017

TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-31214-1

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
9/12/2017 1:15 PM

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09/12/2017

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Qualifiers

LCMS

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

Glossary

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

Job Narrative
320-31214-1

Receipt
The samples were received on 8/31/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.4º C and 2.6º C.

Receipt Exceptions
The container label for the following samples did not match the information listed on the Chain-of-Custody (COC): WGNA-083017-RW-351 (320-31214-7) and NAWC-083017-FRB-351 (320-31214-8). The container labels list 11:30 for sample 7 and 11:25 for sample 8, while the COC lists 11:25 for sample 7 and 11:20 for sample 8. Samples are logged in according to the CoC.

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

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

Organic Prep
Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-182400.

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

Detection Summary

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

TestAmerica Job ID: 320-31214-1

Client Sample ID: WGNA-083017-RW-0518 — Lab Sample ID: 320-31214-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	24	J	39	6.6	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	24		19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.8	J	29	5.3	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.9	J	9.7	1.8	ng/L	1		537	Total/NA
Perfluorobutanesulfonic acid (PFBS)	27	J	87	16	ng/L	1		537	Total/NA

Client Sample ID: WGNA-083017-FRB-0518 — Lab Sample ID: 320-31214-2

No Detections.

Client Sample ID: NAWC-083017-RW-352 — Lab Sample ID: 320-31214-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	9.5	J	19	2.7	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.3	J	9.6	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-083017-FRB-352 — Lab Sample ID: 320-31214-4

No Detections.

Client Sample ID: NAWC-083017-RW-353 — Lab Sample ID: 320-31214-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	11	J M	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	16	J	20	2.8	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.6	J	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-083017-FRB-353 — Lab Sample ID: 320-31214-6

No Detections.

Client Sample ID: WGNA-083017-RW-351 — Lab Sample ID: 320-31214-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	7.3	J M	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	13	J	20	2.8	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.1	J	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-083017-FRB-351 — Lab Sample ID: 320-31214-8

No Detections.

Client Sample ID: NAWC-083017-RW-350 — Lab Sample ID: 320-31214-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	14	J	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	11	J	20	2.8	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.8	J	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-083017-FRB-350 — Lab Sample ID: 320-31214-10

No Detections.

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 320-31214-1

Client Sample ID: WGNA-083017-RW-3785 — Lab Sample ID: 320-31214-11

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	20	J M	39	6.6	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	22		19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	14	J	29	5.3	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.2	J	9.6	1.8	ng/L	1		537	Total/NA

Client Sample ID: WGNA-083017-FRB-3785 — Lab Sample ID: 320-31214-12

No Detections.

Client Sample ID: WGNA-083017-RW-0515 — Lab Sample ID: 320-31214-13

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	29	J	39	6.6	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	29		20	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	26	J	29	5.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.1	J	9.8	1.9	ng/L	1		537	Total/NA

Client Sample ID: WGNA-083017-FRB-0515 — Lab Sample ID: 320-31214-14

No Detections.

Client Sample ID: WGNA-083017-RW-3220 — Lab Sample ID: 320-31214-15

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	40	M	39	6.6	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	16	J	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)	10		9.7	1.8	ng/L	1		537	Total/NA
Perfluorobutanesulfonic acid (PFBS)	98		87	16	ng/L	1		537	Total/NA

Client Sample ID: WGNA-083017-FRB-3220 — Lab Sample ID: 320-31214-16

No Detections.

Client Sample ID: WGNA-083017-DUP08 — Lab Sample ID: 320-31214-17

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	9.6	J M	19	2.7	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.5	J	9.7	1.8	ng/L	1		537	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: WGNA-083017-RW-0518 — Lab Sample ID: 320-31214-1

Date Collected: 08/30/17 09:05 — **Matrix: Water**
Date Received: 08/31/17 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**	39	6.6	ng/L		09/01/17 08:39	09/08/17 21:05	1
Perfluorooctanoic acid (PFOA)	**24**		19	2.7	ng/L		09/01/17 08:39	09/08/17 21:05	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		09/01/17 08:39	09/08/17 21:05	1
Perfluorohexanesulfonic acid (PFHxS)	**9.8**	**J**	29	5.3	ng/L		09/01/17 08:39	09/08/17 21:05	1
Perfluoroheptanoic acid (PFHpA)	**5.9**	**J**	9.7	1.8	ng/L		09/01/17 08:39	09/08/17 21:05	1
Perfluorobutanesulfonic acid (PFBS)	**27**	**J**	87	16	ng/L		09/01/17 08:39	09/08/17 21:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:05*	*1*
13C2 PFDA	*109*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:05*	*1*

Client Sample ID: WGNA-083017-FRB-0518 — Lab Sample ID: 320-31214-2

Date Collected: 08/30/17 09:00 — **Matrix: Water**
Date Received: 08/31/17 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	41	7.0	ng/L		09/01/17 08:39	09/08/17 21:10	1
Perfluorooctanoic acid (PFOA)	8.2	U	21	2.9	ng/L		09/01/17 08:39	09/08/17 21:10	1
Perfluorononanoic acid (PFNA)	21	U	25	8.2	ng/L		09/01/17 08:39	09/08/17 21:10	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	31	5.6	ng/L		09/01/17 08:39	09/08/17 21:10	1
Perfluoroheptanoic acid (PFHpA)	4.1	U	10	1.9	ng/L		09/01/17 08:39	09/08/17 21:10	1
Perfluorobutanesulfonic acid (PFBS)	37	U	92	17	ng/L		09/01/17 08:39	09/08/17 21:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*93*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:10*	*1*
13C2 PFDA	*109*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:10*	*1*

Client Sample ID: NAWC-083017-RW-352 — Lab Sample ID: 320-31214-3

Date Collected: 08/30/17 10:45 — **Matrix: Water**
Date Received: 08/31/17 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 M	39	6.6	ng/L		09/01/17 08:39	09/08/17 21:15	1
Perfluorooctanoic acid (PFOA)	**9.5**	**J**	19	2.7	ng/L		09/01/17 08:39	09/08/17 21:15	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		09/01/17 08:39	09/08/17 21:15	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.3	ng/L		09/01/17 08:39	09/08/17 21:15	1
Perfluoroheptanoic acid (PFHpA)	**3.3**	**J**	9.6	1.8	ng/L		09/01/17 08:39	09/08/17 21:15	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L		09/01/17 08:39	09/08/17 21:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*76*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:15*	*1*
13C2 PFDA	*112*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:15*	*1*

Client Sample ID: NAWC-083017-FRB-352 — Lab Sample ID: 320-31214-4

Date Collected: 08/30/17 10:40 **Matrix: Water**
Date Received: 08/31/17 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	39	6.6	ng/L		09/01/17 08:39	09/08/17 21:20	1
Perfluorooctanoic acid (PFOA)	7.7	U	19	2.7	ng/L		09/01/17 08:39	09/08/17 21:20	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		09/01/17 08:39	09/08/17 21:20	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.3	ng/L		09/01/17 08:39	09/08/17 21:20	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	1.8	ng/L		09/01/17 08:39	09/08/17 21:20	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L		09/01/17 08:39	09/08/17 21:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*100*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:20*	*1*
13C2 PFDA	*113*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:20*	*1*

Client Sample ID: NAWC-083017-RW-353 — Lab Sample ID: 320-31214-5

Date Collected: 08/30/17 10:20 **Matrix: Water**
Date Received: 08/31/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**11**	**J M**	40	6.8	ng/L		09/01/17 08:39	09/08/17 21:24	1
Perfluorooctanoic acid (PFOA)	**16**	**J**	20	2.8	ng/L		09/01/17 08:39	09/08/17 21:24	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		09/01/17 08:39	09/08/17 21:24	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		09/01/17 08:39	09/08/17 21:24	1
Perfluoroheptanoic acid (PFHpA)	**4.6**	**J**	10	1.9	ng/L		09/01/17 08:39	09/08/17 21:24	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		09/01/17 08:39	09/08/17 21:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*74*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:24*	*1*
13C2 PFDA	*116*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:24*	*1*

Client Sample ID: NAWC-083017-FRB-353 — Lab Sample ID: 320-31214-6

Date Collected: 08/30/17 10:15 **Matrix: Water**
Date Received: 08/31/17 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	40	6.9	ng/L		09/01/17 08:39	09/08/17 21:29	1
Perfluorooctanoic acid (PFOA)	8.1	U	20	2.8	ng/L		09/01/17 08:39	09/08/17 21:29	1
Perfluorononanoic acid (PFNA)	20	U	24	8.1	ng/L		09/01/17 08:39	09/08/17 21:29	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.6	ng/L		09/01/17 08:39	09/08/17 21:29	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		09/01/17 08:39	09/08/17 21:29	1
Perfluorobutanesulfonic acid (PFBS)	36	U	91	16	ng/L		09/01/17 08:39	09/08/17 21:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*100*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:29*	*1*
13C2 PFDA	*119*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:29*	*1*

Client Sample ID: WGNA-083017-RW-351 — Lab Sample ID: 320-31214-7

Date Collected: 08/30/17 11:25 — **Matrix: Water**
Date Received: 08/31/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**7.3**	**J M**	40	6.8	ng/L		09/01/17 08:39	09/08/17 21:34	1
Perfluorooctanoic acid (PFOA)	**13**	**J**	20	2.8	ng/L		09/01/17 08:39	09/08/17 21:34	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		09/01/17 08:39	09/08/17 21:34	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		09/01/17 08:39	09/08/17 21:34	1
Perfluoroheptanoic acid (PFHpA)	**4.1**	**J**	10	1.9	ng/L		09/01/17 08:39	09/08/17 21:34	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		09/01/17 08:39	09/08/17 21:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*79*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:34*	*1*
13C2 PFDA	*109*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:34*	*1*

Client Sample ID: NAWC-083017-FRB-351 — Lab Sample ID: 320-31214-8

Date Collected: 08/30/17 11:20 — **Matrix: Water**
Date Received: 08/31/17 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	40	6.9	ng/L		09/01/17 08:39	09/08/17 21:48	1
Perfluorooctanoic acid (PFOA)	8.1	U	20	2.8	ng/L		09/01/17 08:39	09/08/17 21:48	1
Perfluorononanoic acid (PFNA)	20	U	24	8.1	ng/L		09/01/17 08:39	09/08/17 21:48	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		09/01/17 08:39	09/08/17 21:48	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		09/01/17 08:39	09/08/17 21:48	1
Perfluorobutanesulfonic acid (PFBS)	36	U	91	16	ng/L		09/01/17 08:39	09/08/17 21:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*103*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:48*	*1*
13C2 PFDA	*117*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:48*	*1*

Client Sample ID: NAWC-083017-RW-350 — Lab Sample ID: 320-31214-9

Date Collected: 08/30/17 11:45 — **Matrix: Water**
Date Received: 08/31/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**14**	**J**	40	6.8	ng/L		09/01/17 08:39	09/08/17 21:53	1
Perfluorooctanoic acid (PFOA)	**11**	**J**	20	2.8	ng/L		09/01/17 08:39	09/08/17 21:53	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		09/01/17 08:39	09/08/17 21:53	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		09/01/17 08:39	09/08/17 21:53	1
Perfluoroheptanoic acid (PFHpA)	**3.8**	**J**	10	1.9	ng/L		09/01/17 08:39	09/08/17 21:53	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		09/01/17 08:39	09/08/17 21:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*79*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:53*	*1*
13C2 PFDA	*113*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:53*	*1*

Client Sample ID: NAWC-083017-FRB-350 — Lab Sample ID: 320-31214-10

Date Collected: 08/30/17 11:40 — **Matrix: Water**
Date Received: 08/31/17 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	40	6.8	ng/L		09/01/17 08:39	09/08/17 21:58	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		09/01/17 08:39	09/08/17 21:58	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		09/01/17 08:39	09/08/17 21:58	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		09/01/17 08:39	09/08/17 21:58	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		09/01/17 08:39	09/08/17 21:58	1
Perfluorobutanesulfonic acid (PFBS)	36	U	91	16	ng/L		09/01/17 08:39	09/08/17 21:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:58*	*1*
13C2 PFDA	*97*		*70 - 130*	*09/01/17 08:39*	*09/08/17 21:58*	*1*

Client Sample ID: WGNA-083017-RW-3785 — Lab Sample ID: 320-31214-11

Date Collected: 08/30/17 15:35 — **Matrix: Water**
Date Received: 08/31/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**20**	**J M**	39	6.6	ng/L		09/01/17 08:39	09/08/17 22:02	1
Perfluorooctanoic acid (PFOA)	**22**		19	2.7	ng/L		09/01/17 08:39	09/08/17 22:02	1
Perfluorononanoic acid (PFNA)	19	U M	23	7.7	ng/L		09/01/17 08:39	09/08/17 22:02	1
Perfluorohexanesulfonic acid (PFHxS)	**14**	**J**	29	5.3	ng/L		09/01/17 08:39	09/08/17 22:02	1
Perfluoroheptanoic acid (PFHpA)	**6.2**	**J**	9.6	1.8	ng/L		09/01/17 08:39	09/08/17 22:02	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L		09/01/17 08:39	09/08/17 22:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*70 - 130*	*09/01/17 08:39*	*09/08/17 22:02*	*1*
13C2 PFDA	*104*		*70 - 130*	*09/01/17 08:39*	*09/08/17 22:02*	*1*

Client Sample ID: WGNA-083017-FRB-3785 — Lab Sample ID: 320-31214-12

Date Collected: 08/30/17 15:30 — **Matrix: Water**
Date Received: 08/31/17 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		09/01/17 08:39	09/08/17 22:07	1
Perfluorooctanoic acid (PFOA)	7.8	U	19	2.7	ng/L		09/01/17 08:39	09/08/17 22:07	1
Perfluorononanoic acid (PFNA)	19	U	23	7.8	ng/L		09/01/17 08:39	09/08/17 22:07	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.3	ng/L		09/01/17 08:39	09/08/17 22:07	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	1.8	ng/L		09/01/17 08:39	09/08/17 22:07	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L		09/01/17 08:39	09/08/17 22:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*99*		*70 - 130*	*09/01/17 08:39*	*09/08/17 22:07*	*1*
13C2 PFDA	*112*		*70 - 130*	*09/01/17 08:39*	*09/08/17 22:07*	*1*

Client Sample ID: WGNA-083017-RW-0515 — Lab Sample ID: 320-31214-13

Date Collected: 08/30/17 13:55 **Matrix: Water**
Date Received: 08/31/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**29**	**J**	39	6.6	ng/L		09/01/17 08:39	09/08/17 22:12	1
Perfluorooctanoic acid (PFOA)	**29**		20	2.7	ng/L		09/01/17 08:39	09/08/17 22:12	1
Perfluorononanoic acid (PFNA)	20	U	23	7.8	ng/L		09/01/17 08:39	09/08/17 22:12	1
Perfluorohexanesulfonic acid (PFHxS)	**26**	**J**	29	5.4	ng/L		09/01/17 08:39	09/08/17 22:12	1
Perfluoroheptanoic acid (PFHpA)	**6.1**	**J**	9.8	1.9	ng/L		09/01/17 08:39	09/08/17 22:12	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		09/01/17 08:39	09/08/17 22:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*70 - 130*	*09/01/17 08:39*	*09/08/17 22:12*	*1*
13C2 PFDA	*108*		*70 - 130*	*09/01/17 08:39*	*09/08/17 22:12*	*1*

Client Sample ID: WGNA-083017-FRB-0515 — Lab Sample ID: 320-31214-14

Date Collected: 08/30/17 13:50 **Matrix: Water**
Date Received: 08/31/17 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	6.7	ng/L		09/01/17 08:39	09/08/17 22:17	1
Perfluorooctanoic acid (PFOA)	7.9	U	20	2.8	ng/L		09/01/17 08:39	09/08/17 22:17	1
Perfluorononanoic acid (PFNA)	20	U	24	7.9	ng/L		09/01/17 08:39	09/08/17 22:17	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.4	ng/L		09/01/17 08:39	09/08/17 22:17	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	1.9	ng/L		09/01/17 08:39	09/08/17 22:17	1
Perfluorobutanesulfonic acid (PFBS)	35	U	89	16	ng/L		09/01/17 08:39	09/08/17 22:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*96*		*70 - 130*	*09/01/17 08:39*	*09/08/17 22:17*	*1*
13C2 PFDA	*111*		*70 - 130*	*09/01/17 08:39*	*09/08/17 22:17*	*1*

Client Sample ID: WGNA-083017-RW-3220 — Lab Sample ID: 320-31214-15

Date Collected: 08/30/17 14:20 **Matrix: Water**
Date Received: 08/31/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**40**	**M**	39	6.6	ng/L		09/01/17 08:39	09/08/17 22:21	1
Perfluorooctanoic acid (PFOA)	**16**	**J**	19	2.7	ng/L		09/01/17 08:39	09/08/17 22:21	1
Perfluorononanoic acid (PFNA)	19	U M	23	7.8	ng/L		09/01/17 08:39	09/08/17 22:21	1
Perfluorohexanesulfonic acid (PFHxS)	**17**	**J**	29	5.3	ng/L		09/01/17 08:39	09/08/17 22:21	1
Perfluoroheptanoic acid (PFHpA)	**10**		9.7	1.8	ng/L		09/01/17 08:39	09/08/17 22:21	1
Perfluorobutanesulfonic acid (PFBS)	**98**		87	16	ng/L		09/01/17 08:39	09/08/17 22:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*79*		*70 - 130*	*09/01/17 08:39*	*09/08/17 22:21*	*1*
13C2 PFDA	*104*		*70 - 130*	*09/01/17 08:39*	*09/08/17 22:21*	*1*

Client Sample ID: WGNA-083017-FRB-3220 — Lab Sample ID: 320-31214-16

Date Collected: 08/30/17 14:15 — **Matrix: Water**
Date Received: 08/31/17 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	39	6.6	ng/L		09/01/17 08:39	09/08/17 22:26	1
Perfluorooctanoic acid (PFOA)	7.7	U	19	2.7	ng/L		09/01/17 08:39	09/08/17 22:26	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		09/01/17 08:39	09/08/17 22:26	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.3	ng/L		09/01/17 08:39	09/08/17 22:26	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	1.8	ng/L		09/01/17 08:39	09/08/17 22:26	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L		09/01/17 08:39	09/08/17 22:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*70 - 130*	*09/01/17 08:39*	*09/08/17 22:26*	*1*
13C2 PFDA	*111*		*70 - 130*	*09/01/17 08:39*	*09/08/17 22:26*	*1*

Client Sample ID: WGNA-083017-DUP08 — Lab Sample ID: 320-31214-17

Date Collected: 08/30/17 07:00 — **Matrix: Water**
Date Received: 08/31/17 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		09/01/17 08:39	09/08/17 22:31	1
Perfluorooctanoic acid (PFOA)	**9.6**	**J M**	19	2.7	ng/L		09/01/17 08:39	09/08/17 22:31	1
Perfluorononanoic acid (PFNA)	19	U	23	7.8	ng/L		09/01/17 08:39	09/08/17 22:31	1
Perfluorohexanesulfonic acid (PFHxS)	12	U M	29	5.3	ng/L		09/01/17 08:39	09/08/17 22:31	1
Perfluoroheptanoic acid (PFHpA)	**3.5**	**J**	9.7	1.8	ng/L		09/01/17 08:39	09/08/17 22:31	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L		09/01/17 08:39	09/08/17 22:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*79*		*70 - 130*	*09/01/17 08:39*	*09/08/17 22:31*	*1*
13C2 PFDA	*112*		*70 - 130*	*09/01/17 08:39*	*09/08/17 22:31*	*1*

Default Detection Limits

Client: Tetra Tech, Inc. TestAmerica Job ID: 320-31214-1
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: 320-31214-1

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)
320-31214-1	WGNA-083017-RW-0518	86	109
320-31214-2	WGNA-083017-FRB-0518	93	109
320-31214-3	NAWC-083017-RW-352	76	112
320-31214-4	NAWC-083017-FRB-352	100	113
320-31214-5	NAWC-083017-RW-353	74	116
320-31214-6	NAWC-083017-FRB-353	100	119
320-31214-7	WGNA-083017-RW-351	79	109
320-31214-8	NAWC-083017-FRB-351	103	117
320-31214-9	NAWC-083017-RW-350	79	113
320-31214-10	NAWC-083017-FRB-350	91	97
320-31214-11	WGNA-083017-RW-3785	87	104
320-31214-12	WGNA-083017-FRB-3785	99	112
320-31214-13	WGNA-083017-RW-0515	91	108
320-31214-14	WGNA-083017-FRB-0515	96	111
320-31214-15	WGNA-083017-RW-3220	79	104
320-31214-16	WGNA-083017-FRB-3220	95	111
320-31214-17	WGNA-083017-DUP08	79	112
LLCS 320-182400/2-A	Lab Control Sample	98	108
LLCSD 320-182400/3-A	Lab Control Sample Dup	100	117
MB 320-182400/1-A	Method Blank	101	111

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

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

Lab Sample ID: MB 320-182400/1-A **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 183512 **Prep Batch: 182400**

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		09/01/17 08:39	09/08/17 20:51	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		09/01/17 08:39	09/08/17 20:51	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		09/01/17 08:39	09/08/17 20:51	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		09/01/17 08:39	09/08/17 20:51	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		09/01/17 08:39	09/08/17 20:51	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		09/01/17 08:39	09/08/17 20:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*70 - 130*	*09/01/17 08:39*	*09/08/17 20:51*	*1*
13C2 PFDA	*111*		*70 - 130*	*09/01/17 08:39*	*09/08/17 20:51*	*1*

Lab Sample ID: LLCS 320-182400/2-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 183512 **Prep Batch: 182400**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	40.0	37.5	J M	ng/L		94	50 - 150
Perfluorooctanoic acid (PFOA)	20.0	19.2	J	ng/L		96	50 - 150
Perfluorononanoic acid (PFNA)	20.0	19.1	J	ng/L		96	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	30.0	30.1		ng/L		100	50 - 150
Perfluoroheptanoic acid (PFHpA)	10.0	10.4		ng/L		104	50 - 150
Perfluorobutanesulfonic acid (PFBS)	90.0	96.1		ng/L		107	50 - 150

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C2 PFHxA	*98*		*70 - 130*
13C2 PFDA	*108*		*70 - 130*

Lab Sample ID: LLCSD 320-182400/3-A **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 183512 **Prep Batch: 182400**

Analyte	Spike Added	LLCSD Result	LLCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	40.0	38.9	J M	ng/L		97	50 - 150	4	50
Perfluorooctanoic acid (PFOA)	20.0	19.5	J	ng/L		97	50 - 150	1	50
Perfluorononanoic acid (PFNA)	20.0	19.8	J	ng/L		99	50 - 150	4	50
Perfluorohexanesulfonic acid (PFHxS)	30.0	29.8	J	ng/L		99	50 - 150	1	50
Perfluoroheptanoic acid (PFHpA)	10.0	10.5		ng/L		105	50 - 150	1	50
Perfluorobutanesulfonic acid (PFBS)	90.0	96.8		ng/L		108	50 - 150	0.7	50

Surrogate	*LLCSD %Recovery*	*LLCSD Qualifier*	*Limits*
13C2 PFHxA	*100*		*70 - 130*
13C2 PFDA	*117*		*70 - 130*

LCMS

Prep Batch: 182400

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-31214-1	WGNA-083017-RW-0518	Total/NA	Water	537	
320-31214-2	WGNA-083017-FRB-0518	Total/NA	Water	537	
320-31214-3	NAWC-083017-RW-352	Total/NA	Water	537	
320-31214-4	NAWC-083017-FRB-352	Total/NA	Water	537	
320-31214-5	NAWC-083017-RW-353	Total/NA	Water	537	
320-31214-6	NAWC-083017-FRB-353	Total/NA	Water	537	
320-31214-7	WGNA-083017-RW-351	Total/NA	Water	537	
320-31214-8	NAWC-083017-FRB-351	Total/NA	Water	537	
320-31214-9	NAWC-083017-RW-350	Total/NA	Water	537	
320-31214-10	NAWC-083017-FRB-350	Total/NA	Water	537	
320-31214-11	WGNA-083017-RW-3785	Total/NA	Water	537	
320-31214-12	WGNA-083017-FRB-3785	Total/NA	Water	537	
320-31214-13	WGNA-083017-RW-0515	Total/NA	Water	537	
320-31214-14	WGNA-083017-FRB-0515	Total/NA	Water	537	
320-31214-15	WGNA-083017-RW-3220	Total/NA	Water	537	
320-31214-16	WGNA-083017-FRB-3220	Total/NA	Water	537	
320-31214-17	WGNA-083017-DUP08	Total/NA	Water	537	
MB 320-182400/1-A	Method Blank	Total/NA	Water	537	
LLCS 320-182400/2-A	Lab Control Sample	Total/NA	Water	537	
LLCSD 320-182400/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 183512

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-31214-1	WGNA-083017-RW-0518	Total/NA	Water	537	182400
320-31214-2	WGNA-083017-FRB-0518	Total/NA	Water	537	182400
320-31214-3	NAWC-083017-RW-352	Total/NA	Water	537	182400
320-31214-4	NAWC-083017-FRB-352	Total/NA	Water	537	182400
320-31214-5	NAWC-083017-RW-353	Total/NA	Water	537	182400
320-31214-6	NAWC-083017-FRB-353	Total/NA	Water	537	182400
320-31214-7	WGNA-083017-RW-351	Total/NA	Water	537	182400
MB 320-182400/1-A	Method Blank	Total/NA	Water	537	182400
LLCS 320-182400/2-A	Lab Control Sample	Total/NA	Water	537	182400
LLCSD 320-182400/3-A	Lab Control Sample Dup	Total/NA	Water	537	182400

Analysis Batch: 183773

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-31214-8	NAWC-083017-FRB-351	Total/NA	Water	537	182400
320-31214-9	NAWC-083017-RW-350	Total/NA	Water	537	182400
320-31214-10	NAWC-083017-FRB-350	Total/NA	Water	537	182400
320-31214-11	WGNA-083017-RW-3785	Total/NA	Water	537	182400
320-31214-12	WGNA-083017-FRB-3785	Total/NA	Water	537	182400
320-31214-13	WGNA-083017-RW-0515	Total/NA	Water	537	182400
320-31214-14	WGNA-083017-FRB-0515	Total/NA	Water	537	182400
320-31214-15	WGNA-083017-RW-3220	Total/NA	Water	537	182400
320-31214-16	WGNA-083017-FRB-3220	Total/NA	Water	537	182400
320-31214-17	WGNA-083017-DUP08	Total/NA	Water	537	182400

Lab Chronicle

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

TestAmerica Job ID: 320-31214-1

Client Sample ID: WGNA-083017-RW-0518
Lab Sample ID: 320-31214-1
Date Collected: 08/30/17 09:05
Matrix: Water
Date Received: 08/31/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			182400	09/01/17 08:39	CCB	TAL SAC
Total/NA	Analysis	537		1	183512	09/08/17 21:05	JRB	TAL SAC

Client Sample ID: WGNA-083017-FRB-0518
Lab Sample ID: 320-31214-2
Date Collected: 08/30/17 09:00
Matrix: Water
Date Received: 08/31/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			182400	09/01/17 08:39	CCB	TAL SAC
Total/NA	Analysis	537		1	183512	09/08/17 21:10	JRB	TAL SAC

Client Sample ID: NAWC-083017-RW-352
Lab Sample ID: 320-31214-3
Date Collected: 08/30/17 10:45
Matrix: Water
Date Received: 08/31/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			182400	09/01/17 08:39	CCB	TAL SAC
Total/NA	Analysis	537		1	183512	09/08/17 21:15	JRB	TAL SAC

Client Sample ID: NAWC-083017-FRB-352
Lab Sample ID: 320-31214-4
Date Collected: 08/30/17 10:40
Matrix: Water
Date Received: 08/31/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			182400	09/01/17 08:39	CCB	TAL SAC
Total/NA	Analysis	537		1	183512	09/08/17 21:20	JRB	TAL SAC

Client Sample ID: NAWC-083017-RW-353
Lab Sample ID: 320-31214-5
Date Collected: 08/30/17 10:20
Matrix: Water
Date Received: 08/31/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			182400	09/01/17 08:39	CCB	TAL SAC
Total/NA	Analysis	537		1	183512	09/08/17 21:24	JRB	TAL SAC

Client Sample ID: NAWC-083017-FRB-353
Lab Sample ID: 320-31214-6
Date Collected: 08/30/17 10:15
Matrix: Water
Date Received: 08/31/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			182400	09/01/17 08:39	CCB	TAL SAC
Total/NA	Analysis	537		1	183512	09/08/17 21:29	JRB	TAL SAC

Client Sample ID: WGNA-083017-RW-351 — Lab Sample ID: 320-31214-7

Date Collected: 08/30/17 11:25 **Matrix: Water**
Date Received: 08/31/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			182400	09/01/17 08:39	CCB	TAL SAC
Total/NA	Analysis	537		1	183512	09/08/17 21:34	JRB	TAL SAC

Client Sample ID: NAWC-083017-FRB-351 — Lab Sample ID: 320-31214-8

Date Collected: 08/30/17 11:20 **Matrix: Water**
Date Received: 08/31/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			182400	09/01/17 08:39	CCB	TAL SAC
Total/NA	Analysis	537		1	183773	09/08/17 21:48	JRB	TAL SAC

Client Sample ID: NAWC-083017-RW-350 — Lab Sample ID: 320-31214-9

Date Collected: 08/30/17 11:45 **Matrix: Water**
Date Received: 08/31/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			182400	09/01/17 08:39	CCB	TAL SAC
Total/NA	Analysis	537		1	183773	09/08/17 21:53	JRB	TAL SAC

Client Sample ID: NAWC-083017-FRB-350 — Lab Sample ID: 320-31214-10

Date Collected: 08/30/17 11:40 **Matrix: Water**
Date Received: 08/31/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			182400	09/01/17 08:39	CCB	TAL SAC
Total/NA	Analysis	537		1	183773	09/08/17 21:58	JRB	TAL SAC

Client Sample ID: WGNA-083017-RW-3785 — Lab Sample ID: 320-31214-11

Date Collected: 08/30/17 15:35 **Matrix: Water**
Date Received: 08/31/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			182400	09/01/17 08:39	CCB	TAL SAC
Total/NA	Analysis	537		1	183773	09/08/17 22:02	JRB	TAL SAC

Client Sample ID: WGNA-083017-FRB-3785 — Lab Sample ID: 320-31214-12

Date Collected: 08/30/17 15:30 **Matrix: Water**
Date Received: 08/31/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			182400	09/01/17 08:39	CCB	TAL SAC
Total/NA	Analysis	537		1	183773	09/08/17 22:07	JRB	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 320-31214-1

Client Sample ID: WGNA-083017-RW-0515
Lab Sample ID: 320-31214-13
Date Collected: 08/30/17 13:55
Matrix: Water
Date Received: 08/31/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			182400	09/01/17 08:39	CCB	TAL SAC
Total/NA	Analysis	537		1	183773	09/08/17 22:12	JRB	TAL SAC

Client Sample ID: WGNA-083017-FRB-0515
Lab Sample ID: 320-31214-14
Date Collected: 08/30/17 13:50
Matrix: Water
Date Received: 08/31/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			182400	09/01/17 08:39	CCB	TAL SAC
Total/NA	Analysis	537		1	183773	09/08/17 22:17	JRB	TAL SAC

Client Sample ID: WGNA-083017-RW-3220
Lab Sample ID: 320-31214-15
Date Collected: 08/30/17 14:20
Matrix: Water
Date Received: 08/31/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			182400	09/01/17 08:39	CCB	TAL SAC
Total/NA	Analysis	537		1	183773	09/08/17 22:21	JRB	TAL SAC

Client Sample ID: WGNA-083017-FRB-3220
Lab Sample ID: 320-31214-16
Date Collected: 08/30/17 14:15
Matrix: Water
Date Received: 08/31/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			182400	09/01/17 08:39	CCB	TAL SAC
Total/NA	Analysis	537		1	183773	09/08/17 22:26	JRB	TAL SAC

Client Sample ID: WGNA-083017-DUP08
Lab Sample ID: 320-31214-17
Date Collected: 08/30/17 07:00
Matrix: Water
Date Received: 08/31/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			182400	09/01/17 08:39	CCB	TAL SAC
Total/NA	Analysis	537		1	183773	09/08/17 22:31	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: 320-31214-1
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: 320-31214-1
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: 320-31214-1
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-31214-1	WGNA-083017-RW-0518	Water	08/30/17 09:05	08/31/17 09:30
320-31214-2	WGNA-083017-FRB-0518	Water	08/30/17 09:00	08/31/17 09:30
320-31214-3	NAWC-083017-RW-352	Water	08/30/17 10:45	08/31/17 09:30
320-31214-4	NAWC-083017-FRB-352	Water	08/30/17 10:40	08/31/17 09:30
320-31214-5	NAWC-083017-RW-353	Water	08/30/17 10:20	08/31/17 09:30
320-31214-6	NAWC-083017-FRB-353	Water	08/30/17 10:15	08/31/17 09:30
320-31214-7	WGNA-083017-RW-351	Water	08/30/17 11:25	08/31/17 09:30
320-31214-8	NAWC-083017-FRB-351	Water	08/30/17 11:20	08/31/17 09:30
320-31214-9	NAWC-083017-RW-350	Water	08/30/17 11:45	08/31/17 09:30
320-31214-10	NAWC-083017-FRB-350	Water	08/30/17 11:40	08/31/17 09:30
320-31214-11	WGNA-083017-RW-3785	Water	08/30/17 15:35	08/31/17 09:30
320-31214-12	WGNA-083017-FRB-3785	Water	08/30/17 15:30	08/31/17 09:30
320-31214-13	WGNA-083017-RW-0515	Water	08/30/17 13:55	08/31/17 09:30
320-31214-14	WGNA-083017-FRB-0515	Water	08/30/17 13:50	08/31/17 09:30
320-31214-15	WGNA-083017-RW-3220	Water	08/30/17 14:20	08/31/17 09:30
320-31214-16	WGNA-083017-FRB-3220	Water	08/30/17 14:15	08/31/17 09:30
320-31214-17	WGNA-083017-DUP08	Water	08/30/17 07:00	08/31/17 09:30

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 183459

Lab Sample ID: IC 320-183459/7 Client Sample ID:

Date Analyzed: 09/08/17 13:51 Lab File ID: 2017.09.08_537ICAL_009.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.16	Isomers	barnettj	09/08/17 14:31

537

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 183512

Lab Sample ID: CCV 320-183512/1 CCVIS Client Sample ID:

Date Analyzed: 09/08/17 20:41 Lab File ID: 2017.09.08_537C_001.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.16	Missed Peak	barnettj	09/11/17 11:10

Lab Sample ID: LLCS 320-182400/2-A Client Sample ID:

Date Analyzed: 09/08/17 20:56 Lab File ID: 2017.09.08_537C_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.16	Missed Peak	barnettj	09/11/17 11:11

Lab Sample ID: LLCSD 320-182400/3-A Client Sample ID:

Date Analyzed: 09/08/17 21:01 Lab File ID: 2017.09.08_537C_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.16	Missed Peak	barnettj	09/11/17 11:12

Lab Sample ID: 320-31214-3 Client Sample ID: NAWC-083017-RW-352

Date Analyzed: 09/08/17 21:15 Lab File ID: 2017.09.08_537C_008.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.16	Baseline	barnettj	09/11/17 11:13

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 183512

Lab Sample ID: 320-31214-5 Client Sample ID: NAWC-083017-RW-353

Date Analyzed: 09/08/17 21:24 Lab File ID: 2017.09.08_537C_010.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.16	Baseline	barnettj	09/11/17 11:13

Lab Sample ID: 320-31214-7 Client Sample ID: WGNA-083017-RW-351

Date Analyzed: 09/08/17 21:34 Lab File ID: 2017.09.08_537C_012.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.15	Baseline	barnettj	09/11/17 11:14

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 183773

Lab Sample ID: 320-31214-11 Client Sample ID: WGNA-083017-RW-3785

Date Analyzed: 09/08/17 22:02 Lab File ID: 2017.09.08_537C_018.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorononanoic acid (PFNA)	2.16	Wrong peak	barnettj	09/11/17 15:21
Perfluorooctanesulfonic acid (PFOS)	2.16	Missed Peak	barnettj	09/11/17 11:16

Lab Sample ID: 320-31214-15 Client Sample ID: WGNA-083017-RW-3220

Date Analyzed: 09/08/17 22:21 Lab File ID: 2017.09.08_537C_022.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	09/11/17 11:17
Perfluorononanoic acid (PFNA)	2.15	Split Peak	barnettj	09/11/17 15:22

Lab Sample ID: 320-31214-17 Client Sample ID: WGNA-083017-DUP08

Date Analyzed: 09/08/17 22:31 Lab File ID: 2017.09.08_537C_024.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	1.72	Missed Peak	barnettj	09/11/17 11:17
Perfluorooctanoic acid (PFOA)	1.91	Incomplete Integration	barnettj	09/11/17 15:23

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

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.: 320-31214-1

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_00047	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.: 320-31214-1

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.: 320-31214-1

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.: 320-31214-1

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.: 320-31214-1

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.: 320-31214-1

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.: 320-31214-1

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.: 320-31214-1

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-LSP_00026	02/10/18	08/10/17	Methanol, Lot 090285	20000 uL	LC537SPIM_00023	50 uL	Perfluorobutane Sulfonate	225 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	225 ng/mL
							Perfluoroheptanoic acid (PFHpA)	25.0041 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	75.0109 ng/mL
							Perfluorononanoic acid (PFNA)	50.0049 ng/mL
							Perfluorooctanoic acid (PFOA)	50.0378 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	100.016 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_00048	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®

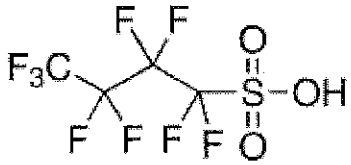
sigma-aldrich.com

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

R: 4/1/15 SRV

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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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Reagent

LC537_PFHxS_00002

R: 4/1/15 SKV

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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

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

(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 $\frac{PFHxS}{Cas\# 355\text{-}46\text{-}4}$

Purity & MW correction = 90.9%

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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®

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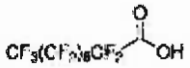
3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:
Perfluorononanoic acid – 97%

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



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

Michael Grady, Manager
Quality Control
Milwaukee, WI US

PFNA

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

Reagent

LC537_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%

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ThermoFisher SCIENTIFIC

Reagent

LC537_PFOS_00003

r: 11/30/16 SV

PFOS

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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

R: 6.14.17 SKV

SIGMA-ALDRICH

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

Certificate of Analysis

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

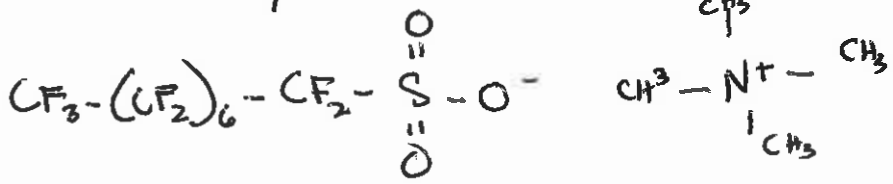
TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE TO OFF WHITE	OFF-WHITE
APPEARANCE (FORM)	POWDER OR POWDER WITH CHUNK(S)	POWDER
CARBON CONTENT	29.77 % - 31.29 %	29.97 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

Purity & MW correction = 77.87%



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

Reagent

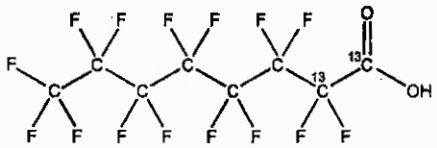
LCM2PFOA_00007

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,...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:

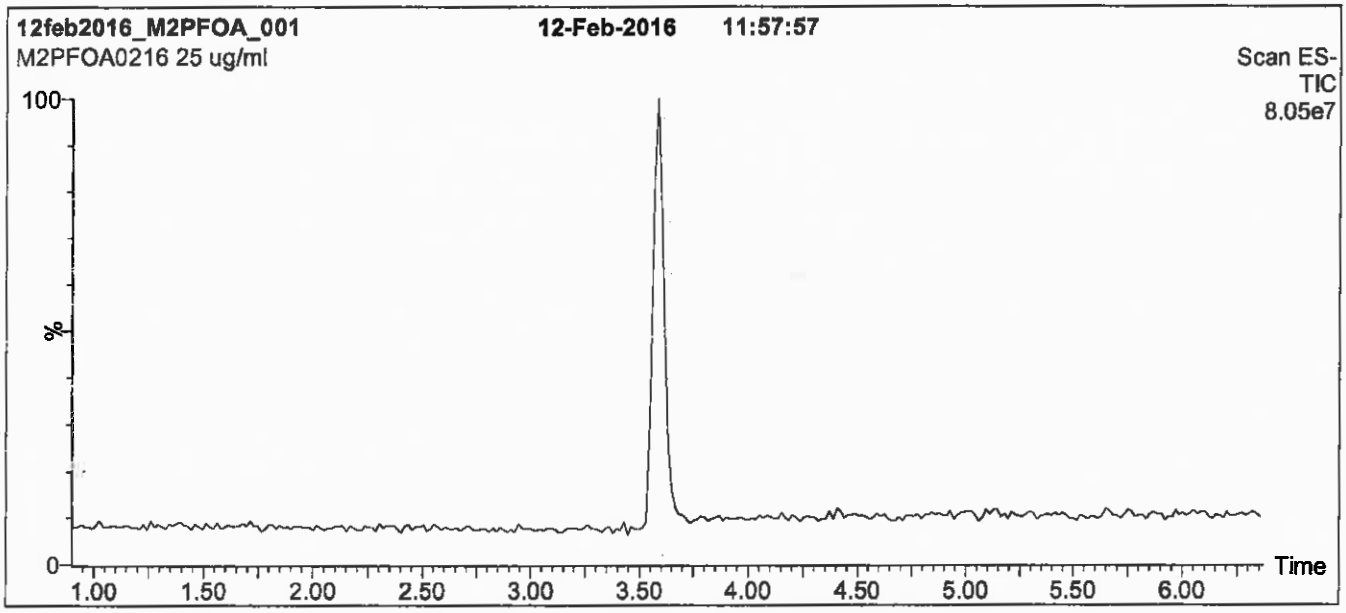
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

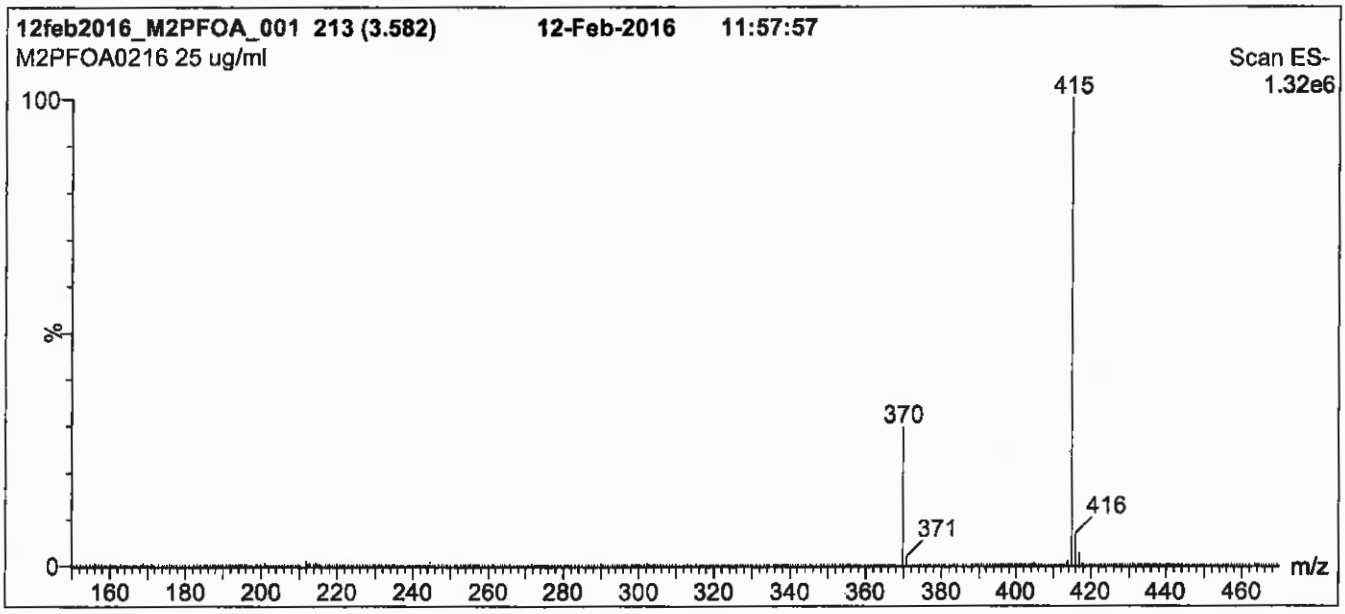
CALA

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

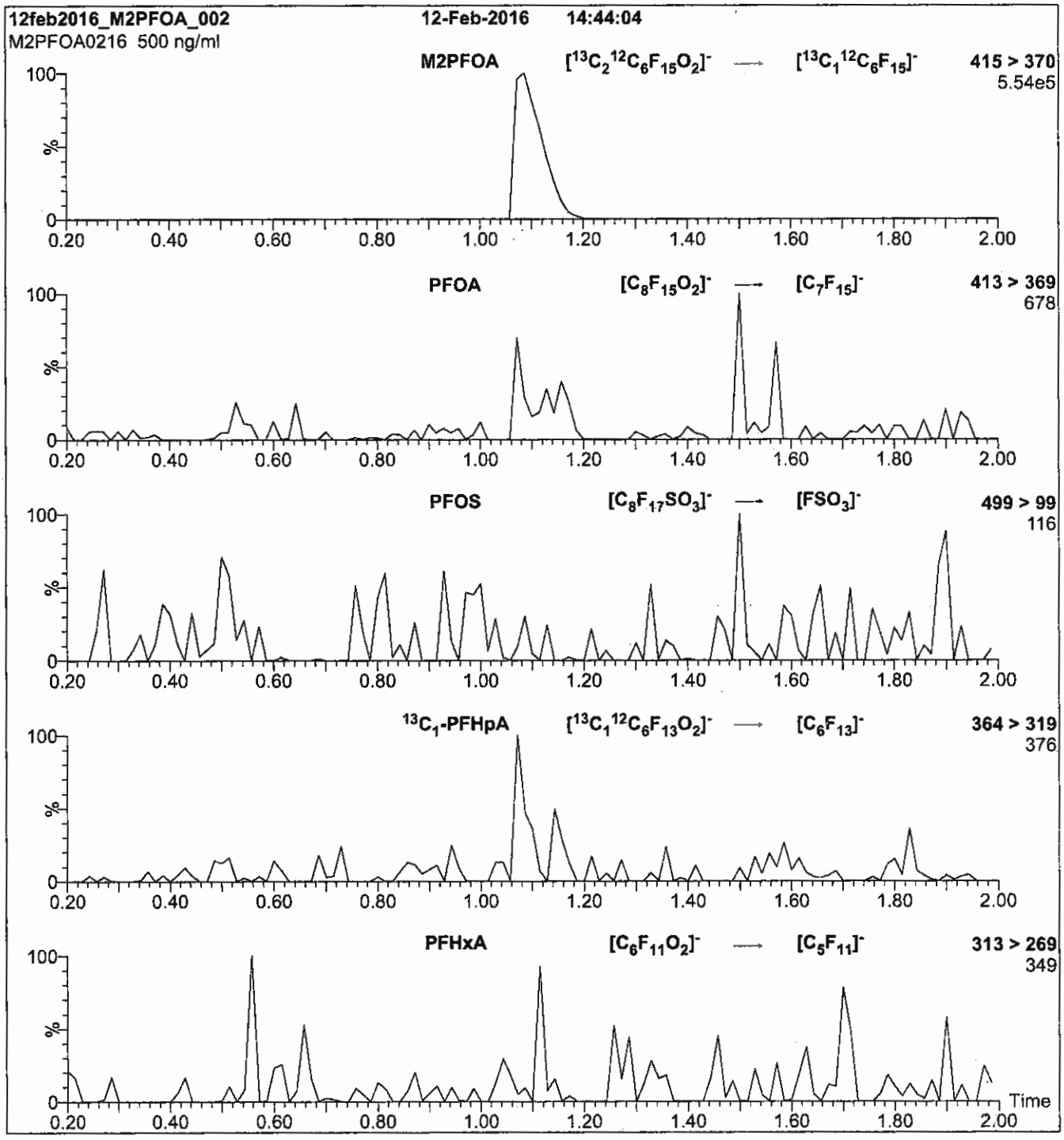
Flow: 300 µl/min

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-Perfluorodecanoic a

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFDA	**LOT NUMBER:**	MPFDA0916
COMPOUND:	Perfluoro-*n*-[1,2-$^{13}C_2$]decanoic acid		
STRUCTURE:		**CAS #:**	Not available

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of $^{13}C_1$-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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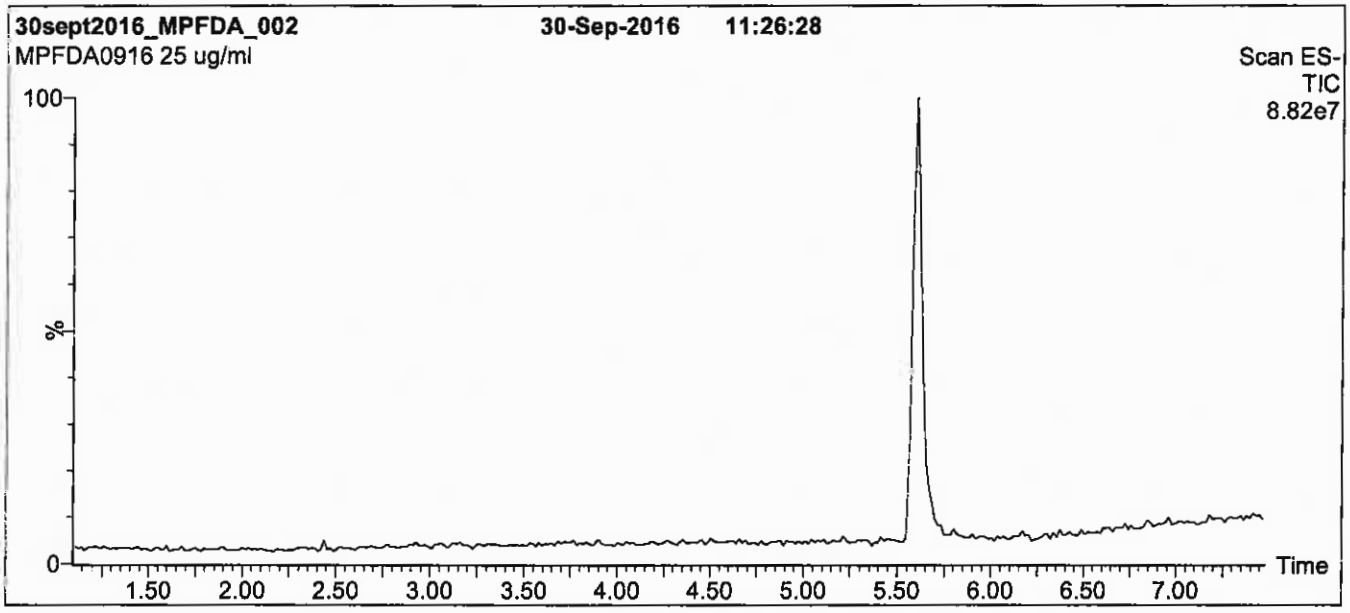
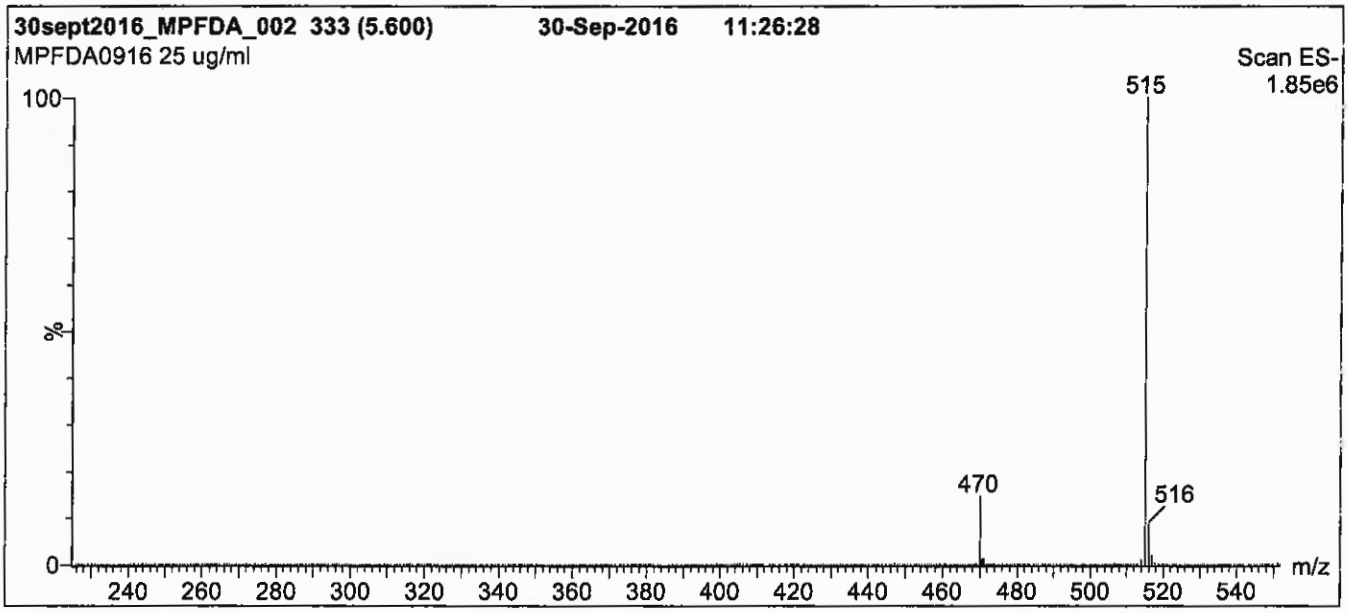
CALA Testing Accreditation No. A1226

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: **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

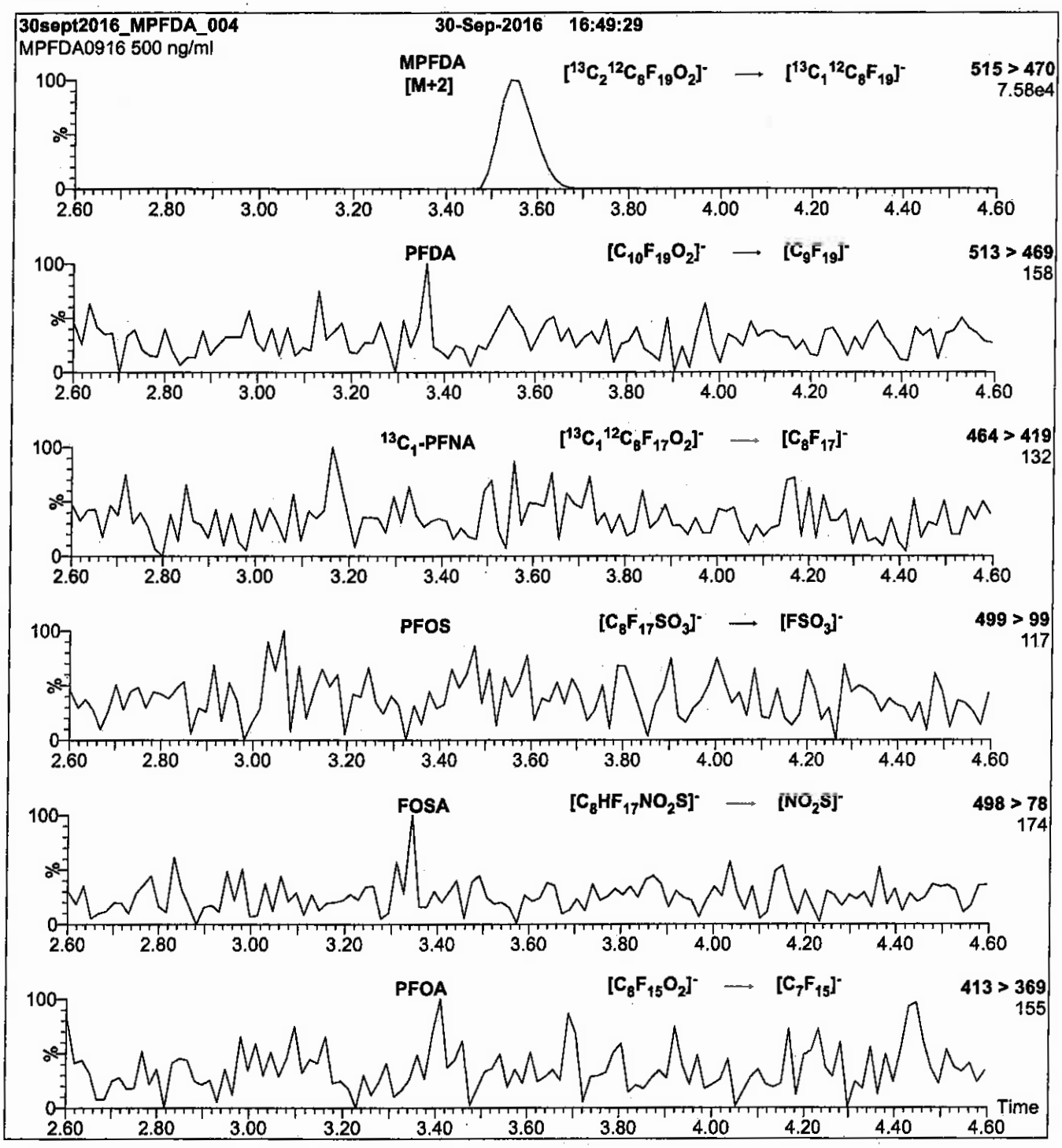
Flow: 300 µl/min

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

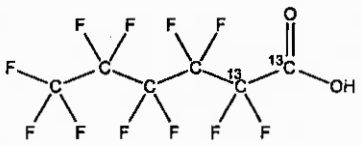
R: SBC 12/21/16

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-$^{13}C_2$)
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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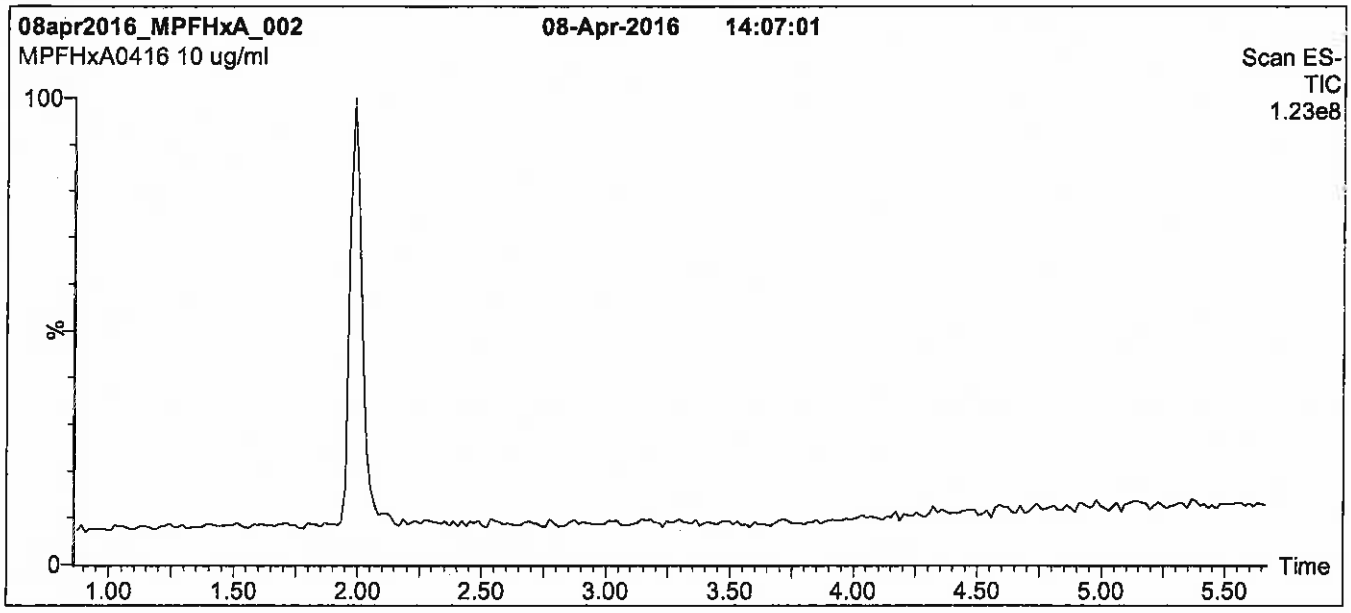
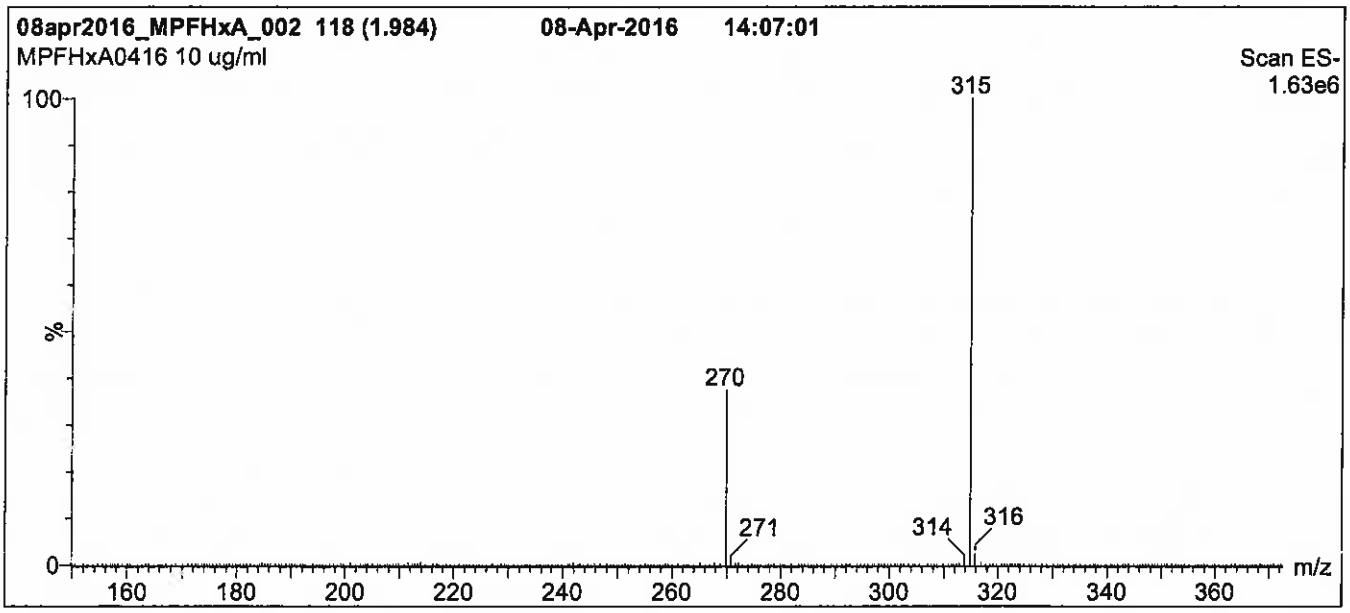
Figure 1: **MPFHxA; LC/MS Data (TIC and Mass Spectrum)**





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

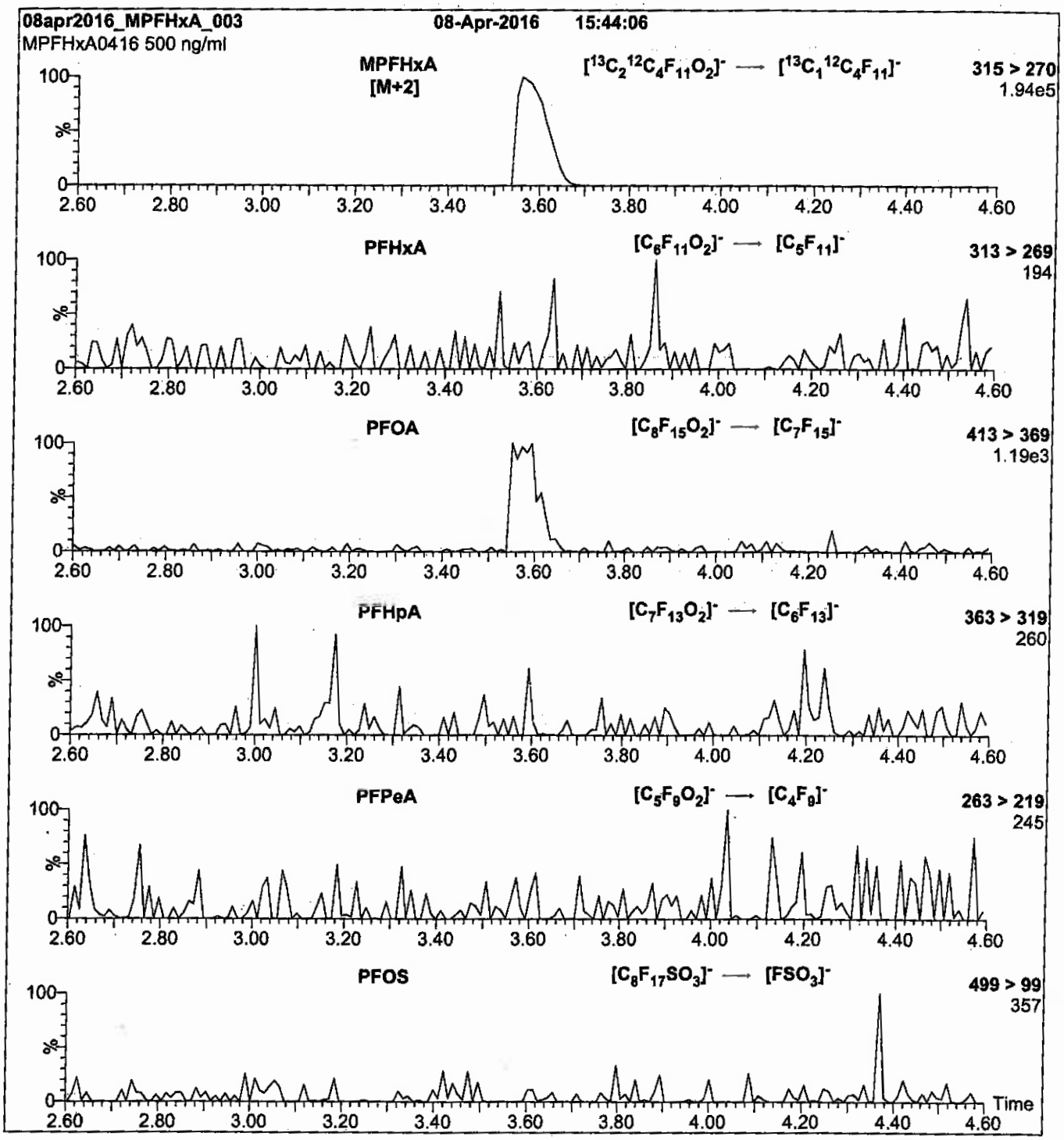
Flow: 300 µl/min

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

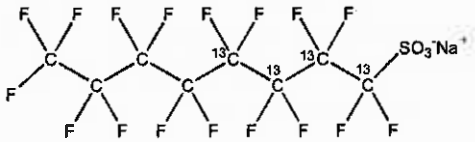
WELLINGTON LABORATORIES

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,...x_n on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

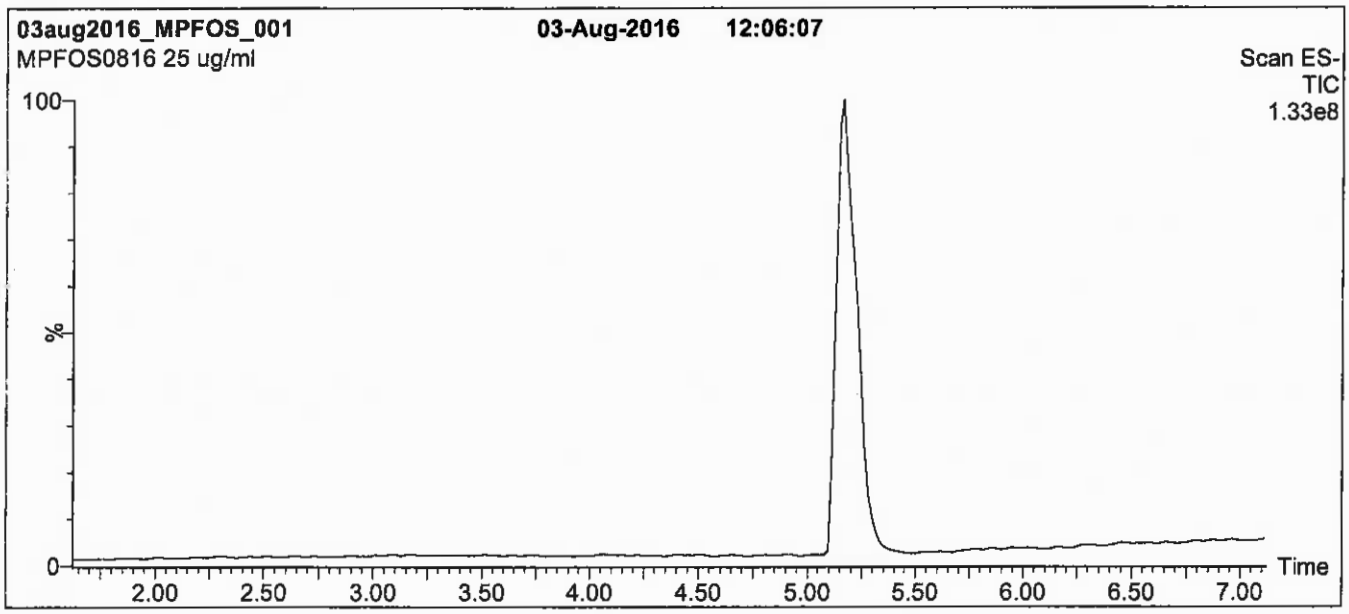
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

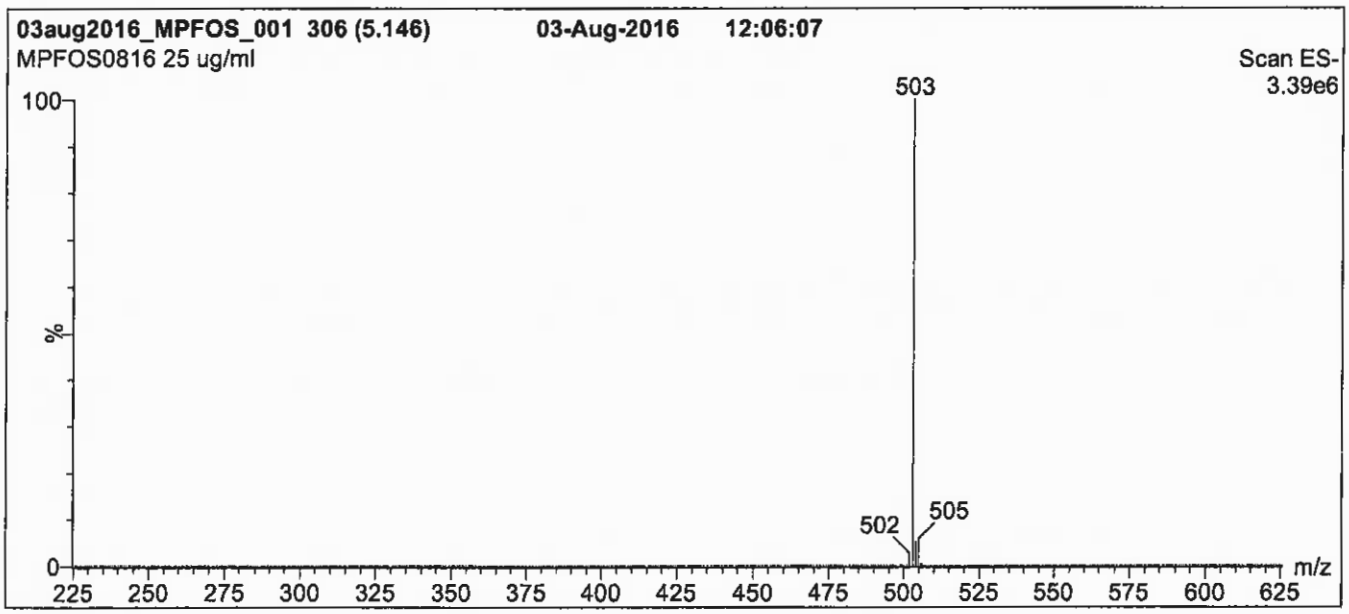
CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

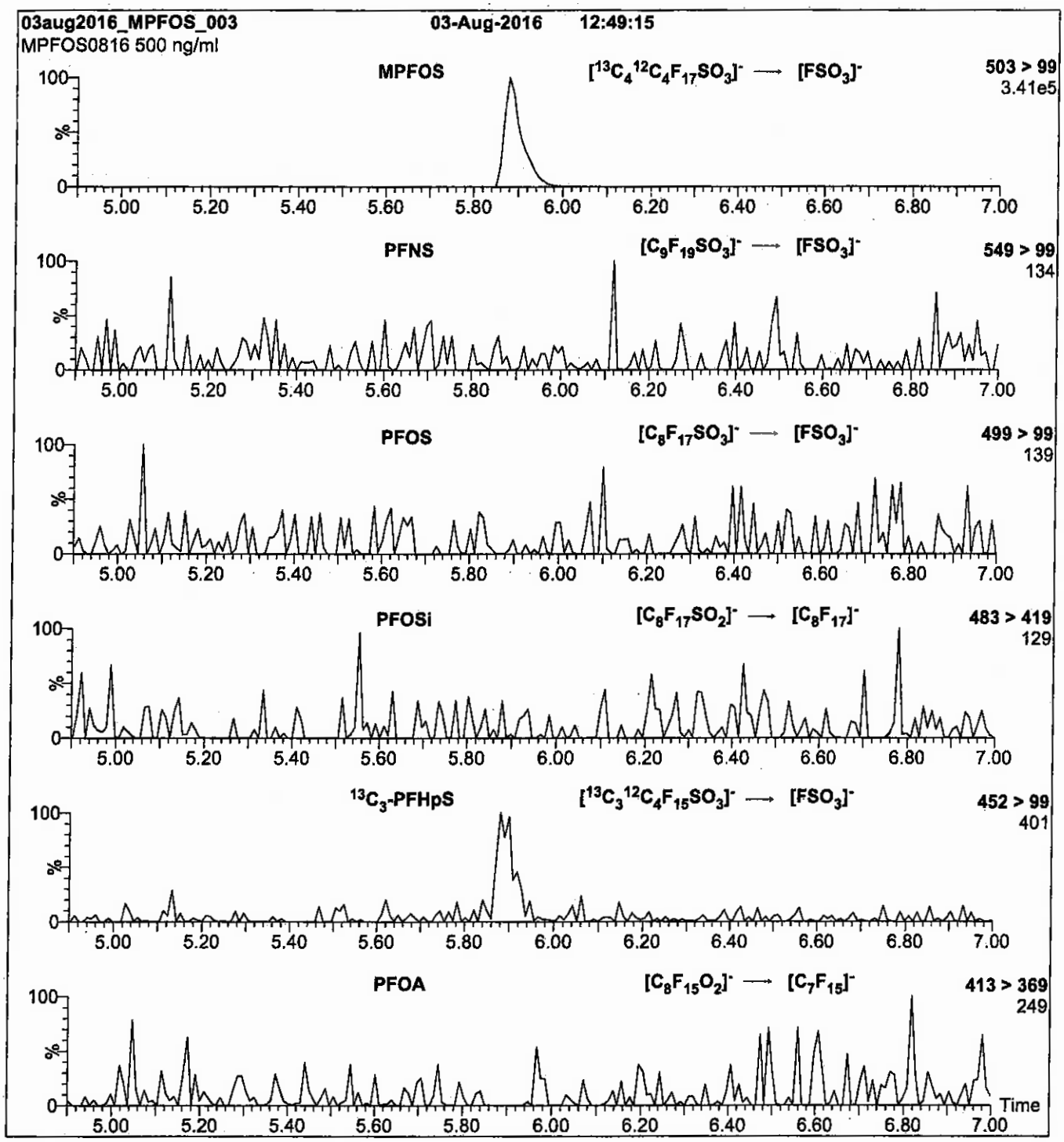
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFOS_00021

r: 5/8/17 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

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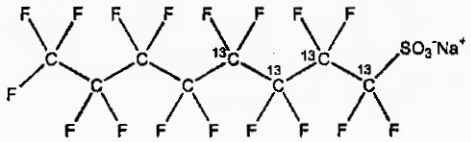
STRUCTURE: **CAS #:** Not available



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

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CALA

ANAB ACCREDITED

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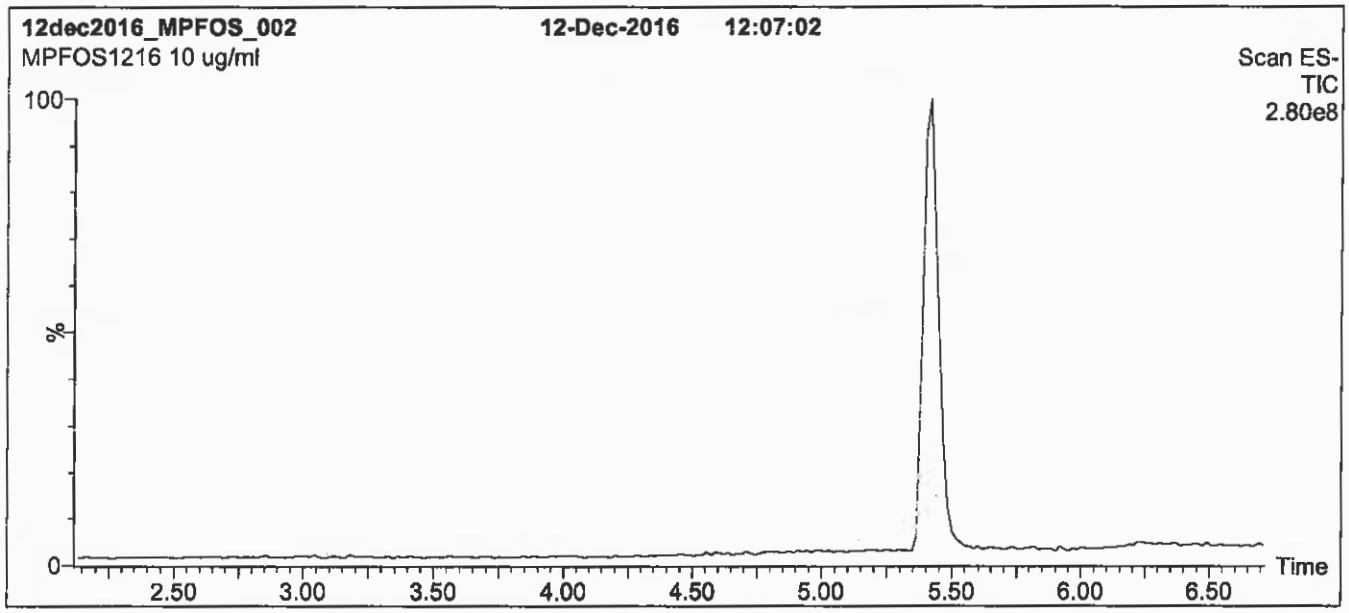

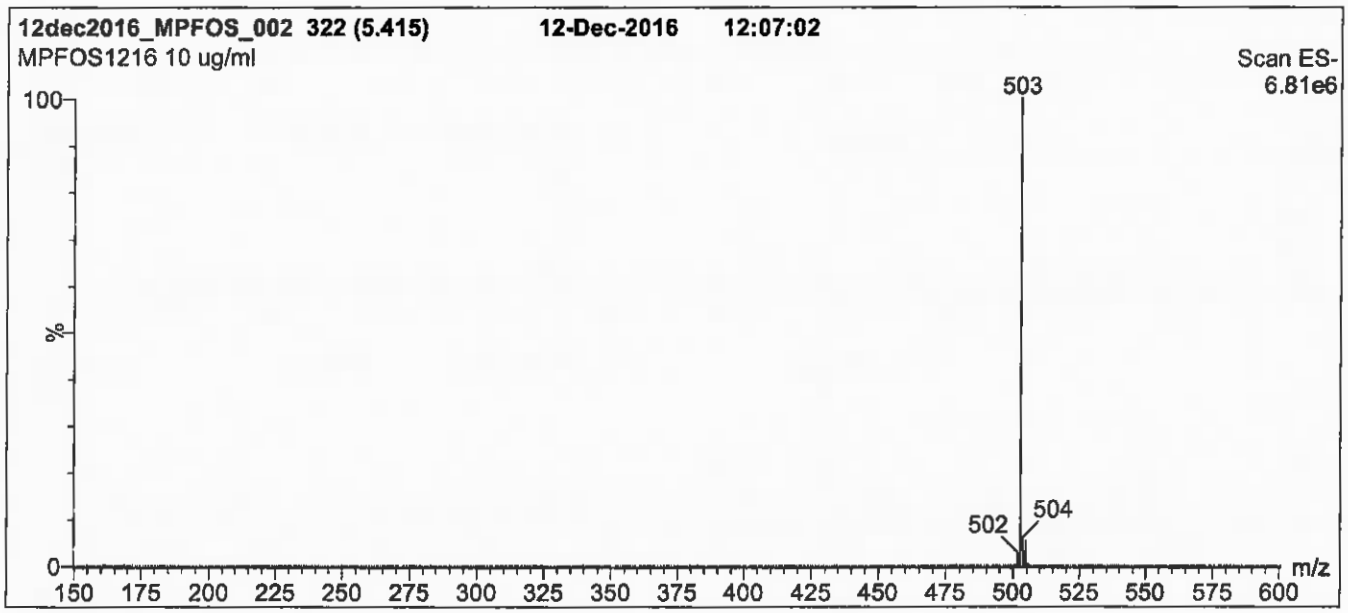

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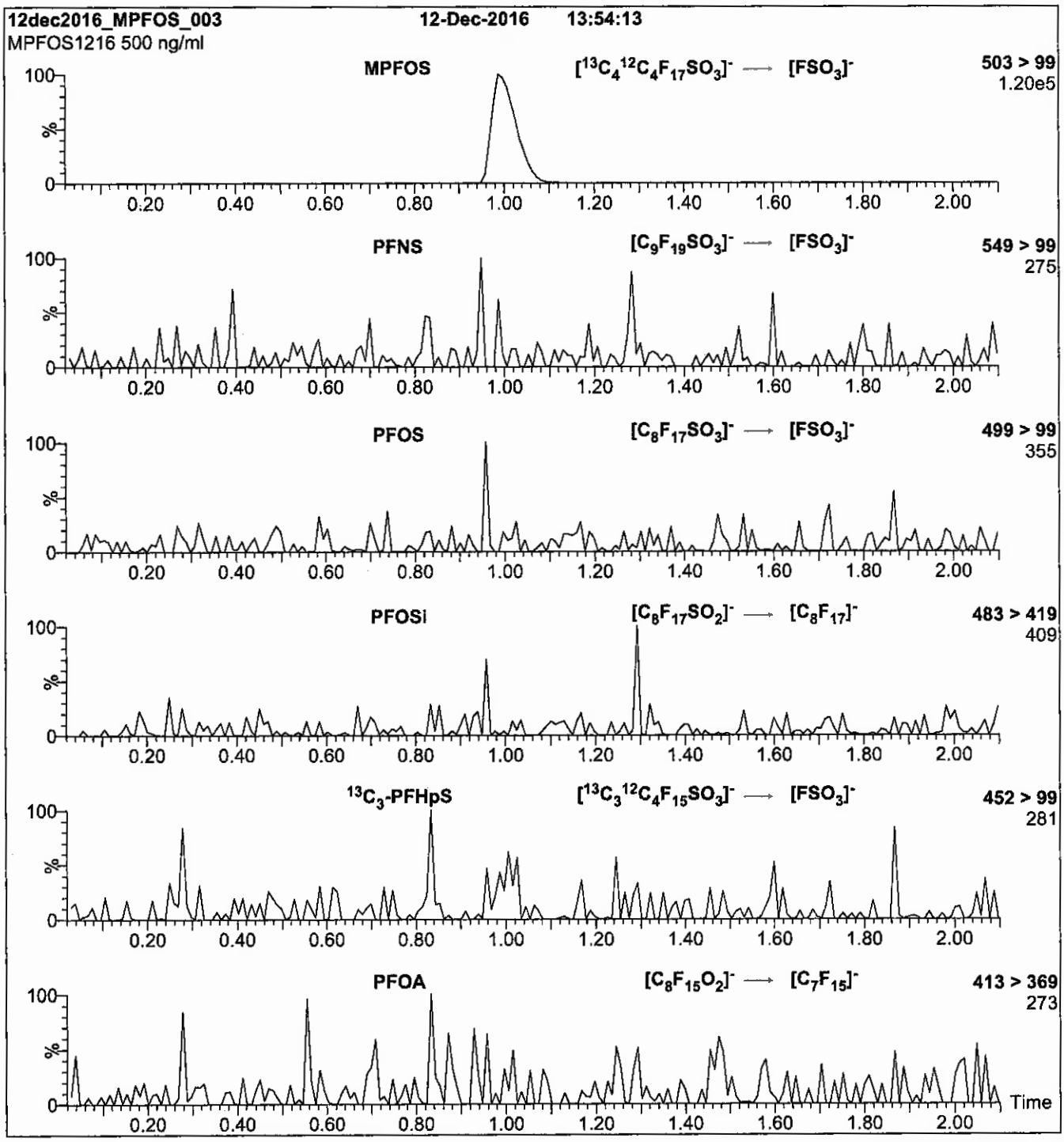

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(both with 10 mM NH_4OAc buffer)

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.: 320-31214-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-083017-RW-0518	320-31214-1	86	109
WGNA-083017-FRB-0518	320-31214-2	93	109
NAWC-083017-RW-352	320-31214-3	76	112
NAWC-083017-FRB-352	320-31214-4	100	113
NAWC-083017-RW-353	320-31214-5	74	116
NAWC-083017-FRB-353	320-31214-6	100	119
WGNA-083017-RW-351	320-31214-7	79	109
NAWC-083017-FRB-351	320-31214-8	103	117
NAWC-083017-RW-350	320-31214-9	79	113
NAWC-083017-FRB-350	320-31214-10	91	97
WGNA-083017-RW-3785	320-31214-11	87	104
WGNA-083017-FRB-3785	320-31214-12	99	112
WGNA-083017-RW-0515	320-31214-13	91	108
WGNA-083017-FRB-0515	320-31214-14	96	111
WGNA-083017-RW-3220	320-31214-15	79	104
WGNA-083017-FRB-3220	320-31214-16	95	111
WGNA-083017-DUP08	320-31214-17	79	112
	MB 320-182400/1-A	101	111
	LLCS 320-182400/2-A	98	108
	LLCSD 320-182400/3-A	100	117

	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 LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.09.08_537C_004.d

Lab ID: LLCS 320-182400/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LLCS CONCENTRATION (ng/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	40.0	37.5 J	94	50-150	M
Perfluorooctanoic acid (PFOA)	20.0	19.2 J	96	50-150	
Perfluorononanoic acid (PFNA)	20.0	19.1 J	96	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.0	30.1	100	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	10.4	104	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.0	96.1	107	50-150	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS LOW LEVEL CONTROL STANDARD DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.09.08_537C_005.d

Lab ID: LLCSD 320-182400/3-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LLCSD CONCENTRATION (ng/L)	LLCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	40.0	38.9 J	97	4	50	50-150	M
Perfluorooctanoic acid (PFOA)	20.0	19.5 J	97	1	50	50-150	
Perfluorononanoic acid (PFNA)	20.0	19.8 J	99	4	50	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.0	29.8 J	99	1	50	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	10.5	105	1	50	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.0	96.8	108	0.7	50	50-150	

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.: 320-31214-1

SDG No.:

Lab File ID: 2017.09.08_537C_003.d Lab Sample ID: MB 320-182400/1-A

Matrix: Water Date Extracted: 09/01/2017 08:39

Instrument ID: A8_N Date Analyzed: 09/08/2017 20:51

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-182400/2-A	2017.09.08_537C_004.d	09/08/2017 20:56
	LLCSD 320-182400/3-A	2017.09.08_537C_005.d	09/08/2017 21:01
WGNA-083017-RW-0518	320-31214-1	2017.09.08_537C_006.d	09/08/2017 21:05
WGNA-083017-FRB-0518	320-31214-2	2017.09.08_537C_007.d	09/08/2017 21:10
NAWC-083017-RW-352	320-31214-3	2017.09.08_537C_008.d	09/08/2017 21:15
NAWC-083017-FRB-352	320-31214-4	2017.09.08_537C_009.d	09/08/2017 21:20
NAWC-083017-RW-353	320-31214-5	2017.09.08_537C_010.d	09/08/2017 21:24
NAWC-083017-FRB-353	320-31214-6	2017.09.08_537C_011.d	09/08/2017 21:29
WGNA-083017-RW-351	320-31214-7	2017.09.08_537C_012.d	09/08/2017 21:34
NAWC-083017-FRB-351	320-31214-8	2017.09.08_537C_015.d	09/08/2017 21:48
NAWC-083017-RW-350	320-31214-9	2017.09.08_537C_016.d	09/08/2017 21:53
NAWC-083017-FRB-350	320-31214-10	2017.09.08_537C_017.d	09/08/2017 21:58
WGNA-083017-RW-3785	320-31214-11	2017.09.08_537C_018.d	09/08/2017 22:02
WGNA-083017-FRB-3785	320-31214-12	2017.09.08_537C_019.d	09/08/2017 22:07
WGNA-083017-RW-0515	320-31214-13	2017.09.08_537C_020.d	09/08/2017 22:12
WGNA-083017-FRB-0515	320-31214-14	2017.09.08_537C_021.d	09/08/2017 22:17
WGNA-083017-RW-3220	320-31214-15	2017.09.08_537C_022.d	09/08/2017 22:21
WGNA-083017-FRB-3220	320-31214-16	2017.09.08_537C_023.d	09/08/2017 22:26
WGNA-083017-DUP08	320-31214-17	2017.09.08_537C_024.d	09/08/2017 22:31

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 09/08/2017 13:27

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 09/08/2017 13:51

Calibration ID: 34044

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		1910246	1.93	5581381	2.16		
UPPER LIMIT		2865369	2.43	8372072	2.66		
LOWER LIMIT		955123	1.43	2790691	1.66		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-183459/9		1974239	1.93	5860601	2.16		
ICV 320-183459/11		2166899	1.94	6602152	2.17		
CCV 320-183512/1 CCVIS		1659667	1.92	5340700	2.16		
MB 320-182400/1-A		1780906	1.92	5489924	2.16		
LLCS 320-182400/2-A		1858873	1.91	5511672	2.16		
LLCSD 320-182400/3-A		1740089	1.91	5356328	2.16		
320-31214-1	WGNA-083017-RW-0518	1915883	1.91	5799593	2.15		
320-31214-2	WGNA-083017-FRB-0518	1876027	1.92	5516017	2.16		
320-31214-3	NAWC-083017-RW-352	1802581	1.91	5422387	2.16		
320-31214-4	NAWC-083017-FRB-352	1718880	1.91	5325769	2.15		
320-31214-5	NAWC-083017-RW-353	1835716	1.91	5524602	2.15		
320-31214-6	NAWC-083017-FRB-353	1805826	1.91	5361538	2.15		
320-31214-7	WGNA-083017-RW-351	1916636	1.91	5726424	2.15		
CCV 320-183512/13 CCVIS		1674403	1.91	5232378	2.15		
CCV 320-183773/13 CCVIS		1674403	1.91	5232378	2.15		
320-31214-8	NAWC-083017-FRB-351	1716976	1.91	5301535	2.15		
320-31214-9	NAWC-083017-RW-350	1886645	1.91	5586809	2.15		
320-31214-10	NAWC-083017-FRB-350	1812981	1.91	5436053	2.15		
320-31214-11	WGNA-083017-RW-3785	1785771	1.92	5328103	2.16		
320-31214-12	WGNA-083017-FRB-3785	1814551	1.91	5592600	2.15		
320-31214-13	WGNA-083017-RW-0515	1762397	1.91	5309757	2.15		
320-31214-14	WGNA-083017-FRB-0515	1789308	1.90	5256598	2.14		
320-31214-15	WGNA-083017-RW-3220	1873708	1.90	5599865	2.14		
320-31214-16	WGNA-083017-FRB-3220	1858055	1.91	5560278	2.15		
320-31214-17	WGNA-083017-DUP08	1886790	1.91	5526719	2.15		
CCV 320-183773/25 CCVIS		1762955	1.91	5568740	2.15		

