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Naval Facilities Engineering Command

Groundwater Sample Results, Combined Level 2 and Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Report, SDG 320-42142-1

Naval Air Warfare Center Warminster
Warminster, Pennsylvania

August 2019

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WARMINSTER_NAWC
SSIC 5000-33c

LABORATORY DATA PACKAGE, 320-42142-1, NAS WILLOW GROVE NAWC WARMINSTER PA

08/30/2018

TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-42142-1

Job Description: Warminster: PFAS, NAS JRB Willow Grove

For:
Tetra Tech, Inc.
234 Mall Boulevard
Suite 260
King of Prussia, PA 19406

Attention: Andy Frebowitz

Approved for release.
David R Alltucker
Project Manager I
8/30/2018 10:35 AM

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08/30/2018

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Qualifiers

LCMS

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

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
320-42142-1

Receipt
The samples were received on 8/15/2018 9:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.7º C and 1.7º C.

Receipt Exceptions

The container label for the following samples did not match the information listed on the Chain-of-Custody (COC): WGNA-080718-DUP-45 (320-42142-23) and WGNA-080718-DUP-46 (320-42142-24). WGNA-080718-DUP-45 and -46 are labeled WGNA-081418-DUP-45 and -46. Samples 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.

Method(s) 537: Internal standard (ISTD) response for the following sample was outside control limits: WGNA-080718-DUP-46 (320-42142-24). The sample was re-analyzed with concurring results. The second set of data has been reported because fewer ISTD were outside control limits.

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 320-241537

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-241832.

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: 320-42142-1

Client Sample ID: NAWC-081418-RW-256 — Lab Sample ID: 320-42142-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	30	J	35	6.0	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	28		18	2.5	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.5	J	27	4.9	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.5	J	8.9	1.7	ng/L	1		537	Total/NA

Client Sample ID: NAWC-081418-FRB-256 — Lab Sample ID: 320-42142-2

No Detections.

Client Sample ID: NAWC-081418-RW-270 — Lab Sample ID: 320-42142-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	15	J	38	6.5	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	11	J	19	2.7	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.6	J	9.6	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-081418-FRB-270 — Lab Sample ID: 320-42142-4

No Detections.

Client Sample ID: NAWC-081418-RW-271 — Lab Sample ID: 320-42142-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	11	J	38	6.5	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	13	J	19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.2	J	29	5.3	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.7	J M	9.6	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-081418-FRB-271 — Lab Sample ID: 320-42142-6

No Detections.

Client Sample ID: NAWC-081418-RW-311 — Lab Sample ID: 320-42142-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	17	J	37	6.2	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	15	J	18	2.6	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.5	J	9.2	1.7	ng/L	1		537	Total/NA

Client Sample ID: NAWC-081418-FRB-311 — Lab Sample ID: 320-42142-8

No Detections.

Client Sample ID: NAWC-081418-RW-038 — Lab Sample ID: 320-42142-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	27	J	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)	6.3	J	29	5.3	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.2	J	9.7	1.8	ng/L	1		537	Total/NA

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: 320-42142-1

Client Sample ID: NAWC-081418-FRB-038 — Lab Sample ID: 320-42142-10

No Detections.

Client Sample ID: NAWC-081418-RW-039 — Lab Sample ID: 320-42142-11

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	14	J	39	6.6	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	10	J	19	2.7	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.1	J M	9.7	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-081418-FRB-039 — Lab Sample ID: 320-42142-12

No Detections.

Client Sample ID: NAWC-081418-RW-187 — Lab Sample ID: 320-42142-13

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	62		38	6.4	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	34		19	2.6	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	31		28	5.2	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	35		9.4	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-081418-FRB-187 — Lab Sample ID: 320-42142-14

No Detections.

Client Sample ID: NAWC-081418-RW-292 — Lab Sample ID: 320-42142-15

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	23	J	38	6.4	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	20		19	2.6	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.4	J	28	5.2	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.5	J	9.4	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-081418-FRB-292 — Lab Sample ID: 320-42142-16

No Detections.

Client Sample ID: NAWC-081418-RW-229 — Lab Sample ID: 320-42142-17

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)	31		20	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	10	J	29	5.4	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	11		9.8	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-081418-FRB-229 — Lab Sample ID: 320-42142-18

No Detections.

Client Sample ID: NAWC-081418-RW-126 — Lab Sample ID: 320-42142-19

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	57		43	7.4	ng/L	1		537	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: NAWC-081418-RW-126 (Continued) Lab Sample ID: 320-42142-19

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	10	J	22	3.0	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	37		33	6.0	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.5	J	11	2.1	ng/L	1		537	Total/NA

Client Sample ID: NAWC-081418-FRB-126 Lab Sample ID: 320-42142-20

No Detections.

Client Sample ID: NAWC-081418-RW-172 Lab Sample ID: 320-42142-21

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	8.1	J	42	7.2	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	10	J	21	3.0	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.6	J M	11	2.0	ng/L	1		537	Total/NA

Client Sample ID: NAWC-081418-FRB-172 Lab Sample ID: 320-42142-22

No Detections.

Client Sample ID: WGNA-080718-DUP-45 Lab Sample ID: 320-42142-23

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	30	J	38	6.4	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	27		19	2.6	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.3	J	28	5.2	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.5	J	9.4	1.8	ng/L	1		537	Total/NA

Client Sample ID: WGNA-080718-DUP-46 Lab Sample ID: 320-42142-24

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	7.8	J	41	7.0	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	10	J	21	2.9	ng/L	1		537	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

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

TestAmerica Job ID: 320-42142-1

Client Sample ID: NAWC-081418-RW-256

Lab Sample ID: 320-42142-1
Date Collected: 08/14/18 08:40
Matrix: Water
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**30**	**J**	35	6.0	ng/L		08/23/18 07:20	08/27/18 01:22	1
Perfluorooctanoic acid (PFOA)	**28**		18	2.5	ng/L		08/23/18 07:20	08/27/18 01:22	1
Perfluorononanoic acid (PFNA)	18	U	21	7.1	ng/L		08/23/18 07:20	08/27/18 01:22	1
Perfluorohexanesulfonic acid (PFHxS)	**5.5**	**J**	27	4.9	ng/L		08/23/18 07:20	08/27/18 01:22	1
Perfluoroheptanoic acid (PFHpA)	**8.5**	**J**	8.9	1.7	ng/L		08/23/18 07:20	08/27/18 01:22	1
Perfluorobutanesulfonic acid (PFBS)	32	U	80	14	ng/L		08/23/18 07:20	08/27/18 01:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*70 - 130*	*08/23/18 07:20*	*08/27/18 01:22*	*1*
13C2 PFDA	*109*		*70 - 130*	*08/23/18 07:20*	*08/27/18 01:22*	*1*

Client Sample ID: NAWC-081418-FRB-256

Lab Sample ID: 320-42142-2
Date Collected: 08/14/18 08:35
Matrix: Water
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	36	6.1	ng/L		08/23/18 07:20	08/27/18 01:36	1
Perfluorooctanoic acid (PFOA)	7.2	U	18	2.5	ng/L		08/23/18 07:20	08/27/18 01:36	1
Perfluorononanoic acid (PFNA)	18	U	22	7.2	ng/L		08/23/18 07:20	08/27/18 01:36	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	4.9	ng/L		08/23/18 07:20	08/27/18 01:36	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	1.7	ng/L		08/23/18 07:20	08/27/18 01:36	1
Perfluorobutanesulfonic acid (PFBS)	32	U	81	14	ng/L		08/23/18 07:20	08/27/18 01:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*108*		*70 - 130*	*08/23/18 07:20*	*08/27/18 01:36*	*1*
13C2 PFDA	*108*		*70 - 130*	*08/23/18 07:20*	*08/27/18 01:36*	*1*

Client Sample ID: NAWC-081418-RW-270

Lab Sample ID: 320-42142-3
Date Collected: 08/14/18 09:40
Matrix: Water
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**15**	**J**	38	6.5	ng/L		08/23/18 07:20	08/27/18 01:41	1
Perfluorooctanoic acid (PFOA)	**11**	**J**	19	2.7	ng/L		08/23/18 07:20	08/27/18 01:41	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		08/23/18 07:20	08/27/18 01:41	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.3	ng/L		08/23/18 07:20	08/27/18 01:41	1
Perfluoroheptanoic acid (PFHpA)	**3.6**	**J**	9.6	1.8	ng/L		08/23/18 07:20	08/27/18 01:41	1
Perfluorobutanesulfonic acid (PFBS)	35	U	86	15	ng/L		08/23/18 07:20	08/27/18 01:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*70 - 130*	*08/23/18 07:20*	*08/27/18 01:41*	*1*
13C2 PFDA	*108*		*70 - 130*	*08/23/18 07:20*	*08/27/18 01:41*	*1*

Client Sample Results

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

TestAmerica Job ID: 320-42142-1

Client Sample ID: NAWC-081418-FRB-270

Lab Sample ID: 320-42142-4
Date Collected: 08/14/18 09:35
Matrix: Water
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	36	6.2	ng/L		08/23/18 07:20	08/27/18 01:45	1
Perfluorooctanoic acid (PFOA)	7.3	U	18	2.5	ng/L		08/23/18 07:20	08/27/18 01:45	1
Perfluorononanoic acid (PFNA)	18	U	22	7.3	ng/L		08/23/18 07:20	08/27/18 01:45	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	5.0	ng/L		08/23/18 07:20	08/27/18 01:45	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	1.7	ng/L		08/23/18 07:20	08/27/18 01:45	1
Perfluorobutanesulfonic acid (PFBS)	33	U	82	15	ng/L		08/23/18 07:20	08/27/18 01:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*113*		*70 - 130*	*08/23/18 07:20*	*08/27/18 01:45*	*1*
13C2 PFDA	*120*		*70 - 130*	*08/23/18 07:20*	*08/27/18 01:45*	*1*

Client Sample ID: NAWC-081418-RW-271

Lab Sample ID: 320-42142-5
Date Collected: 08/14/18 10:10
Matrix: Water
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**11**	**J**	38	6.5	ng/L		08/24/18 09:17	08/29/18 00:04	1
Perfluorooctanoic acid (PFOA)	**13**	**J**	19	2.7	ng/L		08/24/18 09:17	08/29/18 00:04	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		08/24/18 09:17	08/29/18 00:04	1
Perfluorohexanesulfonic acid (PFHxS)	**6.2**	**J**	29	5.3	ng/L		08/24/18 09:17	08/29/18 00:04	1
Perfluoroheptanoic acid (PFHpA)	**3.7**	**J M**	9.6	1.8	ng/L		08/24/18 09:17	08/29/18 00:04	1
Perfluorobutanesulfonic acid (PFBS)	35	U	86	15	ng/L		08/24/18 09:17	08/29/18 00:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*70 - 130*	*08/24/18 09:17*	*08/29/18 00:04*	*1*
13C2 PFDA	*96*		*70 - 130*	*08/24/18 09:17*	*08/29/18 00:04*	*1*

Client Sample ID: NAWC-081418-FRB-271

Lab Sample ID: 320-42142-6
Date Collected: 08/14/18 10:05
Matrix: Water
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	36	6.1	ng/L		08/24/18 09:17	08/27/18 02:18	1
Perfluorooctanoic acid (PFOA)	7.1	U	18	2.5	ng/L		08/24/18 09:17	08/27/18 02:18	1
Perfluorononanoic acid (PFNA)	18	U	21	7.1	ng/L		08/24/18 09:17	08/27/18 02:18	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	4.9	ng/L		08/24/18 09:17	08/27/18 02:18	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	8.9	1.7	ng/L		08/24/18 09:17	08/27/18 02:18	1
Perfluorobutanesulfonic acid (PFBS)	32	U	80	14	ng/L		08/24/18 09:17	08/27/18 02:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*70 - 130*	*08/24/18 09:17*	*08/27/18 02:18*	*1*
13C2 PFDA	*99*		*70 - 130*	*08/24/18 09:17*	*08/27/18 02:18*	*1*

Client Sample Results

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

TestAmerica Job ID: 320-42142-1

Client Sample ID: NAWC-081418-RW-311

Lab Sample ID: 320-42142-7
Date Collected: 08/14/18 11:10
Matrix: Water
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**17**	**J**	37	6.2	ng/L		08/24/18 09:17	08/27/18 02:23	1
Perfluorooctanoic acid (PFOA)	**15**	**J**	18	2.6	ng/L		08/24/18 09:17	08/27/18 02:23	1
Perfluorononanoic acid (PFNA)	18	U	22	7.3	ng/L		08/24/18 09:17	08/27/18 02:23	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	5.0	ng/L		08/24/18 09:17	08/27/18 02:23	1
Perfluoroheptanoic acid (PFHpA)	**5.5**	**J**	9.2	1.7	ng/L		08/24/18 09:17	08/27/18 02:23	1
Perfluorobutanesulfonic acid (PFBS)	33	U	82	15	ng/L		08/24/18 09:17	08/27/18 02:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*99*		*70 - 130*	*08/24/18 09:17*	*08/27/18 02:23*	*1*
13C2 PFDA	*96*		*70 - 130*	*08/24/18 09:17*	*08/27/18 02:23*	*1*

Client Sample ID: NAWC-081418-FRB-311

Lab Sample ID: 320-42142-8
Date Collected: 08/14/18 11:05
Matrix: Water
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	38	6.5	ng/L		08/24/18 09:17	08/27/18 02:27	1
Perfluorooctanoic acid (PFOA)	7.6	U	19	2.7	ng/L		08/24/18 09:17	08/27/18 02:27	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		08/24/18 09:17	08/27/18 02:27	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	29	5.2	ng/L		08/24/18 09:17	08/27/18 02:27	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	1.8	ng/L		08/24/18 09:17	08/27/18 02:27	1
Perfluorobutanesulfonic acid (PFBS)	34	U	86	15	ng/L		08/24/18 09:17	08/27/18 02:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*98*		*70 - 130*	*08/24/18 09:17*	*08/27/18 02:27*	*1*
13C2 PFDA	*106*		*70 - 130*	*08/24/18 09:17*	*08/27/18 02:27*	*1*

Client Sample ID: NAWC-081418-RW-038

Lab Sample ID: 320-42142-9
Date Collected: 08/14/18 12:10
Matrix: Water
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**27**	**J**	39	6.6	ng/L		08/24/18 09:17	08/27/18 02:32	1
Perfluorooctanoic acid (PFOA)	**22**		19	2.7	ng/L		08/24/18 09:17	08/27/18 02:32	1
Perfluorononanoic acid (PFNA)	19	U	23	7.8	ng/L		08/24/18 09:17	08/27/18 02:32	1
Perfluorohexanesulfonic acid (PFHxS)	**6.3**	**J**	29	5.3	ng/L		08/24/18 09:17	08/27/18 02:32	1
Perfluoroheptanoic acid (PFHpA)	**6.2**	**J**	9.7	1.8	ng/L		08/24/18 09:17	08/27/18 02:32	1
Perfluorobutanesulfonic acid (PFBS)	35	U	87	16	ng/L		08/24/18 09:17	08/27/18 02:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*70 - 130*	*08/24/18 09:17*	*08/27/18 02:32*	*1*
13C2 PFDA	*97*		*70 - 130*	*08/24/18 09:17*	*08/27/18 02:32*	*1*

Client Sample Results

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

TestAmerica Job ID: 320-42142-1

Client Sample ID: NAWC-081418-FRB-038

Lab Sample ID: 320-42142-10
Date Collected: 08/14/18 12:05
Matrix: Water
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	36	6.1	ng/L		08/24/18 09:17	08/27/18 02:37	1
Perfluorooctanoic acid (PFOA)	7.2	U	18	2.5	ng/L		08/24/18 09:17	08/27/18 02:37	1
Perfluorononanoic acid (PFNA)	18	U	22	7.2	ng/L		08/24/18 09:17	08/27/18 02:37	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	4.9	ng/L		08/24/18 09:17	08/27/18 02:37	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	1.7	ng/L		08/24/18 09:17	08/27/18 02:37	1
Perfluorobutanesulfonic acid (PFBS)	32	U	81	14	ng/L		08/24/18 09:17	08/27/18 02:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*106*		*70 - 130*	*08/24/18 09:17*	*08/27/18 02:37*	*1*
13C2 PFDA	*102*		*70 - 130*	*08/24/18 09:17*	*08/27/18 02:37*	*1*

Client Sample ID: NAWC-081418-RW-039

Lab Sample ID: 320-42142-11
Date Collected: 08/14/18 12:40
Matrix: Water
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**14**	**J**	39	6.6	ng/L		08/24/18 09:17	08/27/18 02:41	1
Perfluorooctanoic acid (PFOA)	**10**	**J**	19	2.7	ng/L		08/24/18 09:17	08/27/18 02:41	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		08/24/18 09:17	08/27/18 02:41	1
Perfluorohexanesulfonic acid (PFHxS)	12	U M	29	5.3	ng/L		08/24/18 09:17	08/27/18 02:41	1
Perfluoroheptanoic acid (PFHpA)	**3.1**	**J M**	9.7	1.8	ng/L		08/24/18 09:17	08/27/18 02:41	1
Perfluorobutanesulfonic acid (PFBS)	35	U M	87	16	ng/L		08/24/18 09:17	08/27/18 02:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*98*		*70 - 130*	*08/24/18 09:17*	*08/27/18 02:41*	*1*
13C2 PFDA	*99*		*70 - 130*	*08/24/18 09:17*	*08/27/18 02:41*	*1*

Client Sample ID: NAWC-081418-FRB-039

Lab Sample ID: 320-42142-12
Date Collected: 08/14/18 12:35
Matrix: Water
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	38	6.5	ng/L		08/24/18 09:17	08/27/18 02:55	1
Perfluorooctanoic acid (PFOA)	7.6	U	19	2.7	ng/L		08/24/18 09:17	08/27/18 02:55	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		08/24/18 09:17	08/27/18 02:55	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	29	5.2	ng/L		08/24/18 09:17	08/27/18 02:55	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	1.8	ng/L		08/24/18 09:17	08/27/18 02:55	1
Perfluorobutanesulfonic acid (PFBS)	34	U	86	15	ng/L		08/24/18 09:17	08/27/18 02:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*102*		*70 - 130*	*08/24/18 09:17*	*08/27/18 02:55*	*1*
13C2 PFDA	*102*		*70 - 130*	*08/24/18 09:17*	*08/27/18 02:55*	*1*

Client Sample ID: NAWC-081418-RW-187 — Lab Sample ID: 320-42142-13

Date Collected: 08/14/18 13:10 **Matrix: Water**
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**62**		38	6.4	ng/L		08/24/18 09:17	08/27/18 03:00	1
Perfluorooctanoic acid (PFOA)	**34**		19	2.6	ng/L		08/24/18 09:17	08/27/18 03:00	1
Perfluorononanoic acid (PFNA)	19	U	23	7.5	ng/L		08/24/18 09:17	08/27/18 03:00	1
Perfluorohexanesulfonic acid (PFHxS)	**31**		28	5.2	ng/L		08/24/18 09:17	08/27/18 03:00	1
Perfluoroheptanoic acid (PFHpA)	**35**		9.4	1.8	ng/L		08/24/18 09:17	08/27/18 03:00	1
Perfluorobutanesulfonic acid (PFBS)	34	U	84	15	ng/L		08/24/18 09:17	08/27/18 03:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*70 - 130*	*08/24/18 09:17*	*08/27/18 03:00*	*1*
13C2 PFDA	*100*		*70 - 130*	*08/24/18 09:17*	*08/27/18 03:00*	*1*

Client Sample ID: NAWC-081418-FRB-187 — Lab Sample ID: 320-42142-14

Date Collected: 08/14/18 13:05 **Matrix: Water**
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	36	6.1	ng/L		08/24/18 09:17	08/29/18 00:09	1
Perfluorooctanoic acid (PFOA)	7.2	U	18	2.5	ng/L		08/24/18 09:17	08/29/18 00:09	1
Perfluorononanoic acid (PFNA)	18	U	22	7.2	ng/L		08/24/18 09:17	08/29/18 00:09	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	4.9	ng/L		08/24/18 09:17	08/29/18 00:09	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	1.7	ng/L		08/24/18 09:17	08/29/18 00:09	1
Perfluorobutanesulfonic acid (PFBS)	32	U	81	14	ng/L		08/24/18 09:17	08/29/18 00:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*96*		*70 - 130*	*08/24/18 09:17*	*08/29/18 00:09*	*1*
13C2 PFDA	*100*		*70 - 130*	*08/24/18 09:17*	*08/29/18 00:09*	*1*

Client Sample ID: NAWC-081418-RW-292 — Lab Sample ID: 320-42142-15

Date Collected: 08/14/18 13:40 **Matrix: Water**
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**23**	**J**	38	6.4	ng/L		08/24/18 09:17	08/29/18 00:13	1
Perfluorooctanoic acid (PFOA)	**20**		19	2.6	ng/L		08/24/18 09:17	08/29/18 00:13	1
Perfluorononanoic acid (PFNA)	19	U	23	7.5	ng/L		08/24/18 09:17	08/29/18 00:13	1
Perfluorohexanesulfonic acid (PFHxS)	**9.4**	**J**	28	5.2	ng/L		08/24/18 09:17	08/29/18 00:13	1
Perfluoroheptanoic acid (PFHpA)	**8.5**	**J**	9.4	1.8	ng/L		08/24/18 09:17	08/29/18 00:13	1
Perfluorobutanesulfonic acid (PFBS)	34	U	85	15	ng/L		08/24/18 09:17	08/29/18 00:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*97*		*70 - 130*	*08/24/18 09:17*	*08/29/18 00:13*	*1*
13C2 PFDA	*102*		*70 - 130*	*08/24/18 09:17*	*08/29/18 00:13*	*1*

Client Sample Results

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

TestAmerica Job ID: 320-42142-1

Client Sample ID: NAWC-081418-FRB-292

Lab Sample ID: 320-42142-16
Date Collected: 08/14/18 13:35
Matrix: Water
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	6.0	ng/L		08/24/18 09:17	08/27/18 03:14	1
Perfluorooctanoic acid (PFOA)	7.1	U	18	2.5	ng/L		08/24/18 09:17	08/27/18 03:14	1
Perfluorononanoic acid (PFNA)	18	U	21	7.1	ng/L		08/24/18 09:17	08/27/18 03:14	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	4.9	ng/L		08/24/18 09:17	08/27/18 03:14	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.9	1.7	ng/L		08/24/18 09:17	08/27/18 03:14	1
Perfluorobutanesulfonic acid (PFBS)	32	U	80	14	ng/L		08/24/18 09:17	08/27/18 03:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*99*		*70 - 130*	*08/24/18 09:17*	*08/27/18 03:14*	*1*
13C2 PFDA	*102*		*70 - 130*	*08/24/18 09:17*	*08/27/18 03:14*	*1*

Client Sample ID: NAWC-081418-RW-229

Lab Sample ID: 320-42142-17
Date Collected: 08/14/18 16:10
Matrix: Water
Date Received: 08/15/18 09:35

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		08/24/18 09:17	08/27/18 03:19	1
Perfluorooctanoic acid (PFOA)	**31**		20	2.7	ng/L		08/24/18 09:17	08/27/18 03:19	1
Perfluorononanoic acid (PFNA)	20	U M	23	7.8	ng/L		08/24/18 09:17	08/27/18 03:19	1
Perfluorohexanesulfonic acid (PFHxS)	**10**	**J**	29	5.4	ng/L		08/24/18 09:17	08/27/18 03:19	1
Perfluoroheptanoic acid (PFHpA)	**11**		9.8	1.9	ng/L		08/24/18 09:17	08/27/18 03:19	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		08/24/18 09:17	08/27/18 03:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*70 - 130*	*08/24/18 09:17*	*08/27/18 03:19*	*1*
13C2 PFDA	*99*		*70 - 130*	*08/24/18 09:17*	*08/27/18 03:19*	*1*

Client Sample ID: NAWC-081418-FRB-229

Lab Sample ID: 320-42142-18
Date Collected: 08/14/18 16:05
Matrix: Water
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	37	6.3	ng/L		08/24/18 09:17	08/27/18 03:24	1
Perfluorooctanoic acid (PFOA)	7.5	U	19	2.6	ng/L		08/24/18 09:17	08/27/18 03:24	1
Perfluorononanoic acid (PFNA)	19	U	22	7.5	ng/L		08/24/18 09:17	08/27/18 03:24	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	28	5.1	ng/L		08/24/18 09:17	08/27/18 03:24	1
Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	1.8	ng/L		08/24/18 09:17	08/27/18 03:24	1
Perfluorobutanesulfonic acid (PFBS)	34	U	84	15	ng/L		08/24/18 09:17	08/27/18 03:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*100*		*70 - 130*	*08/24/18 09:17*	*08/27/18 03:24*	*1*
13C2 PFDA	*100*		*70 - 130*	*08/24/18 09:17*	*08/27/18 03:24*	*1*

Client Sample ID: NAWC-081418-RW-126 — Lab Sample ID: 320-42142-19

Date Collected: 08/14/18 16:40 **Matrix: Water**
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**57**		43	7.4	ng/L		08/24/18 09:17	08/29/18 00:18	1
Perfluorooctanoic acid (PFOA)	**10**	**J**	22	3.0	ng/L		08/24/18 09:17	08/29/18 00:18	1
Perfluorononanoic acid (PFNA)	22	U	26	8.7	ng/L		08/24/18 09:17	08/29/18 00:18	1
Perfluorohexanesulfonic acid (PFHxS)	**37**		33	6.0	ng/L		08/24/18 09:17	08/29/18 00:18	1
Perfluoroheptanoic acid (PFHpA)	**4.5**	**J**	11	2.1	ng/L		08/24/18 09:17	08/29/18 00:18	1
Perfluorobutanesulfonic acid (PFBS)	39	U	98	17	ng/L		08/24/18 09:17	08/29/18 00:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*70 - 130*	*08/24/18 09:17*	*08/29/18 00:18*	*1*
13C2 PFDA	*95*		*70 - 130*	*08/24/18 09:17*	*08/29/18 00:18*	*1*

Client Sample ID: NAWC-081418-FRB-126 — Lab Sample ID: 320-42142-20

Date Collected: 08/14/18 16:35 **Matrix: Water**
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	36	6.2	ng/L		08/24/18 09:17	08/27/18 03:33	1
Perfluorooctanoic acid (PFOA)	7.3	U	18	2.5	ng/L		08/24/18 09:17	08/27/18 03:33	1
Perfluorononanoic acid (PFNA)	18	U	22	7.3	ng/L		08/24/18 09:17	08/27/18 03:33	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	5.0	ng/L		08/24/18 09:17	08/27/18 03:33	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	1.7	ng/L		08/24/18 09:17	08/27/18 03:33	1
Perfluorobutanesulfonic acid (PFBS)	33	U	82	15	ng/L		08/24/18 09:17	08/27/18 03:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*70 - 130*	*08/24/18 09:17*	*08/27/18 03:33*	*1*
13C2 PFDA	*104*		*70 - 130*	*08/24/18 09:17*	*08/27/18 03:33*	*1*

Client Sample ID: NAWC-081418-RW-172 — Lab Sample ID: 320-42142-21

Date Collected: 08/14/18 17:10 **Matrix: Water**
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**8.1**	**J**	42	7.2	ng/L		08/24/18 09:17	08/27/18 03:38	1
Perfluorooctanoic acid (PFOA)	**10**	**J**	21	3.0	ng/L		08/24/18 09:17	08/27/18 03:38	1
Perfluorononanoic acid (PFNA)	21	U	25	8.5	ng/L		08/24/18 09:17	08/27/18 03:38	1
Perfluorohexanesulfonic acid (PFHxS)	13	U	32	5.8	ng/L		08/24/18 09:17	08/27/18 03:38	1
Perfluoroheptanoic acid (PFHpA)	**3.6**	**J M**	11	2.0	ng/L		08/24/18 09:17	08/27/18 03:38	1
Perfluorobutanesulfonic acid (PFBS)	38	U	95	17	ng/L		08/24/18 09:17	08/27/18 03:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*98*		*70 - 130*	*08/24/18 09:17*	*08/27/18 03:38*	*1*
13C2 PFDA	*100*		*70 - 130*	*08/24/18 09:17*	*08/27/18 03:38*	*1*

Client Sample Results

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

TestAmerica Job ID: 320-42142-1

Client Sample ID: NAWC-081418-FRB-172

Lab Sample ID: 320-42142-22
Date Collected: 08/14/18 17:05
Matrix: Water
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	37	6.2	ng/L		08/24/18 09:17	08/29/18 00:23	1
Perfluorooctanoic acid (PFOA)	7.3	U	18	2.6	ng/L		08/24/18 09:17	08/29/18 00:23	1
Perfluorononanoic acid (PFNA)	18	U	22	7.3	ng/L		08/24/18 09:17	08/29/18 00:23	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	5.0	ng/L		08/24/18 09:17	08/29/18 00:23	1
Perfluoroheptanoic acid (PFHpA)	3.7	U	9.1	1.7	ng/L		08/24/18 09:17	08/29/18 00:23	1
Perfluorobutanesulfonic acid (PFBS)	33	U	82	15	ng/L		08/24/18 09:17	08/29/18 00:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*96*		*70 - 130*	*08/24/18 09:17*	*08/29/18 00:23*	*1*
13C2 PFDA	*97*		*70 - 130*	*08/24/18 09:17*	*08/29/18 00:23*	*1*

Client Sample ID: WGNA-080718-DUP-45

Lab Sample ID: 320-42142-23
Date Collected: 08/14/18 07:00
Matrix: Water
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**30**	**J**	38	6.4	ng/L		08/24/18 09:17	08/29/18 00:27	1
Perfluorooctanoic acid (PFOA)	**27**		19	2.6	ng/L		08/24/18 09:17	08/29/18 00:27	1
Perfluorononanoic acid (PFNA)	19	U	23	7.5	ng/L		08/24/18 09:17	08/29/18 00:27	1
Perfluorohexanesulfonic acid (PFHxS)	**5.3**	**J**	28	5.2	ng/L		08/24/18 09:17	08/29/18 00:27	1
Perfluoroheptanoic acid (PFHpA)	**8.5**	**J**	9.4	1.8	ng/L		08/24/18 09:17	08/29/18 00:27	1
Perfluorobutanesulfonic acid (PFBS)	34	U	85	15	ng/L		08/24/18 09:17	08/29/18 00:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*70 - 130*	*08/24/18 09:17*	*08/29/18 00:27*	*1*
13C2 PFDA	*94*		*70 - 130*	*08/24/18 09:17*	*08/29/18 00:27*	*1*

Client Sample ID: WGNA-080718-DUP-46

Lab Sample ID: 320-42142-24
Date Collected: 08/14/18 12:00
Matrix: Water
Date Received: 08/15/18 09:35

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**7.8**	**J**	41	7.0	ng/L		08/24/18 09:17	08/29/18 00:32	1
Perfluorooctanoic acid (PFOA)	**10**	**J**	21	2.9	ng/L		08/24/18 09:17	08/29/18 00:32	1
Perfluorononanoic acid (PFNA)	21	U	25	8.2	ng/L		08/24/18 09:17	08/29/18 00:32	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	31	5.6	ng/L		08/24/18 09:17	08/29/18 00:32	1
Perfluoroheptanoic acid (PFHpA)	4.1	U	10	1.9	ng/L		08/24/18 09:17	08/29/18 00:32	1
Perfluorobutanesulfonic acid (PFBS)	37	U	92	17	ng/L		08/24/18 09:17	08/29/18 00:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*81*		*70 - 130*	*08/24/18 09:17*	*08/29/18 00:32*	*1*
13C2 PFDA	*87*		*70 - 130*	*08/24/18 09:17*	*08/29/18 00:32*	*1*

Default Detection Limits

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

TestAmerica Job ID: 320-42142-1

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

Prep: 537

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

Surrogate Summary

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

TestAmerica Job ID: 320-42142-1

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

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

		Percent Surrogate Recovery (Acceptance Limits)									
Lab Sample ID	Client Sample ID	PFHxA (70-130)	PFDA (70-130)								
320-42142-1	NAWC-081418-RW-256	95	109								
320-42142-2	NAWC-081418-FRB-256	108	108								
320-42142-3	NAWC-081418-RW-270	101	108								
320-42142-4	NAWC-081418-FRB-270	113	120								
320-42142-5	NAWC-081418-RW-271	85	96								
320-42142-6	NAWC-081418-FRB-271	101	99								
320-42142-7	NAWC-081418-RW-311	99	96								
320-42142-8	NAWC-081418-FRB-311	98	106								
320-42142-9	NAWC-081418-RW-038	90	97								
320-42142-10	NAWC-081418-FRB-038	106	102								
320-42142-11	NAWC-081418-RW-039	98	99								
320-42142-12	NAWC-081418-FRB-039	102	102								
320-42142-13	NAWC-081418-RW-187	95	100								
320-42142-14	NAWC-081418-FRB-187	96	100								
320-42142-15	NAWC-081418-RW-292	97	102								
320-42142-16	NAWC-081418-FRB-292	99	102								
320-42142-17	NAWC-081418-RW-229	91	99								
320-42142-18	NAWC-081418-FRB-229	100	100								
320-42142-19	NAWC-081418-RW-126	90	95								
320-42142-20	NAWC-081418-FRB-126	95	104								
320-42142-21	NAWC-081418-RW-172	98	100								
320-42142-22	NAWC-081418-FRB-172	96	97								
320-42142-23	WGNA-080718-DUP-45	85	94								
320-42142-24	WGNA-080718-DUP-46	81	87								
LCS 320-241832/2-A	Lab Control Sample	104	98								
LCSD 320-241832/3-A	Lab Control Sample Dup	100	97								
LLCS 320-241537/2-A	Lab Control Sample	113	114								
LLCSD 320-241537/3-A	Lab Control Sample Dup	110	109								
MB 320-241537/1-A	Method Blank	104	110								
MB 320-241832/1-A	Method Blank	102	95								

Surrogate Legend

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC Sample Results

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

TestAmerica Job ID: 320-42142-1

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

Lab Sample ID: MB 320-241537/1-A
Matrix: Water
Analysis Batch: 242153

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 241537

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		08/23/18 07:20	08/26/18 23:44	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		08/23/18 07:20	08/26/18 23:44	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		08/23/18 07:20	08/26/18 23:44	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		08/23/18 07:20	08/26/18 23:44	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		08/23/18 07:20	08/26/18 23:44	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		08/23/18 07:20	08/26/18 23:44	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*104*		*70 - 130*	*08/23/18 07:20*	*08/26/18 23:44*	*1*
13C2 PFDA	*110*		*70 - 130*	*08/23/18 07:20*	*08/26/18 23:44*	*1*

Lab Sample ID: LLCS 320-241537/2-A
Matrix: Water
Analysis Batch: 242153

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 241537

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	40.2	43.0		ng/L		107	50 - 150
Perfluorooctanoic acid (PFOA)	20.0	20.4		ng/L		102	50 - 150
Perfluorononanoic acid (PFNA)	20.0	18.9	J	ng/L		94	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	30.3	33.1		ng/L		109	50 - 150
Perfluoroheptanoic acid (PFHpA)	10.0	10.2		ng/L		102	50 - 150
Perfluorobutanesulfonic acid (PFBS)	90.2	105		ng/L		117	50 - 150

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C2 PFHxA	*113*		*70 - 130*
13C2 PFDA	*114*		*70 - 130*

Lab Sample ID: LLCSD 320-241537/3-A
Matrix: Water
Analysis Batch: 242153

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 241537

Analyte	Spike Added	LLCSD Result	LLCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	40.2	45.1		ng/L		112	50 - 150	5	50
Perfluorooctanoic acid (PFOA)	20.0	20.6		ng/L		103	50 - 150	1	50
Perfluorononanoic acid (PFNA)	20.0	19.4	J	ng/L		97	50 - 150	3	50
Perfluorohexanesulfonic acid (PFHxS)	30.3	34.9		ng/L		115	50 - 150	5	50
Perfluoroheptanoic acid (PFHpA)	10.0	11.3		ng/L		113	50 - 150	10	50
Perfluorobutanesulfonic acid (PFBS)	90.2	115		ng/L		127	50 - 150	8	50

Surrogate	*LLCSD %Recovery*	*LLCSD Qualifier*	*Limits*
13C2 PFHxA	*110*		*70 - 130*
13C2 PFDA	*109*		*70 - 130*

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

Lab Sample ID: MB 320-241832/1-A
Matrix: Water
Analysis Batch: 242160

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 241832

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		08/24/18 09:17	08/27/18 01:59	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		08/24/18 09:17	08/27/18 01:59	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		08/24/18 09:17	08/27/18 01:59	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		08/24/18 09:17	08/27/18 01:59	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		08/24/18 09:17	08/27/18 01:59	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		08/24/18 09:17	08/27/18 01:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*102*		*70 - 130*	*08/24/18 09:17*	*08/27/18 01:59*	*1*
13C2 PFDA	*95*		*70 - 130*	*08/24/18 09:17*	*08/27/18 01:59*	*1*

Lab Sample ID: LCS 320-241832/2-A
Matrix: Water
Analysis Batch: 242160

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 241832

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	132	142		ng/L		108	70 - 130
Perfluorooctanoic acid (PFOA)	66.0	68.9		ng/L		104	70 - 130
Perfluorononanoic acid (PFNA)	66.0	67.3		ng/L		102	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	100	115		ng/L		115	70 - 130
Perfluoroheptanoic acid (PFHpA)	32.0	34.1		ng/L		107	70 - 130
Perfluorobutanesulfonic acid (PFBS)	300	351		ng/L		117	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*104*		*70 - 130*
13C2 PFDA	*98*		*70 - 130*

Lab Sample ID: LCSD 320-241832/3-A
Matrix: Water
Analysis Batch: 242160

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 241832

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	132	135		ng/L		103	70 - 130	5	30
Perfluorooctanoic acid (PFOA)	66.0	70.6		ng/L		107	70 - 130	2	30
Perfluorononanoic acid (PFNA)	66.0	65.9		ng/L		100	70 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)	100	111		ng/L		111	70 - 130	3	30
Perfluoroheptanoic acid (PFHpA)	32.0	33.8		ng/L		106	70 - 130	1	30
Perfluorobutanesulfonic acid (PFBS)	300	341		ng/L		114	70 - 130	3	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*100*		*70 - 130*
13C2 PFDA	*97*		*70 - 130*

QC Association Summary

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

TestAmerica Job ID: 320-42142-1

LCMS

Prep Batch: 241537

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-42142-1	NAWC-081418-RW-256	Total/NA	Water	537	
320-42142-2	NAWC-081418-FRB-256	Total/NA	Water	537	
320-42142-3	NAWC-081418-RW-270	Total/NA	Water	537	
320-42142-4	NAWC-081418-FRB-270	Total/NA	Water	537	
MB 320-241537/1-A	Method Blank	Total/NA	Water	537	
LLCS 320-241537/2-A	Lab Control Sample	Total/NA	Water	537	
LLCSD 320-241537/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Prep Batch: 241832

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-42142-5	NAWC-081418-RW-271	Total/NA	Water	537	
320-42142-6	NAWC-081418-FRB-271	Total/NA	Water	537	
320-42142-7	NAWC-081418-RW-311	Total/NA	Water	537	
320-42142-8	NAWC-081418-FRB-311	Total/NA	Water	537	
320-42142-9	NAWC-081418-RW-038	Total/NA	Water	537	
320-42142-10	NAWC-081418-FRB-038	Total/NA	Water	537	
320-42142-11	NAWC-081418-RW-039	Total/NA	Water	537	
320-42142-12	NAWC-081418-FRB-039	Total/NA	Water	537	
320-42142-13	NAWC-081418-RW-187	Total/NA	Water	537	
320-42142-14	NAWC-081418-FRB-187	Total/NA	Water	537	
320-42142-15	NAWC-081418-RW-292	Total/NA	Water	537	
320-42142-16	NAWC-081418-FRB-292	Total/NA	Water	537	
320-42142-17	NAWC-081418-RW-229	Total/NA	Water	537	
320-42142-18	NAWC-081418-FRB-229	Total/NA	Water	537	
320-42142-19	NAWC-081418-RW-126	Total/NA	Water	537	
320-42142-20	NAWC-081418-FRB-126	Total/NA	Water	537	
320-42142-21	NAWC-081418-RW-172	Total/NA	Water	537	
320-42142-22	NAWC-081418-FRB-172	Total/NA	Water	537	
320-42142-23	WGNA-080718-DUP-45	Total/NA	Water	537	
320-42142-24	WGNA-080718-DUP-46	Total/NA	Water	537	
MB 320-241832/1-A	Method Blank	Total/NA	Water	537	
LCS 320-241832/2-A	Lab Control Sample	Total/NA	Water	537	
LCSD 320-241832/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 242153

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-241537/1-A	Method Blank	Total/NA	Water	537	241537
LLCS 320-241537/2-A	Lab Control Sample	Total/NA	Water	537	241537
LLCSD 320-241537/3-A	Lab Control Sample Dup	Total/NA	Water	537	241537

Analysis Batch: 242156

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-42142-1	NAWC-081418-RW-256	Total/NA	Water	537	241537

Analysis Batch: 242157

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-42142-2	NAWC-081418-FRB-256	Total/NA	Water	537	241537
320-42142-3	NAWC-081418-RW-270	Total/NA	Water	537	241537
320-42142-4	NAWC-081418-FRB-270	Total/NA	Water	537	241537

LCMS (Continued)

Analysis Batch: 242160

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-42142-6	NAWC-081418-FRB-271	Total/NA	Water	537	241832
320-42142-7	NAWC-081418-RW-311	Total/NA	Water	537	241832
320-42142-8	NAWC-081418-FRB-311	Total/NA	Water	537	241832
320-42142-9	NAWC-081418-RW-038	Total/NA	Water	537	241832
320-42142-10	NAWC-081418-FRB-038	Total/NA	Water	537	241832
320-42142-11	NAWC-081418-RW-039	Total/NA	Water	537	241832
MB 320-241832/1-A	Method Blank	Total/NA	Water	537	241832
LCS 320-241832/2-A	Lab Control Sample	Total/NA	Water	537	241832
LCSD 320-241832/3-A	Lab Control Sample Dup	Total/NA	Water	537	241832

Analysis Batch: 242161

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-42142-12	NAWC-081418-FRB-039	Total/NA	Water	537	241832
320-42142-13	NAWC-081418-RW-187	Total/NA	Water	537	241832
320-42142-16	NAWC-081418-FRB-292	Total/NA	Water	537	241832
320-42142-17	NAWC-081418-RW-229	Total/NA	Water	537	241832
320-42142-18	NAWC-081418-FRB-229	Total/NA	Water	537	241832
320-42142-20	NAWC-081418-FRB-126	Total/NA	Water	537	241832
320-42142-21	NAWC-081418-RW-172	Total/NA	Water	537	241832

Analysis Batch: 242687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-42142-5	NAWC-081418-RW-271	Total/NA	Water	537	241832
320-42142-14	NAWC-081418-FRB-187	Total/NA	Water	537	241832
320-42142-15	NAWC-081418-RW-292	Total/NA	Water	537	241832
320-42142-19	NAWC-081418-RW-126	Total/NA	Water	537	241832
320-42142-22	NAWC-081418-FRB-172	Total/NA	Water	537	241832
320-42142-23	WGNA-080718-DUP-45	Total/NA	Water	537	241832
320-42142-24	WGNA-080718-DUP-46	Total/NA	Water	537	241832

Lab Chronicle

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

TestAmerica Job ID: 320-42142-1

Client Sample ID: NAWC-081418-RW-256 — Lab Sample ID: 320-42142-1

Date Collected: 08/14/18 08:40 — **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242156	08/27/18 01:22	JRB	TAL SAC

Client Sample ID: NAWC-081418-FRB-256 — Lab Sample ID: 320-42142-2

Date Collected: 08/14/18 08:35 — **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242157	08/27/18 01:36	JRB	TAL SAC

Client Sample ID: NAWC-081418-RW-270 — Lab Sample ID: 320-42142-3

Date Collected: 08/14/18 09:40 — **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242157	08/27/18 01:41	JRB	TAL SAC

Client Sample ID: NAWC-081418-FRB-270 — Lab Sample ID: 320-42142-4

Date Collected: 08/14/18 09:35 — **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241537	08/23/18 07:20	HJA	TAL SAC
Total/NA	Analysis	537		1	242157	08/27/18 01:45	JRB	TAL SAC

Client Sample ID: NAWC-081418-RW-271 — Lab Sample ID: 320-42142-5

Date Collected: 08/14/18 10:10 — **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242687	08/29/18 00:04	JRB	TAL SAC

Client Sample ID: NAWC-081418-FRB-271 — Lab Sample ID: 320-42142-6

Date Collected: 08/14/18 10:05 — **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242160	08/27/18 02:18	JRB	TAL SAC

Client Sample ID: NAWC-081418-RW-311 — Lab Sample ID: 320-42142-7

Date Collected: 08/14/18 11:10 — **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242160	08/27/18 02:23	JRB	TAL SAC

Client Sample ID: NAWC-081418-FRB-311 — Lab Sample ID: 320-42142-8

Date Collected: 08/14/18 11:05 — **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242160	08/27/18 02:27	JRB	TAL SAC

Client Sample ID: NAWC-081418-RW-038 — Lab Sample ID: 320-42142-9

Date Collected: 08/14/18 12:10 — **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242160	08/27/18 02:32	JRB	TAL SAC

Client Sample ID: NAWC-081418-FRB-038 — Lab Sample ID: 320-42142-10

Date Collected: 08/14/18 12:05 — **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242160	08/27/18 02:37	JRB	TAL SAC

Client Sample ID: NAWC-081418-RW-039 — Lab Sample ID: 320-42142-11

Date Collected: 08/14/18 12:40 — **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242160	08/27/18 02:41	JRB	TAL SAC

Client Sample ID: NAWC-081418-FRB-039 — Lab Sample ID: 320-42142-12

Date Collected: 08/14/18 12:35 — **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242161	08/27/18 02:55	JRB	TAL SAC

Client Sample ID: NAWC-081418-RW-187 Lab Sample ID: 320-42142-13

Date Collected: 08/14/18 13:10 **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242161	08/27/18 03:00	JRB	TAL SAC

Client Sample ID: NAWC-081418-FRB-187 Lab Sample ID: 320-42142-14

Date Collected: 08/14/18 13:05 **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242687	08/29/18 00:09	JRB	TAL SAC

Client Sample ID: NAWC-081418-RW-292 Lab Sample ID: 320-42142-15

Date Collected: 08/14/18 13:40 **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242687	08/29/18 00:13	JRB	TAL SAC

Client Sample ID: NAWC-081418-FRB-292 Lab Sample ID: 320-42142-16

Date Collected: 08/14/18 13:35 **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242161	08/27/18 03:14	JRB	TAL SAC

Client Sample ID: NAWC-081418-RW-229 Lab Sample ID: 320-42142-17

Date Collected: 08/14/18 16:10 **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242161	08/27/18 03:19	JRB	TAL SAC

Client Sample ID: NAWC-081418-FRB-229 Lab Sample ID: 320-42142-18

Date Collected: 08/14/18 16:05 **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242161	08/27/18 03:24	JRB	TAL SAC

Client Sample ID: NAWC-081418-RW-126 Lab Sample ID: 320-42142-19

Date Collected: 08/14/18 16:40 **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242687	08/29/18 00:18	JRB	TAL SAC

Client Sample ID: NAWC-081418-FRB-126 Lab Sample ID: 320-42142-20

Date Collected: 08/14/18 16:35 **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242161	08/27/18 03:33	JRB	TAL SAC

Client Sample ID: NAWC-081418-RW-172 Lab Sample ID: 320-42142-21

Date Collected: 08/14/18 17:10 **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242161	08/27/18 03:38	JRB	TAL SAC

Client Sample ID: NAWC-081418-FRB-172 Lab Sample ID: 320-42142-22

Date Collected: 08/14/18 17:05 **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242687	08/29/18 00:23	JRB	TAL SAC

Client Sample ID: WGNA-080718-DUP-45 Lab Sample ID: 320-42142-23

Date Collected: 08/14/18 07:00 **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242687	08/29/18 00:27	JRB	TAL SAC

Client Sample ID: WGNA-080718-DUP-46 Lab Sample ID: 320-42142-24

Date Collected: 08/14/18 12:00 **Matrix: Water**
Date Received: 08/15/18 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			241832	08/24/18 09:17	TWL	TAL SAC
Total/NA	Analysis	537		1	242687	08/29/18 00:32	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: 320-42142-1
Project/Site: Warminster: PFAS, NAS JRB Willow Grove

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
ANAB	DoD ELAP		L2468	01-20-21
Arizona	State Program	9	AZ0708	08-11-19
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-19
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-19
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-19
Kansas	NELAP	7	E-10375	10-31-18
Louisiana	NELAP	6	30612	06-30-19
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-19
New Hampshire	NELAP	1	2997	04-18-19
New Jersey	NELAP	2	CA005	06-30-19
New York	NELAP	2	11666	03-31-19
Oregon	NELAP	10	4040	01-29-19
Pennsylvania	NELAP	3	68-01272	03-31-19
Texas	NELAP	6	T104704399	05-31-19
US Fish & Wildlife	Federal		LE148388-0	07-31-19
USDA	Federal		P330-18-00239	01-17-21
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-19
Vermont	State Program	1	VT-4040	04-30-19
Virginia	NELAP	3	460278	03-14-19
Washington	State Program	10	C581	05-05-19
West Virginia (DW)	State Program	3	9930C	12-31-18
Wyoming	State Program	8	8TMS-L	01-28-19

Method Summary

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

TestAmerica Job ID: 320-42142-1

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

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

TestAmerica Job ID: 320-42142-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-42142-1	NAWC-081418-RW-256	Water	08/14/18 08:40	08/15/18 09:35
320-42142-2	NAWC-081418-FRB-256	Water	08/14/18 08:35	08/15/18 09:35
320-42142-3	NAWC-081418-RW-270	Water	08/14/18 09:40	08/15/18 09:35
320-42142-4	NAWC-081418-FRB-270	Water	08/14/18 09:35	08/15/18 09:35
320-42142-5	NAWC-081418-RW-271	Water	08/14/18 10:10	08/15/18 09:35
320-42142-6	NAWC-081418-FRB-271	Water	08/14/18 10:05	08/15/18 09:35
320-42142-7	NAWC-081418-RW-311	Water	08/14/18 11:10	08/15/18 09:35
320-42142-8	NAWC-081418-FRB-311	Water	08/14/18 11:05	08/15/18 09:35
320-42142-9	NAWC-081418-RW-038	Water	08/14/18 12:10	08/15/18 09:35
320-42142-10	NAWC-081418-FRB-038	Water	08/14/18 12:05	08/15/18 09:35
320-42142-11	NAWC-081418-RW-039	Water	08/14/18 12:40	08/15/18 09:35
320-42142-12	NAWC-081418-FRB-039	Water	08/14/18 12:35	08/15/18 09:35
320-42142-13	NAWC-081418-RW-187	Water	08/14/18 13:10	08/15/18 09:35
320-42142-14	NAWC-081418-FRB-187	Water	08/14/18 13:05	08/15/18 09:35
320-42142-15	NAWC-081418-RW-292	Water	08/14/18 13:40	08/15/18 09:35
320-42142-16	NAWC-081418-FRB-292	Water	08/14/18 13:35	08/15/18 09:35
320-42142-17	NAWC-081418-RW-229	Water	08/14/18 16:10	08/15/18 09:35
320-42142-18	NAWC-081418-FRB-229	Water	08/14/18 16:05	08/15/18 09:35
320-42142-19	NAWC-081418-RW-126	Water	08/14/18 16:40	08/15/18 09:35
320-42142-20	NAWC-081418-FRB-126	Water	08/14/18 16:35	08/15/18 09:35
320-42142-21	NAWC-081418-RW-172	Water	08/14/18 17:10	08/15/18 09:35
320-42142-22	NAWC-081418-FRB-172	Water	08/14/18 17:05	08/15/18 09:35
320-42142-23	WGNA-080718-DUP-45	Water	08/14/18 07:00	08/15/18 09:35
320-42142-24	WGNA-080718-DUP-46	Water	08/14/18 12:00	08/15/18 09:35

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 240166

Lab Sample ID: IC 320-240166/2 Client Sample ID:

Date Analyzed: 08/15/18 18:21 Lab File ID: 2018.08.15_537CURVE_003.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.65	Baseline	roycea	08/15/18 18:53

Lab Sample ID: CCVL 320-240166/9 Client Sample ID:

Date Analyzed: 08/15/18 18:53 Lab File ID: 2018.08.15_537CURVE_010.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.65	Baseline	roycea	08/15/18 19:08

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 242160

Lab Sample ID: 320-42142-11 Client Sample ID: NAWC-081418-RW-039

Date Analyzed: 08/27/18 02:41 Lab File ID: 2018.08.26_537C_045.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.36	Peak assignment corrected	barnettj	08/27/18 15:22
Perfluoroheptanoic acid (PFHpA)	1.62	Missed Peak	barnettj	08/27/18 15:22
Perfluorohexanesulfonic acid (PFHxS)	1.62	Missed Peak	barnettj	08/27/18 15:22

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 242161

Lab Sample ID: 320-42142-17 Client Sample ID: NAWC-081418-RW-229

Date Analyzed: 08/27/18 03:19 Lab File ID: 2018.08.26_537C_053.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorononanoic acid (PFNA)	2.08	Split Peak	barnettj	08/27/18 15:25

Lab Sample ID: 320-42142-21 Client Sample ID: NAWC-081418-RW-172

Date Analyzed: 08/27/18 03:38 Lab File ID: 2018.08.26_537C_057.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.63	Missed Peak	barnettj	08/27/18 15:27

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 242687

Lab Sample ID: 320-42142-5 Client Sample ID: NAWC-081418-RW-271

Date Analyzed: 08/29/18 00:04 Lab File ID: 2018.08.28_537A_012.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.63	Missed Peak	barnettj	08/29/18 11:06

537

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-ICV_00032	08/15/18	06/23/18	MeOH/H2O, Lot 197626	10 mL	LC537-IS_00074	1000 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
.LC537-IS_00074	12/16/18	06/16/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00024	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00010	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00024	05/19/22	Wellington Laboratories, Lot MPFOS517			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-ICV_00032	08/15/18	06/23/18	MeOH/H2O, Lot 197626	10 mL	LC537-SU_00072	1000 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
					LC537ICIM2_00001	400 uL	Perfluorobutanesulfonic acid (PFBS)	100.092 ng/mL
							Perfluoroheptanoic acid (PFHpA)	10 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	20.1619 ng/mL
							Perfluorononanoic acid (PFNA)	20.1641 ng/mL
							Perfluorooctanoic acid (PFOA)	20.167 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	20.1702 ng/mL
.LC537-SU_00072	12/16/18	06/16/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LC537ICIM2_00001	08/15/18	02/15/18	Methanol, Lot 090285	10 mL	LC537ICIM_00020	0.5 mL	Perfluorobutanesulfonic acid (PFBS)	2.5023 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.25 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.504047 ug/mL
							Perfluorononanoic acid (PFNA)	0.504103 ug/mL
							Perfluorooctanoic acid (PFOA)	0.504176 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.504255 ug/mL
..LC537ICIM_00020	08/15/18	02/15/18	Methanol, Lot 090285	25 mL	LC537-PFBS2_00009	0.625 mL	Perfluorobutanesulfonic acid (PFBS)	50.0459 ug/mL
					LC537-PFHpA2_00012	0.0625 mL	Perfluoroheptanoic acid (PFHpA)	5 ug/mL
					LC537-PFHxS2_00009	0.126 mL	Perfluorohexanesulfonic acid (PFHxS)	10.0809 ug/mL
					LC537-PFNA2_00010	0.126 mL	Perfluorononanoic acid (PFNA)	10.0821 ug/mL
					LC537-PFOA2_00011	0.126 mL	Perfluorooctanoic acid (PFOA)	10.0835 ug/mL
					LC537-PFOS2_00011	0.126 mL	Perfluorooctanesulfonic acid (PFOS)	10.0851 ug/mL
...LC537-PFBS2_00009	08/15/18	02/15/18	Methanol, Lot 090285	17.1 mL	LC537_PFBS2_00002	0.0343 g	Perfluorobutanesulfonic acid (PFBS)	2001.84 ug/mL
....LC537_PFBS2_00002	09/08/22	Santa Cruz Biotechnology, Lot F0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	0.998 g/g

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC537-PFHpA2_00012	08/15/18	02/15/18	Methanol, Lot 09092	23.95 mL	LC537_PFHpA2_00002	0.0479 g	Perfluoroheptanoic acid (PFHpA)	2000 ug/mL
....LC537_PFHpA2_00002	06/13/22		Afla Aesar, Lot 10200390		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	1 g/g
...LC537-PFHxS2_00009	08/15/18	02/15/18	Methanol, Lot 090285	25.87 mL	LC537_PFHxS2_00002	0.0569 g	Perfluorohexanesulfonic acid (PFHxS)	2000.19 ug/mL
....LC537_PFHxS2_00002	06/08/22		Santa Cruz Biotechnology, Lot G2516		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA2_00010	08/15/18	02/15/18	Methanol, Lot 090285	16.58 mL	LC537_PFNA2_00002	0.0333 g	Perfluorononanoic acid (PFNA)	2000.41 ug/mL
....LC537_PFNA2_00002	06/14/22		Aldrich, Lot MKCC0699		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.996 g/g
...LC537-PFOA2_00011	08/15/18	02/15/18	Methanol, Lot 090285	22.96 mL	LC537_PFOA2_00002	0.0464 g	Perfluorooctanoic acid (PFOA)	2000.7 ug/mL
....LC537_PFOA2_00002	06/09/22		Afla Aesar, Lot 10199078		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.99 g/g
...LC537-PFOS2_00011	08/15/18	02/15/18	Methanol, Lot 090285	14.71 mL	LC537_PFOS2_00002	0.0378 g	Perfluorooctanesulfonic acid (PFOS)	2001.01 ug/mL
....LC537_PFOS2_00002	06/14/22		Sigma, Lot BCBQ0108V		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.7787 g/g
LC537-IS_00080	02/02/19	08/15/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00024	180 uL	13C4 PFOS	0.2868 ug/mL
.LCM2PFOA_00010	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LCMPFOS_00024	05/19/22		Wellington Laboratories, Lot MPFOS517		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-L1_00022	09/30/18	04/02/18	MeOH/H2O, Lot 090285	5 mL	LC537-IS_00065	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-MSP_00033	60 uL	Perfluorobutanesulfonic acid (PFBS)	8.99912 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.96 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	3.003 ng/mL
							Perfluorononanoic acid (PFNA)	1.98 ng/mL
							Perfluorooctanoic acid (PFOA)	1.98 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	3.95328 ng/mL
					LC537-SU_00064	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-IS_00065	10/02/18	04/02/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00024	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00010	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00024	05/19/22		Wellington Laboratories, Lot MPFOS517		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-MSP_00033	09/30/18	03/30/18	Methanol, Lot 104453	30 mL	LCPFBSA_00002	509 uL	Perfluorobutanesulfonic acid (PFBS)	749.927 ng/mL
					LCPFHpA_00009	48 uL	Perfluoroheptanoic acid (PFHpA)	80 ng/mL
					LCPFHxS-br_00005	165 uL	Perfluorohexanesulfonic acid (PFHxS)	250.25 ng/mL
					LCPFNA_00009	99 uL	Perfluorononanoic acid (PFNA)	165 ng/mL
					LCPFOA_00010	99 uL	Perfluorooctanoic acid (PFOA)	165 ng/mL
					LCPFOS-br_00005	213 uL	Perfluorooctanesulfonic acid (PFOS)	329.44 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFBSA_00002	12/02/21	Wellington Laboratories, Lot LPFBS1116			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFHpA_00009	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHxS-br_00005	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00010	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00005	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LC537-SU_00064	10/02/18	04/02/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L2_00022	09/30/18	04/02/18	MeOH/H2O, Lot 090285	20 mL	LC537-HSP_00028	320 uL	Perfluorobutanesulfonic acid (PFBS)	20.0138 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.16 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	6.72187 ng/mL
							Perfluorononanoic acid (PFNA)	4.4 ng/mL
							Perfluorooctanoic acid (PFOA)	4.4 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	8.78507 ng/mL
					LC537-IS_00065	2 mL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00064	2 mL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00028	09/30/18	03/30/18	Methanol, Lot 104453	30 mL	LCPFBSA_00002	849 uL	Perfluorobutanesulfonic acid (PFBS)	1250.86 ng/mL
					LCPFHpA_00009	81 uL	Perfluoroheptanoic acid (PFHpA)	135 ng/mL
					LCPFHxS-br_00005	277 uL	Perfluorohexanesulfonic acid (PFHxS)	420.117 ng/mL
					LCPFNA_00009	165 uL	Perfluorononanoic acid (PFNA)	275 ng/mL
					LCPFOA_00010	165 uL	Perfluorooctanoic acid (PFOA)	275 ng/mL
					LCPFOS-br_00005	355 uL	Perfluorooctanesulfonic acid (PFOS)	549.067 ng/mL
..LCPFBSA_00002	12/02/21	Wellington Laboratories, Lot LPFBS1116			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFHpA_00009	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHxS-br_00005	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00010	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00005	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LC537-IS_00065	10/02/18	04/02/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFOS_00024	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00010	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00024	05/19/22	Wellington Laboratories, Lot MPFOS517			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00064	10/02/18	04/02/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L3_00025	09/30/18	04/02/18	MeOH/H2O, Lot 090285	20 mL	LC537-HSP_00028	720 uL	Perfluorobutanesulfonic acid (PFBS)	45.031 ng/mL
							Perfluoroheptanoic acid (PFHpA)	4.86 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	15.1242 ng/mL
							Perfluorononanoic acid (PFNA)	9.9 ng/mL
							Perfluorooctanoic acid (PFOA)	9.9 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	19.7664 ng/mL
					LC537-IS_00065	2 mL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00064	2 mL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00028	09/30/18	03/30/18	Methanol, Lot 104453	30 mL	LCPFBSA_00002	849 uL	Perfluorobutanesulfonic acid (PFBS)	1250.86 ng/mL
					LCPFHpA_00009	81 uL	Perfluoroheptanoic acid (PFHpA)	135 ng/mL
					LCPFHxS-br_00005	277 uL	Perfluorohexanesulfonic acid (PFHxS)	420.117 ng/mL
					LCPFNA_00009	165 uL	Perfluorononanoic acid (PFNA)	275 ng/mL
					LCPFOA_00010	165 uL	Perfluorooctanoic acid (PFOA)	275 ng/mL
					LCPFOS-br_00005	355 uL	Perfluorooctanesulfonic acid (PFOS)	549.067 ng/mL
..LCPFBSA_00002	12/02/21	Wellington Laboratories, Lot LPFBS1116			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFHpA_00009	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHxS-br_00005	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00010	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00005	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LC537-IS_00065	10/02/18	04/02/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00024	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00010	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00024	05/19/22	Wellington Laboratories, Lot MPFOS517			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00064	10/02/18	04/02/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-L4_00022	09/30/18	04/02/18	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00028	360 uL	Perfluorobutanesulfonic acid (PFBS)	90.0619 ng/mL
							Perfluoroheptanoic acid (PFHpA)	9.72 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	30.2484 ng/mL
							Perfluorononanoic acid (PFNA)	19.8 ng/mL
							Perfluorooctanoic acid (PFOA)	19.8 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	39.5328 ng/mL
					LC537-IS_00065	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00064	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00028	09/30/18	03/30/18	Methanol, Lot 104453	30 mL	LCPFBSA_00002	849 uL	Perfluorobutanesulfonic acid (PFBS)	1250.86 ng/mL
					LCPFHpA_00009	81 uL	Perfluoroheptanoic acid (PFHpA)	135 ng/mL
					LCPFHxS-br_00005	277 uL	Perfluorohexanesulfonic acid (PFHxS)	420.117 ng/mL
					LCPFNA_00009	165 uL	Perfluorononanoic acid (PFNA)	275 ng/mL
					LCPFOA_00010	165 uL	Perfluorooctanoic acid (PFOA)	275 ng/mL
					LCPFOS-br_00005	355 uL	Perfluorooctanesulfonic acid (PFOS)	549.067 ng/mL
..LCPFBSA_00002	12/02/21	Wellington Laboratories, Lot LPFBS1116			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFHpA_00009	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHxS-br_00005	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00010	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00005	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LC537-IS_00065	10/02/18	04/02/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00024	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00010	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00024	05/19/22	Wellington Laboratories, Lot MPFOS517			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00064	10/02/18	04/02/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L5_00026	09/30/18	04/02/18	MeOH/H2O, Lot 090285	20 mL	LC537-HSP_00028	2160 uL	Perfluorobutanesulfonic acid (PFBS)	135.093 ng/mL
							Perfluoroheptanoic acid (PFHpA)	14.58 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.3726 ng/mL
							Perfluorononanoic acid (PFNA)	29.7 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFOS-br_00005	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
LC537-MSP_00033	09/30/18	03/30/18	Methanol, Lot 104453	30 mL	LCPFBSA_00002	509 uL	Perfluorobutanesulfonic acid (PFBS)	749.927 ng/mL
					LCPFHpA_00009	48 uL	Perfluoroheptanoic acid (PFHpA)	80 ng/mL
					LCPFHxS-br_00005	165 uL	Perfluorohexane Sulfonate	250.25 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	250.25 ng/mL
					LCPFNA_00009	99 uL	Perfluorononanoic acid (PFNA)	165 ng/mL
					LCPFOA_00010	99 uL	Perfluorooctanoic acid (PFOA)	165 ng/mL
					LCPFOS-br_00005	213 uL	Perfluorooctanesulfonic acid (PFOS)	329.44 ng/mL
.LCPFBSA_00002	12/02/21	Wellington Laboratories, Lot LPFBS1116			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFHpA_00009	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHxS-br_00005	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
.LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
.LCPFOA_00010	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFOS-br_00005	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
LC537-SU_00077	01/05/19	08/15/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
.LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	50 ug/mL

Reagent

LC537_PFBS2_00002

r: 6.8.17 SKV

CERTIFICATE OF ANALYSIS

The Power to Question

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

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

Santa Cruz Biotechnology, Inc. 800.457.3801 831.457.3800 fax 831.457.3801 Europe +00800 4573 8000 49 62221 4503 0 www.scbt.com

Reagent

LC537_PFHpA2_00002

Alfa Aesar

Certificate of analysis

r: 6.13.17 SW

PFHp A

Product No.: A12092

Product: Perfluoroheptanoic acid, 98+%

Lot No.: 10200390

Appearance: White fused solid

Water Content (Karl-Fischer): 0.30%

Melting Point: 32.0-34.3°C

Assay (Aqueous acid-base titration): 99.7%

Identification (FTIR): Conforms

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ThermoFisher SCIENTIFIC

Reagent

LC537_PFHxS2_00002

n: 6.8.17 SKU

CERTIFICATE OF ANALYSIS

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

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

$PFH_x S\text{-}K$

$C_6F_{13}SO_3K$ 438.201

$C_6F_{13}SO_3H$ 400.111

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

Purity & MW correction = 90.9%

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Reagent

LC537_PFNA2_00002

r: 6.14.17 SKW

SIGMA-ALDRICH®

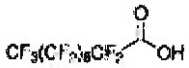
sigma-aldrich.com

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

Certificate of Analysis

Product Name:
Perfluorononanoic acid – 97%

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



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

Michael Grady, Manager
Quality Control
Milwaukee, WI US

PFNA

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

Version Number: 1

Reagent

LC537_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_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

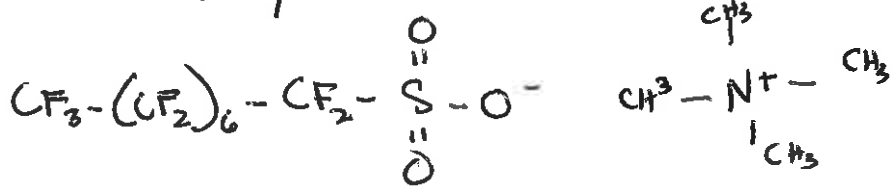
Product Name:	HEPTADECAFLUOROOCTANESULFONIC ACID TETRAETHYLAMMONIUM SALT 98 %
Product Number:	365289
Batch Number:	BCBQ0108V
Brand:	Aldrich
CAS Number:	56773-42-3
Formula:	$CF_3(CF_2)_6CF_2SO_3N(C_2H_5)_4$
Formula Weight:	629.37
Quality Release Date:	11 JUN 2015

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

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

Purity & MW correction = 77.37%



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

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

Reagent

LCM2PFOA_00010

✓ 8/30/14 SKN

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

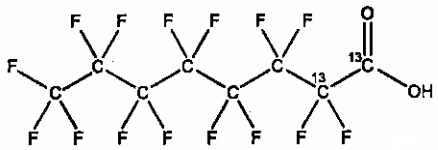
PRODUCT CODE: M2PFOA

LOT NUMBER: M2PFOA0216

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

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_8HF_{15}O_2$

MOLECULAR WEIGHT: 416.05

CONCENTRATION: 50 ± 2.5 µg/ml

SOLVENT(S): Methanol, Water (<1%)

CHEMICAL PURITY: >98%

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

LAST TESTED: (mm/dd/yyyy) 02/12/2016

EXPIRY DATE: (mm/dd/yyyy) 02/12/2021

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

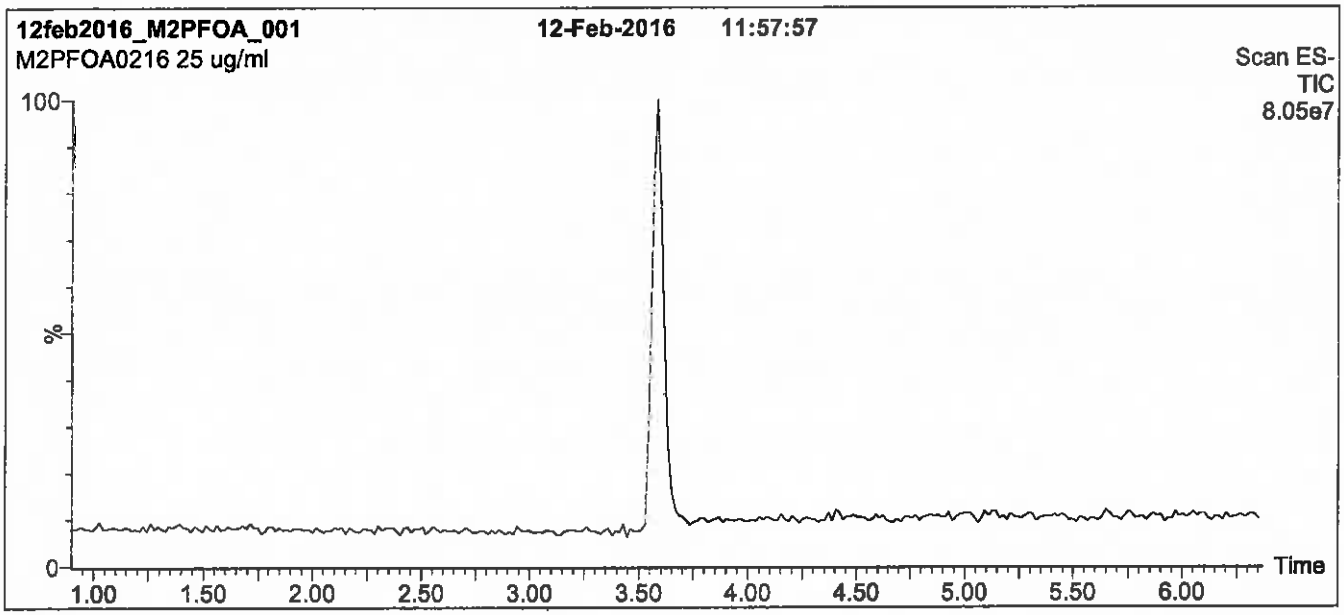
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

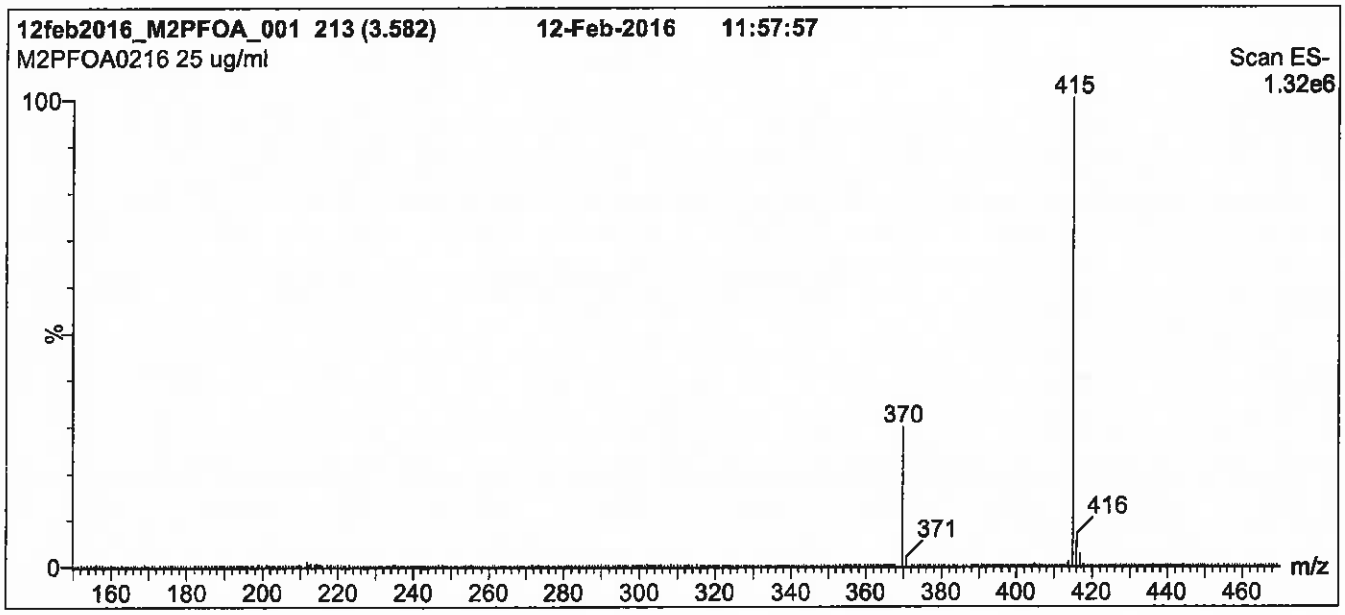
CALA

ANAB ACCREDITED

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

Figure 1: **M2PFOA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

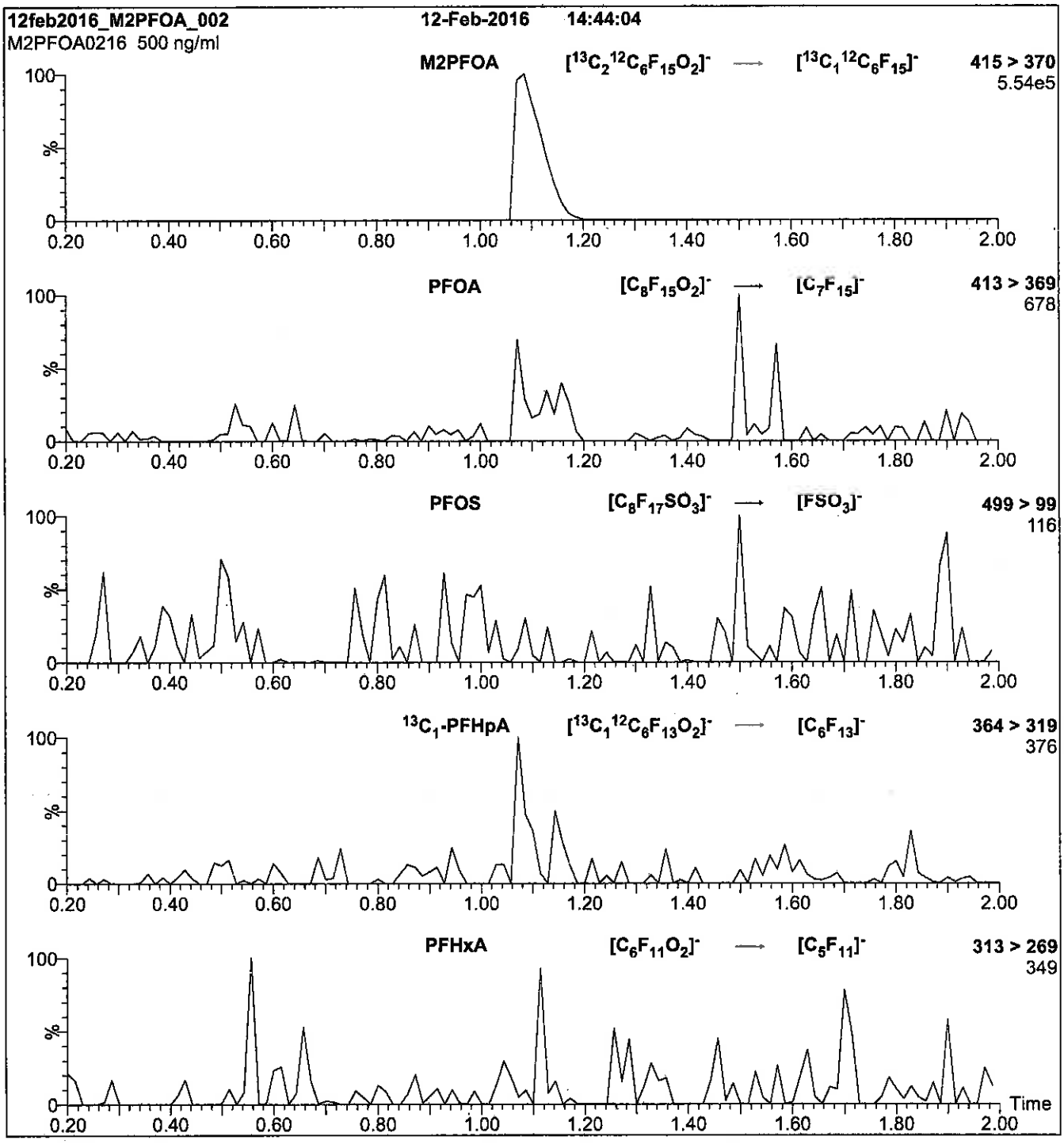
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFDA_00012

R: SBC 12/21/16

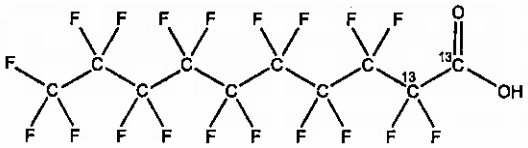
814255
ID: LCMPFDA_00012
Exp: 09/30/21 Prpd: SBC
13C2-Perfluornodecanoic a

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE:
CAS #: Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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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.

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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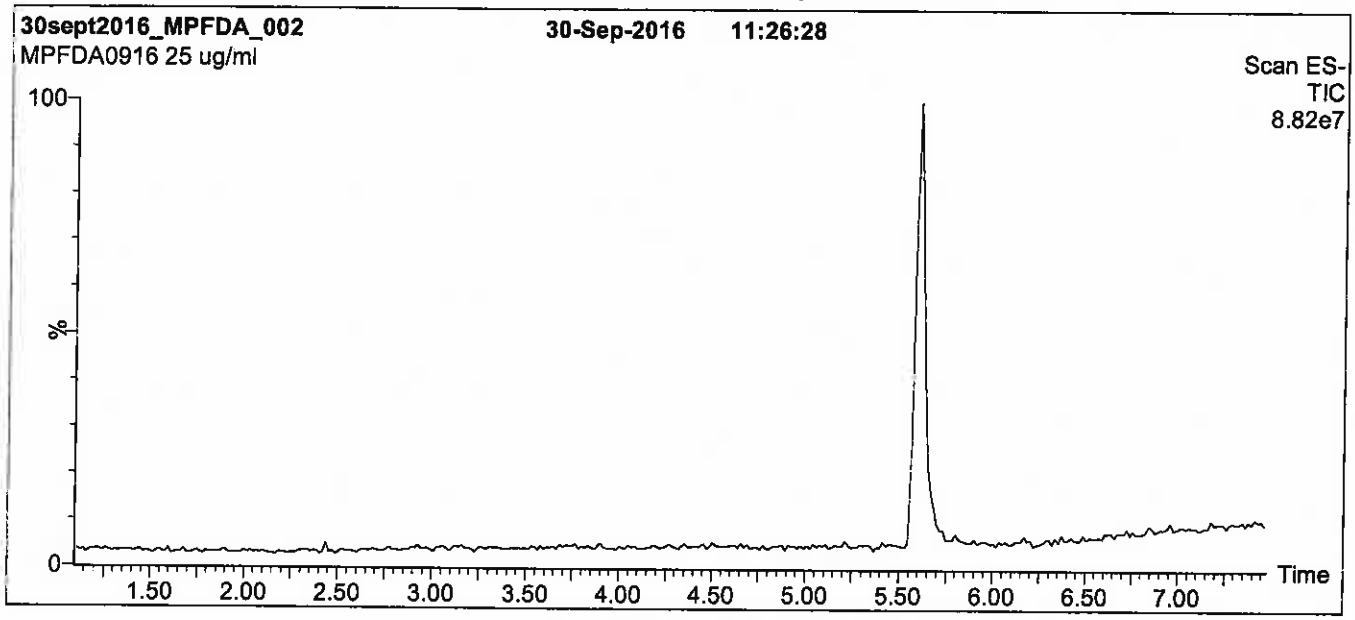
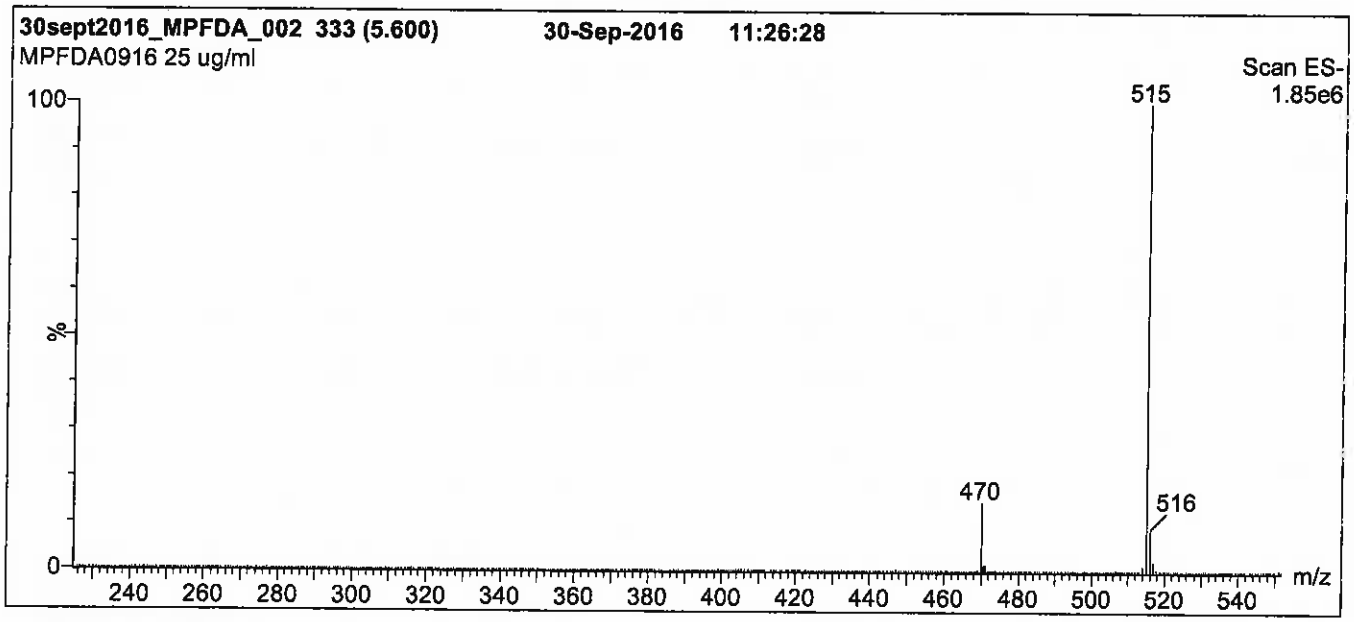
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

Figure 1: **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

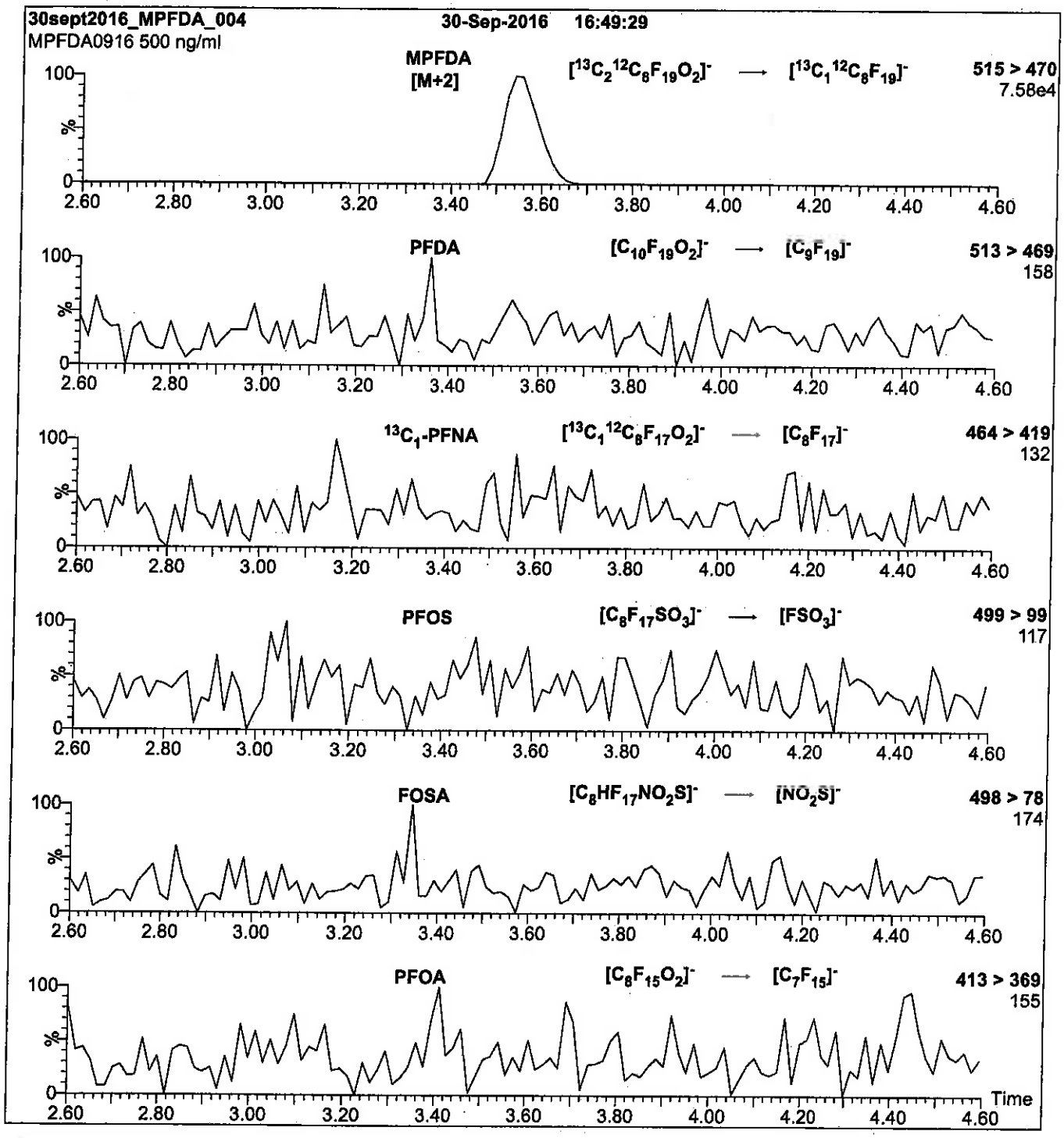
Flow: 300 µl/min

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_00015

r: 5/8/17 SKJ

WELLINGTON LABORATORIES

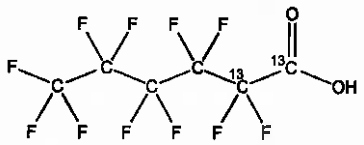
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: MPFHxA1116

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_4HF_{11}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/22/2016
EXPIRY DATE: (mm/dd/yyyy) 11/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 316.04
SOLVENT(S): Methanol
Water (<1%)

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

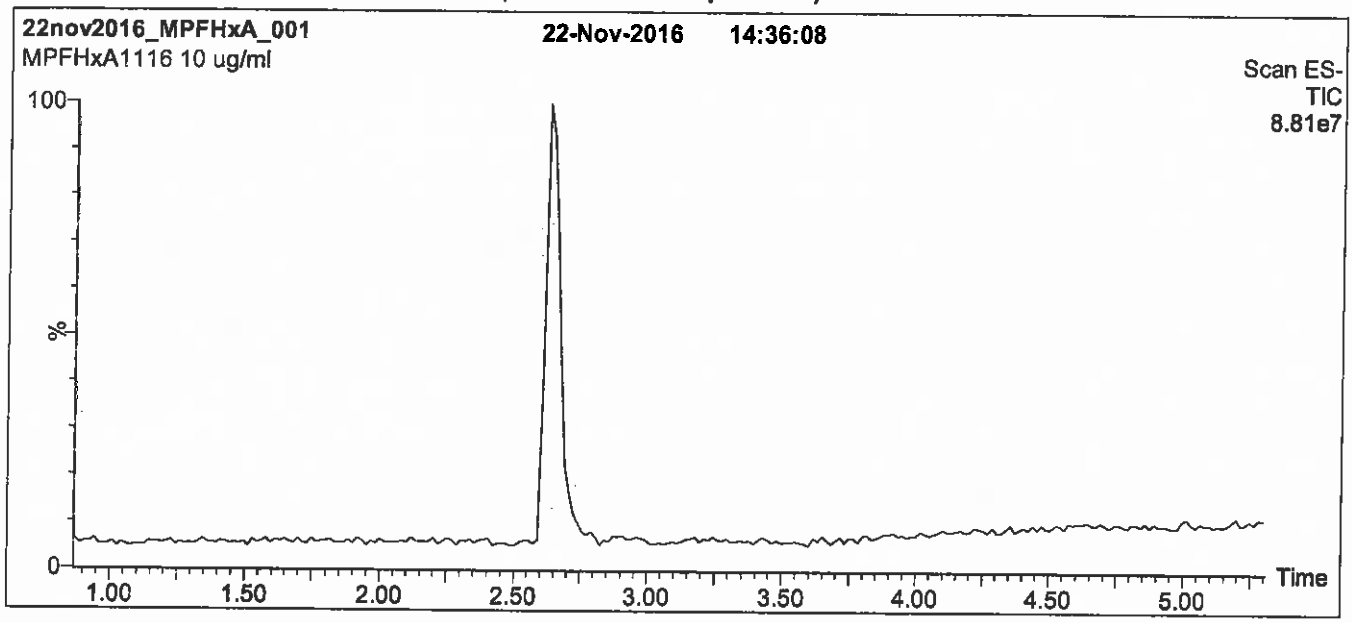
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

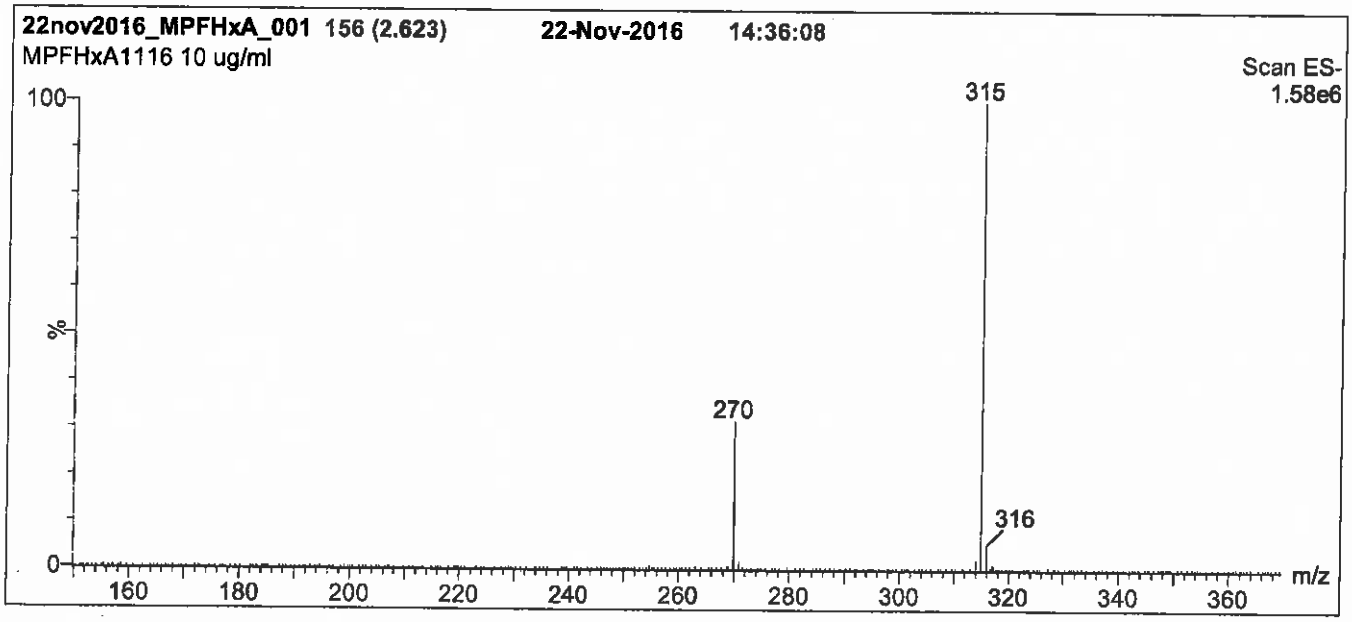
CALA

ANAB ACCREDITED

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions over 0.5 min.
Time: 10 min

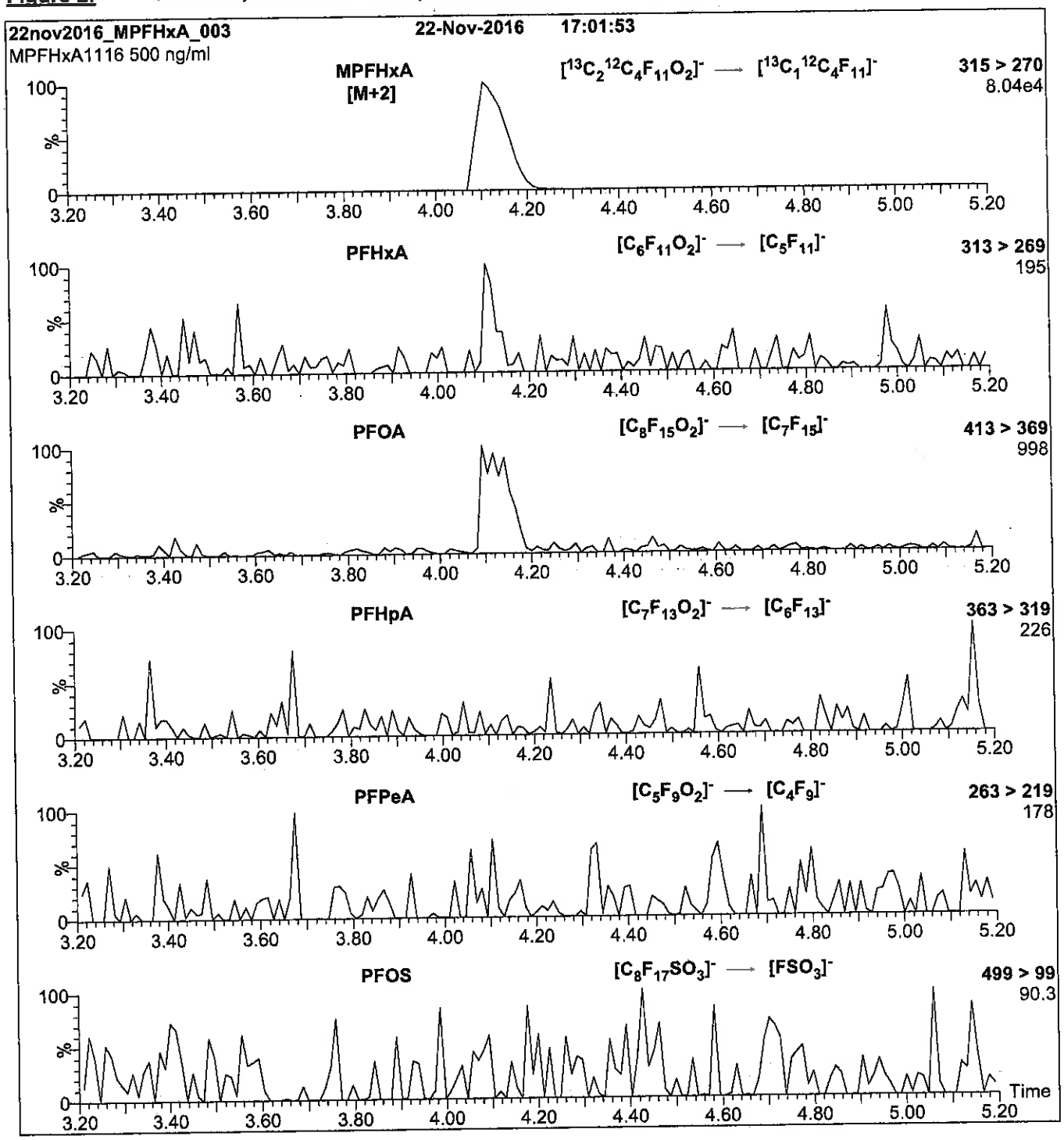
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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) = 10

Reagent

LCMPFOS_00024

r: 8/30/17 SKJ

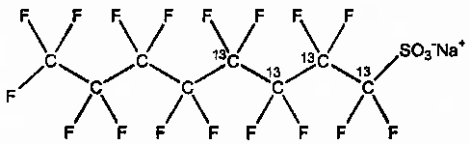
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0517

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-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	05/19/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/19/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/30/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ 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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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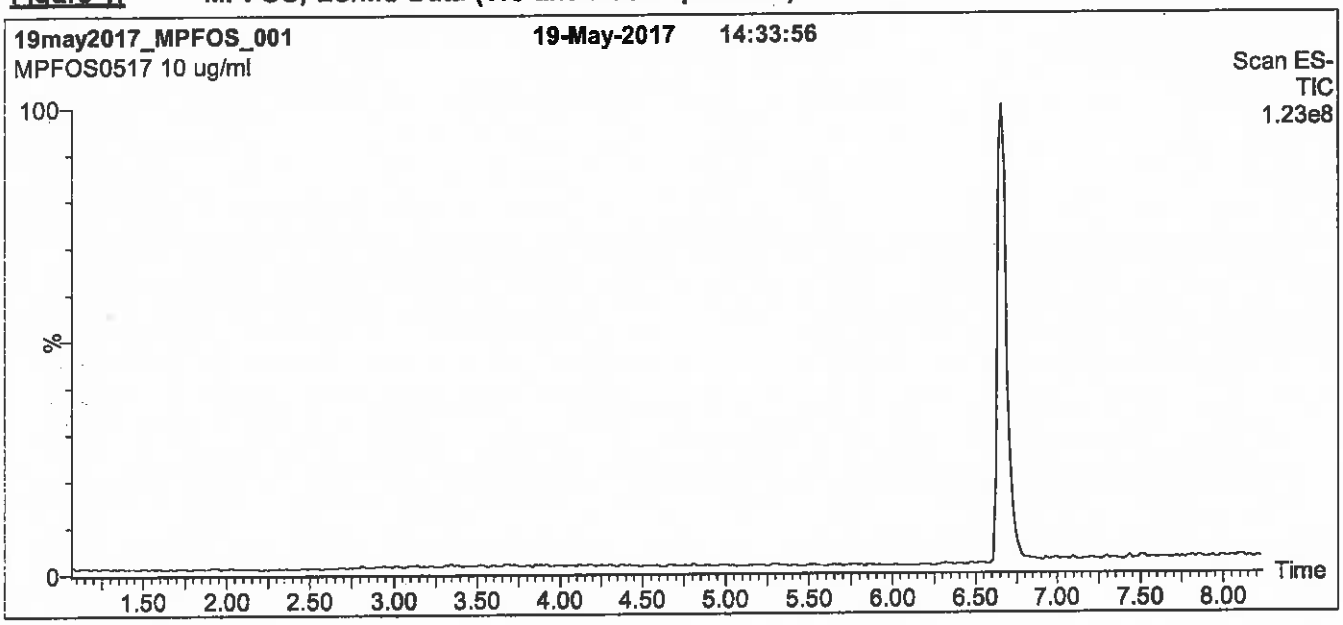
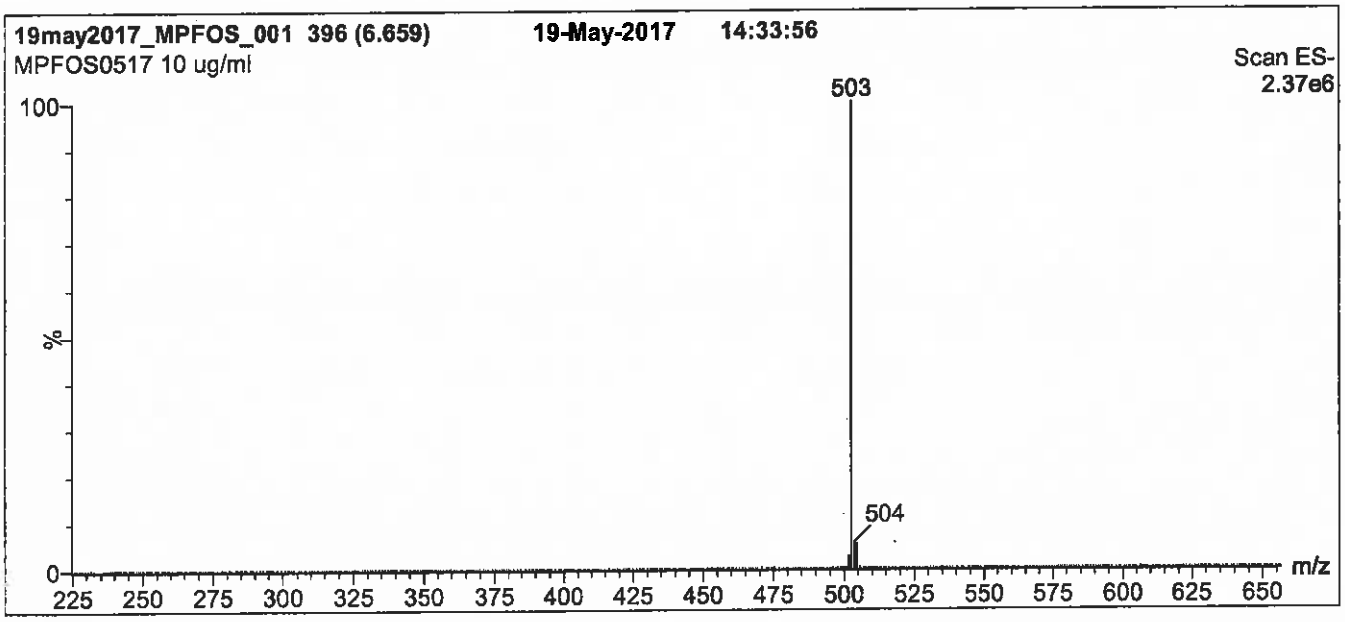
Figure 1: **MPFOS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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 8 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

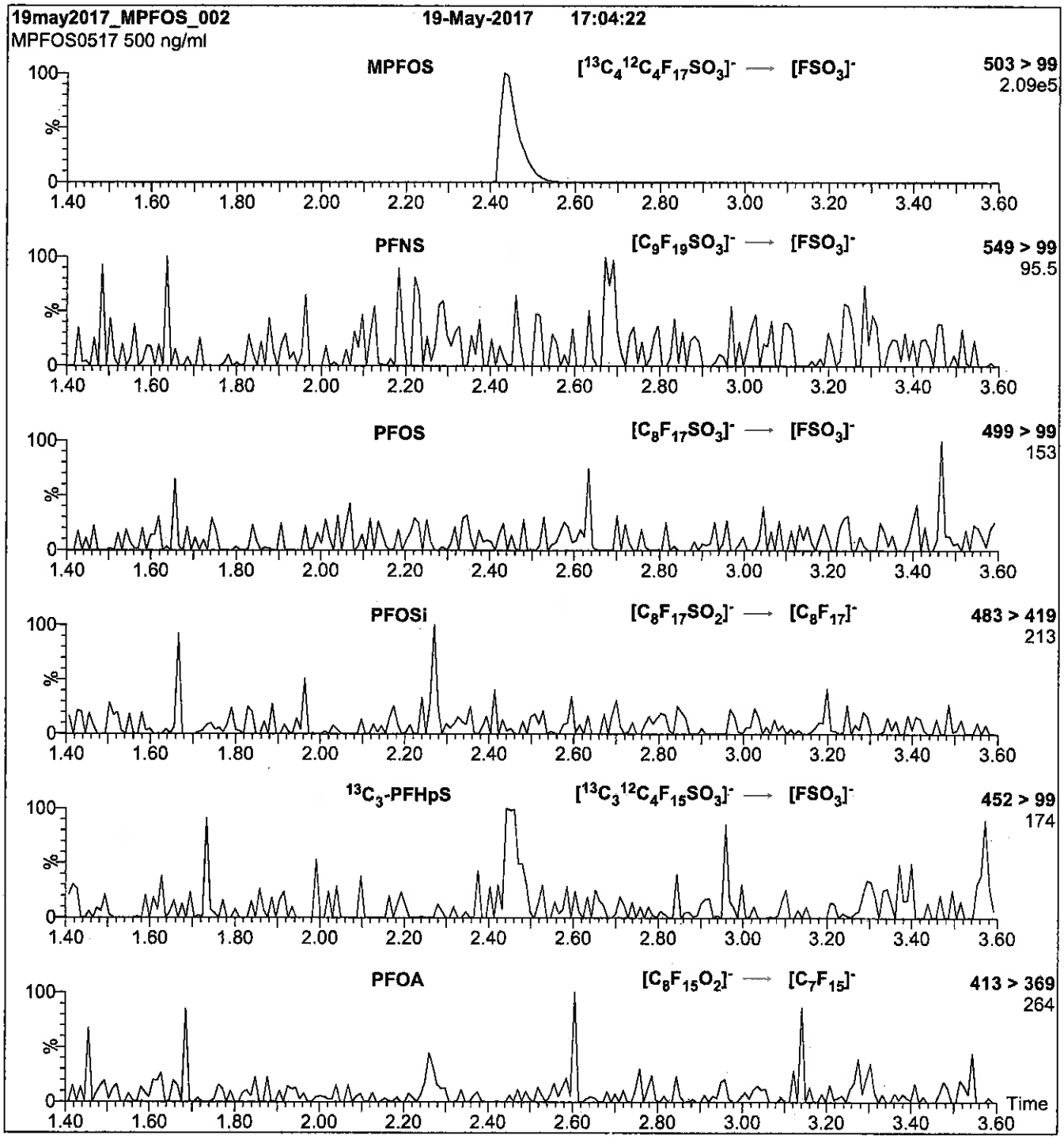
Flow: 300 µl/min

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) = 3.31e-3
Collision Energy (eV) = 40

Reagent

LCPFBSA_00002

P: 9/21/17 SKW

WELLINGTON LABORATORIES

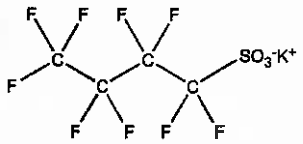
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFBS
COMPOUND: Potassium perfluoro-1-butanesulfonate

LOT NUMBER: LPFBS1116

STRUCTURE:

CAS #: 29420-49-3



MOLECULAR FORMULA: $C_4F_9SO_3K$
MOLECULAR WEIGHT: 338.19
CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt)
44.2 ± 2.2 µg/ml (PFBS anion)
SOLVENT(S): Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/02/2016
EXPIRY DATE: (mm/dd/yyyy) 12/02/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/05/2016 (mm/dd/yyyy)

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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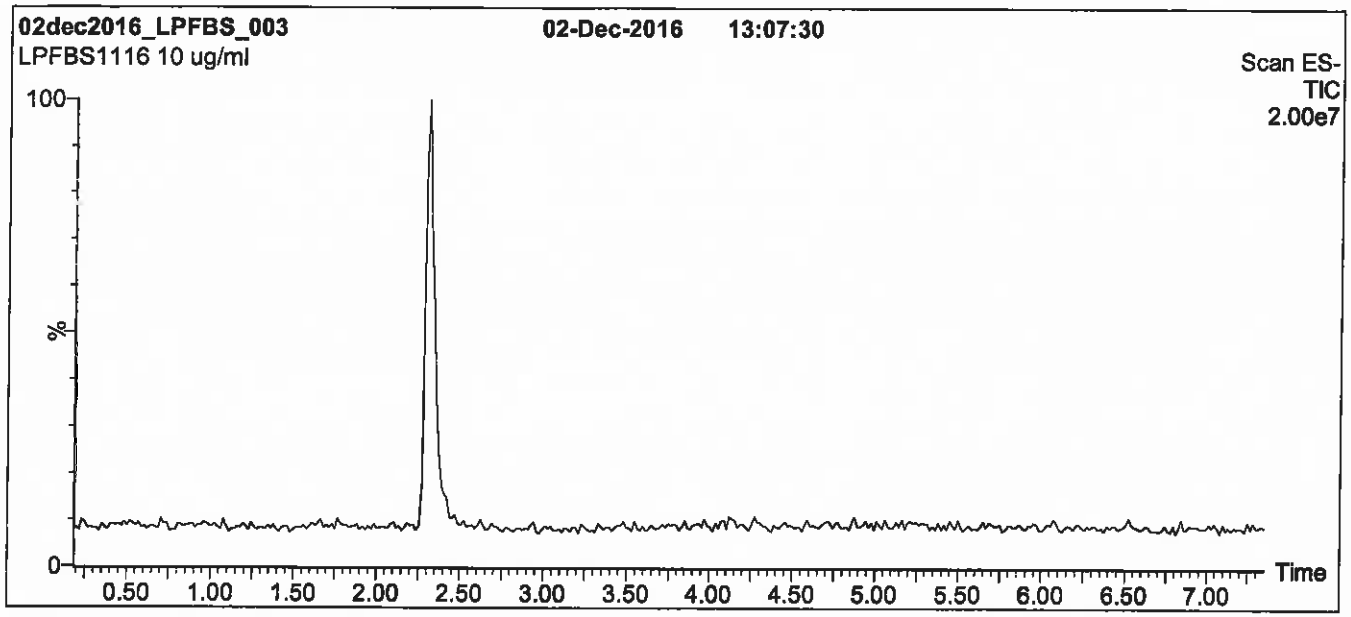
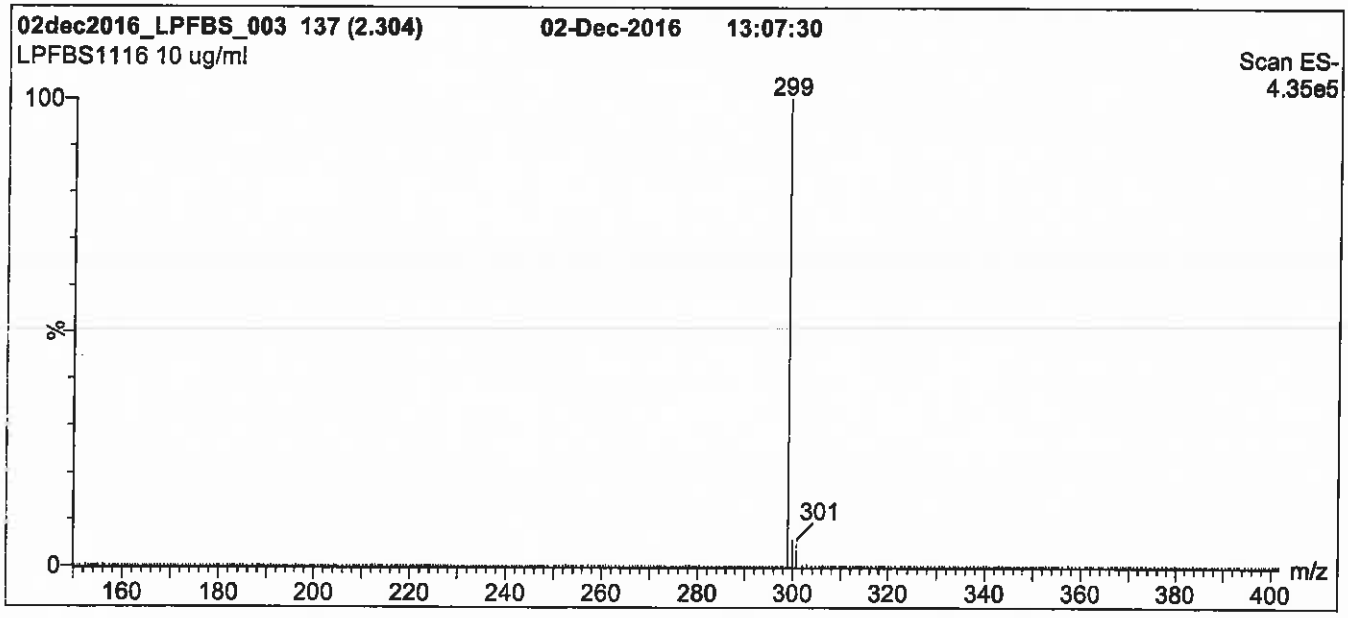
Figure 1: **L-PFBS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

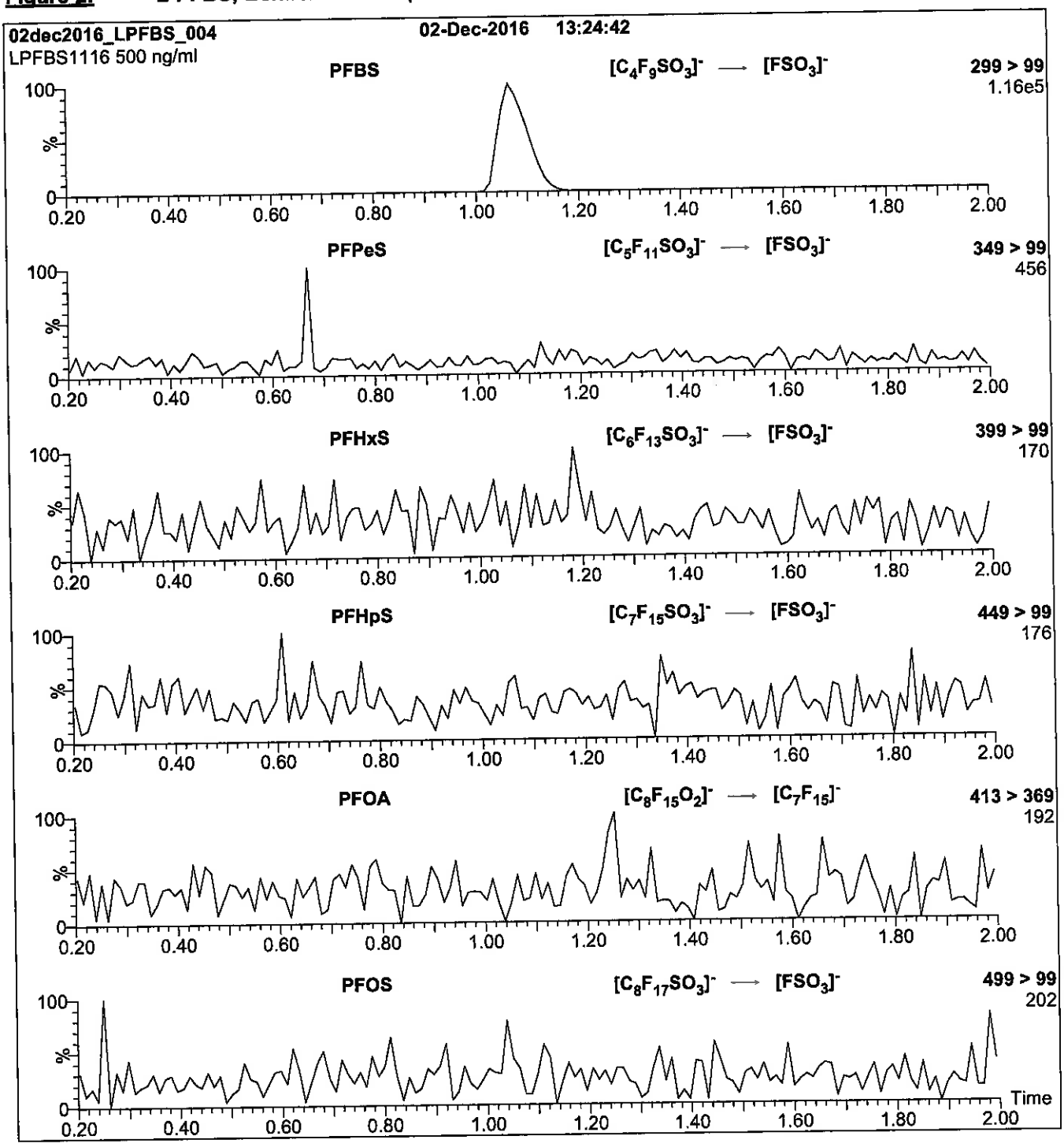
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **L-PFBS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml L-PFBS)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFHpA_00009

P: 9/21/17 SRV

WELLINGTON LABORATORIES

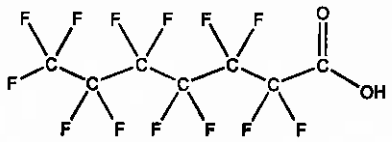
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHpA
COMPOUND: Perfluoro-n-heptanoic acid

LOT NUMBER: PFHpA1216

STRUCTURE:

CAS #: 375-85-9



MOLECULAR FORMULA: $C_7HF_{13}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 364.06
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/02/2016
EXPIRY DATE: (mm/dd/yyyy) 12/02/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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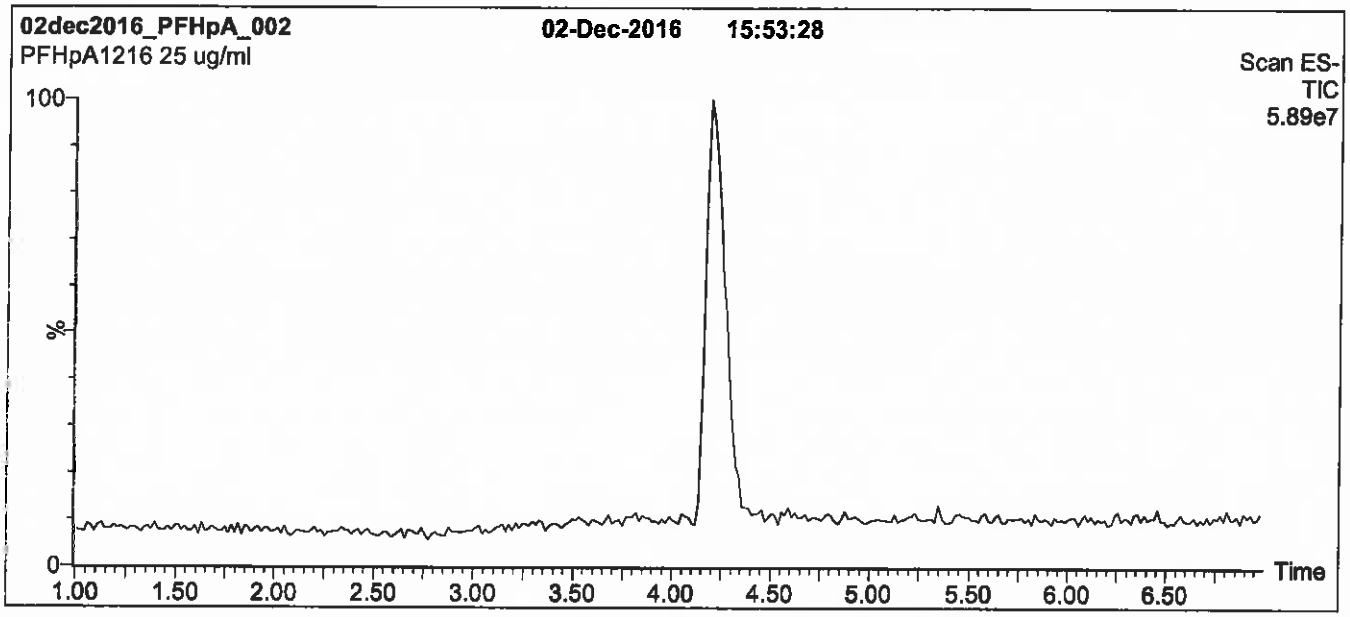
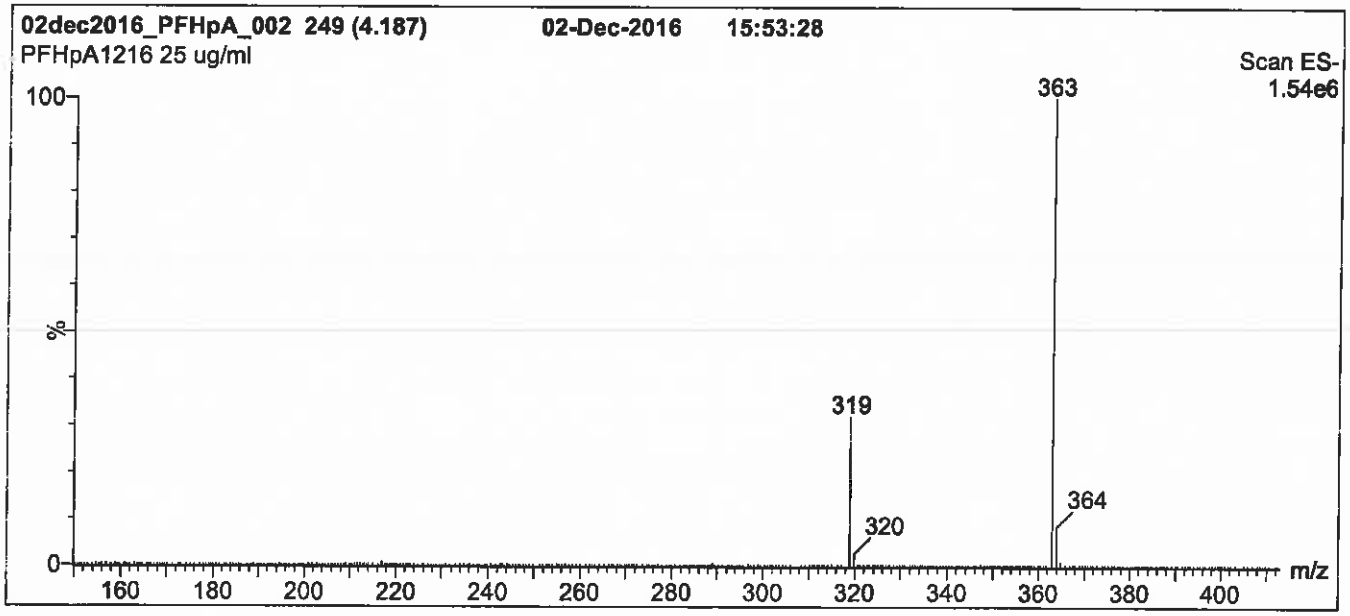
Figure 1: **PFHpA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

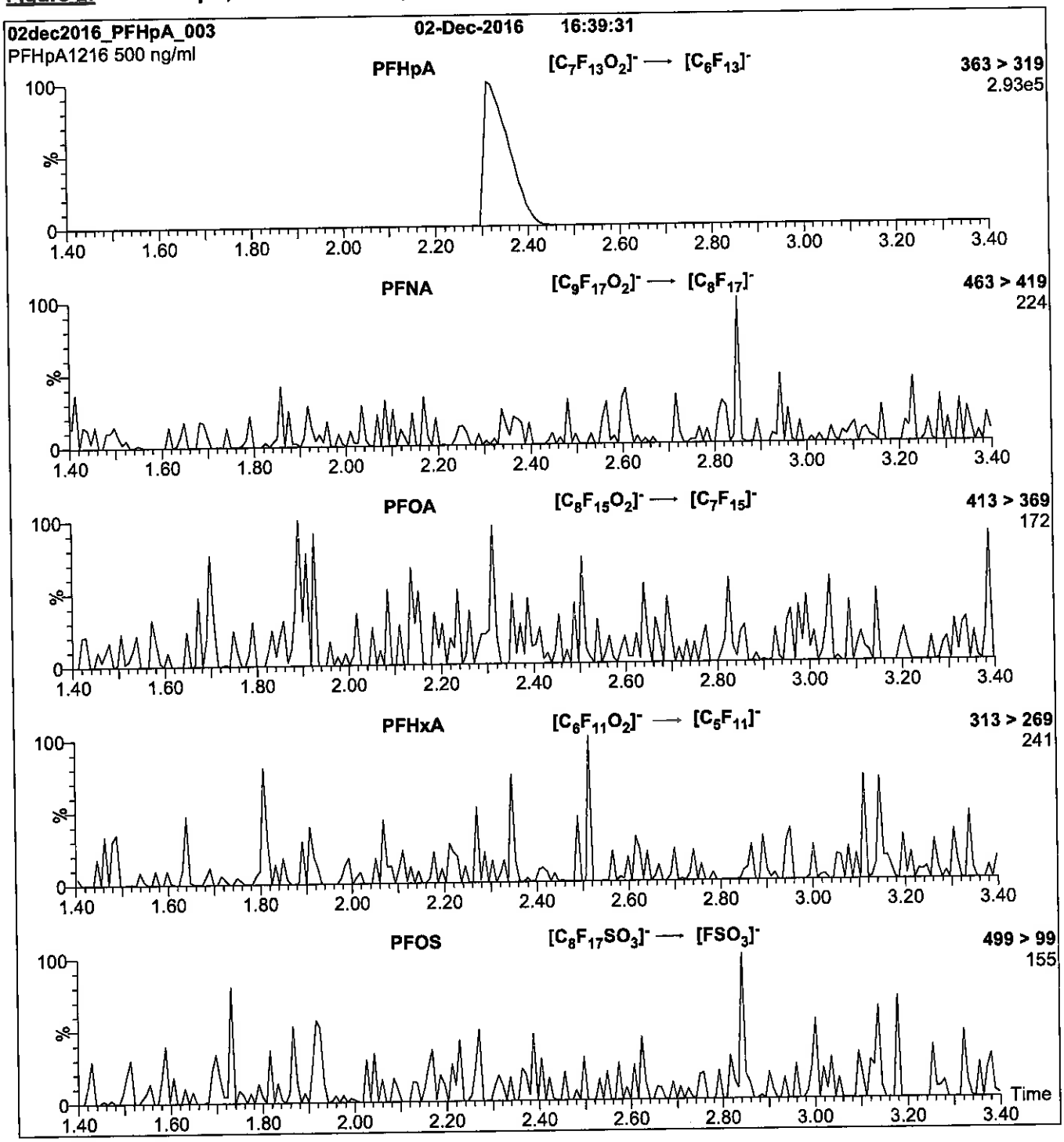
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Reagent

LCPFHxS-br_00005

P: 10/20/A SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFHxSK
LOT NUMBER:	brPFHxSK0117
CONCENTRATION:	50.0 ± 2.5 µg/ml (total potassium salt)
	45.5 ± 2.3 µg/ml (total PFHxS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	01/03/2017
LAST TESTED: (mm/dd/yyyy)	01/04/2017
EXPIRY DATE: (mm/dd/yyyy)	01/04/2022
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorohexanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.5% of perfluoro-1-pentanesulfonate and ~ 0.2% of perfluoro-1-octanesulfonate.
- CAS#: 3871-99-6 (for linear isomer; potassium salt).