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.: 320-31214-1

SDG No.:

Sample No.: CCV 320-183512/1 Date Analyzed: 09/08/2017 20:41

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

Lab File ID (Standard): 2017.09.08_537C_001 Heated Purge: (Y/N) N

Calibration ID: 34044

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1659667	1.92	5340700	2.16		
UPPER LIMIT		2323534	2.42	7476980	2.66		
LOWER LIMIT		1161767	1.42	3738490	1.66		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-182400/1-A		1780906	1.92	5489924	2.16		
LLCS 320-182400/2-A		1858873	1.91	5511672	2.16		
LLCSD 320-182400/3-A		1740089	1.91	5356328	2.16		
320-31214-1	WGNA-083017-RW-0518	1915883	1.91	5799593	2.15		
320-31214-2	WGNA-083017-FRB-0518	1876027	1.92	5516017	2.16		
320-31214-3	NAWC-083017-RW-352	1802581	1.91	5422387	2.16		
320-31214-4	NAWC-083017-FRB-352	1718880	1.91	5325769	2.15		
320-31214-5	NAWC-083017-RW-353	1835716	1.91	5524602	2.15		
320-31214-6	NAWC-083017-FRB-353	1805826	1.91	5361538	2.15		
320-31214-7	WGNA-083017-RW-351	1916636	1.91	5726424	2.15		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Sample No.: CCV 320-183512/13 Date Analyzed: 09/08/2017 21:39

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

Lab File ID (Standard): 2017.09.08_537C_013 Heated Purge: (Y/N) N

Calibration ID: 34044

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1674403	1.91	5232378	2.15		
UPPER LIMIT		2344164	2.41	7325329	2.65		
LOWER LIMIT		1172082	1.41	3662665	1.65		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-182400/1-A		1780906	1.92	5489924	2.16		
LLCS 320-182400/2-A		1858873	1.91	5511672	2.16		
LLCSD 320-182400/3-A		1740089	1.91	5356328	2.16		
320-31214-1	WGNA-083017-RW-0518	1915883	1.91	5799593	2.15		
320-31214-2	WGNA-083017-FRB-0518	1876027	1.92	5516017	2.16		
320-31214-3	NAWC-083017-RW-352	1802581	1.91	5422387	2.16		
320-31214-4	NAWC-083017-FRB-352	1718880	1.91	5325769	2.15		
320-31214-5	NAWC-083017-RW-353	1835716	1.91	5524602	2.15		
320-31214-6	NAWC-083017-FRB-353	1805826	1.91	5361538	2.15		
320-31214-7	WGNA-083017-RW-351	1916636	1.91	5726424	2.15		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Sample No.: CCV 320-183773/13 Date Analyzed: 09/08/2017 21:39

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

Lab File ID (Standard): 2017.09.08_537C_013 Heated Purge: (Y/N) N

Calibration ID: 34044

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1674403	1.91	5232378	2.15		
UPPER LIMIT		2344164	2.41	7325329	2.65		
LOWER LIMIT		1172082	1.41	3662665	1.65		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-31214-8	NAWC-083017-FRB-351	1716976	1.91	5301535	2.15		
320-31214-9	NAWC-083017-RW-350	1886645	1.91	5586809	2.15		
320-31214-10	NAWC-083017-FRB-350	1812981	1.91	5436053	2.15		
320-31214-11	WGNA-083017-RW-3785	1785771	1.92	5328103	2.16		
320-31214-12	WGNA-083017-FRB-3785	1814551	1.91	5592600	2.15		
320-31214-13	WGNA-083017-RW-0515	1762397	1.91	5309757	2.15		
320-31214-14	WGNA-083017-FRB-0515	1789308	1.90	5256598	2.14		
320-31214-15	WGNA-083017-RW-3220	1873708	1.90	5599865	2.14		
320-31214-16	WGNA-083017-FRB-3220	1858055	1.91	5560278	2.15		
320-31214-17	WGNA-083017-DUP08	1886790	1.91	5526719	2.15		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Sample No.: CCV 320-183773/25 Date Analyzed: 09/08/2017 22:36

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

Lab File ID (Standard): 2017.09.08_537C_025 Heated Purge: (Y/N) N

Calibration ID: 34044

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1762955	1.91	5568740	2.15		
UPPER LIMIT		2468137	2.41	7796236	2.65		
LOWER LIMIT		1234069	1.41	3898118	1.65		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-31214-8	NAWC-083017-FRB-351	1716976	1.91	5301535	2.15		
320-31214-9	NAWC-083017-RW-350	1886645	1.91	5586809	2.15		
320-31214-10	NAWC-083017-FRB-350	1812981	1.91	5436053	2.15		
320-31214-11	WGNA-083017-RW-3785	1785771	1.92	5328103	2.16		
320-31214-12	WGNA-083017-FRB-3785	1814551	1.91	5592600	2.15		
320-31214-13	WGNA-083017-RW-0515	1762397	1.91	5309757	2.15		
320-31214-14	WGNA-083017-FRB-0515	1789308	1.90	5256598	2.14		
320-31214-15	WGNA-083017-RW-3220	1873708	1.90	5599865	2.14		
320-31214-16	WGNA-083017-FRB-3220	1858055	1.91	5560278	2.15		
320-31214-17	WGNA-083017-DUP08	1886790	1.91	5526719	2.15		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-RW-0518 Lab Sample ID: 320-31214-1

Matrix: Water Lab File ID: 2017.09.08_537C_006.d

Analysis Method: 537 Date Collected: 08/30/2017 09:05

Extraction Method: 537 Date Extracted: 09/01/2017 08:39

Sample wt/vol: 259(mL) Date Analyzed: 09/08/2017 21:05

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

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

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

Analysis Batch No.: 183512 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	24		19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.8	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.9	J	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	27	J	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	109		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_006.d
Lims ID: 320-31214-A-1-A
Client ID: WGNA-083017-RW-0518
Sample Type: Client
Inject. Date: 08-Sep-2017 21:05:47 ALS Bottle#: 4 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-1-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:12:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.440	-0.006	1.000	1482302	6.99		484	
298.90 > 99.00	1.434	1.440	-0.006	1.000	1006733		1.47(0.00-0.00)	682	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	1995567	8.63		10968	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.736	-0.014	1.000	272085	1.52		33.4	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.739	-0.017	1.000	820427	2.54		244	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1915883	10.0		8518	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.912	1.933	-0.021	1.000	1103298	6.22		40.5	
413.00 > 169.00	1.912	1.933	-0.021	1.000	676426		1.63(0.00-0.00)	1006	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.147	2.140	0.007	1.000	1175420	6.27		292	
499.00 > 99.00	2.147	2.140	0.007	1.000	202965		5.79(0.00-0.00)	135	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.164	-0.017		5799593	28.7		3124	
9 Perfluorononanoic acid									
463.00 > 419.00	2.155	2.171	-0.016	1.000	66597	0.5360		4.0	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1405770	10.9		9719	

Report Date: 11-Sep-2017 15:23:42 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_006.d

Injection Date: 08-Sep-2017 21:05:47 Instrument ID: A8_N

Lims ID: 320-31214-A-1-A Lab Sample ID: 320-31214-1

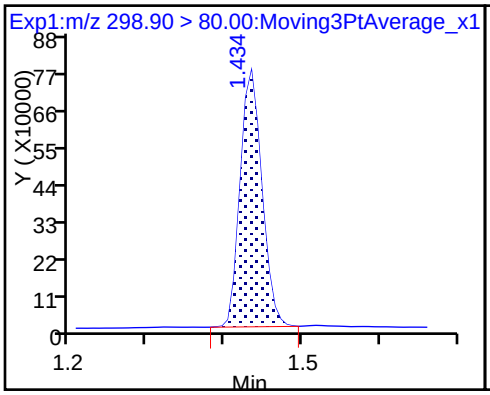
Client ID: WGNA-083017-RW-0518

Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 6

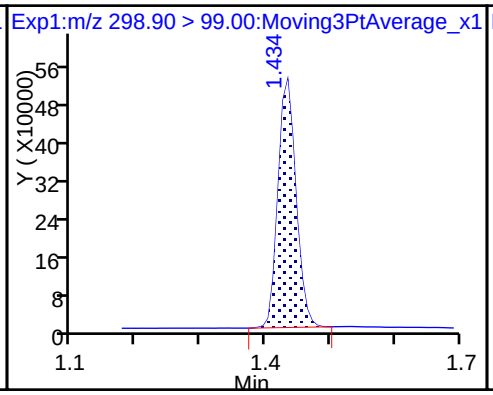
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

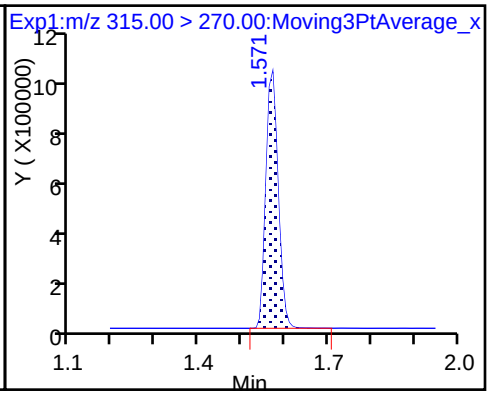
1 Perfluorobutanesulfonic acid



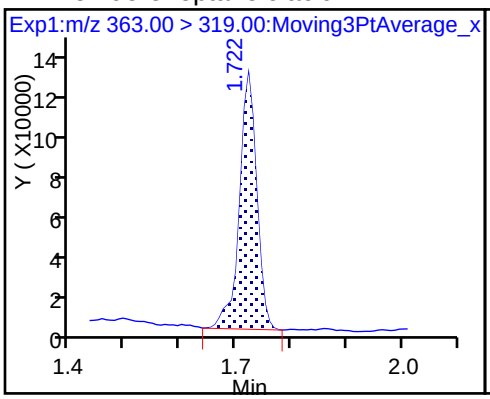
1 Perfluorobutanesulfonic acid



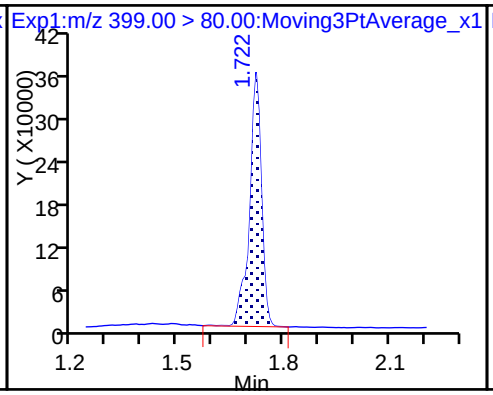
$ 2 13C2 PFHxA



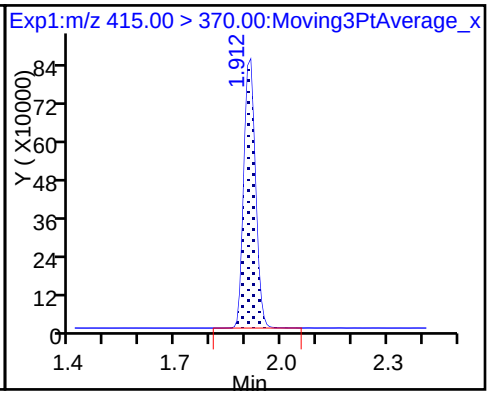
4 Perfluoroheptanoic acid



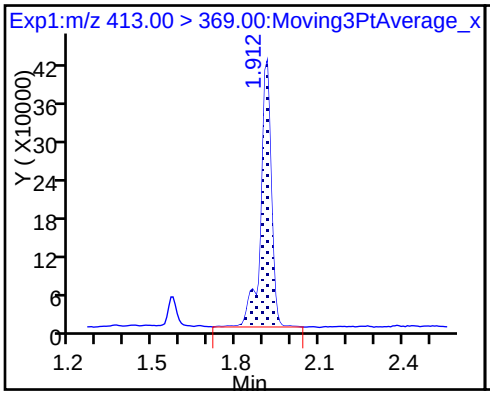
3 Perfluorohexanesulfonic acid



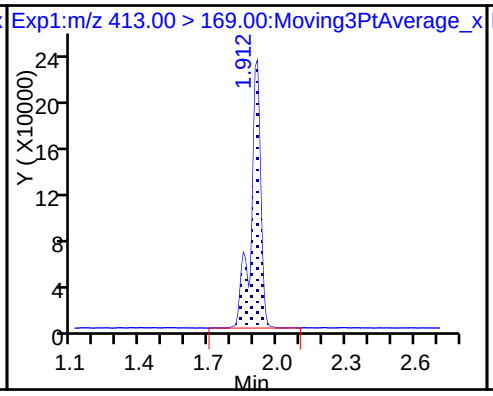
* 6 13C2-PFOA



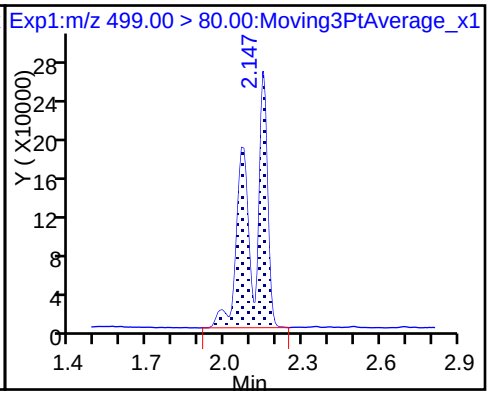
5 Perfluorooctanoic acid



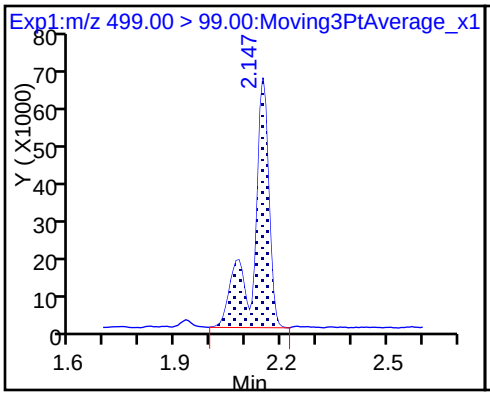
5 Perfluorooctanoic acid



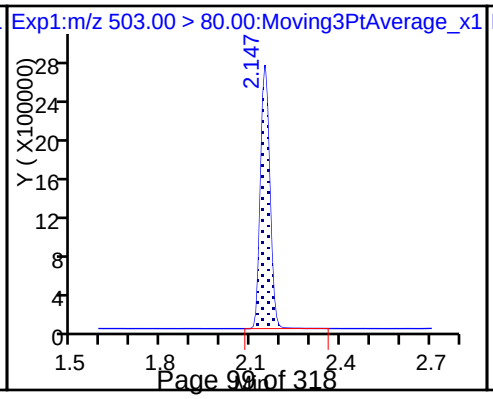
8 Perfluorooctane sulfonic acid



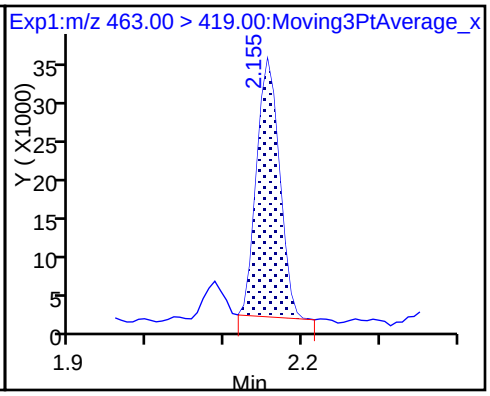
8 Perfluorooctane sulfonic acid



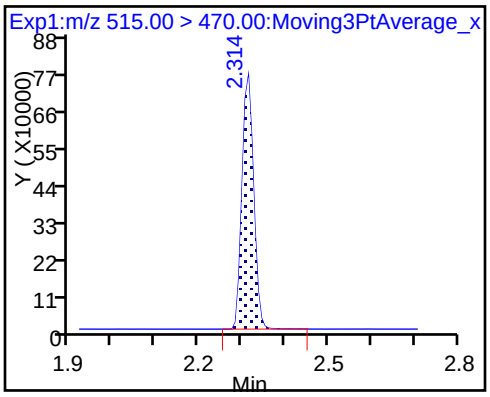
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
88
77
66
55
44
33
22
11
0
1.9
2.2
2.5
2.8
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_006.d
Lims ID: 320-31214-A-1-A
Client ID: WGNA-083017-RW-0518
Sample Type: Client
Inject. Date: 08-Sep-2017 21:05:47 ALS Bottle#: 4 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-1-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:12:33

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.63	86.33
$ 10 13C2 PFDA	10.0	10.9	109.26

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-FRB-0518 Lab Sample ID: 320-31214-2

Matrix: Water Lab File ID: 2017.09.08_537C_007.d

Analysis Method: 537 Date Collected: 08/30/2017 09:00

Extraction Method: 537 Date Extracted: 09/01/2017 08:39

Sample wt/vol: 243.9(mL) Date Analyzed: 09/08/2017 21:10

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

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

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

Analysis Batch No.: 183512 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	8.2	U	21	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	109		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_007.d
Lims ID: 320-31214-A-2-A
Client ID: WGNA-083017-FRB-0518
Sample Type: Client
Inject. Date: 08-Sep-2017 21:10:32 ALS Bottle#: 5 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-2-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.577	0.001	1.000	2112919	9.33		13596	
* 6 13C2-PFOA									
415.00 > 370.00	1.920	1.932	-0.012		1876027	10.0		11379	
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.164	-0.009		5516017	28.7		5026	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1375681	10.9		10184	

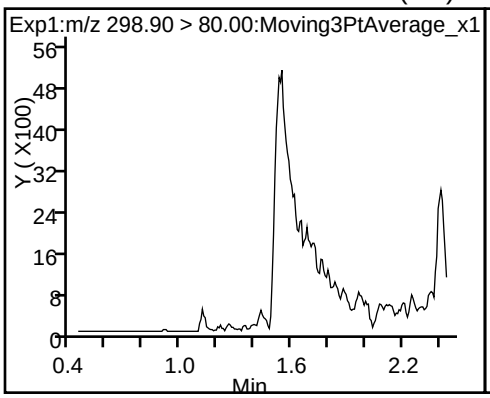
Report Date: 11-Sep-2017 15:23:43 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

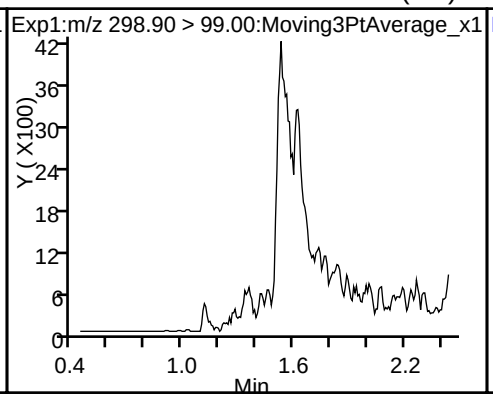
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_007.d

Injection Date:	08-Sep-2017 21:10:32	Instrument ID:	A8_N		
Lims ID:	320-31214-A-2-A	Lab Sample ID:	320-31214-2		
Client ID:	WGNA-083017-FRB-0518				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	5	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

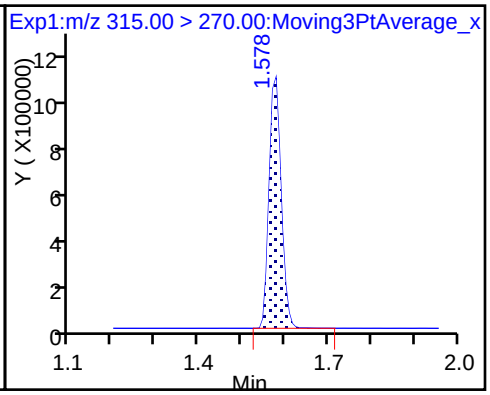
1 Perfluorobutanesulfonic acid (ND)



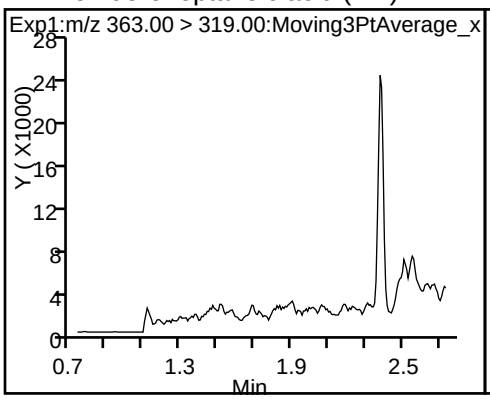
1 Perfluorobutanesulfonic acid (ND)



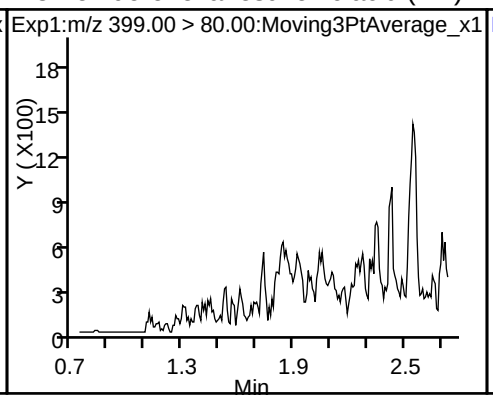
$ 2 13C2 PFHxA

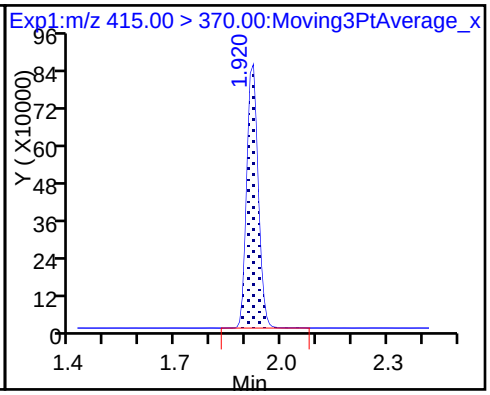


4 Perfluoroheptanoic acid (ND)

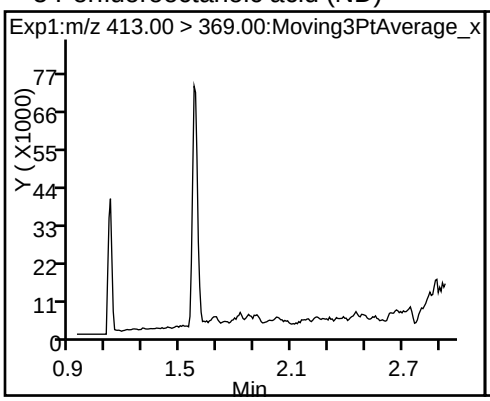


3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA

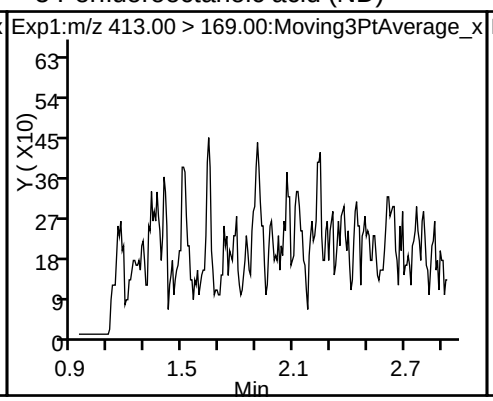




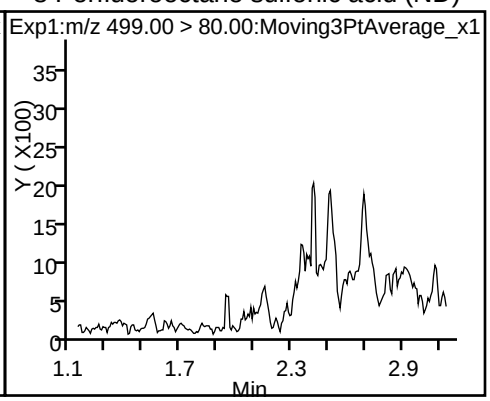
5 Perfluorooctanoic acid (ND)



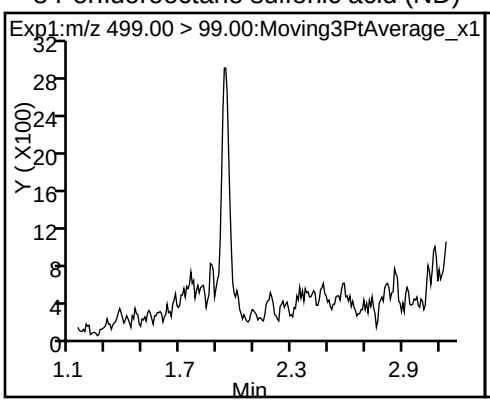
5 Perfluorooctanoic acid (ND)

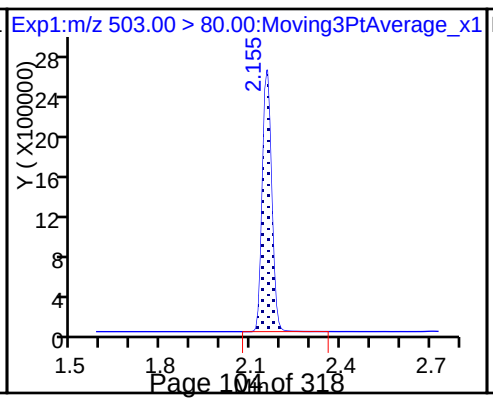


8 Perfluorooctane sulfonic acid (ND)

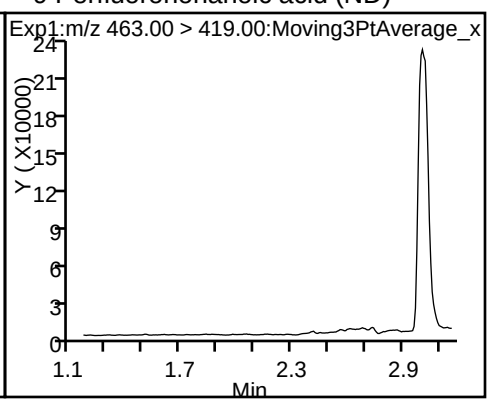


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

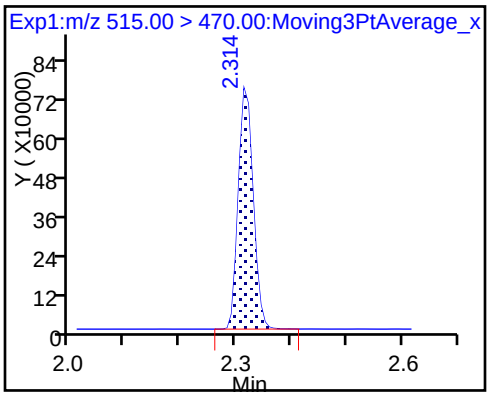




9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
84
72
60
48
36
24
12
0
2.0
2.3
2.6
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_007.d				
Lims ID:	320-31214-A-2-A				
Client ID:	WGNA-083017-FRB-0518				
Sample Type:	Client				
Inject. Date:	08-Sep-2017 21:10:32	ALS Bottle#:	5	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-31214-a-2-a				
Misc. Info.:	Plate: 1 Rack: 3				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	11-Sep-2017 15:23:38	Calib Date:	08-Sep-2017 13:51:29		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK011				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.33	93.35
$ 10 13C2 PFDA	10.0	10.9	109.19

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-RW-352 | Lab Sample ID: 320-31214-3

Matrix: Water | Lab File ID: 2017.09.08_537C_008.d

Analysis Method: 537 | Date Collected: 08/30/2017 10:45

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 259.3(mL) | Date Analyzed: 09/08/2017 21:15

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

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

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

Analysis Batch No.: 183512 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U M	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	9.5	J	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.3	J	9.6	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	76		70-130
STL00996	13C2 PFDA	112		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_008.d
Lims ID: 320-31214-A-3-A
Client ID: NAWC-083017-RW-352
Sample Type: Client
Inject. Date: 08-Sep-2017 21:15:18 ALS Bottle#: 6 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-3-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:13:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.440	0.002	1.000	175824	0.8770		56.3	
298.90 > 99.00	1.442	1.440	0.002	1.000	123902		1.42(0.00-0.00)	82.3	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.577	0.001	1.000	1643396	7.56		10378	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.730	1.736	-0.006	1.000	145145	0.8622		17.3	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.730	1.739	-0.009	1.000	72242	0.2393		21.2	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1802581	10.0		10163	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.920	1.933	-0.013	1.000	411463	2.46		15.7	
413.00 > 169.00	1.920	1.933	-0.013	1.000	231078		1.78(0.00-0.00)	412	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.155	2.140	0.015	1.000	218185	1.24		64.8	M
499.00 > 99.00	2.155	2.140	0.015	1.000	39904		5.47(0.00-0.00)	29.8	M
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.164	-0.009		5422387	28.7		2912	
9 Perfluorononanoic acid									
463.00 > 419.00	2.162	2.171	-0.009	1.000	53631	0.4588		3.4	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1357550	11.2		10271	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 11-Sep-2017 15:23:44 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_008.d

Injection Date: 08-Sep-2017 21:15:18 Instrument ID: A8_N

Lims ID: 320-31214-A-3-A Lab Sample ID: 320-31214-3

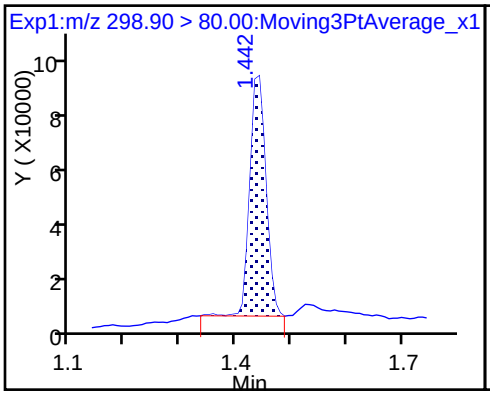
Client ID: NAWC-083017-RW-352

Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 8

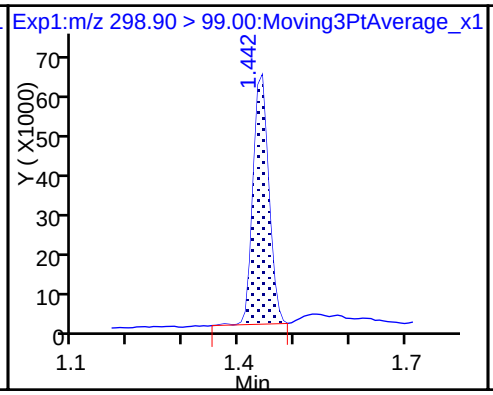
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

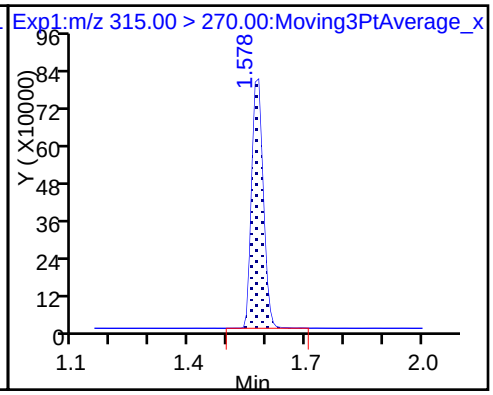
1 Perfluorobutanesulfonic acid



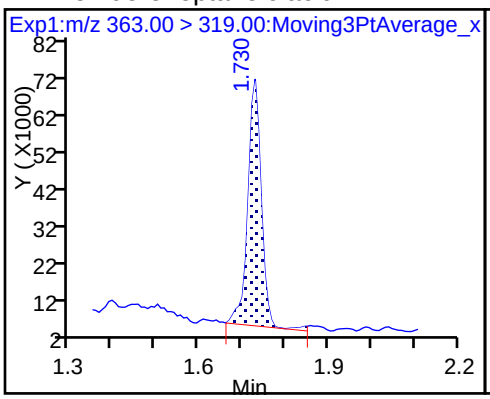
1 Perfluorobutanesulfonic acid



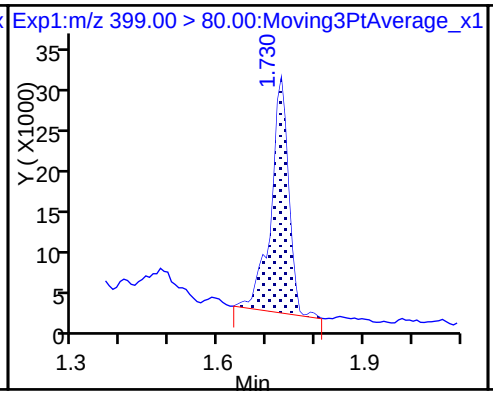
$ 2 13C2 PFHxA



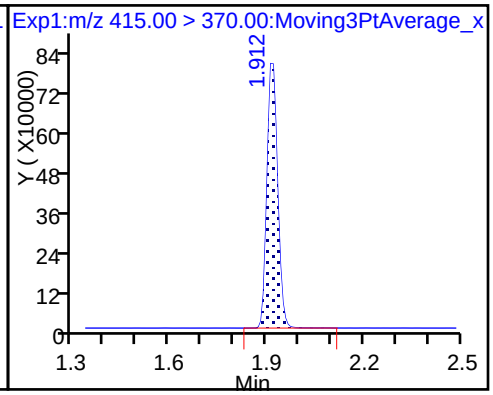
4 Perfluoroheptanoic acid



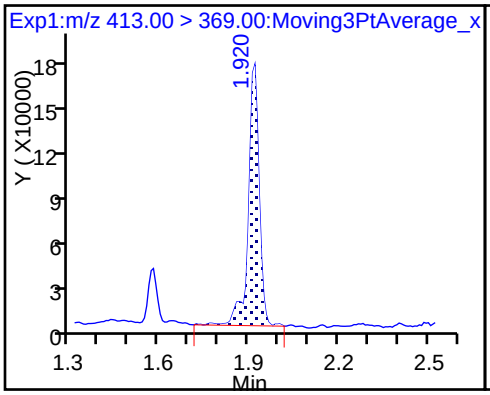
3 Perfluorohexanesulfonic acid



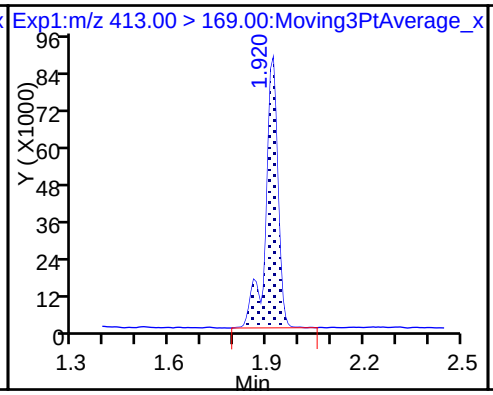
* 6 13C2-PFOA



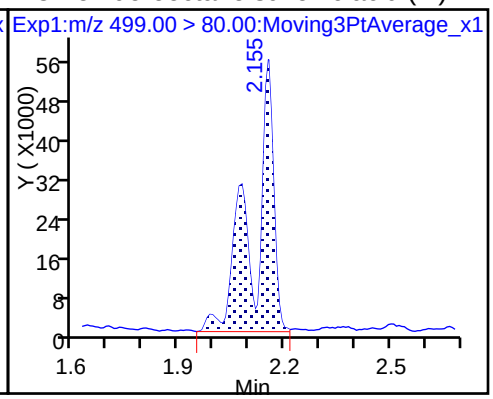
5 Perfluorooctanoic acid



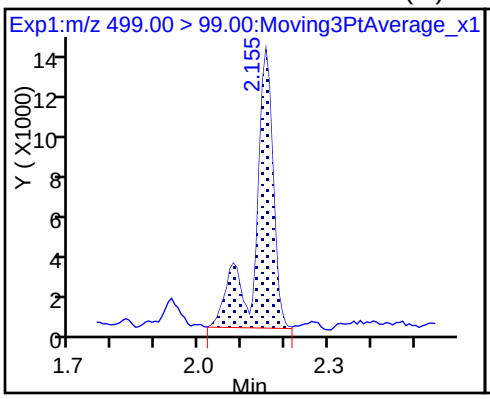
5 Perfluorooctanoic acid



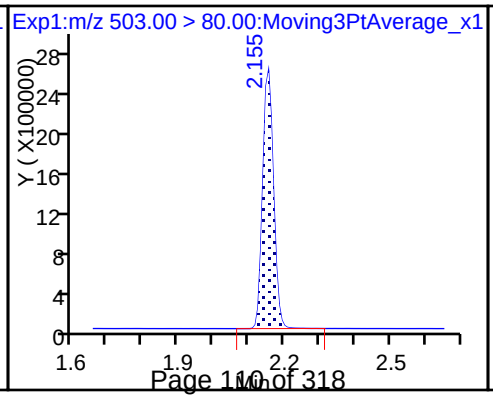
8 Perfluorooctane sulfonic acid (M)



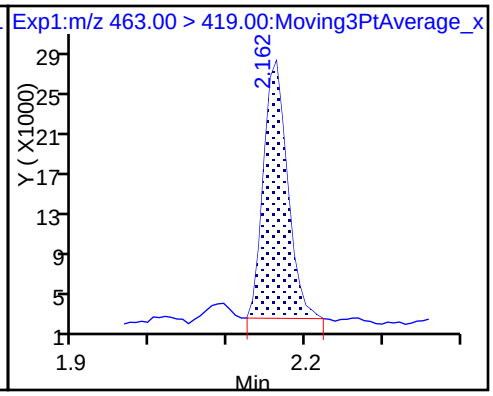
8 Perfluorooctane sulfonic acid (M)



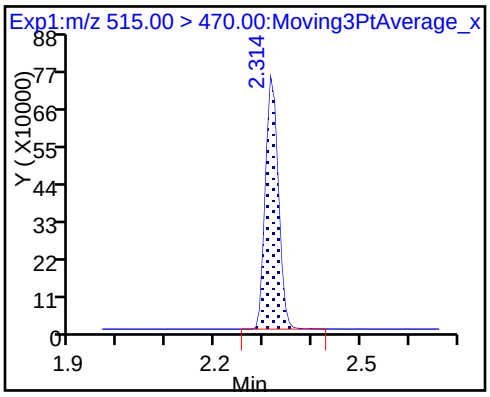
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
88
77
66
55
44
33
22
11
0
1.9
2.2
2.5
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_008.d
Lims ID: 320-31214-A-3-A
Client ID: NAWC-083017-RW-352
Sample Type: Client
Inject. Date: 08-Sep-2017 21:15:18 ALS Bottle#: 6 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-3-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:13:20

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.56	75.56
$ 10 13C2 PFDA	10.0	11.2	112.14

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

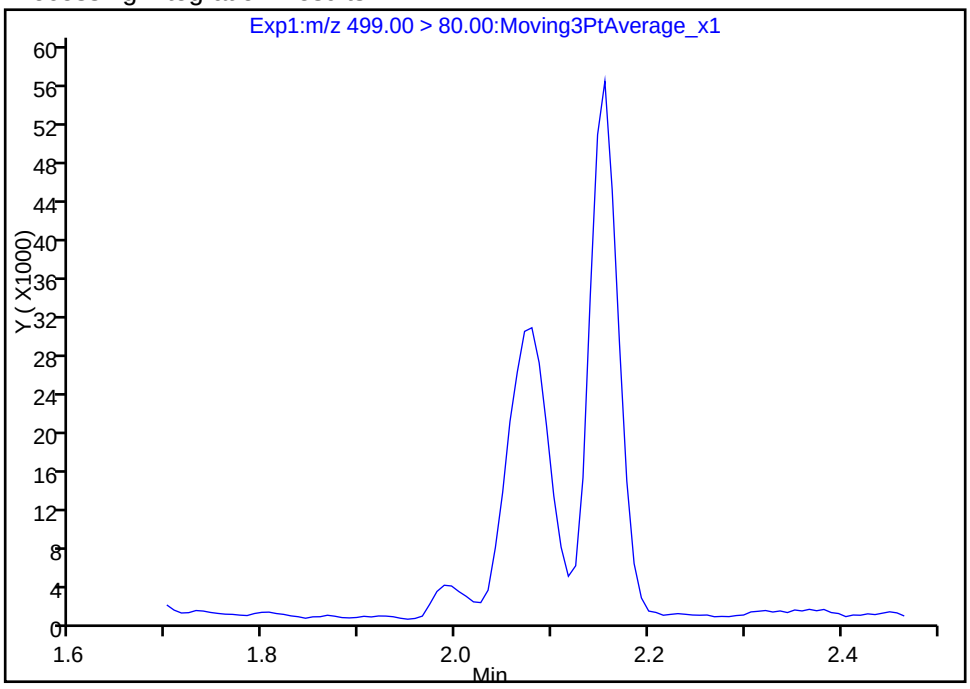
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_008.d				
Injection Date:	08-Sep-2017 21:15:18	Instrument ID:	A8_N		
Lims ID:	320-31214-A-3-A	Lab Sample ID:	320-31214-3		
Client ID:	NAWC-083017-RW-352				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

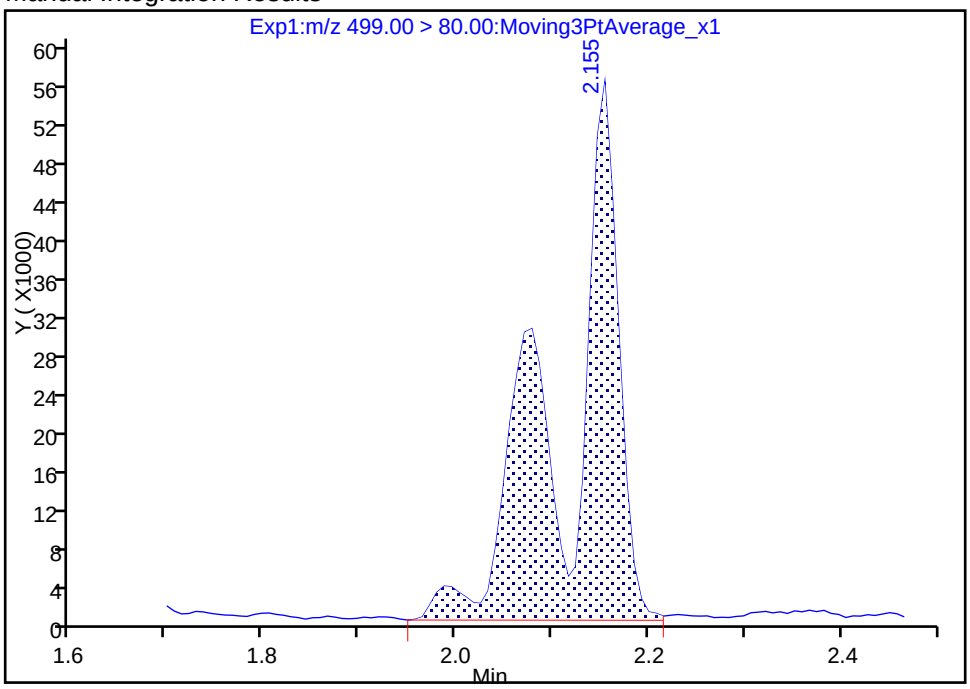
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 218185
Amount: 1.244260
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:12:48
Audit Action: Assigned Compound ID Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

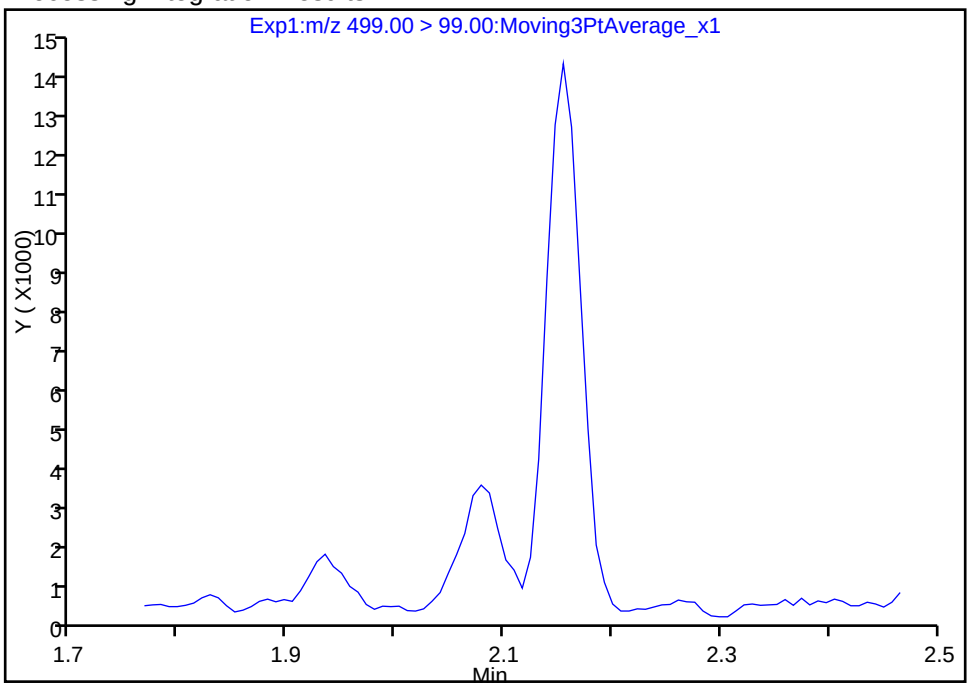
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_008.d				
Injection Date:	08-Sep-2017 21:15:18	Instrument ID:	A8_N		
Lims ID:	320-31214-A-3-A	Lab Sample ID:	320-31214-3		
Client ID:	NAWC-083017-RW-352				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 2

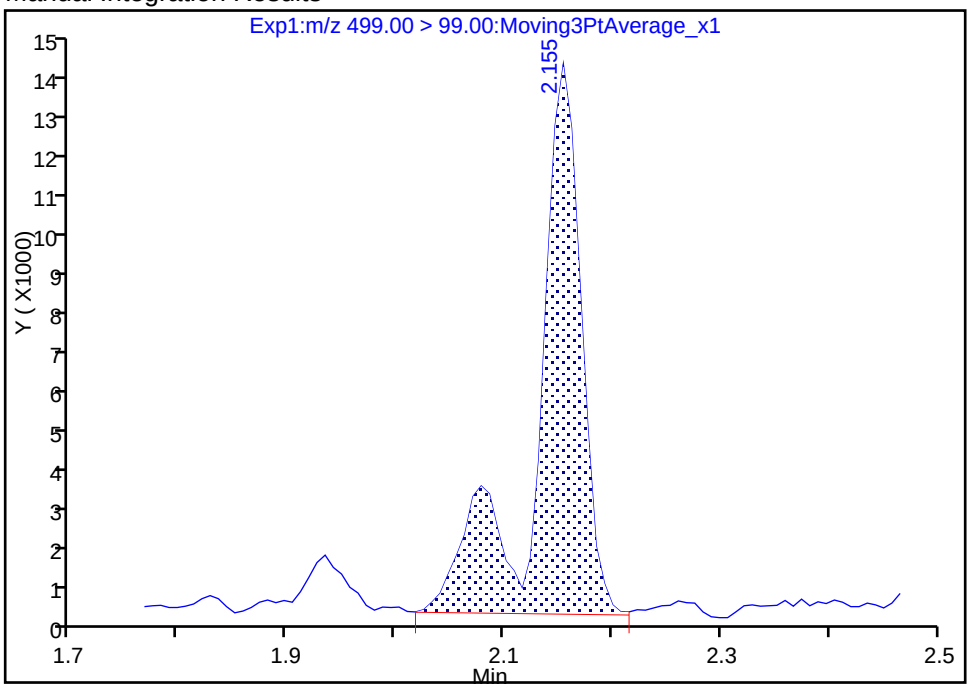
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 39904
Amount: 1.244260
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:13:11
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

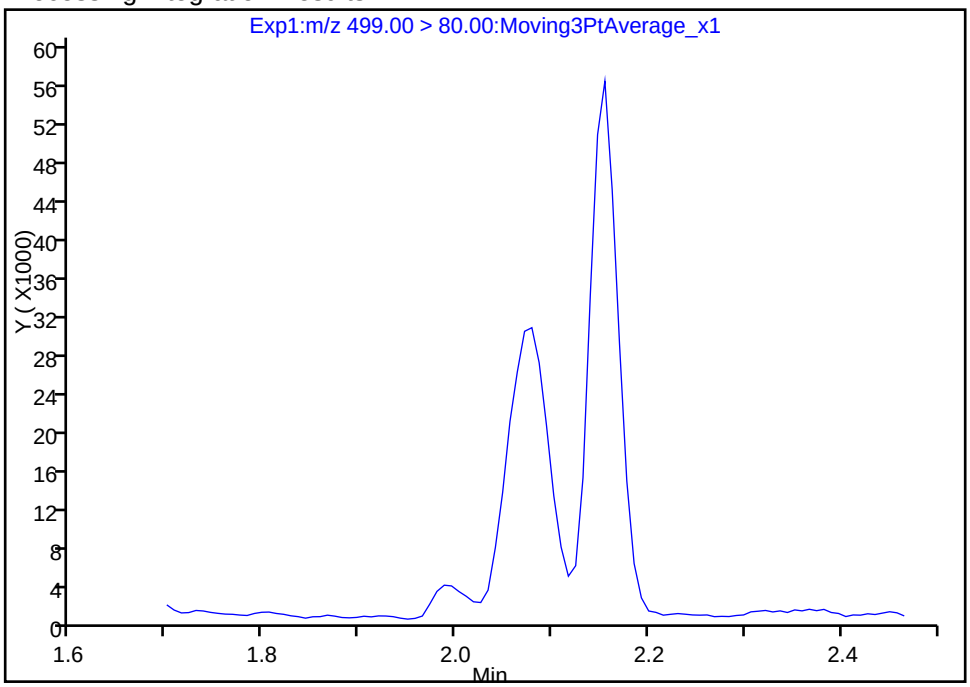
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_008.d				
Injection Date:	08-Sep-2017 21:15:18	Instrument ID:	A8_N		
Lims ID:	320-31214-A-3-A	Lab Sample ID:	320-31214-3		
Client ID:	NAWC-083017-RW-352				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

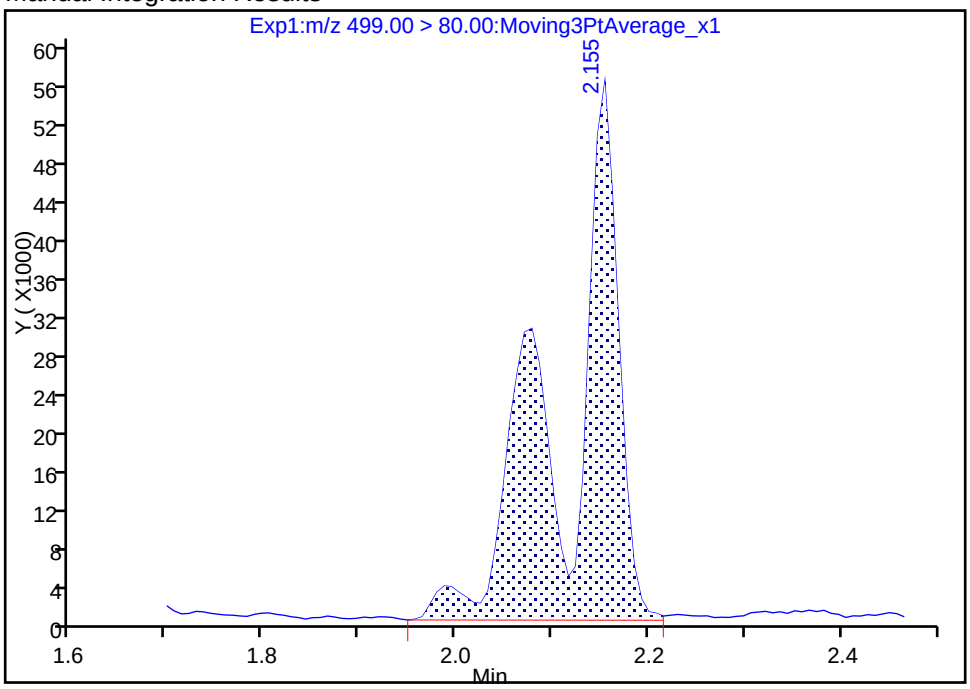
Not Detected
Expected RT: 2.14

Processing Integration Results



RT: 2.15
Area: 218185
Amount: 1.244260
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 11-Sep-2017 11:13:11
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-FRB-352 | Lab Sample ID: 320-31214-4

Matrix: Water | Lab File ID: 2017.09.08_537C_009.d

Analysis Method: 537 | Date Collected: 08/30/2017 10:40

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 258.6(mL) | Date Analyzed: 09/08/2017 21:20

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.: 183512 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
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)	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	100		70-130
STL00996	13C2 PFDA	113		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_009.d
Lims ID: 320-31214-A-4-A
Client ID: NAWC-083017-FRB-352
Sample Type: Client
Inject. Date: 08-Sep-2017 21:20:04 ALS Bottle#: 7 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-4-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 15:17:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	2066559	9.96		13611	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1718880	10.0		8908	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.164	-0.017		5325769	28.7		5154	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1299631	11.3		11780	

Report Date: 11-Sep-2017 15:23:44 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_009.d

Injection Date: 08-Sep-2017 21:20:04 Instrument ID: A8_N

Lims ID: 320-31214-A-4-A Lab Sample ID: 320-31214-4

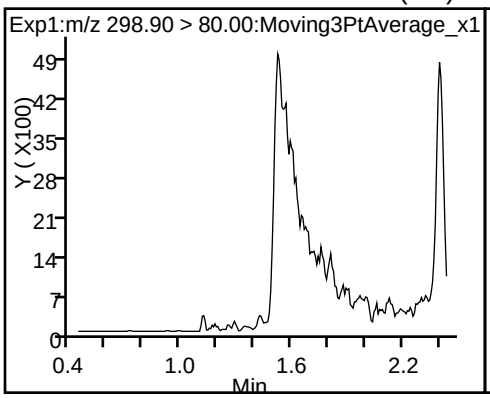
Client ID: NAWC-083017-FRB-352

Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 9

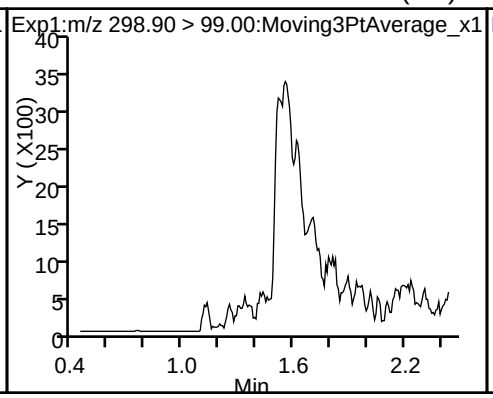
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

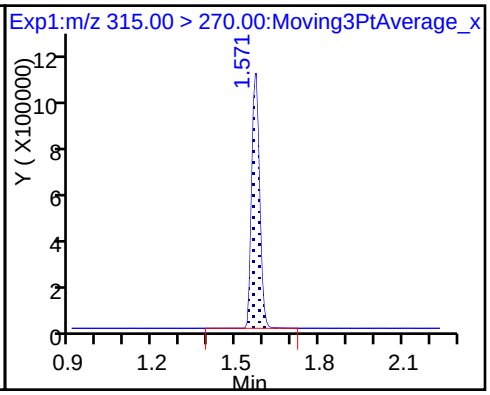
1 Perfluorobutanesulfonic acid (ND)



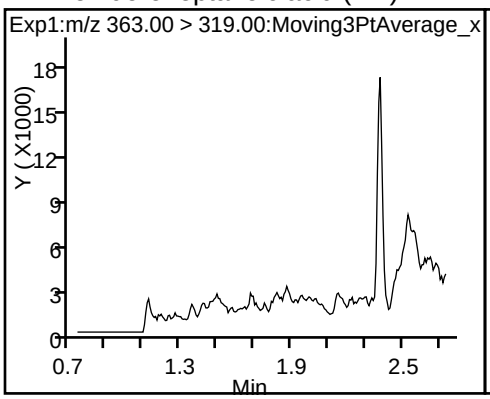
1 Perfluorobutanesulfonic acid (ND)



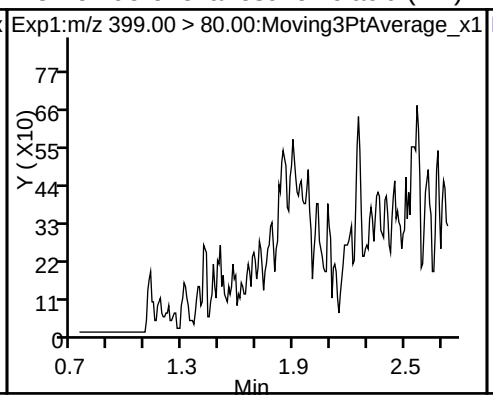
$ 2 13C2 PFHxA

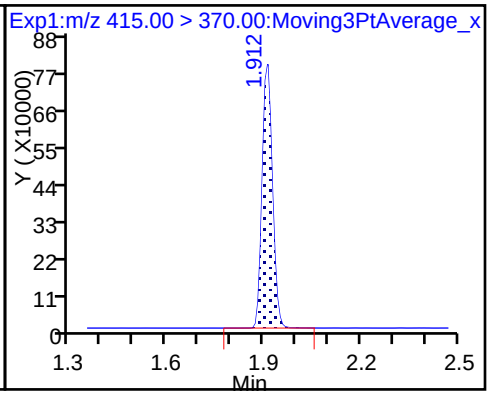


4 Perfluoroheptanoic acid (ND)

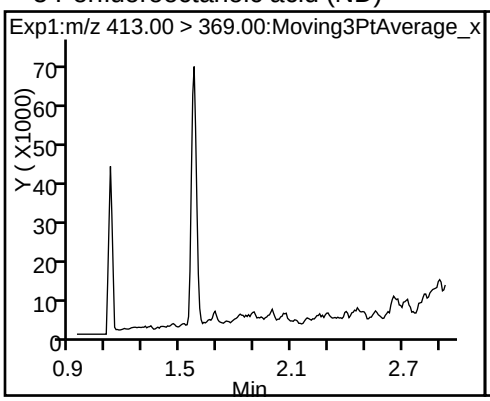


3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA

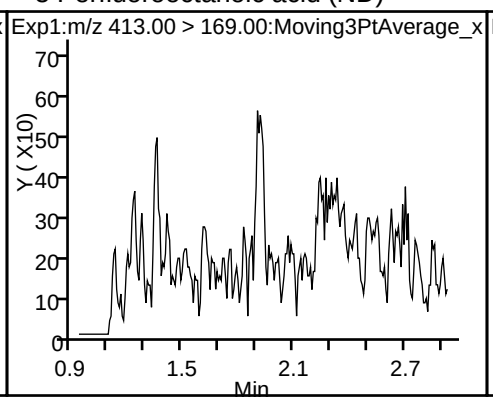




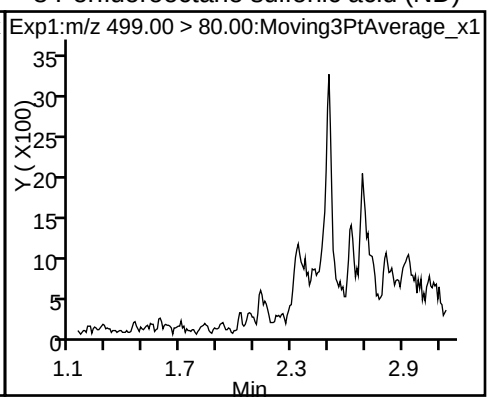
5 Perfluorooctanoic acid (ND)



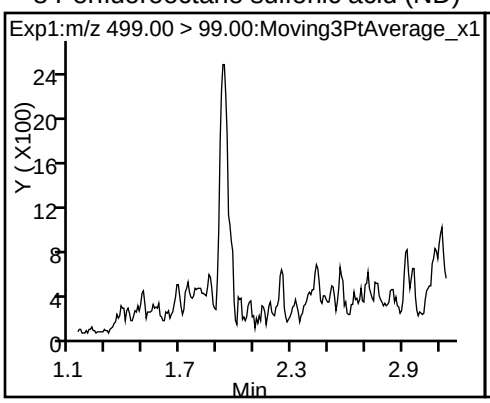
5 Perfluorooctanoic acid (ND)

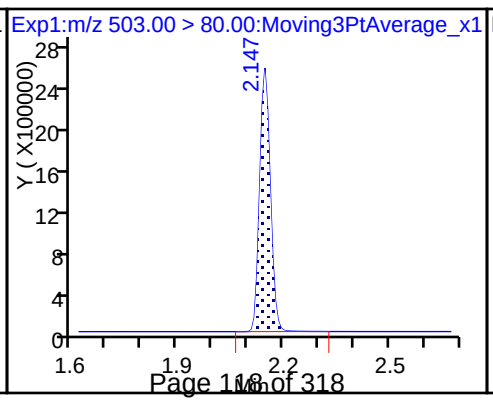


8 Perfluorooctane sulfonic acid (ND)

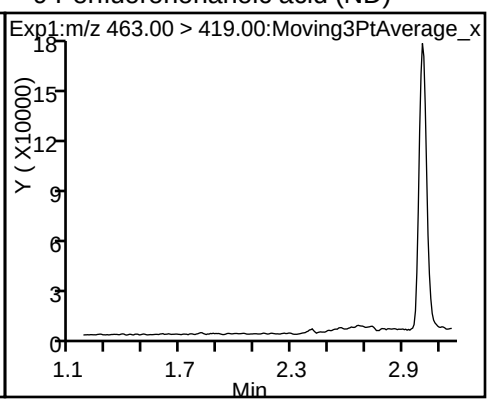


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

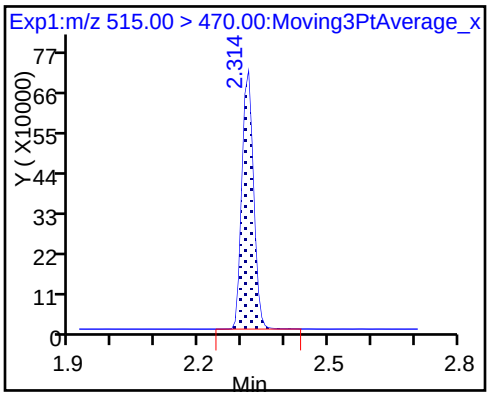




9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
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Y (X10000)
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66
55
44
33
22
11
0
1.9
2.2
2.5
2.8
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_009.d
Lims ID: 320-31214-A-4-A
Client ID: NAWC-083017-FRB-352
Sample Type: Client
Inject. Date: 08-Sep-2017 21:20:04 ALS Bottle#: 7 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-4-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 15:17:44

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.96	99.65
$ 10 13C2 PFDA	10.0	11.3	112.58

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-RW-353 | Lab Sample ID: 320-31214-5

Matrix: Water | Lab File ID: 2017.09.08_537C_010.d

Analysis Method: 537 | Date Collected: 08/30/2017 10:20

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 250.5(mL) | Date Analyzed: 09/08/2017 21:24

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

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

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

Analysis Batch No.: 183512 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	16	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.6	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	74		70-130
STL00996	13C2 PFDA	116		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_010.d
Lims ID: 320-31214-A-5-A
Client ID: NAWC-083017-RW-353
Sample Type: Client
Inject. Date: 08-Sep-2017 21:24:49 ALS Bottle#: 8 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-5-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:13:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.440	-0.006	1.000	210451	1.03		40.9	
298.90 > 99.00	1.434	1.440	-0.006	1.000	142095		1.48(0.00-0.00)	96.0	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	1636815	7.39		10050	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.730	1.736	-0.006	1.000	198580	1.16		26.7	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.730	1.739	-0.009	1.000	200141	0.6507		62.7	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1835716	10.0		9389	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.920	1.933	-0.013	1.000	661658	3.89		25.4	
413.00 > 169.00	1.912	1.933	-0.021	0.996	374408		1.77(0.00-0.00)	652	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.155	2.140	0.015	1.000	504544	2.82		109	M
499.00 > 99.00	2.155	2.140	0.015	1.000	85658		5.89(0.00-0.00)	64.0	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.164	-0.017		5524602	28.7		2230	
9 Perfluorononanoic acid									
463.00 > 419.00	2.155	2.171	-0.016	1.000	66207	0.5562		3.2	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1432295	11.6		10592	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 11-Sep-2017 15:23:45 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_010.d

Injection Date: 08-Sep-2017 21:24:49 Instrument ID: A8_N

Lims ID: 320-31214-A-5-A Lab Sample ID: 320-31214-5

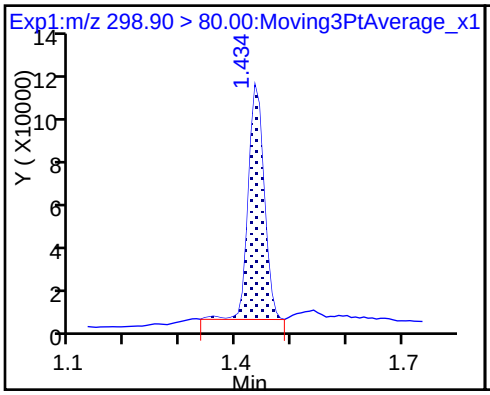
Client ID: NAWC-083017-RW-353

Operator ID: SACINSTLCMS01 ALS Bottle#: 8 Worklist Smp#: 10

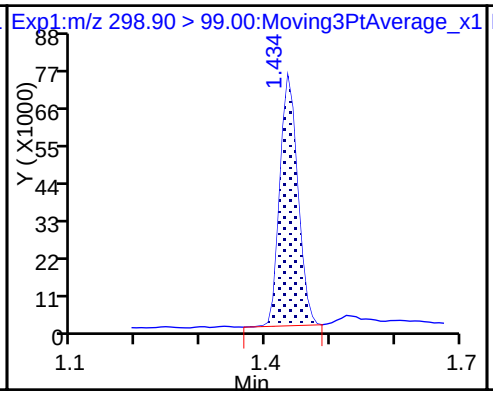
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

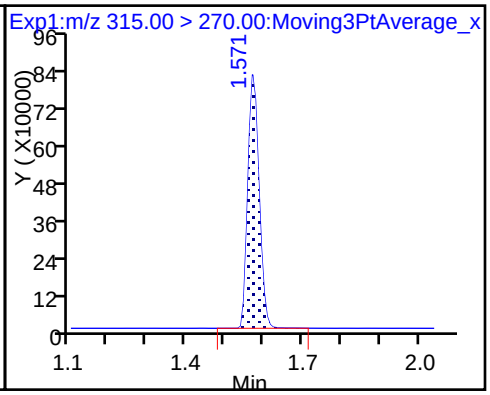
1 Perfluorobutanesulfonic acid



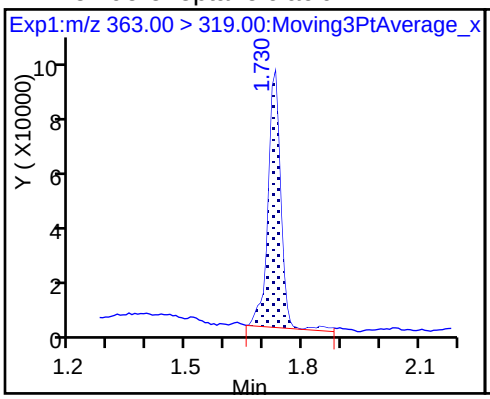
1 Perfluorobutanesulfonic acid



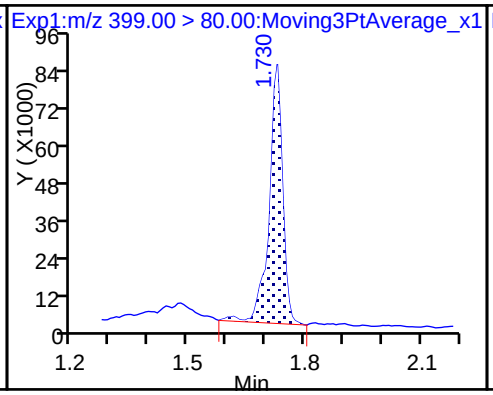
$ 2 13C2 PFHxA



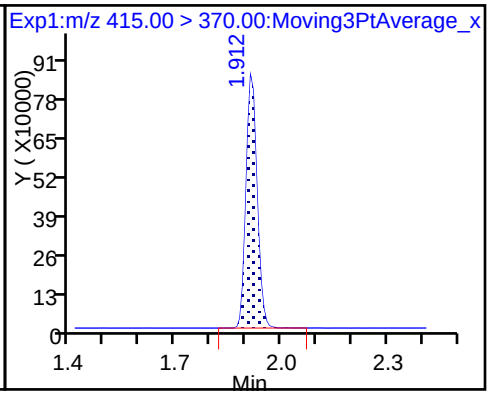
4 Perfluoroheptanoic acid



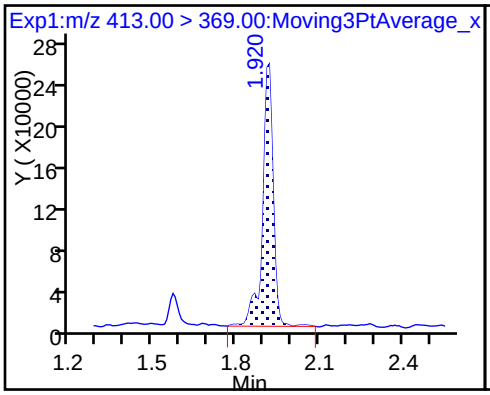
3 Perfluorohexanesulfonic acid



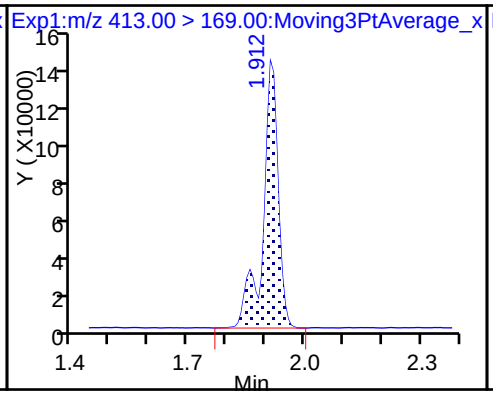
* 6 13C2-PFOA



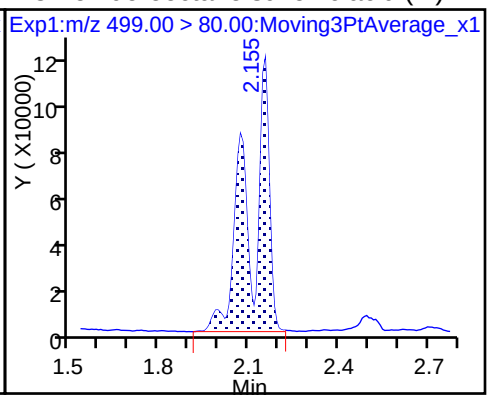
5 Perfluorooctanoic acid



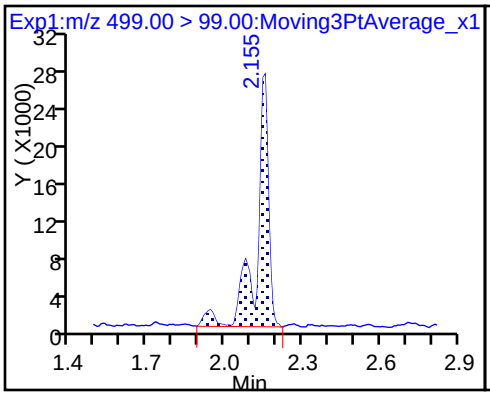
5 Perfluorooctanoic acid



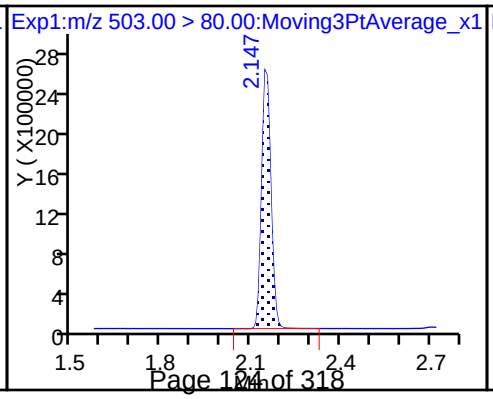
8 Perfluorooctane sulfonic acid (M)



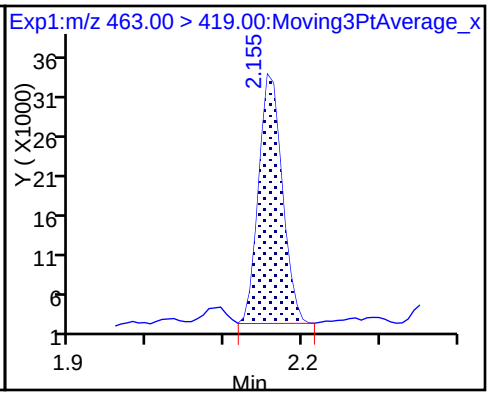
8 Perfluorooctane sulfonic acid



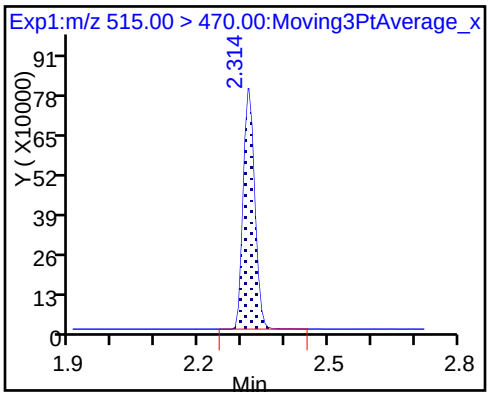
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA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91
78
65
52
39
26
13
0
1.9
2.2
2.5
2.8
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_010.d
Lims ID: 320-31214-A-5-A
Client ID: NAWC-083017-RW-353
Sample Type: Client
Inject. Date: 08-Sep-2017 21:24:49 ALS Bottle#: 8 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-5-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:13:50

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.39	73.90
$ 10 13C2 PFDA	10.0	11.6	116.18

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

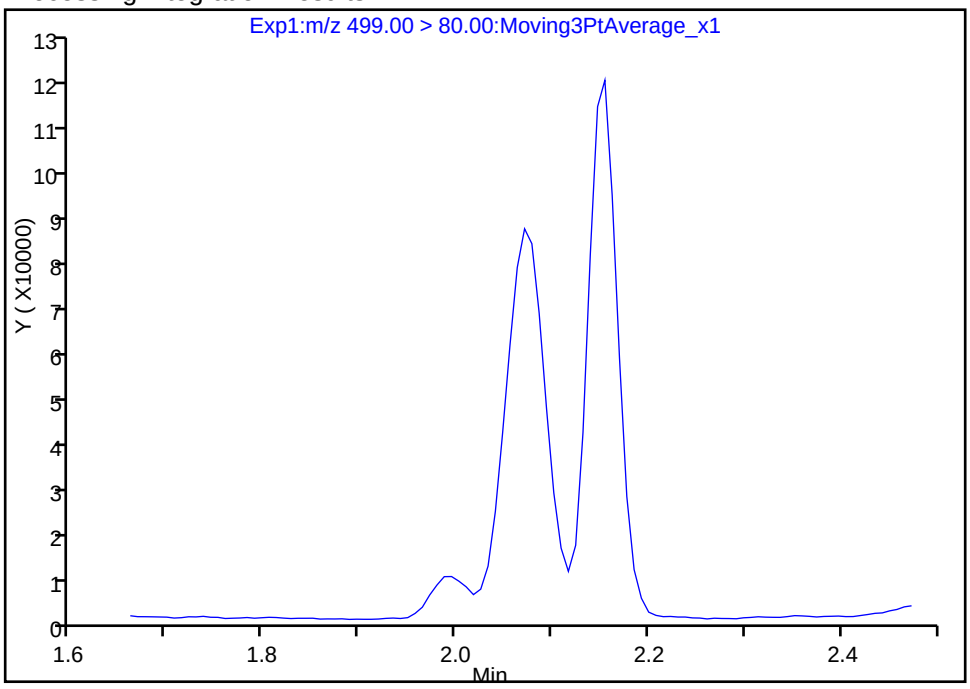
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_010.d				
Injection Date:	08-Sep-2017 21:24:49	Instrument ID:	A8_N		
Lims ID:	320-31214-A-5-A	Lab Sample ID:	320-31214-5		
Client ID:	NAWC-083017-RW-353				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	10
Injection 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

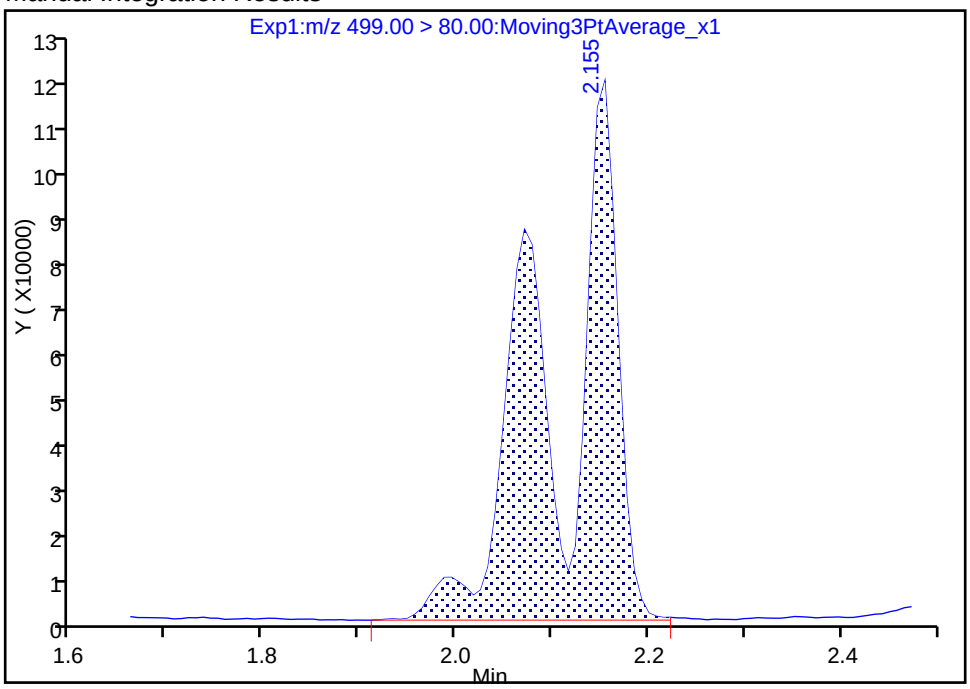
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 504544
Amount: 2.824066
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:13:29
Audit Action: Assigned Compound ID Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

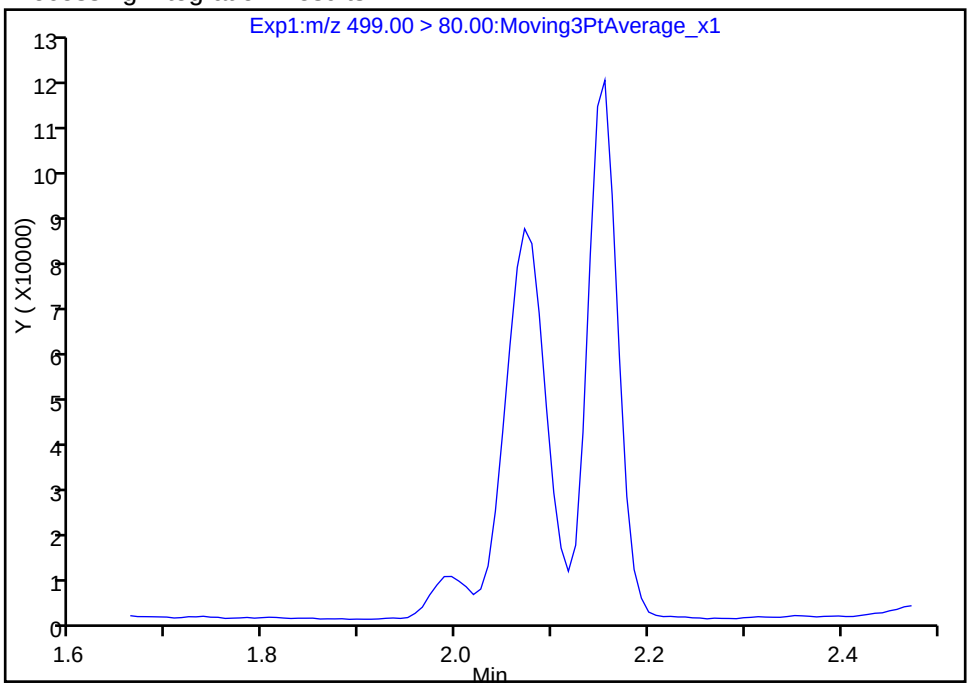
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_010.d				
Injection Date:	08-Sep-2017 21:24:49	Instrument ID:	A8_N		
Lims ID:	320-31214-A-5-A	Lab Sample ID:	320-31214-5		
Client ID:	NAWC-083017-RW-353				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	10
Injection 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

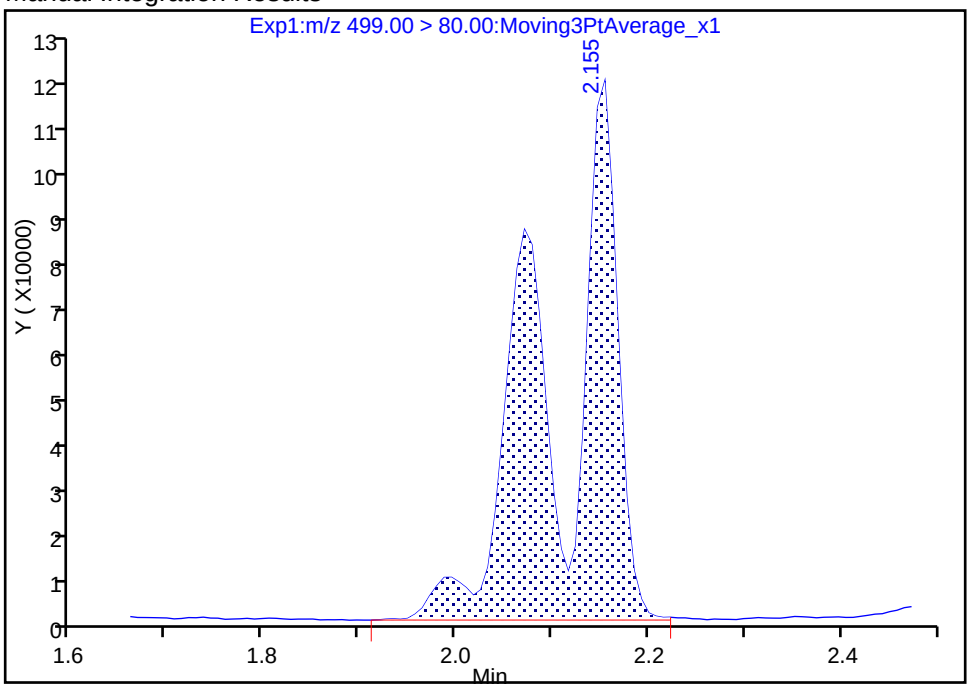
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 504544
Amount: 2.824066
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:13:41
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-FRB-353 Lab Sample ID: 320-31214-6

Matrix: Water Lab File ID: 2017.09.08_537C_011.d

Analysis Method: 537 Date Collected: 08/30/2017 10:15

Extraction Method: 537 Date Extracted: 09/01/2017 08:39

Sample wt/vol: 247.6(mL) Date Analyzed: 09/08/2017 21:29

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

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

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

Analysis Batch No.: 183512 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	119		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_011.d
Lims ID: 320-31214-A-6-A
Client ID: NAWC-083017-FRB-353
Sample Type: Client
Inject. Date: 08-Sep-2017 21:29:33 ALS Bottle#: 9 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-6-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	2178466	10.0		12997	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1805826	10.0		8948	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.164	-0.017		5361538	28.7		4883	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1448305	11.9		12282	

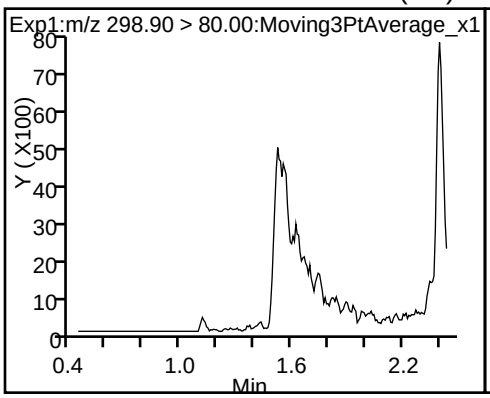
Report Date: 11-Sep-2017 15:23:46 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

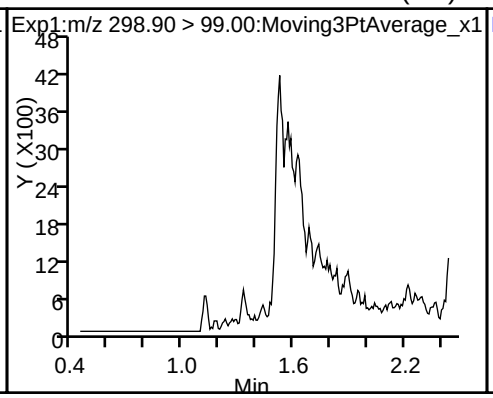
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_011.d

Injection Date:	08-Sep-2017 21:29:33	Instrument ID:	A8_N		
Lims ID:	320-31214-A-6-A	Lab Sample ID:	320-31214-6		
Client ID:	NAWC-083017-FRB-353				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	9	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

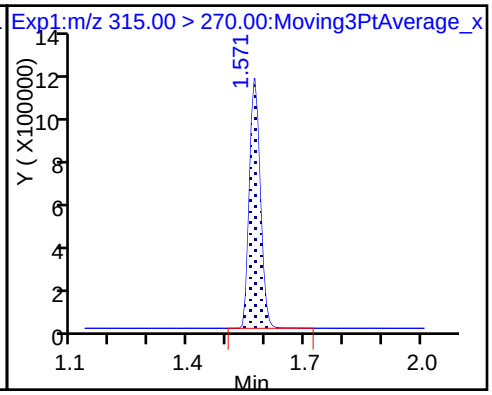
1 Perfluorobutanesulfonic acid (ND)



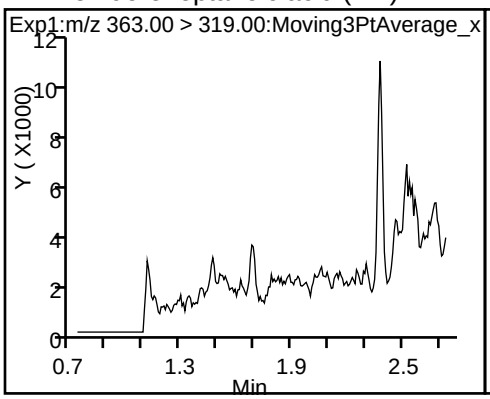
1 Perfluorobutanesulfonic acid (ND)



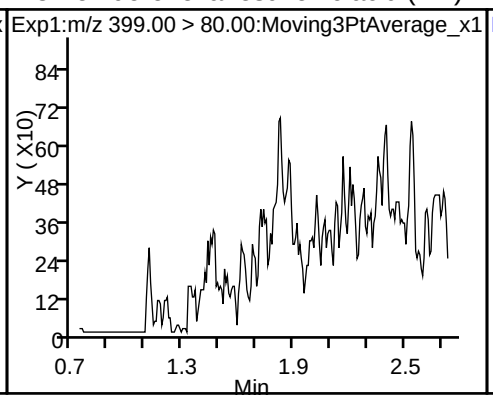
$ 2 13C2 PFHxA

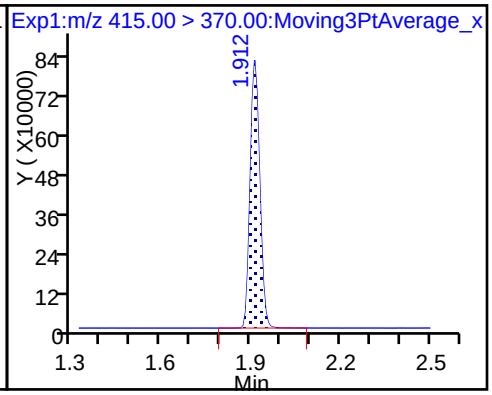


4 Perfluoroheptanoic acid (ND)

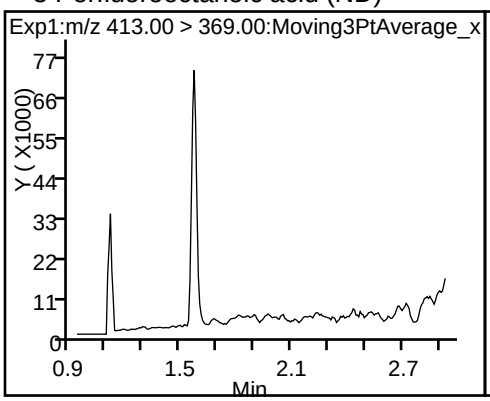


3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA

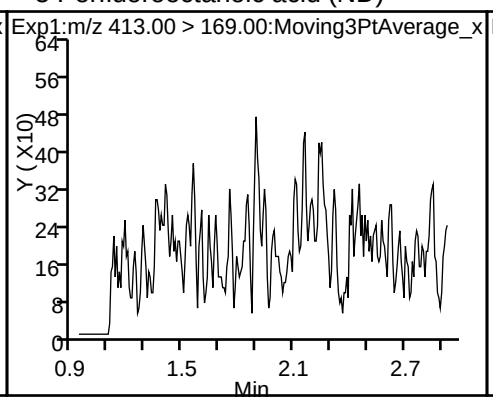




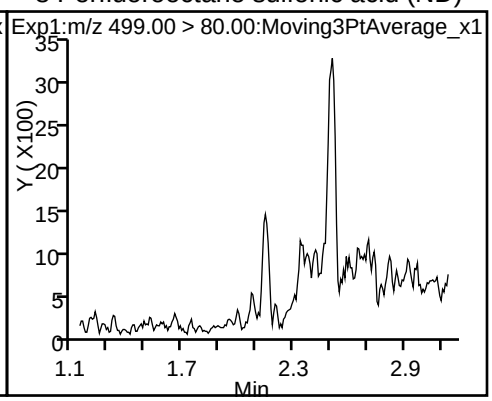
5 Perfluorooctanoic acid (ND)



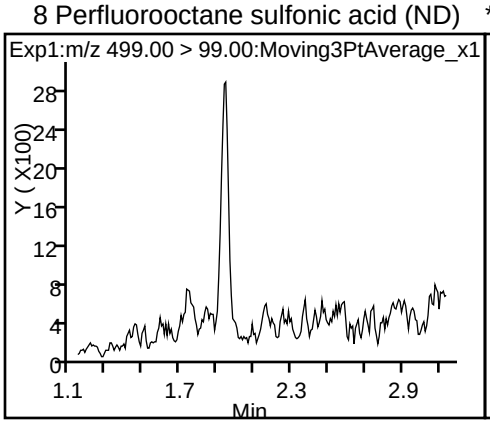
5 Perfluorooctanoic acid (ND)

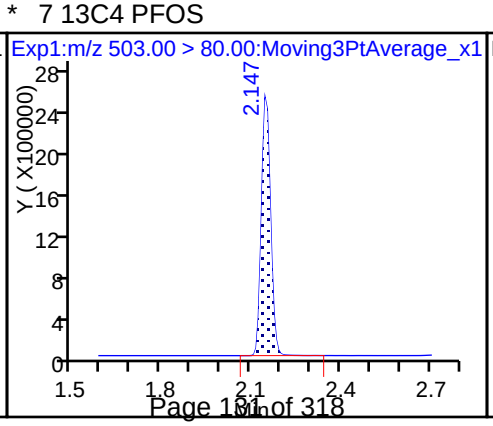


8 Perfluorooctane sulfonic acid (ND)

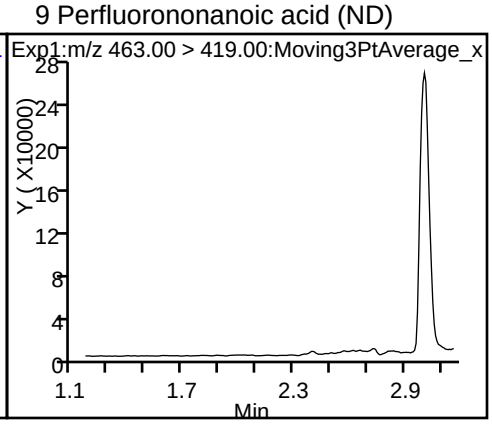


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

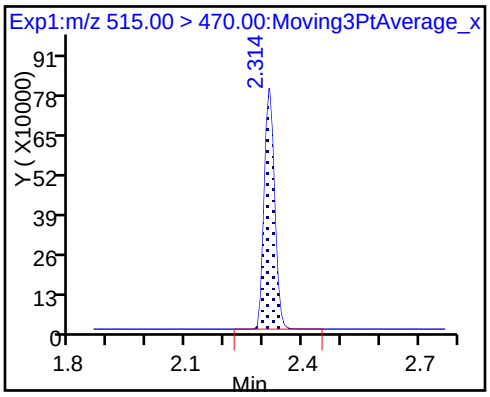




9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
91
78
65
52
39
26
13
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_011.d				
Lims ID:	320-31214-A-6-A				
Client ID:	NAWC-083017-FRB-353				
Sample Type:	Client				
Inject. Date:	08-Sep-2017 21:29:33	ALS Bottle#:	9	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-31214-a-6-a				
Misc. Info.:	Plate: 1 Rack: 3				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	11-Sep-2017 15:23:38	Calib Date:	08-Sep-2017 13:51:29		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK011				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.0	99.98
$ 10 13C2 PFDA	10.0	11.9	119.42

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-RW-351 | Lab Sample ID: 320-31214-7

Matrix: Water | Lab File ID: 2017.09.08_537C_012.d

Analysis Method: 537 | Date Collected: 08/30/2017 11:25

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 249(mL) | Date Analyzed: 09/08/2017 21:34

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.: 183512 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.3	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		70-130
STL00996	13C2 PFDA	109		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_012.d
Lims ID: 320-31214-A-7-A
Client ID: WGNA-083017-RW-351
Sample Type: Client
Inject. Date: 08-Sep-2017 21:34:18 ALS Bottle#: 10 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-7-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:14:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.440	-0.006	1.000	214302	1.01		71.6	
298.90 > 99.00	1.434	1.440	-0.006	1.000	143406		1.49(0.00-0.00)	84.4	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	1826984	7.90		12231	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.736	-0.014	1.000	180793	1.01		21.0	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.739	-0.017	1.000	198241	0.6218		63.5	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1916636	10.0		9873	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.912	1.933	-0.021	1.000	557745	3.14		20.4	
413.00 > 169.00	1.912	1.933	-0.021	1.000	329309		1.69(0.00-0.00)	556	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.147	2.140	0.007	1.000	338466	1.83		98.5	M
499.00 > 99.00	2.147	2.140	0.007	1.000	58053		5.83(0.00-0.00)	37.9	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.164	-0.017		5726424	28.7		3479	
9 Perfluorononanoic acid									
463.00 > 419.00	2.155	2.171	-0.016	1.000	51240	0.4123		2.1	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1406217	10.9		10867	

QC Flag Legend

Review Flags

M - Manually Integrated

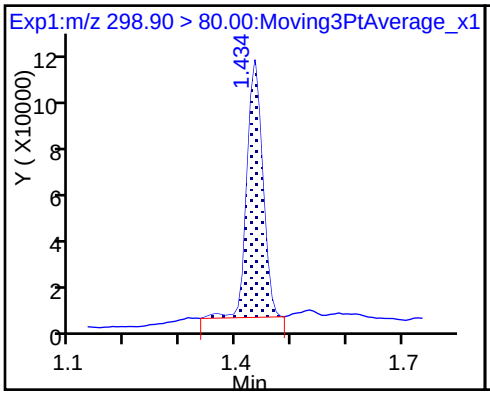
Report Date: 11-Sep-2017 15:23:46 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

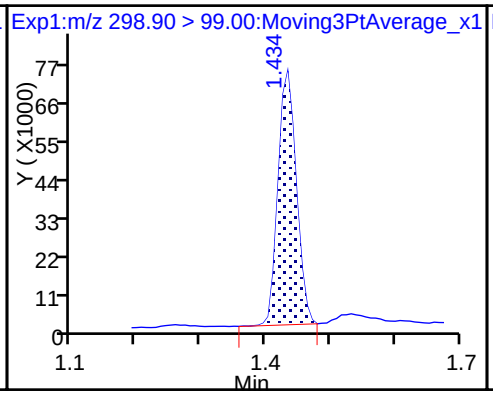
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_012.d

Injection Date:	08-Sep-2017 21:34:18	Instrument ID:	A8_N		
Lims ID:	320-31214-A-7-A	Lab Sample ID:	320-31214-7		
Client ID:	WGNA-083017-RW-351				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

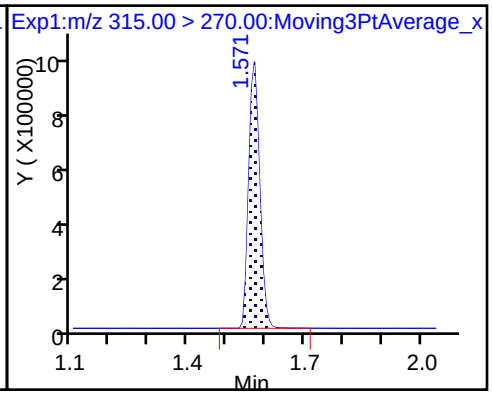
1 Perfluorobutanesulfonic acid



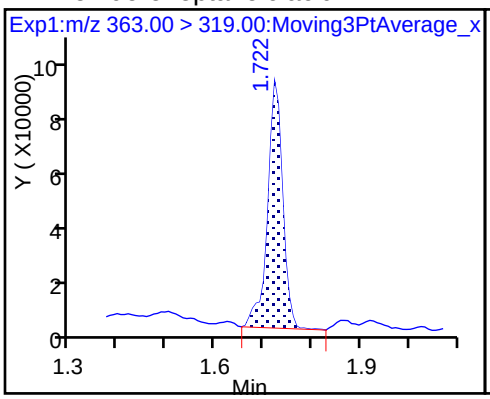
1 Perfluorobutanesulfonic acid



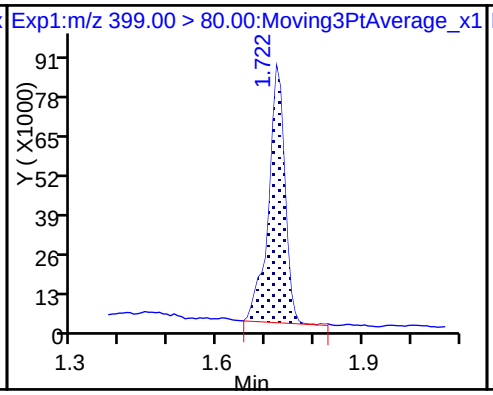
$ 2 13C2 PFHxA



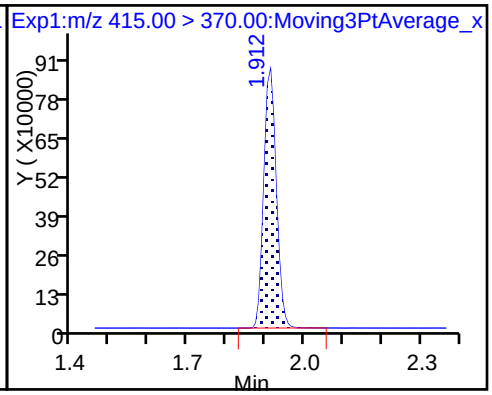
4 Perfluoroheptanoic acid



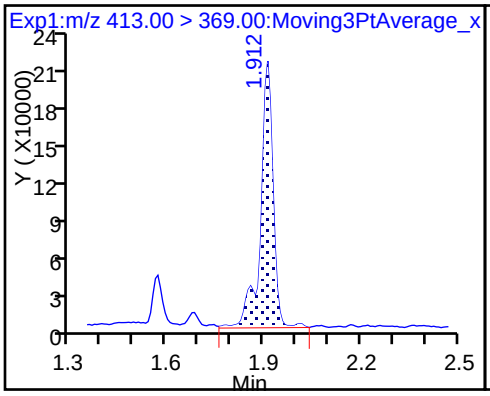
3 Perfluorohexanesulfonic acid



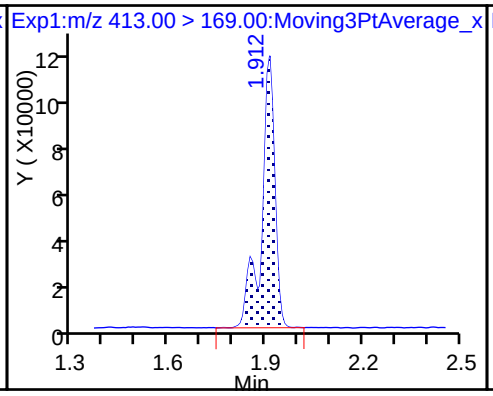
* 6 13C2-PFOA



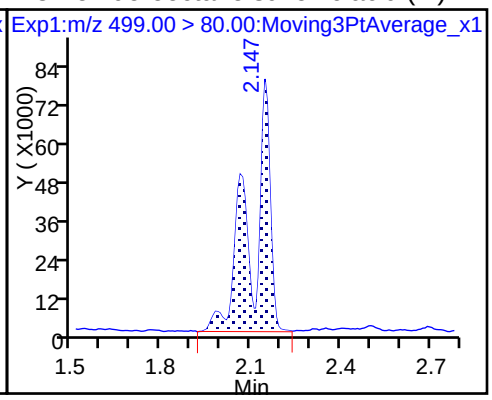
5 Perfluorooctanoic acid



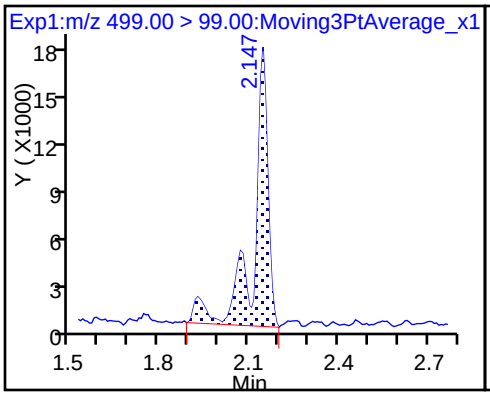
5 Perfluorooctanoic acid



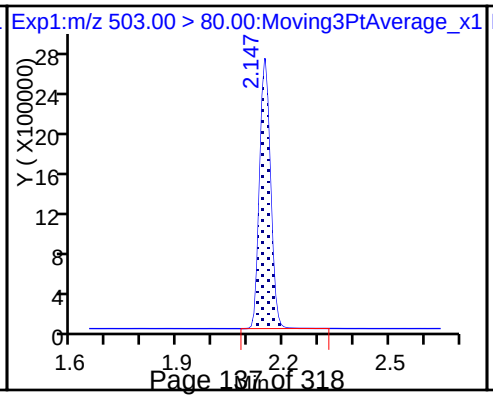
8 Perfluorooctane sulfonic acid (M)



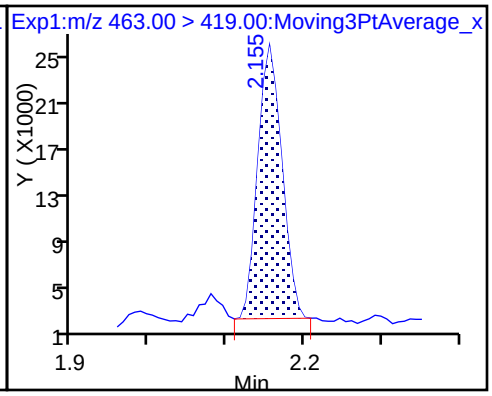
8 Perfluorooctane sulfonic acid



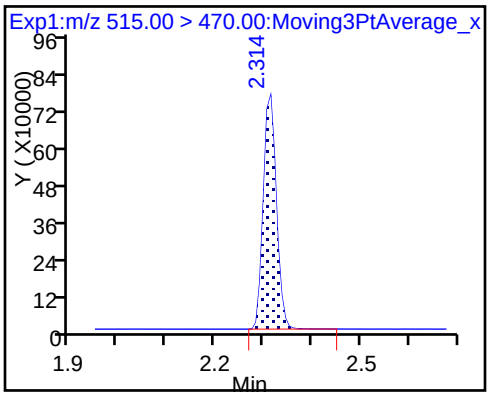
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
96
84
72
60
48
36
24
12
0
1.9
2.2
2.5
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_012.d
Lims ID: 320-31214-A-7-A
Client ID: WGNA-083017-RW-351
Sample Type: Client
Inject. Date: 08-Sep-2017 21:34:18 ALS Bottle#: 10 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-7-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:14:41

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.90	79.00
$ 10 13C2 PFDA	10.0	10.9	109.25

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

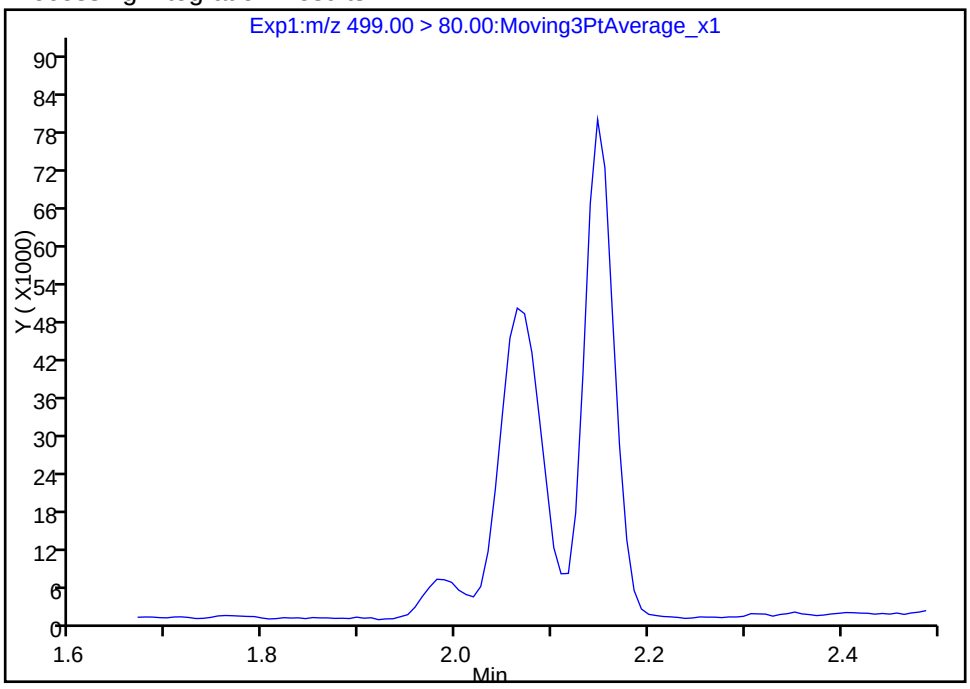
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_012.d				
Injection Date:	08-Sep-2017 21:34:18	Instrument ID:	A8_N		
Lims ID:	320-31214-A-7-A	Lab Sample ID:	320-31214-7		
Client ID:	WGNA-083017-RW-351				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

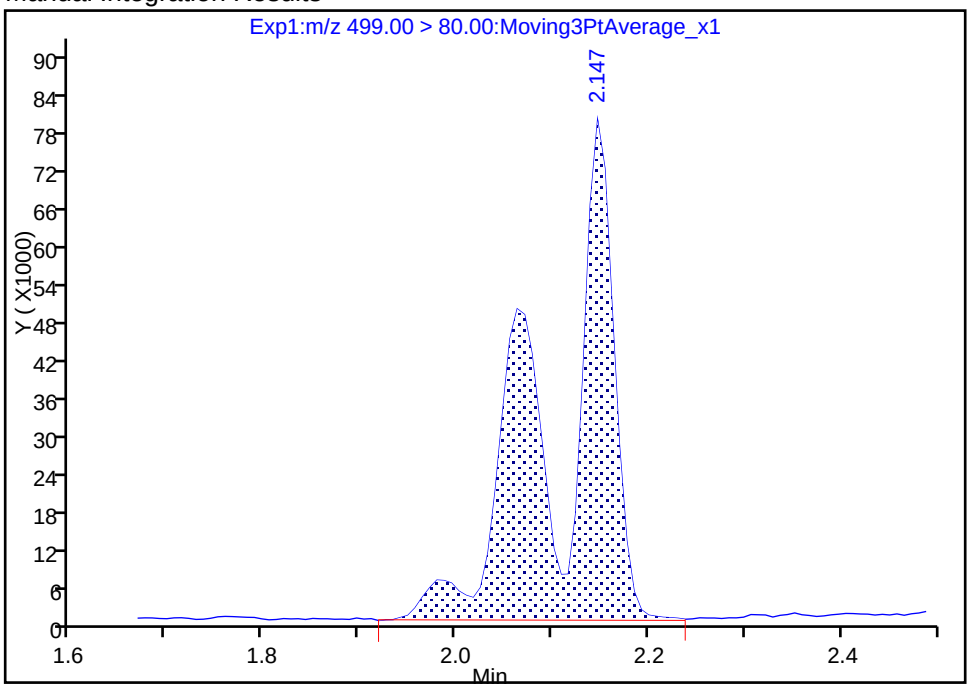
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 338466
Amount: 1.827714
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:14:00
Audit Action: Assigned Compound ID Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

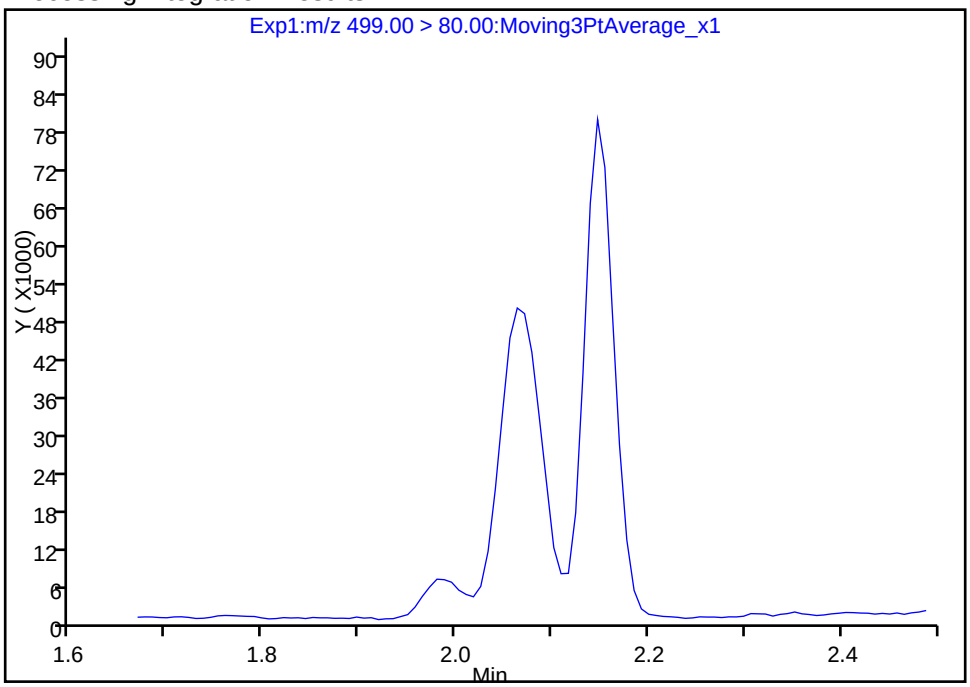
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_012.d				
Injection Date:	08-Sep-2017 21:34:18	Instrument ID:	A8_N		
Lims ID:	320-31214-A-7-A	Lab Sample ID:	320-31214-7		
Client ID:	WGNA-083017-RW-351				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

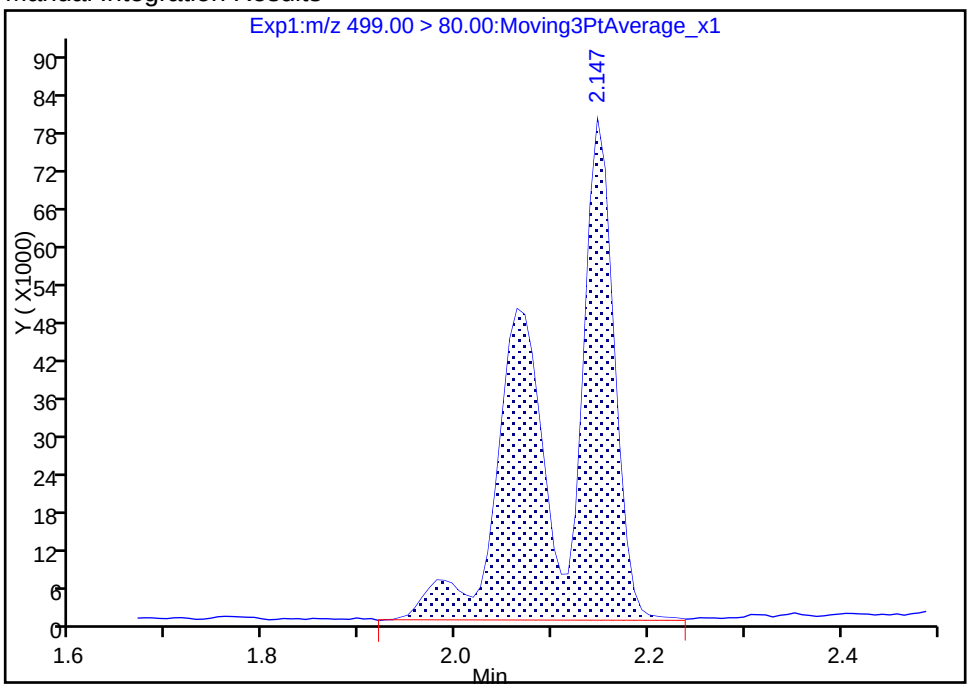
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 338466
Amount: 1.827714
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:14:16
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-FRB-351 | Lab Sample ID: 320-31214-8

Matrix: Water | Lab File ID: 2017.09.08_537C_015.d

Analysis Method: 537 | Date Collected: 08/30/2017 11:20

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 248.1(mL) | Date Analyzed: 09/08/2017 21:48

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

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

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

Analysis Batch No.: 183773 | Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		70-130
STL00996	13C2 PFDA	117		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_015.d
Lims ID: 320-31214-A-8-A
Client ID: NAWC-083017-FRB-351
Sample Type: Client
Inject. Date: 08-Sep-2017 21:48:33 ALS Bottle#: 11 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-8-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:47 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	2143000	10.3		14734	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1716976	10.0		12299	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.164	-0.017		5301535	28.7		5000	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1354229	11.7		10203	

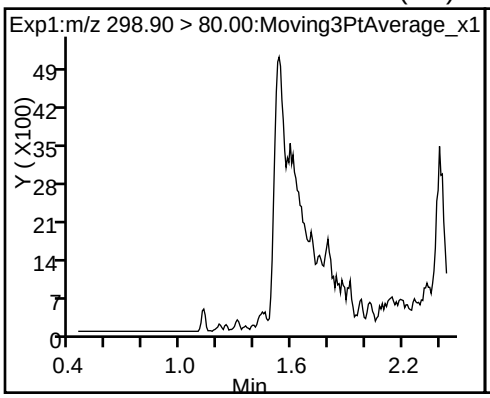
Report Date: 11-Sep-2017 15:23:49 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

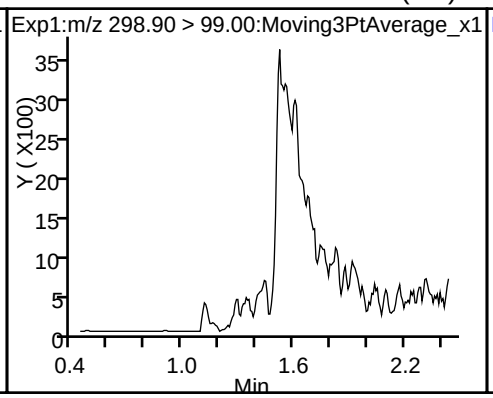
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_015.d

Injection Date:	08-Sep-2017 21:48:33	Instrument ID:	A8_N		
Lims ID:	320-31214-A-8-A	Lab Sample ID:	320-31214-8		
Client ID:	NAWC-083017-FRB-351				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

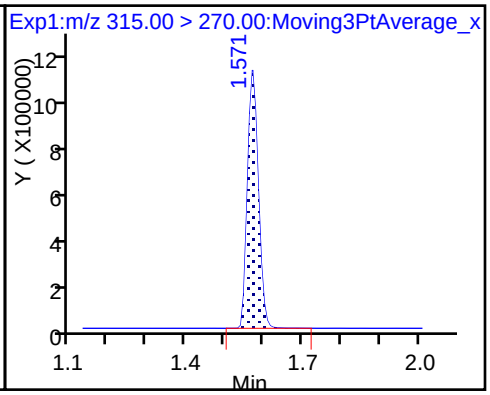
1 Perfluorobutanesulfonic acid (ND)



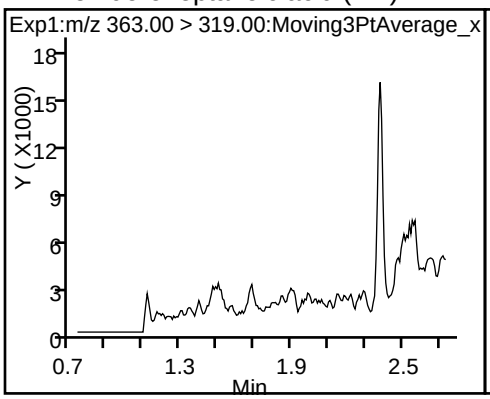
1 Perfluorobutanesulfonic acid (ND)



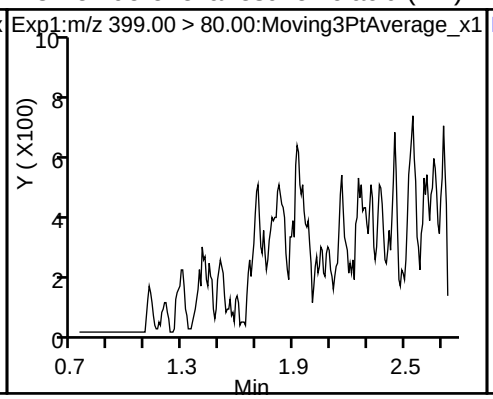
$ 2 13C2 PFHxA

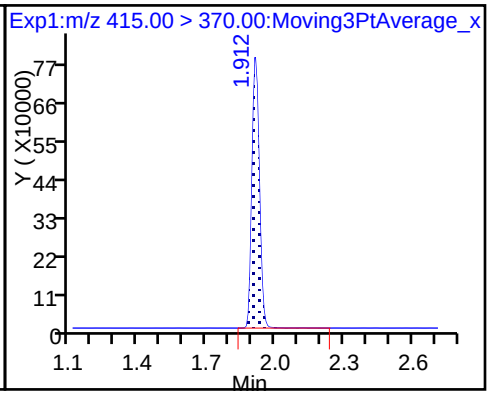


4 Perfluoroheptanoic acid (ND)

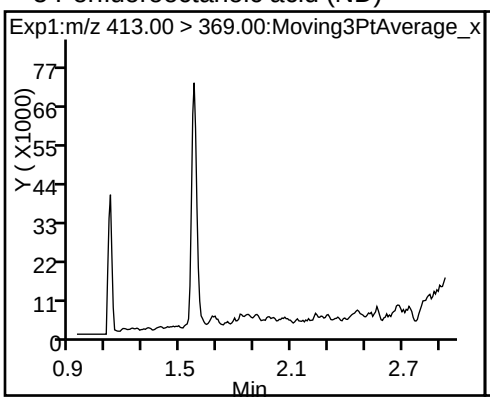


3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA

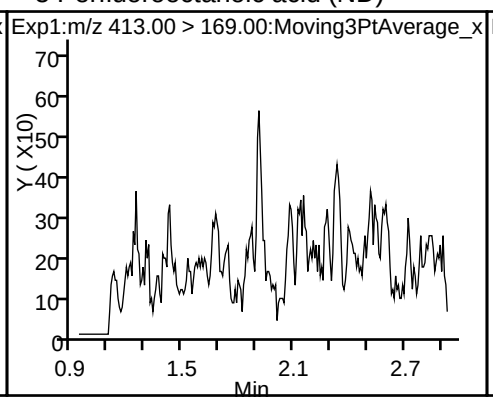




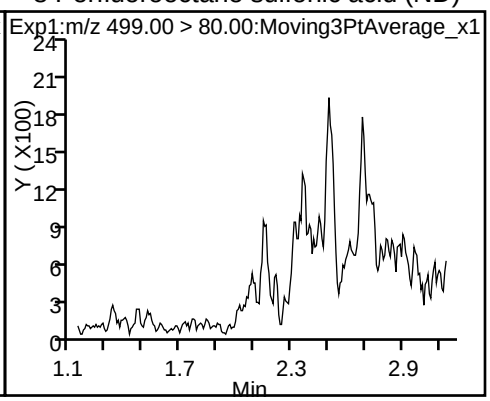
5 Perfluorooctanoic acid (ND)



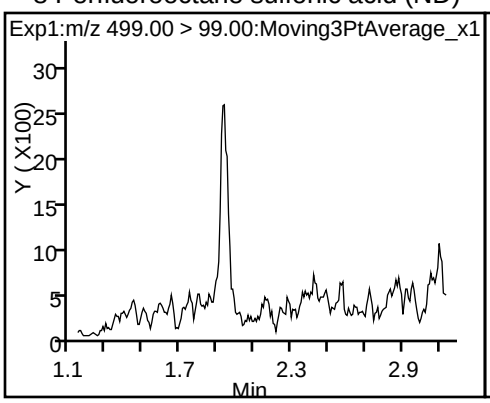
5 Perfluorooctanoic acid (ND)

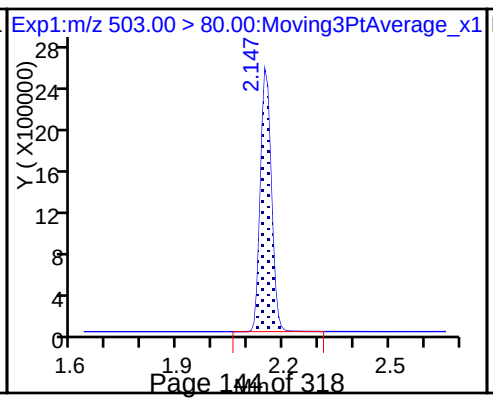


8 Perfluorooctane sulfonic acid (ND)

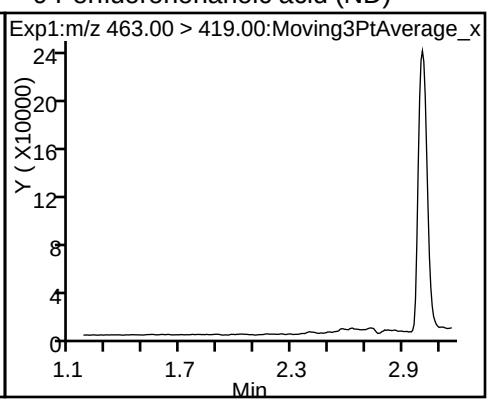


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

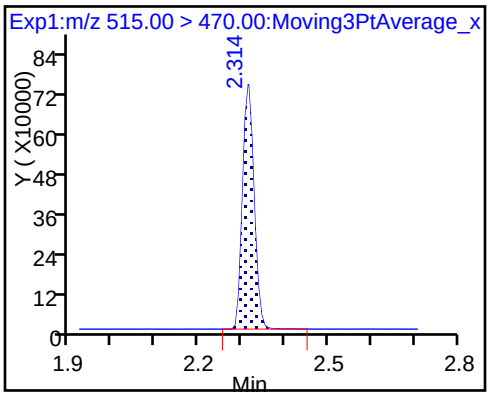




9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
84
72
60
48
36
24
12
0
Y (X10000)
1.9
2.2
2.5
2.8
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_015.d				
Lims ID:	320-31214-A-8-A				
Client ID:	NAWC-083017-FRB-351				
Sample Type:	Client				
Inject. Date:	08-Sep-2017 21:48:33	ALS Bottle#:	11	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-31214-a-8-a				
Misc. Info.:	Plate: 1 Rack: 3				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	11-Sep-2017 15:23:47	Calib Date:	08-Sep-2017 13:51:29		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK011				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.3	103.45
$ 10 13C2 PFDA	10.0	11.7	117.44

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-RW-350 | Lab Sample ID: 320-31214-9

Matrix: Water | Lab File ID: 2017.09.08_537C_016.d

Analysis Method: 537 | Date Collected: 08/30/2017 11:45

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 250.8(mL) | Date Analyzed: 09/08/2017 21:53

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

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

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

Analysis Batch No.: 183773 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	J	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	11	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		70-130
STL00996	13C2 PFDA	113		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_016.d
Lims ID: 320-31214-A-9-A
Client ID: NAWC-083017-RW-350
Sample Type: Client
Inject. Date: 08-Sep-2017 21:53:19 ALS Bottle#: 12 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-9-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:47 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:15:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.440	-0.006	1.000	729186	3.55		278	
298.90 > 99.00	1.434	1.440	-0.006	1.000	503205		1.45(0.00-0.00)	313	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	1796399	7.89		10820	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.736	-0.014	1.000	169780	0.9636		16.7	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.739	-0.017	1.000	167473	0.5384		50.4	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1886645	10.0		9569	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.912	1.933	-0.021	1.000	476076	2.72		19.2	
413.00 > 169.00	1.912	1.933	-0.021	1.000	269584		1.77(0.00-0.00)	497	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.147	2.140	0.007	1.000	654403	3.62		157	
499.00 > 99.00	2.147	2.140	0.007	1.000	120538		5.43(0.00-0.00)	83.0	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.164	-0.017		5586809	28.7		2140	
9 Perfluorononanoic acid									
463.00 > 419.00	2.155	2.171	-0.016	1.000	98210	0.8027		4.0	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1435522	11.3		11209	

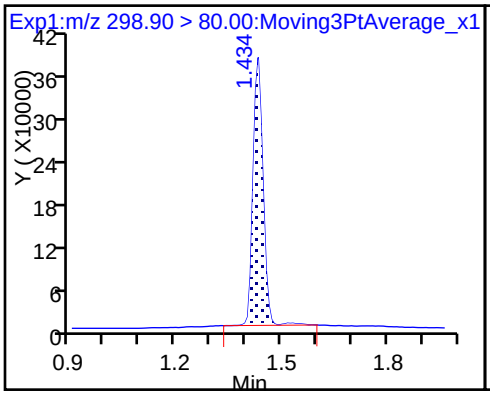
Report Date: 11-Sep-2017 15:23:49 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

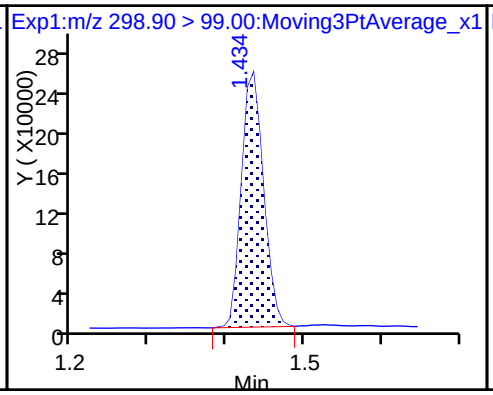
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_016.d

Injection Date:	08-Sep-2017 21:53:19	Instrument ID:	A8_N		
Lims ID:	320-31214-A-9-A	Lab Sample ID:	320-31214-9		
Client ID:	NAWC-083017-RW-350				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

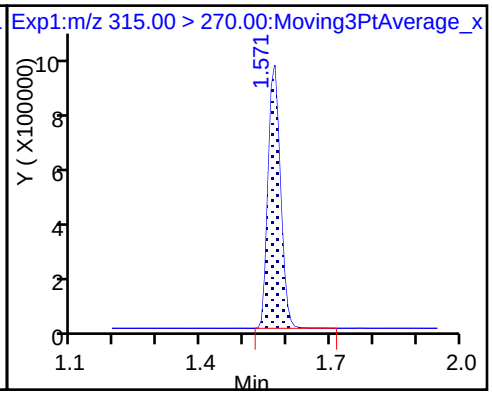
1 Perfluorobutanesulfonic acid



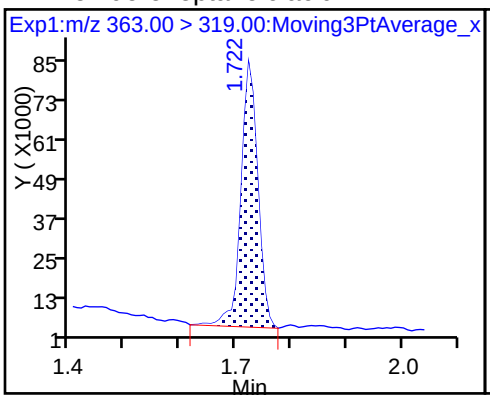
1 Perfluorobutanesulfonic acid



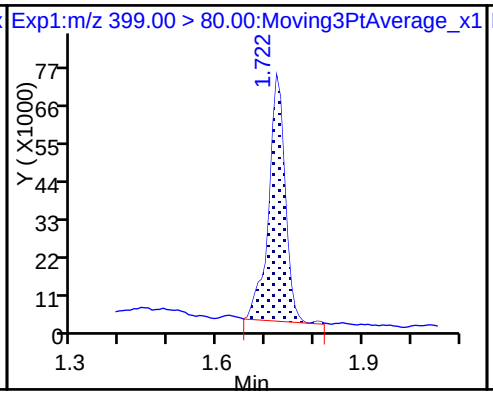
$ 2 13C2 PFHxA



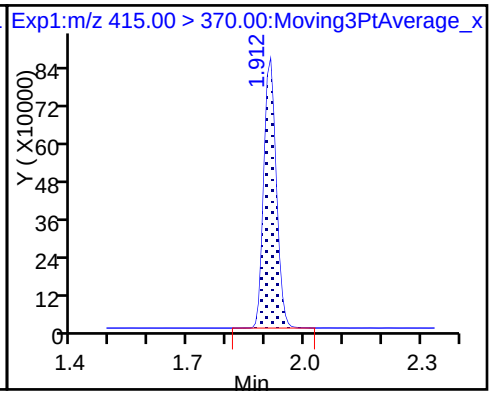
4 Perfluoroheptanoic acid



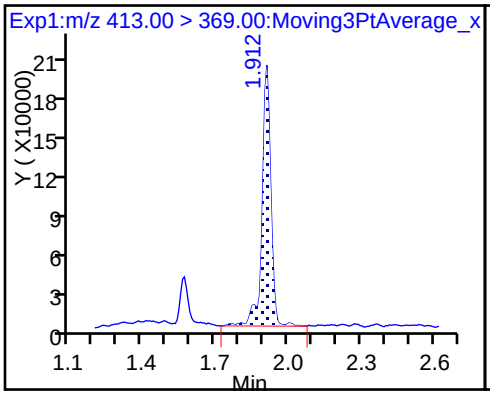
3 Perfluorohexanesulfonic acid



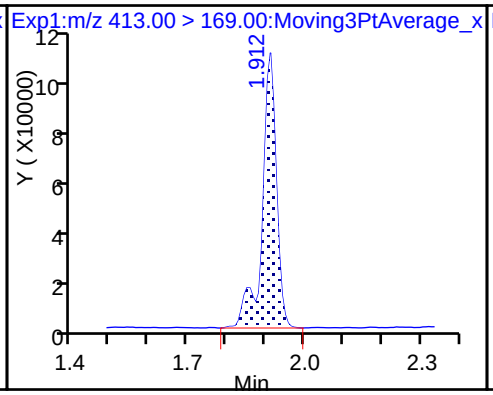
* 6 13C2-PFOA



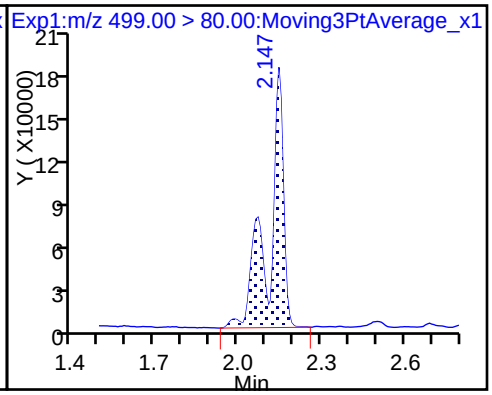
5 Perfluorooctanoic acid



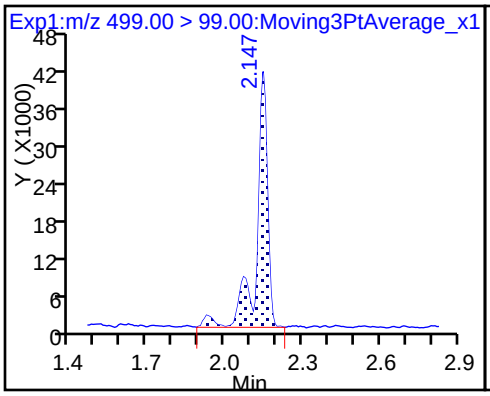
5 Perfluorooctanoic acid



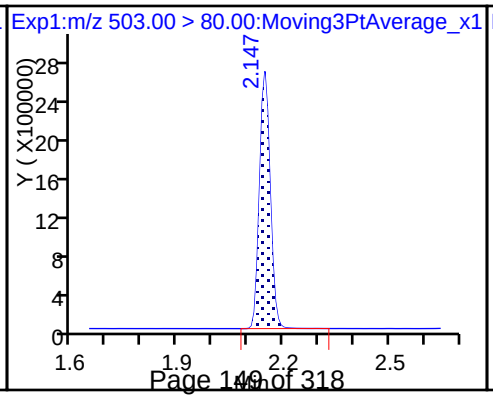
8 Perfluorooctane sulfonic acid



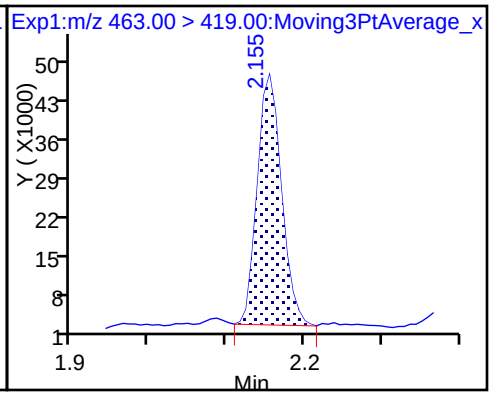
8 Perfluorooctane sulfonic acid



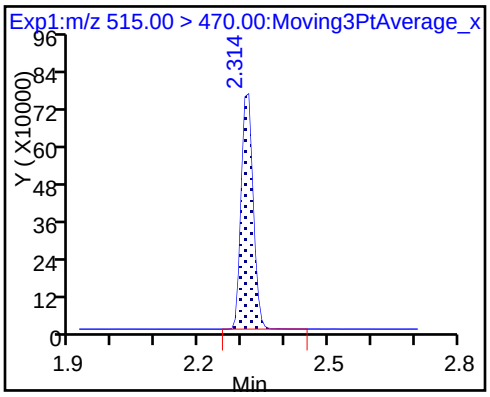
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
96
84
72
60
48
36
24
12
0
1.9
2.2
2.5
2.8
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_016.d
Lims ID: 320-31214-A-9-A
Client ID: NAWC-083017-RW-350
Sample Type: Client
Inject. Date: 08-Sep-2017 21:53:19 ALS Bottle#: 12 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-9-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:47 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:15:57

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.89	78.92
$ 10 13C2 PFDA	10.0	11.3	113.30

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-FRB-350 | Lab Sample ID: 320-31214-10

Matrix: Water | Lab File ID: 2017.09.08_537C_017.d

Analysis Method: 537 | Date Collected: 08/30/2017 11:40

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 248.6(mL) | Date Analyzed: 09/08/2017 21:58

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.: 183773 | 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	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	97		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_017.d
Lims ID: 320-31214-A-10-A
Client ID: NAWC-083017-FRB-350
Sample Type: Client
Inject. Date: 08-Sep-2017 21:58:05 ALS Bottle#: 13 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-10-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:47 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	1989116	9.09		13079	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1812981	10.0		10089	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.164	-0.017		5436053	28.7		5589	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.320	-0.014	1.000	1176210	9.66		8979	

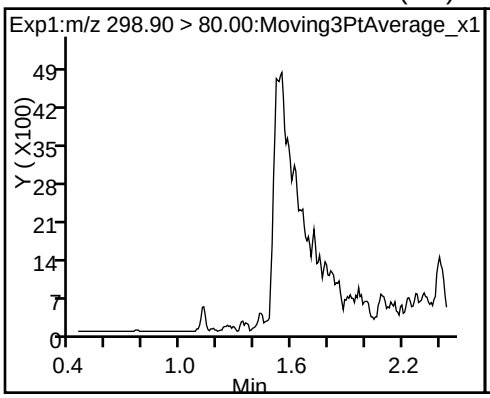
Report Date: 11-Sep-2017 15:23:50 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

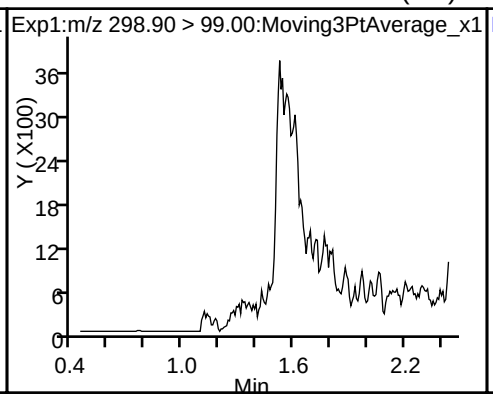
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_017.d

Injection Date:	08-Sep-2017 21:58:05	Instrument ID:	A8_N		
Lims ID:	320-31214-A-10-A	Lab Sample ID:	320-31214-10		
Client ID:	NAWC-083017-FRB-350				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

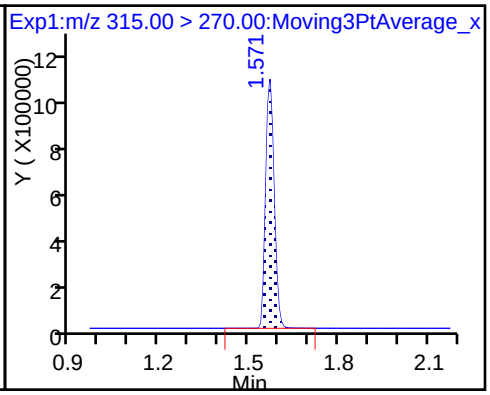
1 Perfluorobutanesulfonic acid (ND)



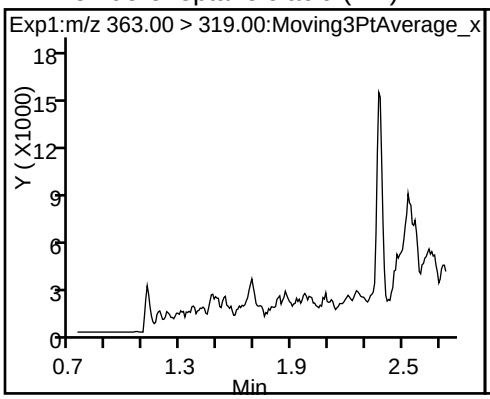
1 Perfluorobutanesulfonic acid (ND)



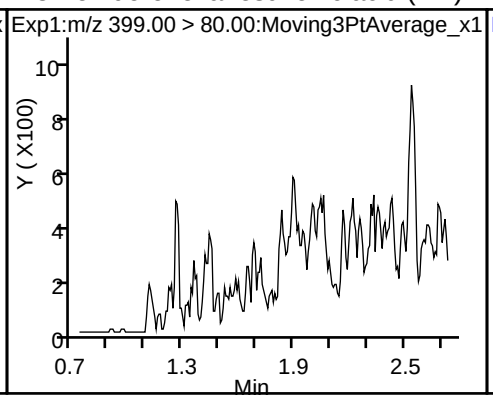
$ 2 13C2 PFHxA

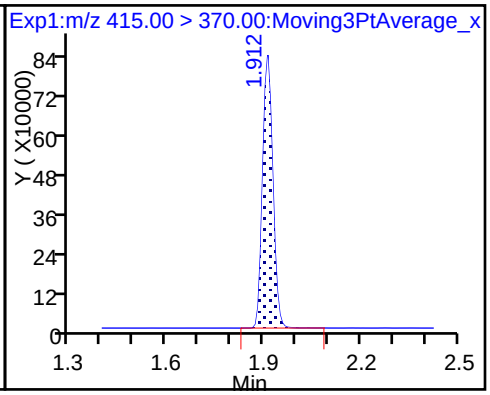


4 Perfluoroheptanoic acid (ND)

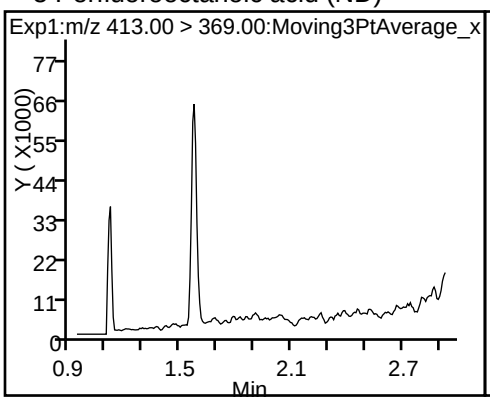


3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA

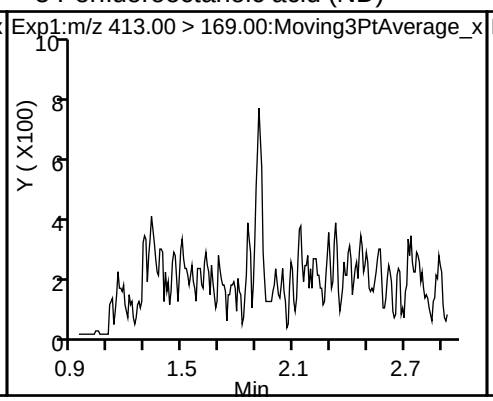




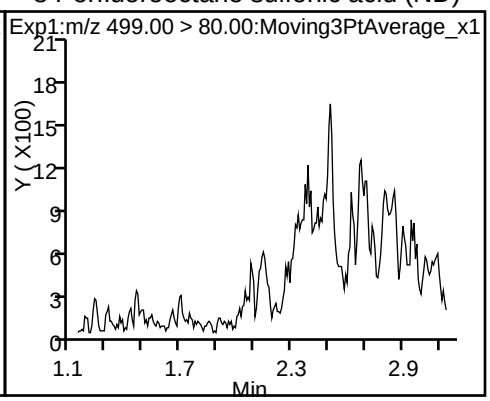
5 Perfluorooctanoic acid (ND)



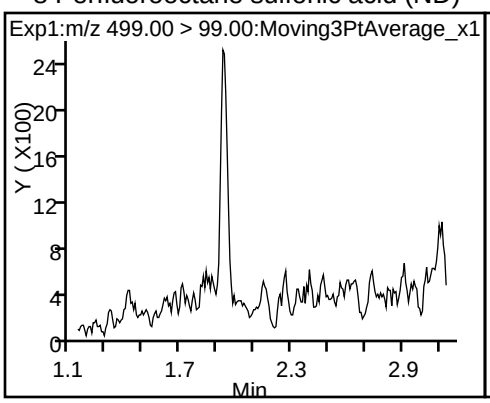
5 Perfluorooctanoic acid (ND)

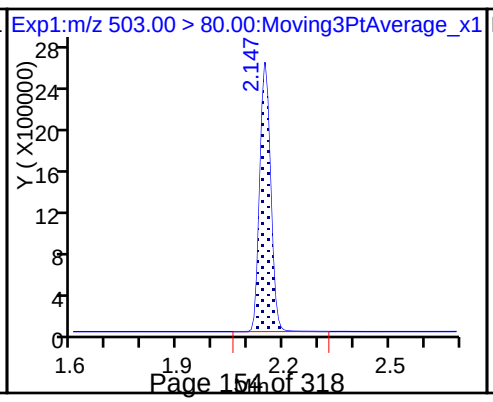


8 Perfluorooctane sulfonic acid (ND)

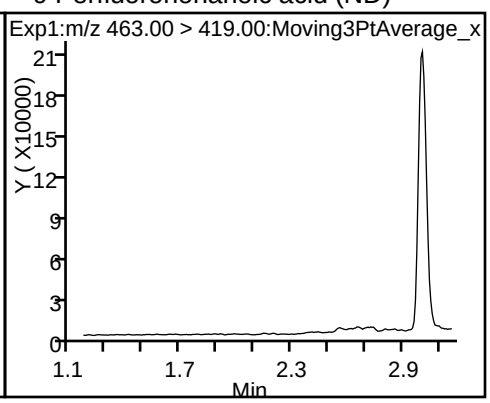


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

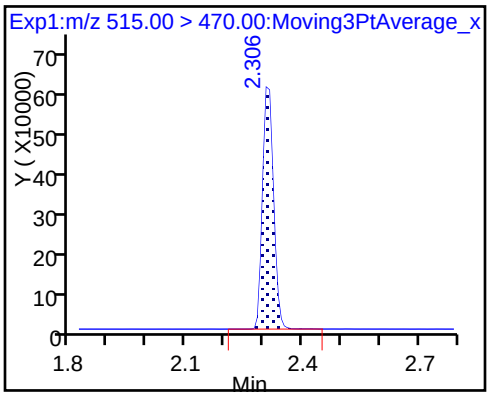




9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
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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\20170908-47701.b\2017.09.08_537C_017.d
Lims ID: 320-31214-A-10-A
Client ID: NAWC-083017-FRB-350
Sample Type: Client
Inject. Date: 08-Sep-2017 21:58:05 ALS Bottle#: 13 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-10-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:47 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.09	90.93
$ 10 13C2 PFDA	10.0	9.66	96.60

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-RW-3785 | Lab Sample ID: 320-31214-11

Matrix: Water | Lab File ID: 2017.09.08_537C_018.d

Analysis Method: 537 | Date Collected: 08/30/2017 15:35

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 259.4(mL) | Date Analyzed: 09/08/2017 22:02

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

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

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

Analysis Batch No.: 183773 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J M	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	22		19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U M	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	14	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.2	J	9.6	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	104		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_018.d
Lims ID: 320-31214-A-11-A
Client ID: WGNA-083017-RW-3785
Sample Type: Client
Inject. Date: 08-Sep-2017 22:02:50 ALS Bottle#: 14 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-11-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:47 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:16:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.440	-0.006	1.000	393830	2.00		150	
298.90 > 99.00	1.434	1.440	-0.006	1.000	279251		1.41(0.00-0.00)	189	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	1868363	8.67		10930	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.730	1.736	-0.006	1.000	266095	1.60		28.1	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.730	1.739	-0.009	1.000	1042837	3.52		394	
* 6 13C2-PFOA									
415.00 > 370.00	1.920	1.932	-0.012		1785771	10.0		10246	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.920	1.933	-0.013	1.000	961089	5.81		33.6	
413.00 > 169.00	1.920	1.933	-0.013	1.000	666644		1.44(0.00-0.00)	757	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.155	2.140	0.015	1.000	873767	5.07		241	M
499.00 > 99.00	2.155	2.140	0.015	1.000	168604		5.18(0.00-0.00)	130	M
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.164	-0.009		5328103	28.7		3560	
9 Perfluorononanoic acid									M
463.00 > 419.00	2.162	2.171	-0.009	1.000	41343	0.3570		1.5	M
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1244370	10.4		8860	

QC Flag Legend

Review Flags

M - Manually Integrated

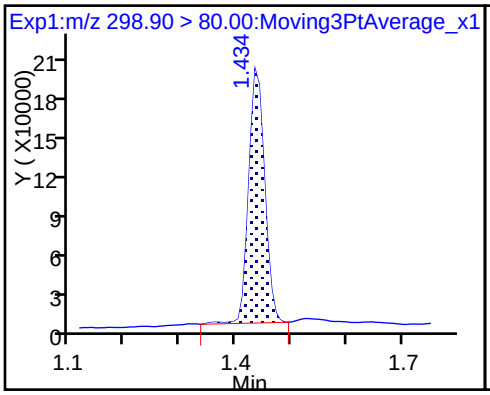
Report Date: 11-Sep-2017 15:23:51 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

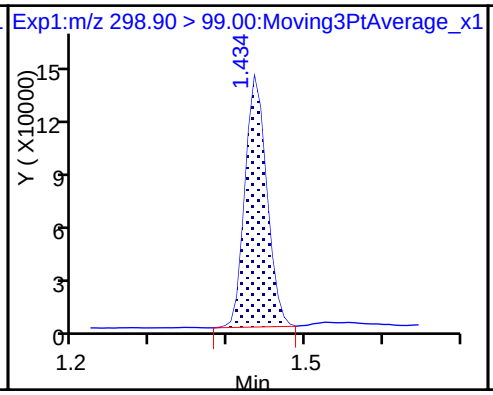
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_018.d

Injection Date:	08-Sep-2017 22:02:50	Instrument ID:	A8_N		
Lims ID:	320-31214-A-11-A	Lab Sample ID:	320-31214-11		
Client ID:	WGNA-083017-RW-3785				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

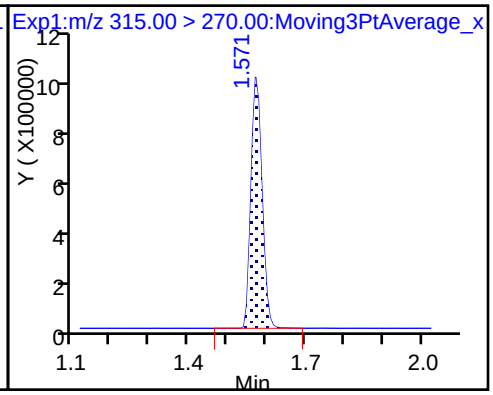
1 Perfluorobutanesulfonic acid



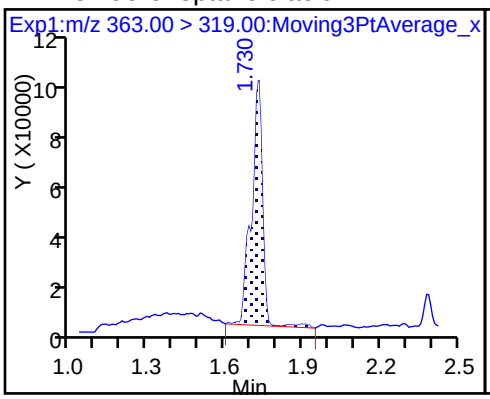
1 Perfluorobutanesulfonic acid



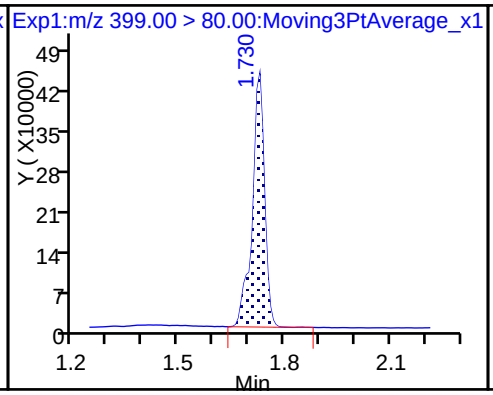
$ 2 13C2 PFHxA



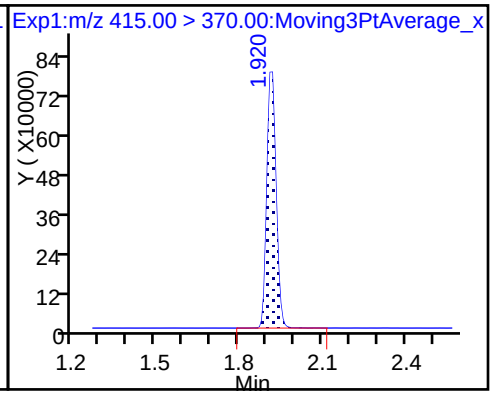
4 Perfluoroheptanoic acid



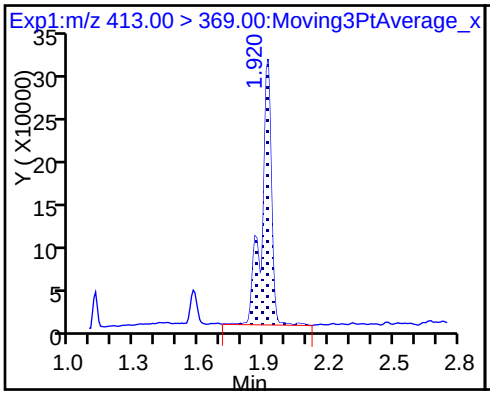
3 Perfluorohexanesulfonic acid



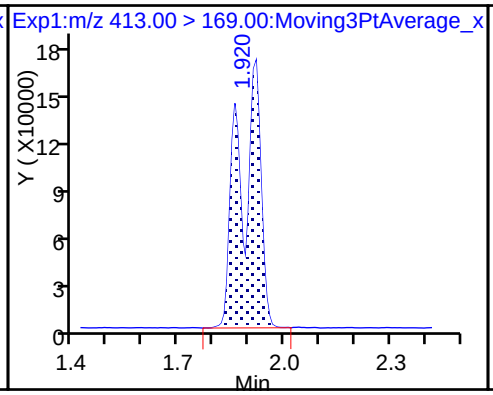
* 6 13C2-PFOA



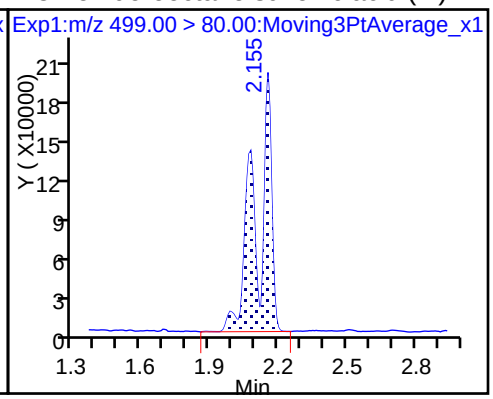
5 Perfluorooctanoic acid



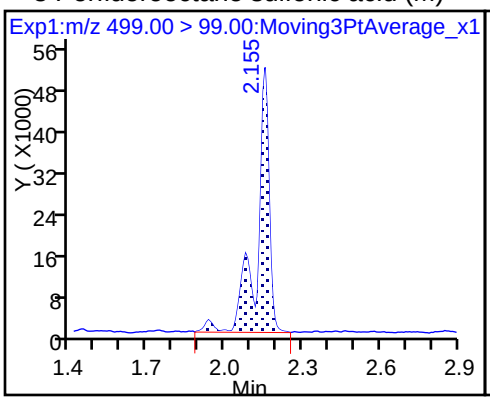
5 Perfluorooctanoic acid



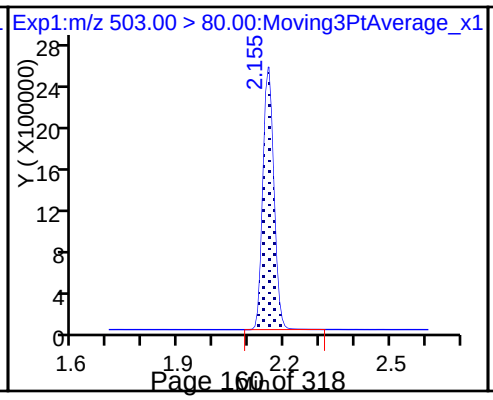
8 Perfluorooctane sulfonic acid (M)



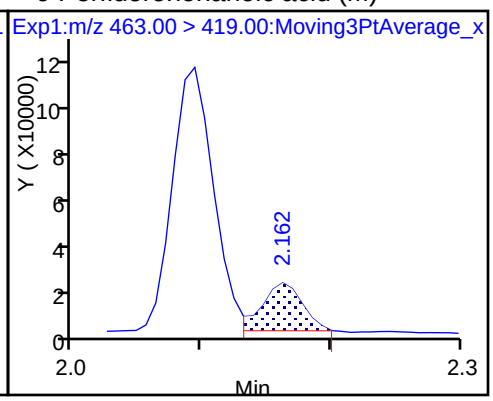
8 Perfluorooctane sulfonic acid (M)



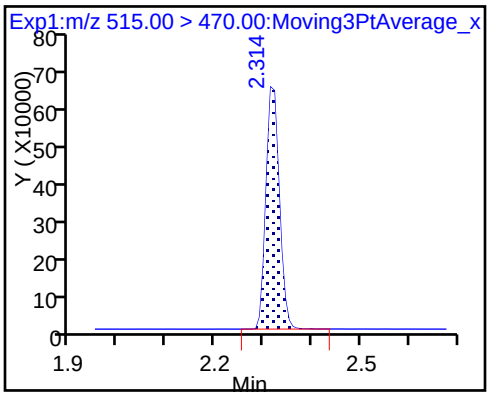
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
80
70
60
50
40
30
20
10
0
1.9
2.2
2.5
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_018.d				
Lims ID:	320-31214-A-11-A				
Client ID:	WGNA-083017-RW-3785				
Sample Type:	Client				
Inject. Date:	08-Sep-2017 22:02:50	ALS Bottle#:	14	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-31214-a-11-a				
Misc. Info.:	Plate: 1 Rack: 3				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	11-Sep-2017 15:23:47	Calib Date:	08-Sep-2017 13:51:29		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK011				
First Level Reviewer: barnettj		Date:	11-Sep-2017 11:16:27		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.67	86.71
$ 10 13C2 PFDA	10.0	10.4	103.76

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

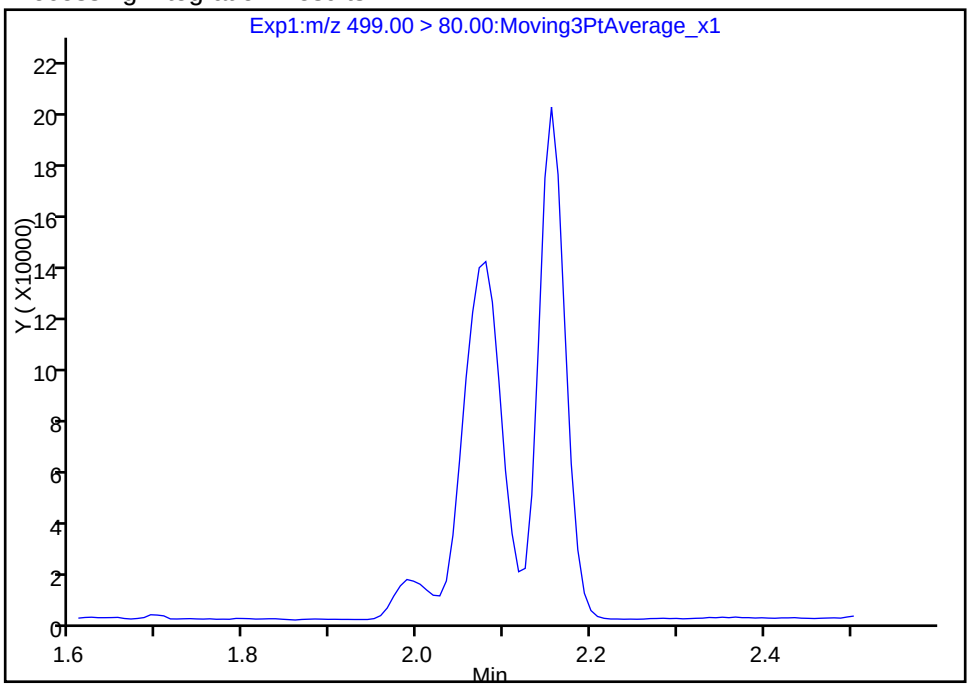
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_018.d				
Injection Date:	08-Sep-2017 22:02:50	Instrument ID:	A8_N		
Lims ID:	320-31214-A-11-A	Lab Sample ID:	320-31214-11		
Client ID:	WGNA-083017-RW-3785				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

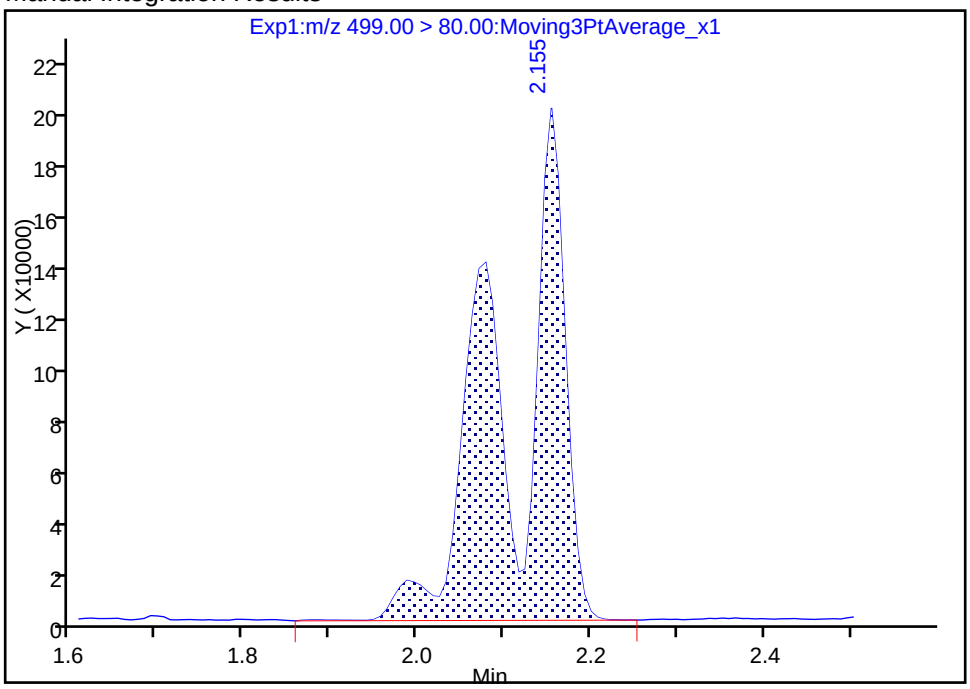
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 873767
Amount: 5.071073
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:16:08
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

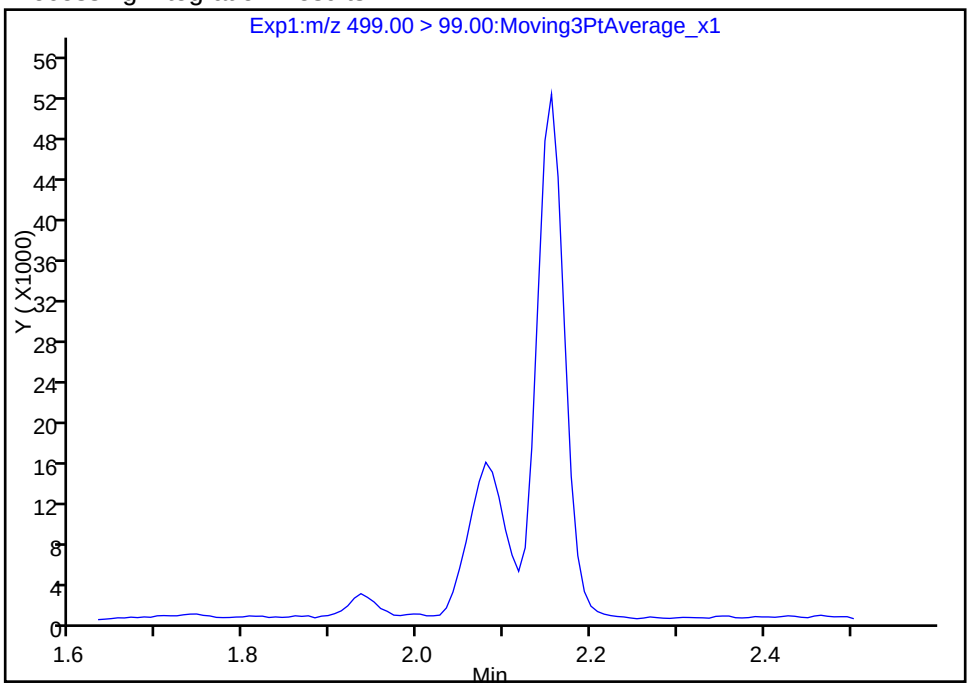
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_018.d				
Injection Date:	08-Sep-2017 22:02:50	Instrument ID:	A8_N		
Lims ID:	320-31214-A-11-A	Lab Sample ID:	320-31214-11		
Client ID:	WGNA-083017-RW-3785				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 2

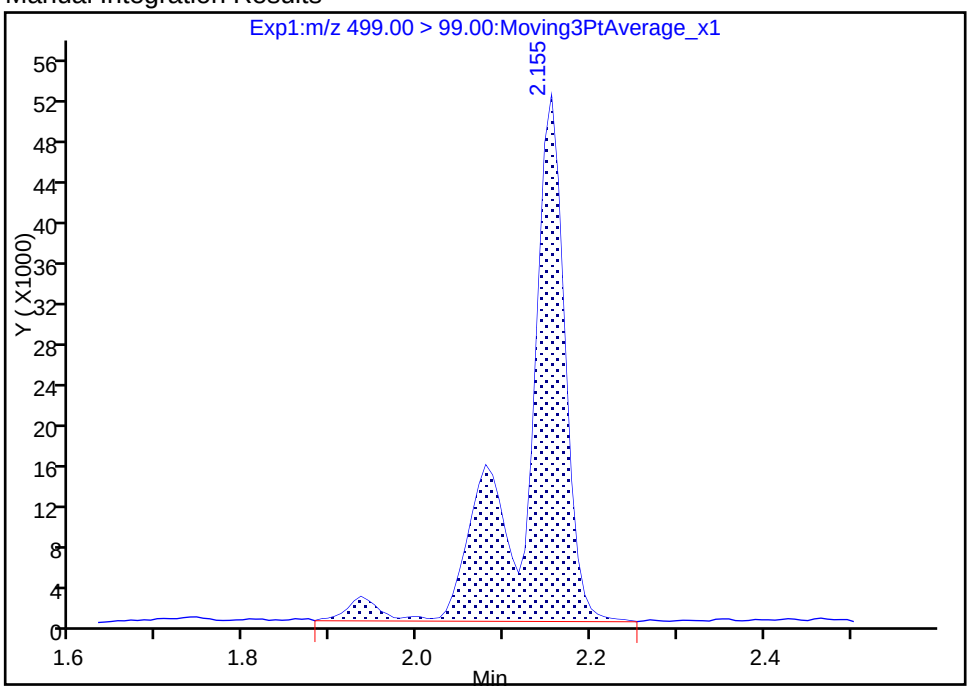
Processing Integration Results

Not Detected
Expected RT: 2.14



Manual Integration Results

RT: 2.15
Area: 168604
Amount: 5.071073
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:16:21
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

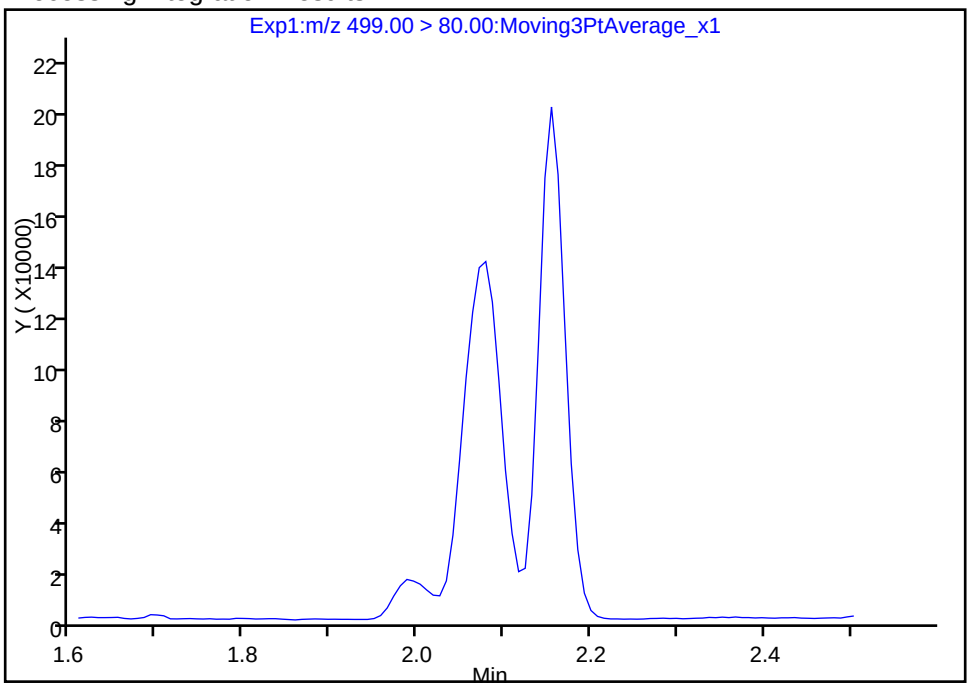
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_018.d				
Injection Date:	08-Sep-2017 22:02:50	Instrument ID:	A8_N		
Lims ID:	320-31214-A-11-A	Lab Sample ID:	320-31214-11		
Client ID:	WGNA-083017-RW-3785				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

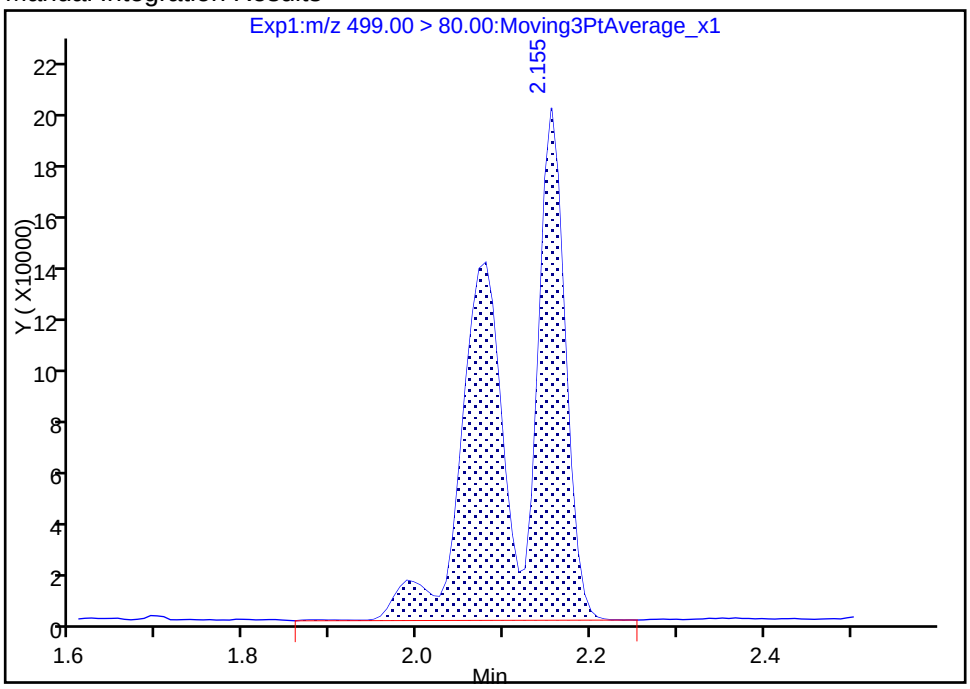
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 873767
Amount: 5.071073
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:16:21
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

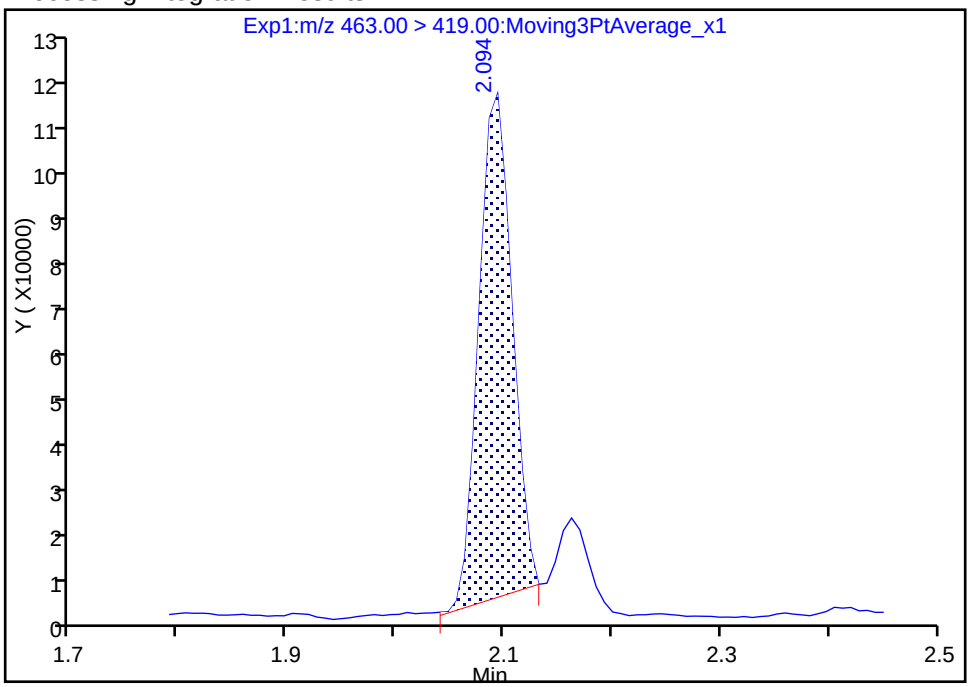
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_018.d				
Injection Date:	08-Sep-2017 22:02:50	Instrument ID:	A8_N		
Lims ID:	320-31214-A-11-A	Lab Sample ID:	320-31214-11		
Client ID:	WGNA-083017-RW-3785				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

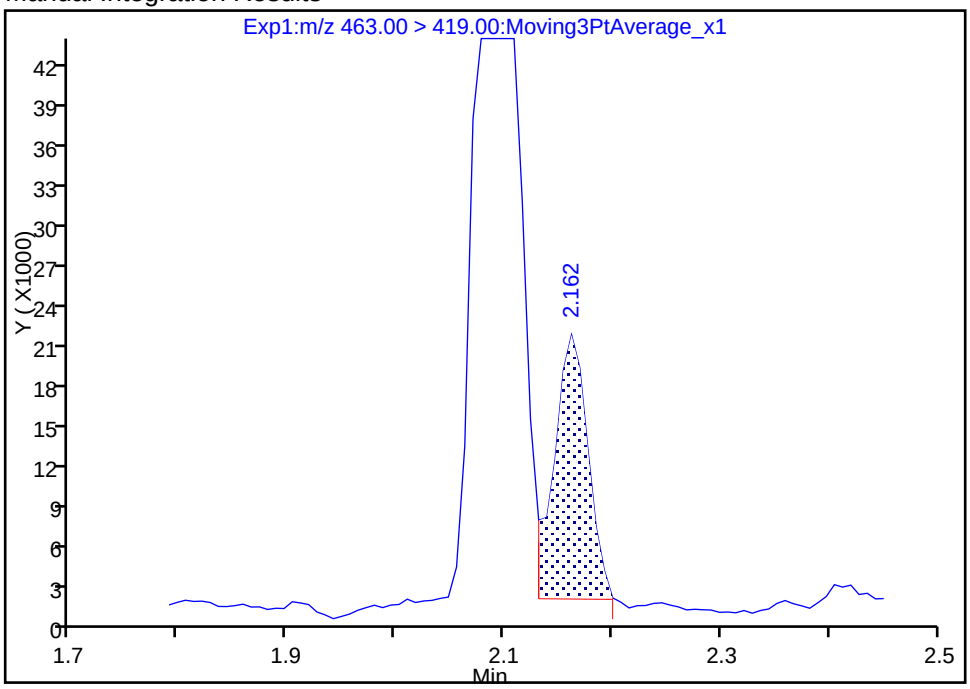
Processing Integration Results

RT: 2.09
Area: 220602
Amount: 1.904933
Amount Units: ng/ml



Manual Integration Results

RT: 2.16
Area: 41343
Amount: 0.357003
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 15:21:02

Audit Action: Manually Integrated Audit Reason: Wrong peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-FRB-3785 | Lab Sample ID: 320-31214-12

Matrix: Water | Lab File ID: 2017.09.08_537C_019.d

Analysis Method: 537 | Date Collected: 08/30/2017 15:30

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 258(mL) | Date Analyzed: 09/08/2017 22:07

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

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

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

Analysis Batch No.: 183773 | 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	99		70-130
STL00996	13C2 PFDA	112		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_019.d
Lims ID: 320-31214-A-12-A
Client ID: WGNA-083017-FRB-3785
Sample Type: Client
Inject. Date: 08-Sep-2017 22:07:36 ALS Bottle#: 15 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-12-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:47 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	2170567	9.91		14529	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1814551	10.0		10040	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.164	-0.017		5592600	28.7		5735	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1369615	11.2		11179	

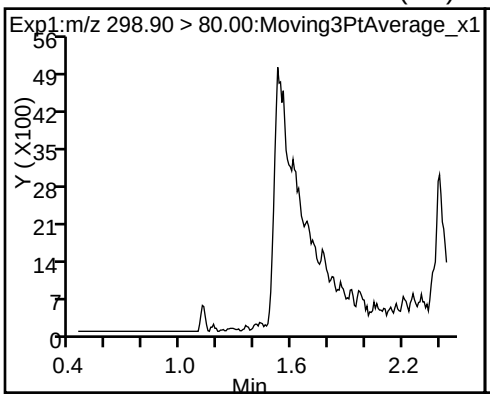
Report Date: 11-Sep-2017 15:23:52 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

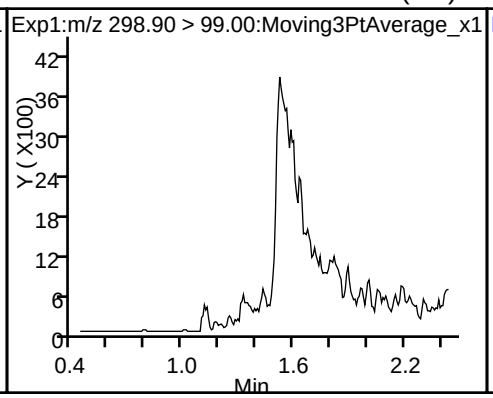
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_019.d

Injection Date:	08-Sep-2017 22:07:36	Instrument ID:	A8_N		
Lims ID:	320-31214-A-12-A	Lab Sample ID:	320-31214-12		
Client ID:	WGNA-083017-FRB-3785				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

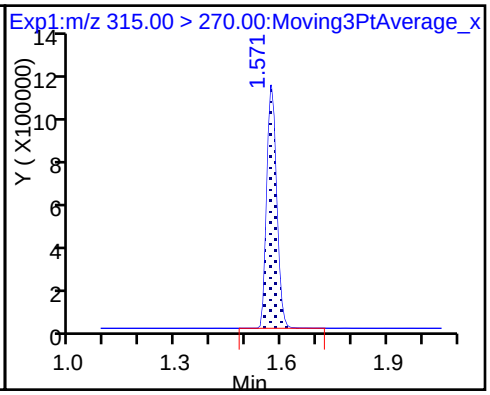
1 Perfluorobutanesulfonic acid (ND)



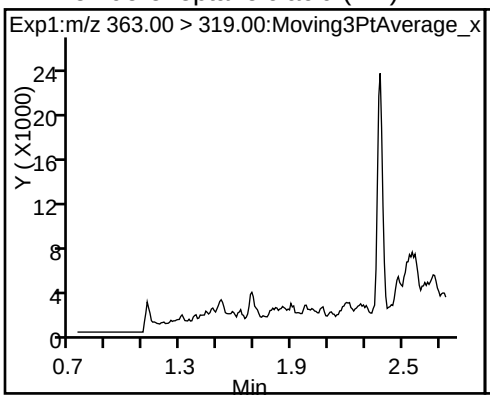
1 Perfluorobutanesulfonic acid (ND)



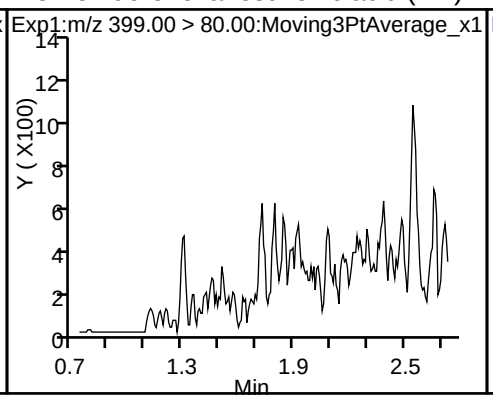
$ 2 13C2 PFHxA

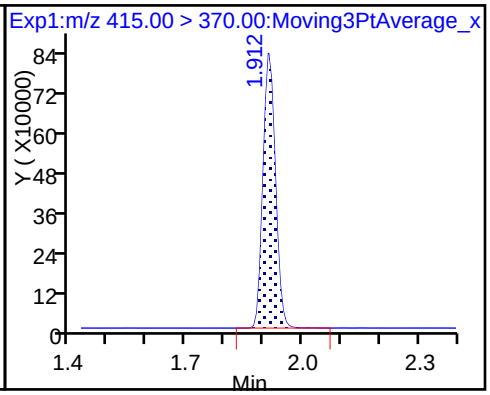


4 Perfluoroheptanoic acid (ND)

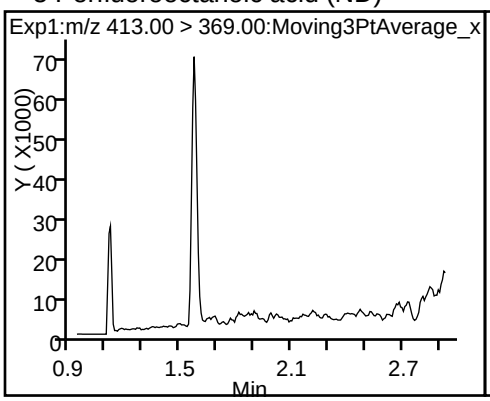


3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA

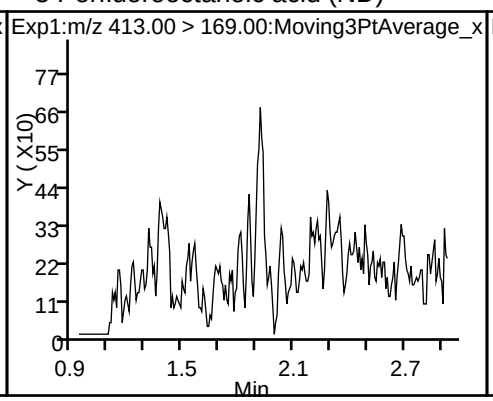




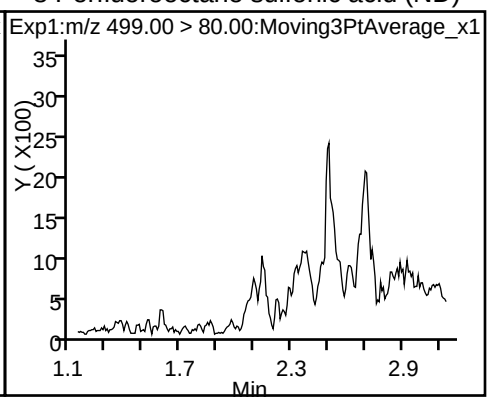
5 Perfluorooctanoic acid (ND)