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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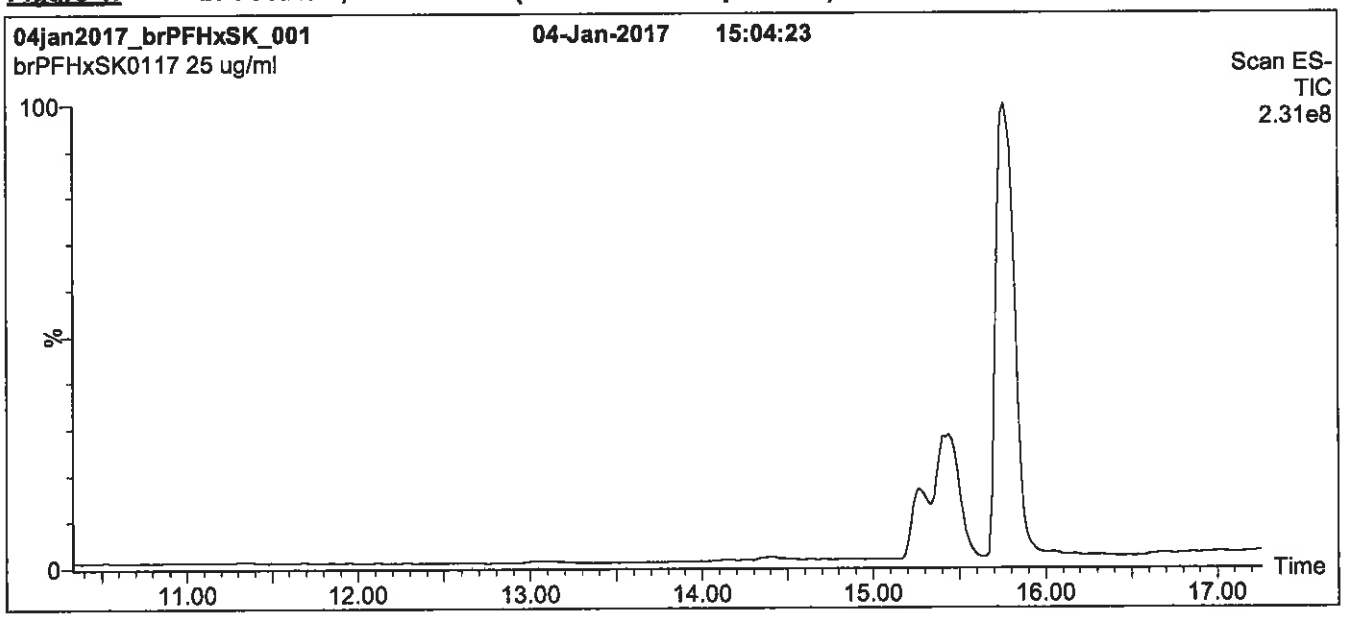
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

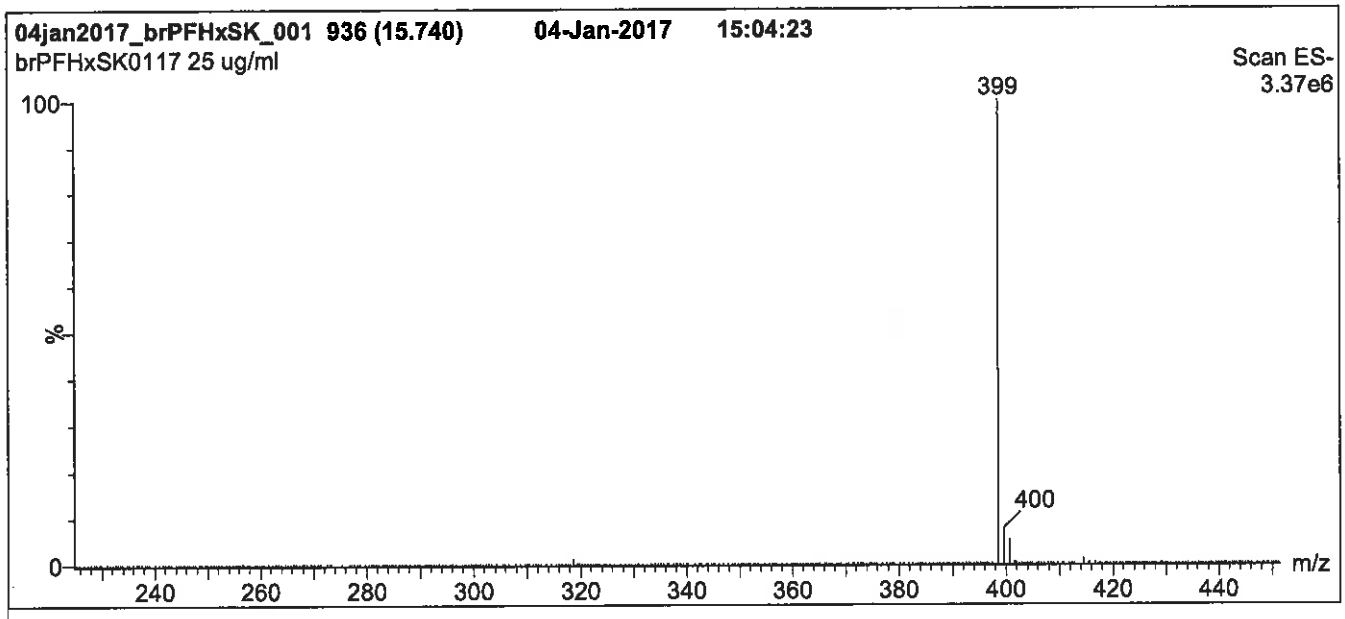
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3C(CF_3)_2CF_2CF_2SO_3^-K^+$	0.2
7	Other Unidentified Isomers		0.5

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

Certified By: _____ B.G. Chittim **Date:** 01/20/2017 (mm/dd/yyyy)

Figure 1: **br-PFHxSK; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

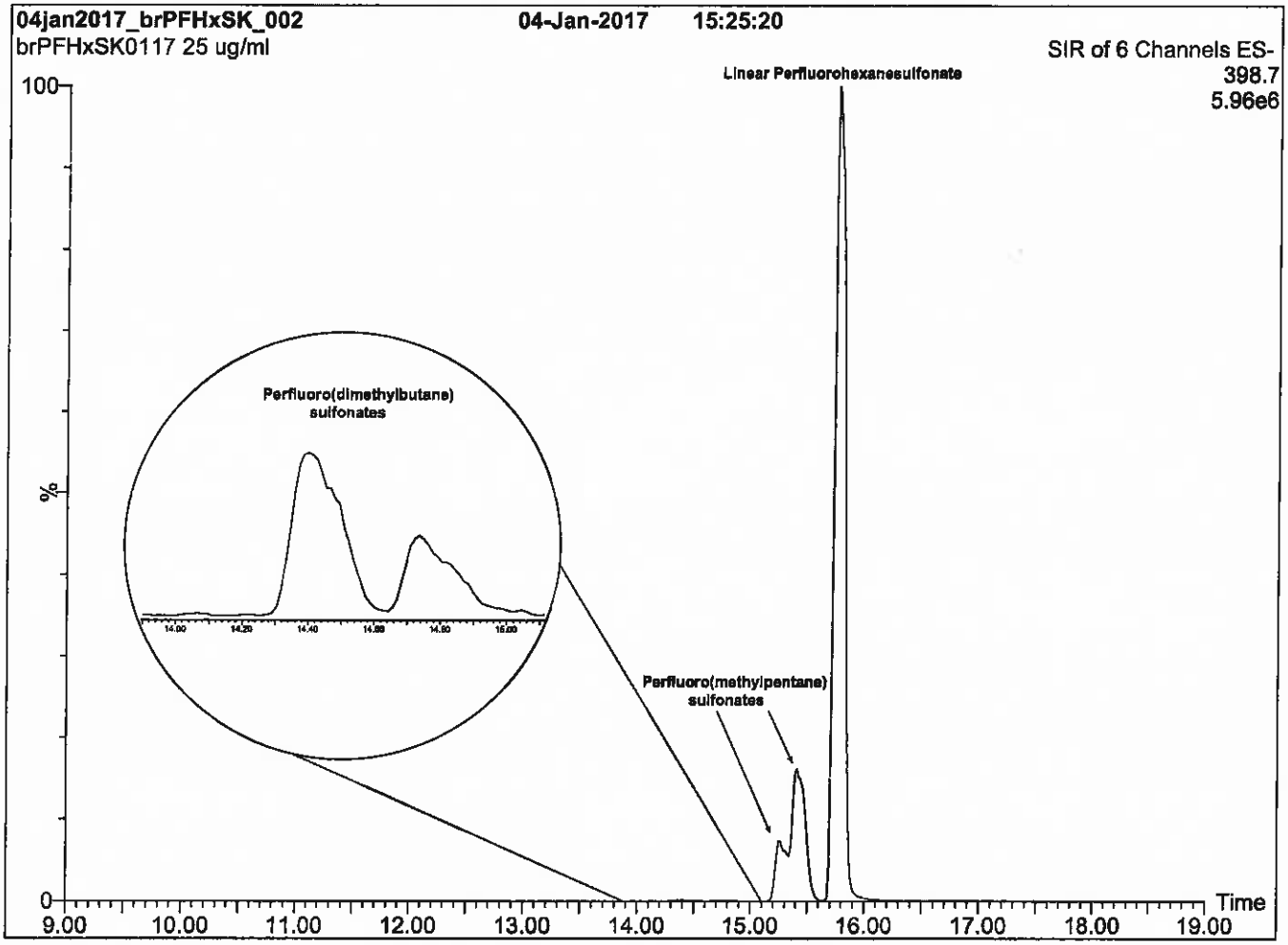
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **br-PFHxSK; LC/MS Data (SIR)**



Conditions for Figure 2:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

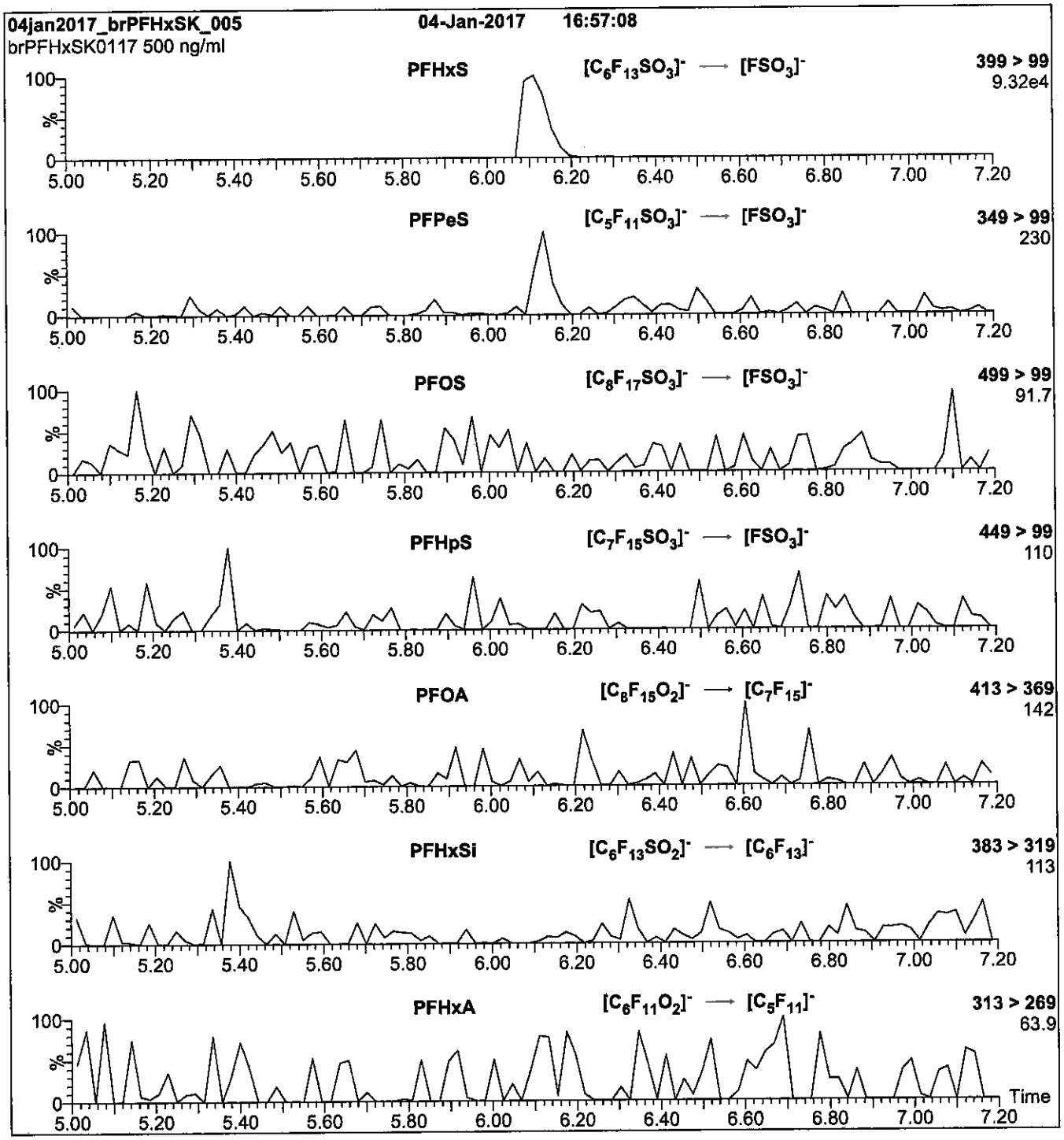
Flow: 300 µl/min

MS Parameters

Experiment: SIR (6 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (15-62)
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 3: **br-PFHxSK; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 3:

Injection: Direct loop injection
10 µl (500 ng/ml br-PFHxSK)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFNA_00009

r: 9/21/17 SKJ

WELLINGTON LABORATORIES

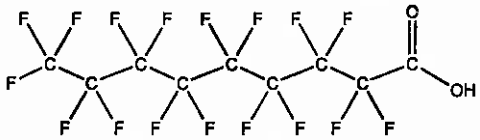
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFNA
COMPOUND: Perfluoro-n-nonanoic acid

LOT NUMBER: PFNA0717

STRUCTURE:

CAS #: 375-95-1



MOLECULAR FORMULA: $C_9HF_{17}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 464.08
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/20/2017
EXPIRY DATE: (mm/dd/yyyy) 07/20/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of perfluoro-n-octanoic acid (PFOA), < 0.1% of perfluoro-n-heptanoic acid (PFHpA), and < 0.1% of perfluoro-n-undecanoic acid (PFUdA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/24/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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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UNCERTAINTY:

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CALA

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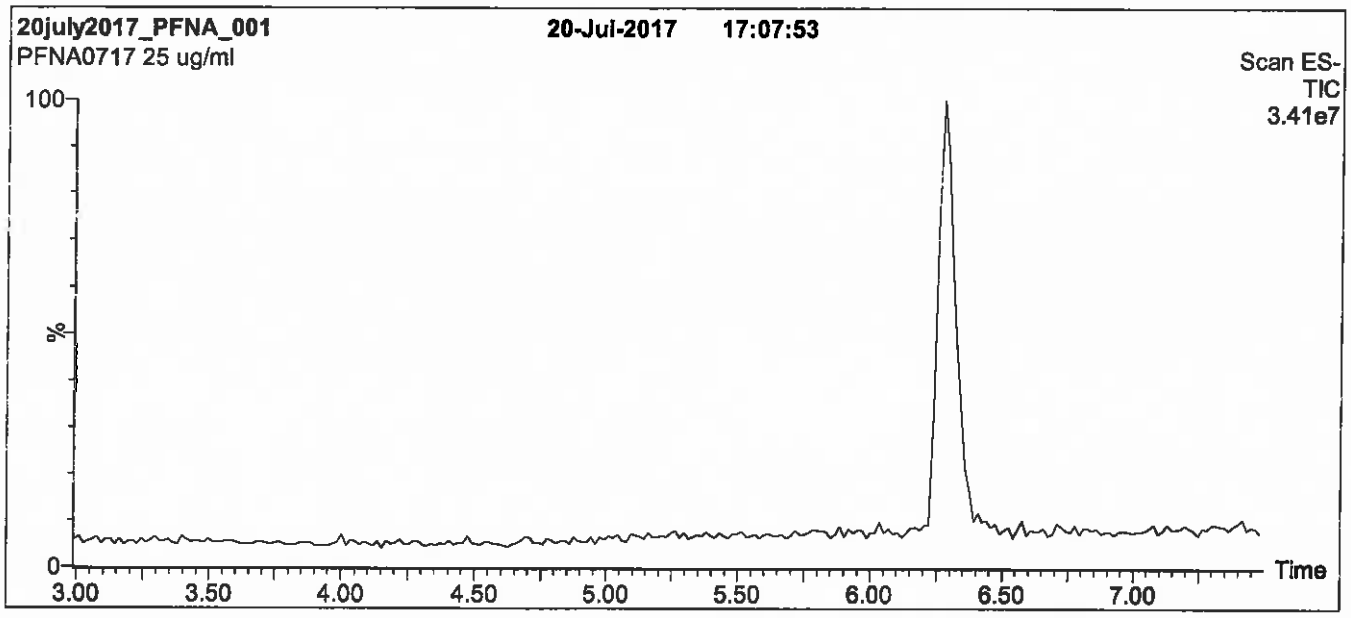
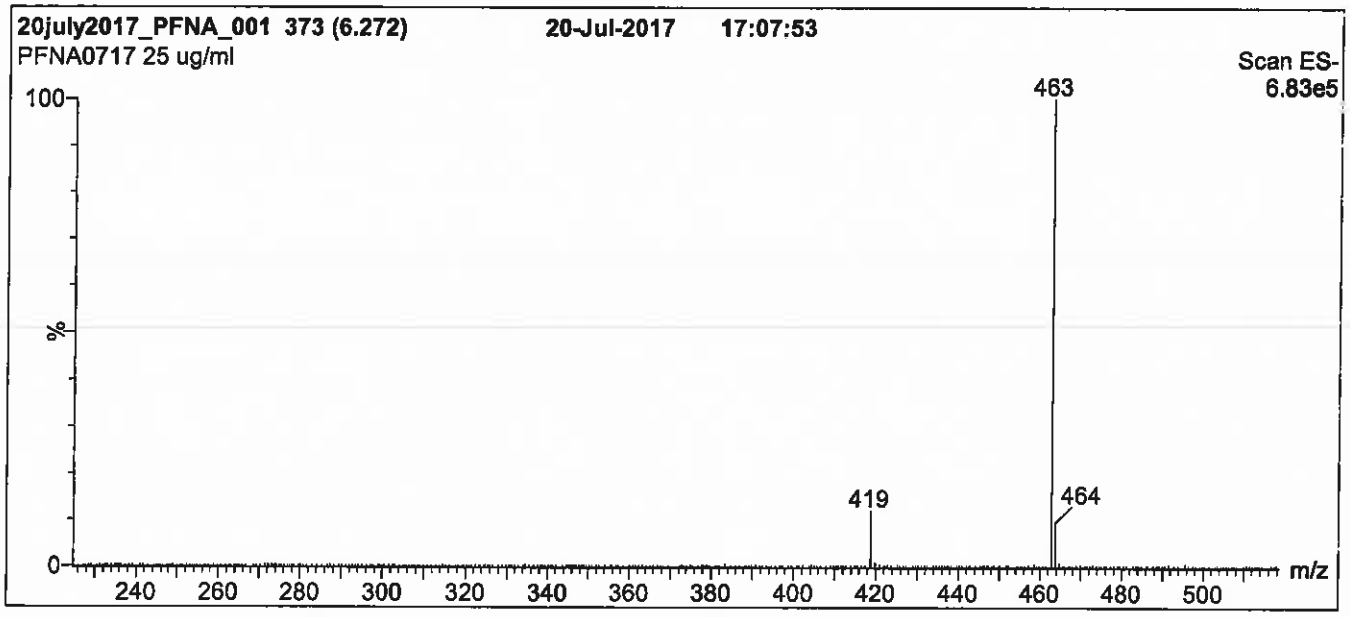




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Hold for 1 min. Ramp to 90% organic over 7 min and hold for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

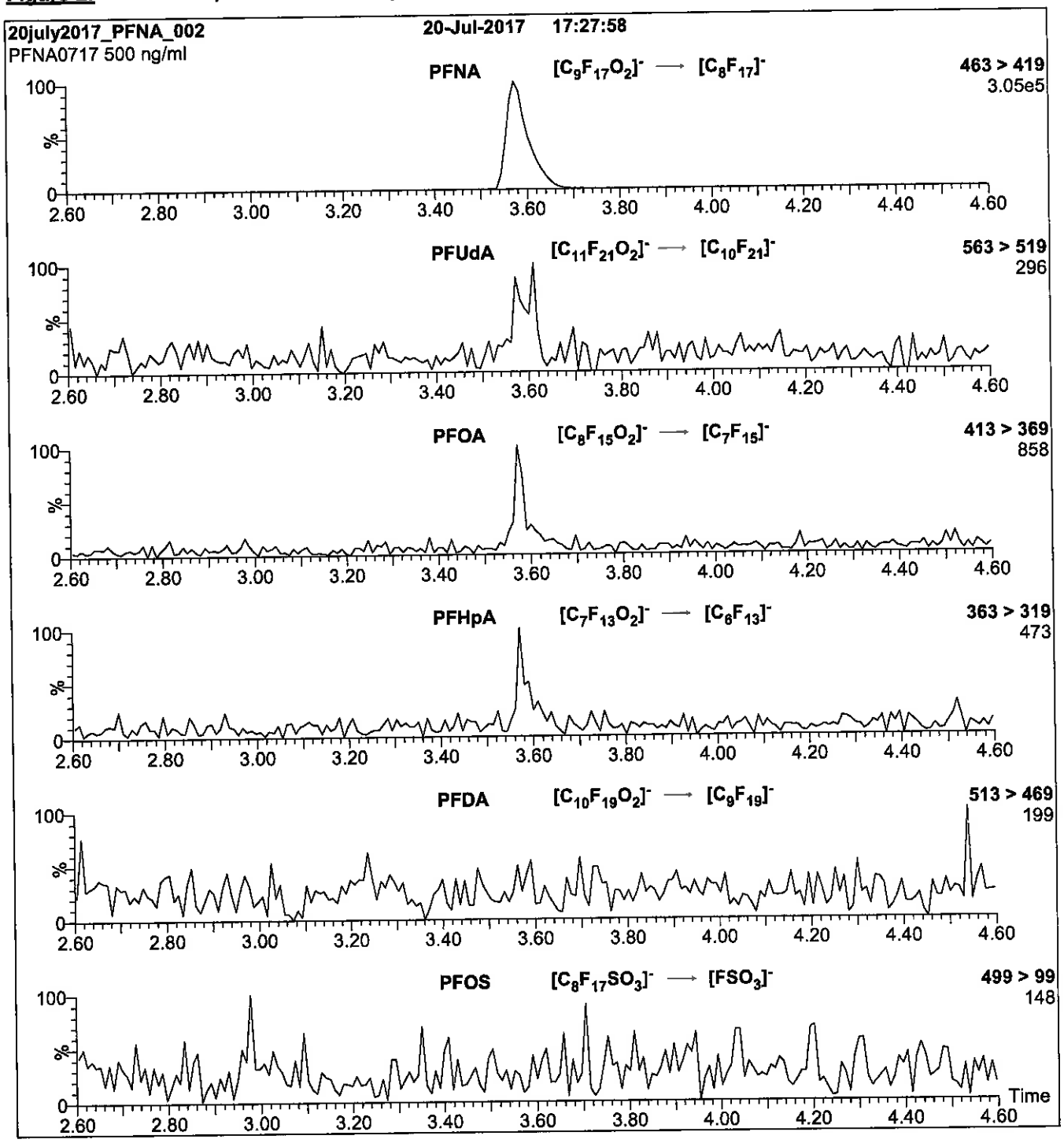
Flow: 300 µl/min

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: **PFNA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

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

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

Reagent

LCPFOA_00010

P: 10/20/17 SKV

WELLINGTON LABORATORIES

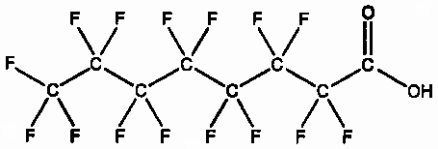
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFOA
COMPOUND: Perfluoro-n-octanoic acid

LOT NUMBER: PFOA0917

STRUCTURE:

CAS #: 335-67-1



MOLECULAR FORMULA: $C_8HF_{15}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 414.07
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/28/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ 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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

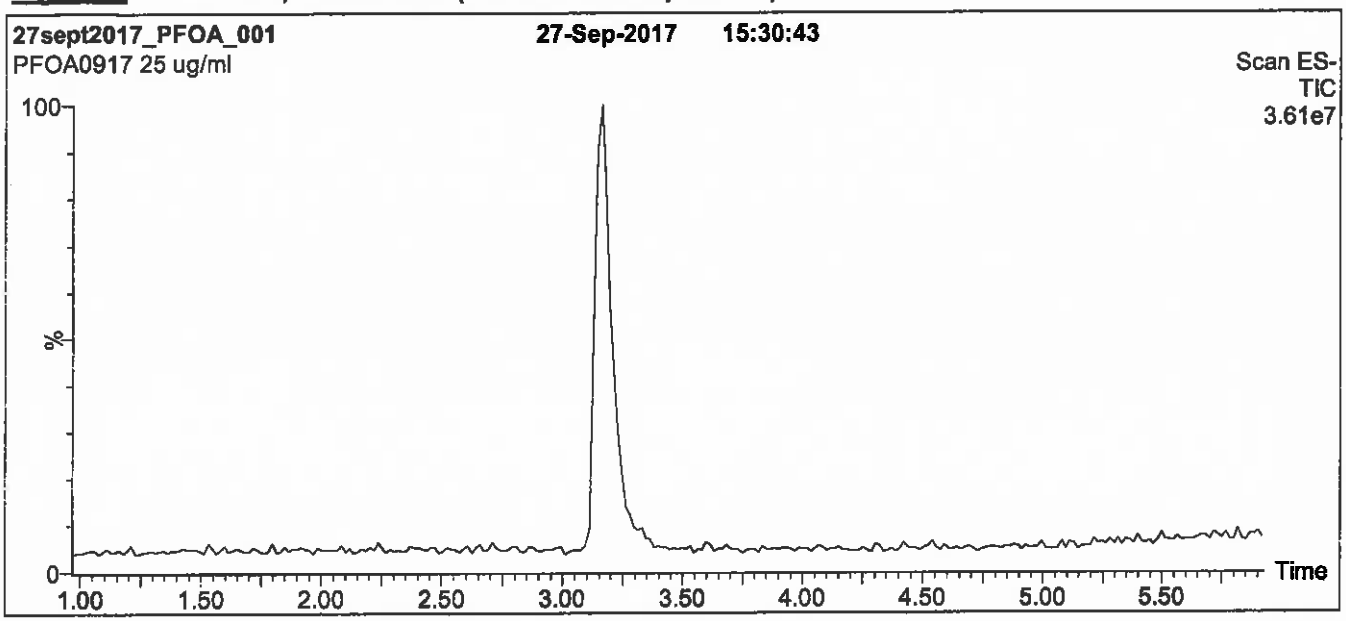
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

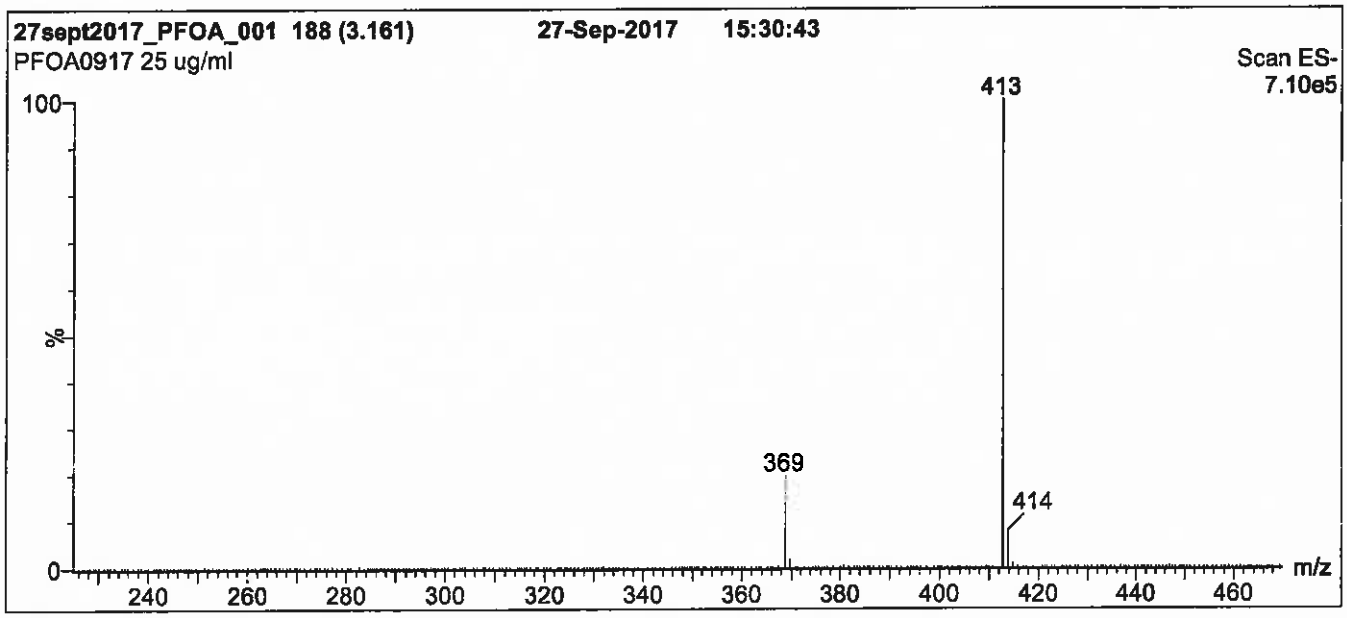
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

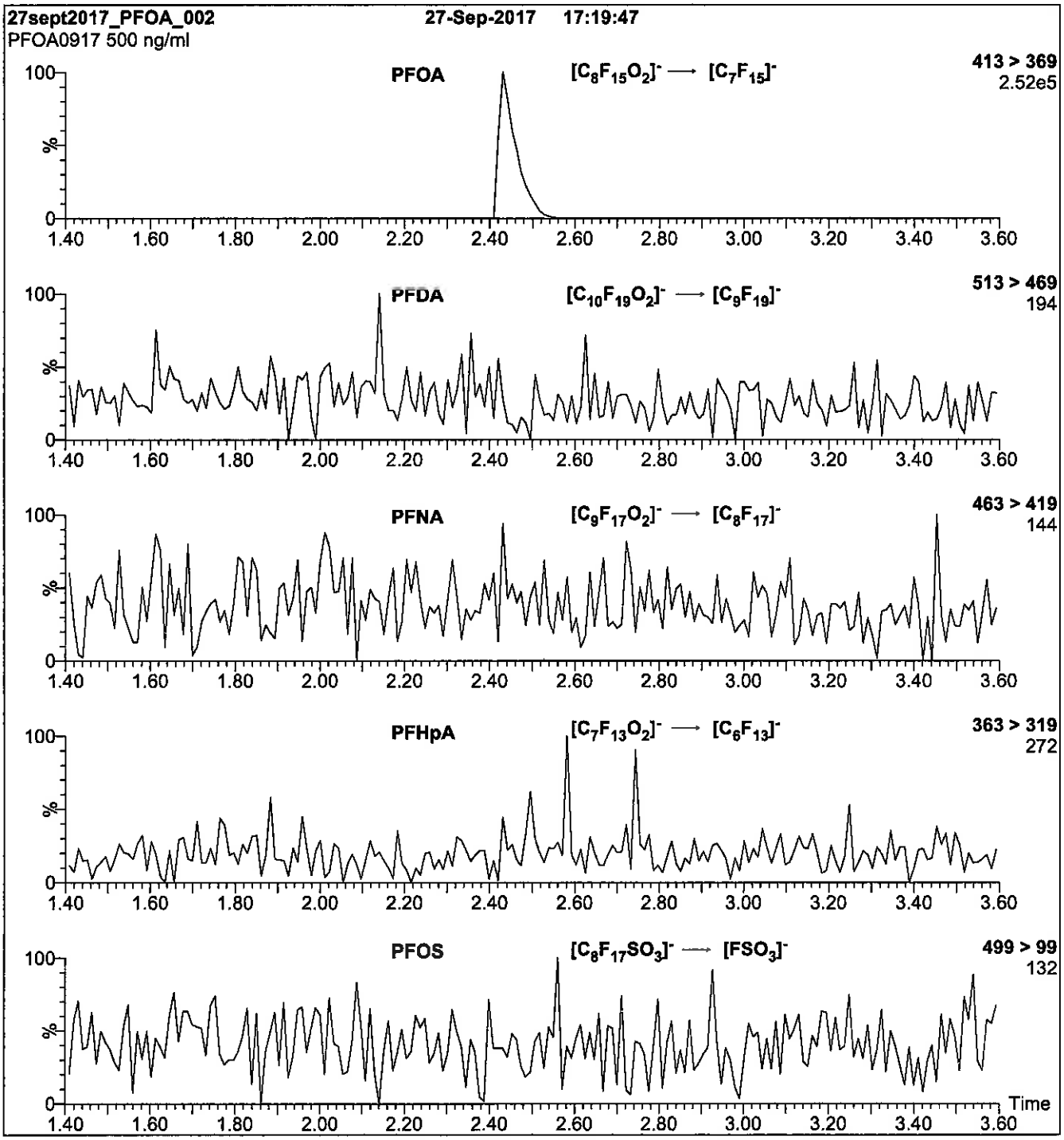
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml PFOA)	**MS Parameters**
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)	Collision Gas (mbar) = 3.46e-3 Collision Energy (eV) = 11
Flow:	300 µl/min	

Reagent

LCPFOS-br_00005

P: 10/20/17 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFOSK
LOT NUMBER:	brPFOSK0117
CONCENTRATION:	50 ± 2.5 µg/ml (total potassium salt)
	46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	01/09/2017
LAST TESTED: (mm/dd/yyyy)	01/12/2017
EXPIRY DATE: (mm/dd/yyyy)	01/12/2022
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

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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.

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CALA

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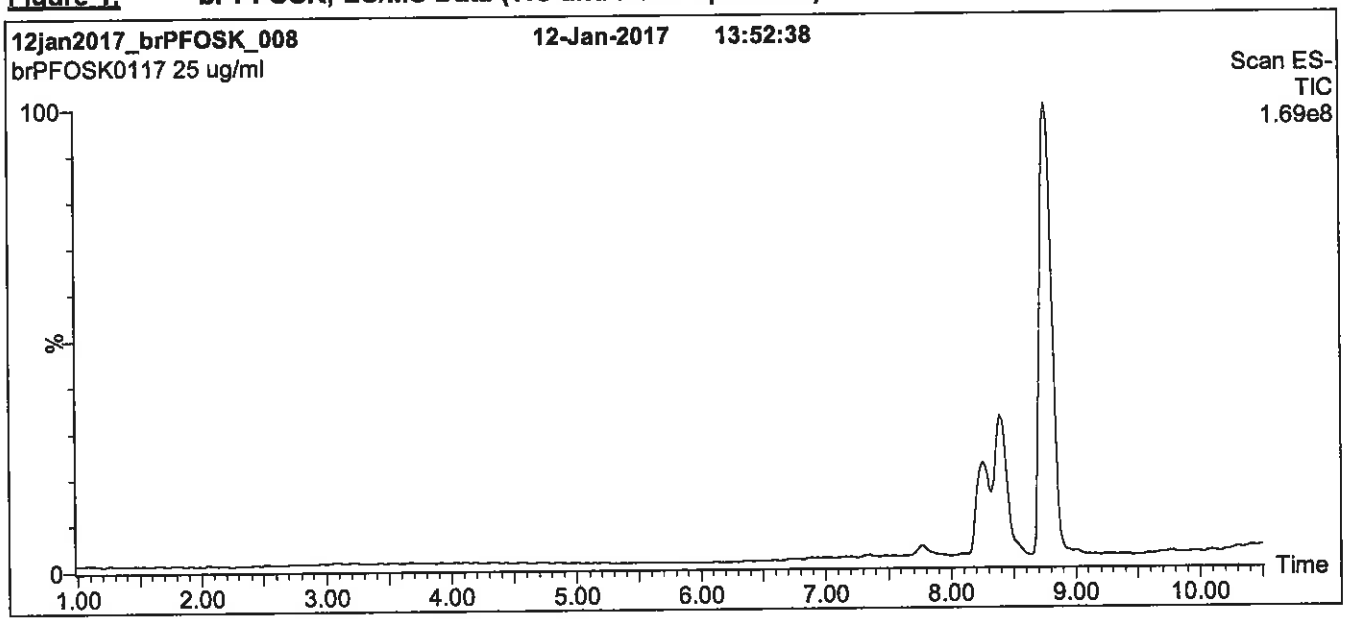
Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

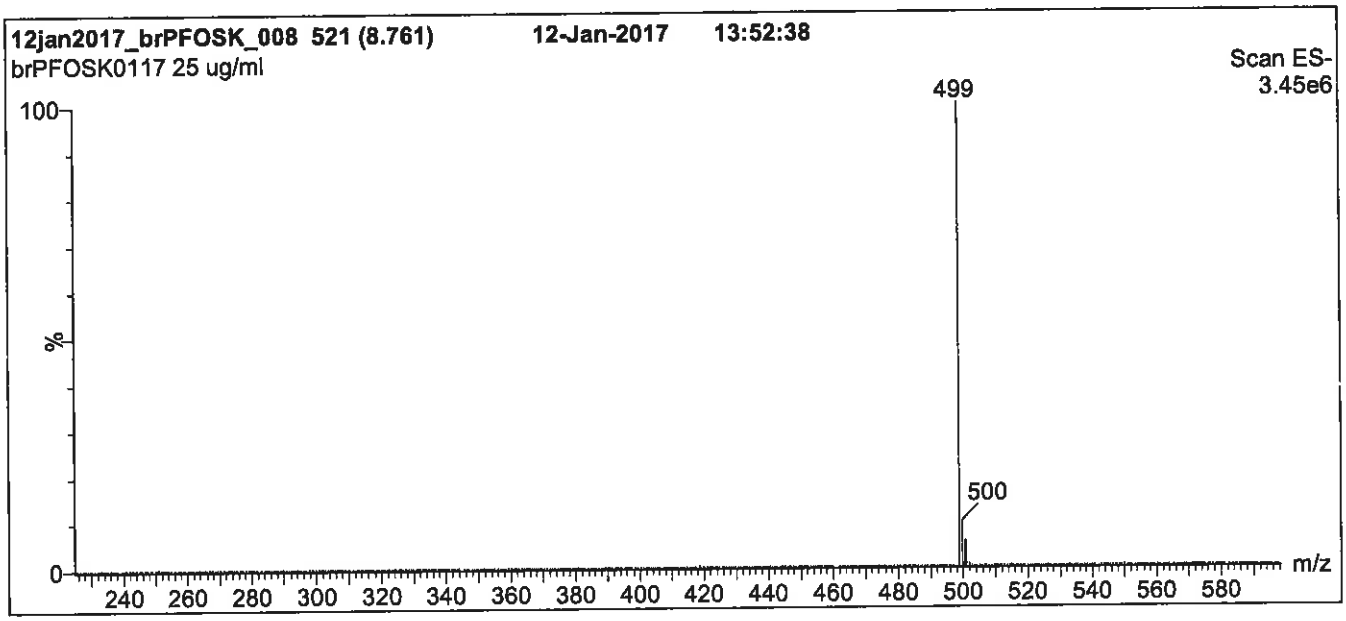
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3C(CF_3)_2CF_2CF_2CF_2CF_2SO_3^-K^+$	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2C(CF_3)_2CF_2CF_2CF_2SO_3^-K^+$	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	0.07

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: B.G. Chittim **Date:** 01/20/2017 (mm/dd/yyyy)

Figure 1: **br-PFOSK; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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 12 min and hold for 2 min.
Return to initial conditions over 0.5 min.
Time: 16 min

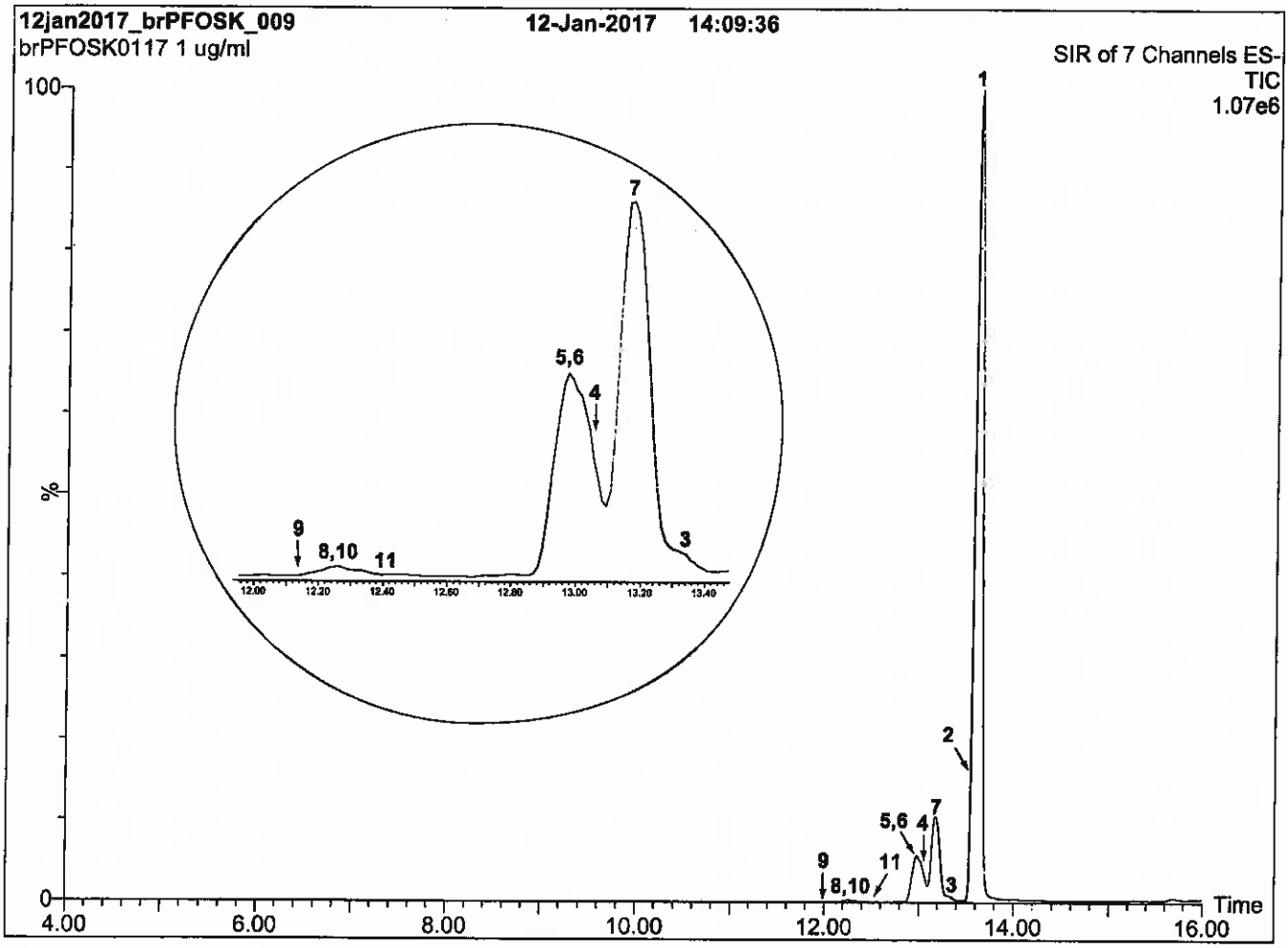
Flow: 300 µl/min

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: **br-PFOSK; LC/MS Data (SIR)**



Conditions for Figure 2:

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

Chromatographic Conditions:

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

Injection: 1.0 µg/ml of br-PFOSK

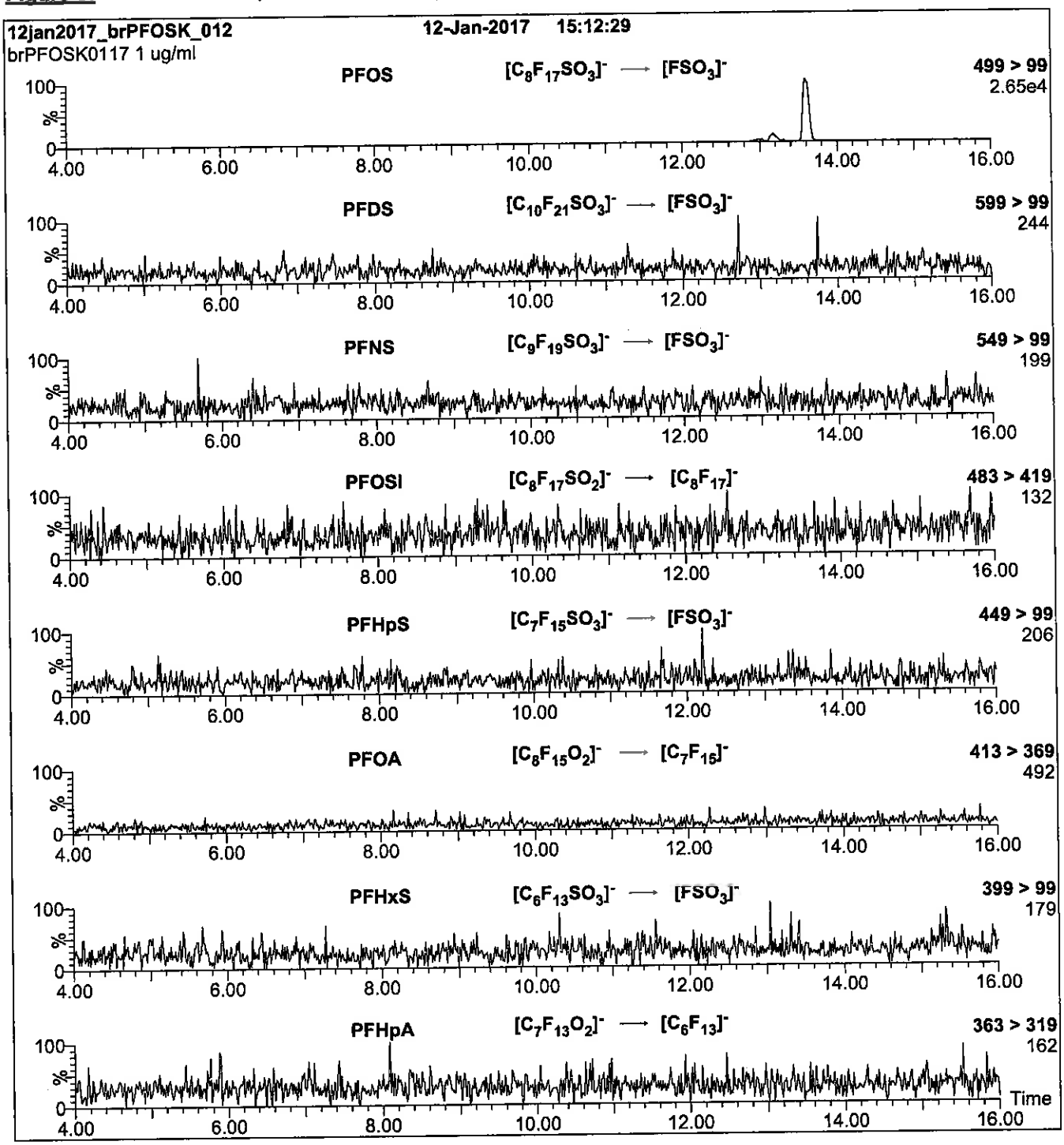
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H_2O (both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min

Flow: 300 µl/min

MS Conditions:

SIR (ES^-)
Source = 110 °C
Desolvation = 325 °C
Cone Voltage = 60V

Figure 3: **br-PFOSK; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 11-50 (variable)

Method 537 DOD

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

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-081418-RW-256	320-42142-1	95	109
NAWC-081418-FRB-256	320-42142-2	108	108
NAWC-081418-RW-270	320-42142-3	101	108
NAWC-081418-FRB-270	320-42142-4	113	120
NAWC-081418-RW-271	320-42142-5	85	96
NAWC-081418-FRB-271	320-42142-6	101	99
NAWC-081418-RW-311	320-42142-7	99	96
NAWC-081418-FRB-311	320-42142-8	98	106
NAWC-081418-RW-038	320-42142-9	90	97
NAWC-081418-FRB-038	320-42142-10	106	102
NAWC-081418-RW-039	320-42142-11	98	99
NAWC-081418-FRB-039	320-42142-12	102	102
NAWC-081418-RW-187	320-42142-13	95	100
NAWC-081418-FRB-187	320-42142-14	96	100
NAWC-081418-RW-292	320-42142-15	97	102
NAWC-081418-FRB-292	320-42142-16	99	102
NAWC-081418-RW-229	320-42142-17	91	99
NAWC-081418-FRB-229	320-42142-18	100	100
NAWC-081418-RW-126	320-42142-19	90	95
NAWC-081418-FRB-126	320-42142-20	95	104
NAWC-081418-RW-172	320-42142-21	98	100
NAWC-081418-FRB-172	320-42142-22	96	97
WGNA-080718-DUP-45	320-42142-23	85	94
WGNA-080718-DUP-46	320-42142-24	81	87
	MB 320-241537/1-A	104	110
	MB 320-241832/1-A	102	95
	LCS 320-241832/2-A	104	98
	LCSD 320-241832/3-A	100	97

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

Column to be used to flag recovery values

FORM II 537

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
	LLCS 320-241537/2-A	113	114
	LLCSD 320-241537/3-A	110	109

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

Column to be used to flag recovery values

FORM II 537

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.08.26_537C_037.d

Lab ID: LCS 320-241832/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	132	142	108	70-130	
Perfluorooctanoic acid (PFOA)	66.0	68.9	104	70-130	
Perfluorononanoic acid (PFNA)	66.0	67.3	102	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	115	115	70-130	
Perfluoroheptanoic acid (PFHpA)	32.0	34.1	107	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	351	117	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.08.26_537C_038.d

Lab ID: LCSD 320-241832/3-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	132	135	103	5	30	70-130	
Perfluorooctanoic acid (PFOA)	66.0	70.6	107	2	30	70-130	
Perfluorononanoic acid (PFNA)	66.0	65.9	100	2	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	111	111	3	30	70-130	
Perfluoroheptanoic acid (PFHpA)	32.0	33.8	106	1	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	341	114	3	30	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.08.26_537C_008.d

Lab ID: LLCS 320-241537/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LLCS CONCENTRATION (ng/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	40.2	43.0	107	50-150	
Perfluorooctanoic acid (PFOA)	20.0	20.4	102	50-150	
Perfluorononanoic acid (PFNA)	20.0	18.9 J	94	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.3	33.1	109	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	10.2	102	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.2	105	117	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.: 320-42142-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.08.26_537C_009.d

Lab ID: LLCSD 320-241537/3-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LLCSD CONCENTRATION (ng/L)	LLCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	40.2	45.1	112	5	50	50-150	
Perfluorooctanoic acid (PFOA)	20.0	20.6	103	1	50	50-150	
Perfluorononanoic acid (PFNA)	20.0	19.4 J	97	3	50	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.3	34.9	115	5	50	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	11.3	113	10	50	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.2	115	127	8	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.: 320-42142-1

SDG No.:

Lab File ID: 2018.08.26_537C_007.d Lab Sample ID: MB 320-241537/1-A

Matrix: Water Date Extracted: 08/23/2018 07:20

Instrument ID: A8_N Date Analyzed: 08/26/2018 23:44

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-241537/2-A	2018.08.26_537C_008.d	08/26/2018 23:48
	LLCSD 320-241537/3-A	2018.08.26_537C_009.d	08/26/2018 23:53
NAWC-081418-RW-256	320-42142-1	2018.08.26_537C_028.d	08/27/2018 01:22
NAWC-081418-FRB-256	320-42142-2	2018.08.26_537C_031.d	08/27/2018 01:36
NAWC-081418-RW-270	320-42142-3	2018.08.26_537C_032.d	08/27/2018 01:41
NAWC-081418-FRB-270	320-42142-4	2018.08.26_537C_033.d	08/27/2018 01:45

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab File ID: 2018.08.26_537C_036.d Lab Sample ID: MB 320-241832/1-A

Matrix: Water Date Extracted: 08/24/2018 09:17

Instrument ID: A8_N Date Analyzed: 08/27/2018 01:59

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-241832/2-A	2018.08.26_537C_037.d	08/27/2018 02:04
	LCSD 320-241832/3-A	2018.08.26_537C_038.d	08/27/2018 02:09
NAWC-081418-FRB-271	320-42142-6	2018.08.26_537C_040.d	08/27/2018 02:18
NAWC-081418-RW-311	320-42142-7	2018.08.26_537C_041.d	08/27/2018 02:23
NAWC-081418-FRB-311	320-42142-8	2018.08.26_537C_042.d	08/27/2018 02:27
NAWC-081418-RW-038	320-42142-9	2018.08.26_537C_043.d	08/27/2018 02:32
NAWC-081418-FRB-038	320-42142-10	2018.08.26_537C_044.d	08/27/2018 02:37
NAWC-081418-RW-039	320-42142-11	2018.08.26_537C_045.d	08/27/2018 02:41
NAWC-081418-FRB-039	320-42142-12	2018.08.26_537C_048.d	08/27/2018 02:55
NAWC-081418-RW-187	320-42142-13	2018.08.26_537C_049.d	08/27/2018 03:00
NAWC-081418-FRB-292	320-42142-16	2018.08.26_537C_052.d	08/27/2018 03:14
NAWC-081418-RW-229	320-42142-17	2018.08.26_537C_053.d	08/27/2018 03:19
NAWC-081418-FRB-229	320-42142-18	2018.08.26_537C_054.d	08/27/2018 03:24
NAWC-081418-FRB-126	320-42142-20	2018.08.26_537C_056.d	08/27/2018 03:33
NAWC-081418-RW-172	320-42142-21	2018.08.26_537C_057.d	08/27/2018 03:38
NAWC-081418-RW-271	320-42142-5	2018.08.28_537A_012.d	08/29/2018 00:04
NAWC-081418-FRB-187	320-42142-14	2018.08.28_537A_013.d	08/29/2018 00:09
NAWC-081418-RW-292	320-42142-15	2018.08.28_537A_014.d	08/29/2018 00:13
NAWC-081418-RW-126	320-42142-19	2018.08.28_537A_015.d	08/29/2018 00:18
NAWC-081418-FRB-172	320-42142-22	2018.08.28_537A_016.d	08/29/2018 00:23
WGNA-080718-DUP-45	320-42142-23	2018.08.28_537A_017.d	08/29/2018 00:27
WGNA-080718-DUP-46	320-42142-24	2018.08.28_537A_018.d	08/29/2018 00:32

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/15/2018 18:44

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		999840	1.85	2469394	2.11		
UPPER LIMIT		1499760	2.35	3704091	2.61		
LOWER LIMIT		499920	1.35	1234697	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-240166/9		1006603	1.84	2388436	2.10		
ICV 320-240166/11		1022273	1.84	2551643	2.10		
CCVL 320-242153/1		956576	1.81	2465858	2.07		
CCV 320-242153/2 CCVIS		846614	1.82	2153988	2.07		
MB 320-241537/1-A		1043498	1.82	2632697	2.07		
LLCS 320-241537/2-A		1063967	1.81	2653479	2.07		
LLCSD 320-241537/3-A		1061847	1.81	2615789	2.06		
CCV 320-242153/14 CCVIS		802241	1.81	2163583	2.07		
CCV 320-242156/14 CCVIS		802241	1.81	2163583	2.07		
320-42142-1	NAWC-081418-RW-256	1120085	1.81	2681466	2.06		
CCV 320-242156/26 CCVIS		836144	1.81	2142935	2.06		
CCV 320-242157/26 CCVIS		836144	1.81	2142935	2.06		
320-42142-2	NAWC-081418-FRB-256	1087608	1.81	2737007	2.07		
320-42142-3	NAWC-081418-RW-270	1124503	1.81	2743746	2.07		
320-42142-4	NAWC-081418-FRB-270	1055150	1.81	2782033	2.06		
CCV 320-242157/31 CCVIS		824422	1.81	2176602	2.07		
CCV 320-242160/31 CCVIS		824422	1.81	2176602	2.07		
MB 320-241832/1-A		1106092	1.81	2676902	2.06		
LCS 320-241832/2-A		1044801	1.81	2647780	2.06		
LCSD 320-241832/3-A		979667	1.81	2502510	2.06		
320-42142-6	NAWC-081418-FRB-271	994954	1.81	2482133	2.06		
320-42142-7	NAWC-081418-RW-311	1010503	1.81	2506398	2.07		
320-42142-8	NAWC-081418-FRB-311	1115578	1.81	2734636	2.07		
320-42142-9	NAWC-081418-RW-038	1138862	1.81	2799168	2.07		
320-42142-10	NAWC-081418-FRB-038	1078762	1.82	2658887	2.07		
320-42142-11	NAWC-081418-RW-039	1094966	1.81	2710395	2.06		

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.: 320-42142-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/15/2018 18:44

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		999840	1.85	2469394	2.11		
UPPER LIMIT		1499760	2.35	3704091	2.61		
LOWER LIMIT		499920	1.35	1234697	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCV 320-242160/43 CCVIS		790234	1.81	2027772	2.07		
CCV 320-242161/43 CCVIS		790234	1.81	2027772	2.07		
320-42142-12	NAWC-081418-FRB-039	963844	1.82	2494524	2.07		
320-42142-13	NAWC-081418-RW-187	1093115	1.81	2685184	2.06		
320-42142-16	NAWC-081418-FRB-292	1021568	1.81	2508454	2.07		
320-42142-17	NAWC-081418-RW-229	1082166	1.81	2785372	2.07		
320-42142-18	NAWC-081418-FRB-229	970605	1.81	2451771	2.07		
320-42142-20	NAWC-081418-FRB-126	987929	1.81	2497413	2.06		
320-42142-21	NAWC-081418-RW-172	1052377	1.81	2633869	2.07		
CCV 320-242161/55 CCVIS		754707	1.81	2022100	2.06		
CCVL 320-242684/1		1111468	1.84	2737262	2.09		
CCV 320-242687/8 CCVIS		930267	1.83	2345437	2.09		
320-42142-5	NAWC-081418-RW-271	1256836	1.83	2880471	2.09		
320-42142-14	NAWC-081418-FRB-187	1211521	1.82	3029669	2.08		
320-42142-15	NAWC-081418-RW-292	1188788	1.82	2980086	2.08		
320-42142-19	NAWC-081418-RW-126	1259631	1.82	2984516	2.08		
320-42142-22	NAWC-081418-FRB-172	687676	1.82	1662172	2.08		
320-42142-23	WGNA-080718-DUP-45	1088472	1.82	2601893	2.08		
320-42142-24	WGNA-080718-DUP-46	1353219Q	1.82	2990257	2.08		
CCV 320-242687/17 CCVIS		887111	1.81	2303342	2.07		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242153/2 Date Analyzed: 08/26/2018 23:34

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

Lab File ID (Standard): 2018.08.26_537C_005 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		846614	1.82	2153988	2.07		
UPPER LIMIT		1185260	2.32	3015583	2.57		
LOWER LIMIT		592630	1.32	1507792	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-241537/1-A		1043498	1.82	2632697	2.07		
LLCS 320-241537/2-A		1063967	1.81	2653479	2.07		
LLCSD 320-241537/3-A		1061847	1.81	2615789	2.06		

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.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242153/14 Date Analyzed: 08/27/2018 00:30

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

Lab File ID (Standard): 2018.08.26_537C_017 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		802241	1.81	2163583	2.07		
UPPER LIMIT		1123137	2.31	3029016	2.57		
LOWER LIMIT		561569	1.31	1514508	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-241537/1-A		1043498	1.82	2632697	2.07		
LLCS 320-241537/2-A		1063967	1.81	2653479	2.07		
LLCSD 320-241537/3-A		1061847	1.81	2615789	2.06		

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.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242156/14 Date Analyzed: 08/27/2018 00:30

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

Lab File ID (Standard): 2018.08.26_537C_017 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		802241	1.81	2163583	2.07		
UPPER LIMIT		1123137	2.31	3029016	2.57		
LOWER LIMIT		561569	1.31	1514508	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-42142-1	NAWC-081418-RW-256	1120085	1.81	2681466	2.06		

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.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242156/26 Date Analyzed: 08/27/2018 01:27

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

Lab File ID (Standard): 2018.08.26_537C_029 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		836144	1.81	2142935	2.06		
UPPER LIMIT		1170602	2.31	3000109	2.56		
LOWER LIMIT		585301	1.31	1500055	1.56		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-42142-1	NAWC-081418-RW-256	1120085	1.81	2681466	2.06		

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.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242157/26 Date Analyzed: 08/27/2018 01:27

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

Lab File ID (Standard): 2018.08.26_537C_029 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		836144	1.81	2142935	2.06		
UPPER LIMIT		1170602	2.31	3000109	2.56		
LOWER LIMIT		585301	1.31	1500055	1.56		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-42142-2	NAWC-081418-FRB-256	1087608	1.81	2737007	2.07		
320-42142-3	NAWC-081418-RW-270	1124503	1.81	2743746	2.07		
320-42142-4	NAWC-081418-FRB-270	1055150	1.81	2782033	2.06		

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.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242157/31 Date Analyzed: 08/27/2018 01:50

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

Lab File ID (Standard): 2018.08.26_537C_034 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		824422	1.81	2176602	2.07		
UPPER LIMIT		1154191	2.31	3047243	2.57		
LOWER LIMIT		577095	1.31	1523621	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-42142-2	NAWC-081418-FRB-256	1087608	1.81	2737007	2.07		
320-42142-3	NAWC-081418-RW-270	1124503	1.81	2743746	2.07		
320-42142-4	NAWC-081418-FRB-270	1055150	1.81	2782033	2.06		

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.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242160/31 Date Analyzed: 08/27/2018 01:50

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

Lab File ID (Standard): 2018.08.26_537C_034 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		824422	1.81	2176602	2.07		
UPPER LIMIT		1154191	2.31	3047243	2.57		
LOWER LIMIT		577095	1.31	1523621	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-241832/1-A		1106092	1.81	2676902	2.06		
LCS 320-241832/2-A		1044801	1.81	2647780	2.06		
LCSD 320-241832/3-A		979667	1.81	2502510	2.06		
320-42142-6	NAWC-081418-FRB-271	994954	1.81	2482133	2.06		
320-42142-7	NAWC-081418-RW-311	1010503	1.81	2506398	2.07		
320-42142-8	NAWC-081418-FRB-311	1115578	1.81	2734636	2.07		
320-42142-9	NAWC-081418-RW-038	1138862	1.81	2799168	2.07		
320-42142-10	NAWC-081418-FRB-038	1078762	1.82	2658887	2.07		
320-42142-11	NAWC-081418-RW-039	1094966	1.81	2710395	2.06		

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.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242160/43 Date Analyzed: 08/27/2018 02:46

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

Lab File ID (Standard): 2018.08.26_537C_046 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		790234	1.81	2027772	2.07		
UPPER LIMIT		1106328	2.31	2838881	2.57		
LOWER LIMIT		553164	1.31	1419440	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-241832/1-A		1106092	1.81	2676902	2.06		
LCS 320-241832/2-A		1044801	1.81	2647780	2.06		
LCSD 320-241832/3-A		979667	1.81	2502510	2.06		
320-42142-6	NAWC-081418-FRB-271	994954	1.81	2482133	2.06		
320-42142-7	NAWC-081418-RW-311	1010503	1.81	2506398	2.07		
320-42142-8	NAWC-081418-FRB-311	1115578	1.81	2734636	2.07		
320-42142-9	NAWC-081418-RW-038	1138862	1.81	2799168	2.07		
320-42142-10	NAWC-081418-FRB-038	1078762	1.82	2658887	2.07		
320-42142-11	NAWC-081418-RW-039	1094966	1.81	2710395	2.06		

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.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242161/43 Date Analyzed: 08/27/2018 02:46

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

Lab File ID (Standard): 2018.08.26_537C_046 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		790234	1.81	2027772	2.07		
UPPER LIMIT		1106328	2.31	2838881	2.57		
LOWER LIMIT		553164	1.31	1419440	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-42142-12	NAWC-081418-FRB-039	963844	1.82	2494524	2.07		
320-42142-13	NAWC-081418-RW-187	1093115	1.81	2685184	2.06		
320-42142-16	NAWC-081418-FRB-292	1021568	1.81	2508454	2.07		
320-42142-17	NAWC-081418-RW-229	1082166	1.81	2785372	2.07		
320-42142-18	NAWC-081418-FRB-229	970605	1.81	2451771	2.07		
320-42142-20	NAWC-081418-FRB-126	987929	1.81	2497413	2.06		
320-42142-21	NAWC-081418-RW-172	1052377	1.81	2633869	2.07		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242161/55 Date Analyzed: 08/27/2018 03:42

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

Lab File ID (Standard): 2018.08.26_537C_058 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		754707	1.81	2022100	2.06		
UPPER LIMIT		1056590	2.31	2830940	2.56		
LOWER LIMIT		528295	1.31	1415470	1.56		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-42142-12	NAWC-081418-FRB-039	963844	1.82	2494524	2.07		
320-42142-13	NAWC-081418-RW-187	1093115	1.81	2685184	2.06		
320-42142-16	NAWC-081418-FRB-292	1021568	1.81	2508454	2.07		
320-42142-17	NAWC-081418-RW-229	1082166	1.81	2785372	2.07		
320-42142-18	NAWC-081418-FRB-229	970605	1.81	2451771	2.07		
320-42142-20	NAWC-081418-FRB-126	987929	1.81	2497413	2.06		
320-42142-21	NAWC-081418-RW-172	1052377	1.81	2633869	2.07		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242687/8 Date Analyzed: 08/28/2018 23:55

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

Lab File ID (Standard): 2018.08.28_537A_010 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		930267	1.83	2345437	2.09		
UPPER LIMIT		1302374	2.33	3283612	2.59		
LOWER LIMIT		651187	1.33	1641806	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-42142-5	NAWC-081418-RW-271	1256836	1.83	2880471	2.09		
320-42142-14	NAWC-081418-FRB-187	1211521	1.82	3029669	2.08		
320-42142-15	NAWC-081418-RW-292	1188788	1.82	2980086	2.08		
320-42142-19	NAWC-081418-RW-126	1259631	1.82	2984516	2.08		
320-42142-22	NAWC-081418-FRB-172	687676	1.82	1662172	2.08		
320-42142-23	WGNA-080718-DUP-45	1088472	1.82	2601893	2.08		
320-42142-24	WGNA-080718-DUP-46	1353219Q	1.82	2990257	2.08		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242687/17 Date Analyzed: 08/29/2018 00:37

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

Lab File ID (Standard): 2018.08.28_537A_019 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		887111	1.81	2303342	2.07		
UPPER LIMIT		1241955	2.31	3224679	2.57		
LOWER LIMIT		620978	1.31	1612339	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-42142-5	NAWC-081418-RW-271	1256836	1.83	2880471	2.09		
320-42142-14	NAWC-081418-FRB-187	1211521	1.82	3029669	2.08		
320-42142-15	NAWC-081418-RW-292	1188788	1.82	2980086	2.08		
320-42142-19	NAWC-081418-RW-126	1259631	1.82	2984516	2.08		
320-42142-22	NAWC-081418-FRB-172	687676	1.82	1662172	2.08		
320-42142-23	WGNA-080718-DUP-45	1088472	1.82	2601893	2.08		
320-42142-24	WGNA-080718-DUP-46	1353219Q	1.82	2990257	2.08		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-256
Lab Sample ID: 320-42142-1
Matrix: Water
Lab File ID: 2018.08.26_537C_028.d
Analysis Method: 537
Date Collected: 08/14/2018 08:40
Extraction Method: 537
Date Extracted: 08/23/2018 07:20
Sample wt/vol: 282(mL)
Date Analyzed: 08/27/2018 01:22
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.: 242156
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	30	J	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	28		18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.5	J	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.5	J	8.9	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	109		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_028.d
Lims ID: 320-42142-A-1-A
Client ID: NAWC-081418-RW-256
Sample Type: Client
Inject. Date: 27-Aug-2018 01:22:25 ALS Bottle#: 20 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-1-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:41:09

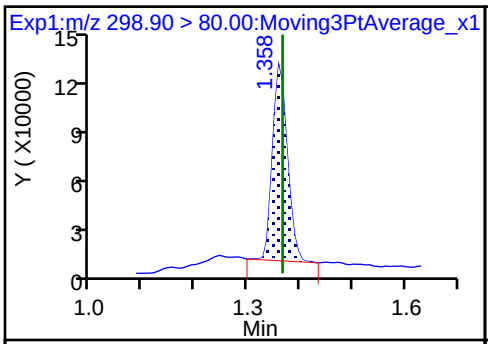
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.366	-0.008	1.000	236397	2.21		88.8	
298.90 > 99.00	1.358	1.366	-0.008	1.000	157464		1.50(0.00-0.00)	260	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.487	-0.008	1.000	1102455	9.47		9926	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.631	-0.007	1.000	238356	1.54		48.8	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.631	-0.007	1.000	284840	2.40		26.8	
* 6 13C2-PFOA									
415.00 > 370.00	1.806	1.813	-0.007		1120085	10.0		7534	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.806	1.813	-0.007	1.000	977206	8.01		81.3	
413.00 > 169.00	1.806	1.813	-0.007	1.000	545840		1.79(0.00-0.00)	1126	
* 7 13C4 PFOS									
503.00 > 80.00	2.064	2.071	-0.007		2681466	28.7		1364	
9 Perfluorononanoic acid									
463.00 > 419.00	2.071	2.079	-0.008	1.000	76415	0.8276		5.5	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.064	2.109	-0.045	1.000	857227	8.49		207	
499.00 > 99.00	2.064	2.109	-0.045	1.000	147662		5.81(0.00-0.00)	159	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	970392	10.9		5598	

Report Date: 27-Aug-2018 14:58:46 Chrom Revision: 2.3 19-Jul-2018 15:14:50

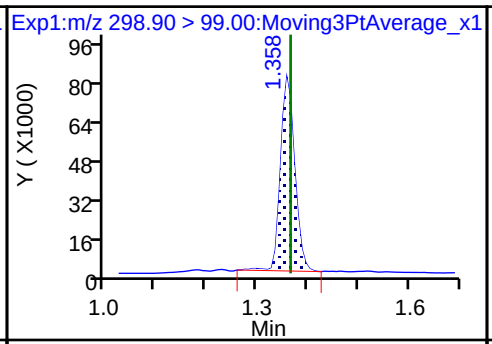
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_028.d				
Injection Date:	27-Aug-2018 01:22:25	Instrument ID:	A8_N		
Lims ID:	320-42142-A-1-A	Lab Sample ID:	320-42142-1		
Client ID:	NAWC-081418-RW-256				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	25
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

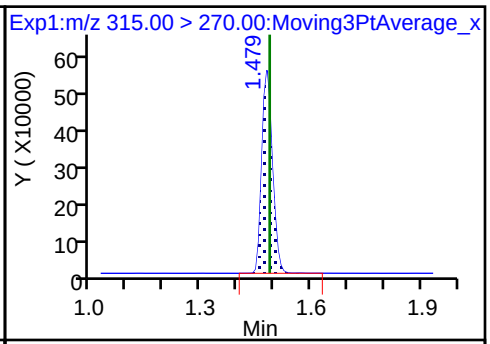
1 Perfluorobutanesulfonic acid



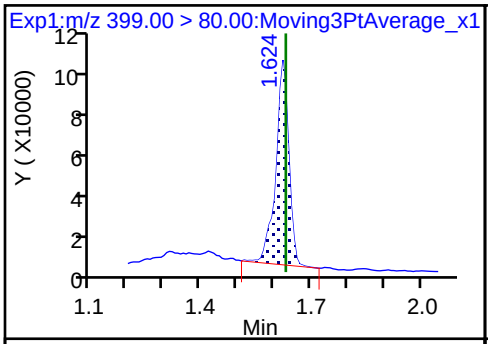
1 Perfluorobutanesulfonic acid



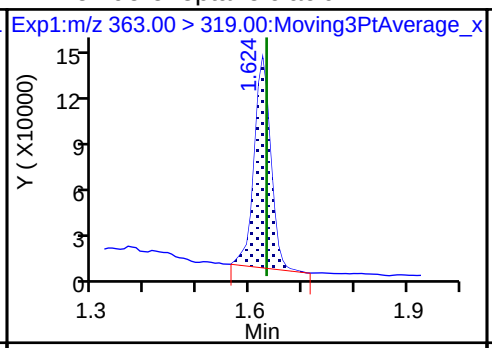
$ 2 13C2 PFHxA



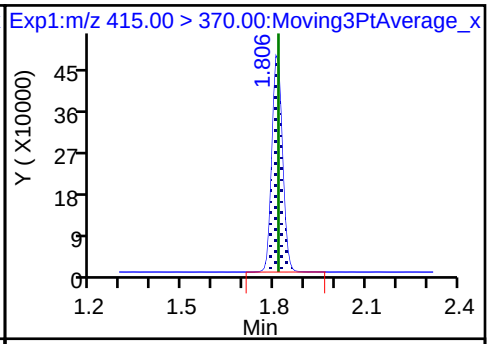
3 Perfluorohexanesulfonic acid



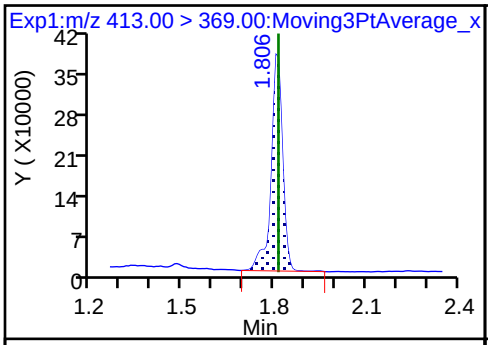
4 Perfluoroheptanoic acid



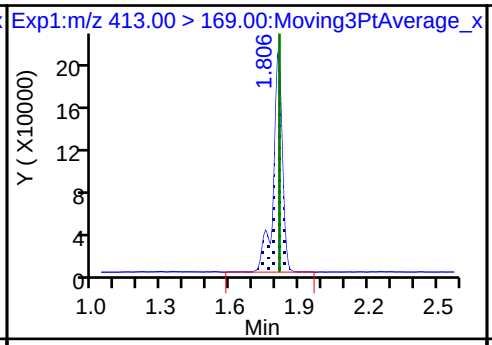
* 6 13C2-PFOA



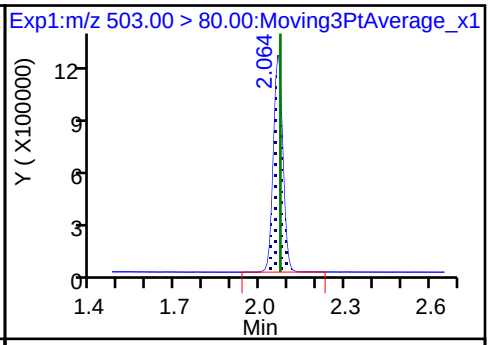
5 Perfluorooctanoic acid



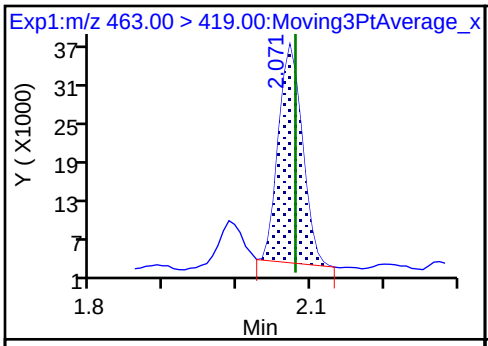
5 Perfluorooctanoic acid



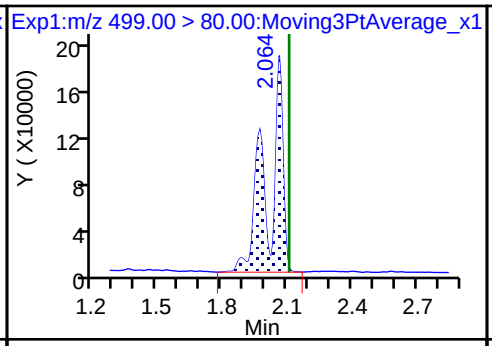
* 7 13C4 PFOS



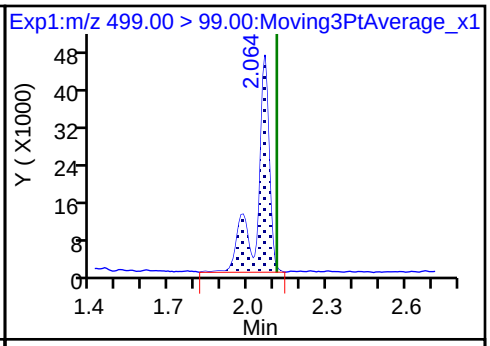
9 Perfluorononanoic acid



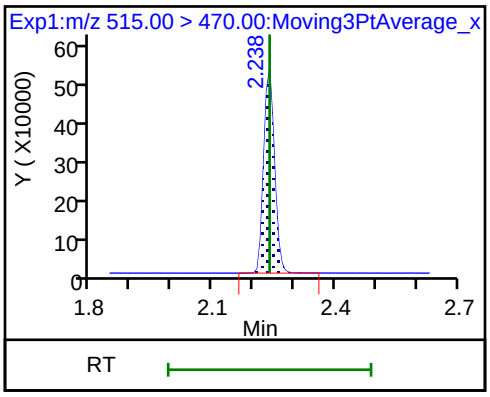
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.238
Y (X10000)
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_028.d
Lims ID: 320-42142-A-1-A
Client ID: NAWC-081418-RW-256
Sample Type: Client
Inject. Date: 27-Aug-2018 01:22:25 ALS Bottle#: 20 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-1-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:41:09

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.47	94.69
$ 10 13C2 PFDA	10.0	10.9	109.37

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-256
Lab Sample ID: 320-42142-2
Matrix: Water
Lab File ID: 2018.08.26_537C_031.d
Analysis Method: 537
Date Collected: 08/14/2018 08:35
Extraction Method: 537
Date Extracted: 08/23/2018 07:20
Sample wt/vol: 278.1(mL)
Date Analyzed: 08/27/2018 01:36
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.: 242157
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	108		70-130
STL00996	13C2 PFDA	108		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_031.d
Lims ID: 320-42142-A-2-A
Client ID: NAWC-081418-FRB-256
Sample Type: Client
Inject. Date: 27-Aug-2018 01:36:25 ALS Bottle#: 21 Worklist Smp#: 28
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-2-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:59:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

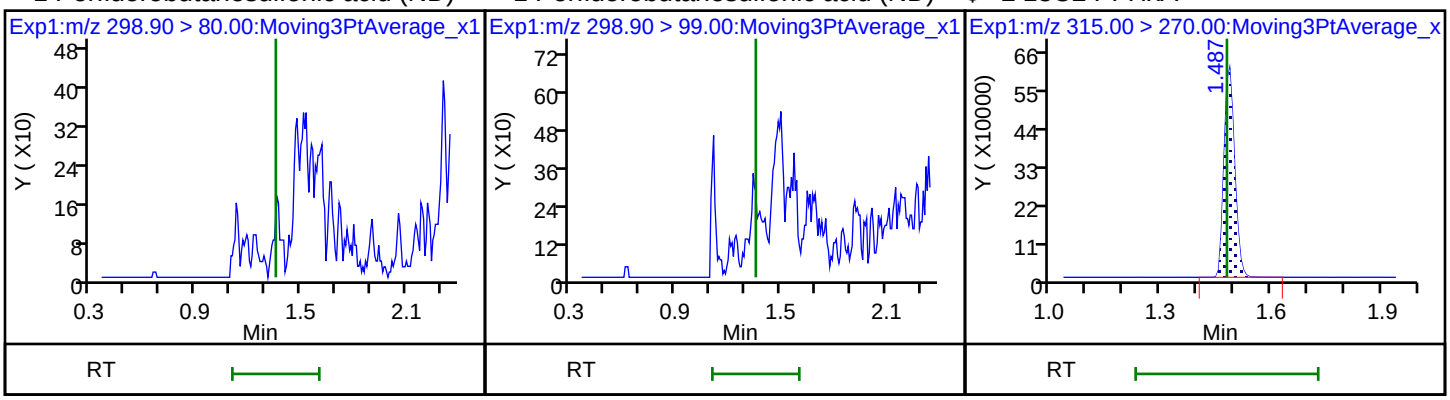
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.479	0.008	1.000	1225871	10.8		14149	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		1087608	10.0		8564	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.064	0.007		2737007	28.7		7507	
$ 10 13C2 PFDA									
515.00 > 470.00	2.246	2.238	0.008	1.000	929612	10.8		4721	

Report Date: 27-Aug-2018 14:59:28 Chrom Revision: 2.3 19-Jul-2018 15:14:50

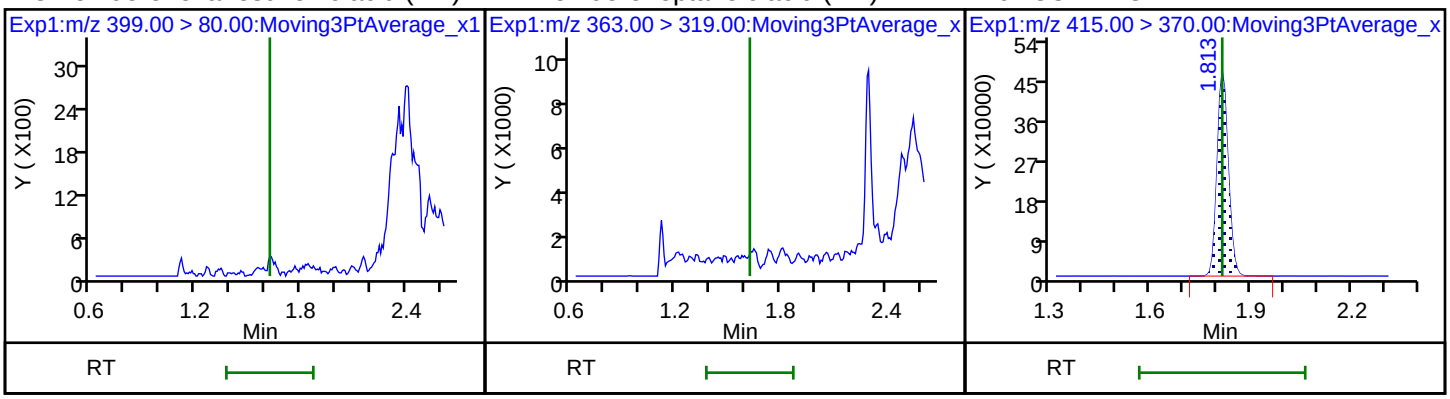
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_031.d				
Injection Date:	27-Aug-2018 01:36:25	Instrument ID:	A8_N		
Lims ID:	320-42142-A-2-A	Lab Sample ID:	320-42142-2		
Client ID:	NAWC-081418-FRB-256				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	28
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

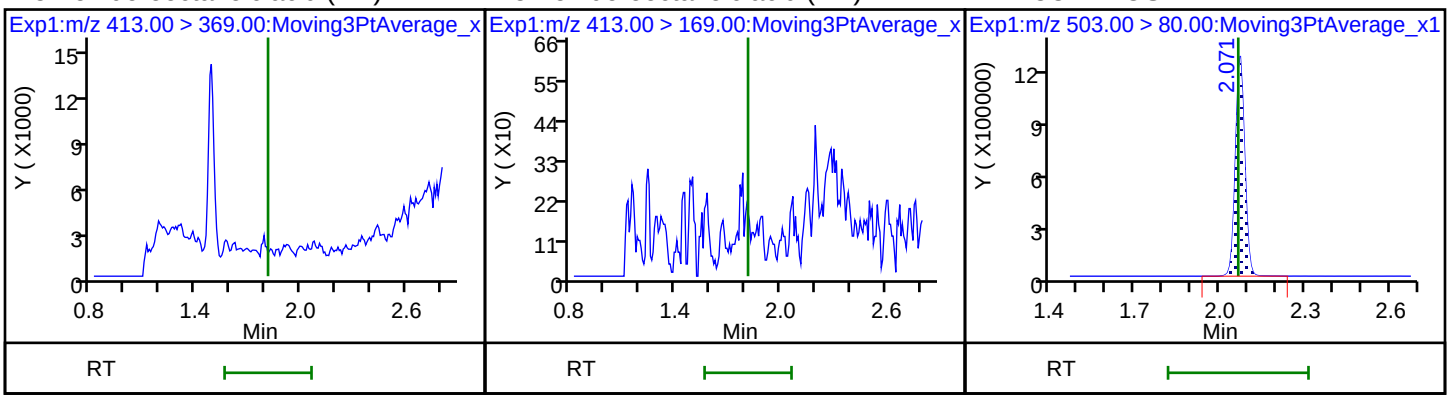
1 Perfluorobutanesulfonic acid (ND) | 1 Perfluorobutanesulfonic acid (ND) | $ 2 13C2 PFHxA



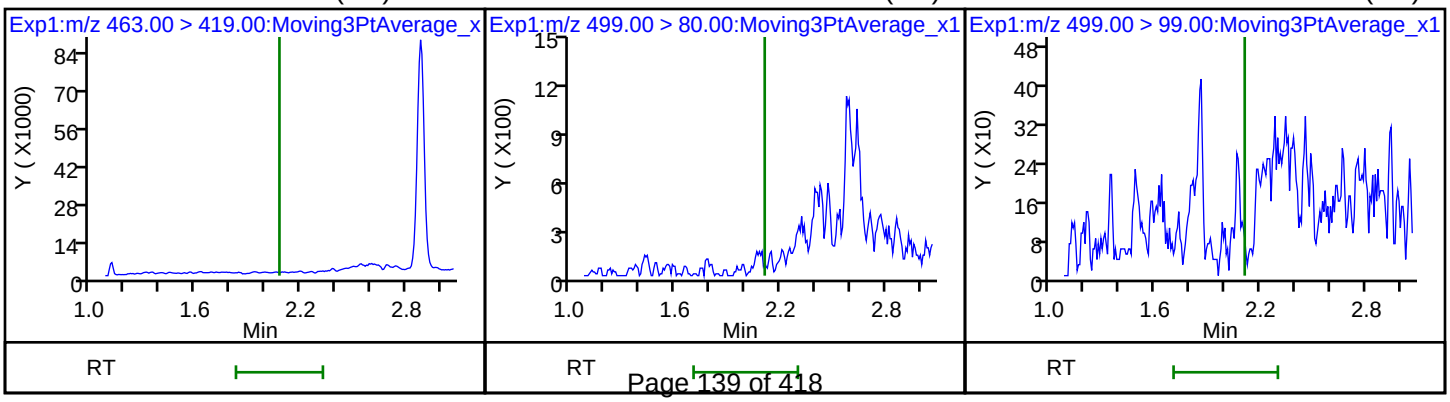
3 Perfluorohexanesulfonic acid (ND) | 4 Perfluoroheptanoic acid (ND) | * 6 13C2-PFOA



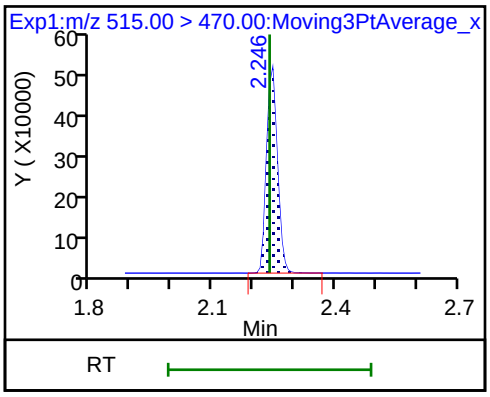
5 Perfluorooctanoic acid (ND) | 5 Perfluorooctanoic acid (ND) | * 7 13C4 PFOS



9 Perfluorononanoic acid (ND) | 8 Perfluorooctane sulfonic acid (ND) | 8 Perfluorooctane sulfonic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.246
Y (X10000)
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_031.d
Lims ID: 320-42142-A-2-A
Client ID: NAWC-081418-FRB-256
Sample Type: Client
Inject. Date: 27-Aug-2018 01:36:25 ALS Bottle#: 21 Worklist Smp#: 28
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-2-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:59:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.8	108.44
$ 10 13C2 PFDA	10.0	10.8	107.90

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-270
Lab Sample ID: 320-42142-3
Matrix: Water
Lab File ID: 2018.08.26_537C_032.d
Analysis Method: 537
Date Collected: 08/14/2018 09:40
Extraction Method: 537
Date Extracted: 08/23/2018 07:20
Sample wt/vol: 260.3(mL)
Date Analyzed: 08/27/2018 01:41
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242157
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	J	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	11	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)	3.6	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	86	35	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	108		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_032.d
Lims ID: 320-42142-A-3-A
Client ID: NAWC-081418-RW-270
Sample Type: Client
Inject. Date: 27-Aug-2018 01:41:05 ALS Bottle#: 22 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-3-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:59:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:41:33

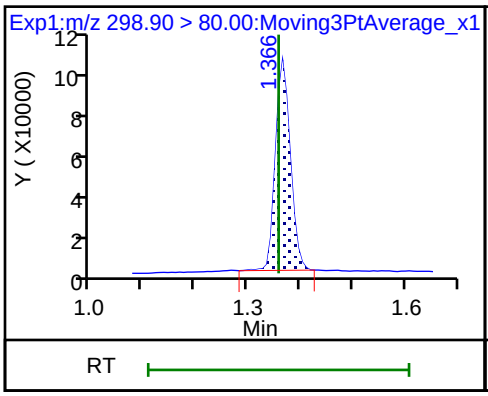
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.358	0.008	1.000	199168	1.82		300	
298.90 > 99.00	1.366	1.358	0.008	1.000	132016		1.51(0.00-0.00)	279	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.479	0.008	1.000	1181197	10.1		9712	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.624	0.007	1.000	210897	1.33		115	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.624	0.007	1.000	111974	0.9416		18.6	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		1124503	10.0		7775	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.813	0.0	1.000	354406	2.89		42.1	
413.00 > 169.00	1.813	1.813	0.0	1.000	212642		1.67(0.00-0.00)	506	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.064	0.007		2743746	28.7		4044	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	391857	3.79		294	
499.00 > 99.00	2.071	2.109	-0.038	1.000	66162		5.92(0.00-0.00)	113	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	962288	10.8		5216	

Report Date: 27-Aug-2018 14:59:31 Chrom Revision: 2.3 19-Jul-2018 15:14:50

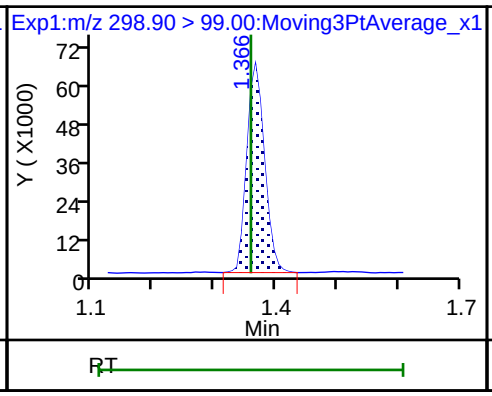
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_032.d				
Injection Date:	27-Aug-2018 01:41:05	Instrument ID:	A8_N		
Lims ID:	320-42142-A-3-A	Lab Sample ID:	320-42142-3		
Client ID:	NAWC-081418-RW-270				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	22	Worklist Smp#:	29
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

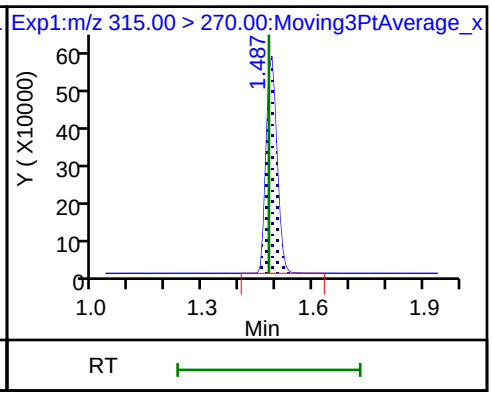
1 Perfluorobutanesulfonic acid



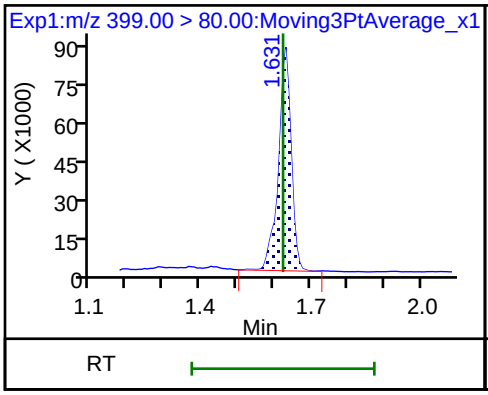
1 Perfluorobutanesulfonic acid



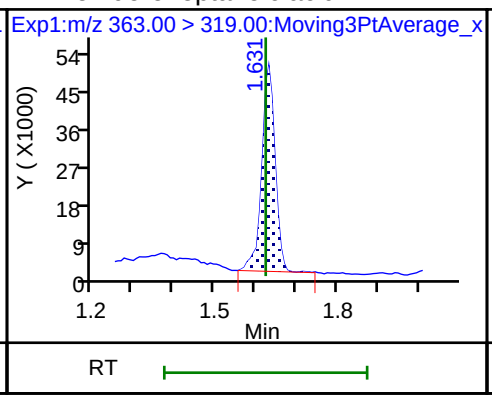
$ 2 13C2 PFHxA



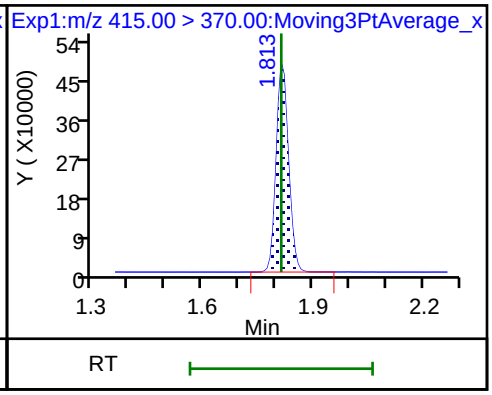
3 Perfluorohexanesulfonic acid



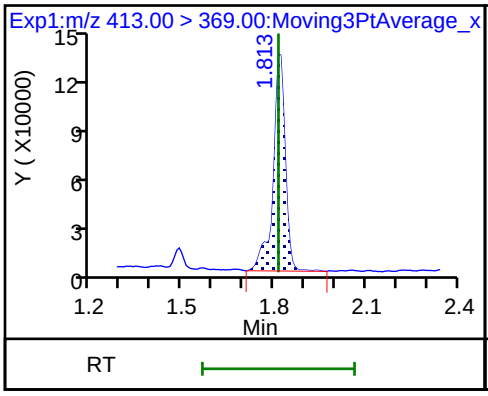
4 Perfluoroheptanoic acid



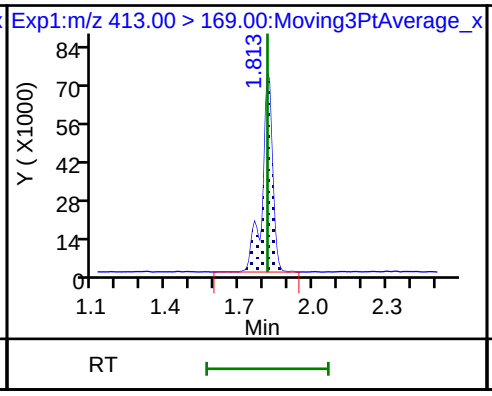
* 6 13C2-PFOA



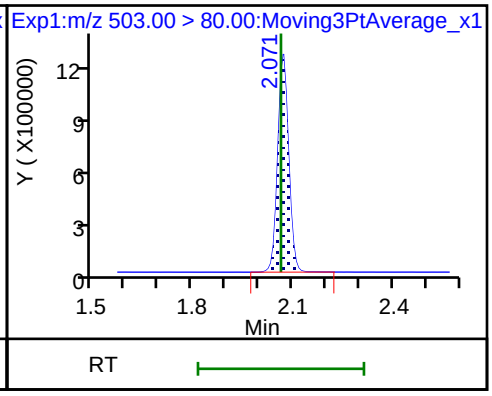
5 Perfluorooctanoic acid



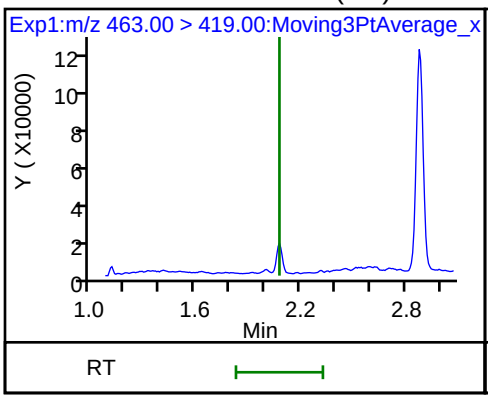
5 Perfluorooctanoic acid



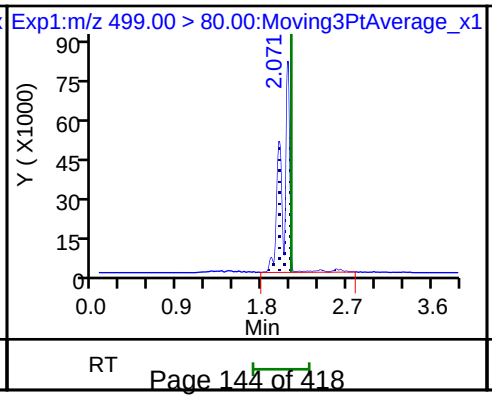
* 7 13C4 PFOS



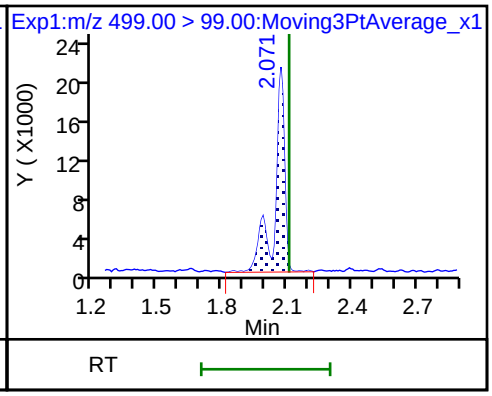
9 Perfluorononanoic acid (ND)



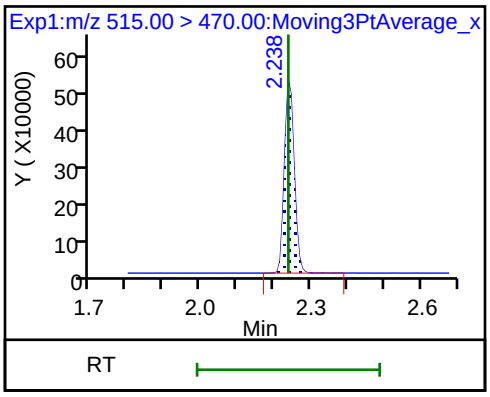
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.238
Y (X10000)
60
50
40
30
20
10
0
1.7
2.0
2.3
2.6
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_032.d
Lims ID: 320-42142-A-3-A
Client ID: NAWC-081418-RW-270
Sample Type: Client
Inject. Date: 27-Aug-2018 01:41:05 ALS Bottle#: 22 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-3-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:59:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:41:33

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.1	101.06
$ 10 13C2 PFDA	10.0	10.8	108.03

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-270
Lab Sample ID: 320-42142-4
Matrix: Water
Lab File ID: 2018.08.26_537C_033.d
Analysis Method: 537
Date Collected: 08/14/2018 09:35
Extraction Method: 537
Date Extracted: 08/23/2018 07:20
Sample wt/vol: 275.6(mL)
Date Analyzed: 08/27/2018 01:45
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.: 242157
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	U	18	7.3	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	113		70-130
STL00996	13C2 PFDA	120		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_033.d
Lims ID: 320-42142-A-4-A
Client ID: NAWC-081418-FRB-270
Sample Type: Client
Inject. Date: 27-Aug-2018 01:45:46 ALS Bottle#: 23 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-4-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:59:33 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:59:39

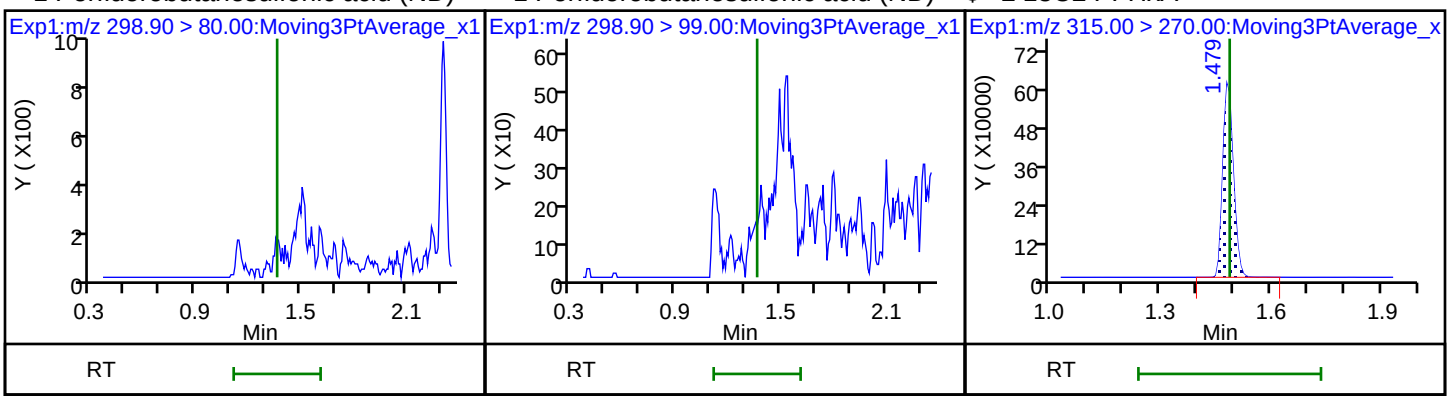
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.487	-0.008	1.000	1237579	11.3		12566	
* 6 13C2-PFOA									
415.00 > 370.00	1.806	1.813	-0.007		1055150	10.0		9051	
* 7 13C4 PFOS									
503.00 > 80.00	2.064	2.071	-0.007		2782033	28.7		7580	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	1005399	12.0		5305	

Report Date: 27-Aug-2018 14:59:44 Chrom Revision: 2.3 19-Jul-2018 15:14:50

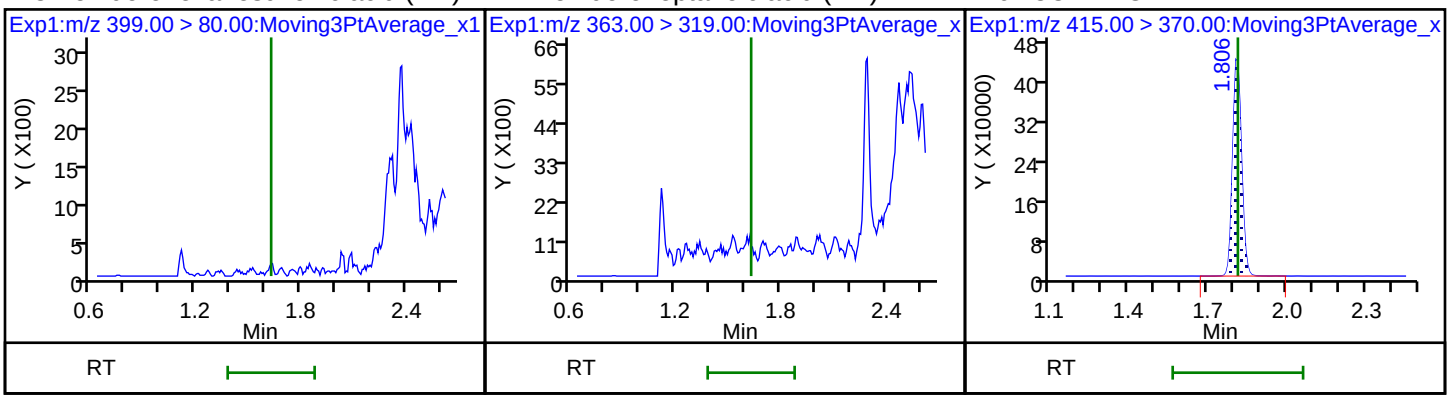
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_033.d				
Injection Date:	27-Aug-2018 01:45:46	Instrument ID:	A8_N		
Lims ID:	320-42142-A-4-A	Lab Sample ID:	320-42142-4		
Client ID:	NAWC-081418-FRB-270				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	23	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

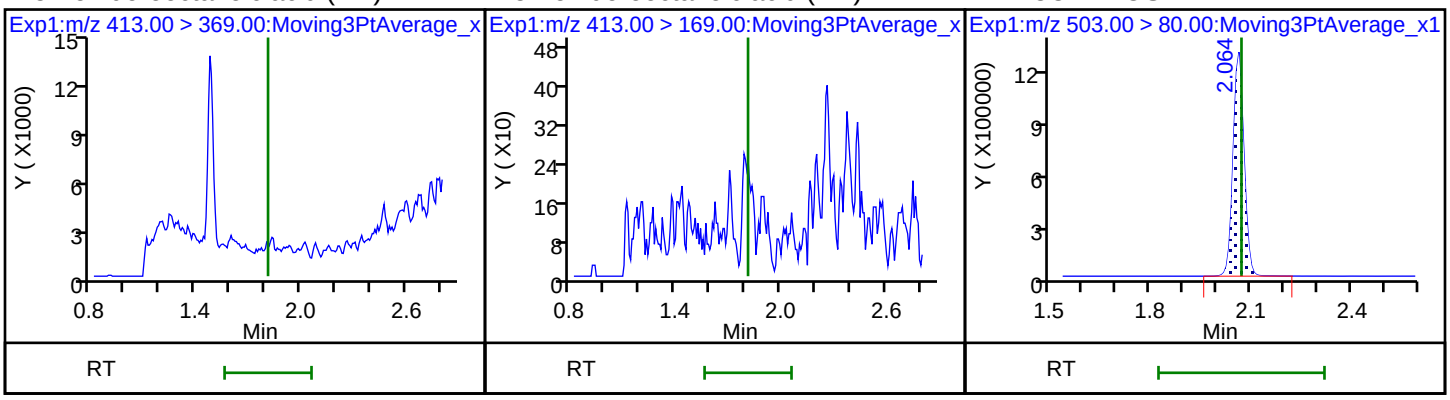
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) $ 2 13C2 PFHxA



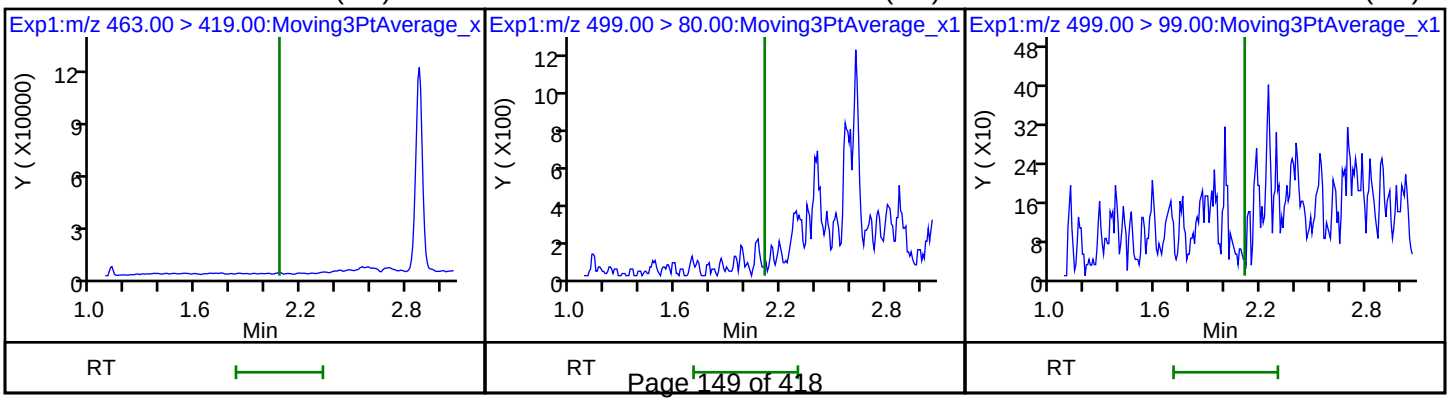
3 Perfluorohexanesulfonic acid (ND) 4 Perfluoroheptanoic acid (ND) * 6 13C2-PFOA



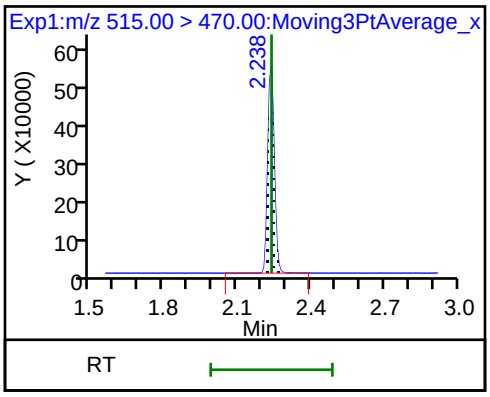
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) * 7 13C4 PFOS



9 Perfluorononanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.238
Y (X10000)
60
50
40
30
20
10
0
1.5
1.8
2.1
2.4
2.7
3.0
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_033.d
Lims ID: 320-42142-A-4-A
Client ID: NAWC-081418-FRB-270
Sample Type: Client
Inject. Date: 27-Aug-2018 01:45:46 ALS Bottle#: 23 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-4-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:59:33 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:59:39

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	11.3	112.84
$ 10 13C2 PFDA	10.0	12.0	120.29

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-271
Lab Sample ID: 320-42142-5
Matrix: Water
Lab File ID: 2018.08.28_537A_012.d
Analysis Method: 537
Date Collected: 08/14/2018 10:10
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 260.5(mL)
Date Analyzed: 08/29/2018 00:04
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242687
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.2	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	J M	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	86	35	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	96		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_012.d
Lims ID: 320-42142-A-5-A
Client ID: NAWC-081418-RW-271
Sample Type: Client
Inject. Date: 29-Aug-2018 00:04:30 ALS Bottle#: 6 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-5-a (241832)
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 11:06:11 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 29-Aug-2018 11:06:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.373	-0.007	1.000	114685	1.00		172	
298.90 > 99.00	1.366	1.373	-0.007	1.000	75355		1.52(0.00-0.00)	193	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.495	-0.008	1.000	1108245	8.48		9282	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.639	-0.008	1.000	268857	1.62		122	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	1.631	1.639	-0.008	1.000	126410	0.9511		22.3	M
* 6 13C2-PFOA									
415.00 > 370.00	1.828	1.828	0.0		1256836	10.0		9025	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.828	1.828	0.0	1.000	464678	3.39		56.4	
413.00 > 169.00	1.828	1.828	0.0	1.000	264034		1.76(0.00-0.00)	614	
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.086	0.0		2880471	28.7		3930	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.086	2.109	-0.023	1.000	309420	2.85		153	
499.00 > 99.00	2.086	2.109	-0.023	1.000	51985		5.95(0.00-0.00)	85.1	
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	951274	9.56		5219	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 29-Aug-2018 11:17:00 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_012.d

Injection Date: 29-Aug-2018 00:04:30 Instrument ID: A8_N

Lims ID: 320-42142-A-5-A Lab Sample ID: 320-42142-5

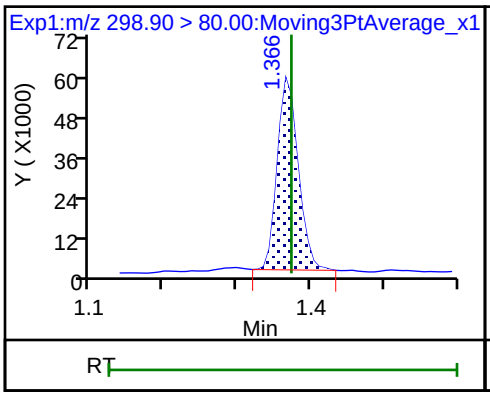
Client ID: NAWC-081418-RW-271

Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 10

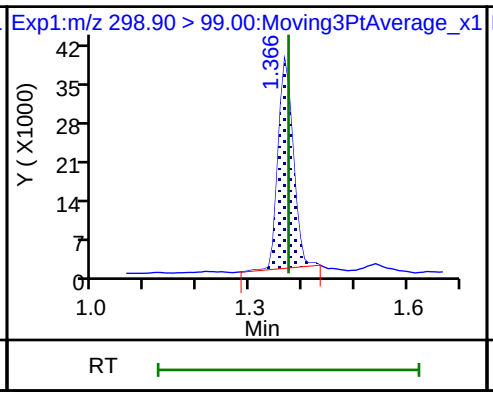
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

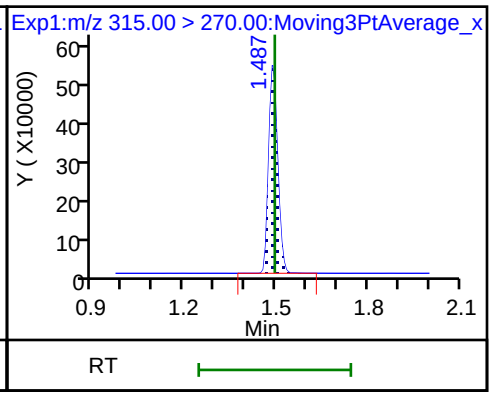
1 Perfluorobutanesulfonic acid



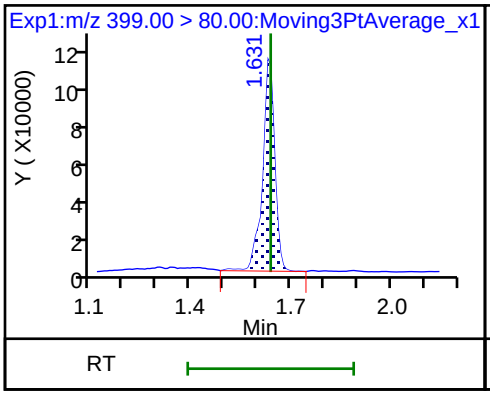
1 Perfluorobutanesulfonic acid



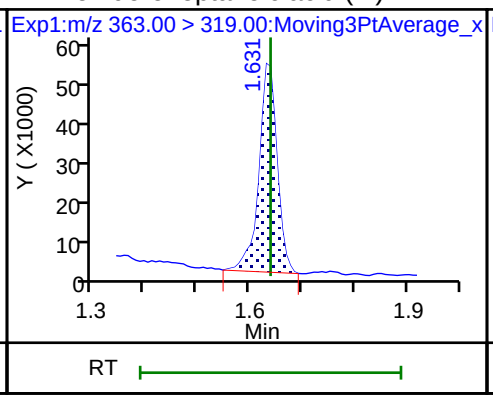
$ 2 13C2 PFHxA



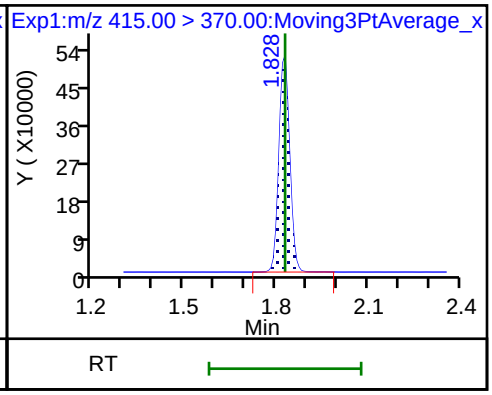
3 Perfluorohexanesulfonic acid



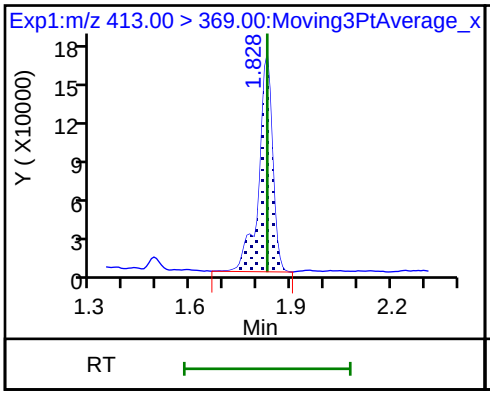
4 Perfluoroheptanoic acid (M)



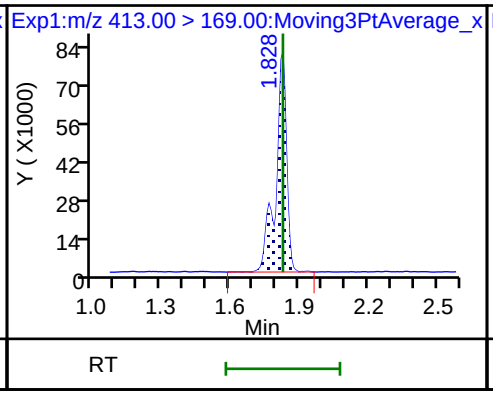
* 6 13C2-PFOA



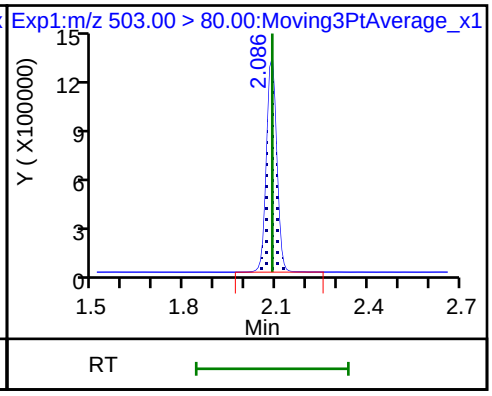
5 Perfluorooctanoic acid



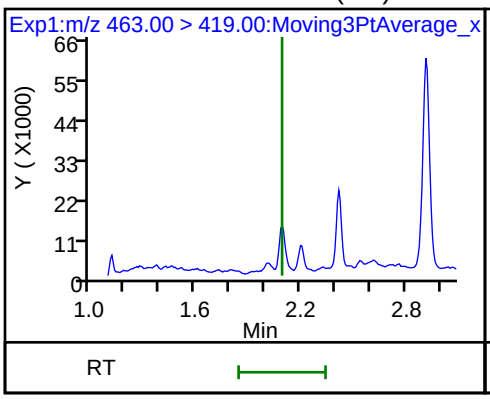
5 Perfluorooctanoic acid



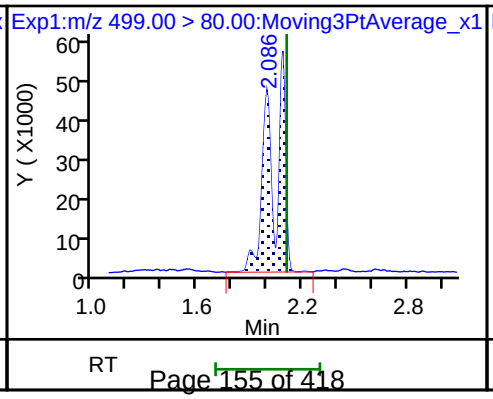
* 7 13C4 PFOS



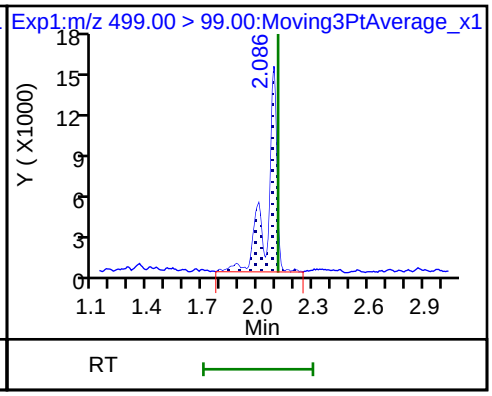
9 Perfluorononanoic acid (ND)



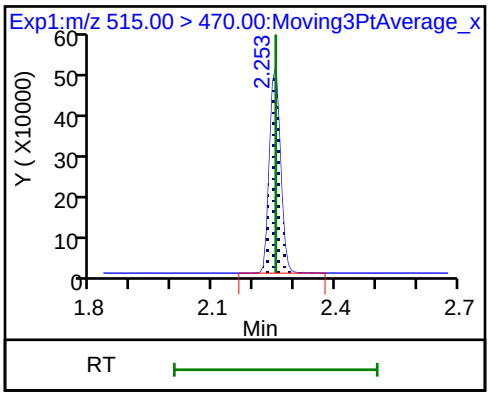
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


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

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_012.d
Lims ID: 320-42142-A-5-A
Client ID: NAWC-081418-RW-271
Sample Type: Client
Inject. Date: 29-Aug-2018 00:04:30 ALS Bottle#: 6 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-5-a (241832)
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 11:06:11 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 29-Aug-2018 11:06:11

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.48	84.83
$ 10 13C2 PFDA	10.0	9.56	95.55

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_012.d				
Injection Date:	29-Aug-2018 00:04:30	Instrument ID:	A8_N		
Lims ID:	320-42142-A-5-A	Lab Sample ID:	320-42142-5		
Client ID:	NAWC-081418-RW-271				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

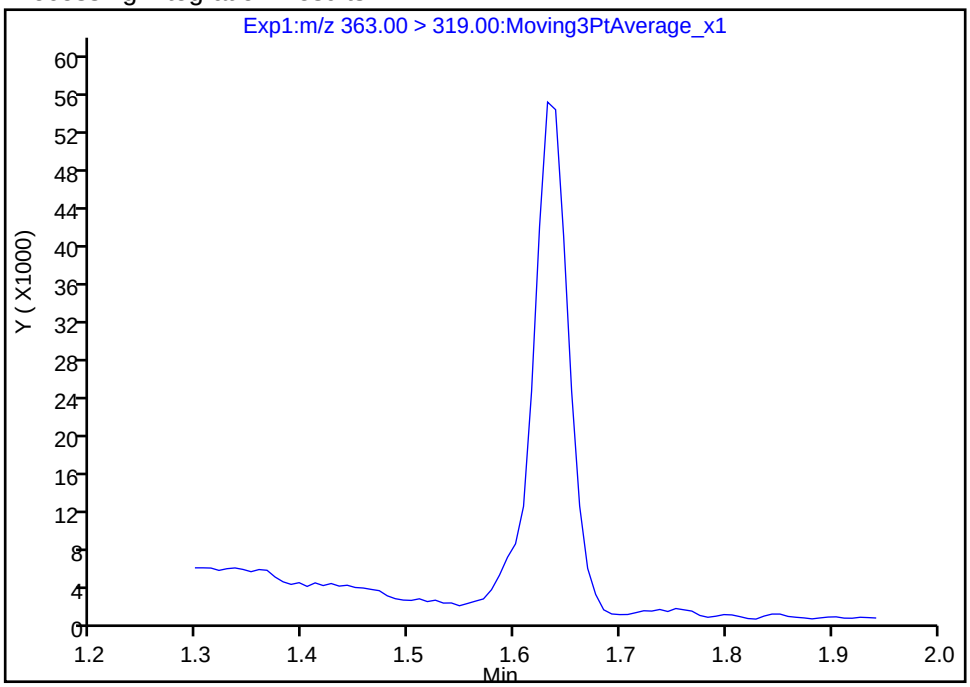
4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

Processing Integration Results

Not Detected

Expected RT: 1.64



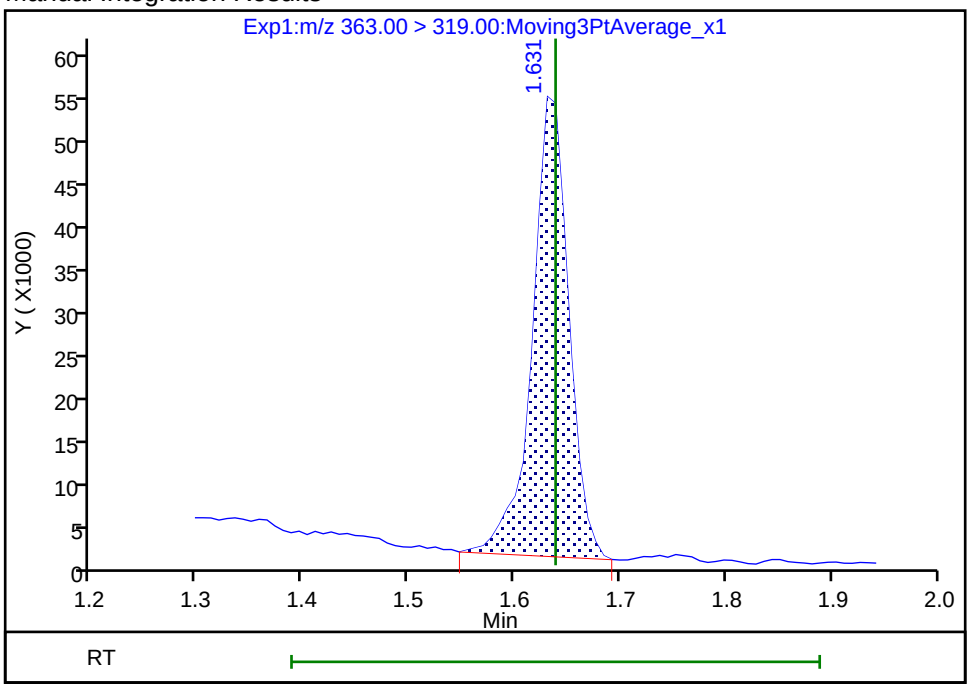
Manual Integration Results

RT: 1.63

Area: 126410

Amount: 0.951082

Amount Units: ng/ml



Reviewer: barnettj, 29-Aug-2018 11:06:03

Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-FRB-271 | Lab Sample ID: 320-42142-6