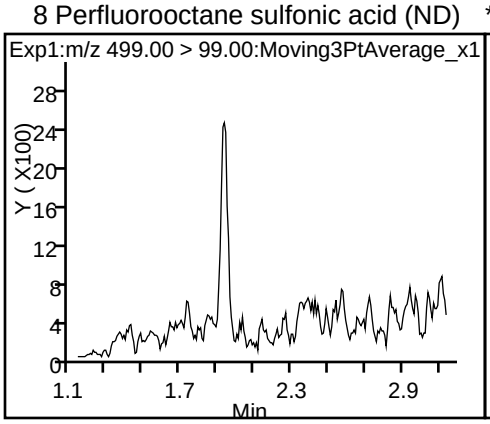
5 Perfluorooctanoic acid (ND)

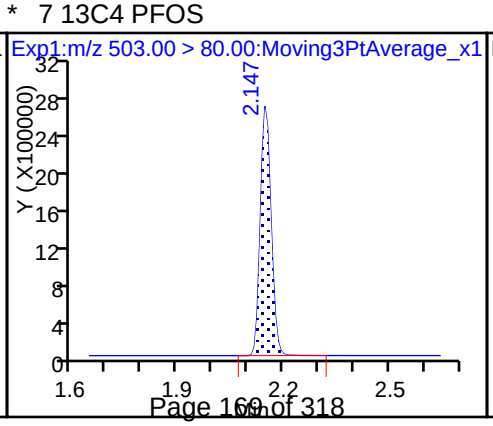


8 Perfluorooctane sulfonic acid (ND)

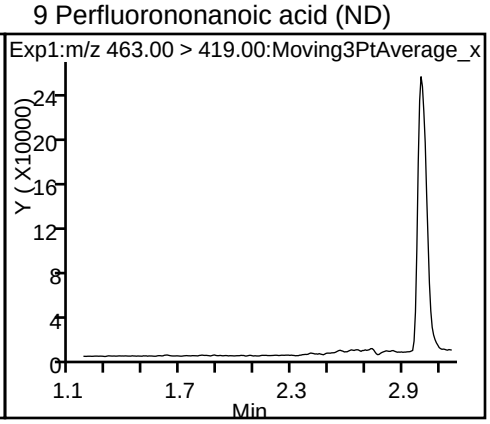


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

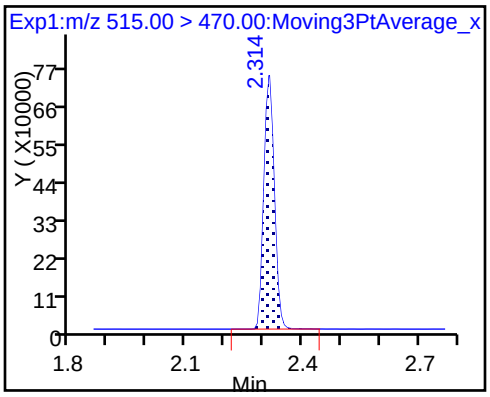




9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
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\20170908-47701.b\2017.09.08_537C_019.d				
Lims ID:	320-31214-A-12-A				
Client ID:	WGNA-083017-FRB-3785				
Sample Type:	Client				
Inject. Date:	08-Sep-2017 22:07:36	ALS Bottle#:	15	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-31214-a-12-a				
Misc. Info.:	Plate: 1 Rack: 3				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	11-Sep-2017 15:23:47	Calib Date:	08-Sep-2017 13:51:29		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK011				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.91	99.14
$ 10 13C2 PFDA	10.0	11.2	112.39

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-RW-0515 Lab Sample ID: 320-31214-13

Matrix: Water Lab File ID: 2017.09.08_537C_020.d

Analysis Method: 537 Date Collected: 08/30/2017 13:55

Extraction Method: 537 Date Extracted: 09/01/2017 08:39

Sample wt/vol: 256.3(mL) Date Analyzed: 09/08/2017 22:12

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

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

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

Analysis Batch No.: 183773 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	29	J	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	29		20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	26	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.1	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	91		70-130
STL00996	13C2 PFDA	108		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_020.d
Lims ID: 320-31214-A-13-A
Client ID: WGNA-083017-RW-0515
Sample Type: Client
Inject. Date: 08-Sep-2017 22:12:20 ALS Bottle#: 16 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-13-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:47 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:16:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.440	-0.006	1.000	595669	3.05		258	
298.90 > 99.00	1.434	1.440	-0.006	1.000	413725		1.44(0.00-0.00)	261	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	1932032	9.09		13386	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.730	1.736	-0.006	1.000	256490	1.56		33.5	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.730	1.739	-0.009	1.000	1989172	6.73		840	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1762397	10.0		10580	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.912	1.933	-0.021	1.000	1231322	7.54		46.8	
413.00 > 169.00	1.912	1.933	-0.021	1.000	762389		1.62(0.00-0.00)	1273	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.147	2.140	0.007	1.000	1258959	7.33		436	
499.00 > 99.00	2.147	2.140	0.007	1.000	224314		5.61(0.00-0.00)	147	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.164	-0.017		5309757	28.7		4096	
9 Perfluorononanoic acid									
463.00 > 419.00	2.155	2.171	-0.016	1.000	47054	0.4117		2.0	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1279787	10.8		9027	

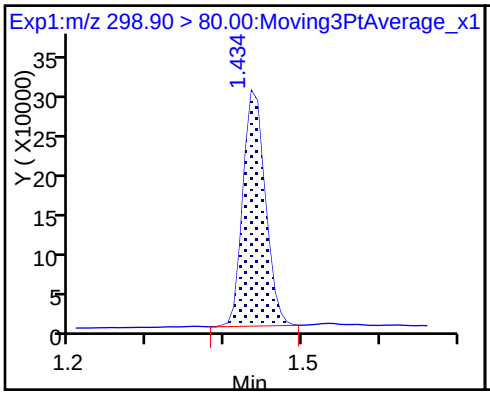
Report Date: 11-Sep-2017 15:23:52 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

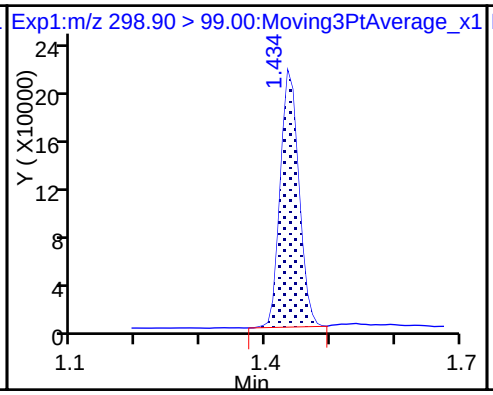
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_020.d

Injection Date:	08-Sep-2017 22:12:20	Instrument ID:	A8_N		
Lims ID:	320-31214-A-13-A	Lab Sample ID:	320-31214-13		
Client ID:	WGNA-083017-RW-0515				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	20
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

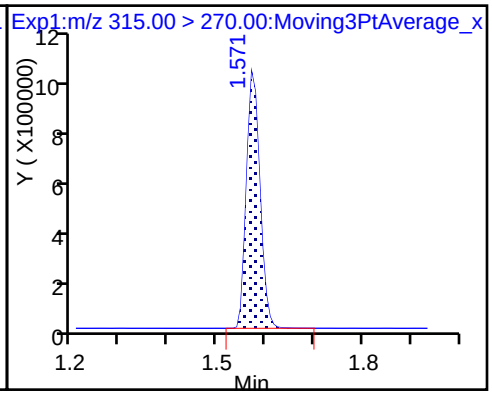
1 Perfluorobutanesulfonic acid



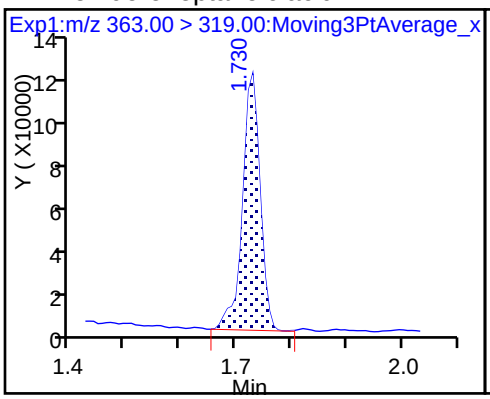
1 Perfluorobutanesulfonic acid



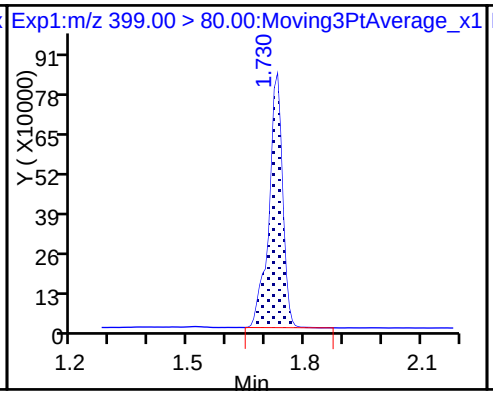
$ 2 13C2 PFHxA



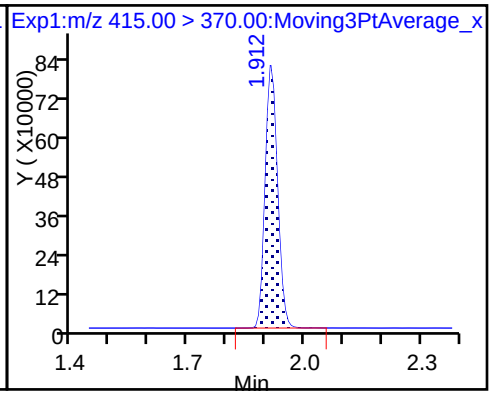
4 Perfluoroheptanoic acid



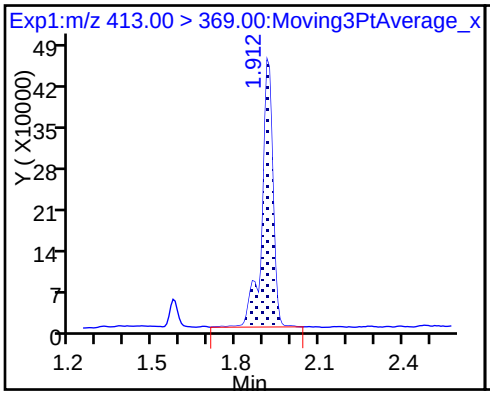
3 Perfluorohexanesulfonic acid



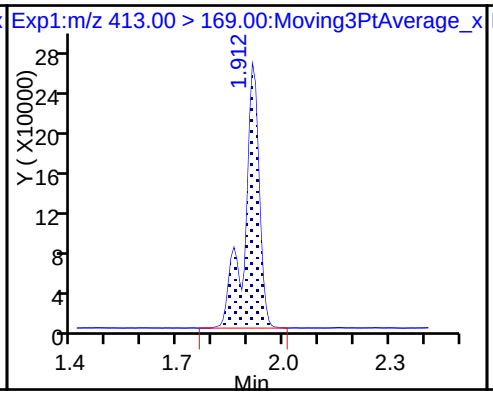
* 6 13C2-PFOA



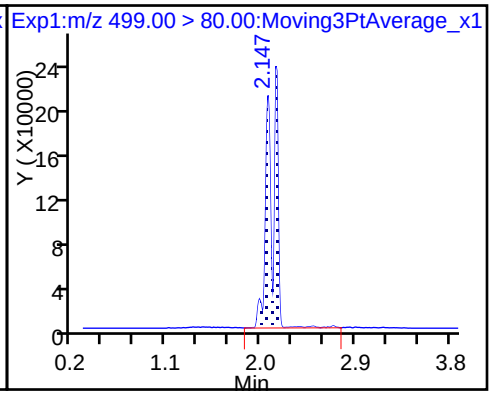
5 Perfluorooctanoic acid



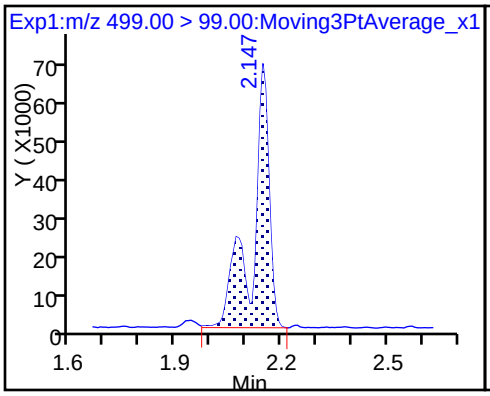
5 Perfluorooctanoic acid



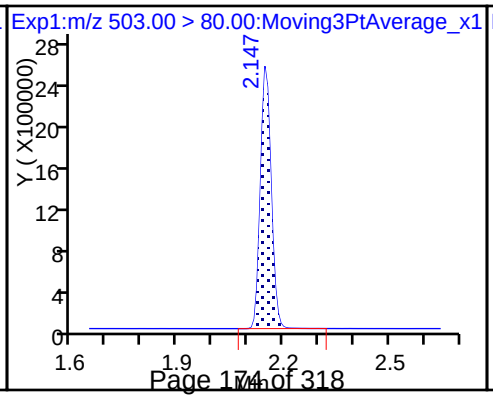
8 Perfluorooctane sulfonic acid



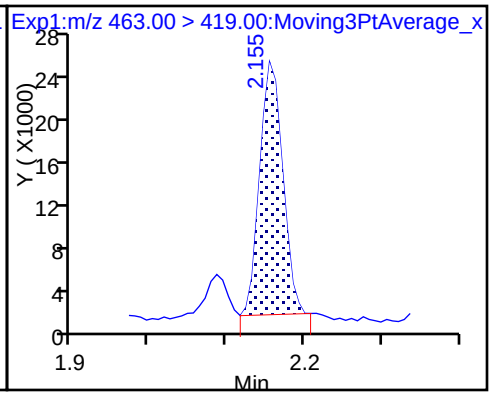
8 Perfluorooctane sulfonic acid



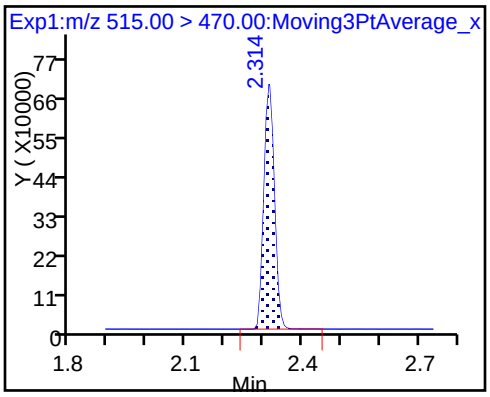
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA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Y (X10000)
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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\20170908-47701.b\2017.09.08_537C_020.d
Lims ID: 320-31214-A-13-A
Client ID: WGNA-083017-RW-0515
Sample Type: Client
Inject. Date: 08-Sep-2017 22:12:20 ALS Bottle#: 16 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-13-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:47 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:16:44

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.09	90.86
$ 10 13C2 PFDA	10.0	10.8	108.13

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-FRB-0515 | Lab Sample ID: 320-31214-14

Matrix: Water | Lab File ID: 2017.09.08_537C_021.d

Analysis Method: 537 | Date Collected: 08/30/2017 13:50

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 253.9(mL) | Date Analyzed: 09/08/2017 22:17

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

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

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

Analysis Batch No.: 183773 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.9	U	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	89	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	111		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_021.d
Lims ID: 320-31214-A-14-A
Client ID: WGNA-083017-FRB-0515
Sample Type: Client
Inject. Date: 08-Sep-2017 22:17:05 ALS Bottle#: 17 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-14-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:47 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.563	1.577	-0.014	1.000	2076347	9.62		13196	
* 6 13C2-PFOA									
415.00 > 370.00	1.904	1.932	-0.028		1789308	10.0		10807	
* 7 13C4 PFOS									
503.00 > 80.00	2.140	2.164	-0.024		5256598	28.7		4933	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.320	-0.014	1.000	1328495	11.1		11057	

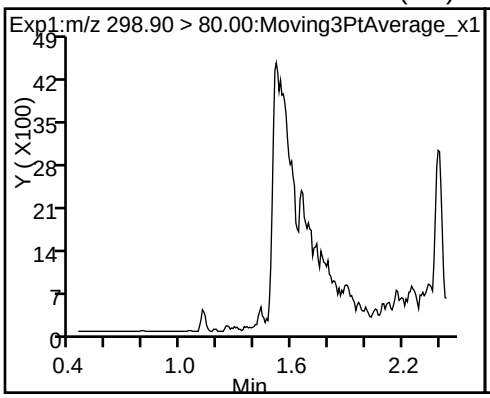
Report Date: 11-Sep-2017 15:23:53 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

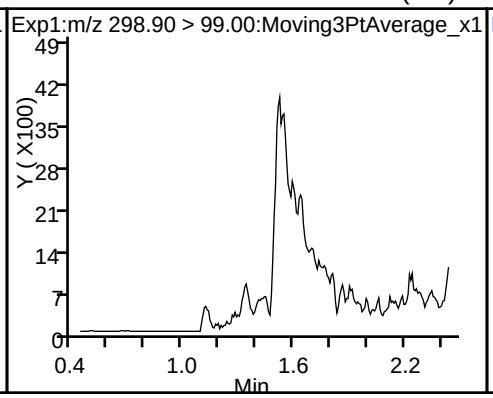
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_021.d

Injection Date:	08-Sep-2017 22:17:05	Instrument ID:	A8_N		
Lims ID:	320-31214-A-14-A	Lab Sample ID:	320-31214-14		
Client ID:	WGNA-083017-FRB-0515				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	21
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

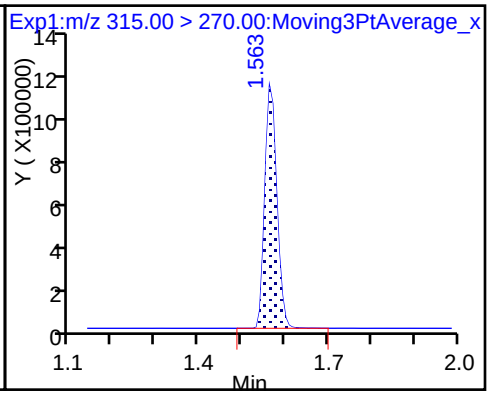
1 Perfluorobutanesulfonic acid (ND)



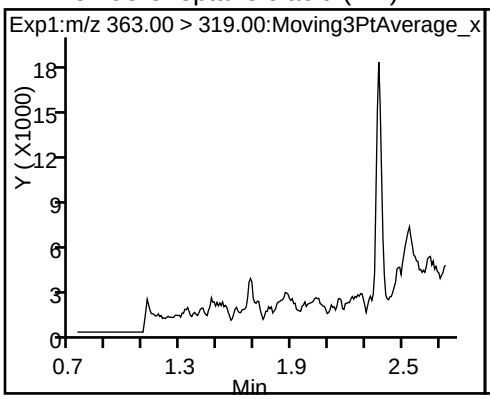
1 Perfluorobutanesulfonic acid (ND)



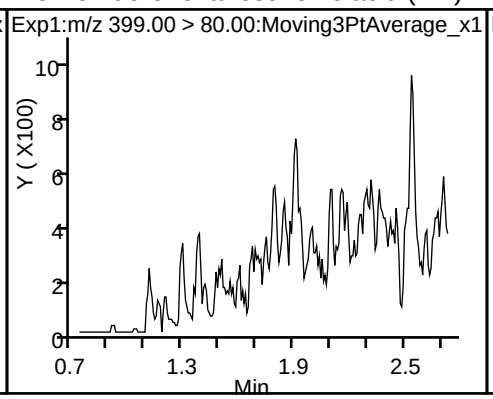
$ 2 13C2 PFHxA

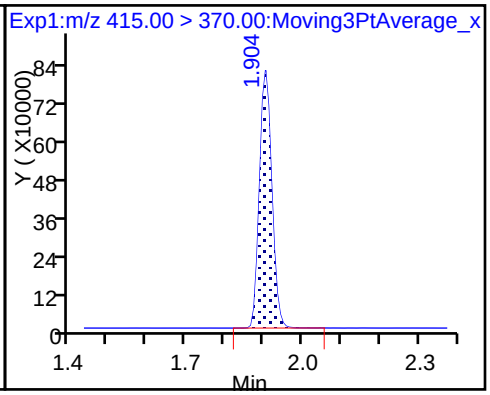


4 Perfluoroheptanoic acid (ND)

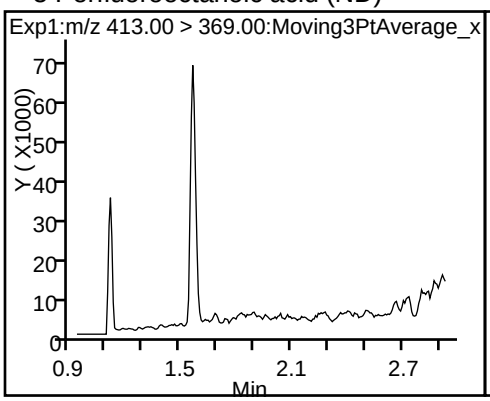


3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA

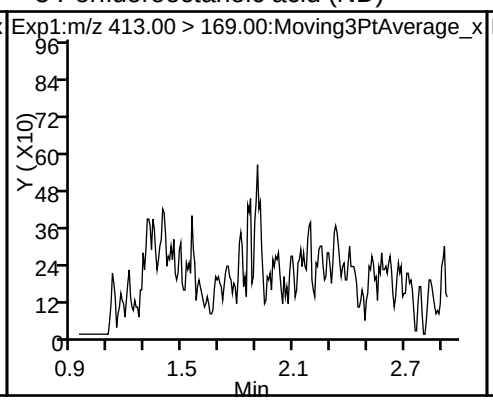




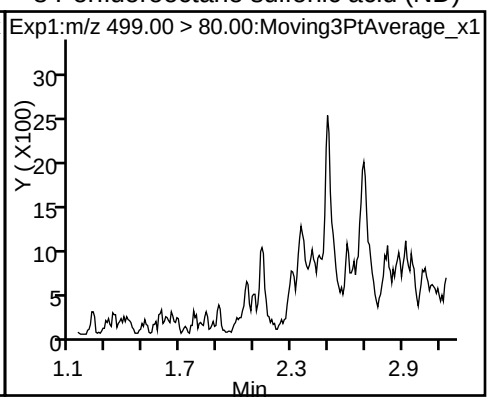
5 Perfluorooctanoic acid (ND)



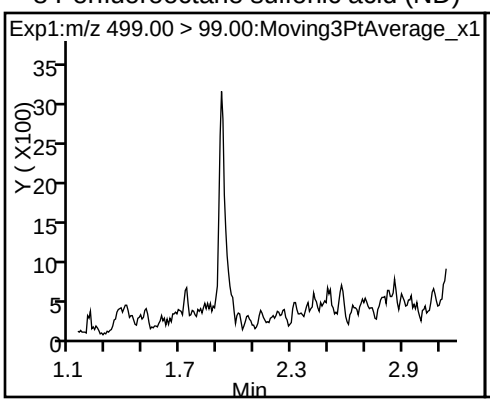
5 Perfluorooctanoic acid (ND)

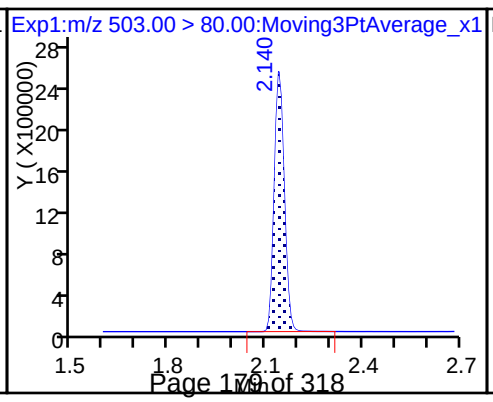


8 Perfluorooctane sulfonic acid (ND)

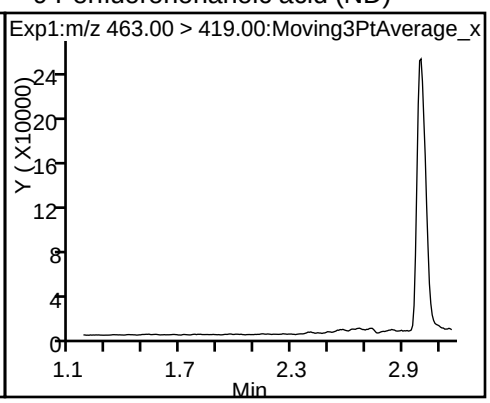


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

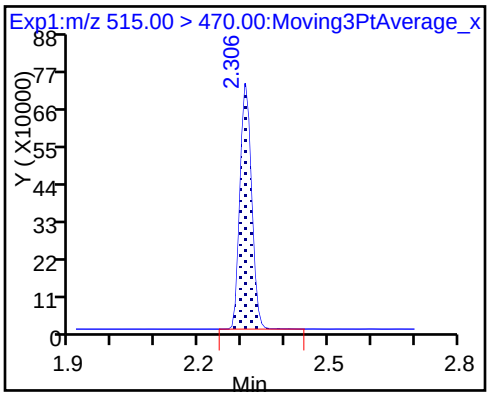




9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA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Y (X10000)
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77
66
55
44
33
22
11
0
1.9
2.2
2.5
2.8
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_021.d				
Lims ID:	320-31214-A-14-A				
Client ID:	WGNA-083017-FRB-0515				
Sample Type:	Client				
Inject. Date:	08-Sep-2017 22:17:05	ALS Bottle#:	17	Worklist Smp#:	21
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-31214-a-14-a				
Misc. Info.:	Plate: 1 Rack: 3				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	11-Sep-2017 15:23:47	Calib Date:	08-Sep-2017 13:51:29		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK011				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.62	96.18
$ 10 13C2 PFDA	10.0	11.1	110.55

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-RW-3220 Lab Sample ID: 320-31214-15

Matrix: Water Lab File ID: 2017.09.08_537C_022.d

Analysis Method: 537 Date Collected: 08/30/2017 14:20

Extraction Method: 537 Date Extracted: 09/01/2017 08:39

Sample wt/vol: 257.7(mL) Date Analyzed: 09/08/2017 22:21

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

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

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

Analysis Batch No.: 183773 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	40	M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	16	J	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U M	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	17	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	10		9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	98		87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		70-130
STL00996	13C2 PFDA	104		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_022.d
Lims ID: 320-31214-A-15-A
Client ID: WGNA-083017-RW-3220
Sample Type: Client
Inject. Date: 08-Sep-2017 22:21:49 ALS Bottle#: 18 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-15-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:47 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:17:21

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	1.440	-0.014	1.000	4991342	25.3		1896	
298.90 > 99.00	1.426	1.440	-0.014	1.000	3407364		1.46(0.00-0.00)	2318	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.563	1.577	-0.014	1.000	1776655	7.86		11622	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.736	-0.014	1.000	454278	2.60		55.4	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.739	-0.017	1.000	1398425	4.49		426	
* 6 13C2-PFOA									
415.00 > 370.00	1.904	1.932	-0.028		1873708	10.0		11411	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.904	1.933	-0.029	1.000	736568	4.24		30.0	
413.00 > 169.00	1.904	1.933	-0.029	1.000	409703		1.80(0.00-0.00)	834	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.140	2.140	0.0	1.000	1873684	10.3		548	M
499.00 > 99.00	2.140	2.140	0.0	1.000	402809		4.65(0.00-0.00)	315	
* 7 13C4 PFOS									
503.00 > 80.00	2.140	2.164	-0.024		5599865	28.7		3010	
9 Perfluorononanoic acid									M
463.00 > 419.00	2.147	2.171	-0.024	1.000	90813	0.7474		4.7	M
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.320	-0.014	1.000	1313283	10.4		10445	

QC Flag Legend

Review Flags

M - Manually Integrated

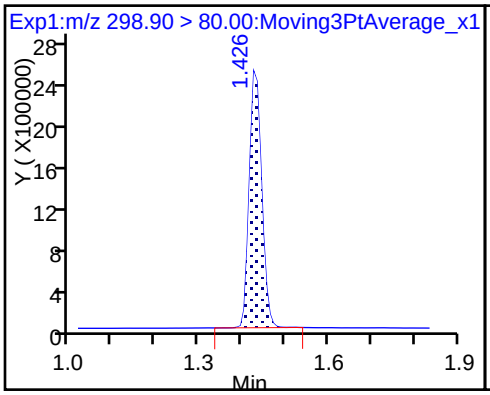
Report Date: 11-Sep-2017 15:23:53 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

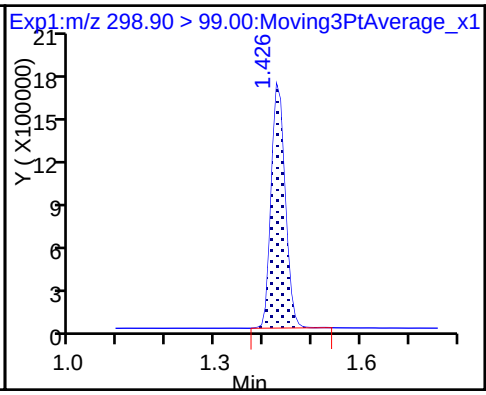
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_022.d

Injection Date:	08-Sep-2017 22:21:49	Instrument ID:	A8_N		
Lims ID:	320-31214-A-15-A	Lab Sample ID:	320-31214-15		
Client ID:	WGNA-083017-RW-3220				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	22
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

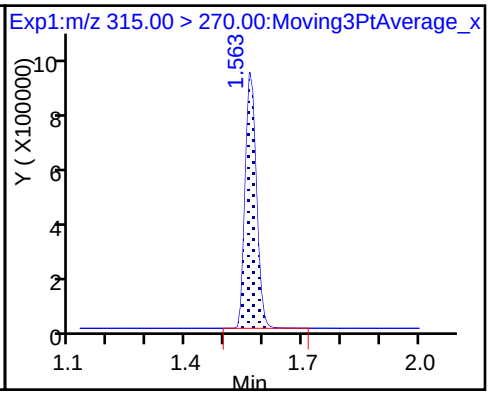
1 Perfluorobutanesulfonic acid



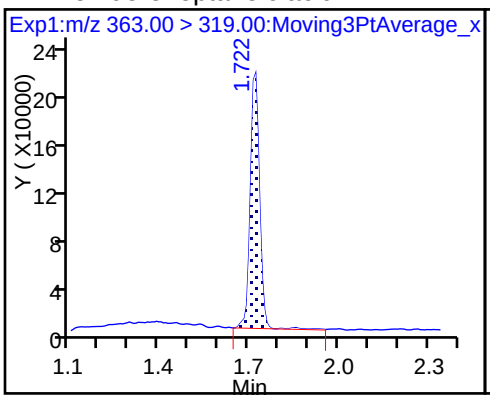
1 Perfluorobutanesulfonic acid



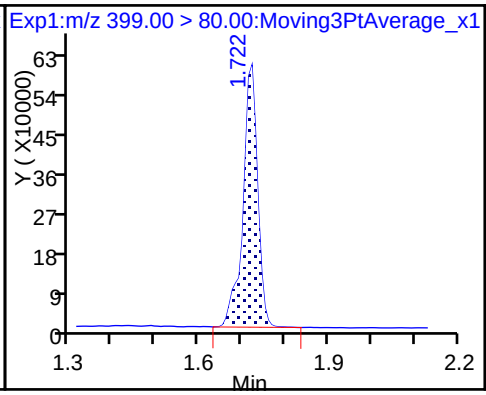
$ 2 13C2 PFHxA



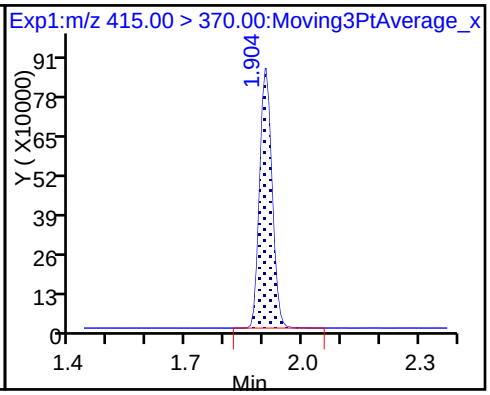
4 Perfluoroheptanoic acid



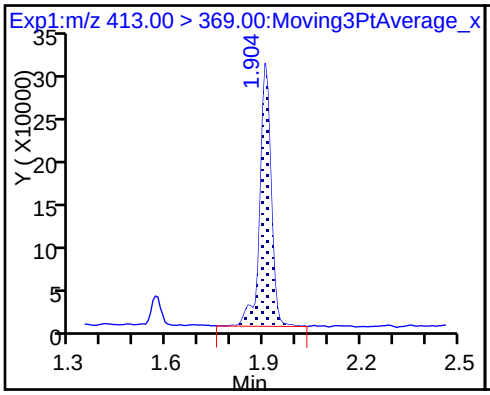
3 Perfluorohexanesulfonic acid



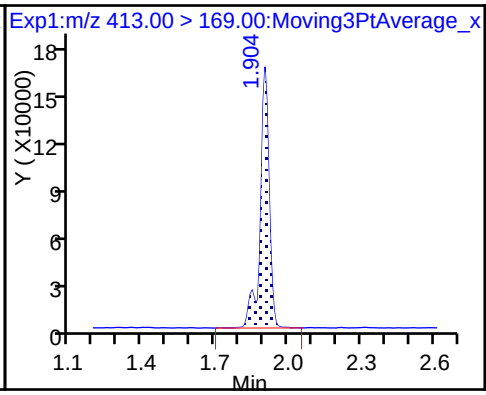
* 6 13C2-PFOA



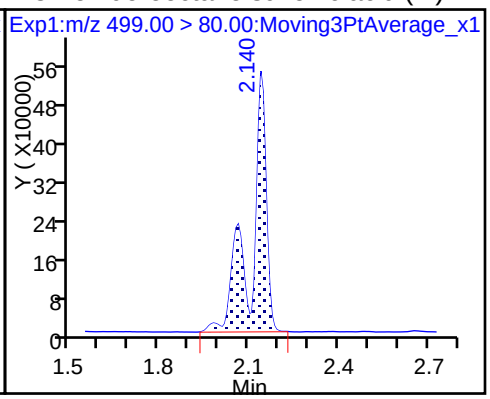
5 Perfluorooctanoic acid



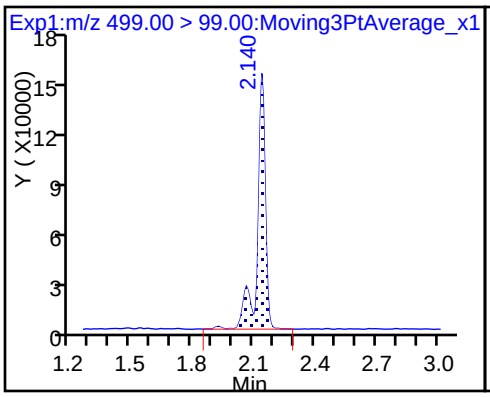
5 Perfluorooctanoic acid



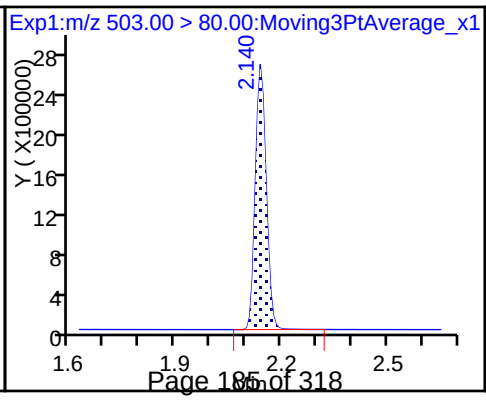
8 Perfluorooctane sulfonic acid (M)



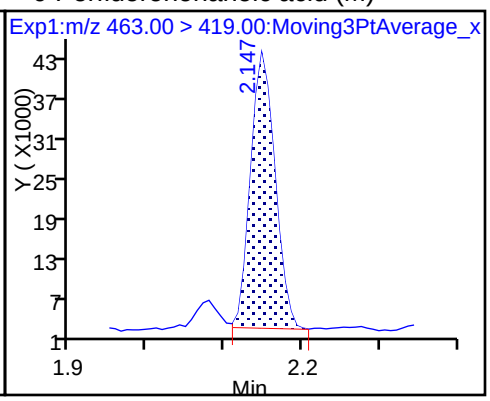
8 Perfluorooctane sulfonic acid



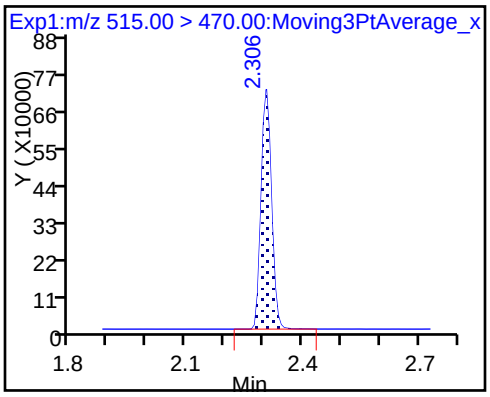
* 7 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA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2.306
Y (X10000)
88
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\20170908-47701.b\2017.09.08_537C_022.d
Lims ID: 320-31214-A-15-A
Client ID: WGNA-083017-RW-3220
Sample Type: Client
Inject. Date: 08-Sep-2017 22:21:49 ALS Bottle#: 18 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-15-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:47 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:17:21

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.86	78.59
$ 10 13C2 PFDA	10.0	10.4	104.37

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

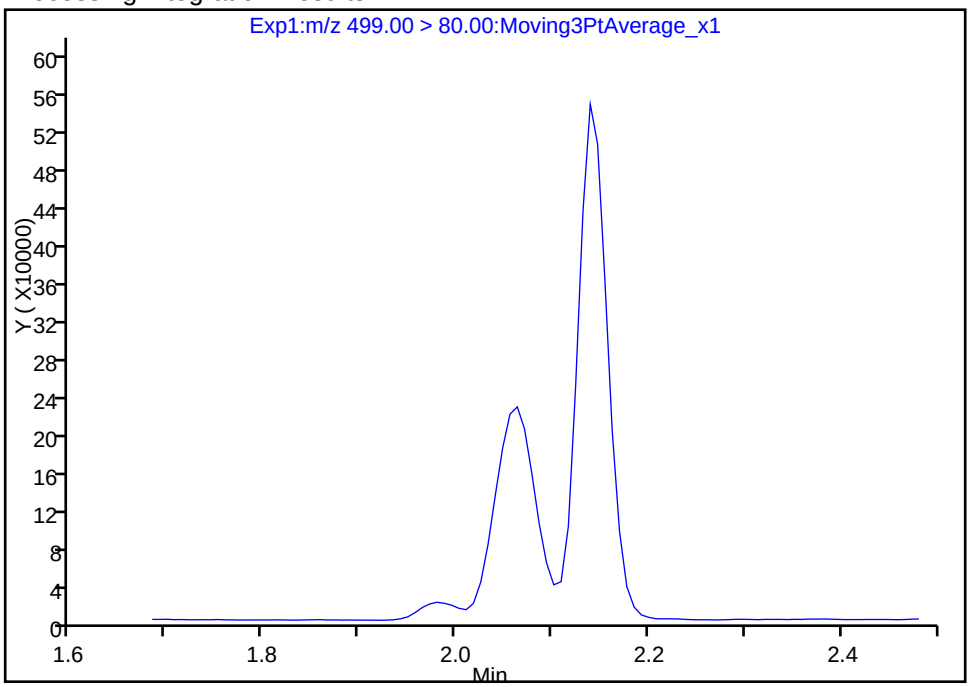
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_022.d				
Injection Date:	08-Sep-2017 22:21:49	Instrument ID:	A8_N		
Lims ID:	320-31214-A-15-A	Lab Sample ID:	320-31214-15		
Client ID:	WGNA-083017-RW-3220				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	22
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

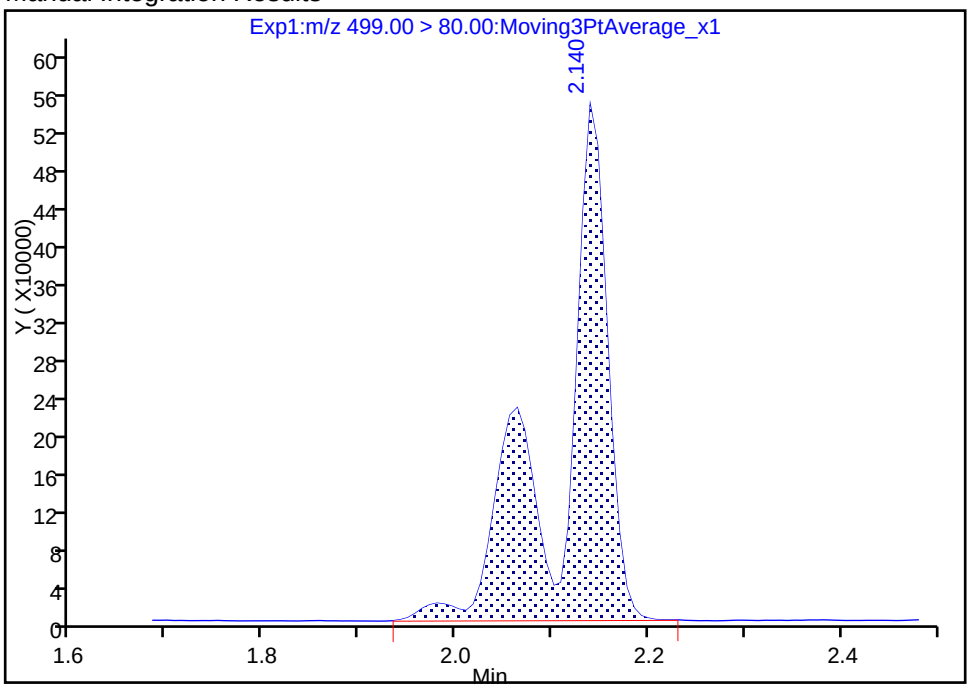
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.14
Area: 1873684
Amount: 10.346551
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:16:56
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

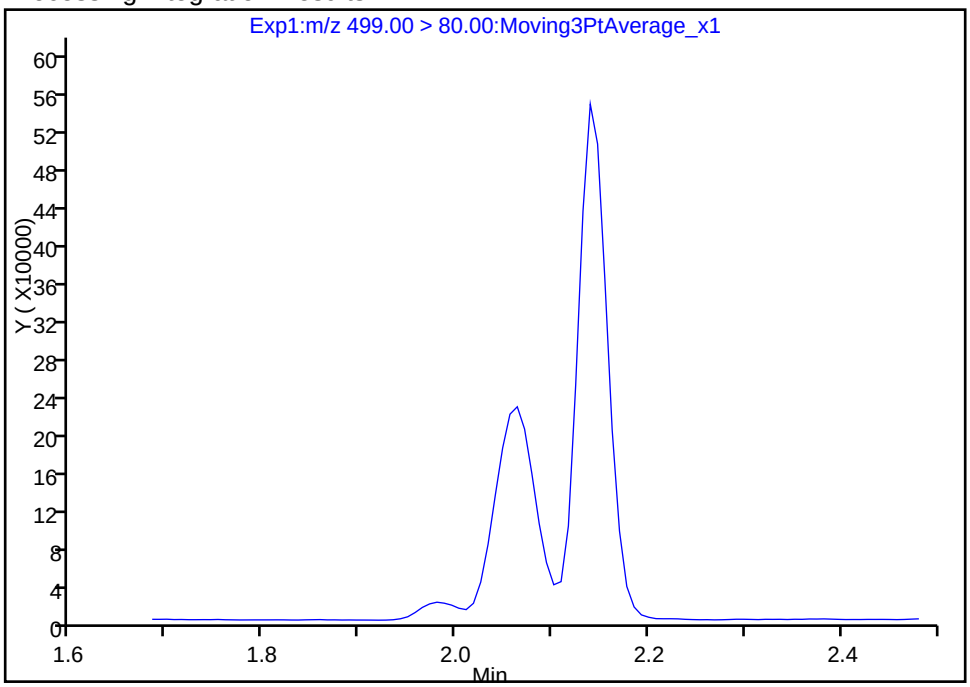
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_022.d				
Injection Date:	08-Sep-2017 22:21:49	Instrument ID:	A8_N		
Lims ID:	320-31214-A-15-A	Lab Sample ID:	320-31214-15		
Client ID:	WGNA-083017-RW-3220				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	22
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

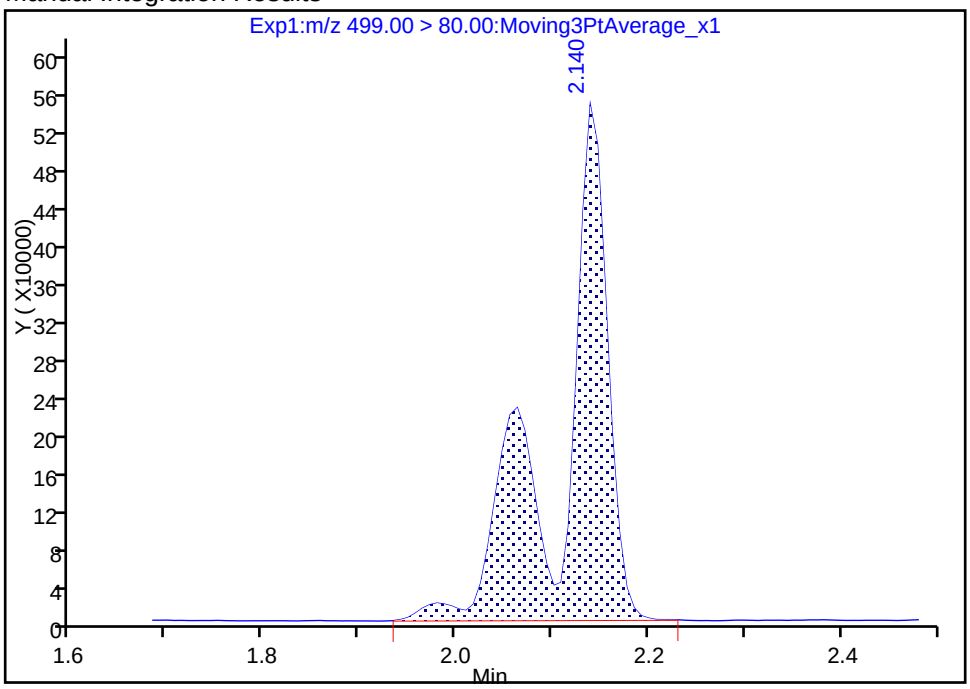
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.14
Area: 1873684
Amount: 10.346551
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:17:15
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

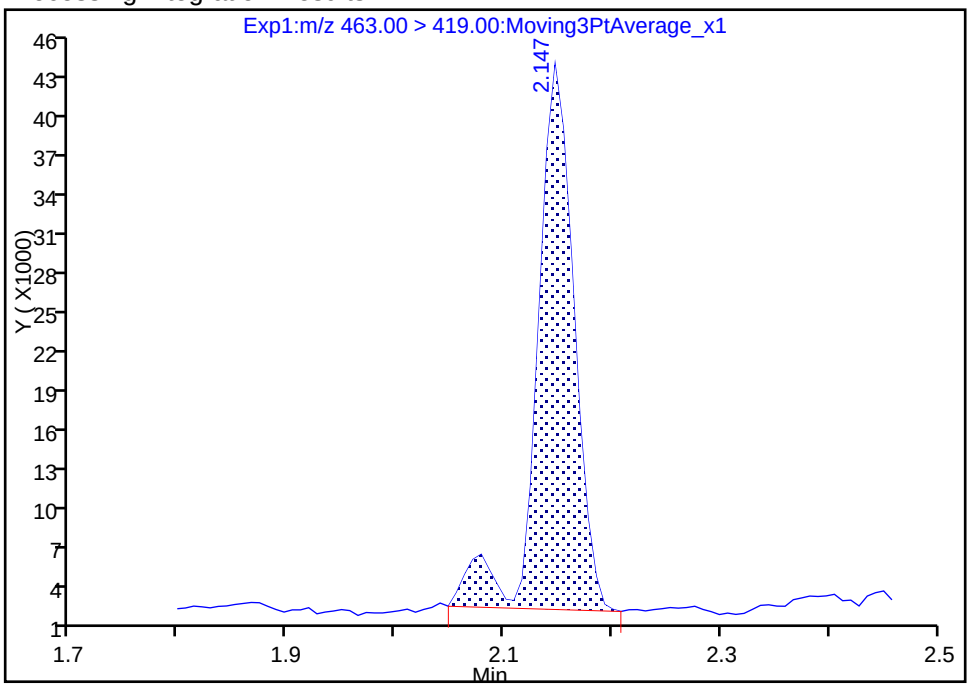
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_022.d				
Injection Date:	08-Sep-2017 22:21:49	Instrument ID:	A8_N		
Lims ID:	320-31214-A-15-A	Lab Sample ID:	320-31214-15		
Client ID:	WGNA-083017-RW-3220				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	22
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

9 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

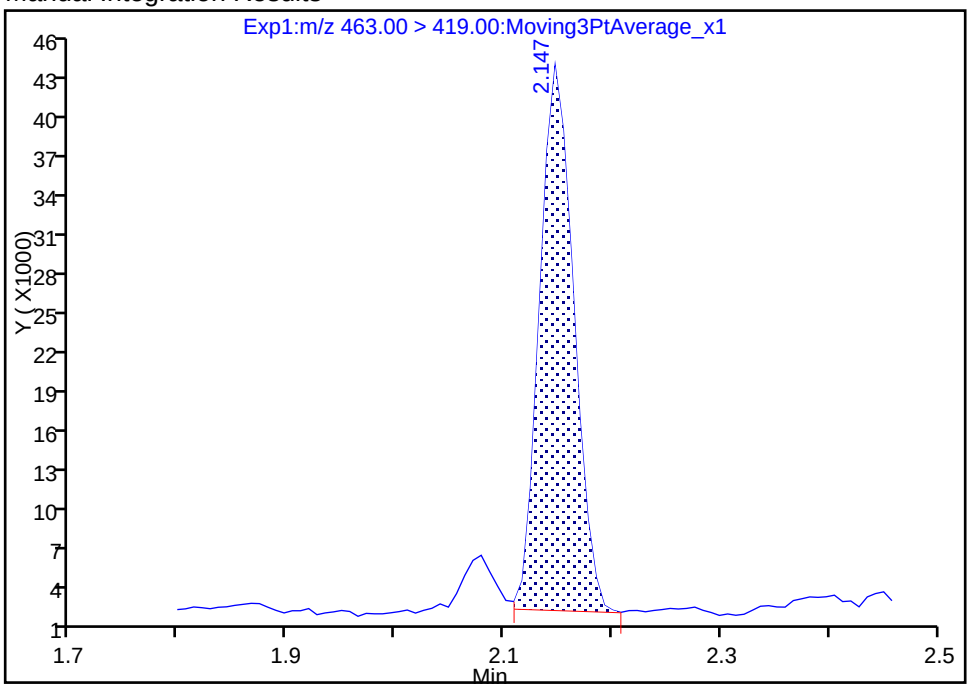
Processing Integration Results

RT: 2.15
Area: 98288
Amount: 0.808899
Amount Units: ng/ml



Manual Integration Results

RT: 2.15
Area: 90813
Amount: 0.747381
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 15:22:26

Audit Action: Manually Integrated Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-FRB-3220 | Lab Sample ID: 320-31214-16

Matrix: Water | Lab File ID: 2017.09.08_537C_023.d

Analysis Method: 537 | Date Collected: 08/30/2017 14:15

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 258.4(mL) | Date Analyzed: 09/08/2017 22:26

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

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

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

Analysis Batch No.: 183773 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
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)	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	95		70-130
STL00996	13C2 PFDA	111		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_023.d
Lims ID: 320-31214-A-16-A
Client ID: WGNA-083017-FRB-3220
Sample Type: Client
Inject. Date: 08-Sep-2017 22:26:33 ALS Bottle#: 19 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-16-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:47 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	2136674	9.53		14519	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1858055	10.0		10472	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.164	-0.017		5560278	28.7		5916	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1385418	11.1		10378	

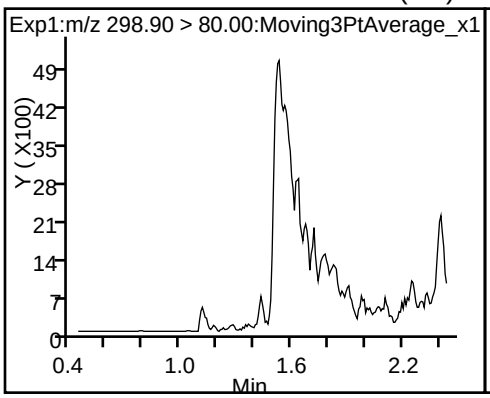
Report Date: 11-Sep-2017 15:23:54 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

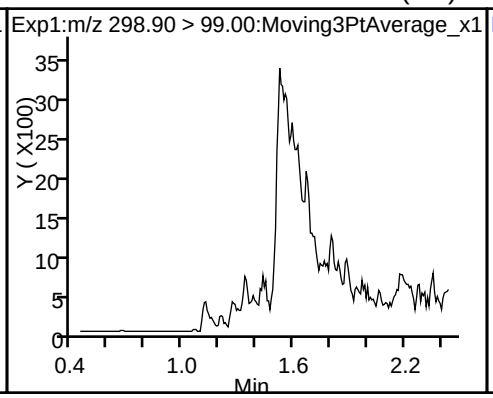
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_023.d

Injection Date:	08-Sep-2017 22:26:33	Instrument ID:	A8_N		
Lims ID:	320-31214-A-16-A	Lab Sample ID:	320-31214-16		
Client ID:	WGNA-083017-FRB-3220				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	19	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

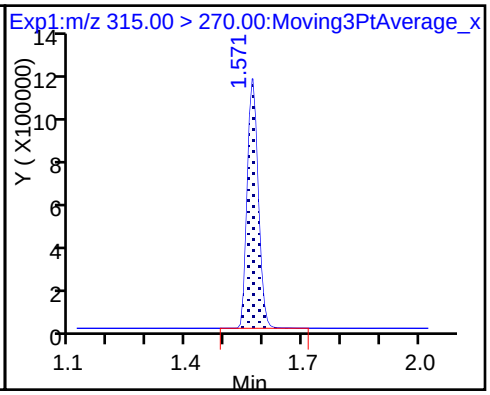
1 Perfluorobutanesulfonic acid (ND)



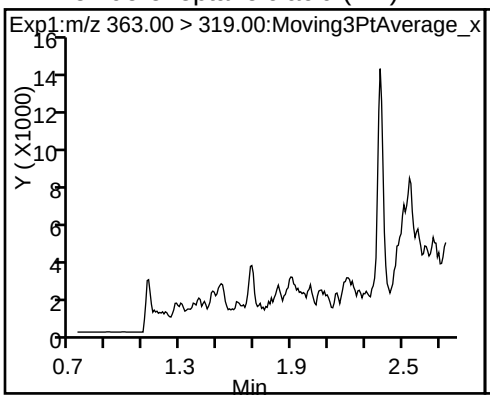
1 Perfluorobutanesulfonic acid (ND)



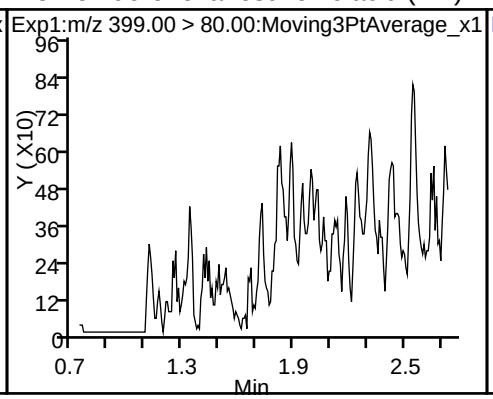
$ 2 13C2 PFHxA

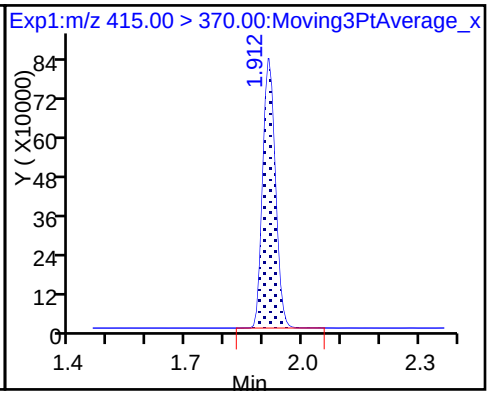


4 Perfluoroheptanoic acid (ND)

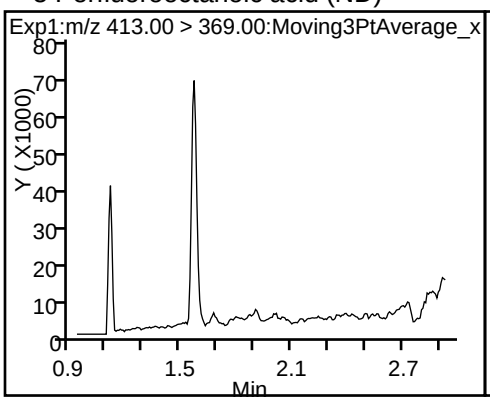


3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA

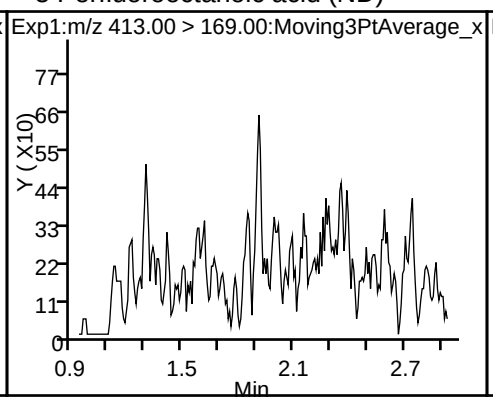




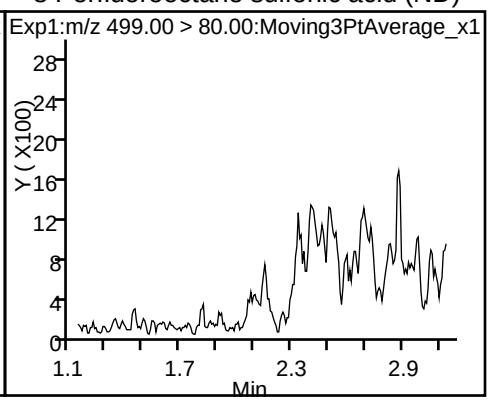
5 Perfluorooctanoic acid (ND)



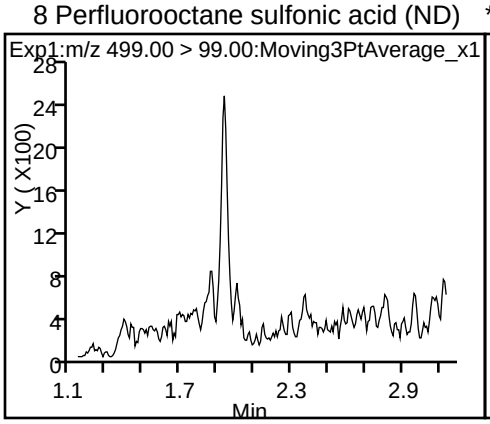
5 Perfluorooctanoic acid (ND)

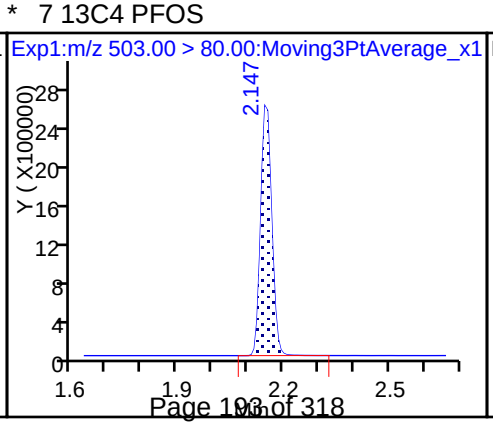


8 Perfluorooctane sulfonic acid (ND)

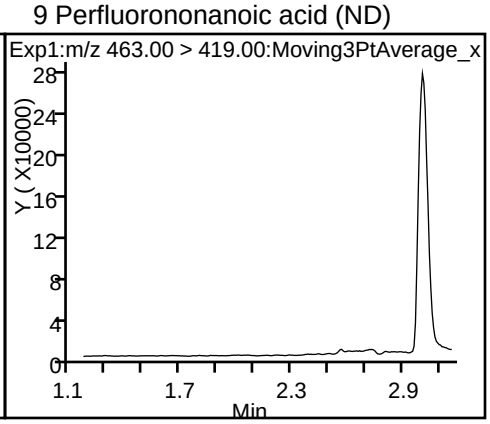


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

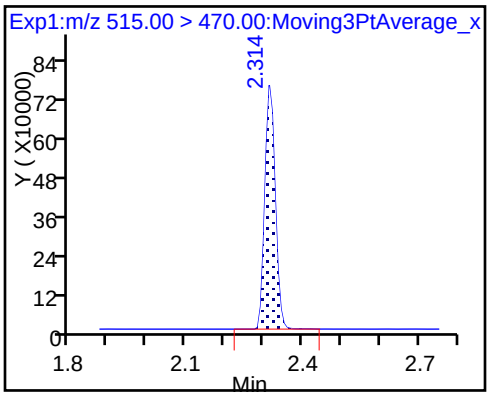




9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
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\20170908-47701.b\2017.09.08_537C_023.d				
Lims ID:	320-31214-A-16-A				
Client ID:	WGNA-083017-FRB-3220				
Sample Type:	Client				
Inject. Date:	08-Sep-2017 22:26:33	ALS Bottle#:	19	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-31214-a-16-a				
Misc. Info.:	Plate: 1 Rack: 3				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	11-Sep-2017 15:23:47	Calib Date:	08-Sep-2017 13:51:29		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK011				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.53	95.31
$ 10 13C2 PFDA	10.0	11.1	111.03

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-DUP08 | Lab Sample ID: 320-31214-17

Matrix: Water | Lab File ID: 2017.09.08_537C_024.d

Analysis Method: 537 | Date Collected: 08/30/2017 07:00

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 257.3(mL) | Date Analyzed: 09/08/2017 22:31

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.: 183773 | 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)	9.6	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 M	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	J	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		70-130
STL00996	13C2 PFDA	112		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_024.d
Lims ID: 320-31214-A-17-A
Client ID: WGNA-083017-DUP08
Sample Type: Client
Inject. Date: 08-Sep-2017 22:31:19 ALS Bottle#: 20 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-17-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:47 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:17:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.440	-0.006	1.000	194194	0.9505		63.8	
298.90 > 99.00	1.434	1.440	-0.006	1.000	132347		1.47(0.00-0.00)	81.7	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	1801665	7.91		9717	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.736	-0.014	1.000	160443	0.9105		17.7	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	1.722	1.739	-0.017	1.000	73291	0.2382		21.2	M
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1886790	10.0		9202	
5 Perfluorooctanoic acid									M
413.00 > 369.00	1.912	1.933	-0.021	1.000	430047	2.46		16.7	M
413.00 > 169.00	1.912	1.933	-0.021	1.000	253613		1.70(0.00-0.00)	464	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.147	2.140	0.007	1.000	232207	1.30		61.9	
499.00 > 99.00	2.147	2.140	0.007	1.000	39950		5.81(0.00-0.00)	28.3	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.164	-0.017		5526719	28.7		2911	
9 Perfluorononanoic acid									
463.00 > 419.00	2.155	2.171	-0.016	1.000	56727	0.4636		2.3	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.320	-0.014	1.000	1419683	11.2		10285	

QC Flag Legend

Review Flags

M - Manually Integrated

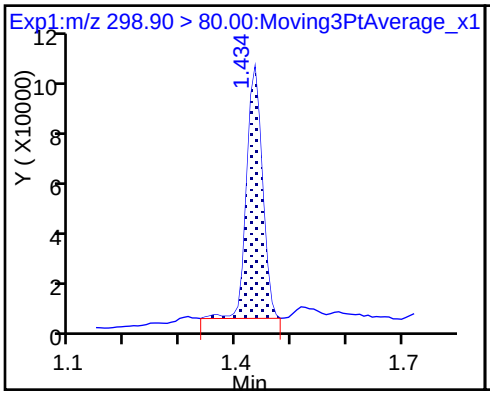
Report Date: 11-Sep-2017 15:23:54 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

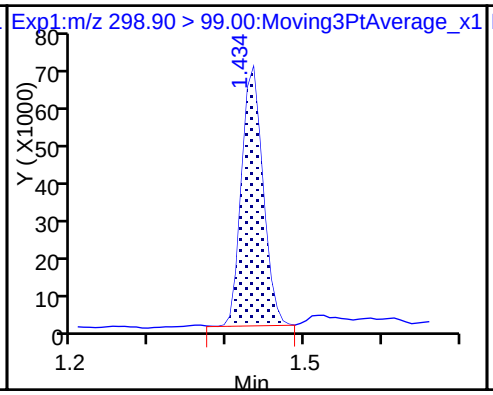
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_024.d

Injection Date:	08-Sep-2017 22:31:19	Instrument ID:	A8_N		
Lims ID:	320-31214-A-17-A	Lab Sample ID:	320-31214-17		
Client ID:	WGNA-083017-DUP08				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

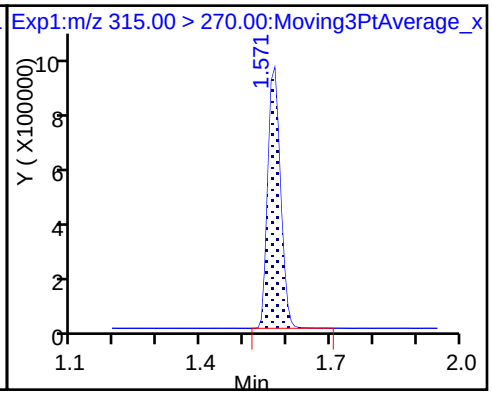
1 Perfluorobutanesulfonic acid



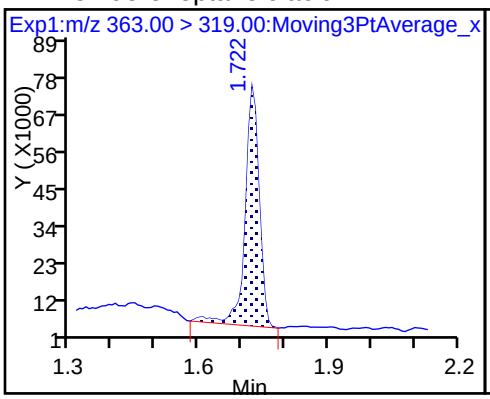
1 Perfluorobutanesulfonic acid



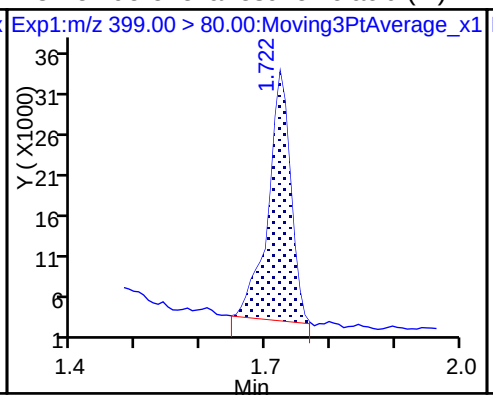
$ 2 13C2 PFHxA



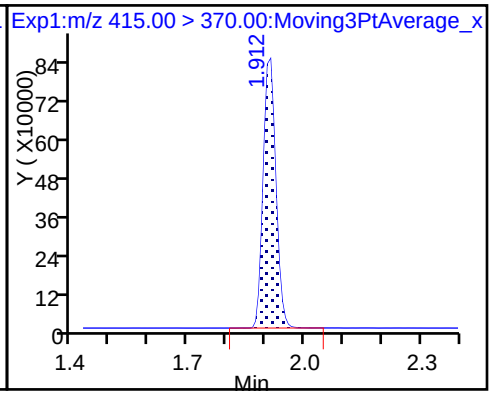
4 Perfluoroheptanoic acid



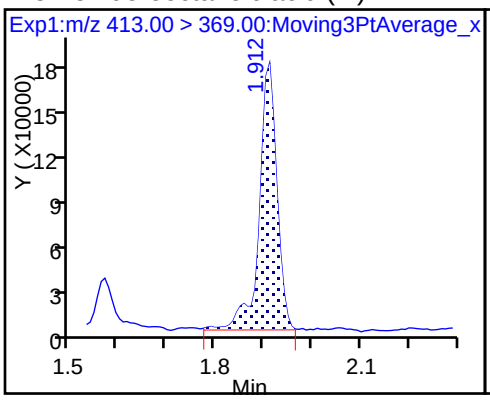
3 Perfluorohexanesulfonic acid (M)



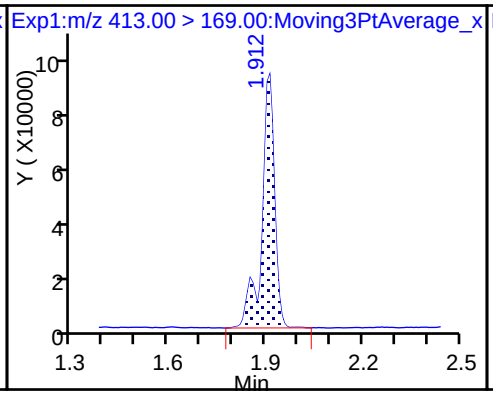
* 6 13C2-PFOA



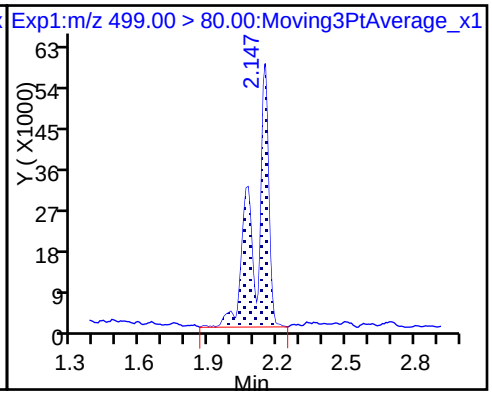
5 Perfluorooctanoic acid (M)



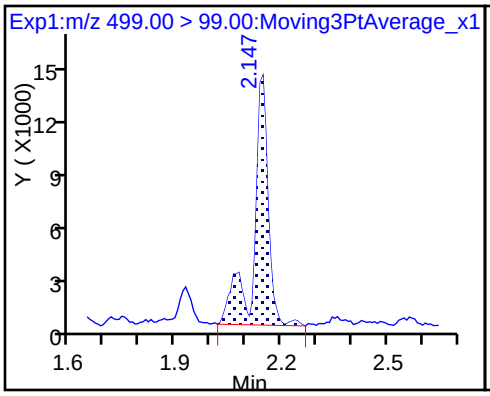
5 Perfluorooctanoic acid



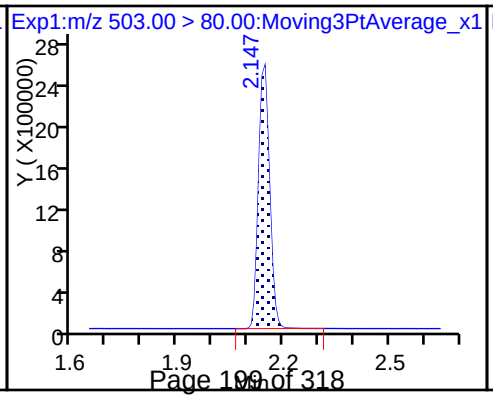
8 Perfluorooctane sulfonic acid



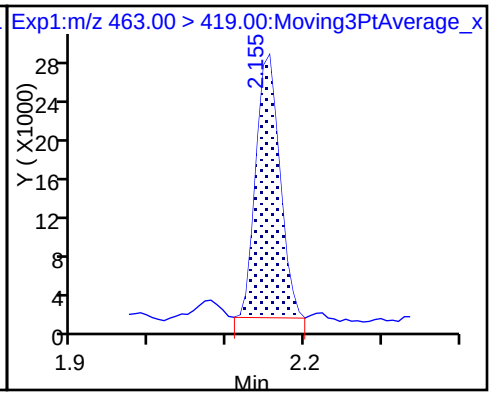
8 Perfluorooctane sulfonic acid



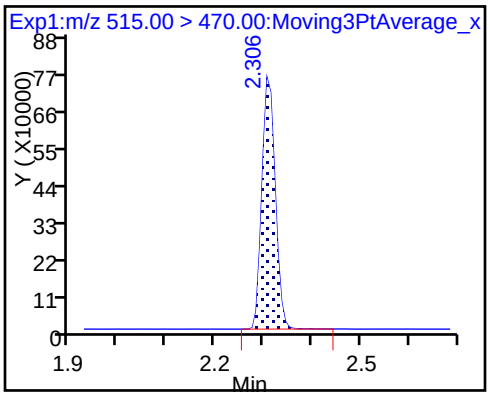
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.306
Y (X10000)
88
77
66
55
44
33
22
11
0
1.9
2.2
2.5
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_024.d
Lims ID: 320-31214-A-17-A
Client ID: WGNA-083017-DUP08
Sample Type: Client
Inject. Date: 08-Sep-2017 22:31:19 ALS Bottle#: 20 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-31214-a-17-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:47 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:17:55

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.91	79.14
$ 10 13C2 PFDA	10.0	11.2	112.04

TestAmerica Sacramento

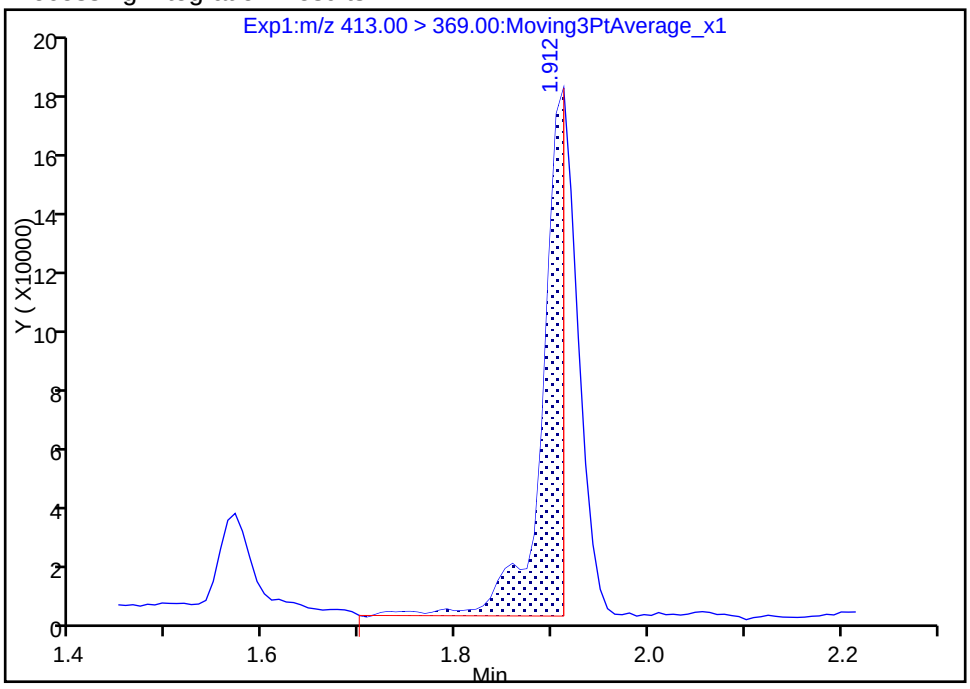
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_024.d				
Injection Date:	08-Sep-2017 22:31:19	Instrument ID:	A8_N		
Lims ID:	320-31214-A-17-A	Lab Sample ID:	320-31214-17		
Client ID:	WGNA-083017-DUP08				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	24
Injection 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

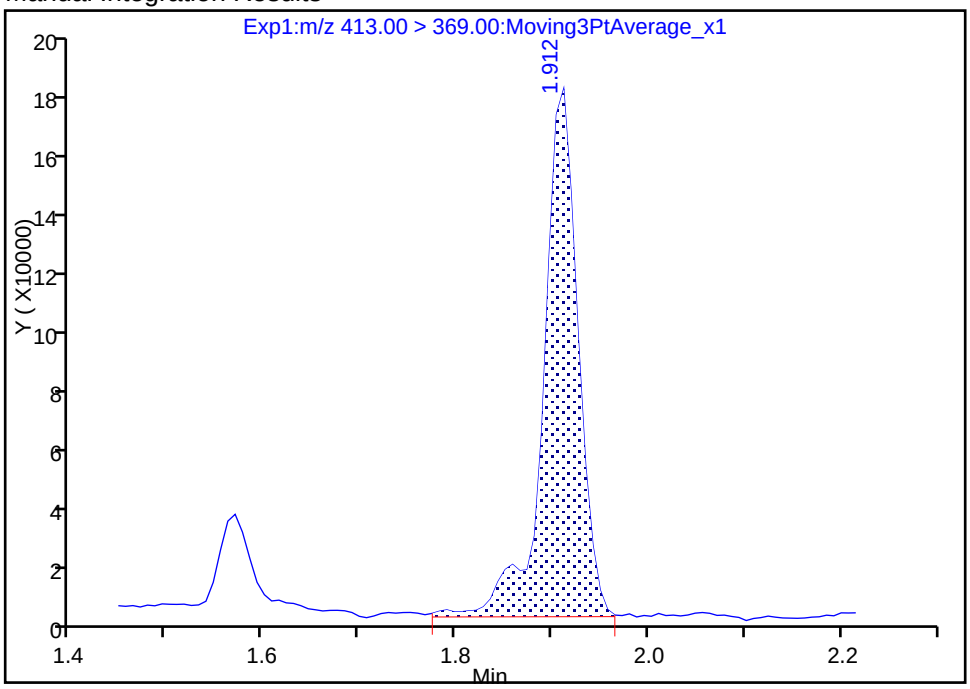
Processing Integration Results

RT: 1.91
Area: 252271
Amount: 1.443601
Amount Units: ng/ml



Manual Integration Results

RT: 1.91
Area: 430047
Amount: 2.460910
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 15:23:01
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

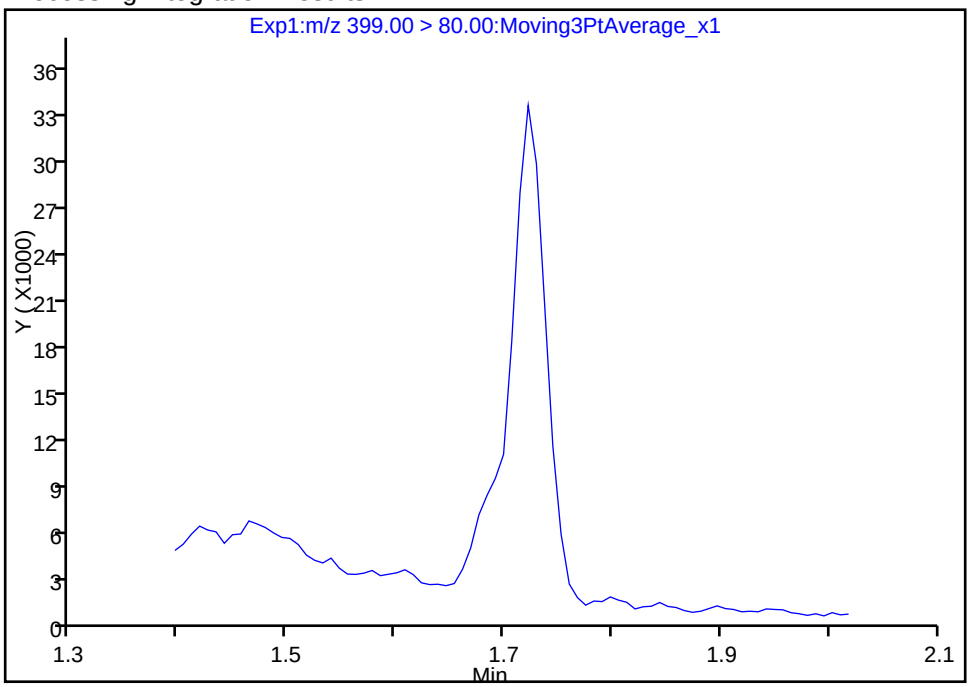
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_024.d				
Injection Date:	08-Sep-2017 22:31:19	Instrument ID:	A8_N		
Lims ID:	320-31214-A-17-A	Lab Sample ID:	320-31214-17		
Client ID:	WGNA-083017-DUP08				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

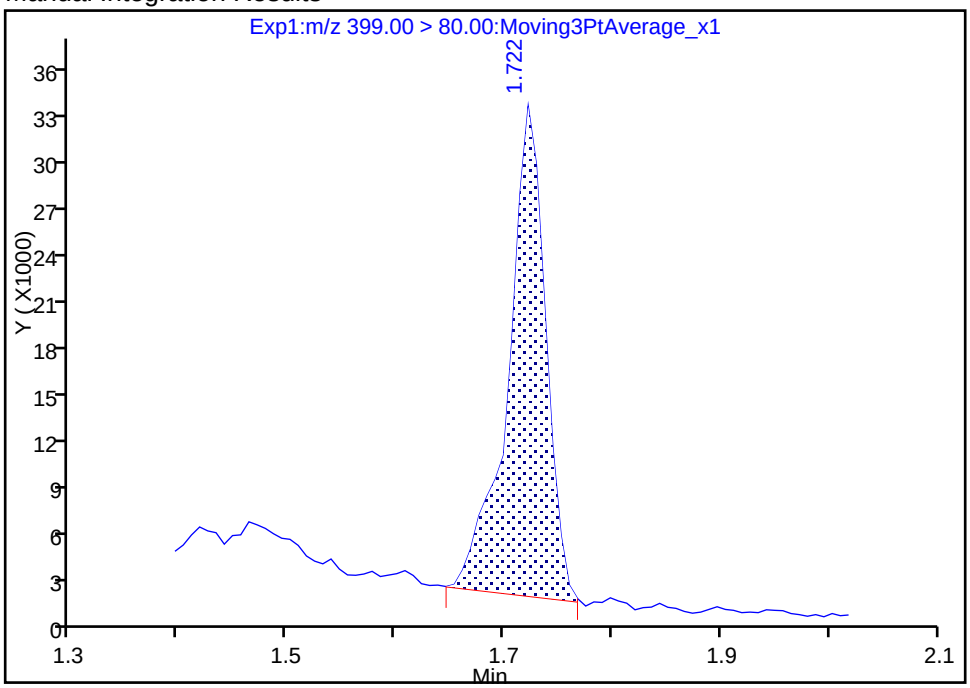
Not Detected
Expected RT: 1.74

Processing Integration Results



Manual Integration Results

RT: 1.72
Area: 73291
Amount: 0.238189
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:17:48
Audit Action: Manually Integrated Audit Reason: Missed Peak

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

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1 Analy Batch No.: 183459

SDG No.:

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

Calibration Start Date: 09/08/2017 13:27 Calibration End Date: 09/08/2017 13:51 Calibration ID: 34044

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-183459/2	2017.09.08_537ICAL_004.d
Level 2	IC 320-183459/3	2017.09.08_537ICAL_005.d
Level 3	IC 320-183459/4	2017.09.08_537ICAL_006.d
Level 4	IC 320-183459/5	2017.09.08_537ICAL_007.d
Level 5	IC 320-183459/6	2017.09.08_537ICAL_008.d
Level 6	IC 320-183459/7	2017.09.08_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)	1.0710 0.6966	1.0575	1.0111	0.8594	0.7869	QuaF		1.0622	-0.002040						0.9990		0.9600
Perfluoroheptanoic acid (PFHpA)	0.9220 0.9255	0.9473	0.9541	0.9231	0.9315	Ave		0.9339				1.5		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.6148 1.4811	1.6536	1.6599	1.5874	1.5838	Ave		1.5968				4.1		30.0			
Perfluorooctanoic acid (PFOA)	0.9158 0.9617	0.9269	0.9412	0.8992	0.9123	Ave		0.9262				2.4		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.8859 0.9363	0.9387	0.9168	0.9427	0.9444	Ave		0.9275				2.4		30.0			
Perfluorononanoic acid (PFNA)	0.6548 0.6554	0.6685	0.6501	0.6318	0.6303	Ave		0.6485				2.3		30.0			
13C2 PFHxA	1.1920 1.2378	1.2004	1.1834	1.2079	1.2178	Ave		1.2066				1.6		30.0			
13C2 PFDA	0.6511 0.7007	0.6681	0.6589	0.6707	0.6801	Ave		0.6716				2.6		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.: 320-31214-1 Analy Batch No.: 183459

SDG No.:

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

Calibration Start Date: 09/08/2017 13:27 Calibration End Date: 09/08/2017 13:51 Calibration ID: 34044

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-183459/2	2017.09.08_537ICAL_004.d
Level 2	IC 320-183459/3	2017.09.08_537ICAL_005.d
Level 3	IC 320-183459/4	2017.09.08_537ICAL_006.d
Level 4	IC 320-183459/5	2017.09.08_537ICAL_007.d
Level 5	IC 320-183459/6	2017.09.08_537ICAL_008.d
Level 6	IC 320-183459/7	2017.09.08_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	1896171 23775992	4213055	9072488	15158012	19852718	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PFOA	Ave	176698 3422434	406467	925418	1800569	2623771	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	953075 16853658	2196189	4965386	9333896	13320862	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PFOA	Ave	351237 7116752	795859	1826954	3509739	5142636	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	697187 14205705	1662376	3656842	7391088	10590577	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PFOA	Ave	250972 4847063	573628	1261094	2464425	3550611	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PFOA	Ave	2283494 2288248	2317173	2295161	2355406	2286265	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PFOA	Ave	1247394 1295246	1289579	1277856	1307825	1276749	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.: 320-31214-1 Analy Batch No.: 183459

SDG No.:

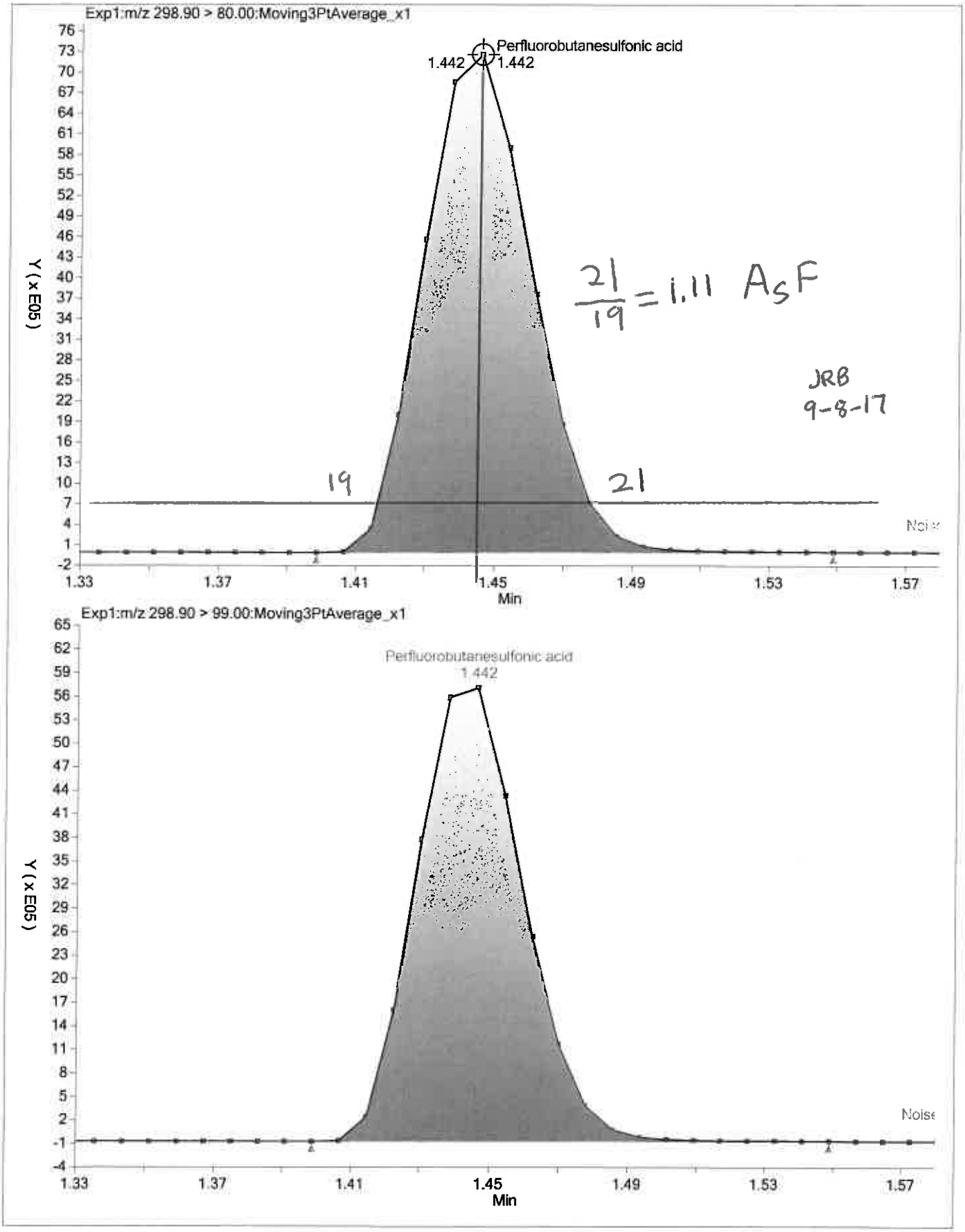
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

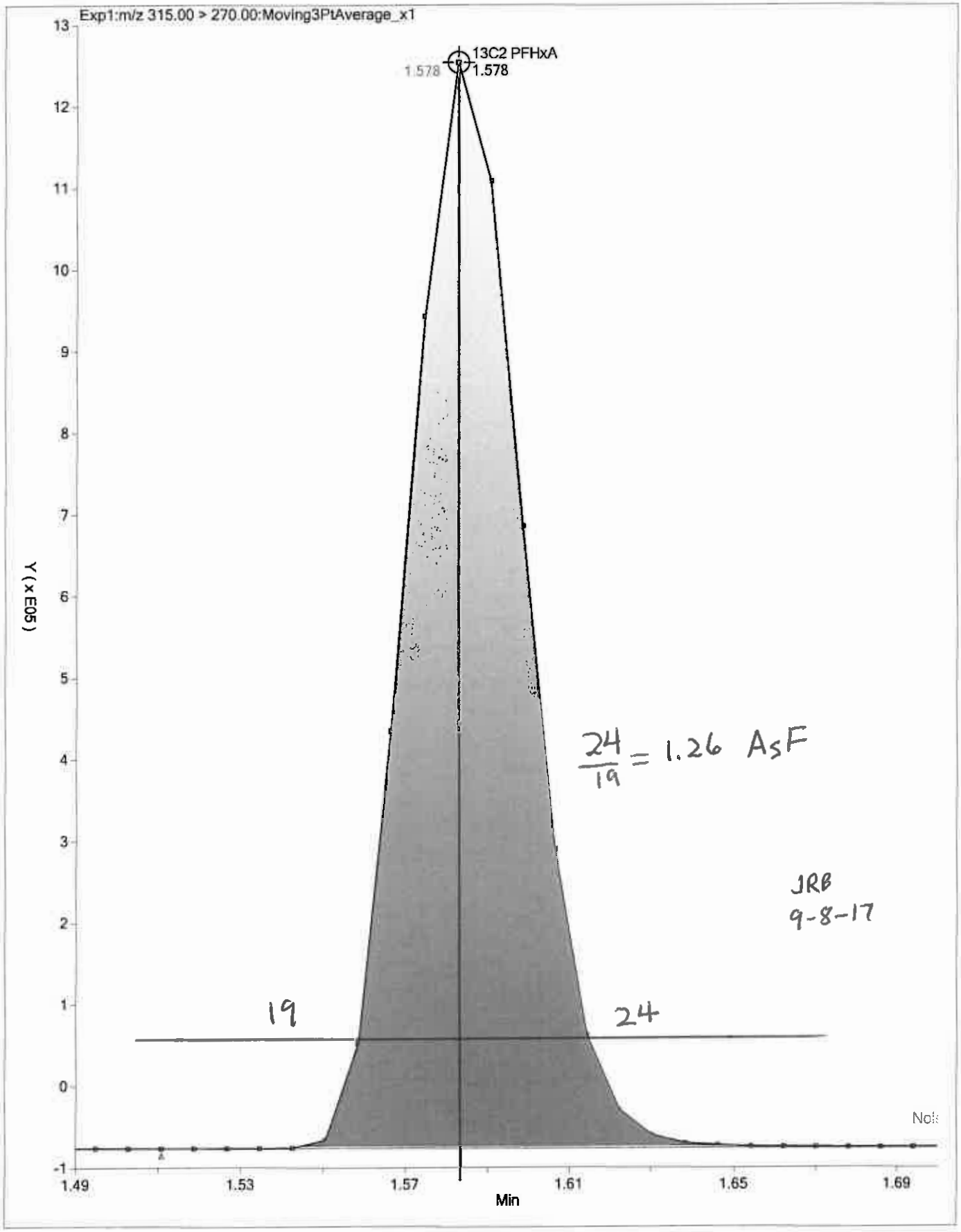
Calibration Start Date: 09/08/2017 13:27 Calibration End Date: 09/08/2017 13:51 Calibration ID: 34044

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-183459/2	2017.09.08_537ICAL_004.d
Level 2	IC 320-183459/3	2017.09.08_537ICAL_005.d
Level 3	IC 320-183459/4	2017.09.08_537ICAL_006.d
Level 4	IC 320-183459/5	2017.09.08_537ICAL_007.d
Level 5	IC 320-183459/6	2017.09.08_537ICAL_008.d
Level 6	IC 320-183459/7	2017.09.08_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)	2.7	3.7	4.7	-2.7	0.0	0.5	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	-1.3	1.4	2.2	-1.2	-0.3	-0.9	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	1.1	3.6	4.0	-0.6	-0.8	-7.2	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-1.1	0.1	1.6	-2.9	-1.5	3.8	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-4.5	1.2	-1.1	1.6	1.8	0.9	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	1.0	3.1	0.3	-2.6	-2.8	1.1	50	30	30	30	30	30
13C2 PFHxA	-1.2	-0.5	-1.9	0.1	0.9	2.6	30	30	30	30	30	30
13C2 PFDA	-3.0	-0.5	-1.9	-0.1	1.3	4.3	30	30	30	30	30	30


Exp1:m/z 298.90 > 80.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
1.442
1.442
Y (x E05)
Min
19
21
Noise
21/19 = 1.11 AsF
JRB
9-8-17
Exp1:m/z 298.90 > 99.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
1.442
Y (x E05)
Min
Noise


Exp1:m/z 315.00 > 270.00:Moving3PtAverage_x1
13C2 PFHxA
1.578
1.578
Y (x E05)
Min
1.49
1.53
1.57
1.61
1.65
1.69
24/19 = 1.26 AsF
JRB
9-8-17
19
24

TestAmerica Laboratories
Istd/Surrogate Recovery Report

Worklist Name: 08SEP2017_537_ICAL Worklist Num: 47689
Instrument: A8_N Method: 537_A8_N
Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b
Limit Group: LC 537 ICAL
Analysis Type: SemiVOA
Inj Volume: 2.00 Inj Vol Units: ul

Lims Batch: 183459
CCV IS Mode: Select Ical Level, Cal Level: 3
Non-Cal IS Mode: Last Ccal Sample

$ 2 13C2 PFHxA
$ 10 13C2 PFDA

Lab ID Inj Date	$ 2	$ 10	* 6 13C2-PFOA	* 7 13C4 PFOS
IS Std			1332513 1.93	4417453 2.19
# 1 RB 08-Sep-2017 13:23:04			1.93 1773490 133.1	2.16 5621219 127.3
IS Std				
# 2 IC L1 08-Sep-2017 13:27:48	1.58 98.79	2.32 96.95	1.93 1915757> 100.0*	2.16 5640583> 100.0*
# 3 IC L2 08-Sep-2017 13:32:32	1.58 99.49	2.32 99.48	1.94 1930305> 100.8*	2.17 5712377> 101.3*
# 4 IC L3 08-Sep-2017 13:37:17	1.58 98.08	2.32 98.11	1.94 1939425> 101.2*	2.17 5718230> 101.4*
# 5 IC L4 08-Sep-2017 13:42:01	1.58 100.10	2.32 99.87	1.94 1950011> 101.8*	2.16 5620007> 99.6*
# 6 IC L5 08-Sep-2017 13:46:44	1.58 100.90	2.32 101.30	1.94 1877393> 98.0*	2.16 5359060> 95.0*
# 7 IC L6 08-Sep-2017 13:51:29	1.57 102.60	2.31 104.30	1.93 1848587> 96.5*	2.16 5438027> 96.4*
IS Std			1939425 1.94	5718230 2.17
# 8 RB 08-Sep-2017 13:56:14			1.93 1756977 90.6	2.16 5487052 96.0
IS Std			1950011 1.94	5620007 2.16
# 9 CCVL 08-Sep-2017 14:00:59	1.58 100.60	2.32 101.90	1.93 1974239 101.2	2.16 5860601 104.3
IS Std			1974239 1.93	5860501 2.16
#10 RB 08-Sep-2017 14:05:44			1.93 1867455 94.6	2.16 5506559 94.0
IS Std			1950011 1.94	5620007 2.16
#11 ICV 08-Sep-2017 14:10:28	1.59 98.18	2.32 98.42	1.94 2166899 111.1	2.17 6602152 117.5
IS Std			1776145 1.93	5415288 2.16
#12 RB 08-Sep-2017 14:15:11			1.93 1776145 100.0	2.16 5415288 100.0

13C2 - PFOA

$$RPD = \frac{1848587 - 1950011}{\frac{1848587 + 1950011}{2}} = -5.3$$

13C4 - PFOS

$$RPD = \frac{5438027 - 5718230}{\frac{5438027 + 5718230}{2}} = -5.0$$

9/12/2017
New

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_004.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 08-Sep-2017 13:27:48 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\20170908-47689.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 08-Sep-2017 14:36:34 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: barnettj Date: 08-Sep-2017 14:29:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.440	0.002	1.000	1896171	9.24		1698	
298.90 > 99.00	1.434	1.440	-0.006	0.995	1335223		1.42(0.00-0.00)	879	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.577	0.001	1.000	2283494	9.88		10570	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.737	1.736	0.001	1.000	176698	0.9876		32.4	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.737	1.739	-0.002	1.000	953075	3.03		1423	
* 6 13C2-PFOA									
415.00 > 370.00	1.927	1.932	-0.005		1915757	10.0		9533	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.935	1.933	0.002	1.000	351237	1.98		23.2	
413.00 > 169.00	1.935	1.933	0.002	1.000	187461		1.87(0.00-0.00)	278	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.162	2.162	0.0	1.000	697187	3.82		448	
499.00 > 99.00	2.162	2.162	0.0	1.000	149805		4.65(0.00-0.00)	237	
* 7 13C4 PFOS									
503.00 > 80.00	2.162	2.164	-0.002		5640583	28.7		5931	
9 Perfluorononanoic acid									
463.00 > 419.00	2.170	2.171	-0.001	1.000	250972	2.02		33.0	
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.320	0.002	1.000	1247394	9.70		9670	

Reagents:

LC537-L1_00020 Amount Added: 1.00 Units: mL

Report Date: 08-Sep-2017 14:36:34 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_004.d

Injection Date: 08-Sep-2017 13:27:48 Instrument ID: A8_N

Lims ID: IC L1

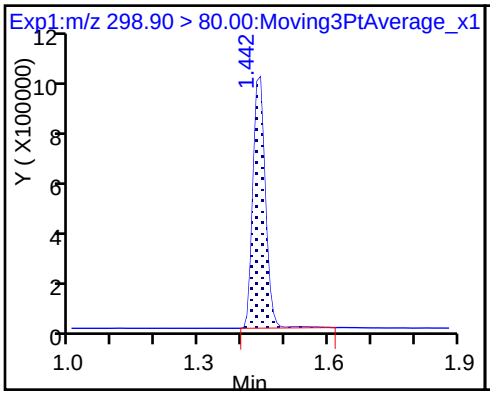
Client ID:

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

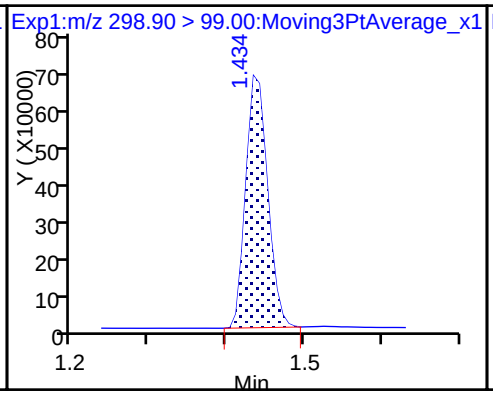
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

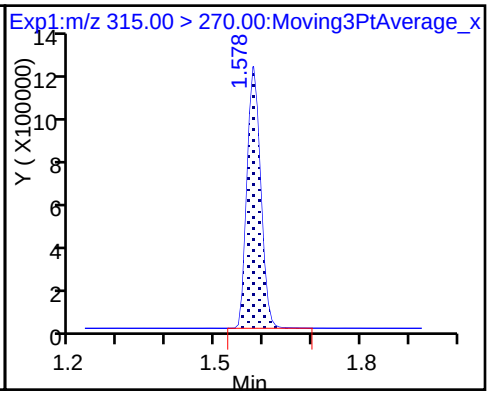
1 Perfluorobutanesulfonic acid



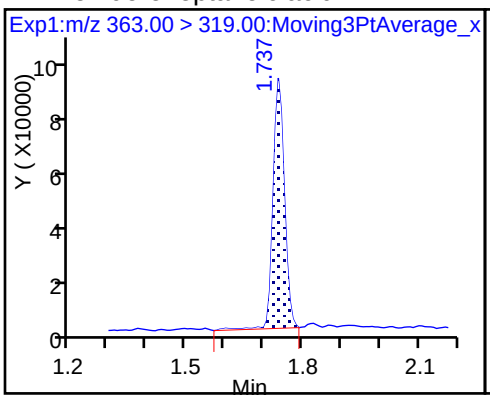
1 Perfluorobutanesulfonic acid



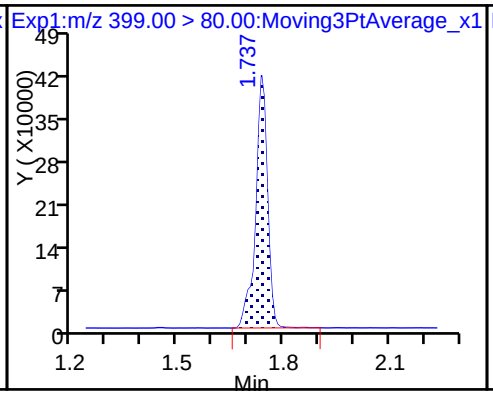
$ 2 13C2 PFHxA



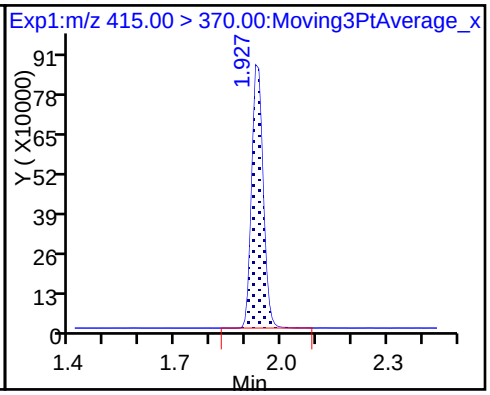
4 Perfluoroheptanoic acid



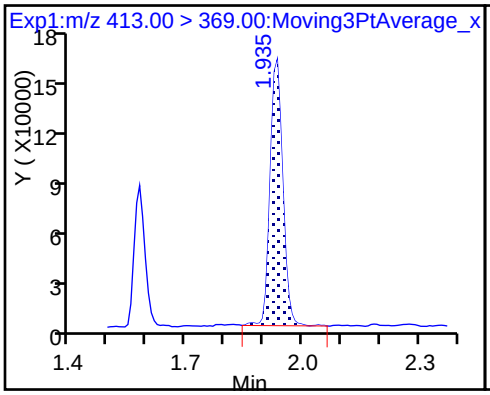
3 Perfluorohexanesulfonic acid



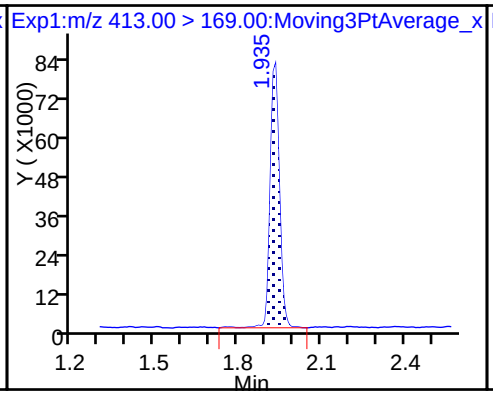
* 6 13C2-PFOA



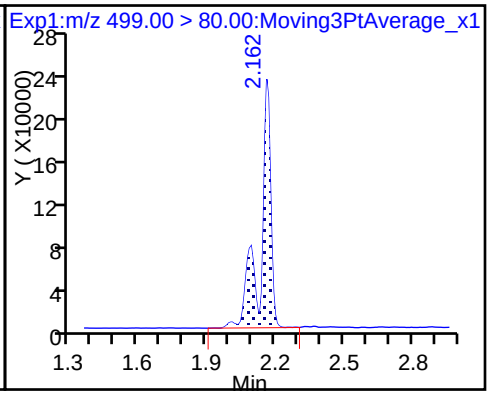
5 Perfluorooctanoic acid



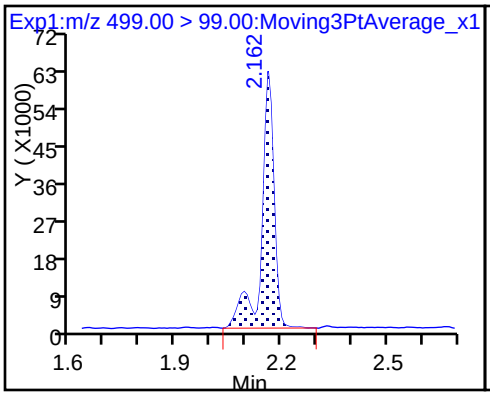
5 Perfluorooctanoic acid



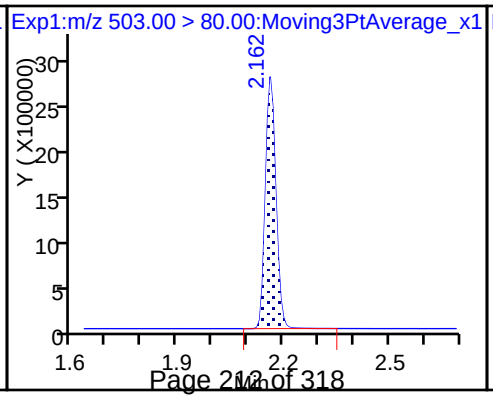
8 Perfluorooctane sulfonic acid



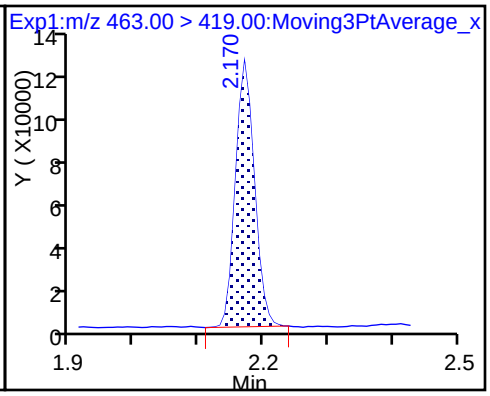
8 Perfluorooctane sulfonic acid



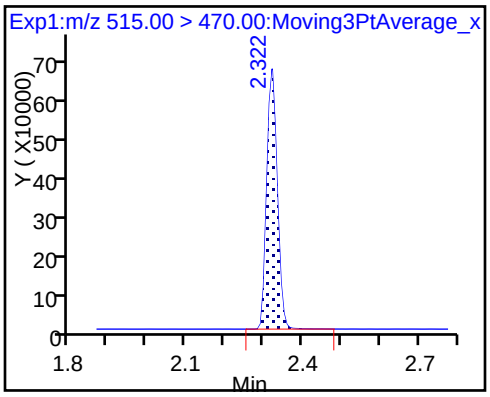
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_005.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 08-Sep-2017 13:32:32 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\20170908-47689.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 08-Sep-2017 14:36:35 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: barnettj Date: 08-Sep-2017 14:30:15

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.440	0.002	1.000	4213055	20.7		2450	
298.90 > 99.00	1.442	1.440	0.002	1.000	3092801		1.36(0.00-0.00)	2075	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.577	0.001	1.000	2317173	9.95		10516	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.737	1.736	0.001	1.000	406467	2.25		75.3	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.739	0.006	1.000	2196189	6.91		3071	
* 6 13C2-PFOA									
415.00 > 370.00	1.935	1.932	0.003		1930305	10.0		10693	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.935	1.933	0.002	1.000	795859	4.45		55.2	
413.00 > 169.00	1.935	1.933	0.002	1.000	446132		1.78(0.00-0.00)	649	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.170	2.162	0.008	1.000	1662376	9.00		1102	
499.00 > 99.00	2.170	2.162	0.008	1.000	339290		4.90(0.00-0.00)	458	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.164	0.006		5712377	28.7		5105	
9 Perfluorononanoic acid									
463.00 > 419.00	2.170	2.171	-0.001	1.000	573628	4.58		70.7	
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.320	0.002	1.000	1289579	9.95		9016	

Reagents:

LC537-L2_00020 Amount Added: 1.00 Units: mL

Report Date: 08-Sep-2017 14:36:35 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_005.d

Injection Date: 08-Sep-2017 13:32:32 Instrument ID: A8_N

Lims ID: IC L2

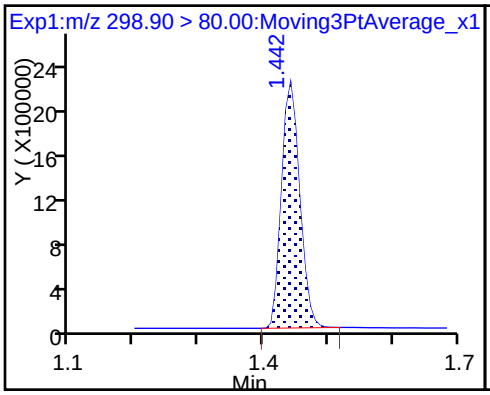
Client ID:

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

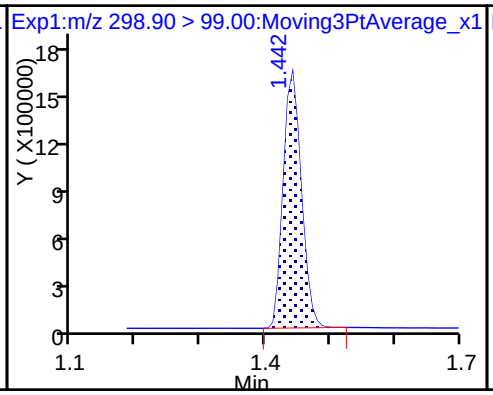
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

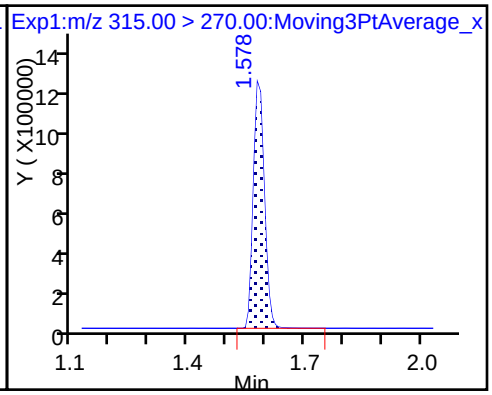
1 Perfluorobutanesulfonic acid



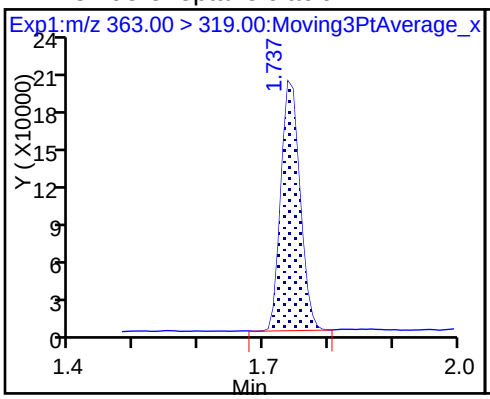
1 Perfluorobutanesulfonic acid



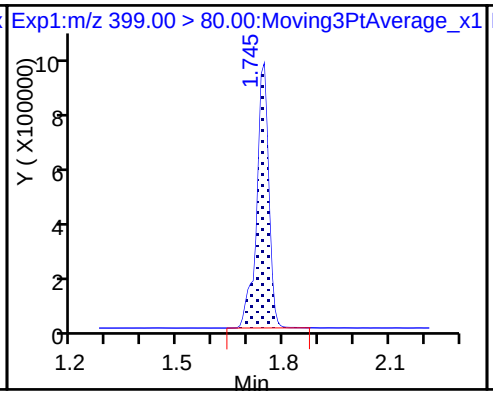
$ 2 13C2 PFHxA



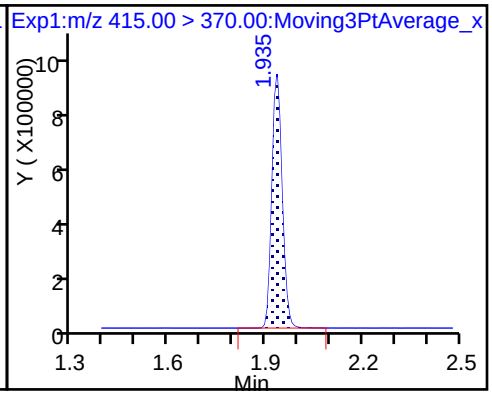
4 Perfluoroheptanoic acid



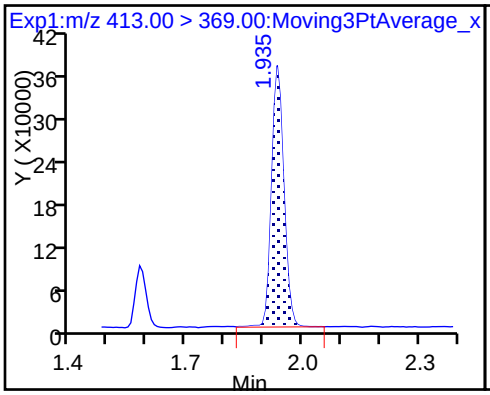
3 Perfluorohexanesulfonic acid



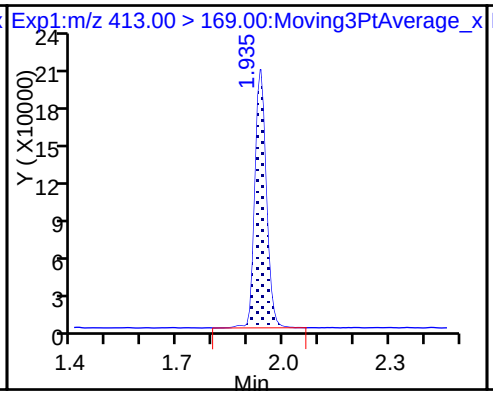
* 6 13C2-PFOA



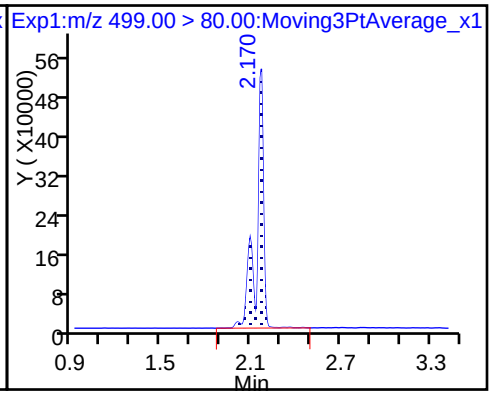
5 Perfluorooctanoic acid



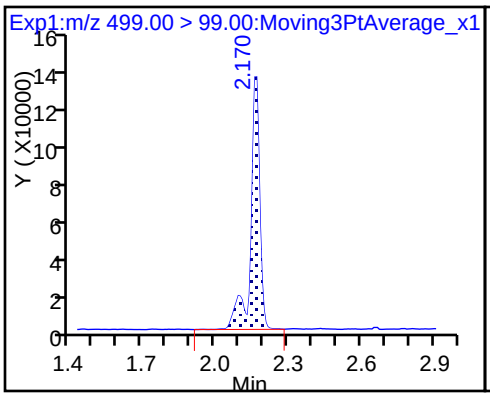
5 Perfluorooctanoic acid



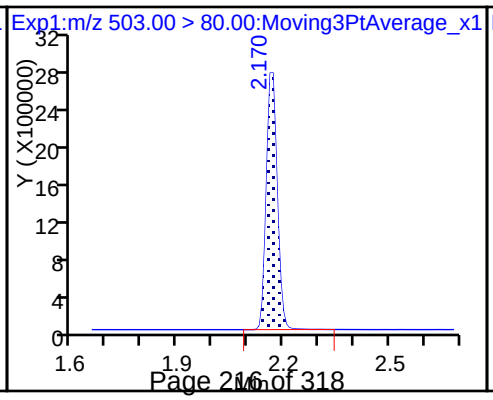
8 Perfluorooctane sulfonic acid



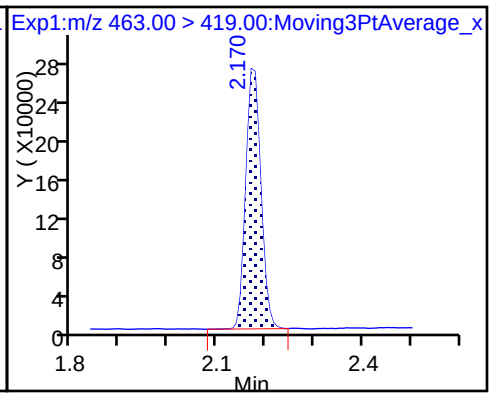
8 Perfluorooctane sulfonic acid



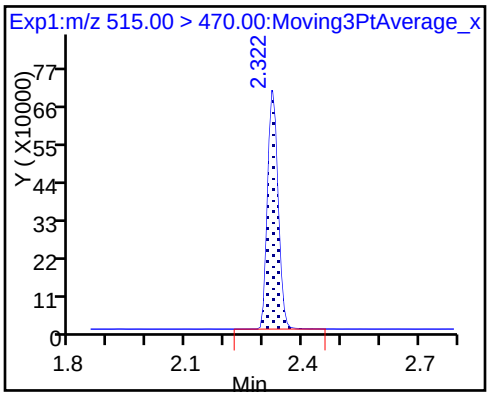
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_006.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 08-Sep-2017 13:37:17 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\20170908-47689.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 08-Sep-2017 14:36:36 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: barnettj Date: 08-Sep-2017 14:30:36

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	1.440	0.002	1.000	9072488	47.1		5125	
298.90 > 99.00	1.442	1.440	0.002	1.000	6528395		1.39(0.00-0.00)	3987	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.577	0.001	1.000	2295161	9.81		9388	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.737	1.736	0.001	1.000	925418	5.11		168	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.739	0.006	1.000	4965386	15.6		5555	
* 6 13C2-PFOA									
415.00 > 370.00	1.935	1.932	0.003		1939425	10.0		9225	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.935	1.933	0.002	1.000	1826954	10.2		130	
413.00 > 169.00	1.935	1.933	0.002	1.000	988483		1.85(0.00-0.00)	1402	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.170	2.162	0.008	1.000	3656842	19.8		2499	
499.00 > 99.00	2.170	2.162	0.008	1.000	766039		4.77(0.00-0.00)	1116	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.164	0.006		5718230	28.7		6352	
9 Perfluorononanoic acid									
463.00 > 419.00	2.177	2.171	0.006	1.000	1261094	10.0		168	
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.320	0.002	1.000	1277856	9.81		8257	

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

Report Date: 08-Sep-2017 14:36:37 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_006.d

Injection Date: 08-Sep-2017 13:37:17 Instrument ID: A8_N

Lims ID: IC L3

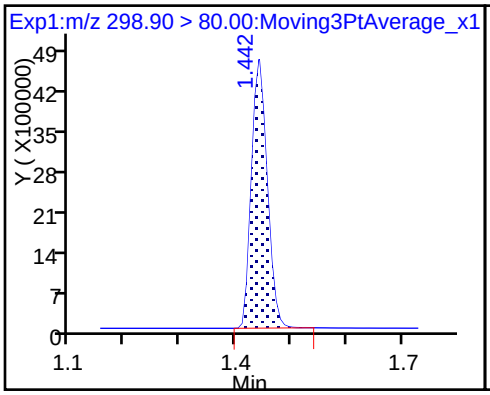
Client ID:

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

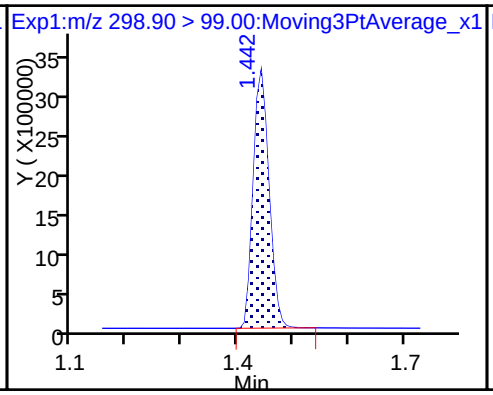
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

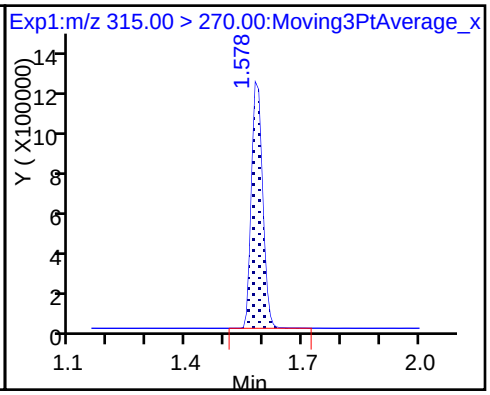
1 Perfluorobutanesulfonic acid



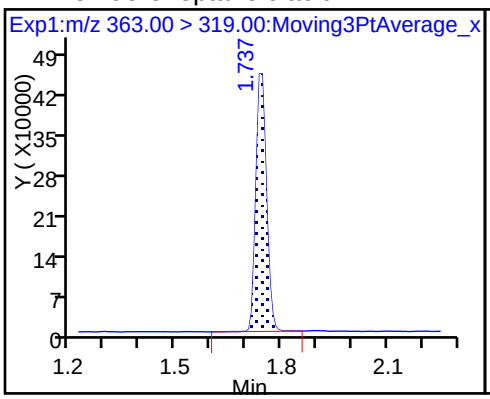
1 Perfluorobutanesulfonic acid



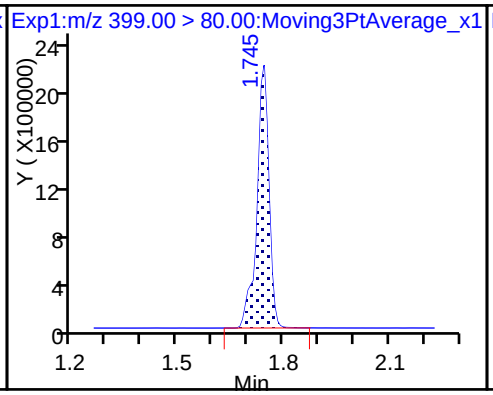
$ 2 13C2 PFHxA



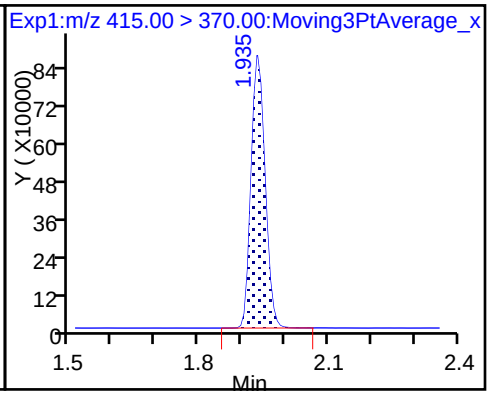
4 Perfluoroheptanoic acid



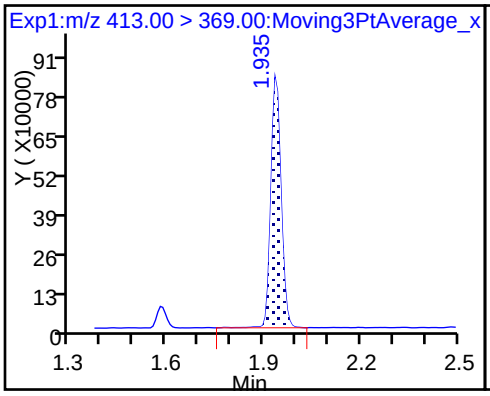
3 Perfluorohexanesulfonic acid



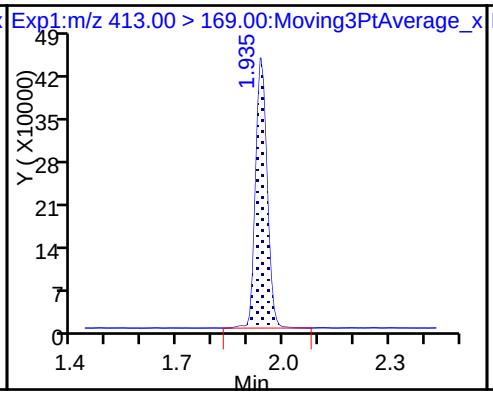
* 6 13C2-PFOA



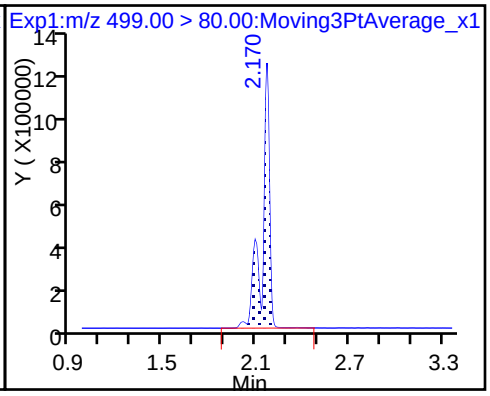
5 Perfluorooctanoic acid



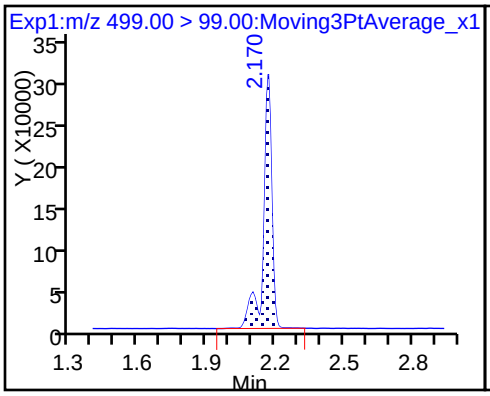
5 Perfluorooctanoic acid



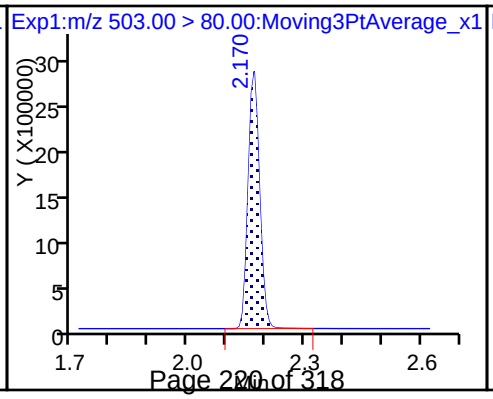
8 Perfluorooctane sulfonic acid



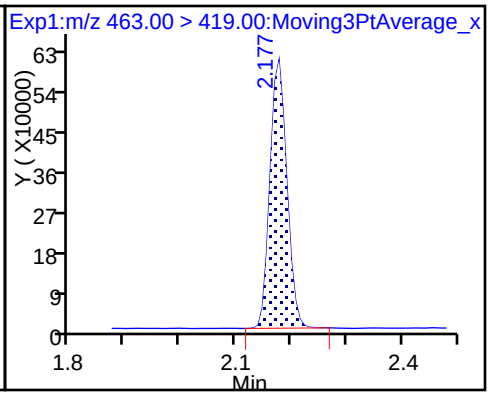
8 Perfluorooctane sulfonic acid



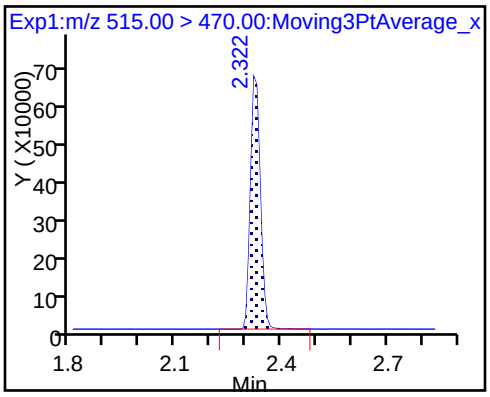
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_007.d
Lims ID: IC L4
Client ID:
Sample Type: ICISAV Calib Level: 4
Inject. Date: 08-Sep-2017 13:42:01 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\20170908-47689.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 08-Sep-2017 14:36:37 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: barnettj Date: 08-Sep-2017 14:30:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.440	0.002	1.000	15158012	87.5		6269	
298.90 > 99.00	1.442	1.440	0.002	1.000	11655421		1.30(0.00-0.00)	5621	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.577	0.001	1.000	2355406	10.0		11115	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.737	1.736	0.001	1.000	1800569	9.89		354	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.737	1.739	-0.002	1.000	9333896	29.8		8135	
* 6 13C2-PFOA									
415.00 > 370.00	1.935	1.932	0.003		1950011	10.0		10259	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.935	1.933	0.002	1.000	3509739	19.4		239	
413.00 > 169.00	1.935	1.933	0.002	1.000	1963901		1.79(0.00-0.00)	3039	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.162	2.162	0.0	1.000	7391088	40.7		3757	
499.00 > 99.00	2.162	2.162	0.0	1.000	1510241		4.89(0.00-0.00)	1788	
* 7 13C4 PFOS									
503.00 > 80.00	2.162	2.164	-0.002		5620007	28.7		6079	
9 Perfluorononanoic acid									
463.00 > 419.00	2.170	2.171	-0.001	1.000	2464425	19.5		304	
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.320	0.002	1.000	1307825	9.99		9047	

Reagents:

LC537-L4_00020 Amount Added: 1.00 Units: mL

Report Date: 08-Sep-2017 14:36:37 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_007.d

Injection Date: 08-Sep-2017 13:42:01 Instrument ID: A8_N

Lims ID: IC L4

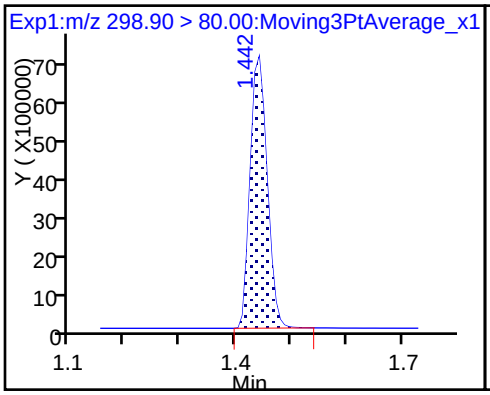
Client ID:

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

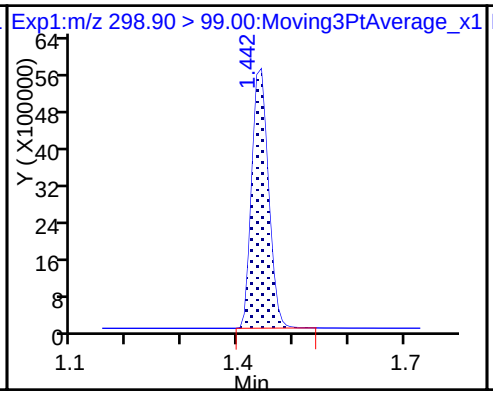
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

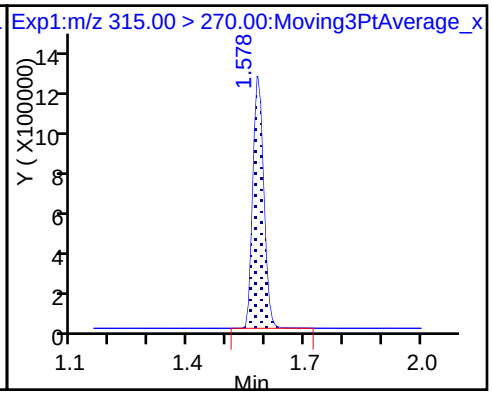
1 Perfluorobutanesulfonic acid



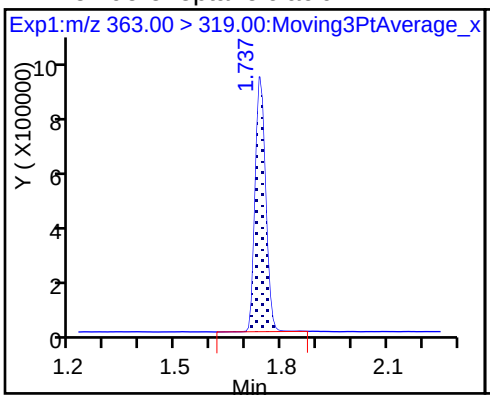
1 Perfluorobutanesulfonic acid



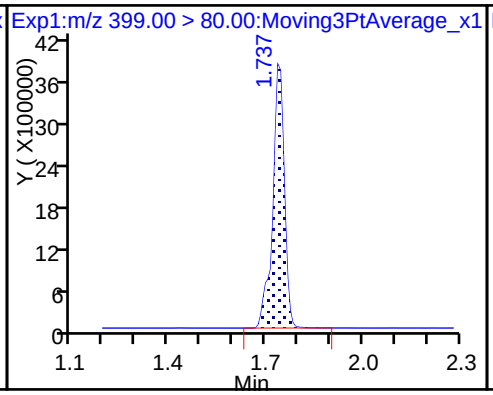
$ 2 13C2 PFHxA



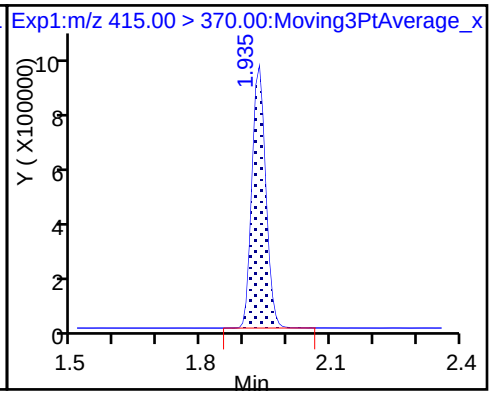
4 Perfluoroheptanoic acid



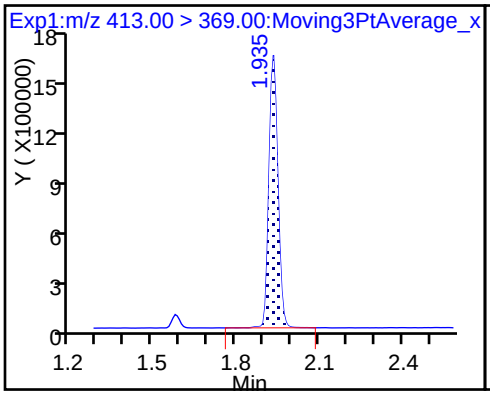
3 Perfluorohexanesulfonic acid



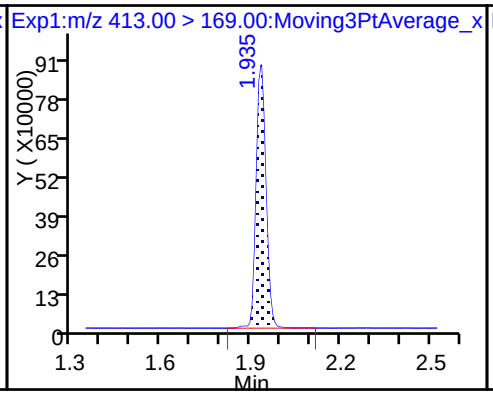
* 6 13C2-PFOA



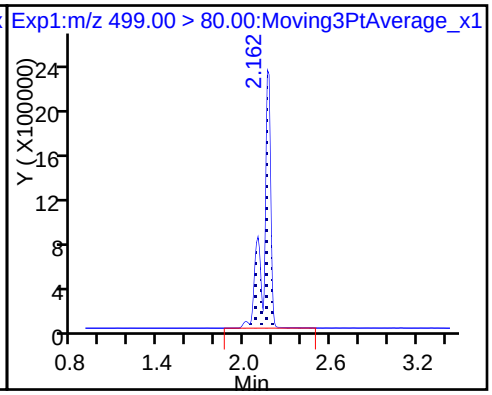
5 Perfluorooctanoic acid



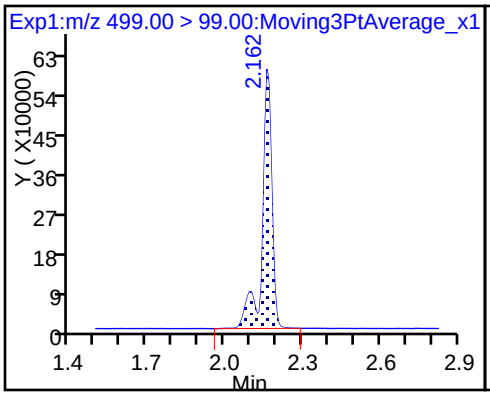
5 Perfluorooctanoic acid



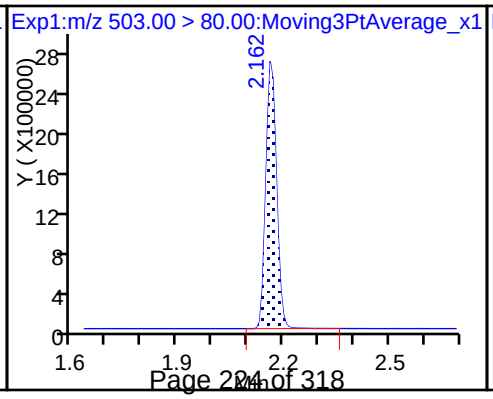
8 Perfluorooctane sulfonic acid



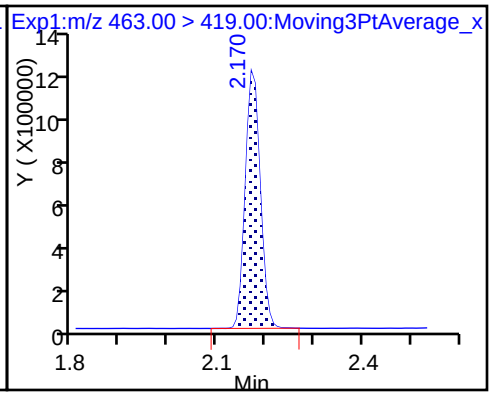
8 Perfluorooctane sulfonic acid



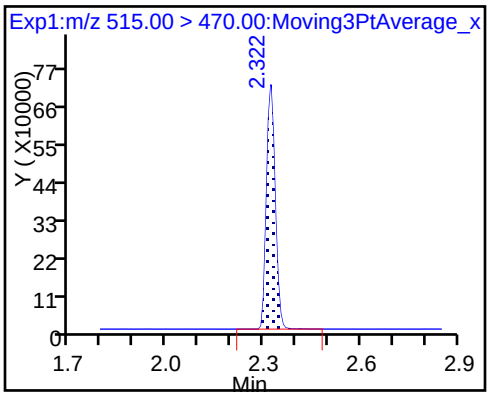
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
77
66
55
44
33
22
11
0
1.7
2.0
2.3
2.6
2.9
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_008.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 08-Sep-2017 13:46:44 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\20170908-47689.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 08-Sep-2017 14:36:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: barnettj Date: 08-Sep-2017 14:31:12

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	1.440	0.002	1.000	19852718	135.1		6850	
298.90 > 99.00	1.442	1.440	0.002	1.000	15195611		1.31(0.00-0.00)	6310	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.577	0.001	1.000	2286265	10.1		10462	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.737	1.736	0.001	1.000	2623771	15.0		505	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.737	1.739	-0.002	1.000	13320862	44.6		8385	
* 6 13C2-PFOA									
415.00 > 370.00	1.935	1.932	0.003		1877393	10.0		9959	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.935	1.933	0.002	1.000	5142636	29.6		349	
413.00 > 169.00	1.935	1.933	0.002	1.000	2903019		1.77(0.00-0.00)	4203	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.170	2.162	0.008	1.000	10590577	61.1		5066	
499.00 > 99.00	2.162	2.162	0.0	0.996	2209991		4.79(0.00-0.00)	2997	
* 7 13C4 PFOS									
503.00 > 80.00	2.162	2.164	-0.002		5359060	28.7		5743	
9 Perfluorononanoic acid									
463.00 > 419.00	2.170	2.171	-0.001	1.000	3550611	29.2		429	
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.320	0.002	1.000	1276749	10.1		8684	

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

Report Date: 08-Sep-2017 14:36:38 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_008.d

Injection Date: 08-Sep-2017 13:46:44 Instrument ID: A8_N

Lims ID: IC L5

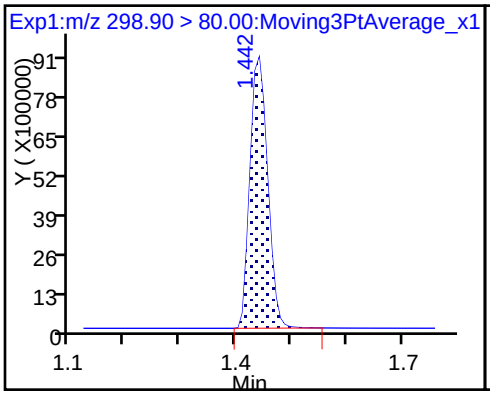
Client ID:

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

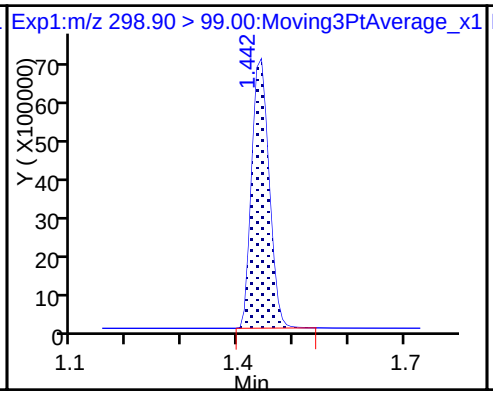
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

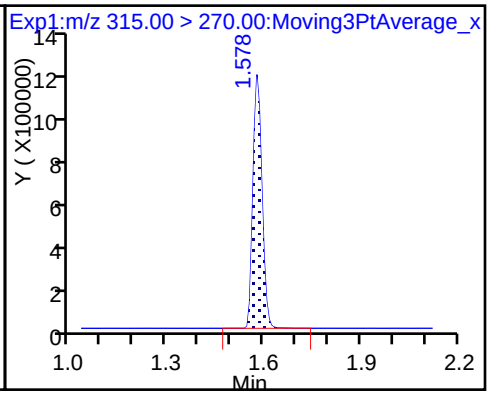
1 Perfluorobutanesulfonic acid



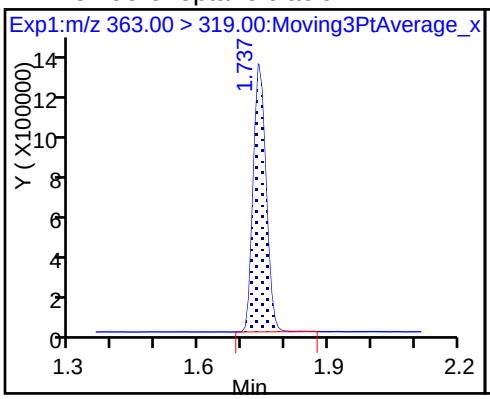
1 Perfluorobutanesulfonic acid



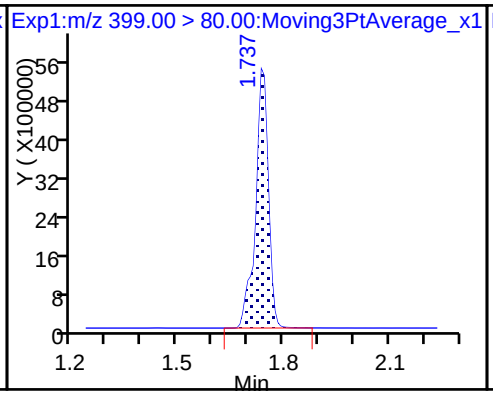
$ 2 13C2 PFHxA



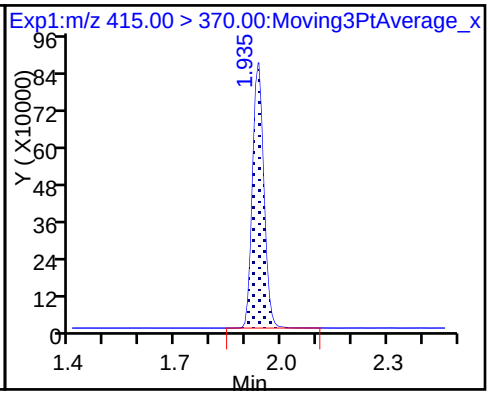
4 Perfluoroheptanoic acid



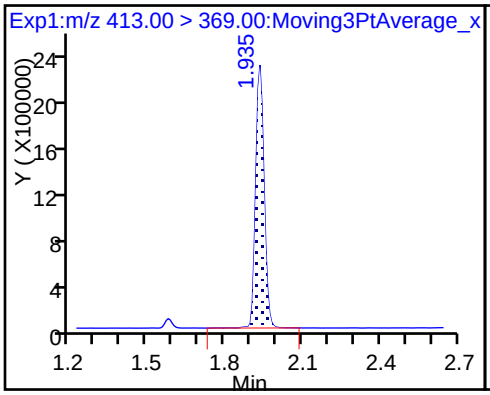
3 Perfluorohexanesulfonic acid



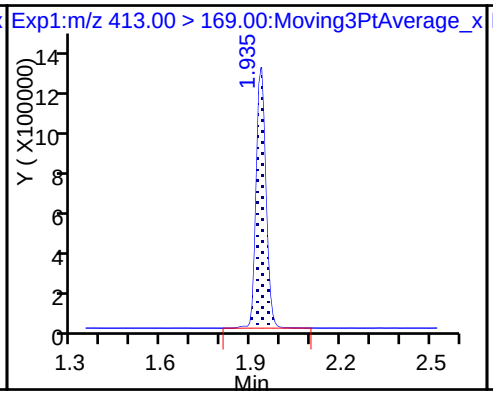
* 6 13C2-PFOA



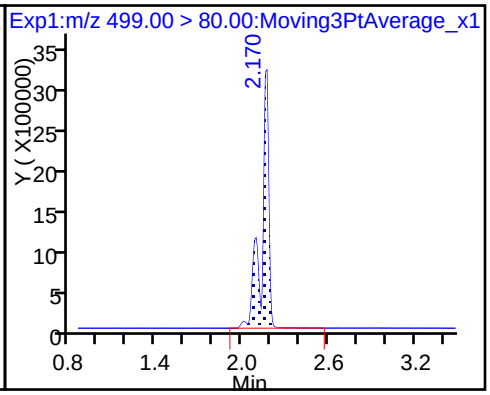
5 Perfluorooctanoic acid



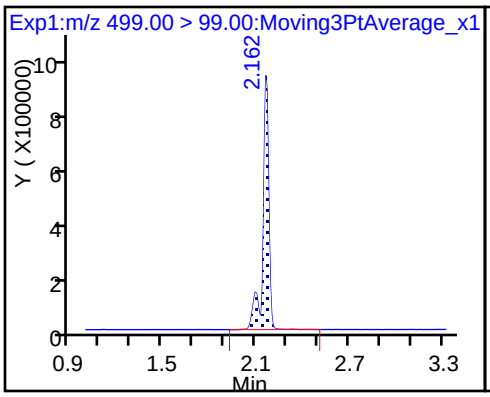
5 Perfluorooctanoic acid



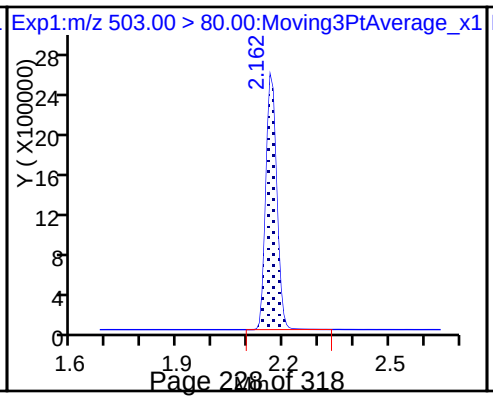
8 Perfluorooctane sulfonic acid



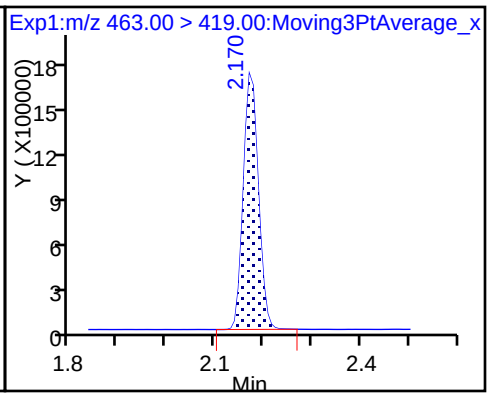
8 Perfluorooctane sulfonic acid



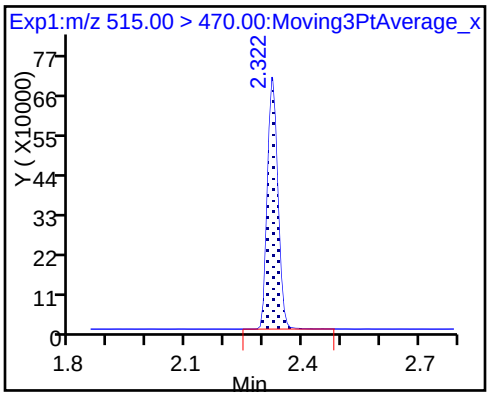
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d
Lims ID: IC L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 08-Sep-2017 13:51:29 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\20170908-47689.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 08-Sep-2017 14:36:39 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: barnettj Date: 08-Sep-2017 14:31:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.440	-0.006	1.000	23775992	180.9		7144	
298.90 > 99.00	1.434	1.440	-0.006	1.000	18153774		1.31(0.00-0.00)	6192	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	2288248	10.3		10238	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.730	1.736	-0.006	1.000	3422434	19.8		633	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.730	1.739	-0.009	1.000	16853658	55.7		8445	
* 6 13C2-PFOA									
415.00 > 370.00	1.927	1.932	-0.005		1848587	10.0		9323	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.927	1.933	-0.006	1.000	7116752	41.6		463	
413.00 > 169.00	1.927	1.933	-0.006	1.000	3999566		1.78(0.00-0.00)	5263	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.162	2.162	0.0	1.000	14205705	80.8		6204	M
499.00 > 99.00	2.155	2.162	-0.007	0.996	3042793		4.67(0.00-0.00)	2941	M
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.164	-0.009		5438027	28.7		5942	
9 Perfluorononanoic acid									
463.00 > 419.00	2.170	2.171	-0.001	1.000	4847063	40.4		564	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1295246	10.4		7835	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L6_00020 Amount Added: 1.00 Units: mL

Report Date: 08-Sep-2017 14:36:39 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Injection Date: 08-Sep-2017 13:51:29 Instrument ID: A8_N

Lims ID: IC L6

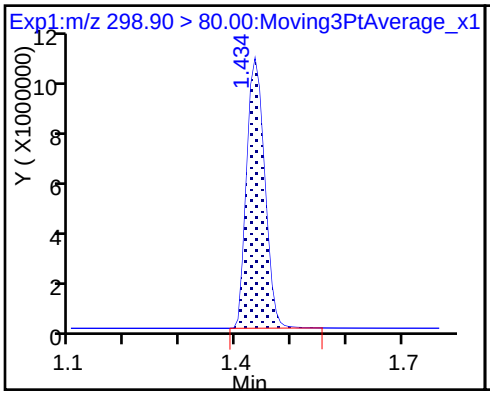
Client ID:

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

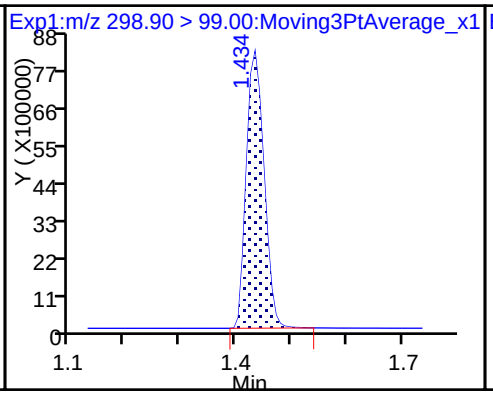
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

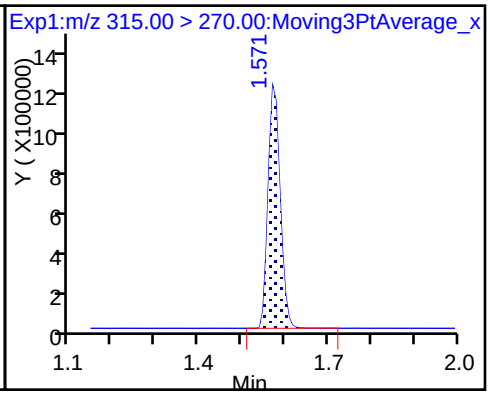
1 Perfluorobutanesulfonic acid



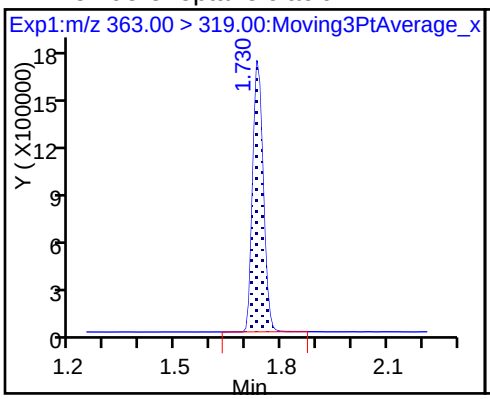
1 Perfluorobutanesulfonic acid



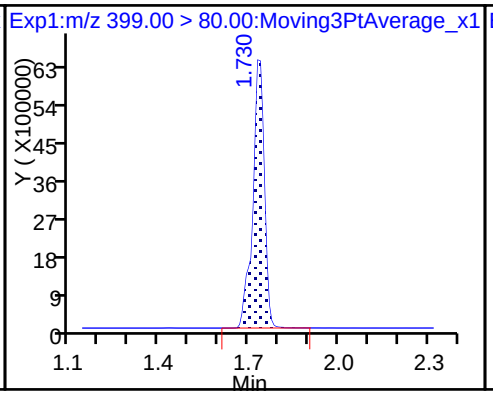
$ 2 13C2 PFHxA



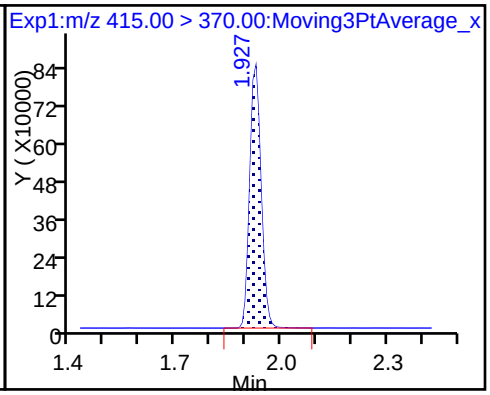
4 Perfluoroheptanoic acid



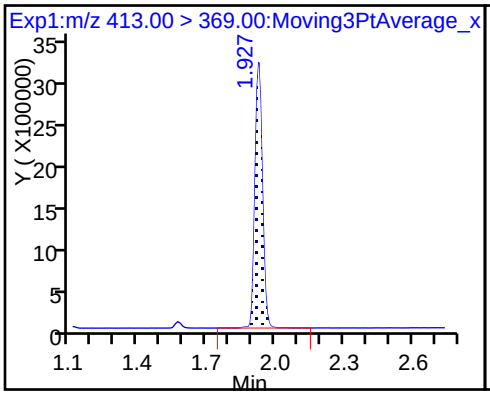
3 Perfluorohexanesulfonic acid



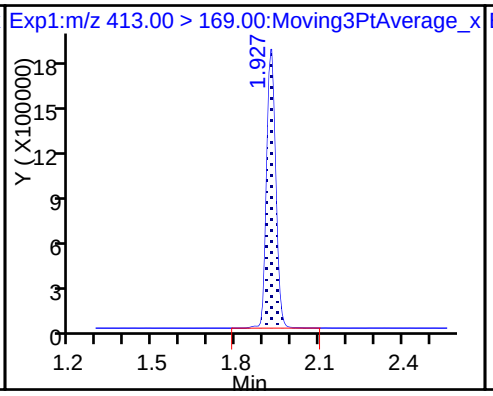
* 6 13C2-PFOA



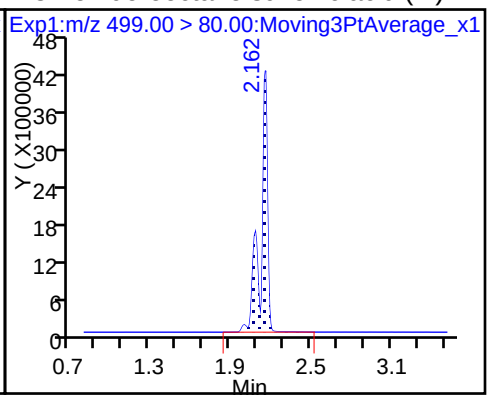
5 Perfluorooctanoic acid



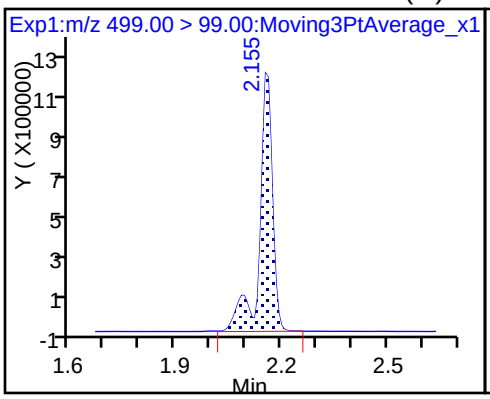
5 Perfluorooctanoic acid



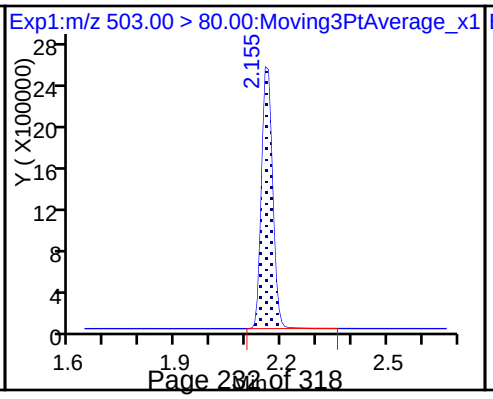
8 Perfluorooctane sulfonic acid (M)



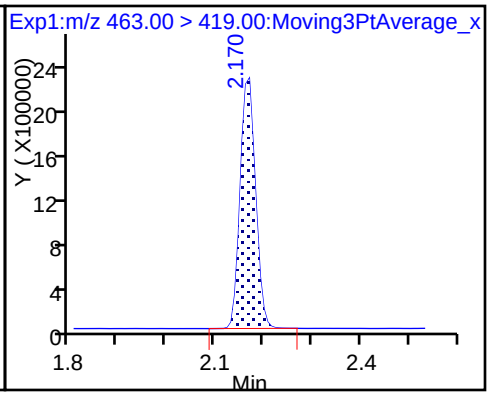
8 Perfluorooctane sulfonic acid (M)



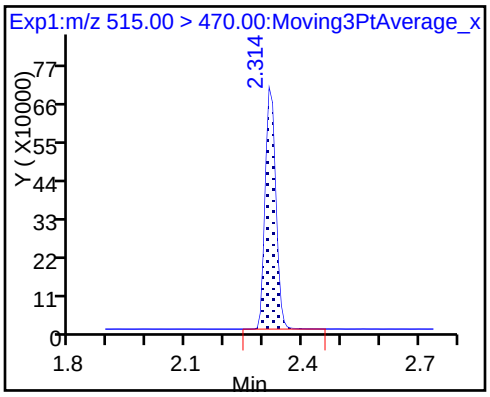
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

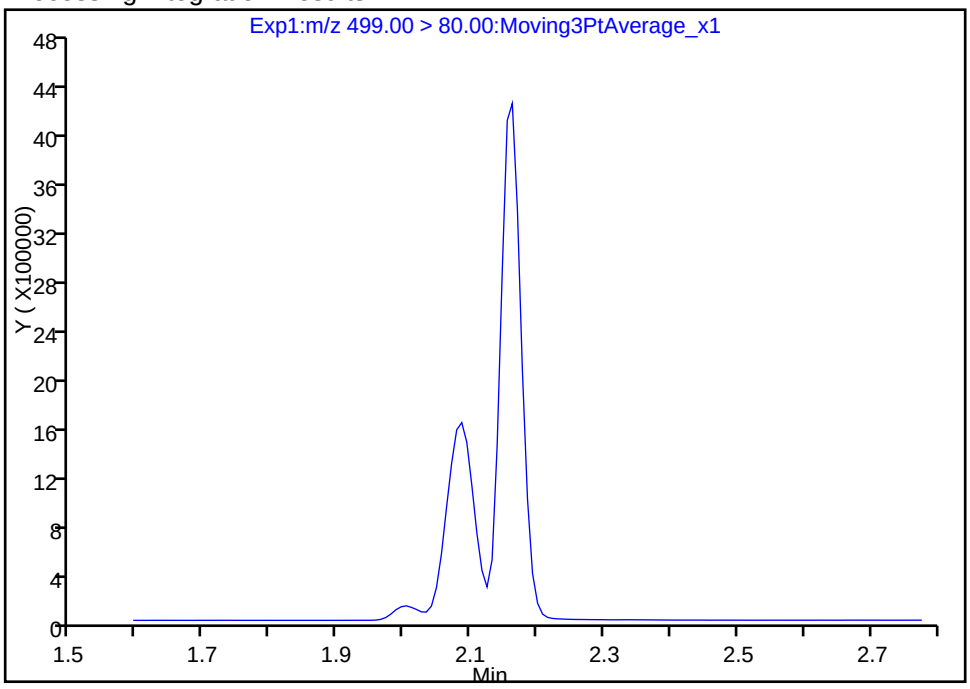
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d
Injection Date: 08-Sep-2017 13:51:29 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

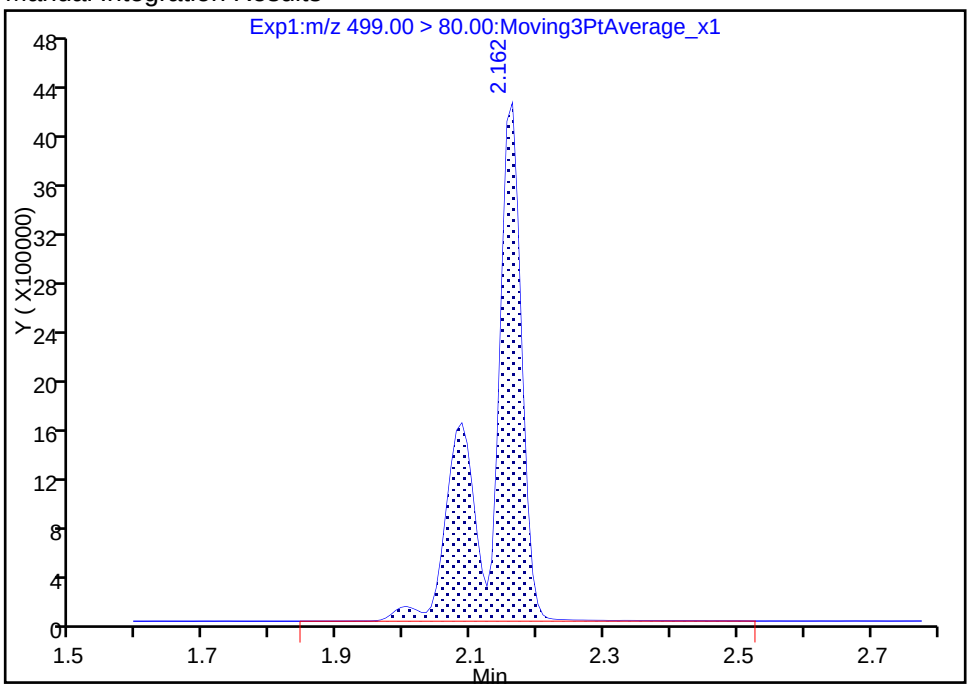
Not Detected
Expected RT: 2.16

Processing Integration Results



Manual Integration Results

RT: 2.16
Area: 14205705
Amount: 80.778955
Amount Units: ng/ml



Reviewer: barnettj, 08-Sep-2017 14:31:17
Audit Action: Assigned Compound ID Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

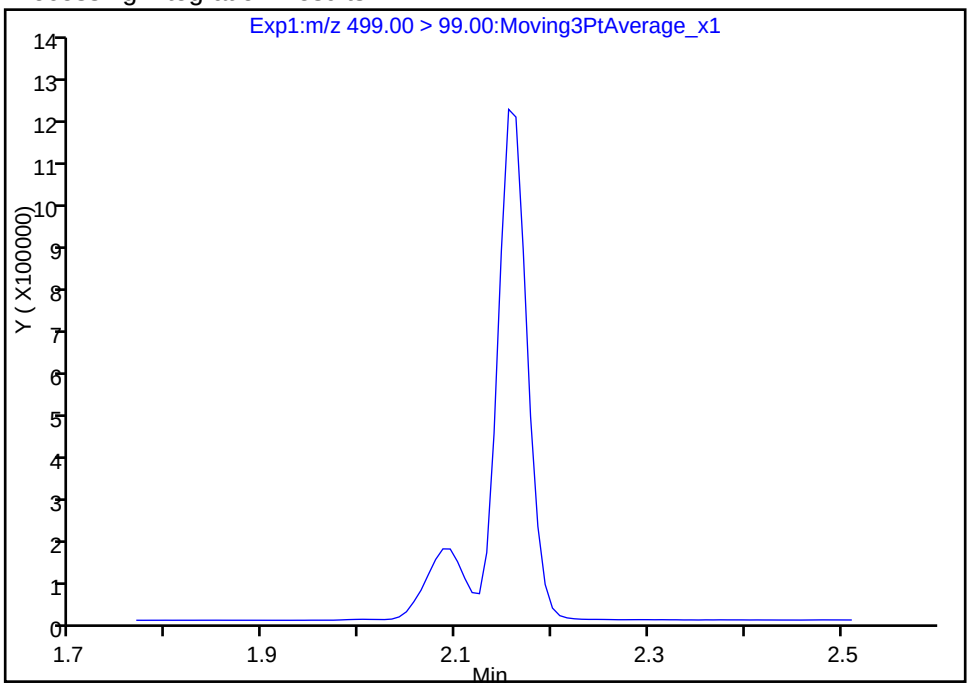
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d
Injection Date: 08-Sep-2017 13:51:29 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

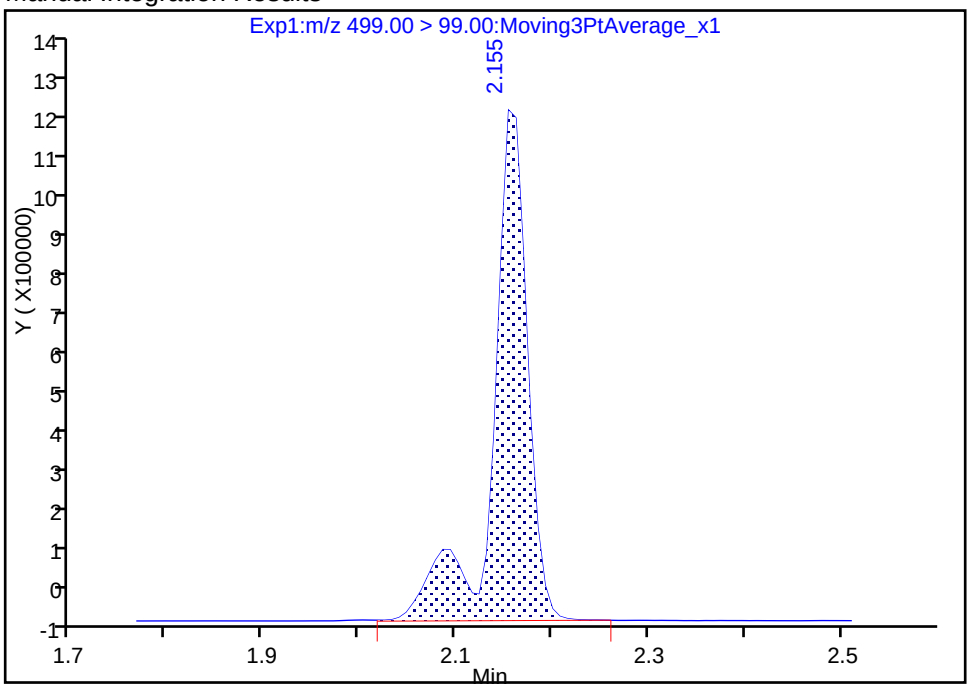
Not Detected
Expected RT: 2.16

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 3042793
Amount: 80.778955
Amount Units: ng/ml



Reviewer: barnettj, 08-Sep-2017 14:31:30
Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

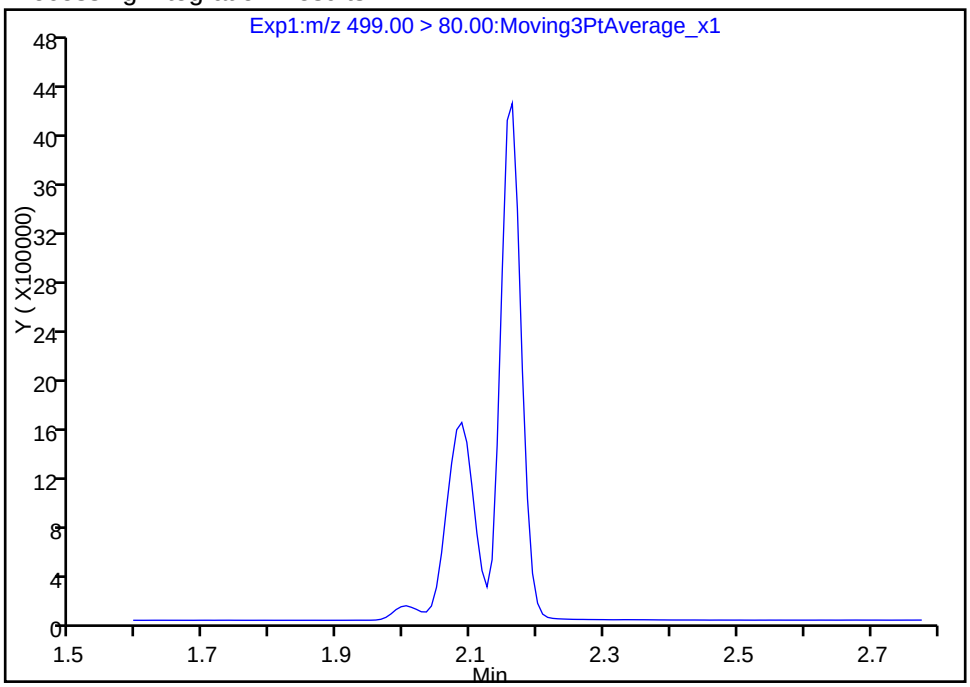
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d
Injection Date: 08-Sep-2017 13:51:29 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

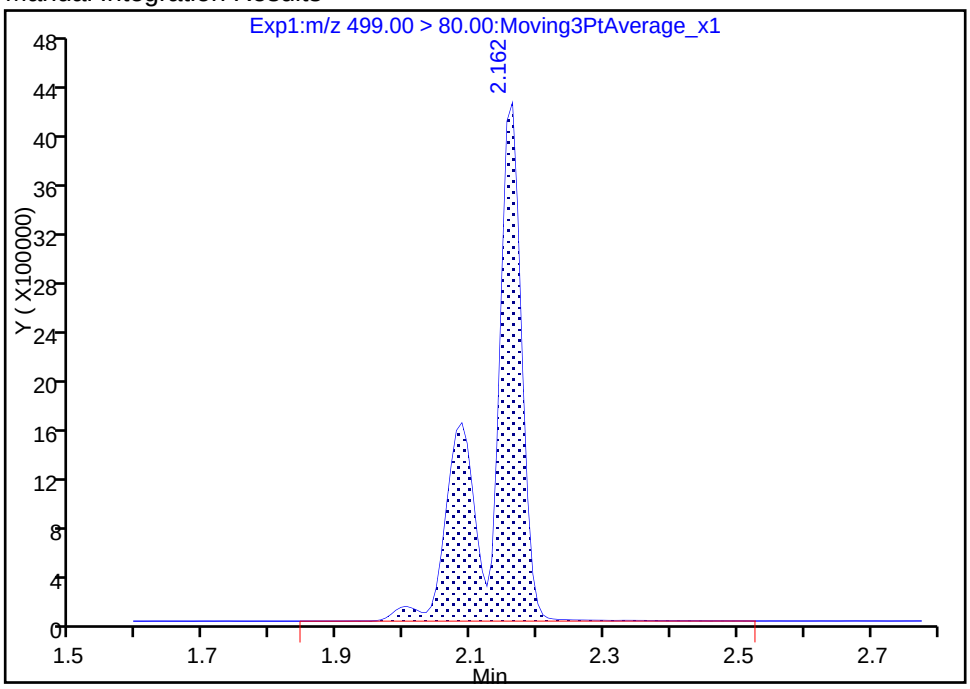
Not Detected
Expected RT: 2.16

Processing Integration Results



Manual Integration Results

RT: 2.16
Area: 14205705
Amount: 80.778955
Amount Units: ng/ml



Reviewer: barnettj, 08-Sep-2017 14:31:30
Audit Action: Manually Integrated Audit Reason: Isomers

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Lab Sample ID: CCVL 320-183459/9 Calibration Date: 09/08/2017 14:00

Instrument ID: A8_N Calib Start Date: 09/08/2017 13:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/08/2017 13:51

Lab File ID: 2017.09.08_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		1.035		20.3	20.0	1.4	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9339	0.9801		2.33	2.22	4.9	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.597	1.670		6.97	6.67	4.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9262	0.9160		4.40	4.45	-1.1	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9275	0.9149		8.77	8.89	-1.4	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6485	0.6787		4.65	4.45	4.7	50.0
13C2 PFHxA	Ave	1.207	1.214		10.1	10.0	0.6	30.0
13C2 PFDA	Ave	0.6716	0.6847		10.2	10.0	1.9	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_011.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 08-Sep-2017 14:00:59 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\20170908-47689.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 08-Sep-2017 14:36:41 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: barnettj Date: 08-Sep-2017 14:34:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.440	-0.006	1.000	4231471	20.3		2782	
298.90 > 99.00	1.434	1.440	-0.006	1.000	3093905		1.37(0.00-0.00)	2232	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.577	0.001	1.000	2397228	10.1		10955	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.737	1.736	0.001	1.000	430105	2.33		83.2	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.737	1.739	-0.002	1.000	2275562	6.97		3197	
* 6 13C2-PFOA									
415.00 > 370.00	1.927	1.932	-0.005		1974239	10.0		10041	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.927	1.933	-0.006	1.000	804442	4.40		57.6	
413.00 > 169.00	1.927	1.933	-0.006	1.000	454125		1.77(0.00-0.00)	774	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.162	2.162	0.0	1.000	1662205	8.77		1128	
499.00 > 99.00	2.162	2.162	0.0	1.000	347509		4.78(0.00-0.00)	502	
* 7 13C4 PFOS									
503.00 > 80.00	2.162	2.164	-0.002		5860601	28.7		6007	
9 Perfluorononanoic acid									
463.00 > 419.00	2.170	2.171	-0.001	1.000	595614	4.65		78.1	
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.320	0.002	1.000	1351701	10.2		8571	

Reagents:

LC537-L2_00020 Amount Added: 1.00 Units: mL

Report Date: 08-Sep-2017 14:36:41 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_011.d

Injection Date: 08-Sep-2017 14:00:59 Instrument ID: A8_N

Lims ID: CCVL

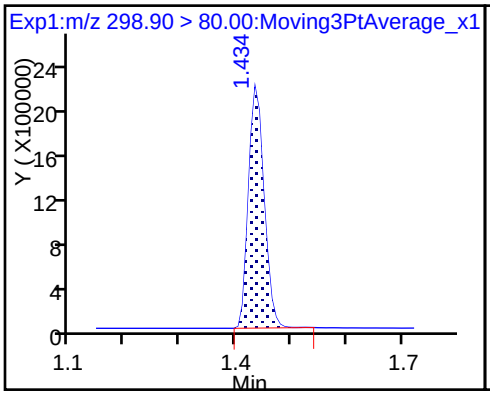
Client ID:

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

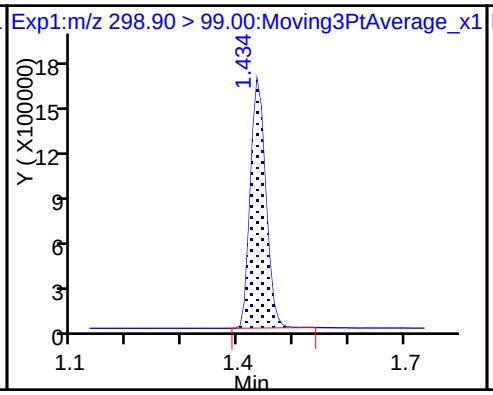
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

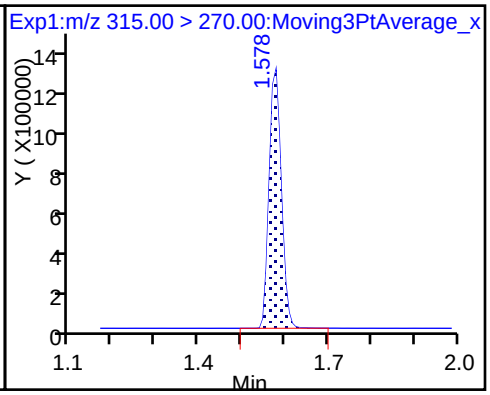
1 Perfluorobutanesulfonic acid



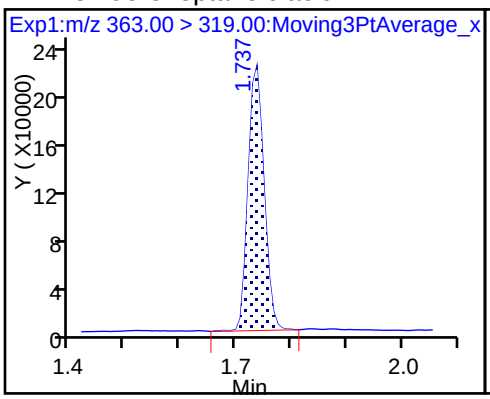
1 Perfluorobutanesulfonic acid



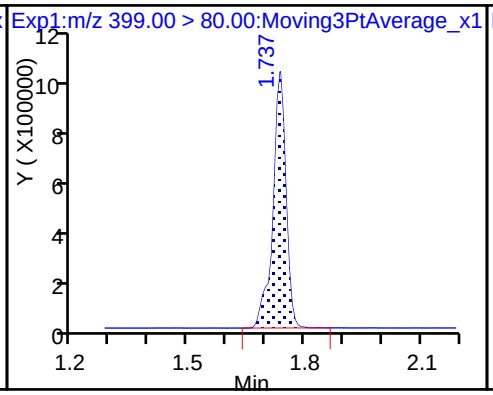
$ 2 13C2 PFHxA



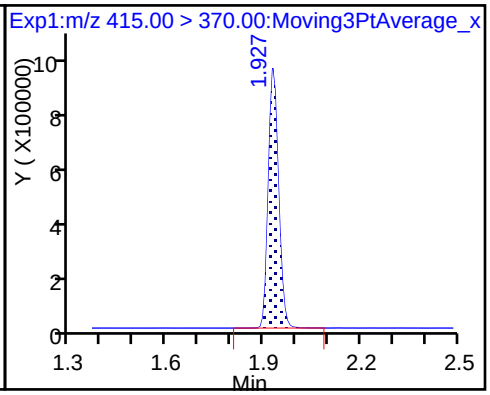
4 Perfluoroheptanoic acid



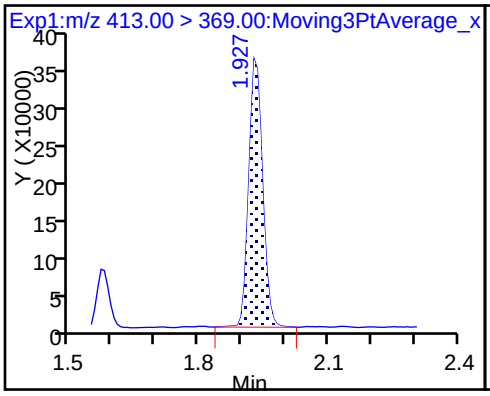
3 Perfluorohexanesulfonic acid



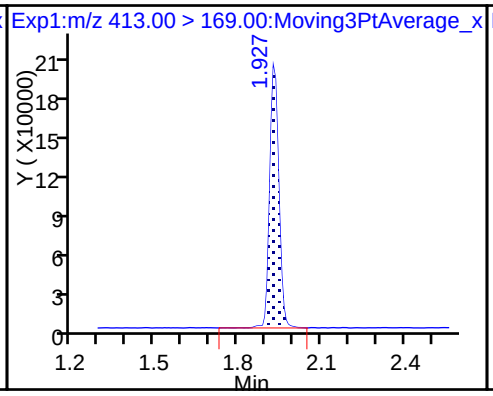
* 6 13C2-PFOA



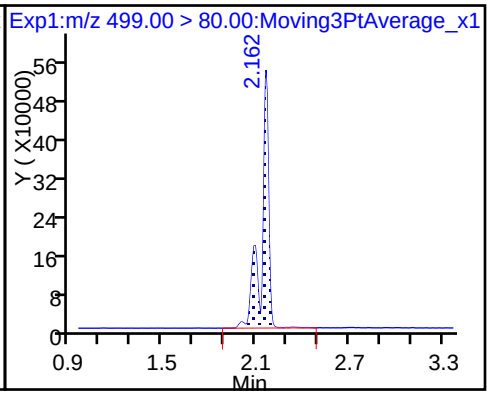
5 Perfluorooctanoic acid



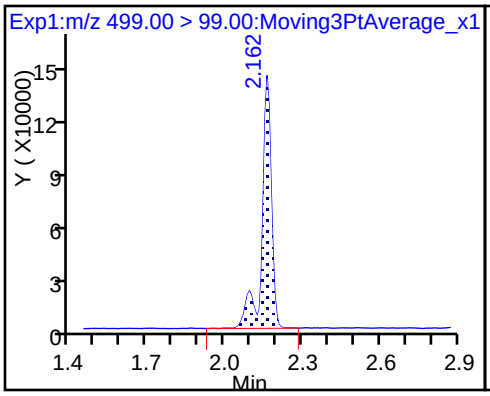
5 Perfluorooctanoic acid



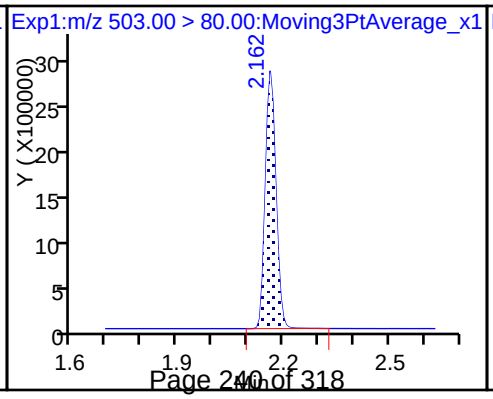
8 Perfluorooctane sulfonic acid



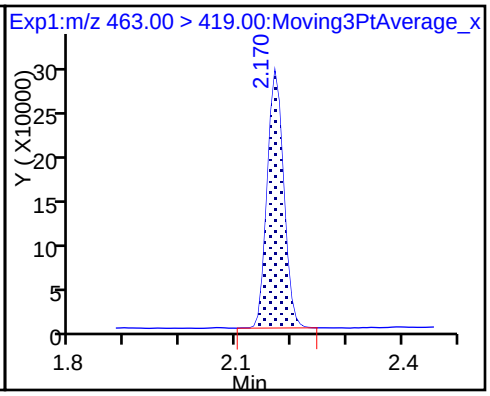
8 Perfluorooctane sulfonic acid



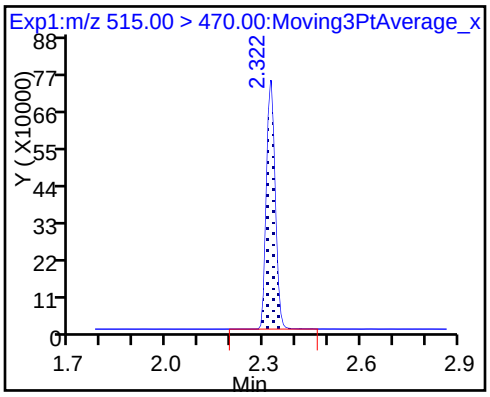
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
88
77
66
55
44
33
22
11
0
1.7
2.0
2.3
2.6
2.9
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Lab Sample ID: ICV 320-183459/11 Calibration Date: 09/08/2017 14:10