Matrix: Water | Lab File ID: 2018.08.26_537C_040.d

Analysis Method: 537 | Date Collected: 08/14/2018 10:05

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 280.2(mL) | Date Analyzed: 08/27/2018 02:18

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.: 242160 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.1	U	18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	8.9	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	99		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_040.d
Lims ID: 320-42142-A-6-A
Client ID: NAWC-081418-FRB-271
Sample Type: Client
Inject. Date: 27-Aug-2018 02:18:28 ALS Bottle#: 28 Worklist Smp#: 37
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-6-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:27:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

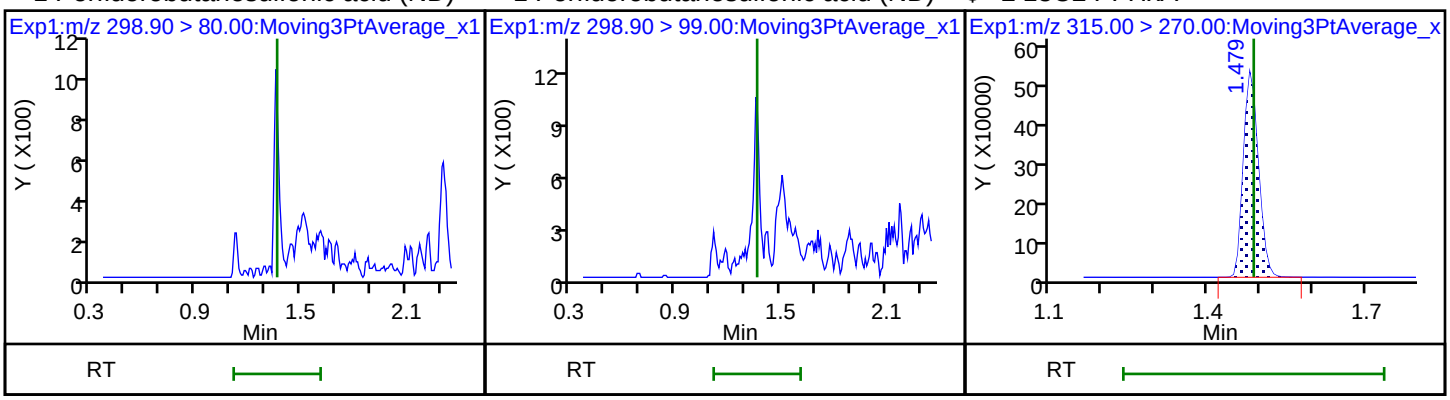
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.487	-0.008	1.000	1047658	10.1		9942	
* 6 13C2-PFOA									
415.00 > 370.00	1.806	1.813	-0.007		994954	10.0		7508	
* 7 13C4 PFOS									
503.00 > 80.00	2.064	2.071	-0.007		2482133	28.7		6372	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	780904	9.91		4091	

Report Date: 27-Aug-2018 15:31:22 Chrom Revision: 2.3 19-Jul-2018 15:14:50

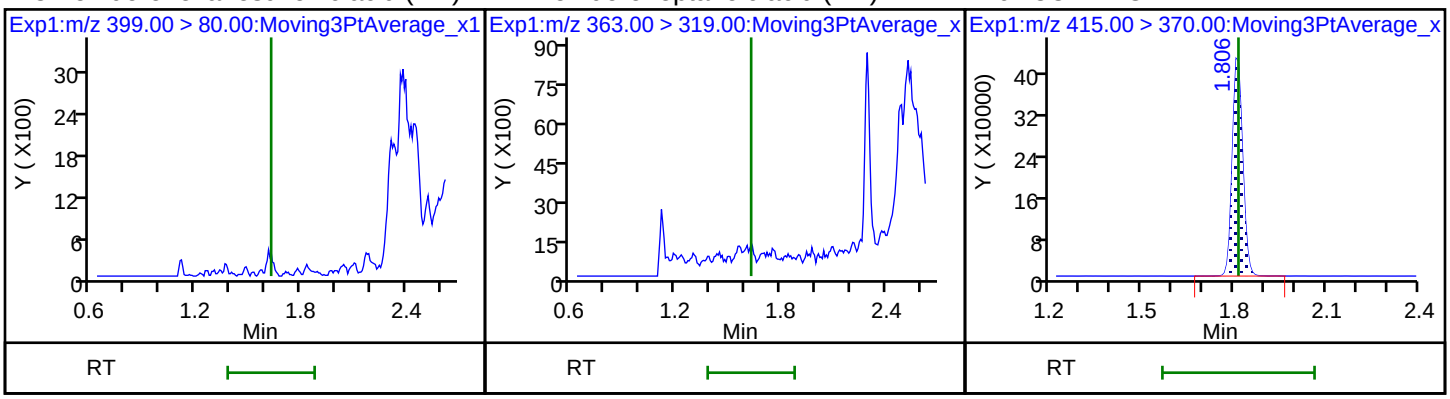
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_040.d				
Injection Date:	27-Aug-2018 02:18:28	Instrument ID:	A8_N		
Lims ID:	320-42142-A-6-A	Lab Sample ID:	320-42142-6		
Client ID:	NAWC-081418-FRB-271				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	37
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

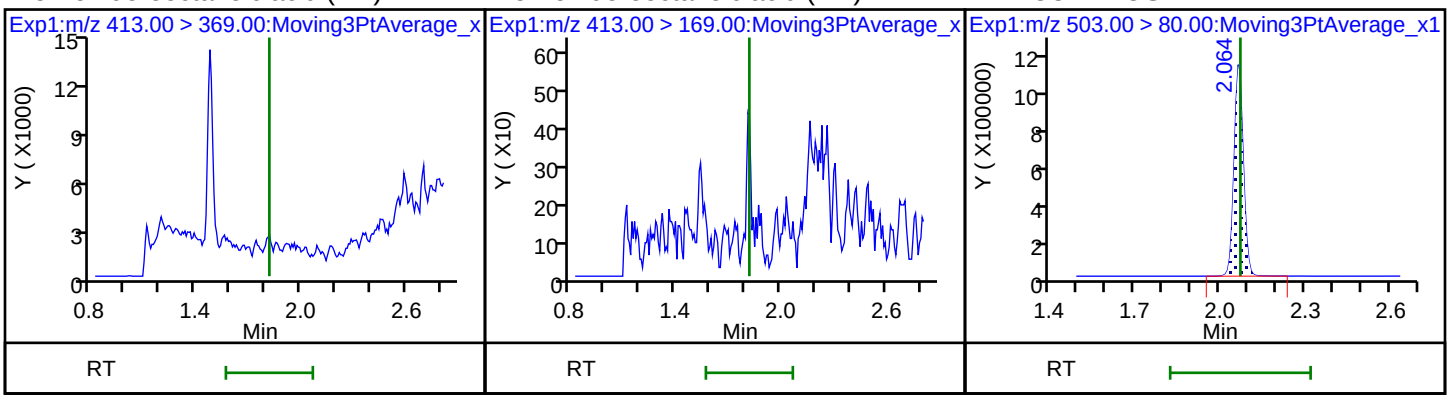
1 Perfluorobutanesulfonic acid (ND) | 1 Perfluorobutanesulfonic acid (ND) | $ 2 13C2 PFHxA



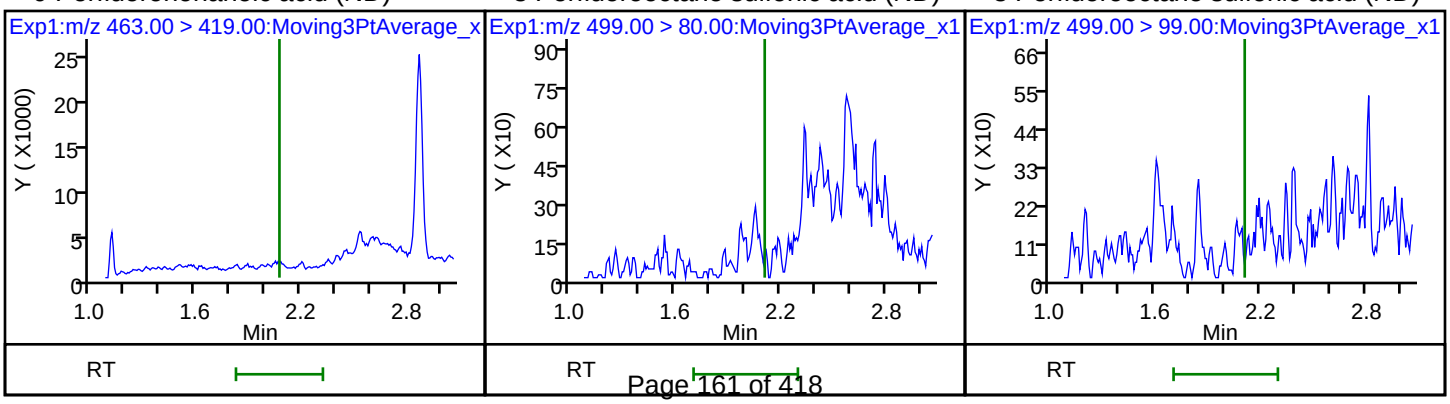
3 Perfluorohexanesulfonic acid (ND) | 4 Perfluoroheptanoic acid (ND) | * 6 13C2-PFOA



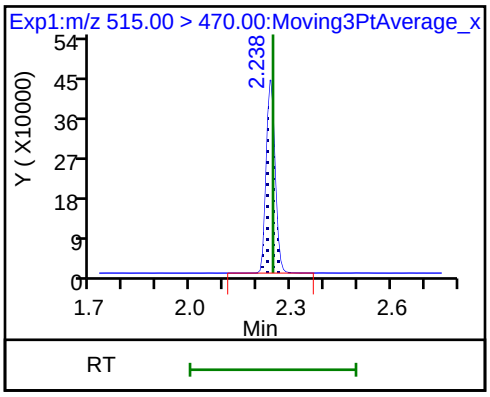
5 Perfluorooctanoic acid (ND) | 5 Perfluorooctanoic acid (ND) | * 7 13C4 PFOS



9 Perfluorononanoic acid (ND) | 8 Perfluorooctane sulfonic acid (ND) | 8 Perfluorooctane sulfonic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.238
Y (X10000)
54
45
36
27
18
9
0
1.7
2.0
2.3
2.6
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_040.d
Lims ID: 320-42142-A-6-A
Client ID: NAWC-081418-FRB-271
Sample Type: Client
Inject. Date: 27-Aug-2018 02:18:28 ALS Bottle#: 28 Worklist Smp#: 37
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-6-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:27:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.1	101.31
$ 10 13C2 PFDA	10.0	9.91	99.08

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-311
Lab Sample ID: 320-42142-7
Matrix: Water
Lab File ID: 2018.08.26_537C_041.d
Analysis Method: 537
Date Collected: 08/14/2018 11:10
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 272.9(mL)
Date Analyzed: 08/27/2018 02:23
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242160
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	37	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	18	7.3	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.5	J	9.2	3.7	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		70-130
STL00996	13C2 PFDA	96		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_041.d
Lims ID: 320-42142-A-7-A
Client ID: NAWC-081418-RW-311
Sample Type: Client
Inject. Date: 27-Aug-2018 02:23:08 ALS Bottle#: 29 Worklist Smp#: 38
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-7-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:27:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 15:21:21

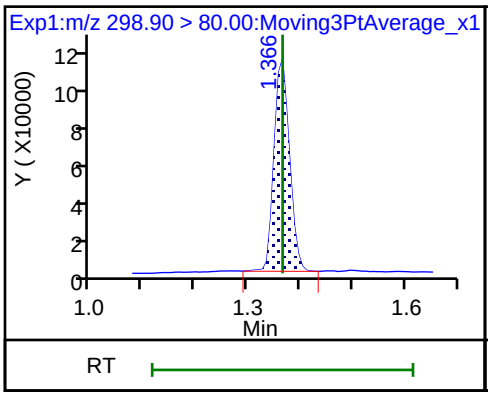
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	227424	2.27		374	
298.90 > 99.00	1.366	1.366	0.0	1.000	148496		1.53(0.00-0.00)	326	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.487	-0.008	1.000	1041144	9.91		10529	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.631	-0.007	1.000	156912	1.08		72.7	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.631	-0.007	1.000	159393	1.49		28.2	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		1010503	10.0		7759	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.821	-0.008	1.000	454841	4.13		56.3	
413.00 > 169.00	1.813	1.821	-0.008	1.000	264734		1.72(0.00-0.00)	656	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2506398	28.7		3578	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	41094	0.4933		4.8	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	434265	4.60		336	
499.00 > 99.00	2.071	2.109	-0.038	1.000	79194		5.48(0.00-0.00)	149	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	764732	9.55		4022	

Report Date: 27-Aug-2018 15:31:25 Chrom Revision: 2.3 19-Jul-2018 15:14:50

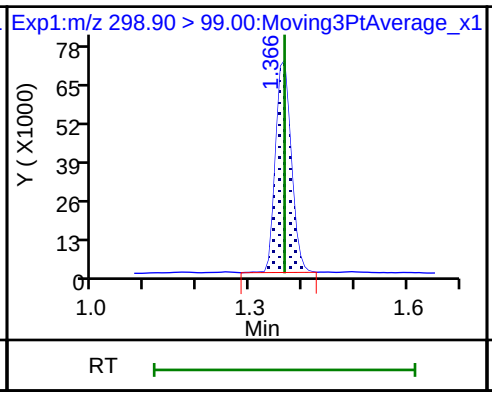
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_041.d				
Injection Date:	27-Aug-2018 02:23:08	Instrument ID:	A8_N		
Lims ID:	320-42142-A-7-A	Lab Sample ID:	320-42142-7		
Client ID:	NAWC-081418-RW-311				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	38
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

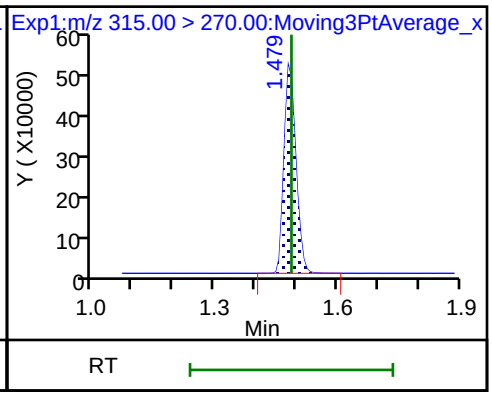
1 Perfluorobutanesulfonic acid



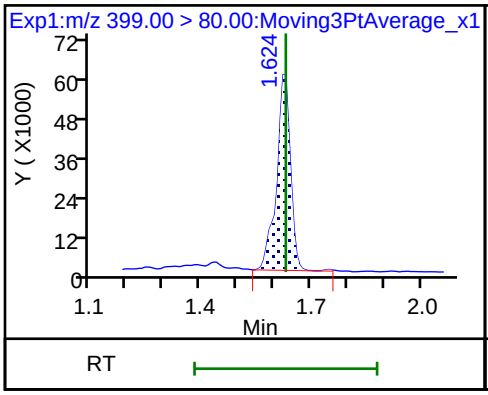
1 Perfluorobutanesulfonic acid



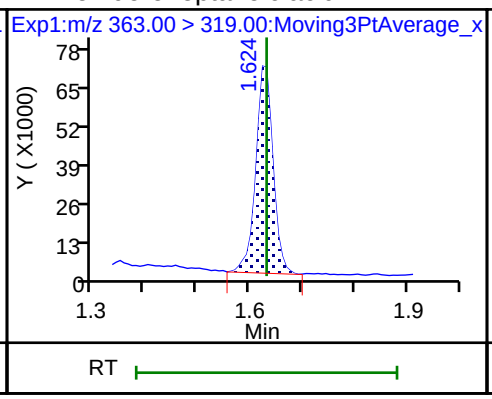
$ 2 13C2 PFHxA



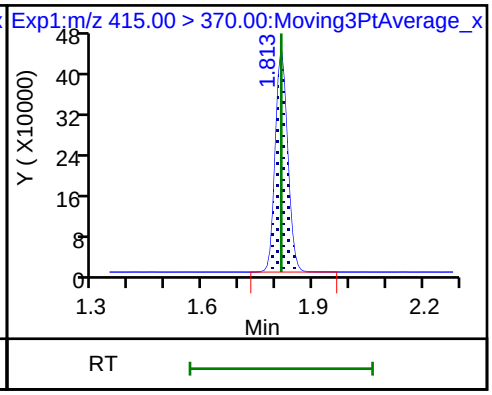
3 Perfluorohexanesulfonic acid



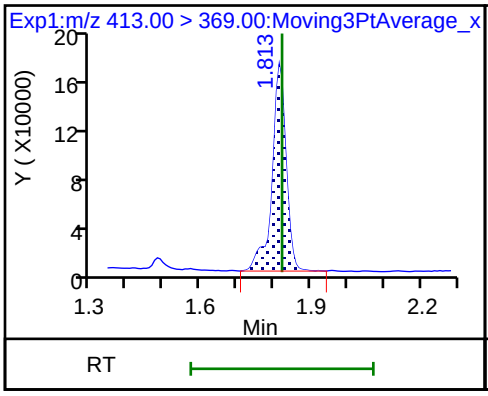
4 Perfluoroheptanoic acid



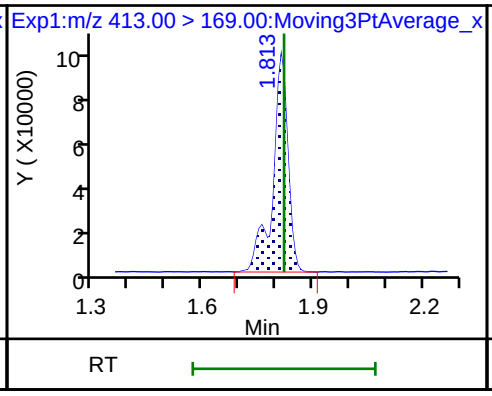
* 6 13C2-PFOA



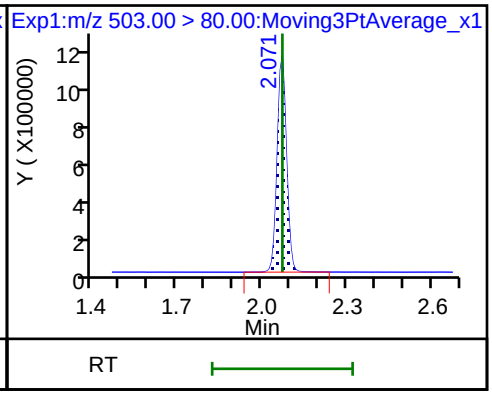
5 Perfluorooctanoic acid



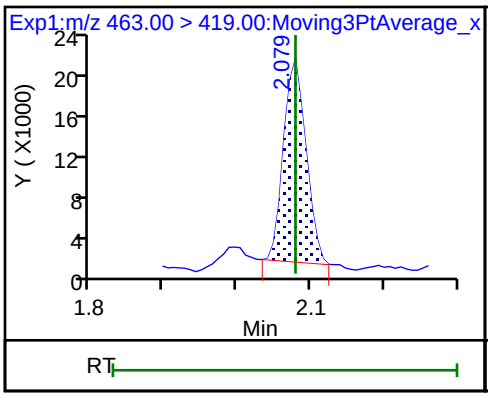
5 Perfluorooctanoic acid



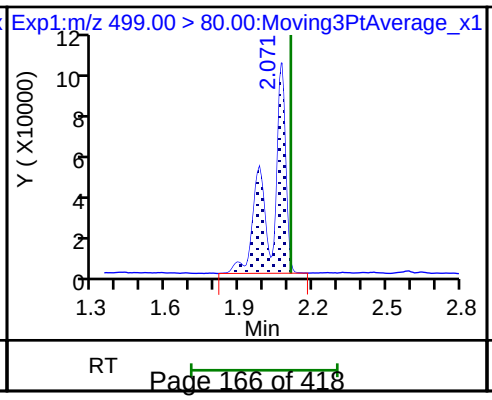
* 7 13C4 PFOS



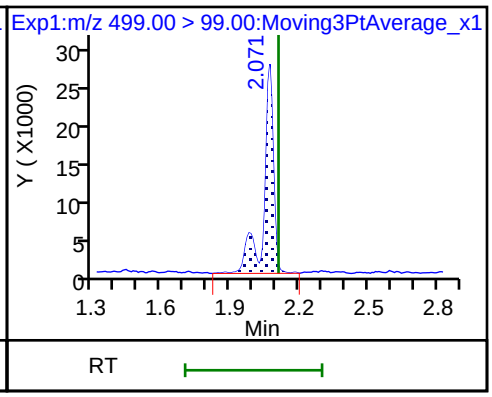
9 Perfluorononanoic acid



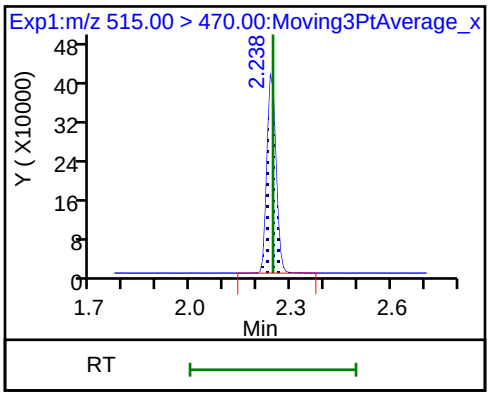
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
Y (X10000)
48
40
32
24
16
8
0
2.238
1.7
2.0
2.3
2.6
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_041.d
Lims ID: 320-42142-A-7-A
Client ID: NAWC-081418-RW-311
Sample Type: Client
Inject. Date: 27-Aug-2018 02:23:08 ALS Bottle#: 29 Worklist Smp#: 38
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-7-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:27:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 15:21:21

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.91	99.13
$ 10 13C2 PFDA	10.0	9.55	95.54

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-311
Lab Sample ID: 320-42142-8
Matrix: Water
Lab File ID: 2018.08.26_537C_042.d
Analysis Method: 537
Date Collected: 08/14/2018 11:05
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 263(mL)
Date Analyzed: 08/27/2018 02:27
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242160
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	106		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_042.d
Lims ID: 320-42142-A-8-A
Client ID: NAWC-081418-FRB-311
Sample Type: Client
Inject. Date: 27-Aug-2018 02:27:49 ALS Bottle#: 30 Worklist Smp#: 39
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-8-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:27:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

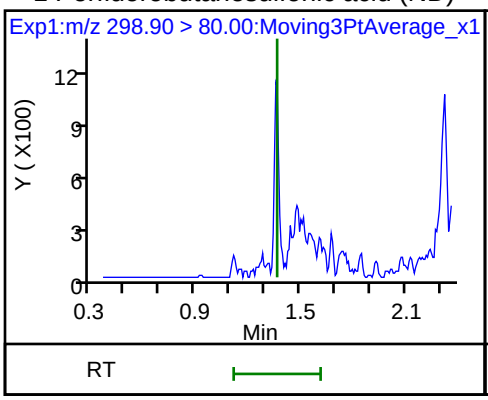
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.487	-0.008	1.000	1140026	9.83		13000	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		1115578	10.0		7683	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2734636	28.7		7149	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	937660	10.6		5148	

Report Date: 27-Aug-2018 15:31:28 Chrom Revision: 2.3 19-Jul-2018 15:14:50

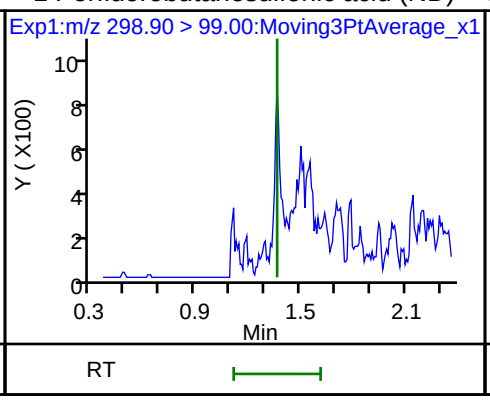
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_042.d				
Injection Date:	27-Aug-2018 02:27:49	Instrument ID:	A8_N		
Lims ID:	320-42142-A-8-A	Lab Sample ID:	320-42142-8		
Client ID:	NAWC-081418-FRB-311				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	30	Worklist Smp#:	39
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

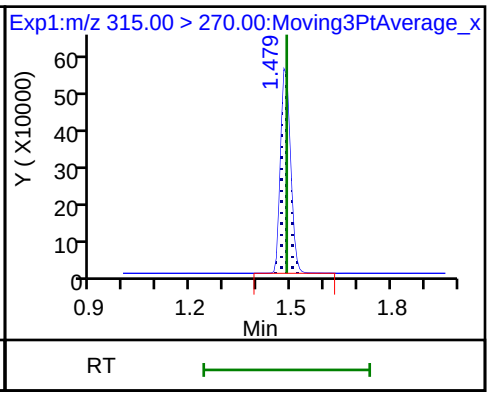
1 Perfluorobutanesulfonic acid (ND)



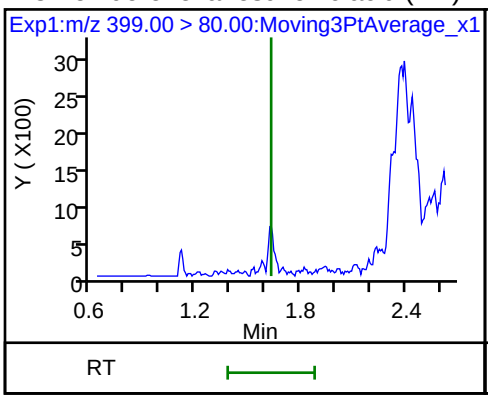
1 Perfluorobutanesulfonic acid (ND)



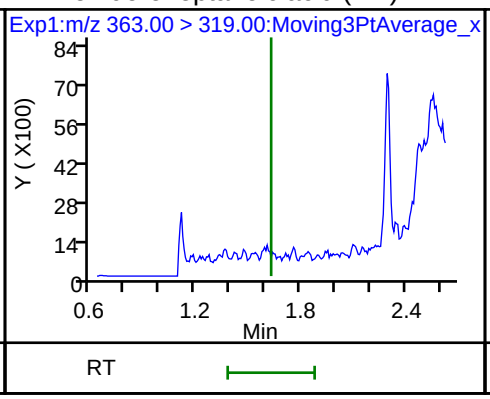
$ 2 13C2 PFHxA



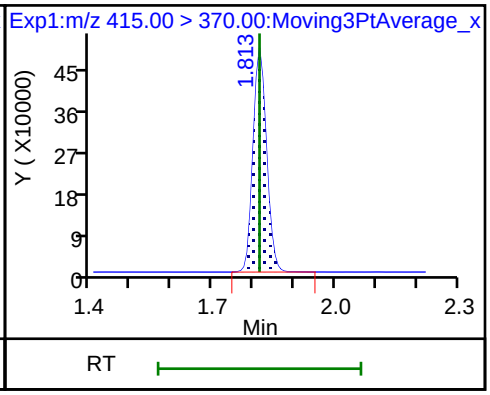
3 Perfluorohexanesulfonic acid (ND)



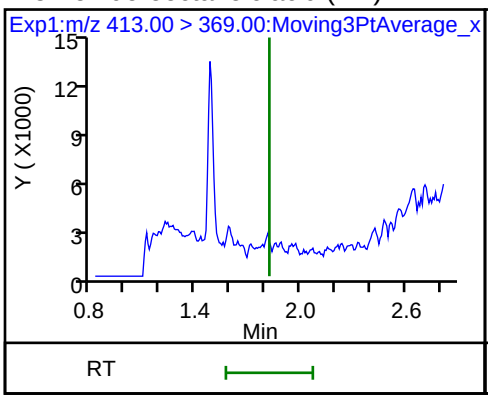
4 Perfluoroheptanoic acid (ND)



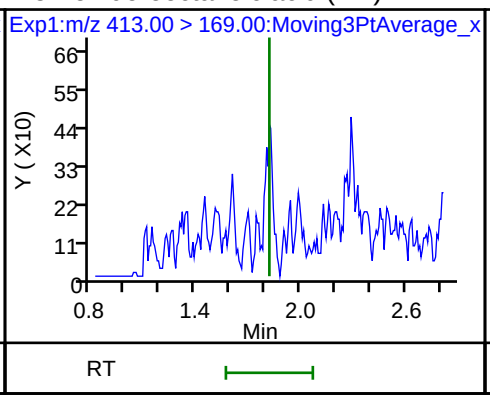
* 6 13C2-PFOA



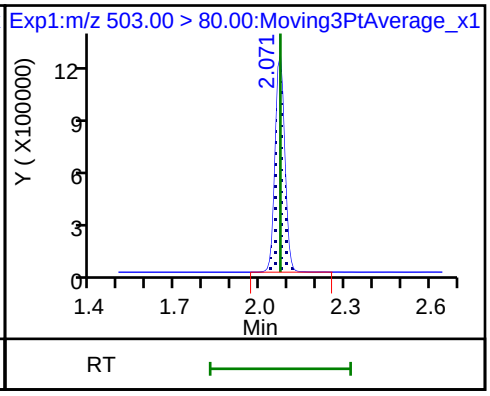
5 Perfluorooctanoic acid (ND)



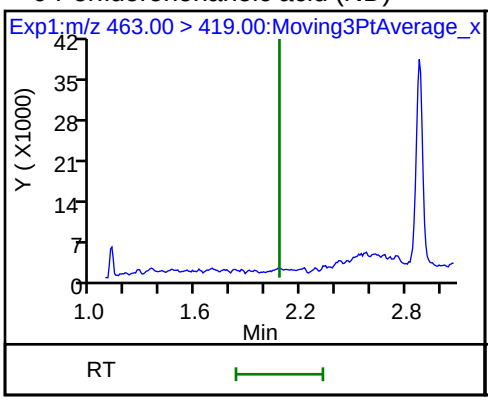
5 Perfluorooctanoic acid (ND)



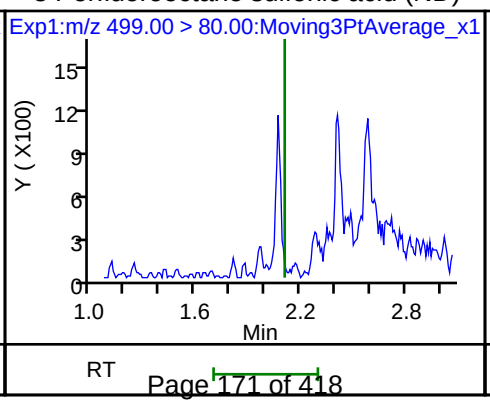
* 7 13C4 PFOS



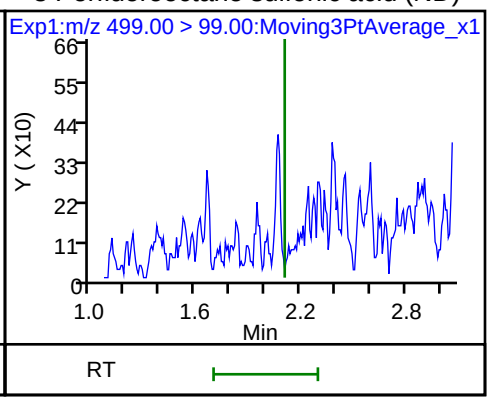
9 Perfluorononanoic acid (ND)



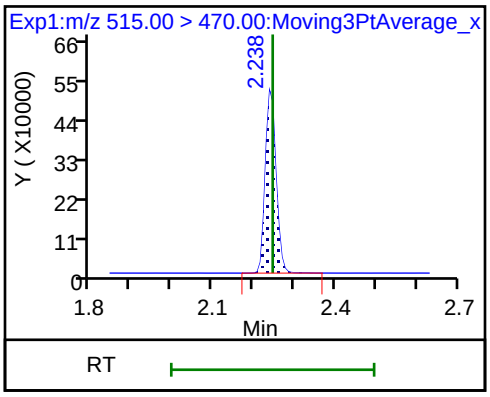
8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND)



$ 10 13C2 PFDA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2.238
Y (X10000)
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_042.d
Lims ID: 320-42142-A-8-A
Client ID: NAWC-081418-FRB-311
Sample Type: Client
Inject. Date: 27-Aug-2018 02:27:49 ALS Bottle#: 30 Worklist Smp#: 39
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-8-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:27:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.83	98.32
$ 10 13C2 PFDA	10.0	10.6	106.11

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-038
Lab Sample ID: 320-42142-9
Matrix: Water
Lab File ID: 2018.08.26_537C_043.d
Analysis Method: 537
Date Collected: 08/14/2018 12:10
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 257.9(mL)
Date Analyzed: 08/27/2018 02:32
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.: 242160
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	27	J	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	22		19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.3	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.2	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	90		70-130
STL00996	13C2 PFDA	97		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_043.d
Lims ID: 320-42142-A-9-A
Client ID: NAWC-081418-RW-038
Sample Type: Client
Inject. Date: 27-Aug-2018 02:32:29 ALS Bottle#: 31 Worklist Smp#: 40
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-9-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:27:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 15:21:48

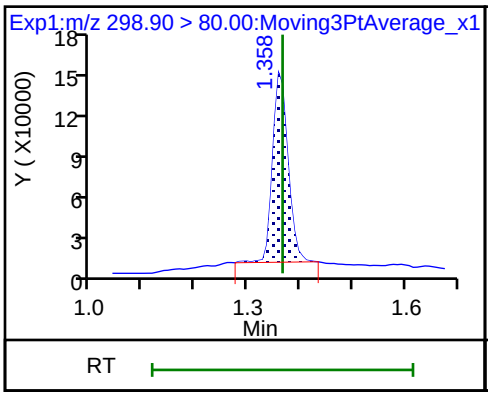
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.366	-0.008	1.000	274339	2.46		113	
298.90 > 99.00	1.358	1.366	-0.008	1.000	181820		1.51(0.00-0.00)	308	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.487	-0.008	1.000	1064053	8.99		8447	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.631	-0.007	1.000	264681	1.64		55.7	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.631	-0.007	1.000	192111	1.60		18.3	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		1138862	10.0		6884	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.821	-0.008	1.000	706762	5.70		56.4	
413.00 > 169.00	1.813	1.821	-0.008	1.000	402171		1.76(0.00-0.00)	852	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2799168	28.7		1456	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	82817	0.8822		7.4	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	728500	6.91		178	
499.00 > 99.00	2.064	2.109	-0.045	0.996	122480		5.95(0.00-0.00)	137	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	878008	9.73		4659	

Report Date: 27-Aug-2018 15:31:31 Chrom Revision: 2.3 19-Jul-2018 15:14:50

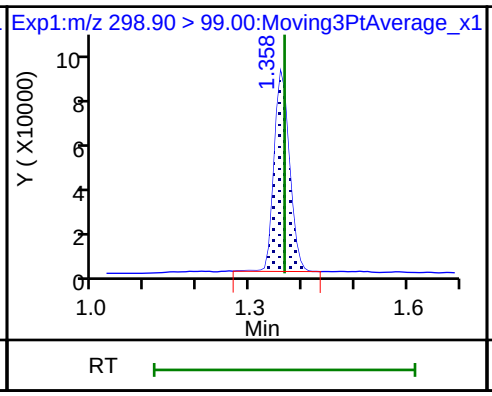
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_043.d				
Injection Date:	27-Aug-2018 02:32:29	Instrument ID:	A8_N		
Lims ID:	320-42142-A-9-A	Lab Sample ID:	320-42142-9		
Client ID:	NAWC-081418-RW-038				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	31	Worklist Smp#:	40
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

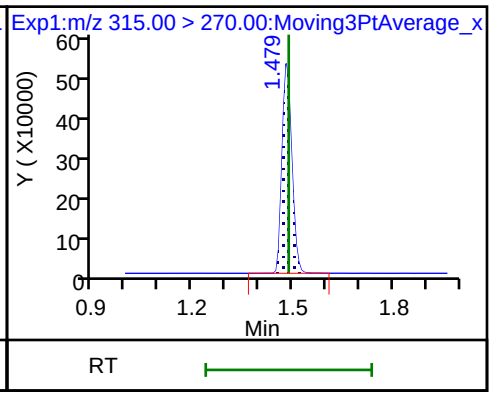
1 Perfluorobutanesulfonic acid



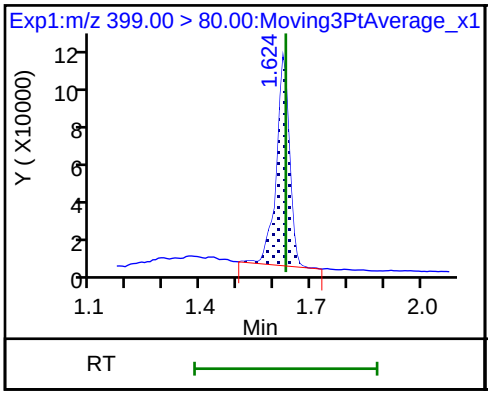
1 Perfluorobutanesulfonic acid



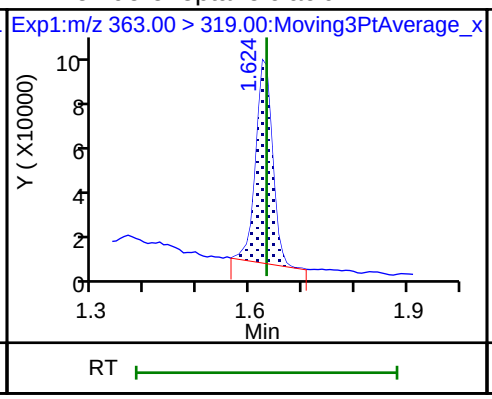
$ 2 13C2 PFHxA



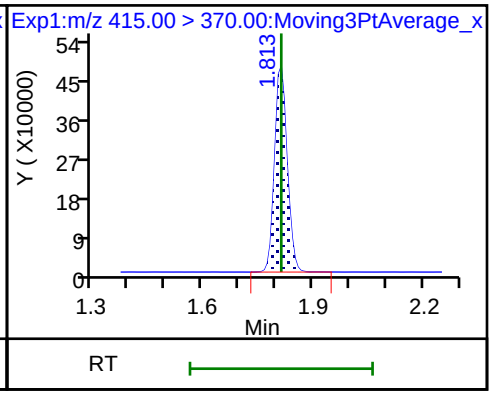
3 Perfluorohexanesulfonic acid



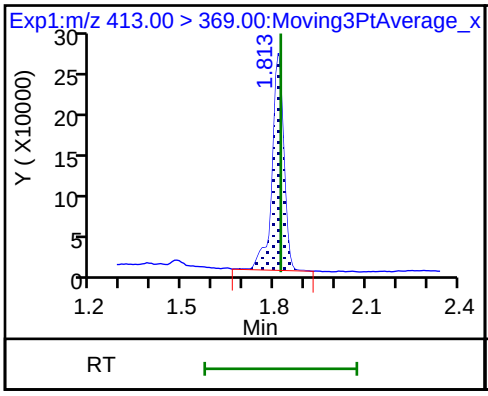
4 Perfluoroheptanoic acid



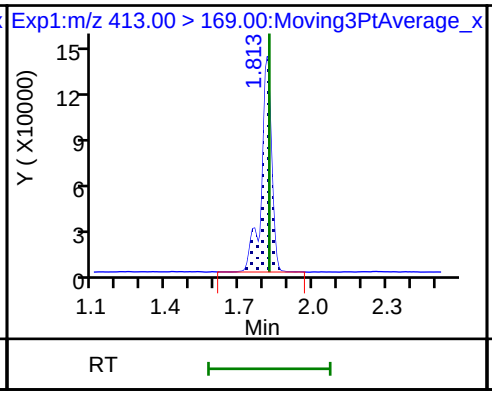
* 6 13C2-PFOA



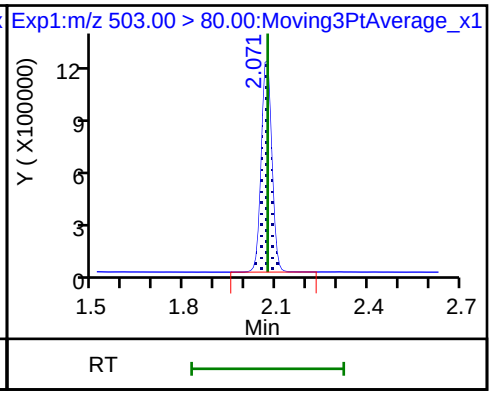
5 Perfluorooctanoic acid



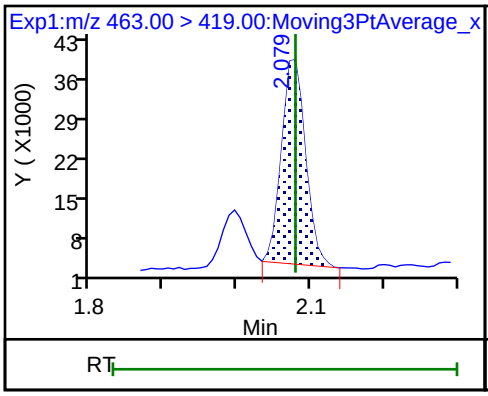
5 Perfluorooctanoic acid



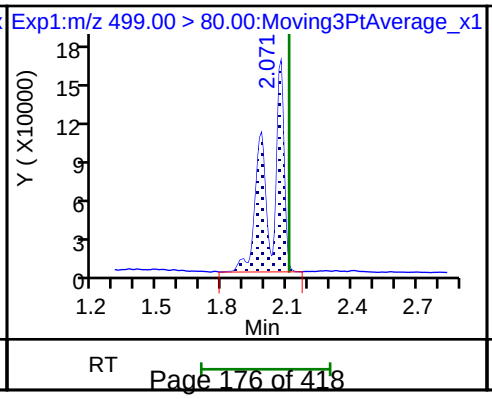
* 7 13C4 PFOS



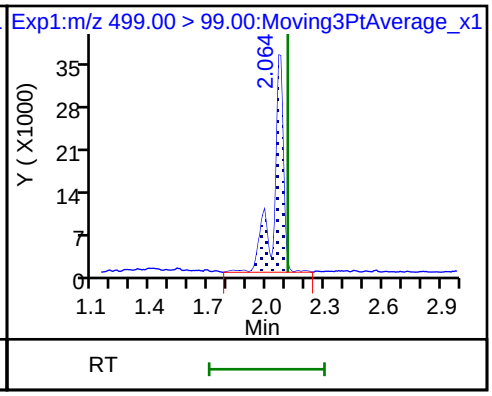
9 Perfluorononanoic acid



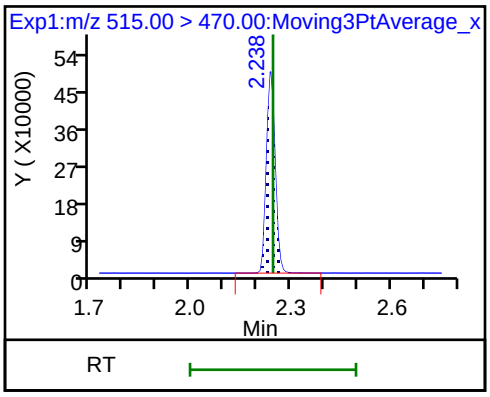
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA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2.238
Y (X10000)
54
45
36
27
18
9
0
1.7
2.0
2.3
2.6
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_043.d
Lims ID: 320-42142-A-9-A
Client ID: NAWC-081418-RW-038
Sample Type: Client
Inject. Date: 27-Aug-2018 02:32:29 ALS Bottle#: 31 Worklist Smp#: 40
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-9-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:27:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 15:21:48

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.99	89.89
$ 10 13C2 PFDA	10.0	9.73	97.33

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-038
Lab Sample ID: 320-42142-10
Matrix: Water
Lab File ID: 2018.08.26_537C_044.d
Analysis Method: 537
Date Collected: 08/14/2018 12:05
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 278.6(mL)
Date Analyzed: 08/27/2018 02:37
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242160
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	106		70-130
STL00996	13C2 PFDA	102		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_044.d
Lims ID: 320-42142-A-10-A
Client ID: NAWC-081418-FRB-038
Sample Type: Client
Inject. Date: 27-Aug-2018 02:37:11 ALS Bottle#: 32 Worklist Smp#: 41
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-10-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:27:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

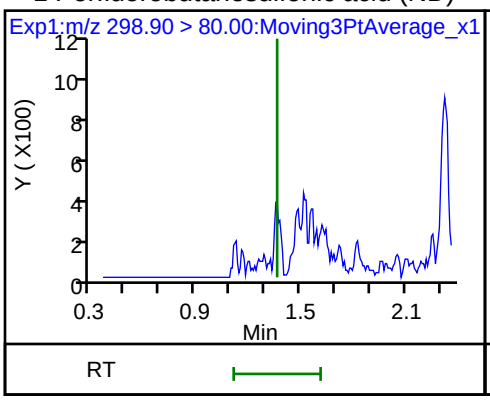
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	1183317	10.6		12884	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.813	0.008		1078762	10.0		8527	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2658887	28.7		7005	
$ 10 13C2 PFDA									
515.00 > 470.00	2.246	2.246	0.0	1.000	871434	10.2		4931	

Report Date: 27-Aug-2018 15:31:33 Chrom Revision: 2.3 19-Jul-2018 15:14:50

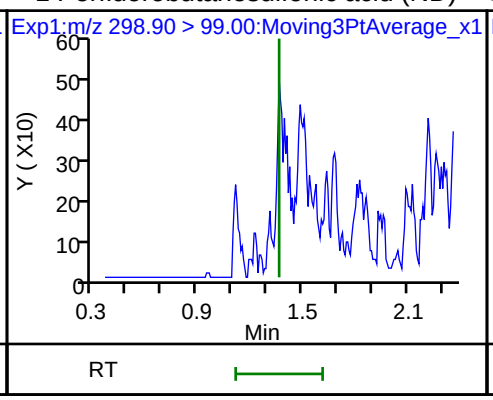
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_044.d				
Injection Date:	27-Aug-2018 02:37:11	Instrument ID:	A8_N		
Lims ID:	320-42142-A-10-A	Lab Sample ID:	320-42142-10		
Client ID:	NAWC-081418-FRB-038				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	41
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

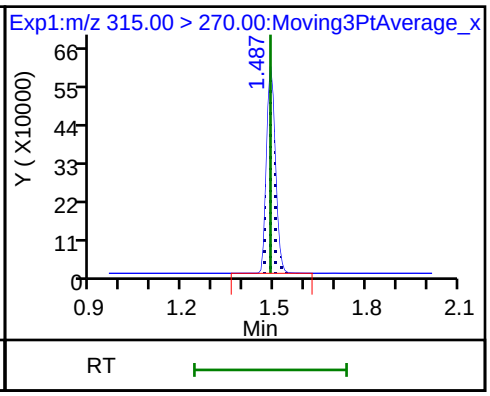
1 Perfluorobutanesulfonic acid (ND)



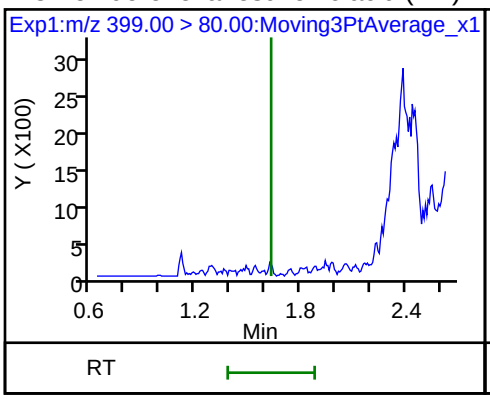
1 Perfluorobutanesulfonic acid (ND)



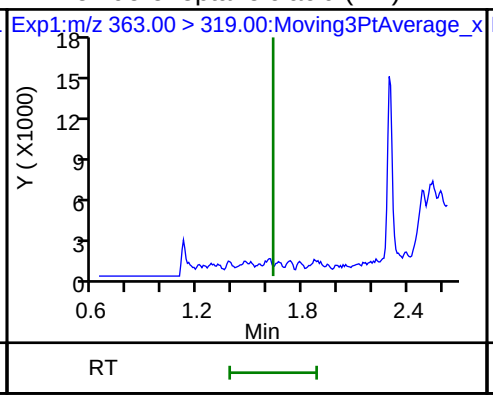
$ 2 13C2 PFHxA



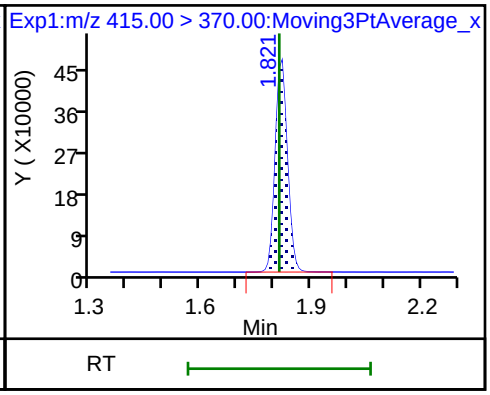
3 Perfluorohexanesulfonic acid (ND)



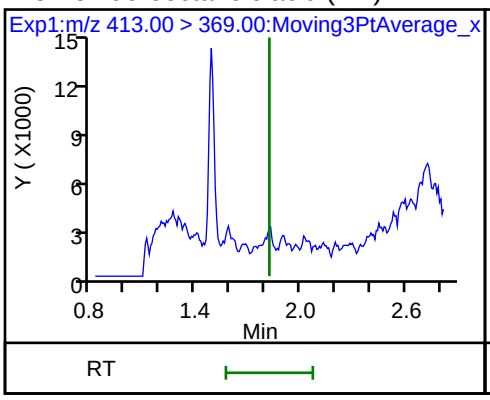
4 Perfluoroheptanoic acid (ND)



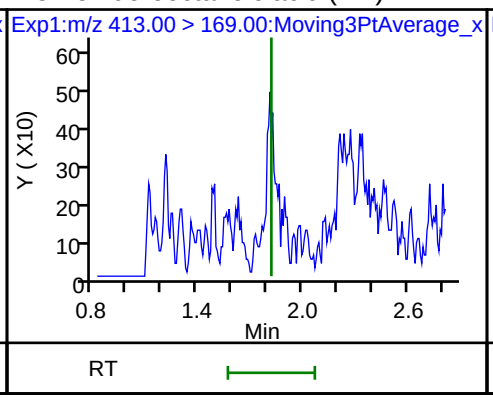
* 6 13C2-PFOA



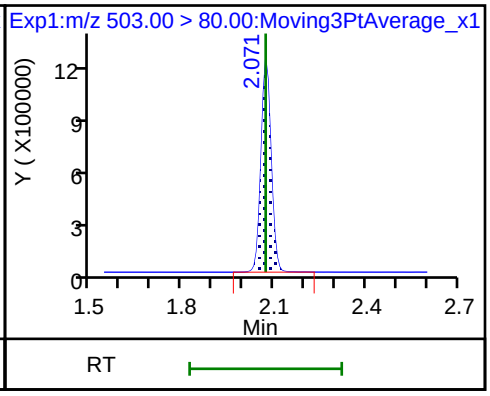
5 Perfluorooctanoic acid (ND)



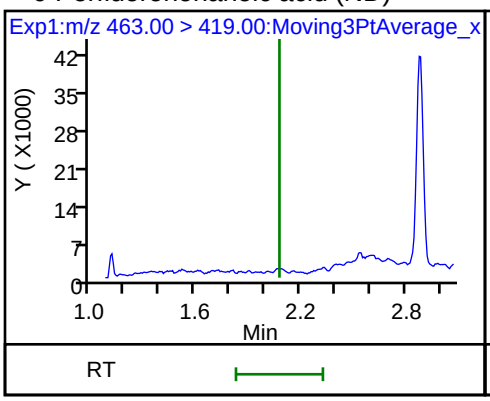
5 Perfluorooctanoic acid (ND)



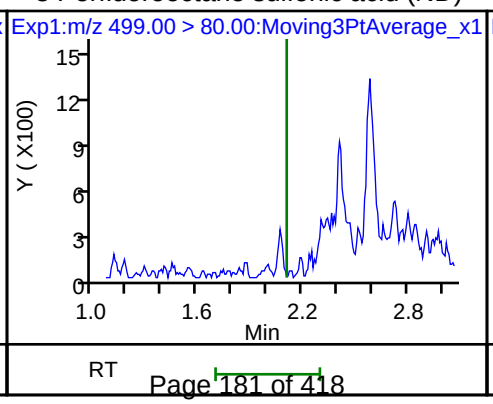
* 7 13C4 PFOS



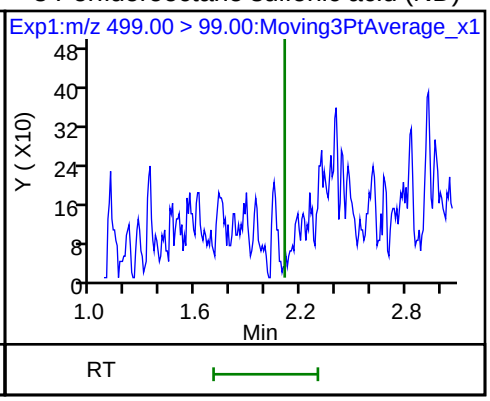
9 Perfluorononanoic acid (ND)



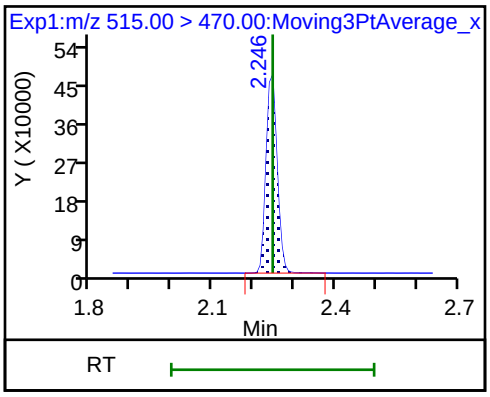
8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.246
Y (X10000)
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_044.d
Lims ID: 320-42142-A-10-A
Client ID: NAWC-081418-FRB-038
Sample Type: Client
Inject. Date: 27-Aug-2018 02:37:11 ALS Bottle#: 32 Worklist Smp#: 41
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-10-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:27:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.6	105.53
$ 10 13C2 PFDA	10.0	10.2	101.98

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-039
Lab Sample ID: 320-42142-11
Matrix: Water
Lab File ID: 2018.08.26_537C_045.d
Analysis Method: 537
Date Collected: 08/14/2018 12:40
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 258.5(mL)
Date Analyzed: 08/27/2018 02:41
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242160
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	J	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	10	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 M	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.1	J M	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U M	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	99		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_045.d
Lims ID: 320-42142-A-11-A
Client ID: NAWC-081418-RW-039
Sample Type: Client
Inject. Date: 27-Aug-2018 02:41:51 ALS Bottle#: 33 Worklist Smp#: 42
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-11-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:27:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 15:23:15

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									M
298.90 > 80.00	1.358	1.366	-0.008	1.000	130156	1.20		192	
298.90 > 99.00	1.358	1.366	-0.008	1.000	86607		1.50(0.00-0.00)	184	M
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.487	-0.008	1.000	1119268	9.83		11014	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	1.624	1.631	-0.007	1.000	102264	0.6534		47.5	M
4 Perfluoroheptanoic acid									M
363.00 > 319.00	1.624	1.631	-0.007	1.000	91480	0.7900		15.6	M
* 6 13C2-PFOA									
415.00 > 370.00	1.806	1.813	-0.007		1094966	10.0		7709	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.806	1.821	-0.015	1.000	315564	2.65		38.5	
413.00 > 169.00	1.806	1.821	-0.015	1.000	167285		1.89(0.00-0.00)	446	
* 7 13C4 PFOS									
503.00 > 80.00	2.064	2.071	-0.007		2710395	28.7		3654	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.064	2.109	-0.045	1.000	356822	3.50		219	
499.00 > 99.00	2.064	2.109	-0.045	1.000	65534		5.44(0.00-0.00)	106	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	859778	9.91		4918	

QC Flag Legend

Review Flags

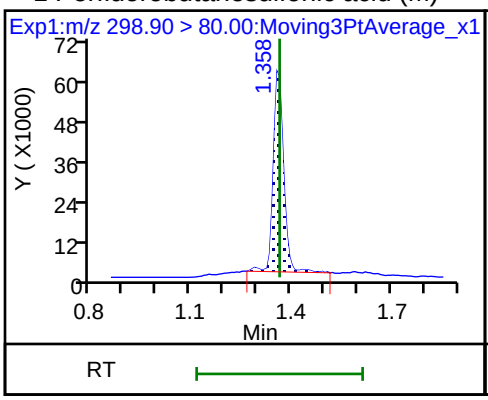
M - Manually Integrated

Report Date: 27-Aug-2018 15:31:36 Chrom Revision: 2.3 19-Jul-2018 15:14:50

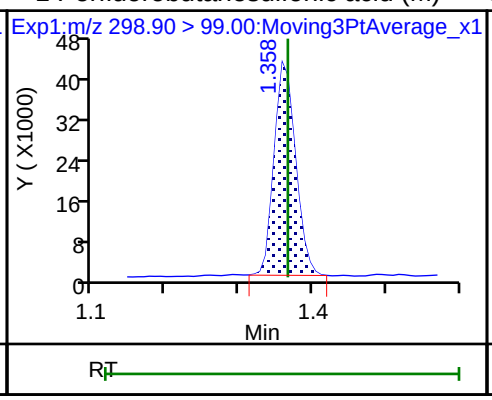
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_045.d				
Injection Date:	27-Aug-2018 02:41:51	Instrument ID:	A8_N		
Lims ID:	320-42142-A-11-A	Lab Sample ID:	320-42142-11		
Client ID:	NAWC-081418-RW-039				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	42
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

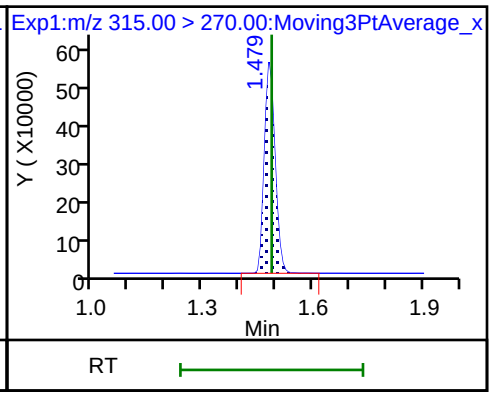
1 Perfluorobutanesulfonic acid (M)



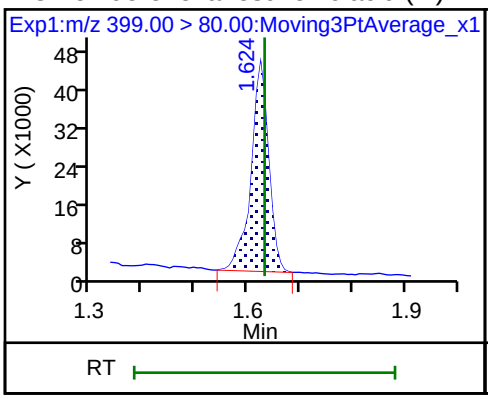
1 Perfluorobutanesulfonic acid (M)



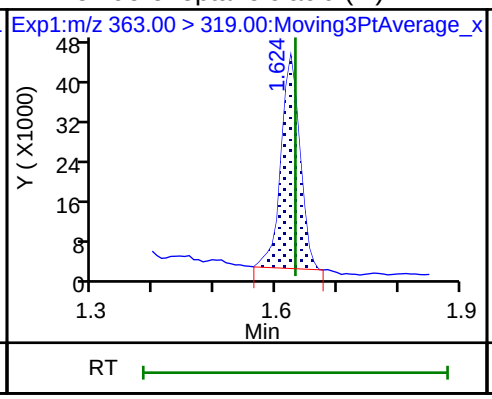
$ 2 13C2 PFHxA



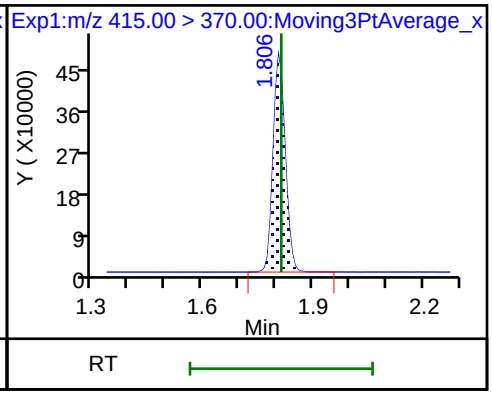
3 Perfluorohexanesulfonic acid (M)



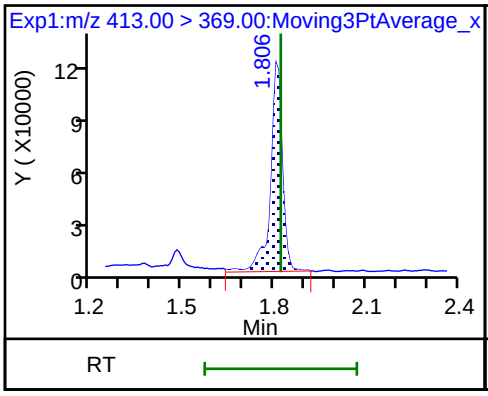
4 Perfluoroheptanoic acid (M)



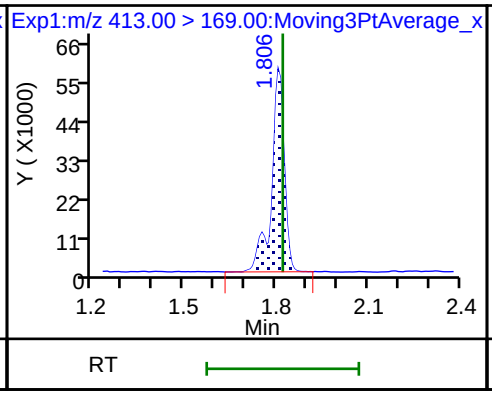
* 6 13C2-PFOA



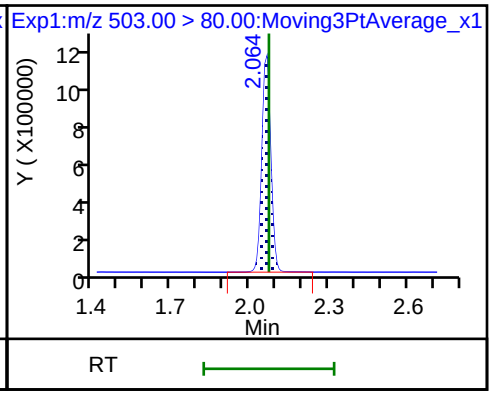
5 Perfluorooctanoic acid



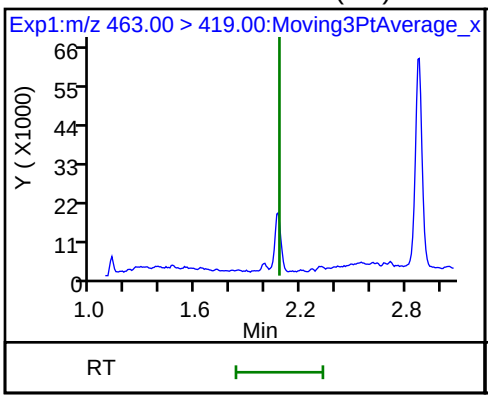
5 Perfluorooctanoic acid



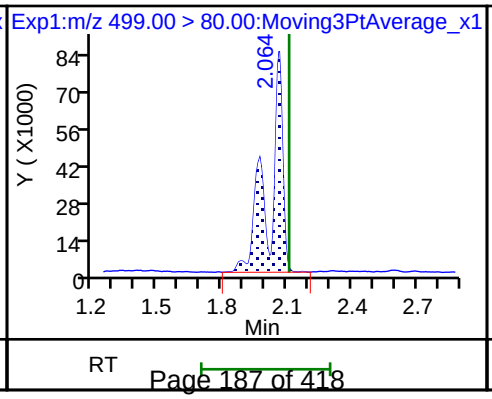
* 7 13C4 PFOS



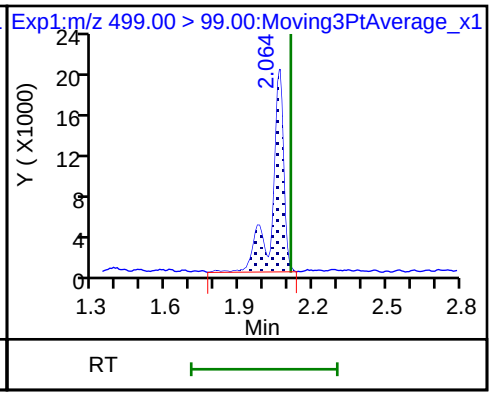
9 Perfluorononanoic acid (ND)



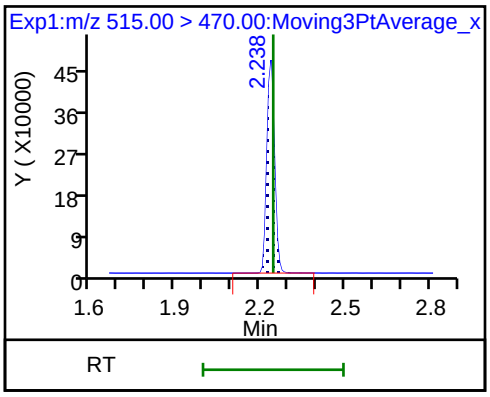
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.238
Y (X10000)
45
36
27
18
9
0
1.6
1.9
2.2
2.5
2.8
Min
RT

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_045.d				
Lims ID:	320-42142-A-11-A				
Client ID:	NAWC-081418-RW-039				
Sample Type:	Client				
Inject. Date:	27-Aug-2018 02:41:51	ALS Bottle#:	33	Worklist Smp#:	42
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-42142-a-11-a				
Misc. Info.:	Plate: 1 Rack: 4				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		

Method:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m		
Limit Group:	LC 537 ICAL		
Last Update:	27-Aug-2018 15:27:25	Calib Date:	15-Aug-2018 18:44:32
Integrator:	Picker		
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d		

Column 1 :			Det: EXP1
Process Host:	XAWRK017		

First Level Reviewer: barnettj		Date:	27-Aug-2018 15:23:15

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.83	98.34
$ 10 13C2 PFDA	10.0	9.91	99.13

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

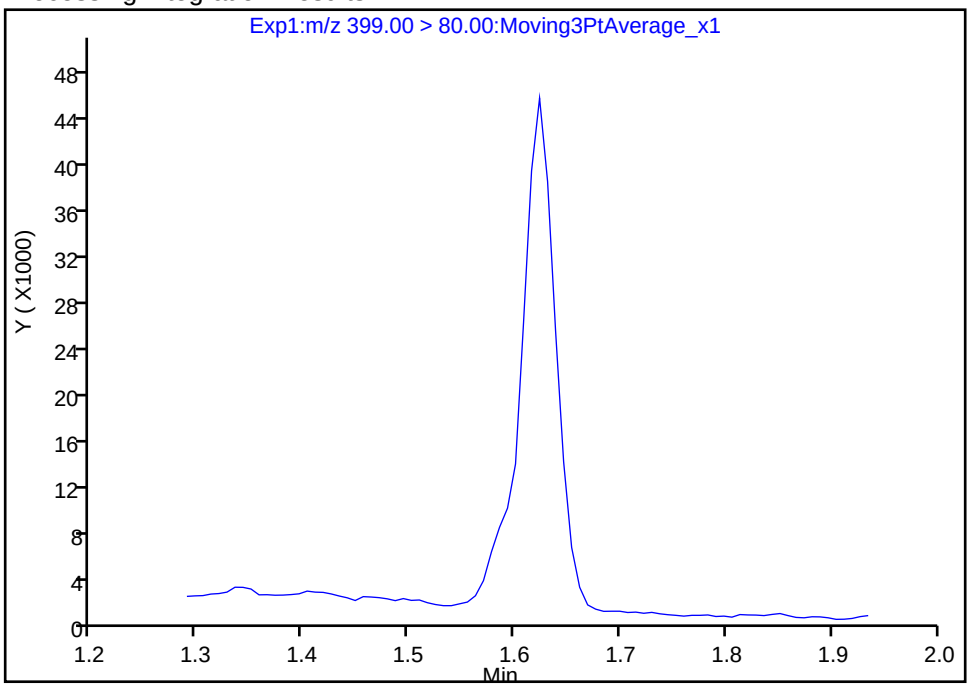
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_045.d				
Injection Date:	27-Aug-2018 02:41:51	Instrument ID:	A8_N		
Lims ID:	320-42142-A-11-A	Lab Sample ID:	320-42142-11		
Client ID:	NAWC-081418-RW-039				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	42
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

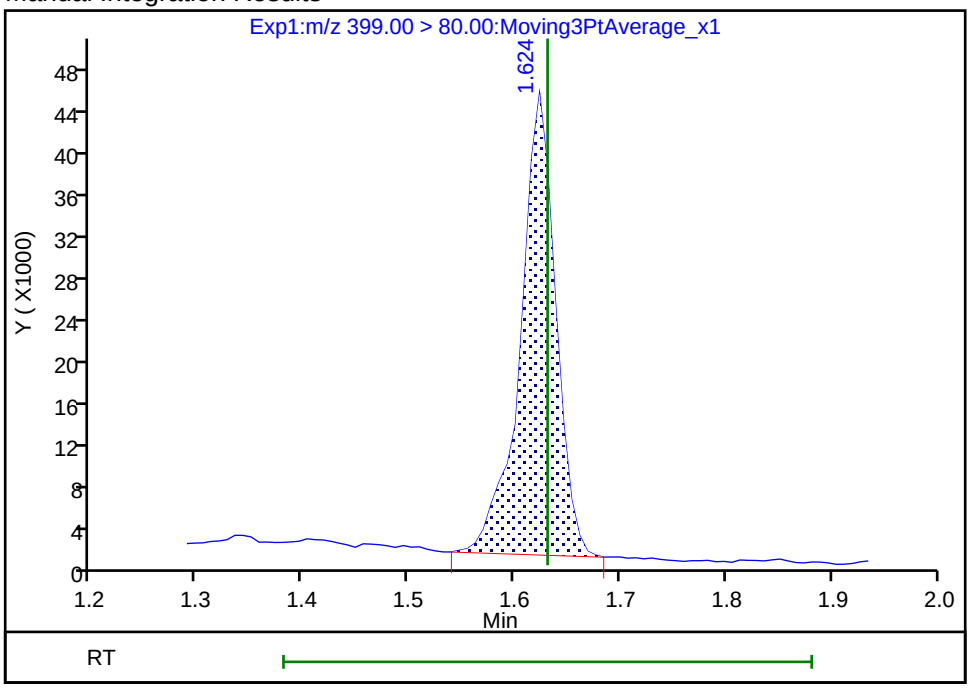
Processing Integration Results

Not Detected
Expected RT: 1.63



Manual Integration Results

RT: 1.62
Area: 102264
Amount: 0.653351
Amount Units: ng/ml



Reviewer: barnettj, 27-Aug-2018 15:22:48
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

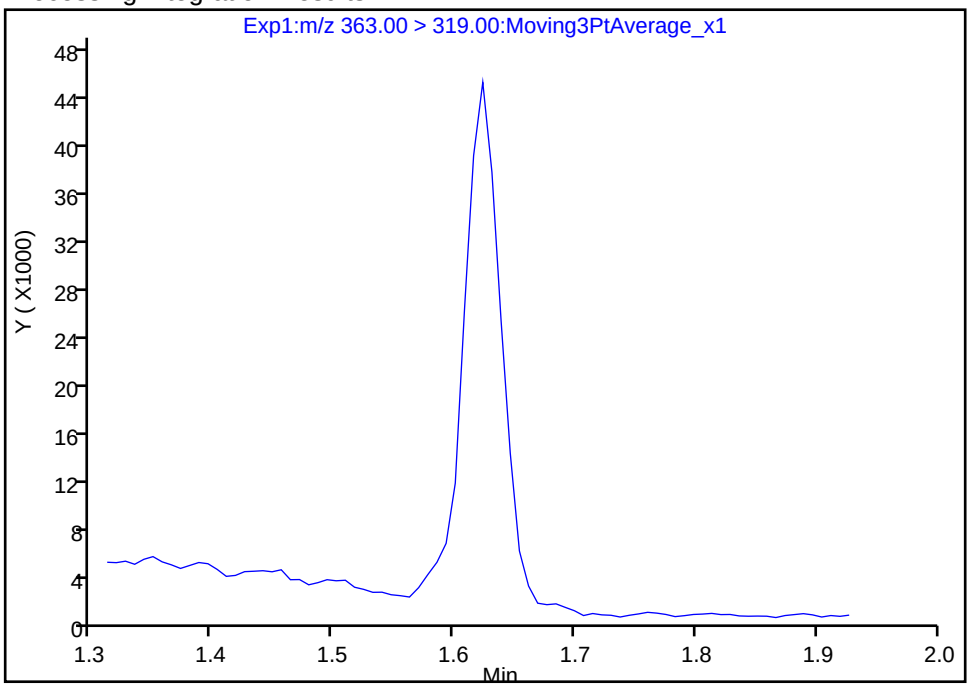
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_045.d				
Injection Date:	27-Aug-2018 02:41:51	Instrument ID:	A8_N		
Lims ID:	320-42142-A-11-A	Lab Sample ID:	320-42142-11		
Client ID:	NAWC-081418-RW-039				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	42
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

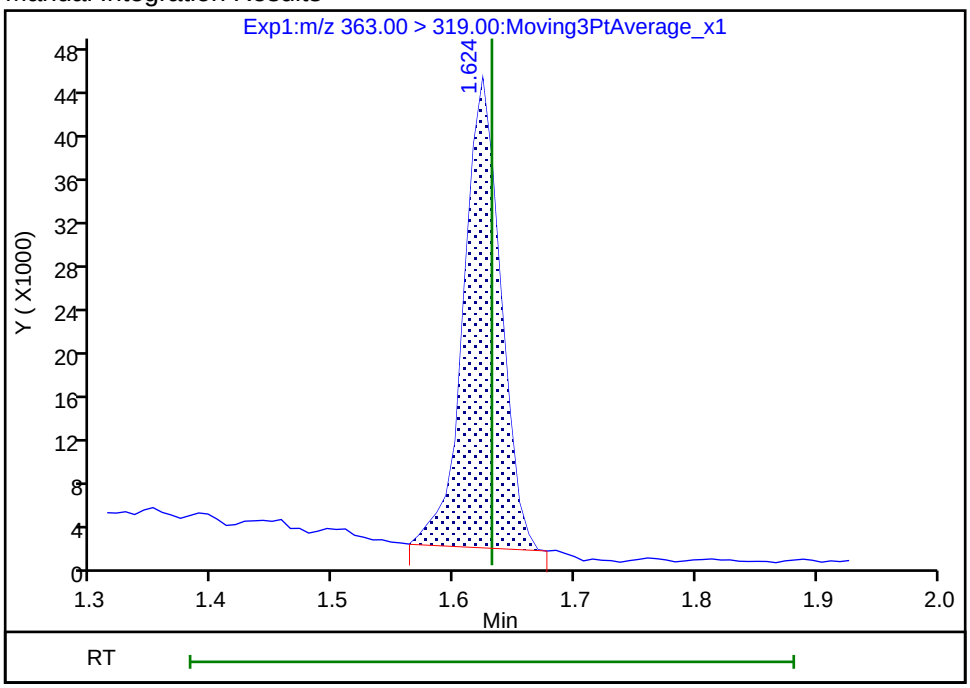
Not Detected
Expected RT: 1.63

Processing Integration Results



RT: 1.62
Area: 91480
Amount: 0.790024
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 27-Aug-2018 15:22:57
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_045.d				
Injection Date:	27-Aug-2018 02:41:51	Instrument ID:	A8_N		
Lims ID:	320-42142-A-11-A	Lab Sample ID:	320-42142-11		
Client ID:	NAWC-081418-RW-039				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	42
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

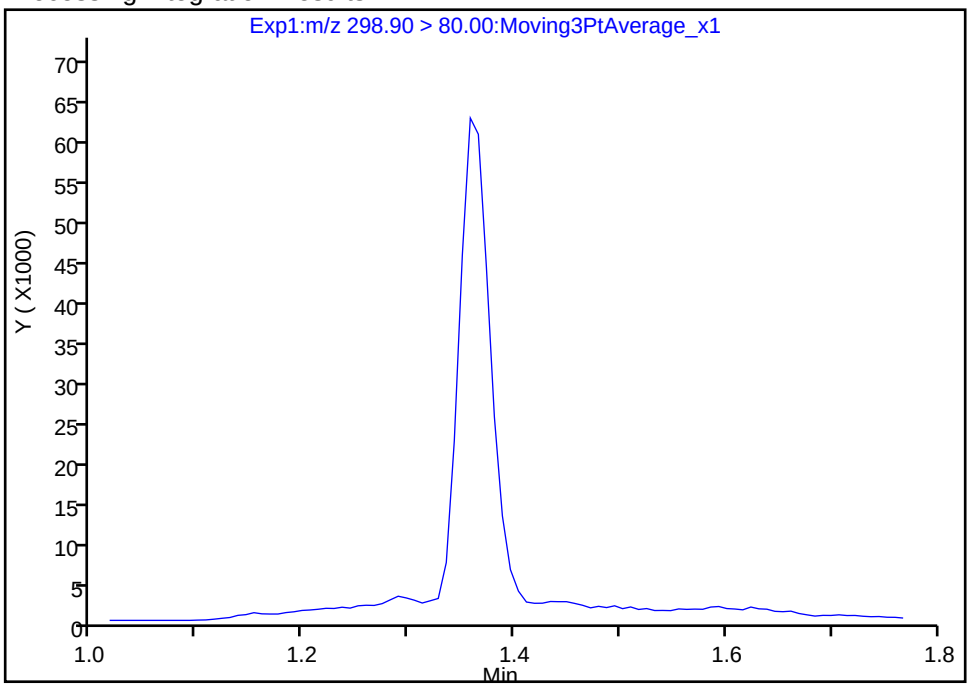
1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

Not Detected

Expected RT: 1.37

Processing Integration Results



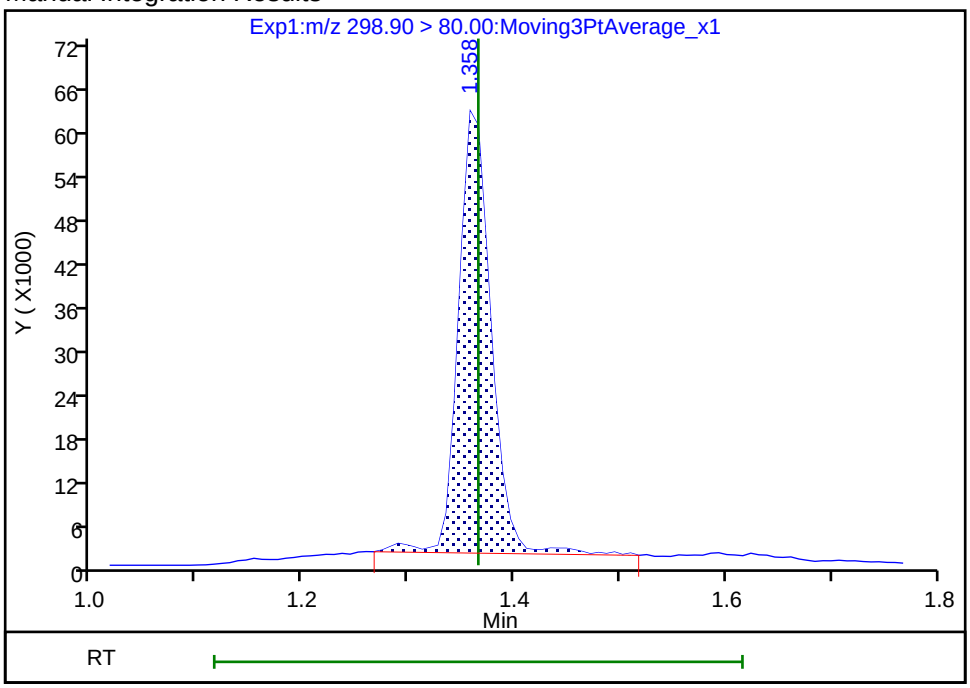
Manual Integration Results

RT: 1.36

Area: 130156

Amount: 1.203130

Amount Units: ng/ml



Reviewer: barnettj, 27-Aug-2018 15:22:15

Audit Action: Assigned Compound ID Audit Reason: Peak assignment corrected

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

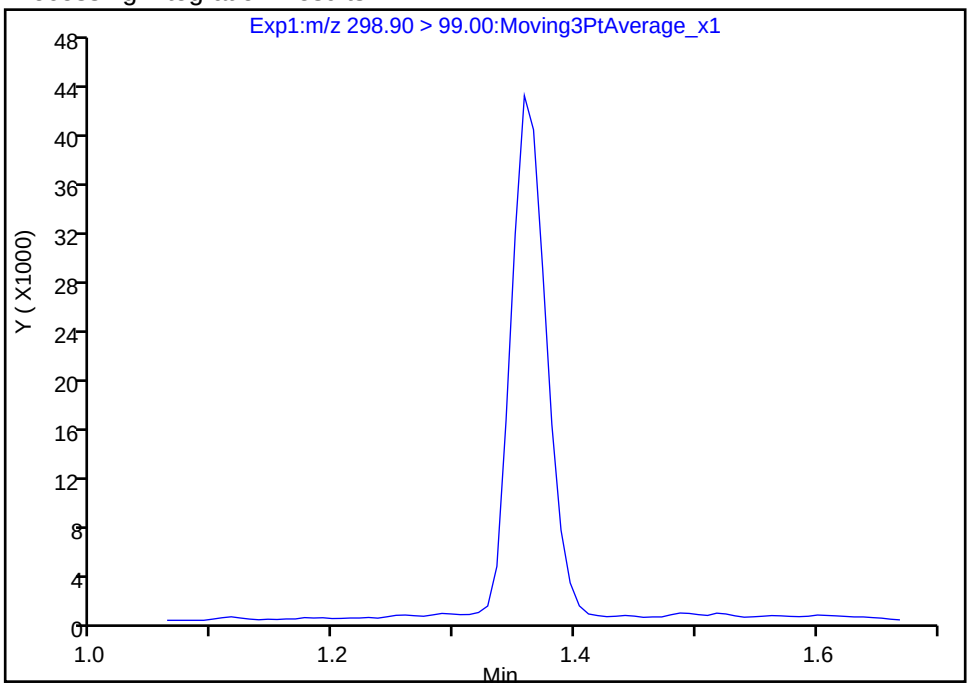
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_045.d				
Injection Date:	27-Aug-2018 02:41:51	Instrument ID:	A8_N		
Lims ID:	320-42142-A-11-A	Lab Sample ID:	320-42142-11		
Client ID:	NAWC-081418-RW-039				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	42
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

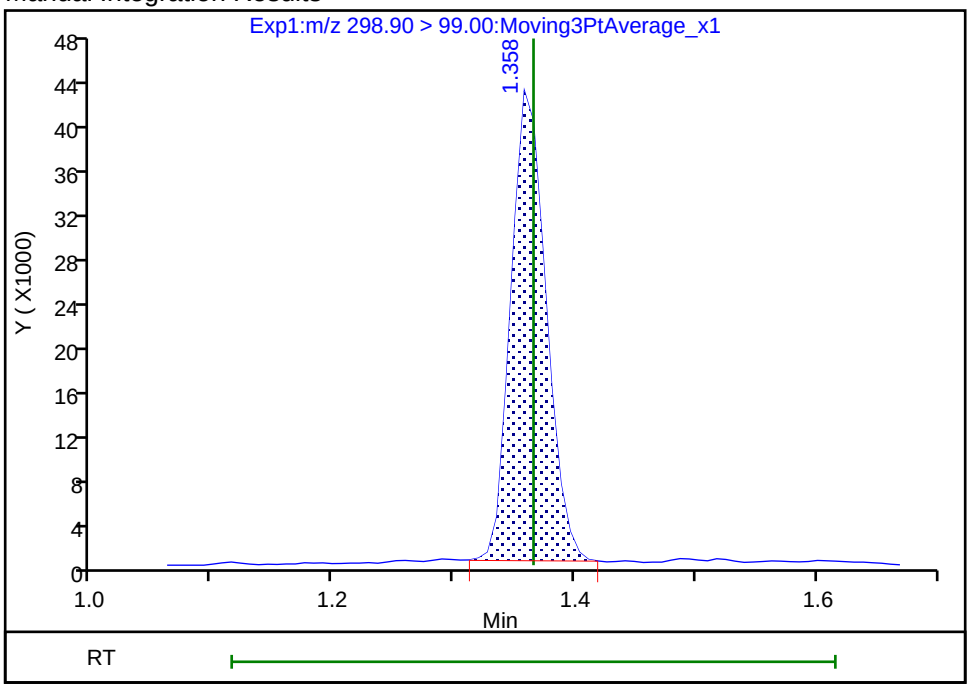
Processing Integration Results

Not Detected
Expected RT: 1.37



Manual Integration Results

RT: 1.36
Area: 86607
Amount: 1.203130
Amount Units: ng/ml



Reviewer: barnettj, 27-Aug-2018 15:22:35
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-039
Lab Sample ID: 320-42142-12
Matrix: Water
Lab File ID: 2018.08.26_537C_048.d
Analysis Method: 537
Date Collected: 08/14/2018 12:35
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 262.6(mL)
Date Analyzed: 08/27/2018 02:55
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242161
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_048.d
Lims ID: 320-42142-A-12-A
Client ID: NAWC-081418-FRB-039
Sample Type: Client
Inject. Date: 27-Aug-2018 02:55:54 ALS Bottle#: 34 Worklist Smp#: 45
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-12-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:31:39 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

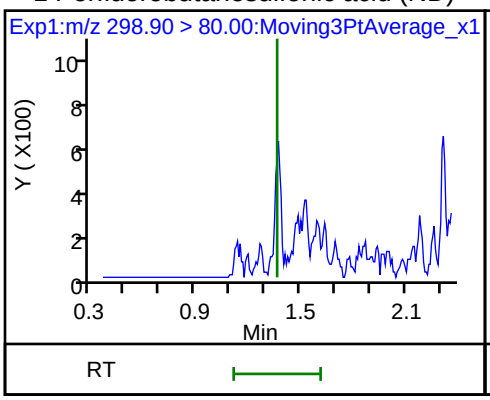
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	1022657	10.2		9704	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.813	0.008		963844	10.0		8109	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2494524	28.7		6317	
$ 10 13C2 PFDA									
515.00 > 470.00	2.246	2.246	0.0	1.000	778355	10.2		4135	

Report Date: 27-Aug-2018 15:32:04 Chrom Revision: 2.3 19-Jul-2018 15:14:50

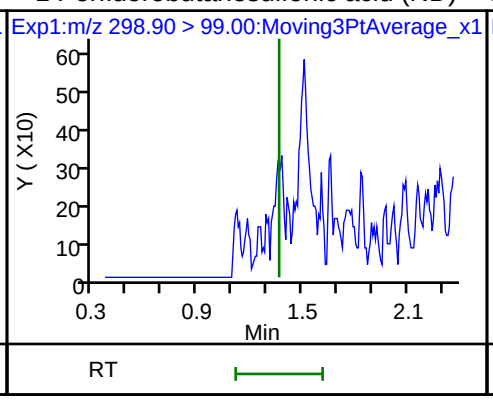
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_048.d				
Injection Date:	27-Aug-2018 02:55:54	Instrument ID:	A8_N		
Lims ID:	320-42142-A-12-A	Lab Sample ID:	320-42142-12		
Client ID:	NAWC-081418-FRB-039				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	45
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

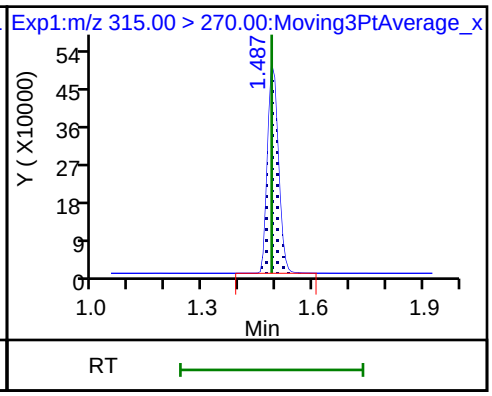
1 Perfluorobutanesulfonic acid (ND)



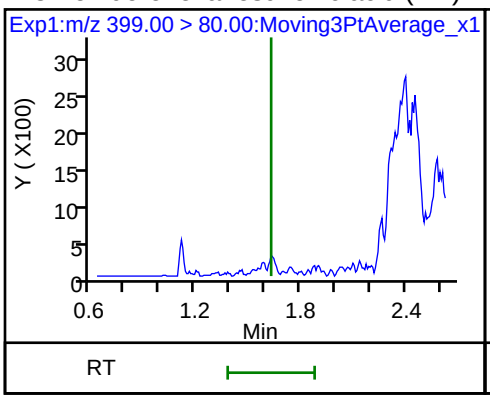
1 Perfluorobutanesulfonic acid (ND)



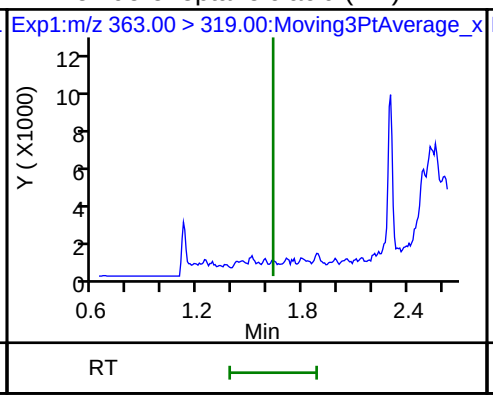
$ 2 13C2 PFHxA



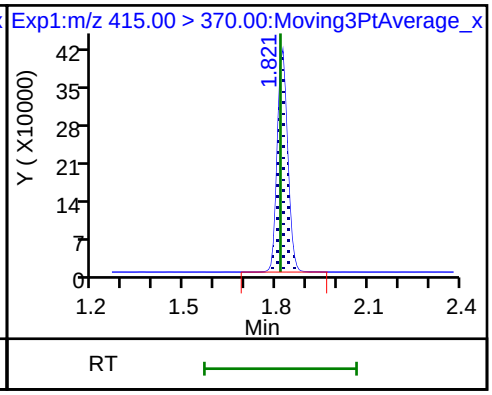
3 Perfluorohexanesulfonic acid (ND)



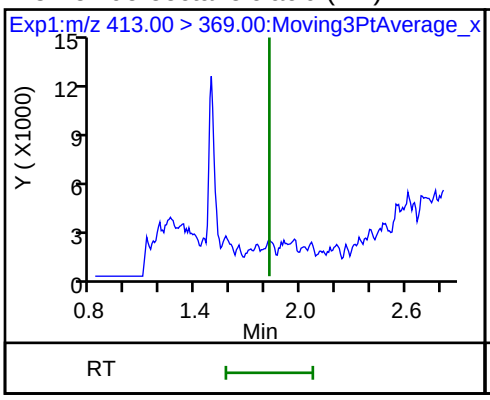
4 Perfluoroheptanoic acid (ND)



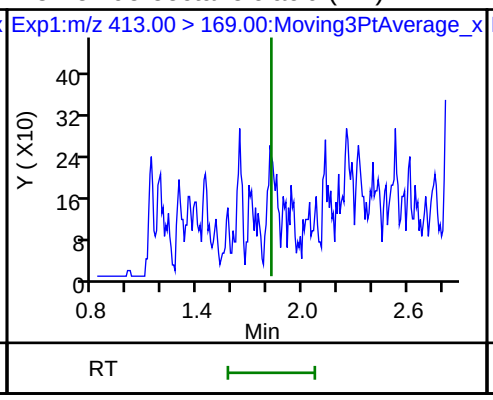
* 6 13C2-PFOA



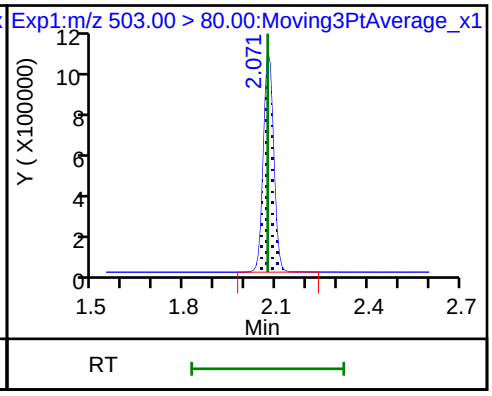
5 Perfluorooctanoic acid (ND)



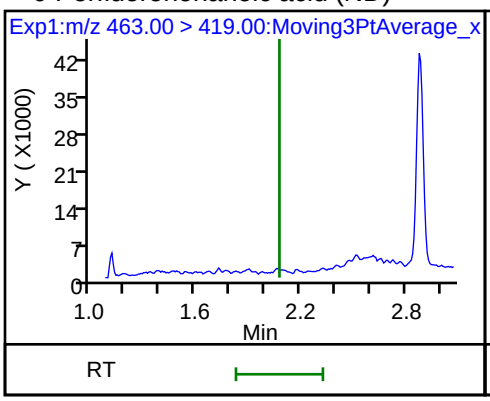
5 Perfluorooctanoic acid (ND)



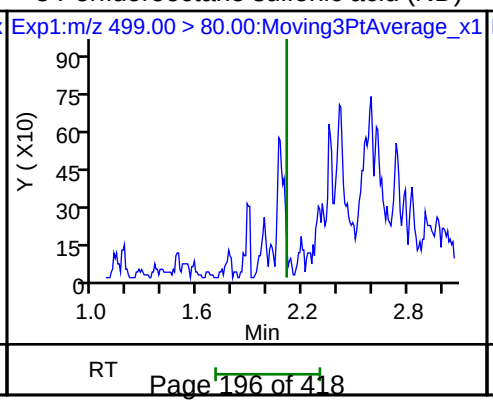
* 7 13C4 PFOS



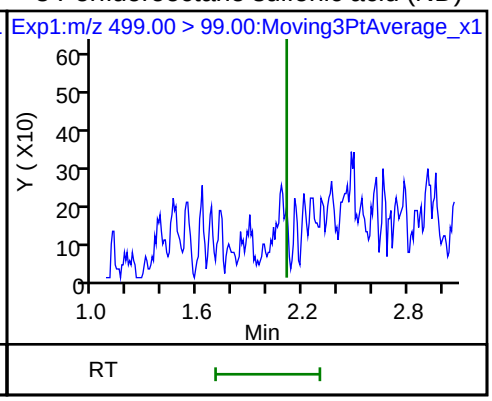
9 Perfluorononanoic acid (ND)



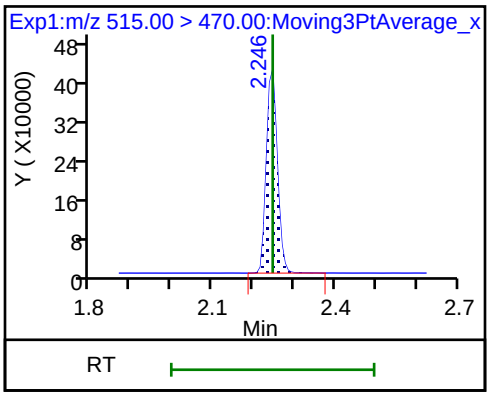
8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.246
Y (X10000)
48
40
32
24
16
8
0
1.8
2.1
2.4
2.7
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_048.d
Lims ID: 320-42142-A-12-A
Client ID: NAWC-081418-FRB-039
Sample Type: Client
Inject. Date: 27-Aug-2018 02:55:54 ALS Bottle#: 34 Worklist Smp#: 45
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-12-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:31:39 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.2	102.08
$ 10 13C2 PFDA	10.0	10.2	101.95

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-187
Lab Sample ID: 320-42142-13
Matrix: Water
Lab File ID: 2018.08.26_537C_049.d
Analysis Method: 537
Date Collected: 08/14/2018 13:10
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 266.4(mL)
Date Analyzed: 08/27/2018 03:00
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242161
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	62		38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	34		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	31		28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	35		9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	84	34	15

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_049.d
Lims ID: 320-42142-A-13-A
Client ID: NAWC-081418-RW-187
Sample Type: Client
Inject. Date: 27-Aug-2018 03:00:34 ALS Bottle#: 35 Worklist Smp#: 46
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-13-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:31:39 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 15:23:54

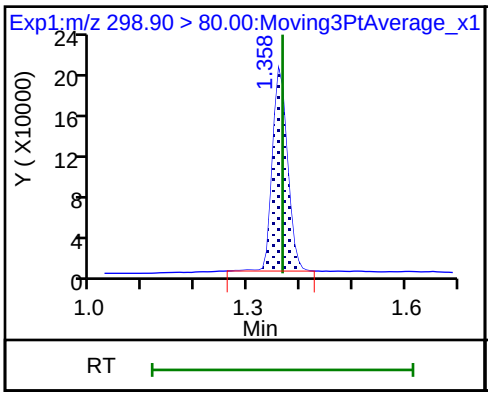
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.366	-0.008	1.000	397258	3.71		465	
298.90 > 99.00	1.358	1.366	-0.008	1.000	257722		1.54(0.00-0.00)	518	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.487	-0.008	1.000	1075433	9.47		9145	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.631	-0.007	1.000	1272041	8.20		510	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.631	-0.007	1.000	1074759	9.30		178	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		1093115	10.0		8623	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.821	-0.008	1.000	1077237	9.04		128	
413.00 > 169.00	1.813	1.821	-0.008	1.000	572523		1.88(0.00-0.00)	1495	
* 7 13C4 PFOS									
503.00 > 80.00	2.064	2.071	-0.007		2685184	28.7		2818	
9 Perfluorononanoic acid									
463.00 > 419.00	2.071	2.079	-0.008	1.000	171165	1.90		17.6	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.064	2.109	-0.045	1.000	1657381	16.4		884	
499.00 > 99.00	2.064	2.109	-0.045	1.000	336088		4.93(0.00-0.00)	566	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	862664	9.96		4907	

Report Date: 27-Aug-2018 15:32:07 Chrom Revision: 2.3 19-Jul-2018 15:14:50

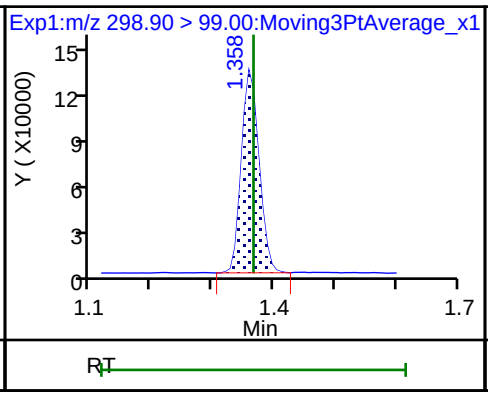
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_049.d				
Injection Date:	27-Aug-2018 03:00:34	Instrument ID:	A8_N		
Lims ID:	320-42142-A-13-A	Lab Sample ID:	320-42142-13		
Client ID:	NAWC-081418-RW-187				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	35	Worklist Smp#:	46
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

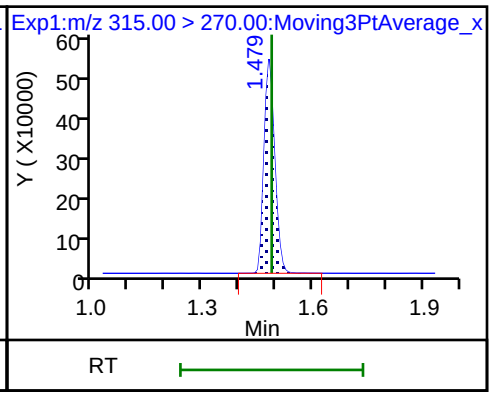
1 Perfluorobutanesulfonic acid



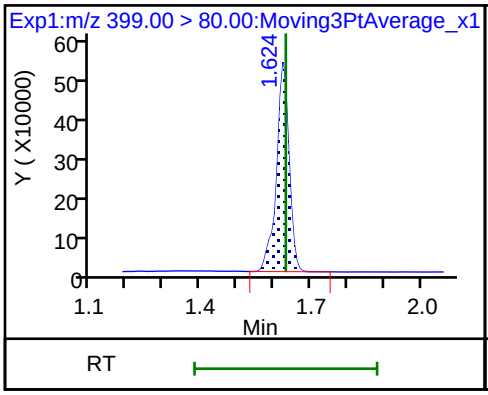
1 Perfluorobutanesulfonic acid



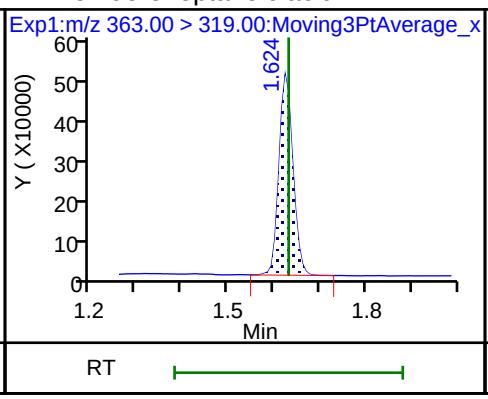
$ 2 13C2 PFHxA



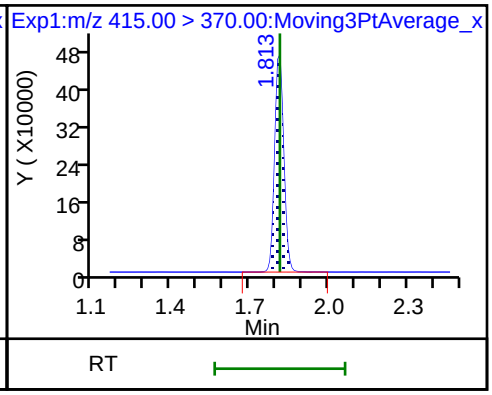
3 Perfluorohexanesulfonic acid



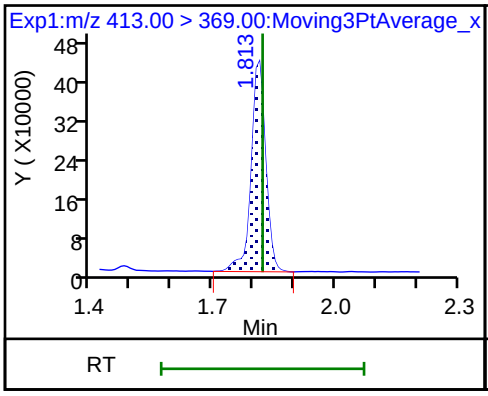
4 Perfluoroheptanoic acid



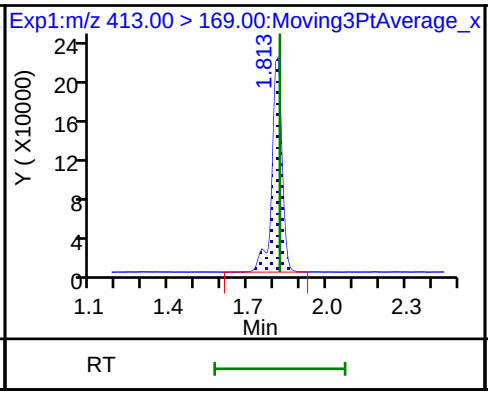
* 6 13C2-PFOA



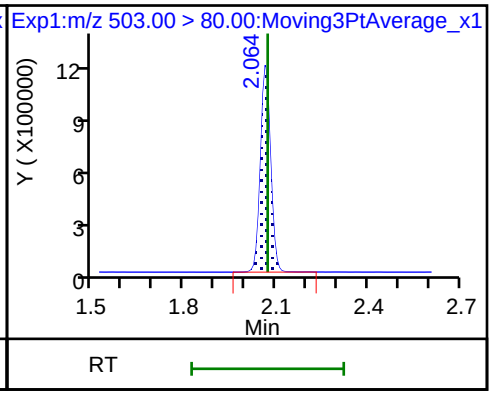
5 Perfluorooctanoic acid



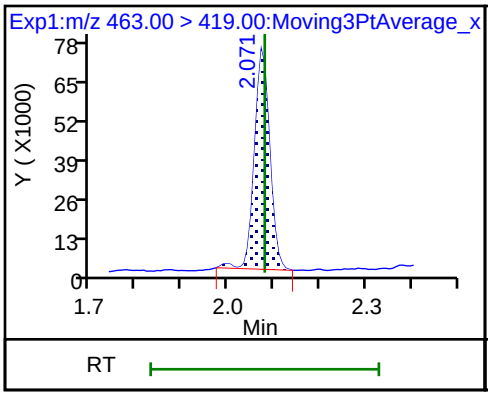
5 Perfluorooctanoic acid



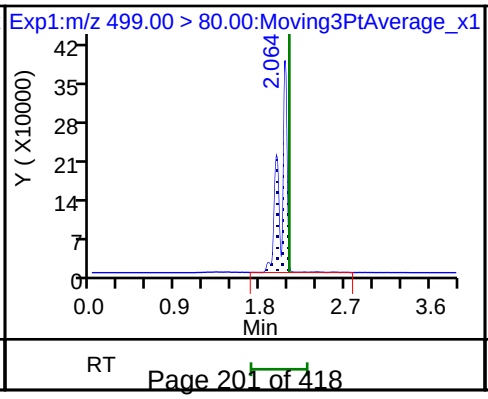
* 7 13C4 PFOS



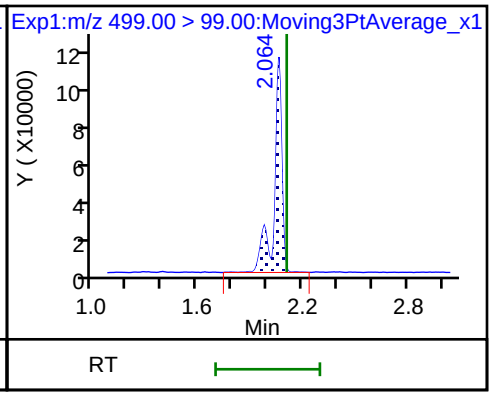
9 Perfluorononanoic acid



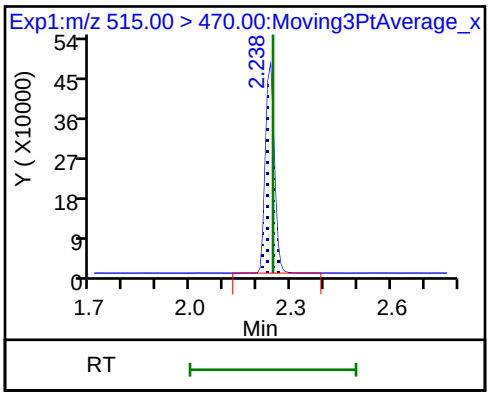
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.238
Y (X10000)
54
45
36
27
18
9
0
1.7
2.0
2.3
2.6
Min
RT

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_049.d				
Lims ID:	320-42142-A-13-A				
Client ID:	NAWC-081418-RW-187				
Sample Type:	Client				
Inject. Date:	27-Aug-2018 03:00:34	ALS Bottle#:	35	Worklist Smp#:	46
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-42142-a-13-a				
Misc. Info.:	Plate: 1 Rack: 4				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		

Method:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m		
Limit Group:	LC 537 ICAL		
Last Update:	27-Aug-2018 15:31:39	Calib Date:	15-Aug-2018 18:44:32
Integrator:	Picker		
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d		

Column 1 :		Det: EXP1	
Process Host:	XAWRK017		

First Level Reviewer: barnettj Date: 27-Aug-2018 15:23:54

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.47	94.65
$ 10 13C2 PFDA	10.0	9.96	99.63

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-187
Lab Sample ID: 320-42142-14
Matrix: Water
Lab File ID: 2018.08.28_537A_013.d
Analysis Method: 537
Date Collected: 08/14/2018 13:05
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 278.6(mL)
Date Analyzed: 08/29/2018 00:09
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242687
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	100		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_013.d
Lims ID: 320-42142-A-14-A
Client ID: NAWC-081418-FRB-187
Sample Type: Client
Inject. Date: 29-Aug-2018 00:09:11 ALS Bottle#: 7 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-14-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 11:06:11 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

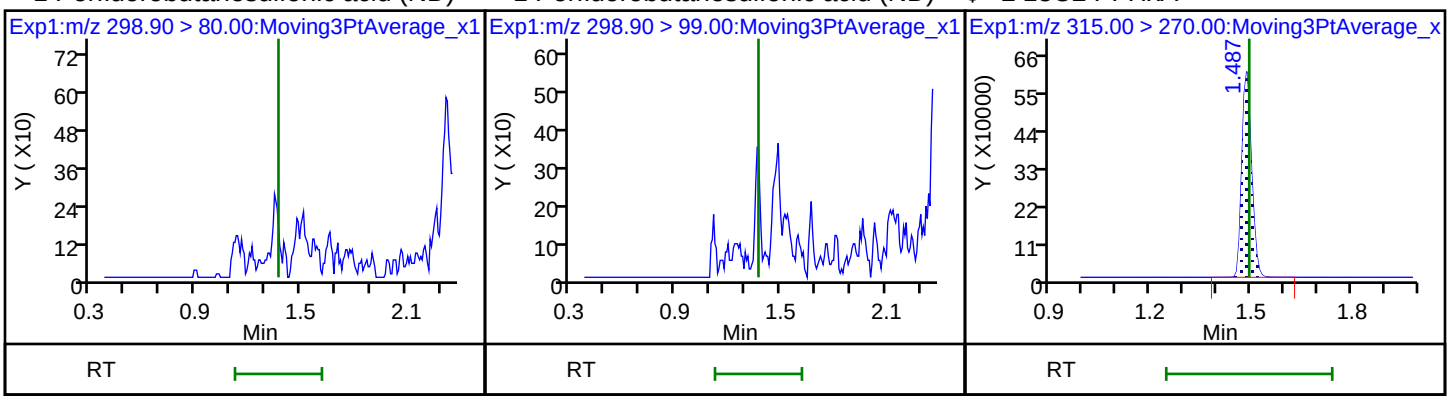
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.495	-0.008	1.000	1209287	9.60		11623	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.828	-0.007		1211521	10.0		8828	
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.086	-0.007		3029669	28.7		6724	
$ 10 13C2 PFDA									
515.00 > 470.00	2.246	2.253	-0.007	1.000	960058	10.0		5252	

Report Date: 29-Aug-2018 11:17:02 Chrom Revision: 2.3 19-Jul-2018 15:14:50

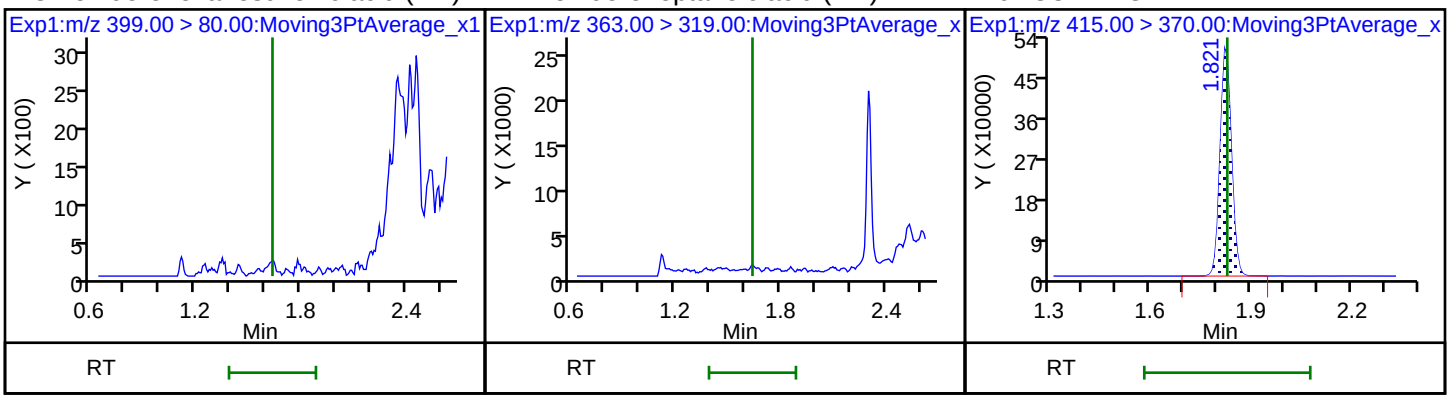
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_013.d				
Injection Date:	29-Aug-2018 00:09:11	Instrument ID:	A8_N		
Lims ID:	320-42142-A-14-A	Lab Sample ID:	320-42142-14		
Client ID:	NAWC-081418-FRB-187				
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		

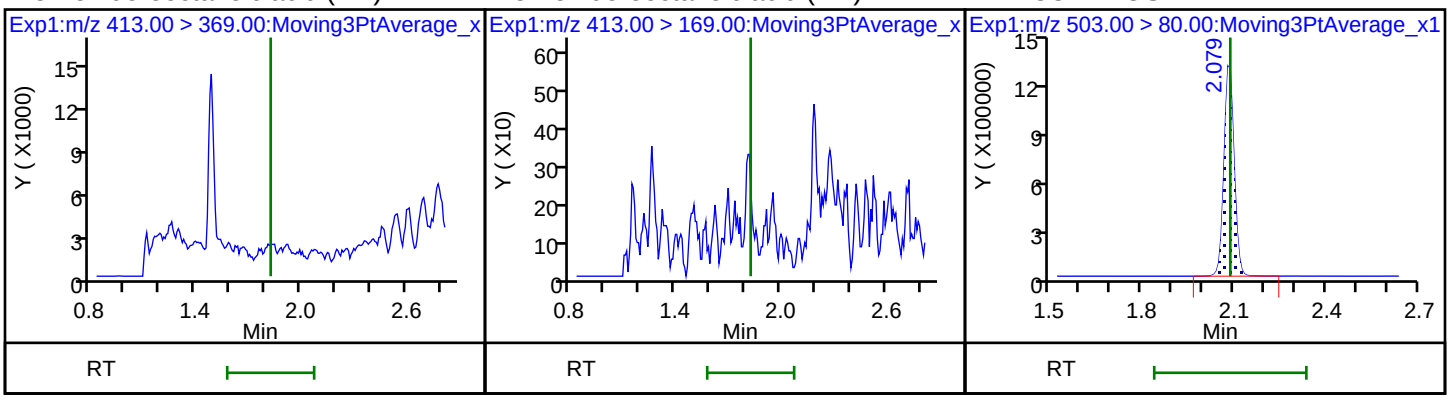
1 Perfluorobutanesulfonic acid (ND) | 1 Perfluorobutanesulfonic acid (ND) | $ 2 13C2 PFHxA



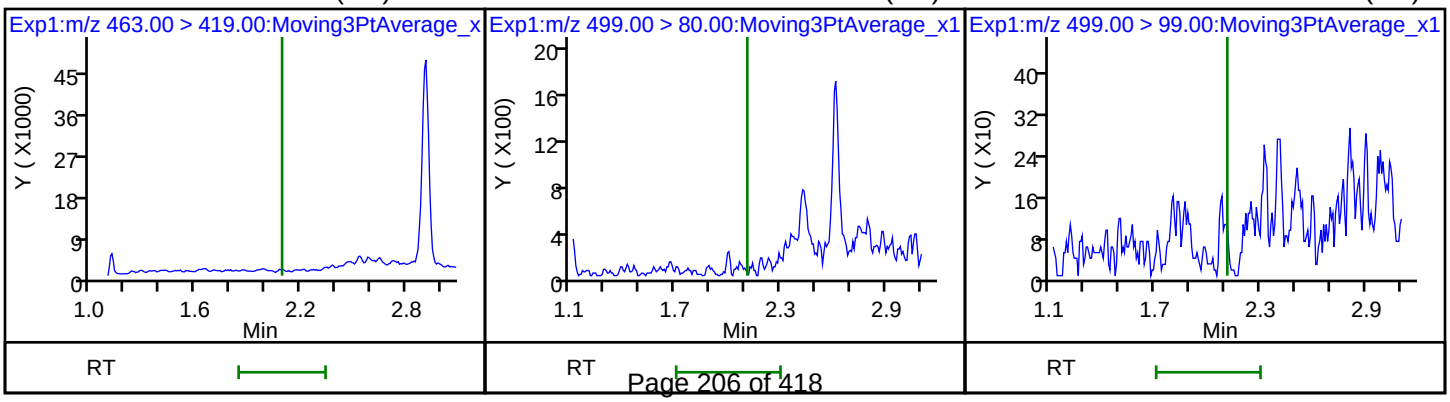
3 Perfluorohexanesulfonic acid (ND) | 4 Perfluoroheptanoic acid (ND) | * 6 13C2-PFOA



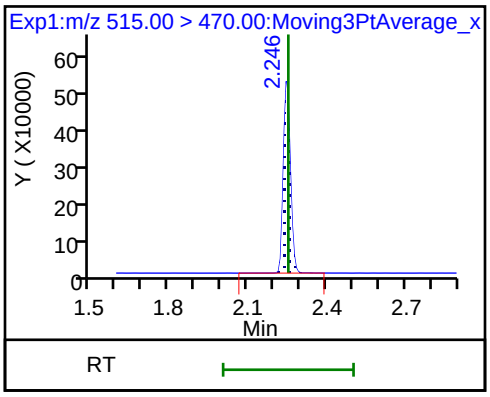
5 Perfluorooctanoic acid (ND) | 5 Perfluorooctanoic acid (ND) | * 7 13C4 PFOS



9 Perfluorononanoic acid (ND) | 8 Perfluorooctane sulfonic acid (ND) | 8 Perfluorooctane sulfonic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.246
Y (X10000)
60
50
40
30
20
10
0
1.5
1.8
2.1
2.4
2.7
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_013.d
Lims ID: 320-42142-A-14-A
Client ID: NAWC-081418-FRB-187
Sample Type: Client
Inject. Date: 29-Aug-2018 00:09:11 ALS Bottle#: 7 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-14-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 11:06:11 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.60	96.03
$ 10 13C2 PFDA	10.0	10.0	100.04

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-292
Lab Sample ID: 320-42142-15
Matrix: Water
Lab File ID: 2018.08.28_537A_014.d
Analysis Method: 537
Date Collected: 08/14/2018 13:40
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 266.2(mL)
Date Analyzed: 08/29/2018 00:13
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242687
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	23	J	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	20		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.4	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.5	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	102		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_014.d
Lims ID: 320-42142-A-15-A
Client ID: NAWC-081418-RW-292
Sample Type: Client
Inject. Date: 29-Aug-2018 00:13:52 ALS Bottle#: 8 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-15-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 11:06:11 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 29-Aug-2018 11:06:40

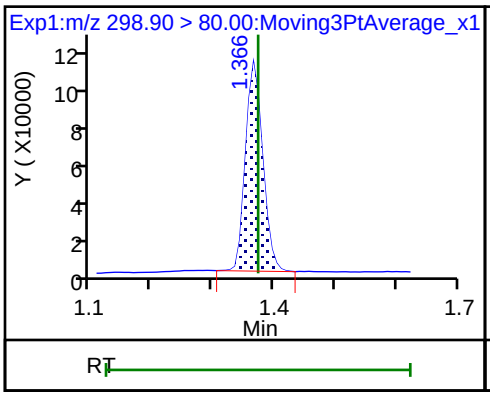
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.373	-0.007	1.000	213613	1.80		395	
298.90 > 99.00	1.366	1.373	-0.007	1.000	142180		1.50(0.00-0.00)	521	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.495	-0.008	1.000	1204596	9.75		10286	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.639	-0.008	1.000	430056	2.50		209	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.639	-0.008	1.000	284828	2.27		51.8	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.828	-0.007		1188788	10.0		8768	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.821	1.828	-0.007	1.000	703765	5.43		86.7	
413.00 > 169.00	1.821	1.828	-0.007	1.000	399926		1.76(0.00-0.00)	1012	
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.086	-0.007		2980086	28.7		3840	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.079	2.109	-0.030	1.000	687791	6.13		468	
499.00 > 99.00	2.079	2.109	-0.030	1.000	120741		5.70(0.00-0.00)	233	
$ 10 13C2 PFDA									
515.00 > 470.00	2.246	2.253	-0.007	1.000	959986	10.2		5243	

Report Date: 29-Aug-2018 11:17:04 Chrom Revision: 2.3 19-Jul-2018 15:14:50

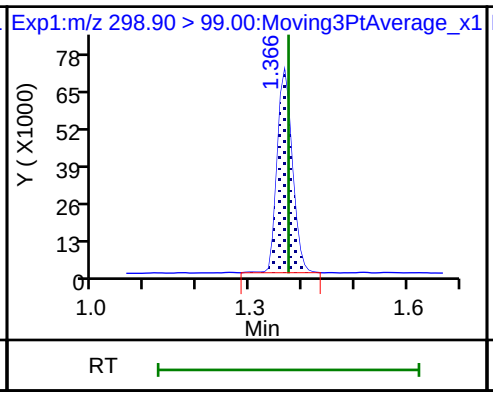
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_014.d				
Injection Date:	29-Aug-2018 00:13:52	Instrument ID:	A8_N		
Lims ID:	320-42142-A-15-A	Lab Sample ID:	320-42142-15		
Client ID:	NAWC-081418-RW-292				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

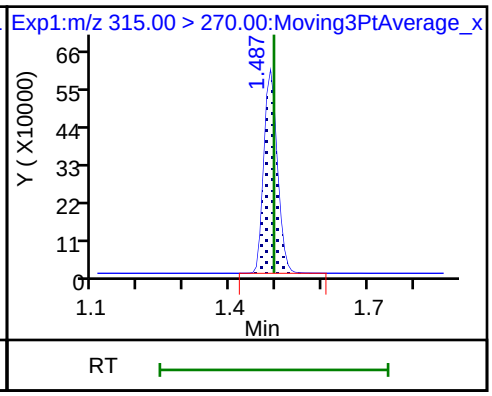
1 Perfluorobutanesulfonic acid



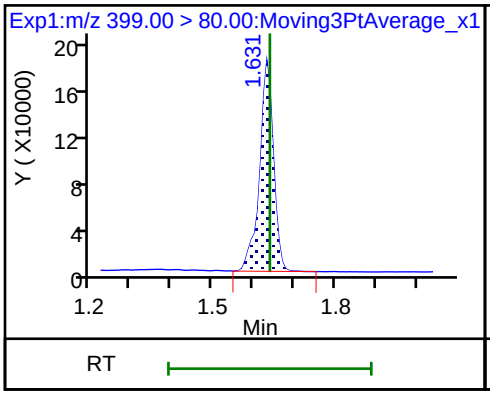
1 Perfluorobutanesulfonic acid



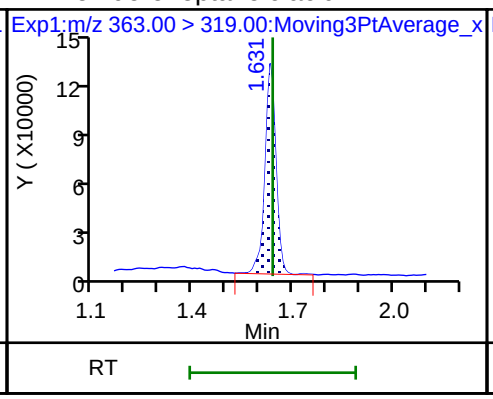
$ 2 13C2 PFHxA



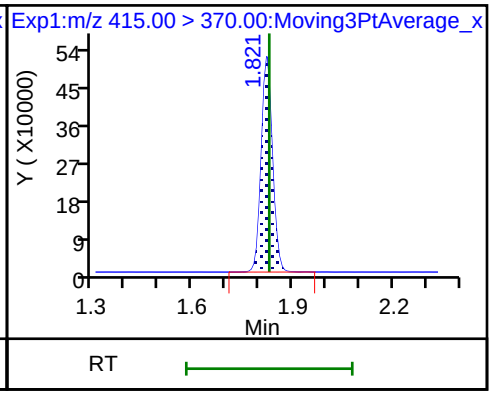
3 Perfluorohexanesulfonic acid



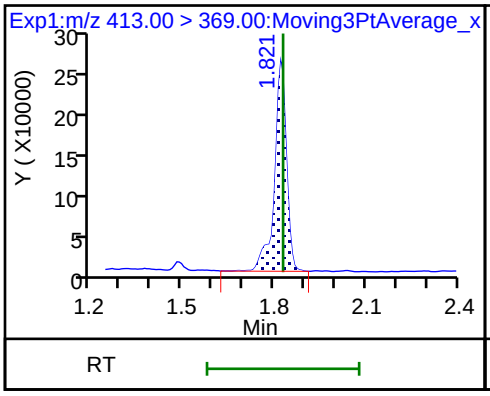
4 Perfluoroheptanoic acid



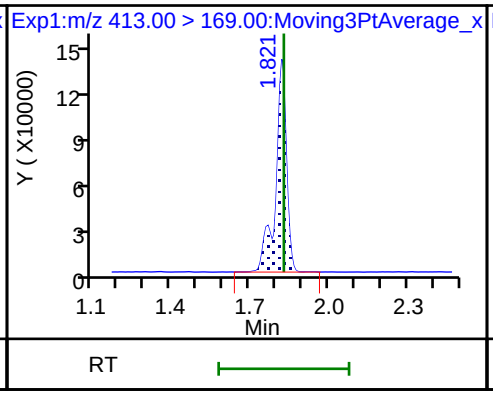
* 6 13C2-PFOA



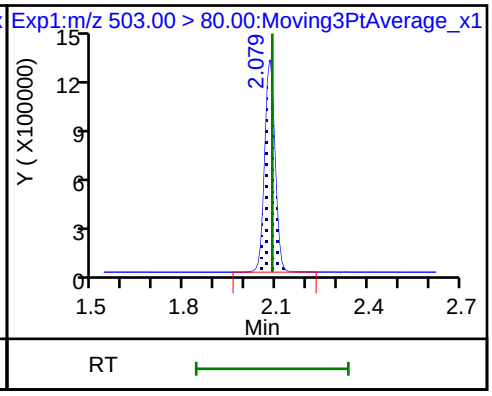
5 Perfluorooctanoic acid



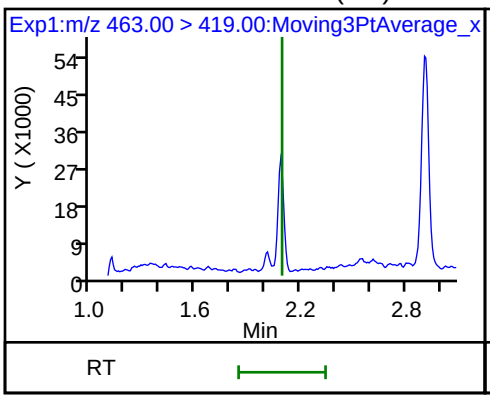
5 Perfluorooctanoic acid



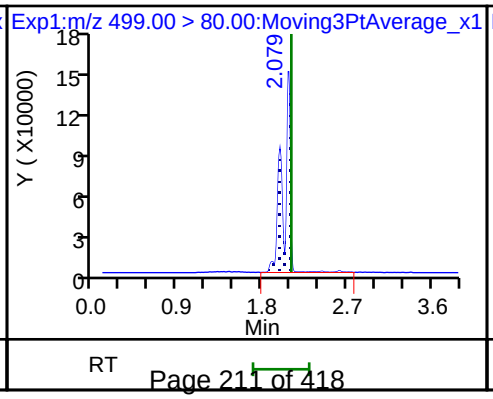
* 7 13C4 PFOS



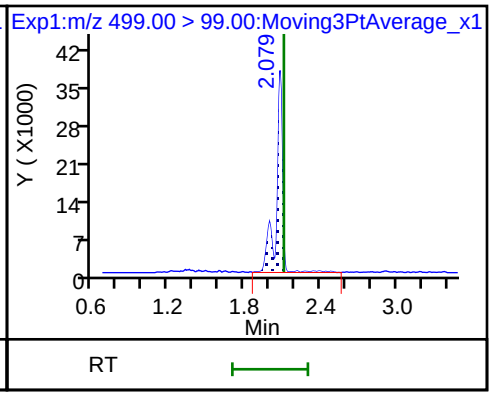
9 Perfluorononanoic acid (ND)