Instrument ID: A8_N Calib Start Date: 09/08/2017 13:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/08/2017 13:51

Lab File ID: 2017.09.08_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		0.8407		97.5	100	-2.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9339	0.9585		10.3	10.0	2.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.597	1.807		22.7	20.1	13.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9262	0.9495		21.0	20.5	2.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9275	1.113		23.6	19.7	20.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6485	0.7430		23.1	20.1	14.6	30.0
13C2 PFHxA	Ave	1.207	1.185		9.82	10.0	-1.8	30.0
13C2 PFDA	Ave	0.6716	0.6610		9.84	10.0	-1.6	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_013.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 08-Sep-2017 14:10:28 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\20170908-47689.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 08-Sep-2017 14:36:42 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: barnettj Date: 08-Sep-2017 14:34:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.440	0.002	1.000	19376335	97.5		6914	
298.90 > 99.00	1.442	1.440	0.002	1.000	14935061		1.30(0.00-0.00)	6602	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.586	1.577	0.009	1.000	2566770	9.82		12238	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.737	1.736	0.001	1.000	2076062	10.3		392	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.745	1.739	0.006	1.000	8349942	22.7		7727	
* 6 13C2-PFOA									
415.00 > 370.00	1.935	1.932	0.003		2166899	10.0		10916	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.935	1.933	0.002	1.000	4214438	21.0		288	
413.00 > 169.00	1.935	1.933	0.002	1.000	2422425		1.74(0.00-0.00)	3521	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.170	2.162	0.008	1.000	5049121	23.6		2981	
499.00 > 99.00	2.170	2.162	0.008	1.000	947042		5.33(0.00-0.00)	1196	
* 7 13C4 PFOS									
503.00 > 80.00	2.170	2.164	0.006		6602152	28.7		6669	
9 Perfluorononanoic acid									
463.00 > 419.00	2.177	2.171	0.006	1.000	3240273	23.1		458	
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.320	0.002	1.000	1432268	9.84		8543	

Reagents:

LC537-ICV_00028 Amount Added: 1.00 Units: mL

Report Date: 08-Sep-2017 14:36:43 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_013.d

Injection Date: 08-Sep-2017 14:10:28 Instrument ID: A8_N

Lims ID: ICV

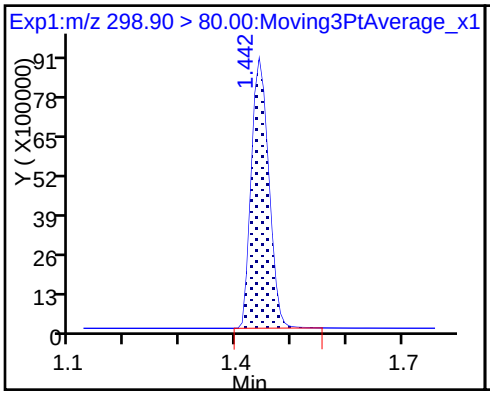
Client ID:

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

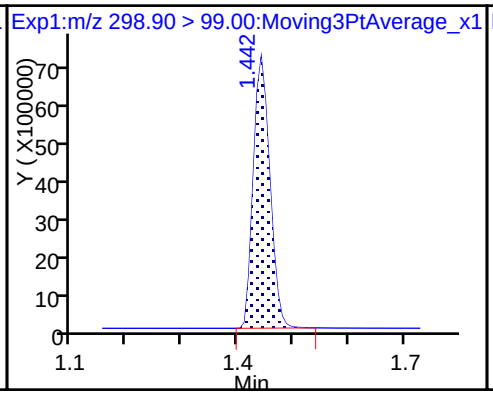
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

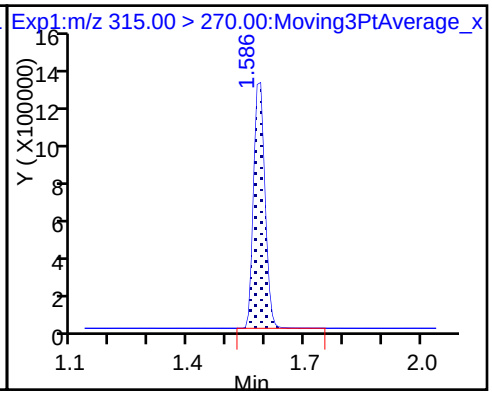
1 Perfluorobutanesulfonic acid



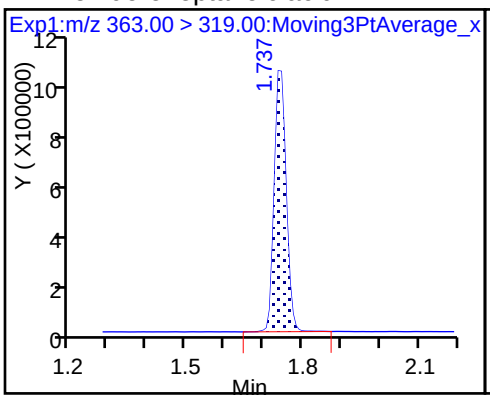
1 Perfluorobutanesulfonic acid



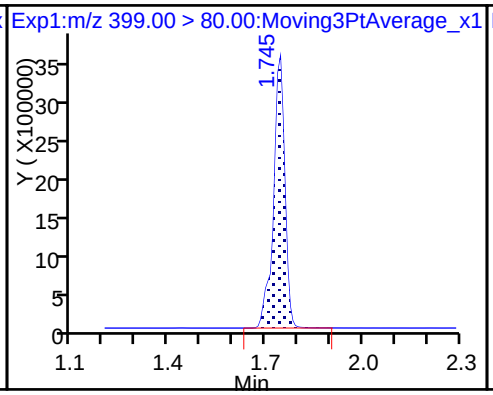
$ 2 13C2 PFHxA



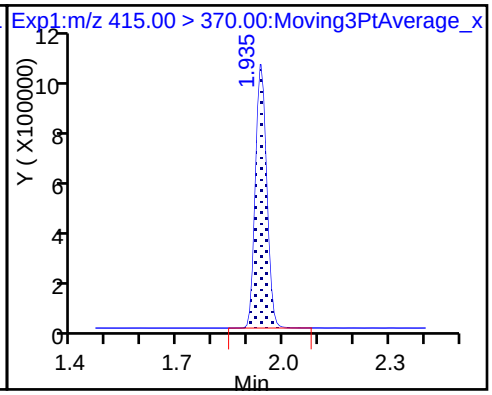
4 Perfluoroheptanoic acid



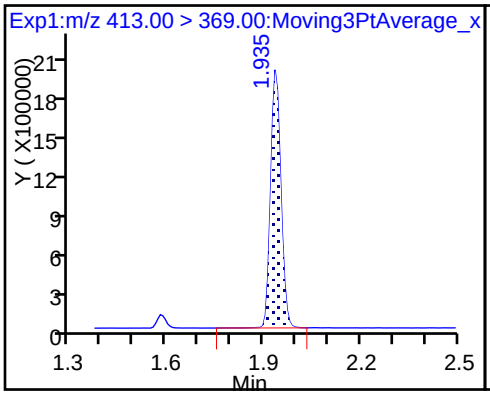
3 Perfluorohexanesulfonic acid



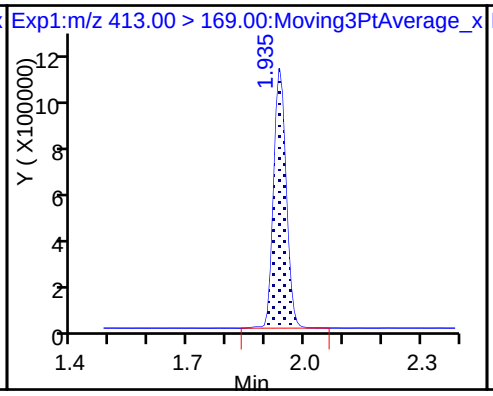
* 6 13C2-PFOA



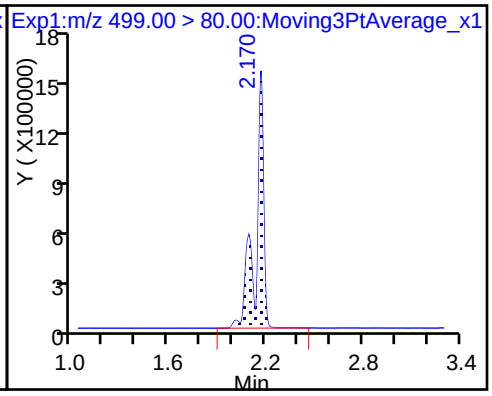
5 Perfluorooctanoic acid



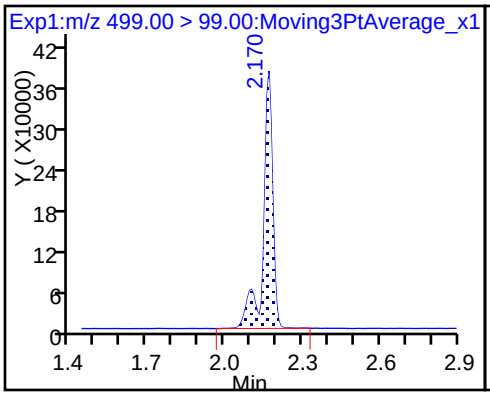
5 Perfluorooctanoic acid



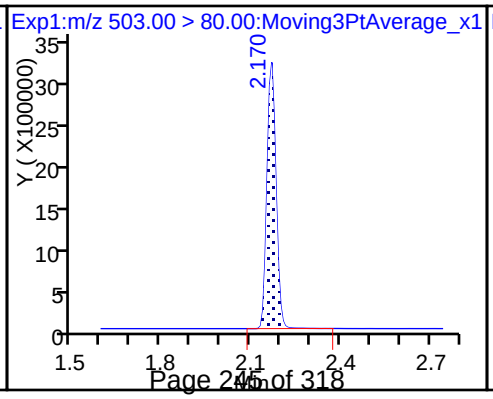
8 Perfluorooctane sulfonic acid



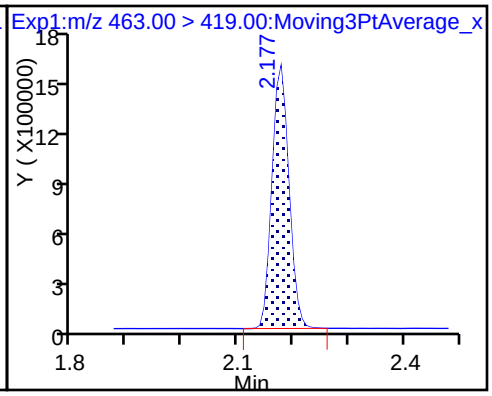
8 Perfluorooctane sulfonic acid



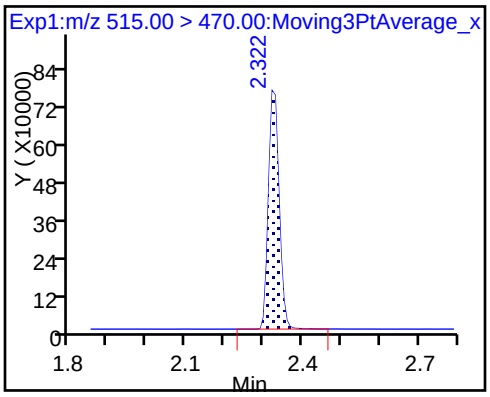
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA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2.322
Y (X10000)
84
72
60
48
36
24
12
0
1.8
2.1
2.4
2.7
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Lab Sample ID: CCVL 320-183505/3 Calibration Date: 09/08/2017 15:38

Instrument ID: A8_N Calib Start Date: 09/08/2017 13:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/08/2017 13:51

Lab File ID: 2017.09.08_537B_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.046		20.5	20.0	2.5	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9339	0.9827		2.34	2.22	5.2	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.597	1.654		6.91	6.67	3.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9262	0.9027		4.34	4.45	-2.5	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9275	0.9099		8.72	8.89	-1.9	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6485	0.6629		4.54	4.45	2.2	50.0
13C2 PFHxA	Ave	1.207	1.208		10.0	10.0	0.2	30.0
13C2 PFDA	Ave	0.6716	0.6635		9.88	10.0	-1.2	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47697.b\2017.09.08_537B_004.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 08-Sep-2017 15:38:19 ALS Bottle#: 2 Worklist Smp#: 3
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\20170908-47697.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 13:40:46 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 10:13:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.440	0.002	1.000	4384320	20.5		2929	
298.90 > 99.00	1.442	1.440	0.002	1.000	3146825		1.39(0.00-0.00)	2377	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.577	0.001	1.000	2456768	10.0		12781	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.737	1.736	0.001	1.000	444074	2.34		90.7	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.737	1.739	-0.002	1.000	2312363	6.91		3441	
* 6 13C2-PFOA									
415.00 > 370.00	1.927	1.932	-0.005		2032951	10.0		10848	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.927	1.933	-0.006	1.000	816255	4.34		58.7	
413.00 > 169.00	1.927	1.933	-0.006	1.000	466657		1.75(0.00-0.00)	829	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.162	2.162	0.0	1.000	1695895	8.72		1040	
499.00 > 99.00	2.162	2.162	0.0	1.000	364303		4.66(0.00-0.00)	530	
* 7 13C4 PFOS									
503.00 > 80.00	2.162	2.164	-0.002		6012410	28.7		6165	
9 Perfluorononanoic acid									
463.00 > 419.00	2.170	2.171	-0.001	1.000	599093	4.54		81.4	
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.320	0.002	1.000	1348768	9.88		9886	

Reagents:

LC537-L2_00020 Amount Added: 1.00 Units: mL

Report Date: 11-Sep-2017 13:40:47 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47697.b\2017.09.08_537B_004.d

Injection Date: 08-Sep-2017 15:38:19 Instrument ID: A8_N

Lims ID: CCVL

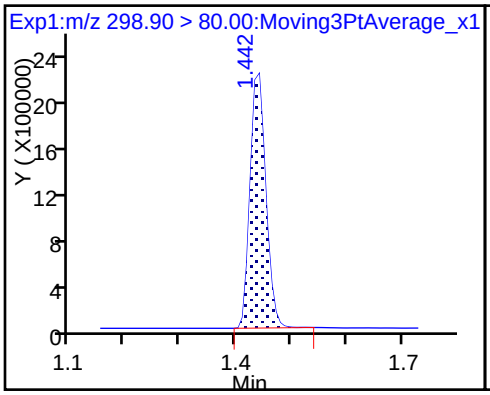
Client ID:

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

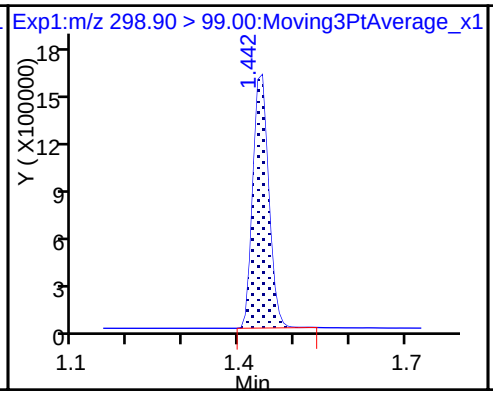
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

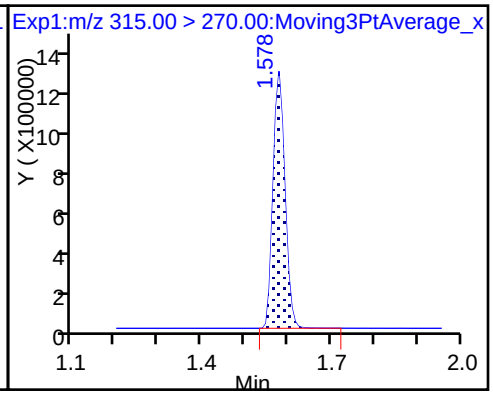
1 Perfluorobutanesulfonic acid



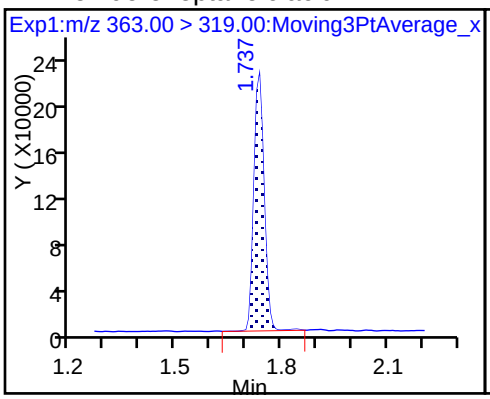
1 Perfluorobutanesulfonic acid



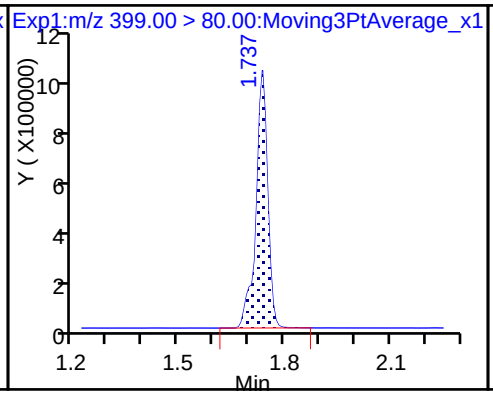
$ 2 13C2 PFHxA



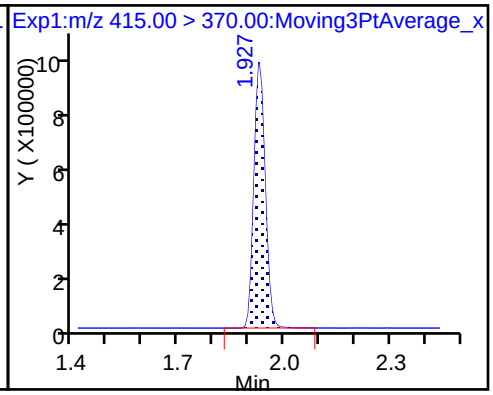
4 Perfluoroheptanoic acid



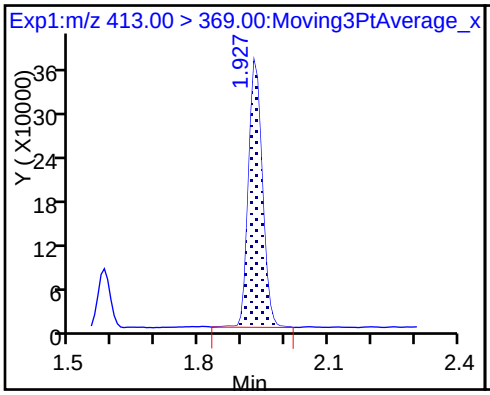
3 Perfluorohexanesulfonic acid



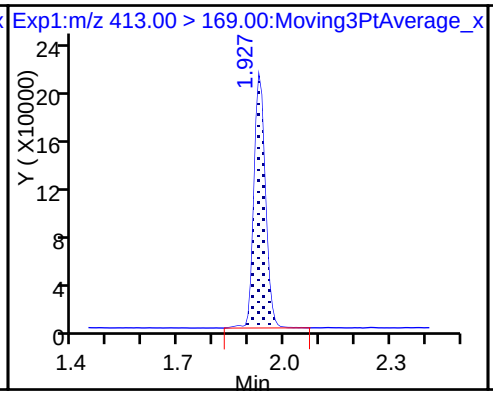
* 6 13C2-PFOA



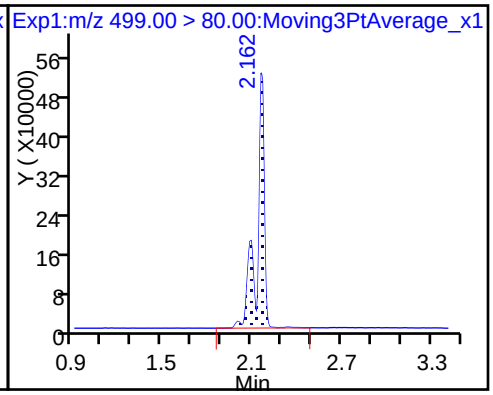
5 Perfluorooctanoic acid



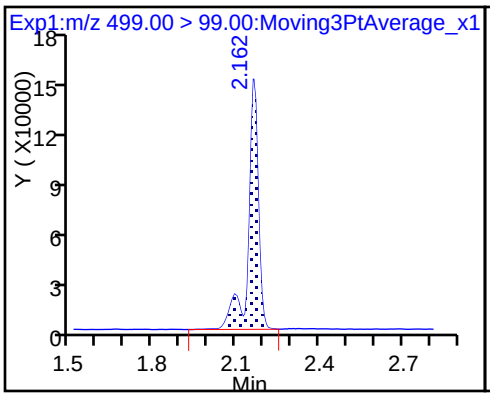
5 Perfluorooctanoic acid



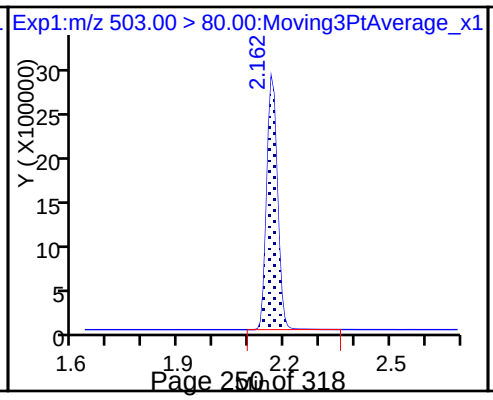
8 Perfluorooctane sulfonic acid



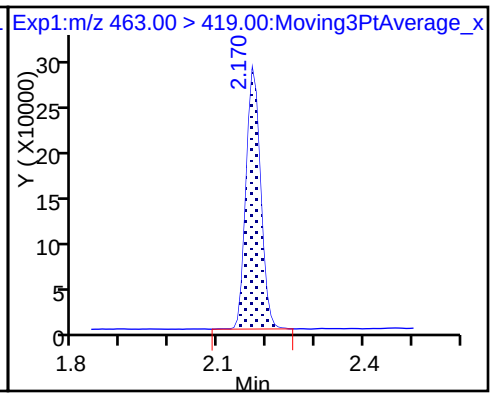
8 Perfluorooctane sulfonic acid



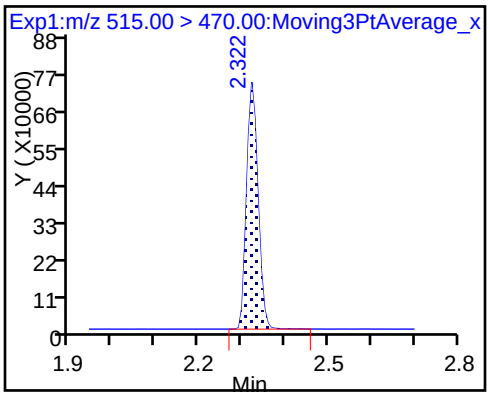
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
88
77
66
55
44
33
22
11
0
1.9
2.2
2.5
2.8
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Lab Sample ID: CCV 320-183512/1 Calibration Date: 09/08/2017 20:41

Instrument ID: A8_N Calib Start Date: 09/08/2017 13:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/08/2017 13:51

Lab File ID: 2017.09.08_537C_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.034		48.3	45.0	7.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9339	1.033		5.53	5.00	10.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.597	1.670		15.7	15.0	4.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9262	0.9403		10.2	10.0	1.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9275	0.9220		19.9	20.0	-0.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6485	0.6642		10.2	10.0	2.4	30.0
13C2 PFHxA	Ave	1.207	1.286		10.7	10.0	6.5	30.0
13C2 PFDA	Ave	0.6716	0.6874		10.2	10.0	2.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_001.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 08-Sep-2017 20:41:59 ALS Bottle#: 3 Worklist Smp#: 1
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\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:11:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.440	0.002	1.000	8662455	48.3		4979	
298.90 > 99.00	1.442	1.440	0.002	1.000	6353317		1.36(0.00-0.00)	4087	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.577	0.001	1.000	2133533	10.7		14059	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.730	1.736	-0.006	1.000	857257	5.53		176	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.730	1.739	-0.009	1.000	4664734	15.7		5738	
* 6 13C2-PFOA									
415.00 > 370.00	1.920	1.932	-0.012		1659667	10.0		9783	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.920	1.933	-0.013	1.000	1561865	10.2		68.7	
413.00 > 169.00	1.920	1.933	-0.013	1.000	832214		1.88(0.00-0.00)	1928	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.155	2.140	0.015	1.000	3434770	19.9		2654	M
499.00 > 99.00	2.155	2.140	0.015	1.000	690744		4.97(0.00-0.00)	787	M
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.164	-0.009		5340700	28.7		6043	
9 Perfluorononanoic acid									
463.00 > 419.00	2.162	2.171	-0.009	1.000	1102588	10.2		138	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1140918	10.2		8588	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

Report Date: 11-Sep-2017 15:23:38 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_001.d

Injection Date: 08-Sep-2017 20:41:59 Instrument ID: A8_N

Lims ID: CCV L3

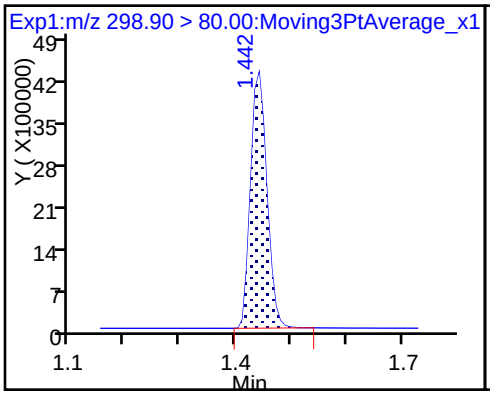
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 1

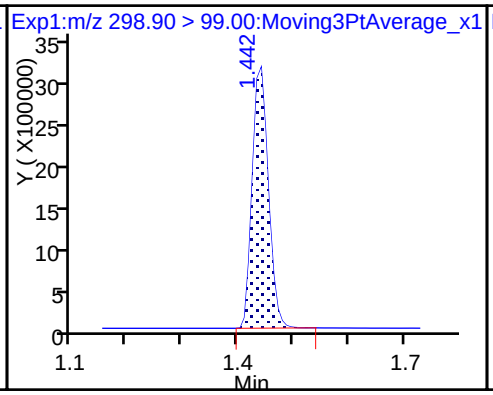
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

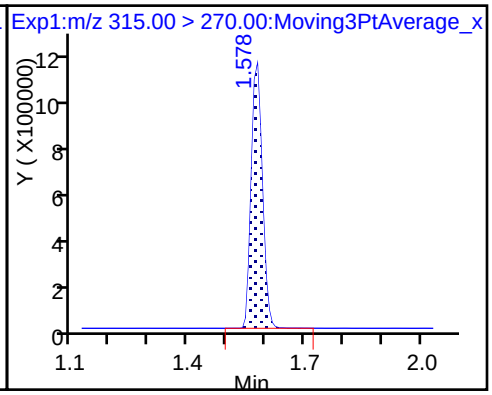
1 Perfluorobutanesulfonic acid



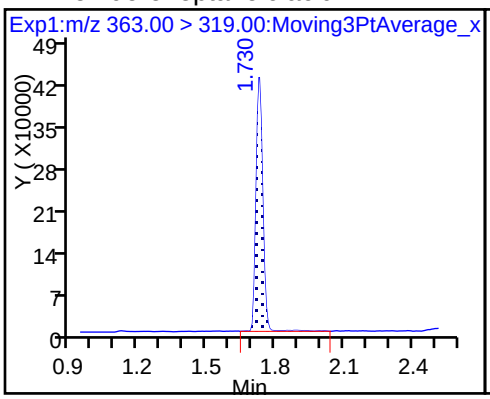
1 Perfluorobutanesulfonic acid



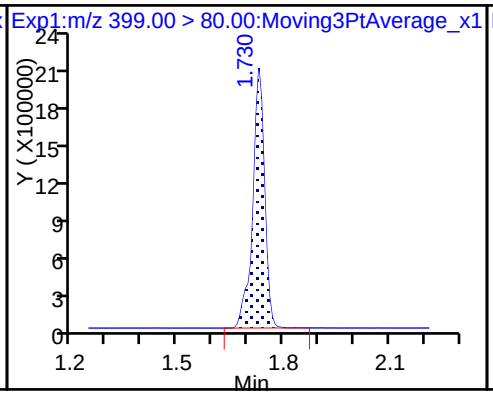
$ 2 13C2 PFHxA



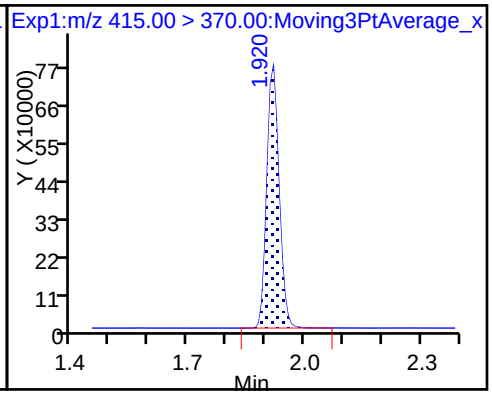
4 Perfluoroheptanoic acid



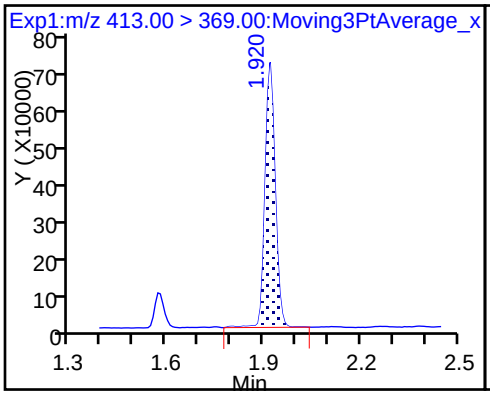
3 Perfluorohexanesulfonic acid



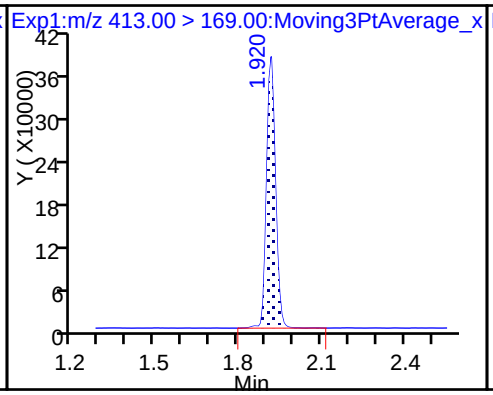
* 6 13C2-PFOA



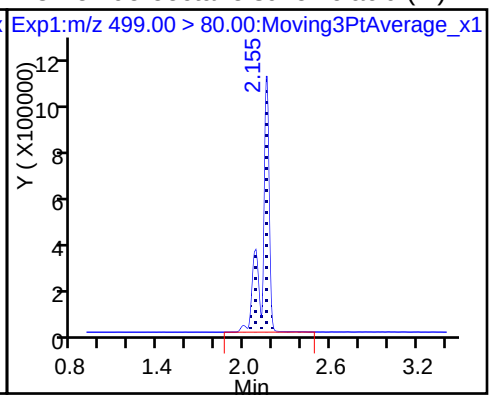
5 Perfluorooctanoic acid



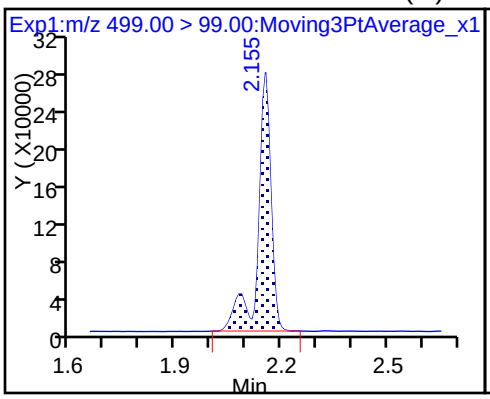
5 Perfluorooctanoic acid



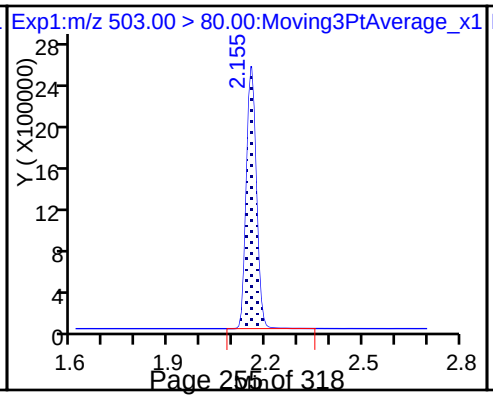
8 Perfluorooctane sulfonic acid (M)



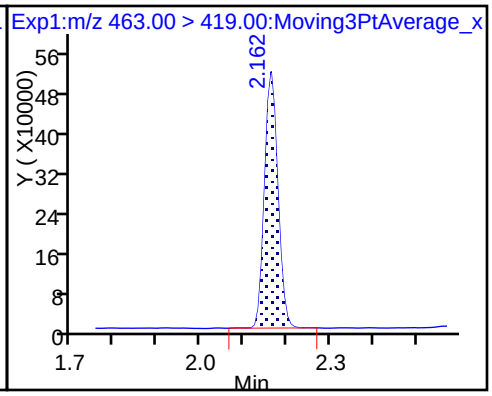
8 Perfluorooctane sulfonic acid (M)



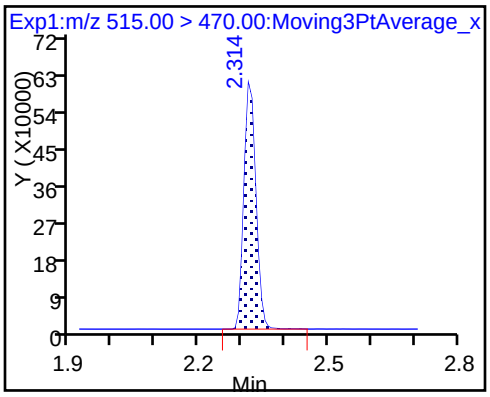
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
72
63
54
45
36
27
18
9
0
1.9
2.2
2.5
2.8
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

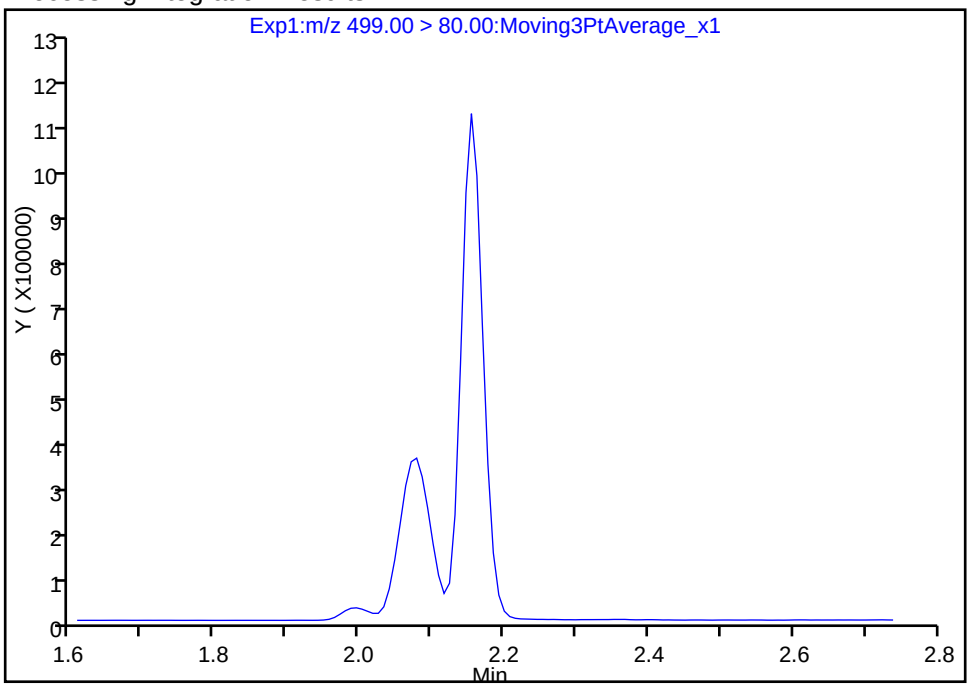
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_001.d
Injection Date: 08-Sep-2017 20:41:59 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

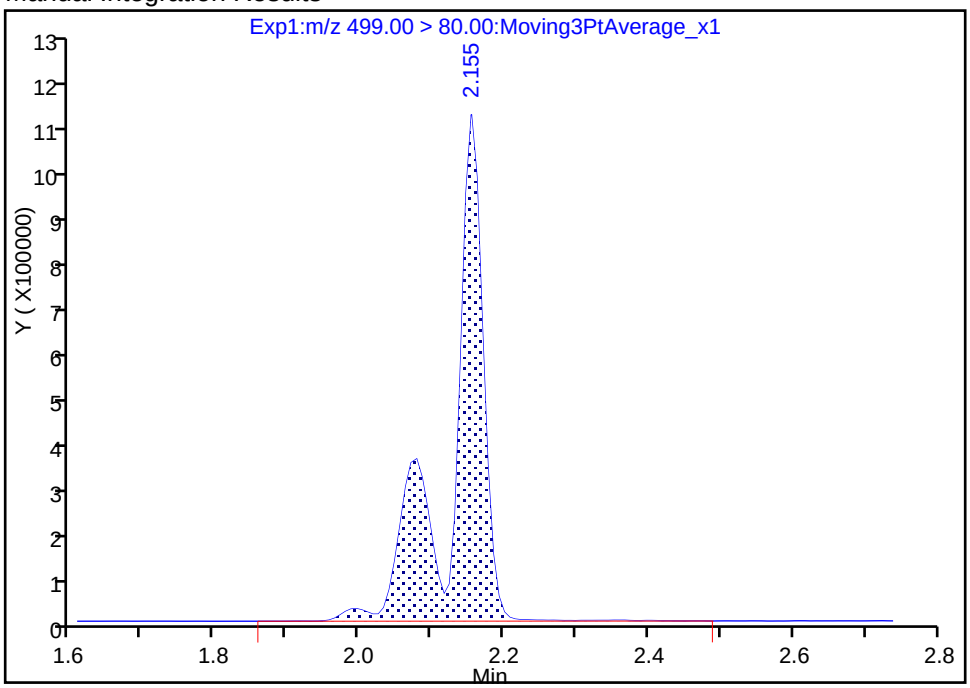
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 3434770
Amount: 19.887321
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:10:43
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

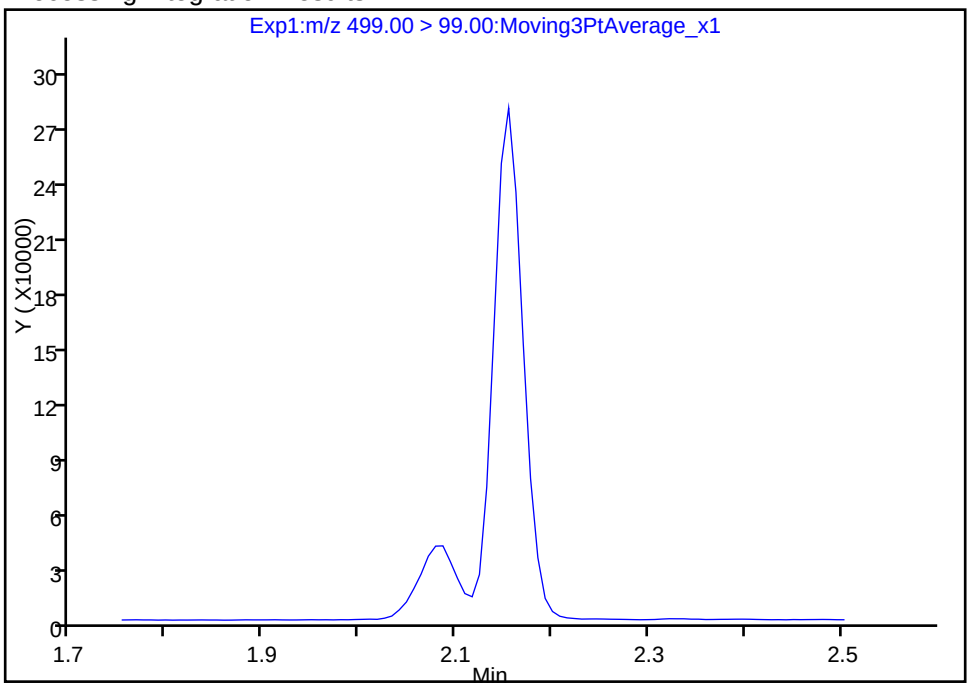
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_001.d
Injection Date: 08-Sep-2017 20:41:59 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

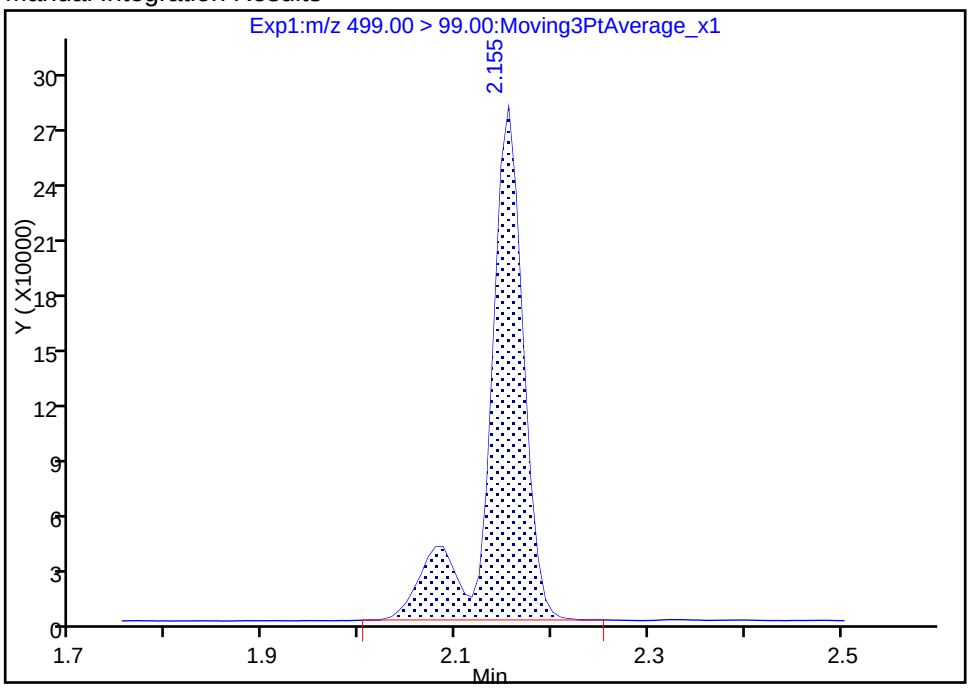
Processing Integration Results

Not Detected
Expected RT: 2.14



Manual Integration Results

RT: 2.15
Area: 690744
Amount: 19.887321
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:10:56
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

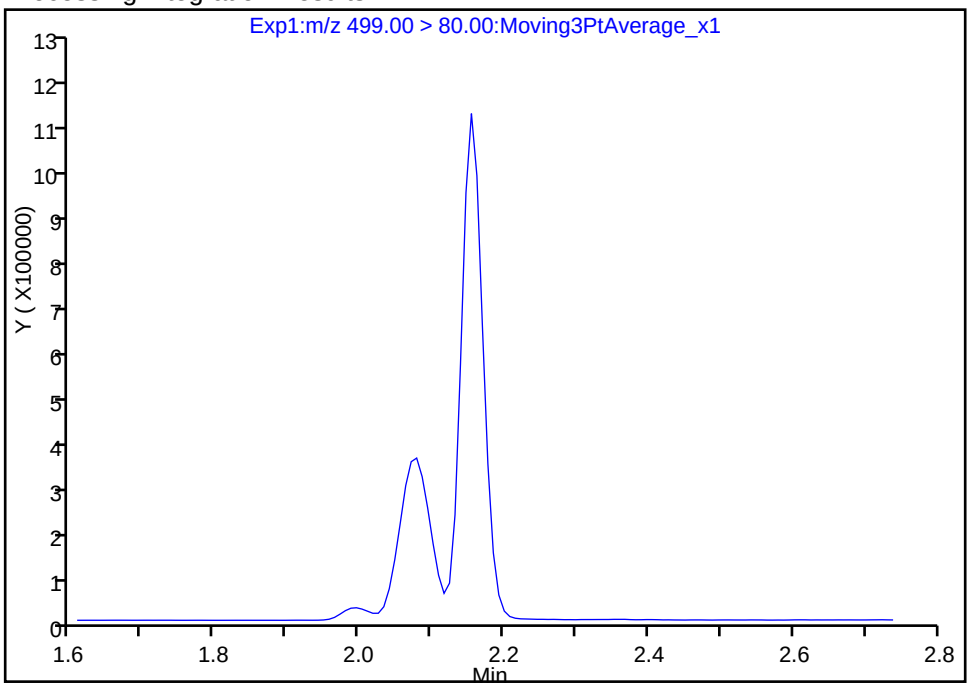
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_001.d
Injection Date: 08-Sep-2017 20:41:59 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

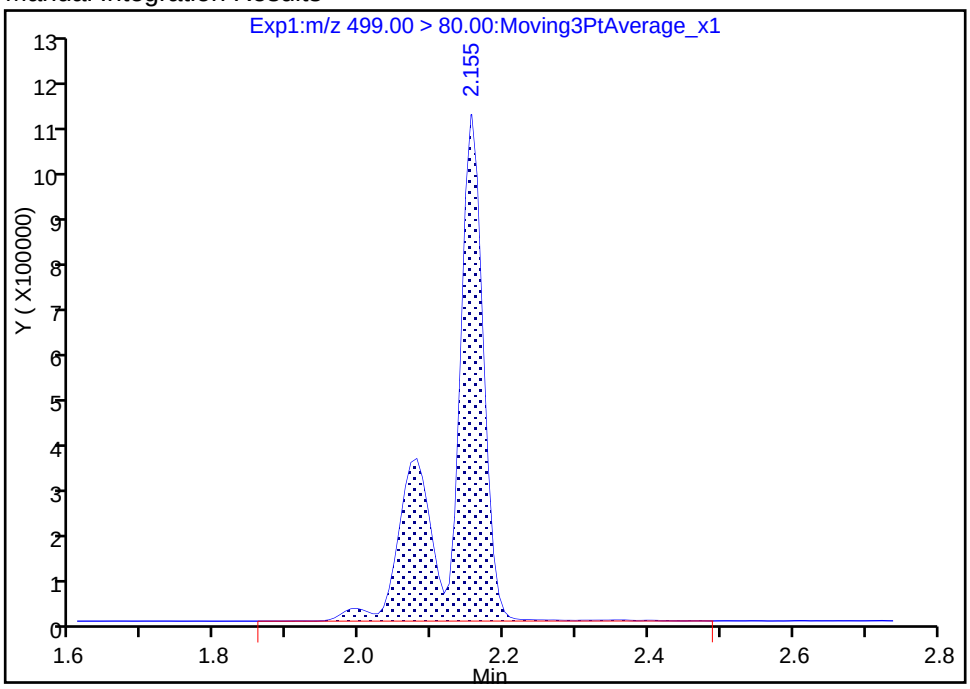
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 3434770
Amount: 19.887321
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:10:56
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Lab Sample ID: CCV 320-183512/13 Calibration Date: 09/08/2017 21:39

Instrument ID: A8_N Calib Start Date: 09/08/2017 13:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/08/2017 13:51

Lab File ID: 2017.09.08_537C_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		0.7924		137	135	1.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9339	0.9876		15.9	15.0	5.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.597	1.552		43.7	45.0	-2.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9262	0.9339		30.3	30.0	0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9275	0.9312		60.3	60.0	0.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6485	0.6526		30.2	30.0	0.6	30.0
13C2 PFHxA	Ave	1.207	1.277		10.6	10.0	5.8	30.0
13C2 PFDA	Ave	0.6716	0.6814		10.1	10.0	1.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Lab Sample ID: CCV 320-183773/13 Calibration Date: 09/08/2017 21:39

Instrument ID: A8_N Calib Start Date: 09/08/2017 13:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/08/2017 13:51

Lab File ID: 2017.09.08_537C_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		0.7924		137	135	1.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9339	0.9876		15.9	15.0	5.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.597	1.552		43.7	45.0	-2.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9262	0.9339		30.3	30.0	0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9275	0.9312		60.3	60.0	0.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6485	0.6526		30.2	30.0	0.6	30.0
13C2 PFHxA	Ave	1.207	1.277		10.6	10.0	5.8	30.0
13C2 PFDA	Ave	0.6716	0.6814		10.1	10.0	1.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_013.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 08-Sep-2017 21:39:02 ALS Bottle#: 5 Worklist Smp#: 13
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\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:47 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:15:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.440	-0.006	1.000	19518313	136.5		6761	
298.90 > 99.00	1.434	1.440	-0.006	1.000	15131185		1.29(0.00-0.00)	6726	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	2138171	10.6		12482	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.736	-0.014	1.000	2480940	15.9		500	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.739	-0.017	1.000	12740992	43.7		8667	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1674403	10.0		9309	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.912	1.933	-0.021	1.000	4695000	30.3		197	
413.00 > 169.00	1.912	1.933	-0.021	1.000	2620840		1.79(0.00-0.00)	5318	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.147	2.140	0.007	1.000	10196134	60.3		6632	
499.00 > 99.00	2.147	2.140	0.007	1.000	2129641		4.79(0.00-0.00)	2205	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.164	-0.017		5232378	28.7		5746	
9 Perfluorononanoic acid									
463.00 > 419.00	2.155	2.171	-0.016	1.000	3278671	30.2		327	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1140919	10.1		8723	

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_013.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 08-Sep-2017 21:39:02 ALS Bottle#: 5 Worklist Smp#: 13
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\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:47 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:15:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.440	-0.006	1.000	19518313	136.5		6761	
298.90 > 99.00	1.434	1.440	-0.006	1.000	15131185		1.29(0.00-0.00)	6726	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	2138171	10.6		12482	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.736	-0.014	1.000	2480940	15.9		500	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.722	1.739	-0.017	1.000	12740992	43.7		8667	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1674403	10.0		9309	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.912	1.933	-0.021	1.000	4695000	30.3		197	
413.00 > 169.00	1.912	1.933	-0.021	1.000	2620840		1.79(0.00-0.00)	5318	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.147	2.140	0.007	1.000	10196134	60.3		6632	
499.00 > 99.00	2.147	2.140	0.007	1.000	2129641		4.79(0.00-0.00)	2205	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.164	-0.017		5232378	28.7		5746	
9 Perfluorononanoic acid									
463.00 > 419.00	2.155	2.171	-0.016	1.000	3278671	30.2		327	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1140919	10.1		8723	

Reagents:

LC537-L5_00024 Amount Added: 1.00 Units: mL

Report Date: 11-Sep-2017 15:23:47 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_013.d

Injection Date: 08-Sep-2017 21:39:02 Instrument ID: A8_N

Lims ID: CCV L5

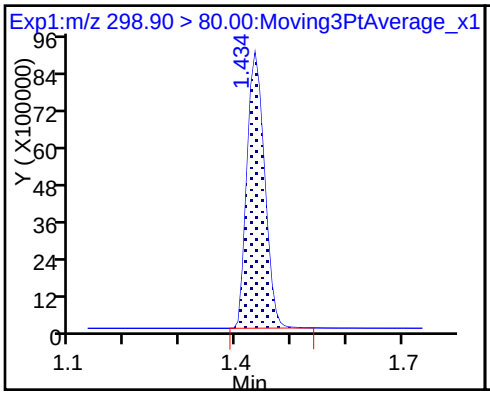
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 13

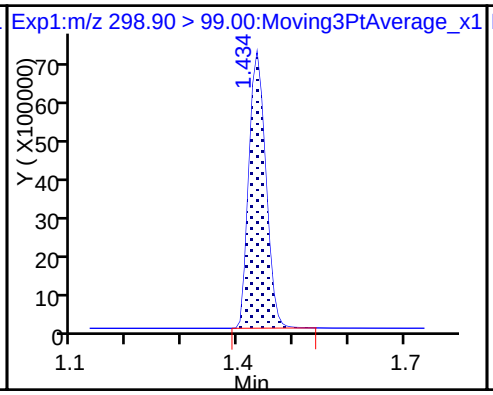
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

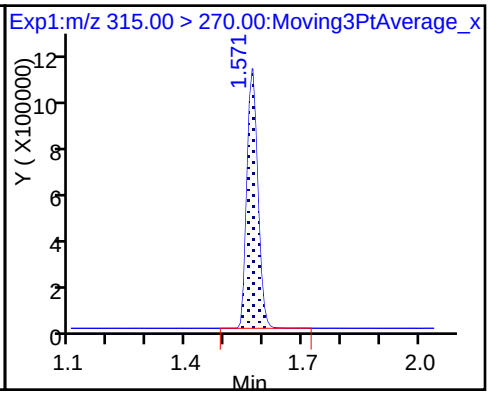
1 Perfluorobutanesulfonic acid



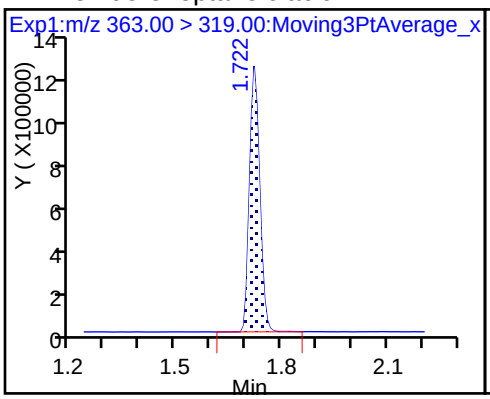
1 Perfluorobutanesulfonic acid



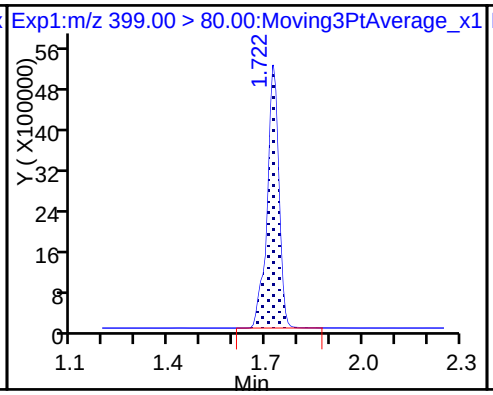
$ 2 13C2 PFHxA



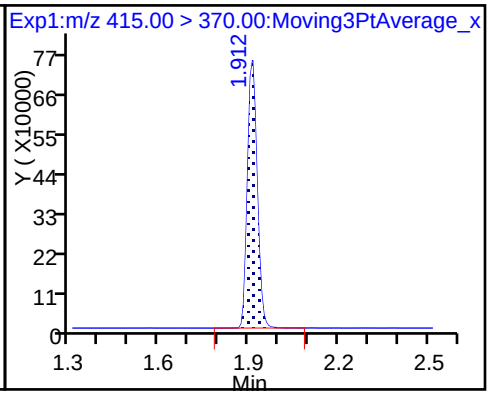
4 Perfluoroheptanoic acid



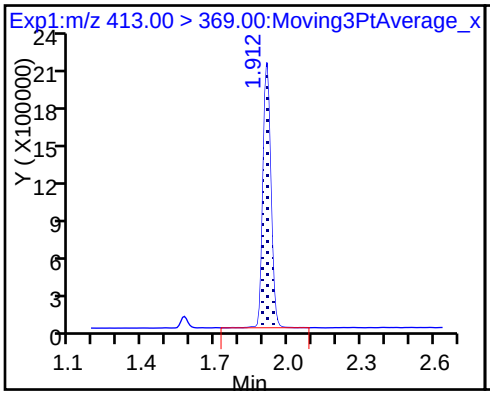
3 Perfluorohexanesulfonic acid



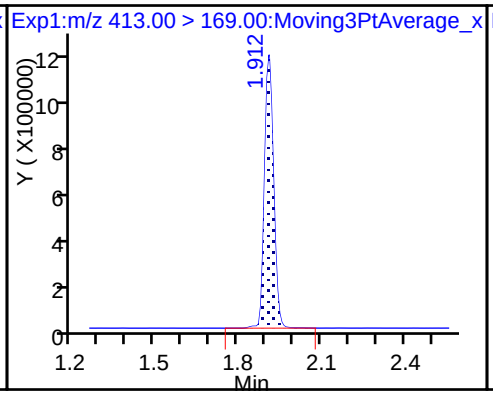
* 6 13C2-PFOA



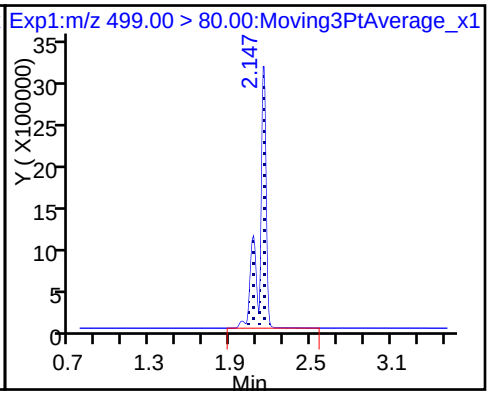
5 Perfluorooctanoic acid



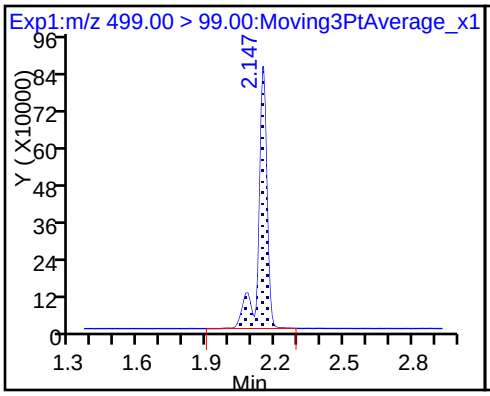
5 Perfluorooctanoic acid



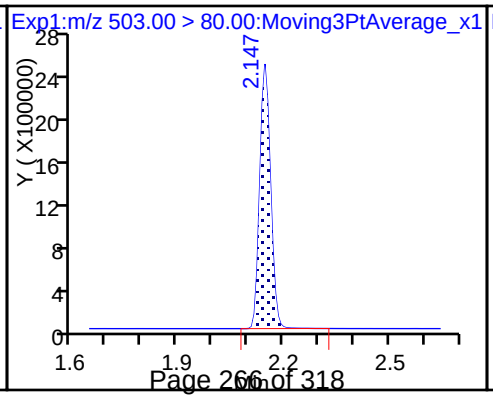
8 Perfluorooctane sulfonic acid



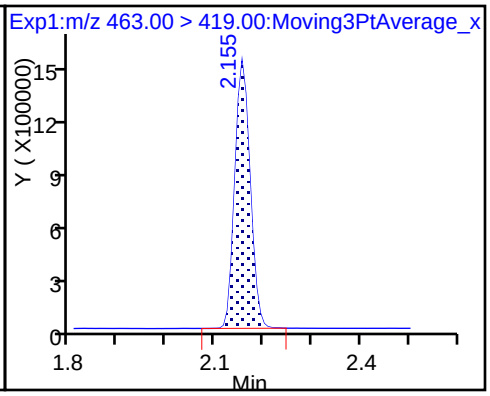
8 Perfluorooctane sulfonic acid



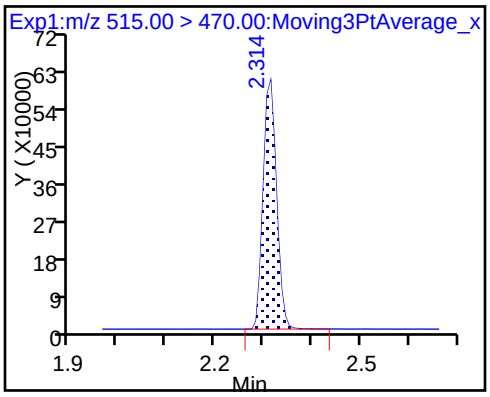
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
72
63
54
45
36
27
18
9
0
1.9
2.2
2.5
Min

Report Date: 11-Sep-2017 15:23:47 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_013.d

Injection Date: 08-Sep-2017 21:39:02 Instrument ID: A8_N

Lims ID: CCV L5

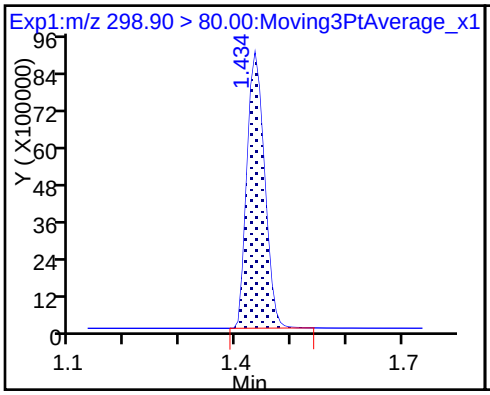
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 13

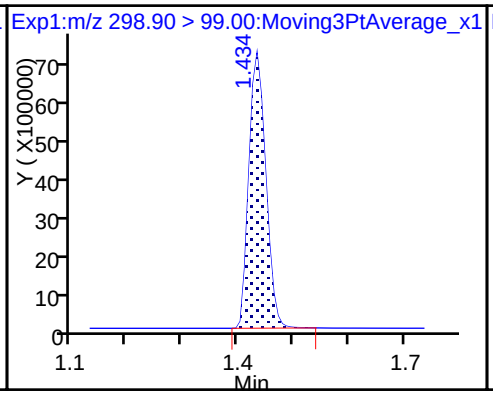
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

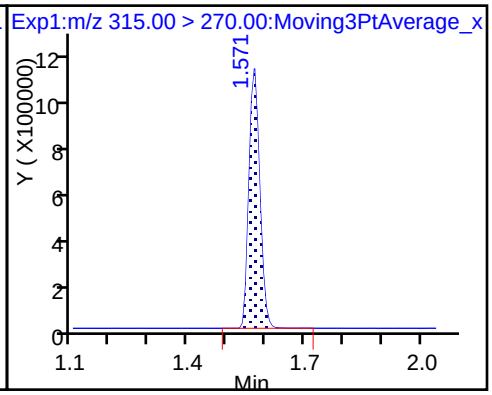
1 Perfluorobutanesulfonic acid



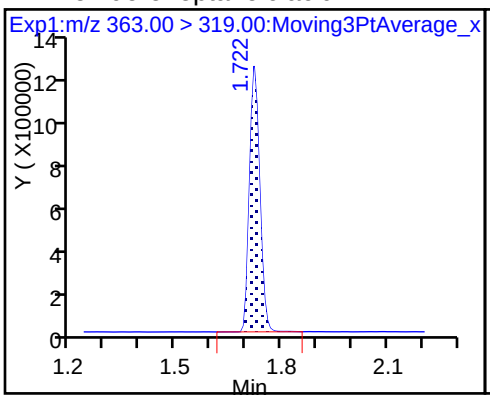
1 Perfluorobutanesulfonic acid



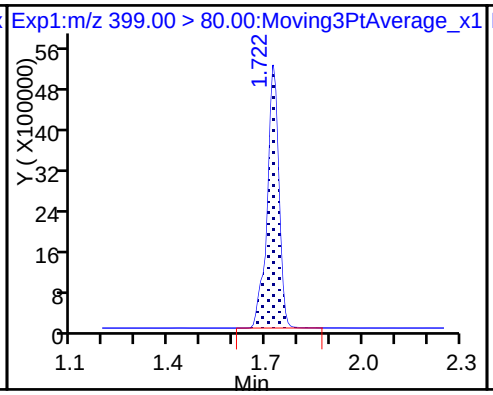
$ 2 13C2 PFHxA



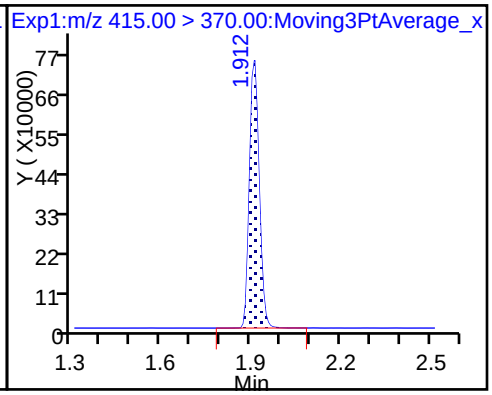
4 Perfluoroheptanoic acid



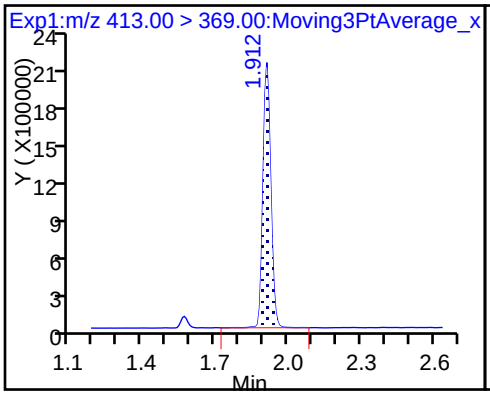
3 Perfluorohexanesulfonic acid



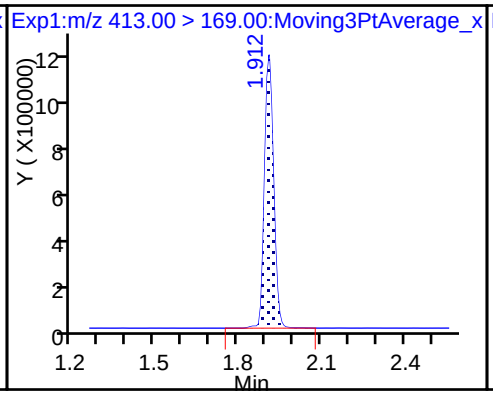
* 6 13C2-PFOA



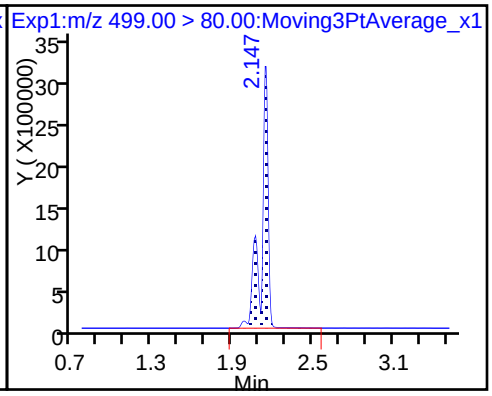
5 Perfluorooctanoic acid



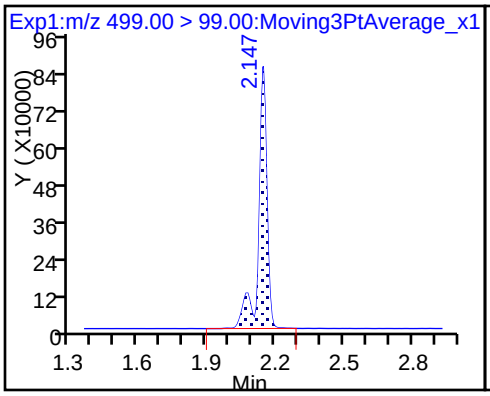
5 Perfluorooctanoic acid



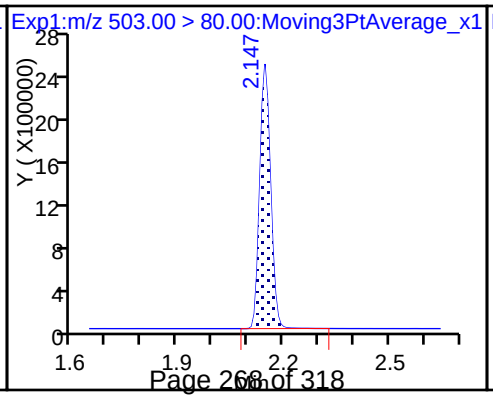
8 Perfluorooctane sulfonic acid



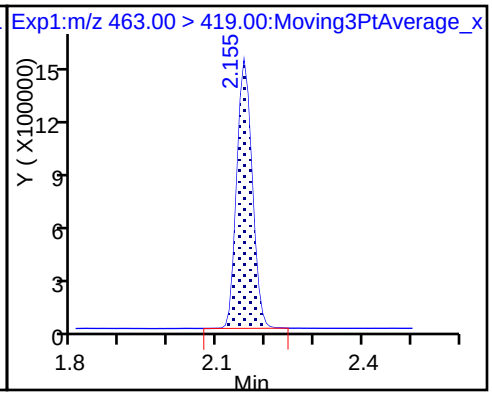
8 Perfluorooctane sulfonic acid



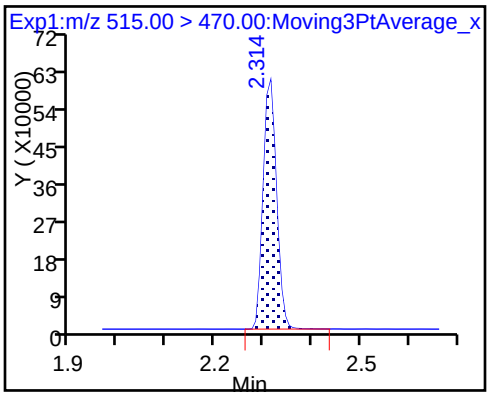
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
72
63
54
45
36
27
18
9
0
1.9
2.2
2.5
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Lab Sample ID: CCV 320-183773/25 Calibration Date: 09/08/2017 22:36

Instrument ID: A8_N Calib Start Date: 09/08/2017 13:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/08/2017 13:51

Lab File ID: 2017.09.08_537C_025.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.032		48.2	45.0	7.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9339	1.007		5.39	5.00	7.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.597	1.694		15.9	15.0	6.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9262	0.9253		10.0	10.0	-0.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9275	0.9070		19.6	20.0	-2.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6485	0.6860		10.6	10.0	5.8	30.0
13C2 PFHxA	Ave	1.207	1.286		10.7	10.0	6.6	30.0
13C2 PFDA	Ave	0.6716	0.6809		10.1	10.0	1.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_025.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 08-Sep-2017 22:36:06 ALS Bottle#: 3 Worklist Smp#: 25
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\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:55 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:18:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.440	-0.006	1.000	9019513	48.2		4953	
298.90 > 99.00	1.434	1.440	-0.006	1.000	6464892		1.40(0.00-0.00)	3955	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	2267952	10.7		12367	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.736	-0.014	1.000	887704	5.39		181	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.730	1.739	-0.009	1.000	4935276	15.9		5814	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1762955	10.0		9208	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.912	1.933	-0.021	1.000	1632627	10.0		65.4	
413.00 > 169.00	1.912	1.933	-0.021	1.000	875385		1.87(0.00-0.00)	2109	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.147	2.140	0.007	1.000	3522927	19.6		2661	
499.00 > 99.00	2.147	2.140	0.007	1.000	730898		4.82(0.00-0.00)	847	
* 7 13C4 PFOS									
503.00 > 80.00	2.147	2.164	-0.017		5568740	28.7		6133	
9 Perfluorononanoic acid									
463.00 > 419.00	2.155	2.171	-0.016	1.000	1209579	10.6		126	
$ 10 13C2 PFDA									
515.00 > 470.00	2.306	2.320	-0.014	1.000	1200337	10.1		10416	

Reagents:

LC537-L3_00023 Amount Added: 1.00 Units: mL

Report Date: 11-Sep-2017 15:23:55 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_025.d

Injection Date: 08-Sep-2017 22:36:06 Instrument ID: A8_N

Lims ID: CCV L3

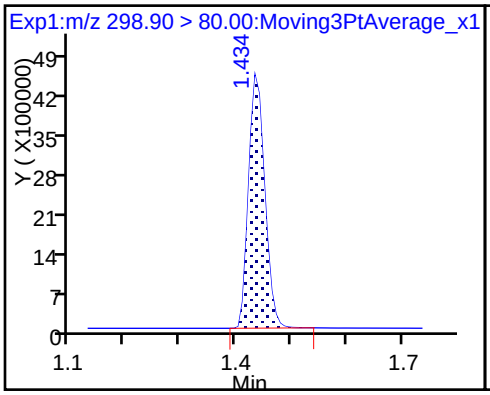
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 25

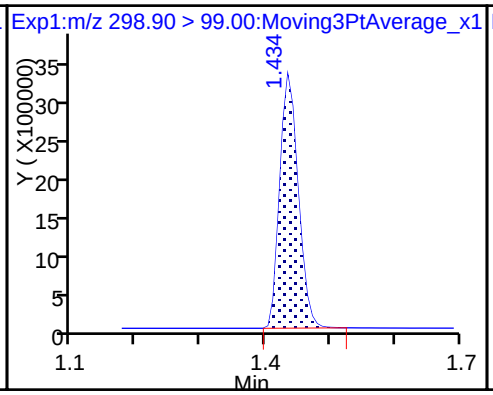
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

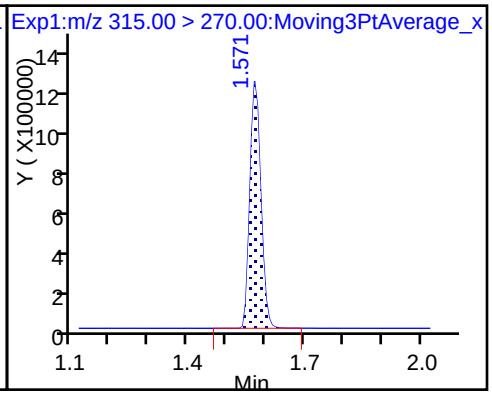
1 Perfluorobutanesulfonic acid



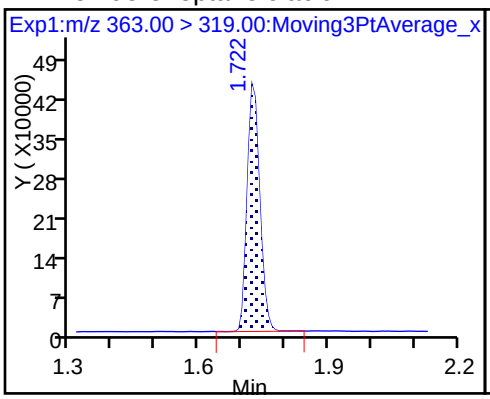
1 Perfluorobutanesulfonic acid



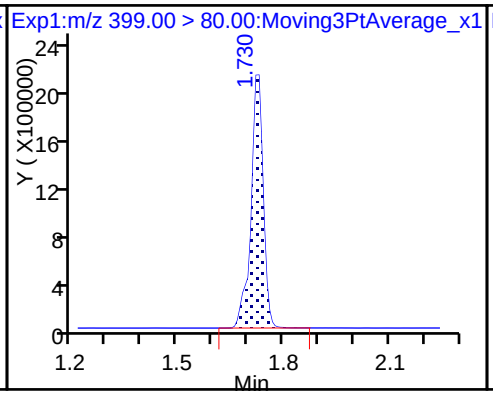
$ 2 13C2 PFHxA



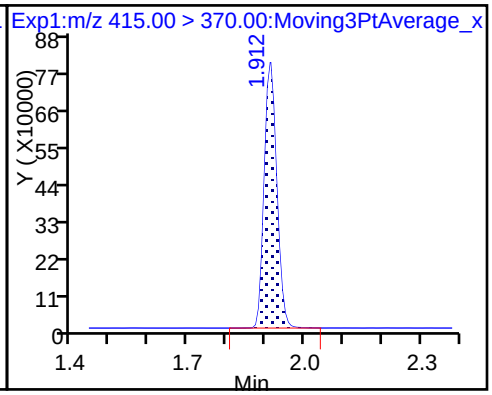
4 Perfluoroheptanoic acid



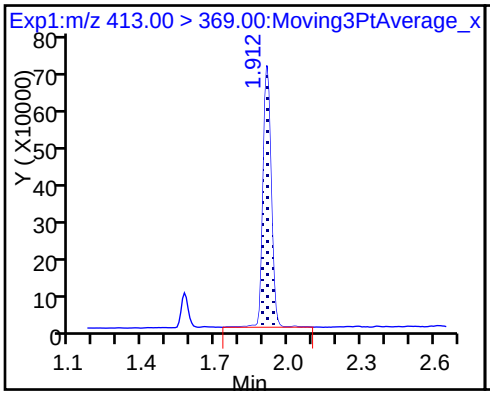
3 Perfluorohexanesulfonic acid



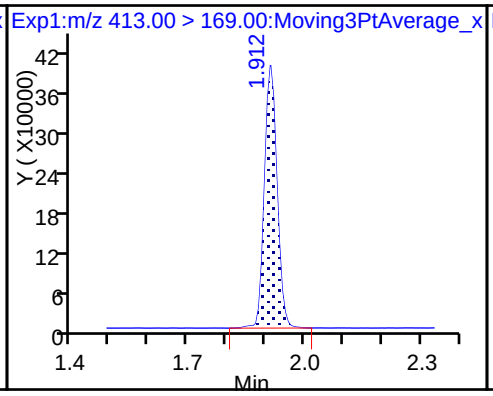
* 6 13C2-PFOA



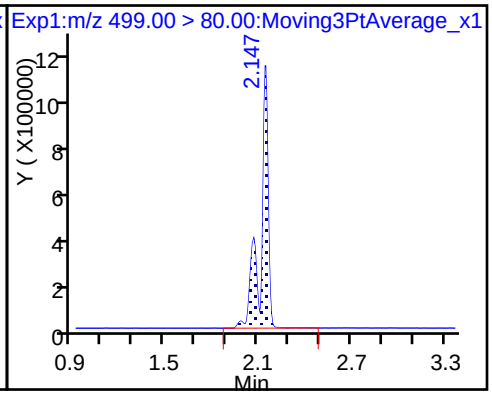
5 Perfluorooctanoic acid



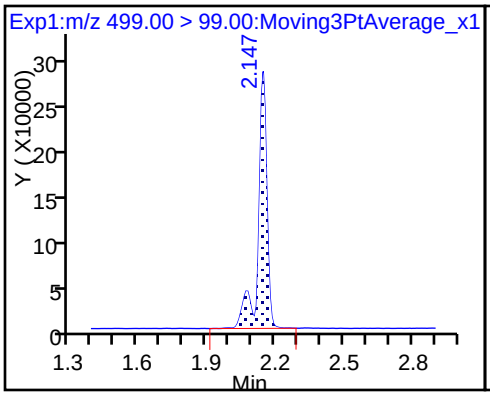
5 Perfluorooctanoic acid



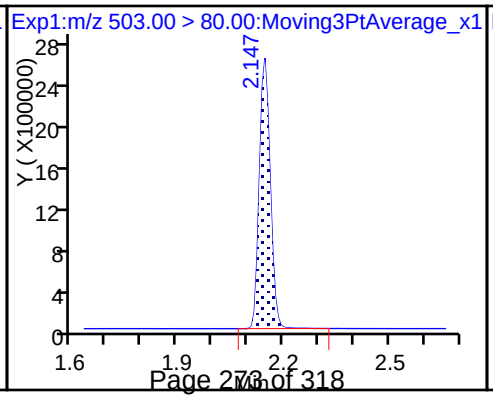
8 Perfluorooctane sulfonic acid



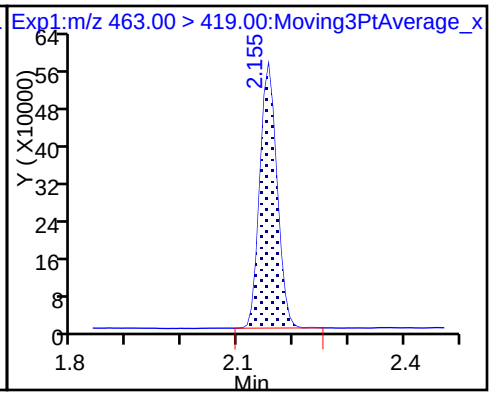
8 Perfluorooctane sulfonic acid



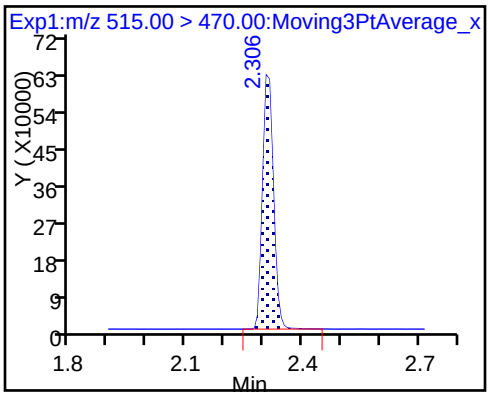
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.306
Y (X10000)
72
63
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
Min

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-182400/1-A

Matrix: Water | Lab File ID: 2017.09.08_537C_003.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 250(mL) | Date Analyzed: 09/08/2017 20:51

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

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

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

Analysis Batch No.: 183512 | 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	101		70-130
STL00996	13C2 PFDA	111		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_003.d
Lims ID: MB 320-182400/1-A
Client ID:
Sample Type: MB
Inject. Date: 08-Sep-2017 20:51:30 ALS Bottle#: 1 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-182400/1-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.578	1.577	0.001	1.000	2168128	10.1		12612	
* 6 13C2-PFOA									
415.00 > 370.00	1.920	1.932	-0.012		1780906	10.0		9557	
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.164	-0.009		5489924	28.7		4963	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1332225	11.1		10649	

Report Date: 11-Sep-2017 15:23:40 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_003.d

Injection Date: 08-Sep-2017 20:51:30 Instrument ID: A8_N

Lims ID: MB 320-182400/1-A

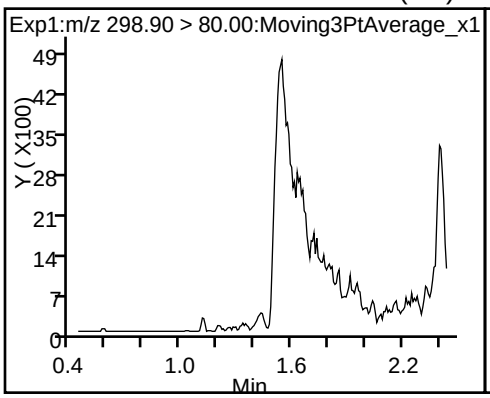
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 3

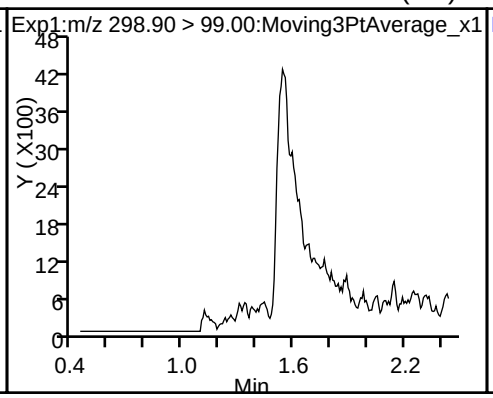
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

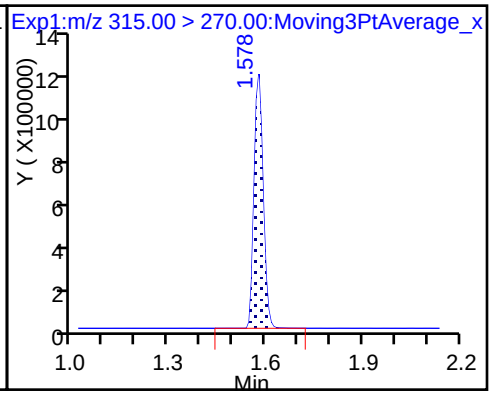
1 Perfluorobutanesulfonic acid (ND)



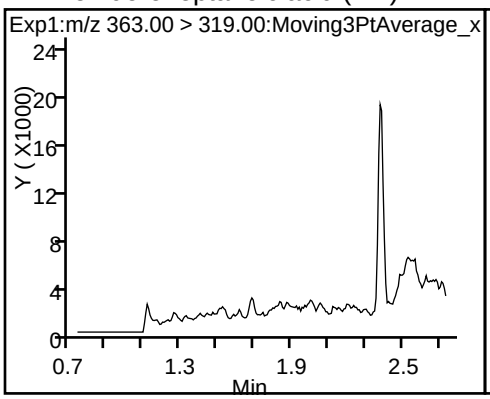
1 Perfluorobutanesulfonic acid (ND)



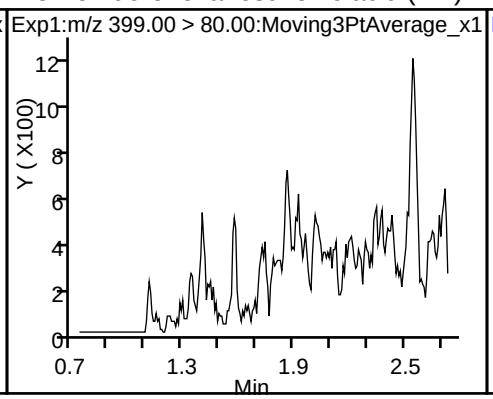
$ 2 13C2 PFHxA

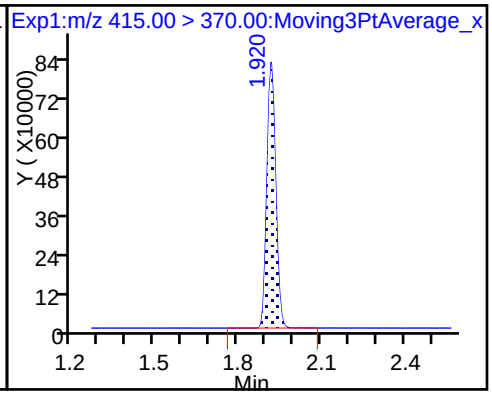


4 Perfluoroheptanoic acid (ND)

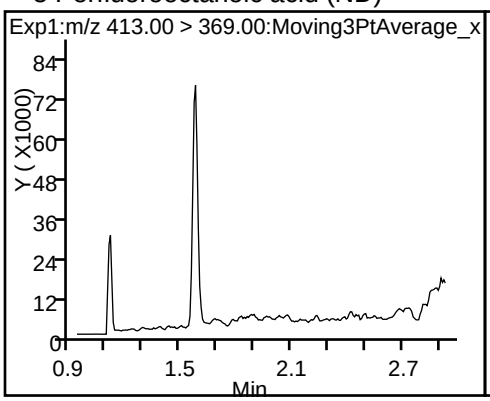


3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA

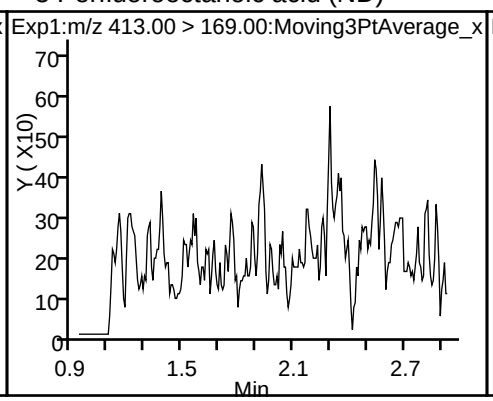




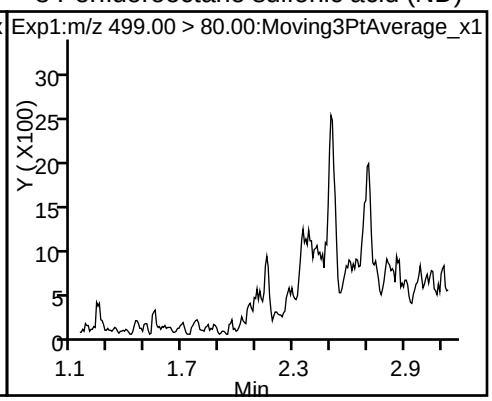
5 Perfluorooctanoic acid (ND)



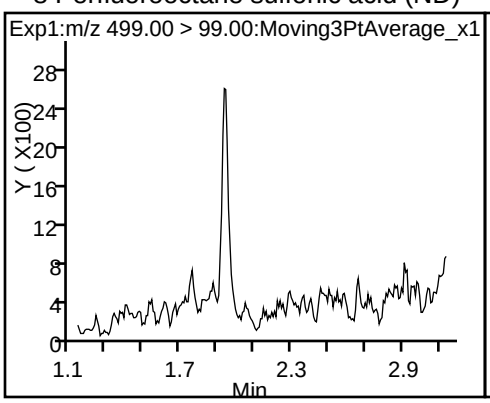
5 Perfluorooctanoic acid (ND)

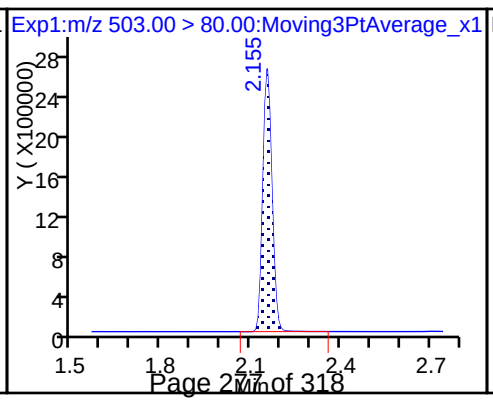


8 Perfluorooctane sulfonic acid (ND)

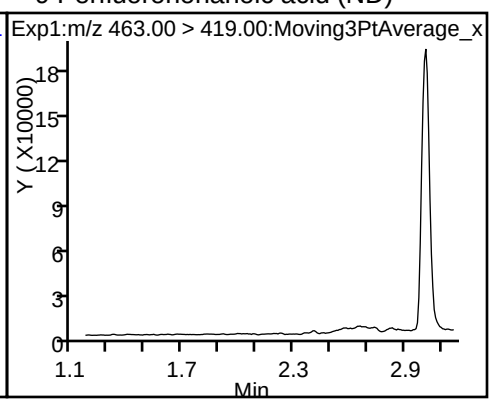


8 Perfluorooctane sulfonic acid (ND) * 7 13C4 PFOS

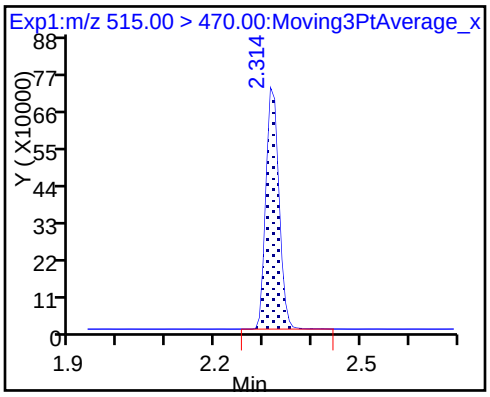




9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
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77
66
55
44
33
22
11
0
1.9
2.2
2.5
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_003.d
Lims ID: MB 320-182400/1-A
Client ID:
Sample Type: MB
Inject. Date: 08-Sep-2017 20:51:30 ALS Bottle#: 1 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-182400/1-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.1	100.90
$ 10 13C2 PFDA	10.0	11.1	111.39