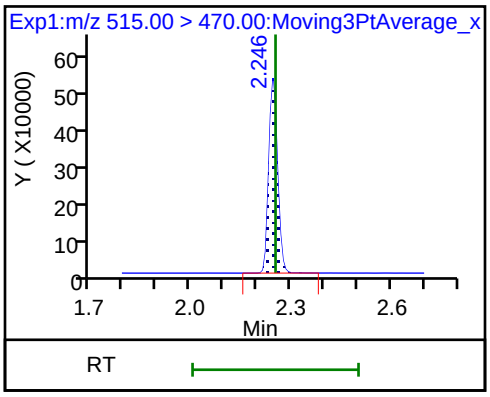
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA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Y (X10000)
60
50
40
30
20
10
0
1.7
2.0
2.3
2.6
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_014.d
Lims ID: 320-42142-A-15-A
Client ID: NAWC-081418-RW-292
Sample Type: Client
Inject. Date: 29-Aug-2018 00:13:52 ALS Bottle#: 8 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-15-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 11:06:11 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 29-Aug-2018 11:06:40

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.75	97.49
$ 10 13C2 PFDA	10.0	10.2	101.95

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-292
Lab Sample ID: 320-42142-16
Matrix: Water
Lab File ID: 2018.08.26_537C_052.d
Analysis Method: 537
Date Collected: 08/14/2018 13:35
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 281.9(mL)
Date Analyzed: 08/27/2018 03:14
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242161
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.1	U	18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.9	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		70-130
STL00996	13C2 PFDA	102		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_052.d
Lims ID: 320-42142-A-16-A
Client ID: NAWC-081418-FRB-292
Sample Type: Client
Inject. Date: 27-Aug-2018 03:14:40 ALS Bottle#: 38 Worklist Smp#: 49
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-16-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:31:39 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

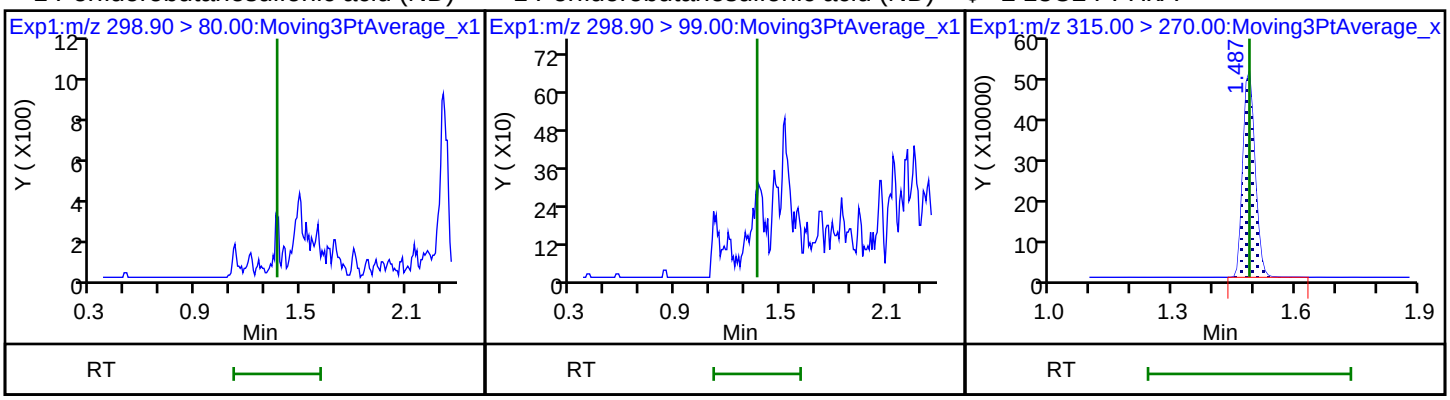
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	1049119	9.88		11403	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		1021568	10.0		8545	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2508454	28.7		6811	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	826226	10.2		4805	

Report Date: 27-Aug-2018 15:32:17 Chrom Revision: 2.3 19-Jul-2018 15:14:50

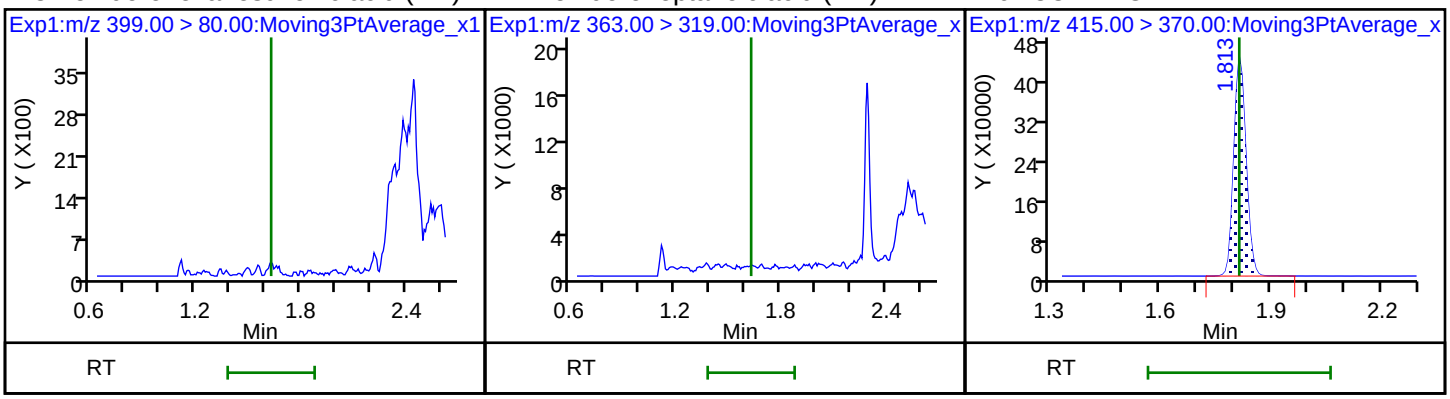
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_052.d				
Injection Date:	27-Aug-2018 03:14:40	Instrument ID:	A8_N		
Lims ID:	320-42142-A-16-A	Lab Sample ID:	320-42142-16		
Client ID:	NAWC-081418-FRB-292				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	38	Worklist Smp#:	49
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

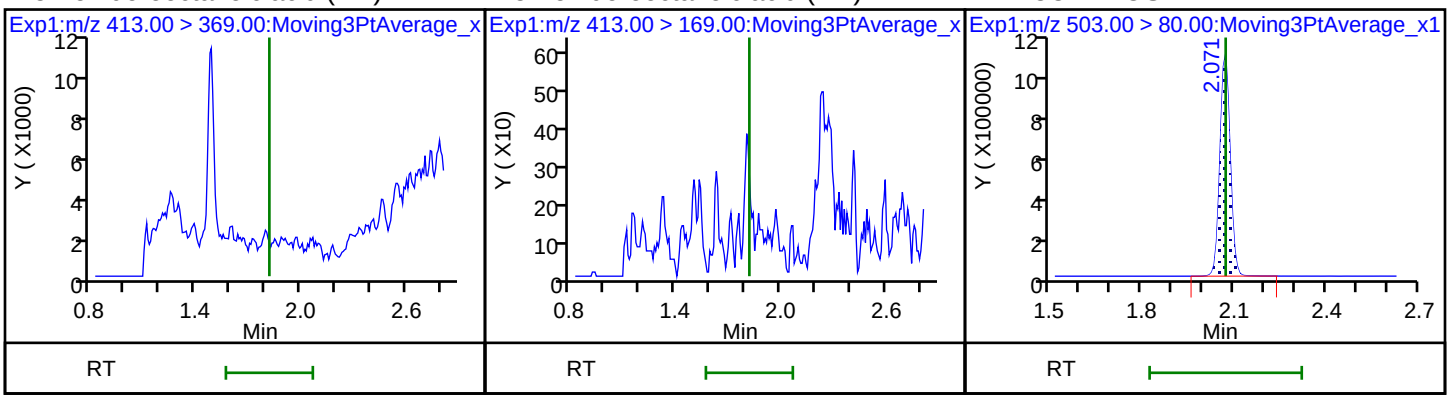
1 Perfluorobutanesulfonic acid (ND) | 1 Perfluorobutanesulfonic acid (ND) | $ 2 13C2 PFHxA



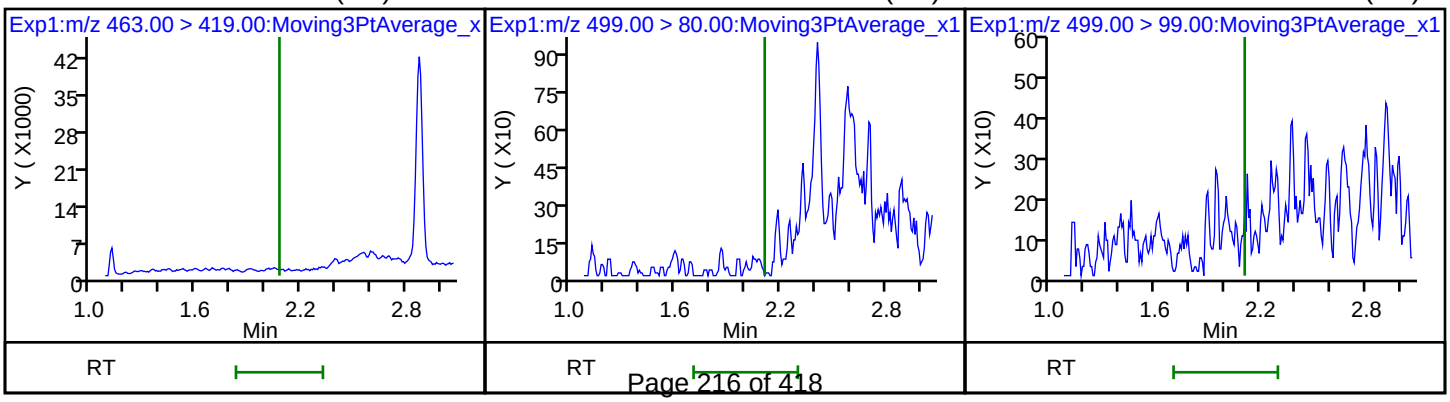
3 Perfluorohexanesulfonic acid (ND) | 4 Perfluoroheptanoic acid (ND) | * 6 13C2-PFOA



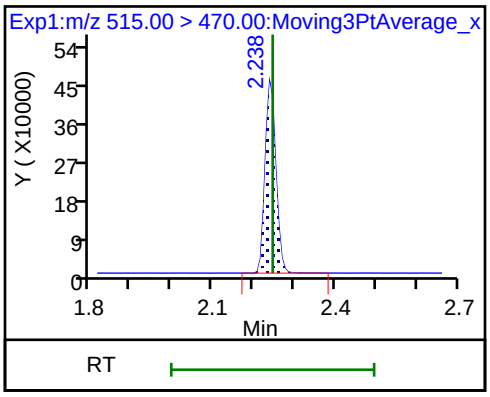
5 Perfluorooctanoic acid (ND) | 5 Perfluorooctanoic acid (ND) | * 7 13C4 PFOS



9 Perfluorononanoic acid (ND) | 8 Perfluorooctane sulfonic acid (ND) | 8 Perfluorooctane sulfonic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.238
Y (X10000)
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_052.d
Lims ID: 320-42142-A-16-A
Client ID: NAWC-081418-FRB-292
Sample Type: Client
Inject. Date: 27-Aug-2018 03:14:40 ALS Bottle#: 38 Worklist Smp#: 49
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-16-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:31:39 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.88	98.80
$ 10 13C2 PFDA	10.0	10.2	102.10

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-229
Lab Sample ID: 320-42142-17
Matrix: Water
Lab File ID: 2018.08.26_537C_053.d
Analysis Method: 537
Date Collected: 08/14/2018 16:10
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 255.7(mL)
Date Analyzed: 08/27/2018 03:19
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242161
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)	31		20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	11		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	99		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_053.d
Lims ID: 320-42142-A-17-A
Client ID: NAWC-081418-RW-229
Sample Type: Client
Inject. Date: 27-Aug-2018 03:19:21 ALS Bottle#: 39 Worklist Smp#: 50
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-17-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:31:39 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 15:25:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	259619	2.34		406	
298.90 > 99.00	1.366	1.366	0.0	1.000	177974		1.46(0.00-0.00)	373	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	1018416	9.05		10228	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	425308	2.64		204	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	333700	2.92		49.5	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		1082166	10.0		7569	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.821	-0.008	1.000	934781	7.93		102	
413.00 > 169.00	1.813	1.821	-0.008	1.000	612539		1.53(0.00-0.00)	1229	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2785372	28.7		3522	
9 Perfluorononanoic acid									M
463.00 > 419.00	2.079	2.079	0.0	1.000	97300	1.09		8.5	M
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	786475	7.50		552	
499.00 > 99.00	2.064	2.109	-0.045	0.996	158872		4.95(0.00-0.00)	280	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	845631	9.86		4569	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 27-Aug-2018 15:32:20 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_053.d

Injection Date: 27-Aug-2018 03:19:21 Instrument ID: A8_N

Lims ID: 320-42142-A-17-A Lab Sample ID: 320-42142-17

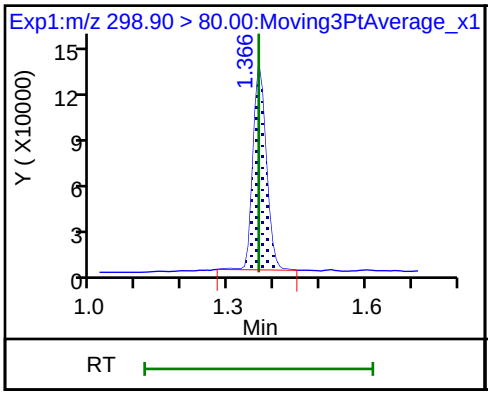
Client ID: NAWC-081418-RW-229

Operator ID: SACINSTLCMS01 ALS Bottle#: 39 Worklist Smp#: 50

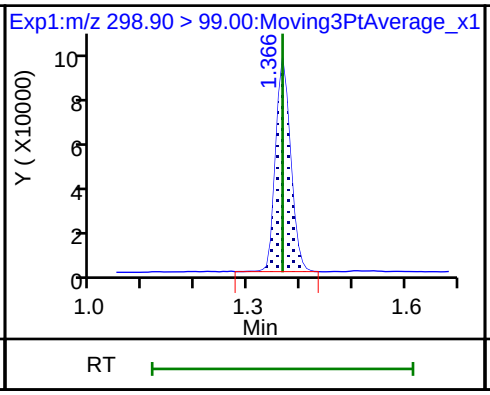
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

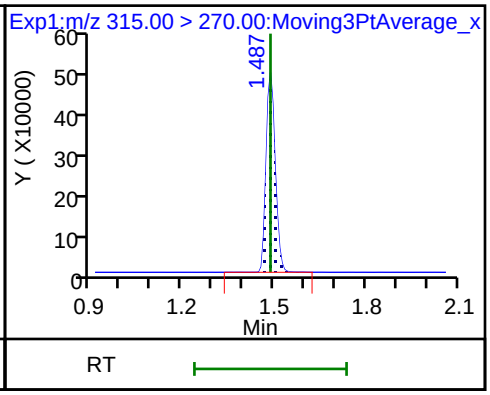
1 Perfluorobutanesulfonic acid



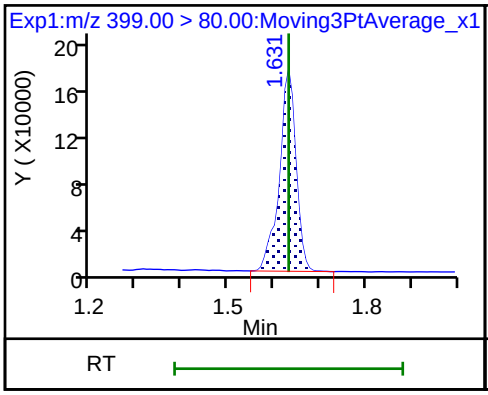
1 Perfluorobutanesulfonic acid



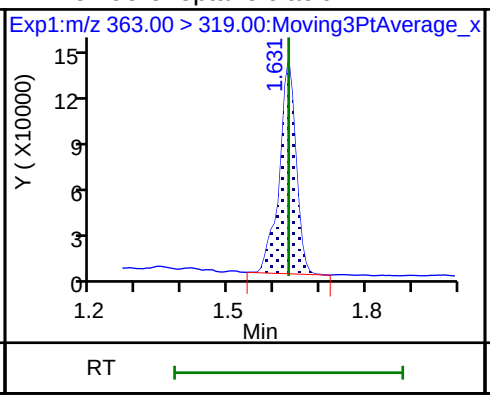
$ 2 13C2 PFHxA



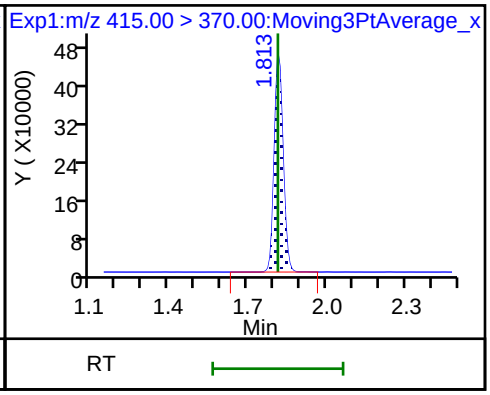
3 Perfluorohexanesulfonic acid



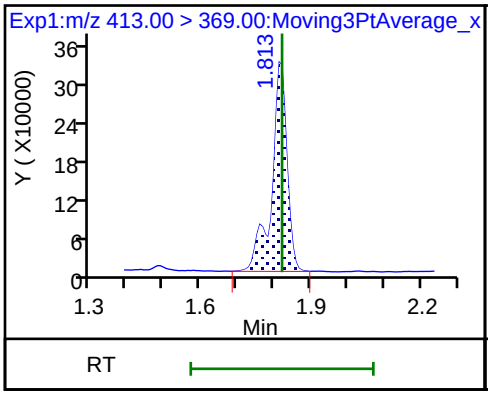
4 Perfluoroheptanoic acid



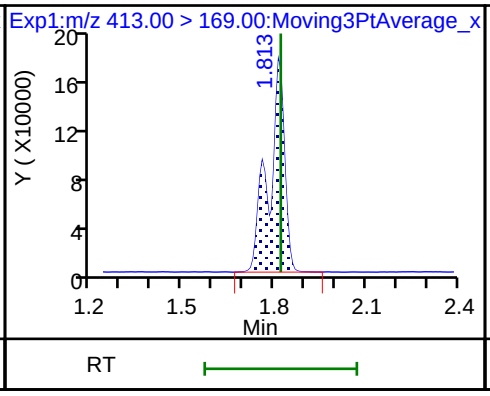
* 6 13C2-PFOA



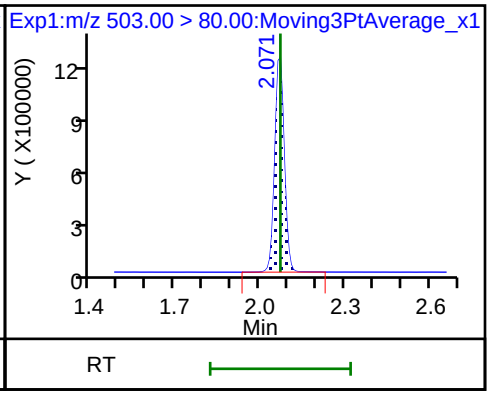
5 Perfluorooctanoic acid



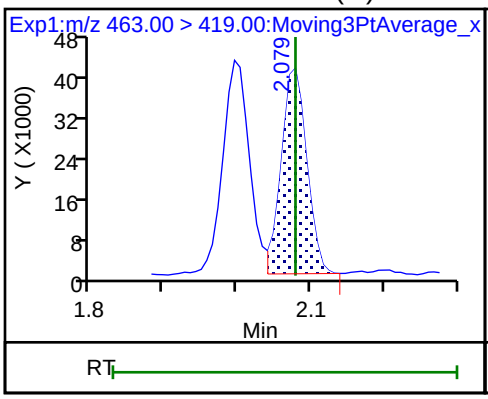
5 Perfluorooctanoic acid



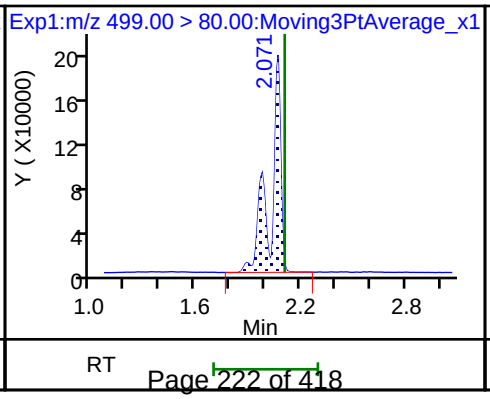
* 7 13C4 PFOS



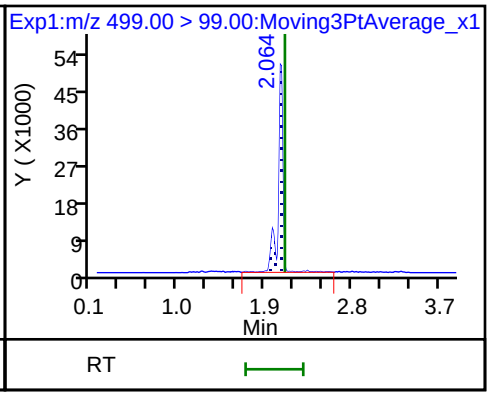
9 Perfluorononanoic acid (M)



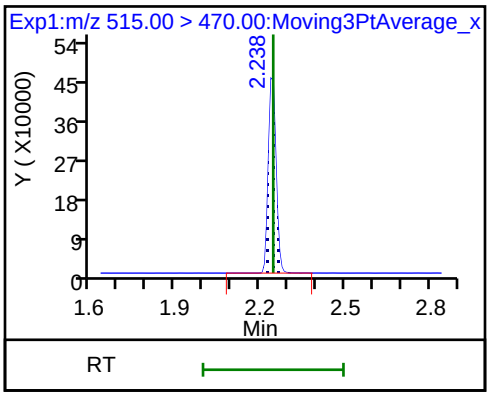
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
Y (X10000)
54
45
36
27
18
9
0
2.238
1.6
1.9
2.2
2.5
2.8
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_053.d
Lims ID: 320-42142-A-17-A
Client ID: NAWC-081418-RW-229
Sample Type: Client
Inject. Date: 27-Aug-2018 03:19:21 ALS Bottle#: 39 Worklist Smp#: 50
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-17-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:31:39 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 15:25:46

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.05	90.54
$ 10 13C2 PFDA	10.0	9.86	98.65

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

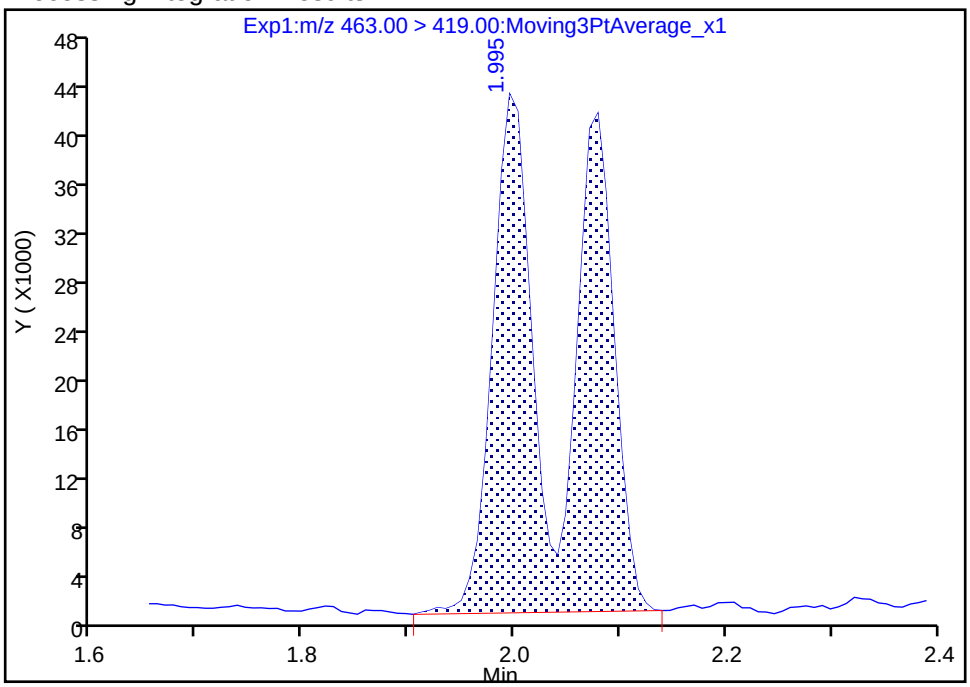
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_053.d				
Injection Date:	27-Aug-2018 03:19:21	Instrument ID:	A8_N		
Lims ID:	320-42142-A-17-A	Lab Sample ID:	320-42142-17		
Client ID:	NAWC-081418-RW-229				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	39	Worklist Smp#:	50
Injection 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

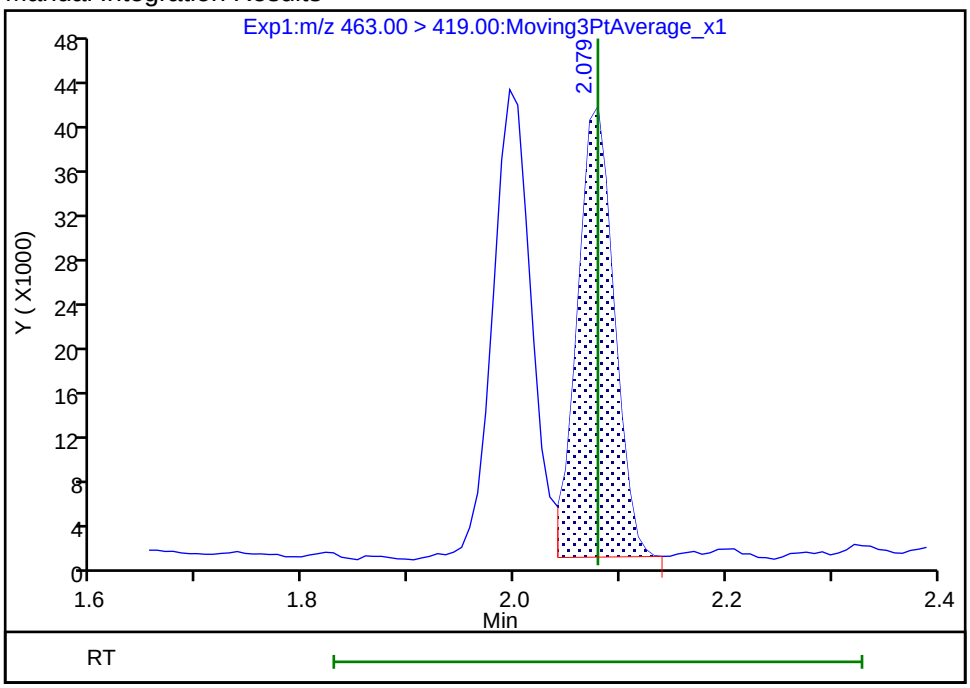
Processing Integration Results

RT: 2.00
Area: 205003
Amount: 2.298117
Amount Units: ng/ml



Manual Integration Results

RT: 2.08
Area: 97300
Amount: 1.090749
Amount Units: ng/ml



Reviewer: barnettj, 27-Aug-2018 15:25:29

Audit Action: Manually Integrated Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-229
Lab Sample ID: 320-42142-18
Matrix: Water
Lab File ID: 2018.08.26_537C_054.d
Analysis Method: 537
Date Collected: 08/14/2018 16:05
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 268.3(mL)
Date Analyzed: 08/27/2018 03:24
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.: 242161
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.5	U	19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	84	34	15

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_054.d
Lims ID: 320-42142-A-18-A
Client ID: NAWC-081418-FRB-229
Sample Type: Client
Inject. Date: 27-Aug-2018 03:24:02 ALS Bottle#: 40 Worklist Smp#: 51
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-18-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:31:39 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

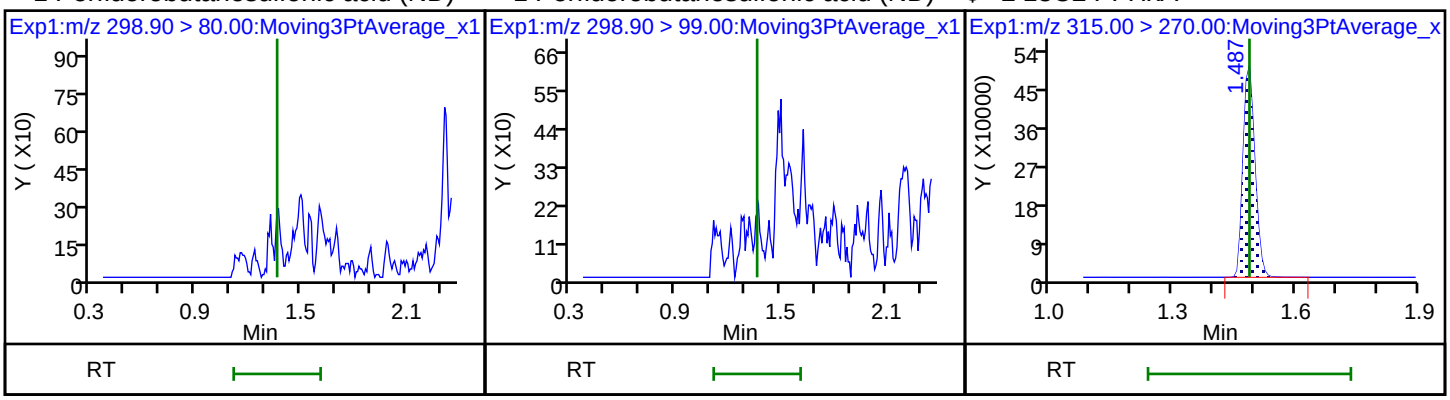
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	1003944	9.95		10643	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		970605	10.0		6795	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2451771	28.7		6143	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	765573	9.96		3944	

Report Date: 27-Aug-2018 15:32:24 Chrom Revision: 2.3 19-Jul-2018 15:14:50

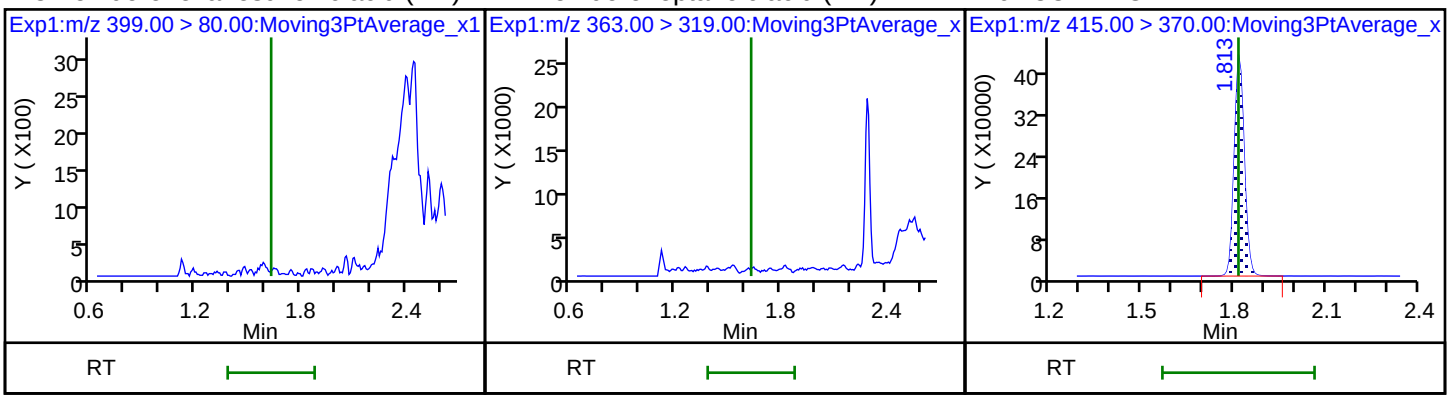
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_054.d				
Injection Date:	27-Aug-2018 03:24:02	Instrument ID:	A8_N		
Lims ID:	320-42142-A-18-A	Lab Sample ID:	320-42142-18		
Client ID:	NAWC-081418-FRB-229				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	40	Worklist Smp#:	51
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

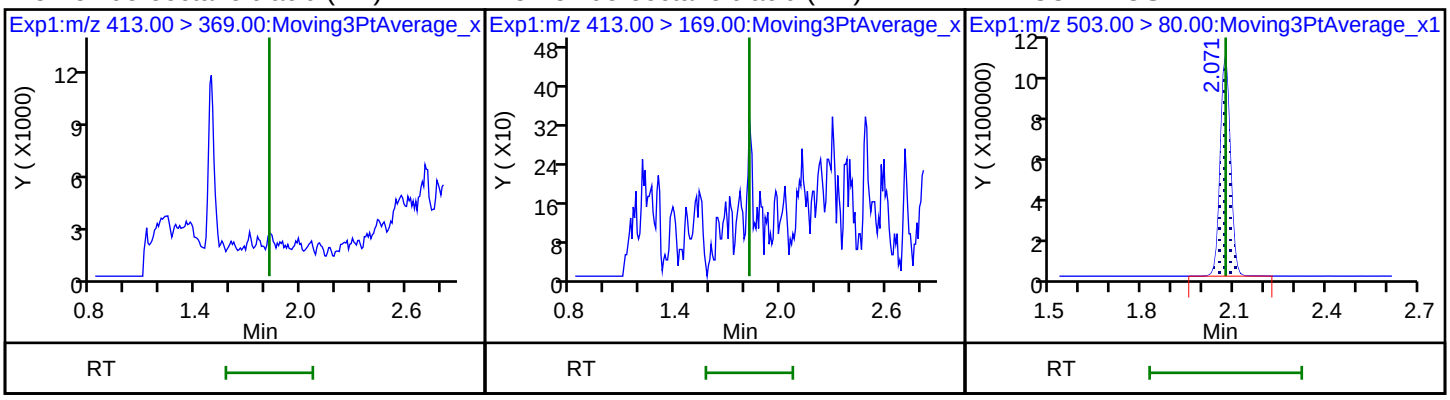
1 Perfluorobutanesulfonic acid (ND) | 1 Perfluorobutanesulfonic acid (ND) | $ 2 13C2 PFHxA



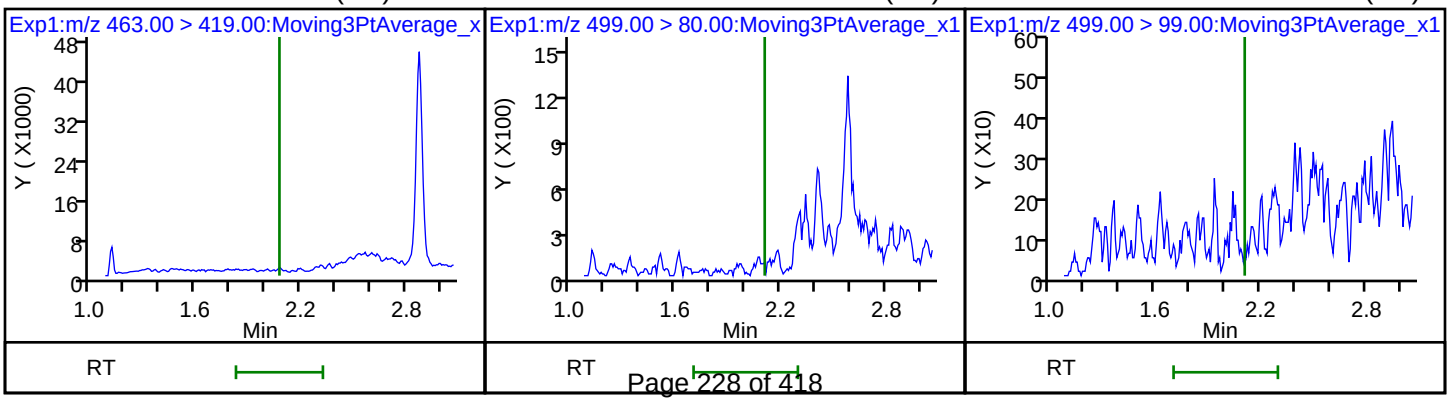
3 Perfluorohexanesulfonic acid (ND) | 4 Perfluoroheptanoic acid (ND) | * 6 13C2-PFOA



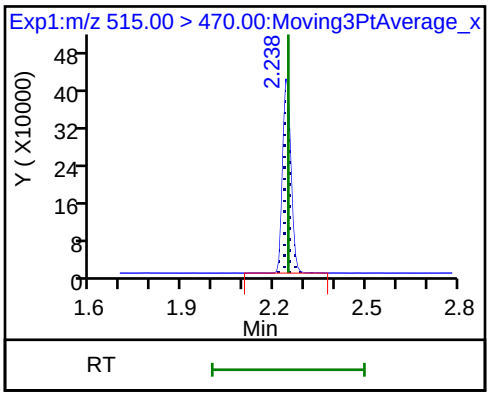
5 Perfluorooctanoic acid (ND) | 5 Perfluorooctanoic acid (ND) | * 7 13C4 PFOS



9 Perfluorononanoic acid (ND) | 8 Perfluorooctane sulfonic acid (ND) | 8 Perfluorooctane sulfonic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.238
Y (X10000)
48
40
32
24
16
8
0
1.6
1.9
2.2
2.5
2.8
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_054.d
Lims ID: 320-42142-A-18-A
Client ID: NAWC-081418-FRB-229
Sample Type: Client
Inject. Date: 27-Aug-2018 03:24:02 ALS Bottle#: 40 Worklist Smp#: 51
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-18-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:31:39 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.95	99.51
$ 10 13C2 PFDA	10.0	9.96	99.58

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-126
Lab Sample ID: 320-42142-19
Matrix: Water
Lab File ID: 2018.08.28_537A_015.d
Analysis Method: 537
Date Collected: 08/14/2018 16:40
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 230.5(mL)
Date Analyzed: 08/29/2018 00:18
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.: 242687
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	57		43	17	7.4
335-67-1	Perfluorooctanoic acid (PFOA)	10	J	22	8.7	3.0
375-95-1	Perfluorononanoic acid (PFNA)	22	U	26	22	8.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	37		33	13	6.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.5	J	11	4.3	2.1
375-73-5	Perfluorobutanesulfonic acid (PFBS)	39	U	98	39	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	95		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_015.d
Lims ID: 320-42142-A-19-A
Client ID: NAWC-081418-RW-126
Sample Type: Client
Inject. Date: 29-Aug-2018 00:18:32 ALS Bottle#: 9 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-19-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 11:06:11 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 29-Aug-2018 11:06:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.373	-0.007	1.000	132705	1.11		149	
298.90 > 99.00	1.366	1.373	-0.007	1.000	87432		1.52(0.00-0.00)	232	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.495	-0.008	1.000	1179378	9.01		8999	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.639	1.639	0.0	1.000	1454768	8.44		548	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.639	-0.008	1.000	137622	1.03		15.8	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.828	-0.007		1259631	10.0		9057	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.828	1.828	0.0	1.000	326510	2.38		35.8	
413.00 > 169.00	1.828	1.828	0.0	1.000	193116		1.69(0.00-0.00)	474	
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.086	-0.007		2984516	28.7		3216	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.079	2.109	-0.030	1.000	1486056	13.2		849	
499.00 > 99.00	2.079	2.109	-0.030	1.000	314424		4.73(0.00-0.00)	625	
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	951992	9.54		4756	

Report Date: 29-Aug-2018 11:17:06 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_015.d

Injection Date: 29-Aug-2018 00:18:32 Instrument ID: A8_N

Lims ID: 320-42142-A-19-A Lab Sample ID: 320-42142-19

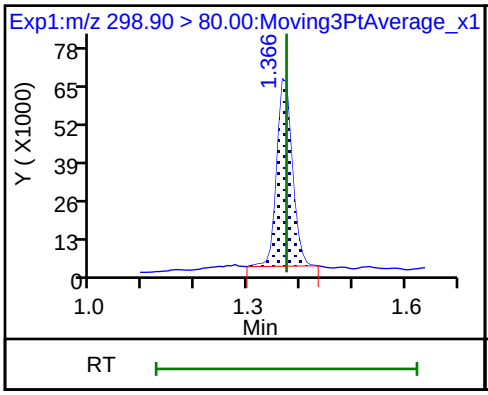
Client ID: NAWC-081418-RW-126

Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 13

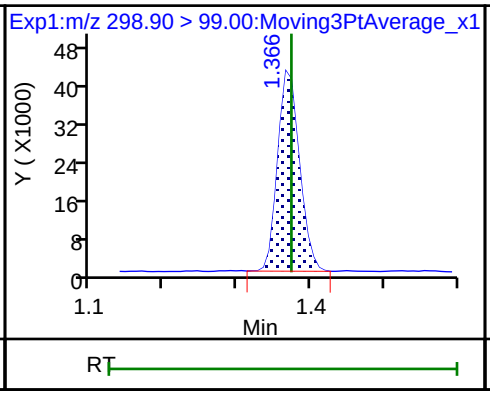
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

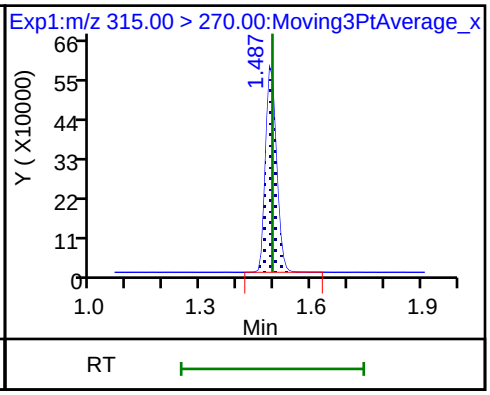
1 Perfluorobutanesulfonic acid



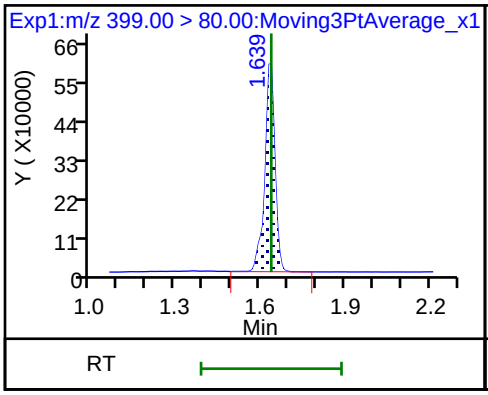
1 Perfluorobutanesulfonic acid



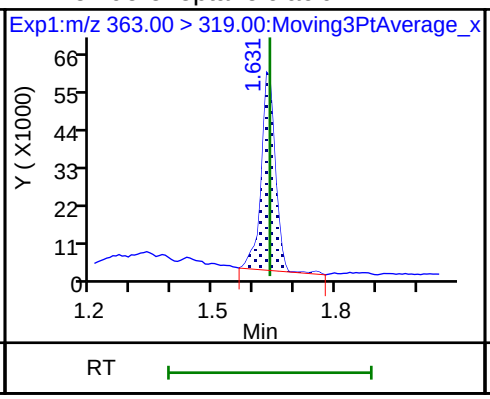
$ 2 13C2 PFHxA



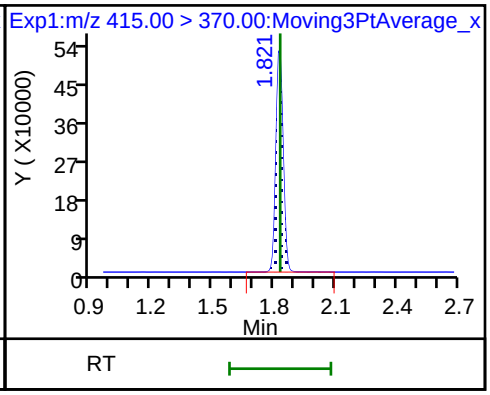
3 Perfluorohexanesulfonic acid



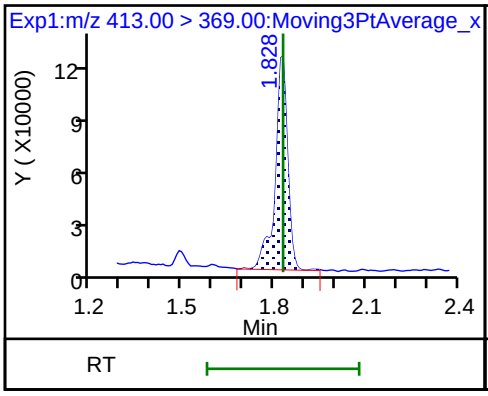
4 Perfluoroheptanoic acid



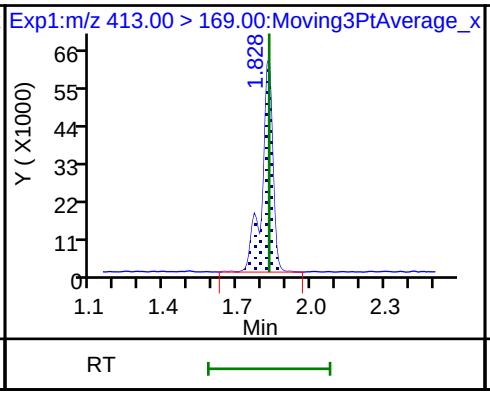
* 6 13C2-PFOA



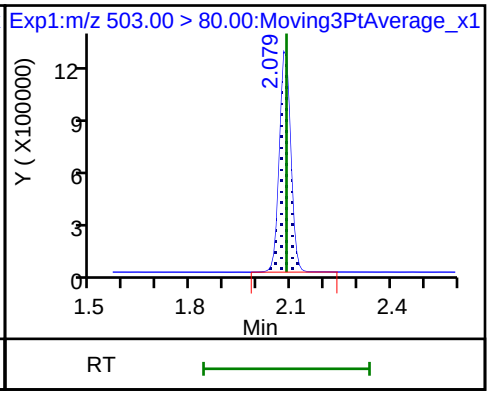
5 Perfluorooctanoic acid



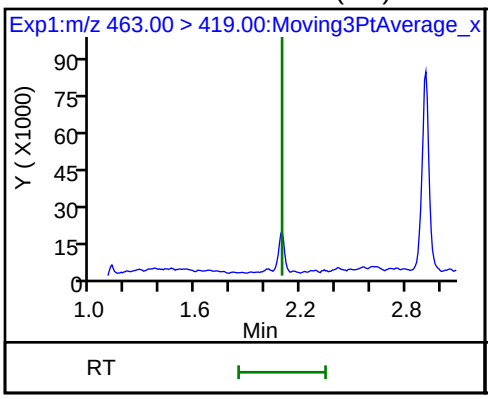
5 Perfluorooctanoic acid



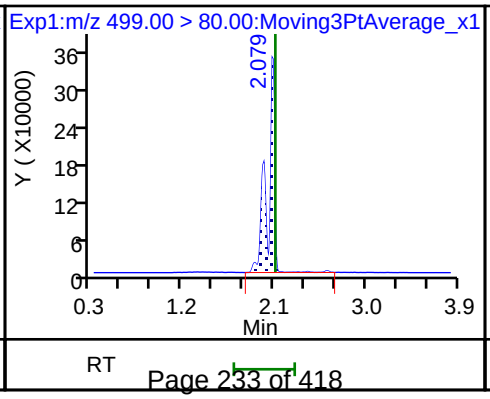
* 7 13C4 PFOS



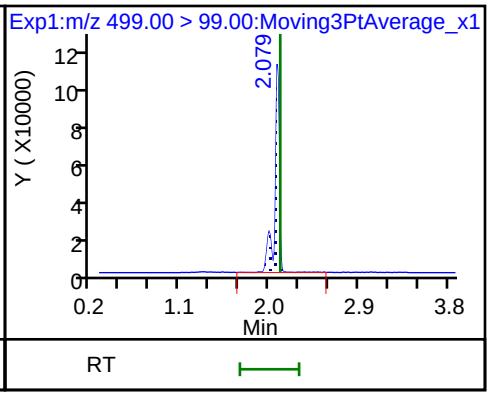
9 Perfluorononanoic acid (ND)



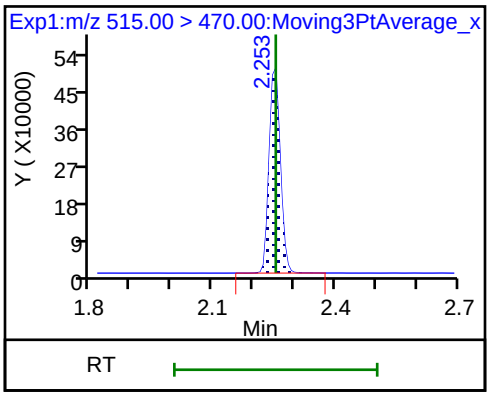
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA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Y (X10000)
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_015.d
Lims ID: 320-42142-A-19-A
Client ID: NAWC-081418-RW-126
Sample Type: Client
Inject. Date: 29-Aug-2018 00:18:32 ALS Bottle#: 9 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-19-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 11:06:11 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 29-Aug-2018 11:06:59

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.01	90.08
$ 10 13C2 PFDA	10.0	9.54	95.41

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-126
Lab Sample ID: 320-42142-20
Matrix: Water
Lab File ID: 2018.08.26_537C_056.d
Analysis Method: 537
Date Collected: 08/14/2018 16:35
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 275(mL)
Date Analyzed: 08/27/2018 03:33
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242161
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	U	18	7.3	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	104		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_056.d
Lims ID: 320-42142-A-20-A
Client ID: NAWC-081418-FRB-126
Sample Type: Client
Inject. Date: 27-Aug-2018 03:33:24 ALS Bottle#: 42 Worklist Smp#: 53
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-20-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:31:39 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

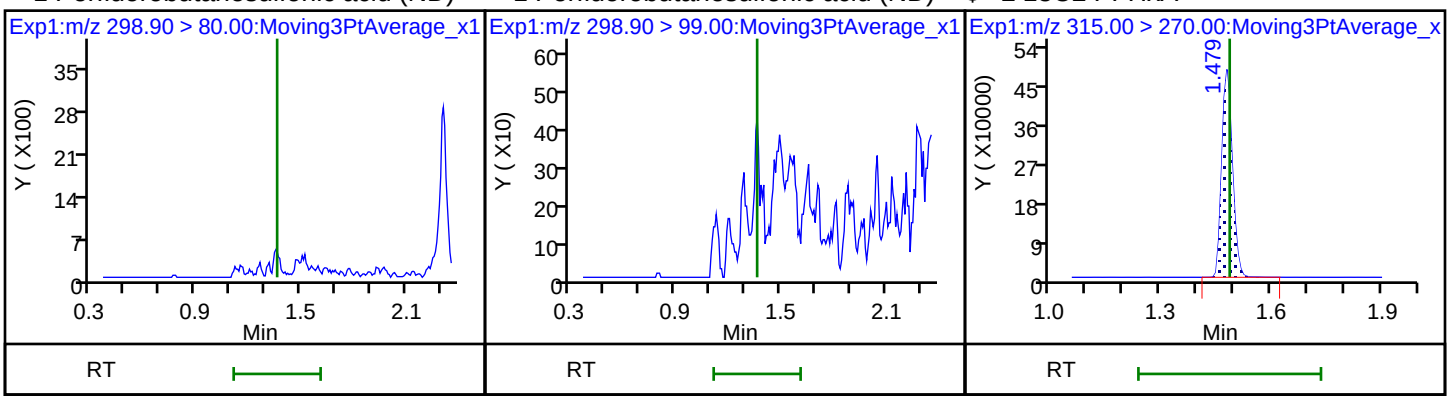
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.487	-0.008	1.000	971829	9.46		9717	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		987929	10.0		7599	
* 7 13C4 PFOS									
503.00 > 80.00	2.064	2.071	-0.007		2497413	28.7		6154	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	811791	10.4		4358	

Report Date: 27-Aug-2018 15:32:29 Chrom Revision: 2.3 19-Jul-2018 15:14:50

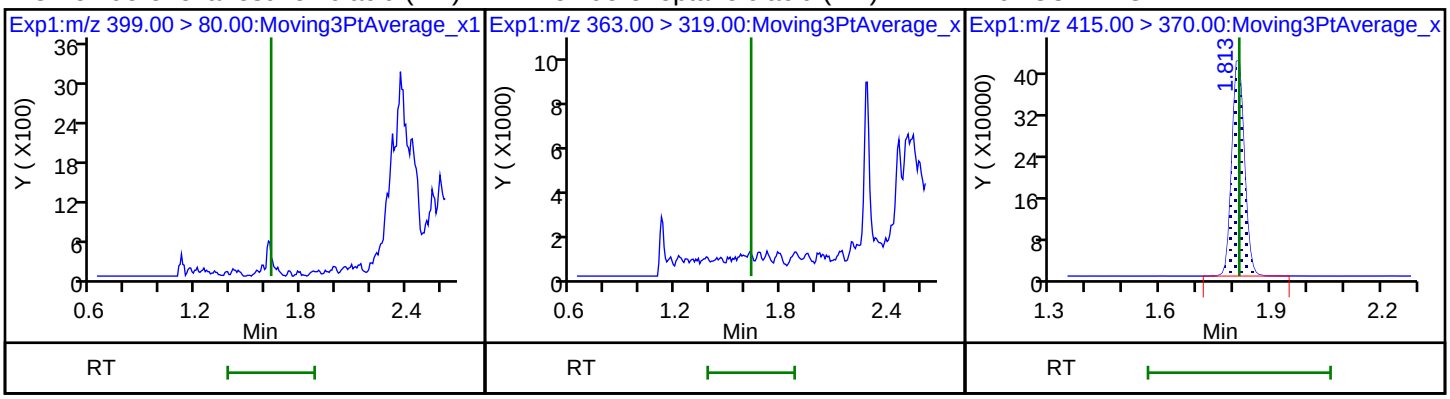
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_056.d				
Injection Date:	27-Aug-2018 03:33:24	Instrument ID:	A8_N		
Lims ID:	320-42142-A-20-A	Lab Sample ID:	320-42142-20		
Client ID:	NAWC-081418-FRB-126				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	42	Worklist Smp#:	53
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

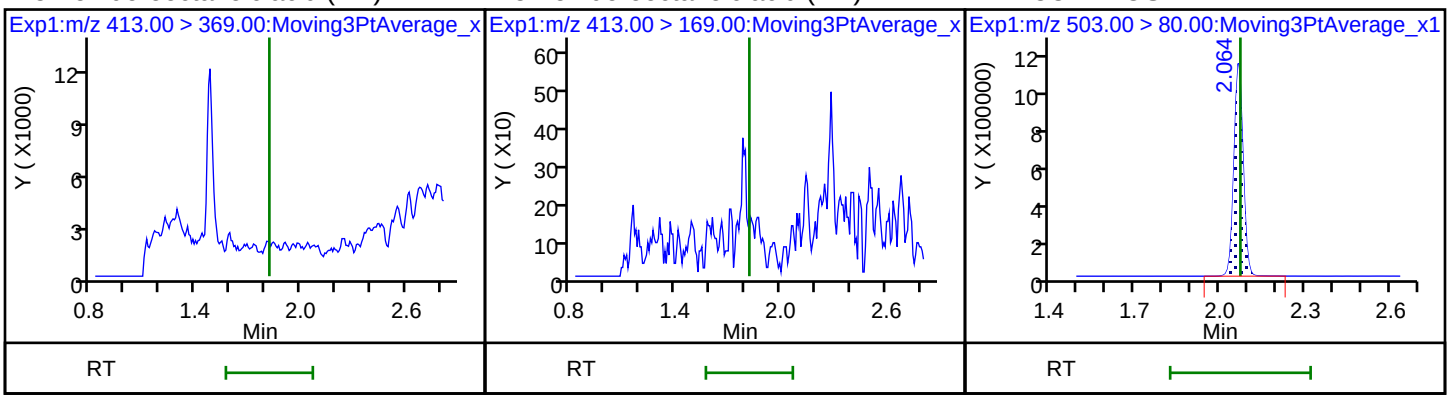
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) $ 2 13C2 PFHxA



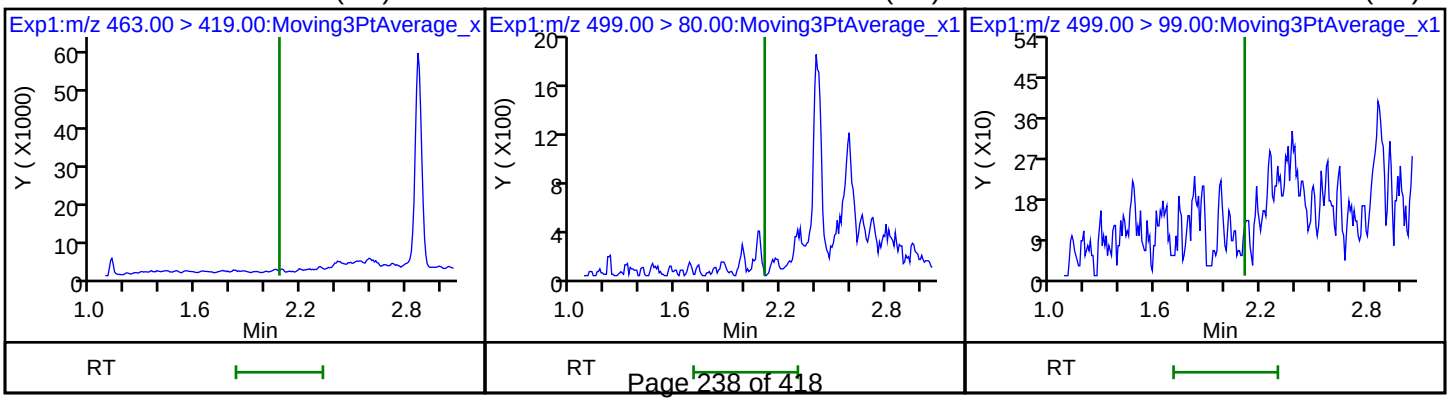
3 Perfluorohexanesulfonic acid (ND) 4 Perfluoroheptanoic acid (ND) * 6 13C2-PFOA



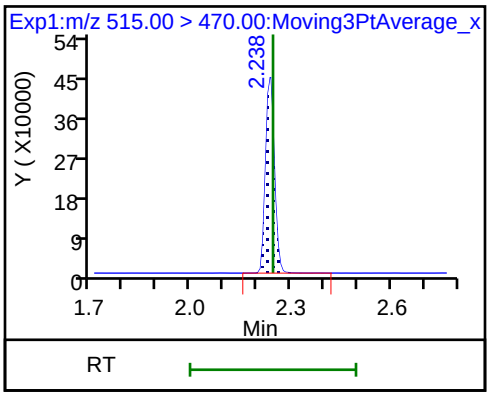
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) * 7 13C4 PFOS



9 Perfluorononanoic acid (ND) 8 Perfluorooctane sulfonic acid (ND) 8 Perfluorooctane sulfonic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.238
Y (X10000)
54
45
36
27
18
9
0
1.7
2.0
2.3
2.6
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_056.d
Lims ID: 320-42142-A-20-A
Client ID: NAWC-081418-FRB-126
Sample Type: Client
Inject. Date: 27-Aug-2018 03:33:24 ALS Bottle#: 42 Worklist Smp#: 53
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-20-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:31:39 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.46	94.64
$ 10 13C2 PFDA	10.0	10.4	103.74

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-172
Lab Sample ID: 320-42142-21
Matrix: Water
Lab File ID: 2018.08.26_537C_057.d
Analysis Method: 537
Date Collected: 08/14/2018 17:10
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 235.7(mL)
Date Analyzed: 08/27/2018 03:38
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242161
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.1	J	42	17	7.2
335-67-1	Perfluorooctanoic acid (PFOA)	10	J	21	8.5	3.0
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	13	U	32	13	5.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	J M	11	4.2	2.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	38	U	95	38	17

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_057.d
Lims ID: 320-42142-A-21-A
Client ID: NAWC-081418-RW-172
Sample Type: Client
Inject. Date: 27-Aug-2018 03:38:05 ALS Bottle#: 43 Worklist Smp#: 54
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-21-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:31:39 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 15:27:25

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	80432	0.7651		192	
298.90 > 99.00	1.366	1.366	0.0	1.000	55768		1.44(0.00-0.00)	123	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	1074687	9.82		9534	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	143360	0.9425		86.2	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	1.631	1.631	0.0	1.000	94152	0.8460		18.4	M
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		1052377	10.0		8212	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.821	-0.008	1.000	277312	2.42		37.3	
413.00 > 169.00	1.813	1.821	-0.008	1.000	166361		1.67(0.00-0.00)	428	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2633869	28.7		5060	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	189614	1.91		157	
499.00 > 99.00	2.071	2.109	-0.038	1.000	35579		5.33(0.00-0.00)	60.3	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	836904	10.0		4048	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 27-Aug-2018 15:32:33 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_057.d

Injection Date: 27-Aug-2018 03:38:05 Instrument ID: A8_N

Lims ID: 320-42142-A-21-A Lab Sample ID: 320-42142-21

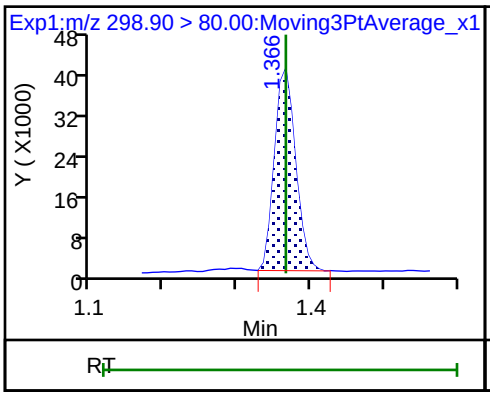
Client ID: NAWC-081418-RW-172

Operator ID: SACINSTLCMS01 ALS Bottle#: 43 Worklist Smp#: 54

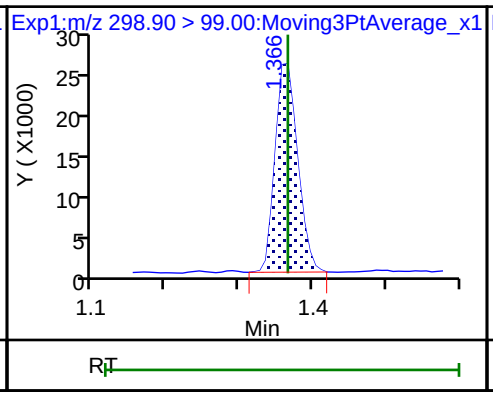
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

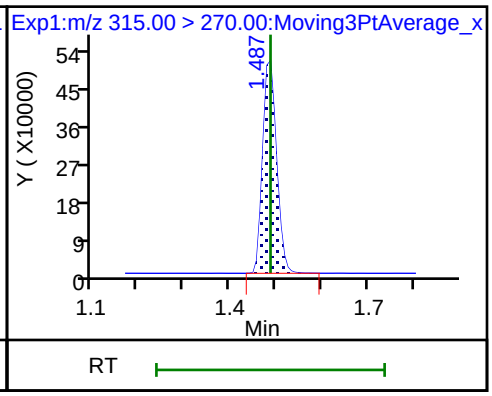
1 Perfluorobutanesulfonic acid



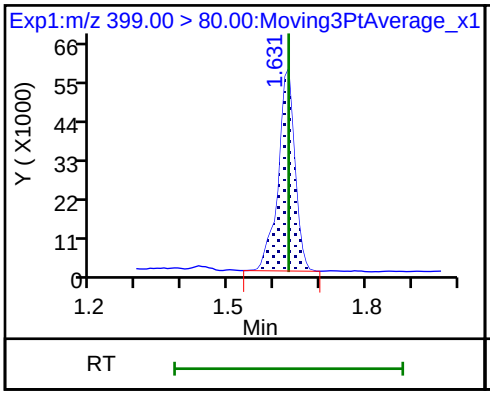
1 Perfluorobutanesulfonic acid



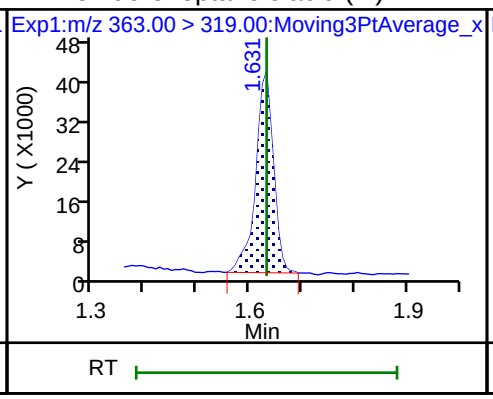
$ 2 13C2 PFHxA



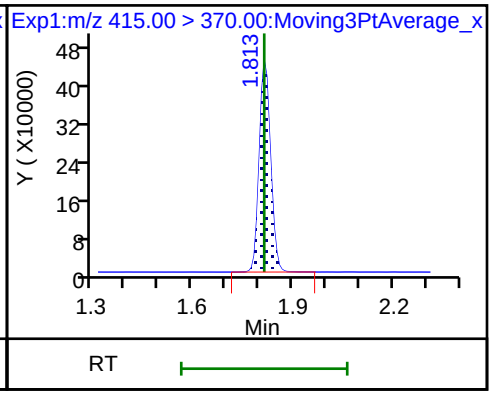
3 Perfluorohexanesulfonic acid



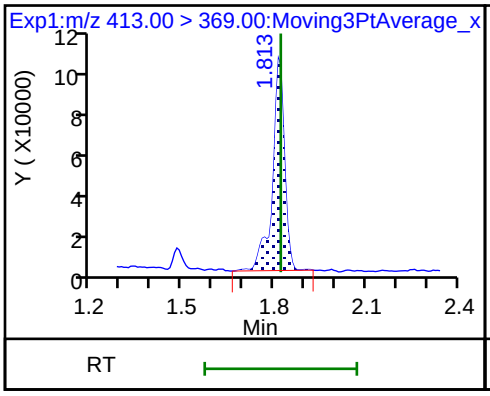
4 Perfluoroheptanoic acid (M)



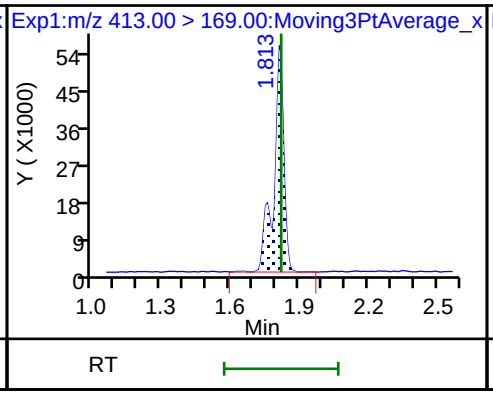
* 6 13C2-PFOA



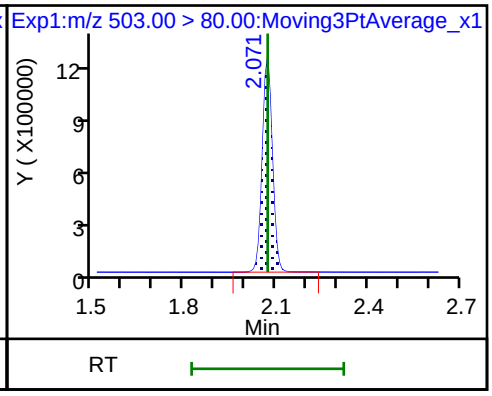
5 Perfluorooctanoic acid



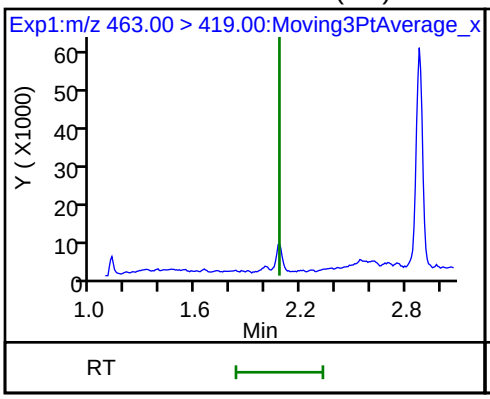
5 Perfluorooctanoic acid



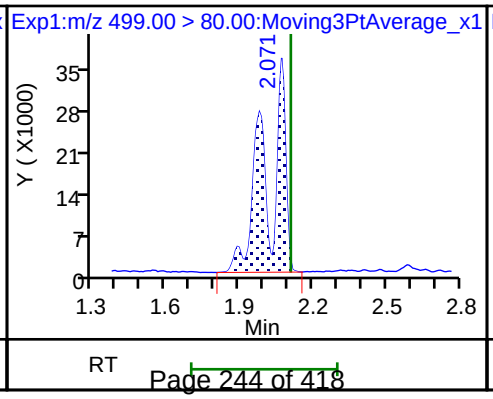
* 7 13C4 PFOS



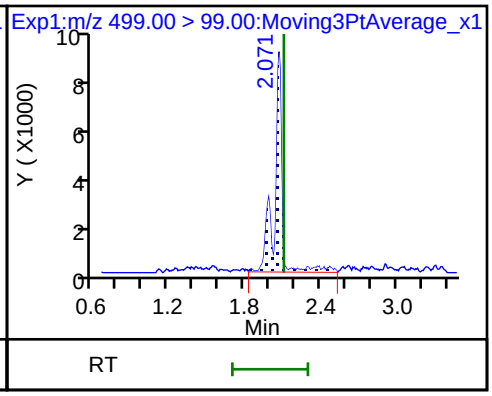
9 Perfluorononanoic acid (ND)



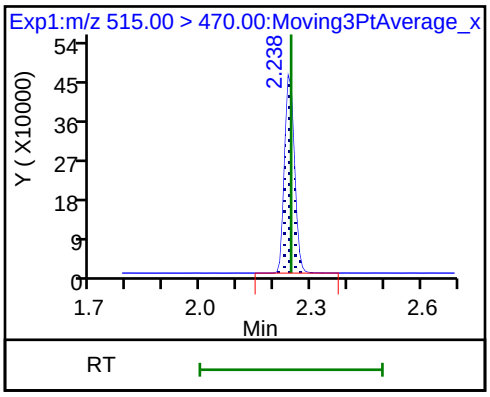
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.238
Y (X10000)
54
45
36
27
18
9
0
1.7
2.0
2.3
2.6
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_057.d
Lims ID: 320-42142-A-21-A
Client ID: NAWC-081418-RW-172
Sample Type: Client
Inject. Date: 27-Aug-2018 03:38:05 ALS Bottle#: 43 Worklist Smp#: 54
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-21-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:31:39 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 15:27:25

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.82	98.25
$ 10 13C2 PFDA	10.0	10.0	100.40

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

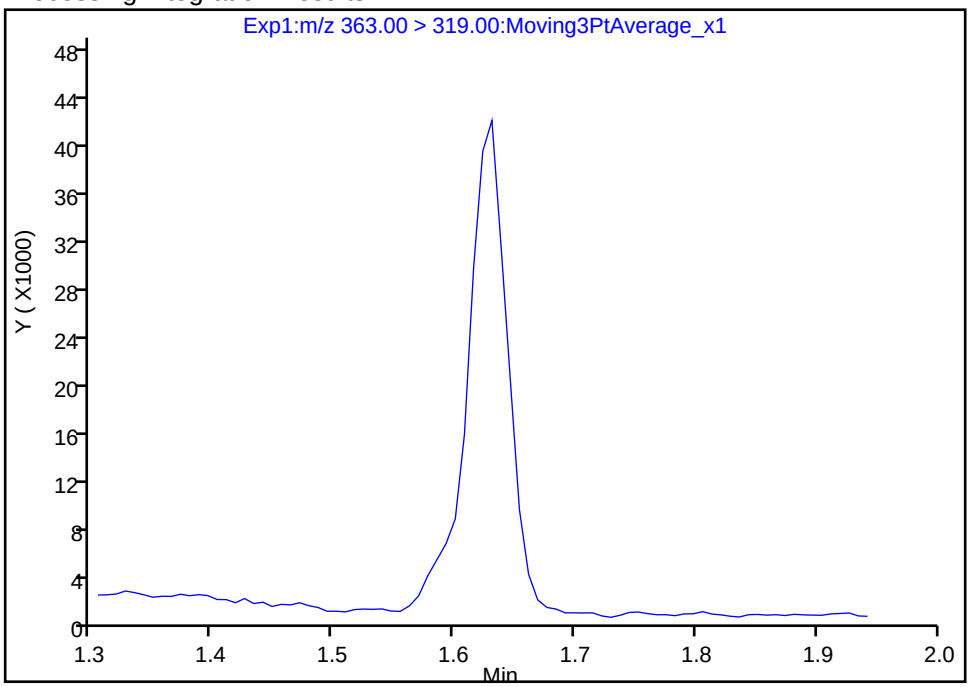
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_057.d				
Injection Date:	27-Aug-2018 03:38:05	Instrument ID:	A8_N		
Lims ID:	320-42142-A-21-A	Lab Sample ID:	320-42142-21		
Client ID:	NAWC-081418-RW-172				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	43	Worklist Smp#:	54
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

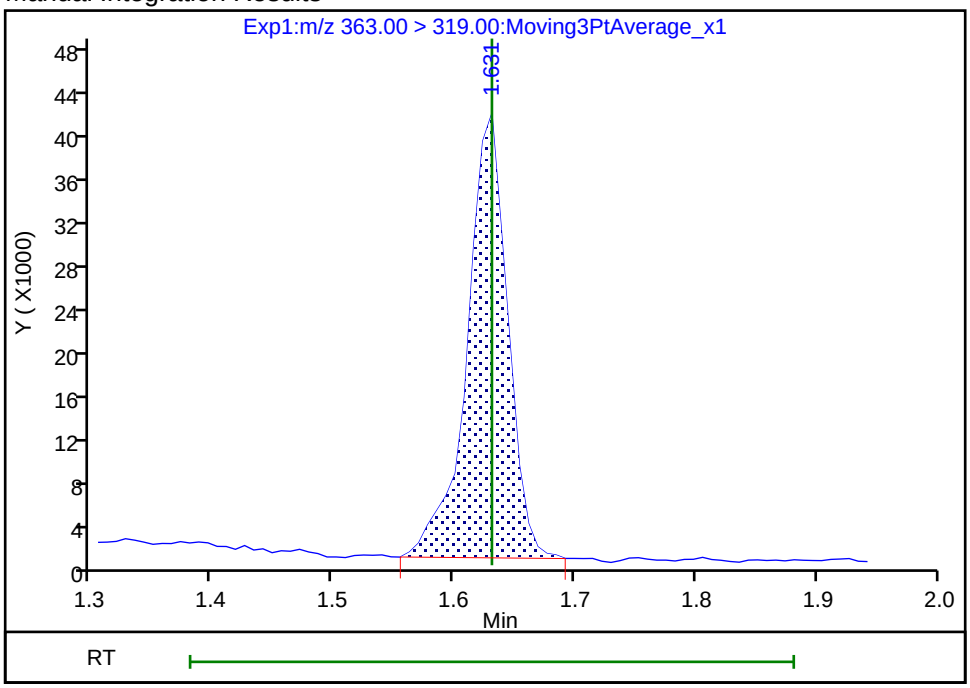
Not Detected
Expected RT: 1.63

Processing Integration Results



Manual Integration Results

RT: 1.63
Area: 94152
Amount: 0.846005
Amount Units: ng/ml



Reviewer: barnettj, 27-Aug-2018 15:27:01
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-172
Lab Sample ID: 320-42142-22
Matrix: Water
Lab File ID: 2018.08.28_537A_016.d
Analysis Method: 537
Date Collected: 08/14/2018 17:05
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 273.6(mL)
Date Analyzed: 08/29/2018 00:23
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242687
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	U	18	7.3	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.1	3.7	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	97		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_016.d
Lims ID: 320-42142-A-22-A
Client ID: NAWC-081418-FRB-172
Sample Type: Client
Inject. Date: 29-Aug-2018 00:23:13 ALS Bottle#: 10 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-22-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 11:06:11 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

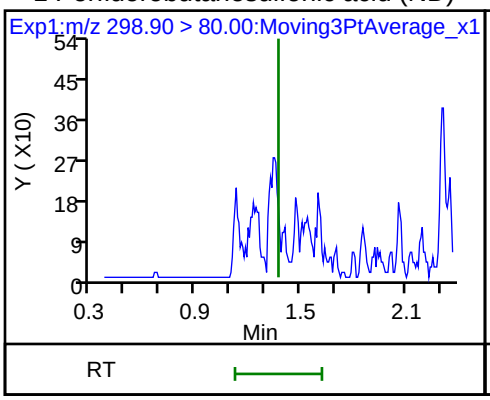
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.495	-0.008	1.000	683501	9.56		7045	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.828	-0.007		687676	10.0		5149	
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.086	-0.007		1662172	28.7		4690	
$ 10 13C2 PFDA									
515.00 > 470.00	2.246	2.253	-0.007	1.000	528685	9.71		2889	

Report Date: 29-Aug-2018 11:17:08 Chrom Revision: 2.3 19-Jul-2018 15:14:50

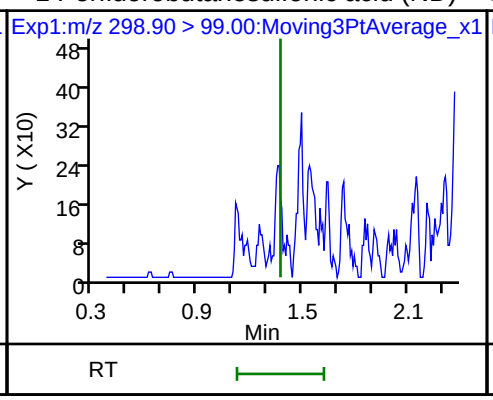
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_016.d				
Injection Date:	29-Aug-2018 00:23:13	Instrument ID:	A8_N		
Lims ID:	320-42142-A-22-A	Lab Sample ID:	320-42142-22		
Client ID:	NAWC-081418-FRB-172				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

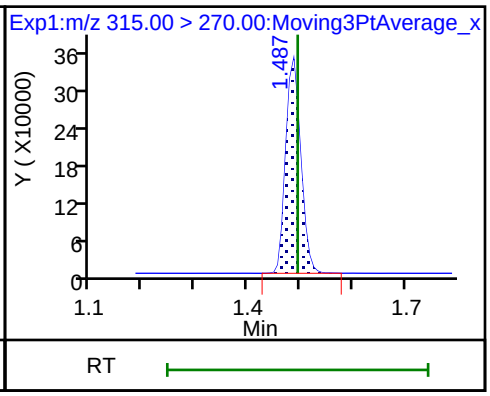
1 Perfluorobutanesulfonic acid (ND)



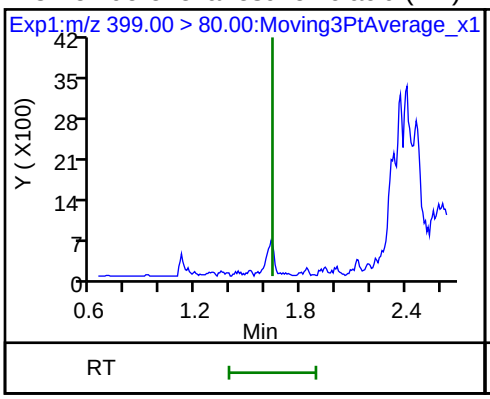
1 Perfluorobutanesulfonic acid (ND)



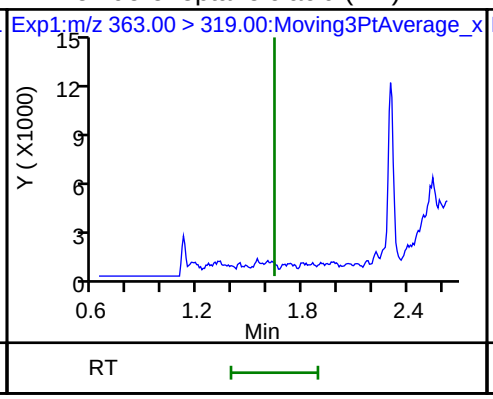
$ 2 13C2 PFHxA



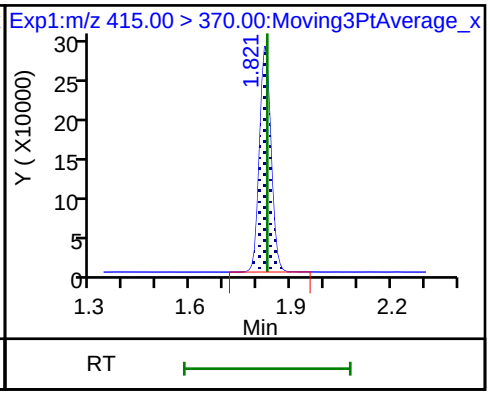
3 Perfluorohexanesulfonic acid (ND)



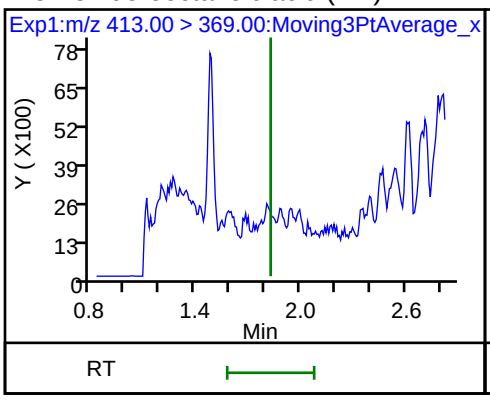
4 Perfluoroheptanoic acid (ND)



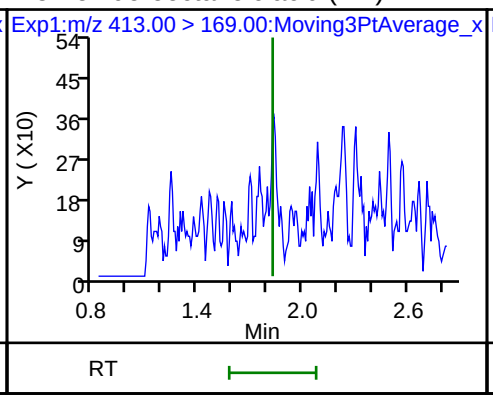
* 6 13C2-PFOA



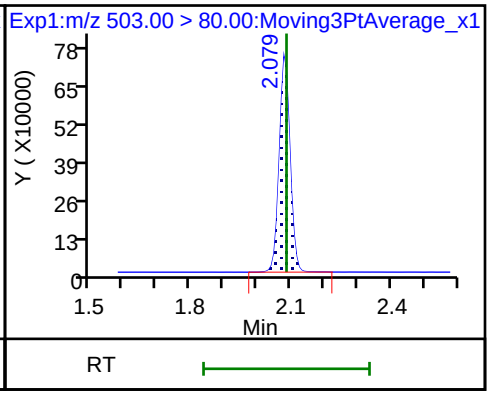
5 Perfluorooctanoic acid (ND)



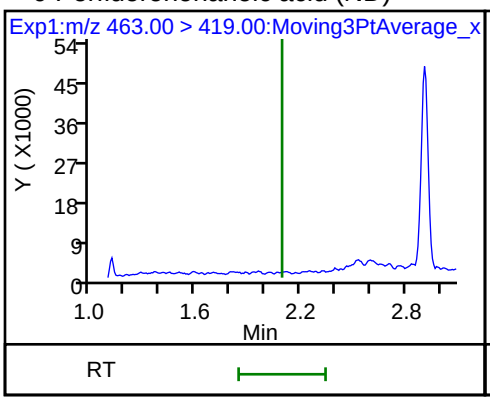
5 Perfluorooctanoic acid (ND)



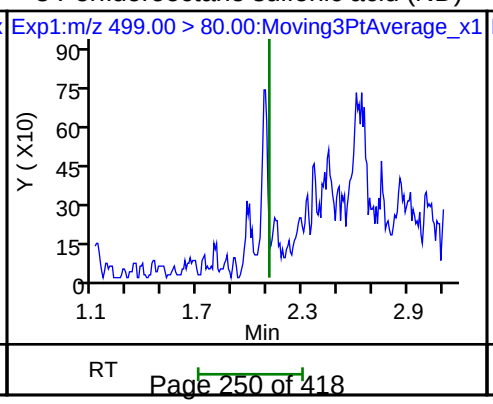
* 7 13C4 PFOS



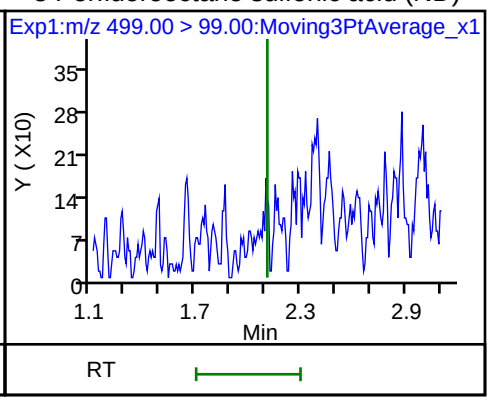
9 Perfluorononanoic acid (ND)



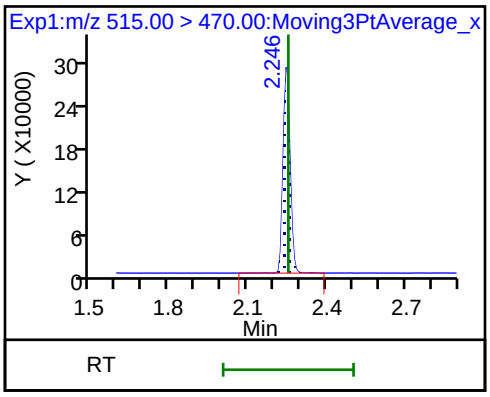
8 Perfluorooctane sulfonic acid (ND)



8 Perfluorooctane sulfonic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.246
Y (X10000)
30
24
18
12
6
0
1.5
1.8
2.1
2.4
2.7
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_016.d
Lims ID: 320-42142-A-22-A
Client ID: NAWC-081418-FRB-172
Sample Type: Client
Inject. Date: 29-Aug-2018 00:23:13 ALS Bottle#: 10 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-22-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 11:06:11 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.56	95.63
$ 10 13C2 PFDA	10.0	9.71	97.06

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: WGNA-080718-DUP-45
Lab Sample ID: 320-42142-23
Matrix: Water
Lab File ID: 2018.08.28_537A_017.d
Analysis Method: 537
Date Collected: 08/14/2018 07:00
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 266(mL)
Date Analyzed: 08/29/2018 00:27
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242687
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	30	J	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	27		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.3	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.5	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	94		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_017.d
Lims ID: 320-42142-A-23-A
Client ID: WGNA-080718-DUP-45
Sample Type: Client
Inject. Date: 29-Aug-2018 00:27:53 ALS Bottle#: 11 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-23-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 11:06:11 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 29-Aug-2018 10:15:18

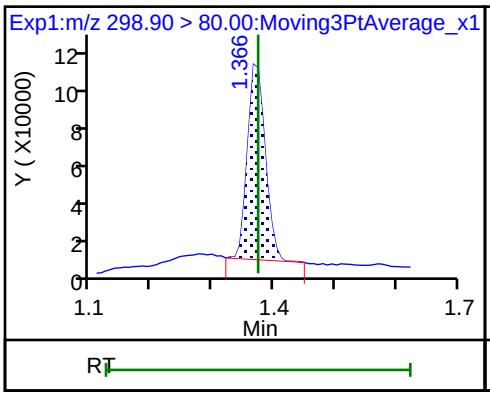
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.373	-0.007	1.000	201490	1.94		79.1	
298.90 > 99.00	1.366	1.373	-0.007	1.000	138304		1.46(0.00-0.00)	310	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.495	-0.008	1.000	956937	8.46		7372	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.639	1.639	0.0	1.000	212434	1.41		43.8	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.639	1.639	0.0	1.000	260052	2.26		25.5	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.828	-0.007		1088472	10.0		6516	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.821	1.828	-0.007	1.000	845148	7.13		72.9	
413.00 > 169.00	1.828	1.828	0.0	1.004	494312		1.71(0.00-0.00)	979	
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.086	-0.007		2601893	28.7		1491	
9 Perfluorononanoic acid									
463.00 > 419.00	2.094	2.094	0.0	1.000	69515	0.7748		7.1	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.086	2.109	-0.023	1.000	770168	7.86		185	
499.00 > 99.00	2.079	2.109	-0.030	0.996	132112		5.83(0.00-0.00)	154	
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	808841	9.38		4128	

Report Date: 29-Aug-2018 11:17:09 Chrom Revision: 2.3 19-Jul-2018 15:14:50

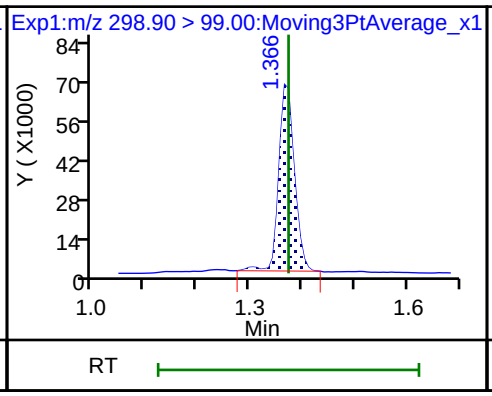
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_017.d				
Injection Date:	29-Aug-2018 00:27:53	Instrument ID:	A8_N		
Lims ID:	320-42142-A-23-A	Lab Sample ID:	320-42142-23		
Client ID:	WGNA-080718-DUP-45				
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		

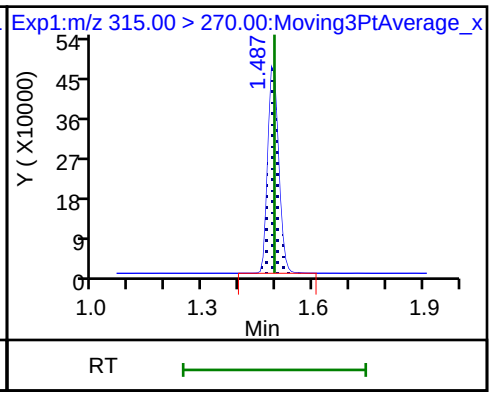
1 Perfluorobutanesulfonic acid



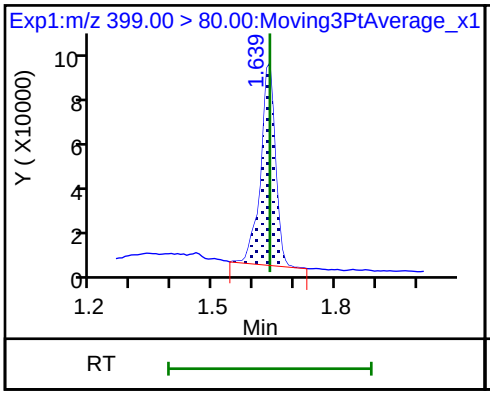
1 Perfluorobutanesulfonic acid



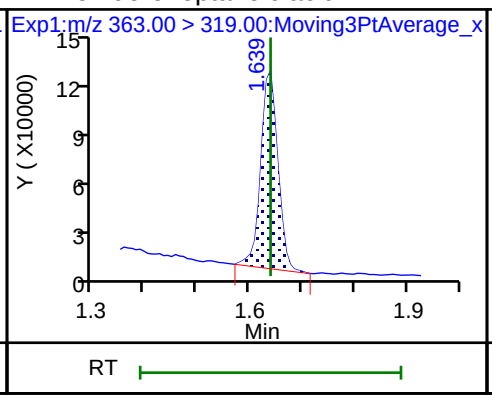
$ 2 13C2 PFHxA



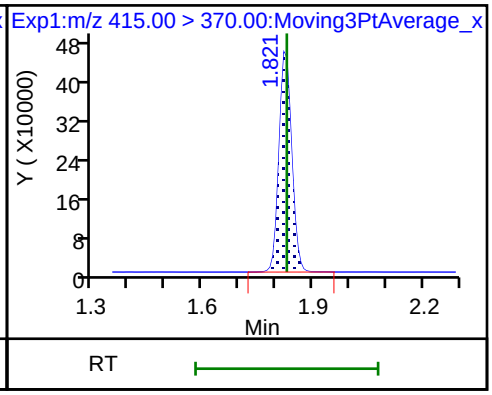
3 Perfluorohexanesulfonic acid



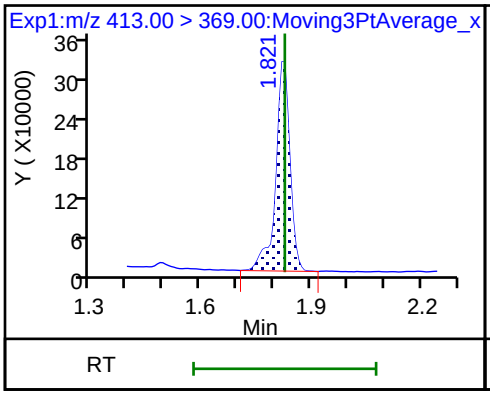
4 Perfluoroheptanoic acid



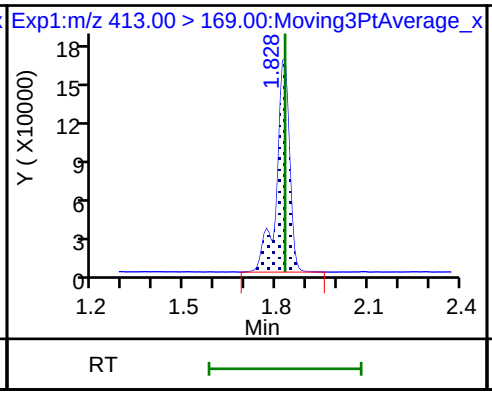
* 6 13C2-PFOA



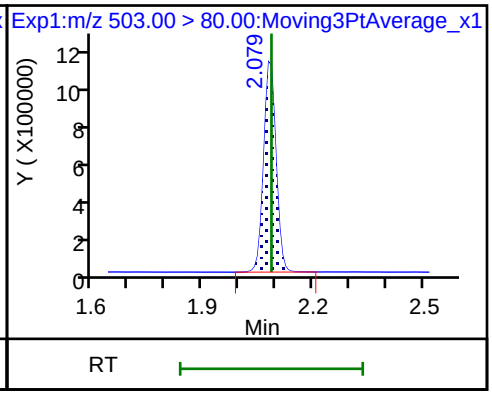
5 Perfluorooctanoic acid



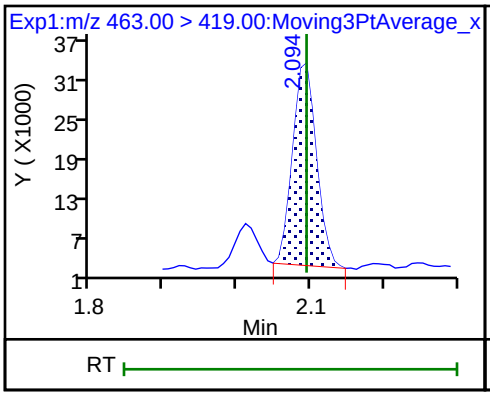
5 Perfluorooctanoic acid



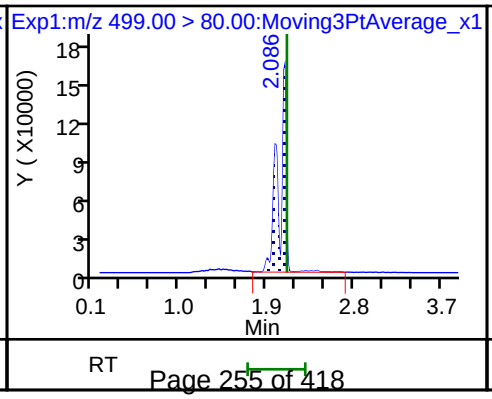
* 7 13C4 PFOS



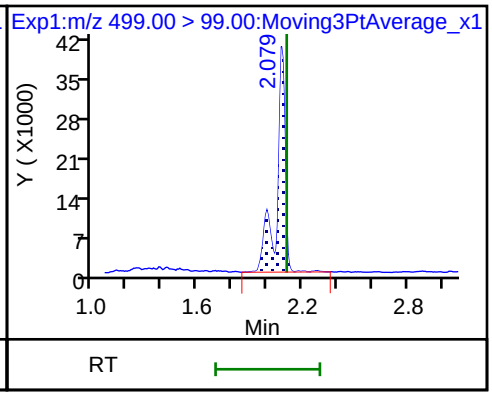
9 Perfluorononanoic acid



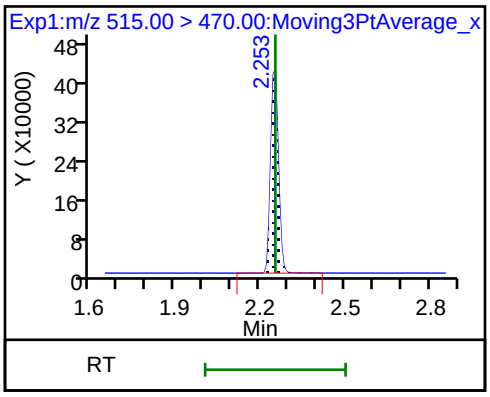
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.253
Y (X10000)
48
40
32
24
16
8
0
1.6
1.9
2.2
2.5
2.8
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_017.d
Lims ID: 320-42142-A-23-A
Client ID: WGNA-080718-DUP-45
Sample Type: Client
Inject. Date: 29-Aug-2018 00:27:53 ALS Bottle#: 11 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-23-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 11:06:11 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 29-Aug-2018 10:15:18

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.46	84.58
$ 10 13C2 PFDA	10.0	9.38	93.81

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: WGNA-080718-DUP-46
Lab Sample ID: 320-42142-24
Matrix: Water
Lab File ID: 2018.08.28_537A_018.d
Analysis Method: 537
Date Collected: 08/14/2018 12:00
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 243.7(mL)
Date Analyzed: 08/29/2018 00:32
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.: 242687
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.8	J	41	16	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	10	J	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	81		70-130
STL00996	13C2 PFDA	87		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_018.d
Lims ID: 320-42142-A-24-A
Client ID: WGNA-080718-DUP-46
Sample Type: Client
Inject. Date: 29-Aug-2018 00:32:34 ALS Bottle#: 12 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-24-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 11:06:11 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 29-Aug-2018 11:16:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.373	-0.007	1.000	89211	0.7475		181	
298.90 > 99.00	1.366	1.373	-0.007	1.000	71115		1.25(0.00-0.00)	207	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.495	-0.008	1.000	1142874	8.13		10421	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.639	-0.008	1.000	156784	0.9079		80.9	
* 6 13C2-PFOA									s
415.00 > 370.00	1.821	1.828	-0.007		1353219	10.0		10530	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.821	1.828	-0.007	1.000	358744	2.43		46.5	
413.00 > 169.00	1.821	1.828	-0.007	1.000	212548		1.69(0.00-0.00)	552	
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.086	-0.007		2990257	28.7		5342	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.079	2.109	-0.030	1.000	212823	1.89		142	
499.00 > 99.00	2.079	2.109	-0.030	1.000	35816		5.94(0.00-0.00)	65.4	
$ 10 13C2 PFDA									
515.00 > 470.00	2.246	2.253	-0.007	1.000	931345	8.69		5471	

QC Flag Legend

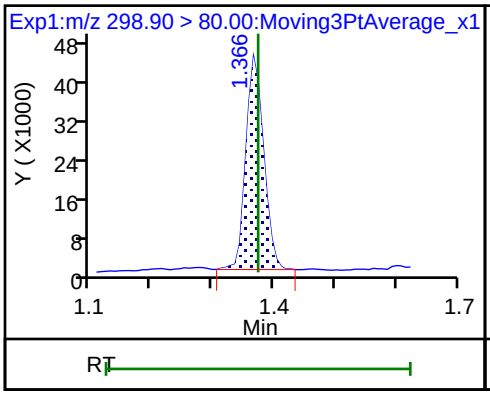
Processing Flags
s - Failed ISTD Recovery Test

Report Date: 29-Aug-2018 11:17:11 Chrom Revision: 2.3 19-Jul-2018 15:14:50

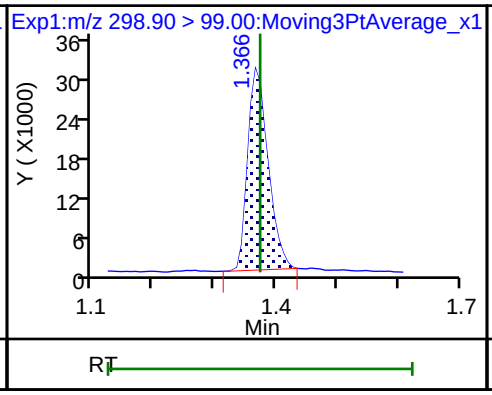
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_018.d				
Injection Date:	29-Aug-2018 00:32:34	Instrument ID:	A8_N		
Lims ID:	320-42142-A-24-A	Lab Sample ID:	320-42142-24		
Client ID:	WGNA-080718-DUP-46				
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		

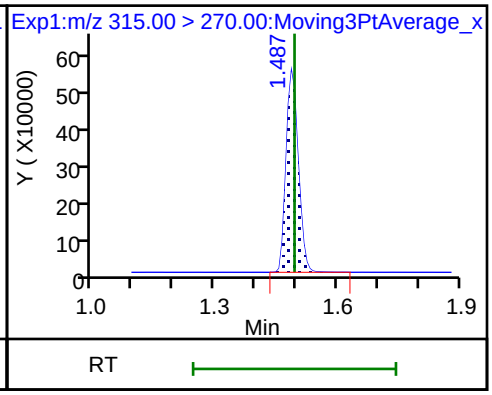
1 Perfluorobutanesulfonic acid



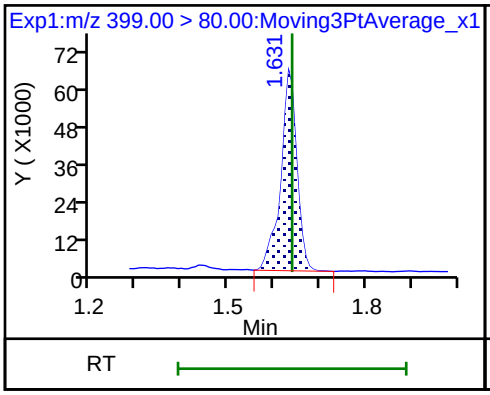
1 Perfluorobutanesulfonic acid



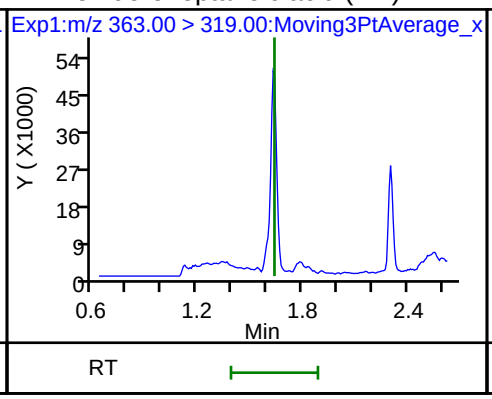
$ 2 13C2 PFHxA



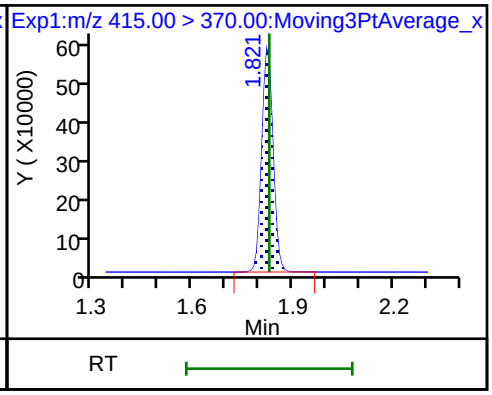
3 Perfluorohexanesulfonic acid



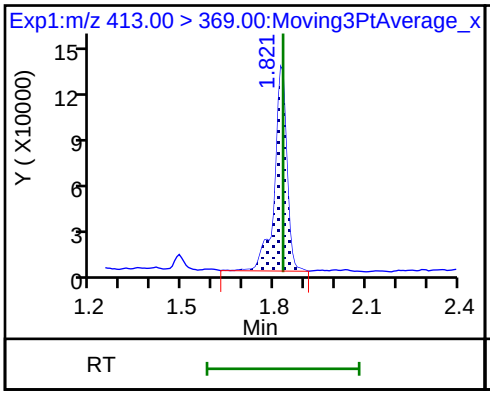
4 Perfluoroheptanoic acid (ND)



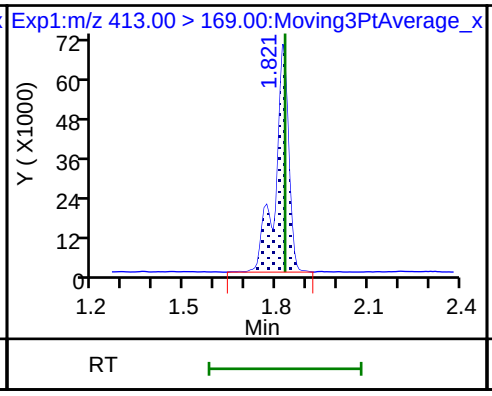
* 6 13C2-PFOA



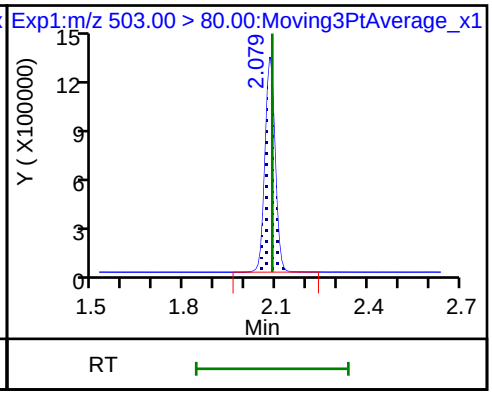
5 Perfluorooctanoic acid



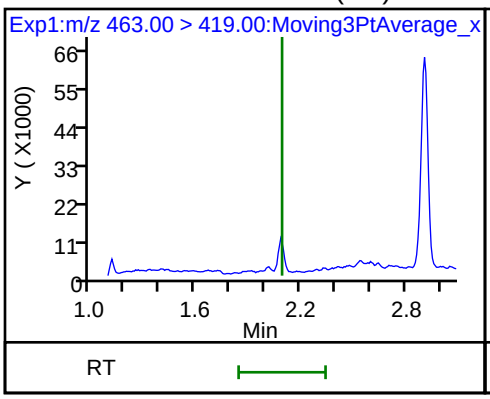
5 Perfluorooctanoic acid



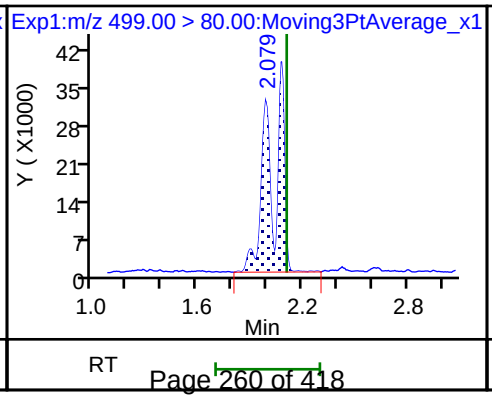
* 7 13C4 PFOS



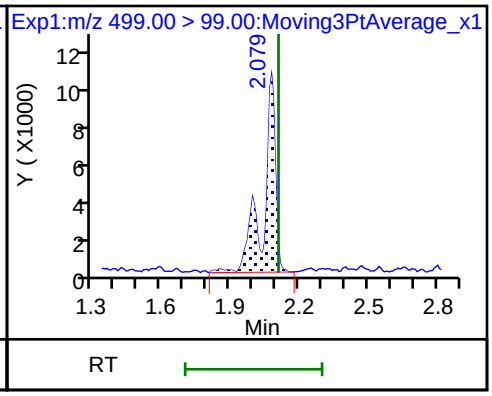
9 Perfluorononanoic acid (ND)



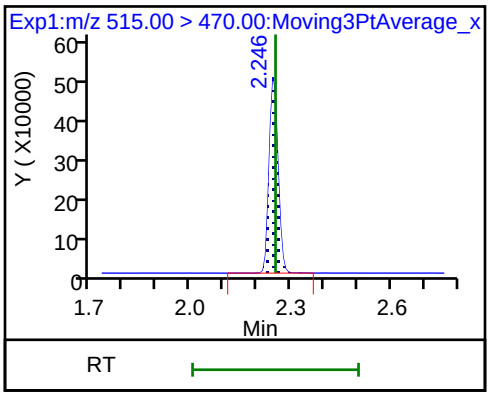
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.246
Y (X10000)
60
50
40
30
20
10
0
1.7
2.0
2.3
2.6
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_018.d
Lims ID: 320-42142-A-24-A
Client ID: WGNA-080718-DUP-46
Sample Type: Client
Inject. Date: 29-Aug-2018 00:32:34 ALS Bottle#: 12 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-24-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 11:06:11 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 29-Aug-2018 11:16:52

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.13	81.25
$ 10 13C2 PFDA	10.0	8.69	86.89

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

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1 Analy Batch No.: 240166

SDG No.:

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

Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.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)	1.2479 0.9705	1.1886	1.2616	1.1091	1.0906	Ave		1.1447				9.6		30.0			
Perfluoroheptanoic acid (PFHpA)	1.0855 1.0407	1.0364	1.0489	1.0876	1.0460	Ave		1.0575				2.2		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.6492 1.6115	1.6167	1.6890	1.6380	1.7330	Ave		1.6562				2.8		30.0			
Perfluorooctanoic acid (PFOA)	1.0954 1.0842	1.0529	1.0915	1.1075	1.1058	Ave		1.0895				1.8		30.0			
Perfluorooctanesulfonic acid (PFOS)	1.0830 1.0982	1.0386	1.0683	1.0853	1.1084	Ave		1.0803				2.3		30.0			
Perfluorononanoic acid (PFNA)	0.8630 0.8350	0.7990	0.7881	0.8431	0.8177	Ave		0.8243				3.4		30.0			
13C2 PFHxA	1.0723 1.0545	1.0111	1.0024	1.0515	1.0447	Ave		1.0394				2.6		30.0			
13C2 PFDA	0.7972 0.7976	0.7443	0.7670	0.8351	0.8115	Ave		0.7921				4.1		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.: 320-42142-1 Analy Batch No.: 240166

SDG No.:

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

Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	Ave	998954 15136483	2070355	4549188	9386038	11785636	9.00 180	20.0	45.0	90.1	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	106948 1986691	233189	488515	1105731	1440874	0.960 19.4	2.16	4.86	9.72	14.6
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	440547 8441814	945775	2045536	4655795	6289862	3.00 60.5	6.72	15.1	30.2	45.4
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	222587 4216218	482587	1035552	2293687	3102767	1.98 39.6	4.40	9.90	19.8	29.7
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	380845 7518443	794113	1690983	4031609	5257770	3.95 79.1	8.79	19.8	39.5	59.3
Perfluorononanoic acid (PFNA)	13PF OA	Ave	175370 3246932	366204	747749	1746006	2294540	1.98 39.6	4.40	9.90	19.8	29.7
13C2 PFHxA	13PF OA	Ave	1100508 1035478	1053216	960623	1099800	987004	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	818198 783206	775306	735076	873467	766710	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD

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

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1 Analy Batch No.: 240166

SDG No.:

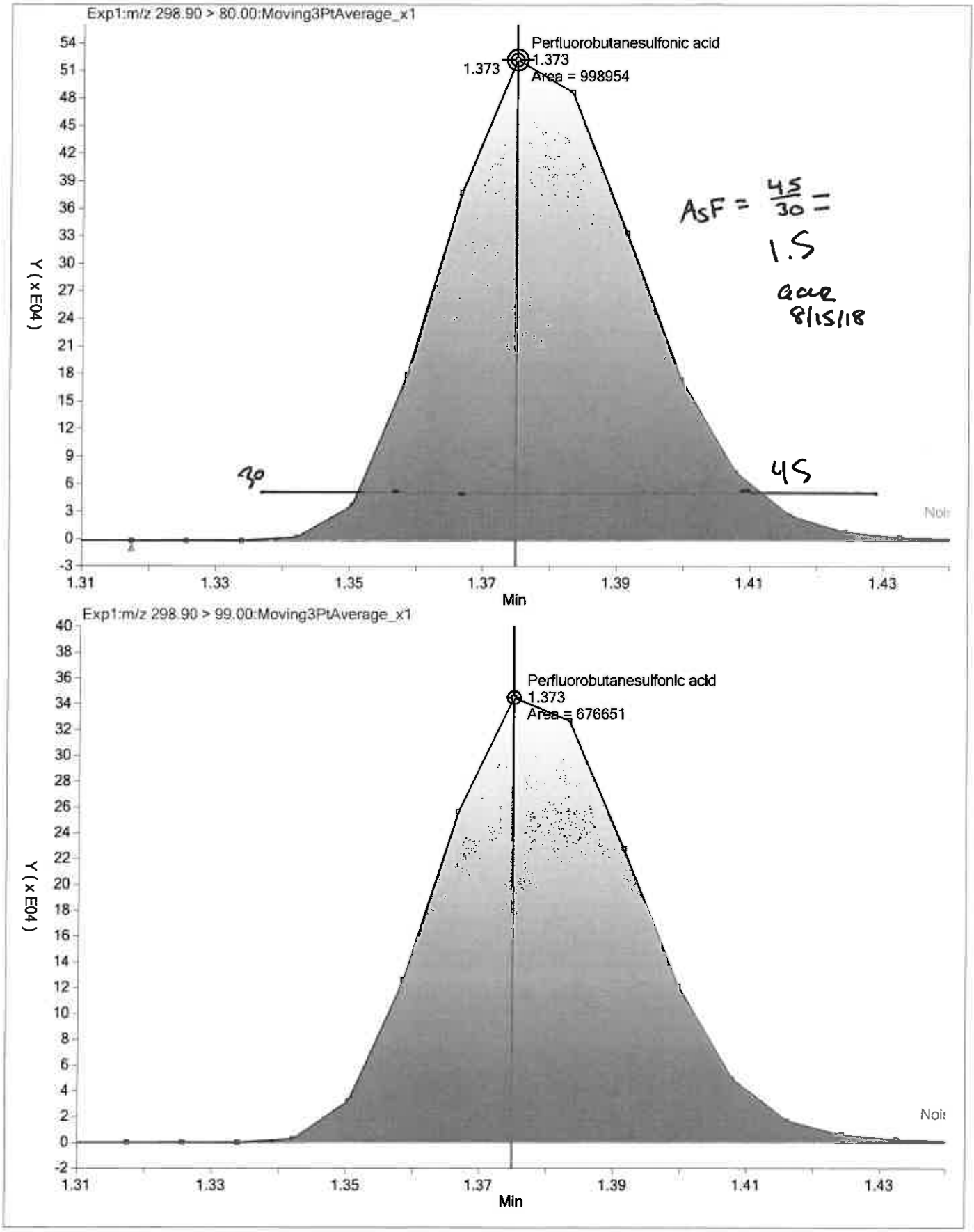
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

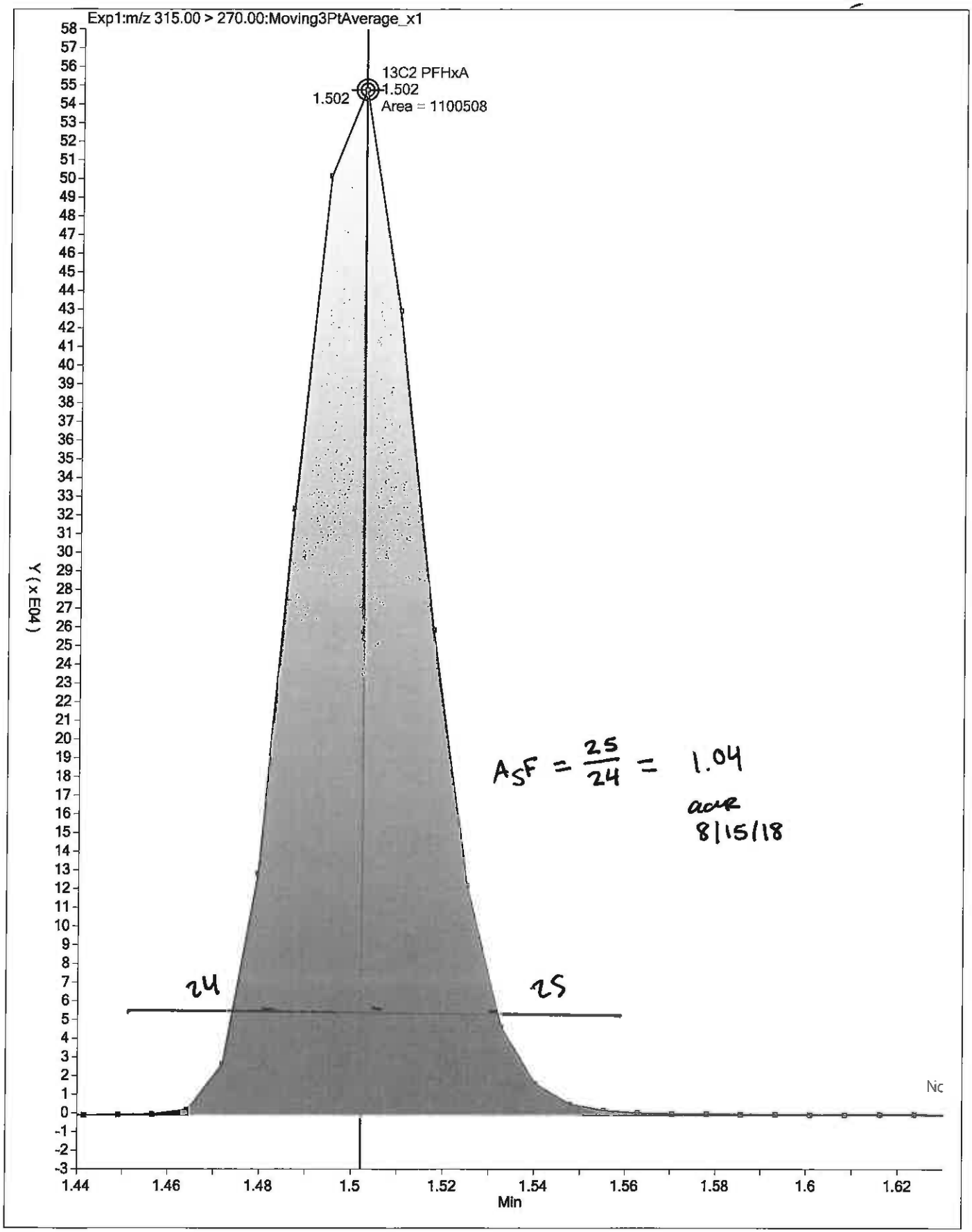
Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.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)	9.0	3.8	10.2	-3.1	-4.7	-15.2	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	2.6	-2.0	-0.8	2.8	-1.1	-1.6	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-0.4	-2.4	2.0	-1.1	4.6	-2.7	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	0.5	-3.4	0.2	1.7	1.5	-0.5	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	0.2	-3.9	-1.1	0.5	2.6	1.7	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	4.7	-3.1	-4.4	2.3	-0.8	1.3	50	30	30	30	30	30
13C2 PFHxA	3.2	-2.7	-3.6	1.2	0.5	1.4	30	30	30	30	30	30
13C2 PFDA	0.6	-6.0	-3.2	5.4	2.4	0.7	30	30	30	30	30	30


Exp1:m/z 298.90 > 80.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
1.373
1.373
Area = 998954
AsF = 45/30 =
1.5
acc
8/15/18
30
45
Y (x E04)
Min
Exp1:m/z 298.90 > 99.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
1.373
Area = 676651
Y (x E04)
Min


Exp1:m/z 315.00 > 270.00:Moving3PtAverage_x1
13C2 PFHxA
1.502
Area = 1100508
1.502
Y (x E04)
Min
24
25
$A_SF = \frac{25}{24} = 1.04$
acr
8/15/18

TestAmerica Laboratories
Istd/Surrogate Recovery Report

Worklist Name: 15AUG2018_537_ICAL Worklist Num: 62769
Instrument: A8_N Method: 537_A8_N
Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b
Limit Group: LC 537 ICAL
Analysis Type: SemiVOA
Inj Volume: 2.00 Inj Vol Units: ul

Lims Batch: 240166
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			1167019 1.78	2601656 2.01
# 1 RB 15-Aug-2018 18:16:30			1.86 1133890 97.2	2.12 2646770 101.7
IS Std				
# 2 IC L1 15-Aug-2018 18:21:09	1.50 103.20	2.27 100.60	1.85 1026304> 100.0*	2.11 2551191> 100.0*
# 3 IC L2 15-Aug-2018 18:25:50	1.50 97.28	2.28 93.96	1.85 1041660> 101.5*	2.11 2496049> 97.8*
# 4 IC L3 15-Aug-2018 18:30:31	1.51 96.91	2.27 97.60	1.85 958352> 93.4*	2.11 2296598> 90.0*
# 5 IC L4 15-Aug-2018 18:35:11	1.50 101.20	2.28 105.40	1.85 1045953> 101.9*	2.11 2694948> 105.6*
# 6 IC L5 15-Aug-2018 18:39:51	1.51 100.50	2.27 102.40	1.85 944777> 92.1*	2.11 2294155> 89.9*
# 7 IC L6 15-Aug-2018 18:44:32	1.50 101.40	2.27 100.70	1.84 981996> 95.7*	2.10 2483425> 97.3*
IS Std			958352 1.85	2296598 2.11
# 8 RB 15-Aug-2018 18:49:12			1.85 1059425 110.5	2.11 2535393 110.4
IS Std			1045953 1.85	2694948 2.11
# 9 CCVL 15-Aug-2018 18:53:52	1.50 96.45	2.27 96.68	1.84 1006603 96.2	2.10 2388436 88.6
IS Std			1006603 1.84	2388436 2.10
#10 ICB 15-Aug-2018 18:58:33			1.84 1042675 103.6	2.10 2354282 98.6
IS Std			1045953 1.85	2694948 2.11
#11 ICV 15-Aug-2018 19:03:12	1.50 98.30	2.26 100.40	1.84 1022273 97.7	2.10 2551643 94.7

13C2 PFOA

$$RPD = \frac{1045953 - 944777}{\left(\frac{1045953 + 944777}{2}\right)} \times 100 = 10.2\%$$

13C4 PFOS

$$RPD = \frac{2694948 - 2294155}{\left(\frac{2694948 + 2294155}{2}\right)} \times 100 = 16.1\%$$

acr
8/16/18

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_003.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 15-Aug-2018 18:21:09 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*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 16-Aug-2018 08:51:49 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 18:54:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.373	1.381	-0.008	1.000	998954	9.81		2568	
298.90 > 99.00	1.373	1.381	-0.008	1.000	676651		1.48(0.00-0.00)	998	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1100508	10.3		9954	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	1.654	1.654	0.0	1.000	106948	0.9854		20.4	M
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	440547	2.99		282	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.850	0.001	1.000	222587	1.99		30.5	
413.00 > 169.00	1.851	1.850	0.001	1.000	121100		1.84(0.00-0.00)	269	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.850	0.001		1026304	10.0		6456	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		2551191	28.7		5861	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	380845	3.96		606	
499.00 > 99.00	2.109	2.109	0.0	1.000	83364		4.57(0.00-0.00)	134	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	175370	2.07		29.0	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.271	-0.003	1.000	818198	10.1		6270	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L1_00022 Amount Added: 1.00 Units: mL

Report Date: 16-Aug-2018 08:51:50 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_003.d

Injection Date: 15-Aug-2018 18:21:09 Instrument ID: A8_N

Lims ID: IC L1

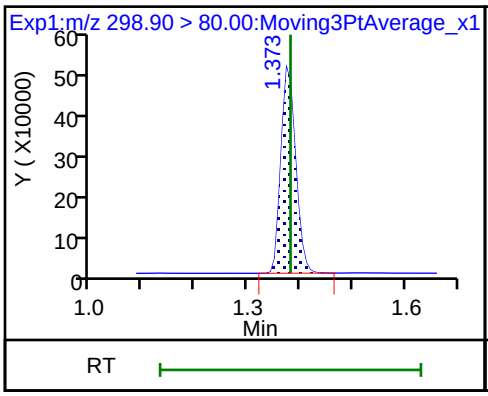
Client ID:

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

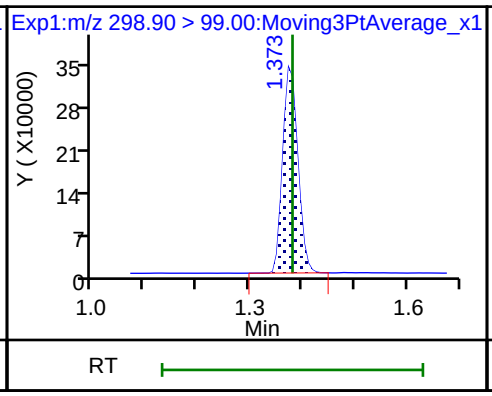
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