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: | Lab Sample ID: LLCS 320-182400/2-A

Matrix: Water | Lab File ID: 2017.09.08_537C_004.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 250(mL) | Date Analyzed: 09/08/2017 20:56

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

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

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

Analysis Batch No.: 183512 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	37.5	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	19.2	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	19.1	J	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	30.1		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	10.4		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	96.1		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	108		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_004.d
Lims ID: LLCS 320-182400/2-A
Client ID:
Sample Type: LLCS
Inject. Date: 08-Sep-2017 20:56:16 ALS Bottle#: 2 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: llcs 320-182400/2-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:11:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.442	1.440	0.002	1.000	4678605	24.0		2627	
298.90 > 99.00	1.442	1.440	0.002	1.000	3108373		1.51(0.00-0.00)	1845	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	2187209	9.75		12871	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.730	1.736	-0.006	1.000	451508	2.60		89.7	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.730	1.739	-0.009	1.000	2311067	7.53		3141	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1858873	10.0		8434	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.920	1.933	-0.013	1.000	827772	4.81		39.4	
413.00 > 169.00	1.920	1.933	-0.013	1.000	437586		1.89(0.00-0.00)	979	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.155	2.140	0.015	1.000	1671748	9.38		1155	M
499.00 > 99.00	2.155	2.140	0.015	1.000	352760		4.74(0.00-0.00)	320	M
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.164	-0.009		5511672	28.7		4540	
9 Perfluorononanoic acid									
463.00 > 419.00	2.162	2.171	-0.009	1.000	576073	4.78		33.3	
$ 10 13C2 PFDA									
515.00 > 470.00	2.314	2.320	-0.006	1.000	1345407	10.8		9792	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 11-Sep-2017 15:23:41 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_004.d

Injection Date: 08-Sep-2017 20:56:16 Instrument ID: A8_N

Lims ID: LLCS 320-182400/2-A

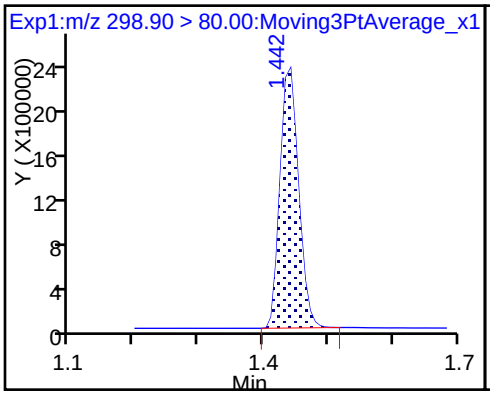
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 4

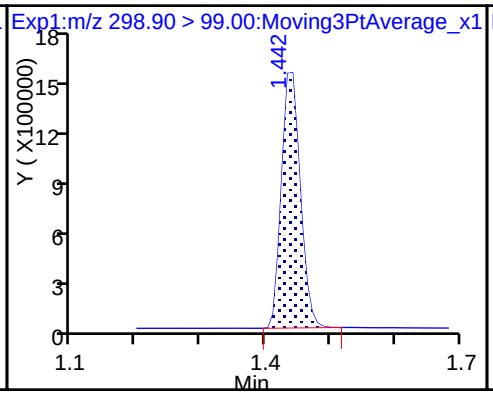
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

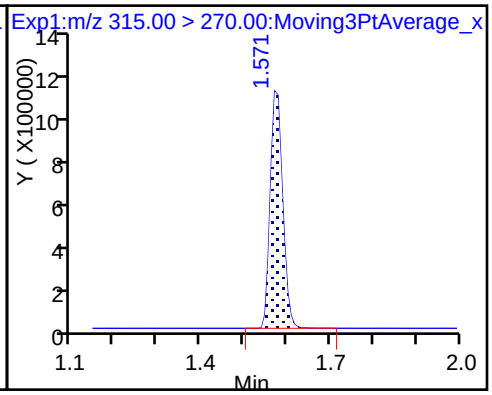
1 Perfluorobutanesulfonic acid



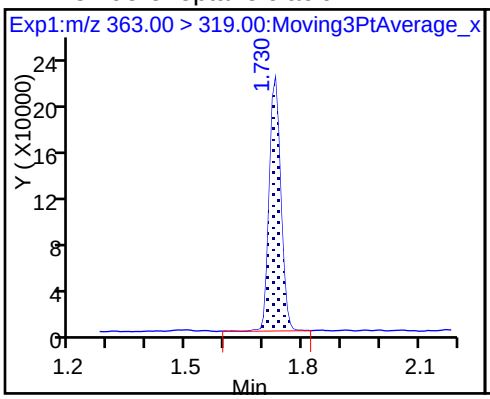
1 Perfluorobutanesulfonic acid



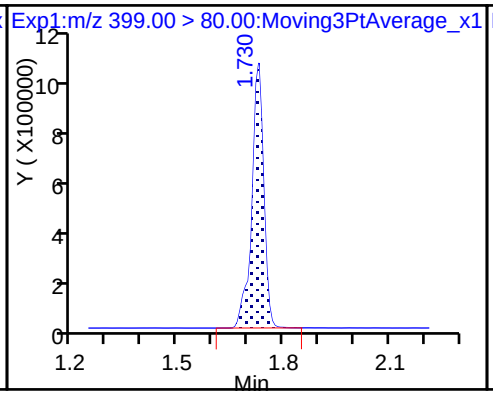
$ 2 13C2 PFHxA



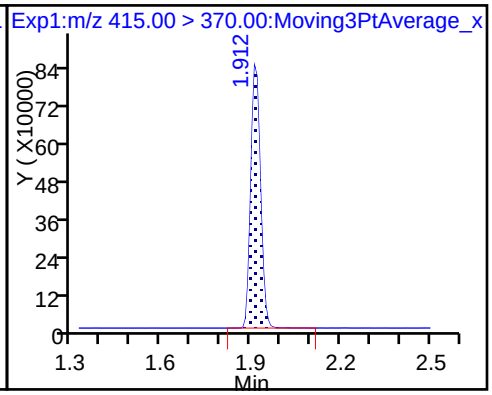
4 Perfluoroheptanoic acid



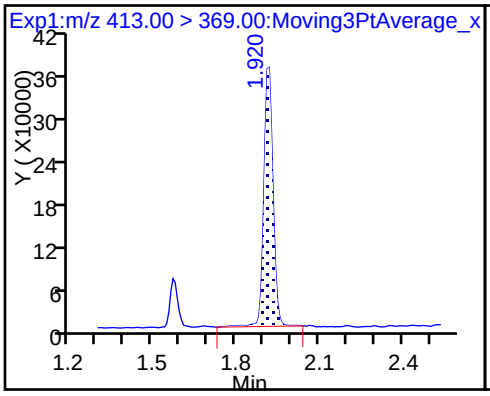
3 Perfluorohexanesulfonic acid



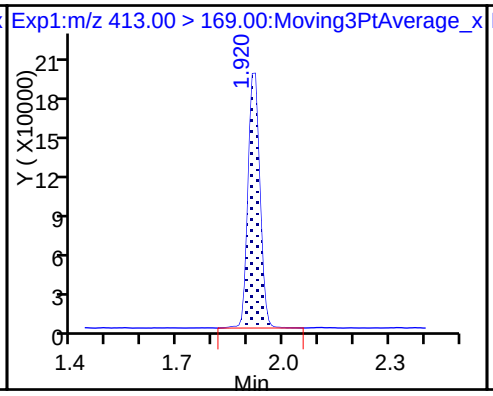
* 6 13C2-PFOA



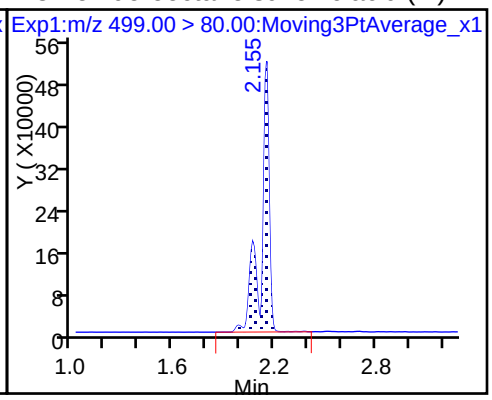
5 Perfluorooctanoic acid



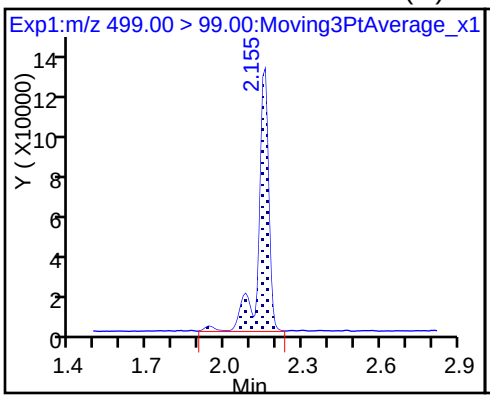
5 Perfluorooctanoic acid



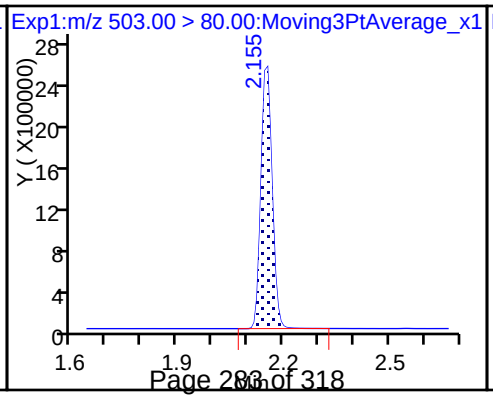
8 Perfluorooctane sulfonic acid (M)



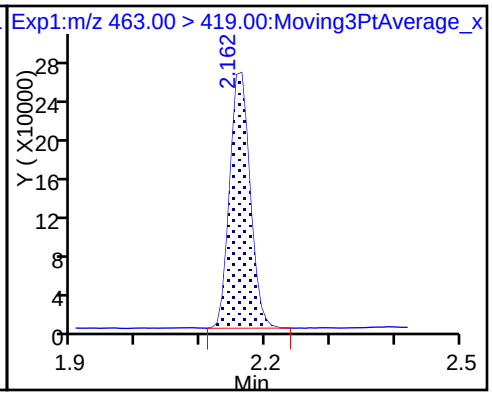
8 Perfluorooctane sulfonic acid (M)



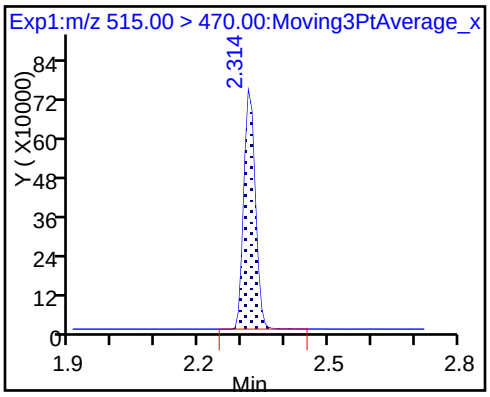
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.314
Y (X10000)
84
72
60
48
36
24
12
0
1.9
2.2
2.5
2.8
Min

Report Date: 11-Sep-2017 15:23:41 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_004.d
Lims ID: LLCS 320-182400/2-A
Client ID:
Sample Type: LLCS
Inject. Date: 08-Sep-2017 20:56:16 ALS Bottle#: 2 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: llcs 320-182400/2-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:11:50

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.75	97.52
$ 10 13C2 PFDA	10.0	10.8	107.77

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

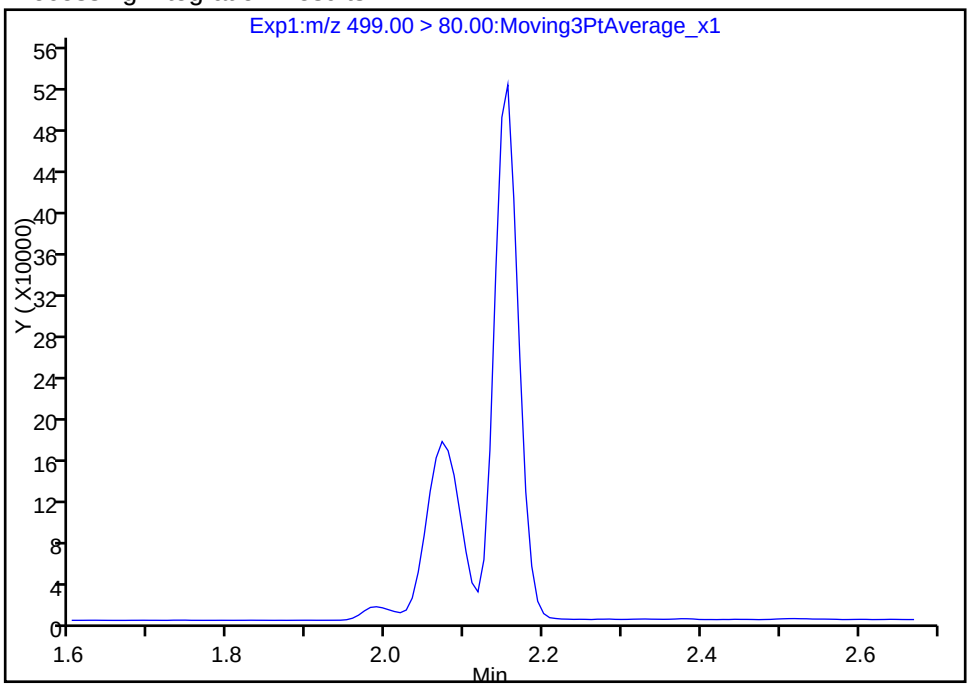
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_004.d
Injection Date: 08-Sep-2017 20:56:16 Instrument ID: A8_N
Lims ID: LLCS 320-182400/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

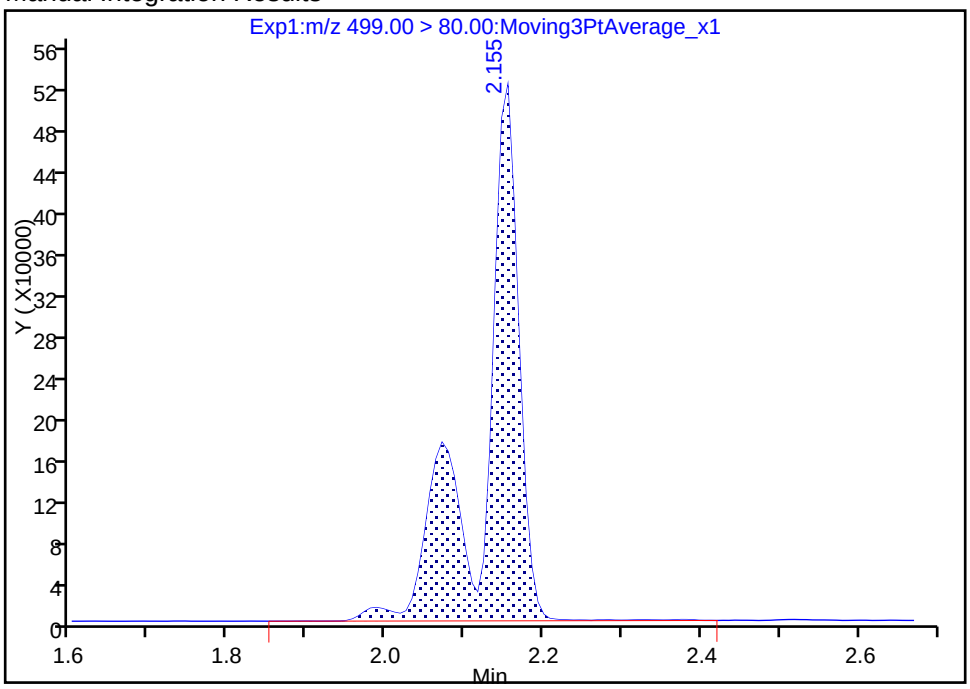
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 1671748
Amount: 9.379167
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:11:13
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

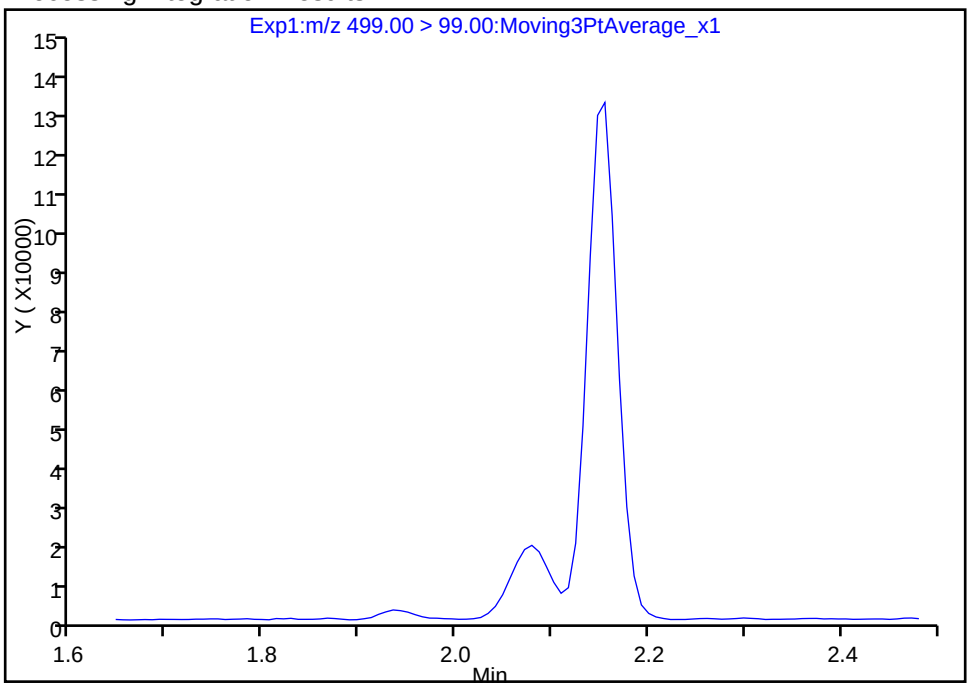
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_004.d
Injection Date: 08-Sep-2017 20:56:16 Instrument ID: A8_N
Lims ID: LLCS 320-182400/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

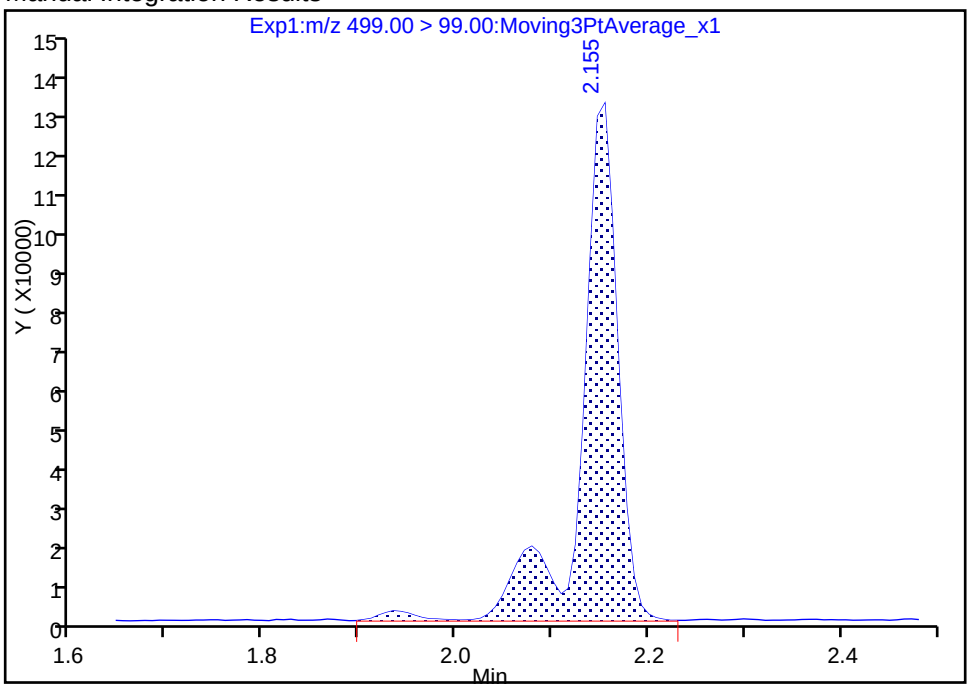
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 352760
Amount: 9.379167
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:11:31
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

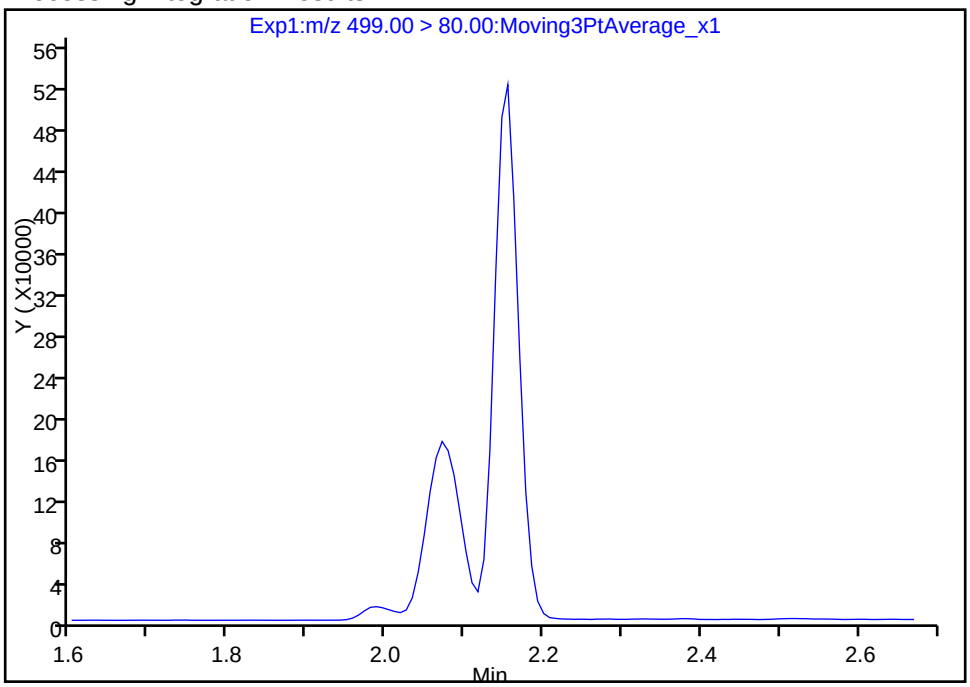
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_004.d
Injection Date: 08-Sep-2017 20:56:16 Instrument ID: A8_N
Lims ID: LLCS 320-182400/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

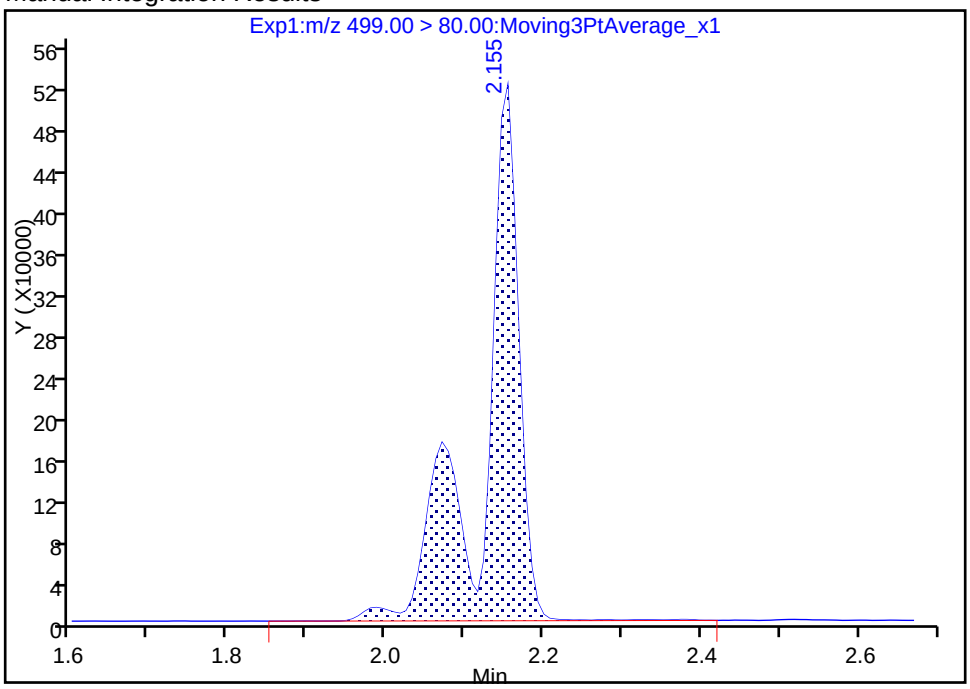
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 1671748
Amount: 9.379167
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:11:31
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: | Lab Sample ID: LLCSD 320-182400/3-A

Matrix: Water | Lab File ID: 2017.09.08_537C_005.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 250(mL) | Date Analyzed: 09/08/2017 21:01

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

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

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

Analysis Batch No.: 183512 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	38.9	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	19.5	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	19.8	J	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	29.8	J	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	10.5		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	96.8		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	117		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_005.d
Lims ID: LLCSD 320-182400/3-A
Client ID:
Sample Type: LLCSD
Inject. Date: 08-Sep-2017 21:01:01 ALS Bottle#: 3 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: llcsd 320-182400/3-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:12:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.434	1.440	-0.006	1.000	4576812	24.2		2527	
298.90 > 99.00	1.434	1.440	-0.006	1.000	3157111		1.45(0.00-0.00)	2223	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.571	1.577	-0.007	1.000	2106692	10.0		12743	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.722	1.736	-0.014	1.000	427488	2.63		81.8	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.730	1.739	-0.009	1.000	2224295	7.46		2890	
* 6 13C2-PFOA									
415.00 > 370.00	1.912	1.932	-0.020		1740089	10.0		12108	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.912	1.933	-0.021	1.000	783728	4.86		37.0	
413.00 > 169.00	1.912	1.933	-0.021	1.000	426426		1.84(0.00-0.00)	893	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.155	2.140	0.015	1.000	1685275	9.73		1832	M
499.00 > 99.00	2.155	2.140	0.015	1.000	350338		4.81(0.00-0.00)	378	M
* 7 13C4 PFOS									
503.00 > 80.00	2.155	2.164	-0.009		5356328	28.7		4866	
9 Perfluorononanoic acid									
463.00 > 419.00	2.162	2.171	-0.009	1.000	559469	4.96		39.1	
$ 10 13C2 PFDA									
515.00 > 470.00	2.322	2.320	0.002	1.000	1371018	11.7		10817	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 11-Sep-2017 15:23:41 Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_005.d

Injection Date: 08-Sep-2017 21:01:01 Instrument ID: A8_N

Lims ID: LLCSD 320-182400/3-A

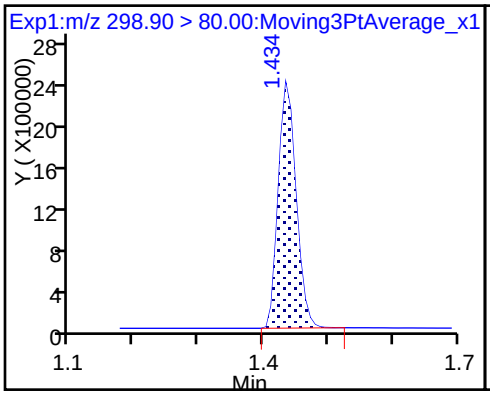
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 5

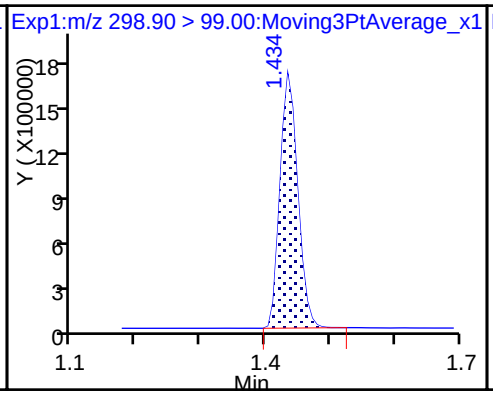
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

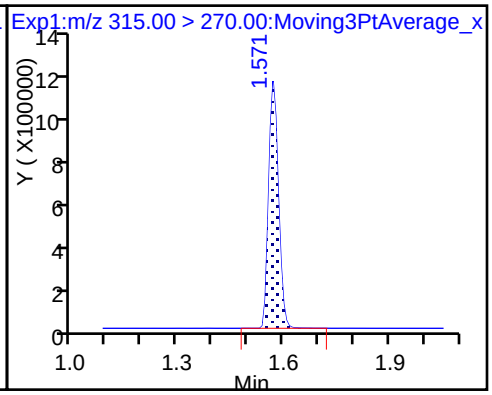
1 Perfluorobutanesulfonic acid



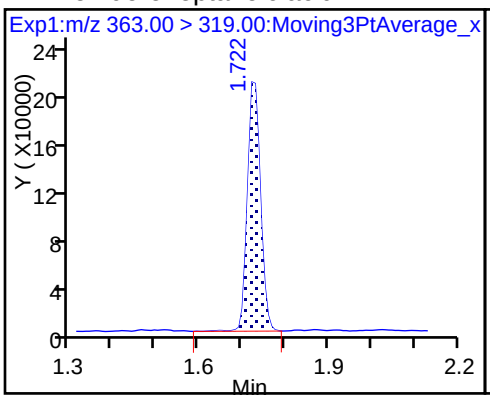
1 Perfluorobutanesulfonic acid



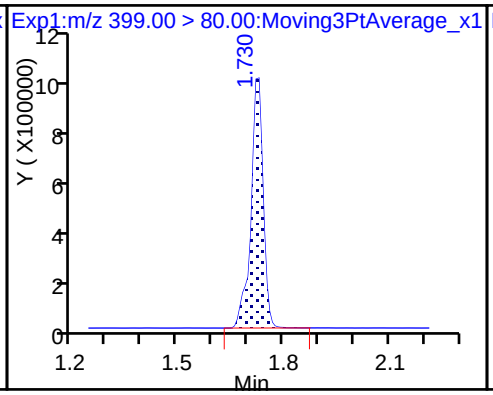
$ 2 13C2 PFHxA



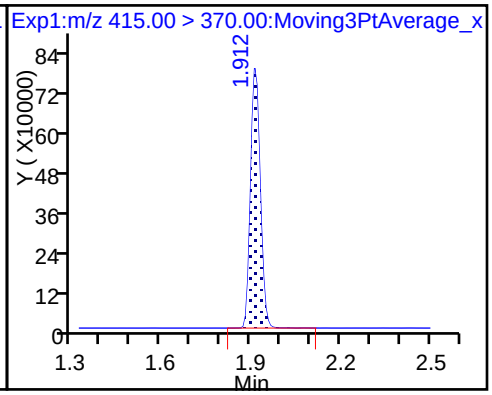
4 Perfluoroheptanoic acid



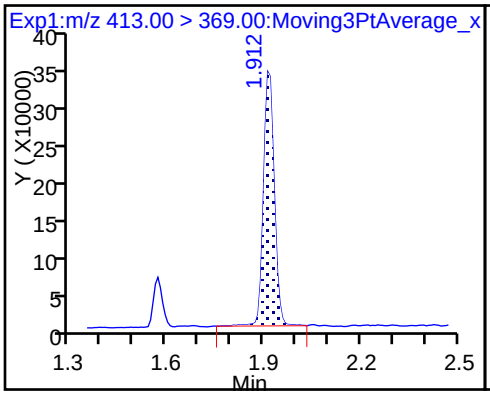
3 Perfluorohexanesulfonic acid



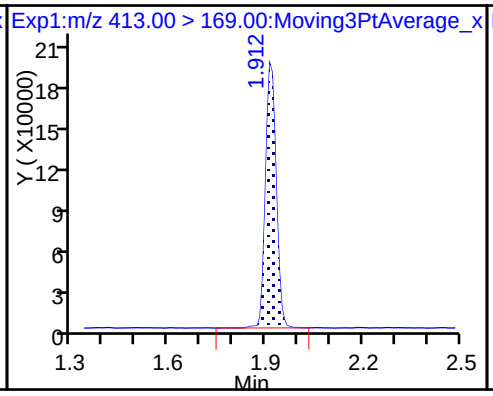
* 6 13C2-PFOA



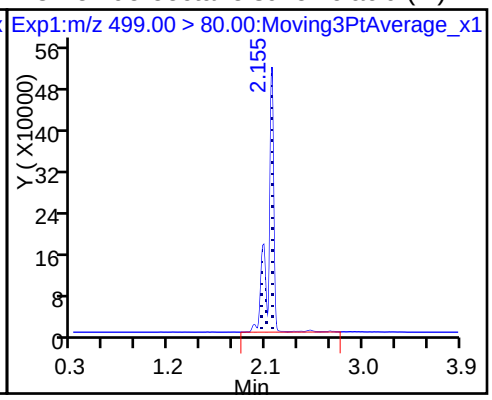
5 Perfluorooctanoic acid



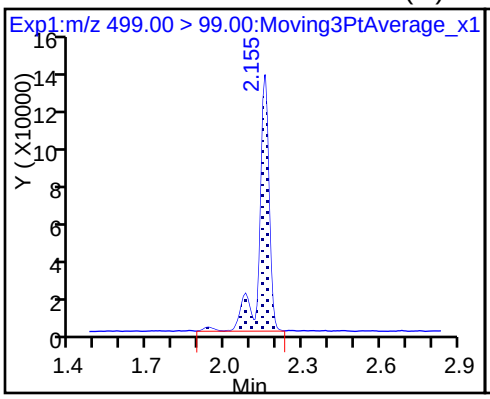
5 Perfluorooctanoic acid



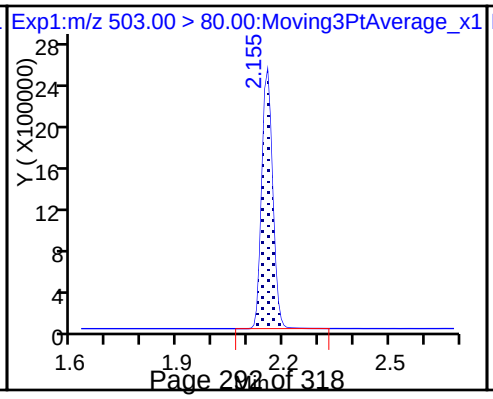
8 Perfluorooctane sulfonic acid (M)



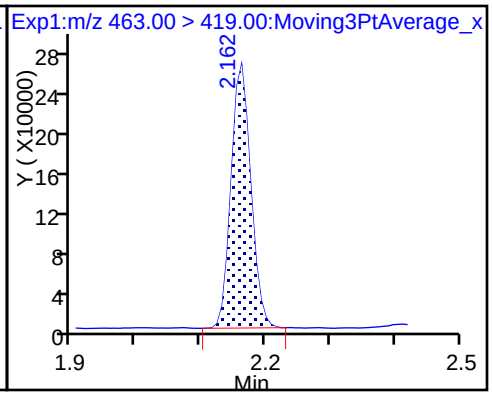
8 Perfluorooctane sulfonic acid (M)



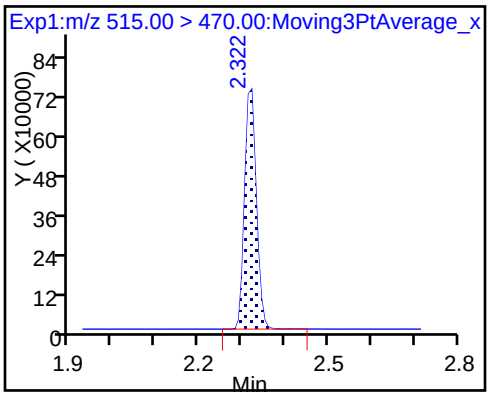
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.322
Y (X10000)
84
72
60
48
36
24
12
0
1.9
2.2
2.5
2.8
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_005.d
Lims ID: LLCSD 320-182400/3-A
Client ID:
Sample Type: LLCSD
Inject. Date: 08-Sep-2017 21:01:01 ALS Bottle#: 3 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: llcsd 320-182400/3-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 11-Sep-2017 15:23:38 Calib Date: 08-Sep-2017 13:51:29
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170908-47689.b\2017.09.08_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 11-Sep-2017 11:12:14

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.0	100.34
$ 10 13C2 PFDA	10.0	11.7	117.32

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

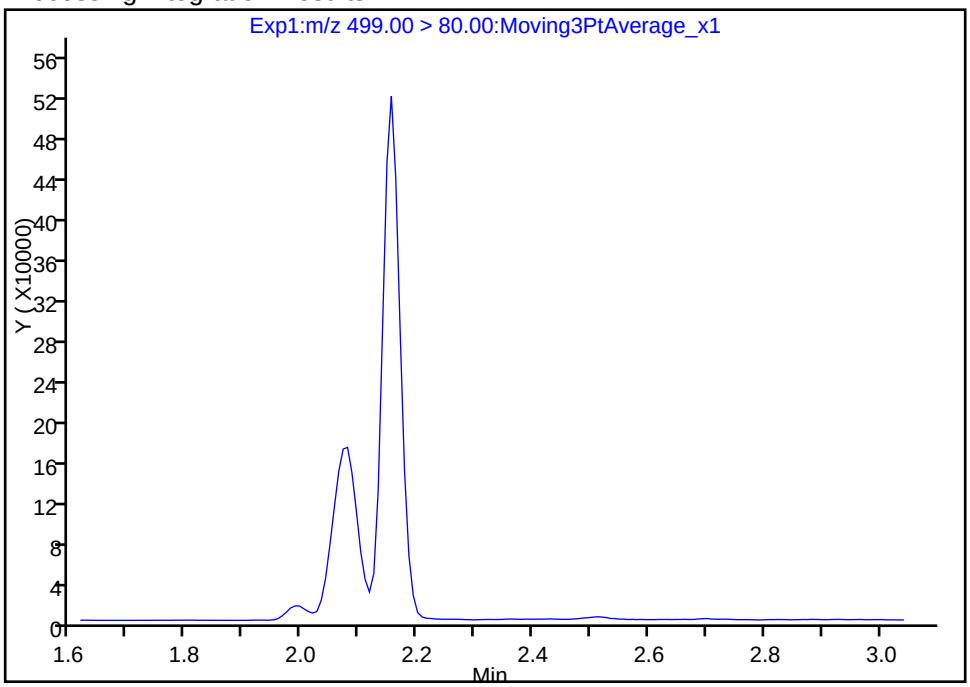
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_005.d
Injection Date: 08-Sep-2017 21:01:01 Instrument ID: A8_N
Lims ID: LLCSD 320-182400/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

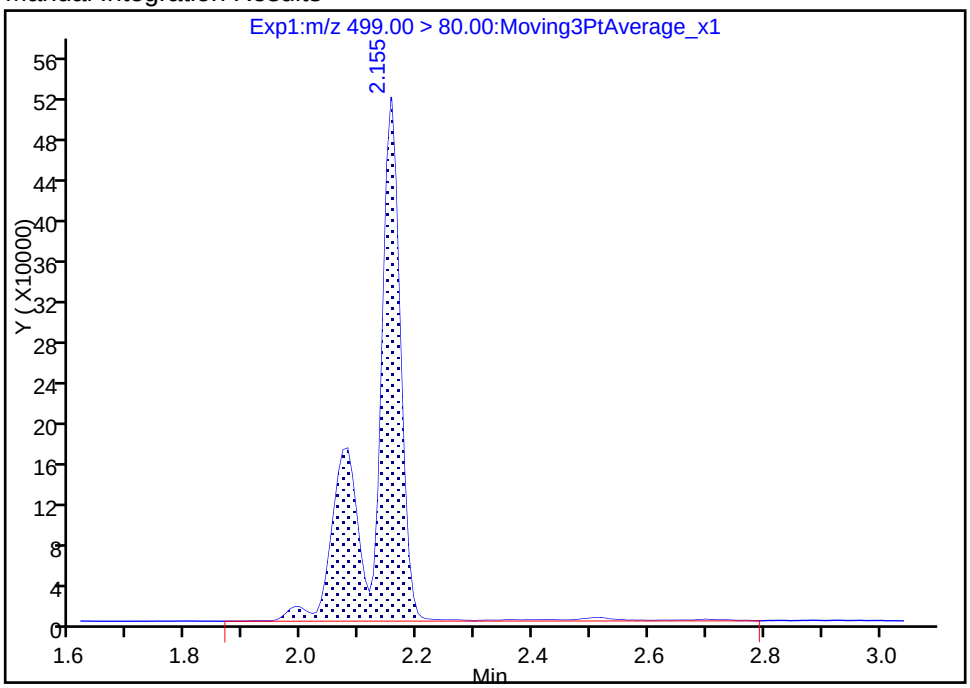
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 1685275
Amount: 9.729274
Amount Units: ng/ml



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

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

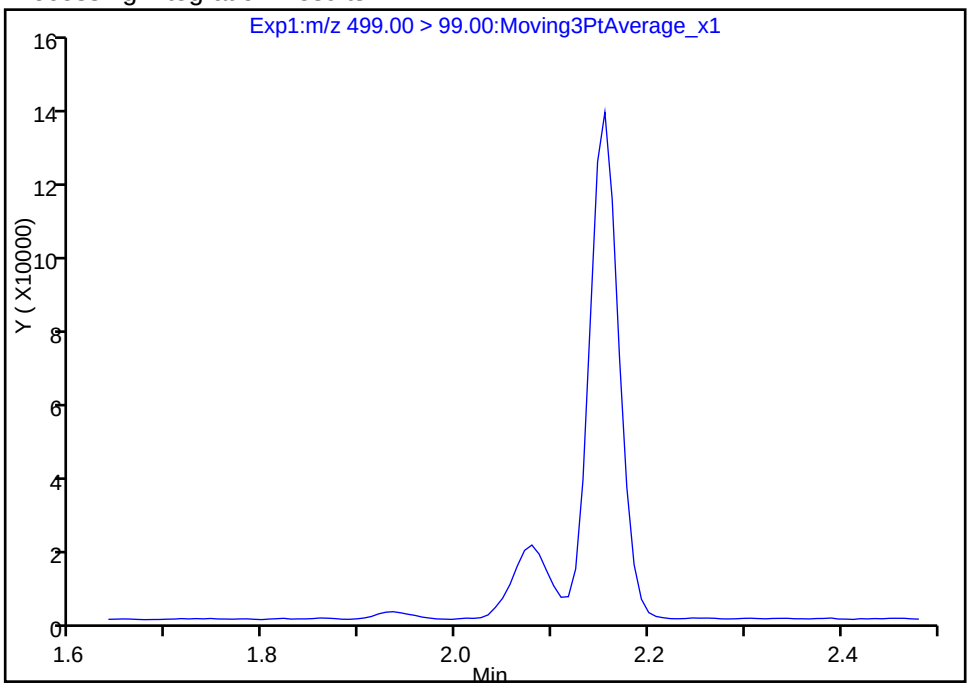
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_005.d
Injection Date: 08-Sep-2017 21:01:01 Instrument ID: A8_N
Lims ID: LLCSD 320-182400/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

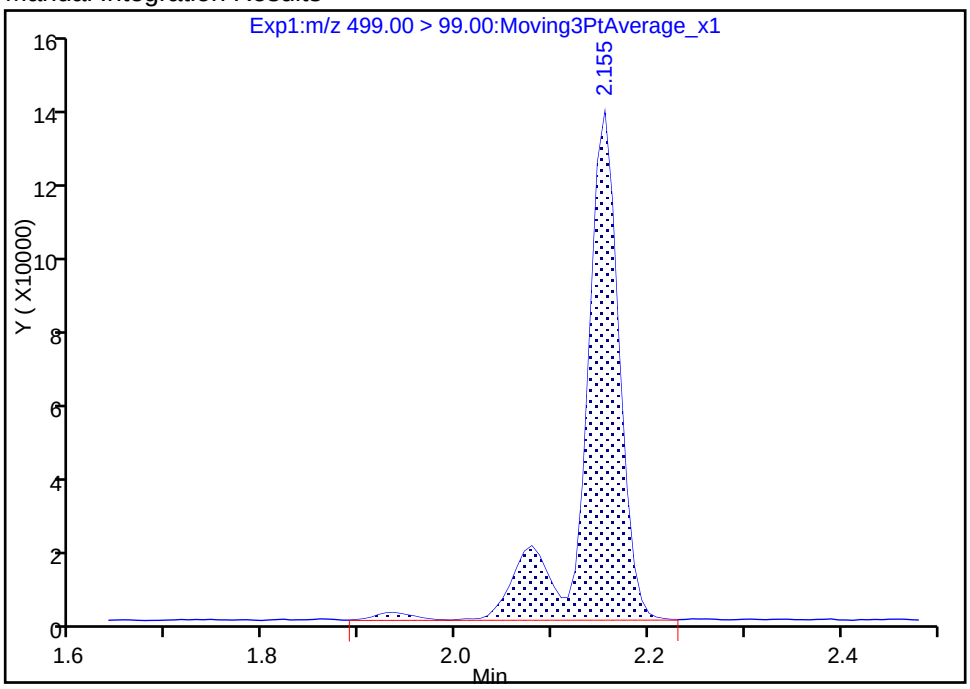
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 350338
Amount: 9.729274
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:12:08
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

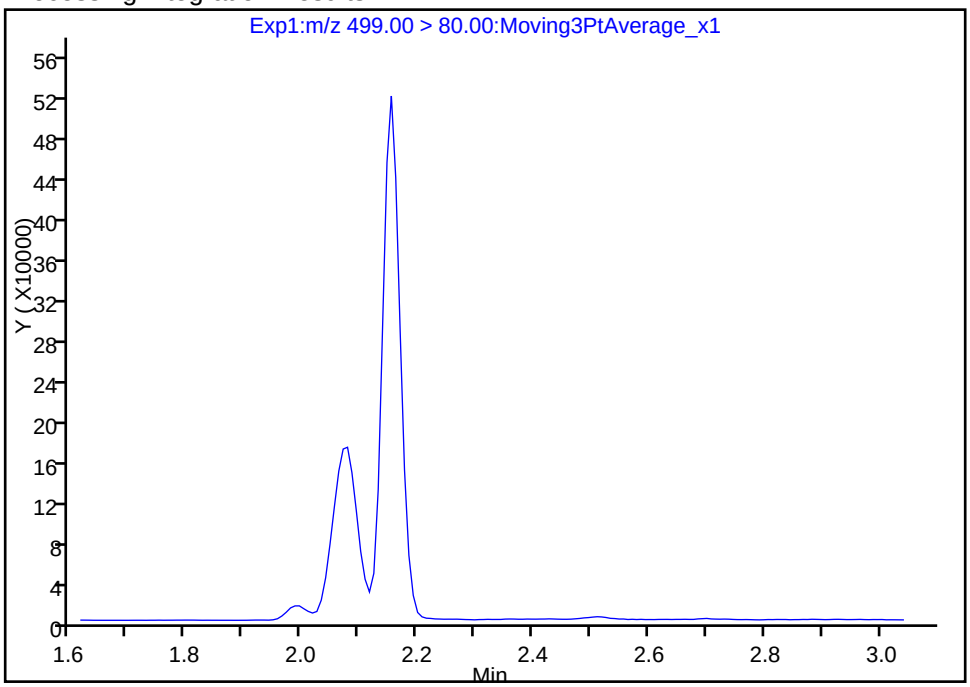
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b\2017.09.08_537C_005.d
Injection Date: 08-Sep-2017 21:01:01 Instrument ID: A8_N
Lims ID: LLCSD 320-182400/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

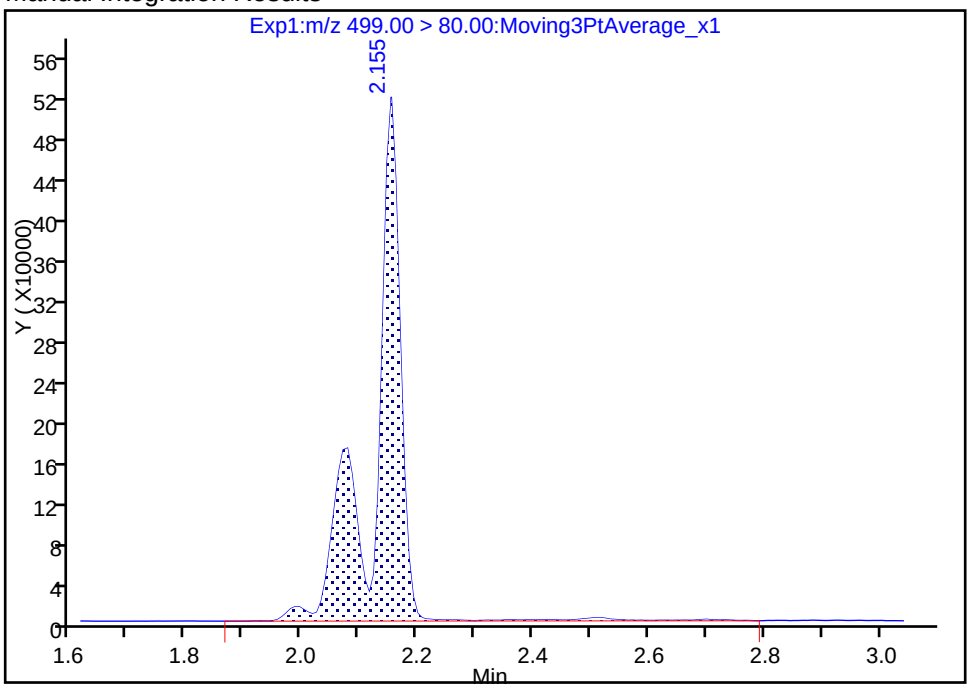
Not Detected
Expected RT: 2.14

Processing Integration Results



Manual Integration Results

RT: 2.15
Area: 1685275
Amount: 9.729274
Amount Units: ng/ml



Reviewer: barnettj, 11-Sep-2017 11:12:08
Audit Action: Manually Integrated Audit Reason: Missed Peak

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Instrument ID: A8_N Start Date: 09/08/2017 13:27

Analysis Batch Number: 183459 End Date: 09/08/2017 14:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-183459/2		09/08/2017 13:27	1	2017.09.08_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-183459/3		09/08/2017 13:32	1	2017.09.08_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-183459/4		09/08/2017 13:37	1	2017.09.08_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-183459/5 ICISAV		09/08/2017 13:42	1	2017.09.08_537I CAL 007.d	GeminiC18 3x100 3(mm)
IC 320-183459/6		09/08/2017 13:46	1	2017.09.08_537I CAL 008.d	GeminiC18 3x100 3(mm)
IC 320-183459/7		09/08/2017 13:51	1	2017.09.08_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/08/2017 13:56	1		GeminiC18 3x100 3(mm)
CCVL 320-183459/9		09/08/2017 14:00	1	2017.09.08_537I CAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/08/2017 14:05	1		GeminiC18 3x100 3(mm)
ICV 320-183459/11		09/08/2017 14:10	1	2017.09.08_537I CAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Instrument ID: A8_N Start Date: 09/08/2017 15:38

Analysis Batch Number: 183505 End Date: 09/08/2017 15:38

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-183505/3		09/08/2017 15:38	1	2017.09.08_537B_004.d	GeminiC18 3x100 3(mm)

537

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Instrument ID: A8_N Start Date: 09/08/2017 20:41

Analysis Batch Number: 183512 End Date: 09/08/2017 21:39

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-183512/1 CCVIS		09/08/2017 20:41	1	2017.09.08_537C 001.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/08/2017 20:46	1		GeminiC18 3x100 3(mm)
MB 320-182400/1-A		09/08/2017 20:51	1	2017.09.08_537C 003.d	GeminiC18 3x100 3(mm)
LLCS 320-182400/2-A		09/08/2017 20:56	1	2017.09.08_537C 004.d	GeminiC18 3x100 3(mm)
LLCSD 320-182400/3-A		09/08/2017 21:01	1	2017.09.08_537C 005.d	GeminiC18 3x100 3(mm)
320-31214-1		09/08/2017 21:05	1	2017.09.08_537C 006.d	GeminiC18 3x100 3(mm)
320-31214-2		09/08/2017 21:10	1	2017.09.08_537C 007.d	GeminiC18 3x100 3(mm)
320-31214-3		09/08/2017 21:15	1	2017.09.08_537C 008.d	GeminiC18 3x100 3(mm)
320-31214-4		09/08/2017 21:20	1	2017.09.08_537C 009.d	GeminiC18 3x100 3(mm)
320-31214-5		09/08/2017 21:24	1	2017.09.08_537C 010.d	GeminiC18 3x100 3(mm)
320-31214-6		09/08/2017 21:29	1	2017.09.08_537C 011.d	GeminiC18 3x100 3(mm)
320-31214-7		09/08/2017 21:34	1	2017.09.08_537C 012.d	GeminiC18 3x100 3(mm)
CCV 320-183512/13 CCVIS		09/08/2017 21:39	1	2017.09.08_537C 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Instrument ID: A8_N Start Date: 09/08/2017 21:39

Analysis Batch Number: 183773 End Date: 09/08/2017 22:36

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-183773/13 CCVIS		09/08/2017 21:39	1	2017.09.08_537C_013.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/08/2017 21:43	1		GeminiC18 3x100 3(mm)
320-31214-8		09/08/2017 21:48	1	2017.09.08_537C_015.d	GeminiC18 3x100 3(mm)
320-31214-9		09/08/2017 21:53	1	2017.09.08_537C_016.d	GeminiC18 3x100 3(mm)
320-31214-10		09/08/2017 21:58	1	2017.09.08_537C_017.d	GeminiC18 3x100 3(mm)
320-31214-11		09/08/2017 22:02	1	2017.09.08_537C_018.d	GeminiC18 3x100 3(mm)
320-31214-12		09/08/2017 22:07	1	2017.09.08_537C_019.d	GeminiC18 3x100 3(mm)
320-31214-13		09/08/2017 22:12	1	2017.09.08_537C_020.d	GeminiC18 3x100 3(mm)
320-31214-14		09/08/2017 22:17	1	2017.09.08_537C_021.d	GeminiC18 3x100 3(mm)
320-31214-15		09/08/2017 22:21	1	2017.09.08_537C_022.d	GeminiC18 3x100 3(mm)
320-31214-16		09/08/2017 22:26	1	2017.09.08_537C_023.d	GeminiC18 3x100 3(mm)
320-31214-17		09/08/2017 22:31	1	2017.09.08_537C_024.d	GeminiC18 3x100 3(mm)
CCV 320-183773/25 CCVIS		09/08/2017 22:36	1	2017.09.08_537C_025.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Batch Number: 182400 Batch Start Date: 09/01/17 08:39 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 09/05/17 11:38

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00047
MB 320-182400/1		537, 537				250 mL	1.00 mL	7 SU	100 uL
LLCS 320-182400/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
LLCSD 320-182400/3		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-31214-A-1	WGNA-083017-RW-0518	537, 537	T	286.16 g	27.21 g	259 mL	1.00 mL	7 SU	100 uL
320-31214-A-2	WGNA-083017-FRB-0518	537, 537	T	271.58 g	27.64 g	243.9 mL	1.00 mL	7 SU	100 uL
320-31214-A-3	NAWC-083017-RW-352	537, 537	T	287.16 g	27.90 g	259.3 mL	1.00 mL	7 SU	100 uL
320-31214-A-4	NAWC-083017-FRB-352	537, 537	T	285.51 g	26.93 g	258.6 mL	1.00 mL	7 SU	100 uL
320-31214-A-5	NAWC-083017-RW-353	537, 537	T	278.28 g	27.81 g	250.5 mL	1.00 mL	7 SU	100 uL
320-31214-A-6	NAWC-083017-FRB-353	537, 537	T	275.07 g	27.49 g	247.6 mL	1.00 mL	7 SU	100 uL
320-31214-A-7	WGNA-083017-RW-351	537, 537	T	277.15 g	28.14 g	249 mL	1.00 mL	7 SU	100 uL
320-31214-A-8	NAWC-083017-FRB-351	537, 537	T	275.39 g	27.33 g	248.1 mL	1.00 mL	7 SU	100 uL
320-31214-A-9	NAWC-083017-RW-350	537, 537	T	278.45 g	27.70 g	250.8 mL	1.00 mL	7 SU	100 uL
320-31214-A-10	NAWC-083017-FRB-350	537, 537	T	275.87 g	27.29 g	248.6 mL	1.00 mL	7 SU	100 uL
320-31214-A-11	WGNA-083017-RW-3785	537, 537	T	287.11 g	27.76 g	259.4 mL	1.00 mL	7 SU	100 uL
320-31214-A-12	WGNA-083017-FRB-3785	537, 537	T	285.03 g	27.06 g	258 mL	1.00 mL	7 SU	100 uL
320-31214-A-13	WGNA-083017-RW-0515	537, 537	T	283.97 g	27.63 g	256.3 mL	1.00 mL	7 SU	100 uL
320-31214-A-14	WGNA-083017-FRB-0515	537, 537	T	281.26 g	27.32 g	253.9 mL	1.00 mL	7 SU	100 uL
320-31214-A-15	WGNA-083017-RW-3220	537, 537	T	285.14 g	27.47 g	257.7 mL	1.00 mL	7 SU	100 uL
320-31214-A-16	WGNA-083017-FRB-3220	537, 537	T	285.90 g	27.50 g	258.4 mL	1.00 mL	7 SU	100 uL
320-31214-A-17	WGNA-083017-DUP08	537, 537	T	285.05 g	27.74 g	257.3 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00026	LC537-SU 00048	AnalysisComment			

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.: 320-31214-1

SDG No.:

Batch Number: 182400 Batch Start Date: 09/01/17 08:39 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 09/05/17 11:38

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00026	LC537-SU 00048	AnalysisComment			
MB 320-182400/1		537, 537			100 uL	ch nd			
LLCS 320-182400/2		537, 537		100 uL	100 uL	ch nd			
LLCSD 320-182400/3		537, 537		100 uL	100 uL	ch nd			
320-31214-A-1	WGNA-083017-RW-0518	537, 537	T		100 uL	ch nd			
320-31214-A-2	WGNA-083017-FRB-0518	537, 537	T		100 uL	ch nd			
320-31214-A-3	NAWC-083017-RW-352	537, 537	T		100 uL	ch nd			
320-31214-A-4	NAWC-083017-FRB-352	537, 537	T		100 uL	ch nd			
320-31214-A-5	NAWC-083017-RW-353	537, 537	T		100 uL	ch nd			
320-31214-A-6	NAWC-083017-FRB-353	537, 537	T		100 uL	ch nd			
320-31214-A-7	WGNA-083017-RW-351	537, 537	T		100 uL	ch nd			
320-31214-A-8	NAWC-083017-FRB-351	537, 537	T		100 uL	ch nd			
320-31214-A-9	NAWC-083017-RW-350	537, 537	T		100 uL	ch nd			
320-31214-A-10	NAWC-083017-FRB-350	537, 537	T		100 uL	ch nd			
320-31214-A-11	WGNA-083017-RW-3785	537, 537	T		100 uL	ch nd			
320-31214-A-12	WGNA-083017-FRB-3785	537, 537	T		100 uL	ch nd			
320-31214-A-13	WGNA-083017-RW-0515	537, 537	T		100 uL	ch nd			
320-31214-A-14	WGNA-083017-FRB-0515	537, 537	T		100 uL	ch nd			
320-31214-A-15	WGNA-083017-RW-3220	537, 537	T		100 uL	ch nd			
320-31214-A-16	WGNA-083017-FRB-3220	537, 537	T		100 uL	ch nd			
320-31214-A-17	WGNA-083017-DUP08	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.: 320-31214-1

SDG No.:

Batch Number: 182400 Batch Start Date: 09/01/17 08:39 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 09/05/17 11:38

Batch Notes	
Batch Comment	IS:1002957
Manifold ID	7,3
Methanol ID	1010866
Pipette ID	M16387D
Analyst ID - IS Reagent Drop	CCB
Analyst ID - IS Reagent Drop Witness	HJA
Analyst ID - SU Reagent Drop	CCB
Analyst ID - SU Reagent Drop Witness	JNS
Analyst ID - TA Reagent Drop	CCB
Analyst ID - TA Reagent Drop Witness	JNS
SPE Cartridge ID	6357081-03
Trizma ID	SLBR4303V
Reagent Water ID	8/28/17

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: 31214, 31180 Instrument ID & Date: 9-8-17 ICAL Batch: 183459
Extraction Batch: 182400 Worklist #: 47701 TALS Batch: 183512, 183773, 183774

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?	✓			✓
3. Native compounds and surrogates in control? Low-range within ±50% of true value Mid and High-range within ±30% of true value	✓			✓
4. Internal Standard areas in control? Areas ≥ 50% of average area of the ICal and 70-140% of the most recent CCV.	✓			✓
Client Samples & QC Sample Results				
1. Were preparation and analysis done within holding times?	✓			✓
2. Are Chromatograms reviewed and spectra verified?	✓			✓
3. Are positive results within calibration range?	✓			✓
4. Dilutions due to target cpds? ____ Dilutions due to non-targets? ____			✓	
5. All target compounds in MB < 1/3 RL ? **(Requires NCM if "no.")**	✓			✓
6. Are target constituents in LCS/LCSD within method control limits?	✓			✓
7. Internal Standard areas in control for all samples and QC reported? ±50% from the average area of the ICAL and 70-140% of the most recent CCV	✓			✓
8. Do results (e.g., dilutions/trip blanks) make sense?	✓			✓
9. Are MS/MSD recoveries and RPDs within method control limits?			✓	
10. Are all QC samples properly linked in TALS?	✓			✓
11. All manual integrations appropriate and completely documented?	✓			✓
12. Are nonconformances documented as NCMs?			✓	
13. Are all Chrom graphics uploaded?	✓			✓

1st Level Reviewer / Date: JRB 9-11-17 2nd Level Reviewer / Date: MLwerf 9/12/2017

NCM # and Comments: _____

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 ICAL Checklist

A8

Instrument ID & Date: 9-8-17 Worklist#: 47689

ICAL Batch: 183459, 183460 Calibration ID number: 34044, 34045

Review Items	Level 1 Yes	Level 1 No	Level 1 N/A	Level 2
Initial Calibration				
1. Mass calibration, as needed, verified by full scan of PFC stock standard. All PFC ions used for quantitation are within 0.3 m/z of true mass?	✓			✓
2. Responses increase with increasing concentration?	✓			✓
3. Fit used (circle): (Average) Linear (1/x²)Linear (Quadratic) (6 points minimum)				
4. Meets fit criteria? Intercept ≤ ½ RL RSD ≤ 30% for Average $R^2 \geq 0.990$ for Linear $R^2 \geq 0.990$ for Quadratic **NOTE: "Force through Zero" must be used and weighted if needed**	✓			✓
5. If quadratic fit used the curve does not "bend over".	✓			✓
6. Feed calibration points into the calculated curve. Are points ≤MRL within ±50% of true value? Are points >MRL within ±30% of true value?	✓			✓
7. Any carryover from the high calibration point must be ≤ 1/3 RL	✓			✓
8. Asymmetry check meets criteria for the first two eluting peaks?.(0.8 - 1.5).	✓			✓
9. Is the asymmetry check scanned and linked in TALS to the calibration point?	✓			✓
10. Is ICV (2nd source) ± 30% of true value?	✓			✓
11. Is ICV (2nd source) internal standards ±50% of average area of the ICAL?	✓			✓
12. ICal locked in Chrom and uploaded to TALS?	✓			
13. ICal locked in TALS and scanned?				✓

1st Level Reviewer / Date: JRB 9-11-17 2nd Level Reviewer / Date: MW 9/11/2017

NCM # and Comments:

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 08SEP2017_537I Worklist Number: 47701
Instrument Name: A8_N Chrom Method: 537_A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170908-47701.b
QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 183512
# 1 CCV L3	# 1 CCV L3
# 2 RB	# 2 RB
# 3 MB 320-182400/1-A	# 3 MB 320-182400/1-A
# 4 LLCS 320-182400/2-A	# 4 LLCS 320-182400/2-A
# 5 LLCSD 320-182400/3-A	# 5 LLCSD 320-182400/3-A
# 6 320-31214-A-1-A	# 6 320-31214-A-1-A
# 7 320-31214-A-2-A	# 7 320-31214-A-2-A
# 8 320-31214-A-3-A	# 8 320-31214-A-3-A
# 9 320-31214-A-4-A	# 9 320-31214-A-4-A
#10 320-31214-A-5-A	#10 320-31214-A-5-A
#11 320-31214-A-6-A	#11 320-31214-A-6-A
#12 320-31214-A-7-A	#12 320-31214-A-7-A
#13 CCV L5	#13 CCV L5

QC Batch: 2	LC 537 ICAL Raw Batch: 183773
#13 CCV L5	#13 CCV L5
#14 RB	#14 RB
#15 320-31214-A-8-A	#15 320-31214-A-8-A
#16 320-31214-A-9-A	#16 320-31214-A-9-A
#17 320-31214-A-10-A	#17 320-31214-A-10-A
#18 320-31214-A-11-A	#18 320-31214-A-11-A
#19 320-31214-A-12-A	#19 320-31214-A-12-A
#20 320-31214-A-13-A	#20 320-31214-A-13-A
#21 320-31214-A-14-A	#21 320-31214-A-14-A
#22 320-31214-A-15-A	#22 320-31214-A-15-A
#23 320-31214-A-16-A	#23 320-31214-A-16-A
#24 320-31214-A-17-A	#24 320-31214-A-17-A
#25 CCV L3	#25 CCV L3

QC Batch: 3	LC 537 ICAL Raw Batch: 183774
#25 CCV L3	#25 CCV L3
#26 RB	#26 RB
#27 320-31180-A-1-A	#27 320-31180-A-1-A
#28 320-31180-A-2-A	#28 320-31180-A-2-A
#29 CCV L5	#29 CCV L5
#30 RB	#30 RB

4

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-182400 Analyst: Branscum, Cassie Batch Open: 9/1/2017 8:39:00AM

Method Code: 320-537_Prep-320 Batch End: 9/5/2017 11:38:00AM

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~320-182400/1 N/A	N/A		250 mL 1.00 mL	7			N/A	N/A	N/A	ch nd	
2	LLCS~320-182400/2 N/A	N/A		250 mL 1.00 mL	7			N/A	N/A	N/A	ch nd	
3	LLCSD~320-182400/3 N/A	N/A		250 mL 1.00 mL	7			N/A	N/A	N/A	ch nd	
4	320-31214-A-1 (537_DOD5)	N/A (320-31214-1)	286.16 g 27.21 g	259 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
5	320-31214-A-2 (537_DOD5)	N/A (320-31214-1)	271.58 g 27.64 g	243.9 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
6	320-31214-A-3 (537_DOD5)	N/A (320-31214-1)	287.16 g 27.90 g	259.3 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
7	320-31214-A-4 (537_DOD5)	N/A (320-31214-1)	285.51 g 26.93 g	258.6 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
8	320-31214-A-5 (537_DOD5)	N/A (320-31214-1)	278.28 g 27.81 g	250.5 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
9	320-31214-A-6 (537_DOD5)	N/A (320-31214-1)	275.07 g 27.49 g	247.6 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
10	320-31214-A-7 (537_DOD5)	N/A (320-31214-1)	277.15 g 28.14 g	249 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-182400 Analyst: Branscum, Cassie Batch Open: 9/1/2017 8:39:00AM

Method Code: 320-537_Prep-320 Batch End: 9/5/2017 11:38:00AM

11	320-31214-A-8 (537_DOD5)	N/A (320-31214-1)	275.39 g 27.33 g	248.1 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
12	320-31214-A-9 (537_DOD5)	N/A (320-31214-1)	278.45 g 27.70 g	250.8 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
13	320-31214-A-10 (537_DOD5)	N/A (320-31214-1)	275.87 g 27.29 g	248.6 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
14	320-31214-A-11 (537_DOD5)	N/A (320-31214-1)	287.11 g 27.76 g	259.4 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
15	320-31214-A-12 (537_DOD5)	N/A (320-31214-1)	285.03 g 27.06 g	258 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
16	320-31214-A-13 (537_DOD5)	N/A (320-31214-1)	283.97 g 27.63 g	256.3 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
17	320-31214-A-14 (537_DOD5)	N/A (320-31214-1)	281.26 g 27.32 g	253.9 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
18	320-31214-A-15 (537_DOD5)	N/A (320-31214-1)	285.14 g 27.47 g	257.7 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
19	320-31214-A-16 (537_DOD5)	N/A (320-31214-1)	285.90 g 27.50 g	258.4 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
20	320-31214-A-17 (537_DOD5)	N/A (320-31214-1)	285.05 g 27.74 g	257.3 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
21	320-31180-A-1 (537_DOD5)	WE04 (320-31180-1)	291.18 g 27.86 g	263.3 mL 1.00 mL	7			9/6/17	16_Days	4	ch nd	
22	320-31180-A-2 (537_DOD5)	WE04 (320-31180-1)	280.56 g 27.16 g	253.4 mL 1.00 mL	7			9/6/17	16_Days	4	ch nd	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-182400 Analyst: Branscum, Cassie Batch Open: 9/1/2017 8:39:00AM

Method Code: 320-537_Prep-320 Batch End: 9/5/2017 11:38:00AM

Batch Notes

Manifold ID	7,3
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-03
Methanol ID	1010866
Reagent Water ID	8/28/17
Pipette ID	M16387D
Analyst ID - TA Reagent Drop	CCB
Analyst ID - TA Reagent Drop Witness	JNS
Analyst ID - SU Reagent Drop	CCB
Analyst ID - SU Reagent Drop Witness	JNS
Analyst ID - IS Reagent Drop	CCB
Analyst ID - IS Reagent Drop Witness	HJA
Batch Comment	IS:1002957

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-182400 | Analyst: Branscum, Cassie | Batch Open: 9/1/2017 8:39:00AM

Method Code: 320-537_Prep-320 | Batch End:

Batch Notes

Manifold ID	7, 3
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-03
Methanol ID	1210866
Reagent Water ID	8/28/17
Pipette ID	M163870
Analyst ID - TA Reagent Drop	CCB
Analyst ID - TA Reagent Drop Witness	JNS
Analyst ID - SU Reagent Drop	CCB
Analyst ID - SU Reagent Drop Witness	JNS
Analyst ID - IS Reagent Drop	CeB
Analyst ID - IS Reagent Drop Witness	HA
Batch Comment	IS: 1002957; HSA 9-5-17

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-182400 Analyst: Branscum, Cassie Batch Open: 9/1/2017 8:39:00AM

Method Code: 320-537_Prep-320 Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-182400/1	LC537-SU_00048	100 uL	1.00 mL	CB 9-1-17	JNS 9/1/17
LLCS 320-182400/2	LC537-LSP_00026	100 uL	1.00 mL		
LLCS 320-182400/2	LC537-SU_00048	100 uL	1.00 mL		
LLCSD 320-182400/3	LC537-LSP_00026	100 uL	1.00 mL		
LLCSD 320-182400/3	LC537-SU_00048	100 uL	1.00 mL		
320-31214-A-1	LC537-SU_00048	100 uL	1.00 mL		
320-31214-A-2	LC537-SU_00048	100 uL	1.00 mL		
320-31214-A-3	LC537-SU_00048	100 uL	1.00 mL		
320-31214-A-4	LC537-SU_00048	100 uL	1.00 mL		
320-31214-A-5	LC537-SU_00048	100 uL	1.00 mL		
320-31214-A-6	LC537-SU_00048	100 uL	1.00 mL		
320-31214-A-7	LC537-SU_00048	100 uL	1.00 mL		
320-31214-A-8	LC537-SU_00048	100 uL	1.00 mL		
320-31214-A-9	LC537-SU_00048	100 uL	1.00 mL		
320-31214-A-10	LC537-SU_00048	100 uL	1.00 mL		
320-31214-A-11	LC537-SU_00048	100 uL	1.00 mL		
320-31214-A-12	LC537-SU_00048	100 uL	1.00 mL		
320-31214-A-13	LC537-SU_00048	100 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-182400 Analyst: Branscum, Cassie Batch Open: 9/1/2017 8:39:00AM

Method Code: 320-537_Prep-320 Batch End:

320-31214-A-14	LC537-SU_00048	100 uL	1.00 mL	CDS 9-1-17	JNS 9/1/17
320-31214-A-15	LC537-SU_00048	100 uL	1.00 mL		
320-31214-A-16	LC537-SU_00048	100 uL	1.00 mL		
320-31214-A-17	LC537-SU_00048	100 uL	1.00 mL		
320-31180-A-1	LC537-SU_00048	100 uL	1.00 mL		
320-31180-A-2	LC537-SU_00048	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): 320-482400 Test: 537, Prep

Earliest Holding Time: 9-13-17

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	✓	✓
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: CS Date: 9-5-17

2nd Level Reviewer: HSA Date: 9-5-17

Comments: _____

Shipping and Receiving Documents

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

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

Regulatory Program: ☑ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Andy Frebowitz	Site Contact: Mary Kay Bond	Date: 8/30/2017	COC No:
TetraTech	Tel/Fax: 610.382.1170	Lab Contact: Dave Alltucker	Carrier: FedEx	1 of 2 COCs
234 Mall Boulevard Suite 260	**Analysis Turnaround Time**			Sampler: Mary Kay Bond
King of Prussia, PA 19406	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
610-382-1174	TAT if different from Below 21			Walk-in Client:
610-491-9688	☐ 2 weeks			Lab Sampling:
Project Name: WE04	☐ 1 week			
Site: WE04	☐ 2 days			Job / SDG No.:
P O # 1132358 (through EarthToxics)	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 UCMR3	Sample Specific Notes:
WGNA-083017-RW-0518	8/30/2017	09:05	G	DW	2	N	N	Y	
WGNA-083017-FRB-0518	8/30/2017	09:00	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-083017-RW-352	8/30/2017	10:45	G	DW	2	N	N	Y	
NAWC-083017-FRB-352	8/30/2017	10:40	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-083017-RW-353	8/30/2017	10:20	G	DW	2	N	N	Y	
NAWC-083017-FRB-353	8/30/2017	10:15	G	DW	2	N	N	Y	Field Reagent Blank
* WGNA-083017-RW-351	8/30/2017	11:25	G	DW	2	N	N	Y	
** NAWC-083017-FRB-351	8/30/2017	11:20	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-083017-RW-350	8/30/2017	11:45	G	DW	2	N	N	Y	
NAWC-083017-FRB-350	8/30/2017	11:40	G	DW	2	N	N	Y	Field Reagent Blank

320-31214 Chain of Custody

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

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the 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: 770138839427 & 770138934807 * label at 1130. ** label at 1125.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 2-6 2.6 Corr'd: | Therm ID No.: AK-1

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Mary Kay Bond	Tetra Tech	8/30/2017 18:00			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
					8-31-17 930
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

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: 8/30/2017	COC No:
TetraTech	Tel/Fax: 610.382.1170	Lab Contact: Dave Alltucker	Carrier: FedEx	2 of 2 COCs
234 Mall Boulevard Suite 260	Analysis Turnaround Time			Sampler: Mary Kay Bond
King of Prussia, PA 19406	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
610-382-1174	TAT if different from Below 21			Walk-in Client:
610-491-9688	☐ 2 weeks			Lab Sampling:
Project Name: WE04	☐ 1 week			
Site: WE04	☐ 2 days			Job / SDG No.:
P O # 1132358 (through EarthToxics)	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 UCMR3	Sample Specific Notes:
WGNA-083017-RW-3785	8/30/2017	15:35	G	DW	2	N	N	Y	
WGNA-083017-FRB-3785	8/30/2017	15:30	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-083017-RW-0515	8/30/2017	13:55	G	DW	2	N	N	Y	
WGNA-083017-FRB-0515	8/30/2017	13:50	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-083017-RW-3220	8/30/2017	14:20	G	DW	2	N	N	Y	
WGNA-083017-FRB-3220	8/30/2017	14:15	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-083017-DUP08	8/30/2017	07:00	G	DW	2	N	N	Y	Duplicate

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 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: 770138839427 & 770138934807

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd:_____ Corr'd:_____		Therm ID No.:_____
Relinquished by: Mary Kay Bond	Company: Tetra Tech	Date/Time: 8/30/2017 18:00	Received by:	Company:	Date/Time: 8-31-17 930
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: 320-31214-1

Login Number: 31214
List Number: 1
Creator: Aguayo, Alonso

List Source: TestAmerica Sacramento

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

"WGNA-083017-RW-0518","537","RES","320-31214-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","24","ng/L","J","6.6","DL","","TRG","","","39","LOQ","YES","-99","","259","1.00","15",""
"WGNA-083017-RW-0518","537","RES","320-31214-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","24","ng/L","","2.7","DL","","TRG","","","19","LOQ","YES","-99","","259","1.00","7.7",""
"WGNA-083017-RW-0518","537","RES","320-31214-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","9.8","ng/L","J","5.3","DL","","TRG","","","29","LOQ","YES","-99","","259","1.00","12",""
"WGNA-083017-RW-0518","537","RES","320-31214-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","27","ng/L","J","16","DL","","TRG","","","87","LOQ","YES","-99","","259","1.00","35",""
"WGNA-083017-RW-0518","537","RES","320-31214-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","5.9","ng/L","J","1.8","DL","","TRG","","","9.7","LOQ","YES","-99","","259","1.00","3.9",""
"WGNA-083017-RW-0518","537","RES","320-31214-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES","-99","","259","1.00","19",""
"WGNA-083017-RW-0518","537","RES","320-31214-1","TALSAC","STL00993","13C2 PFHxA","33","ng/L","","-99","DL","","SURR","86","","-99","LOQ","YES","38.6","","259","1.00","0",""
"WGNA-083017-RW-0518","537","RES","320-31214-1","TALSAC","STL00996","13C2 PFDA","42","ng/L","","-99","DL","","SURR","109","","-99","LOQ","YES","38.6","","259","1.00","0",""
"NAWC-083017-FRB-350","537","RES","320-31214-10","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","248.6","1.00","16",""
"NAWC-083017-FRB-350","537","RES","320-31214-10","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","248.6","1.00","8.0",""
"NAWC-083017-FRB-350","537","RES","320-31214-10","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","248.6","1.00","12",""
"NAWC-083017-FRB-350","537","RES","320-31214-10","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","91","LOQ","YES","-99","","248.6","1.00","36",""
"NAWC-083017-FRB-350","537","RES","320-31214-10","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","248.6","1.00","4.0",""
"NAWC-083017-FRB-350","537","RES","320-31214-10","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","248.6","1.00","20",""
"NAWC-083017-FRB-350","537","RES","320-31214-10","TALSAC","STL00993","13C2 PFHxA","37","ng/L","","-99","DL","","SURR","91","","-99","LOQ","YES","40.2","","248.6","1.00","0",""
"NAWC-083017-FRB-350","537","RES","320-31214-10","TALSAC","STL00996","13C2 PFDA","39","ng/L","","-99","DL","","SURR","97","","-99","LOQ","YES","40.2","","248.6","1.00","0",""
"WGNA-083017-RW-3785","537","RES","320-31214-11","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","20","ng/L","J M","6.6","DL","","TRG","","","39","LOQ","YES","-99","","259.4","1.00","15",""
"WGNA-083017-RW-3785","537","RES","320-31214-11","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","22","ng/L","","2.7","DL","","TRG","","","19","LOQ","YES","-99","","259.4","1.00","7.7",""
"WGNA-083017-RW-3785","537","RES","320-31214-11","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","14","ng/L","J","5.3","DL","","TRG","","","29","LOQ","YES","-99","","259.4","1.00","12",""
"WGNA-083017-RW-3785","537","RES","320-31214-11","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U","16","DL","","TRG","","","87","LOQ","YES","-99","","259.4","1.00","35",""
"WGNA-083017-RW-3785","537","RES","320-31214-11","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","6.2","ng/L","J","1.8","DL","","TRG","","","9.6","LOQ","YES","-99","","259.4","1.00","3.9",""
"WGNA-083017-RW-3785","537","RES","320-31214-11","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U M","7.7","DL","","TRG","","","23","LOQ","YES","-99","","259.4","1.00","19",""
"WGNA-083017-RW-3785","537","RES","320-31214-11","TALSAC","STL00993","13C2 PFHxA","33","ng/L","","-99","DL","","SURR","87","","-99","LOQ","YES","38.6","","259.4","1.00","0",""
"WGNA-083017-RW-3785","537","RES","320-31214-11","TALSAC","STL00996","13C2 PFDA","40","ng/L","","-99","DL","","SURR","104","","-99","LOQ","YES","38.6","","259.4","1.00","0",""
"WGNA-083017-FRB-3785","537","RES","320-31214-12","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.6","DL","","TRG","","","39","LOQ","YES","-99","","258","1.00","16",""
"WGNA-083017-FRB-3785","537","RES","320-31214-12","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.8","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES","-99","","258","1.00","7.8",""
"WGNA-083017-FRB-3785","537","RES","320-31214-12","TALSAC","355-46-4","Perfluorohexanesulfonic acid

(PFHxS)","12","ng/L","U","5.3","DL","","TRG","","","29","LOQ","YES","-99","","258","1.00","12",""
"WGNA-083017-FRB-3785","537","RES","320-31214-12","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","16","DL","","TRG","","","87","LOQ","YES","-99","","258","1.00","35",""
"WGNA-083017-FRB-3785","537","RES","320-31214-12","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.9","ng/L","U","1.8","DL","","TRG","","","9.7","LOQ","YES","-99","","258","1.00","3.9",""
"WGNA-083017-FRB-3785","537","RES","320-31214-12","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES","-99","","258","1.00","19",""
"WGNA-083017-FRB-3785","537","RES","320-31214-12","TALSAC","STL00993","13C2
PFHxA","38","ng/L","","-99","DL","","SURR","99","","-99","LOQ","YES","38.8","","258","1.00","0",""
"WGNA-083017-FRB-3785","537","RES","320-31214-12","TALSAC","STL00996","13C2
PFDA","44","ng/L","","-99","DL","","SURR","112","","-99","LOQ","YES","38.8","","258","1.00","0",""
"WGNA-083017-RW-0515","537","RES","320-31214-13","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","29","ng/L","J","6.6","DL","","TRG","","","39","LOQ","YES","-99","","256.3","1.00","16",""
"WGNA-083017-RW-0515","537","RES","320-31214-13","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","29","ng/L","","2.7","DL","","TRG","","","20","LOQ","YES","-99","","256.3","1.00","7.8",""
"WGNA-083017-RW-0515","537","RES","320-31214-13","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","26","ng/L","J","5.4","DL","","TRG","","","29","LOQ","YES","-99","","256.3","1.00","12",""
"WGNA-083017-RW-0515","537","RES","320-31214-13","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","256.3","1.00","35",""
"WGNA-083017-RW-0515","537","RES","320-31214-13","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","6.1","ng/L","J","1.9","DL","","TRG","","","9.8","LOQ","YES","-99","","256.3","1.00","3.9",""
"WGNA-083017-RW-0515","537","RES","320-31214-13","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES","-99","","256.3","1.00","20",""
"WGNA-083017-RW-0515","537","RES","320-31214-13","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","91","","-99","LOQ","YES","39.0","","256.3","1.00","0",""
"WGNA-083017-RW-0515","537","RES","320-31214-13","TALSAC","STL00996","13C2
PFDA","42","ng/L","","-99","DL","","SURR","108","","-99","LOQ","YES","39.0","","256.3","1.00","0",""
"WGNA-083017-FRB-0515","537","RES","320-31214-14","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.7","DL","","TRG","","","39","LOQ","YES","-99","","253.9","1.00","16",""
"WGNA-083017-FRB-0515","537","RES","320-31214-14","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.9","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","253.9","1.00","7.9",""
"WGNA-083017-FRB-0515","537","RES","320-31214-14","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","30","LOQ","YES","-99","","253.9","1.00","12",""
"WGNA-083017-FRB-0515","537","RES","320-31214-14","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","16","DL","","TRG","","","89","LOQ","YES","-99","","253.9","1.00","35",""
"WGNA-083017-FRB-0515","537","RES","320-31214-14","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.9","ng/L","U","1.9","DL","","TRG","","","9.8","LOQ","YES","-99","","253.9","1.00","3.9",""
"WGNA-083017-FRB-0515","537","RES","320-31214-14","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES","-99","","253.9","1.00","20",""
"WGNA-083017-FRB-0515","537","RES","320-31214-14","TALSAC","STL00993","13C2
PFHxA","38","ng/L","","-99","DL","","SURR","96","","-99","LOQ","YES","39.4","","253.9","1.00","0",""
"WGNA-083017-FRB-0515","537","RES","320-31214-14","TALSAC","STL00996","13C2
PFDA","44","ng/L","","-99","DL","","SURR","111","","-99","LOQ","YES","39.4","","253.9","1.00","0",""
"WGNA-083017-RW-3220","537","RES","320-31214-15","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","40","ng/L","M","6.6","DL","","TRG","","","39","LOQ","YES","-99","","257.7","1.00","16",""
"WGNA-083017-RW-3220","537","RES","320-31214-15","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","16","ng/L","J","2.7","DL","","TRG","","","19","LOQ","YES","-99","","257.7","1.00","7.8",""
"WGNA-083017-RW-3220","537","RES","320-31214-15","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","17","ng/L","J","5.3","DL","","TRG","","","29","LOQ","YES","-99","","257.7","1.00","12",""
"WGNA-083017-RW-3220","537","RES","320-31214-15","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","98","ng/L","","16","DL","","TRG","","","87","LOQ","YES","-99","","257.7","1.00","35",""
"WGNA-083017-RW-3220","537","RES","320-31214-15","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","10","ng/L","","1.8","DL","","TRG","","","9.7","LOQ","YES","-99","","257.7","1.00","3.9",""
"WGNA-083017-RW-3220","537","RES","320-31214-15","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA)","19","ng/L","U M","7.8","DL","","TRG","","","23","LOQ","YES","-99","","257.7","1.00","19",""
"WGNA-083017-RW-3220","537","RES","320-31214-15","TALSAC","STL00993","13C2
PFHxA","30","ng/L","","-99","DL","","SURR","79","","-99","LOQ","YES","38.8","","257.7","1.00","0",""
"WGNA-083017-RW-3220","537","RES","320-31214-15","TALSAC","STL00996","13C2
PFDA","40","ng/L","","-99","DL","","SURR","104","","-99","LOQ","YES","38.8","","257.7","1.00","0",""
"WGNA-083017-FRB-3220","537","RES","320-31214-16","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.6","DL","","TRG","","","39","LOQ","YES","-99","","258.4","1.00","15",""
"WGNA-083017-FRB-3220","537","RES","320-31214-16","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.7","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES","-99","","258.4","1.00","7.7",""
"WGNA-083017-FRB-3220","537","RES","320-31214-16","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.3","DL","","TRG","","","29","LOQ","YES","-99","","258.4","1.00","12",""
"WGNA-083017-FRB-3220","537","RES","320-31214-16","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","16","DL","","TRG","","","87","LOQ","YES","-99","","258.4","1.00","35",""
"WGNA-083017-FRB-3220","537","RES","320-31214-16","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.9","ng/L","U","1.8","DL","","TRG","","","9.7","LOQ","YES","-99","","258.4","1.00","3.9",""
"WGNA-083017-FRB-3220","537","RES","320-31214-16","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES","-99","","258.4","1.00","19",""
"WGNA-083017-FRB-3220","537","RES","320-31214-16","TALSAC","STL00993","13C2
PFHxA","37","ng/L","","-99","DL","","SURR","95","","-99","LOQ","YES","38.7","","258.4","1.00","0",""
"WGNA-083017-FRB-3220","537","RES","320-31214-16","TALSAC","STL00996","13C2
PFDA","43","ng/L","","-99","DL","","SURR","111","","-99","LOQ","YES","38.7","","258.4","1.00","0",""
"WGNA-083017-DUP08","537","RES","320-31214-17","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.6","DL","","TRG","","","39","LOQ","YES","-99","","257.3","1.00","16",""
"WGNA-083017-DUP08","537","RES","320-31214-17","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","9.6","ng/L","J M","2.7","DL","","TRG","","","19","LOQ","YES","-99","","257.3","1.00","7.8",""
"WGNA-083017-DUP08","537","RES","320-31214-17","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U M","5.3","DL","","TRG","","","29","LOQ","YES","-99","","257.3","1.00","12",""
"WGNA-083017-DUP08","537","RES","320-31214-17","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","16","DL","","TRG","","","87","LOQ","YES","-99","","257.3","1.00","35",""
"WGNA-083017-DUP08","537","RES","320-31214-17","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.5","ng/L","J","1.8","DL","","TRG","","","9.7","LOQ","YES","-99","","257.3","1.00","3.9",""
"WGNA-083017-DUP08","537","RES","320-31214-17","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES","-99","","257.3","1.00","19",""
"WGNA-083017-DUP08","537","RES","320-31214-17","TALSAC","STL00993","13C2
PFHxA","31","ng/L","","-99","DL","","SURR","79","","-99","LOQ","YES","38.9","","257.3","1.00","0",""
"WGNA-083017-DUP08","537","RES","320-31214-17","TALSAC","STL00996","13C2
PFDA","44","ng/L","","-99","DL","","SURR","112","","-99","LOQ","YES","38.9","","257.3","1.00","0",""
"WGNA-083017-FRB-0518","537","RES","320-31214-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","7.0","DL","","TRG","","","41","LOQ","YES","-99","","243.9","1.00","16",""
"WGNA-083017-FRB-0518","537","RES","320-31214-2","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.2","ng/L","U","2.9","DL","","TRG","","","21","LOQ","YES","-99","","243.9","1.00","8.2",""
"WGNA-083017-FRB-0518","537","RES","320-31214-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.6","DL","","TRG","","","31","LOQ","YES","-99","","243.9","1.00","12",""
"WGNA-083017-FRB-0518","537","RES","320-31214-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","37","ng/L","U","17","DL","","TRG","","","92","LOQ","YES","-99","","243.9","1.00","37",""
"WGNA-083017-FRB-0518","537","RES","320-31214-2","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.1","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","243.9","1.00","4.1",""
"WGNA-083017-FRB-0518","537","RES","320-31214-2","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","21","ng/L","U","8.2","DL","","TRG","","","25","LOQ","YES","-99","","243.9","1.00","21",""
"WGNA-083017-FRB-0518","537","RES","320-31214-2","TALSAC","STL00993","13C2
PFHxA","38","ng/L","","-99","DL","","SURR","93","","-99","LOQ","YES","41.0","","243.9","1.00","0",""
"WGNA-083017-FRB-0518","537","RES","320-31214-2","TALSAC","STL00996","13C2
PFDA","45","ng/L","","-99","DL","","SURR","109","","-99","LOQ","YES","41.0","","243.9","1.00","0",""
"NAWC-083017-RW-352","537","RES","320-31214-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS)","15","ng/L","U M","6.6","DL","","TRG","","","39","LOQ","YES","-99","","259.3","1.00","15",""
"NAWC-083017-RW-352","537","RES","320-31214-3","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","9.5","ng/L","J","2.7","DL","","TRG","","","19","LOQ","YES","-99","","259.3","1.00","7.7",""
"NAWC-083017-RW-352","537","RES","320-31214-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.3","DL","","TRG","","","29","LOQ","YES","-99","","259.3","1.00","12",""
"NAWC-083017-RW-352","537","RES","320-31214-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","16","DL","","TRG","","","87","LOQ","YES","-99","","259.3","1.00","35",""
"NAWC-083017-RW-352","537","RES","320-31214-3","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.3","ng/L","J","1.8","DL","","TRG","","","9.6","LOQ","YES","-99","","259.3","1.00","3.9",""
"NAWC-083017-RW-352","537","RES","320-31214-3","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES","-99","","259.3","1.00","19",""
"NAWC-083017-RW-352","537","RES","320-31214-3","TALSAC","STL00993","13C2
PFHxA","29","ng/L","","-99","DL","","SURR","76","","-99","LOQ","YES","38.6","","259.3","1.00","0",""
"NAWC-083017-RW-352","537","RES","320-31214-3","TALSAC","STL00996","13C2
PFDA","43","ng/L","","-99","DL","","SURR","112","","-99","LOQ","YES","38.6","","259.3","1.00","0",""
"NAWC-083017-FRB-352","537","RES","320-31214-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.6","DL","","TRG","","","39","LOQ","YES","-99","","258.6","1.00","15",""
"NAWC-083017-FRB-352","537","RES","320-31214-4","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.7","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES","-99","","258.6","1.00","7.7",""
"NAWC-083017-FRB-352","537","RES","320-31214-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.3","DL","","TRG","","","29","LOQ","YES","-99","","258.6","1.00","12",""
"NAWC-083017-FRB-352","537","RES","320-31214-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","16","DL","","TRG","","","87","LOQ","YES","-99","","258.6","1.00","35",""
"NAWC-083017-FRB-352","537","RES","320-31214-4","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.9","ng/L","U","1.8","DL","","TRG","","","9.7","LOQ","YES","-99","","258.6","1.00","3.9",""
"NAWC-083017-FRB-352","537","RES","320-31214-4","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES","-99","","258.6","1.00","19",""
"NAWC-083017-FRB-352","537","RES","320-31214-4","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","-99","DL","","SURR","100","","-99","LOQ","YES","38.7","","258.6","1.00","0",""
"NAWC-083017-FRB-352","537","RES","320-31214-4","TALSAC","STL00996","13C2
PFDA","44","ng/L","","-99","DL","","SURR","113","","-99","LOQ","YES","38.7","","258.6","1.00","0",""
"NAWC-083017-RW-353","537","RES","320-31214-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","11","ng/L","J M","6.8","DL","","TRG","","","40","LOQ","YES","-99","","250.5","1.00","16",""
"NAWC-083017-RW-353","537","RES","320-31214-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","16","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","250.5","1.00","8.0",""
"NAWC-083017-RW-353","537","RES","320-31214-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","250.5","1.00","12",""
"NAWC-083017-RW-353","537","RES","320-31214-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250.5","1.00","36",""
"NAWC-083017-RW-353","537","RES","320-31214-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.6","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES","-99","","250.5","1.00","4.0",""
"NAWC-083017-RW-353","537","RES","320-31214-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","250.5","1.00","20",""
"NAWC-083017-RW-353","537","RES","320-31214-5","TALSAC","STL00993","13C2
PFHxA","30","ng/L","","-99","DL","","SURR","74","","-99","LOQ","YES","39.9","","250.5","1.00","0",""
"NAWC-083017-RW-353","537","RES","320-31214-5","TALSAC","STL00996","13C2
PFDA","46","ng/L","","-99","DL","","SURR","116","","-99","LOQ","YES","39.9","","250.5","1.00","0",""
"NAWC-083017-FRB-353","537","RES","320-31214-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.9","DL","","TRG","","","40","LOQ","YES","-99","","247.6","1.00","16",""
"NAWC-083017-FRB-353","537","RES","320-31214-6","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.1","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","247.6","1.00","8.1",""
"NAWC-083017-FRB-353","537","RES","320-31214-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.6","DL","","TRG","","","30","LOQ","YES","-99","","247.6","1.00","12",""
"NAWC-083017-FRB-353","537","RES","320-31214-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)","36","ng/L","U","16","DL","","TRG","","","91","LOQ","YES","-99","","247.6","1.00","36",""
"NAWC-083017-FRB-353","537","RES","320-31214-6","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","247.6","1.00","4.0",""
"NAWC-083017-FRB-353","537","RES","320-31214-6","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.1","DL","","TRG","","","24","LOQ","YES","-99","","247.6","1.00","20",""
"NAWC-083017-FRB-353","537","RES","320-31214-6","TALSAC","STL00993","13C2
PFHxA","40","ng/L","","-99","DL","","SURR","100","","-99","LOQ","YES","40.4","","247.6","1.00","0",""
"NAWC-083017-FRB-353","537","RES","320-31214-6","TALSAC","STL00996","13C2
PFDA","48","ng/L","","-99","DL","","SURR","119","","-99","LOQ","YES","40.4","","247.6","1.00","0",""
"WGNA-083017-RW-351","537","RES","320-31214-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","7.3","ng/L","J M","6.8","DL","","TRG","","","40","LOQ","YES","-99","","249","1.00","16",""
"WGNA-083017-RW-351","537","RES","320-31214-7","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","13","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","249","1.00","8.0",""
"WGNA-083017-RW-351","537","RES","320-31214-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","249","1.00","12",""
"WGNA-083017-RW-351","537","RES","320-31214-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","249","1.00","36",""
"WGNA-083017-RW-351","537","RES","320-31214-7","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.1","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES","-99","","249","1.00","4.0",""
"WGNA-083017-RW-351","537","RES","320-31214-7","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","249","1.00","20",""
"WGNA-083017-RW-351","537","RES","320-31214-7","TALSAC","STL00993","13C2
PFHxA","32","ng/L","","-99","DL","","SURR","79","","-99","LOQ","YES","40.2","","249","1.00","0",""
"WGNA-083017-RW-351","537","RES","320-31214-7","TALSAC","STL00996","13C2
PFDA","44","ng/L","","-99","DL","","SURR","109","","-99","LOQ","YES","40.2","","249","1.00","0",""
"NAWC-083017-FRB-351","537","RES","320-31214-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.9","DL","","TRG","","","40","LOQ","YES","-99","","248.1","1.00","16",""
"NAWC-083017-FRB-351","537","RES","320-31214-8","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.1","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","248.1","1.00","8.1",""
"NAWC-083017-FRB-351","537","RES","320-31214-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","248.1","1.00","12",""
"NAWC-083017-FRB-351","537","RES","320-31214-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","91","LOQ","YES","-99","","248.1","1.00","36",""
"NAWC-083017-FRB-351","537","RES","320-31214-8","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","248.1","1.00","4.0",""
"NAWC-083017-FRB-351","537","RES","320-31214-8","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.1","DL","","TRG","","","24","LOQ","YES","-99","","248.1","1.00","20",""
"NAWC-083017-FRB-351","537","RES","320-31214-8","TALSAC","STL00993","13C2
PFHxA","42","ng/L","","-99","DL","","SURR","103","","-99","LOQ","YES","40.3","","248.1","1.00","0",""
"NAWC-083017-FRB-351","537","RES","320-31214-8","TALSAC","STL00996","13C2
PFDA","47","ng/L","","-99","DL","","SURR","117","","-99","LOQ","YES","40.3","","248.1","1.00","0",""
"NAWC-083017-RW-350","537","RES","320-31214-9","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","J","6.8","DL","","TRG","","","40","LOQ","YES","-99","","250.8","1.00","16",""
"NAWC-083017-RW-350","537","RES","320-31214-9","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","11","ng/L","J","2.8","DL","","TRG","","","20","LOQ","YES","-99","","250.8","1.00","8.0",""
"NAWC-083017-RW-350","537","RES","320-31214-9","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","250.8","1.00","12",""
"NAWC-083017-RW-350","537","RES","320-31214-9","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250.8","1.00","36",""
"NAWC-083017-RW-350","537","RES","320-31214-9","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.8","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES","-99","","250.8","1.00","4.0",""
"NAWC-083017-RW-350","537","RES","320-31214-9","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","250.8","1.00","20",""
"NAWC-083017-RW-350","537","RES","320-31214-9","TALSAC","STL00993","13C2