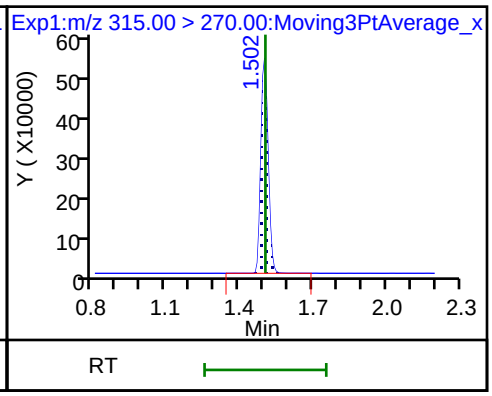
1 Perfluorobutanesulfonic acid



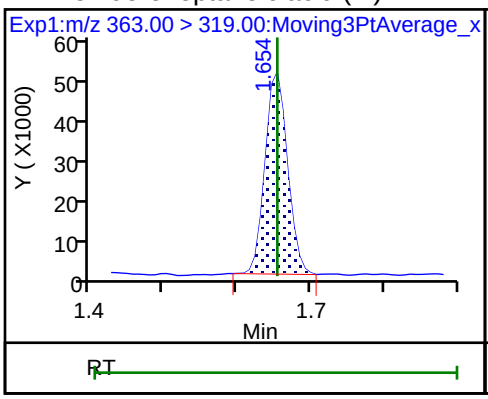
1 Perfluorobutanesulfonic acid



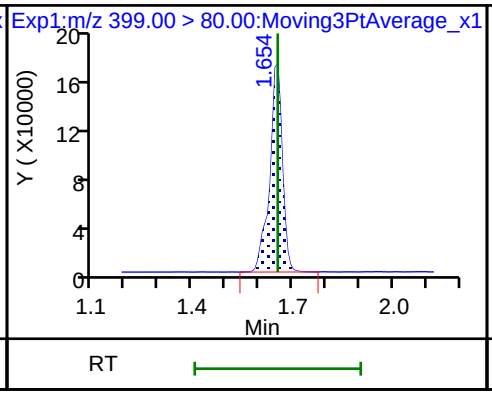
$ 2 13C2 PFHxA



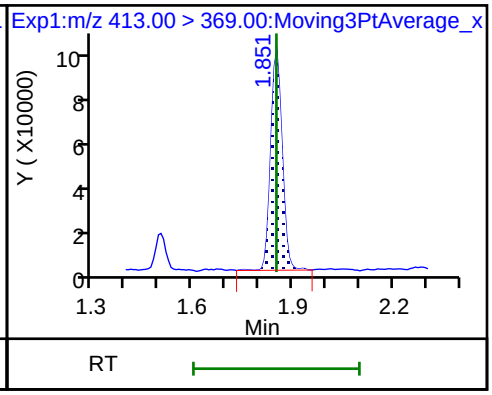
4 Perfluoroheptanoic acid (M)



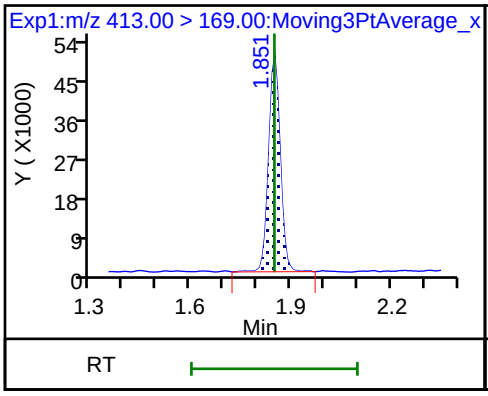
3 Perfluorohexanesulfonic acid



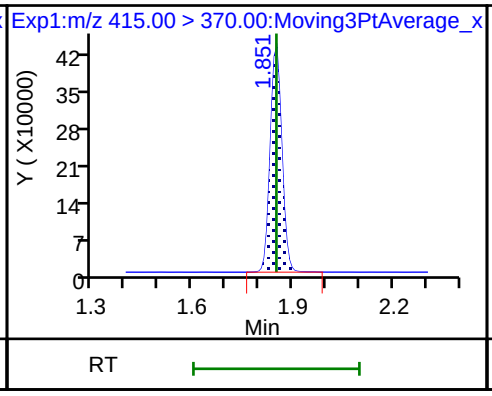
5 Perfluorooctanoic acid



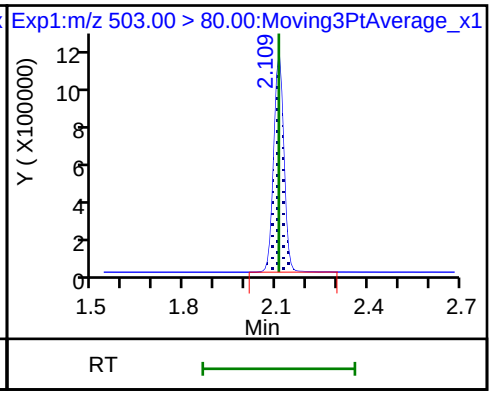
5 Perfluorooctanoic acid



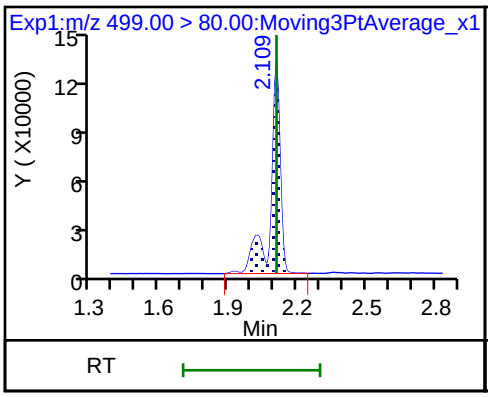
* 6 13C2-PFOA



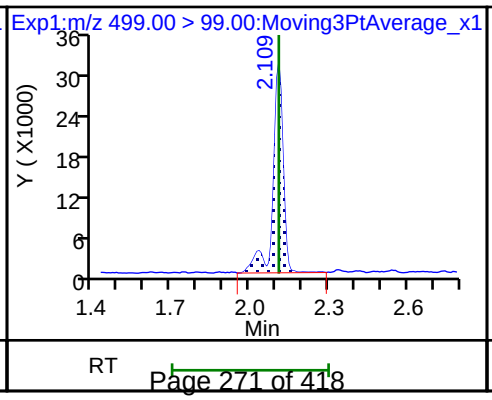
* 7 13C4 PFOS



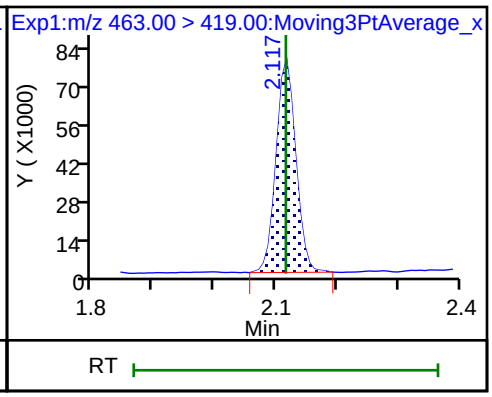
8 Perfluorooctane sulfonic acid



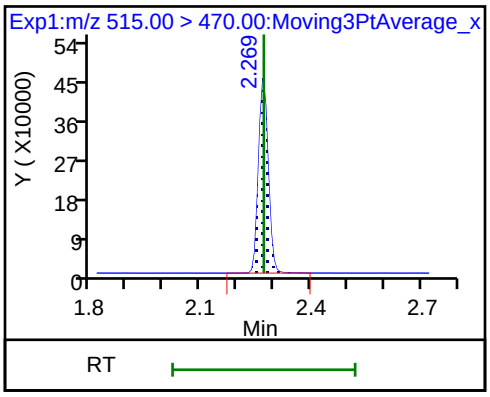
8 Perfluorooctane sulfonic acid



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X10000)
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
Min
RT

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

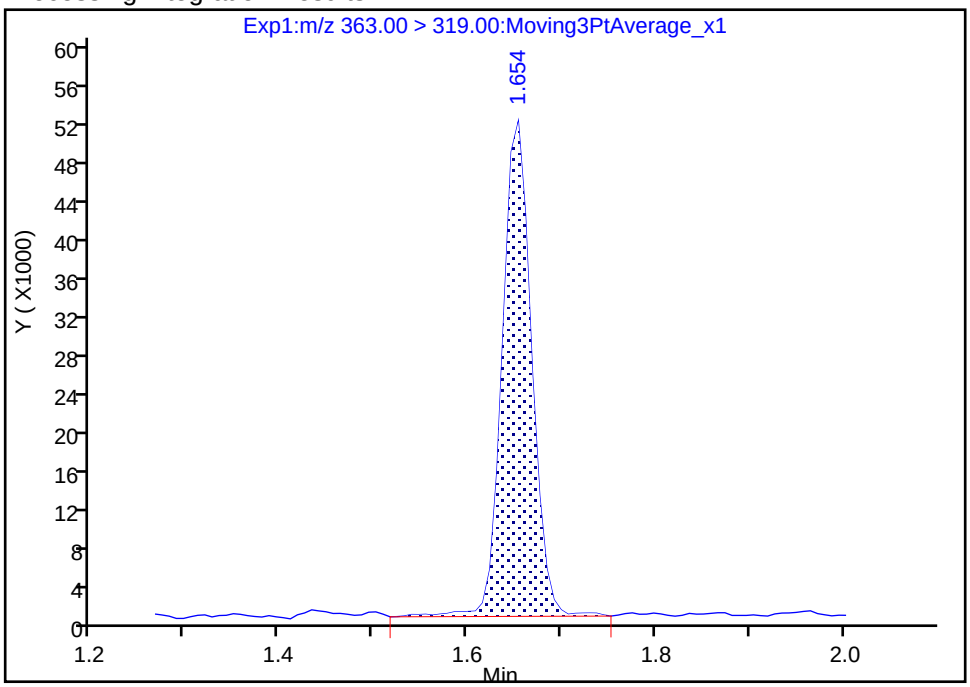
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_003.d				
Injection Date:	15-Aug-2018 18:21:09	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

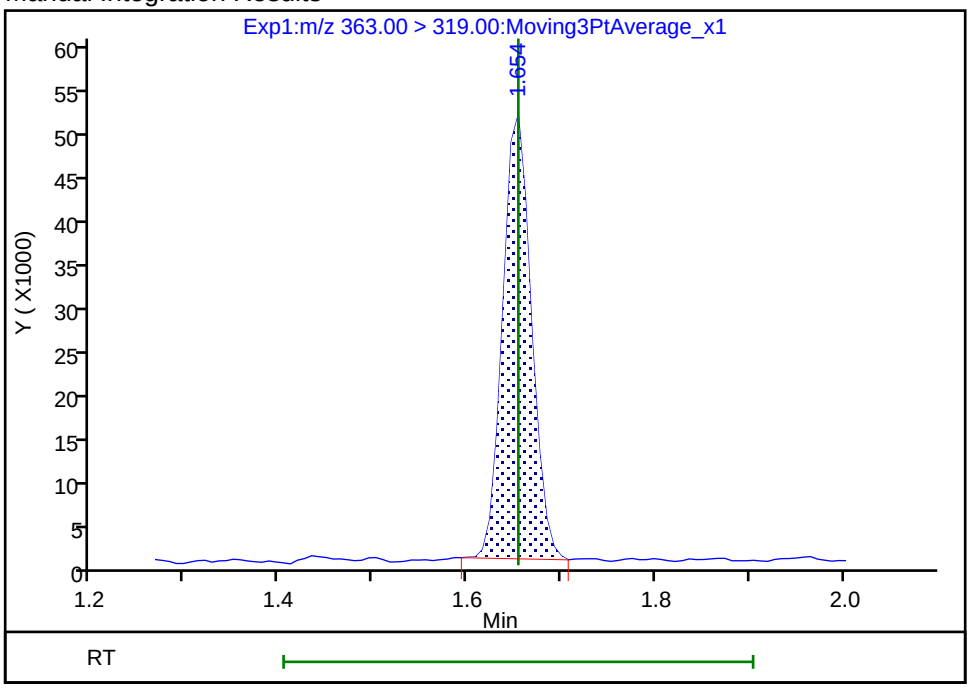
Processing Integration Results

RT: 1.65
Area: 110830
Amount: 1.021059
Amount Units: ng/ml



Manual Integration Results

RT: 1.65
Area: 106948
Amount: 0.985398
Amount Units: ng/ml



Reviewer: roycea, 15-Aug-2018 18:53:50

Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_004.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 15-Aug-2018 18:25:50 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*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 16-Aug-2018 08:51:51 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 18:54:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	2070355	20.8		4725	
298.90 > 99.00	1.381	1.381	0.0	1.000	1435059		1.44(0.00-0.00)	2152	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1053216	9.73		8501	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	233189	2.12		44.5	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	945775	6.56		643	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.850	0.001	1.000	482587	4.25		66.7	
413.00 > 169.00	1.851	1.850	0.001	1.000	253282		1.91(0.00-0.00)	550	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.850	0.001		1041660	10.0		6420	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		2496049	28.7		4617	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	794113	8.45		1241	
499.00 > 99.00	2.109	2.109	0.0	1.000	177724		4.47(0.00-0.00)	300	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	366204	4.26		60.0	
$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.271	0.005	1.000	775306	9.40		5522	

Reagents:

LC537-L2_00022 Amount Added: 1.00 Units: mL

Report Date: 16-Aug-2018 08:51:51 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_004.d

Injection Date: 15-Aug-2018 18:25:50 Instrument ID: A8_N

Lims ID: IC L2

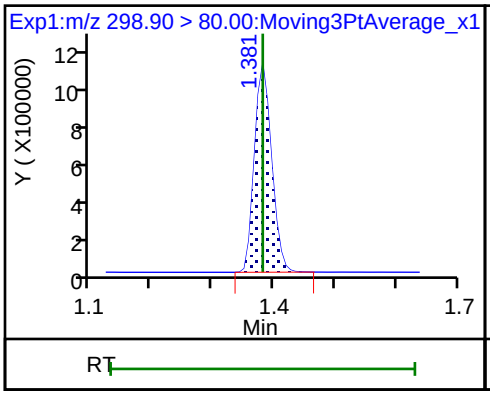
Client ID:

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

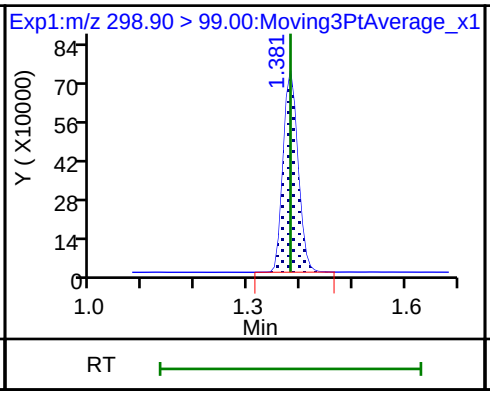
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

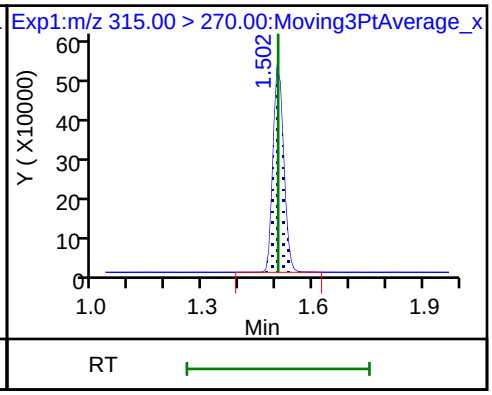
1 Perfluorobutanesulfonic acid



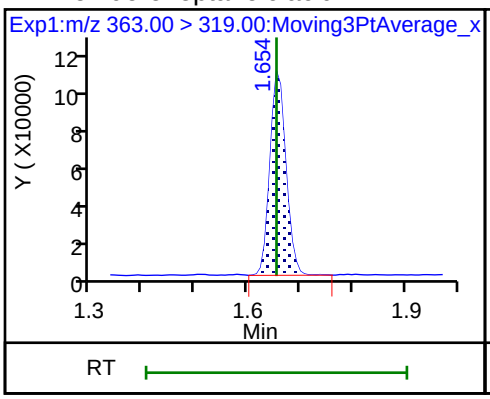
1 Perfluorobutanesulfonic acid



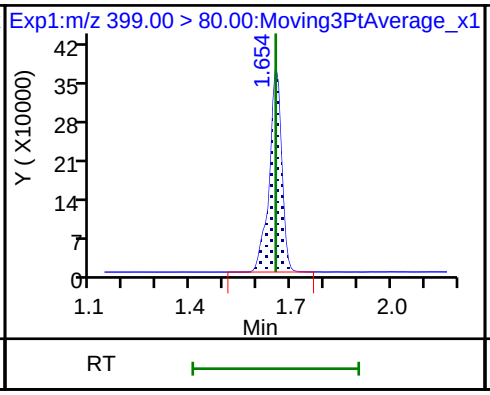
$ 2 13C2 PFHxA



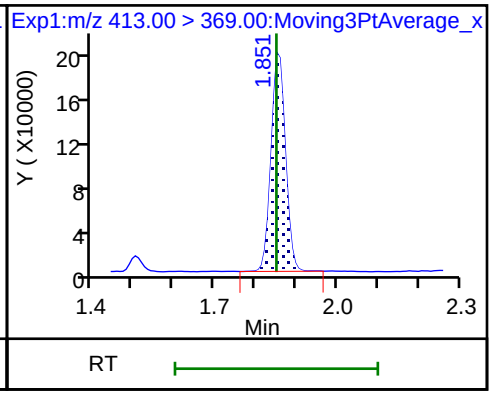
4 Perfluoroheptanoic acid



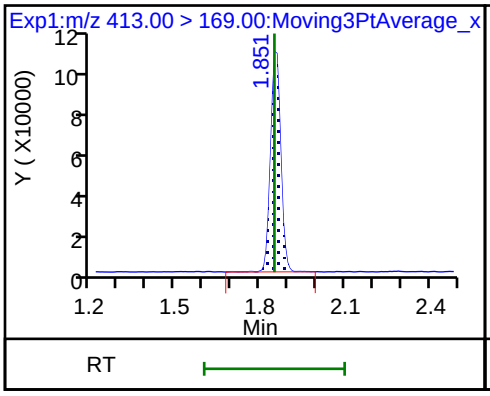
3 Perfluorohexanesulfonic acid



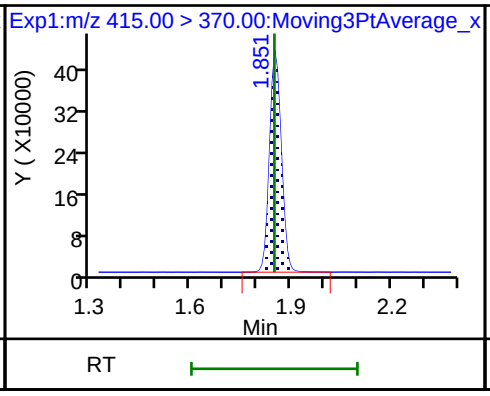
5 Perfluorooctanoic acid



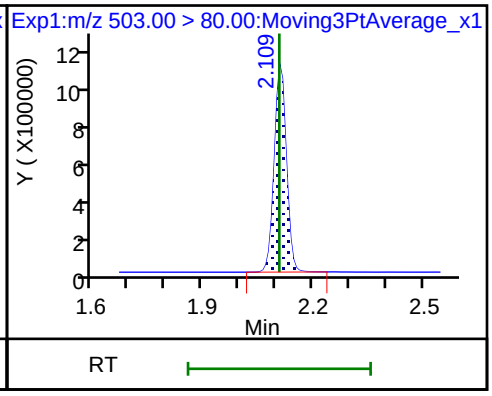
5 Perfluorooctanoic acid



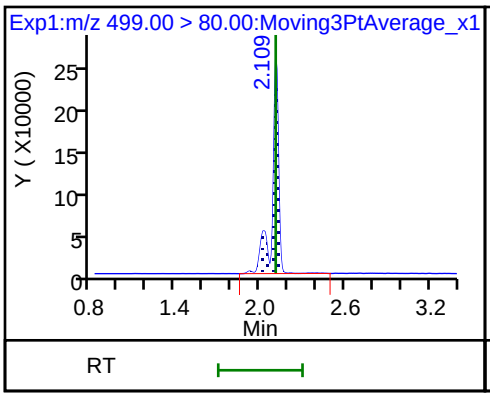
* 6 13C2-PFOA



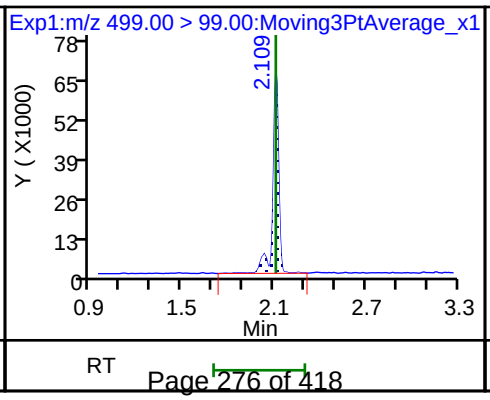
* 7 13C4 PFOS



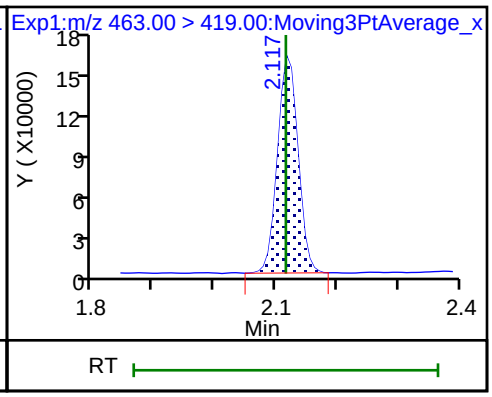
8 Perfluorooctane sulfonic acid



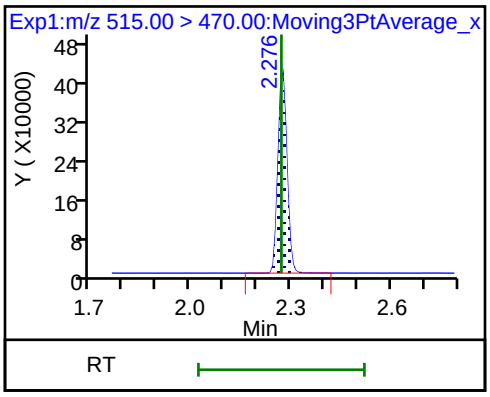
8 Perfluorooctane sulfonic acid



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.276
Y (X10000)
48
40
32
24
16
8
0
1.7
2.0
2.3
2.6
Min
RT

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_005.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 15-Aug-2018 18:30:31 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*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 16-Aug-2018 08:51:52 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 18:54:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	4549188	49.6		9553	
298.90 > 99.00	1.381	1.381	0.0	1.000	3023433		1.50(0.00-0.00)	4386	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.505	0.005	1.000	960623	9.64		8278	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	488515	4.82		90.9	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	2045536	15.4		1357	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.850	0.001	1.000	1035552	9.92		136	
413.00 > 169.00	1.851	1.850	0.001	1.000	542050		1.91(0.00-0.00)	1191	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.850	0.001		958352	10.0		6793	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		2296598	28.7		5075	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	1690983	19.5		2539	
499.00 > 99.00	2.109	2.109	0.0	1.000	384764		4.39(0.00-0.00)	662	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	747749	9.47		118	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.271	-0.003	1.000	735076	9.68		5283	

Reagents:

LC537-L3_00025 Amount Added: 1.00 Units: mL

Report Date: 16-Aug-2018 08:51:53 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_005.d

Injection Date: 15-Aug-2018 18:30:31 Instrument ID: A8_N

Lims ID: IC L3

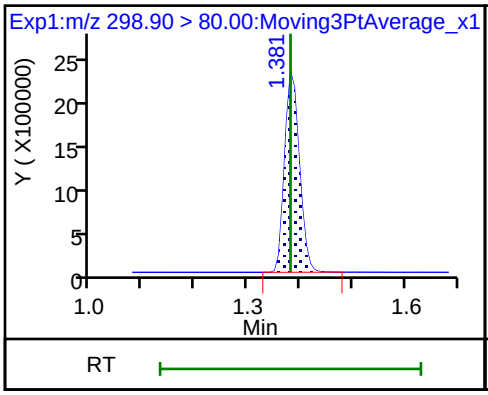
Client ID:

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

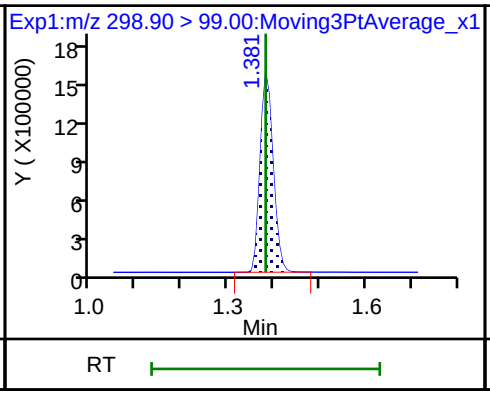
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

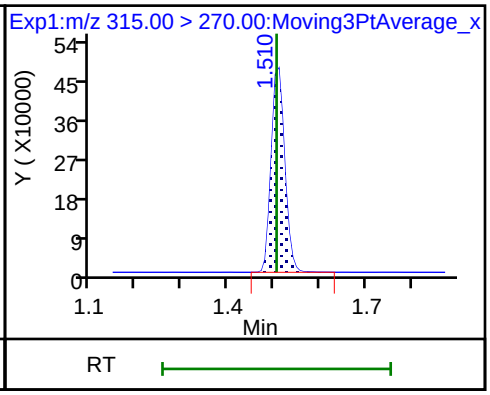
1 Perfluorobutanesulfonic acid



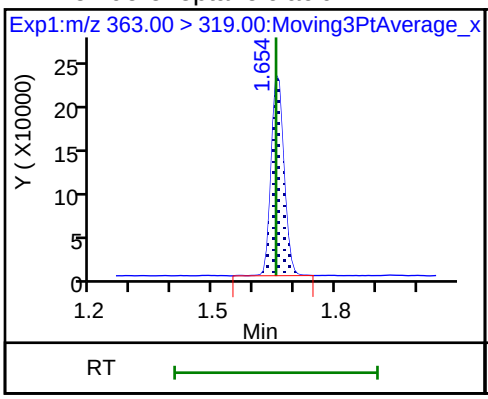
1 Perfluorobutanesulfonic acid



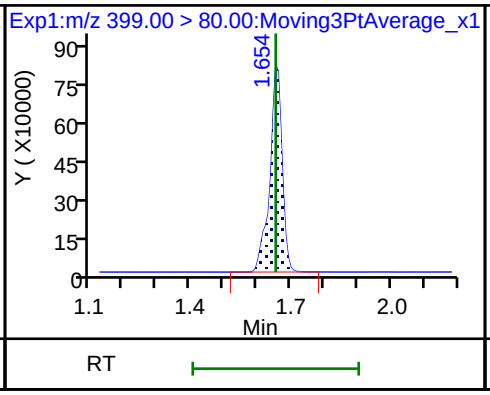
$ 2 13C2 PFHxA



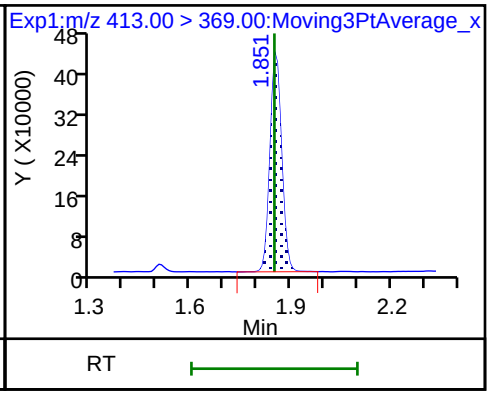
4 Perfluoroheptanoic acid



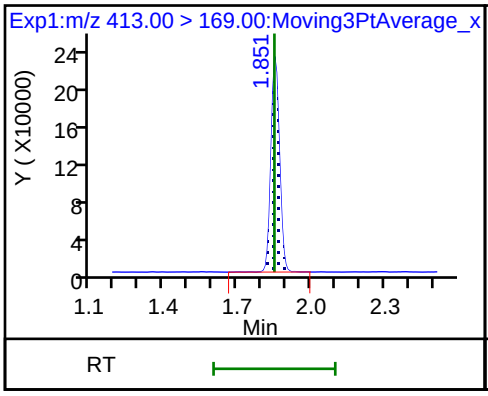
3 Perfluorohexanesulfonic acid



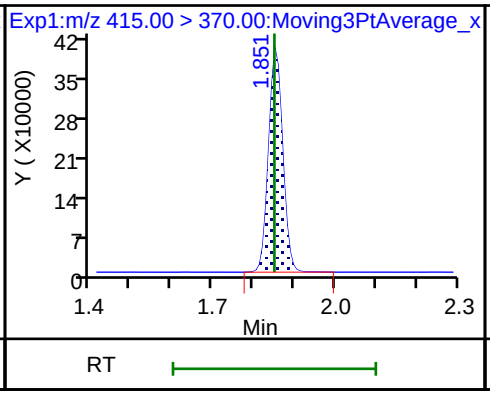
5 Perfluorooctanoic acid



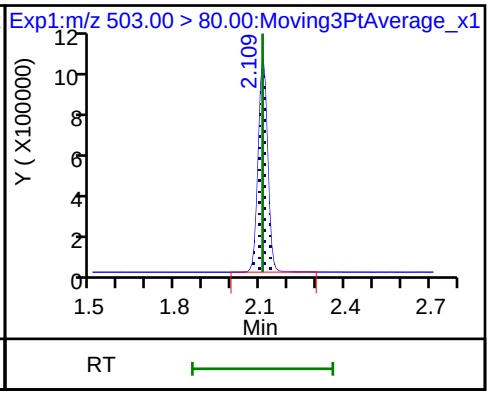
5 Perfluorooctanoic acid



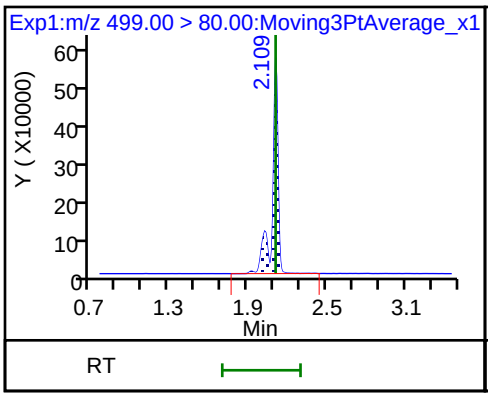
* 6 13C2-PFOA



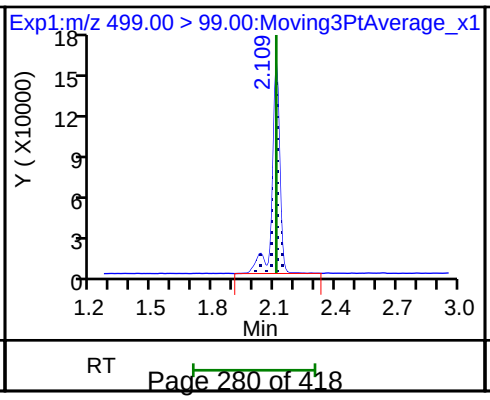
* 7 13C4 PFOS



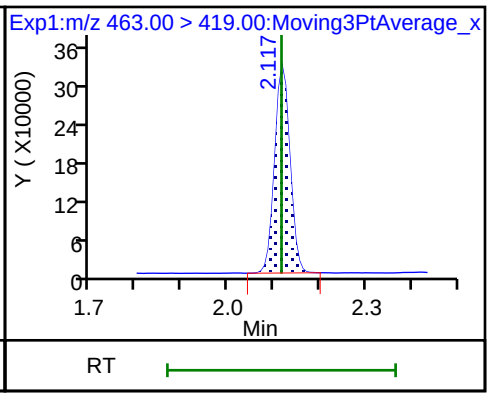
8 Perfluorooctane sulfonic acid



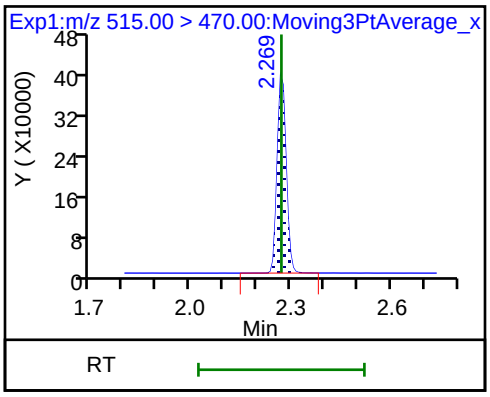
8 Perfluorooctane sulfonic acid



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X10000)
48
40
32
24
16
8
0
1.7
2.0
2.3
2.6
Min
RT

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_006.d
Lims ID: IC L4
Client ID:
Sample Type: ICISAV Calib Level: 4
Inject. Date: 15-Aug-2018 18:35:11 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*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 16-Aug-2018 08:51:53 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK001

First Level Reviewer: roycea Date: 16-Aug-2018 08:51:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	9386038	87.3		13589	
298.90 > 99.00	1.381	1.381	0.0	1.000	6689135		1.40(0.00-0.00)	8057	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1099800	10.1		8908	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	1105731	10.0		214	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	4655795	29.9		2833	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.850	0.001	1.000	2293687	20.1		314	
413.00 > 169.00	1.851	1.850	0.001	1.000	1177353		1.95(0.00-0.00)	2593	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.850	0.001		1045953	10.0		8611	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		2694948	28.7		5789	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	4031609	39.7		5452	
499.00 > 99.00	2.109	2.109	0.0	1.000	879709		4.58(0.00-0.00)	1346	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	1746006	20.3		261	
$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.271	0.005	1.000	873467	10.5		5675	

Reagents:

LC537-L4_00022 Amount Added: 1.00 Units: mL

Report Date: 16-Aug-2018 08:51:53 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_006.d

Injection Date: 15-Aug-2018 18:35:11 Instrument ID: A8_N

Lims ID: IC L4

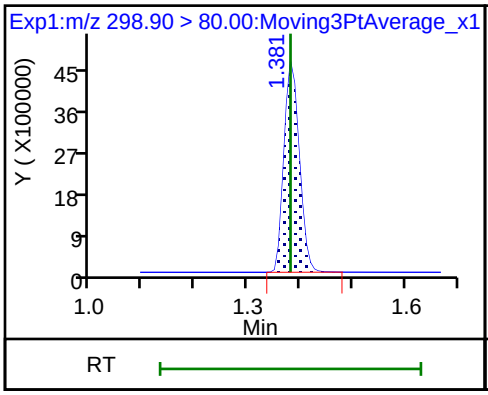
Client ID:

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

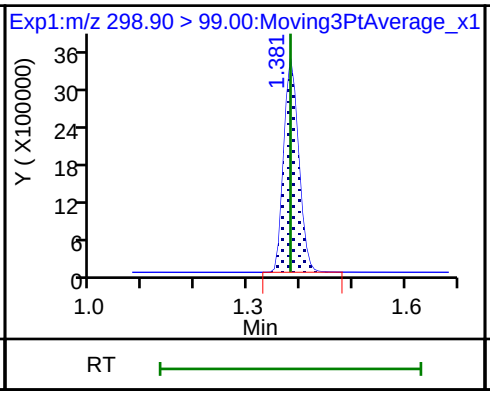
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

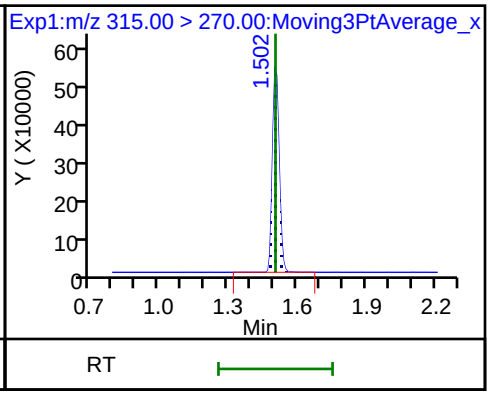
1 Perfluorobutanesulfonic acid



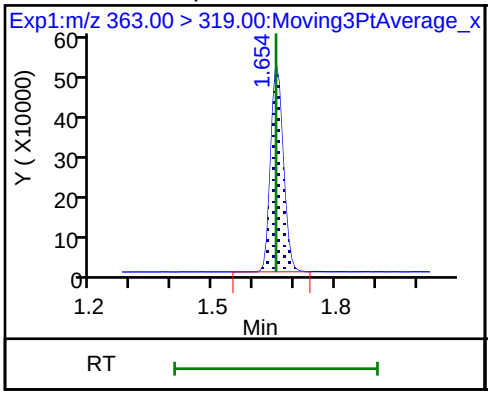
1 Perfluorobutanesulfonic acid



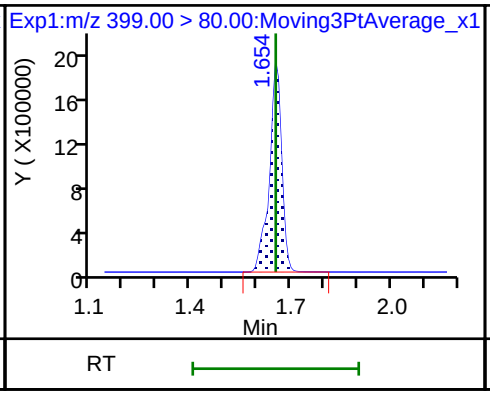
$ 2 13C2 PFHxA



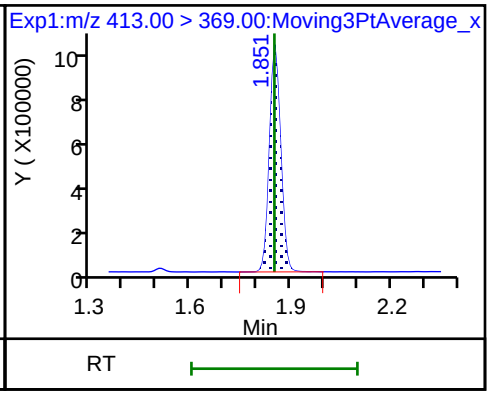
4 Perfluoroheptanoic acid



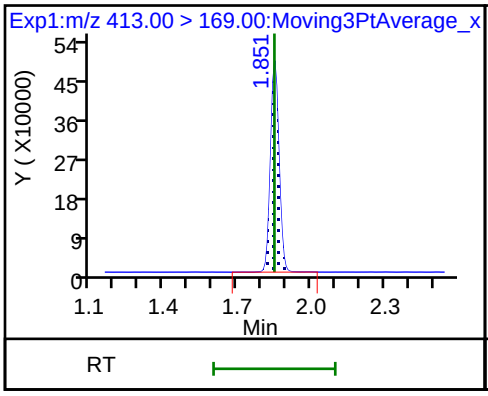
3 Perfluorohexanesulfonic acid



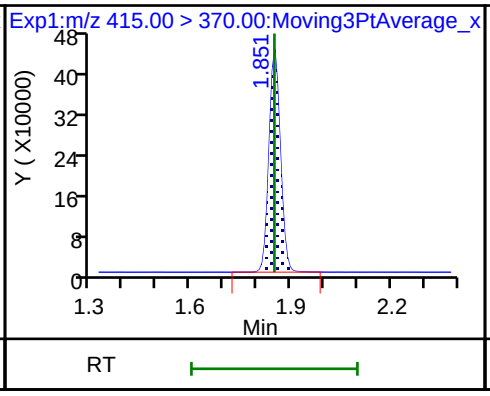
5 Perfluorooctanoic acid



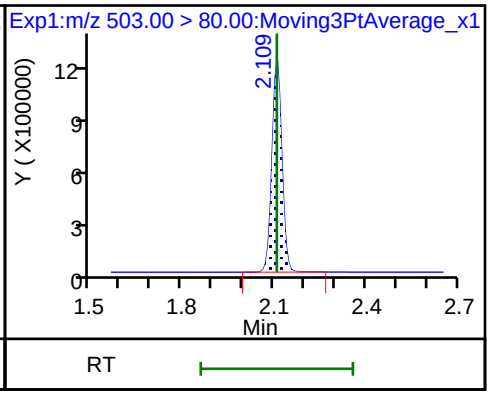
5 Perfluorooctanoic acid



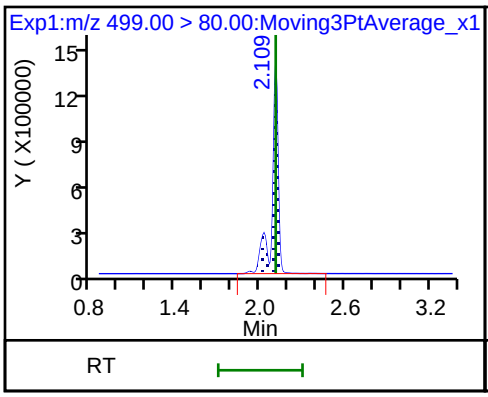
* 6 13C2-PFOA



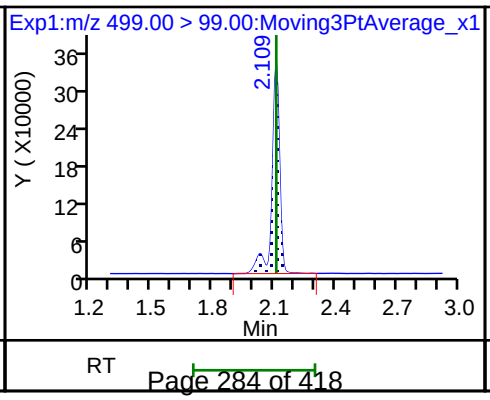
* 7 13C4 PFOS



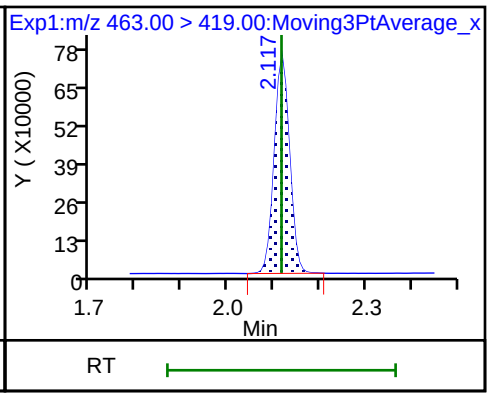
8 Perfluorooctane sulfonic acid



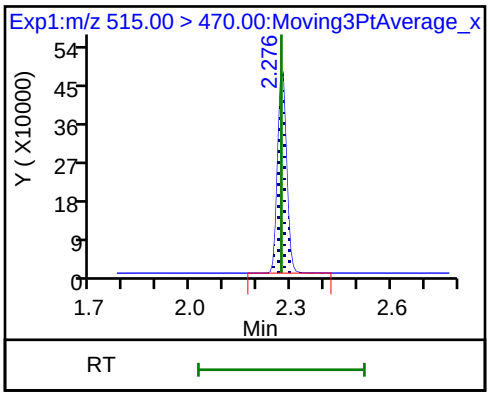
8 Perfluorooctane sulfonic acid



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.276
Y (X10000)
54
45
36
27
18
9
0
1.7
2.0
2.3
2.6
Min
RT

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_007.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 15-Aug-2018 18:39:51 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*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 16-Aug-2018 08:51:48 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 18:55:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.381	0.007	1.000	11785636	128.7		14701	
298.90 > 99.00	1.388	1.381	0.007	1.000	8762661		1.34(0.00-0.00)	9668	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.505	0.005	1.000	987004	10.1		9370	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	6289862	47.5		3399	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	1440874	14.4		257	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.850	0.001		944777	10.0		7532	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.850	0.001	1.000	3102767	30.1		420	
413.00 > 169.00	1.851	1.850	0.001	1.000	1613623		1.92(0.00-0.00)	3725	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		2294155	28.7		5009	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	5257770	60.8		6360	
499.00 > 99.00	2.109	2.109	0.0	1.000	1128903		4.66(0.00-0.00)	1721	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	2294540	29.5		331	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.271	-0.003	1.000	766710	10.2		5627	

Reagents:

LC537-L5_00026 Amount Added: 1.00 Units: mL

Report Date: 16-Aug-2018 08:51:48 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_007.d

Injection Date: 15-Aug-2018 18:39:51 Instrument ID: A8_N

Lims ID: IC L5

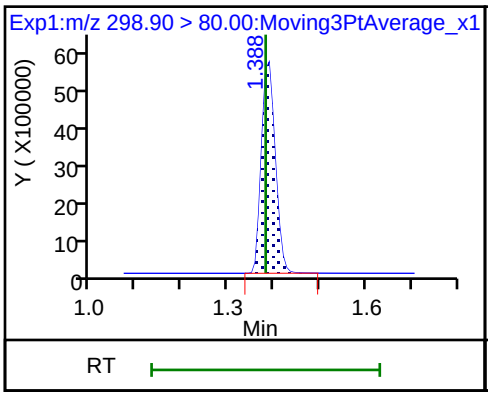
Client ID:

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

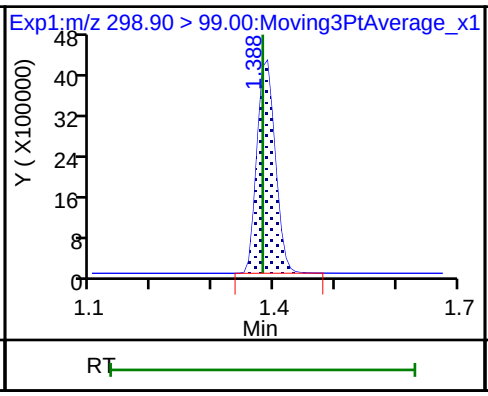
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

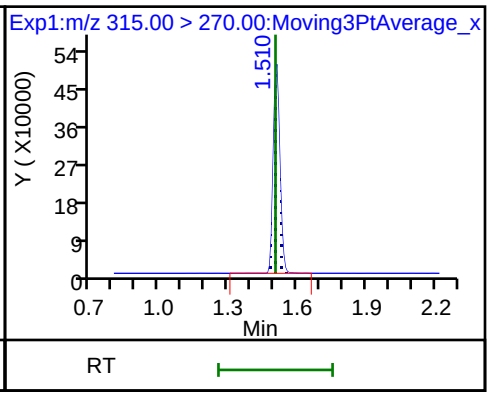
1 Perfluorobutanesulfonic acid



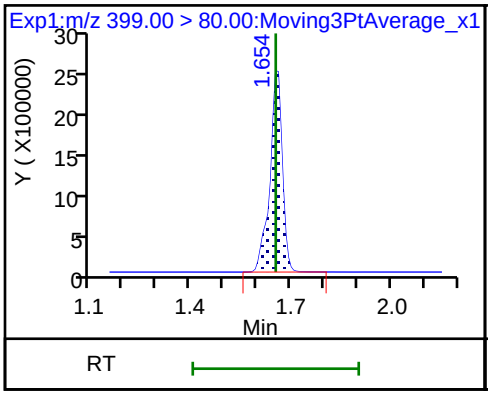
1 Perfluorobutanesulfonic acid



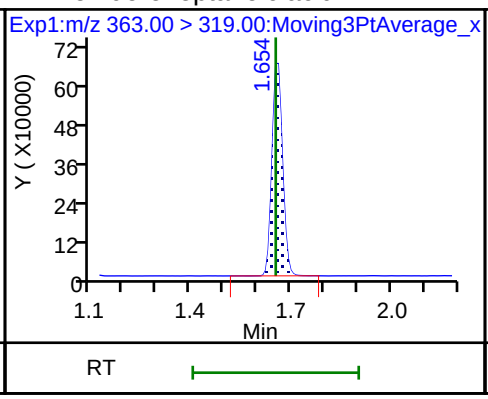
$ 2 13C2 PFHxA



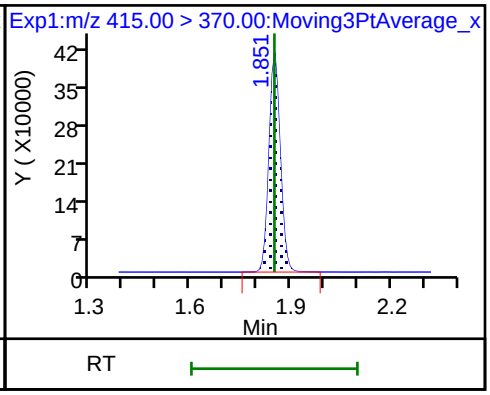
3 Perfluorohexanesulfonic acid



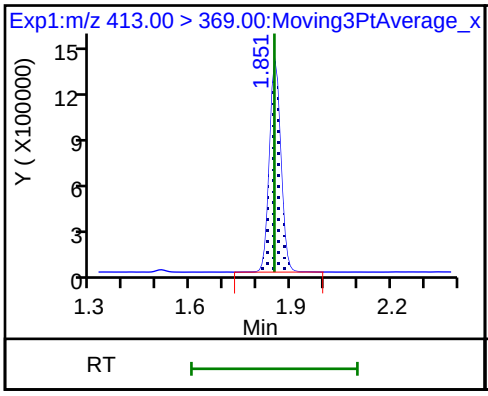
4 Perfluoroheptanoic acid



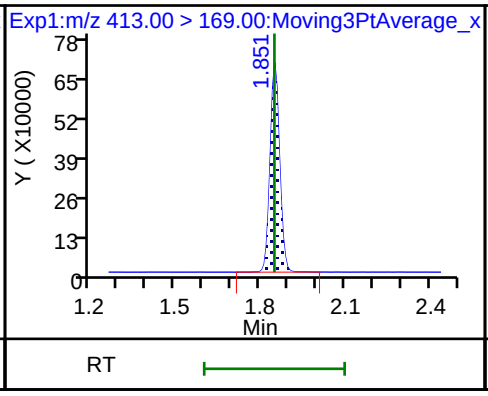
* 6 13C2-PFOA



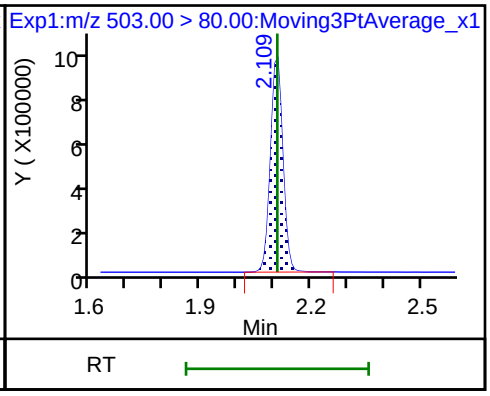
5 Perfluorooctanoic acid



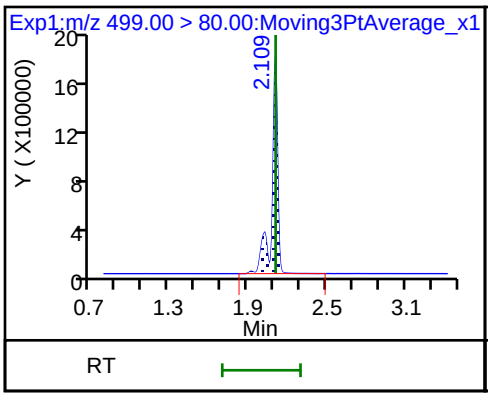
5 Perfluorooctanoic acid



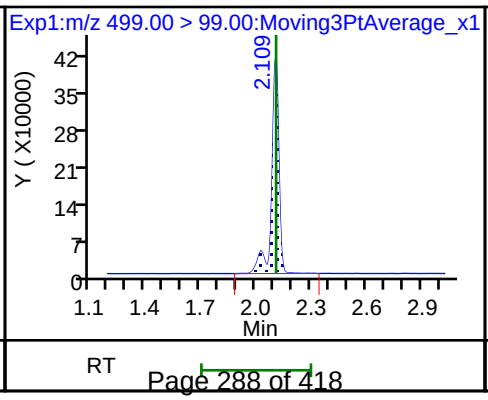
* 7 13C4 PFOS



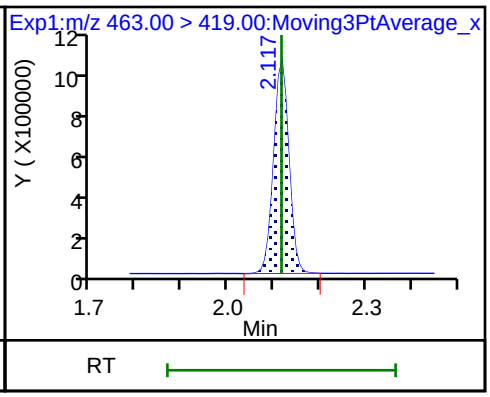
8 Perfluorooctane sulfonic acid



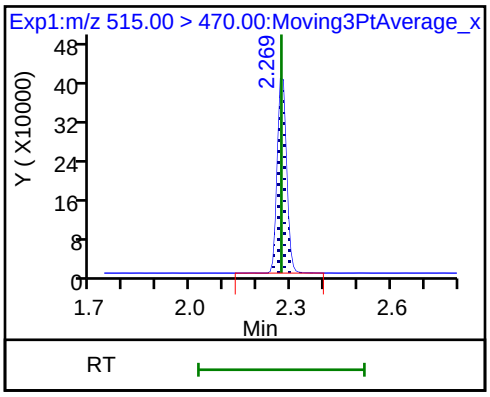
8 Perfluorooctane sulfonic acid



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X10000)
48
40
32
24
16
8
0
1.7
2.0
2.3
2.6
Min
RT

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
Lims ID: IC L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 15-Aug-2018 18:44:32 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*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 16-Aug-2018 08:51:54 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 18:55:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	15136483	152.7		15082	
298.90 > 99.00	1.381	1.381	0.0	1.000	11077712		1.37(0.00-0.00)	11444	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1035478	10.1		10037	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	1986691	19.1		353	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	8441814	58.9		4544	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.850	-0.006	1.000	4216218	39.4		560	
413.00 > 169.00	1.844	1.850	-0.006	1.000	2187034		1.93(0.00-0.00)	4711	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.850	-0.006		981996	10.0		8690	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.108	-0.006		2483425	28.7		5512	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	7518443	80.4		8718	
499.00 > 99.00	2.102	2.109	-0.007	1.000	1595089		4.71(0.00-0.00)	2315	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	3246932	40.1		449	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.271	-0.003	1.000	783206	10.1		6018	

Reagents:

LC537-L6_00022 Amount Added: 1.00 Units: mL

Report Date: 16-Aug-2018 08:51:55 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Injection Date: 15-Aug-2018 18:44:32 Instrument ID: A8_N

Lims ID: IC L6

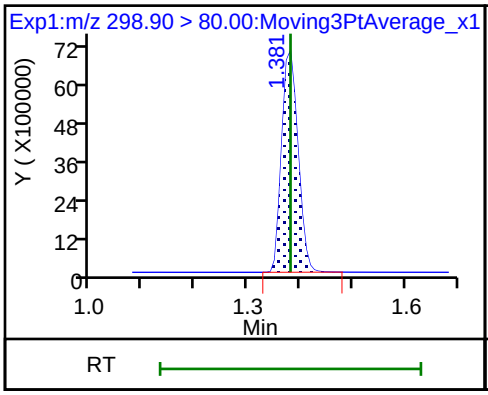
Client ID:

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

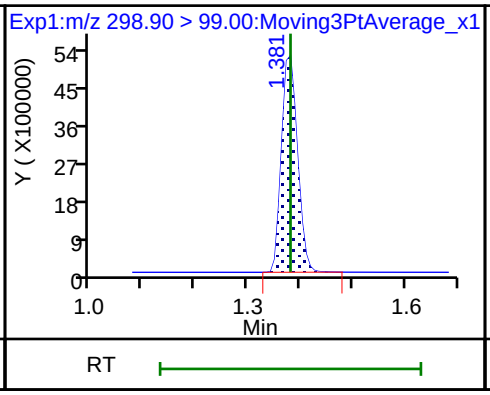
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

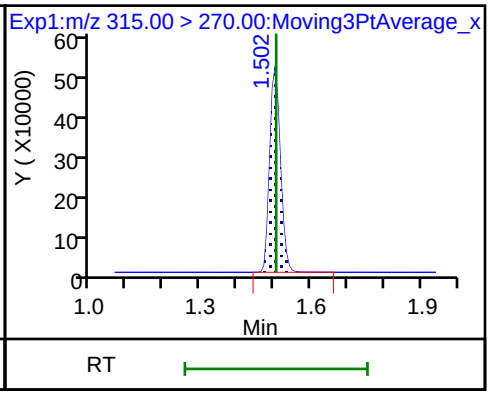
1 Perfluorobutanesulfonic acid



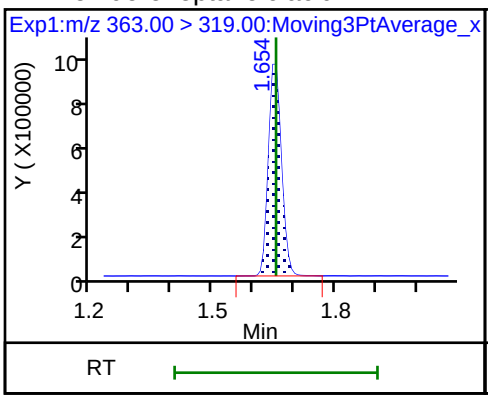
1 Perfluorobutanesulfonic acid



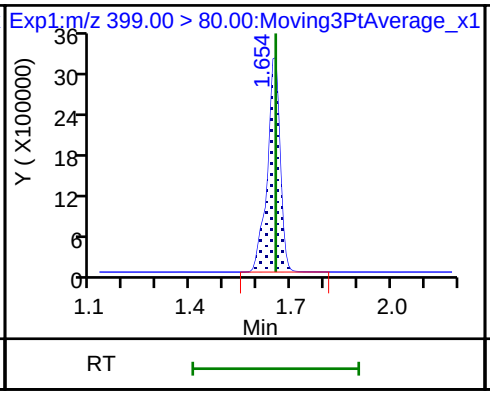
$ 2 13C2 PFHxA



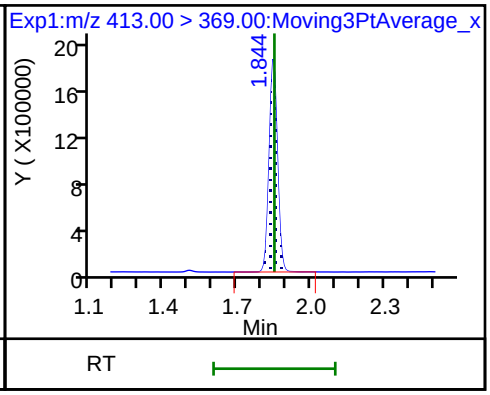
4 Perfluoroheptanoic acid



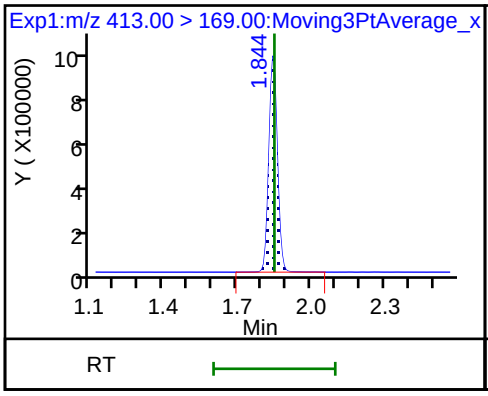
3 Perfluorohexanesulfonic acid



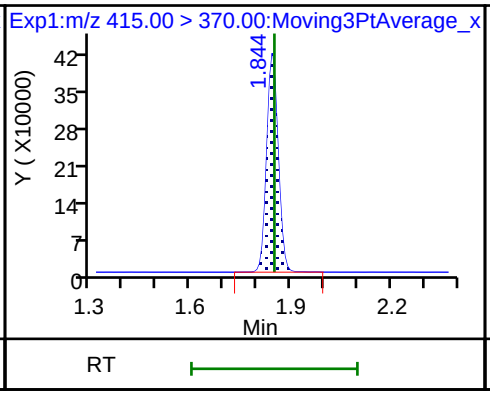
5 Perfluorooctanoic acid



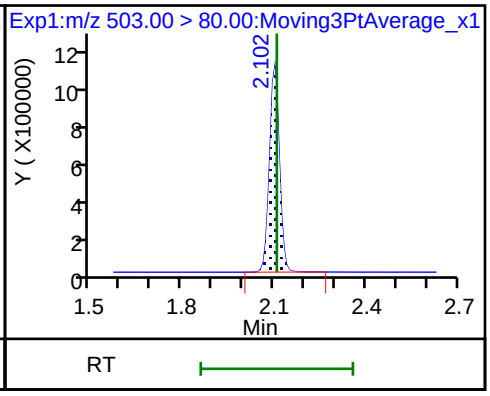
5 Perfluorooctanoic acid



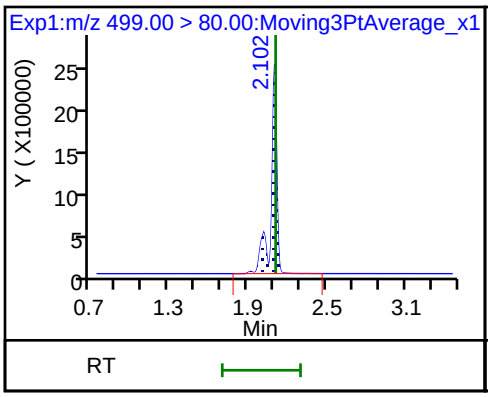
* 6 13C2-PFOA



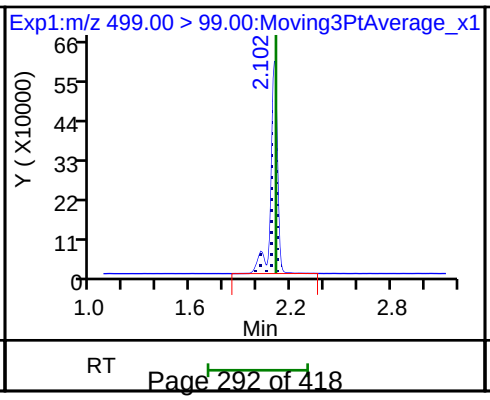
* 7 13C4 PFOS



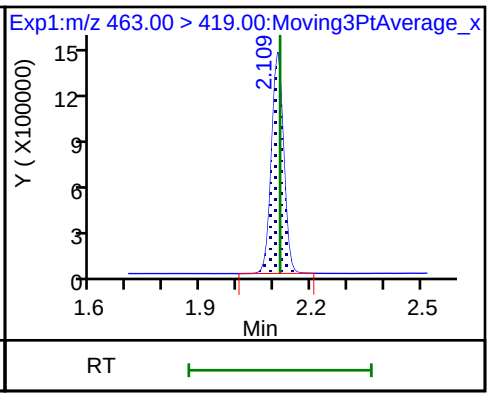
8 Perfluorooctane sulfonic acid



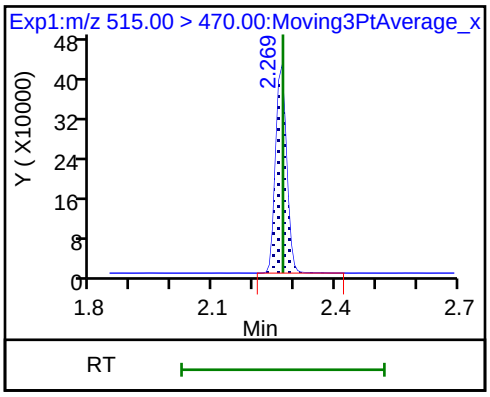
8 Perfluorooctane sulfonic acid



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X10000)
48
40
32
24
16
8
0
1.8
2.1
2.4
2.7
Min
RT

Calibration / Perfluorobutanesulfonic acid

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

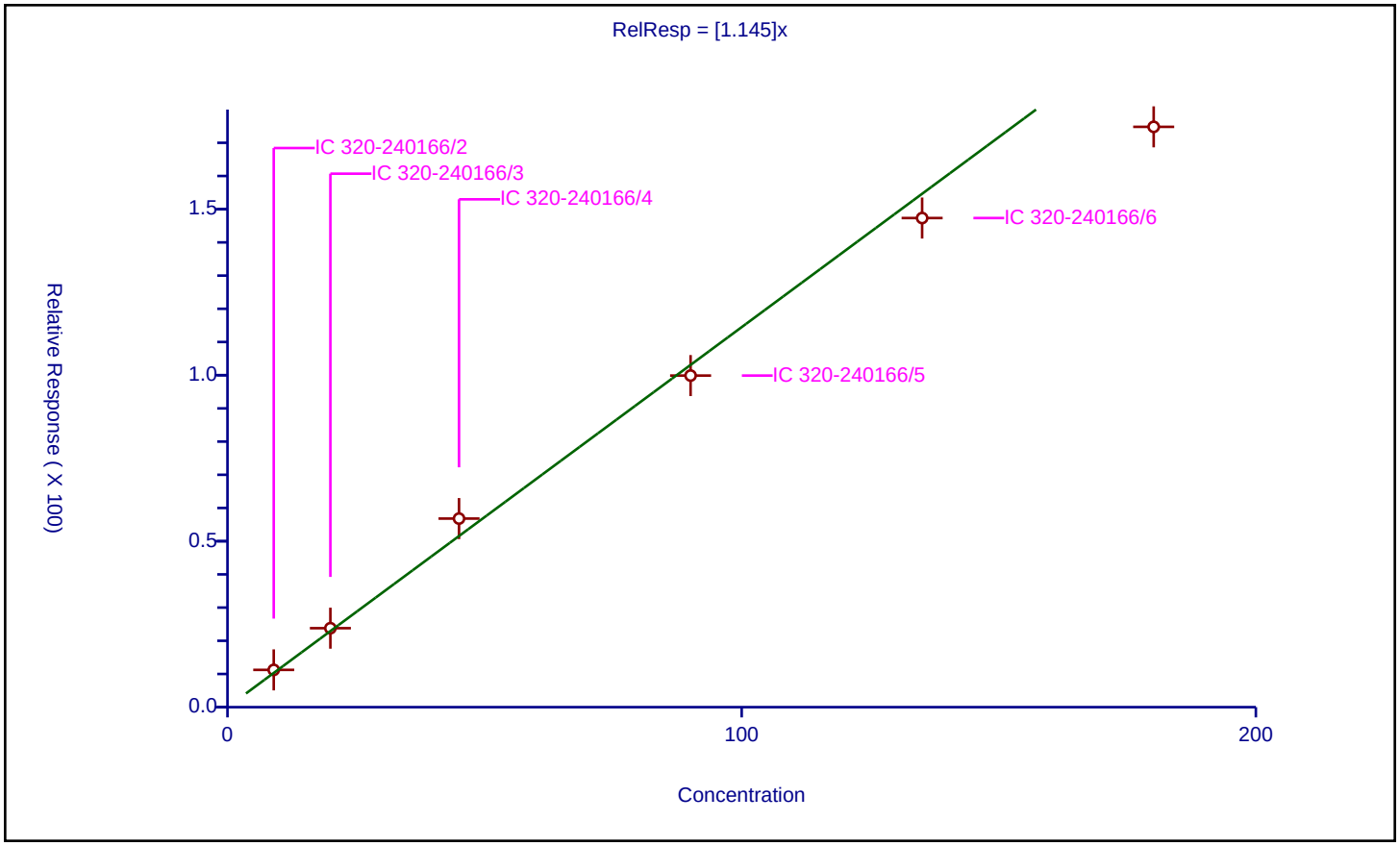
Curve Coefficients

Intercept:	0
Slope:	1.145

Error Coefficients

Standard Error:	9820000
Relative Standard Error:	9.6
Correlation Coefficient:	0.987
Coefficient of Determination (Adjusted):	0.984

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	8.99912	11.230049	28.68	2551191.0	1.247905	Y
2	IC 320-240166/3	20.01376	23.788708	28.68	2496049.0	1.188618	Y
3	IC 320-240166/4	45.03096	56.810426	28.68	2296598.0	1.261586	Y
4	IC 320-240166/5	90.06192	99.887482	28.68	2694948.0	1.109098	Y
5	IC 320-240166/6	135.09288	147.336183	28.68	2294155.0	1.090629	Y
6	IC 320-240166/7	180.12384	174.804688	28.68	2483425.0	0.970469	Y



Calibration / 13C2 PFHxA

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

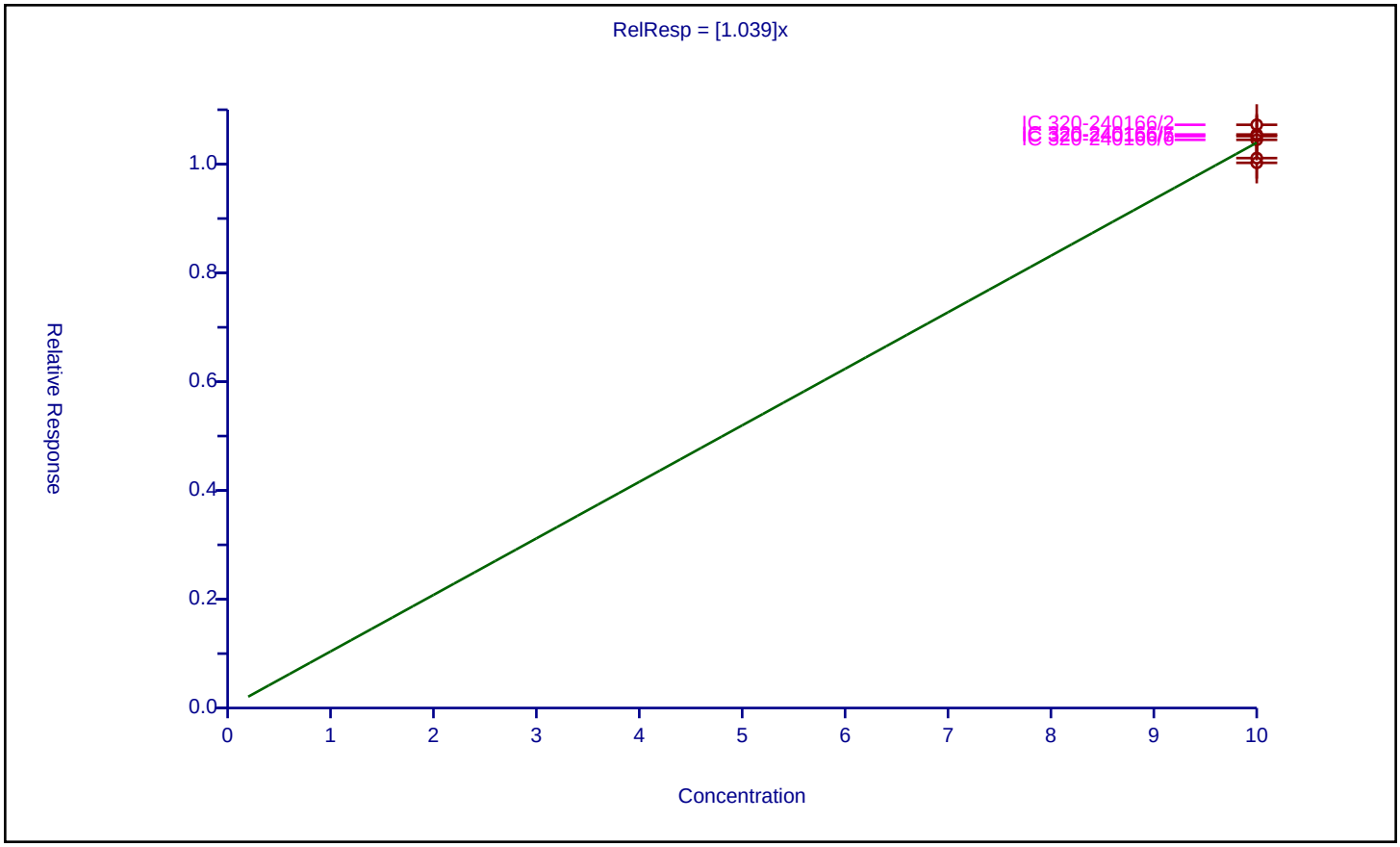
Curve Coefficients

Intercept:	0
Slope:	1.039

Error Coefficients

Standard Error:	1140000
Relative Standard Error:	2.6
Correlation Coefficient:	NA
Coefficient of Determination (Adjusted):	0.000000000000000111

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	10.0	10.723022	10.0	1026304.0	1.072302	Y
2	IC 320-240166/3	10.0	10.110938	10.0	1041660.0	1.011094	Y
3	IC 320-240166/4	10.0	10.023697	10.0	958352.0	1.00237	Y
4	IC 320-240166/5	10.0	10.514813	10.0	1045953.0	1.051481	Y
5	IC 320-240166/6	10.0	10.446952	10.0	944777.0	1.044695	Y
6	IC 320-240166/7	10.0	10.544625	10.0	981996.0	1.054463	Y



Calibration / Perfluoroheptanoic acid

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

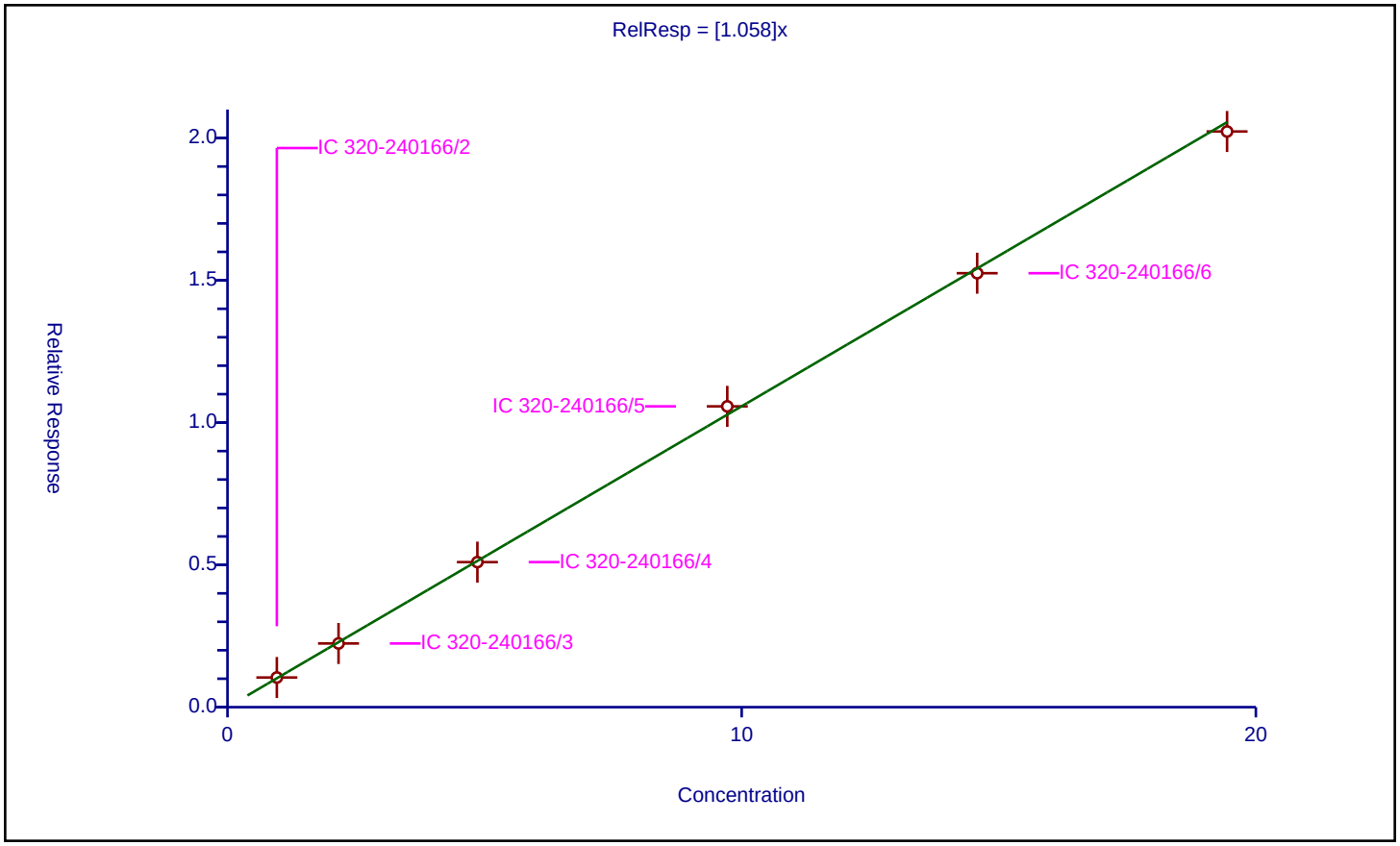
Curve Coefficients

Intercept:	0
Slope:	1.058

Error Coefficients

Standard Error:	1230000
Relative Standard Error:	2.2
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	0.96	1.042069	10.0	1026304.0	1.085489	Y
2	IC 320-240166/3	2.16	2.238629	10.0	1041660.0	1.036402	Y
3	IC 320-240166/4	4.86	5.097449	10.0	958352.0	1.048858	Y
4	IC 320-240166/5	9.72	10.571517	10.0	1045953.0	1.087605	Y
5	IC 320-240166/6	14.58	15.250943	10.0	944777.0	1.046018	Y
6	IC 320-240166/7	19.44	20.231152	10.0	981996.0	1.040697	Y



Calibration / Perfluorohexanesulfonic acid

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

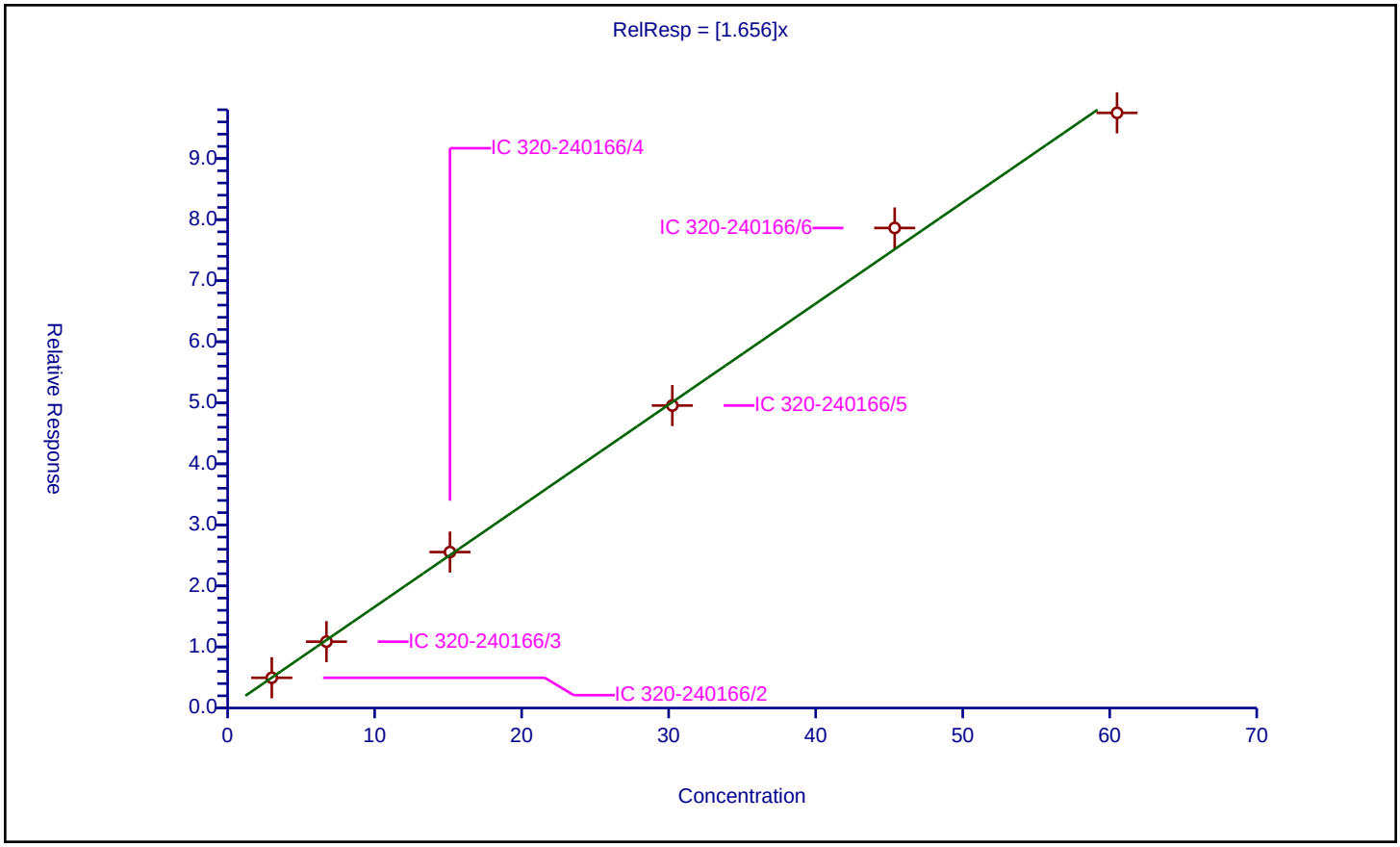
Curve Coefficients

Intercept:	0
Slope:	1.656

Error Coefficients

Standard Error:	5250000
Relative Standard Error:	2.8
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	3.003	4.952545	28.68	2551191.0	1.649199	Y
2	IC 320-240166/3	6.721867	10.867105	28.68	2496049.0	1.61668	Y
3	IC 320-240166/4	15.1242	25.544729	28.68	2296598.0	1.688997	Y
4	IC 320-240166/5	30.2484	49.547598	28.68	2694948.0	1.638024	Y
5	IC 320-240166/6	45.3726	78.631671	28.68	2294155.0	1.733021	Y
6	IC 320-240166/7	60.4968	97.490855	28.68	2483425.0	1.611504	Y



Calibration / Perfluorooctanoic acid

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

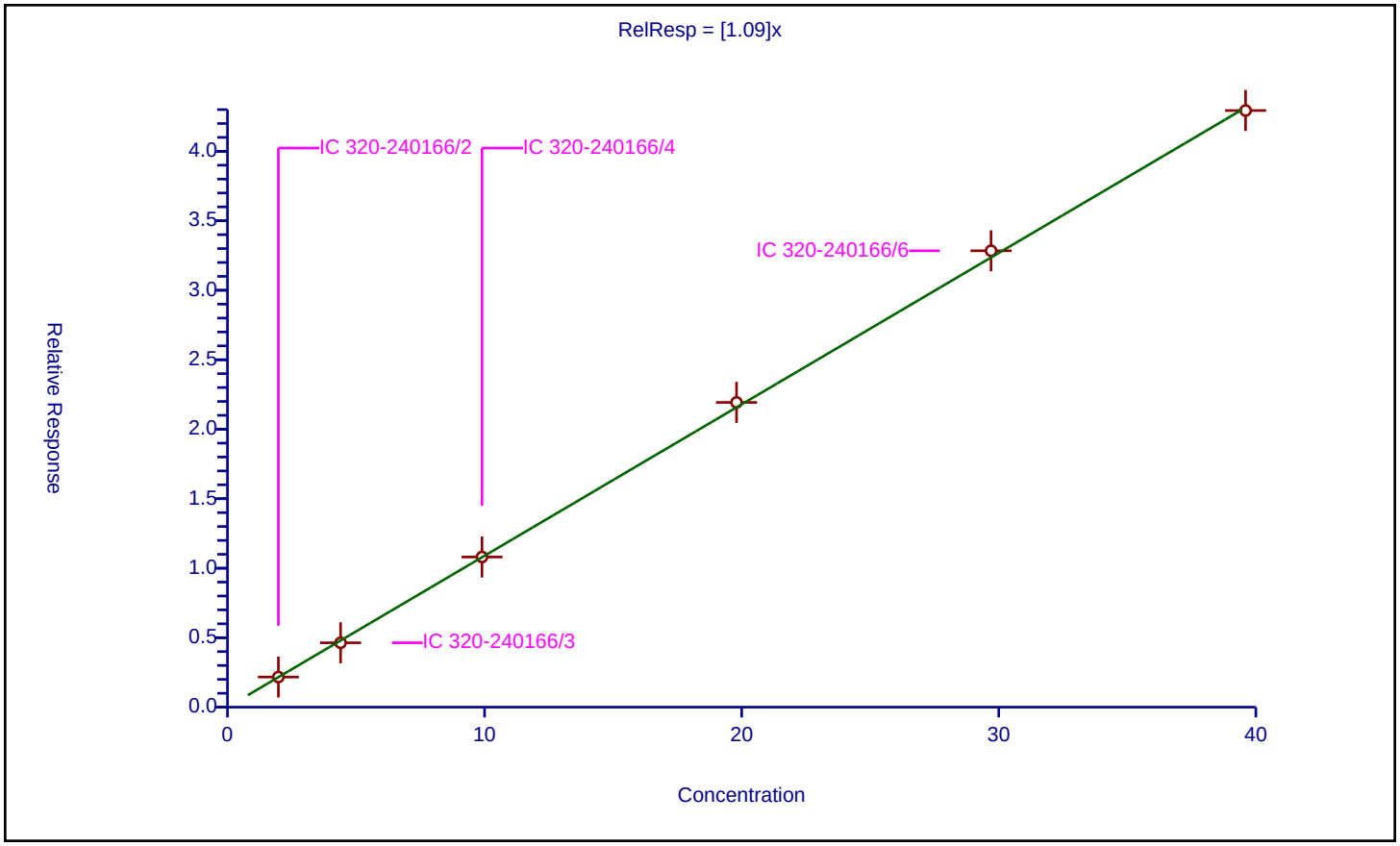
Curve Coefficients

Intercept:	0
Slope:	1.09

Error Coefficients

Standard Error:	2610000
Relative Standard Error:	1.8
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	1.98	2.168821	10.0	1026304.0	1.095364	Y
2	IC 320-240166/3	4.4	4.632865	10.0	1041660.0	1.052924	Y
3	IC 320-240166/4	9.9	10.80555	10.0	958352.0	1.09147	Y
4	IC 320-240166/5	19.8	21.929159	10.0	1045953.0	1.107533	Y
5	IC 320-240166/6	29.7	32.841263	10.0	944777.0	1.105766	Y
6	IC 320-240166/7	39.6	42.935185	10.0	981996.0	1.084222	Y



Calibration / Perfluorooctane sulfonic acid

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

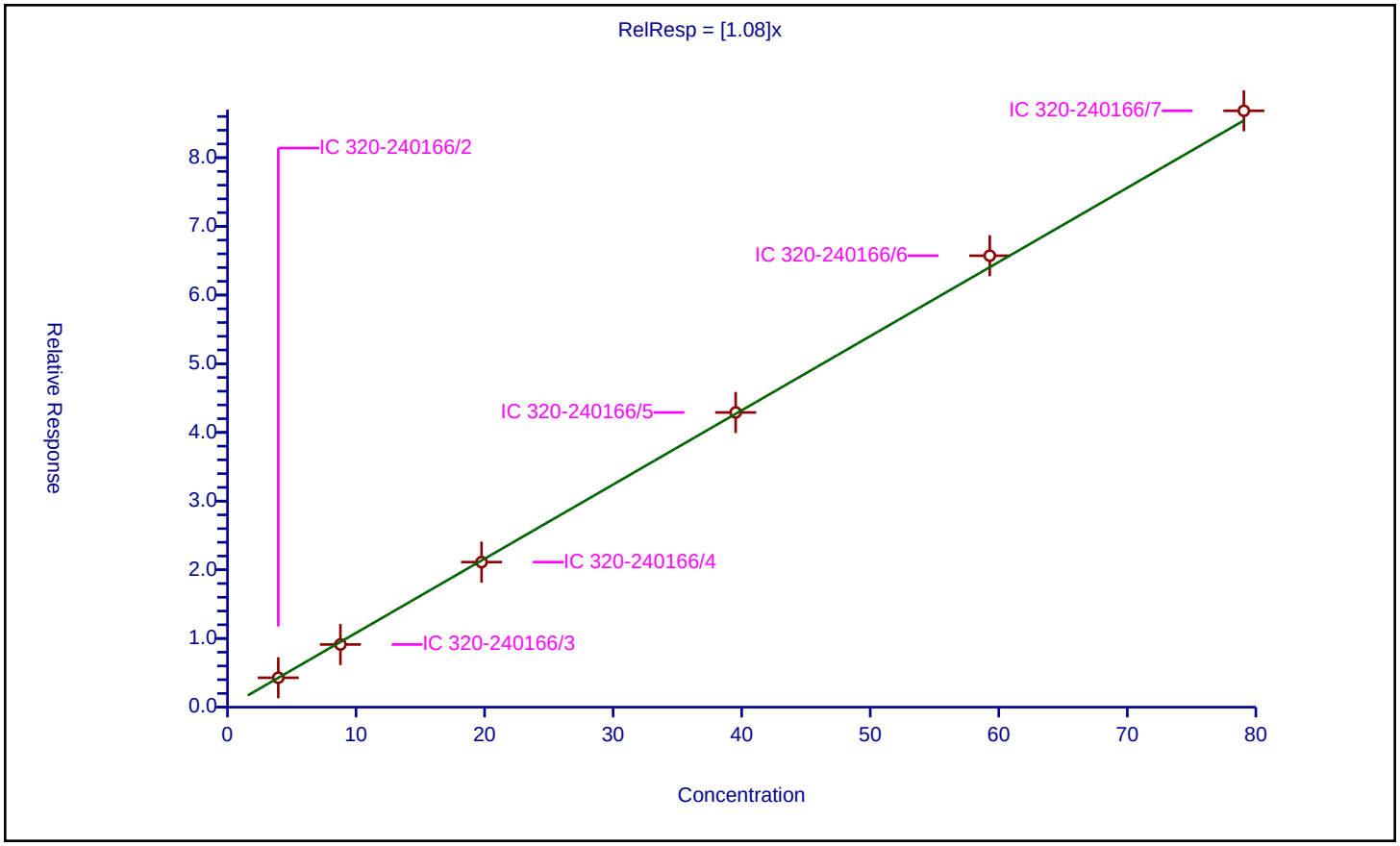
Curve Coefficients

Intercept:	0
Slope:	1.08

Error Coefficients

Standard Error:	4560000
Relative Standard Error:	2.3
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	3.95328	4.281386	28.68	2551191.0	1.082996	Y
2	IC 320-240166/3	8.785067	9.124485	28.68	2496049.0	1.038636	Y
3	IC 320-240166/4	19.7664	21.117058	28.68	2296598.0	1.068331	Y
4	IC 320-240166/5	39.5328	42.904927	28.68	2694948.0	1.085299	Y
5	IC 320-240166/6	59.2992	65.729144	28.68	2294155.0	1.108432	Y
6	IC 320-240166/7	79.0656	86.827243	28.68	2483425.0	1.098167	Y



Calibration / Perfluorononanoic acid

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

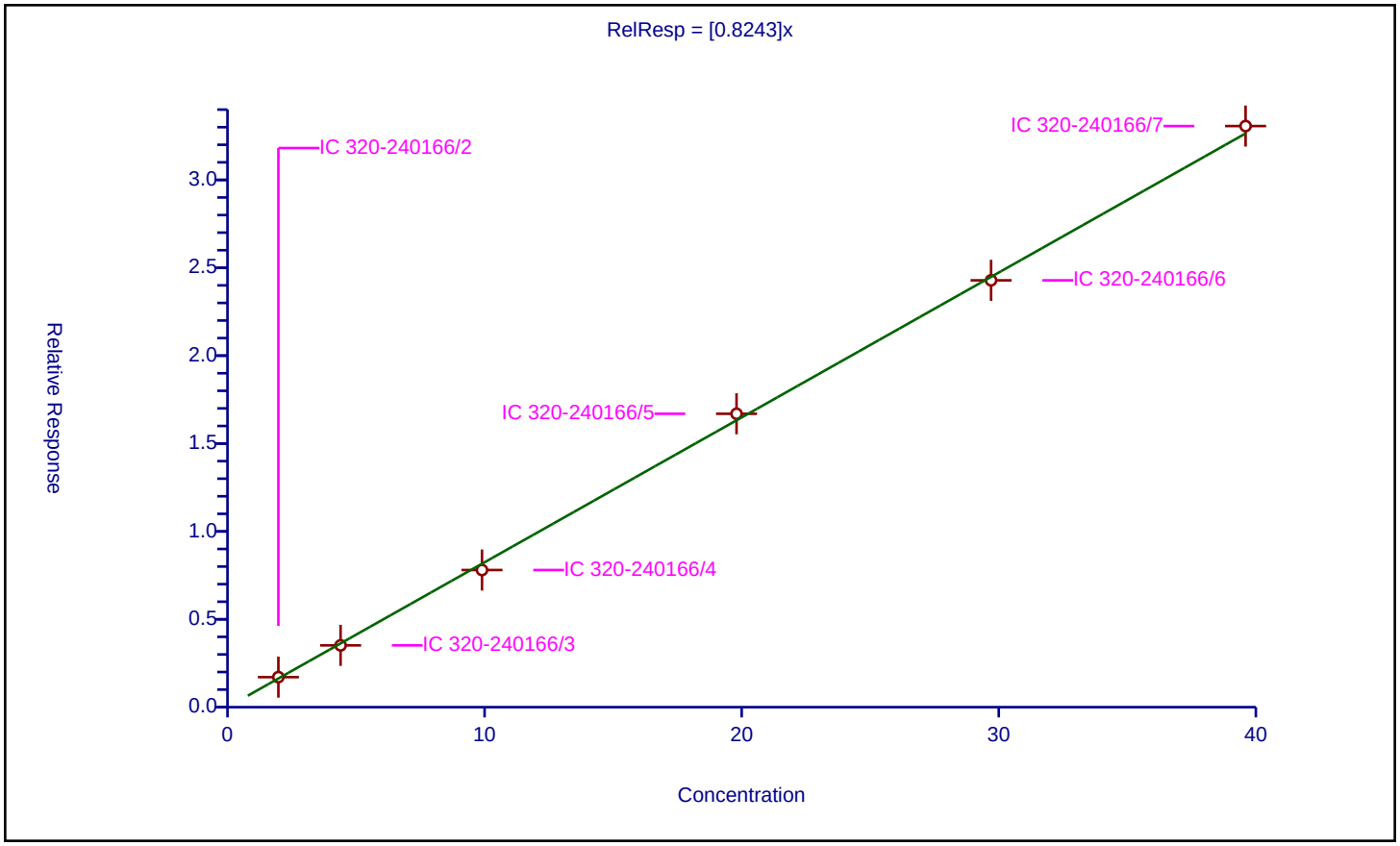
Curve Coefficients

Intercept:	0
Slope:	0.8243

Error Coefficients

Standard Error:	1980000
Relative Standard Error:	3.4
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	1.98	1.708753	10.0	1026304.0	0.863007	Y
2	IC 320-240166/3	4.4	3.515581	10.0	1041660.0	0.798996	Y
3	IC 320-240166/4	9.9	7.802446	10.0	958352.0	0.788126	Y
4	IC 320-240166/5	19.8	16.692968	10.0	1045953.0	0.843079	Y
5	IC 320-240166/6	29.7	24.286578	10.0	944777.0	0.81773	Y
6	IC 320-240166/7	39.6	33.064615	10.0	981996.0	0.834965	Y



Calibration / 13C2 PFDA

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

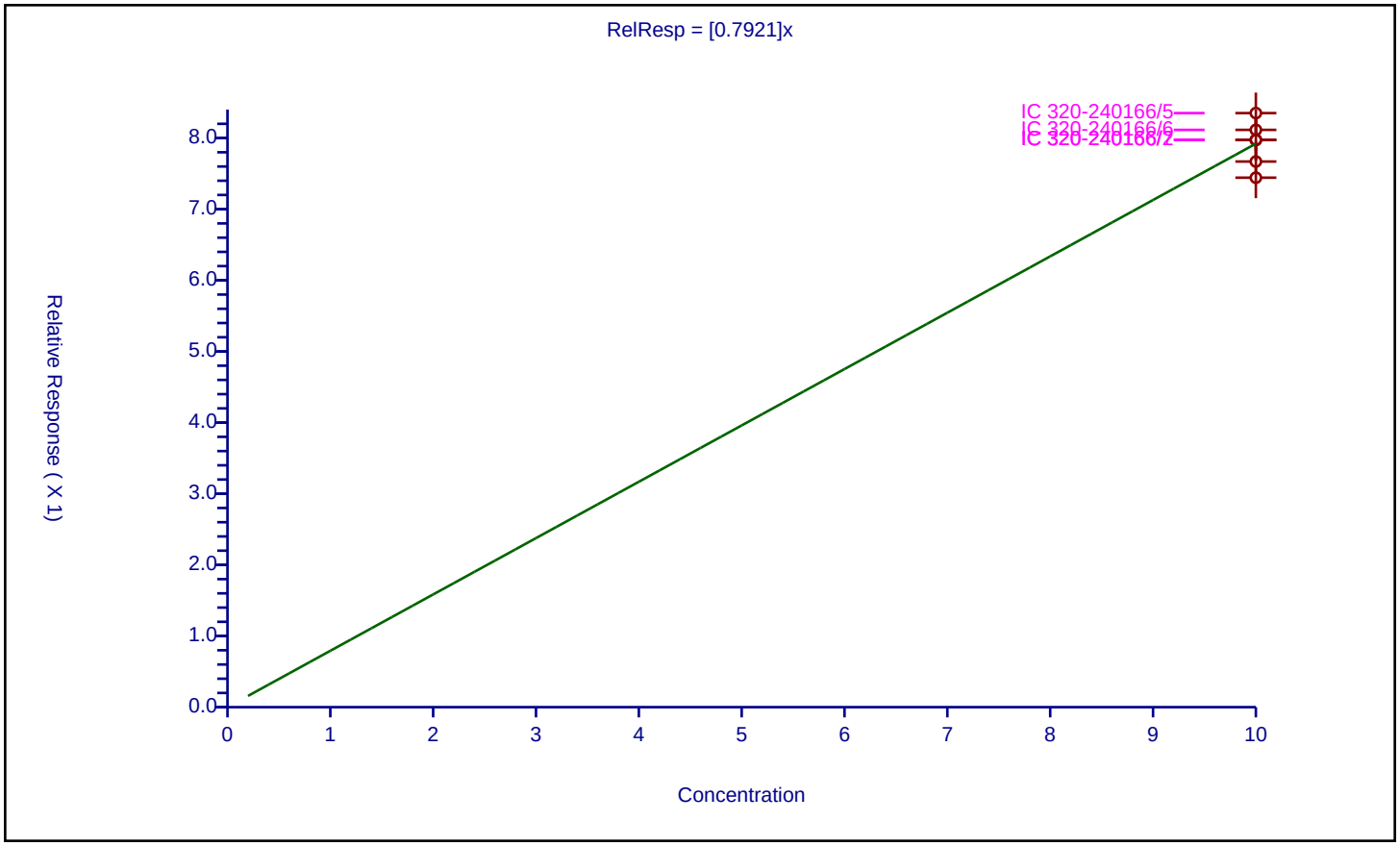
Curve Coefficients

Intercept:	0
Slope:	0.7921

Error Coefficients

Standard Error:	869000
Relative Standard Error:	4.1
Correlation Coefficient:	NA
Coefficient of Determination (Adjusted):	0

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	10.0	7.972277	10.0	1026304.0	0.797228	Y
2	IC 320-240166/3	10.0	7.442985	10.0	1041660.0	0.744299	Y
3	IC 320-240166/4	10.0	7.670209	10.0	958352.0	0.767021	Y
4	IC 320-240166/5	10.0	8.35092	10.0	1045953.0	0.835092	Y
5	IC 320-240166/6	10.0	8.115248	10.0	944777.0	0.811525	Y
6	IC 320-240166/7	10.0	7.975654	10.0	981996.0	0.797565	Y



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCVL 320-240166/9 Calibration Date: 08/15/2018 18:53

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.15_537CURVE_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.167		20.4	20.0	2.0	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.033		2.11	2.16	-2.4	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.611		6.54	6.72	-2.7	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.020		4.12	4.40	-6.4	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.039		8.45	8.79	-3.8	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8023		4.28	4.40	-2.7	50.0
13C2 PFHxA	Ave	1.039	1.002		9.64	10.0	-3.6	30.0
13C2 PFDA	Ave	0.7921	0.7658		9.67	10.0	-3.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_010.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 15-Aug-2018 18:53:52 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*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 16-Aug-2018 08:40:39 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 19:08:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	1945320	20.4		4245	
298.90 > 99.00	1.381	1.381	0.0	1.000	1331599		1.46(0.00-0.00)	1955	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1009111	9.64		8281	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	901941	6.54		565	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	1.654	1.654	0.0	1.000	224502	2.11		42.5	M
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.850	-0.006		1006603	10.0		8231	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.850	-0.006	1.000	451556	4.12		60.4	
413.00 > 169.00	1.844	1.850	-0.006	1.000	246955		1.83(0.00-0.00)	568	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.108	-0.006		2388436	28.7		5214	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	760165	8.45		1715	
499.00 > 99.00	2.102	2.109	-0.007	1.000	165858		4.58(0.00-0.00)	275	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	355358	4.28		52.6	
$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.271	-0.003	1.000	770892	9.67		5141	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L2_00022 Amount Added: 1.00 Units: mL

Report Date: 16-Aug-2018 08:40:39 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_010.d

Injection Date: 15-Aug-2018 18:53:52 Instrument ID: A8_N

Lims ID: CCVL

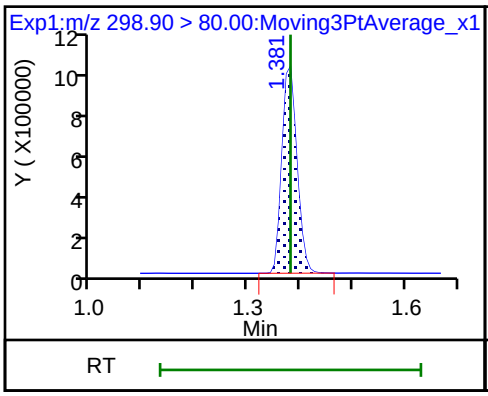
Client ID:

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

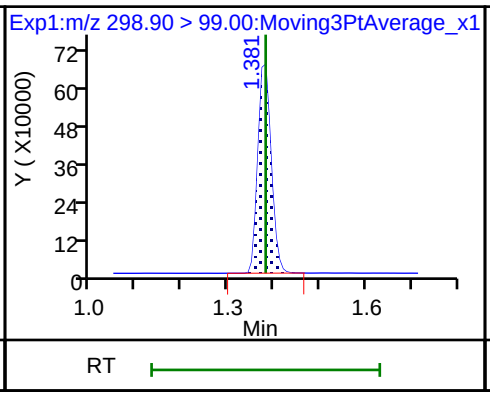
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

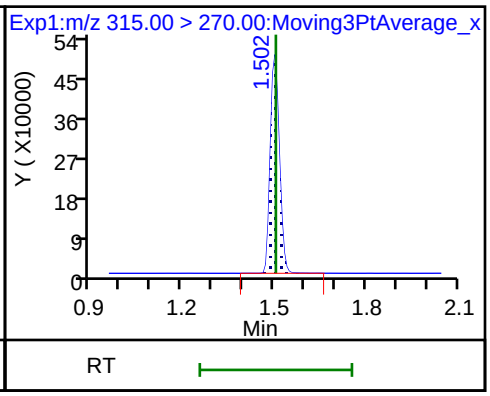
1 Perfluorobutanesulfonic acid



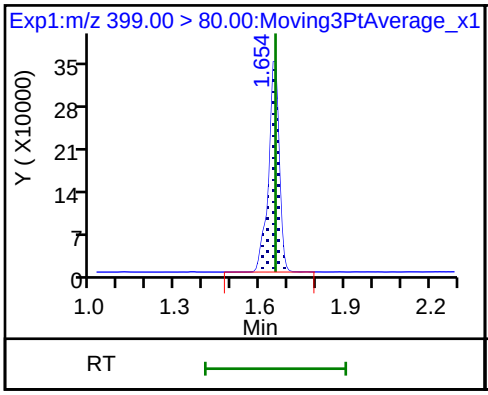
1 Perfluorobutanesulfonic acid



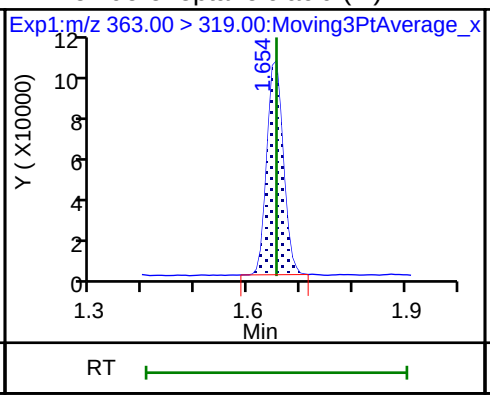
$ 2 13C2 PFHxA



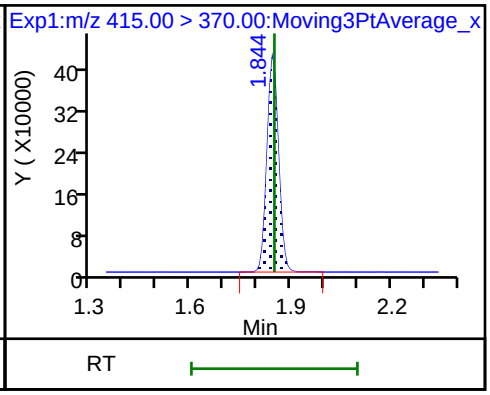
3 Perfluorohexanesulfonic acid



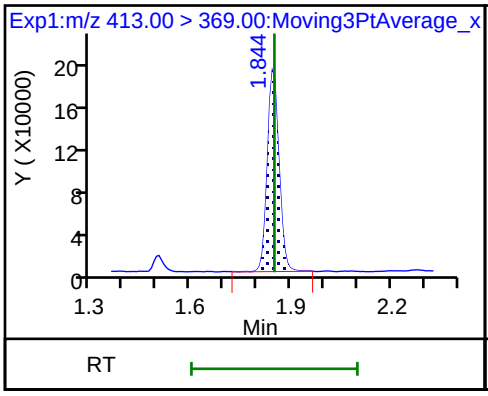
4 Perfluoroheptanoic acid (M)



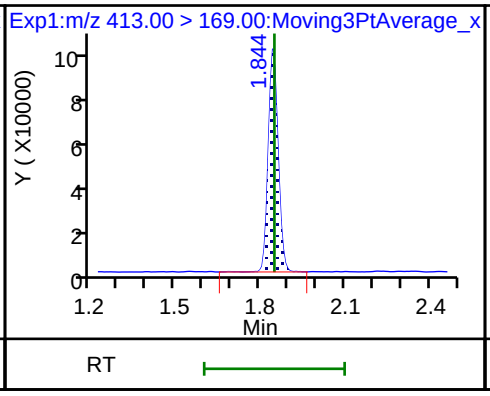
* 6 13C2-PFOA



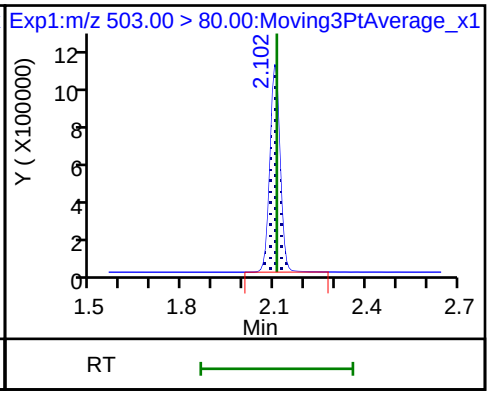
5 Perfluorooctanoic acid



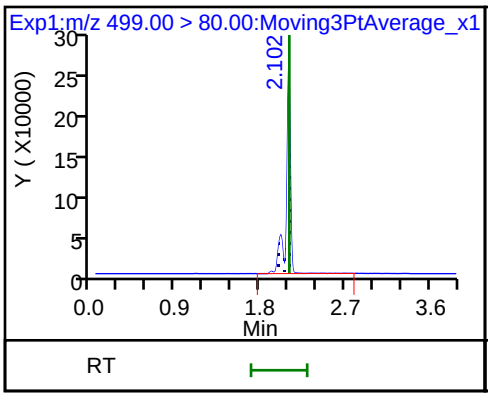
5 Perfluorooctanoic acid



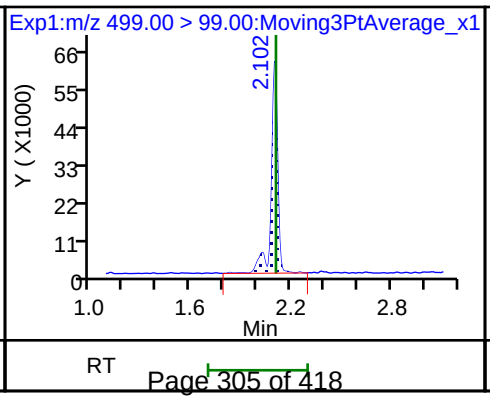
* 7 13C4 PFOS



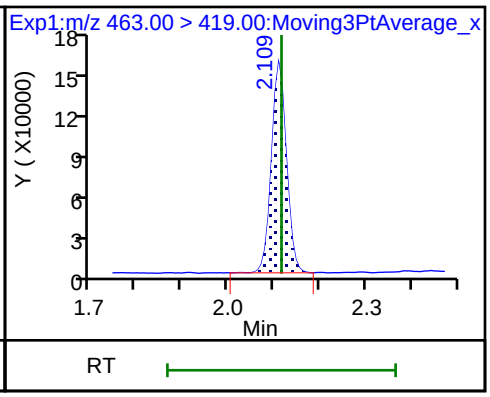
8 Perfluorooctane sulfonic acid



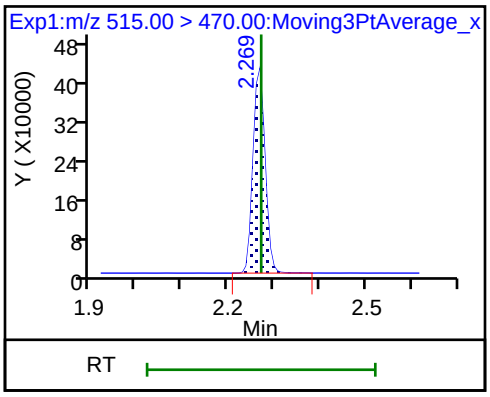
8 Perfluorooctane sulfonic acid



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.269
Y (X10000)
48
40
32
24
16
8
0
1.9
2.2
2.5
Min
RT

TestAmerica Sacramento

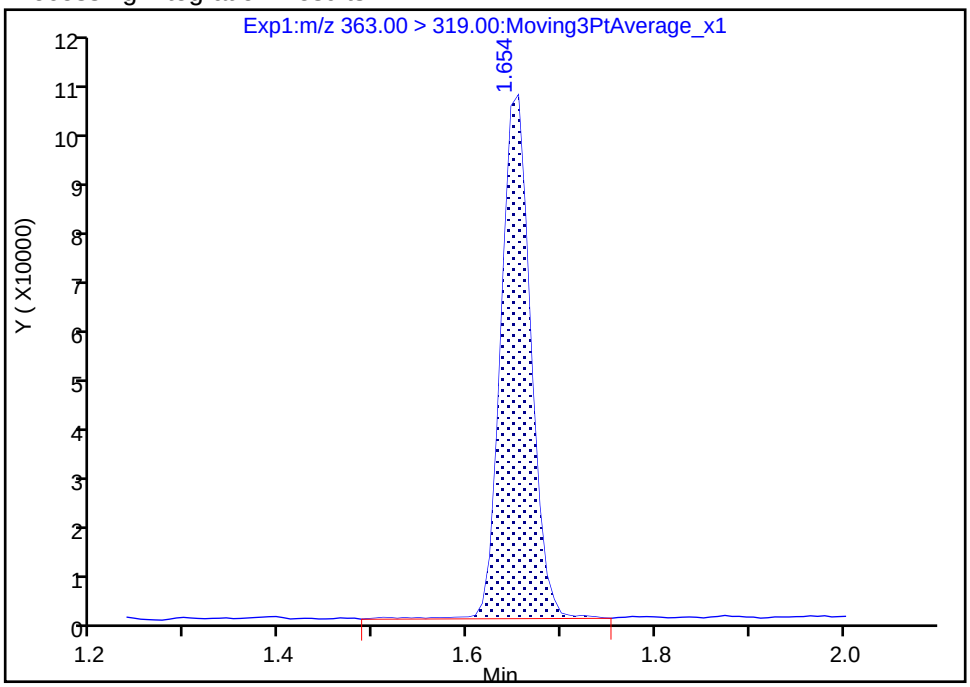
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_010.d				
Injection Date:	15-Aug-2018 18:53:52	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

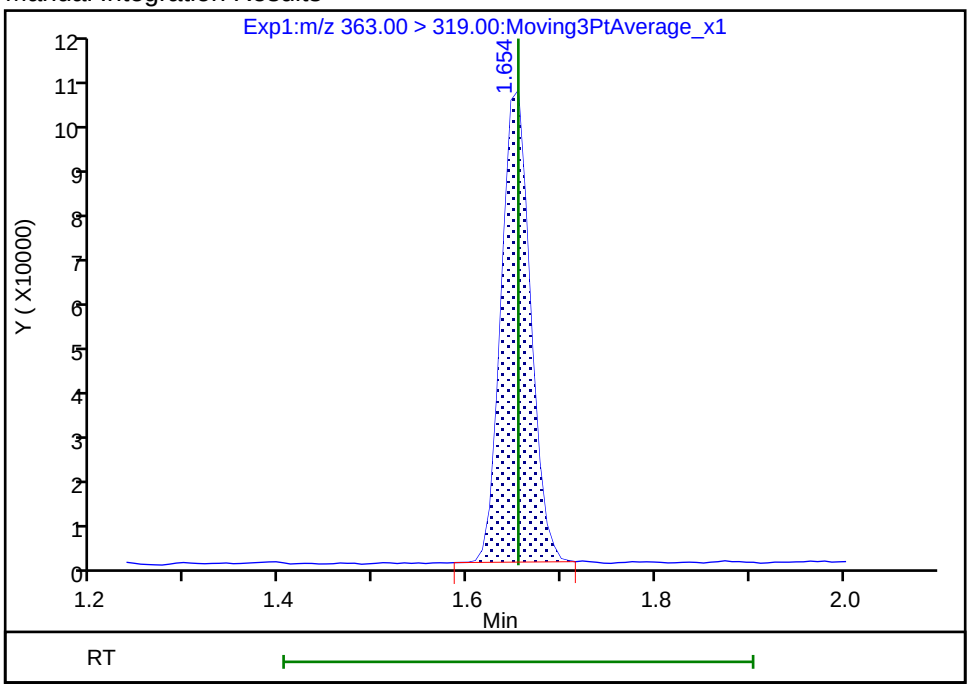
Processing Integration Results

RT: 1.65
Area: 229068
Amount: 2.151895
Amount Units: ng/ml



Manual Integration Results

RT: 1.65
Area: 224502
Amount: 2.109002
Amount Units: ng/ml



Reviewer: roycea, 15-Aug-2018 19:08:41
Audit Action: Manually Integrated Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: ICV 320-240166/11 Calibration Date: 08/15/2018 19:03

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.15_537CURVE_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.005		87.9	100	-12.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	0.9536		9.02	10.0	-9.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.530		18.6	20.2	-7.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	0.8802		16.3	20.2	-19.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	0.9603		17.9	20.2	-11.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7757		19.0	20.2	-5.9	30.0
13C2 PFHxA	Ave	1.039	1.022		9.83	10.0	-1.7	30.0
13C2 PFDA	Ave	0.7921	0.7952		10.0	10.0	0.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_012.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 15-Aug-2018 19:03:12 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\20180815-62769.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 16-Aug-2018 08:40:40 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 19:11:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	8951923	87.9		13197	
298.90 > 99.00	1.373	1.381	-0.008	0.995	6353811		1.41(0.00-0.00)	8112	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1044443	9.83		9288	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.646	1.654	-0.008	1.000	2744582	18.6		1806	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.646	1.654	-0.008	1.000	974881	9.02		176	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.850	-0.006		1022273	10.0		7889	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.850	-0.006	1.000	1814661	16.3		244	
413.00 > 169.00	1.844	1.850	-0.006	1.000	963434		1.88(0.00-0.00)	2245	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.108	-0.006		2551643	28.7		5068	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	1723342	17.9		2659	
499.00 > 99.00	2.102	2.109	-0.007	1.000	346840		4.97(0.00-0.00)	526	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	1598983	19.0		227	
$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.271	-0.010	1.000	812885	10.0		5447	

Reagents:

LC537-ICV_00032 Amount Added: 1.00 Units: mL

Report Date: 16-Aug-2018 08:40:41 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_012.d

Injection Date: 15-Aug-2018 19:03:12 Instrument ID: A8_N

Lims ID: ICV

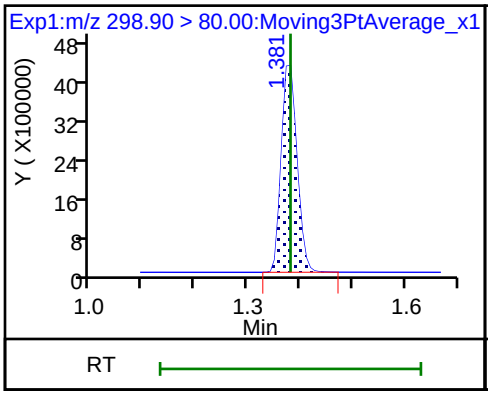
Client ID:

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

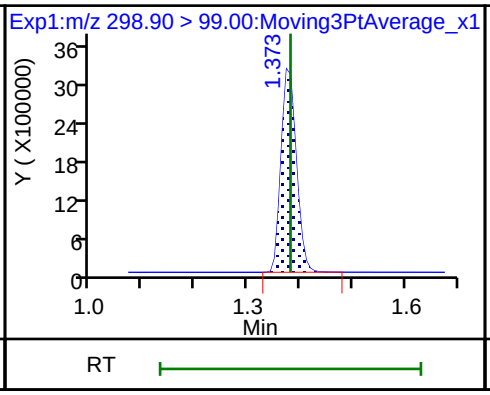
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

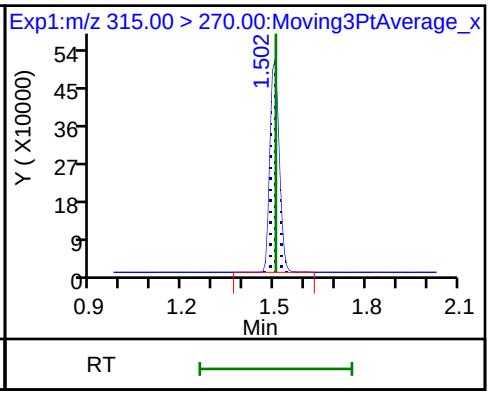
1 Perfluorobutanesulfonic acid



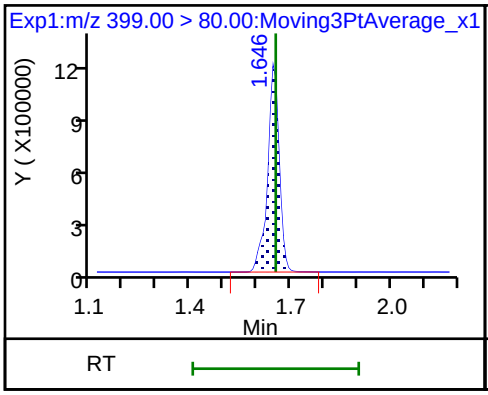
1 Perfluorobutanesulfonic acid



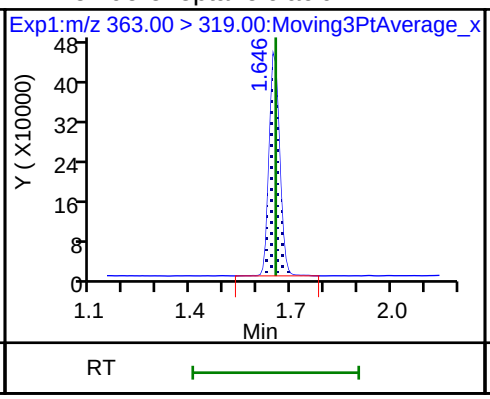
$ 2 13C2 PFHxA



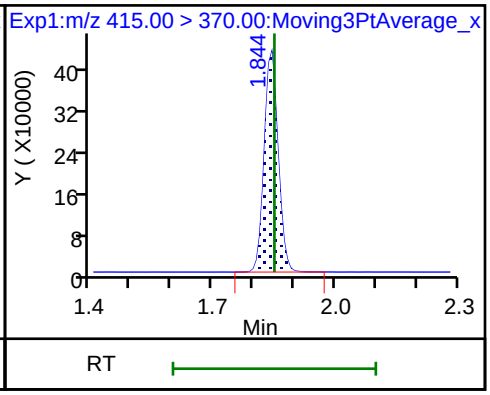
3 Perfluorohexanesulfonic acid



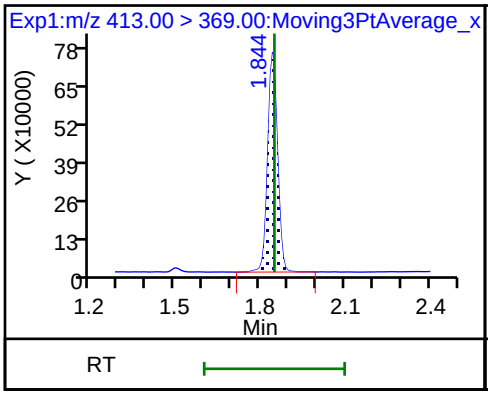
4 Perfluoroheptanoic acid



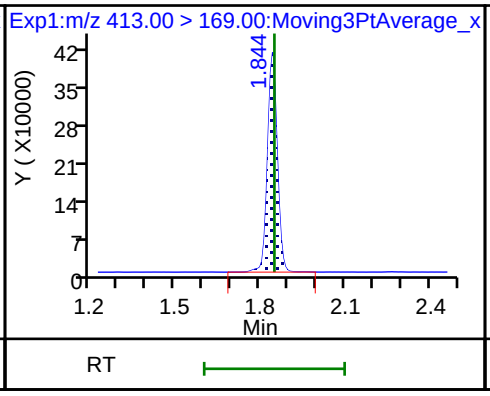
* 6 13C2-PFOA



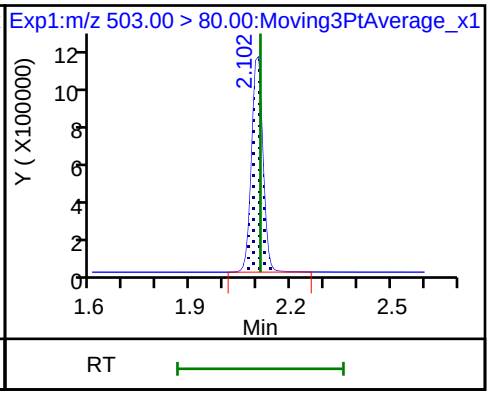
5 Perfluorooctanoic acid



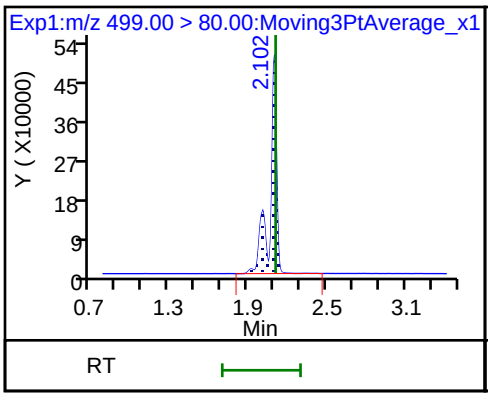
5 Perfluorooctanoic acid



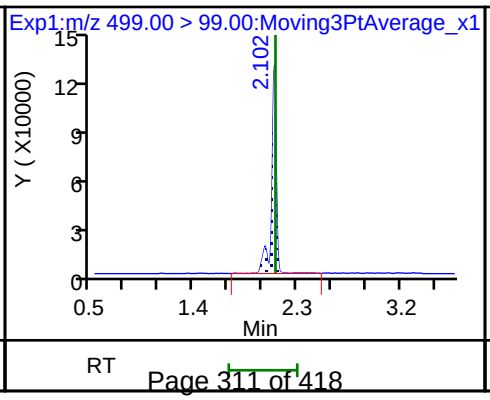
* 7 13C4 PFOS



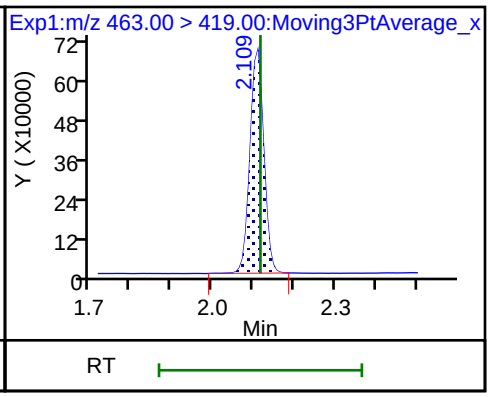
8 Perfluorooctane sulfonic acid



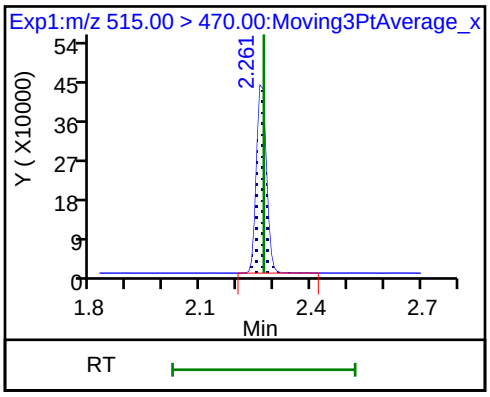
8 Perfluorooctane sulfonic acid



9 Perfluorononanoic acid



$ 10 13C2 PFDA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Y (X10000)
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
Min
RT

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCVL 320-242153/1 Calibration Date: 08/26/2018 23:30

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.183		20.7	20.0	3.3	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.122		2.29	2.16	6.1	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.646		6.68	6.72	-0.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.033		4.17	4.40	-5.2	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.027		8.35	8.79	-4.9	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8082		4.31	4.40	-2.0	50.0
13C2 PFHxA	Ave	1.039	1.105		10.6	10.0	6.3	30.0
13C2 PFDA	Ave	0.7921	0.8820		11.1	10.0	11.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_004.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 26-Aug-2018 23:30:03 ALS Bottle#: 2 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCVL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:57:44 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:33:16

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	2034901	20.7		6968	
298.90 > 99.00	1.366	1.366	0.0	1.000	1428021		1.42(0.00-0.00)	3489	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	1057028	10.6		10378	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	951334	6.68		671	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	231878	2.29		56.9	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		956576	10.0		7128	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.821	1.813	0.008	1.000	434606	4.17		66.4	
413.00 > 169.00	1.813	1.813	0.0	0.996	229588		1.89(0.00-0.00)	741	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.064	0.007		2465858	28.7		6765	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.071	0.008	1.000	340154	4.31		50.6	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	775692	8.35		1443	
499.00 > 99.00	2.071	2.109	-0.038	1.000	168910		4.59(0.00-0.00)	547	
$ 10 13C2 PFDA									
515.00 > 470.00	2.246	2.238	0.008	1.000	843650	11.1		3947	

Reagents:

LC537-L2_00022 Amount Added: 1.00 Units: mL

Report Date: 27-Aug-2018 14:57:45 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_004.d

Injection Date: 26-Aug-2018 23:30:03 Instrument ID: A8_N

Lims ID: CCVL

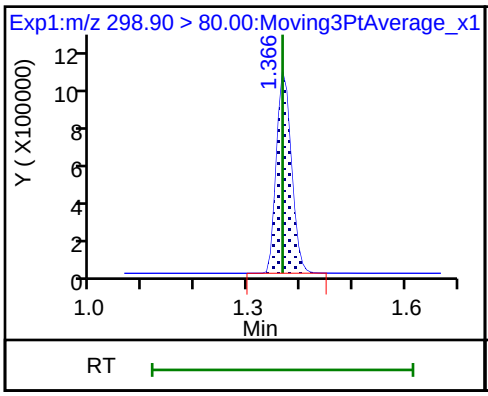
Client ID:

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

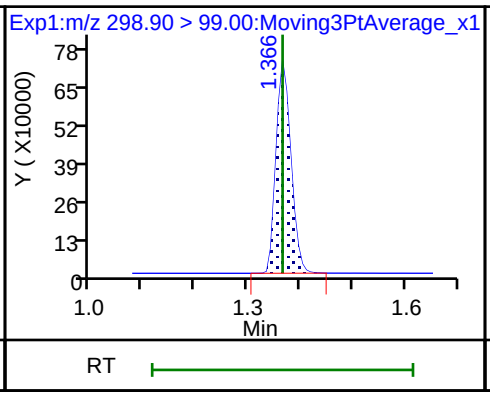
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

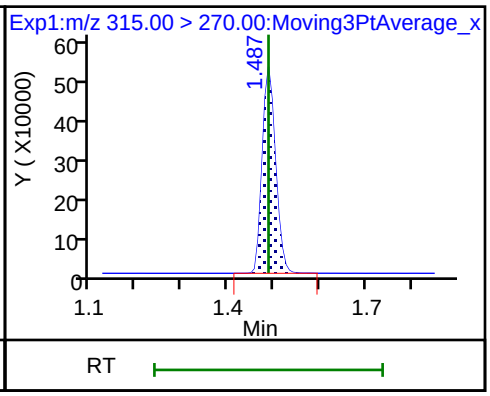
1 Perfluorobutanesulfonic acid



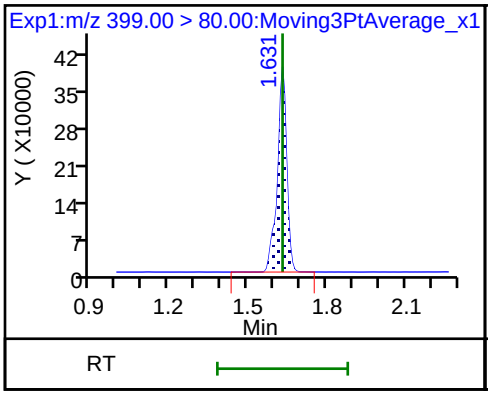
1 Perfluorobutanesulfonic acid



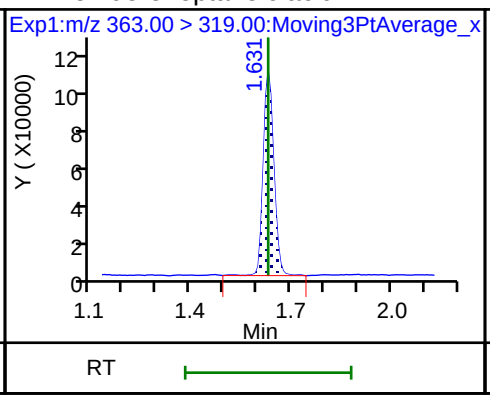
$ 2 13C2 PFHxA



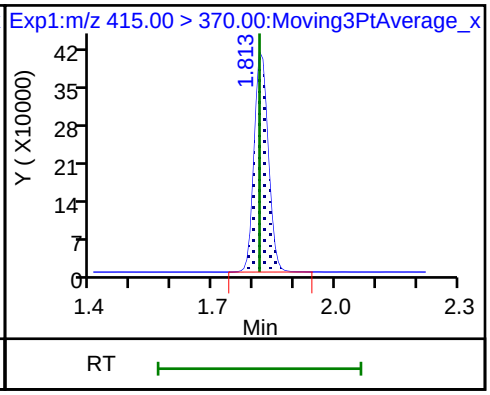
3 Perfluorohexanesulfonic acid



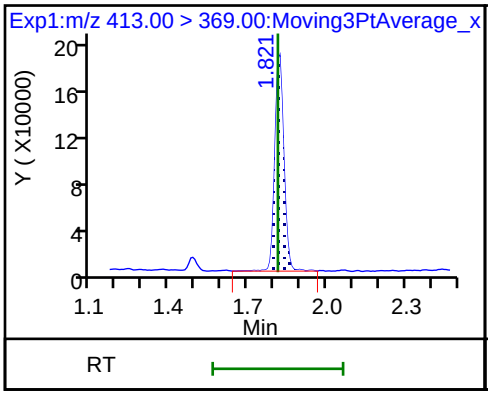
4 Perfluoroheptanoic acid



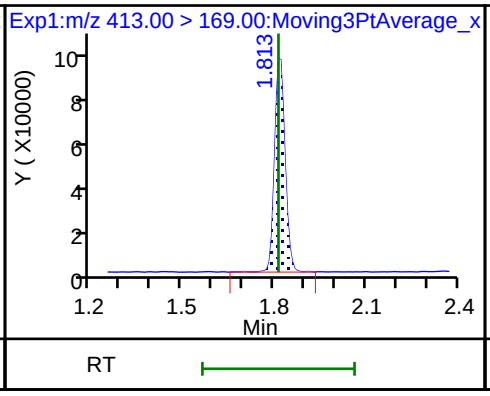
* 6 13C2-PFOA



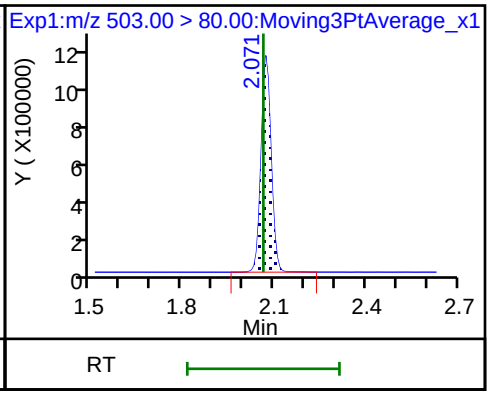
5 Perfluorooctanoic acid



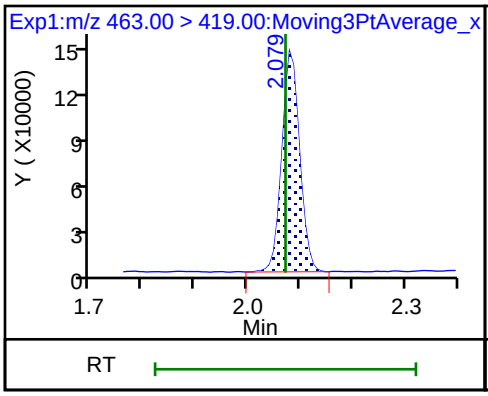
5 Perfluorooctanoic acid



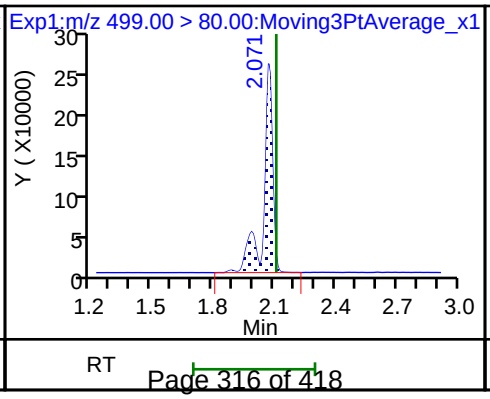
* 7 13C4 PFOS



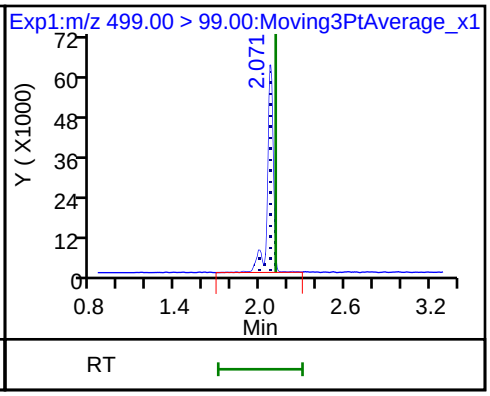
9 Perfluorononanoic acid



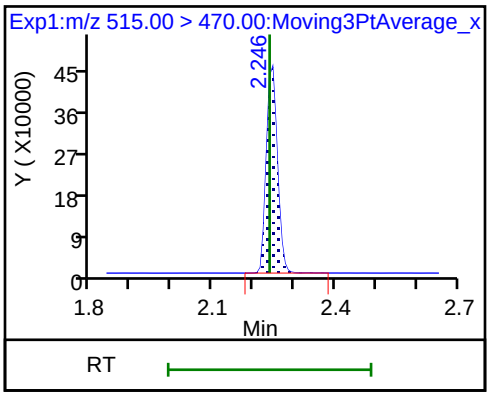
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.246
Y (X10000)
45
36
27
18
9
0
1.8
2.1
2.4
2.7
Min
RT

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242153/2 Calibration Date: 08/26/2018 23:34

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.281		50.4	45.0	11.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.133		5.21	4.86	7.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.680		15.3	15.1	1.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.082		9.83	9.90	-0.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.071		19.6	19.8	-0.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7975		9.58	9.90	-3.3	30.0
13C2 PFHxA	Ave	1.039	1.091		10.5	10.0	5.0	30.0
13C2 PFDA	Ave	0.7921	0.8612		10.9	10.0	8.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_005.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 26-Aug-2018 23:34:44 ALS Bottle#: 3 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L3
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	4331274	50.4		12691	
298.90 > 99.00	1.366	1.366	0.0	1.000	2942141		1.47(0.00-0.00)	7152	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	923853	10.5		9188	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	1908217	15.3		1374	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	466328	5.21		120	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.821	0.0		846614	10.0		6797	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.821	1.821	0.0	1.000	906601	9.83		142	
413.00 > 169.00	1.821	1.821	0.0	1.000	463490		1.96(0.00-0.00)	1364	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2153988	28.7		6885	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	668382	9.58		101	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	1589677	19.6		2741	
499.00 > 99.00	2.071	2.109	-0.038	1.000	352268		4.51(0.00-0.00)	1136	
$ 10 13C2 PFDA									
515.00 > 470.00	2.246	2.246	0.0	1.000	729104	10.9		3717	

Reagents:

LC537-L3_00025 Amount Added: 1.00 Units: mL

Report Date: 27-Aug-2018 14:57:48 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_005.d

Injection Date: 26-Aug-2018 23:34:44 Instrument ID: A8_N

Lims ID: CCV L3

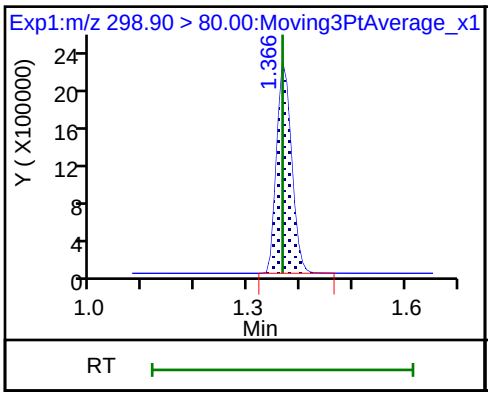
Client ID:

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

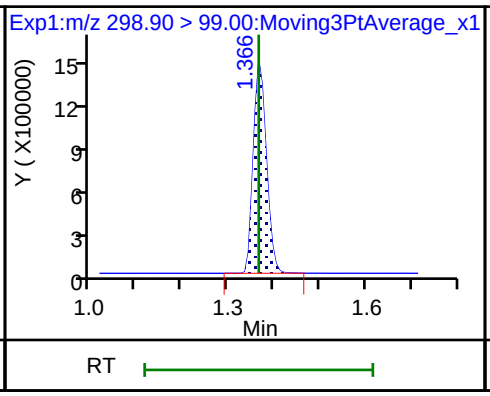
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

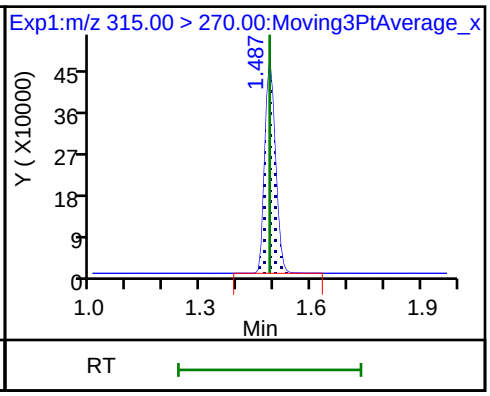
1 Perfluorobutanesulfonic acid



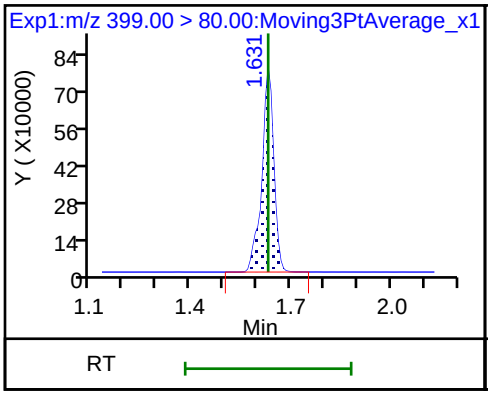
1 Perfluorobutanesulfonic acid



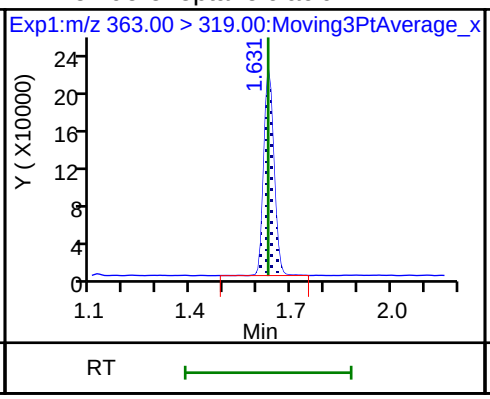
$ 2 13C2 PFHxA



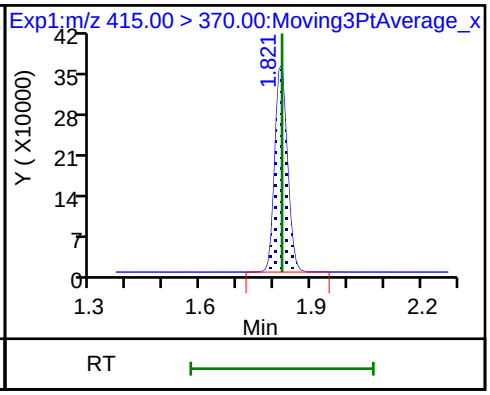
3 Perfluorohexanesulfonic acid



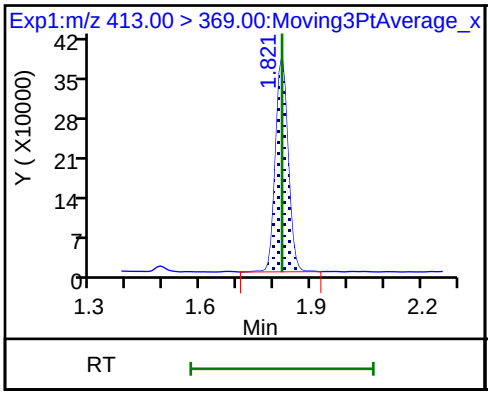
4 Perfluoroheptanoic acid



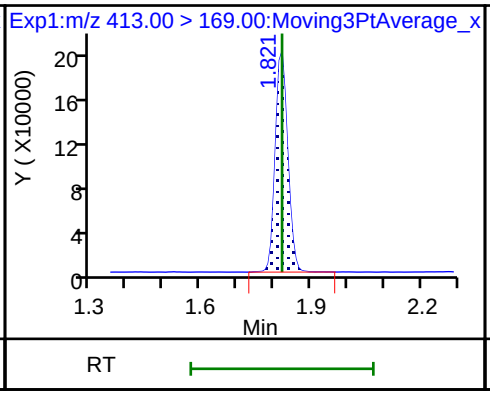
* 6 13C2-PFOA



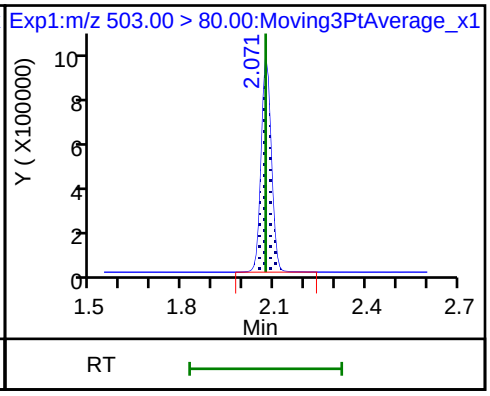
5 Perfluorooctanoic acid



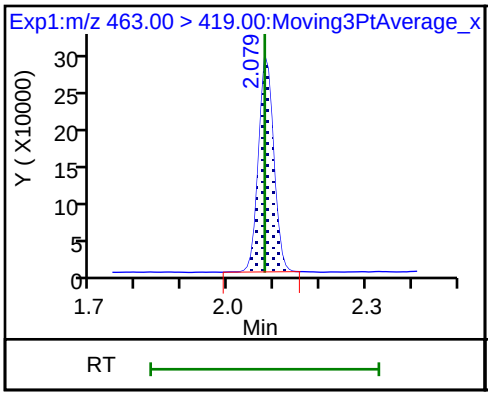
5 Perfluorooctanoic acid



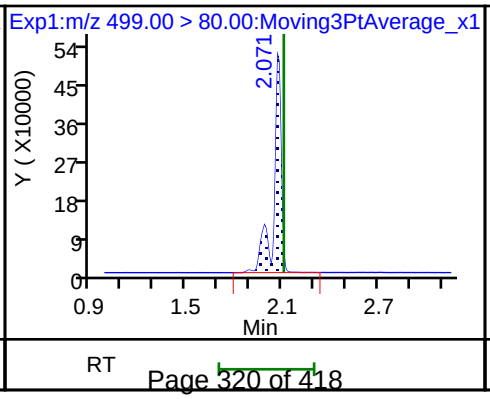
* 7 13C4 PFOS



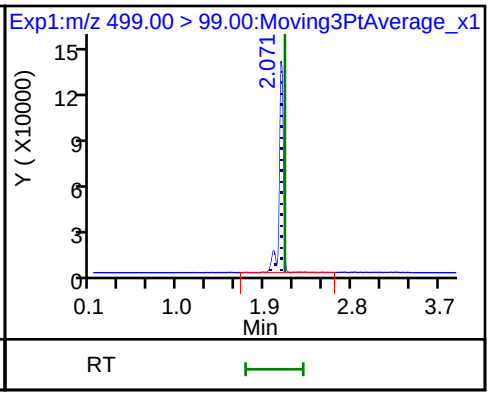
9 Perfluorononanoic acid



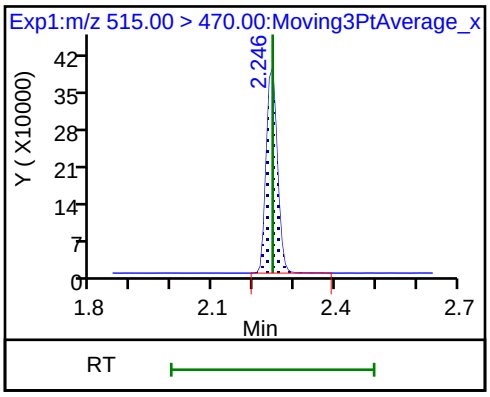
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA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35
28
21
14
7
0
1.8
2.1
2.4
2.7
Min
RT

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242153/14 Calibration Date: 08/27/2018 00:30

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.115		132	135	-2.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.095		15.1	14.6	3.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.694		46.4	45.4	2.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.061		28.9	29.7	-2.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.073		58.9	59.3	-0.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8365		30.1	29.7	1.5	30.0
13C2 PFHxA	Ave	1.039	1.148		11.0	10.0	10.4	30.0
13C2 PFDA	Ave	0.7921	0.9021		11.4	10.0	13.9	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242156/14 Calibration Date: 08/27/2018 00:30

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.115		132	135	-2.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.095		15.1	14.6	3.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.694		46.4	45.4	2.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.061		28.9	29.7	-2.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.073		58.9	59.3	-0.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8365		30.1	29.7	1.5	30.0
13C2 PFHxA	Ave	1.039	1.148		11.0	10.0	10.4	30.0
13C2 PFDA	Ave	0.7921	0.9021		11.4	10.0	13.9	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_017.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 27-Aug-2018 00:30:56 ALS Bottle#: 5 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	11367602	131.6		21187	
298.90 > 99.00	1.366	1.366	0.0	1.000	8215143		1.38(0.00-0.00)	15523	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	920949	11.0		10269	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	5798099	46.4		3765	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	1280496	15.1		330	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		802241	10.0		6103	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.813	0.0	1.000	2527639	28.9		394	
413.00 > 169.00	1.813	1.813	0.0	1.000	1354716		1.87(0.00-0.00)	4009	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2163583	28.7		6539	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	1993046	30.1		279	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	4799303	58.9		8042	
499.00 > 99.00	2.071	2.109	-0.038	1.000	1043594		4.60(0.00-0.00)	2976	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	723717	11.4		3625	

Reagents:

LC537-L5_00026 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_017.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 27-Aug-2018 00:30:56 ALS Bottle#: 5 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:58:16 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	11367602	131.6		21187	
298.90 > 99.00	1.366	1.366	0.0	1.000	8215143		1.38(0.00-0.00)	15523	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	920949	11.0		10269	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	5798099	46.4		3765	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	1280496	15.1		330	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		802241	10.0		6103	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.813	0.0	1.000	2527639	28.9		394	
413.00 > 169.00	1.813	1.813	0.0	1.000	1354716		1.87(0.00-0.00)	4009	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2163583	28.7		6539	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	1993046	30.1		279	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	4799303	58.9		8042	
499.00 > 99.00	2.071	2.109	-0.038	1.000	1043594		4.60(0.00-0.00)	2976	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	723717	11.4		3625	

Reagents:

LC537-L5_00026 Amount Added: 1.00 Units: mL

Report Date: 27-Aug-2018 14:58:17 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_017.d

Injection Date: 27-Aug-2018 00:30:56 Instrument ID: A8_N

Lims ID: CCV L5

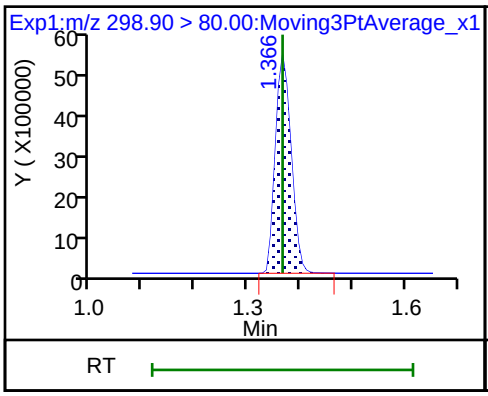
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 14

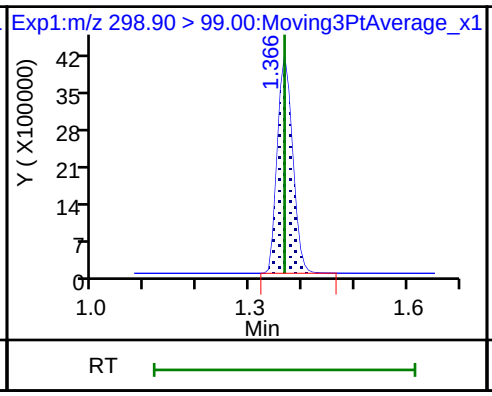
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

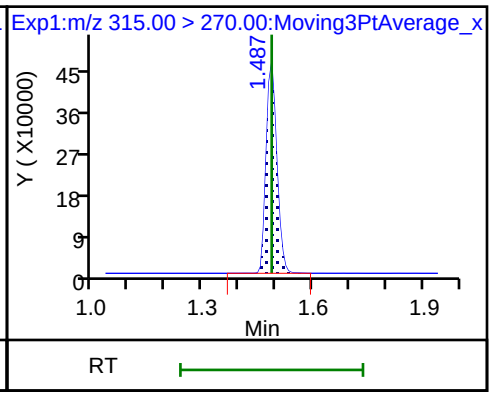
1 Perfluorobutanesulfonic acid



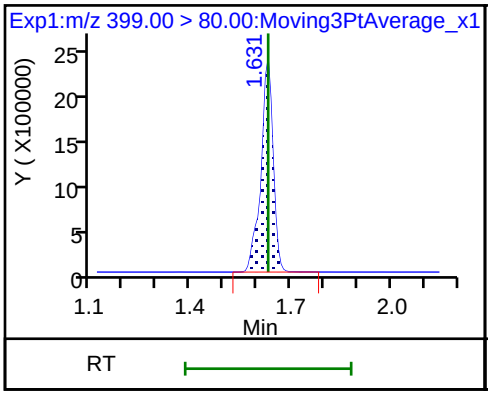
1 Perfluorobutanesulfonic acid



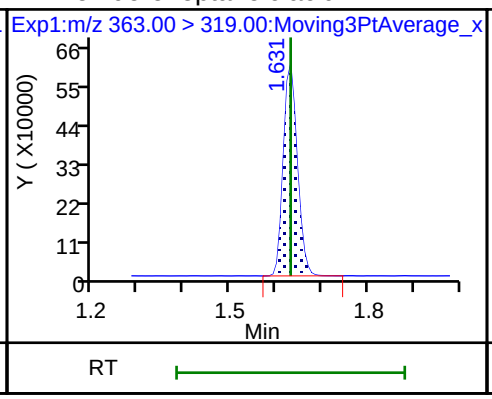
$ 2 13C2 PFHxA



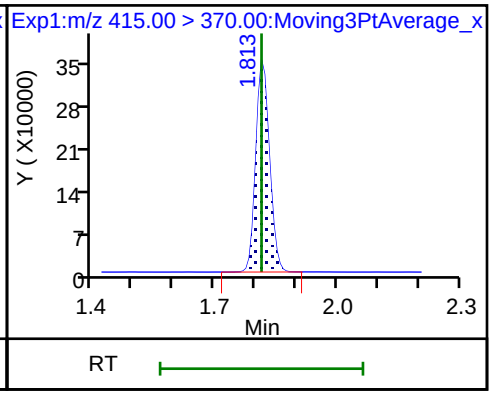
3 Perfluorohexanesulfonic acid



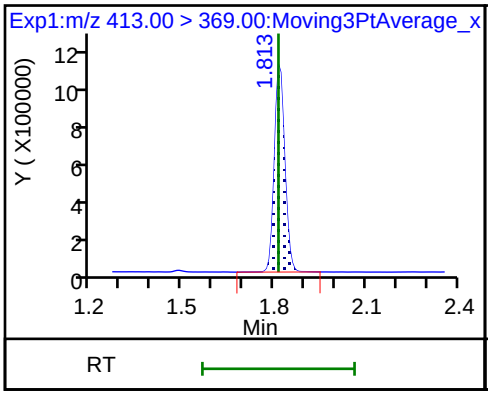
4 Perfluoroheptanoic acid



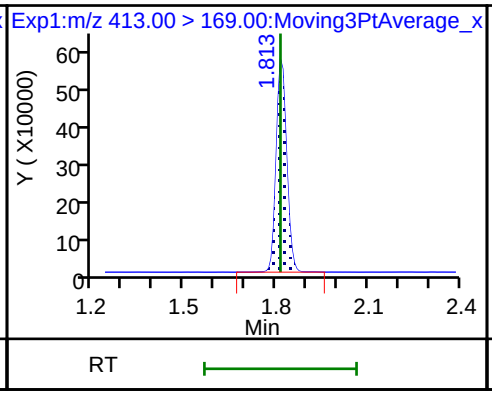
* 6 13C2-PFOA



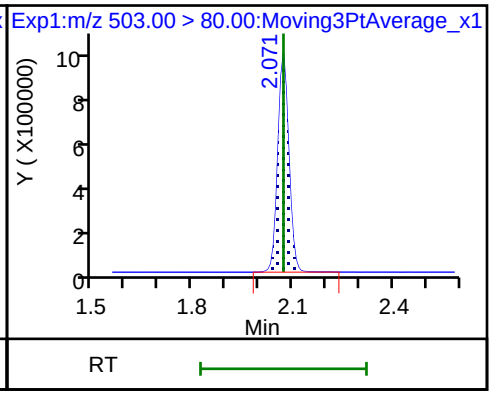
5 Perfluorooctanoic acid



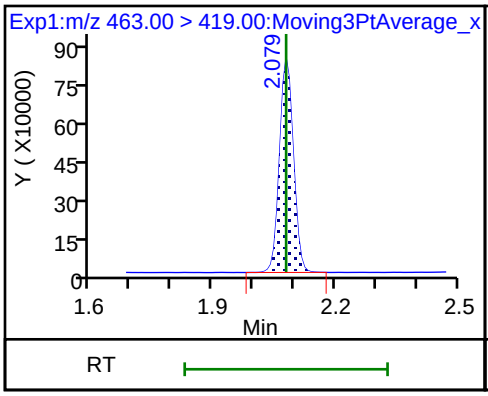
5 Perfluorooctanoic acid



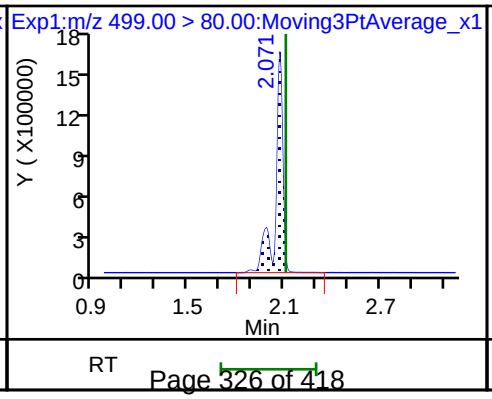
* 7 13C4 PFOS



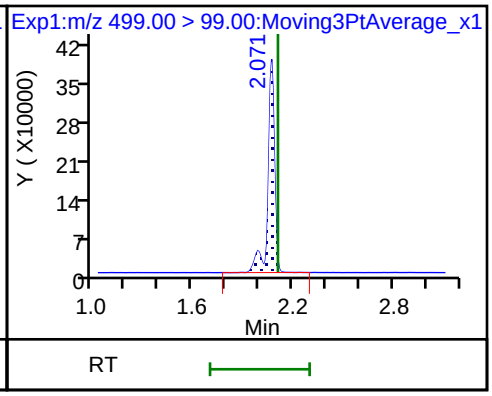
9 Perfluorononanoic acid



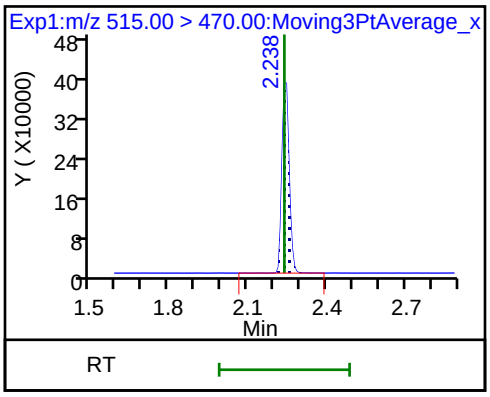
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA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2.238
Y (X10000)
48
40
32
24
16
8
0
1.5
1.8
2.1
2.4
2.7
Min
RT

Report Date: 27-Aug-2018 14:58:17 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_017.d

Injection Date: 27-Aug-2018 00:30:56 Instrument ID: A8_N

Lims ID: CCV L5

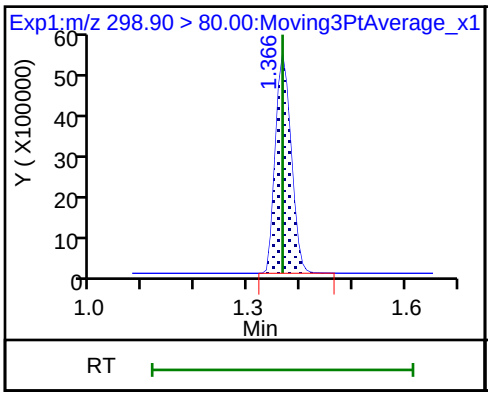
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 14

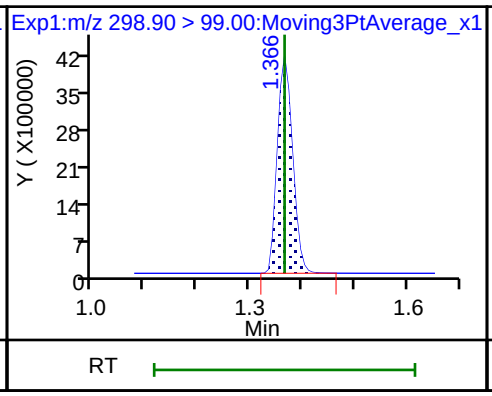
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

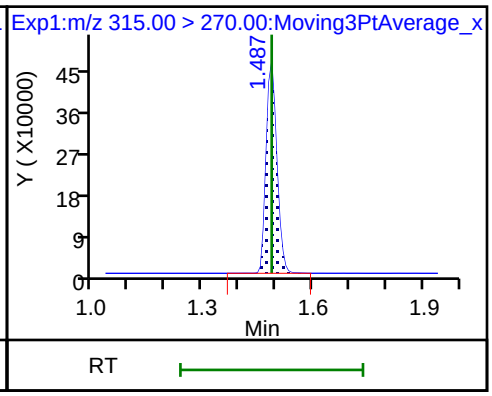
1 Perfluorobutanesulfonic acid



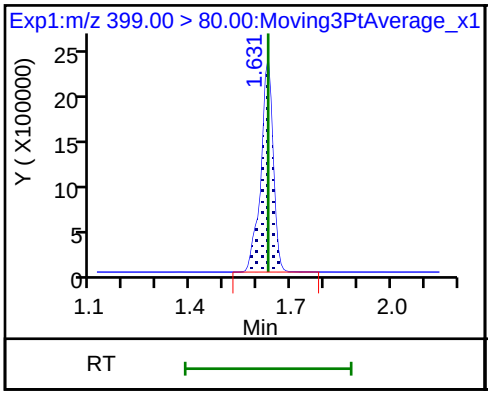
1 Perfluorobutanesulfonic acid



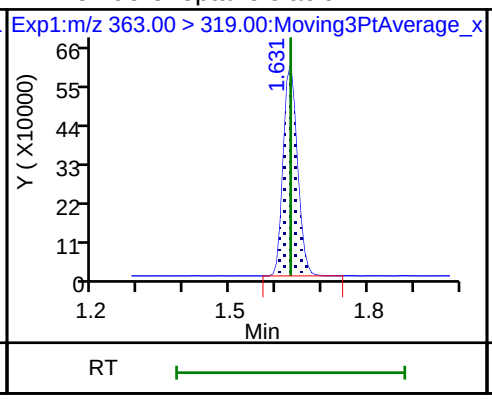
$ 2 13C2 PFHxA



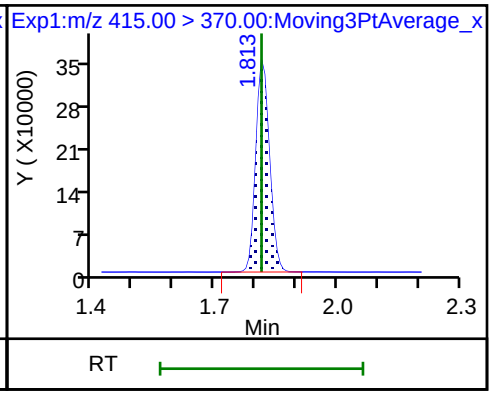
3 Perfluorohexanesulfonic acid



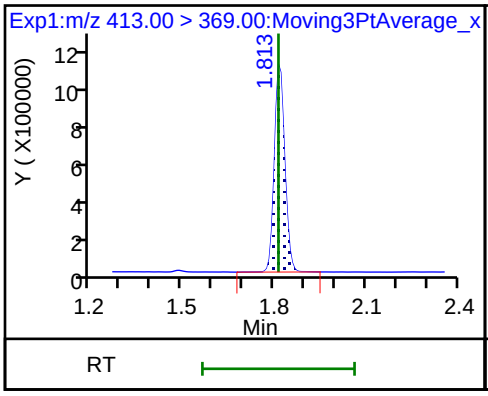
4 Perfluoroheptanoic acid



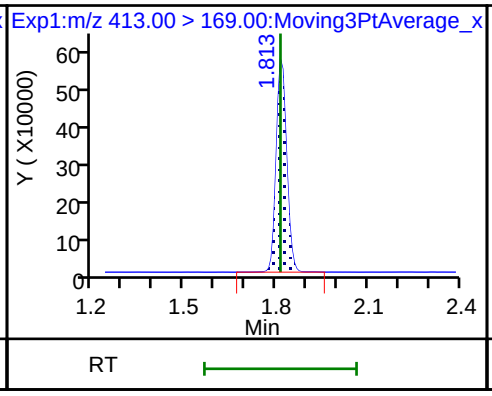
* 6 13C2-PFOA



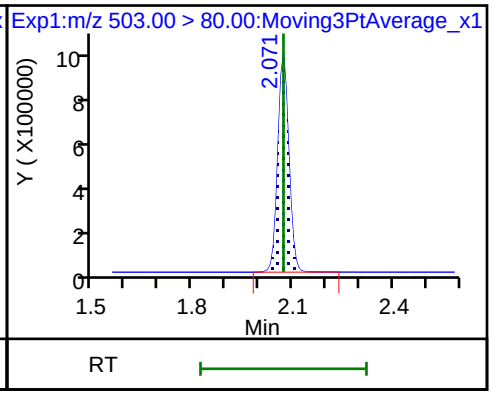
5 Perfluorooctanoic acid



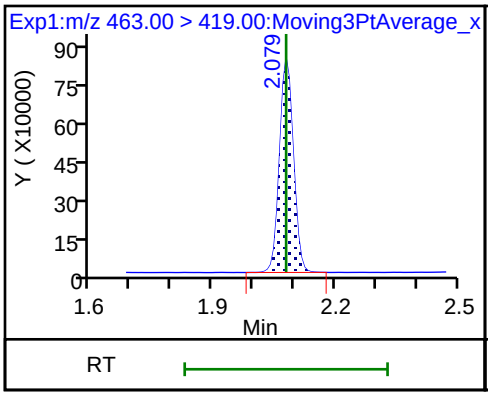
5 Perfluorooctanoic acid



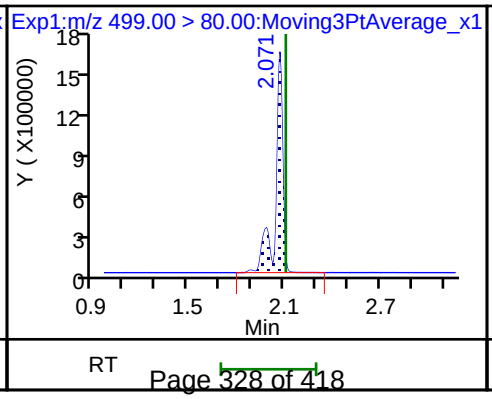
* 7 13C4 PFOS



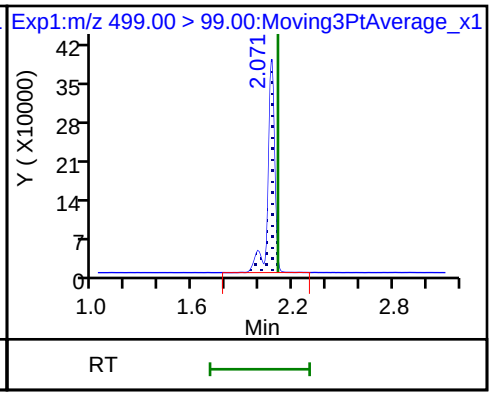
9 Perfluorononanoic acid



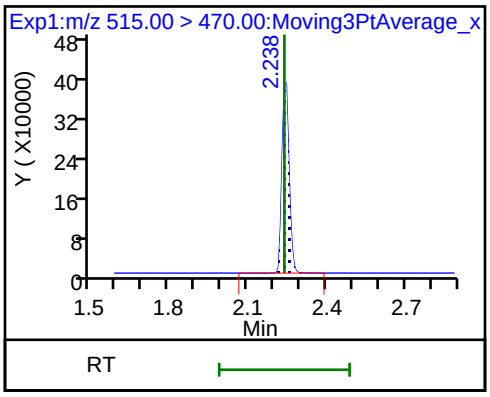
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA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40
32
24
16
8
0
1.5
1.8
2.1
2.4
2.7
Min
RT

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242156/26 Calibration Date: 08/27/2018 01:27

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.272		50.0	45.0	11.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.092		5.02	4.86	3.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.725		15.7	15.1	4.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.069		9.71	9.90	-1.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.069		19.6	19.8	-1.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7980		9.58	9.90	-3.2	30.0
13C2 PFHxA	Ave	1.039	1.147		11.0	10.0	10.4	30.0
13C2 PFDA	Ave	0.7921	0.8814		11.1	10.0	11.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242157/26 Calibration Date: 08/27/2018 01:27

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.272		50.0	45.0	11.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.092		5.02	4.86	3.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.725		15.7	15.1	4.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.069		9.71	9.90	-1.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.069		19.6	19.8	-1.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7980		9.58	9.90	-3.2	30.0
13C2 PFHxA	Ave	1.039	1.147		11.0	10.0	10.4	30.0
13C2 PFDA	Ave	0.7921	0.8814		11.1	10.0	11.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_029.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 27-Aug-2018 01:27:05 ALS Bottle#: 3 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L3
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:58:47 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.358	0.0	1.000	4279833	50.0		13010	
298.90 > 99.00	1.358	1.358	0.0	1.000	2933785		1.46(0.00-0.00)	6008	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.479	0.0	1.000	959412	11.0		10667	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.624	0.0	1.000	1949045	15.7		1422	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.624	0.0	1.000	443590	5.02		111	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		836144	10.0		6148	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.813	0.0	1.000	885035	9.71		143	
413.00 > 169.00	1.813	1.813	0.0	1.000	448866		1.97(0.00-0.00)	1561	
* 7 13C4 PFOS									
503.00 > 80.00	2.064	2.064	0.0		2142935	28.7		5797	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	660568	9.58		92.0	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	1578219	19.6		2957	
499.00 > 99.00	2.071	2.109	-0.038	1.000	350195		4.51(0.00-0.00)	1069	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	736936	11.1		3562	

Reagents:

LC537-L3_00025 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_029.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 27-Aug-2018 01:27:05 ALS Bottle#: 3 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L3
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:58:47 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.358	0.0	1.000	4279833	50.0		13010	
298.90 > 99.00	1.358	1.358	0.0	1.000	2933785		1.46(0.00-0.00)	6008	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.479	0.0	1.000	959412	11.0		10667	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.624	0.0	1.000	1949045	15.7		1422	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.624	0.0	1.000	443590	5.02		111	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		836144	10.0		6148	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.813	0.0	1.000	885035	9.71		143	
413.00 > 169.00	1.813	1.813	0.0	1.000	448866		1.97(0.00-0.00)	1561	
* 7 13C4 PFOS									
503.00 > 80.00	2.064	2.064	0.0		2142935	28.7		5797	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	660568	9.58		92.0	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	1578219	19.6		2957	
499.00 > 99.00	2.071	2.109	-0.038	1.000	350195		4.51(0.00-0.00)	1069	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	736936	11.1		3562	

Reagents:

LC537-L3_00025 Amount Added: 1.00 Units: mL

Report Date: 27-Aug-2018 14:58:49 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_029.d

Injection Date: 27-Aug-2018 01:27:05 Instrument ID: A8_N

Lims ID: CCV L3

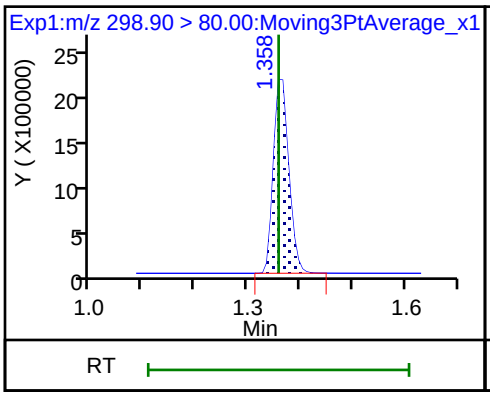
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 26

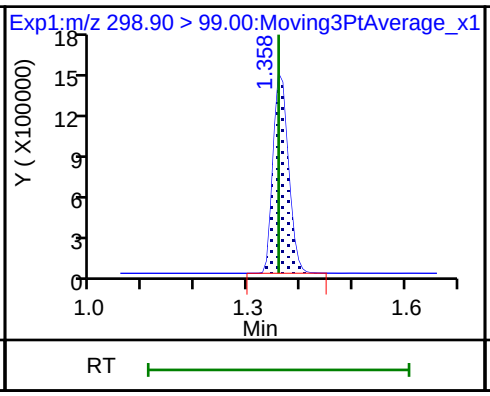
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

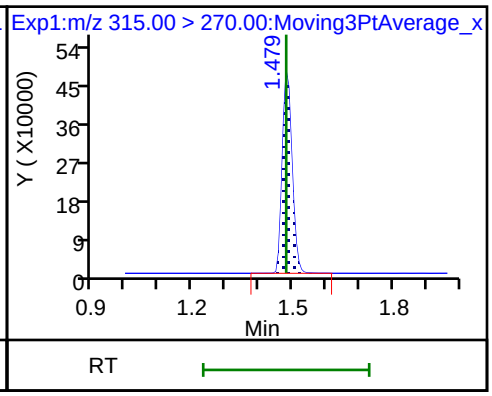
1 Perfluorobutanesulfonic acid



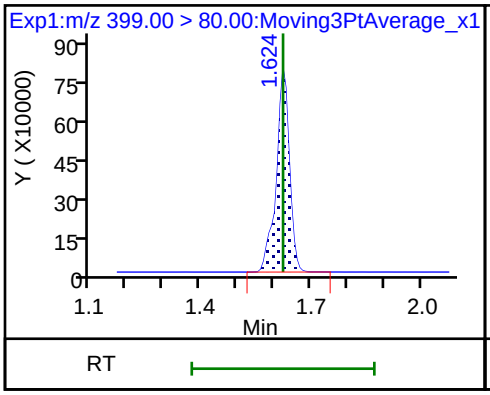
1 Perfluorobutanesulfonic acid



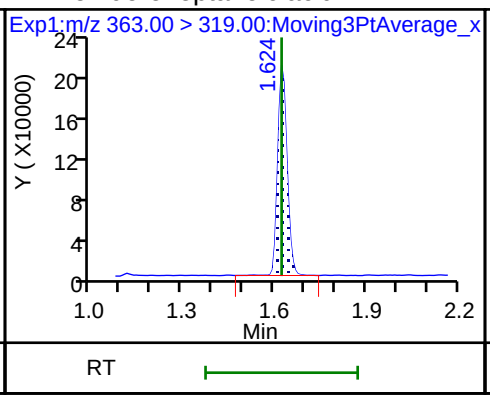
$ 2 13C2 PFHxA



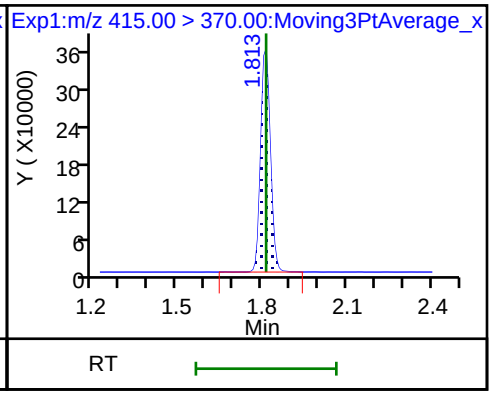
3 Perfluorohexanesulfonic acid



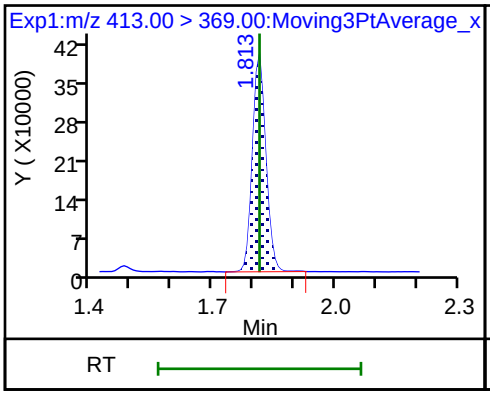
4 Perfluoroheptanoic acid



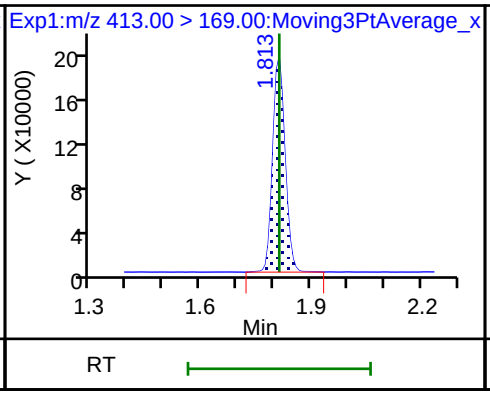
* 6 13C2-PFOA



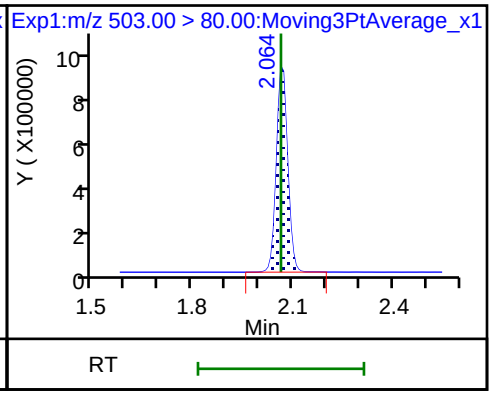
5 Perfluorooctanoic acid



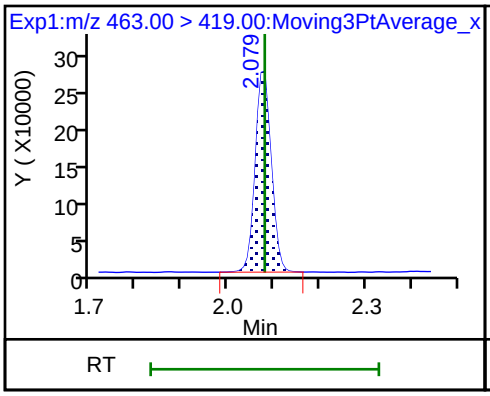
5 Perfluorooctanoic acid



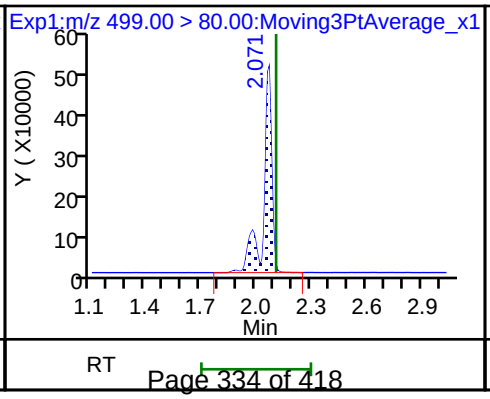
* 7 13C4 PFOS



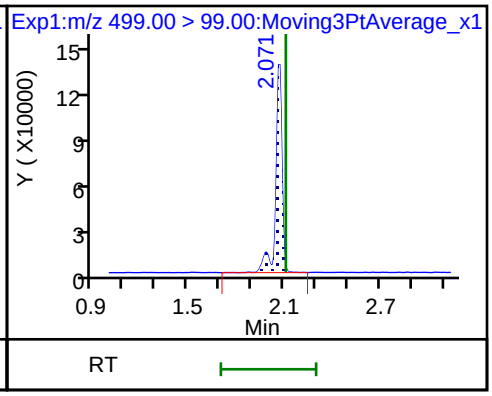
9 Perfluorononanoic acid



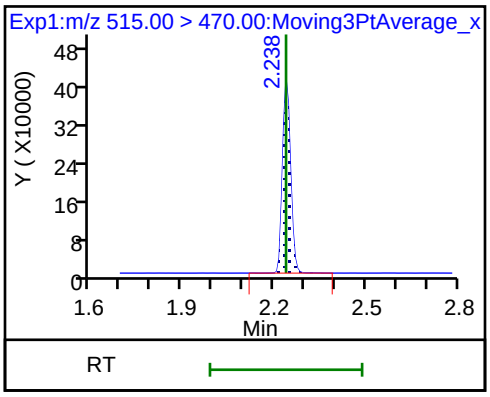
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA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2.238
Y (X10000)
48
40
32
24
16
8
0
1.6
1.9
2.2
2.5
2.8
Min
RT

Report Date: 27-Aug-2018 14:58:48 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_029.d

Injection Date: 27-Aug-2018 01:27:05 Instrument ID: A8_N

Lims ID: CCV L3

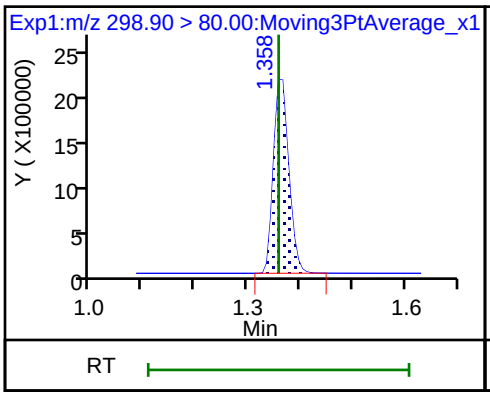
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 26

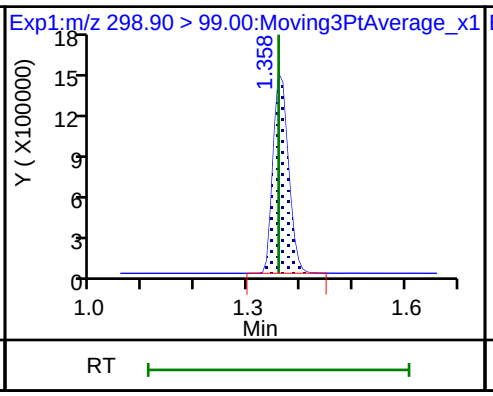
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

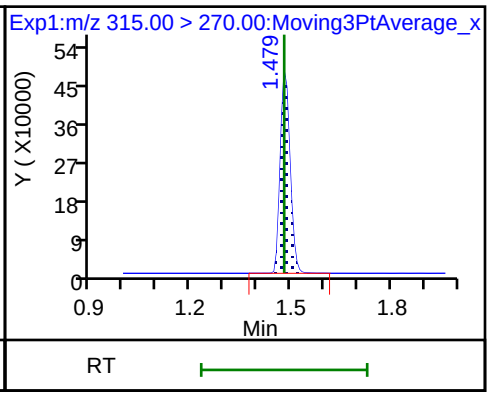
1 Perfluorobutanesulfonic acid



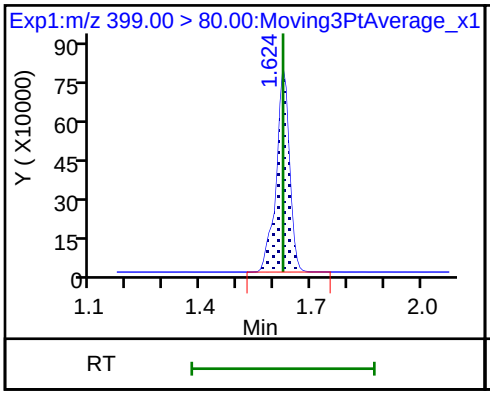
1 Perfluorobutanesulfonic acid



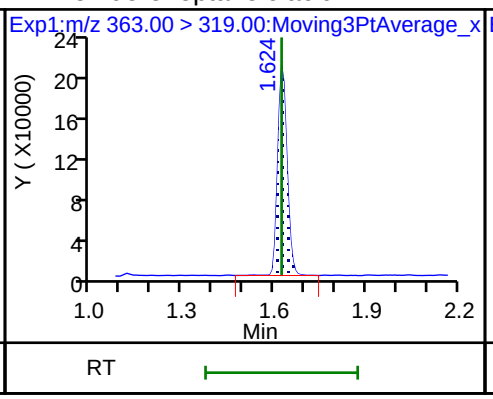
$ 2 13C2 PFHxA



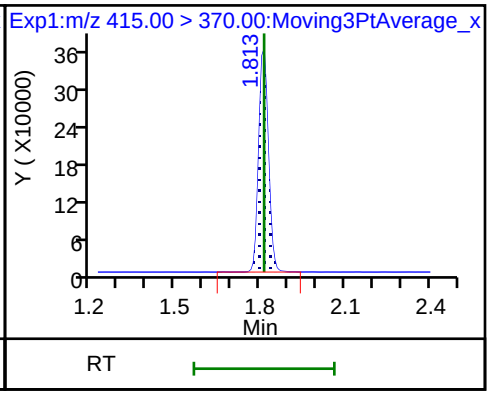
3 Perfluorohexanesulfonic acid



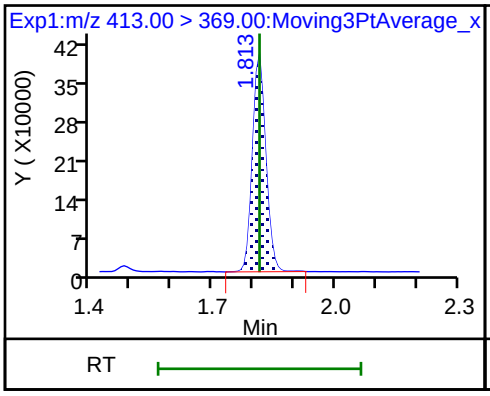
4 Perfluoroheptanoic acid



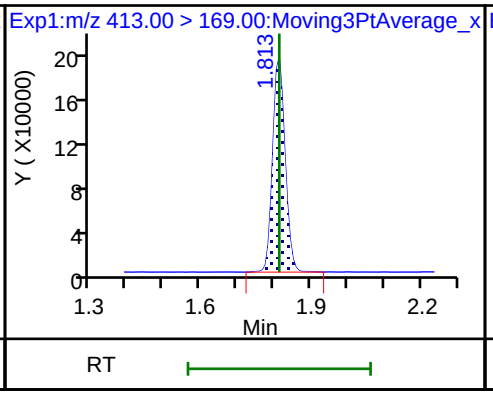
* 6 13C2-PFOA



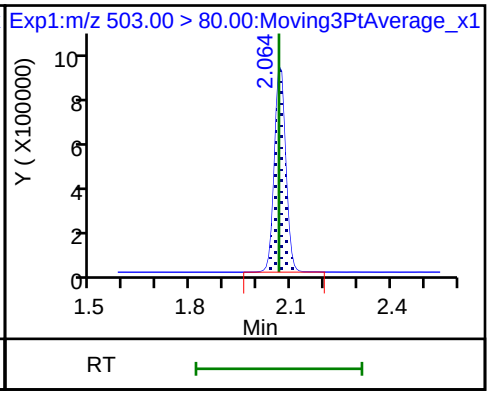
5 Perfluorooctanoic acid



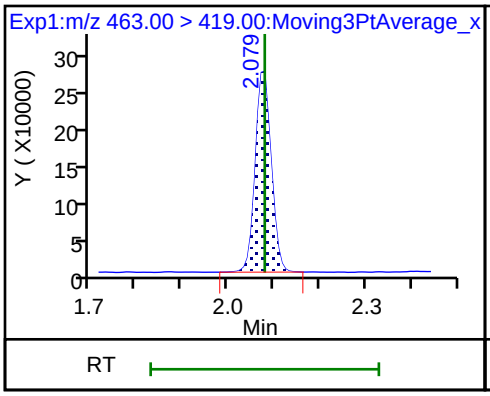
5 Perfluorooctanoic acid



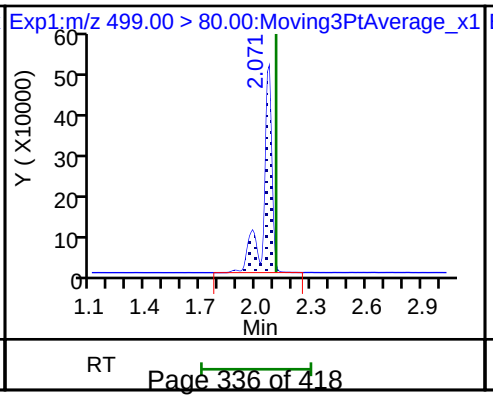
* 7 13C4 PFOS



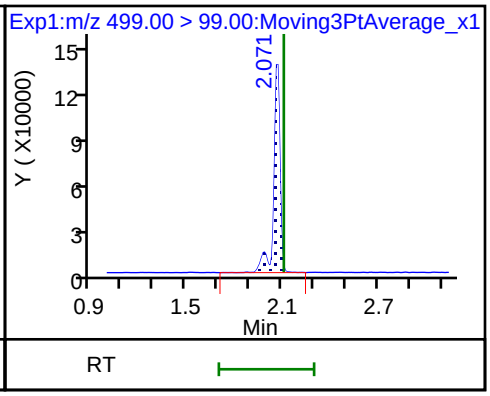
9 Perfluorononanoic acid



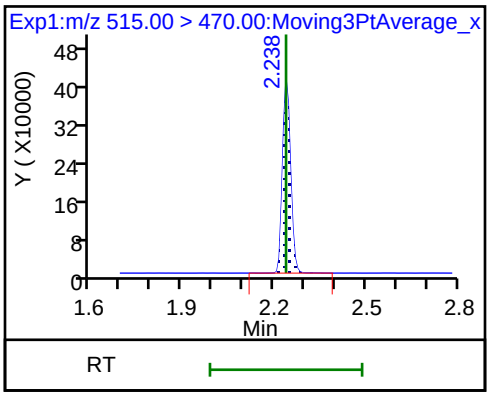
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA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Y (X10000)
48
40
32
24
16
8
0
1.6
1.9
2.2
2.5
2.8
Min
RT

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242157/31 Calibration Date: 08/27/2018 01:50

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_034.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.118		132	135	-2.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.141		15.7	14.6	7.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.752		48.0	45.4	5.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.109		30.2	29.7	1.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.092		59.9	59.3	1.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8018		28.9	29.7	-2.7	30.0
13C2 PFHxA	Ave	1.039	1.113		10.7	10.0	7.1	30.0
13C2 PFDA	Ave	0.7921	0.9007		11.4	10.0	13.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242160/31 Calibration Date: 08/27/2018 01:50

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_034.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.118		132	135	-2.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.141		15.7	14.6	7.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.752		48.0	45.4	5.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.109		30.2	29.7	1.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.092		59.9	59.3	1.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8018		28.9	29.7	-2.7	30.0
13C2 PFHxA	Ave	1.039	1.113		10.7	10.0	7.1	30.0
13C2 PFDA	Ave	0.7921	0.9007		11.4	10.0	13.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_034.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 27-Aug-2018 01:50:27 ALS Bottle#: 5 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:59:33 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	11459986	131.9		18402	
298.90 > 99.00	1.366	1.366	0.0	1.000	8086794		1.42(0.00-0.00)	13670	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	917350	10.7		10311	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	6034118	48.0		3858	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	1370908	15.7		327	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		824422	10.0		7130	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.813	0.0	1.000	2714508	30.2		437	
413.00 > 169.00	1.813	1.813	0.0	1.000	1410299		1.92(0.00-0.00)	4359	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2176602	28.7		6007	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	1963163	28.9		275	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	4912312	59.9		8720	
499.00 > 99.00	2.071	2.109	-0.038	1.000	1073494		4.58(0.00-0.00)	3155	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	742549	11.4		3967	

Reagents:

LC537-L5_00026 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_034.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 27-Aug-2018 01:50:27 ALS Bottle#: 5 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:59:33 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	11459986	131.9		18402	
298.90 > 99.00	1.366	1.366	0.0	1.000	8086794		1.42(0.00-0.00)	13670	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	917350	10.7		10311	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	6034118	48.0		3858	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	1370908	15.7		327	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		824422	10.0		7130	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.813	0.0	1.000	2714508	30.2		437	
413.00 > 169.00	1.813	1.813	0.0	1.000	1410299		1.92(0.00-0.00)	4359	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2176602	28.7		6007	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	1963163	28.9		275	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	4912312	59.9		8720	
499.00 > 99.00	2.071	2.109	-0.038	1.000	1073494		4.58(0.00-0.00)	3155	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	742549	11.4		3967	

Reagents:

LC537-L5_00026 Amount Added: 1.00 Units: mL

Report Date: 27-Aug-2018 14:59:34 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_034.d

Injection Date: 27-Aug-2018 01:50:27 Instrument ID: A8_N

Lims ID: CCV L5

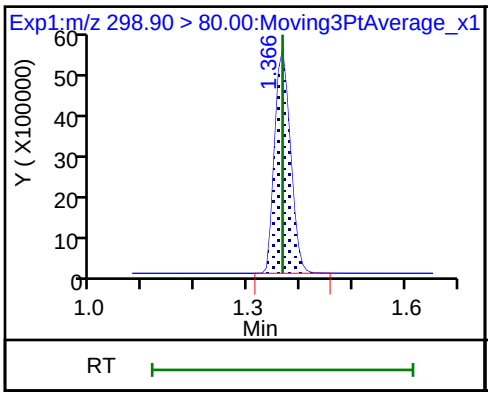
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 31

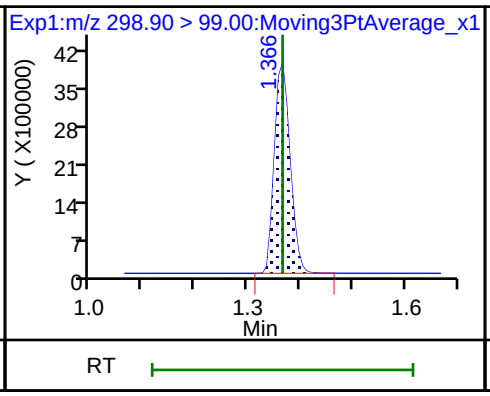
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

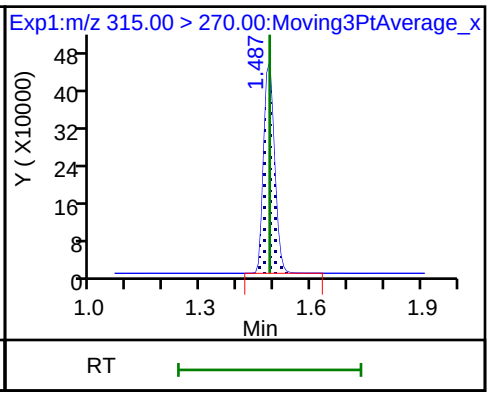
1 Perfluorobutanesulfonic acid



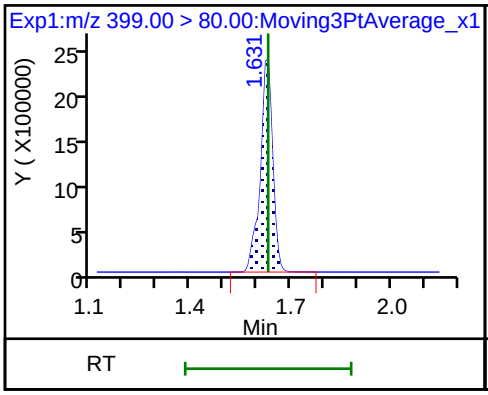
1 Perfluorobutanesulfonic acid



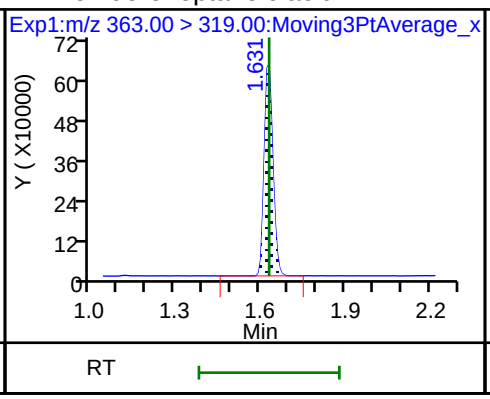
$ 2 13C2 PFHxA



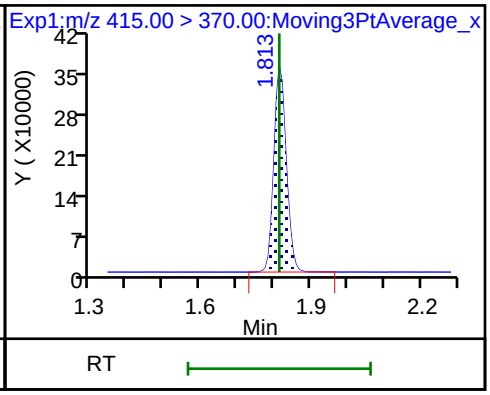
3 Perfluorohexanesulfonic acid



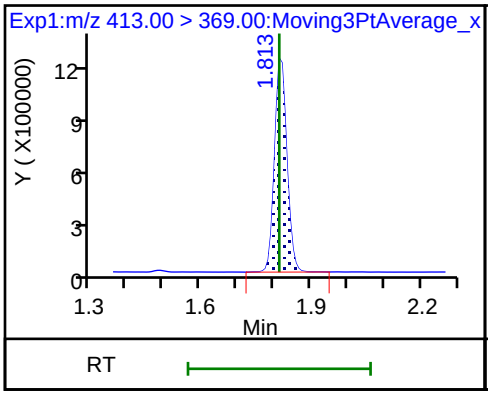
4 Perfluoroheptanoic acid



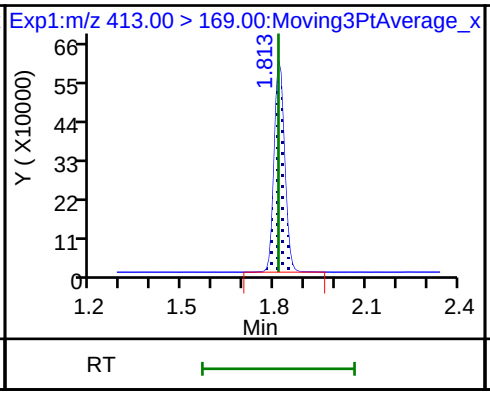
* 6 13C2-PFOA



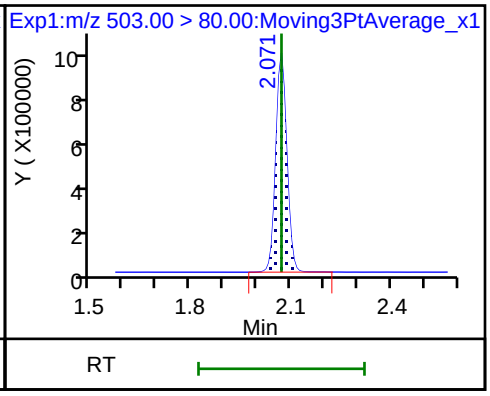
5 Perfluorooctanoic acid



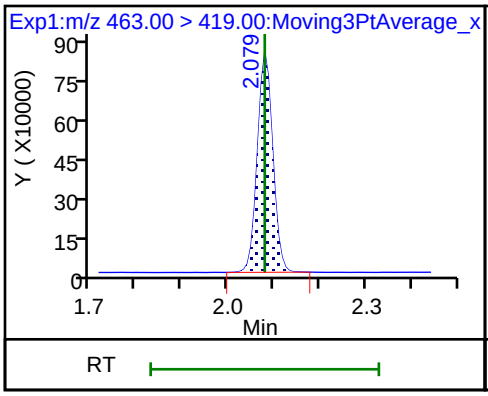
5 Perfluorooctanoic acid



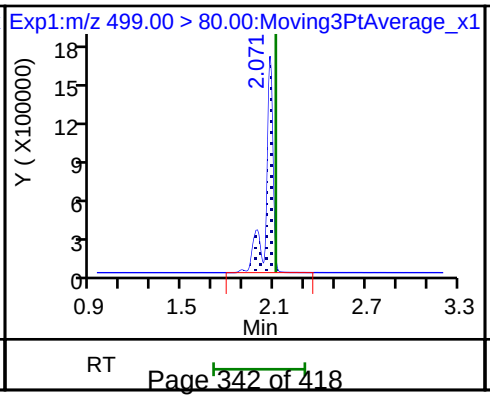
* 7 13C4 PFOS



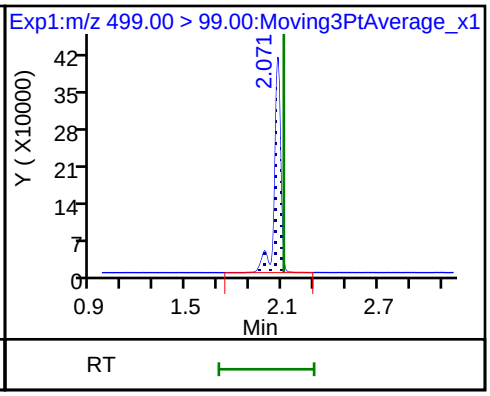
9 Perfluorononanoic acid



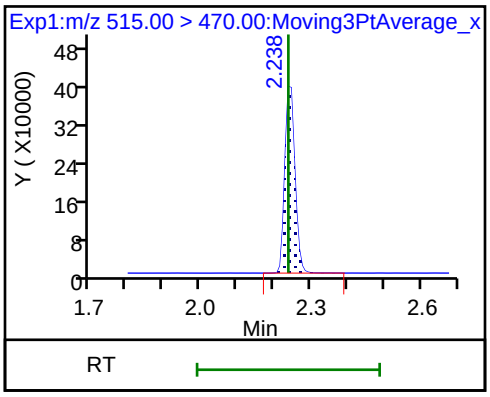
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.238
Y (X10000)
48
40
32
24
16
8
0
1.7
2.0
2.3
2.6
Min
RT

Report Date: 27-Aug-2018 14:59:34 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_034.d

Injection Date: 27-Aug-2018 01:50:27 Instrument ID: A8_N

Lims ID: CCV L5

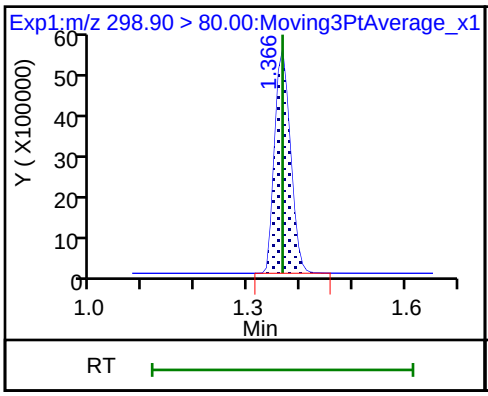
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 31

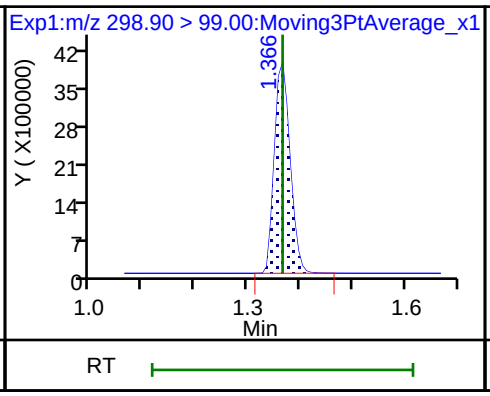
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

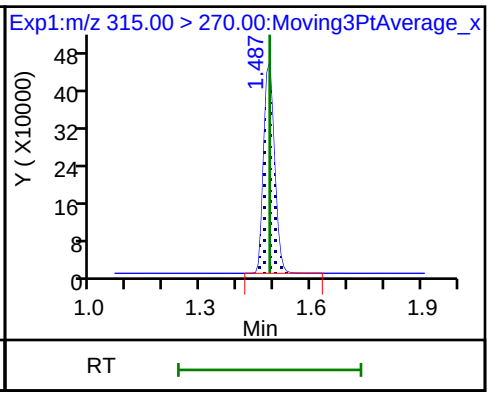
1 Perfluorobutanesulfonic acid



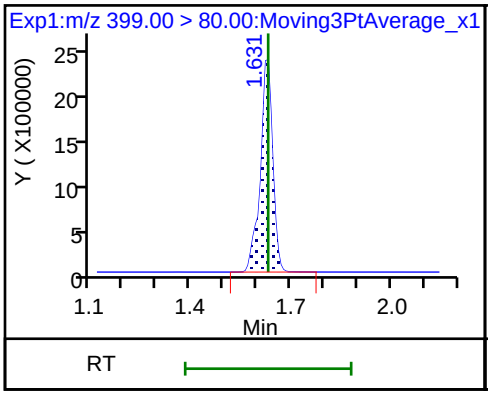
1 Perfluorobutanesulfonic acid



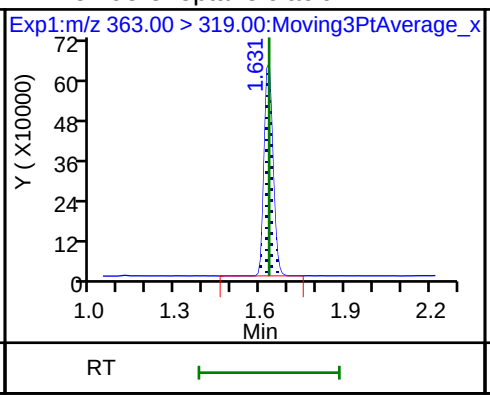
$ 2 13C2 PFHxA



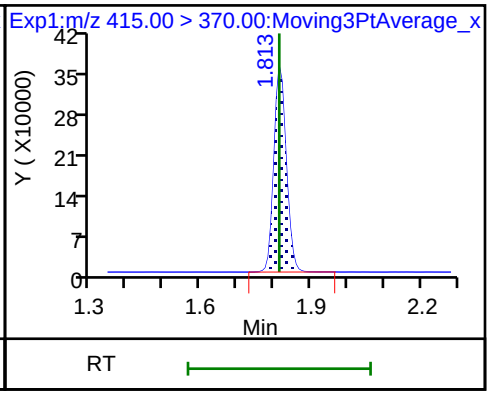
3 Perfluorohexanesulfonic acid



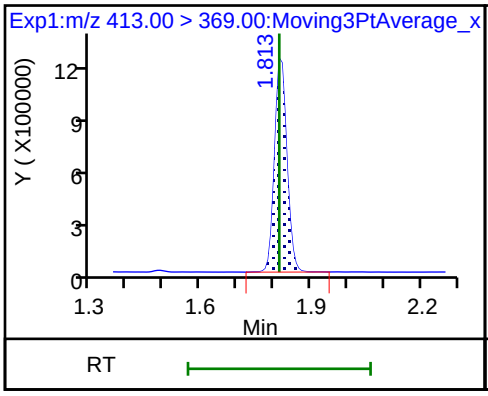
4 Perfluoroheptanoic acid



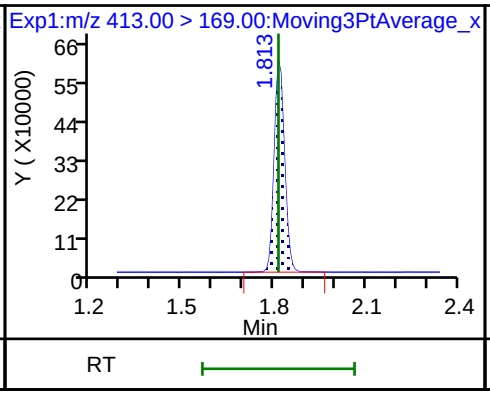
* 6 13C2-PFOA



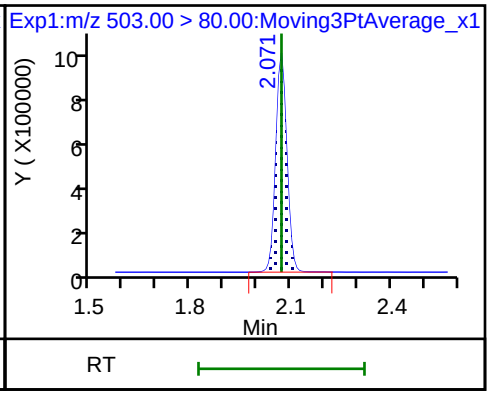
5 Perfluorooctanoic acid



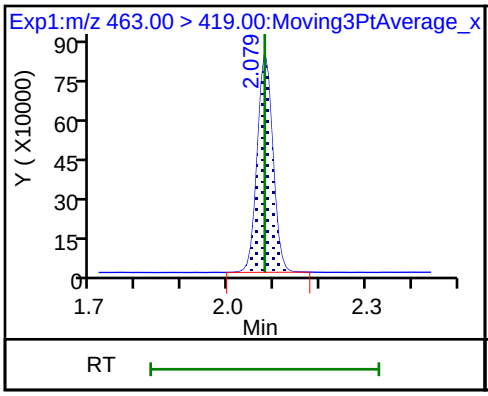
5 Perfluorooctanoic acid



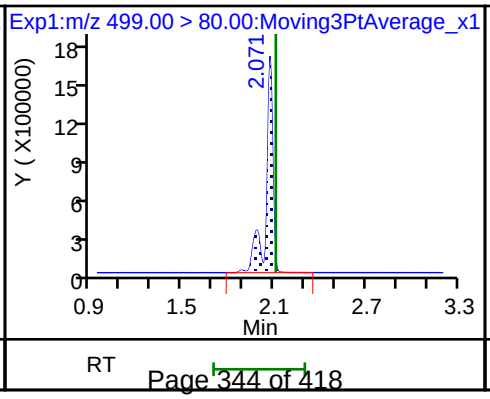
* 7 13C4 PFOS



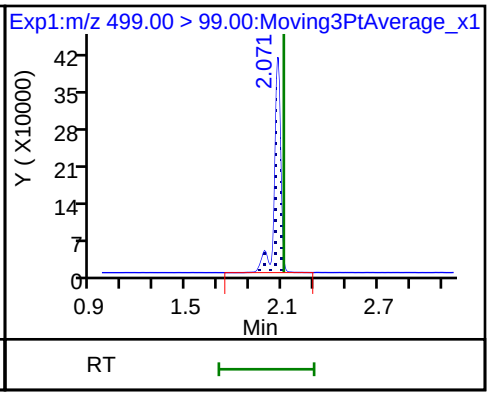
9 Perfluorononanoic acid



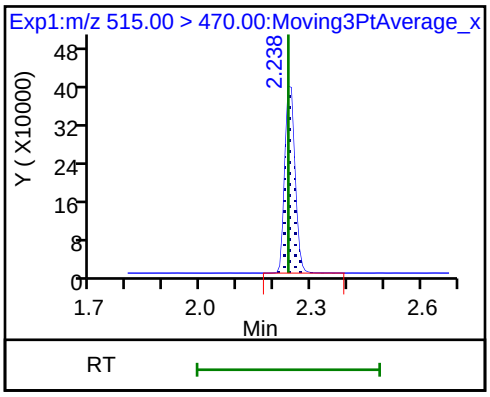
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA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40
32
24
16
8
0
1.7
2.0
2.3
2.6
Min
RT

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242160/43 Calibration Date: 08/27/2018 02:46

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_046.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.287		50.6	45.0	12.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.131		5.20	4.86	7.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.698		15.5	15.1	2.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.068		9.71	9.90	-2.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.088		19.9	19.8	0.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7983		9.59	9.90	-3.2	30.0
13C2 PFHxA	Ave	1.039	1.143		11.0	10.0	10.0	30.0
13C2 PFDA	Ave	0.7921	0.9013		11.4	10.0	13.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242161/43 Calibration Date: 08/27/2018 02:46

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_046.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
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Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.088		19.9	19.8	0.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7983		9.59	9.90	-3.2	30.0
13C2 PFHxA	Ave	1.039	1.143		11.0	10.0	10.0	30.0
13C2 PFDA	Ave	0.7921	0.9013		11.4	10.0	13.8	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_046.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 27-Aug-2018 02:46:34 ALS Bottle#: 3 Worklist Smp#: 43
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L3
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:31:39 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 15:23:26

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	4097796	50.6		12763	
298.90 > 99.00	1.366	1.366	0.0	1.000	2795811		1.47(0.00-0.00)	6227	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	903418	11.0		9640	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	1816250	15.5		1290	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	434450	5.20		113	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		790234	10.0		6714	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.821	1.821	0.0	1.000	835681	9.71		126	
413.00 > 169.00	1.813	1.821	-0.008	0.996	444193		1.88(0.00-0.00)	1773	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2027772	28.7		5720	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	624514	9.59		91.0	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	1519974	19.9		2936	
499.00 > 99.00	2.071	2.109	-0.038	1.000	333424		4.56(0.00-0.00)	995	
$ 10 13C2 PFDA									
515.00 > 470.00	2.246	2.246	0.0	1.000	712208	11.4		4030	

Reagents:

LC537-L3_00025 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_046.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 27-Aug-2018 02:46:34 ALS Bottle#: 3 Worklist Smp#: 43
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L3
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:31:39 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 15:23:26

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	4097796	50.6		12763	
298.90 > 99.00	1.366	1.366	0.0	1.000	2795811		1.47(0.00-0.00)	6227	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	903418	11.0		9640	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	1816250	15.5		1290	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	434450	5.20		113	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		790234	10.0		6714	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.821	1.821	0.0	1.000	835681	9.71		126	
413.00 > 169.00	1.813	1.821	-0.008	0.996	444193		1.88(0.00-0.00)	1773	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2027772	28.7		5720	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	624514	9.59		91.0	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	1519974	19.9		2936	
499.00 > 99.00	2.071	2.109	-0.038	1.000	333424		4.56(0.00-0.00)	995	
$ 10 13C2 PFDA									
515.00 > 470.00	2.246	2.246	0.0	1.000	712208	11.4		4030	

Reagents:

LC537-L3_00025 Amount Added: 1.00 Units: mL

Report Date: 27-Aug-2018 15:31:40 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_046.d

Injection Date: 27-Aug-2018 02:46:34 Instrument ID: A8_N

Lims ID: CCV L3

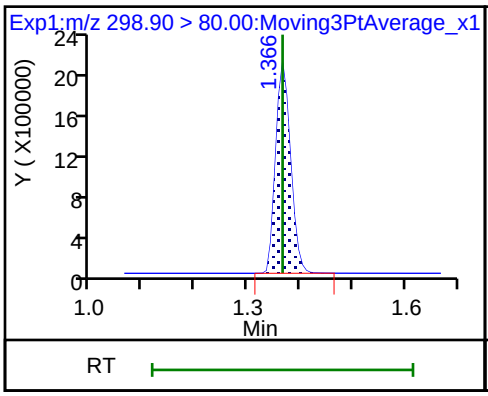
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 43

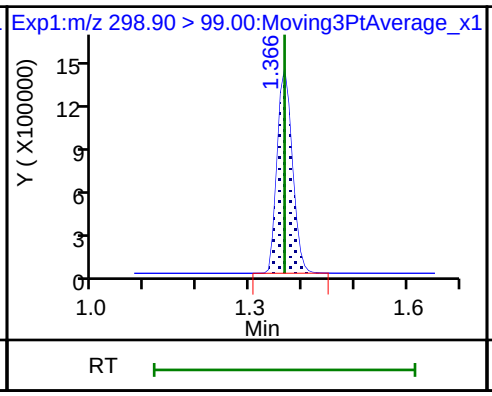
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

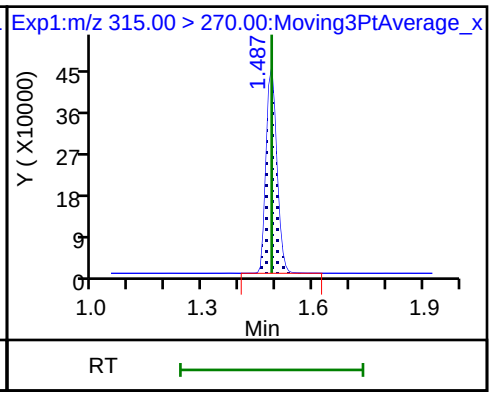
1 Perfluorobutanesulfonic acid



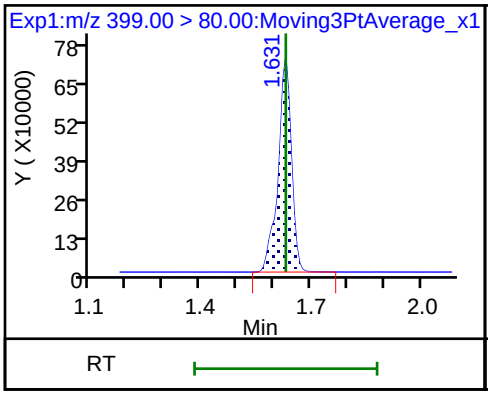
1 Perfluorobutanesulfonic acid



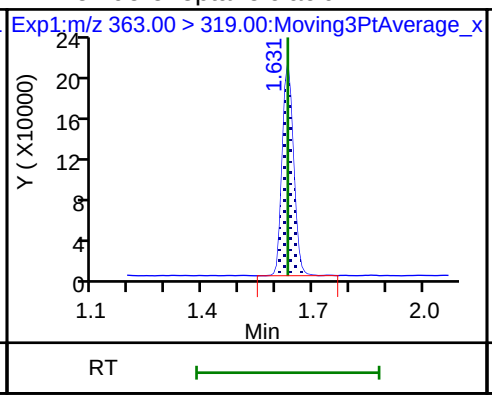
$ 2 13C2 PFHxA



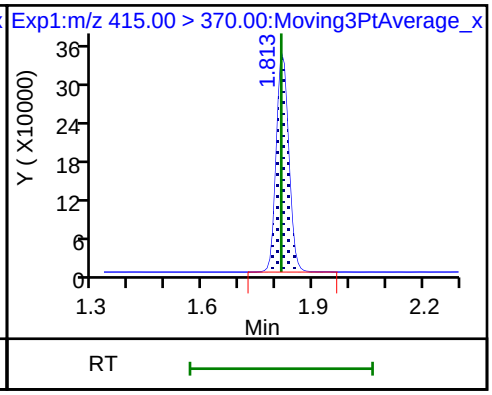
3 Perfluorohexanesulfonic acid



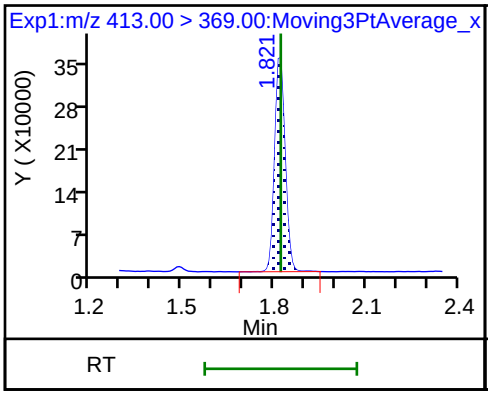
4 Perfluoroheptanoic acid



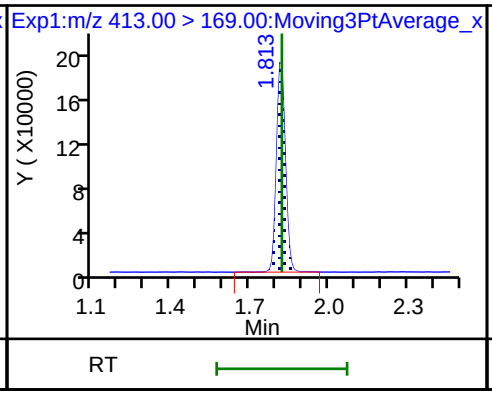
* 6 13C2-PFOA



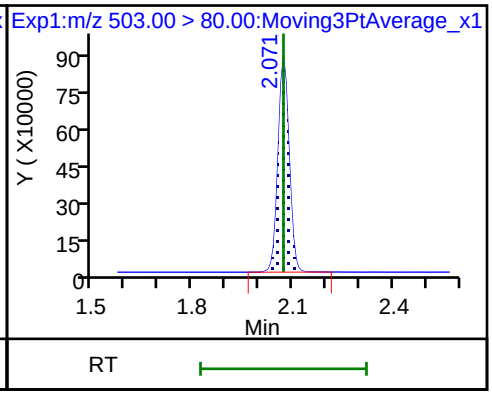
5 Perfluorooctanoic acid



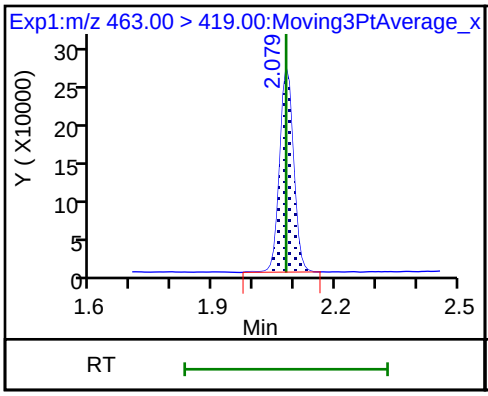
5 Perfluorooctanoic acid



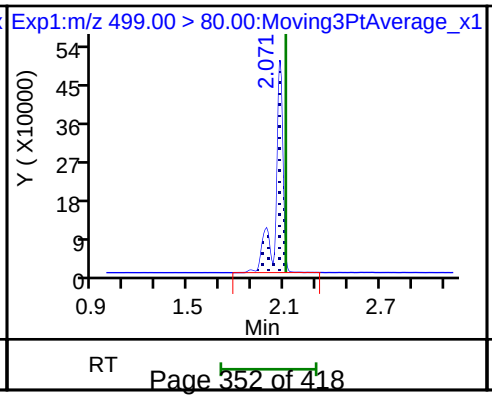
* 7 13C4 PFOS



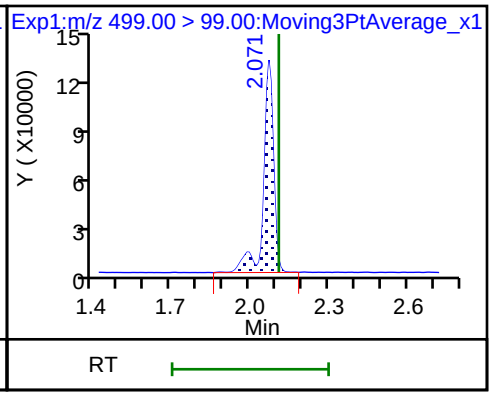
9 Perfluorononanoic acid



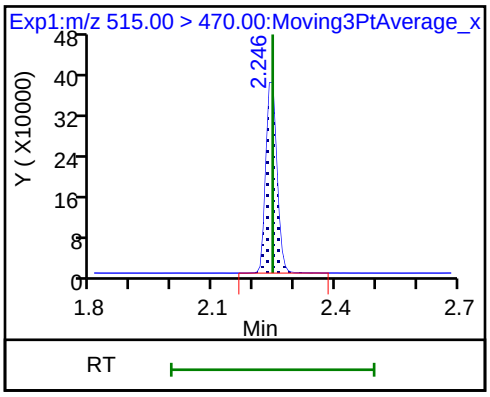
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA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2.246
Y (X10000)
48
40
32
24
16
8
0
1.8
2.1
2.4
2.7
Min
RT

Report Date: 27-Aug-2018 15:31:40 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_046.d

Injection Date: 27-Aug-2018 02:46:34 Instrument ID: A8_N

Lims ID: CCV L3

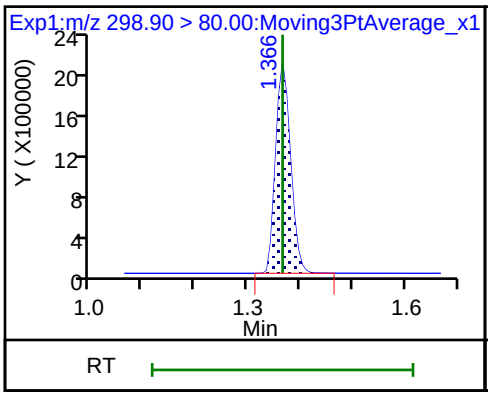
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 43

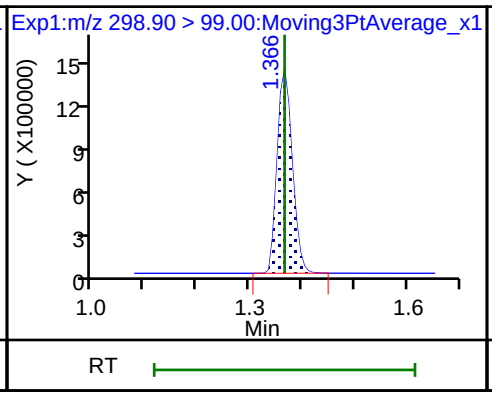
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

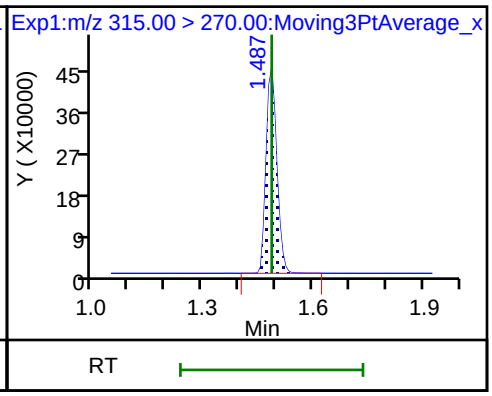
1 Perfluorobutanesulfonic acid



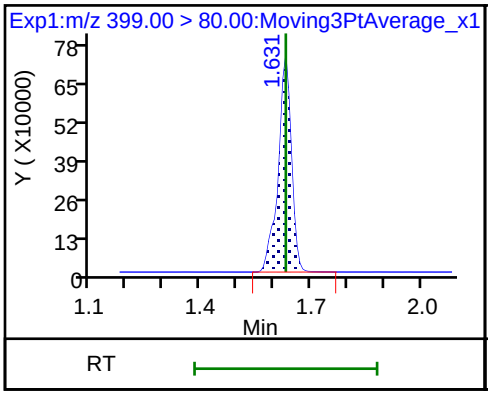
1 Perfluorobutanesulfonic acid



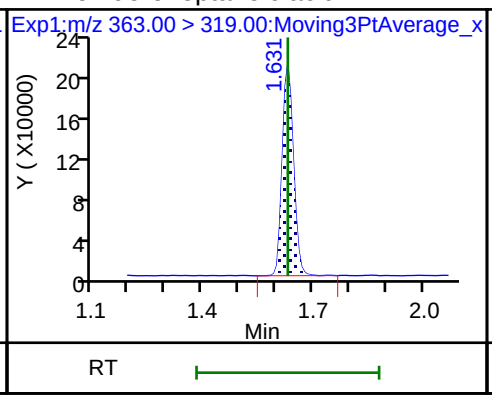
$ 2 13C2 PFHxA



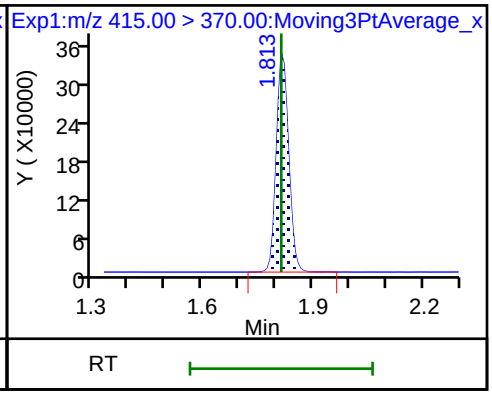
3 Perfluorohexanesulfonic acid



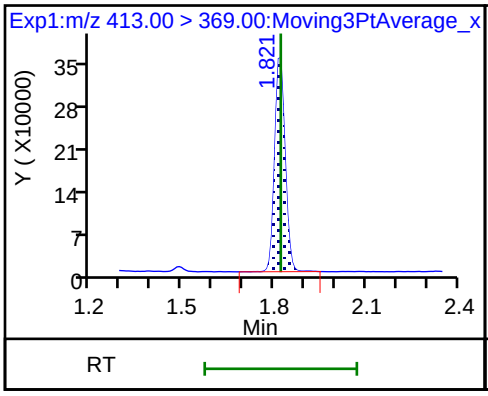
4 Perfluoroheptanoic acid



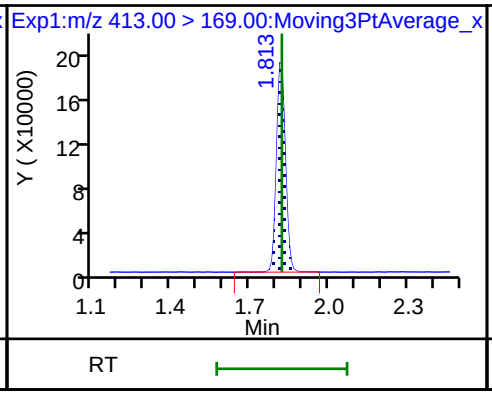
* 6 13C2-PFOA



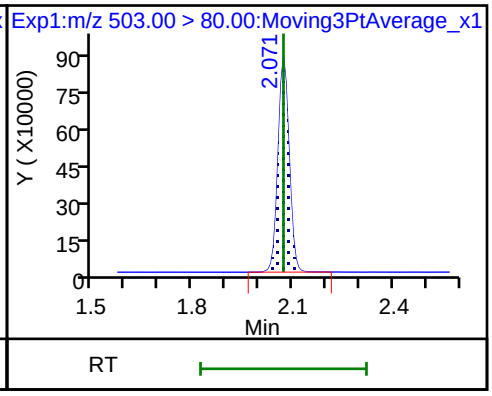
5 Perfluorooctanoic acid



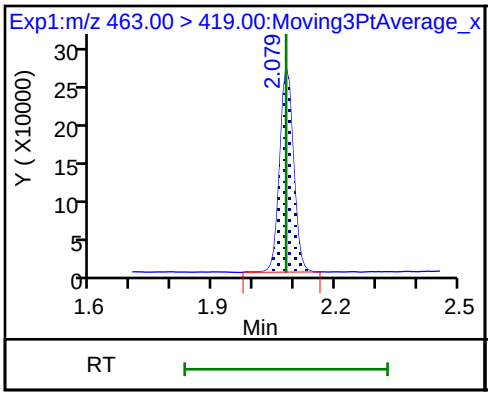
5 Perfluorooctanoic acid



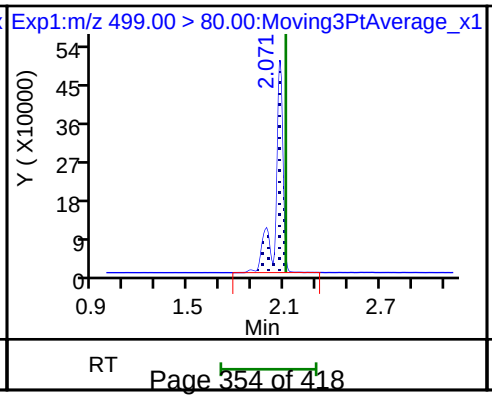
* 7 13C4 PFOS



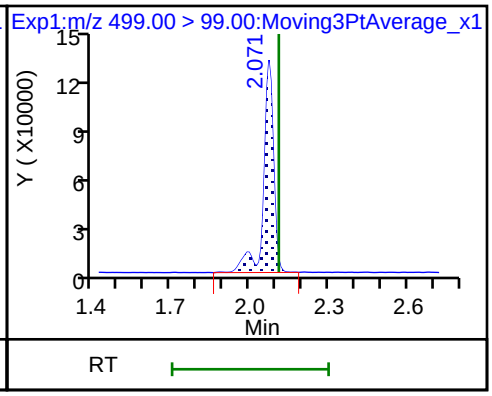
9 Perfluorononanoic acid



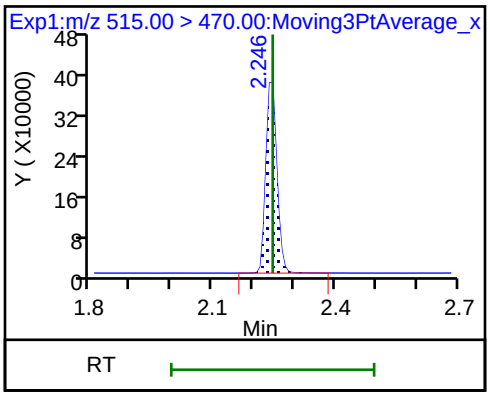
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


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

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242161/55 Calibration Date: 08/27/2018 03:42

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_058.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.134		134	135	-1.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.125		15.5	14.6	6.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.727		47.3	45.4	4.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.093		29.8	29.7	0.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.086		59.6	59.3	0.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8218		29.6	29.7	-0.3	30.0
13C2 PFHxA	Ave	1.039	1.165		11.2	10.0	12.1	30.0
13C2 PFDA	Ave	0.7921	0.9175		11.6	10.0	15.8	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_058.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 27-Aug-2018 03:42:46 ALS Bottle#: 5 Worklist Smp#: 55
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:32:35 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	10796902	133.8		20061	
298.90 > 99.00	1.366	1.366	0.0	1.000	7726557		1.40(0.00-0.00)	13342	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	879419	11.2		10458	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	5525201	47.3		3540	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	1238119	15.5		304	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		754707	10.0		5907	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.813	0.0	1.000	2450183	29.8		385	
413.00 > 169.00	1.813	1.813	0.0	1.000	1324244		1.85(0.00-0.00)	4594	
* 7 13C4 PFOS									
503.00 > 80.00	2.064	2.064	0.0		2022100	28.7		5013	
9 Perfluorononanoic acid									
463.00 > 419.00	2.071	2.071	0.0	1.000	1841953	29.6		261	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.064	2.109	-0.045	1.000	4541375	59.6		7112	
499.00 > 99.00	2.064	2.109	-0.045	1.000	1004105		4.52(0.00-0.00)	2568	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	692445	11.6		3729	

Reagents:

LC537-L5_00026 Amount Added: 1.00 Units: mL

Report Date: 27-Aug-2018 15:32:36 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_058.d

Injection Date: 27-Aug-2018 03:42:46 Instrument ID: A8_N

Lims ID: CCV L5

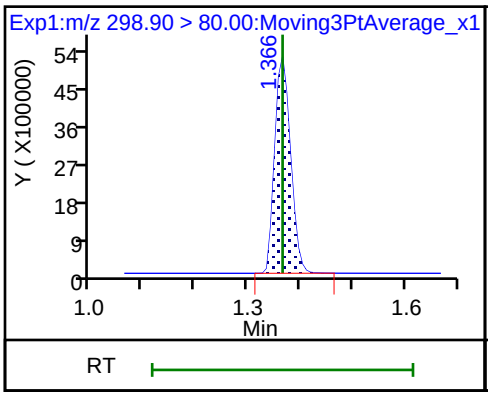
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 55

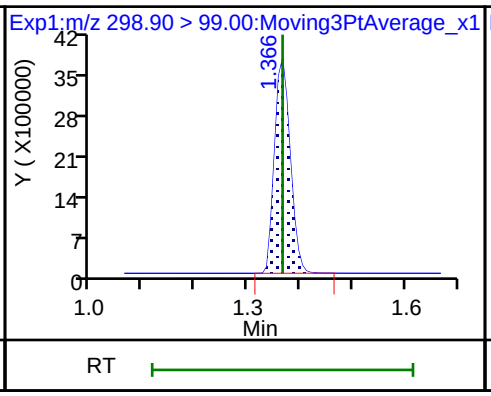
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

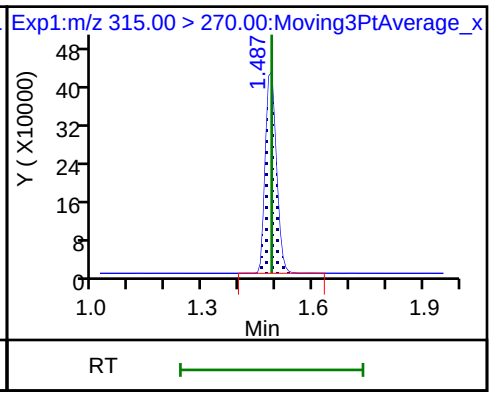
1 Perfluorobutanesulfonic acid



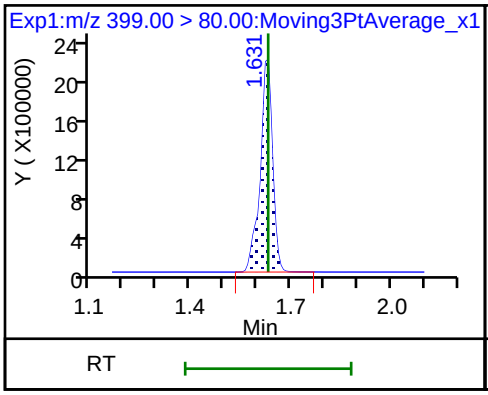
1 Perfluorobutanesulfonic acid



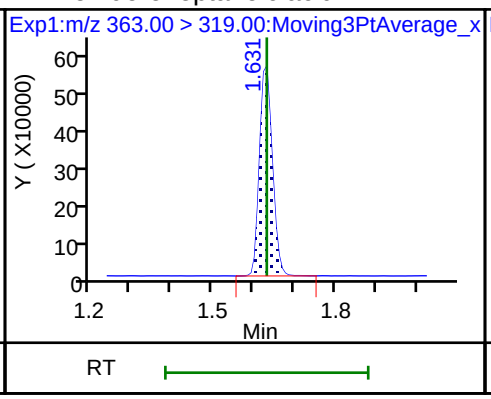
$ 2 13C2 PFHxA



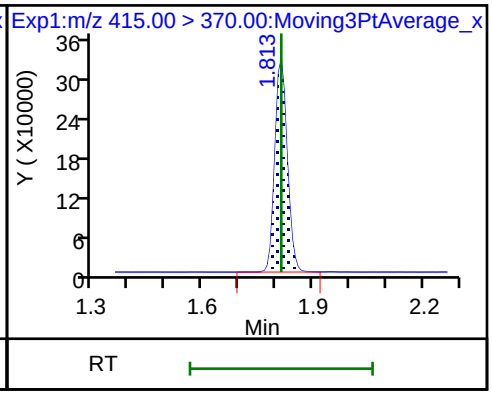
3 Perfluorohexanesulfonic acid



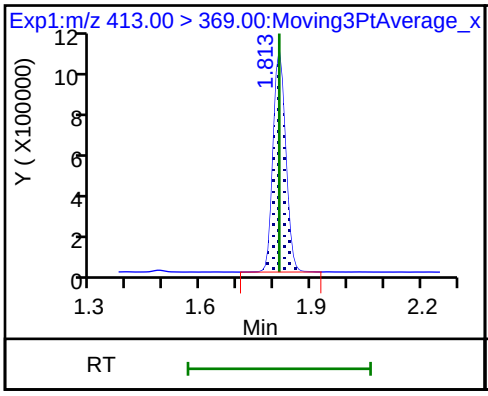
4 Perfluoroheptanoic acid



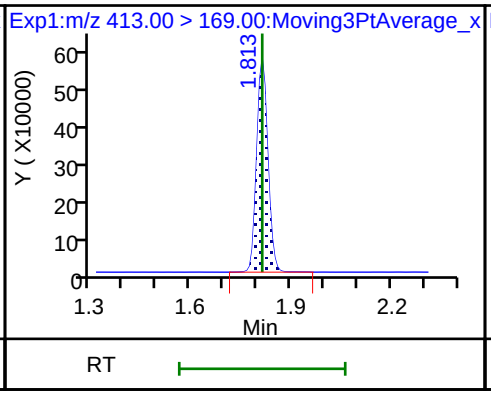
* 6 13C2-PFOA



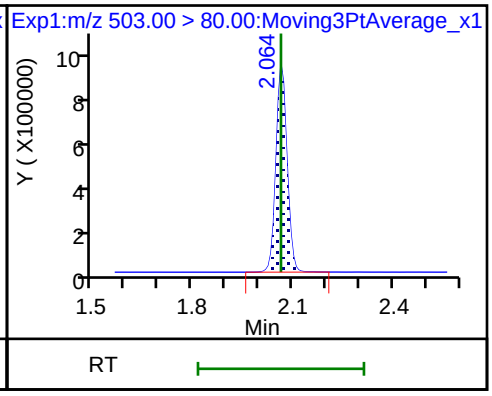
5 Perfluorooctanoic acid



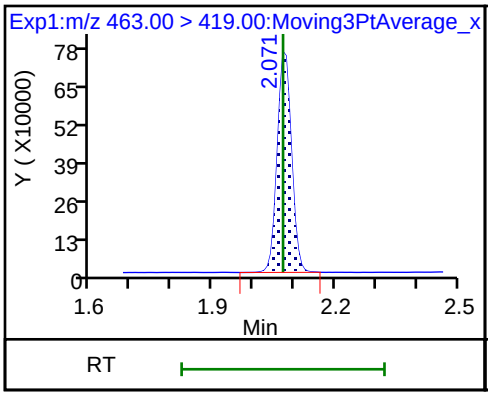
5 Perfluorooctanoic acid



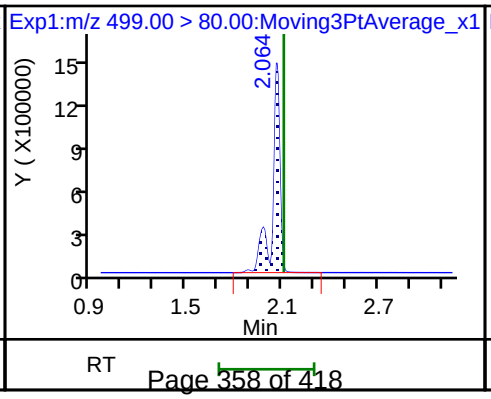
* 7 13C4 PFOS



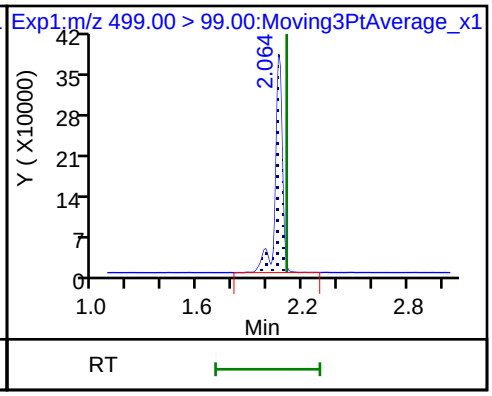
9 Perfluorononanoic acid



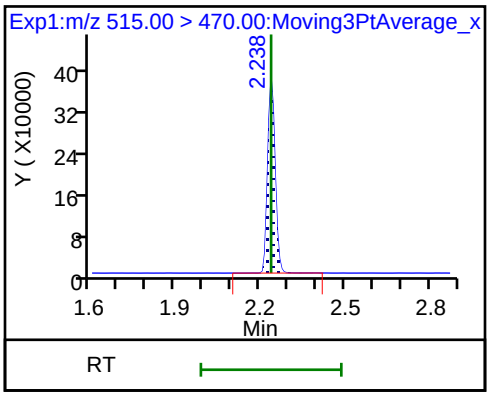
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.238
Y (X10000)
40
32
24
16
8
0
1.6
1.9
2.2
2.5
2.8
Min
RT

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCVL 320-242684/1 Calibration Date: 08/28/2018 23:22

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.28_537A_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.171		20.5	20.0	2.3	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.017		2.08	2.16	-3.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.581		6.42	6.72	-4.5	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.003		4.05	4.40	-8.0	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.021		8.30	8.79	-5.5	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7737		4.13	4.40	-6.1	50.0
13C2 PFHxA	Ave	1.039	1.087		10.5	10.0	4.6	30.0
13C2 PFDA	Ave	0.7921	0.8736		11.0	10.0	10.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_003.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 28-Aug-2018 23:22:25 ALS Bottle#: 2 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCVL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 10:27:00 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	2235878	20.5		9577	
298.90 > 99.00	1.366	1.366	0.0	1.000	1553855		1.44(0.00-0.00)	5119	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.479	0.008	1.000	1208123	10.5		10184	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.639	1.624	0.015	1.000	1014308	6.42		726	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.639	1.624	0.015	1.000	244226	2.08		71.8	
* 6 13C2-PFOA									
415.00 > 370.00	1.836	1.813	0.023		1111468	10.0		7847	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.836	1.813	0.023	1.000	490374	4.05		71.1	
413.00 > 169.00	1.836	1.813	0.023	1.000	269200		1.82(0.00-0.00)	810	
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.071	0.023		2737262	28.7		8418	
9 Perfluorononanoic acid									
463.00 > 419.00	2.102	2.079	0.023	1.000	378365	4.13		71.1	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.094	2.109	-0.015	1.000	855819	8.30		1709	
499.00 > 99.00	2.094	2.109	-0.015	1.000	182942		4.68(0.00-0.00)	728	
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.238	0.015	1.000	971021	11.0		4834	

Reagents:

LC537-L2_00022 Amount Added: 1.00 Units: mL

Report Date: 29-Aug-2018 10:27:01 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_003.d

Injection Date: 28-Aug-2018 23:22:25 Instrument ID: A8_N

Lims ID: CCVL

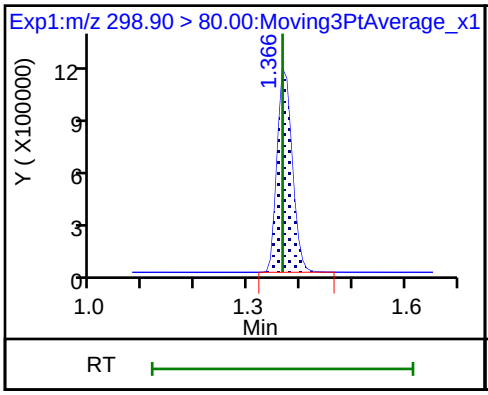
Client ID:

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

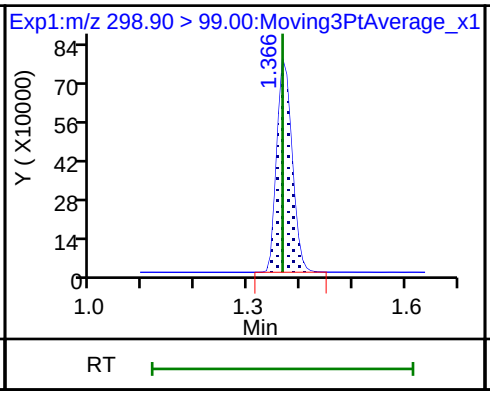
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

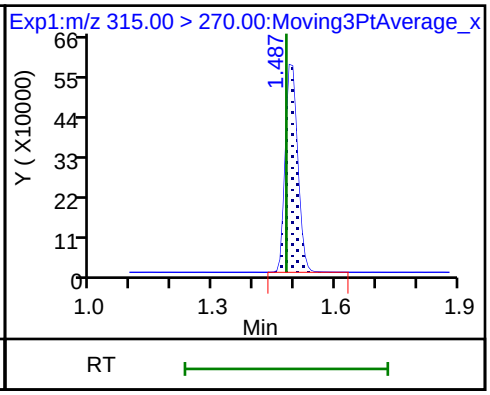
1 Perfluorobutanesulfonic acid



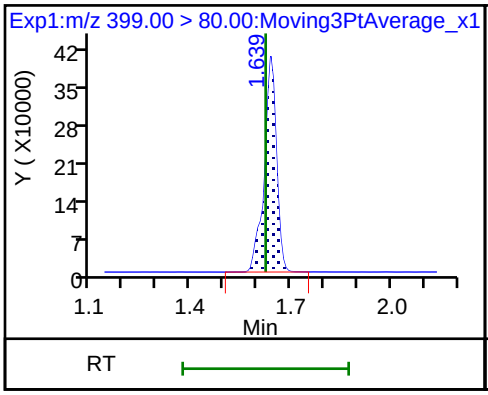
1 Perfluorobutanesulfonic acid



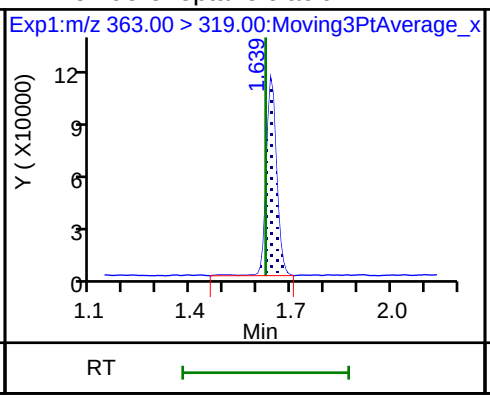
$ 2 13C2 PFHxA



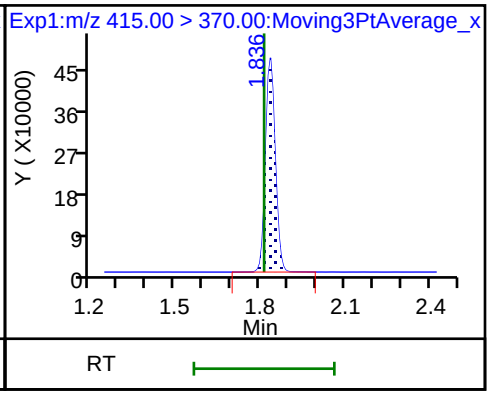
3 Perfluorohexanesulfonic acid



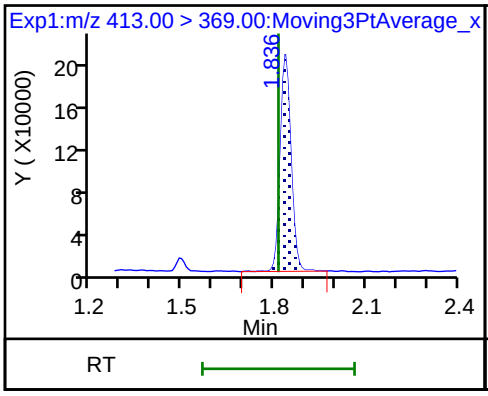
4 Perfluoroheptanoic acid



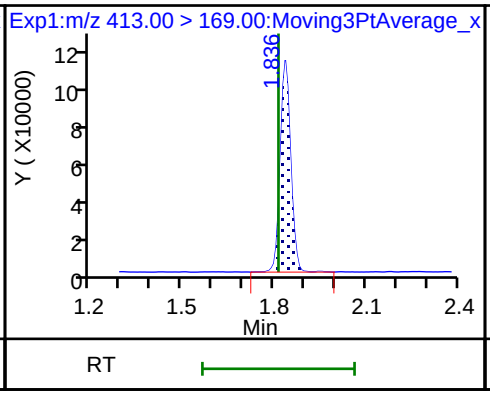
* 6 13C2-PFOA



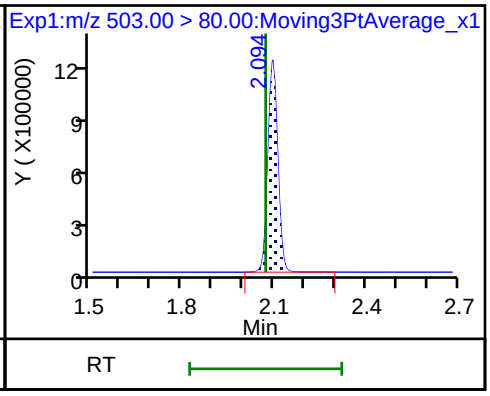
5 Perfluorooctanoic acid



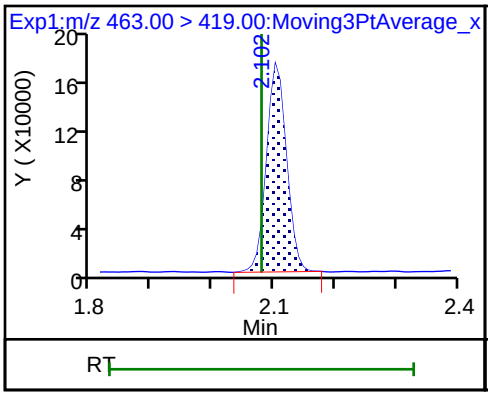
5 Perfluorooctanoic acid



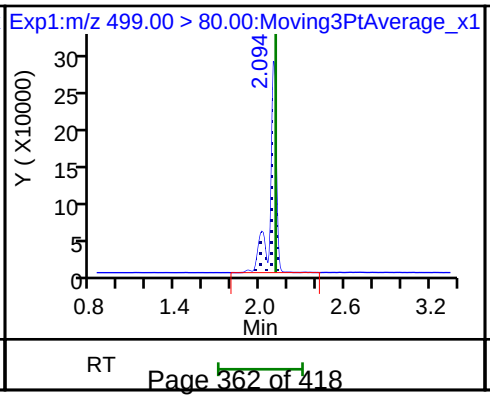
* 7 13C4 PFOS



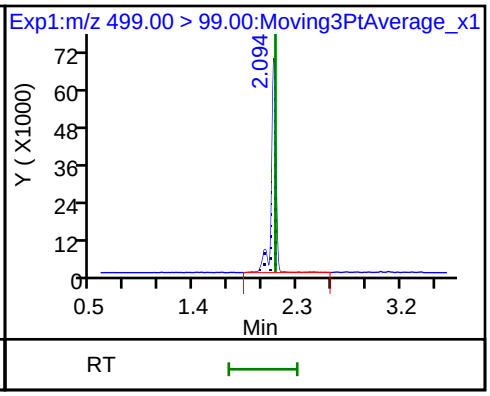
9 Perfluorononanoic acid



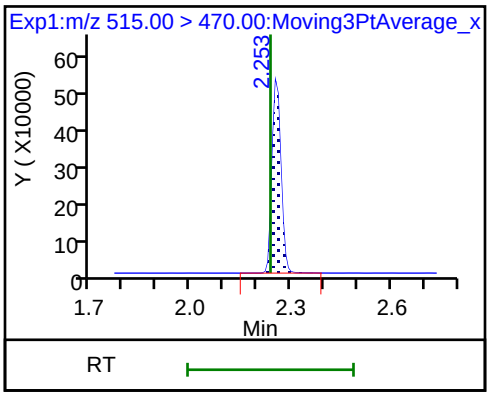
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


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

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242687/8 Calibration Date: 08/28/2018 23:55

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.28_537A_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.208		47.5	45.0	5.5	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.056		4.85	4.86	-0.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.716		15.7	15.1	3.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.043		9.48	9.90	-4.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.071		19.6	19.8	-0.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7953		9.55	9.90	-3.5	30.0
13C2 PFHxA	Ave	1.039	1.070		10.3	10.0	2.9	30.0
13C2 PFDA	Ave	0.7921	0.8661		10.9	10.0	9.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_010.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 28-Aug-2018 23:55:08 ALS Bottle#: 3 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L3
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 10:29:04 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 29-Aug-2018 10:28:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.373	1.373	0.0	1.000	4447440	47.5		14417	
298.90 > 99.00	1.373	1.373	0.0	1.000	3077527		1.45(0.00-0.00)	9892	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.495	1.495	0.0	1.000	995013	10.3		8792	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.639	1.639	0.0	1.000	2122033	15.7		1349	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.639	1.639	0.0	1.000	477515	4.85		132	
* 6 13C2-PFOA									
415.00 > 370.00	1.828	1.828	0.0		930267	10.0		7396	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.828	1.828	0.0	1.000	960945	9.48		139	
413.00 > 169.00	1.828	1.828	0.0	1.000	514231		1.87(0.00-0.00)	1768	
* 7 13C4 PFOS									
503.00 > 80.00	2.086	2.086	0.0		2345437	28.7		6046	
9 Perfluorononanoic acid									
463.00 > 419.00	2.094	2.094	0.0	1.000	732409	9.55		121	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.086	2.109	-0.023	1.000	1731096	19.6		3006	
499.00 > 99.00	2.086	2.109	-0.023	1.000	379718		4.56(0.00-0.00)	1444	
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	805729	10.9		3939	

Reagents:

LC537-L3_00025 Amount Added: 1.00 Units: mL

Report Date: 29-Aug-2018 10:29:06 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_010.d

Injection Date: 28-Aug-2018 23:55:08 Instrument ID: A8_N

Lims ID: CCV L3

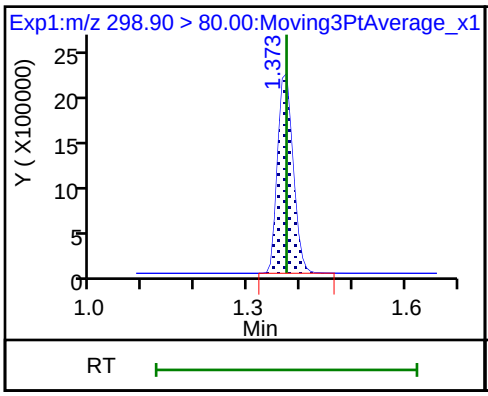
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 8

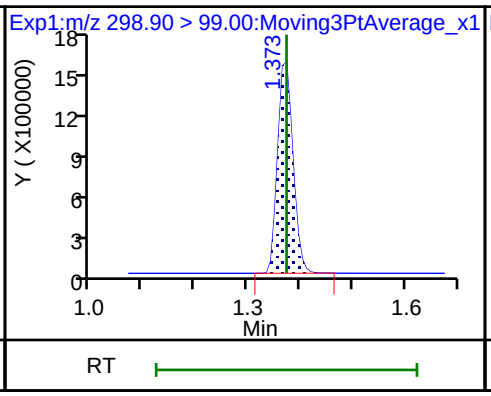
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

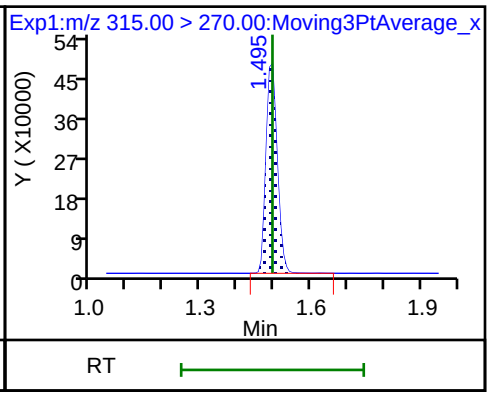
1 Perfluorobutanesulfonic acid



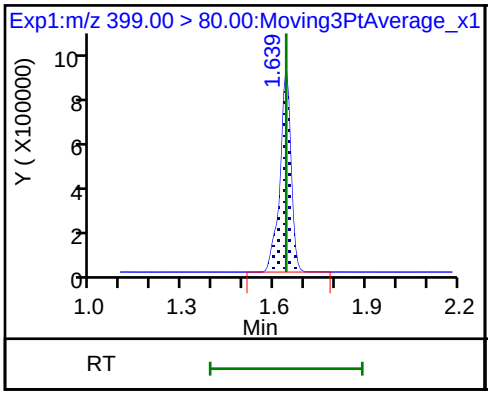
1 Perfluorobutanesulfonic acid



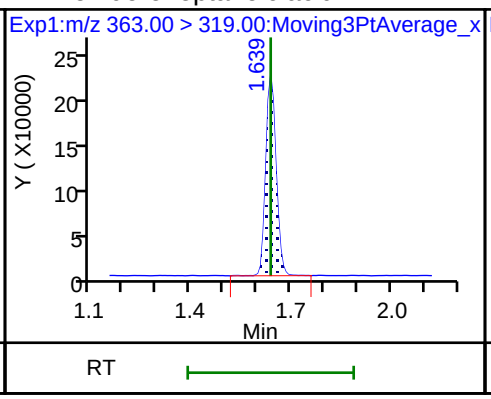
$ 2 13C2 PFHxA



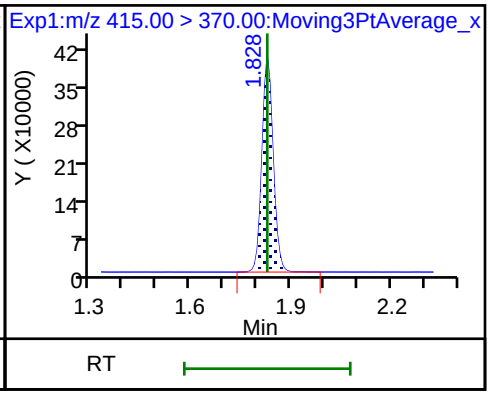
3 Perfluorohexanesulfonic acid



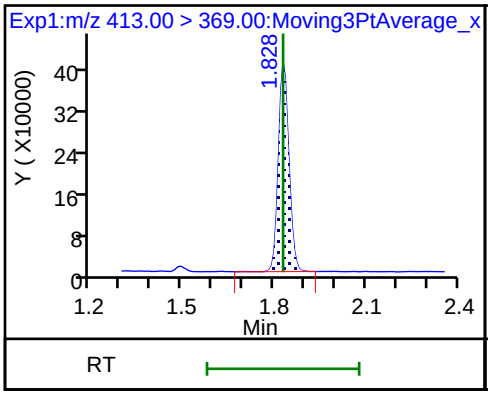
4 Perfluoroheptanoic acid



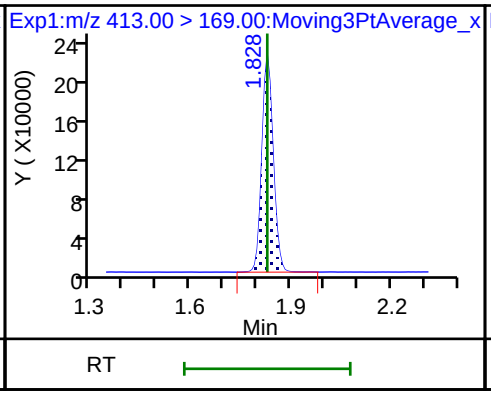
* 6 13C2-PFOA



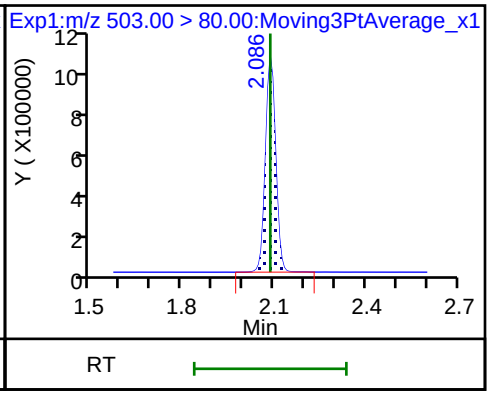
5 Perfluorooctanoic acid



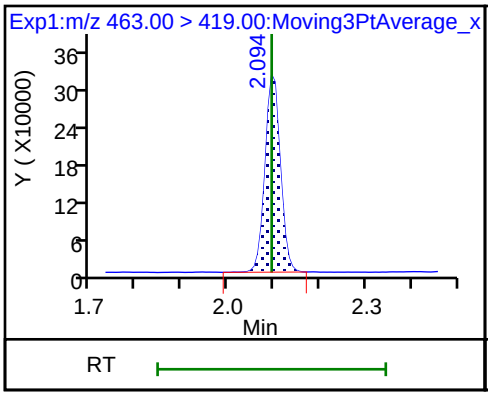
5 Perfluorooctanoic acid



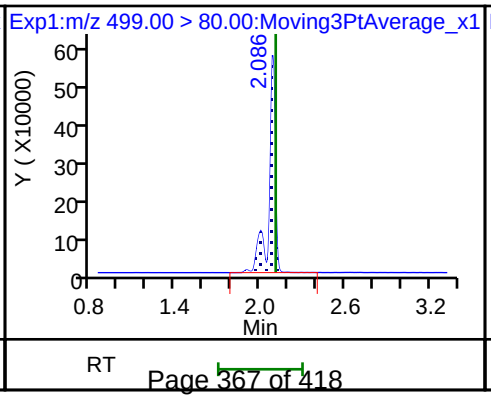
* 7 13C4 PFOS



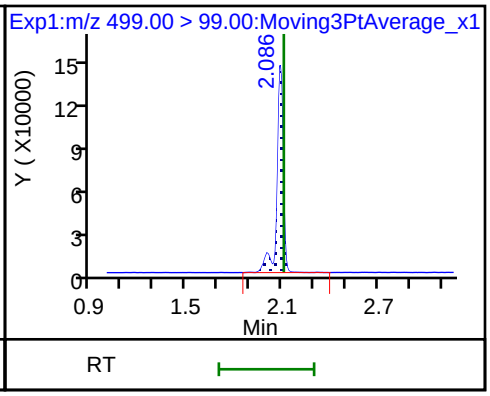
9 Perfluorononanoic acid



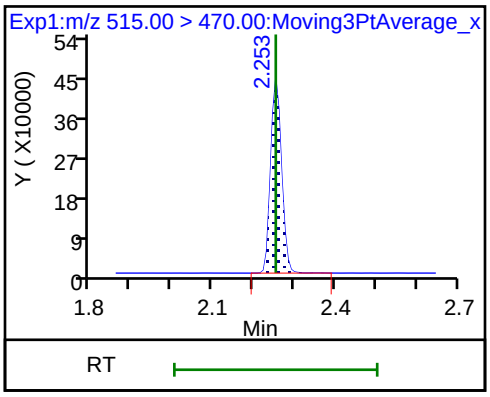
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.253
Y (X10000)
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
Min
RT

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242687/17 Calibration Date: 08/29/2018 00:37

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.28_537A_019.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.113		131	135	-2.8	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.143		15.8	14.6	8.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.742		47.7	45.4	5.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.076		29.3	29.7	-1.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.103		60.5	59.3	2.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8361		30.1	29.7	1.4	30.0
13C2 PFHxA	Ave	1.039	1.122		10.8	10.0	8.0	30.0
13C2 PFDA	Ave	0.7921	0.9099		11.5	10.0	14.9	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_019.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 29-Aug-2018 00:37:14 ALS Bottle#: 5 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub9

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 11:17:13 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	12074809	131.3		23163	
298.90 > 99.00	1.366	1.366	0.0	1.000	8707582		1.39(0.00-0.00)	18407	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	995508	10.8		8408	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	6348907	47.7		3782	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	1478550	15.8		410	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		887111	10.0		6911	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.813	0.0	1.000	2835569	29.3		423	
413.00 > 169.00	1.813	1.813	0.0	1.000	1563192		1.81(0.00-0.00)	5103	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2303342	28.7		5889	
9 Perfluorononanoic acid									
463.00 > 419.00	2.086	2.086	0.0	1.000	2202860	30.1		338	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.079	2.109	-0.030	1.000	5253002	60.5		7695	
499.00 > 99.00	2.071	2.109	-0.038	0.996	1105266		4.75(0.00-0.00)	3480	
$ 10 13C2 PFDA									
515.00 > 470.00	2.246	2.246	0.0	1.000	807161	11.5		4500	

Reagents:

LC537-L5_00026 Amount Added: 1.00 Units: mL

Report Date: 29-Aug-2018 11:17:13 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_019.d

Injection Date: 29-Aug-2018 00:37:14 Instrument ID: A8_N

Lims ID: CCV L5

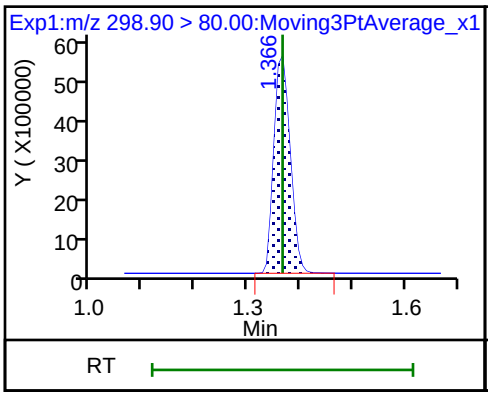
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 17

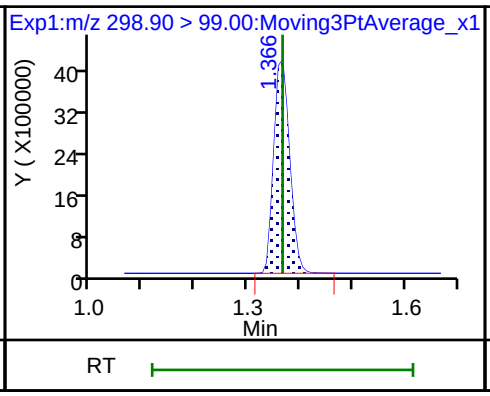
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

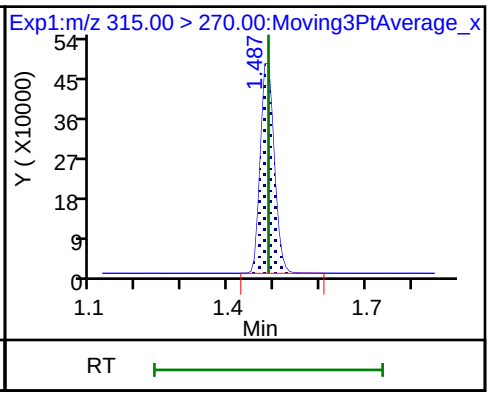
1 Perfluorobutanesulfonic acid



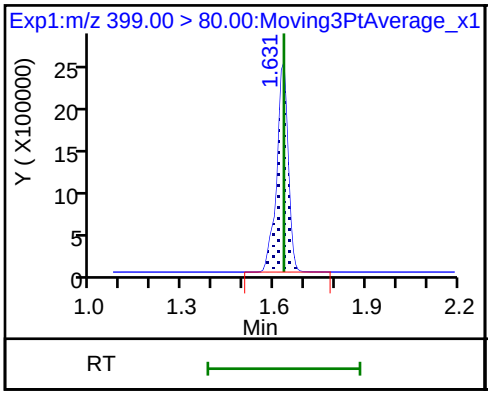
1 Perfluorobutanesulfonic acid



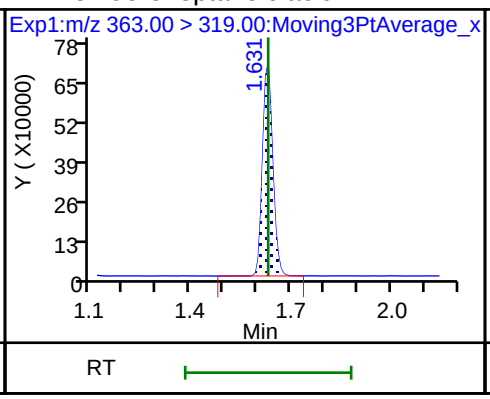
$ 2 13C2 PFHxA



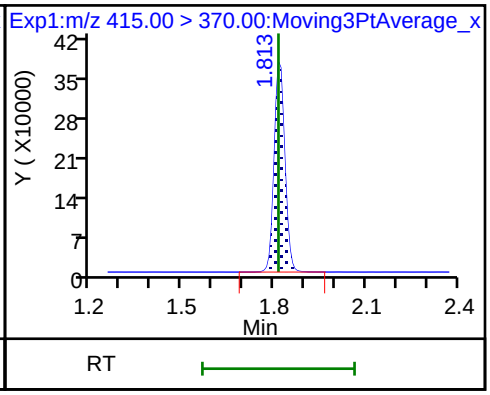
3 Perfluorohexanesulfonic acid



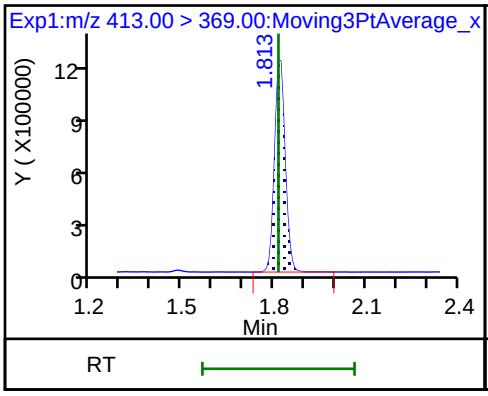
4 Perfluoroheptanoic acid



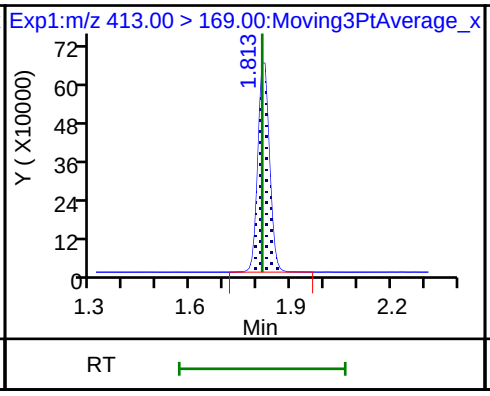
* 6 13C2-PFOA



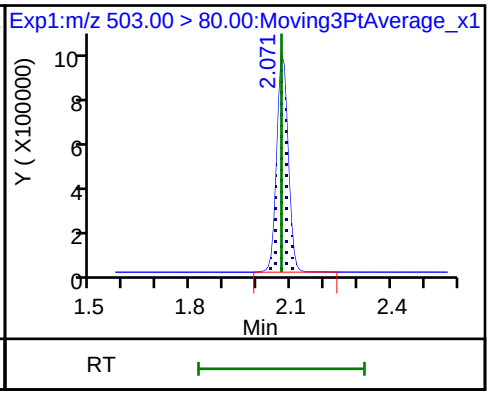
5 Perfluorooctanoic acid



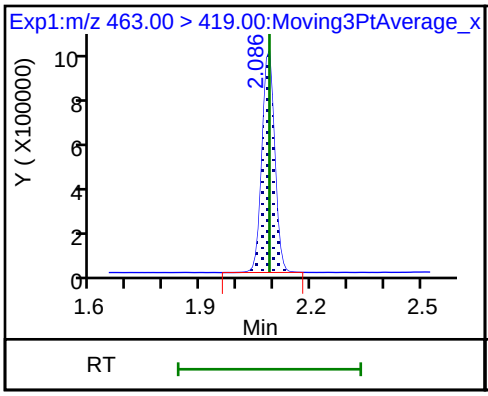
5 Perfluorooctanoic acid



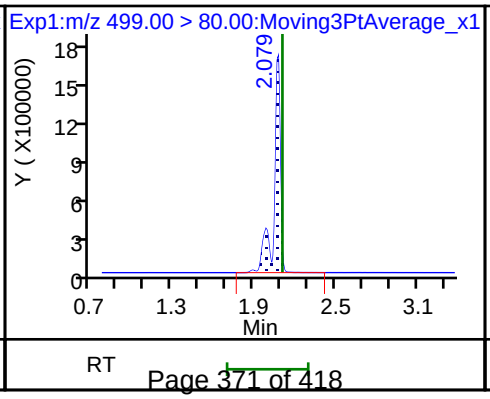
* 7 13C4 PFOS



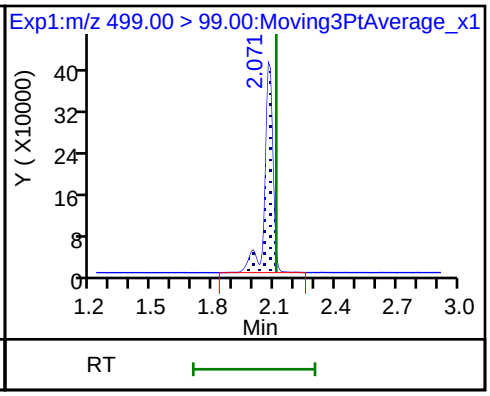
9 Perfluorononanoic acid



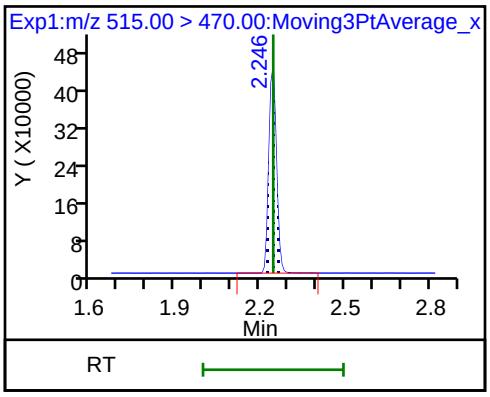
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA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40
32
24
16
8
0
1.6
1.9
2.2
2.5
2.8
Min
RT

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 320-241537/1-A
Matrix: Water
Lab File ID: 2018.08.26_537C_007.d
Analysis Method: 537
Date Collected:
Extraction Method: 537
Date Extracted: 08/23/2018 07:20
Sample wt/vol: 250(mL)
Date Analyzed: 08/26/2018 23:44
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.: 242153
Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	110		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_007.d
Lims ID: MB 320-241537/1-A
Client ID:
Sample Type: MB
Inject. Date: 26-Aug-2018 23:44:04 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-241537/1-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	1131053	10.4		12039	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.821	0.0		1043498	10.0		7523	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2632697	28.7		6690	
$ 10 13C2 PFDA									
515.00 > 470.00	2.246	2.246	0.0	1.000	905382	11.0		4608	

Report Date: 27-Aug-2018 14:57:50 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_007.d

Injection Date: 26-Aug-2018 23:44:04 Instrument ID: A8_N

Lims ID: MB 320-241537/1-A

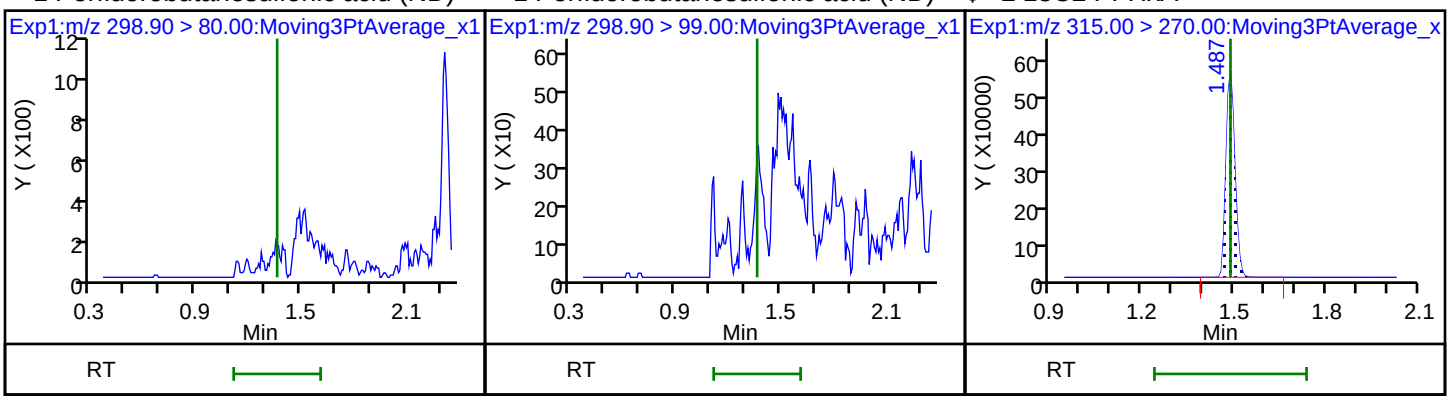
Client ID:

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

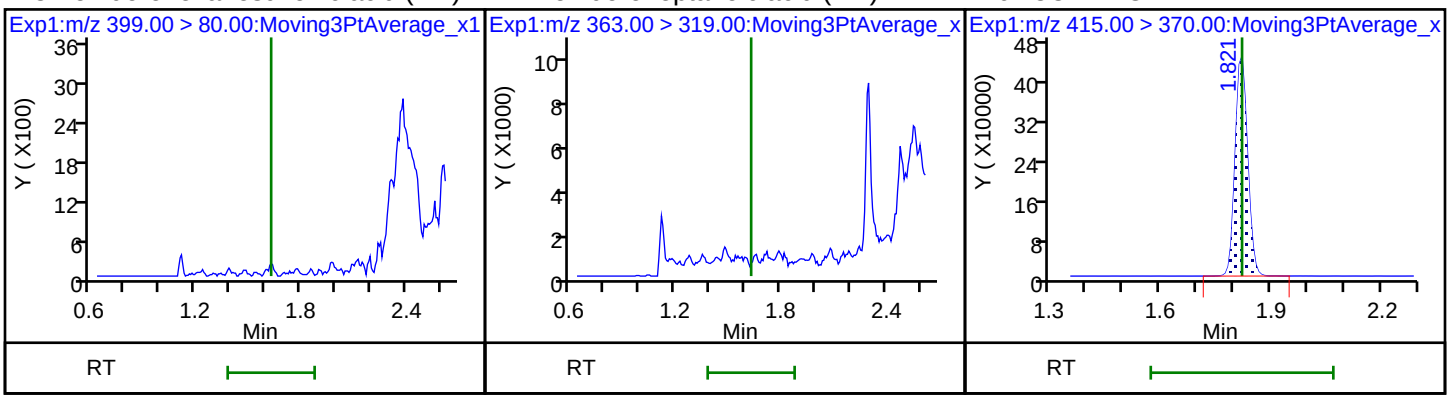
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

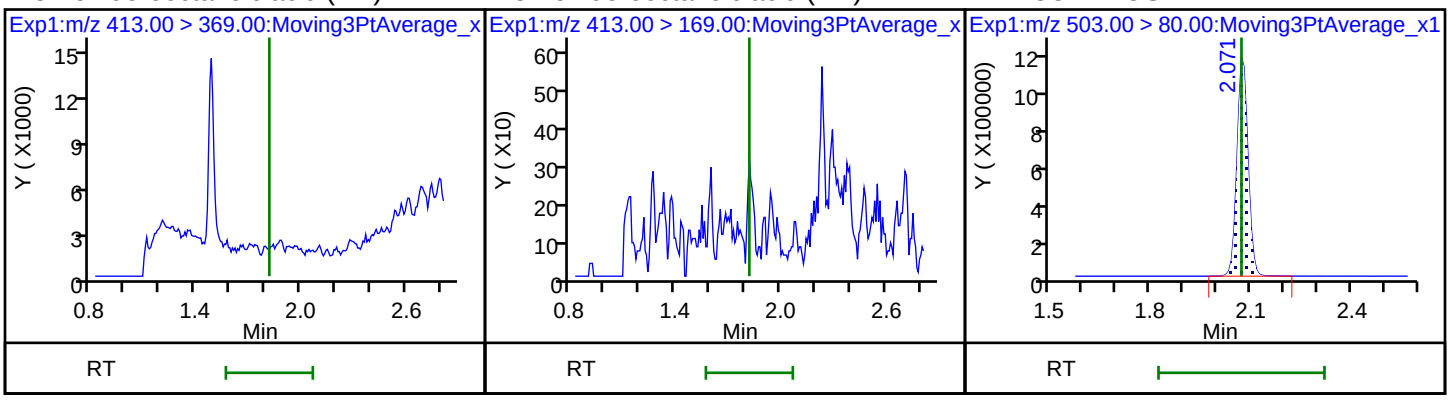
1 Perfluorobutanesulfonic acid (ND) | 1 Perfluorobutanesulfonic acid (ND) | $ 2 13C2 PFHxA



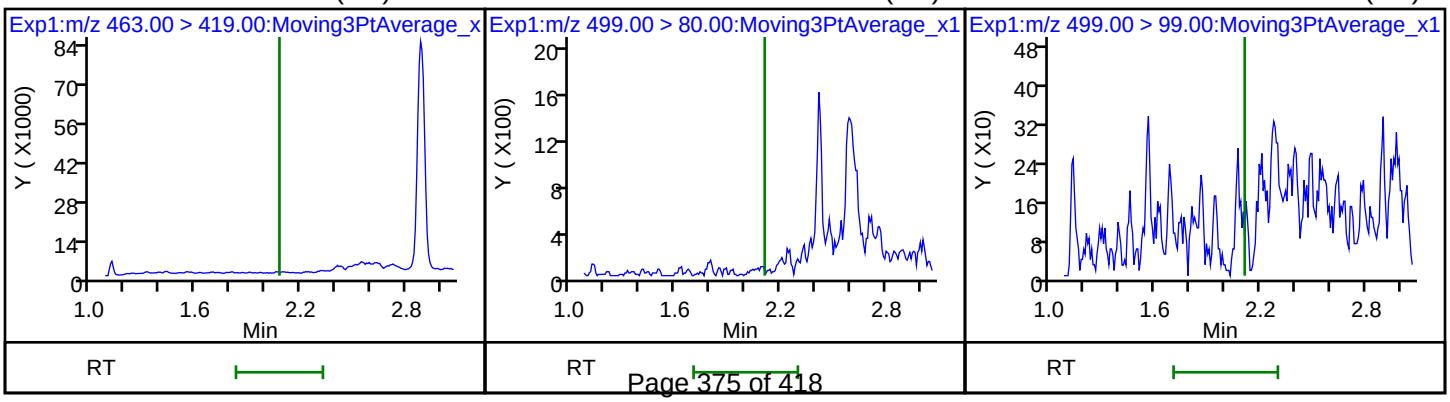
3 Perfluorohexanesulfonic acid (ND) | 4 Perfluoroheptanoic acid (ND) | * 6 13C2-PFOA



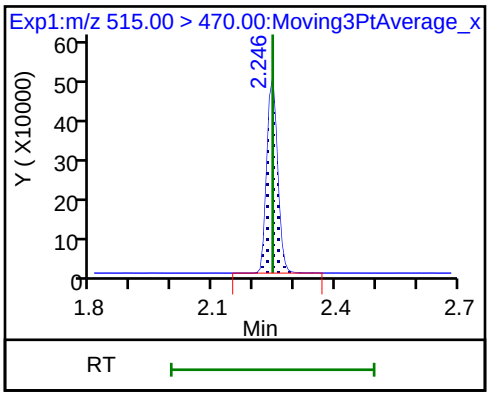
5 Perfluorooctanoic acid (ND) | 5 Perfluorooctanoic acid (ND) | * 7 13C4 PFOS



9 Perfluorononanoic acid (ND) | 8 Perfluorooctane sulfonic acid (ND) | 8 Perfluorooctane sulfonic acid (ND)



$ 10 13C2 PFDA


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

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_007.d
Lims ID: MB 320-241537/1-A
Client ID:
Sample Type: MB
Inject. Date: 26-Aug-2018 23:44:04 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-241537/1-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.4	104.28
$ 10 13C2 PFDA	10.0	11.0	109.53

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 320-241832/1-A
Matrix: Water
Lab File ID: 2018.08.26_537C_036.d
Analysis Method: 537
Date Collected:
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 250(mL)
Date Analyzed: 08/27/2018 01:59
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.: 242160
Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	102		70-130
STL00996	13C2 PFDA	95		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_036.d
Lims ID: MB 320-241832/1-A
Client ID:
Sample Type: MB
Inject. Date: 27-Aug-2018 01:59:46 ALS Bottle#: 24 Worklist Smp#: 33
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-241832/1-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:27:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.487	-0.008	1.000	1177442	10.2		11715	
* 6 13C2-PFOA									
415.00 > 370.00	1.806	1.813	-0.007		1106092	10.0		9276	
* 7 13C4 PFOS									
503.00 > 80.00	2.064	2.071	-0.007		2676902	28.7		6813	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	835112	9.53		4172	

Report Date: 27-Aug-2018 15:31:06 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_036.d

Injection Date: 27-Aug-2018 01:59:46 Instrument ID: A8_N

Lims ID: MB 320-241832/1-A

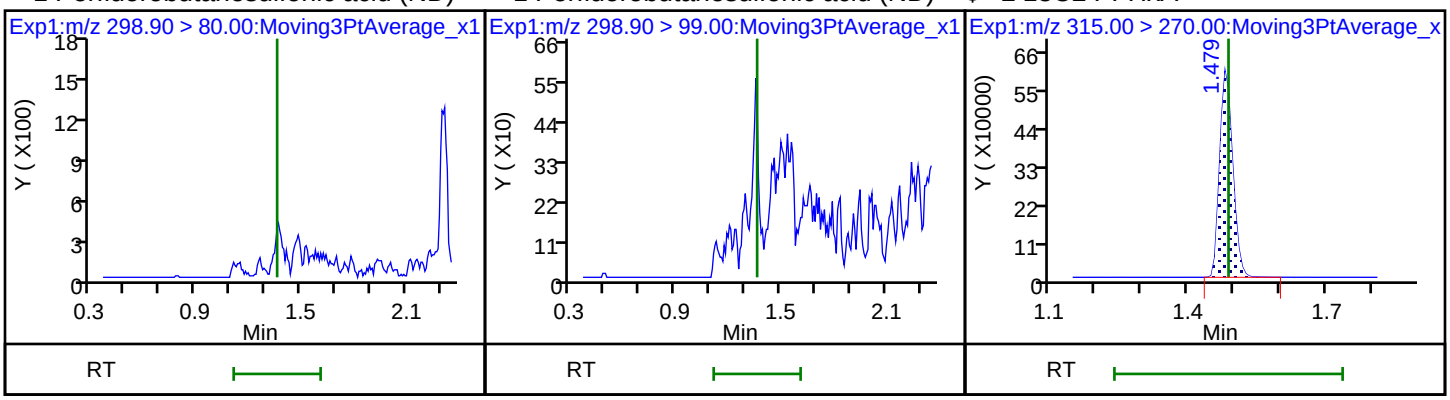
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 24 Worklist Smp#: 33

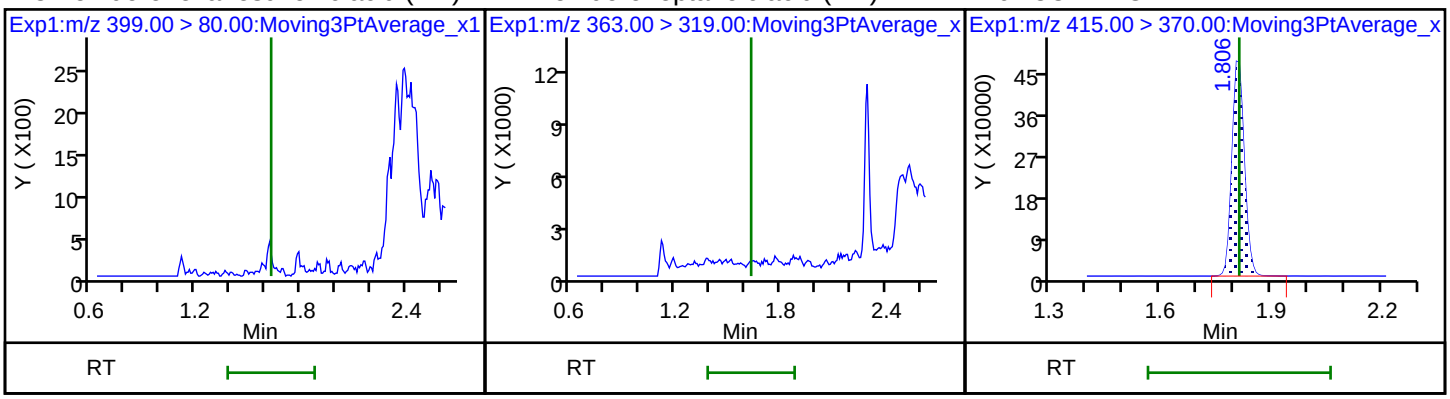
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

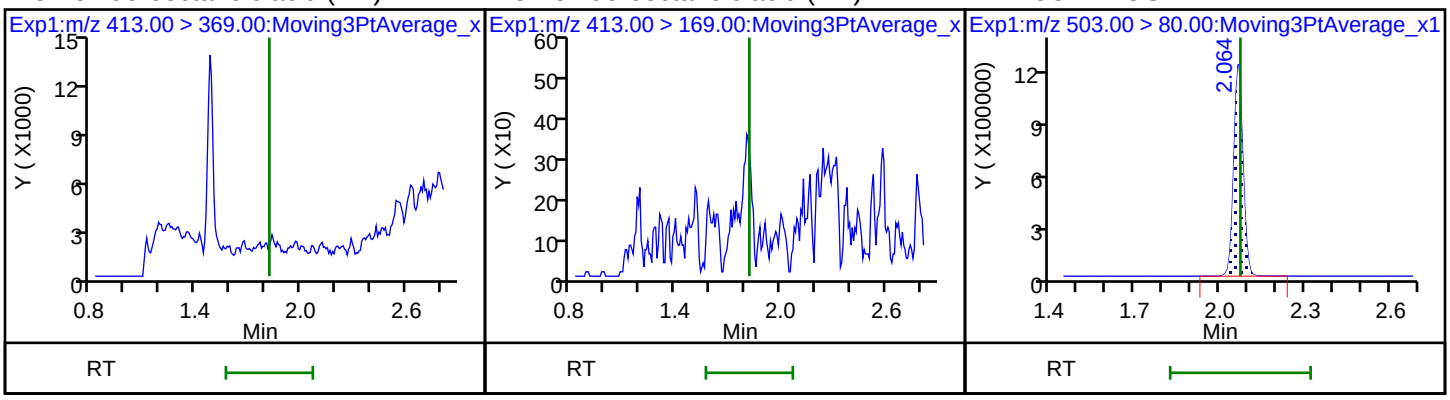
1 Perfluorobutanesulfonic acid (ND) | 1 Perfluorobutanesulfonic acid (ND) | $ 2 13C2 PFHxA



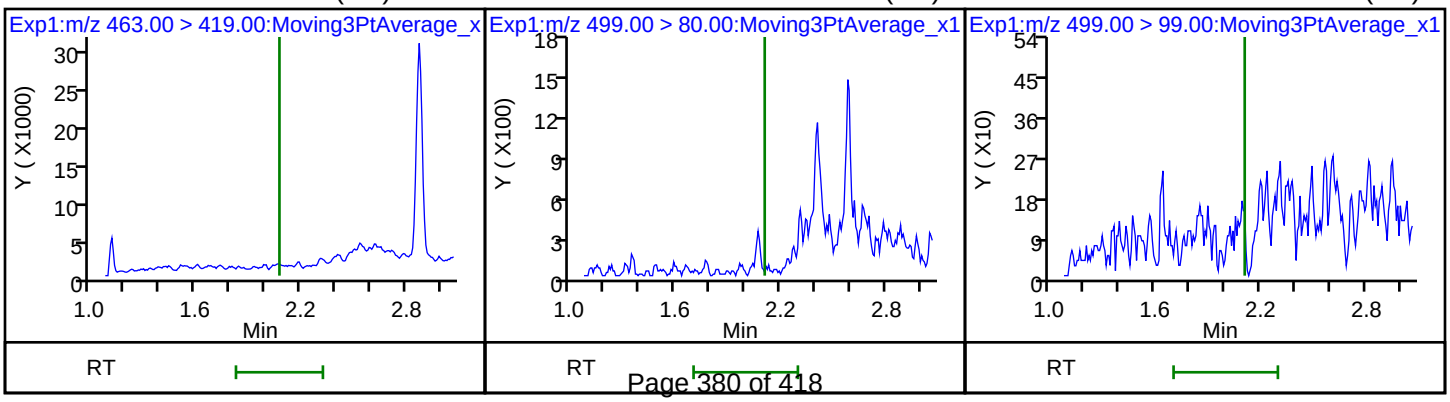
3 Perfluorohexanesulfonic acid (ND) | 4 Perfluoroheptanoic acid (ND) | * 6 13C2-PFOA



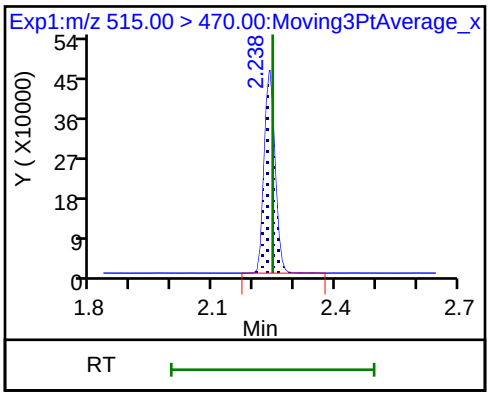
5 Perfluorooctanoic acid (ND) | 5 Perfluorooctanoic acid (ND) | * 7 13C4 PFOS



9 Perfluorononanoic acid (ND) | 8 Perfluorooctane sulfonic acid (ND) | 8 Perfluorooctane sulfonic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.238
Y (X10000)
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_036.d
Lims ID: MB 320-241832/1-A
Client ID:
Sample Type: MB
Inject. Date: 27-Aug-2018 01:59:46 ALS Bottle#: 24 Worklist Smp#: 33
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-241832/1-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:27:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.2	102.42
$ 10 13C2 PFDA	10.0	9.53	95.32

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCS 320-241832/2-A
Matrix: Water
Lab File ID: 2018.08.26_537C_037.d
Analysis Method: 537
Date Collected:
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 250(mL)
Date Analyzed: 08/27/2018 02:04
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242160
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	142		40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	68.9		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	67.3		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	115		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	34.1		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	351		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	98		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_037.d
Lims ID: LCS 320-241832/2-A
Client ID:
Sample Type: LCS
Inject. Date: 27-Aug-2018 02:04:26 ALS Bottle#: 25 Worklist Smp#: 34
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-241832/2-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:27:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 15:16:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	9284765	87.9		18454	
298.90 > 99.00	1.366	1.366	0.0	1.000	6552975		1.42(0.00-0.00)	11978	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.487	-0.008	1.000	1124035	10.4		13155	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.631	-0.007	1.000	4381778	28.7		3408	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.631	-0.007	1.000	942888	8.53		241	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.813	0.0		1044801	10.0		9308	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.821	-0.008	1.000	1961338	17.2		313	
413.00 > 169.00	1.813	1.821	-0.008	1.000	1081712		1.81(0.00-0.00)	3868	
* 7 13C4 PFOS									
503.00 > 80.00	2.064	2.071	-0.007		2647780	28.7		6418	
9 Perfluorononanoic acid									
463.00 > 419.00	2.071	2.079	-0.008	1.000	1448626	16.8		198	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.064	2.109	-0.045	1.000	3537843	35.5		5931	
499.00 > 99.00	2.064	2.109	-0.045	1.000	758148		4.67(0.00-0.00)	2200	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	812760	9.82		4352	

Report Date: 27-Aug-2018 15:31:11 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_037.d

Injection Date: 27-Aug-2018 02:04:26 Instrument ID: A8_N

Lims ID: LCS 320-241832/2-A

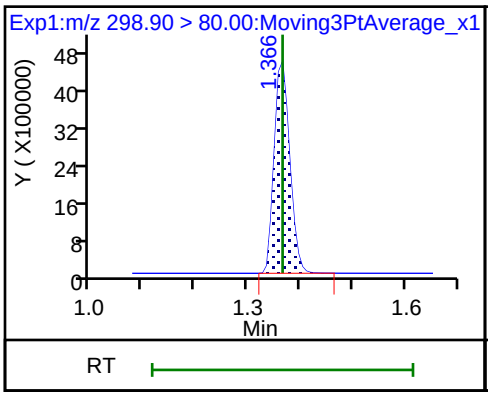
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 25 Worklist Smp#: 34

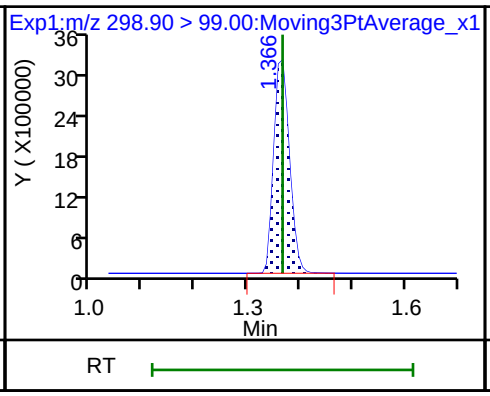
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

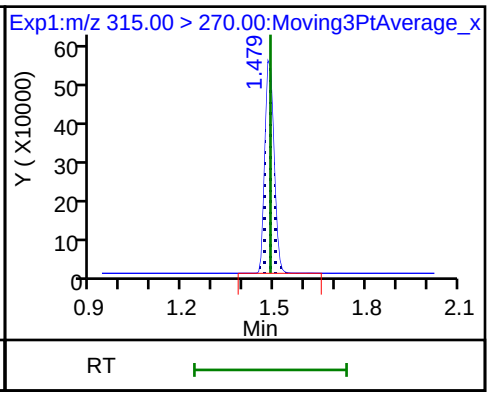
1 Perfluorobutanesulfonic acid



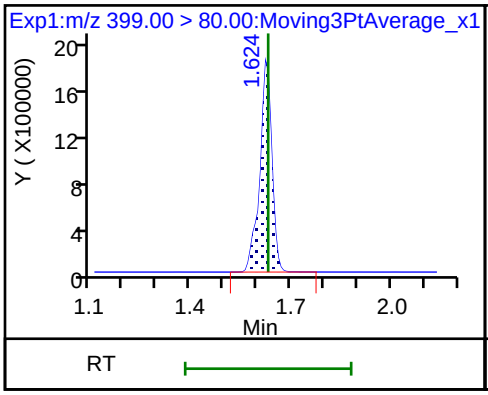
1 Perfluorobutanesulfonic acid



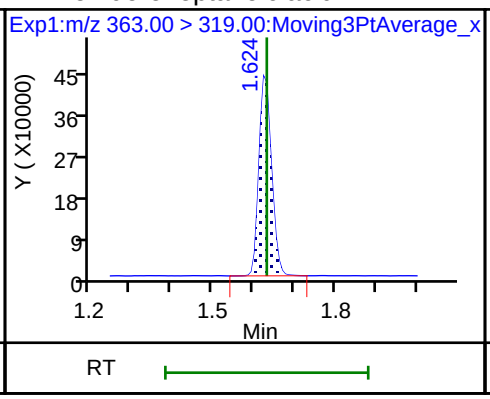
$ 2 13C2 PFHxA



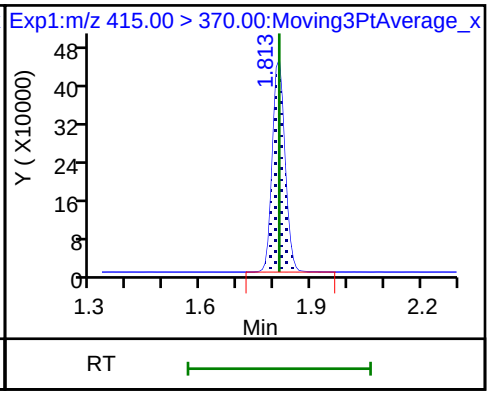
3 Perfluorohexanesulfonic acid



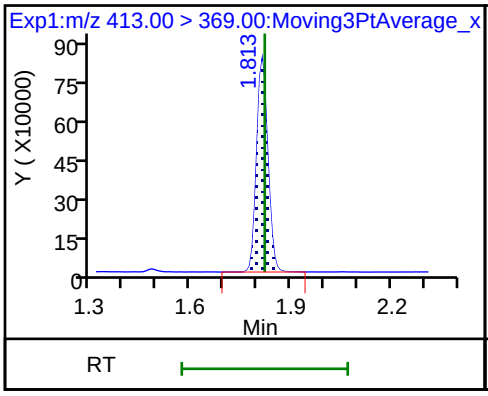
4 Perfluoroheptanoic acid



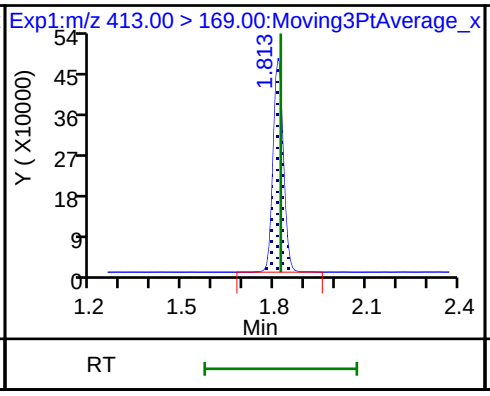
* 6 13C2-PFOA



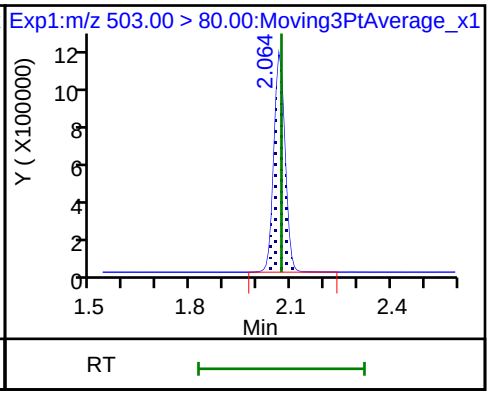
5 Perfluorooctanoic acid



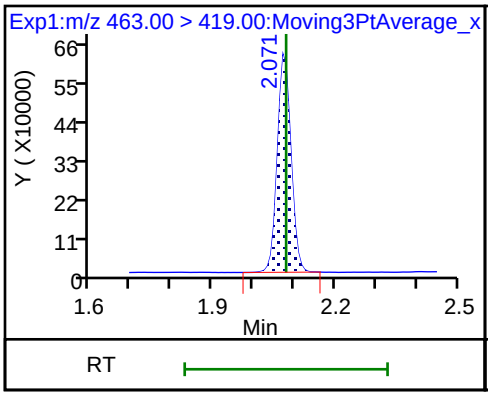
5 Perfluorooctanoic acid



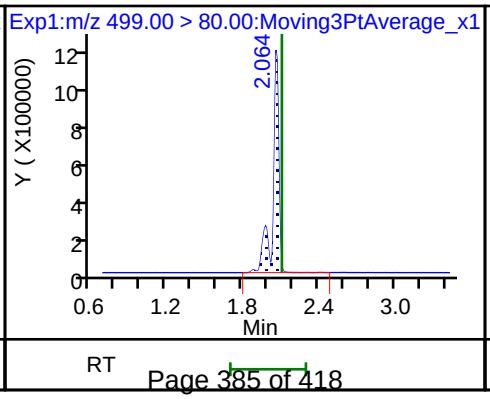
* 7 13C4 PFOS



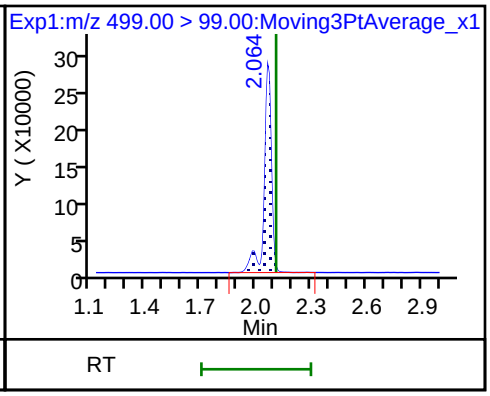
9 Perfluorononanoic acid



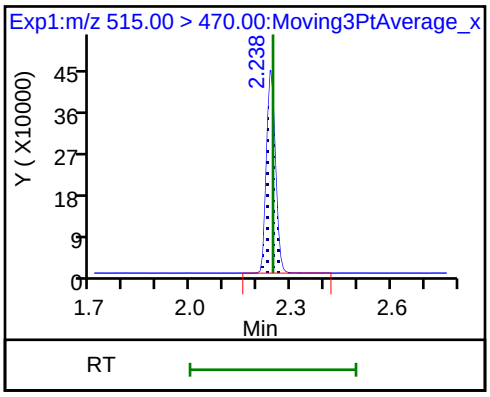
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.238
Y (X10000)
45
36
27
18
9
0
1.7
2.0
2.3
2.6
Min
RT

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_037.d				
Lims ID:	LCS 320-241832/2-A				
Client ID:					
Sample Type:	LCS				
Inject. Date:	27-Aug-2018 02:04:26	ALS Bottle#:	25	Worklist Smp#:	34
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	lcs 320-241832/2-a				
Misc. Info.:	Plate: 1 Rack: 4				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		

Method:	\\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m		
Limit Group:	LC 537 ICAL		
Last Update:	27-Aug-2018 15:27:25	Calib Date:	15-Aug-2018 18:44:32
Integrator:	Picker		
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d		

Column 1 :		Det: EXP1	
Process Host:	XAWRK017		

First Level Reviewer: barnettj Date: 27-Aug-2018 15:16:13

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.4	103.51
$ 10 13C2 PFDA	10.0	9.82	98.21

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCSD 320-241832/3-A
Matrix: Water
Lab File ID: 2018.08.26_537C_038.d
Analysis Method: 537
Date Collected:
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 250(mL)
Date Analyzed: 08/27/2018 02:09
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242160
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	135		40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	70.6		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	65.9		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	111		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	33.8		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	341		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	97		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_038.d
Lims ID: LCSD 320-241832/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 27-Aug-2018 02:09:07 ALS Bottle#: 26 Worklist Smp#: 35
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-241832/3-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:27:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 15:16:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.366	-0.008	1.000	8522038	85.3		17383	
298.90 > 99.00	1.358	1.366	-0.008	1.000	6110193		1.39(0.00-0.00)	10756	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.487	-0.008	1.000	1021477	10.0		9987	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.631	-0.007	1.000	4008398	27.7		2864	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.631	-0.007	1.000	875388	8.45		230	
* 6 13C2-PFOA									
415.00 > 370.00	1.806	1.813	-0.007		979667	10.0		8059	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.821	-0.008	1.000	1885234	17.7		303	
413.00 > 169.00	1.806	1.821	-0.015	0.996	974595		1.93(0.00-0.00)	2848	
* 7 13C4 PFOS									
503.00 > 80.00	2.064	2.071	-0.007		2502510	28.7		6539	
9 Perfluorononanoic acid									
463.00 > 419.00	2.071	2.079	-0.008	1.000	1329664	16.5		171	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.064	2.109	-0.045	1.000	3186148	33.8		5674	
499.00 > 99.00	2.064	2.109	-0.045	1.000	701884		4.54(0.00-0.00)	1812	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	753575	9.71		4134	

Report Date: 27-Aug-2018 15:31:17 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_038.d

Injection Date: 27-Aug-2018 02:09:07 Instrument ID: A8_N

Lims ID: LCSD 320-241832/3-A

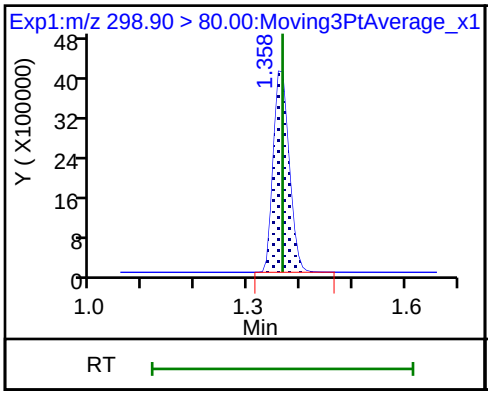
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 26 Worklist Smp#: 35

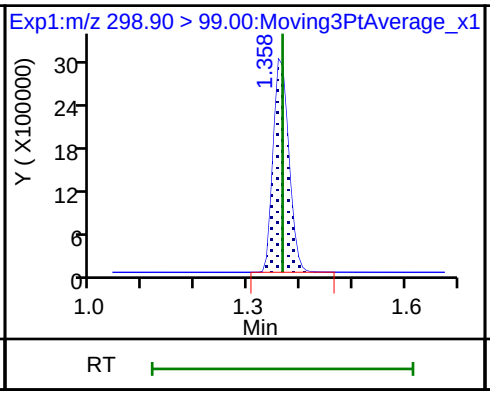
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

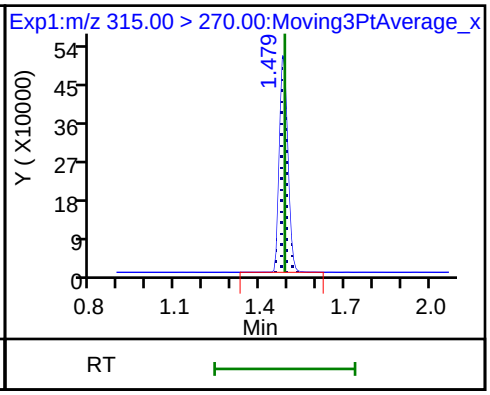
1 Perfluorobutanesulfonic acid



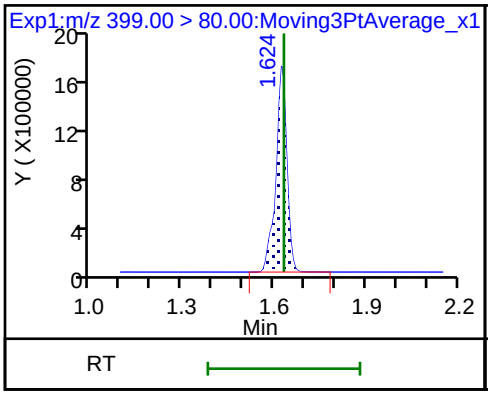
1 Perfluorobutanesulfonic acid



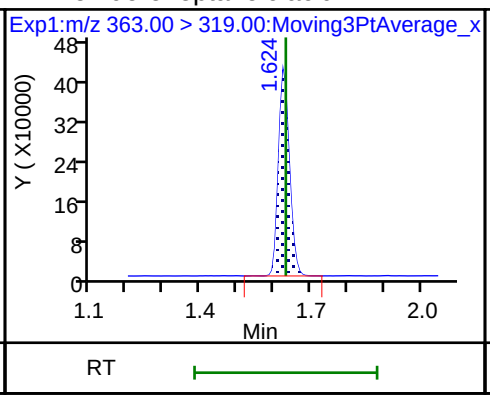
$ 2 13C2 PFHxA



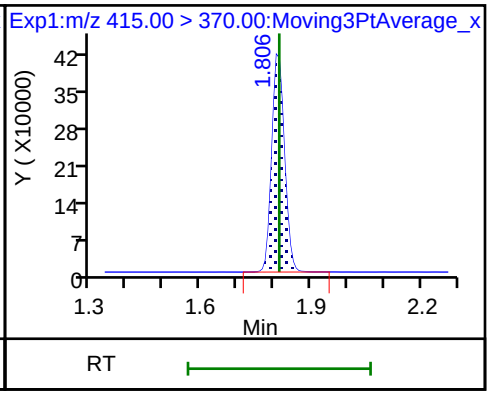
3 Perfluorohexanesulfonic acid



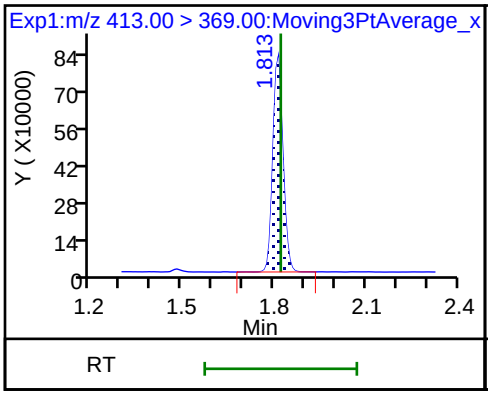
4 Perfluoroheptanoic acid



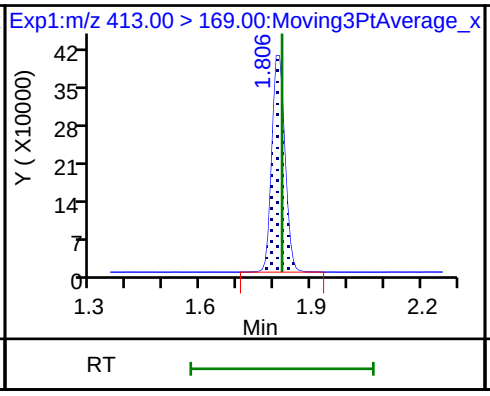
* 6 13C2-PFOA



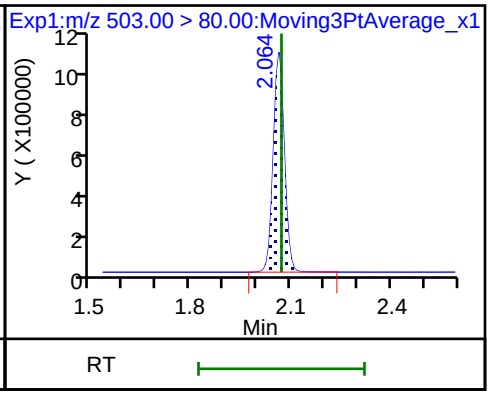
5 Perfluorooctanoic acid



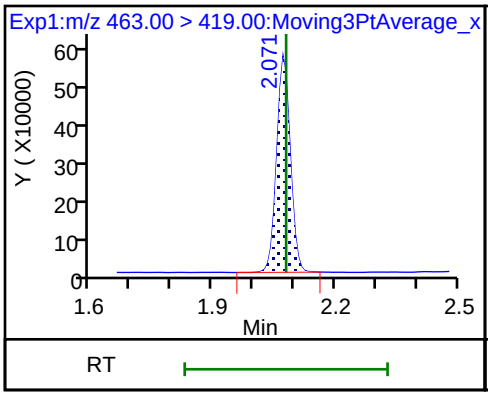
5 Perfluorooctanoic acid



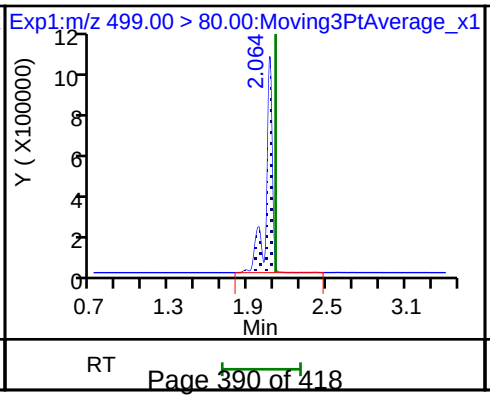
* 7 13C4 PFOS



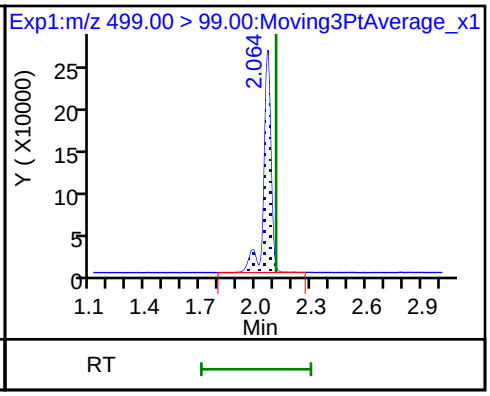
9 Perfluorononanoic acid



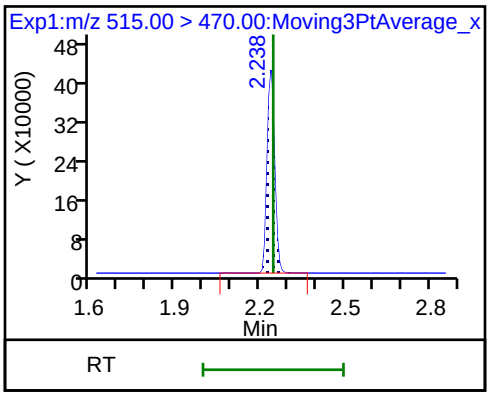
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.238
Y (X10000)
48
40
32
24
16
8
0
1.6
1.9
2.2
2.5
2.8
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_038.d
Lims ID: LCSD 320-241832/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 27-Aug-2018 02:09:07 ALS Bottle#: 26 Worklist Smp#: 35
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-241832/3-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 15:27:25 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 15:16:42

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	10.0	100.32
$ 10 13C2 PFDA	10.0	9.71	97.11

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID:
Lab Sample ID: LLCS 320-241537/2-A
Matrix: Water
Lab File ID: 2018.08.26_537C_008.d
Analysis Method: 537
Date Collected:
Extraction Method: 537
Date Extracted: 08/23/2018 07:20
Sample wt/vol: 250(mL)
Date Analyzed: 08/26/2018 23:48
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.: 242153
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	43.0		40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	20.4		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	18.9	J	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	33.1		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	10.2		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	105		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	113		70-130
STL00996	13C2 PFDA	114		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_008.d
Lims ID: LLCS 320-241537/2-A
Client ID:
Sample Type: LLCS
Inject. Date: 26-Aug-2018 23:48:46 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: llcs 320-241537/2-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:34:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.366	0.0	1.000	2790264	26.3		8428	
298.90 > 99.00	1.366	1.366	0.0	1.000	1949062		1.43(0.00-0.00)	4358	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.487	0.0	1.000	1247239	11.3		11825	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.631	1.631	0.0	1.000	1266183	8.26		1060	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.631	0.0	1.000	285629	2.54		78.2	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.821	-0.008		1063967	10.0		8606	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.821	-0.008	1.000	591374	5.10		88.4	
413.00 > 169.00	1.813	1.821	-0.008	1.000	309586		1.91(0.00-0.00)	930	
* 7 13C4 PFOS									
503.00 > 80.00	2.071	2.071	0.0		2653479	28.7		6775	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	413812	4.72		35.5	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	1074658	10.8		1842	
499.00 > 99.00	2.071	2.109	-0.038	1.000	233449		4.60(0.00-0.00)	641	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	964663	11.4		5223	

Report Date: 27-Aug-2018 14:57:53 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_008.d

Injection Date: 26-Aug-2018 23:48:46 Instrument ID: A8_N

Lims ID: LLCS 320-241537/2-A

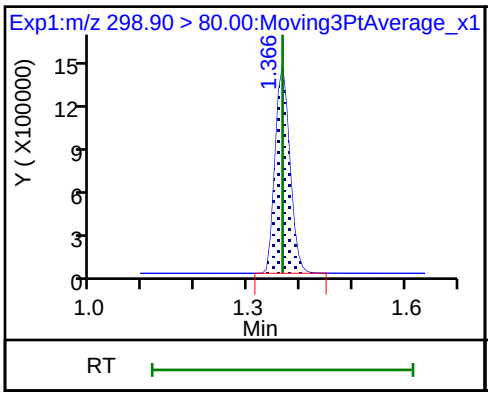
Client ID:

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

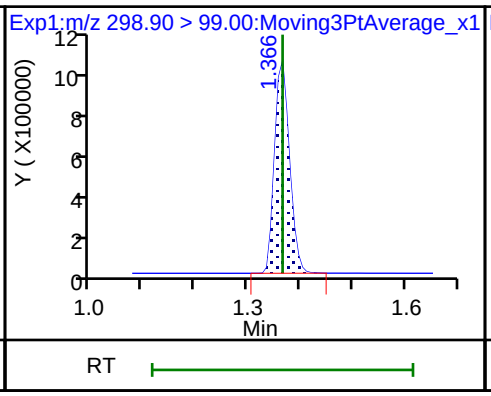
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

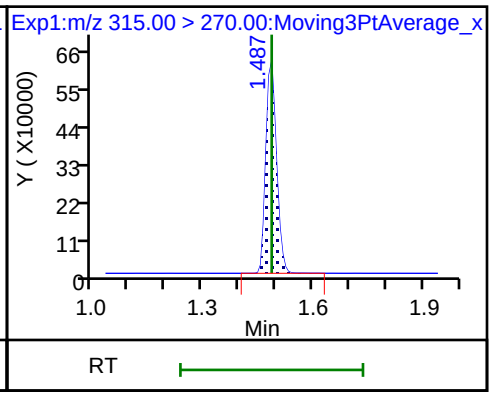
1 Perfluorobutanesulfonic acid



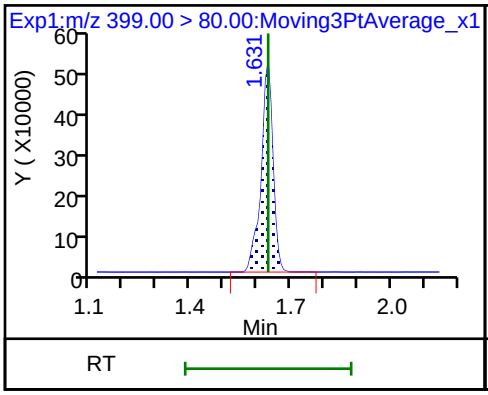
1 Perfluorobutanesulfonic acid



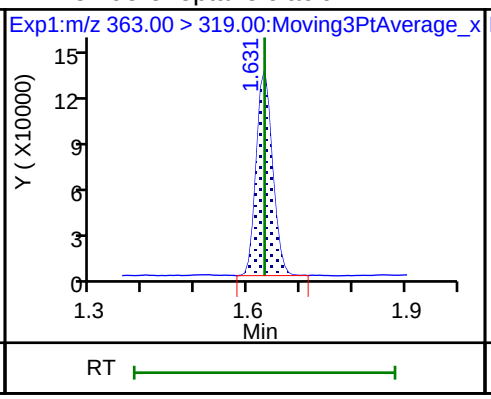
$ 2 13C2 PFHxA



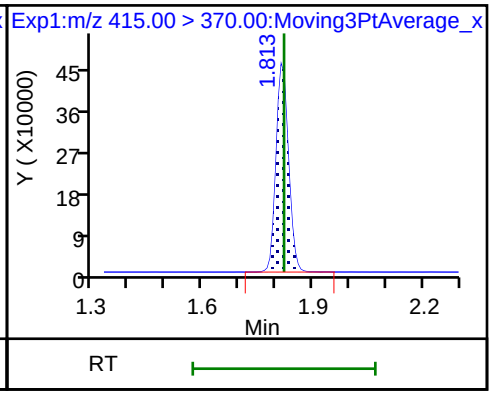
3 Perfluorohexanesulfonic acid



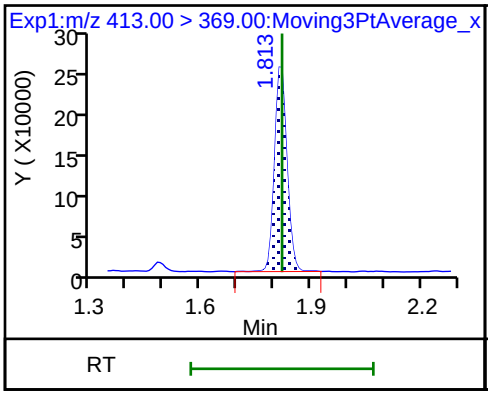
4 Perfluoroheptanoic acid



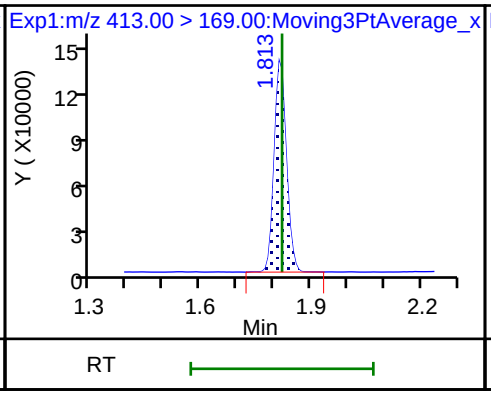
* 6 13C2-PFOA



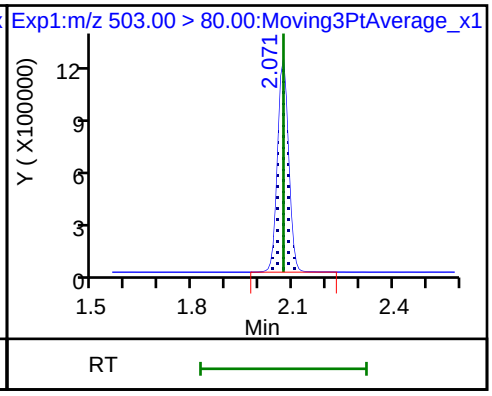
5 Perfluorooctanoic acid



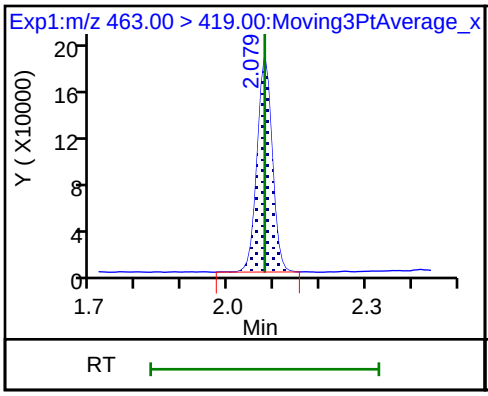
5 Perfluorooctanoic acid



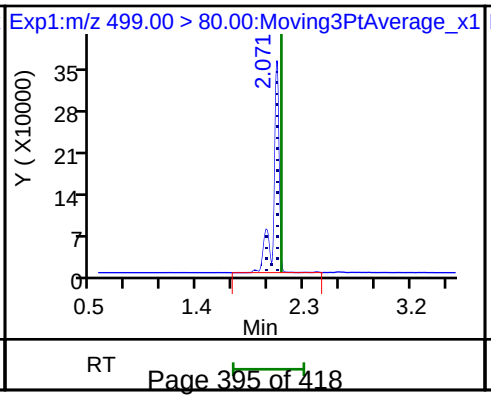
* 7 13C4 PFOS



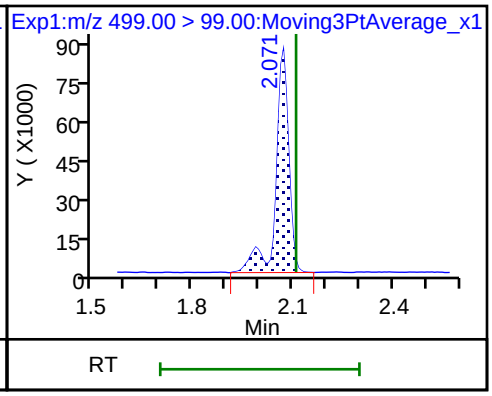
9 Perfluorononanoic acid



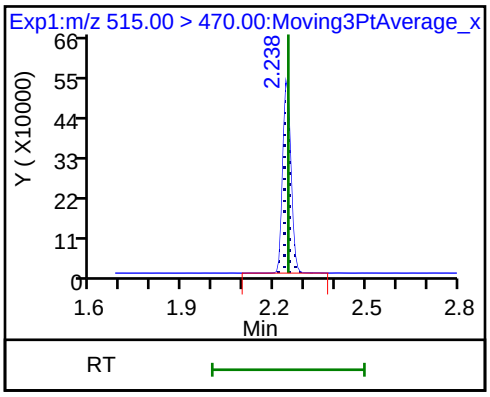
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.238
Y (X10000)
66
55
44
33
22
11
0
1.6
1.9
2.2
2.5
2.8
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_008.d
Lims ID: LLCS 320-241537/2-A
Client ID:
Sample Type: LLCS
Inject. Date: 26-Aug-2018 23:48:46 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: llcs 320-241537/2-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:34:42

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	11.3	112.78
$ 10 13C2 PFDA	10.0	11.4	114.46

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID:
Lab Sample ID: LLCSD 320-241537/3-A
Matrix: Water
Lab File ID: 2018.08.26_537C_009.d
Analysis Method: 537
Date Collected:
Extraction Method: 537
Date Extracted: 08/23/2018 07:20
Sample wt/vol: 250(mL)
Date Analyzed: 08/26/2018 23:53
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.: 242153
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	45.1		40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	20.6		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	19.4	J	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	34.9		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	11.3		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	115		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	110		70-130
STL00996	13C2 PFDA	109		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_009.d
Lims ID: LLCSD 320-241537/3-A
Client ID:
Sample Type: LLCSD
Inject. Date: 26-Aug-2018 23:53:27 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: llcsd 320-241537/3-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:35:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.366	-0.008	1.000	2994448	28.7		9139	
298.90 > 99.00	1.358	1.366	-0.008	1.000	2102159		1.42(0.00-0.00)	5093	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.487	-0.008	1.000	1209791	11.0		10923	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.624	1.631	-0.007	1.000	1317498	8.72		1042	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.624	1.631	-0.007	1.000	316618	2.82		79.0	
* 6 13C2-PFOA									
415.00 > 370.00	1.813	1.821	-0.008		1061847	10.0		8079	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.813	1.821	-0.008	1.000	596692	5.16		90.9	
413.00 > 169.00	1.813	1.821	-0.008	1.000	324418		1.84(0.00-0.00)	1041	
* 7 13C4 PFOS									
503.00 > 80.00	2.064	2.071	-0.007		2615789	28.7		7225	
9 Perfluorononanoic acid									
463.00 > 419.00	2.079	2.079	0.0	1.000	425441	4.86		35.8	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.071	2.109	-0.038	1.000	1111402	11.3		3530	
499.00 > 99.00	2.064	2.109	-0.045	0.996	244750		4.54(0.00-0.00)	729	
$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.246	-0.008	1.000	919536	10.9		5250	

Report Date: 27-Aug-2018 14:57:56 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_009.d

Injection Date: 26-Aug-2018 23:53:27 Instrument ID: A8_N

Lims ID: LLCSD 320-241537/3-A

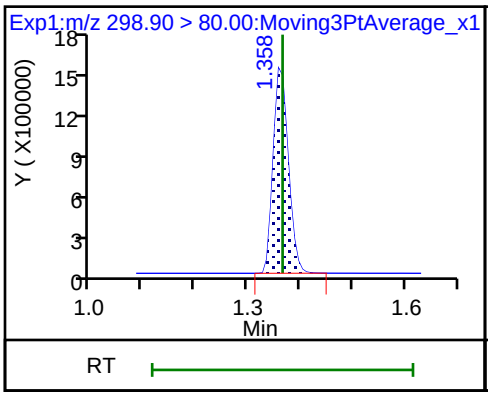
Client ID:

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

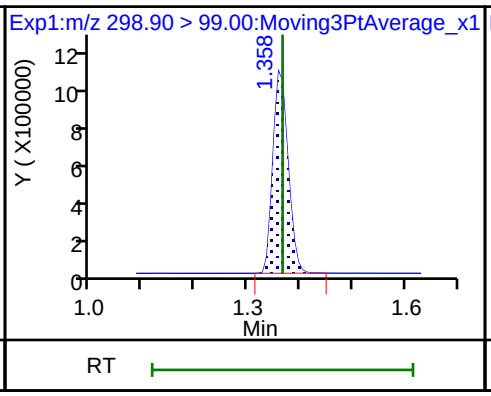
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

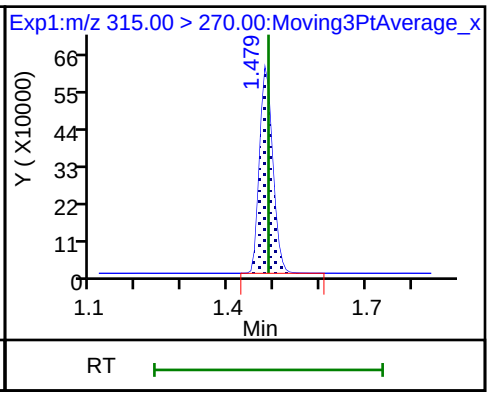
1 Perfluorobutanesulfonic acid



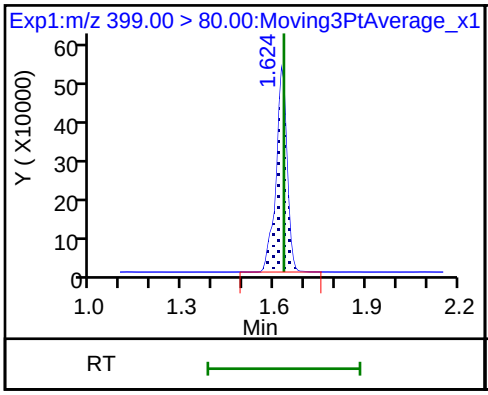
1 Perfluorobutanesulfonic acid



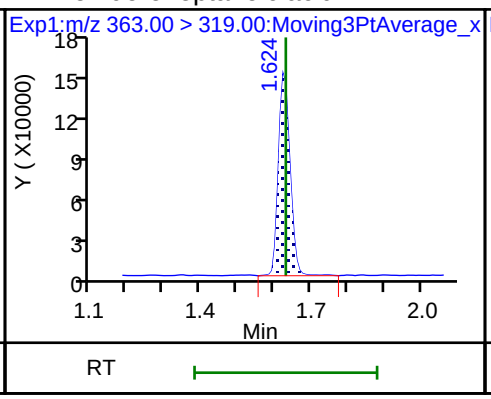
$ 2 13C2 PFHxA



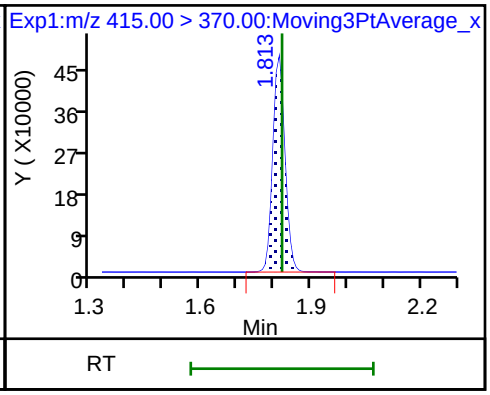
3 Perfluorohexanesulfonic acid



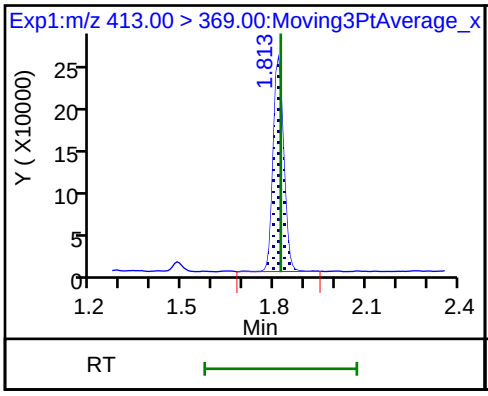
4 Perfluoroheptanoic acid



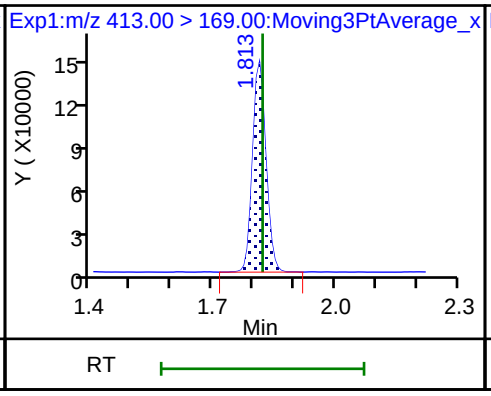
* 6 13C2-PFOA



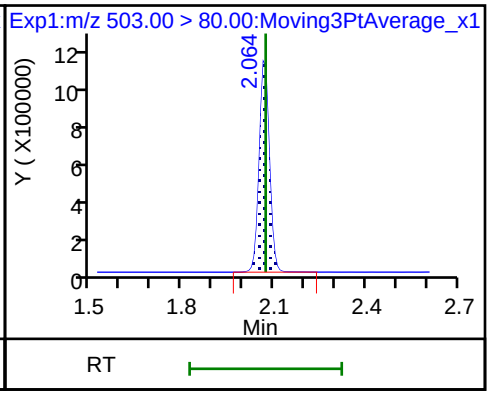
5 Perfluorooctanoic acid



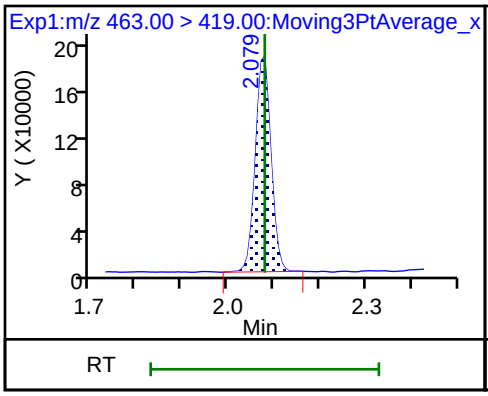
5 Perfluorooctanoic acid



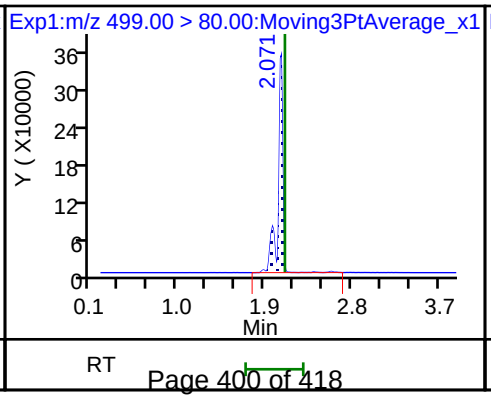
* 7 13C4 PFOS



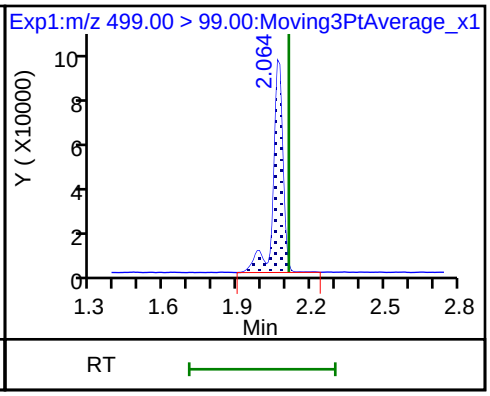
9 Perfluorononanoic acid



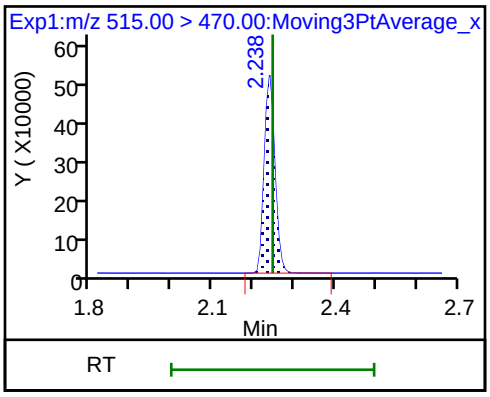
8 Perfluorooctane sulfonic acid



8 Perfluorooctane sulfonic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.238
Y (X10000)
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min
RT

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\2018.08.26_537C_009.d
Lims ID: LLCSD 320-241537/3-A
Client ID:
Sample Type: LLCSD
Inject. Date: 26-Aug-2018 23:53:27 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: llcsd 320-241537/3-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180826-63285.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 27-Aug-2018 14:57:48 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 27-Aug-2018 14:35:08

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	11.0	109.61
$ 10 13C2 PFDA	10.0	10.9	109.32

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Start Date: 08/15/2018 18:21

Analysis Batch Number: 240166 End Date: 08/15/2018 19:03

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-240166/2		08/15/2018 18:21	1	2018.08.15_537CURVE 003.d	GeminiC18 3x100 3(mm)
IC 320-240166/3		08/15/2018 18:25	1	2018.08.15_537CURVE 004.d	GeminiC18 3x100 3(mm)
IC 320-240166/4		08/15/2018 18:30	1	2018.08.15_537CURVE 005.d	GeminiC18 3x100 3(mm)
IC 320-240166/5 ICISAV		08/15/2018 18:35	1	2018.08.15_537CURVE 006.d	GeminiC18 3x100 3(mm)
IC 320-240166/6		08/15/2018 18:39	1	2018.08.15_537CURVE 007.d	GeminiC18 3x100 3(mm)
IC 320-240166/7		08/15/2018 18:44	1	2018.08.15_537CURVE 008.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/15/2018 18:49	1		GeminiC18 3x100 3(mm)
CCVL 320-240166/9		08/15/2018 18:53	1	2018.08.15_537CURVE 010.d	GeminiC18 3x100 3(mm)
ICB 320-240166/10		08/15/2018 18:58	1		GeminiC18 3x100 3(mm)
ICV 320-240166/11		08/15/2018 19:03	1	2018.08.15_537CURVE 012.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Start Date: 08/26/2018 23:30

Analysis Batch Number: 242153 End Date: 08/27/2018 00:30

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-242153/1		08/26/2018 23:30	1	2018.08.26_537C 004.d	GeminiC18 3x100 3(mm)
CCV 320-242153/2 CCVIS		08/26/2018 23:34	1	2018.08.26_537C 005.d	GeminiC18 3x100 3(mm)
MB 320-241537/1-A		08/26/2018 23:44	1	2018.08.26_537C 007.d	GeminiC18 3x100 3(mm)
LLCS 320-241537/2-A		08/26/2018 23:48	1	2018.08.26_537C 008.d	GeminiC18 3x100 3(mm)
LLCSD 320-241537/3-A		08/26/2018 23:53	1	2018.08.26_537C 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/26/2018 23:58	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:02	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:07	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:12	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:16	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:21	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:26	1		GeminiC18 3x100 3(mm)
CCV 320-242153/14 CCVIS		08/27/2018 00:30	1	2018.08.26_537C 017.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Start Date: 08/27/2018 00:30

Analysis Batch Number: 242156 End Date: 08/27/2018 01:27

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-242156/14 CCVIS		08/27/2018 00:30	1	2018.08.26_537C 017.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:40	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:44	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:49	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:54	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:58	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 01:03	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 01:08	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 01:13	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 01:17	1		GeminiC18 3x100 3(mm)
320-42142-1		08/27/2018 01:22	1	2018.08.26_537C 028.d	GeminiC18 3x100 3(mm)
CCV 320-242156/26 CCVIS		08/27/2018 01:27	1	2018.08.26_537C 029.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Start Date: 08/27/2018 01:27

Analysis Batch Number: 242157 End Date: 08/27/2018 01:50

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-242157/26 CCVIS		08/27/2018 01:27	1	2018.08.26_537C 029.d	GeminiC18 3x100 3(mm)
320-42142-2		08/27/2018 01:36	1	2018.08.26_537C 031.d	GeminiC18 3x100 3(mm)
320-42142-3		08/27/2018 01:41	1	2018.08.26_537C 032.d	GeminiC18 3x100 3(mm)
320-42142-4		08/27/2018 01:45	1	2018.08.26_537C 033.d	GeminiC18 3x100 3(mm)
CCV 320-242157/31 CCVIS		08/27/2018 01:50	1	2018.08.26_537C _034.d	GeminiC18 3x100 3(mm)

537

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Start Date: 08/27/2018 01:50

Analysis Batch Number: 242160 End Date: 08/27/2018 02:46

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-242160/31 CCVIS		08/27/2018 01:50	1	2018.08.26_537C 034.d	GeminiC18 3x100 3(mm)
MB 320-241832/1-A		08/27/2018 01:59	1	2018.08.26_537C 036.d	GeminiC18 3x100 3(mm)
LCS 320-241832/2-A		08/27/2018 02:04	1	2018.08.26_537C 037.d	GeminiC18 3x100 3(mm)
LCSD 320-241832/3-A		08/27/2018 02:09	1	2018.08.26_537C 038.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 02:13	1		GeminiC18 3x100 3(mm)
320-42142-6		08/27/2018 02:18	1	2018.08.26_537C 040.d	GeminiC18 3x100 3(mm)
320-42142-7		08/27/2018 02:23	1	2018.08.26_537C 041.d	GeminiC18 3x100 3(mm)
320-42142-8		08/27/2018 02:27	1	2018.08.26_537C 042.d	GeminiC18 3x100 3(mm)
320-42142-9		08/27/2018 02:32	1	2018.08.26_537C 043.d	GeminiC18 3x100 3(mm)
320-42142-10		08/27/2018 02:37	1	2018.08.26_537C 044.d	GeminiC18 3x100 3(mm)
320-42142-11		08/27/2018 02:41	1	2018.08.26_537C 045.d	GeminiC18 3x100 3(mm)
CCV 320-242160/43 CCVIS		08/27/2018 02:46	1	2018.08.26_537C 046.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Start Date: 08/27/2018 02:46

Analysis Batch Number: 242161 End Date: 08/27/2018 03:42

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-242161/43 CCVIS		08/27/2018 02:46	1	2018.08.26_537C 046.d	GeminiC18 3x100 3(mm)
320-42142-12		08/27/2018 02:55	1	2018.08.26_537C 048.d	GeminiC18 3x100 3(mm)
320-42142-13		08/27/2018 03:00	1	2018.08.26_537C 049.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 03:05	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 03:09	1		GeminiC18 3x100 3(mm)
320-42142-16		08/27/2018 03:14	1	2018.08.26_537C 052.d	GeminiC18 3x100 3(mm)
320-42142-17		08/27/2018 03:19	1	2018.08.26_537C 053.d	GeminiC18 3x100 3(mm)
320-42142-18		08/27/2018 03:24	1	2018.08.26_537C 054.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 03:28	1		GeminiC18 3x100 3(mm)
320-42142-20		08/27/2018 03:33	1	2018.08.26_537C 056.d	GeminiC18 3x100 3(mm)
320-42142-21		08/27/2018 03:38	1	2018.08.26_537C 057.d	GeminiC18 3x100 3(mm)
CCV 320-242161/55 CCVIS		08/27/2018 03:42	1	2018.08.26_537C 058.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Start Date: 08/28/2018 23:22

Analysis Batch Number: 242684 End Date: 08/28/2018 23:55

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-242684/1		08/28/2018 23:22	1	2018.08.28_537A 003.d	GeminiC18 3x100 3(mm)
CCV 320-242684/2 CCVIS		08/28/2018 23:27	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:31	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:36	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:41	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:45	2		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:50	1		GeminiC18 3x100 3(mm)
CCV 320-242684/8 CCVIS		08/28/2018 23:55	1		GeminiC18 3x100 3(mm)

537

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Start Date: 08/28/2018 23:55

Analysis Batch Number: 242687 End Date: 08/29/2018 00:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-242687/8 CCVIS		08/28/2018 23:55	1	2018.08.28_537A 010.d	GeminiC18 3x100 3(mm)
320-42142-5		08/29/2018 00:04	1	2018.08.28_537A 012.d	GeminiC18 3x100 3(mm)
320-42142-14		08/29/2018 00:09	1	2018.08.28_537A 013.d	GeminiC18 3x100 3(mm)
320-42142-15		08/29/2018 00:13	1	2018.08.28_537A 014.d	GeminiC18 3x100 3(mm)
320-42142-19		08/29/2018 00:18	1	2018.08.28_537A 015.d	GeminiC18 3x100 3(mm)
320-42142-22		08/29/2018 00:23	1	2018.08.28_537A 016.d	GeminiC18 3x100 3(mm)
320-42142-23		08/29/2018 00:27	1	2018.08.28_537A 017.d	GeminiC18 3x100 3(mm)
320-42142-24		08/29/2018 00:32	1	2018.08.28_537A 018.d	GeminiC18 3x100 3(mm)
CCV 320-242687/17 CCVIS		08/29/2018 00:37	1	2018.08.28_537A 019.d	GeminiC18 3x100 3(mm)

537

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Batch Number: 241537 Batch Start Date: 08/23/18 07:20 Batch Analyst: Arauz, Horacio J

Batch Method: 537 Batch End Date: 08/24/18 15:50

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00080
MB 320-241537/1		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
LLCS 320-241537/2		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
LLCSD 320-241537/3		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
320-42142-A-1	NAWC-081418-RW-256	537, 537	T	311.48 g	29.45 g	282 mL	1.00 mL	7.0 SU	100 uL
320-42142-A-2	NAWC-081418-FRB-256	537, 537	T	305.93 g	27.83 g	278.1 mL	1.00 mL	7.0 SU	100 uL
320-42142-A-3	NAWC-081418-RW-270	537, 537	T	289.48 g	29.16 g	260.3 mL	1.00 mL	7.0 SU	100 uL
320-42142-A-4	NAWC-081418-FRB-270	537, 537	T	303.53 g	27.95 g	275.6 mL	1.00 mL	7.0 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00077	AnalysisComment			
MB 320-241537/1		537, 537			100 uL	Chlorine ND			
LLCS 320-241537/2		537, 537		100 uL	100 uL	Chlorine ND			
LLCSD 320-241537/3		537, 537		100 uL	100 uL	Chlorine ND			
320-42142-A-1	NAWC-081418-RW-256	537, 537	T		100 uL	Chlorine ND			
320-42142-A-2	NAWC-081418-FRB-256	537, 537	T		100 uL	Chlorine ND			
320-42142-A-3	NAWC-081418-RW-270	537, 537	T		100 uL	Chlorine ND			
320-42142-A-4	NAWC-081418-FRB-270	537, 537	T		100 uL	Chlorine ND			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Batch Number: 241537 Batch Start Date: 08/23/18 07:20 Batch Analyst: Arauz, Horacio J

Batch Method: 537 Batch End Date: 08/24/18 15:50

Batch Notes	
Analyst ID - Aliquot Step	SKD
Batch Comment	Client labels match TA label, HJA 08/22/18
Analyst ID - Concentration	SKD
Analyst ID - Final Volume Step	SKD
Internal Standard ID#	1334015
Manifold ID	1, 3
Methanol ID	1335812
pH Indicator ID	0818
Pipette ID	R40536G
Analyst ID - IS Reagent Drop	SKD
Analyst ID - IS Reagent Drop Witness	VPM
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	SKD
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	SKD
SPE Cartridge Lot ID	6390138-06
Trizma ID	SLBR5241V
Reagent Water ID	08/21/18

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Batch Number: 241832 Batch Start Date: 08/24/18 09:17 Batch Analyst: Long, Tyrel W

Batch Method: 537 Batch End Date: 08/25/18 13:40

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00080
MB 320-241832/1		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCS 320-241832/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCSD 320-241832/3		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-42142-A-5	NAWC-081418-RW-271	537, 537	T	288.83 g	28.29 g	260.5 mL	1.00 mL	7 SU	100 uL
320-42142-A-6	NAWC-081418-FRB-271	537, 537	T	308.42 g	28.20 g	280.2 mL	1.00 mL	7 SU	100 uL
320-42142-A-7	NAWC-081418-RW-311	537, 537	T	301.23 g	28.36 g	272.9 mL	1.00 mL	7 SU	100 uL
320-42142-A-8	NAWC-081418-FRB-311	537, 537	T	291.12 g	28.11 g	263 mL	1.00 mL	7 SU	100 uL
320-42142-A-9	NAWC-081418-RW-038	537, 537	T	286.63 g	28.70 g	257.9 mL	1.00 mL	7 SU	100 uL
320-42142-A-10	NAWC-081418-FRB-038	537, 537	T	306.45 g	27.88 g	278.6 mL	1.00 mL	7 SU	100 uL
320-42142-A-11	NAWC-081418-RW-039	537, 537	T	286.61 g	28.11 g	258.5 mL	1.00 mL	7 SU	100 uL
320-42142-A-12	NAWC-081418-FRB-039	537, 537	T	290.69 g	28.06 g	262.6 mL	1.00 mL	7 SU	100 uL
320-42142-A-13	NAWC-081418-RW-187	537, 537	T	294.86 g	28.45 g	266.4 mL	1.00 mL	7 SU	100 uL
320-42142-A-14	NAWC-081418-FRB-187	537, 537	T	307.24 g	28.64 g	278.6 mL	1.00 mL	7 SU	100 uL
320-42142-A-15	NAWC-081418-RW-292	537, 537	T	294.56 g	28.38 g	266.2 mL	1.00 mL	7 SU	100 uL
320-42142-A-16	NAWC-081418-FRB-292	537, 537	T	310.14 g	28.29 g	281.9 mL	1.00 mL	7 SU	100 uL
320-42142-A-17	NAWC-081418-RW-229	537, 537	T	284.49 g	28.76 g	255.7 mL	1.00 mL	7 SU	100 uL
320-42142-A-18	NAWC-081418-FRB-229	537, 537	T	296.28 g	27.97 g	268.3 mL	1.00 mL	7 SU	100 uL
320-42142-A-19	NAWC-081418-RW-126	537, 537	T	259.79 g	29.31 g	230.5 mL	1.00 mL	7 SU	100 uL
320-42142-A-20	NAWC-081418-FRB-126	537, 537	T	303.78 g	28.82 g	275 mL	1.00 mL	7 SU	100 uL
320-42142-A-21	NAWC-081418-RW-172	537, 537	T	264.81 g	29.14 g	235.7 mL	1.00 mL	7 SU	100 uL
320-42142-A-22	NAWC-081418-FRB-172	537, 537	T	301.45 g	27.84 g	273.6 mL	1.00 mL	7 SU	100 uL
320-42142-A-23	WGNA-080718-DUP-45	537, 537	T	294.57 g	28.61 g	266 mL	1.00 mL	7 SU	100 uL

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.: 320-42142-1

SDG No.:

Batch Number: 241832 Batch Start Date: 08/24/18 09:17 Batch Analyst: Long, Tyrel W

Batch Method: 537 Batch End Date: 08/25/18 13:40

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00080
320-42142-A-24	WGNA-080718-DUP-46	537, 537	T	271.88 g	28.14 g	243.7 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00033	LC537-SU 00077	AnalysisComment			
MB 320-241832/1		537, 537			100 uL	Chlorine ND			
LCS 320-241832/2		537, 537		100 uL	100 uL	Chlorine ND			
LCSD 320-241832/3		537, 537		100 uL	100 uL	Chlorine ND			
320-42142-A-5	NAWC-081418-RW-271	537, 537	T		100 uL	Chlorine ND			
320-42142-A-6	NAWC-081418-FRB-271	537, 537	T		100 uL	Chlorine ND			
320-42142-A-7	NAWC-081418-RW-311	537, 537	T		100 uL	Chlorine ND			
320-42142-A-8	NAWC-081418-FRB-311	537, 537	T		100 uL	Chlorine ND			
320-42142-A-9	NAWC-081418-RW-038	537, 537	T		100 uL	Chlorine ND			
320-42142-A-10	NAWC-081418-FRB-038	537, 537	T		100 uL	Chlorine ND			
320-42142-A-11	NAWC-081418-RW-039	537, 537	T		100 uL	Chlorine ND			
320-42142-A-12	NAWC-081418-FRB-039	537, 537	T		100 uL	Chlorine ND			
320-42142-A-13	NAWC-081418-RW-187	537, 537	T		100 uL	Chlorine ND			
320-42142-A-14	NAWC-081418-FRB-187	537, 537	T		100 uL	Chlorine ND			
320-42142-A-15	NAWC-081418-RW-292	537, 537	T		100 uL	Chlorine ND			
320-42142-A-16	NAWC-081418-FRB-292	537, 537	T		100 uL	Chlorine ND			
320-42142-A-17	NAWC-081418-RW-229	537, 537	T		100 uL	Chlorine ND			
320-42142-A-18	NAWC-081418-FRB-229	537, 537	T		100 uL	Chlorine ND			
320-42142-A-19	NAWC-081418-RW-126	537, 537	T		100 uL	Chlorine ND			
320-42142-A-20	NAWC-081418-FRB-126	537, 537	T		100 uL	Chlorine ND			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Batch Number: 241832 Batch Start Date: 08/24/18 09:17 Batch Analyst: Long, Tyrel W

Batch Method: 537 Batch End Date: 08/25/18 13:40

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00033	LC537-SU 00077	AnalysisComment			
320-42142-A-21	NAWC-081418-RW-172	537, 537	T		100 uL	Chlorine ND			
320-42142-A-22	NAWC-081418-FRB-172	537, 537	T		100 uL	Chlorine ND			
320-42142-A-23	WGNA-080718-DUP-45	537, 537	T		100 uL	Chlorine ND			
320-42142-A-24	WGNA-080718-DUP-46	537, 537	T		100 uL	Chlorine ND			

Batch Notes	
Analyst ID - Aliquot Step	SKD
Batch Comment	Client labels match TA label, TWL 08/22/18
Analyst ID - Concentration	SKD
Analyst ID - Final Volume Step	SKD
Internal Standard ID#	1334015
Manifold ID	3,4
Methanol ID	1335812
pH Indicator ID	0818
Pipette ID	R40536G
Analyst ID - IS Reagent Drop	SKD
Analyst ID - IS Reagent Drop Witness	VPM
Analyst ID - SU Reagent Drop	TWL
Analyst ID - SU Reagent Drop Witness	QLP
Analyst ID - TA Reagent Drop	TWL
Analyst ID - TA Reagent Drop Witness	QLP
SPE Cartridge Lot ID	6390138-08
Trizma ID	SLBR5241V
Reagent Water ID	08/23/18

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Shipping and Receiving Documents

TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

Regulatory Program: ☑DW ☐NPDES ☐RCRA ☐Other:

Client Contact	Project Manager: Andy Frebowitz	Site Contact: Mary Kay Bond	Date: 8/14/2018	COC No:
TetraTech	Tel/Fax: 610.382.2920	Lab Contact: Dave Alltucker	Carrier: FedEx	1 of 1 COCs
234 Mall Boulevard Suite 260	Analysis Turnaround Time			Sampler: Mary Kay Bond
King of Prussia, PA 19406	☐CALENDAR DAYS ☐WORKING DAYS			For Lab Use Only:
610-382-2924	TAT if different from Below 21			Client:
610-491-9688	☐ 2 weeks			ling:
Project Name: WE04	☐ 1 week			
Site: WE04	☐ 2 days			No.:
P O # 1132358 (through EarthToxics)	☐ 1 day			

320-42142 Chain of Custody

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=Grab) | Matrix | # of Cont. | Filtered Sample (Y / N) | Perform MS / MSD (Y / N) | EPA 537 UCMR3 | | |

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-42142-1

Login Number: 42142
List Number: 1
Creator: Nelson, Kym D

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	seals
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.	False	IDs on containers do not match the COC. Logged in per COC.
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	

"NAWC-081418-RW-256","537","RES","320-42142-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","30","ng/L","J","6.0","DL","","TRG","","","35","LOQ","YES","-99","","282","1.00","14",""
"NAWC-081418-RW-256","537","RES","320-42142-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","28","ng/L","","2.5","DL","","TRG","","","18","LOQ","YES","-99","","282","1.00","7.1",""
"NAWC-081418-RW-256","537","RES","320-42142-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","5.5","ng/L","J","4.9","DL","","TRG","","","27","LOQ","YES","-99","","282","1.00","11",""
"NAWC-081418-RW-256","537","RES","320-42142-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","32","ng/L","U","14","DL","","TRG","","","80","LOQ","YES","-99","","282","1.00","32",""
"NAWC-081418-RW-256","537","RES","320-42142-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","8.5","ng/L","J","1.7","DL","","TRG","","","8.9","LOQ","YES","-99","","282","1.00","3.5",""
"NAWC-081418-RW-256","537","RES","320-42142-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","18","ng/L","U","7.1","DL","","TRG","","","21","LOQ","YES","-99","","282","1.00","18",""
"NAWC-081418-RW-256","537","RES","320-42142-1","TALSAC","STL00993","13C2 PFHxA","34","ng/L","","-99","DL","","SURR","95","","-99","LOQ","YES","35.5","","282","1.00","0",""
"NAWC-081418-RW-256","537","RES","320-42142-1","TALSAC","STL00996","13C2 PFDA","39","ng/L","","-99","DL","","SURR","109","","-99","LOQ","YES","35.5","","282","1.00","0",""
"NAWC-081418-FRB-038","537","RES","320-42142-10","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","14","ng/L","U","6.1","DL","","TRG","","","36","LOQ","YES","-99","","278.6","1.00","14",""
"NAWC-081418-FRB-038","537","RES","320-42142-10","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.2","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","278.6","1.00","7.2",""
"NAWC-081418-FRB-038","537","RES","320-42142-10","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","11","ng/L","U","4.9","DL","","TRG","","","27","LOQ","YES","-99","","278.6","1.00","11",""
"NAWC-081418-FRB-038","537","RES","320-42142-10","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","32","ng/L","U","14","DL","","TRG","","","81","LOQ","YES","-99","","278.6","1.00","32",""
"NAWC-081418-FRB-038","537","RES","320-42142-10","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.6","ng/L","U","1.7","DL","","TRG","","","9.0","LOQ","YES","-99","","278.6","1.00","3.6",""
"NAWC-081418-FRB-038","537","RES","320-42142-10","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","18","ng/L","U","7.2","DL","","TRG","","","22","LOQ","YES","-99","","278.6","1.00","18",""
"NAWC-081418-FRB-038","537","RES","320-42142-10","TALSAC","STL00993","13C2 PFHxA","38","ng/L","","-99","DL","","SURR","106","","-99","LOQ","YES","35.9","","278.6","1.00","0",""
"NAWC-081418-FRB-038","537","RES","320-42142-10","TALSAC","STL00996","13C2 PFDA","37","ng/L","","-99","DL","","SURR","102","","-99","LOQ","YES","35.9","","278.6","1.00","0",""
"NAWC-081418-RW-039","537","RES","320-42142-11","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","14","ng/L","J","6.6","DL","","TRG","","","39","LOQ","YES","-99","","258.5","1.00","15",""
"NAWC-081418-RW-039","537","RES","320-42142-11","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","10","ng/L","J","2.7","DL","","TRG","","","19","LOQ","YES","-99","","258.5","1.00","7.7",""
"NAWC-081418-RW-039","537","RES","320-42142-11","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U M","5.3","DL","","TRG","","","29","LOQ","YES","-99","","258.5","1.00","12",""
"NAWC-081418-RW-039","537","RES","320-42142-11","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U M","16","DL","","TRG","","","87","LOQ","YES","-99","","258.5","1.00","35",""
"NAWC-081418-RW-039","537","RES","320-42142-11","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.1","ng/L","J M","1.8","DL","","TRG","","","9.7","LOQ","YES","-99","","258.5","1.00","3.9",""
"NAWC-081418-RW-039","537","RES","320-42142-11","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES","-99","","258.5","1.00","19",""
"NAWC-081418-RW-039","537","RES","320-42142-11","TALSAC","STL00993","13C2 PFHxA","38","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","38.7","","258.5","1.00","0",""
"NAWC-081418-RW-039","537","RES","320-42142-11","TALSAC","STL00996","13C2 PFDA","38","ng/L","","-99","DL","","SURR","99","","-99","LOQ","YES","38.7","","258.5","1.00","0",""
"NAWC-081418-FRB-039","537","RES","320-42142-12","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","15","ng/L","U","6.5","DL","","TRG","","","38","LOQ","YES","-99","","262.6","1.00","15",""
"NAWC-081418-FRB-039","537","RES","320-42142-12","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.6","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES","-99","","262.6","1.00","7.6",""
"NAWC-081418-FRB-039","537","RES","320-42142-12","TALSAC","355-46-4","Perfluorohexanesulfonic acid

(PFHxS)","11","ng/L","U","5.2","DL","","TRG","","","29","LOQ","YES","-99","","262.6","1.00","11",""
"NAWC-081418-FRB-039","537","RES","320-42142-12","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","TRG","","","86","LOQ","YES","-99","","262.6","1.00","34",""
"NAWC-081418-FRB-039","537","RES","320-42142-12","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.8","ng/L","U","1.8","DL","","TRG","","","9.5","LOQ","YES","-99","","262.6","1.00","3.8",""
"NAWC-081418-FRB-039","537","RES","320-42142-12","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.6","DL","","TRG","","","23","LOQ","YES","-99","","262.6","1.00","19",""
"NAWC-081418-FRB-039","537","RES","320-42142-12","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","-99","DL","","SURR","102","","-99","LOQ","YES","38.1","","262.6","1.00","0",""
"NAWC-081418-FRB-039","537","RES","320-42142-12","TALSAC","STL00996","13C2
PFDA","39","ng/L","","-99","DL","","SURR","102","","-99","LOQ","YES","38.1","","262.6","1.00","0",""
"NAWC-081418-RW-187","537","RES","320-42142-13","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","62","ng/L","","6.4","DL","","TRG","","","38","LOQ","YES","-99","","266.4","1.00","15",""
"NAWC-081418-RW-187","537","RES","320-42142-13","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","34","ng/L","","2.6","DL","","TRG","","","19","LOQ","YES","-99","","266.4","1.00","7.5",""
"NAWC-081418-RW-187","537","RES","320-42142-13","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","31","ng/L","","5.2","DL","","TRG","","","28","LOQ","YES","-99","","266.4","1.00","11",""
"NAWC-081418-RW-187","537","RES","320-42142-13","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","TRG","","","84","LOQ","YES","-99","","266.4","1.00","34",""
"NAWC-081418-RW-187","537","RES","320-42142-13","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","35","ng/L","","1.8","DL","","TRG","","","9.4","LOQ","YES","-99","","266.4","1.00","3.8",""
"NAWC-081418-RW-187","537","RES","320-42142-13","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.5","DL","","TRG","","","23","LOQ","YES","-99","","266.4","1.00","19",""
"NAWC-081418-RW-187","537","RES","320-42142-13","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","-99","DL","","SURR","95","","-99","LOQ","YES","37.5","","266.4","1.00","0",""
"NAWC-081418-RW-187","537","RES","320-42142-13","TALSAC","STL00996","13C2
PFDA","37","ng/L","","-99","DL","","SURR","100","","-99","LOQ","YES","37.5","","266.4","1.00","0",""
"NAWC-081418-FRB-187","537","RES","320-42142-14","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.1","DL","","TRG","","","36","LOQ","YES","-99","","278.6","1.00","14",""
"NAWC-081418-FRB-187","537","RES","320-42142-14","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.2","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","278.6","1.00","7.2",""
"NAWC-081418-FRB-187","537","RES","320-42142-14","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","4.9","DL","","TRG","","","27","LOQ","YES","-99","","278.6","1.00","11",""
"NAWC-081418-FRB-187","537","RES","320-42142-14","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","81","LOQ","YES","-99","","278.6","1.00","32",""
"NAWC-081418-FRB-187","537","RES","320-42142-14","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","U","1.7","DL","","TRG","","","9.0","LOQ","YES","-99","","278.6","1.00","3.6",""
"NAWC-081418-FRB-187","537","RES","320-42142-14","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.2","DL","","TRG","","","22","LOQ","YES","-99","","278.6","1.00","18",""
"NAWC-081418-FRB-187","537","RES","320-42142-14","TALSAC","STL00993","13C2
PFHxA","34","ng/L","","-99","DL","","SURR","96","","-99","LOQ","YES","35.9","","278.6","1.00","0",""
"NAWC-081418-FRB-187","537","RES","320-42142-14","TALSAC","STL00996","13C2
PFDA","36","ng/L","","-99","DL","","SURR","100","","-99","LOQ","YES","35.9","","278.6","1.00","0",""
"NAWC-081418-RW-292","537","RES","320-42142-15","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","23","ng/L","J","6.4","DL","","TRG","","","38","LOQ","YES","-99","","266.2","1.00","15",""
"NAWC-081418-RW-292","537","RES","320-42142-15","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","20","ng/L","","2.6","DL","","TRG","","","19","LOQ","YES","-99","","266.2","1.00","7.5",""
"NAWC-081418-RW-292","537","RES","320-42142-15","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","9.4","ng/L","J","5.2","DL","","TRG","","","28","LOQ","YES","-99","","266.2","1.00","11",""
"NAWC-081418-RW-292","537","RES","320-42142-15","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","TRG","","","85","LOQ","YES","-99","","266.2","1.00","34",""
"NAWC-081418-RW-292","537","RES","320-42142-15","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","8.5","ng/L","J","1.8","DL","","TRG","","","9.4","LOQ","YES","-99","","266.2","1.00","3.8",""
"NAWC-081418-RW-292","537","RES","320-42142-15","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA)","19","ng/L","U","7.5","DL","","TRG","","","23","LOQ","YES","-99","","266.2","1.00","19","
"NAWC-081418-RW-292","537","RES","320-42142-15","TALSAC","STL00993","13C2
PFHxA","37","ng/L","","-99","DL","","SURR","97","","-99","LOQ","YES","37.6","","266.2","1.00","0","
"NAWC-081418-RW-292","537","RES","320-42142-15","TALSAC","STL00996","13C2
PFDA","38","ng/L","","-99","DL","","SURR","102","","-99","LOQ","YES","37.6","","266.2","1.00","0","
"NAWC-081418-FRB-292","537","RES","320-42142-16","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.0","DL","","TRG","","","35","LOQ","YES","-99","","281.9","1.00","14","
"NAWC-081418-FRB-292","537","RES","320-42142-16","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.1","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","281.9","1.00","7.1","
"NAWC-081418-FRB-292","537","RES","320-42142-16","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","4.9","DL","","TRG","","","27","LOQ","YES","-99","","281.9","1.00","11","
"NAWC-081418-FRB-292","537","RES","320-42142-16","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","80","LOQ","YES","-99","","281.9","1.00","32","
"NAWC-081418-FRB-292","537","RES","320-42142-16","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.5","ng/L","U","1.7","DL","","TRG","","","8.9","LOQ","YES","-99","","281.9","1.00","3.5","
"NAWC-081418-FRB-292","537","RES","320-42142-16","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.1","DL","","TRG","","","21","LOQ","YES","-99","","281.9","1.00","18","
"NAWC-081418-FRB-292","537","RES","320-42142-16","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","99","","-99","LOQ","YES","35.5","","281.9","1.00","0","
"NAWC-081418-FRB-292","537","RES","320-42142-16","TALSAC","STL00996","13C2
PFDA","36","ng/L","","-99","DL","","SURR","102","","-99","LOQ","YES","35.5","","281.9","1.00","0","
"NAWC-081418-RW-229","537","RES","320-42142-17","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","29","ng/L","J","6.6","DL","","TRG","","","39","LOQ","YES","-99","","255.7","1.00","16","
"NAWC-081418-RW-229","537","RES","320-42142-17","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","31","ng/L","","2.7","DL","","TRG","","","20","LOQ","YES","-99","","255.7","1.00","7.8","
"NAWC-081418-RW-229","537","RES","320-42142-17","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","10","ng/L","J","5.4","DL","","TRG","","","29","LOQ","YES","-99","","255.7","1.00","12","
"NAWC-081418-RW-229","537","RES","320-42142-17","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","255.7","1.00","35","
"NAWC-081418-RW-229","537","RES","320-42142-17","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","11","ng/L","","1.9","DL","","TRG","","","9.8","LOQ","YES","-99","","255.7","1.00","3.9","
"NAWC-081418-RW-229","537","RES","320-42142-17","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U M","7.8","DL","","TRG","","","23","LOQ","YES","-99","","255.7","1.00","20","
"NAWC-081418-RW-229","537","RES","320-42142-17","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","91","","-99","LOQ","YES","39.1","","255.7","1.00","0","
"NAWC-081418-RW-229","537","RES","320-42142-17","TALSAC","STL00996","13C2
PFDA","39","ng/L","","-99","DL","","SURR","99","","-99","LOQ","YES","39.1","","255.7","1.00","0","
"NAWC-081418-FRB-229","537","RES","320-42142-18","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.3","DL","","TRG","","","37","LOQ","YES","-99","","268.3","1.00","15","
"NAWC-081418-FRB-229","537","RES","320-42142-18","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.5","ng/L","U","2.6","DL","","TRG","","","19","LOQ","YES","-99","","268.3","1.00","7.5","
"NAWC-081418-FRB-229","537","RES","320-42142-18","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.1","DL","","TRG","","","28","LOQ","YES","-99","","268.3","1.00","11","
"NAWC-081418-FRB-229","537","RES","320-42142-18","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","TRG","","","84","LOQ","YES","-99","","268.3","1.00","34","
"NAWC-081418-FRB-229","537","RES","320-42142-18","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.7","ng/L","U","1.8","DL","","TRG","","","9.3","LOQ","YES","-99","","268.3","1.00","3.7","
"NAWC-081418-FRB-229","537","RES","320-42142-18","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.5","DL","","TRG","","","22","LOQ","YES","-99","","268.3","1.00","19","
"NAWC-081418-FRB-229","537","RES","320-42142-18","TALSAC","STL00993","13C2
PFHxA","37","ng/L","","-99","DL","","SURR","100","","-99","LOQ","YES","37.3","","268.3","1.00","0","
"NAWC-081418-FRB-229","537","RES","320-42142-18","TALSAC","STL00996","13C2
PFDA","37","ng/L","","-99","DL","","SURR","100","","-99","LOQ","YES","37.3","","268.3","1.00","0","
"NAWC-081418-RW-126","537","RES","320-42142-19","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS)","57","ng/L","","7.4","DL","","TRG","","","43","LOQ","YES","-99","","230.5","1.00","17","
"NAWC-081418-RW-126","537","RES","320-42142-19","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","10","ng/L","J","3.0","DL","","TRG","","","22","LOQ","YES","-99","","230.5","1.00","8.7","
"NAWC-081418-RW-126","537","RES","320-42142-19","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","37","ng/L","","6.0","DL","","TRG","","","33","LOQ","YES","-99","","230.5","1.00","13","
"NAWC-081418-RW-126","537","RES","320-42142-19","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","39","ng/L","U","17","DL","","TRG","","","98","LOQ","YES","-99","","230.5","1.00","39","
"NAWC-081418-RW-126","537","RES","320-42142-19","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.5","ng/L","J","2.1","DL","","TRG","","","11","LOQ","YES","-99","","230.5","1.00","4.3","
"NAWC-081418-RW-126","537","RES","320-42142-19","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","22","ng/L","U","8.7","DL","","TRG","","","26","LOQ","YES","-99","","230.5","1.00","22","
"NAWC-081418-RW-126","537","RES","320-42142-19","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","43.4","","230.5","1.00","0","
"NAWC-081418-RW-126","537","RES","320-42142-19","TALSAC","STL00996","13C2
PFDA","41","ng/L","","-99","DL","","SURR","95","","-99","LOQ","YES","43.4","","230.5","1.00","0","
"NAWC-081418-FRB-256","537","RES","320-42142-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.1","DL","","TRG","","","36","LOQ","YES","-99","","278.1","1.00","14","
"NAWC-081418-FRB-256","537","RES","320-42142-2","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.2","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","278.1","1.00","7.2","
"NAWC-081418-FRB-256","537","RES","320-42142-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","4.9","DL","","TRG","","","27","LOQ","YES","-99","","278.1","1.00","11","
"NAWC-081418-FRB-256","537","RES","320-42142-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","81","LOQ","YES","-99","","278.1","1.00","32","
"NAWC-081418-FRB-256","537","RES","320-42142-2","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","U","1.7","DL","","TRG","","","9.0","LOQ","YES","-99","","278.1","1.00","3.6","
"NAWC-081418-FRB-256","537","RES","320-42142-2","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.2","DL","","TRG","","","22","LOQ","YES","-99","","278.1","1.00","18","
"NAWC-081418-FRB-256","537","RES","320-42142-2","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","-99","DL","","SURR","108","","-99","LOQ","YES","36.0","","278.1","1.00","0","
"NAWC-081418-FRB-256","537","RES","320-42142-2","TALSAC","STL00996","13C2
PFDA","39","ng/L","","-99","DL","","SURR","108","","-99","LOQ","YES","36.0","","278.1","1.00","0","
"NAWC-081418-FRB-126","537","RES","320-42142-20","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.2","DL","","TRG","","","36","LOQ","YES","-99","","275","1.00","15","
"NAWC-081418-FRB-126","537","RES","320-42142-20","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.3","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","275","1.00","7.3","
"NAWC-081418-FRB-126","537","RES","320-42142-20","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.0","DL","","TRG","","","27","LOQ","YES","-99","","275","1.00","11","
"NAWC-081418-FRB-126","537","RES","320-42142-20","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","33","ng/L","U","15","DL","","TRG","","","82","LOQ","YES","-99","","275","1.00","33","
"NAWC-081418-FRB-126","537","RES","320-42142-20","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","U","1.7","DL","","TRG","","","9.1","LOQ","YES","-99","","275","1.00","3.6","
"NAWC-081418-FRB-126","537","RES","320-42142-20","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.3","DL","","TRG","","","22","LOQ","YES","-99","","275","1.00","18","
"NAWC-081418-FRB-126","537","RES","320-42142-20","TALSAC","STL00993","13C2
PFHxA","34","ng/L","","-99","DL","","SURR","95","","-99","LOQ","YES","36.4","","275","1.00","0","
"NAWC-081418-FRB-126","537","RES","320-42142-20","TALSAC","STL00996","13C2
PFDA","38","ng/L","","-99","DL","","SURR","104","","-99","LOQ","YES","36.4","","275","1.00","0","
"NAWC-081418-RW-172","537","RES","320-42142-21","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","8.1","ng/L","J","7.2","DL","","TRG","","","42","LOQ","YES","-99","","235.7","1.00","17","
"NAWC-081418-RW-172","537","RES","320-42142-21","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","10","ng/L","J","3.0","DL","","TRG","","","21","LOQ","YES","-99","","235.7","1.00","8.5","
"NAWC-081418-RW-172","537","RES","320-42142-21","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","13","ng/L","U","5.8","DL","","TRG","","","32","LOQ","YES","-99","","235.7","1.00","13","
"NAWC-081418-RW-172","537","RES","320-42142-21","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)","38","ng/L","U","17","DL","","TRG","","","95","LOQ","YES","-99","","235.7","1.00","38",""
"NAWC-081418-RW-172","537","RES","320-42142-21","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","J M","2.0","DL","","TRG","","","11","LOQ","YES","-99","","235.7","1.00","4.2",""
"NAWC-081418-RW-172","537","RES","320-42142-21","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","21","ng/L","U","8.5","DL","","TRG","","","25","LOQ","YES","-99","","235.7","1.00","21",""
"NAWC-081418-RW-172","537","RES","320-42142-21","TALSAC","STL00993","13C2
PFHxA","42","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","42.4","","235.7","1.00","0",""
"NAWC-081418-RW-172","537","RES","320-42142-21","TALSAC","STL00996","13C2
PFDA","43","ng/L","","-99","DL","","SURR","100","","-99","LOQ","YES","42.4","","235.7","1.00","0",""
"NAWC-081418-FRB-172","537","RES","320-42142-22","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.2","DL","","TRG","","","37","LOQ","YES","-99","","273.6","1.00","15",""
"NAWC-081418-FRB-172","537","RES","320-42142-22","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.3","ng/L","U","2.6","DL","","TRG","","","18","LOQ","YES","-99","","273.6","1.00","7.3",""
"NAWC-081418-FRB-172","537","RES","320-42142-22","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.0","DL","","TRG","","","27","LOQ","YES","-99","","273.6","1.00","11",""
"NAWC-081418-FRB-172","537","RES","320-42142-22","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","33","ng/L","U","15","DL","","TRG","","","82","LOQ","YES","-99","","273.6","1.00","33",""
"NAWC-081418-FRB-172","537","RES","320-42142-22","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.7","ng/L","U","1.7","DL","","TRG","","","9.1","LOQ","YES","-99","","273.6","1.00","3.7",""
"NAWC-081418-FRB-172","537","RES","320-42142-22","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.3","DL","","TRG","","","22","LOQ","YES","-99","","273.6","1.00","18",""
"NAWC-081418-FRB-172","537","RES","320-42142-22","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","96","","-99","LOQ","YES","36.5","","273.6","1.00","0",""
"NAWC-081418-FRB-172","537","RES","320-42142-22","TALSAC","STL00996","13C2
PFDA","35","ng/L","","-99","DL","","SURR","97","","-99","LOQ","YES","36.5","","273.6","1.00","0",""
"WGNA-080718-DUP-45","537","RES","320-42142-23","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","30","ng/L","J","6.4","DL","","TRG","","","38","LOQ","YES","-99","","266","1.00","15",""
"WGNA-080718-DUP-45","537","RES","320-42142-23","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","27","ng/L","","2.6","DL","","TRG","","","19","LOQ","YES","-99","","266","1.00","7.5",""
"WGNA-080718-DUP-45","537","RES","320-42142-23","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","5.3","ng/L","J","5.2","DL","","TRG","","","28","LOQ","YES","-99","","266","1.00","11",""
"WGNA-080718-DUP-45","537","RES","320-42142-23","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","TRG","","","85","LOQ","YES","-99","","266","1.00","34",""
"WGNA-080718-DUP-45","537","RES","320-42142-23","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","8.5","ng/L","J","1.8","DL","","TRG","","","9.4","LOQ","YES","-99","","266","1.00","3.8",""
"WGNA-080718-DUP-45","537","RES","320-42142-23","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.5","DL","","TRG","","","23","LOQ","YES","-99","","266","1.00","19",""
"WGNA-080718-DUP-45","537","RES","320-42142-23","TALSAC","STL00993","13C2
PFHxA","32","ng/L","","-99","DL","","SURR","85","","-99","LOQ","YES","37.6","","266","1.00","0",""
"WGNA-080718-DUP-45","537","RES","320-42142-23","TALSAC","STL00996","13C2
PFDA","35","ng/L","","-99","DL","","SURR","94","","-99","LOQ","YES","37.6","","266","1.00","0",""
"WGNA-080718-DUP-46","537","RES","320-42142-24","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","7.8","ng/L","J","7.0","DL","","TRG","","","41","LOQ","YES","-99","","243.7","1.00","16",""
"WGNA-080718-DUP-46","537","RES","320-42142-24","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","10","ng/L","J","2.9","DL","","TRG","","","21","LOQ","YES","-99","","243.7","1.00","8.2",""
"WGNA-080718-DUP-46","537","RES","320-42142-24","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.6","DL","","TRG","","","31","LOQ","YES","-99","","243.7","1.00","12",""
"WGNA-080718-DUP-46","537","RES","320-42142-24","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","37","ng/L","U","17","DL","","TRG","","","92","LOQ","YES","-99","","243.7","1.00","37",""
"WGNA-080718-DUP-46","537","RES","320-42142-24","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","4.1","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","243.7","1.00","4.1",""
"WGNA-080718-DUP-46","537","RES","320-42142-24","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","21","ng/L","U","8.2","DL","","TRG","","","25","LOQ","YES","-99","","243.7","1.00","21",""
"WGNA-080718-DUP-46","537","RES","320-42142-24","TALSAC","STL00993","13C2