PFHxA","31","ng/L","","-99","DL","","SURR","79","","-99","LOQ","YES","39.9","","250.8","1.00","0",""
"NAWC-083017-RW-350","537","RES","320-31214-9","TALSAC","STL00996","13C2
PFDA","45","ng/L","","-99","DL","","SURR","113","","-99","LOQ","YES","39.9","","250.8","1.00","0",""
"LLCS 320-182400/2-A","537","RES","LLCS 320-182400/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","37.5","ng/L","J M","6.8","DL","","SPK","94","","40","LOQ","YES","40.0","","250","1.00","16",""
"LLCS 320-182400/2-A","537","RES","LLCS 320-182400/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","19.2","ng/L","J","2.8","DL","","SPK","96","","20","LOQ","YES","20.0","","250","1.00","8.0",""
"LLCS 320-182400/2-A","537","RES","LLCS 320-182400/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","30.1","ng/L","","5.5","DL","","SPK","100","","30","LOQ","YES","30.0","","250","1.00","12",""
"LLCS 320-182400/2-A","537","RES","LLCS 320-182400/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","96.1","ng/L","","16","DL","","SPK","107","","90","LOQ","YES","90.0","","250","1.00","36",""
"LLCS 320-182400/2-A","537","RES","LLCS 320-182400/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","10.4","ng/L","","1.9","DL","","SPK","104","","10","LOQ","YES","10.0","","250","1.00","4.0",""
"LLCS 320-182400/2-A","537","RES","LLCS 320-182400/2-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19.1","ng/L","J","8.0","DL","","SPK","96","","24","LOQ","YES","20.0","","250","1.00","20",""
"LLCS 320-182400/2-A","537","RES","LLCS 320-182400/2-A","TALSAC","STL00993","13C2
PFHxA","39.0","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","40.0","","250","1.00","0",""
"LLCS 320-182400/2-A","537","RES","LLCS 320-182400/2-A","TALSAC","STL00996","13C2
PFDA","43.1","ng/L","","-99","DL","","SURR","108","","-99","LOQ","YES","40.0","","250","1.00","0",""
"LLCSD 320-182400/3-A","537","RES","LLCSD 320-182400/3-A","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","38.9","ng/L","J M","6.8","DL","","SPK","97","4","40","LOQ","YES","40.0","LLCS 320-182400/2-
A","250","1.00","16",""
"LLCSD 320-182400/3-A","537","RES","LLCSD 320-182400/3-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","19.5","ng/L","J","2.8","DL","","SPK","97","1","20","LOQ","YES","20.0","LLCS 320-182400/2-
A","250","1.00","8.0",""
"LLCSD 320-182400/3-A","537","RES","LLCSD 320-182400/3-A","TALSAC","355-46-4","Perfluorohexanesulfonic
acid (PFHxS)","29.8","ng/L","J","5.5","DL","","SPK","99","1","30","LOQ","YES","30.0","LLCS 320-182400/2-
A","250","1.00","12",""
"LLCSD 320-182400/3-A","537","RES","LLCSD 320-182400/3-A","TALSAC","375-73-5","Perfluorobutanesulfonic
acid (PFBS)","96.8","ng/L","","16","DL","","SPK","108","0.7","90","LOQ","YES","90.0","LLCS 320-182400/2-
A","250","1.00","36",""
"LLCSD 320-182400/3-A","537","RES","LLCSD 320-182400/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","10.5","ng/L","","1.9","DL","","SPK","105","1","10","LOQ","YES","10.0","LLCS 320-182400/2-
A","250","1.00","4.0",""
"LLCSD 320-182400/3-A","537","RES","LLCSD 320-182400/3-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19.8","ng/L","J","8.0","DL","","SPK","99","4","24","LOQ","YES","20.0","LLCS 320-182400/2-
A","250","1.00","20",""
"LLCSD 320-182400/3-A","537","RES","LLCSD 320-182400/3-A","TALSAC","STL00993","13C2
PFHxA","40.1","ng/L","","-99","DL","","SURR","100","3","-99","LOQ","YES","40.0","LLCS 320-182400/2-
A","250","1.00","0",""
"LLCSD 320-182400/3-A","537","RES","LLCSD 320-182400/3-A","TALSAC","STL00996","13C2
PFDA","46.9","ng/L","","-99","DL","","SURR","117","8","-99","LOQ","YES","40.0","LLCS 320-182400/2-
A","250","1.00","0",""
"MB 320-182400/1-A","537","RES","MB 320-182400/1-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","250","1.00","16",""
"MB 320-182400/1-A","537","RES","MB 320-182400/1-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","250","1.00","8.0",""
"MB 320-182400/1-A","537","RES","MB 320-182400/1-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","250","1.00","12",""
"MB 320-182400/1-A","537","RES","MB 320-182400/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250","1.00","36",""
"MB 320-182400/1-A","537","RES","MB 320-182400/1-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","250","1.00","4.0",""
"MB 320-182400/1-A","537","RES","MB 320-182400/1-A","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","250","1.00","20",""
"MB 320-182400/1-A","537","RES","MB 320-182400/1-A","TALSAC","STL00993","13C2
PFHxA","40.4","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","40.0","","250","1.00","0",""
"MB 320-182400/1-A","537","RES","MB 320-182400/1-A","TALSAC","STL00996","13C2
PFDA","44.6","ng/L","","-99","DL","","SURR","111","","-99","LOQ","YES","40.0","","250","1.00","0",""
"Unknown","Unknown","WGNA-083017-RW-0518","08/30/2017 09:05","AQ","320-31214-
1","NM","","2.6","537","METHOD","RES","09/01/2017 08:39","09/08/2017
21:05","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183512","320-31214-1","08/31/2017 09:30","09/01/2017 08:20",""
"Unknown","Unknown","NAWC-083017-FRB-350","08/30/2017 11:40","AQ","320-31214-
10","FB","","2.6","537","METHOD","RES","09/01/2017 08:39","09/08/2017
21:58","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183773","320-31214-1","08/31/2017 09:30","09/01/2017 08:20",""
"Unknown","Unknown","WGNA-083017-RW-3785","08/30/2017 15:35","AQ","320-31214-
11","NM","","2.6","537","METHOD","RES","09/01/2017 08:39","09/08/2017
22:02","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183773","320-31214-1","08/31/2017 09:30","09/01/2017 08:20",""
"Unknown","Unknown","WGNA-083017-FRB-3785","08/30/2017 15:30","AQ","320-31214-
12","FB","","2.6","537","METHOD","RES","09/01/2017 08:39","09/08/2017
22:07","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183773","320-31214-1","08/31/2017 09:30","09/01/2017 08:20",""
"Unknown","Unknown","WGNA-083017-RW-0515","08/30/2017 13:55","AQ","320-31214-
13","NM","","2.6","537","METHOD","RES","09/01/2017 08:39","09/08/2017
22:12","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183773","320-31214-1","08/31/2017 09:30","09/01/2017 08:20",""
"Unknown","Unknown","WGNA-083017-FRB-0515","08/30/2017 13:50","AQ","320-31214-
14","FB","","2.6","537","METHOD","RES","09/01/2017 08:39","09/08/2017
22:17","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183773","320-31214-1","08/31/2017 09:30","09/01/2017 08:20",""
"Unknown","Unknown","WGNA-083017-RW-3220","08/30/2017 14:20","AQ","320-31214-
15","NM","","2.6","537","METHOD","RES","09/01/2017 08:39","09/08/2017
22:21","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183773","320-31214-1","08/31/2017 09:30","09/01/2017 08:20",""
"Unknown","Unknown","WGNA-083017-FRB-3220","08/30/2017 14:15","AQ","320-31214-
16","FB","","2.6","537","METHOD","RES","09/01/2017 08:39","09/08/2017
22:26","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183773","320-31214-1","08/31/2017 09:30","09/01/2017 08:20",""
"Unknown","Unknown","WGNA-083017-DUP08","08/30/2017 07:00","AQ","320-31214-
17","FD","","2.6","537","METHOD","RES","09/01/2017 08:39","09/08/2017
22:31","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183773","320-31214-1","08/31/2017 09:30","09/01/2017 08:20",""
"Unknown","Unknown","WGNA-083017-FRB-0518","08/30/2017 09:00","AQ","320-31214-
2","FB","","2.6","537","METHOD","RES","09/01/2017 08:39","09/08/2017
21:10","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183512","320-31214-1","08/31/2017 09:30","09/01/2017 08:20",""
"Unknown","Unknown","NAWC-083017-RW-352","08/30/2017 10:45","AQ","320-31214-
3","NM","","2.6","537","METHOD","RES","09/01/2017 08:39","09/08/2017
21:15","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183512","320-31214-1","08/31/2017 09:30","09/01/2017 08:20",""
"Unknown","Unknown","NAWC-083017-FRB-352","08/30/2017 10:40","AQ","320-31214-
4","FB","","2.6","537","METHOD","RES","09/01/2017 08:39","09/08/2017
21:20","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183512","320-31214-1","08/31/2017 09:30","09/01/2017 08:20",""
"Unknown","Unknown","NAWC-083017-RW-353","08/30/2017 10:20","AQ","320-31214-

5","NM","","2.6","537","METHOD","RES","09/01/2017 08:39","09/08/2017
21:24","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183512","320-31214-1","08/31/2017 09:30","09/01/2017 08:20",""
"Unknown","Unknown","NAWC-083017-FRB-353","08/30/2017 10:15","AQ","320-31214-
6","FB","","2.6","537","METHOD","RES","09/01/2017 08:39","09/08/2017
21:29","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183512","320-31214-1","08/31/2017 09:30","09/01/2017 08:20",""
"Unknown","Unknown","WGNA-083017-RW-351","08/30/2017 11:25","AQ","320-31214-
7","NM","","2.6","537","METHOD","RES","09/01/2017 08:39","09/08/2017
21:34","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183512","320-31214-1","08/31/2017 09:30","09/01/2017 08:20",""
"Unknown","Unknown","NAWC-083017-FRB-351","08/30/2017 11:20","AQ","320-31214-
8","FB","","2.6","537","METHOD","RES","09/01/2017 08:39","09/08/2017
21:48","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183773","320-31214-1","08/31/2017 09:30","09/01/2017 08:20",""
"Unknown","Unknown","NAWC-083017-RW-350","08/30/2017 11:45","AQ","320-31214-
9","NM","","2.6","537","METHOD","RES","09/01/2017 08:39","09/08/2017
21:53","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183773","320-31214-1","08/31/2017 09:30","09/01/2017 08:20",""
"Unknown","Unknown","LLCS 320-182400/2-A","","AQ","LLCS 320-182400/2-
A","LCS","","-99","537","METHOD","RES","09/01/2017 08:39","09/08/2017
20:56","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183512","320-31214-1","09/01/2017 08:39","09/01/2017 08:20",""
"Unknown","Unknown","LLCSD 320-182400/3-A","","AQ","LLCSD 320-182400/3-
A","LCSD","","-99","537","METHOD","RES","09/01/2017 08:39","09/08/2017
21:01","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183512","320-31214-1","09/01/2017 08:39","09/01/2017 08:20",""
"Unknown","Unknown","MB 320-182400/1-A","","AQ","MB 320-182400/1-
A","MB","","-99","537","METHOD","RES","09/01/2017 08:39","09/08/2017
20:51","TALSAC","COA","WET","NA","1","NA","NA","","100","320-182400","320-182400","NA","320-
183512","320-31214-1","09/01/2017 08:39","09/01/2017 08:20",""

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) 320-31214-1

SAMPLES: 8/Field Reagent Blank (FRB)

NAWC-083017-FRB-350	NAWC-083017-FRB-351
NAWC-083017-FRB-352	NAWC-083017-FRB-353
WGNA-083017-FRB-0515	WGNA-083017-FRB-0518
WGNA-083017-FRB-3220	WGNA-083017-FRB-3785

9/Drinking Water

NAWC-083017-RW-350	WGNA-083017-RW-351
NAWC-083017-RW-352	NAWC-083017-RW-353
WGNA-083017-RW-0515	WGNA-083017-RW-0518
WGNA-083017-RW-3220	WGNA-083017-RW-3785
WGNA-083017-DUP08	

Overview

The sample set for NAS JRB Willow Grove, SDG 320-31214-1, consisted of nine (9) drinking water samples and eight (8) FRB samples. All samples were analyzed for select perfluorinated alkyl acids including pentadecafluorooctanoic acid (PFOA), perfluorobutane sulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA) and perfluorooctane sulfonic acid (PFOS). One (1) field duplicate pair (NAWC-083017-RW-0352 / WGNA-083017-DUP08) was included in this SDG.

The samples were collected by Tetra Tech on August 30, 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 / laboratory control sample duplicate results, internal standard areas and recoveries, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

None.

Minor

Detected results reported below the limit of quantitation (LOQ) but above the detection limit (DL) were qualified as estimated, (J).

Notes

It was noted in the case narrative that the sampling time on the bottles did not match the sampling time on the chain of custody for samples WGNA-083017-RW-351 and NAWC-083017-FRB-351. The laboratory logged

the samples in according to the chain of custody.

It was noted in the case narrative that there was insufficient sample volume to analyze a matrix spike / matrix spike duplicate sample. No action was taken as a result of this issue.

Samples with detections and their associated FRBs are summarized below. No detected results were present in any FRBs.

Sample	**Associated FRB**
NAWC-083017-RW-350	NAWC-083017-FRB-350
WGNA-083017-RW-351	NAWC-083017-FRB-351
NAWC-083017-RW-352	NAWC-083017-FRB-352
WGNA-083017-DUP08	NAWC-083017-FRB-352
NAWC-083017-RW-353	NAWC-083017-FRB-353
WGNA-083017-RW-0515	WGNA-083017-FRB-0515
WGNA-083017-RW-0518	WGNA-083017-FRB-0518
WGNA-083017-RW-3220	WGNA-083017-FRB-3220
WGNA-083017-RW-3785	WGNA-083017-FRB-3785

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-083017-FRB-350			NAWC-083017-FRB-351			NAWC-083017-FRB-352			NAWC-083017-FRB-353		
SDG: 320-31214-1	LAB_ID	320-31214-10			320-31214-8			320-31214-4			320-31214-6		
FRACTION: PFAS	SAMP_DATE	8/30/2017			8/30/2017			8/30/2017			8/30/2017		
MEDIA: WATER	QC_TYPE	FB			FB			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		8	U		8.1	U		7.7	U		8.1	U	
PERFLUOROBUTANESULFONIC ACID		36	U		36	U		35	U		36	U	
PERFLUOROHEPTANOIC ACID		4	U		4	U		3.9	U		4	U	
PERFLUOROHEXANESULFONIC ACID		12	U		12	U		12	U		12	U	
PERFLUORONONANOIC ACID		20	U		20	U		19	U		20	U	
PERFLUOROOCTANE SULFONIC ACID		16	U		16	U		15	U		16	U	

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-083017-RW-350			NAWC-083017-RW-352			NAWC-083017-RW-353			WGNA-083017-DUP08		
SDG: 320-31214-1	LAB_ID	320-31214-9			320-31214-3			320-31214-5			320-31214-17		
FRACTION: PFAS	SAMP_DATE	8/30/2017			8/30/2017			8/30/2017			8/30/2017		
MEDIA: WATER	QC_TYPE	NM			NM			NM			FD		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF										NAWC-083017-RW-352		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		11	J	P	9.5	J	P	16	J	P	9.6	J	P
PERFLUOROBUTANESULFONIC ACID		36	U		35	U		36	U		35	U	
PERFLUOROHEPTANOIC ACID		3.8	J	P	3.3	J	P	4.6	J	P	3.5	J	P
PERFLUOROHEXANESULFONIC ACID		12	U		12	U		12	U		12	U	
PERFLUORONONANOIC ACID		20	U		19	U		20	U		19	U	
PERFLUOROOCTANE SULFONIC ACID		14	J	P	15	U		11	J	P	16	U	

PROJ_NO: 08005-WE04	NSAMPLE	WGNA-083017-FRB-0515			WGNA-083017-FRB-0518			WGNA-083017-FRB-3220			WGNA-083017-FRB-3785		
SDG: 320-31214-1	LAB_ID	320-31214-14			320-31214-2			320-31214-16			320-31214-12		
FRACTION: PFAS	SAMP_DATE	8/30/2017			8/30/2017			8/30/2017			8/30/2017		
MEDIA: WATER	QC_TYPE	FB			FB			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		7.9	U		8.2	U		7.7	U		7.8	U	
PERFLUOROBUTANESULFONIC ACID		35	U		37	U		35	U		35	U	
PERFLUOROHEPTANOIC ACID		3.9	U		4.1	U		3.9	U		3.9	U	
PERFLUOROHEXANESULFONIC ACID		12	U		12	U		12	U		12	U	
PERFLUORONONANOIC ACID		20	U		21	U		19	U		19	U	
PERFLUOROOCTANE SULFONIC ACID		16	U		16	U		15	U		16	U	

PROJ_NO: 08005-WE04	NSAMPLE	WGNA-083017-RW-0515			WGNA-083017-RW-0518			WGNA-083017-RW-3220			WGNA-083017-RW-351		
SDG: 320-31214-1	LAB_ID	320-31214-13			320-31214-1			320-31214-15			320-31214-7		
FRACTION: PFAS	SAMP_DATE	8/30/2017			8/30/2017			8/30/2017			8/30/2017		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		29			24			16	J	P	13	J	P
PERFLUOROBUTANESULFONIC ACID		35	U		27	J	P	98			36	U	
PERFLUOROHEPTANOIC ACID		6.1	J	P	5.9	J	P	10			4.1	J	P
PERFLUOROHEXANESULFONIC ACID		26	J	P	9.8	J	P	17	J	P	12	U	
PERFLUORONONANOIC ACID		20	U		19	U		19	U		20	U	
PERFLUOROOCTANE SULFONIC ACID		29	J	P	24	J	P	40			7.3	J	P

PROJ_NO: 08005-WE04	NSAMPLE	WGNA-083017-RW-3785		
SDG: 320-31214-1	LAB_ID	320-31214-11		
FRACTION: PFAS	SAMP_DATE	8/30/2017		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	NG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		22		
PERFLUOROBUTANESULFONIC ACID		35	U	
PERFLUOROHEPTANOIC ACID		6.2	J	P
PERFLUOROHEXANESULFONIC ACID		14	J	P
PERFLUORONONANOIC ACID		19	U	
PERFLUOROOCTANE SULFONIC ACID		20	J	P

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-RW-0518 | Lab Sample ID: 320-31214-1

Matrix: Water | Lab File ID: 2017.09.08_537C_006.d

Analysis Method: 537 | Date Collected: 08/30/2017 09:05

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 259(mL) | Date Analyzed: 09/08/2017 21:05

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

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

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

Analysis Batch No.: 183512 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	24		19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.8	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.9	J	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	27	J	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		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.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-FRB-0518 | Lab Sample ID: 320-31214-2

Matrix: Water | Lab File ID: 2017.09.08_537C_007.d

Analysis Method: 537 | Date Collected: 08/30/2017 09:00

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 243.9(mL) | Date Analyzed: 09/08/2017 21:10

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

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

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

Analysis Batch No.: 183512 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	8.2	U	21	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	109		70-130

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-RW-352 | Lab Sample ID: 320-31214-3

Matrix: Water | Lab File ID: 2017.09.08_537C_008.d

Analysis Method: 537 | Date Collected: 08/30/2017 10:45

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 259.3(mL) | Date Analyzed: 09/08/2017 21:15

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

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

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

Analysis Batch No.: 183512 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U M	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	9.5	J	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.3	J	9.6	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	76		70-130
STL00996	13C2 PFDA	112		70-130

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-FRB-352 | Lab Sample ID: 320-31214-4

Matrix: Water | Lab File ID: 2017.09.08_537C_009.d

Analysis Method: 537 | Date Collected: 08/30/2017 10:40

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 258.6(mL) | Date Analyzed: 09/08/2017 21:20

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.: 183512 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
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)	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	100		70-130
STL00996	13C2 PFDA	113		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-RW-353 | Lab Sample ID: 320-31214-5

Matrix: Water | Lab File ID: 2017.09.08_537C_010.d

Analysis Method: 537 | Date Collected: 08/30/2017 10:20

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 250.5(mL) | Date Analyzed: 09/08/2017 21:24

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

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

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

Analysis Batch No.: 183512 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J~~M~~	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	16	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.6	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	74		70-130
STL00996	13C2 PFDA	116		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-FRB-353 Lab Sample ID: 320-31214-6

Matrix: Water Lab File ID: 2017.09.08_537C_011.d

Analysis Method: 537 Date Collected: 08/30/2017 10:15

Extraction Method: 537 Date Extracted: 09/01/2017 08:39

Sample wt/vol: 247.6(mL) Date Analyzed: 09/08/2017 21:29

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

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

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

Analysis Batch No.: 183512 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	119		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-RW-351 | Lab Sample ID: 320-31214-7

Matrix: Water | Lab File ID: 2017.09.08_537C_012.d

Analysis Method: 537 | Date Collected: 08/30/2017 11:25

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 249(mL) | Date Analyzed: 09/08/2017 21:34

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.: 183512 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.3	J ~~M~~	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		70-130
STL00996	13C2 PFDA	109		70-130

09/18/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-FRB-351 | Lab Sample ID: 320-31214-8

Matrix: Water | Lab File ID: 2017.09.08_537C_015.d

Analysis Method: 537 | Date Collected: 08/30/2017 11:20

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 248.1(mL) | Date Analyzed: 09/08/2017 21:48

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

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

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

Analysis Batch No.: 183773 | Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		70-130
STL00996	13C2 PFDA	117		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-RW-350 | Lab Sample ID: 320-31214-9

Matrix: Water | Lab File ID: 2017.09.08_537C_016.d

Analysis Method: 537 | Date Collected: 08/30/2017 11:45

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 250.8(mL) | Date Analyzed: 09/08/2017 21:53

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

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

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

Analysis Batch No.: 183773 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	J	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	11	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		70-130
STL00996	13C2 PFDA	113		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-FRB-350 | Lab Sample ID: 320-31214-10

Matrix: Water | Lab File ID: 2017.09.08_537C_017.d

Analysis Method: 537 | Date Collected: 08/30/2017 11:40

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 248.6(mL) | Date Analyzed: 09/08/2017 21:58

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

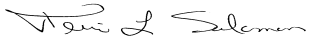
Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

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

Analysis Batch No.: 183773 | 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	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	97		70-130



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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-RW-3785 | Lab Sample ID: 320-31214-11

Matrix: Water | Lab File ID: 2017.09.08_537C_018.d

Analysis Method: 537 | Date Collected: 08/30/2017 15:35

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 259.4(mL) | Date Analyzed: 09/08/2017 22:02

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

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

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

Analysis Batch No.: 183773 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J ~~M~~	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	22		19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U ~~M~~	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	14	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.2	J	9.6	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	104		70-130

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-FRB-3785 | Lab Sample ID: 320-31214-12

Matrix: Water | Lab File ID: 2017.09.08_537C_019.d

Analysis Method: 537 | Date Collected: 08/30/2017 15:30

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 258(mL) | Date Analyzed: 09/08/2017 22:07

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

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

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

Analysis Batch No.: 183773 | 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	99		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.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-RW-0515 | Lab Sample ID: 320-31214-13

Matrix: Water | Lab File ID: 2017.09.08_537C_020.d

Analysis Method: 537 | Date Collected: 08/30/2017 13:55

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 256.3(mL) | Date Analyzed: 09/08/2017 22:12

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

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

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

Analysis Batch No.: 183773 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	29	J	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	29		20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	26	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.1	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	91		70-130
STL00996	13C2 PFDA	108		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-FRB-0515 Lab Sample ID: 320-31214-14

Matrix: Water Lab File ID: 2017.09.08_537C_021.d

Analysis Method: 537 Date Collected: 08/30/2017 13:50

Extraction Method: 537 Date Extracted: 09/01/2017 08:39

Sample wt/vol: 253.9(mL) Date Analyzed: 09/08/2017 22:17

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

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

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

Analysis Batch No.: 183773 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.9	U	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	89	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	111		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-RW-3220 | Lab Sample ID: 320-31214-15

Matrix: Water | Lab File ID: 2017.09.08_537C_022.d

Analysis Method: 537 | Date Collected: 08/30/2017 14:20

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 257.7(mL) | Date Analyzed: 09/08/2017 22:21

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

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

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

Analysis Batch No.: 183773 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	40	~~M~~	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	16	J	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U ~~M~~	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	17	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	10		9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	98		87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		70-130
STL00996	13C2 PFDA	104		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-FRB-3220 | Lab Sample ID: 320-31214-16

Matrix: Water | Lab File ID: 2017.09.08_537C_023.d

Analysis Method: 537 | Date Collected: 08/30/2017 14:15

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 258.4(mL) | Date Analyzed: 09/08/2017 22:26

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

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

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

Analysis Batch No.: 183773 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
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)	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	95		70-130
STL00996	13C2 PFDA	111		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-DUP08 | Lab Sample ID: 320-31214-17

Matrix: Water | Lab File ID: 2017.09.08_537C_024.d

Analysis Method: 537 | Date Collected: 08/30/2017 07:00

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 257.3(mL) | Date Analyzed: 09/08/2017 22:31

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.: 183773 | 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)	9.6	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 ~~M~~	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	J	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		70-130
STL00996	13C2 PFDA	112		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.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-RW-0518 Lab Sample ID: 320-31214-1

Matrix: Water Lab File ID: 2017.09.08_537C_006.d

Analysis Method: 537 Date Collected: 08/30/2017 09:05

Extraction Method: 537 Date Extracted: 09/01/2017 08:39

Sample wt/vol: 259(mL) Date Analyzed: 09/08/2017 21:05

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

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

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

Analysis Batch No.: 183512 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	24		19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.8	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.9	J	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	27	J	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	109		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-FRB-0518 Lab Sample ID: 320-31214-2

Matrix: Water Lab File ID: 2017.09.08_537C_007.d

Analysis Method: 537 Date Collected: 08/30/2017 09:00

Extraction Method: 537 Date Extracted: 09/01/2017 08:39

Sample wt/vol: 243.9(mL) Date Analyzed: 09/08/2017 21:10

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

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

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

Analysis Batch No.: 183512 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	8.2	U	21	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	109		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-RW-352 | Lab Sample ID: 320-31214-3

Matrix: Water | Lab File ID: 2017.09.08_537C_008.d

Analysis Method: 537 | Date Collected: 08/30/2017 10:45

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 259.3(mL) | Date Analyzed: 09/08/2017 21:15

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

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

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

Analysis Batch No.: 183512 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U M	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	9.5	J	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.3	J	9.6	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	76		70-130
STL00996	13C2 PFDA	112		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-FRB-352 | Lab Sample ID: 320-31214-4

Matrix: Water | Lab File ID: 2017.09.08_537C_009.d

Analysis Method: 537 | Date Collected: 08/30/2017 10:40

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 258.6(mL) | Date Analyzed: 09/08/2017 21:20

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.: 183512 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
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)	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	100		70-130
STL00996	13C2 PFDA	113		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-RW-353 | Lab Sample ID: 320-31214-5

Matrix: Water | Lab File ID: 2017.09.08_537C_010.d

Analysis Method: 537 | Date Collected: 08/30/2017 10:20

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 250.5(mL) | Date Analyzed: 09/08/2017 21:24

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

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

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

Analysis Batch No.: 183512 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	16	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.6	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	74		70-130
STL00996	13C2 PFDA	116		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-FRB-353 Lab Sample ID: 320-31214-6

Matrix: Water Lab File ID: 2017.09.08_537C_011.d

Analysis Method: 537 Date Collected: 08/30/2017 10:15

Extraction Method: 537 Date Extracted: 09/01/2017 08:39

Sample wt/vol: 247.6(mL) Date Analyzed: 09/08/2017 21:29

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

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

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

Analysis Batch No.: 183512 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	119		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-RW-351 | Lab Sample ID: 320-31214-7

Matrix: Water | Lab File ID: 2017.09.08_537C_012.d

Analysis Method: 537 | Date Collected: 08/30/2017 11:25

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 249(mL) | Date Analyzed: 09/08/2017 21:34

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.: 183512 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.3	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		70-130
STL00996	13C2 PFDA	109		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-FRB-351 | Lab Sample ID: 320-31214-8

Matrix: Water | Lab File ID: 2017.09.08_537C_015.d

Analysis Method: 537 | Date Collected: 08/30/2017 11:20

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 248.1(mL) | Date Analyzed: 09/08/2017 21:48

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

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

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

Analysis Batch No.: 183773 | Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		70-130
STL00996	13C2 PFDA	117		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-RW-350 | Lab Sample ID: 320-31214-9

Matrix: Water | Lab File ID: 2017.09.08_537C_016.d

Analysis Method: 537 | Date Collected: 08/30/2017 11:45

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 250.8(mL) | Date Analyzed: 09/08/2017 21:53

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

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

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

Analysis Batch No.: 183773 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	J	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	11	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		70-130
STL00996	13C2 PFDA	113		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: NAWC-083017-FRB-350 | Lab Sample ID: 320-31214-10

Matrix: Water | Lab File ID: 2017.09.08_537C_017.d

Analysis Method: 537 | Date Collected: 08/30/2017 11:40

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 248.6(mL) | Date Analyzed: 09/08/2017 21:58

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.: 183773 | 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	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	97		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-RW-3785 | Lab Sample ID: 320-31214-11

Matrix: Water | Lab File ID: 2017.09.08_537C_018.d

Analysis Method: 537 | Date Collected: 08/30/2017 15:35

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 259.4(mL) | Date Analyzed: 09/08/2017 22:02

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

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

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

Analysis Batch No.: 183773 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J M	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	22		19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U M	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	14	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.2	J	9.6	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	104		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-FRB-3785 | Lab Sample ID: 320-31214-12

Matrix: Water | Lab File ID: 2017.09.08_537C_019.d

Analysis Method: 537 | Date Collected: 08/30/2017 15:30

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 258(mL) | Date Analyzed: 09/08/2017 22:07

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

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

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

Analysis Batch No.: 183773 | 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	99		70-130
STL00996	13C2 PFDA	112		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-RW-0515 Lab Sample ID: 320-31214-13

Matrix: Water Lab File ID: 2017.09.08_537C_020.d

Analysis Method: 537 Date Collected: 08/30/2017 13:55

Extraction Method: 537 Date Extracted: 09/01/2017 08:39

Sample wt/vol: 256.3(mL) Date Analyzed: 09/08/2017 22:12

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

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

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

Analysis Batch No.: 183773 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	29	J	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	29		20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	26	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.1	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	91		70-130
STL00996	13C2 PFDA	108		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-FRB-0515 | Lab Sample ID: 320-31214-14

Matrix: Water | Lab File ID: 2017.09.08_537C_021.d

Analysis Method: 537 | Date Collected: 08/30/2017 13:50

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 253.9(mL) | Date Analyzed: 09/08/2017 22:17

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

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

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

Analysis Batch No.: 183773 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.7
335-67-1	Perfluorooctanoic acid (PFOA)	7.9	U	20	7.9	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	7.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	3.9	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	89	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	111		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-RW-3220 Lab Sample ID: 320-31214-15

Matrix: Water Lab File ID: 2017.09.08_537C_022.d

Analysis Method: 537 Date Collected: 08/30/2017 14:20

Extraction Method: 537 Date Extracted: 09/01/2017 08:39

Sample wt/vol: 257.7(mL) Date Analyzed: 09/08/2017 22:21

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

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

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

Analysis Batch No.: 183773 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	40	M	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	16	J	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U M	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	17	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	10		9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	98		87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		70-130
STL00996	13C2 PFDA	104		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-FRB-3220 | Lab Sample ID: 320-31214-16

Matrix: Water | Lab File ID: 2017.09.08_537C_023.d

Analysis Method: 537 | Date Collected: 08/30/2017 14:15

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 258.4(mL) | Date Analyzed: 09/08/2017 22:26

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

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

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

Analysis Batch No.: 183773 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	39	15	6.6
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)	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	95		70-130
STL00996	13C2 PFDA	111		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: WGNA-083017-DUP08 | Lab Sample ID: 320-31214-17

Matrix: Water | Lab File ID: 2017.09.08_537C_024.d

Analysis Method: 537 | Date Collected: 08/30/2017 07:00

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 257.3(mL) | Date Analyzed: 09/08/2017 22:31

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.: 183773 | 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)	9.6	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 M	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	J	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		70-130
STL00996	13C2 PFDA	112		70-130

Appendix C

Support Documentation

ANALYTE	ORIGINAL RW-352	DUPLICATE DUP08	RL	RPD	RPD > 50%	ORIGINAL SAMPLE CONC >2xRL	DUPLICATE SAMPLE CONC >2xRL	DIFFERENCE >2XRL
Perfluorooctanoic acid (PFOA)	9.5	9.6	19	1.047	FALSE	FALSE	FALSE	FALSE
Perfluoroheptanoic acid (PFHpA)	3.3	3.5	9.6	5.882	FALSE	FALSE	FALSE	FALSE

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: 8/30/2017	COC No:
TetraTech	Tel/Fax: 610.382.1170	Lab Contact: Dave Alltucker	Carrier: FedEx	1 of 2 COCs
234 Mall Boulevard Suite 260	**Analysis Turnaround Time**			Sampler: Mary Kay Bond
King of Prussia, PA 19406	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
610-382-1174	TAT if different from Below 21			Walk-in Client:
610-491-9688	☐ 2 weeks			Lab Sampling:
Project Name: WE04	☐ 1 week			
Site: WE04	☐ 2 days			Job / SDG No.:
P O # 1132358 (through EarthToxics)	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 UCMR3	Sample Specific Notes:
WGNA-083017-RW-0518	8/30/2017	09:05	G	DW	2	N	N	Y	
WGNA-083017-FRB-0518	8/30/2017	09:00	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-083017-RW-352	8/30/2017	10:45	G	DW	2	N	N	Y	
NAWC-083017-FRB-352	8/30/2017	10:40	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-083017-RW-353	8/30/2017	10:20	G	DW	2	N	N	Y	
NAWC-083017-FRB-353	8/30/2017	10:15	G	DW	2	N	N	Y	Field Reagent Blank
* WGNA-083017-RW-351	8/30/2017	11:25	G	DW	2	N	N	Y	
** NAWC-083017-FRB-351	8/30/2017	11:20	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-083017-RW-350	8/30/2017	11:45	G	DW	2	N	N	Y	
NAWC-083017-FRB-350	8/30/2017	11:40	G	DW	2	N	N	Y	Field Reagent Blank

320-31214 Chain of Custody

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

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the 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: 770138839427 & 770138934807 * label at 1130. ** label at 1125.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 2-6 2.6 Corr'd: | Therm ID No.: AK-1

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Mary Kay Bond	Tetra Tech	8/30/2017 18:00			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
					8-31-17 930
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

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: 8/30/2017	COC No:
TetraTech	Tel/Fax: 610.382.1170	Lab Contact: Dave Alltucker	Carrier: FedEx	2 of 2 COCs
234 Mall Boulevard Suite 260	Analysis Turnaround Time			Sampler: Mary Kay Bond
King of Prussia, PA 19406	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
610-382-1174	TAT if different from Below 21			Walk-in Client:
610-491-9688	☐ 2 weeks			Lab Sampling:
Project Name: WE04	☐ 1 week			
Site: WE04	☐ 2 days			Job / SDG No.:
P O # 1132358 (through EarthToxics)	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 UCMR3	Sample Specific Notes:
WGNA-083017-RW-3785	8/30/2017	15:35	G	DW	2	N	N	Y	
WGNA-083017-FRB-3785	8/30/2017	15:30	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-083017-RW-0515	8/30/2017	13:55	G	DW	2	N	N	Y	
WGNA-083017-FRB-0515	8/30/2017	13:50	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-083017-RW-3220	8/30/2017	14:20	G	DW	2	N	N	Y	
WGNA-083017-FRB-3220	8/30/2017	14:15	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-083017-DUP08	8/30/2017	07:00	G	DW	2	N	N	Y	Duplicate

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 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: 770138839427 & 770138934807

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd:_____ Corr'd:_____		Therm ID No.:_____
Relinquished by: Mary Kay Bond	Company: Tetra Tech	Date/Time: 8/30/2017 18:00	Received by:	Company:	Date/Time: 8-31-17 930
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
320-31214-1

Receipt
The samples were received on 8/31/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.4º C and 2.6º C.

Receipt Exceptions
The container label for the following samples did not match the information listed on the Chain-of-Custody (COC): WGNA-083017-RW-351 (320-31214-7) and NAWC-083017-FRB-351 (320-31214-8). The container labels list 11:30 for sample 7 and 11:25 for sample 8, while the COC lists 11:25 for sample 7 and 11:20 for sample 8. Samples are logged in according to the CoC.

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

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

Organic Prep
Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-182400.

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

Method Summary

Client: Tetra Tech, Inc. TestAmerica Job ID: 320-31214-1
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: 320-31214-1
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-31214-1	WGNA-083017-RW-0518	Water	08/30/17 09:05	08/31/17 09:30
320-31214-2	WGNA-083017-FRB-0518	Water	08/30/17 09:00	08/31/17 09:30
320-31214-3	NAWC-083017-RW-352	Water	08/30/17 10:45	08/31/17 09:30
320-31214-4	NAWC-083017-FRB-352	Water	08/30/17 10:40	08/31/17 09:30
320-31214-5	NAWC-083017-RW-353	Water	08/30/17 10:20	08/31/17 09:30
320-31214-6	NAWC-083017-FRB-353	Water	08/30/17 10:15	08/31/17 09:30
320-31214-7	WGNA-083017-RW-351	Water	08/30/17 11:25	08/31/17 09:30
320-31214-8	NAWC-083017-FRB-351	Water	08/30/17 11:20	08/31/17 09:30
320-31214-9	NAWC-083017-RW-350	Water	08/30/17 11:45	08/31/17 09:30
320-31214-10	NAWC-083017-FRB-350	Water	08/30/17 11:40	08/31/17 09:30
320-31214-11	WGNA-083017-RW-3785	Water	08/30/17 15:35	08/31/17 09:30
320-31214-12	WGNA-083017-FRB-3785	Water	08/30/17 15:30	08/31/17 09:30
320-31214-13	WGNA-083017-RW-0515	Water	08/30/17 13:55	08/31/17 09:30
320-31214-14	WGNA-083017-FRB-0515	Water	08/30/17 13:50	08/31/17 09:30
320-31214-15	WGNA-083017-RW-3220	Water	08/30/17 14:20	08/31/17 09:30
320-31214-16	WGNA-083017-FRB-3220	Water	08/30/17 14:15	08/31/17 09:30
320-31214-17	WGNA-083017-DUP08	Water	08/30/17 07:00	08/31/17 09:30

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-083017-RW-0518	320-31214-1	86	109
WGNA-083017-FRB-0518	320-31214-2	93	109
NAWC-083017-RW-352	320-31214-3	76	112
NAWC-083017-FRB-352	320-31214-4	100	113
NAWC-083017-RW-353	320-31214-5	74	116
NAWC-083017-FRB-353	320-31214-6	100	119
WGNA-083017-RW-351	320-31214-7	79	109
NAWC-083017-FRB-351	320-31214-8	103	117
NAWC-083017-RW-350	320-31214-9	79	113
NAWC-083017-FRB-350	320-31214-10	91	97
WGNA-083017-RW-3785	320-31214-11	87	104
WGNA-083017-FRB-3785	320-31214-12	99	112
WGNA-083017-RW-0515	320-31214-13	91	108
WGNA-083017-FRB-0515	320-31214-14	96	111
WGNA-083017-RW-3220	320-31214-15	79	104
WGNA-083017-FRB-3220	320-31214-16	95	111
WGNA-083017-DUP08	320-31214-17	79	112
	MB 320-182400/1-A	101	111
	LLCS 320-182400/2-A	98	108
	LLCSD 320-182400/3-A	100	117

	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 LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.09.08_537C_004.d

Lab ID: LLCS 320-182400/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LLCS CONCENTRATION (ng/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	40.0	37.5 J	94	50-150	M
Perfluorooctanoic acid (PFOA)	20.0	19.2 J	96	50-150	
Perfluorononanoic acid (PFNA)	20.0	19.1 J	96	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.0	30.1	100	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	10.4	104	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.0	96.1	107	50-150	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS LOW LEVEL CONTROL STANDARD DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.09.08_537C_005.d

Lab ID: LLCSD 320-182400/3-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LLCSD CONCENTRATION (ng/L)	LLCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	40.0	38.9 J	97	4	50	50-150	M
Perfluorooctanoic acid (PFOA)	20.0	19.5 J	97	1	50	50-150	
Perfluorononanoic acid (PFNA)	20.0	19.8 J	99	4	50	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.0	29.8 J	99	1	50	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	10.5	105	1	50	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.0	96.8	108	0.7	50	50-150	

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.: 320-31214-1

SDG No.:

Lab File ID: 2017.09.08_537C_003.d Lab Sample ID: MB 320-182400/1-A

Matrix: Water Date Extracted: 09/01/2017 08:39

Instrument ID: A8_N Date Analyzed: 09/08/2017 20:51

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-182400/2-A	2017.09.08_537C_004.d	09/08/2017 20:56
	LLCSD 320-182400/3-A	2017.09.08_537C_005.d	09/08/2017 21:01
WGNA-083017-RW-0518	320-31214-1	2017.09.08_537C_006.d	09/08/2017 21:05
WGNA-083017-FRB-0518	320-31214-2	2017.09.08_537C_007.d	09/08/2017 21:10
NAWC-083017-RW-352	320-31214-3	2017.09.08_537C_008.d	09/08/2017 21:15
NAWC-083017-FRB-352	320-31214-4	2017.09.08_537C_009.d	09/08/2017 21:20
NAWC-083017-RW-353	320-31214-5	2017.09.08_537C_010.d	09/08/2017 21:24
NAWC-083017-FRB-353	320-31214-6	2017.09.08_537C_011.d	09/08/2017 21:29
WGNA-083017-RW-351	320-31214-7	2017.09.08_537C_012.d	09/08/2017 21:34
NAWC-083017-FRB-351	320-31214-8	2017.09.08_537C_015.d	09/08/2017 21:48
NAWC-083017-RW-350	320-31214-9	2017.09.08_537C_016.d	09/08/2017 21:53
NAWC-083017-FRB-350	320-31214-10	2017.09.08_537C_017.d	09/08/2017 21:58
WGNA-083017-RW-3785	320-31214-11	2017.09.08_537C_018.d	09/08/2017 22:02
WGNA-083017-FRB-3785	320-31214-12	2017.09.08_537C_019.d	09/08/2017 22:07
WGNA-083017-RW-0515	320-31214-13	2017.09.08_537C_020.d	09/08/2017 22:12
WGNA-083017-FRB-0515	320-31214-14	2017.09.08_537C_021.d	09/08/2017 22:17
WGNA-083017-RW-3220	320-31214-15	2017.09.08_537C_022.d	09/08/2017 22:21
WGNA-083017-FRB-3220	320-31214-16	2017.09.08_537C_023.d	09/08/2017 22:26
WGNA-083017-DUP08	320-31214-17	2017.09.08_537C_024.d	09/08/2017 22:31

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-31214-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-182400/1-A

Matrix: Water | Lab File ID: 2017.09.08_537C_003.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 09/01/2017 08:39

Sample wt/vol: 250(mL) | Date Analyzed: 09/08/2017 20:51

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

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

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

Analysis Batch No.: 183512 | 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	101		70-130
STL00996	13C2 PFDA	111		70-130

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 09/08/2017 13:27

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 09/08/2017 13:51

Calibration ID: 34044

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		1910246	1.93	5581381	2.16		
UPPER LIMIT		2865369	2.43	8372072	2.66		
LOWER LIMIT		955123	1.43	2790691	1.66		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-183459/9		1974239	1.93	5860601	2.16		
ICV 320-183459/11		2166899	1.94	6602152	2.17		
CCV 320-183512/1 CCVIS		1659667	1.92	5340700	2.16		
MB 320-182400/1-A		1780906	1.92	5489924	2.16		
LLCS 320-182400/2-A		1858873	1.91	5511672	2.16		
LLCSD 320-182400/3-A		1740089	1.91	5356328	2.16		
320-31214-1	WGNA-083017-RW-0518	1915883	1.91	5799593	2.15		
320-31214-2	WGNA-083017-FRB-0518	1876027	1.92	5516017	2.16		
320-31214-3	NAWC-083017-RW-352	1802581	1.91	5422387	2.16		
320-31214-4	NAWC-083017-FRB-352	1718880	1.91	5325769	2.15		
320-31214-5	NAWC-083017-RW-353	1835716	1.91	5524602	2.15		
320-31214-6	NAWC-083017-FRB-353	1805826	1.91	5361538	2.15		
320-31214-7	WGNA-083017-RW-351	1916636	1.91	5726424	2.15		
CCV 320-183512/13 CCVIS		1674403	1.91	5232378	2.15		
CCV 320-183773/13 CCVIS		1674403	1.91	5232378	2.15		
320-31214-8	NAWC-083017-FRB-351	1716976	1.91	5301535	2.15		
320-31214-9	NAWC-083017-RW-350	1886645	1.91	5586809	2.15		
320-31214-10	NAWC-083017-FRB-350	1812981	1.91	5436053	2.15		
320-31214-11	WGNA-083017-RW-3785	1785771	1.92	5328103	2.16		
320-31214-12	WGNA-083017-FRB-3785	1814551	1.91	5592600	2.15		
320-31214-13	WGNA-083017-RW-0515	1762397	1.91	5309757	2.15		
320-31214-14	WGNA-083017-FRB-0515	1789308	1.90	5256598	2.14		
320-31214-15	WGNA-083017-RW-3220	1873708	1.90	5599865	2.14		
320-31214-16	WGNA-083017-FRB-3220	1858055	1.91	5560278	2.15		
320-31214-17	WGNA-083017-DUP08	1886790	1.91	5526719	2.15		
CCV 320-183773/25 CCVIS		1762955	1.91	5568740	2.15		

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.: 320-31214-1

SDG No.:

Sample No.: CCV 320-183512/1 Date Analyzed: 09/08/2017 20:41

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

Lab File ID (Standard): 2017.09.08_537C_001 Heated Purge: (Y/N) N

Calibration ID: 34044

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1659667	1.92	5340700	2.16		
UPPER LIMIT		2323534	2.42	7476980	2.66		
LOWER LIMIT		1161767	1.42	3738490	1.66		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-182400/1-A		1780906	1.92	5489924	2.16		
LLCS 320-182400/2-A		1858873	1.91	5511672	2.16		
LLCSD 320-182400/3-A		1740089	1.91	5356328	2.16		
320-31214-1	WGNA-083017-RW-0518	1915883	1.91	5799593	2.15		
320-31214-2	WGNA-083017-FRB-0518	1876027	1.92	5516017	2.16		
320-31214-3	NAWC-083017-RW-352	1802581	1.91	5422387	2.16		
320-31214-4	NAWC-083017-FRB-352	1718880	1.91	5325769	2.15		
320-31214-5	NAWC-083017-RW-353	1835716	1.91	5524602	2.15		
320-31214-6	NAWC-083017-FRB-353	1805826	1.91	5361538	2.15		
320-31214-7	WGNA-083017-RW-351	1916636	1.91	5726424	2.15		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Sample No.: CCV 320-183512/13 Date Analyzed: 09/08/2017 21:39

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

Lab File ID (Standard): 2017.09.08_537C_013 Heated Purge: (Y/N) N

Calibration ID: 34044

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1674403	1.91	5232378	2.15		
UPPER LIMIT		2344164	2.41	7325329	2.65		
LOWER LIMIT		1172082	1.41	3662665	1.65		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-182400/1-A		1780906	1.92	5489924	2.16		
LLCS 320-182400/2-A		1858873	1.91	5511672	2.16		
LLCSD 320-182400/3-A		1740089	1.91	5356328	2.16		
320-31214-1	WGNA-083017-RW-0518	1915883	1.91	5799593	2.15		
320-31214-2	WGNA-083017-FRB-0518	1876027	1.92	5516017	2.16		
320-31214-3	NAWC-083017-RW-352	1802581	1.91	5422387	2.16		
320-31214-4	NAWC-083017-FRB-352	1718880	1.91	5325769	2.15		
320-31214-5	NAWC-083017-RW-353	1835716	1.91	5524602	2.15		
320-31214-6	NAWC-083017-FRB-353	1805826	1.91	5361538	2.15		
320-31214-7	WGNA-083017-RW-351	1916636	1.91	5726424	2.15		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Sample No.: CCV 320-183773/13 Date Analyzed: 09/08/2017 21:39

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

Lab File ID (Standard): 2017.09.08_537C_013 Heated Purge: (Y/N) N

Calibration ID: 34044

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1674403	1.91	5232378	2.15		
UPPER LIMIT		2344164	2.41	7325329	2.65		
LOWER LIMIT		1172082	1.41	3662665	1.65		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-31214-8	NAWC-083017-FRB-351	1716976	1.91	5301535	2.15		
320-31214-9	NAWC-083017-RW-350	1886645	1.91	5586809	2.15		
320-31214-10	NAWC-083017-FRB-350	1812981	1.91	5436053	2.15		
320-31214-11	WGNA-083017-RW-3785	1785771	1.92	5328103	2.16		
320-31214-12	WGNA-083017-FRB-3785	1814551	1.91	5592600	2.15		
320-31214-13	WGNA-083017-RW-0515	1762397	1.91	5309757	2.15		
320-31214-14	WGNA-083017-FRB-0515	1789308	1.90	5256598	2.14		
320-31214-15	WGNA-083017-RW-3220	1873708	1.90	5599865	2.14		
320-31214-16	WGNA-083017-FRB-3220	1858055	1.91	5560278	2.15		
320-31214-17	WGNA-083017-DUP08	1886790	1.91	5526719	2.15		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Sample No.: CCV 320-183773/25 Date Analyzed: 09/08/2017 22:36

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

Lab File ID (Standard): 2017.09.08_537C_025 Heated Purge: (Y/N) N

Calibration ID: 34044

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1762955	1.91	5568740	2.15		
UPPER LIMIT		2468137	2.41	7796236	2.65		
LOWER LIMIT		1234069	1.41	3898118	1.65		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-31214-8	NAWC-083017-FRB-351	1716976	1.91	5301535	2.15		
320-31214-9	NAWC-083017-RW-350	1886645	1.91	5586809	2.15		
320-31214-10	NAWC-083017-FRB-350	1812981	1.91	5436053	2.15		
320-31214-11	WGNA-083017-RW-3785	1785771	1.92	5328103	2.16		
320-31214-12	WGNA-083017-FRB-3785	1814551	1.91	5592600	2.15		
320-31214-13	WGNA-083017-RW-0515	1762397	1.91	5309757	2.15		
320-31214-14	WGNA-083017-FRB-0515	1789308	1.90	5256598	2.14		
320-31214-15	WGNA-083017-RW-3220	1873708	1.90	5599865	2.14		
320-31214-16	WGNA-083017-FRB-3220	1858055	1.91	5560278	2.15		
320-31214-17	WGNA-083017-DUP08	1886790	1.91	5526719	2.15		

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

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

Column used to flag values outside QC limits

FORM VIII 537

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

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1 Analy Batch No.: 183459

SDG No.:

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

Calibration Start Date: 09/08/2017 13:27 Calibration End Date: 09/08/2017 13:51 Calibration ID: 34044

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-183459/2	2017.09.08_537ICAL_004.d
Level 2	IC 320-183459/3	2017.09.08_537ICAL_005.d
Level 3	IC 320-183459/4	2017.09.08_537ICAL_006.d
Level 4	IC 320-183459/5	2017.09.08_537ICAL_007.d
Level 5	IC 320-183459/6	2017.09.08_537ICAL_008.d
Level 6	IC 320-183459/7	2017.09.08_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)	1.0710 0.6966	1.0575	1.0111	0.8594	0.7869	QuaF		1.0622	-0.002040						0.9990		0.9600
Perfluoroheptanoic acid (PFHpA)	0.9220 0.9255	0.9473	0.9541	0.9231	0.9315	Ave		0.9339				1.5		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.6148 1.4811	1.6536	1.6599	1.5874	1.5838	Ave		1.5968				4.1		30.0			
Perfluorooctanoic acid (PFOA)	0.9158 0.9617	0.9269	0.9412	0.8992	0.9123	Ave		0.9262				2.4		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.8859 0.9363	0.9387	0.9168	0.9427	0.9444	Ave		0.9275				2.4		30.0			
Perfluorononanoic acid (PFNA)	0.6548 0.6554	0.6685	0.6501	0.6318	0.6303	Ave		0.6485				2.3		30.0			
13C2 PFHxA	1.1920 1.2378	1.2004	1.1834	1.2079	1.2178	Ave		1.2066				1.6		30.0			
13C2 PFDA	0.6511 0.7007	0.6681	0.6589	0.6707	0.6801	Ave		0.6716				2.6		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.: 320-31214-1 Analy Batch No.: 183459

SDG No.:

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

Calibration Start Date: 09/08/2017 13:27 Calibration End Date: 09/08/2017 13:51 Calibration ID: 34044

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-183459/2	2017.09.08_537ICAL_004.d
Level 2	IC 320-183459/3	2017.09.08_537ICAL_005.d
Level 3	IC 320-183459/4	2017.09.08_537ICAL_006.d
Level 4	IC 320-183459/5	2017.09.08_537ICAL_007.d
Level 5	IC 320-183459/6	2017.09.08_537ICAL_008.d
Level 6	IC 320-183459/7	2017.09.08_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	1896171 23775992	4213055	9072488	15158012	19852718	9.00 180	20.0	45.0	90.0	135
Perfluoroheptanoic acid (PFHpA)	13PFOA	Ave	176698 3422434	406467	925418	1800569	2623771	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	953075 16853658	2196189	4965386	9333896	13320862	3.00 60.0	6.67	15.0	30.0	45.0
Perfluorooctanoic acid (PFOA)	13PFOA	Ave	351237 7116752	795859	1826954	3509739	5142636	2.00 40.0	4.45	10.0	20.0	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	697187 14205705	1662376	3656842	7391088	10590577	4.00 80.0	8.89	20.0	40.0	60.0
Perfluorononanoic acid (PFNA)	13PFOA	Ave	250972 4847063	573628	1261094	2464425	3550611	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PFOA	Ave	2283494 2288248	2317173	2295161	2355406	2286265	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PFOA	Ave	1247394 1295246	1289579	1277856	1307825	1276749	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.: 320-31214-1 Analy Batch No.: 183459

SDG No.:

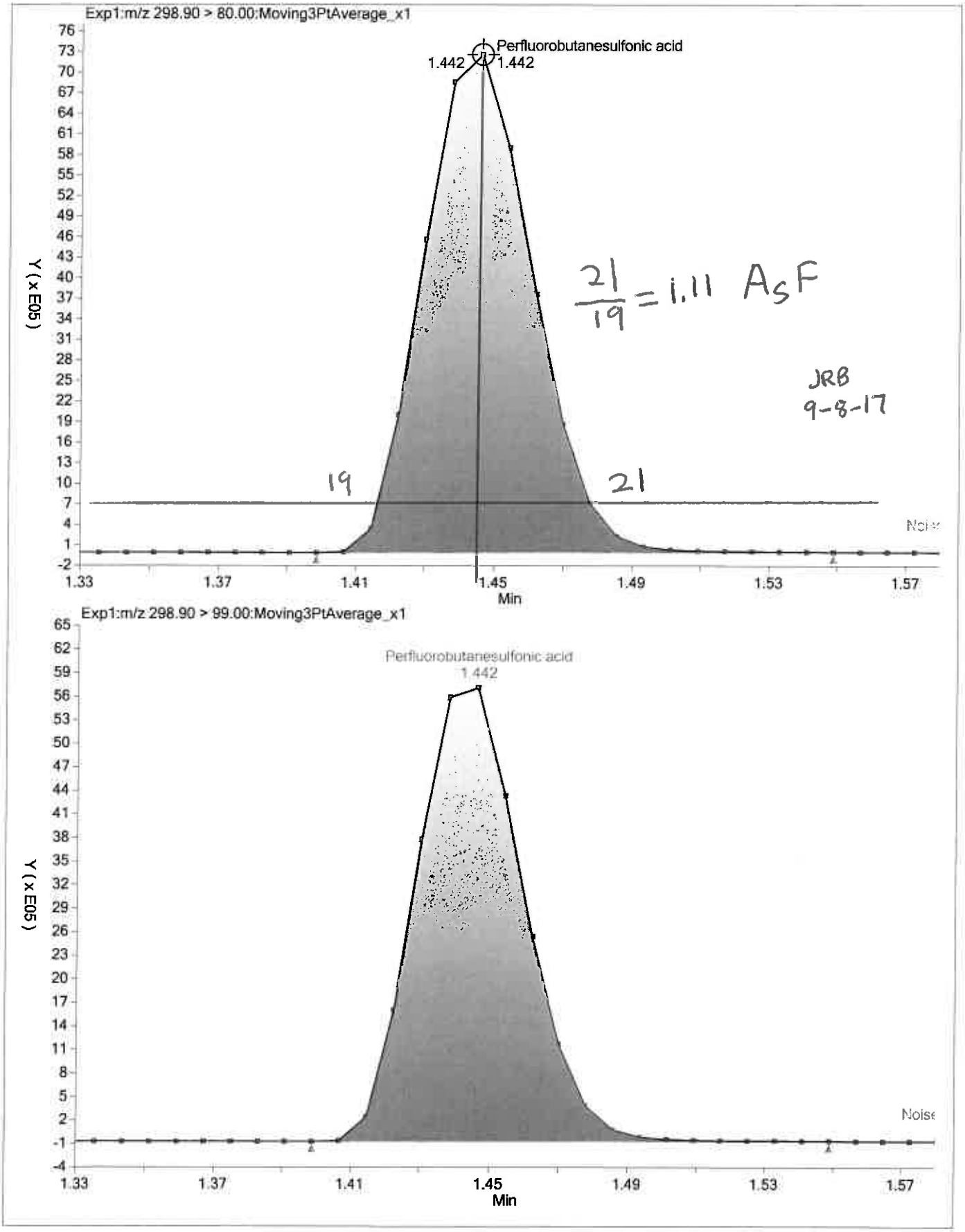
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

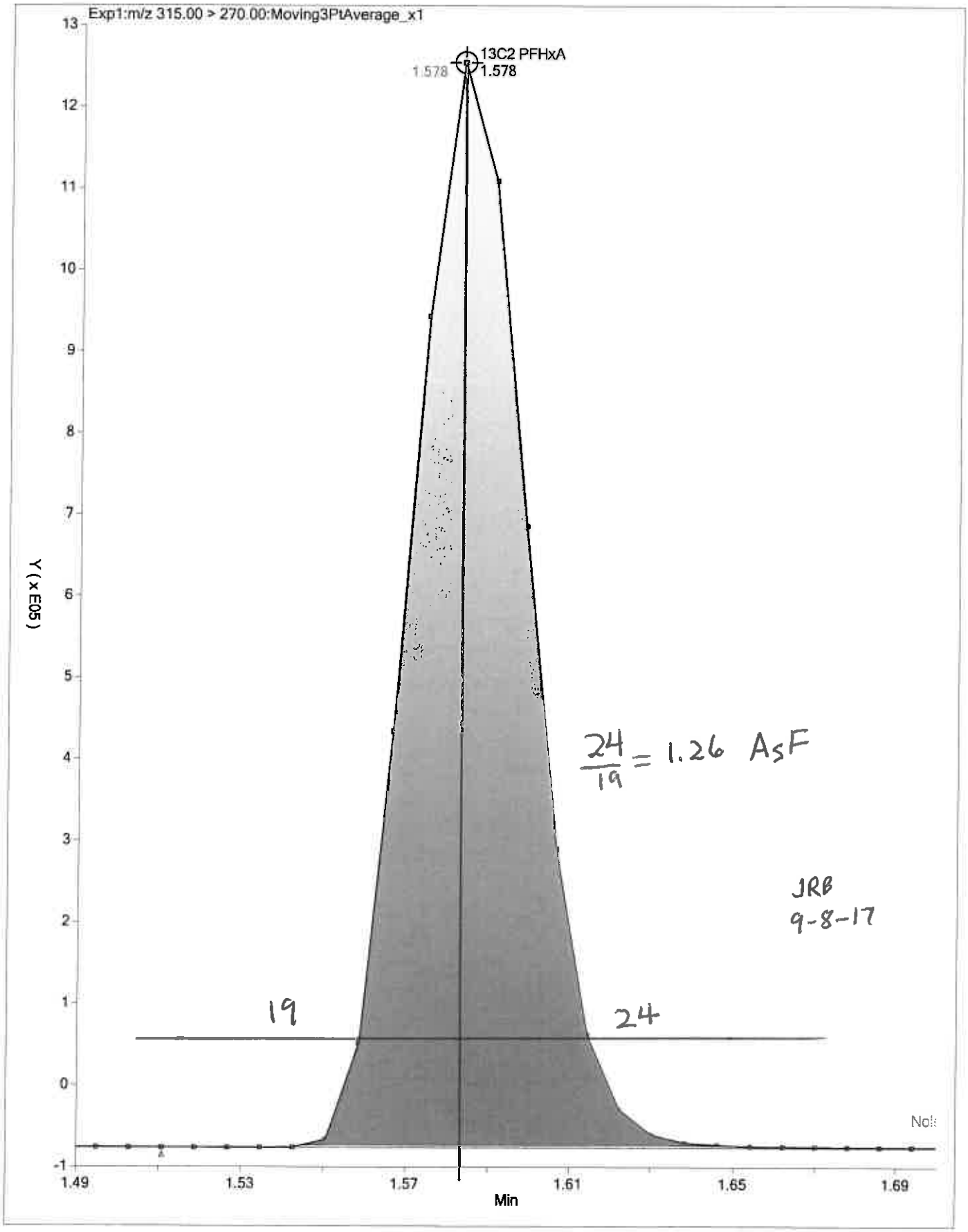
Calibration Start Date: 09/08/2017 13:27 Calibration End Date: 09/08/2017 13:51 Calibration ID: 34044

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-183459/2	2017.09.08_537ICAL_004.d
Level 2	IC 320-183459/3	2017.09.08_537ICAL_005.d
Level 3	IC 320-183459/4	2017.09.08_537ICAL_006.d
Level 4	IC 320-183459/5	2017.09.08_537ICAL_007.d
Level 5	IC 320-183459/6	2017.09.08_537ICAL_008.d
Level 6	IC 320-183459/7	2017.09.08_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)	2.7	3.7	4.7	-2.7	0.0	0.5	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	-1.3	1.4	2.2	-1.2	-0.3	-0.9	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	1.1	3.6	4.0	-0.6	-0.8	-7.2	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-1.1	0.1	1.6	-2.9	-1.5	3.8	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-4.5	1.2	-1.1	1.6	1.8	0.9	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	1.0	3.1	0.3	-2.6	-2.8	1.1	50	30	30	30	30	30
13C2 PFHxA	-1.2	-0.5	-1.9	0.1	0.9	2.6	30	30	30	30	30	30
13C2 PFDA	-3.0	-0.5	-1.9	-0.1	1.3	4.3	30	30	30	30	30	30


Exp1:m/z 298.90 > 80.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
1.442
1.442
Y (x E05)
Min
19
21
Noise
21/19 = 1.11 AsF
JRB
9-8-17
Exp1:m/z 298.90 > 99.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
1.442
Y (x E05)
Min
Noise


Exp1:m/z 315.00 > 270.00:Moving3PtAverage_x1
13C2 PFHxA
1.578
1.578
Y (x E05)
Min
1.49
1.53
1.57
1.61
1.65
1.69
24/19 = 1.26 ASF
JRB
9-8-17
19
24

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Lab Sample ID: CCVL 320-183459/9 Calibration Date: 09/08/2017 14:00

Instrument ID: A8_N Calib Start Date: 09/08/2017 13:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/08/2017 13:51

Lab File ID: 2017.09.08_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		1.035		20.3	20.0	1.4	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9339	0.9801		2.33	2.22	4.9	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.597	1.670		6.97	6.67	4.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9262	0.9160		4.40	4.45	-1.1	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9275	0.9149		8.77	8.89	-1.4	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6485	0.6787		4.65	4.45	4.7	50.0
13C2 PFHxA	Ave	1.207	1.214		10.1	10.0	0.6	30.0
13C2 PFDA	Ave	0.6716	0.6847		10.2	10.0	1.9	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Lab Sample ID: ICV 320-183459/11 Calibration Date: 09/08/2017 14:10

Instrument ID: A8_N Calib Start Date: 09/08/2017 13:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/08/2017 13:51

Lab File ID: 2017.09.08_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		0.8407		97.5	100	-2.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9339	0.9585		10.3	10.0	2.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.597	1.807		22.7	20.1	13.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9262	0.9495		21.0	20.5	2.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9275	1.113		23.6	19.7	20.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6485	0.7430		23.1	20.1	14.6	30.0
13C2 PFHxA	Ave	1.207	1.185		9.82	10.0	-1.8	30.0
13C2 PFDA	Ave	0.6716	0.6610		9.84	10.0	-1.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Lab Sample ID: CCVL 320-183505/3 Calibration Date: 09/08/2017 15:38

Instrument ID: A8_N Calib Start Date: 09/08/2017 13:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/08/2017 13:51

Lab File ID: 2017.09.08_537B_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.046		20.5	20.0	2.5	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9339	0.9827		2.34	2.22	5.2	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.597	1.654		6.91	6.67	3.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9262	0.9027		4.34	4.45	-2.5	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9275	0.9099		8.72	8.89	-1.9	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6485	0.6629		4.54	4.45	2.2	50.0
13C2 PFHxA	Ave	1.207	1.208		10.0	10.0	0.2	30.0
13C2 PFDA	Ave	0.6716	0.6635		9.88	10.0	-1.2	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Lab Sample ID: CCV 320-183512/1 Calibration Date: 09/08/2017 20:41

Instrument ID: A8_N Calib Start Date: 09/08/2017 13:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/08/2017 13:51

Lab File ID: 2017.09.08_537C_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.034		48.3	45.0	7.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9339	1.033		5.53	5.00	10.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.597	1.670		15.7	15.0	4.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9262	0.9403		10.2	10.0	1.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9275	0.9220		19.9	20.0	-0.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6485	0.6642		10.2	10.0	2.4	30.0
13C2 PFHxA	Ave	1.207	1.286		10.7	10.0	6.5	30.0
13C2 PFDA	Ave	0.6716	0.6874		10.2	10.0	2.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Lab Sample ID: CCV 320-183512/13 Calibration Date: 09/08/2017 21:39

Instrument ID: A8_N Calib Start Date: 09/08/2017 13:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/08/2017 13:51

Lab File ID: 2017.09.08_537C_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		0.7924		137	135	1.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9339	0.9876		15.9	15.0	5.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.597	1.552		43.7	45.0	-2.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9262	0.9339		30.3	30.0	0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9275	0.9312		60.3	60.0	0.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6485	0.6526		30.2	30.0	0.6	30.0
13C2 PFHxA	Ave	1.207	1.277		10.6	10.0	5.8	30.0
13C2 PFDA	Ave	0.6716	0.6814		10.1	10.0	1.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Lab Sample ID: CCV 320-183773/13 Calibration Date: 09/08/2017 21:39

Instrument ID: A8_N Calib Start Date: 09/08/2017 13:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/08/2017 13:51

Lab File ID: 2017.09.08_537C_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		0.7924		137	135	1.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9339	0.9876		15.9	15.0	5.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.597	1.552		43.7	45.0	-2.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9262	0.9339		30.3	30.0	0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9275	0.9312		60.3	60.0	0.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6485	0.6526		30.2	30.0	0.6	30.0
13C2 PFHxA	Ave	1.207	1.277		10.6	10.0	5.8	30.0
13C2 PFDA	Ave	0.6716	0.6814		10.1	10.0	1.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Lab Sample ID: CCV 320-183773/25 Calibration Date: 09/08/2017 22:36

Instrument ID: A8_N Calib Start Date: 09/08/2017 13:27

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 09/08/2017 13:51

Lab File ID: 2017.09.08_537C_025.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.032		48.2	45.0	7.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9339	1.007		5.39	5.00	7.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.597	1.694		15.9	15.0	6.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9262	0.9253		10.0	10.0	-0.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9275	0.9070		19.6	20.0	-2.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6485	0.6860		10.6	10.0	5.8	30.0
13C2 PFHxA	Ave	1.207	1.286		10.7	10.0	6.6	30.0
13C2 PFDA	Ave	0.6716	0.6809		10.1	10.0	1.4	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Instrument ID: A8_N Start Date: 09/08/2017 13:27

Analysis Batch Number: 183459 End Date: 09/08/2017 14:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-183459/2		09/08/2017 13:27	1	2017.09.08_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-183459/3		09/08/2017 13:32	1	2017.09.08_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-183459/4		09/08/2017 13:37	1	2017.09.08_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-183459/5 ICISAV		09/08/2017 13:42	1	2017.09.08_537I CAL 007.d	GeminiC18 3x100 3(mm)
IC 320-183459/6		09/08/2017 13:46	1	2017.09.08_537I CAL 008.d	GeminiC18 3x100 3(mm)
IC 320-183459/7		09/08/2017 13:51	1	2017.09.08_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/08/2017 13:56	1		GeminiC18 3x100 3(mm)
CCVL 320-183459/9		09/08/2017 14:00	1	2017.09.08_537I CAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/08/2017 14:05	1		GeminiC18 3x100 3(mm)
ICV 320-183459/11		09/08/2017 14:10	1	2017.09.08_537I CAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Instrument ID: A8_N Start Date: 09/08/2017 15:38

Analysis Batch Number: 183505 End Date: 09/08/2017 15:38

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-183505/3		09/08/2017 15:38	1	2017.09.08_537B_004.d	GeminiC18 3x100 3(mm)

537

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Instrument ID: A8_N Start Date: 09/08/2017 20:41

Analysis Batch Number: 183512 End Date: 09/08/2017 21:39

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-183512/1 CCVIS		09/08/2017 20:41	1	2017.09.08_537C 001.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/08/2017 20:46	1		GeminiC18 3x100 3(mm)
MB 320-182400/1-A		09/08/2017 20:51	1	2017.09.08_537C 003.d	GeminiC18 3x100 3(mm)
LLCS 320-182400/2-A		09/08/2017 20:56	1	2017.09.08_537C 004.d	GeminiC18 3x100 3(mm)
LLCSD 320-182400/3-A		09/08/2017 21:01	1	2017.09.08_537C 005.d	GeminiC18 3x100 3(mm)
320-31214-1		09/08/2017 21:05	1	2017.09.08_537C 006.d	GeminiC18 3x100 3(mm)
320-31214-2		09/08/2017 21:10	1	2017.09.08_537C 007.d	GeminiC18 3x100 3(mm)
320-31214-3		09/08/2017 21:15	1	2017.09.08_537C 008.d	GeminiC18 3x100 3(mm)
320-31214-4		09/08/2017 21:20	1	2017.09.08_537C 009.d	GeminiC18 3x100 3(mm)
320-31214-5		09/08/2017 21:24	1	2017.09.08_537C 010.d	GeminiC18 3x100 3(mm)
320-31214-6		09/08/2017 21:29	1	2017.09.08_537C 011.d	GeminiC18 3x100 3(mm)
320-31214-7		09/08/2017 21:34	1	2017.09.08_537C 012.d	GeminiC18 3x100 3(mm)
CCV 320-183512/13 CCVIS		09/08/2017 21:39	1	2017.09.08_537C 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Instrument ID: A8_N Start Date: 09/08/2017 21:39

Analysis Batch Number: 183773 End Date: 09/08/2017 22:36

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-183773/13 CCVIS		09/08/2017 21:39	1	2017.09.08_537C_013.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/08/2017 21:43	1		GeminiC18 3x100 3(mm)
320-31214-8		09/08/2017 21:48	1	2017.09.08_537C_015.d	GeminiC18 3x100 3(mm)
320-31214-9		09/08/2017 21:53	1	2017.09.08_537C_016.d	GeminiC18 3x100 3(mm)
320-31214-10		09/08/2017 21:58	1	2017.09.08_537C_017.d	GeminiC18 3x100 3(mm)
320-31214-11		09/08/2017 22:02	1	2017.09.08_537C_018.d	GeminiC18 3x100 3(mm)
320-31214-12		09/08/2017 22:07	1	2017.09.08_537C_019.d	GeminiC18 3x100 3(mm)
320-31214-13		09/08/2017 22:12	1	2017.09.08_537C_020.d	GeminiC18 3x100 3(mm)
320-31214-14		09/08/2017 22:17	1	2017.09.08_537C_021.d	GeminiC18 3x100 3(mm)
320-31214-15		09/08/2017 22:21	1	2017.09.08_537C_022.d	GeminiC18 3x100 3(mm)
320-31214-16		09/08/2017 22:26	1	2017.09.08_537C_023.d	GeminiC18 3x100 3(mm)
320-31214-17		09/08/2017 22:31	1	2017.09.08_537C_024.d	GeminiC18 3x100 3(mm)
CCV 320-183773/25 CCVIS		09/08/2017 22:36	1	2017.09.08_537C_025.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31214-1

SDG No.:

Batch Number: 182400 Batch Start Date: 09/01/17 08:39 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 09/05/17 11:38

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00047
MB 320-182400/1		537, 537				250 mL	1.00 mL	7 SU	100 uL
LLCS 320-182400/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
LLCSD 320-182400/3		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-31214-A-1	WGNA-083017-RW-0518	537, 537	T	286.16 g	27.21 g	259 mL	1.00 mL	7 SU	100 uL
320-31214-A-2	WGNA-083017-FRB-0518	537, 537	T	271.58 g	27.64 g	243.9 mL	1.00 mL	7 SU	100 uL
320-31214-A-3	NAWC-083017-RW-352	537, 537	T	287.16 g	27.90 g	259.3 mL	1.00 mL	7 SU	100 uL
320-31214-A-4	NAWC-083017-FRB-352	537, 537	T	285.51 g	26.93 g	258.6 mL	1.00 mL	7 SU	100 uL
320-31214-A-5	NAWC-083017-RW-353	537, 537	T	278.28 g	27.81 g	250.5 mL	1.00 mL	7 SU	100 uL
320-31214-A-6	NAWC-083017-FRB-353	537, 537	T	275.07 g	27.49 g	247.6 mL	1.00 mL	7 SU	100 uL
320-31214-A-7	WGNA-083017-RW-351	537, 537	T	277.15 g	28.14 g	249 mL	1.00 mL	7 SU	100 uL
320-31214-A-8	NAWC-083017-FRB-351	537, 537	T	275.39 g	27.33 g	248.1 mL	1.00 mL	7 SU	100 uL
320-31214-A-9	NAWC-083017-RW-350	537, 537	T	278.45 g	27.70 g	250.8 mL	1.00 mL	7 SU	100 uL
320-31214-A-10	NAWC-083017-FRB-350	537, 537	T	275.87 g	27.29 g	248.6 mL	1.00 mL	7 SU	100 uL
320-31214-A-11	WGNA-083017-RW-3785	537, 537	T	287.11 g	27.76 g	259.4 mL	1.00 mL	7 SU	100 uL
320-31214-A-12	WGNA-083017-FRB-3785	537, 537	T	285.03 g	27.06 g	258 mL	1.00 mL	7 SU	100 uL
320-31214-A-13	WGNA-083017-RW-0515	537, 537	T	283.97 g	27.63 g	256.3 mL	1.00 mL	7 SU	100 uL
320-31214-A-14	WGNA-083017-FRB-0515	537, 537	T	281.26 g	27.32 g	253.9 mL	1.00 mL	7 SU	100 uL
320-31214-A-15	WGNA-083017-RW-3220	537, 537	T	285.14 g	27.47 g	257.7 mL	1.00 mL	7 SU	100 uL
320-31214-A-16	WGNA-083017-FRB-3220	537, 537	T	285.90 g	27.50 g	258.4 mL	1.00 mL	7 SU	100 uL
320-31214-A-17	WGNA-083017-DUP08	537, 537	T	285.05 g	27.74 g	257.3 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00026	LC537-SU 00048	AnalysisComment			

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.: 320-31214-1

SDG No.:

Batch Number: 182400 Batch Start Date: 09/01/17 08:39 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 09/05/17 11:38

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00026	LC537-SU 00048	AnalysisComment			
MB 320-182400/1		537, 537			100 uL	ch nd			
LLCS 320-182400/2		537, 537		100 uL	100 uL	ch nd			
LLCSD 320-182400/3		537, 537		100 uL	100 uL	ch nd			
320-31214-A-1	WGNA-083017-RW-0518	537, 537	T		100 uL	ch nd			
320-31214-A-2	WGNA-083017-FRB-0518	537, 537	T		100 uL	ch nd			
320-31214-A-3	NAWC-083017-RW-352	537, 537	T		100 uL	ch nd			
320-31214-A-4	NAWC-083017-FRB-352	537, 537	T		100 uL	ch nd			
320-31214-A-5	NAWC-083017-RW-353	537, 537	T		100 uL	ch nd			
320-31214-A-6	NAWC-083017-FRB-353	537, 537	T		100 uL	ch nd			
320-31214-A-7	WGNA-083017-RW-351	537, 537	T		100 uL	ch nd			
320-31214-A-8	NAWC-083017-FRB-351	537, 537	T		100 uL	ch nd			
320-31214-A-9	NAWC-083017-RW-350	537, 537	T		100 uL	ch nd			
320-31214-A-10	NAWC-083017-FRB-350	537, 537	T		100 uL	ch nd			
320-31214-A-11	WGNA-083017-RW-3785	537, 537	T		100 uL	ch nd			
320-31214-A-12	WGNA-083017-FRB-3785	537, 537	T		100 uL	ch nd			
320-31214-A-13	WGNA-083017-RW-0515	537, 537	T		100 uL	ch nd			
320-31214-A-14	WGNA-083017-FRB-0515	537, 537	T		100 uL	ch nd			
320-31214-A-15	WGNA-083017-RW-3220	537, 537	T		100 uL	ch nd			
320-31214-A-16	WGNA-083017-FRB-3220	537, 537	T		100 uL	ch nd			
320-31214-A-17	WGNA-083017-DUP08	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.: 320-31214-1

SDG No.:

Batch Number: 182400 Batch Start Date: 09/01/17 08:39 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 09/05/17 11:38

Batch Notes	
Batch Comment	IS:1002957
Manifold ID	7,3
Methanol ID	1010866
Pipette ID	M16387D
Analyst ID - IS Reagent Drop	CCB
Analyst ID - IS Reagent Drop Witness	HJA
Analyst ID - SU Reagent Drop	CCB
Analyst ID - SU Reagent Drop Witness	JNS
Analyst ID - TA Reagent Drop	CCB
Analyst ID - TA Reagent Drop Witness	JNS
SPE Cartridge ID	6357081-03
Trizma ID	SLBR4303V
Reagent Water ID	8/28/17

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.

4

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-182400

Method Code: 320-537_Prep-320

Analyst: Branscum, Cassie

Batch Open: 9/1/2017 8:39:00AM

Batch End: 9/5/2017 11:38:00AM

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~320-182400/1 N/A	N/A		250 mL	7			N/A	N/A	N/A	ch nd	
				1.00 mL								
2	LLCS~320-182400/2 N/A	N/A		250 mL	7			N/A	N/A	N/A	ch nd	
				1.00 mL								
3	LLCSD~320-182400/3 N/A	N/A		250 mL	7			N/A	N/A	N/A	ch nd	
				1.00 mL								
4	320-31214-A-1 (537_DOD5)	N/A (320-31214-1)	286.16 g	259 mL	7			9/7/17	16_Days	4	ch nd	
			27.21 g	1.00 mL								
5	320-31214-A-2 (537_DOD5)	N/A (320-31214-1)	271.58 g	243.9 mL	7			9/7/17	16_Days	4	ch nd	
			27.64 g	1.00 mL								
6	320-31214-A-3 (537_DOD5)	N/A (320-31214-1)	287.16 g	259.3 mL	7			9/7/17	16_Days	4	ch nd	
			27.90 g	1.00 mL								
7	320-31214-A-4 (537_DOD5)	N/A (320-31214-1)	285.51 g	258.6 mL	7			9/7/17	16_Days	4	ch nd	
			26.93 g	1.00 mL								
8	320-31214-A-5 (537_DOD5)	N/A (320-31214-1)	278.28 g	250.5 mL	7			9/7/17	16_Days	4	ch nd	
			27.81 g	1.00 mL								
9	320-31214-A-6 (537_DOD5)	N/A (320-31214-1)	275.07 g	247.6 mL	7			9/7/17	16_Days	4	ch nd	
			27.49 g	1.00 mL								
10	320-31214-A-7 (537_DOD5)	N/A (320-31214-1)	277.15 g	249 mL	7			9/7/17	16_Days	4	ch nd	
			28.14 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-182400 Analyst: Branscum, Cassie Batch Open: 9/1/2017 8:39:00AM

Method Code: 320-537_Prep-320 Batch End: 9/5/2017 11:38:00AM

11	320-31214-A-8 (537_DOD5)	N/A (320-31214-1)	275.39 g 27.33 g	248.1 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
12	320-31214-A-9 (537_DOD5)	N/A (320-31214-1)	278.45 g 27.70 g	250.8 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
13	320-31214-A-10 (537_DOD5)	N/A (320-31214-1)	275.87 g 27.29 g	248.6 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
14	320-31214-A-11 (537_DOD5)	N/A (320-31214-1)	287.11 g 27.76 g	259.4 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
15	320-31214-A-12 (537_DOD5)	N/A (320-31214-1)	285.03 g 27.06 g	258 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
16	320-31214-A-13 (537_DOD5)	N/A (320-31214-1)	283.97 g 27.63 g	256.3 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
17	320-31214-A-14 (537_DOD5)	N/A (320-31214-1)	281.26 g 27.32 g	253.9 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
18	320-31214-A-15 (537_DOD5)	N/A (320-31214-1)	285.14 g 27.47 g	257.7 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
19	320-31214-A-16 (537_DOD5)	N/A (320-31214-1)	285.90 g 27.50 g	258.4 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
20	320-31214-A-17 (537_DOD5)	N/A (320-31214-1)	285.05 g 27.74 g	257.3 mL 1.00 mL	7			9/7/17	16_Days	4	ch nd	
21	320-31180-A-1 (537_DOD5)	WE04 (320-31180-1)	291.18 g 27.86 g	263.3 mL 1.00 mL	7			9/6/17	16_Days	4	ch nd	
22	320-31180-A-2 (537_DOD5)	WE04 (320-31180-1)	280.56 g 27.16 g	253.4 mL 1.00 mL	7			9/6/17	16_Days	4	ch nd	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-182400

Method Code: 320-537_Prep-320

Analyst: Branscum, Cassie

Batch Open: 9/1/2017 8:39:00AM

Batch End: 9/5/2017 11:38:00AM

Batch Notes

Manifold ID	7,3
Trizma ID	SLBR4303V
SPE Cartridge ID	6357081-03
Methanol ID	1010866
Reagent Water ID	8/28/17
Pipette ID	M16387D
Analyst ID - TA Reagent Drop	CCB
Analyst ID - TA Reagent Drop Witness	JNS
Analyst ID - SU Reagent Drop	CCB
Analyst ID - SU Reagent Drop Witness	JNS
Analyst ID - IS Reagent Drop	CCB
Analyst ID - IS Reagent Drop Witness	HJA
Batch Comment	IS:1002957

Comments

PFAS Calibration Calculations:

Initial Calibration 9/8/2017
Instrument A8_N

Perfluorohexanesulfonic acid

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF
3	953075	5640583	28.7	1.61646	1.6148
6.67	2196189	5712377	28.7	1.65428	1.6536
15	4965386	5718230	28.7	1.66143	1.6599
30	9333896	5620007	28.7	1.58886	1.5874
45	13320862	5359060	28.7	1.58531	1.5838
60	16853658	5438027	28.7	1.48246	1.4811
			Average	1.59813	1.5968
			Standard Deviation	0.0650	
			RSD	0.0407	
			%RSD	4.06724	4.1

Continuing Calibration 09/08/2017 @ 20:41
A8_N

Perfluorohexanesulfonic acid

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
15	4664734	5340700	28.7	1.6712	4.6571284	1.67	4.6

Willow Grove
SDG 320-31214-1

Sample Identification	WGNA-083017-RW-0518	
Compound	Perfluorohexanesulfonic acid	
Compound Area	820427	
Internal Standard Amount (ng)	28.7	
Dilution Factor	1	
Internal Standard Area	5799593	
Average RRF	1.5968	
Sample Volume(ml)	259	
Volume Extract (ml)	1	
Injection Volume (µl)	1	
µl to ml	1000.00	
Concentration	9.82	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