PFHxA","33","ng/L","","-99","DL","","SURR","81","","-99","LOQ","YES","41.0","","243.7","1.00","0",""
"WGNA-080718-DUP-46","537","RES","320-42142-24","TALSAC","STL00996","13C2
PFDA","36","ng/L","","-99","DL","","SURR","87","","-99","LOQ","YES","41.0","","243.7","1.00","0",""
"NAWC-081418-RW-270","537","RES","320-42142-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","J","6.5","DL","","TRG","","","38","LOQ","YES","-99","","260.3","1.00","15",""
"NAWC-081418-RW-270","537","RES","320-42142-3","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","11","ng/L","J","2.7","DL","","TRG","","","19","LOQ","YES","-99","","260.3","1.00","7.7",""
"NAWC-081418-RW-270","537","RES","320-42142-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.3","DL","","TRG","","","29","LOQ","YES","-99","","260.3","1.00","12",""
"NAWC-081418-RW-270","537","RES","320-42142-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","15","DL","","TRG","","","86","LOQ","YES","-99","","260.3","1.00","35",""
"NAWC-081418-RW-270","537","RES","320-42142-3","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","J","1.8","DL","","TRG","","","9.6","LOQ","YES","-99","","260.3","1.00","3.8",""
"NAWC-081418-RW-270","537","RES","320-42142-3","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES","-99","","260.3","1.00","19",""
"NAWC-081418-RW-270","537","RES","320-42142-3","TALSAC","STL00993","13C2
PFHxA","39","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","38.4","","260.3","1.00","0",""
"NAWC-081418-RW-270","537","RES","320-42142-3","TALSAC","STL00996","13C2
PFDA","42","ng/L","","-99","DL","","SURR","108","","-99","LOQ","YES","38.4","","260.3","1.00","0",""
"NAWC-081418-FRB-270","537","RES","320-42142-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.2","DL","","TRG","","","36","LOQ","YES","-99","","275.6","1.00","15",""
"NAWC-081418-FRB-270","537","RES","320-42142-4","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.3","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","275.6","1.00","7.3",""
"NAWC-081418-FRB-270","537","RES","320-42142-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.0","DL","","TRG","","","27","LOQ","YES","-99","","275.6","1.00","11",""
"NAWC-081418-FRB-270","537","RES","320-42142-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","33","ng/L","U","15","DL","","TRG","","","82","LOQ","YES","-99","","275.6","1.00","33",""
"NAWC-081418-FRB-270","537","RES","320-42142-4","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","U","1.7","DL","","TRG","","","9.1","LOQ","YES","-99","","275.6","1.00","3.6",""
"NAWC-081418-FRB-270","537","RES","320-42142-4","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.3","DL","","TRG","","","22","LOQ","YES","-99","","275.6","1.00","18",""
"NAWC-081418-FRB-270","537","RES","320-42142-4","TALSAC","STL00993","13C2
PFHxA","41","ng/L","","-99","DL","","SURR","113","","-99","LOQ","YES","36.3","","275.6","1.00","0",""
"NAWC-081418-FRB-270","537","RES","320-42142-4","TALSAC","STL00996","13C2
PFDA","44","ng/L","","-99","DL","","SURR","120","","-99","LOQ","YES","36.3","","275.6","1.00","0",""
"NAWC-081418-RW-271","537","RES","320-42142-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","11","ng/L","J","6.5","DL","","TRG","","","38","LOQ","YES","-99","","260.5","1.00","15",""
"NAWC-081418-RW-271","537","RES","320-42142-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","13","ng/L","J","2.7","DL","","TRG","","","19","LOQ","YES","-99","","260.5","1.00","7.7",""
"NAWC-081418-RW-271","537","RES","320-42142-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","6.2","ng/L","J","5.3","DL","","TRG","","","29","LOQ","YES","-99","","260.5","1.00","12",""
"NAWC-081418-RW-271","537","RES","320-42142-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","15","DL","","TRG","","","86","LOQ","YES","-99","","260.5","1.00","35",""
"NAWC-081418-RW-271","537","RES","320-42142-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.7","ng/L","J M","1.8","DL","","TRG","","","9.6","LOQ","YES","-99","","260.5","1.00","3.8",""
"NAWC-081418-RW-271","537","RES","320-42142-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES","-99","","260.5","1.00","19",""
"NAWC-081418-RW-271","537","RES","320-42142-5","TALSAC","STL00993","13C2
PFHxA","33","ng/L","","-99","DL","","SURR","85","","-99","LOQ","YES","38.4","","260.5","1.00","0",""
"NAWC-081418-RW-271","537","RES","320-42142-5","TALSAC","STL00996","13C2
PFDA","37","ng/L","","-99","DL","","SURR","96","","-99","LOQ","YES","38.4","","260.5","1.00","0",""
"NAWC-081418-FRB-271","537","RES","320-42142-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.1","DL","","TRG","","","36","LOQ","YES","-99","","280.2","1.00","14",""
"NAWC-081418-FRB-271","537","RES","320-42142-6","TALSAC","335-67-1","Perfluorooctanoic acid

(PFOA)","7.1","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","280.2","1.00","7.1","",
"NAWC-081418-FRB-271","537","RES","320-42142-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","4.9","DL","","TRG","","","27","LOQ","YES","-99","","280.2","1.00","11","",
"NAWC-081418-FRB-271","537","RES","320-42142-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","14","DL","","TRG","","","80","LOQ","YES","-99","","280.2","1.00","32","",
"NAWC-081418-FRB-271","537","RES","320-42142-6","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","U","1.7","DL","","TRG","","","8.9","LOQ","YES","-99","","280.2","1.00","3.6","",
"NAWC-081418-FRB-271","537","RES","320-42142-6","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.1","DL","","TRG","","","21","LOQ","YES","-99","","280.2","1.00","18","",
"NAWC-081418-FRB-271","537","RES","320-42142-6","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","-99","DL","","SURR","101","","-99","LOQ","YES","35.7","","280.2","1.00","0","",
"NAWC-081418-FRB-271","537","RES","320-42142-6","TALSAC","STL00996","13C2
PFDA","35","ng/L","","-99","DL","","SURR","99","","-99","LOQ","YES","35.7","","280.2","1.00","0","",
"NAWC-081418-RW-311","537","RES","320-42142-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","17","ng/L","J","6.2","DL","","TRG","","","37","LOQ","YES","-99","","272.9","1.00","15","",
"NAWC-081418-RW-311","537","RES","320-42142-7","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","15","ng/L","J","2.6","DL","","TRG","","","18","LOQ","YES","-99","","272.9","1.00","7.3","",
"NAWC-081418-RW-311","537","RES","320-42142-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.0","DL","","TRG","","","27","LOQ","YES","-99","","272.9","1.00","11","",
"NAWC-081418-RW-311","537","RES","320-42142-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","33","ng/L","U","15","DL","","TRG","","","82","LOQ","YES","-99","","272.9","1.00","33","",
"NAWC-081418-RW-311","537","RES","320-42142-7","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","5.5","ng/L","J","1.7","DL","","TRG","","","9.2","LOQ","YES","-99","","272.9","1.00","3.7","",
"NAWC-081418-RW-311","537","RES","320-42142-7","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.3","DL","","TRG","","","22","LOQ","YES","-99","","272.9","1.00","18","",
"NAWC-081418-RW-311","537","RES","320-42142-7","TALSAC","STL00993","13C2
PFHxA","36","ng/L","","-99","DL","","SURR","99","","-99","LOQ","YES","36.6","","272.9","1.00","0","",
"NAWC-081418-RW-311","537","RES","320-42142-7","TALSAC","STL00996","13C2
PFDA","35","ng/L","","-99","DL","","SURR","96","","-99","LOQ","YES","36.6","","272.9","1.00","0","",
"NAWC-081418-FRB-311","537","RES","320-42142-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.5","DL","","TRG","","","38","LOQ","YES","-99","","263","1.00","15","",
"NAWC-081418-FRB-311","537","RES","320-42142-8","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.6","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES","-99","","263","1.00","7.6","",
"NAWC-081418-FRB-311","537","RES","320-42142-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.2","DL","","TRG","","","29","LOQ","YES","-99","","263","1.00","11","",
"NAWC-081418-FRB-311","537","RES","320-42142-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","TRG","","","86","LOQ","YES","-99","","263","1.00","34","",
"NAWC-081418-FRB-311","537","RES","320-42142-8","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.8","ng/L","U","1.8","DL","","TRG","","","9.5","LOQ","YES","-99","","263","1.00","3.8","",
"NAWC-081418-FRB-311","537","RES","320-42142-8","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.6","DL","","TRG","","","23","LOQ","YES","-99","","263","1.00","19","",
"NAWC-081418-FRB-311","537","RES","320-42142-8","TALSAC","STL00993","13C2
PFHxA","37","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","38.0","","263","1.00","0","",
"NAWC-081418-FRB-311","537","RES","320-42142-8","TALSAC","STL00996","13C2
PFDA","40","ng/L","","-99","DL","","SURR","106","","-99","LOQ","YES","38.0","","263","1.00","0","",
"NAWC-081418-RW-038","537","RES","320-42142-9","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","27","ng/L","J","6.6","DL","","TRG","","","39","LOQ","YES","-99","","257.9","1.00","16","",
"NAWC-081418-RW-038","537","RES","320-42142-9","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","22","ng/L","","2.7","DL","","TRG","","","19","LOQ","YES","-99","","257.9","1.00","7.8","",
"NAWC-081418-RW-038","537","RES","320-42142-9","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","6.3","ng/L","J","5.3","DL","","TRG","","","29","LOQ","YES","-99","","257.9","1.00","12","",
"NAWC-081418-RW-038","537","RES","320-42142-9","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","16","DL","","TRG","","","87","LOQ","YES","-99","","257.9","1.00","35","",
"NAWC-081418-RW-038","537","RES","320-42142-9","TALSAC","375-85-9","Perfluoroheptanoic acid

(PFHpA)","6.2","ng/L","J","1.8","DL","","TRG","","","9.7","LOQ","YES","-99","","257.9","1.00","3.9",""
"NAWC-081418-RW-038","537","RES","320-42142-9","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES","-99","","257.9","1.00","19",""
"NAWC-081418-RW-038","537","RES","320-42142-9","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","38.8","","257.9","1.00","0",""
"NAWC-081418-RW-038","537","RES","320-42142-9","TALSAC","STL00996","13C2
PFDA","38","ng/L","","-99","DL","","SURR","97","","-99","LOQ","YES","38.8","","257.9","1.00","0",""
"LCS 320-241832/2-A","537","RES","LCS 320-241832/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","142","ng/L","","6.8","DL","","SPK","108","","40","LOQ","YES","132","","250","1.00","16",""
"LCS 320-241832/2-A","537","RES","LCS 320-241832/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","68.9","ng/L","","2.8","DL","","SPK","104","","20","LOQ","YES","66.0","","250","1.00","8.0",""
"LCS 320-241832/2-A","537","RES","LCS 320-241832/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","115","ng/L","","5.5","DL","","SPK","115","","30","LOQ","YES","100","","250","1.00","12",""
"LCS 320-241832/2-A","537","RES","LCS 320-241832/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","351","ng/L","","16","DL","","SPK","117","","90","LOQ","YES","300","","250","1.00","36",""
"LCS 320-241832/2-A","537","RES","LCS 320-241832/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","34.1","ng/L","","1.9","DL","","SPK","107","","10","LOQ","YES","32.0","","250","1.00","4.0",""
"LCS 320-241832/2-A","537","RES","LCS 320-241832/2-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","67.3","ng/L","","8.0","DL","","SPK","102","","24","LOQ","YES","66.0","","250","1.00","20",""
"LCS 320-241832/2-A","537","RES","LCS 320-241832/2-A","TALSAC","STL00993","13C2
PFHxA","41.4","ng/L","","-99","DL","","SURR","104","","-99","LOQ","YES","40.0","","250","1.00","0",""
"LCS 320-241832/2-A","537","RES","LCS 320-241832/2-A","TALSAC","STL00996","13C2
PFDA","39.3","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","40.0","","250","1.00","0",""
"LCSD 320-241832/3-A","537","RES","LCSD 320-241832/3-A","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","135","ng/L","","6.8","DL","","SPK","103","5","40","LOQ","YES","132","LCS 320-241832/2-
A","250","1.00","16",""
"LCSD 320-241832/3-A","537","RES","LCSD 320-241832/3-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","70.6","ng/L","","2.8","DL","","SPK","107","2","20","LOQ","YES","66.0","LCS 320-241832/2-
A","250","1.00","8.0",""
"LCSD 320-241832/3-A","537","RES","LCSD 320-241832/3-A","TALSAC","355-46-4","Perfluorohexanesulfonic
acid (PFHxS)","111","ng/L","","5.5","DL","","SPK","111","3","30","LOQ","YES","100","LCS 320-241832/2-
A","250","1.00","12",""
"LCSD 320-241832/3-A","537","RES","LCSD 320-241832/3-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","341","ng/L","","16","DL","","SPK","114","3","90","LOQ","YES","300","LCS 320-241832/2-
A","250","1.00","36",""
"LCSD 320-241832/3-A","537","RES","LCSD 320-241832/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","33.8","ng/L","","1.9","DL","","SPK","106","1","10","LOQ","YES","32.0","LCS 320-241832/2-
A","250","1.00","4.0",""
"LCSD 320-241832/3-A","537","RES","LCSD 320-241832/3-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","65.9","ng/L","","8.0","DL","","SPK","100","2","24","LOQ","YES","66.0","LCS 320-241832/2-
A","250","1.00","20",""
"LCSD 320-241832/3-A","537","RES","LCSD 320-241832/3-A","TALSAC","STL00993","13C2
PFHxA","40.1","ng/L","","-99","DL","","SURR","100","","-99","LOQ","YES","40.0","LCS 320-241832/2-
A","250","1.00","0",""
"LCSD 320-241832/3-A","537","RES","LCSD 320-241832/3-A","TALSAC","STL00996","13C2
PFDA","38.8","ng/L","","-99","DL","","SURR","97","","-99","LOQ","YES","40.0","LCS 320-241832/2-
A","250","1.00","0",""
"LLCS 320-241537/2-A","537","RES","LLCS 320-241537/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","43.0","ng/L","","6.8","DL","","SPK","107","","40","LOQ","YES","40.2","","250","1.00","16",""
"LLCS 320-241537/2-A","537","RES","LLCS 320-241537/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","20.4","ng/L","","2.8","DL","","SPK","102","","20","LOQ","YES","20.0","","250","1.00","8.0",""
"LLCS 320-241537/2-A","537","RES","LLCS 320-241537/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","33.1","ng/L","","5.5","DL","","SPK","109","","30","LOQ","YES","30.3","","250","1.00","12",""
"LLCS 320-241537/2-A","537","RES","LLCS 320-241537/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)","105","ng/L","","16","DL","","SPK","117","","90","LOQ","YES","90.2","","250","1.00","36",""
"LLCS 320-241537/2-A","537","RES","LLCS 320-241537/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","10.2","ng/L","","1.9","DL","","SPK","102","","10","LOQ","YES","10.0","","250","1.00","4.0",""
"LLCS 320-241537/2-A","537","RES","LLCS 320-241537/2-A","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","18.9","ng/L","J","8.0","DL","","SPK","94","","24","LOQ","YES","20.0","","250","1.00","20",""
"LLCS 320-241537/2-A","537","RES","LLCS 320-241537/2-A","TALSAC","STL00993","13C2 PFHxA","45.1","ng/L","","-99","DL","","SURR","113","","-99","LOQ","YES","40.0","","250","1.00","0",""
"LLCS 320-241537/2-A","537","RES","LLCS 320-241537/2-A","TALSAC","STL00996","13C2 PFDA","45.8","ng/L","","-99","DL","","SURR","114","","-99","LOQ","YES","40.0","","250","1.00","0",""
"LLCSD 320-241537/3-A","537","RES","LLCSD 320-241537/3-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","45.1","ng/L","","6.8","DL","","SPK","112","5","40","LOQ","YES","40.2","LLCS 320-241537/2-A","250","1.00","16",""
"LLCSD 320-241537/3-A","537","RES","LLCSD 320-241537/3-A","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","20.6","ng/L","","2.8","DL","","SPK","103","1","20","LOQ","YES","20.0","LLCS 320-241537/2-A","250","1.00","8.0",""
"LLCSD 320-241537/3-A","537","RES","LLCSD 320-241537/3-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","34.9","ng/L","","5.5","DL","","SPK","115","5","30","LOQ","YES","30.3","LLCS 320-241537/2-A","250","1.00","12",""
"LLCSD 320-241537/3-A","537","RES","LLCSD 320-241537/3-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","115","ng/L","","16","DL","","SPK","127","8","90","LOQ","YES","90.2","LLCS 320-241537/2-A","250","1.00","36",""
"LLCSD 320-241537/3-A","537","RES","LLCSD 320-241537/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","11.3","ng/L","","1.9","DL","","SPK","113","10","10","LOQ","YES","10.0","LLCS 320-241537/2-A","250","1.00","4.0",""
"LLCSD 320-241537/3-A","537","RES","LLCSD 320-241537/3-A","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19.4","ng/L","J","8.0","DL","","SPK","97","3","24","LOQ","YES","20.0","LLCS 320-241537/2-A","250","1.00","20",""
"LLCSD 320-241537/3-A","537","RES","LLCSD 320-241537/3-A","TALSAC","STL00993","13C2 PFHxA","43.8","ng/L","","-99","DL","","SURR","110","3","-99","LOQ","YES","40.0","LLCS 320-241537/2-A","250","1.00","0",""
"LLCSD 320-241537/3-A","537","RES","LLCSD 320-241537/3-A","TALSAC","STL00996","13C2 PFDA","43.7","ng/L","","-99","DL","","SURR","109","5","-99","LOQ","YES","40.0","LLCS 320-241537/2-A","250","1.00","0",""
"MB 320-241537/1-A","537","RES","MB 320-241537/1-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 320-241537/1-A","537","RES","MB 320-241537/1-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 320-241537/1-A","537","RES","MB 320-241537/1-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 320-241537/1-A","537","RES","MB 320-241537/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250","1.00","36",""
"MB 320-241537/1-A","537","RES","MB 320-241537/1-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 320-241537/1-A","537","RES","MB 320-241537/1-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 320-241537/1-A","537","RES","MB 320-241537/1-A","TALSAC","STL00993","13C2 PFHxA","41.7","ng/L","","-99","DL","","SURR","104","","-99","LOQ","YES","40.0","","250","1.00","0",""
"MB 320-241537/1-A","537","RES","MB 320-241537/1-A","TALSAC","STL00996","13C2 PFDA","43.8","ng/L","","-99","DL","","SURR","110","","-99","LOQ","YES","40.0","","250","1.00","0",""
"MB 320-241832/1-A","537","RES","MB 320-241832/1-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 320-241832/1-A","537","RES","MB 320-241832/1-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 320-241832/1-A","537","RES","MB 320-241832/1-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 320-241832/1-A","537","RES","MB 320-241832/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250","1.00","36",""
"MB 320-241832/1-A","537","RES","MB 320-241832/1-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 320-241832/1-A","537","RES","MB 320-241832/1-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 320-241832/1-A","537","RES","MB 320-241832/1-A","TALSAC","STL00993","13C2
PFHxA","41.0","ng/L","","-99","DL","","SURR","102","","-99","LOQ","YES","40.0","","250","1.00","0",""
"MB 320-241832/1-A","537","RES","MB 320-241832/1-A","TALSAC","STL00996","13C2
PFDA","38.1","ng/L","","-99","DL","","SURR","95","","-99","LOQ","YES","40.0","","250","1.00","0",""
"Unknown","Unknown","NAWC-081418-RW-256","08/14/2018 08:40","AQ","320-42142-
1","NM","","1.7","537","METHOD","RES","08/23/2018 07:20","08/27/2018
01:22","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241537","320-241537","NA","320-
242156","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-FRB-038","08/14/2018 12:05","AQ","320-42142-
10","FB","","1.7","537","METHOD","RES","08/24/2018 09:17","08/27/2018
02:37","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242160","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-RW-039","08/14/2018 12:40","AQ","320-42142-
11","NM","","1.7","537","METHOD","RES","08/24/2018 09:17","08/27/2018
02:41","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242160","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-FRB-039","08/14/2018 12:35","AQ","320-42142-
12","FB","","1.7","537","METHOD","RES","08/24/2018 09:17","08/27/2018
02:55","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242161","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-RW-187","08/14/2018 13:10","AQ","320-42142-
13","NM","","1.7","537","METHOD","RES","08/24/2018 09:17","08/27/2018
03:00","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242161","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-FRB-187","08/14/2018 13:05","AQ","320-42142-
14","FB","","1.7","537","METHOD","RES","08/24/2018 09:17","08/29/2018
00:09","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242687","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-RW-292","08/14/2018 13:40","AQ","320-42142-
15","NM","","1.7","537","METHOD","RES","08/24/2018 09:17","08/29/2018
00:13","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242687","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-FRB-292","08/14/2018 13:35","AQ","320-42142-
16","FB","","1.7","537","METHOD","RES","08/24/2018 09:17","08/27/2018
03:14","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242161","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-RW-229","08/14/2018 16:10","AQ","320-42142-
17","NM","","1.7","537","METHOD","RES","08/24/2018 09:17","08/27/2018
03:19","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242161","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-FRB-229","08/14/2018 16:05","AQ","320-42142-
18","FB","","1.7","537","METHOD","RES","08/24/2018 09:17","08/27/2018
03:24","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242161","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-RW-126","08/14/2018 16:40","AQ","320-42142-
19","NM","","1.7","537","METHOD","RES","08/24/2018 09:17","08/29/2018
00:18","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-

242687","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-FRB-256","08/14/2018 08:35","AQ","320-42142-
2","FB","","1.7","537","METHOD","RES","08/23/2018 07:20","08/27/2018
01:36","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241537","320-241537","NA","320-
242157","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-FRB-126","08/14/2018 16:35","AQ","320-42142-
20","FB","","1.7","537","METHOD","RES","08/24/2018 09:17","08/27/2018
03:33","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242161","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-RW-172","08/14/2018 17:10","AQ","320-42142-
21","NM","","1.7","537","METHOD","RES","08/24/2018 09:17","08/27/2018
03:38","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242161","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-FRB-172","08/14/2018 17:05","AQ","320-42142-
22","FB","","1.7","537","METHOD","RES","08/24/2018 09:17","08/29/2018
00:23","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242687","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","WGNA-080718-DUP-45","08/14/2018 07:00","AQ","320-42142-
23","FD","","1.7","537","METHOD","RES","08/24/2018 09:17","08/29/2018
00:27","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242687","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","WGNA-080718-DUP-46","08/14/2018 12:00","AQ","320-42142-
24","FD","","1.7","537","METHOD","RES","08/24/2018 09:17","08/29/2018
00:32","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242687","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-RW-270","08/14/2018 09:40","AQ","320-42142-
3","NM","","1.7","537","METHOD","RES","08/23/2018 07:20","08/27/2018
01:41","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241537","320-241537","NA","320-
242157","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-FRB-270","08/14/2018 09:35","AQ","320-42142-
4","FB","","1.7","537","METHOD","RES","08/23/2018 07:20","08/27/2018
01:45","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241537","320-241537","NA","320-
242157","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-RW-271","08/14/2018 10:10","AQ","320-42142-
5","NM","","1.7","537","METHOD","RES","08/24/2018 09:17","08/29/2018
00:04","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242687","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-FRB-271","08/14/2018 10:05","AQ","320-42142-
6","FB","","1.7","537","METHOD","RES","08/24/2018 09:17","08/27/2018
02:18","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242160","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-RW-311","08/14/2018 11:10","AQ","320-42142-
7","NM","","1.7","537","METHOD","RES","08/24/2018 09:17","08/27/2018
02:23","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242160","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-FRB-311","08/14/2018 11:05","AQ","320-42142-
8","FB","","1.7","537","METHOD","RES","08/24/2018 09:17","08/27/2018
02:27","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242160","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","NAWC-081418-RW-038","08/14/2018 12:10","AQ","320-42142-
9","NM","","1.7","537","METHOD","RES","08/24/2018 09:17","08/27/2018
02:32","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242160","320-42142-1","08/15/2018 09:35","08/17/2018 10:45",""
"Unknown","Unknown","LCS 320-241832/2-A","","AQ","LCS 320-241832/2-

A","LCS","","-99","537","METHOD","RES","08/24/2018 09:17","08/27/2018
02:04","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242160","320-42142-1","08/24/2018 09:17","08/17/2018 10:45",""
"Unknown","Unknown","LCSD 320-241832/3-A","","AQ","LCSD 320-241832/3-
A","LCSD","","-99","537","METHOD","RES","08/24/2018 09:17","08/27/2018
02:09","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242160","320-42142-1","08/24/2018 09:17","08/17/2018 10:45",""
"Unknown","Unknown","LLCS 320-241537/2-A","","AQ","LLCS 320-241537/2-
A","LCS","","-99","537","METHOD","RES","08/23/2018 07:20","08/26/2018
23:48","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241537","320-241537","NA","320-
242153","320-42142-1","08/23/2018 07:20","08/17/2018 10:45",""
"Unknown","Unknown","LLCSD 320-241537/3-A","","AQ","LLCSD 320-241537/3-
A","LCSD","","-99","537","METHOD","RES","08/23/2018 07:20","08/26/2018
23:53","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241537","320-241537","NA","320-
242153","320-42142-1","08/23/2018 07:20","08/17/2018 10:45",""
"Unknown","Unknown","MB 320-241537/1-A","","AQ","MB 320-241537/1-
A","MB","","-99","537","METHOD","RES","08/23/2018 07:20","08/26/2018
23:44","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241537","320-241537","NA","320-
242153","320-42142-1","08/23/2018 07:20","08/17/2018 10:45",""
"Unknown","Unknown","MB 320-241832/1-A","","AQ","MB 320-241832/1-
A","MB","","-99","537","METHOD","RES","08/24/2018 09:17","08/27/2018
01:59","TALSAC","COA","WET","NA","1","NA","NA","","100","320-241832","320-241832","NA","320-
242160","320-42142-1","08/24/2018 09:17","08/17/2018 10:45",""

TETRA TECH **INTERNAL CORRESPONDENCE**

TO:	**A. FREBOWITZ**	**DATE:**	**OCTOBER 3, 2018**
FROM:	**TERRI L. SOLOMON**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION –POLYFLUOROALKYL SUBSTANCES (PFAS)**
NAS JRB WILLOW GROVE
SAMPLE DELIVERY GROUP (SDG) 320-42142-1

SAMPLES: 11/Field Reagent Blank (FRB)

NAWC-081418-FRB-038	NAWC-081418-FRB-039
NAWC-081418-FRB-126	NAWC-081418-FRB-172
NAWC-081418-FRB-187	NAWC-081418-FRB-229
NAWC-081418-FRB-256	NAWC-081418-FRB-270
NAWC-081418-FRB-271	NAWC-081418-FRB-292
NAWC-081418-FRB-311	

13/Drinking Water

NAWC-081418-RW-038	NAWC-081418-RW-039
NAWC-081418-RW-126	NAWC-081418-RW-172
NAWC-081418-RW-187	NAWC-081418-RW-229
NAWC-081418-RW-256	NAWC-081418-RW-270
NAWC-081418-RW-271	NAWC-081418-RW-292
NAWC-081418-RW-311	WGNA-081418-DUP-45
WGNA-081418-DUP-46	

Overview

The sample set for NAS JRB Willow Grove, SDG 320-42142-1, consisted of thirteen (13) drinking water samples and eleven (11) 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). Two (2) field duplicate pairs, NAWC-081418-RW-256 / WGNA-081418-DUP-45 and NAWC-081418-RW-172 / WGNA-081418-DUP-46, were included in this SDG.

The samples were collected by Tetra Tech on August 14, 2018 and analyzed by Test America-Sacramento. All sample analyses were conducted in accordance with EPA Method 537 version 1.1 analytical and reporting protocols.

The data contained in this SDG was validated with regard to the following parameters: data completeness, holding times, mass calibration, mass spectral acquisition rate, tune check, instrument sensitivity check, initial/continuing calibrations, ion transitions, laboratory method/FRBs, surrogate spike recoveries, laboratory control sample / laboratory control sample duplicate results, injected internal standard areas and recoveries, field duplicate results, 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).

The sample injected internal standard continuing calibration areas for NAWC-081418-FRB-311, NAWC-081418-RW-038, NAWC-081418-RW-187, NAWC-081418-RW-229, WGNA-081418-DUP-46, NAWC-081418-RW-271 and NAWC-081418-RW-126 for 13C2-PFOA were greater than the 140% quality control limit. The injected internal standards areas were within the initial calibration quality control limits. The detected results reported for PFHpA and PFOA in the affected samples were qualified as estimated (J).

Notes

It is stated in the case narrative that the following sample IDs were listed as WGNA-081418-DUP-45 and WGNA-081418-DUP-46 on the sample bottles and listed as WGNA-080718-DUP-45 and WGNA-080718-DUP-46 on the chain of custody. The sampling date for all samples is 08/14/2018. The validator amended the sample IDs to match the sample bottles and the sampling date provided on the chain of custody. The sample IDs are reported as WGNA-081418-DUP-45 and WGNA-081418-DUP-46.

Samples with detections and their associated FRBs are summarized below. No detected results were present in the FRBs.

Sample	Associated FRB
NAWC-081418-RW-038	NAWC-081418-FRB-038
NAWC-081418-RW-039	NAWC-081418-FRB-039
NAWC-081418-RW-126	NAWC-081418-FRB-126
NAWC-081418-RW-172	NAWC-081418-FRB-172
NAWC-081418-RW-187	NAWC-081418-FRB-187
NAWC-081418-RW-229	NAWC-081418-FRB-229
NAWC-081418-RW-256	NAWC-081418-FRB-256
NAWC-081418-RW-270	NAWC-081418-FRB-270
NAWC-081418-RW-271	NAWC-081418-FRB-271
NAWC-081418-RW-292	NAWC-081418-FRB-292
NAWC-081418-RW-311	NAWC-081418-FRB-311
WGNA-081418-DUP-45	NAWC-081418-FRB-256
WGNA-081418-DUP-46	NAWC-081418-FRB-172

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: Several injected internal standards were above the quality control limits.

Other Factors Affecting Data Quality: Results below the RL were estimated.

The data for these analyses were reviewed with reference to the Environmental Protection Agency document EPA/600/R-08/092, Method 537, “Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)”, (September 2009), US EPA National Functional Guidelines for Organic Data Review (January 2017), and the Department of Defense (DoD) document entitled “Quality Systems Manual (QSM) for Environmental Laboratories” (July 2013) as applicable. The text of this report has been formulated to address only those areas affecting data quality.

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 detection limit.
J	The result is an estimated quantity. 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.
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
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.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team, but exclusion of the data is recommended.

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-081418-FRB-038			NAWC-081418-FRB-039			NAWC-081418-FRB-126			NAWC-081418-FRB-172		
SDG: 320-42142-1	LAB_ID	320-42142-10			320-42142-12			320-42142-20			320-42142-22		
FRACTION: PFAS	SAMP_DATE	8/14/2018			8/14/2018			8/14/2018			8/14/2018		
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 (PFOA)		7.2	U		7.6	U		7.3	U		7.3	U	
PERFLUOROBUTANESULFONIC ACID (PFBS)		32	U		34	U		33	U		33	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		3.6	U		3.8	U		3.6	U		3.7	U	
PERFLUOROHEXANESULFONIC ACID (PFHXS)		11	U		11	U		11	U		11	U	
PERFLUORONONANOIC ACID (PFNA)		18	U		19	U		18	U		18	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		14	U		15	U		15	U		15	U	

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-081418-FRB-187			NAWC-081418-FRB-229			NAWC-081418-FRB-256			NAWC-081418-FRB-270		
SDG: 320-42142-1	LAB_ID	320-42142-14			320-42142-18			320-42142-2			320-42142-4		
FRACTION: PFAS	SAMP_DATE	8/14/2018			8/14/2018			8/14/2018			8/14/2018		
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 (PFOA)		7.2	U		7.5	U		7.2	U		7.3	U	
PERFLUOROBUTANESULFONIC ACID (PFBS)		32	U		34	U		32	U		33	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		3.6	U		3.7	U		3.6	U		3.6	U	
PERFLUOROHEXANESULFONIC ACID (PFHXS)		11	U		11	U		11	U		11	U	
PERFLUORONONANOIC ACID (PFNA)		18	U		19	U		18	U		18	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		14	U		15	U		14	U		15	U	

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-081418-FRB-271			NAWC-081418-FRB-292			NAWC-081418-FRB-311			NAWC-081418-RW-038		
SDG: 320-42142-1	LAB_ID	320-42142-6			320-42142-16			320-42142-8			320-42142-9		
FRACTION: PFAS	SAMP_DATE	8/14/2018			8/14/2018			8/14/2018			8/14/2018		
MEDIA: WATER	QC_TYPE	FB			FB			FB			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID (PFOA)		7.1	U		7.1	U		7.6	U		22	J	N
PERFLUOROBUTANESULFONIC ACID (PFBS)		32	U		32	U		34	U		35	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		3.6	U		3.5	U		3.8	U		6.2	J	NP
PERFLUOROHEXANESULFONIC ACID (PFHXS)		11	U		11	U		11	U		6.3	J	P
PERFLUORONONANOIC ACID (PFNA)		18	U		18	U		19	U		19	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		14	U		14	U		15	U		27	J	P

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-081418-RW-039			NAWC-081418-RW-126			NAWC-081418-RW-172			NAWC-081418-RW-187		
SDG: 320-42142-1	LAB_ID	320-42142-11			320-42142-19			320-42142-21			320-42142-13		
FRACTION: PFAS	SAMP_DATE	8/14/2018			8/14/2018			8/14/2018			8/14/2018		
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 (PFOA)		10	J	P	10	J	NP	10	J	P	34	J	N
PERFLUOROBUTANESULFONIC ACID (PFBS)		35	U		39	U		38	U		34	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		3.1	J	P	4.5	J	NP	3.6	J	P	35	J	N
PERFLUOROHEXANESULFONIC ACID (PFHXS)		12	U		37			13	U		31		
PERFLUORONONANOIC ACID (PFNA)		19	U		22	U		21	U		19	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		14	J	P	57			8.1	J	P	62		

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-081418-RW-229			NAWC-081418-RW-256			NAWC-081418-RW-270			NAWC-081418-RW-271		
SDG: 320-42142-1	LAB_ID	320-42142-17			320-42142-1			320-42142-3			320-42142-5		
FRACTION: PFAS	SAMP_DATE	8/14/2018			8/14/2018			8/14/2018			8/14/2018		
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 (PFOA)		31	J	N	28			11	J	P	13	J	NP
PERFLUOROBUTANESULFONIC ACID (PFBS)		35	U		32	U		35	U		35	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		11	J	N	8.5	J	P	3.6	J	P	3.7	J	NP
PERFLUOROHEXANESULFONIC ACID (PFHXS)		10	J	P	5.5	J	P	12	U		6.2	J	P
PERFLUORONONANOIC ACID (PFNA)		20	U		18	U		19	U		19	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		29	J	P	30	J	P	15	J	P	11	J	P

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-081418-RW-292			NAWC-081418-RW-311			WGNA-081418-DUP-45			WGNA-081418-DUP-46		
SDG: 320-42142-1	LAB_ID	320-42142-15			320-42142-7			320-42142-23			320-42142-24		
FRACTION: PFAS	SAMP_DATE	8/14/2018			8/14/2018			8/14/2018			8/14/2018		
MEDIA: WATER	QC_TYPE	NM			NM			FD			FD		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF							NAWC-081418-RW-256			NAWC-081418-RW-172		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID (PFOA)		20			15	J	P	27			10	J	NP
PERFLUOROBUTANESULFONIC ACID (PFBS)		34	U		33	U		34	U		37	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		8.5	J	P	5.5	J	P	8.5	J	P	4.1	U	
PERFLUOROHEXANESULFONIC ACID (PFHXS)		9.4	J	P	11	U		5.3	J	P	12	U	
PERFLUORONONANOIC ACID (PFNA)		19	U		18	U		19	U		21	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		23	J	P	17	J	P	30	J	P	7.8	J	P

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-RW-256 | Lab Sample ID: 320-42142-1

Matrix: Water | Lab File ID: 2018.08.26_537C_028.d

Analysis Method: 537 | Date Collected: 08/14/2018 08:40

Extraction Method: 537 | Date Extracted: 08/23/2018 07:20

Sample wt/vol: 282(mL) | Date Analyzed: 08/27/2018 01:22

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.: 242156 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	30	J	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	28		18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.5	J	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.5	J	8.9	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	109		70-130

10/03/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-256
Lab Sample ID: 320-42142-2
Matrix: Water
Lab File ID: 2018.08.26_537C_031.d
Analysis Method: 537
Date Collected: 08/14/2018 08:35
Extraction Method: 537
Date Extracted: 08/23/2018 07:20
Sample wt/vol: 278.1(mL)
Date Analyzed: 08/27/2018 01:36
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.: 242157
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	108		70-130
STL00996	13C2 PFDA	108		70-130

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Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-270
Lab Sample ID: 320-42142-3
Matrix: Water
Lab File ID: 2018.08.26_537C_032.d
Analysis Method: 537
Date Collected: 08/14/2018 09:40
Extraction Method: 537
Date Extracted: 08/23/2018 07:20
Sample wt/vol: 260.3(mL)
Date Analyzed: 08/27/2018 01:41
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242157
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	J	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	11	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)	3.6	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	86	35	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	108		70-130

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Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-270
Lab Sample ID: 320-42142-4
Matrix: Water
Lab File ID: 2018.08.26_537C_033.d
Analysis Method: 537
Date Collected: 08/14/2018 09:35
Extraction Method: 537
Date Extracted: 08/23/2018 07:20
Sample wt/vol: 275.6(mL)
Date Analyzed: 08/27/2018 01:45
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.: 242157
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	U	18	7.3	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	113		70-130
STL00996	13C2 PFDA	120		70-130

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Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-RW-271 | Lab Sample ID: 320-42142-5

Matrix: Water | Lab File ID: 2018.08.28_537A_012.d

Analysis Method: 537 | Date Collected: 08/14/2018 10:10

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 260.5(mL) | Date Analyzed: 08/29/2018 00:04

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

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

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

Analysis Batch No.: 242687 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.2	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	J ~~M~~	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	86	35	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	96		70-130

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Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-FRB-271 | Lab Sample ID: 320-42142-6

Matrix: Water | Lab File ID: 2018.08.26_537C_040.d

Analysis Method: 537 | Date Collected: 08/14/2018 10:05

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 280.2(mL) | Date Analyzed: 08/27/2018 02:18

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.: 242160 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.1	U	18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	8.9	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	99		70-130

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Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-RW-311 | Lab Sample ID: 320-42142-7

Matrix: Water | Lab File ID: 2018.08.26_537C_041.d

Analysis Method: 537 | Date Collected: 08/14/2018 11:10

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 272.9(mL) | Date Analyzed: 08/27/2018 02:23

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

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

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

Analysis Batch No.: 242160 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	37	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	18	7.3	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.5	J	9.2	3.7	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		70-130
STL00996	13C2 PFDA	96		70-130

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-FRB-311 | Lab Sample ID: 320-42142-8

Matrix: Water | Lab File ID: 2018.08.26_537C_042.d

Analysis Method: 537 | Date Collected: 08/14/2018 11:05

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 263(mL) | Date Analyzed: 08/27/2018 02:27

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

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

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

Analysis Batch No.: 242160 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	106		70-130

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Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-RW-038 | Lab Sample ID: 320-42142-9

Matrix: Water | Lab File ID: 2018.08.26_537C_043.d

Analysis Method: 537 | Date Collected: 08/14/2018 12:10

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 257.9(mL) | Date Analyzed: 08/27/2018 02:32

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.: 242160 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	27	J	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	22	J	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.3	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.2	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	90		70-130
STL00996	13C2 PFDA	97		70-130

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-FRB-038 | Lab Sample ID: 320-42142-10

Matrix: Water | Lab File ID: 2018.08.26_537C_044.d

Analysis Method: 537 | Date Collected: 08/14/2018 12:05

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 278.6(mL) | Date Analyzed: 08/27/2018 02:37

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

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

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

Analysis Batch No.: 242160 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	106		70-130
STL00996	13C2 PFDA	102		70-130

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-RW-039 | Lab Sample ID: 320-42142-11

Matrix: Water | Lab File ID: 2018.08.26_537C_045.d

Analysis Method: 537 | Date Collected: 08/14/2018 12:40

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 258.5(mL) | Date Analyzed: 08/27/2018 02:41

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

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

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

Analysis Batch No.: 242160 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	J	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	10	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 ~~M~~	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.1	J ~~M~~	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U ~~M~~	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	99		70-130

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Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-FRB-039 | Lab Sample ID: 320-42142-12

Matrix: Water | Lab File ID: 2018.08.26_537C_048.d

Analysis Method: 537 | Date Collected: 08/14/2018 12:35

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 262.6(mL) | Date Analyzed: 08/27/2018 02:55

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

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

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

Analysis Batch No.: 242161 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

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

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Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-RW-187 | Lab Sample ID: 320-42142-13

Matrix: Water | Lab File ID: 2018.08.26_537C_049.d

Analysis Method: 537 | Date Collected: 08/14/2018 13:10

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 266.4(mL) | Date Analyzed: 08/27/2018 03:00

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

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

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

Analysis Batch No.: 242161 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	62		38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	34	J	19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	31		28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	35	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	84	34	15

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

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-FRB-187 | Lab Sample ID: 320-42142-14

Matrix: Water | Lab File ID: 2018.08.28_537A_013.d

Analysis Method: 537 | Date Collected: 08/14/2018 13:05

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 278.6(mL) | Date Analyzed: 08/29/2018 00:09

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

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

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

Analysis Batch No.: 242687 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	100		70-130

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Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-RW-292 | Lab Sample ID: 320-42142-15

Matrix: Water | Lab File ID: 2018.08.28_537A_014.d

Analysis Method: 537 | Date Collected: 08/14/2018 13:40

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 266.2(mL) | Date Analyzed: 08/29/2018 00:13

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

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

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

Analysis Batch No.: 242687 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	23	J	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	20		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.4	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.5	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	102		70-130

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-292
Lab Sample ID: 320-42142-16
Matrix: Water
Lab File ID: 2018.08.26_537C_052.d
Analysis Method: 537
Date Collected: 08/14/2018 13:35
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 281.9(mL)
Date Analyzed: 08/27/2018 03:14
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242161
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.1	U	18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.9	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		70-130
STL00996	13C2 PFDA	102		70-130

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-RW-229 | Lab Sample ID: 320-42142-17

Matrix: Water | Lab File ID: 2018.08.26_537C_053.d

Analysis Method: 537 | Date Collected: 08/14/2018 16:10

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 255.7(mL) | Date Analyzed: 08/27/2018 03:19

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

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

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

Analysis Batch No.: 242161 | 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)	31	J	20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U ~~M~~	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	11	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	99		70-130

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-FRB-229 | Lab Sample ID: 320-42142-18

Matrix: Water | Lab File ID: 2018.08.26_537C_054.d

Analysis Method: 537 | Date Collected: 08/14/2018 16:05

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 268.3(mL) | Date Analyzed: 08/27/2018 03:24

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.: 242161 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.5	U	19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	84	34	15

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

10/03/2018

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-126
Lab Sample ID: 320-42142-19
Matrix: Water
Lab File ID: 2018.08.28_537A_015.d
Analysis Method: 537
Date Collected: 08/14/2018 16:40
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 230.5(mL)
Date Analyzed: 08/29/2018 00:18
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.: 242687
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	57		43	17	7.4
335-67-1	Perfluorooctanoic acid (PFOA)	10	J	22	8.7	3.0
375-95-1	Perfluorononanoic acid (PFNA)	22	U	26	22	8.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	37		33	13	6.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.5	J	11	4.3	2.1
375-73-5	Perfluorobutanesulfonic acid (PFBS)	39	U	98	39	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	95		70-130

10/03/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-FRB-126 | Lab Sample ID: 320-42142-20

Matrix: Water | Lab File ID: 2018.08.26_537C_056.d

Analysis Method: 537 | Date Collected: 08/14/2018 16:35

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 275(mL) | Date Analyzed: 08/27/2018 03:33

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

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

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

Analysis Batch No.: 242161 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	U	18	7.3	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	104		70-130

10/003/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-RW-172 | Lab Sample ID: 320-42142-21

Matrix: Water | Lab File ID: 2018.08.26_537C_057.d

Analysis Method: 537 | Date Collected: 08/14/2018 17:10

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 235.7(mL) | Date Analyzed: 08/27/2018 03:38

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

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

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

Analysis Batch No.: 242161 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.1	J	42	17	7.2
335-67-1	Perfluorooctanoic acid (PFOA)	10	J	21	8.5	3.0
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	13	U	32	13	5.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	J ~~M~~	11	4.2	2.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	38	U	95	38	17

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

10/03/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-FRB-172 | Lab Sample ID: 320-42142-22

Matrix: Water | Lab File ID: 2018.08.28_537A_016.d

Analysis Method: 537 | Date Collected: 08/14/2018 17:05

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 273.6(mL) | Date Analyzed: 08/29/2018 00:23

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

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

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

Analysis Batch No.: 242687 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	U	18	7.3	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.1	3.7	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	97		70-130

10/03/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: WGNA-~~080718~~ 081418 -DUP-45 | Lab Sample ID: 320-42142-23

Matrix: Water | Lab File ID: 2018.08.28_537A_017.d

Analysis Method: 537 | Date Collected: 08/14/2018 07:00

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 266(mL) | Date Analyzed: 08/29/2018 00:27

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

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

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

Analysis Batch No.: 242687 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	30	J	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	27		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.3	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.5	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	94		70-130

10/03/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: WGNA-~~080718~~ 081418-DUP-46 | Lab Sample ID: 320-42142-24

Matrix: Water | Lab File ID: 2018.08.28_537A_018.d

Analysis Method: 537 | Date Collected: 08/14/2018 12:00

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 243.7(mL) | Date Analyzed: 08/29/2018 00:32

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.: 242687 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.8	J	41	16	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	10	J	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	81		70-130
STL00996	13C2 PFDA	87		70-130

Nan L Salemon
10/03/2018

Appendix B

Results as Reported by the Laboratory

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-256
Lab Sample ID: 320-42142-1
Matrix: Water
Lab File ID: 2018.08.26_537C_028.d
Analysis Method: 537
Date Collected: 08/14/2018 08:40
Extraction Method: 537
Date Extracted: 08/23/2018 07:20
Sample wt/vol: 282(mL)
Date Analyzed: 08/27/2018 01:22
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.: 242156
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	30	J	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	28		18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.5	J	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.5	J	8.9	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	109		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-256
Lab Sample ID: 320-42142-2
Matrix: Water
Lab File ID: 2018.08.26_537C_031.d
Analysis Method: 537
Date Collected: 08/14/2018 08:35
Extraction Method: 537
Date Extracted: 08/23/2018 07:20
Sample wt/vol: 278.1(mL)
Date Analyzed: 08/27/2018 01:36
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.: 242157
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	108		70-130
STL00996	13C2 PFDA	108		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-270
Lab Sample ID: 320-42142-3
Matrix: Water
Lab File ID: 2018.08.26_537C_032.d
Analysis Method: 537
Date Collected: 08/14/2018 09:40
Extraction Method: 537
Date Extracted: 08/23/2018 07:20
Sample wt/vol: 260.3(mL)
Date Analyzed: 08/27/2018 01:41
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242157
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	J	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	11	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)	3.6	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	86	35	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	108		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-270
Lab Sample ID: 320-42142-4
Matrix: Water
Lab File ID: 2018.08.26_537C_033.d
Analysis Method: 537
Date Collected: 08/14/2018 09:35
Extraction Method: 537
Date Extracted: 08/23/2018 07:20
Sample wt/vol: 275.6(mL)
Date Analyzed: 08/27/2018 01:45
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.: 242157
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	U	18	7.3	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	113		70-130
STL00996	13C2 PFDA	120		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-271
Lab Sample ID: 320-42142-5
Matrix: Water
Lab File ID: 2018.08.28_537A_012.d
Analysis Method: 537
Date Collected: 08/14/2018 10:10
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 260.5(mL)
Date Analyzed: 08/29/2018 00:04
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242687
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	J	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	13	J	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.2	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	J M	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	86	35	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	96		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: NAWC-081418-FRB-271 | Lab Sample ID: 320-42142-6

Matrix: Water | Lab File ID: 2018.08.26_537C_040.d

Analysis Method: 537 | Date Collected: 08/14/2018 10:05

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 280.2(mL) | Date Analyzed: 08/27/2018 02:18

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.: 242160 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.1	U	18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	8.9	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	99		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-311
Lab Sample ID: 320-42142-7
Matrix: Water
Lab File ID: 2018.08.26_537C_041.d
Analysis Method: 537
Date Collected: 08/14/2018 11:10
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 272.9(mL)
Date Analyzed: 08/27/2018 02:23
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242160
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	37	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	18	7.3	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.5	J	9.2	3.7	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		70-130
STL00996	13C2 PFDA	96		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-311
Lab Sample ID: 320-42142-8
Matrix: Water
Lab File ID: 2018.08.26_537C_042.d
Analysis Method: 537
Date Collected: 08/14/2018 11:05
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 263(mL)
Date Analyzed: 08/27/2018 02:27
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242160
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	106		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-038
Lab Sample ID: 320-42142-9
Matrix: Water
Lab File ID: 2018.08.26_537C_043.d
Analysis Method: 537
Date Collected: 08/14/2018 12:10
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 257.9(mL)
Date Analyzed: 08/27/2018 02:32
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.: 242160
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	27	J	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	22		19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.3	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.2	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	90		70-130
STL00996	13C2 PFDA	97		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-038
Lab Sample ID: 320-42142-10
Matrix: Water
Lab File ID: 2018.08.26_537C_044.d
Analysis Method: 537
Date Collected: 08/14/2018 12:05
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 278.6(mL)
Date Analyzed: 08/27/2018 02:37
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242160
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	106		70-130
STL00996	13C2 PFDA	102		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-039
Lab Sample ID: 320-42142-11
Matrix: Water
Lab File ID: 2018.08.26_537C_045.d
Analysis Method: 537
Date Collected: 08/14/2018 12:40
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 258.5(mL)
Date Analyzed: 08/27/2018 02:41
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242160
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	J	39	15	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	10	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 M	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.1	J M	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U M	87	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	99		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-039
Lab Sample ID: 320-42142-12
Matrix: Water
Lab File ID: 2018.08.26_537C_048.d
Analysis Method: 537
Date Collected: 08/14/2018 12:35
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 262.6(mL)
Date Analyzed: 08/27/2018 02:55
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242161
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-187
Lab Sample ID: 320-42142-13
Matrix: Water
Lab File ID: 2018.08.26_537C_049.d
Analysis Method: 537
Date Collected: 08/14/2018 13:10
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 266.4(mL)
Date Analyzed: 08/27/2018 03:00
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242161
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	62		38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	34		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	31		28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	35		9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	84	34	15

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-187
Lab Sample ID: 320-42142-14
Matrix: Water
Lab File ID: 2018.08.28_537A_013.d
Analysis Method: 537
Date Collected: 08/14/2018 13:05
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 278.6(mL)
Date Analyzed: 08/29/2018 00:09
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242687
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	100		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-292
Lab Sample ID: 320-42142-15
Matrix: Water
Lab File ID: 2018.08.28_537A_014.d
Analysis Method: 537
Date Collected: 08/14/2018 13:40
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 266.2(mL)
Date Analyzed: 08/29/2018 00:13
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242687
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	23	J	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	20		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.4	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.5	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	102		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-292
Lab Sample ID: 320-42142-16
Matrix: Water
Lab File ID: 2018.08.26_537C_052.d
Analysis Method: 537
Date Collected: 08/14/2018 13:35
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 281.9(mL)
Date Analyzed: 08/27/2018 03:14
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242161
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.1	U	18	7.1	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.9	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	80	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		70-130
STL00996	13C2 PFDA	102		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-229
Lab Sample ID: 320-42142-17
Matrix: Water
Lab File ID: 2018.08.26_537C_053.d
Analysis Method: 537
Date Collected: 08/14/2018 16:10
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 255.7(mL)
Date Analyzed: 08/27/2018 03:19
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242161
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)	31		20	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	20	U M	23	20	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	J	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	11		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	99		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-229
Lab Sample ID: 320-42142-18
Matrix: Water
Lab File ID: 2018.08.26_537C_054.d
Analysis Method: 537
Date Collected: 08/14/2018 16:05
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 268.3(mL)
Date Analyzed: 08/27/2018 03:24
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.: 242161
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.5	U	19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	84	34	15

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-126
Lab Sample ID: 320-42142-19
Matrix: Water
Lab File ID: 2018.08.28_537A_015.d
Analysis Method: 537
Date Collected: 08/14/2018 16:40
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 230.5(mL)
Date Analyzed: 08/29/2018 00:18
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.: 242687
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	57		43	17	7.4
335-67-1	Perfluorooctanoic acid (PFOA)	10	J	22	8.7	3.0
375-95-1	Perfluorononanoic acid (PFNA)	22	U	26	22	8.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	37		33	13	6.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.5	J	11	4.3	2.1
375-73-5	Perfluorobutanesulfonic acid (PFBS)	39	U	98	39	17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	95		70-130

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-126
Lab Sample ID: 320-42142-20
Matrix: Water
Lab File ID: 2018.08.26_537C_056.d
Analysis Method: 537
Date Collected: 08/14/2018 16:35
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 275(mL)
Date Analyzed: 08/27/2018 03:33
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242161
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	36	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	U	18	7.3	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	104		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-RW-172
Lab Sample ID: 320-42142-21
Matrix: Water
Lab File ID: 2018.08.26_537C_057.d
Analysis Method: 537
Date Collected: 08/14/2018 17:10
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 235.7(mL)
Date Analyzed: 08/27/2018 03:38
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242161
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.1	J	42	17	7.2
335-67-1	Perfluorooctanoic acid (PFOA)	10	J	21	8.5	3.0
375-95-1	Perfluorononanoic acid (PFNA)	21	U	25	21	8.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	13	U	32	13	5.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	J M	11	4.2	2.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	38	U	95	38	17

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID: NAWC-081418-FRB-172
Lab Sample ID: 320-42142-22
Matrix: Water
Lab File ID: 2018.08.28_537A_016.d
Analysis Method: 537
Date Collected: 08/14/2018 17:05
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 273.6(mL)
Date Analyzed: 08/29/2018 00:23
Con. Extract Vol.: 1.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 242687
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	U	18	7.3	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.1	3.7	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	97		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: WGNA-~~080718~~ 081418 -DUP-45 | Lab Sample ID: 320-42142-23

Matrix: Water | Lab File ID: 2018.08.28_537A_017.d

Analysis Method: 537 | Date Collected: 08/14/2018 07:00

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 266(mL) | Date Analyzed: 08/29/2018 00:27

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

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

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

Analysis Batch No.: 242687 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	30	J	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	27		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.3	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.5	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	94		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-42142-1

SDG No.:

Client Sample ID: WGNA-~~080718~~ 081418 -DUP-46 | Lab Sample ID: 320-42142-24

Matrix: Water | Lab File ID: 2018.08.28_537A_018.d

Analysis Method: 537 | Date Collected: 08/14/2018 12:00

Extraction Method: 537 | Date Extracted: 08/24/2018 09:17

Sample wt/vol: 243.7(mL) | Date Analyzed: 08/29/2018 00:32

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.: 242687 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.8	J	41	16	7.0
335-67-1	Perfluorooctanoic acid (PFOA)	10	J	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	81		70-130
STL00996	13C2 PFDA	87		70-130

Appendix C

Support Documentation

ANALYTE	ORIGINAL NAWC-081418-RW-256	DUPLICATE WGNA-080718-DUP-45	RL	RPD	RPD > 30% Aqueous	ORIGINAL SAMPLE CONC >2xRL	DUPLICATE SAMPLE CONC >2xRL	DIFFERENCE >2XRL
Perfluorooctanoic acid (PFOA)	28	27	18	3.64	FALSE	FALSE	FALSE	FALSE
Perfluoroheptanoic acid (PFHpA)	8.5	8.5	8.9	0.00	FALSE	FALSE	FALSE	FALSE
Perfluorohexanesulfonic acid (PFHxS)	5.5	5.3	27	3.70	FALSE	FALSE	FALSE	FALSE
Perfluorooctanesulfonic acid (PFOS)	30	30	35	0.00	FALSE	FALSE	FALSE	FALSE

ANALYTE	ORIGINAL NAWC-081418-RW-172	DUPLICATE WGNA-080718-DUP-46	RL	RPD	RPD > 30% Aqueous	ORIGINAL SAMPLE CONC >2xRL	DUPLICATE SAMPLE CONC >2xRL	DIFFERENCE >2XRL
Perfluorooctanoic acid (PFOA)	10	10	21	0.00	FALSE	FALSE	FALSE	FALSE
Perfluoroheptanoic acid (PFHpA)	3.6	4.1	11	12.99	FALSE	FALSE	FALSE	FALSE
Perfluorooctanesulfonic acid (PFOS)	8.1	7.8	42	3.77	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: 8/14/2018	COC No:
TetraTech	Tel/Fax: 610.382.2920	Lab Contact: Dave Alltucker	Carrier: FedEx	1 of 1 COCs
234 Mall Boulevard Suite 260	Analysis Turnaround Time			Sampler: Mary Kay Bond
King of Prussia, PA 19406	☐CALENDAR DAYS ☐WORKING DAYS			For Lab Use Only:
610-382-2924	TAT if different from Below 21			Client:
610-491-9688	☐ 2 weeks			ling:
Project Name: WE04	☐ 1 week			
Site: WE04	☐ 2 days			No.:
P O # 1132358 (through EarthToxics)	☐ 1 day			

320-42142 Chain of Custody

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=Grab) | Matrix | # of Cont. | Filtered Sample (Y / N) | Perform MS / MSD (Y / N) | EPA 537 UCMR3 | | |

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-42142-1

Login Number: 42142
List Number: 1
Creator: Nelson, Kym D

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	seals
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.	False	IDs on containers do not match the COC. Logged in per COC.
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	

Job Narrative
320-42142-1

Receipt
The samples were received on 8/15/2018 9:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.7º C and 1.7º C.

Receipt Exceptions

The container label for the following samples did not match the information listed on the Chain-of-Custody (COC): WGNA-080718-DUP-45 (320-42142-23) and WGNA-080718-DUP-46 (320-42142-24). WGNA-080718-DUP-45 and -46 are labeled WGNA-081418-DUP-45 and -46. Samples 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.

Method(s) 537: Internal standard (ISTD) response for the following sample was outside control limits: WGNA-080718-DUP-46 (320-42142-24). The sample was re-analyzed with concurring results. The second set of data has been reported because fewer ISTD were outside control limits.

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 320-241537

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-241832.

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

Method Summary

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

TestAmerica Job ID: 320-42142-1

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

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

TestAmerica Job ID: 320-42142-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-42142-1	NAWC-081418-RW-256	Water	08/14/18 08:40	08/15/18 09:35
320-42142-2	NAWC-081418-FRB-256	Water	08/14/18 08:35	08/15/18 09:35
320-42142-3	NAWC-081418-RW-270	Water	08/14/18 09:40	08/15/18 09:35
320-42142-4	NAWC-081418-FRB-270	Water	08/14/18 09:35	08/15/18 09:35
320-42142-5	NAWC-081418-RW-271	Water	08/14/18 10:10	08/15/18 09:35
320-42142-6	NAWC-081418-FRB-271	Water	08/14/18 10:05	08/15/18 09:35
320-42142-7	NAWC-081418-RW-311	Water	08/14/18 11:10	08/15/18 09:35
320-42142-8	NAWC-081418-FRB-311	Water	08/14/18 11:05	08/15/18 09:35
320-42142-9	NAWC-081418-RW-038	Water	08/14/18 12:10	08/15/18 09:35
320-42142-10	NAWC-081418-FRB-038	Water	08/14/18 12:05	08/15/18 09:35
320-42142-11	NAWC-081418-RW-039	Water	08/14/18 12:40	08/15/18 09:35
320-42142-12	NAWC-081418-FRB-039	Water	08/14/18 12:35	08/15/18 09:35
320-42142-13	NAWC-081418-RW-187	Water	08/14/18 13:10	08/15/18 09:35
320-42142-14	NAWC-081418-FRB-187	Water	08/14/18 13:05	08/15/18 09:35
320-42142-15	NAWC-081418-RW-292	Water	08/14/18 13:40	08/15/18 09:35
320-42142-16	NAWC-081418-FRB-292	Water	08/14/18 13:35	08/15/18 09:35
320-42142-17	NAWC-081418-RW-229	Water	08/14/18 16:10	08/15/18 09:35
320-42142-18	NAWC-081418-FRB-229	Water	08/14/18 16:05	08/15/18 09:35
320-42142-19	NAWC-081418-RW-126	Water	08/14/18 16:40	08/15/18 09:35
320-42142-20	NAWC-081418-FRB-126	Water	08/14/18 16:35	08/15/18 09:35
320-42142-21	NAWC-081418-RW-172	Water	08/14/18 17:10	08/15/18 09:35
320-42142-22	NAWC-081418-FRB-172	Water	08/14/18 17:05	08/15/18 09:35
320-42142-23	WGNA-080718-DUP-45	Water	08/14/18 07:00	08/15/18 09:35
320-42142-24	WGNA-080718-DUP-46	Water	08/14/18 12:00	08/15/18 09:35

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-081418-RW-256	320-42142-1	95	109
NAWC-081418-FRB-256	320-42142-2	108	108
NAWC-081418-RW-270	320-42142-3	101	108
NAWC-081418-FRB-270	320-42142-4	113	120
NAWC-081418-RW-271	320-42142-5	85	96
NAWC-081418-FRB-271	320-42142-6	101	99
NAWC-081418-RW-311	320-42142-7	99	96
NAWC-081418-FRB-311	320-42142-8	98	106
NAWC-081418-RW-038	320-42142-9	90	97
NAWC-081418-FRB-038	320-42142-10	106	102
NAWC-081418-RW-039	320-42142-11	98	99
NAWC-081418-FRB-039	320-42142-12	102	102
NAWC-081418-RW-187	320-42142-13	95	100
NAWC-081418-FRB-187	320-42142-14	96	100
NAWC-081418-RW-292	320-42142-15	97	102
NAWC-081418-FRB-292	320-42142-16	99	102
NAWC-081418-RW-229	320-42142-17	91	99
NAWC-081418-FRB-229	320-42142-18	100	100
NAWC-081418-RW-126	320-42142-19	90	95
NAWC-081418-FRB-126	320-42142-20	95	104
NAWC-081418-RW-172	320-42142-21	98	100
NAWC-081418-FRB-172	320-42142-22	96	97
WGNA-080718-DUP-45	320-42142-23	85	94
WGNA-080718-DUP-46	320-42142-24	81	87
	MB 320-241537/1-A	104	110
	MB 320-241832/1-A	102	95
	LCS 320-241832/2-A	104	98
	LCSD 320-241832/3-A	100	97

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

Column to be used to flag recovery values

FORM II 537

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
	LLCS 320-241537/2-A	113	114
	LLCSD 320-241537/3-A	110	109

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

Column to be used to flag recovery values

FORM II 537

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.08.26_537C_037.d

Lab ID: LCS 320-241832/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	132	142	108	70-130	
Perfluorooctanoic acid (PFOA)	66.0	68.9	104	70-130	
Perfluorononanoic acid (PFNA)	66.0	67.3	102	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	115	115	70-130	
Perfluoroheptanoic acid (PFHpA)	32.0	34.1	107	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	351	117	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.08.26_537C_038.d

Lab ID: LCSD 320-241832/3-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	132	135	103	5	30	70-130	
Perfluorooctanoic acid (PFOA)	66.0	70.6	107	2	30	70-130	
Perfluorononanoic acid (PFNA)	66.0	65.9	100	2	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	100	111	111	3	30	70-130	
Perfluoroheptanoic acid (PFHpA)	32.0	33.8	106	1	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	300	341	114	3	30	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.08.26_537C_008.d

Lab ID: LLCS 320-241537/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LLCS CONCENTRATION (ng/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	40.2	43.0	107	50-150	
Perfluorooctanoic acid (PFOA)	20.0	20.4	102	50-150	
Perfluorononanoic acid (PFNA)	20.0	18.9 J	94	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.3	33.1	109	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	10.2	102	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.2	105	117	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.: 320-42142-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.08.26_537C_009.d

Lab ID: LLCSD 320-241537/3-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LLCSD CONCENTRATION (ng/L)	LLCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	40.2	45.1	112	5	50	50-150	
Perfluorooctanoic acid (PFOA)	20.0	20.6	103	1	50	50-150	
Perfluorononanoic acid (PFNA)	20.0	19.4 J	97	3	50	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.3	34.9	115	5	50	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	11.3	113	10	50	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.2	115	127	8	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.: 320-42142-1

SDG No.:

Lab File ID: 2018.08.26_537C_007.d Lab Sample ID: MB 320-241537/1-A

Matrix: Water Date Extracted: 08/23/2018 07:20

Instrument ID: A8_N Date Analyzed: 08/26/2018 23:44

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-241537/2-A	2018.08.26_537C_008.d	08/26/2018 23:48
	LLCSD 320-241537/3-A	2018.08.26_537C_009.d	08/26/2018 23:53
NAWC-081418-RW-256	320-42142-1	2018.08.26_537C_028.d	08/27/2018 01:22
NAWC-081418-FRB-256	320-42142-2	2018.08.26_537C_031.d	08/27/2018 01:36
NAWC-081418-RW-270	320-42142-3	2018.08.26_537C_032.d	08/27/2018 01:41
NAWC-081418-FRB-270	320-42142-4	2018.08.26_537C_033.d	08/27/2018 01:45

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 320-241537/1-A
Matrix: Water
Lab File ID: 2018.08.26_537C_007.d
Analysis Method: 537
Date Collected:
Extraction Method: 537
Date Extracted: 08/23/2018 07:20
Sample wt/vol: 250(mL)
Date Analyzed: 08/26/2018 23:44
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.: 242153
Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		70-130
STL00996	13C2 PFDA	110		70-130

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab File ID: 2018.08.26_537C_036.d Lab Sample ID: MB 320-241832/1-A

Matrix: Water Date Extracted: 08/24/2018 09:17

Instrument ID: A8_N Date Analyzed: 08/27/2018 01:59

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-241832/2-A	2018.08.26_537C_037.d	08/27/2018 02:04
	LCSD 320-241832/3-A	2018.08.26_537C_038.d	08/27/2018 02:09
NAWC-081418-FRB-271	320-42142-6	2018.08.26_537C_040.d	08/27/2018 02:18
NAWC-081418-RW-311	320-42142-7	2018.08.26_537C_041.d	08/27/2018 02:23
NAWC-081418-FRB-311	320-42142-8	2018.08.26_537C_042.d	08/27/2018 02:27
NAWC-081418-RW-038	320-42142-9	2018.08.26_537C_043.d	08/27/2018 02:32
NAWC-081418-FRB-038	320-42142-10	2018.08.26_537C_044.d	08/27/2018 02:37
NAWC-081418-RW-039	320-42142-11	2018.08.26_537C_045.d	08/27/2018 02:41
NAWC-081418-FRB-039	320-42142-12	2018.08.26_537C_048.d	08/27/2018 02:55
NAWC-081418-RW-187	320-42142-13	2018.08.26_537C_049.d	08/27/2018 03:00
NAWC-081418-FRB-292	320-42142-16	2018.08.26_537C_052.d	08/27/2018 03:14
NAWC-081418-RW-229	320-42142-17	2018.08.26_537C_053.d	08/27/2018 03:19
NAWC-081418-FRB-229	320-42142-18	2018.08.26_537C_054.d	08/27/2018 03:24
NAWC-081418-FRB-126	320-42142-20	2018.08.26_537C_056.d	08/27/2018 03:33
NAWC-081418-RW-172	320-42142-21	2018.08.26_537C_057.d	08/27/2018 03:38
NAWC-081418-RW-271	320-42142-5	2018.08.28_537A_012.d	08/29/2018 00:04
NAWC-081418-FRB-187	320-42142-14	2018.08.28_537A_013.d	08/29/2018 00:09
NAWC-081418-RW-292	320-42142-15	2018.08.28_537A_014.d	08/29/2018 00:13
NAWC-081418-RW-126	320-42142-19	2018.08.28_537A_015.d	08/29/2018 00:18
NAWC-081418-FRB-172	320-42142-22	2018.08.28_537A_016.d	08/29/2018 00:23
WGNA-080718-DUP-45	320-42142-23	2018.08.28_537A_017.d	08/29/2018 00:27
WGNA-080718-DUP-46	320-42142-24	2018.08.28_537A_018.d	08/29/2018 00:32

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-42142-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 320-241832/1-A
Matrix: Water
Lab File ID: 2018.08.26_537C_036.d
Analysis Method: 537
Date Collected:
Extraction Method: 537
Date Extracted: 08/24/2018 09:17
Sample wt/vol: 250(mL)
Date Analyzed: 08/27/2018 01:59
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.: 242160
Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	102		70-130
STL00996	13C2 PFDA	95		70-130

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/15/2018 18:44

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		999840	1.85	2469394	2.11		
UPPER LIMIT		1499760	2.35	3704091	2.61		
LOWER LIMIT		499920	1.35	1234697	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-240166/9		1006603	1.84	2388436	2.10		
ICV 320-240166/11		1022273	1.84	2551643	2.10		
CCVL 320-242153/1		956576	1.81	2465858	2.07		
CCV 320-242153/2 CCVIS		846614	1.82	2153988	2.07		
MB 320-241537/1-A		1043498	1.82	2632697	2.07		
LLCS 320-241537/2-A		1063967	1.81	2653479	2.07		
LLCSD 320-241537/3-A		1061847	1.81	2615789	2.06		
CCV 320-242153/14 CCVIS		802241	1.81	2163583	2.07		
CCV 320-242156/14 CCVIS		802241	1.81	2163583	2.07		
320-42142-1	NAWC-081418-RW-256	1120085	1.81	2681466	2.06		
CCV 320-242156/26 CCVIS		836144	1.81	2142935	2.06		
CCV 320-242157/26 CCVIS		836144	1.81	2142935	2.06		
320-42142-2	NAWC-081418-FRB-256	1087608	1.81	2737007	2.07		
320-42142-3	NAWC-081418-RW-270	1124503	1.81	2743746	2.07		
320-42142-4	NAWC-081418-FRB-270	1055150	1.81	2782033	2.06		
CCV 320-242157/31 CCVIS		824422	1.81	2176602	2.07		
CCV 320-242160/31 CCVIS		824422	1.81	2176602	2.07		
MB 320-241832/1-A		1106092	1.81	2676902	2.06		
LCS 320-241832/2-A		1044801	1.81	2647780	2.06		
LCSD 320-241832/3-A		979667	1.81	2502510	2.06		
320-42142-6	NAWC-081418-FRB-271	994954	1.81	2482133	2.06		
320-42142-7	NAWC-081418-RW-311	1010503	1.81	2506398	2.07		
320-42142-8	NAWC-081418-FRB-311	1115578	1.81	2734636	2.07		
320-42142-9	NAWC-081418-RW-038	1138862	1.81	2799168	2.07		
320-42142-10	NAWC-081418-FRB-038	1078762	1.82	2658887	2.07		
320-42142-11	NAWC-081418-RW-039	1094966	1.81	2710395	2.06		

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.: 320-42142-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/15/2018 18:44

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		999840	1.85	2469394	2.11		
UPPER LIMIT		1499760	2.35	3704091	2.61		
LOWER LIMIT		499920	1.35	1234697	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCV 320-242160/43 CCVIS		790234	1.81	2027772	2.07		
CCV 320-242161/43 CCVIS		790234	1.81	2027772	2.07		
320-42142-12	NAWC-081418-FRB-039	963844	1.82	2494524	2.07		
320-42142-13	NAWC-081418-RW-187	1093115	1.81	2685184	2.06		
320-42142-16	NAWC-081418-FRB-292	1021568	1.81	2508454	2.07		
320-42142-17	NAWC-081418-RW-229	1082166	1.81	2785372	2.07		
320-42142-18	NAWC-081418-FRB-229	970605	1.81	2451771	2.07		
320-42142-20	NAWC-081418-FRB-126	987929	1.81	2497413	2.06		
320-42142-21	NAWC-081418-RW-172	1052377	1.81	2633869	2.07		
CCV 320-242161/55 CCVIS		754707	1.81	2022100	2.06		
CCVL 320-242684/1		1111468	1.84	2737262	2.09		
CCV 320-242687/8 CCVIS		930267	1.83	2345437	2.09		
320-42142-5	NAWC-081418-RW-271	1256836	1.83	2880471	2.09		
320-42142-14	NAWC-081418-FRB-187	1211521	1.82	3029669	2.08		
320-42142-15	NAWC-081418-RW-292	1188788	1.82	2980086	2.08		
320-42142-19	NAWC-081418-RW-126	1259631	1.82	2984516	2.08		
320-42142-22	NAWC-081418-FRB-172	687676	1.82	1662172	2.08		
320-42142-23	WGNA-080718-DUP-45	1088472	1.82	2601893	2.08		
320-42142-24	WGNA-080718-DUP-46	1353219Q	1.82	2990257	2.08		
CCV 320-242687/17 CCVIS		887111	1.81	2303342	2.07		

WITHIN LIMITS

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.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242153/2 Date Analyzed: 08/26/2018 23:34

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

Lab File ID (Standard): 2018.08.26_537C_005 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		846614	1.82	2153988	2.07		
UPPER LIMIT		1185260	2.32	3015583	2.57		
LOWER LIMIT		592630	1.32	1507792	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-241537/1-A		1043498	1.82	2632697	2.07		
LLCS 320-241537/2-A		1063967	1.81	2653479	2.07		
LLCSD 320-241537/3-A		1061847	1.81	2615789	2.06		

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.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242153/14 Date Analyzed: 08/27/2018 00:30

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

Lab File ID (Standard): 2018.08.26_537C_017 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		802241	1.81	2163583	2.07		
UPPER LIMIT		1123137	2.31	3029016	2.57		
LOWER LIMIT		561569	1.31	1514508	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-241537/1-A		1043498	1.82	2632697	2.07		
LLCS 320-241537/2-A		1063967	1.81	2653479	2.07		
LLCSD 320-241537/3-A		1061847	1.81	2615789	2.06		

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.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242156/14 Date Analyzed: 08/27/2018 00:30

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

Lab File ID (Standard): 2018.08.26_537C_017 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		802241	1.81	2163583	2.07		
UPPER LIMIT		1123137	2.31	3029016	2.57		
LOWER LIMIT		561569	1.31	1514508	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-42142-1	NAWC-081418-RW-256	1120085	1.81	2681466	2.06		

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.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242156/26 Date Analyzed: 08/27/2018 01:27

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

Lab File ID (Standard): 2018.08.26_537C_029 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		836144	1.81	2142935	2.06		
UPPER LIMIT		1170602	2.31	3000109	2.56		
LOWER LIMIT		585301	1.31	1500055	1.56		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-42142-1	NAWC-081418-RW-256	1120085	1.81	2681466	2.06		

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.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242157/26 Date Analyzed: 08/27/2018 01:27

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

Lab File ID (Standard): 2018.08.26_537C_029 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		836144	1.81	2142935	2.06		
UPPER LIMIT		1170602	2.31	3000109	2.56		
LOWER LIMIT		585301	1.31	1500055	1.56		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-42142-2	NAWC-081418-FRB-256	1087608	1.81	2737007	2.07		
320-42142-3	NAWC-081418-RW-270	1124503	1.81	2743746	2.07		
320-42142-4	NAWC-081418-FRB-270	1055150	1.81	2782033	2.06		

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.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242157/31 Date Analyzed: 08/27/2018 01:50

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

Lab File ID (Standard): 2018.08.26_537C_034 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		824422	1.81	2176602	2.07		
UPPER LIMIT		1154191	2.31	3047243	2.57		
LOWER LIMIT		577095	1.31	1523621	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-42142-2	NAWC-081418-FRB-256	1087608	1.81	2737007	2.07		
320-42142-3	NAWC-081418-RW-270	1124503	1.81	2743746	2.07		
320-42142-4	NAWC-081418-FRB-270	1055150	1.81	2782033	2.06		

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.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242160/31 Date Analyzed: 08/27/2018 01:50

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

Lab File ID (Standard): 2018.08.26_537C_034 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		824422	1.81	2176602	2.07		
UPPER LIMIT		1154191	2.31	3047243	2.57		
LOWER LIMIT		577095	1.31	1523621	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-241832/1-A		1106092	1.81	2676902	2.06		
LCS 320-241832/2-A		1044801	1.81	2647780	2.06		
LCSD 320-241832/3-A		979667	1.81	2502510	2.06		
320-42142-6	NAWC-081418-FRB-271	994954	1.81	2482133	2.06		
320-42142-7	NAWC-081418-RW-311	1010503	1.81	2506398	2.07		
320-42142-8	NAWC-081418-FRB-311	1115578	1.81	2734636	2.07		
320-42142-9	NAWC-081418-RW-038	1138862	1.81	2799168	2.07		
320-42142-10	NAWC-081418-FRB-038	1078762	1.82	2658887	2.07		
320-42142-11	NAWC-081418-RW-039	1094966	1.81	2710395	2.06		

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.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242160/43 Date Analyzed: 08/27/2018 02:46

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

Lab File ID (Standard): 2018.08.26_537C_046 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		790234	1.81	2027772	2.07		
UPPER LIMIT		1106328	2.31	2838881	2.57		
LOWER LIMIT		553164	1.31	1419440	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-241832/1-A		1106092	1.81	2676902	2.06		
LCS 320-241832/2-A		1044801	1.81	2647780	2.06		
LCSD 320-241832/3-A		979667	1.81	2502510	2.06		
320-42142-6	NAWC-081418-FRB-271	994954	1.81	2482133	2.06		
320-42142-7	NAWC-081418-RW-311	1010503	1.81	2506398	2.07		
320-42142-8	NAWC-081418-FRB-311	1115578	1.81	2734636	2.07		
320-42142-9	NAWC-081418-RW-038	1138862	1.81	2799168	2.07		
320-42142-10	NAWC-081418-FRB-038	1078762	1.82	2658887	2.07		
320-42142-11	NAWC-081418-RW-039	1094966	1.81	2710395	2.06		

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.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242161/43 Date Analyzed: 08/27/2018 02:46

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

Lab File ID (Standard): 2018.08.26_537C_046 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		790234	1.81	2027772	2.07		
UPPER LIMIT		1106328	2.31	2838881	2.57		
LOWER LIMIT		553164	1.31	1419440	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-42142-12	NAWC-081418-FRB-039	963844	1.82	2494524	2.07		
320-42142-13	NAWC-081418-RW-187	1093115	1.81	2685184	2.06		
320-42142-16	NAWC-081418-FRB-292	1021568	1.81	2508454	2.07		
320-42142-17	NAWC-081418-RW-229	1082166	1.81	2785372	2.07		
320-42142-18	NAWC-081418-FRB-229	970605	1.81	2451771	2.07		
320-42142-20	NAWC-081418-FRB-126	987929	1.81	2497413	2.06		
320-42142-21	NAWC-081418-RW-172	1052377	1.81	2633869	2.07		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242161/55 Date Analyzed: 08/27/2018 03:42

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

Lab File ID (Standard): 2018.08.26_537C_058 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		754707	1.81	2022100	2.06		
UPPER LIMIT		1056590	2.31	2830940	2.56		
LOWER LIMIT		528295	1.31	1415470	1.56		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-42142-12	NAWC-081418-FRB-039	963844	1.82	2494524	2.07		
320-42142-13	NAWC-081418-RW-187	1093115	1.81	2685184	2.06		
320-42142-16	NAWC-081418-FRB-292	1021568	1.81	2508454	2.07		
320-42142-17	NAWC-081418-RW-229	1082166	1.81	2785372	2.07		
320-42142-18	NAWC-081418-FRB-229	970605	1.81	2451771	2.07		
320-42142-20	NAWC-081418-FRB-126	987929	1.81	2497413	2.06		
320-42142-21	NAWC-081418-RW-172	1052377	1.81	2633869	2.07		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242687/8 Date Analyzed: 08/28/2018 23:55

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

Lab File ID (Standard): 2018.08.28_537A_010 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		930267	1.83	2345437	2.09		
UPPER LIMIT		1302374	2.33	3283612	2.59		
LOWER LIMIT		651187	1.33	1641806	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-42142-5	NAWC-081418-RW-271	1256836	1.83	2880471	2.09		
320-42142-14	NAWC-081418-FRB-187	1211521	1.82	3029669	2.08		
320-42142-15	NAWC-081418-RW-292	1188788	1.82	2980086	2.08		
320-42142-19	NAWC-081418-RW-126	1259631	1.82	2984516	2.08		
320-42142-22	NAWC-081418-FRB-172	687676	1.82	1662172	2.08		
320-42142-23	WGNA-080718-DUP-45	1088472	1.82	2601893	2.08		
320-42142-24	WGNA-080718-DUP-46	1353219Q	1.82	2990257	2.08		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Sample No.: CCV 320-242687/17 Date Analyzed: 08/29/2018 00:37

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

Lab File ID (Standard): 2018.08.28_537A_019 Heated Purge: (Y/N) N

Calibration ID: 40641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		887111	1.81	2303342	2.07		
UPPER LIMIT		1241955	2.31	3224679	2.57		
LOWER LIMIT		620978	1.31	1612339	1.57		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-42142-5	NAWC-081418-RW-271	1256836	1.83	2880471	2.09		
320-42142-14	NAWC-081418-FRB-187	1211521	1.82	3029669	2.08		
320-42142-15	NAWC-081418-RW-292	1188788	1.82	2980086	2.08		
320-42142-19	NAWC-081418-RW-126	1259631	1.82	2984516	2.08		
320-42142-22	NAWC-081418-FRB-172	687676	1.82	1662172	2.08		
320-42142-23	WGNA-080718-DUP-45	1088472	1.82	2601893	2.08		
320-42142-24	WGNA-080718-DUP-46	1353219Q	1.82	2990257	2.08		

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

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

Column used to flag values outside QC limits

FORM VIII 537

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

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1 Analy Batch No.: 240166

SDG No.:

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

Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.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)	1.2479 0.9705	1.1886	1.2616	1.1091	1.0906	Ave		1.1447				9.6		30.0			
Perfluoroheptanoic acid (PFHpA)	1.0855 1.0407	1.0364	1.0489	1.0876	1.0460	Ave		1.0575				2.2		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.6492 1.6115	1.6167	1.6890	1.6380	1.7330	Ave		1.6562				2.8		30.0			
Perfluorooctanoic acid (PFOA)	1.0954 1.0842	1.0529	1.0915	1.1075	1.1058	Ave		1.0895				1.8		30.0			
Perfluorooctanesulfonic acid (PFOS)	1.0830 1.0982	1.0386	1.0683	1.0853	1.1084	Ave		1.0803				2.3		30.0			
Perfluorononanoic acid (PFNA)	0.8630 0.8350	0.7990	0.7881	0.8431	0.8177	Ave		0.8243				3.4		30.0			
13C2 PFHxA	1.0723 1.0545	1.0111	1.0024	1.0515	1.0447	Ave		1.0394				2.6		30.0			
13C2 PFDA	0.7972 0.7976	0.7443	0.7670	0.8351	0.8115	Ave		0.7921				4.1		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.: 320-42142-1 Analy Batch No.: 240166

SDG No.:

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

Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	Ave	998954 15136483	2070355	4549188	9386038	11785636	9.00 180	20.0	45.0	90.1	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	106948 1986691	233189	488515	1105731	1440874	0.960 19.4	2.16	4.86	9.72	14.6
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	440547 8441814	945775	2045536	4655795	6289862	3.00 60.5	6.72	15.1	30.2	45.4
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	222587 4216218	482587	1035552	2293687	3102767	1.98 39.6	4.40	9.90	19.8	29.7
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	380845 7518443	794113	1690983	4031609	5257770	3.95 79.1	8.79	19.8	39.5	59.3
Perfluorononanoic acid (PFNA)	13PF OA	Ave	175370 3246932	366204	747749	1746006	2294540	1.98 39.6	4.40	9.90	19.8	29.7
13C2 PFHxA	13PF OA	Ave	1100508 1035478	1053216	960623	1099800	987004	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	818198 783206	775306	735076	873467	766710	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD

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

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1 Analy Batch No.: 240166

SDG No.:

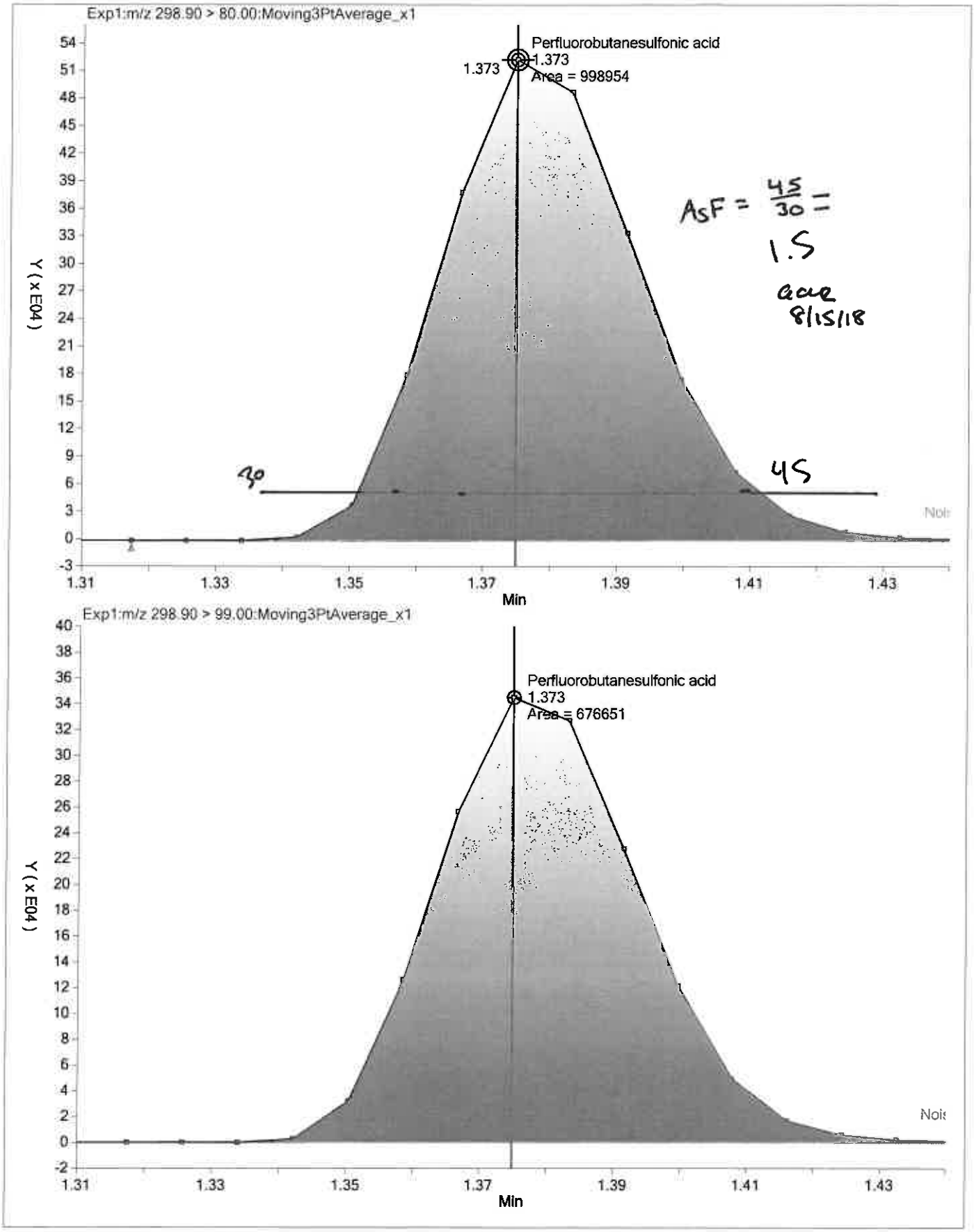
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

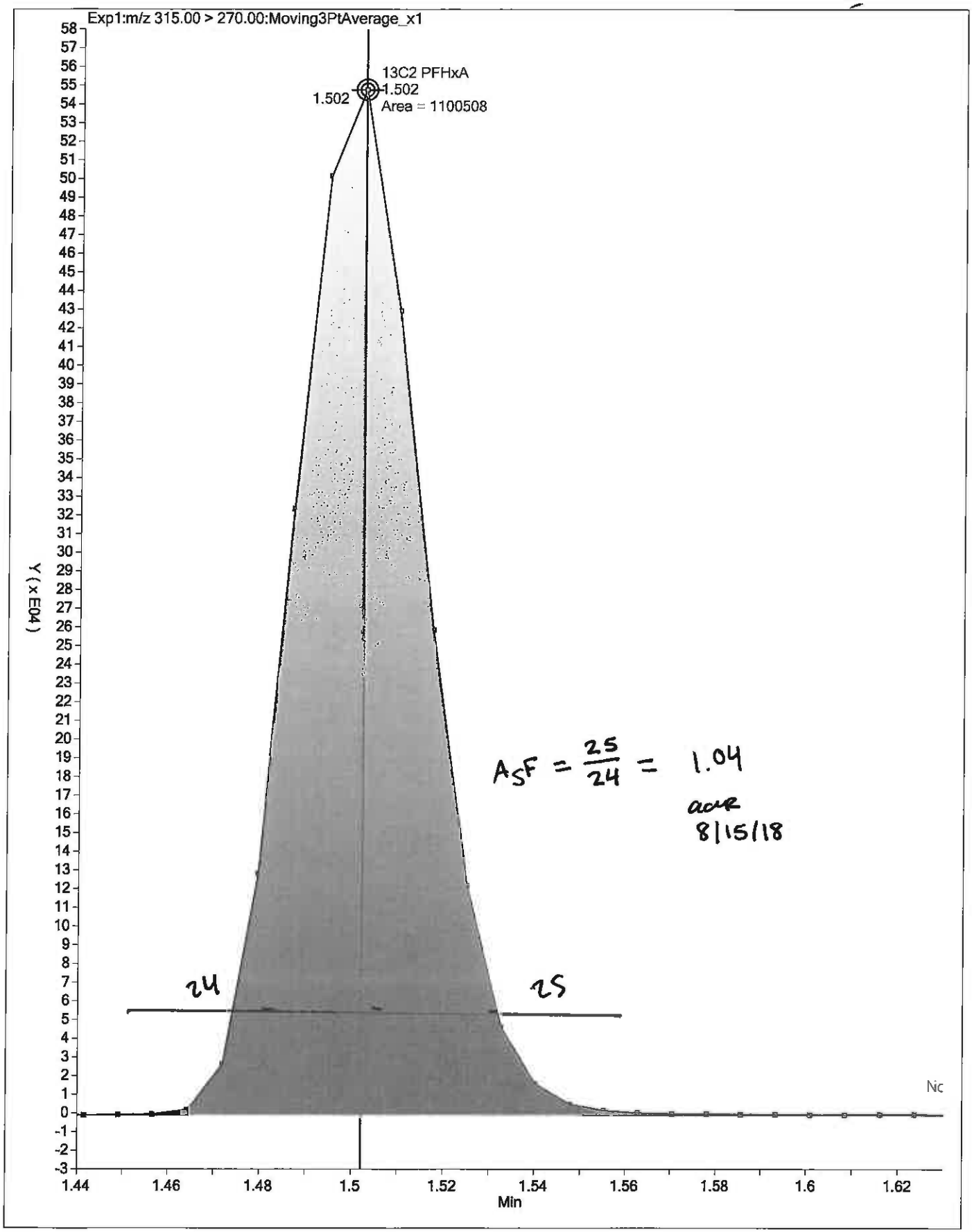
Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.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)	9.0	3.8	10.2	-3.1	-4.7	-15.2	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	2.6	-2.0	-0.8	2.8	-1.1	-1.6	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-0.4	-2.4	2.0	-1.1	4.6	-2.7	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	0.5	-3.4	0.2	1.7	1.5	-0.5	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	0.2	-3.9	-1.1	0.5	2.6	1.7	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	4.7	-3.1	-4.4	2.3	-0.8	1.3	50	30	30	30	30	30
13C2 PFHxA	3.2	-2.7	-3.6	1.2	0.5	1.4	30	30	30	30	30	30
13C2 PFDA	0.6	-6.0	-3.2	5.4	2.4	0.7	30	30	30	30	30	30


Exp1:m/z 298.90 > 80.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
1.373
1.373
Area = 998954
AsF = 45/30 =
1.5
acc
8/15/18
30
45
Y (x E04)
Min
Exp1:m/z 298.90 > 99.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
1.373
Area = 676651
Y (x E04)
Min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13C2 PFHxA
1.502
Area = 1100508
1.502
Y (x E04)
Min
24
25
$A_SF = \frac{25}{24} = 1.04$
acr
8/15/18

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCVL 320-240166/9 Calibration Date: 08/15/2018 18:53

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.15_537CURVE_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.167		20.4	20.0	2.0	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.033		2.11	2.16	-2.4	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.611		6.54	6.72	-2.7	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.020		4.12	4.40	-6.4	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.039		8.45	8.79	-3.8	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8023		4.28	4.40	-2.7	50.0
13C2 PFHxA	Ave	1.039	1.002		9.64	10.0	-3.6	30.0
13C2 PFDA	Ave	0.7921	0.7658		9.67	10.0	-3.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: ICV 320-240166/11 Calibration Date: 08/15/2018 19:03

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.15_537CURVE_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.005		87.9	100	-12.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	0.9536		9.02	10.0	-9.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.530		18.6	20.2	-7.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	0.8802		16.3	20.2	-19.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	0.9603		17.9	20.2	-11.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7757		19.0	20.2	-5.9	30.0
13C2 PFHxA	Ave	1.039	1.022		9.83	10.0	-1.7	30.0
13C2 PFDA	Ave	0.7921	0.7952		10.0	10.0	0.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCVL 320-242153/1 Calibration Date: 08/26/2018 23:30

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.183		20.7	20.0	3.3	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.122		2.29	2.16	6.1	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.646		6.68	6.72	-0.6	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.033		4.17	4.40	-5.2	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.027		8.35	8.79	-4.9	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8082		4.31	4.40	-2.0	50.0
13C2 PFHxA	Ave	1.039	1.105		10.6	10.0	6.3	30.0
13C2 PFDA	Ave	0.7921	0.8820		11.1	10.0	11.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242153/2 Calibration Date: 08/26/2018 23:34

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.281		50.4	45.0	11.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.133		5.21	4.86	7.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.680		15.3	15.1	1.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.082		9.83	9.90	-0.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.071		19.6	19.8	-0.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7975		9.58	9.90	-3.3	30.0
13C2 PFHxA	Ave	1.039	1.091		10.5	10.0	5.0	30.0
13C2 PFDA	Ave	0.7921	0.8612		10.9	10.0	8.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242153/14 Calibration Date: 08/27/2018 00:30

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.115		132	135	-2.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.095		15.1	14.6	3.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.694		46.4	45.4	2.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.061		28.9	29.7	-2.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.073		58.9	59.3	-0.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8365		30.1	29.7	1.5	30.0
13C2 PFHxA	Ave	1.039	1.148		11.0	10.0	10.4	30.0
13C2 PFDA	Ave	0.7921	0.9021		11.4	10.0	13.9	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242156/14 Calibration Date: 08/27/2018 00:30

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.115		132	135	-2.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.095		15.1	14.6	3.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.694		46.4	45.4	2.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.061		28.9	29.7	-2.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.073		58.9	59.3	-0.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8365		30.1	29.7	1.5	30.0
13C2 PFHxA	Ave	1.039	1.148		11.0	10.0	10.4	30.0
13C2 PFDA	Ave	0.7921	0.9021		11.4	10.0	13.9	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242156/26 Calibration Date: 08/27/2018 01:27

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.272		50.0	45.0	11.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.092		5.02	4.86	3.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.725		15.7	15.1	4.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.069		9.71	9.90	-1.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.069		19.6	19.8	-1.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7980		9.58	9.90	-3.2	30.0
13C2 PFHxA	Ave	1.039	1.147		11.0	10.0	10.4	30.0
13C2 PFDA	Ave	0.7921	0.8814		11.1	10.0	11.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242157/26 Calibration Date: 08/27/2018 01:27

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.272		50.0	45.0	11.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.092		5.02	4.86	3.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.725		15.7	15.1	4.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.069		9.71	9.90	-1.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.069		19.6	19.8	-1.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7980		9.58	9.90	-3.2	30.0
13C2 PFHxA	Ave	1.039	1.147		11.0	10.0	10.4	30.0
13C2 PFDA	Ave	0.7921	0.8814		11.1	10.0	11.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242157/31 Calibration Date: 08/27/2018 01:50

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_034.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.118		132	135	-2.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.141		15.7	14.6	7.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.752		48.0	45.4	5.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.109		30.2	29.7	1.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.092		59.9	59.3	1.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8018		28.9	29.7	-2.7	30.0
13C2 PFHxA	Ave	1.039	1.113		10.7	10.0	7.1	30.0
13C2 PFDA	Ave	0.7921	0.9007		11.4	10.0	13.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242160/31 Calibration Date: 08/27/2018 01:50

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_034.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.118		132	135	-2.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.141		15.7	14.6	7.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.752		48.0	45.4	5.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.109		30.2	29.7	1.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.092		59.9	59.3	1.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8018		28.9	29.7	-2.7	30.0
13C2 PFHxA	Ave	1.039	1.113		10.7	10.0	7.1	30.0
13C2 PFDA	Ave	0.7921	0.9007		11.4	10.0	13.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242160/43 Calibration Date: 08/27/2018 02:46

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_046.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.287		50.6	45.0	12.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.131		5.20	4.86	7.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.698		15.5	15.1	2.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.068		9.71	9.90	-2.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.088		19.9	19.8	0.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7983		9.59	9.90	-3.2	30.0
13C2 PFHxA	Ave	1.039	1.143		11.0	10.0	10.0	30.0
13C2 PFDA	Ave	0.7921	0.9013		11.4	10.0	13.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242161/43 Calibration Date: 08/27/2018 02:46

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_046.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.287		50.6	45.0	12.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.131		5.20	4.86	7.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.698		15.5	15.1	2.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.068		9.71	9.90	-2.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.088		19.9	19.8	0.7	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7983		9.59	9.90	-3.2	30.0
13C2 PFHxA	Ave	1.039	1.143		11.0	10.0	10.0	30.0
13C2 PFDA	Ave	0.7921	0.9013		11.4	10.0	13.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242161/55 Calibration Date: 08/27/2018 03:42

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.26_537C_058.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.134		134	135	-1.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.125		15.5	14.6	6.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.727		47.3	45.4	4.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.093		29.8	29.7	0.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.086		59.6	59.3	0.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8218		29.6	29.7	-0.3	30.0
13C2 PFHxA	Ave	1.039	1.165		11.2	10.0	12.1	30.0
13C2 PFDA	Ave	0.7921	0.9175		11.6	10.0	15.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCVL 320-242684/1 Calibration Date: 08/28/2018 23:22

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.28_537A_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.171		20.5	20.0	2.3	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.017		2.08	2.16	-3.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.581		6.42	6.72	-4.5	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.003		4.05	4.40	-8.0	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.021		8.30	8.79	-5.5	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7737		4.13	4.40	-6.1	50.0
13C2 PFHxA	Ave	1.039	1.087		10.5	10.0	4.6	30.0
13C2 PFDA	Ave	0.7921	0.8736		11.0	10.0	10.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242687/8 Calibration Date: 08/28/2018 23:55

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.28_537A_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.208		47.5	45.0	5.5	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.056		4.85	4.86	-0.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.716		15.7	15.1	3.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.043		9.48	9.90	-4.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.071		19.6	19.8	-0.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7953		9.55	9.90	-3.5	30.0
13C2 PFHxA	Ave	1.039	1.070		10.3	10.0	2.9	30.0
13C2 PFDA	Ave	0.7921	0.8661		10.9	10.0	9.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Lab Sample ID: CCV 320-242687/17 Calibration Date: 08/29/2018 00:37

Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 08/15/2018 18:44

Lab File ID: 2018.08.28_537A_019.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.113		131	135	-2.8	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.143		15.8	14.6	8.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.742		47.7	45.4	5.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.076		29.3	29.7	-1.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.103		60.5	59.3	2.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8361		30.1	29.7	1.4	30.0
13C2 PFHxA	Ave	1.039	1.122		10.8	10.0	8.0	30.0
13C2 PFDA	Ave	0.7921	0.9099		11.5	10.0	14.9	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Start Date: 08/15/2018 18:21

Analysis Batch Number: 240166 End Date: 08/15/2018 19:03

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-240166/2		08/15/2018 18:21	1	2018.08.15_537CURVE 003.d	GeminiC18 3x100 3(mm)
IC 320-240166/3		08/15/2018 18:25	1	2018.08.15_537CURVE 004.d	GeminiC18 3x100 3(mm)
IC 320-240166/4		08/15/2018 18:30	1	2018.08.15_537CURVE 005.d	GeminiC18 3x100 3(mm)
IC 320-240166/5 ICISAV		08/15/2018 18:35	1	2018.08.15_537CURVE 006.d	GeminiC18 3x100 3(mm)
IC 320-240166/6		08/15/2018 18:39	1	2018.08.15_537CURVE 007.d	GeminiC18 3x100 3(mm)
IC 320-240166/7		08/15/2018 18:44	1	2018.08.15_537CURVE 008.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/15/2018 18:49	1		GeminiC18 3x100 3(mm)
CCVL 320-240166/9		08/15/2018 18:53	1	2018.08.15_537CURVE 010.d	GeminiC18 3x100 3(mm)
ICB 320-240166/10		08/15/2018 18:58	1		GeminiC18 3x100 3(mm)
ICV 320-240166/11		08/15/2018 19:03	1	2018.08.15_537CURVE 012.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Start Date: 08/26/2018 23:30

Analysis Batch Number: 242153 End Date: 08/27/2018 00:30

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-242153/1		08/26/2018 23:30	1	2018.08.26_537C 004.d	GeminiC18 3x100 3(mm)
CCV 320-242153/2 CCVIS		08/26/2018 23:34	1	2018.08.26_537C 005.d	GeminiC18 3x100 3(mm)
MB 320-241537/1-A		08/26/2018 23:44	1	2018.08.26_537C 007.d	GeminiC18 3x100 3(mm)
LLCS 320-241537/2-A		08/26/2018 23:48	1	2018.08.26_537C 008.d	GeminiC18 3x100 3(mm)
LLCSD 320-241537/3-A		08/26/2018 23:53	1	2018.08.26_537C 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/26/2018 23:58	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:02	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:07	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:12	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:16	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:21	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:26	1		GeminiC18 3x100 3(mm)
CCV 320-242153/14 CCVIS		08/27/2018 00:30	1	2018.08.26_537C 017.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Start Date: 08/27/2018 00:30

Analysis Batch Number: 242156 End Date: 08/27/2018 01:27

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-242156/14 CCVIS		08/27/2018 00:30	1	2018.08.26_537C 017.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:40	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:44	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:49	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:54	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 00:58	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 01:03	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 01:08	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 01:13	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 01:17	1		GeminiC18 3x100 3(mm)
320-42142-1		08/27/2018 01:22	1	2018.08.26_537C 028.d	GeminiC18 3x100 3(mm)
CCV 320-242156/26 CCVIS		08/27/2018 01:27	1	2018.08.26_537C 029.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Start Date: 08/27/2018 01:27

Analysis Batch Number: 242157 End Date: 08/27/2018 01:50

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-242157/26 CCVIS		08/27/2018 01:27	1	2018.08.26_537C 029.d	GeminiC18 3x100 3(mm)
320-42142-2		08/27/2018 01:36	1	2018.08.26_537C 031.d	GeminiC18 3x100 3(mm)
320-42142-3		08/27/2018 01:41	1	2018.08.26_537C 032.d	GeminiC18 3x100 3(mm)
320-42142-4		08/27/2018 01:45	1	2018.08.26_537C 033.d	GeminiC18 3x100 3(mm)
CCV 320-242157/31 CCVIS		08/27/2018 01:50	1	2018.08.26_537C _034.d	GeminiC18 3x100 3(mm)

537

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Start Date: 08/27/2018 01:50

Analysis Batch Number: 242160 End Date: 08/27/2018 02:46

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-242160/31 CCVIS		08/27/2018 01:50	1	2018.08.26_537C 034.d	GeminiC18 3x100 3(mm)
MB 320-241832/1-A		08/27/2018 01:59	1	2018.08.26_537C 036.d	GeminiC18 3x100 3(mm)
LCS 320-241832/2-A		08/27/2018 02:04	1	2018.08.26_537C 037.d	GeminiC18 3x100 3(mm)
LCSD 320-241832/3-A		08/27/2018 02:09	1	2018.08.26_537C 038.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 02:13	1		GeminiC18 3x100 3(mm)
320-42142-6		08/27/2018 02:18	1	2018.08.26_537C 040.d	GeminiC18 3x100 3(mm)
320-42142-7		08/27/2018 02:23	1	2018.08.26_537C 041.d	GeminiC18 3x100 3(mm)
320-42142-8		08/27/2018 02:27	1	2018.08.26_537C 042.d	GeminiC18 3x100 3(mm)
320-42142-9		08/27/2018 02:32	1	2018.08.26_537C 043.d	GeminiC18 3x100 3(mm)
320-42142-10		08/27/2018 02:37	1	2018.08.26_537C 044.d	GeminiC18 3x100 3(mm)
320-42142-11		08/27/2018 02:41	1	2018.08.26_537C 045.d	GeminiC18 3x100 3(mm)
CCV 320-242160/43 CCVIS		08/27/2018 02:46	1	2018.08.26_537C 046.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Start Date: 08/27/2018 02:46

Analysis Batch Number: 242161 End Date: 08/27/2018 03:42

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-242161/43 CCVIS		08/27/2018 02:46	1	2018.08.26_537C 046.d	GeminiC18 3x100 3(mm)
320-42142-12		08/27/2018 02:55	1	2018.08.26_537C 048.d	GeminiC18 3x100 3(mm)
320-42142-13		08/27/2018 03:00	1	2018.08.26_537C 049.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 03:05	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 03:09	1		GeminiC18 3x100 3(mm)
320-42142-16		08/27/2018 03:14	1	2018.08.26_537C 052.d	GeminiC18 3x100 3(mm)
320-42142-17		08/27/2018 03:19	1	2018.08.26_537C 053.d	GeminiC18 3x100 3(mm)
320-42142-18		08/27/2018 03:24	1	2018.08.26_537C 054.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/27/2018 03:28	1		GeminiC18 3x100 3(mm)
320-42142-20		08/27/2018 03:33	1	2018.08.26_537C 056.d	GeminiC18 3x100 3(mm)
320-42142-21		08/27/2018 03:38	1	2018.08.26_537C 057.d	GeminiC18 3x100 3(mm)
CCV 320-242161/55 CCVIS		08/27/2018 03:42	1	2018.08.26_537C 058.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Start Date: 08/28/2018 23:22

Analysis Batch Number: 242684 End Date: 08/28/2018 23:55

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-242684/1		08/28/2018 23:22	1	2018.08.28_537A 003.d	GeminiC18 3x100 3(mm)
CCV 320-242684/2 CCVIS		08/28/2018 23:27	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:31	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:36	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:41	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:45	2		GeminiC18 3x100 3(mm)
ZZZZZ		08/28/2018 23:50	1		GeminiC18 3x100 3(mm)
CCV 320-242684/8 CCVIS		08/28/2018 23:55	1		GeminiC18 3x100 3(mm)

537

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Instrument ID: A8_N Start Date: 08/28/2018 23:55

Analysis Batch Number: 242687 End Date: 08/29/2018 00:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-242687/8 CCVIS		08/28/2018 23:55	1	2018.08.28_537A 010.d	GeminiC18 3x100 3(mm)
320-42142-5		08/29/2018 00:04	1	2018.08.28_537A 012.d	GeminiC18 3x100 3(mm)
320-42142-14		08/29/2018 00:09	1	2018.08.28_537A 013.d	GeminiC18 3x100 3(mm)
320-42142-15		08/29/2018 00:13	1	2018.08.28_537A 014.d	GeminiC18 3x100 3(mm)
320-42142-19		08/29/2018 00:18	1	2018.08.28_537A 015.d	GeminiC18 3x100 3(mm)
320-42142-22		08/29/2018 00:23	1	2018.08.28_537A 016.d	GeminiC18 3x100 3(mm)
320-42142-23		08/29/2018 00:27	1	2018.08.28_537A 017.d	GeminiC18 3x100 3(mm)
320-42142-24		08/29/2018 00:32	1	2018.08.28_537A 018.d	GeminiC18 3x100 3(mm)
CCV 320-242687/17 CCVIS		08/29/2018 00:37	1	2018.08.28_537A 019.d	GeminiC18 3x100 3(mm)

537

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Batch Number: 241537 Batch Start Date: 08/23/18 07:20 Batch Analyst: Arauz, Horacio J

Batch Method: 537 Batch End Date: 08/24/18 15:50

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00080
MB 320-241537/1		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
LLCS 320-241537/2		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
LLCSD 320-241537/3		537, 537				250 mL	1.00 mL	7.0 SU	100 uL
320-42142-A-1	NAWC-081418-RW-256	537, 537	T	311.48 g	29.45 g	282 mL	1.00 mL	7.0 SU	100 uL
320-42142-A-2	NAWC-081418-FRB-256	537, 537	T	305.93 g	27.83 g	278.1 mL	1.00 mL	7.0 SU	100 uL
320-42142-A-3	NAWC-081418-RW-270	537, 537	T	289.48 g	29.16 g	260.3 mL	1.00 mL	7.0 SU	100 uL
320-42142-A-4	NAWC-081418-FRB-270	537, 537	T	303.53 g	27.95 g	275.6 mL	1.00 mL	7.0 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00077	AnalysisComment			
MB 320-241537/1		537, 537			100 uL	Chlorine ND			
LLCS 320-241537/2		537, 537		100 uL	100 uL	Chlorine ND			
LLCSD 320-241537/3		537, 537		100 uL	100 uL	Chlorine ND			
320-42142-A-1	NAWC-081418-RW-256	537, 537	T		100 uL	Chlorine ND			
320-42142-A-2	NAWC-081418-FRB-256	537, 537	T		100 uL	Chlorine ND			
320-42142-A-3	NAWC-081418-RW-270	537, 537	T		100 uL	Chlorine ND			
320-42142-A-4	NAWC-081418-FRB-270	537, 537	T		100 uL	Chlorine ND			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Batch Number: 241537 Batch Start Date: 08/23/18 07:20 Batch Analyst: Arauz, Horacio J

Batch Method: 537 Batch End Date: 08/24/18 15:50

Batch Notes	
Analyst ID - Aliquot Step	SKD
Batch Comment	Client labels match TA label, HJA 08/22/18
Analyst ID - Concentration	SKD
Analyst ID - Final Volume Step	SKD
Internal Standard ID#	1334015
Manifold ID	1, 3
Methanol ID	1335812
pH Indicator ID	0818
Pipette ID	R40536G
Analyst ID - IS Reagent Drop	SKD
Analyst ID - IS Reagent Drop Witness	VPM
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	SKD
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	SKD
SPE Cartridge Lot ID	6390138-06
Trizma ID	SLBR5241V
Reagent Water ID	08/21/18

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Batch Number: 241832 Batch Start Date: 08/24/18 09:17 Batch Analyst: Long, Tyrel W

Batch Method: 537 Batch End Date: 08/25/18 13:40

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00080
MB 320-241832/1		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCS 320-241832/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCSD 320-241832/3		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-42142-A-5	NAWC-081418-RW-271	537, 537	T	288.83 g	28.29 g	260.5 mL	1.00 mL	7 SU	100 uL
320-42142-A-6	NAWC-081418-FRB-271	537, 537	T	308.42 g	28.20 g	280.2 mL	1.00 mL	7 SU	100 uL
320-42142-A-7	NAWC-081418-RW-311	537, 537	T	301.23 g	28.36 g	272.9 mL	1.00 mL	7 SU	100 uL
320-42142-A-8	NAWC-081418-FRB-311	537, 537	T	291.12 g	28.11 g	263 mL	1.00 mL	7 SU	100 uL
320-42142-A-9	NAWC-081418-RW-038	537, 537	T	286.63 g	28.70 g	257.9 mL	1.00 mL	7 SU	100 uL
320-42142-A-10	NAWC-081418-FRB-038	537, 537	T	306.45 g	27.88 g	278.6 mL	1.00 mL	7 SU	100 uL
320-42142-A-11	NAWC-081418-RW-039	537, 537	T	286.61 g	28.11 g	258.5 mL	1.00 mL	7 SU	100 uL
320-42142-A-12	NAWC-081418-FRB-039	537, 537	T	290.69 g	28.06 g	262.6 mL	1.00 mL	7 SU	100 uL
320-42142-A-13	NAWC-081418-RW-187	537, 537	T	294.86 g	28.45 g	266.4 mL	1.00 mL	7 SU	100 uL
320-42142-A-14	NAWC-081418-FRB-187	537, 537	T	307.24 g	28.64 g	278.6 mL	1.00 mL	7 SU	100 uL
320-42142-A-15	NAWC-081418-RW-292	537, 537	T	294.56 g	28.38 g	266.2 mL	1.00 mL	7 SU	100 uL
320-42142-A-16	NAWC-081418-FRB-292	537, 537	T	310.14 g	28.29 g	281.9 mL	1.00 mL	7 SU	100 uL
320-42142-A-17	NAWC-081418-RW-229	537, 537	T	284.49 g	28.76 g	255.7 mL	1.00 mL	7 SU	100 uL
320-42142-A-18	NAWC-081418-FRB-229	537, 537	T	296.28 g	27.97 g	268.3 mL	1.00 mL	7 SU	100 uL
320-42142-A-19	NAWC-081418-RW-126	537, 537	T	259.79 g	29.31 g	230.5 mL	1.00 mL	7 SU	100 uL
320-42142-A-20	NAWC-081418-FRB-126	537, 537	T	303.78 g	28.82 g	275 mL	1.00 mL	7 SU	100 uL
320-42142-A-21	NAWC-081418-RW-172	537, 537	T	264.81 g	29.14 g	235.7 mL	1.00 mL	7 SU	100 uL
320-42142-A-22	NAWC-081418-FRB-172	537, 537	T	301.45 g	27.84 g	273.6 mL	1.00 mL	7 SU	100 uL
320-42142-A-23	WGNA-080718-DUP-45	537, 537	T	294.57 g	28.61 g	266 mL	1.00 mL	7 SU	100 uL

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.: 320-42142-1

SDG No.:

Batch Number: 241832 Batch Start Date: 08/24/18 09:17 Batch Analyst: Long, Tyrel W

Batch Method: 537 Batch End Date: 08/25/18 13:40

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00080
320-42142-A-24	WGNA-080718-DUP-46	537, 537	T	271.88 g	28.14 g	243.7 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00033	LC537-SU 00077	AnalysisComment			
MB 320-241832/1		537, 537			100 uL	Chlorine ND			
LCS 320-241832/2		537, 537		100 uL	100 uL	Chlorine ND			
LCSD 320-241832/3		537, 537		100 uL	100 uL	Chlorine ND			
320-42142-A-5	NAWC-081418-RW-271	537, 537	T		100 uL	Chlorine ND			
320-42142-A-6	NAWC-081418-FRB-271	537, 537	T		100 uL	Chlorine ND			
320-42142-A-7	NAWC-081418-RW-311	537, 537	T		100 uL	Chlorine ND			
320-42142-A-8	NAWC-081418-FRB-311	537, 537	T		100 uL	Chlorine ND			
320-42142-A-9	NAWC-081418-RW-038	537, 537	T		100 uL	Chlorine ND			
320-42142-A-10	NAWC-081418-FRB-038	537, 537	T		100 uL	Chlorine ND			
320-42142-A-11	NAWC-081418-RW-039	537, 537	T		100 uL	Chlorine ND			
320-42142-A-12	NAWC-081418-FRB-039	537, 537	T		100 uL	Chlorine ND			
320-42142-A-13	NAWC-081418-RW-187	537, 537	T		100 uL	Chlorine ND			
320-42142-A-14	NAWC-081418-FRB-187	537, 537	T		100 uL	Chlorine ND			
320-42142-A-15	NAWC-081418-RW-292	537, 537	T		100 uL	Chlorine ND			
320-42142-A-16	NAWC-081418-FRB-292	537, 537	T		100 uL	Chlorine ND			
320-42142-A-17	NAWC-081418-RW-229	537, 537	T		100 uL	Chlorine ND			
320-42142-A-18	NAWC-081418-FRB-229	537, 537	T		100 uL	Chlorine ND			
320-42142-A-19	NAWC-081418-RW-126	537, 537	T		100 uL	Chlorine ND			
320-42142-A-20	NAWC-081418-FRB-126	537, 537	T		100 uL	Chlorine ND			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42142-1

SDG No.:

Batch Number: 241832 Batch Start Date: 08/24/18 09:17 Batch Analyst: Long, Tyrel W

Batch Method: 537 Batch End Date: 08/25/18 13:40

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00033	LC537-SU 00077	AnalysisComment			
320-42142-A-21	NAWC-081418-RW-172	537, 537	T		100 uL	Chlorine ND			
320-42142-A-22	NAWC-081418-FRB-172	537, 537	T		100 uL	Chlorine ND			
320-42142-A-23	WGNA-080718-DUP-45	537, 537	T		100 uL	Chlorine ND			
320-42142-A-24	WGNA-080718-DUP-46	537, 537	T		100 uL	Chlorine ND			

Batch Notes	
Analyst ID - Aliquot Step	SKD
Batch Comment	Client labels match TA label, TWL 08/22/18
Analyst ID - Concentration	SKD
Analyst ID - Final Volume Step	SKD
Internal Standard ID#	1334015
Manifold ID	3,4
Methanol ID	1335812
pH Indicator ID	0818
Pipette ID	R40536G
Analyst ID - IS Reagent Drop	SKD
Analyst ID - IS Reagent Drop Witness	VPM
Analyst ID - SU Reagent Drop	TWL
Analyst ID - SU Reagent Drop Witness	QLP
Analyst ID - TA Reagent Drop	TWL
Analyst ID - TA Reagent Drop Witness	QLP
SPE Cartridge Lot ID	6390138-08
Trizma ID	SLBR5241V
Reagent Water ID	08/23/18

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

PFAS Calibration Calculations:

Initial Calibration 8/15/2018
Instrument A8_N

PFOA

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF
1.98	222587	1026304	10	1.09536	1.0954
4.4	482587	1041660	10	1.05292	1.0529
9.9	1035552	958352	10	1.09147	1.0915
19.8	2293687	1045953	10	1.10753	1.1075
29.7	3102767	944777	10	1.10577	1.1058
39.6	4216218	981996	10	1.08422	1.0842
			Average	1.08955	1.0895
			Standard Deviation	0.0200	
			RSD	0.0183	
			%RSD	1.83275	1.8

Continuing Calibration 08/26/2018 @ 23:34
PFOA

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
9.9	906601	846614	10	1.0817	-0.718503	1.09	-0.7

Sample Identification NAWC-081418-RW-126
Compound PFOA

Compound Area	326510	Average RRF	1.0895
Internal Standard Amount (ng)	10	Sample Volume(ml)	230.5
Dilution Factor	1	Volume Extract (ml)	1
Internal Standard Area	1259631	Injection Volume (µl)	1
Concentration	10.3218 ng/L		
Reported Result	10 ng/L		

Surrogate PFHxA

Compound Area	1179378		
Internal Standard Amount (ng)	10		
Dilution Factor	1	Volume Extract (ml)	1
Internal Standard Area	1259631	Injection Volume (µl	1
Average RRF	1.0394		
Concentration	9.0080		
Surrogate %R	90.08	Spike amount	10

LCS %R

320-241832/2-A			
PFOA	Spike amount	LCS concentration	
104.39	66	68.9	
320-241832/3-A			LCS/LCSD RPD 2.437276
PFOA	Spike amount	LCS concentration	
106.97	66	70.6	

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\2018.08.28_537A_015.d
Lims ID: 320-42142-A-19-A
Client ID: NAWC-081418-RW-126
Sample Type: Client
Inject. Date: 29-Aug-2018 00:18:32 ALS Bottle#: 9 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-42142-a-19-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180828-63420.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Aug-2018 11:06:11 Calib Date: 15-Aug-2018 18:44:32
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 29-Aug-2018 11:06:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.366	1.373	-0.007	1.000	132705	1.11		149	
298.90 > 99.00	1.366	1.373	-0.007	1.000	87432		1.52(0.00-0.00)	232	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.487	1.495	-0.008	1.000	1179378	9.01		8999	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.639	1.639	0.0	1.000	1454768	8.44		548	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.631	1.639	-0.008	1.000	137622	1.03		15.8	
* 6 13C2-PFOA									
415.00 > 370.00	1.821	1.828	-0.007		1259631	10.0		9057	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.828	1.828	0.0	1.000	326510	2.38		35.8	
413.00 > 169.00	1.828	1.828	0.0	1.000	193116		1.69(0.00-0.00)	474	
* 7 13C4 PFOS									
503.00 > 80.00	2.079	2.086	-0.007		2984516	28.7		3216	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.079	2.109	-0.030	1.000	1486056	13.2		849	
499.00 > 99.00	2.079	2.109	-0.030	1.000	314424		4.73(0.00-0.00)	625	
$ 10 13C2 PFDA									
515.00 > 470.00	2.253	2.253	0.0	1.000	951992	9.54		4756	

DODCMD_ID	INSTALLATION_ID	SDG	SITE_NAME	NORM_SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	CONTRACT_ID	DO_CTO_NUMBER	CONTR_NAME	SAMPLE_NAME	SAMPLE_MATRIX_DESC	SAMPLE_TYPE_DESC	COLLECT_DATE	ANALYTICAL_METHOD	ANALYTICAL_METHOD_GRP_DESC
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1							N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-FRB-270	Water for QC samples	Field Reagent Blank	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1							N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-FRB-229	Water for QC samples	Field Reagent Blank	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1							N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-FRB-187	Water for QC samples	Field Reagent Blank	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1	OFFSITE_RW	SITE 00001	NAWC-RW-126	Domestic well	2709709.394	337862.1898	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-RW-126	Ground water	Normal (Regular)	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1							N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-FRB-039	Water for QC samples	Field Reagent Blank	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1							N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-FRB-256	Water for QC samples	Field Reagent Blank	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1							N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-FRB-271	Water for QC samples	Field Reagent Blank	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1	OFFSITE_RW	SITE 00001	NAWC-RW-256	Domestic well	2714886.293	334239.3855	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-RW-256-D	Ground water	Field duplicate	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1							N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-FRB-172	Water for QC samples	Field Reagent Blank	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1	OFFSITE_RW	SITE 00001	NAWC-RW-311	Domestic well	2727690.462	327618.1967	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-RW-311	Ground water	Normal (Regular)	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1	OFFSITE_RW	SITE 00001	NAWC-RW-187	Domestic well	2710079.013	336718.3557	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-RW-187	Ground water	Normal (Regular)	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1	OFFSITE_RW	SITE 00001	NAWC-RW-271	Domestic well	2719532.792	324448.7088	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-RW-271	Ground water	Normal (Regular)	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1	OFFSITE_RW	SITE 00001	NAWC-RW-292	Domestic well	2708542.982	323952.453	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-RW-292	Ground water	Normal (Regular)	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1	OFFSITE_RW	SITE 00001	NAWC-RW-256	Domestic well	2714886.293	334239.3855	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-RW-256	Ground water	Normal (Regular)	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1							N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-FRB-126	Water for QC samples	Field Reagent Blank	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1	OFFSITE_RW	SITE 00001	NAWC-RW-172	Domestic well	2718906.679	322851.919	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-RW-172	Ground water	Normal (Regular)	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1							N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-FRB-311	Water for QC samples	Field Reagent Blank	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1							N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-FRB-038	Water for QC samples	Field Reagent Blank	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1	OFFSITE_RW	SITE 00001	NAWC-RW-038	Domestic well	2714212.295	334116.5382	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-RW-038	Ground water	Normal (Regular)	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1	OFFSITE_RW	SITE 00001	NAWC-RW-270	Domestic well	2719532.792	324448.7088	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-RW-270	Ground water	Normal (Regular)	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1	OFFSITE_RW	SITE 00001	NAWC-RW-229	Domestic well	2716447.423	332325.9333	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-RW-229	Ground water	Normal (Regular)	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1							N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-FRB-292	Water for QC samples	Field Reagent Blank	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1	OFFSITE_RW	SITE 00001	NAWC-RW-039	Domestic well	2714239.658	334340.4816	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-RW-039	Ground water	Normal (Regular)	14-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-42142-1	OFFSITE_RW	SITE 00001	NAWC-RW-172	Domestic well	2718906.679	322851.919	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-081418-RW-172-D	Ground water	Field duplicate	14-Aug-18	537	Perfluoroalkyl Compounds