NAVFAC
Naval Facilities Engineering Command

Off-Base Drinking Water Sample Results, Level 2 Laboratory Report, Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Figure, SDG J25960-1

Naval Air Station Whidbey Island
Oak Harbor, Washington

June 2019

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Sacramento
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Tel: (916)373-5600

TestAmerica Job ID: 320-25960-1
Client Project/Site: Whidbey Island

For:
CH2M Hill Constructors, Inc.
1100 NE Circle Blvd
Corvallis, Oregon 97330

Attn: Tiffany Hill

Authorized for release by:
3/1/2017 2:17:37 PM

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Definitions/Glossary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-25960-1

Qualifiers

LCMS

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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 ID: 320-25960-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: CH2M Hill Constructors, Inc.

Project: Whidbey Island

Report Number: 320-25960-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Sacramento attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

TestAmerica utilizes USEPA approved methods and DOD QSM, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

All parameters for which TestAmerica Sacramento has certification were evaluated to the QSM specified reporting convention or to the client specified format if different from QSM. Parameters not certified under QSM, if any, were evaluated to the detection limit (DL) and include qualified results where applicable.

The sample(s) that contain constituents flagged with U are undetected. The result associated with this flag is the limit of detection (LOD).

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 02/22/2017; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.0 C.

PFOA/PFOS

Samples WI-CV-1RW73-0217 (320-25960-1), WI-CV-1FB73-0217 (320-25960-2), WI-CV-1RW74-0217 (320-25960-3), WI-CV-1FB74-0217 (320-25960-4), WI-CV-1RW75-0217 (320-25960-5), WI-CV-1FB75-0217 (320-25960-6), WI-CV-1RW76-0217 (320-25960-7) and WI-CV-1FB76-0217 (320-25960-8) were analyzed for PFOA/PFOS in accordance with 537. The samples were prepared on 02/27/2017 and analyzed on 02/28/2017.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batches 320-151910 and 320-152377.

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

Job ID: 320-25960-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

Detection Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-25960-1

Client Sample ID: WI-CV-1RW73-0217 **Lab Sample ID: 320-25960-1**

No Detections.

Client Sample ID: WI-CV-1FB73-0217 **Lab Sample ID: 320-25960-2**

No Detections.

Client Sample ID: WI-CV-1RW74-0217 **Lab Sample ID: 320-25960-3**

No Detections.

Client Sample ID: WI-CV-1FB74-0217 **Lab Sample ID: 320-25960-4**

No Detections.

Client Sample ID: WI-CV-1RW75-0217 **Lab Sample ID: 320-25960-5**

No Detections.

Client Sample ID: WI-CV-1FB75-0217 **Lab Sample ID: 320-25960-6**

No Detections.

Client Sample ID: WI-CV-1RW76-0217 **Lab Sample ID: 320-25960-7**

No Detections.

Client Sample ID: WI-CV-1FB76-0217 **Lab Sample ID: 320-25960-8**

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: WI-CV-1RW73-0217

Lab Sample ID: 320-25960-1
Date Collected: 02/20/17 12:00
Matrix: Water
Date Received: 02/22/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.045	U	0.057	0.015	ug/L		02/27/17 14:33	02/28/17 16:25	1
Perfluorooctanoic acid (PFOA)	0.023	U	0.028	0.0089	ug/L		02/27/17 14:33	02/28/17 16:25	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.045	ug/L		02/27/17 14:33	02/28/17 16:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*81*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:25*	*1*
13C2 PFDA	*89*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:25*	*1*

Client Sample ID: WI-CV-1FB73-0217

Lab Sample ID: 320-25960-2
Date Collected: 02/20/17 12:01
Matrix: Water
Date Received: 02/22/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.054	0.014	ug/L		02/27/17 14:33	02/28/17 16:29	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.0084	ug/L		02/27/17 14:33	02/28/17 16:29	1
Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.043	ug/L		02/27/17 14:33	02/28/17 16:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:29*	*1*
13C2 PFDA	*83*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:29*	*1*

Client Sample ID: WI-CV-1RW74-0217

Lab Sample ID: 320-25960-3
Date Collected: 02/20/17 17:03
Matrix: Water
Date Received: 02/22/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.054	0.014	ug/L		02/27/17 14:33	02/28/17 16:34	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.0085	ug/L		02/27/17 14:33	02/28/17 16:34	1
Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.043	ug/L		02/27/17 14:33	02/28/17 16:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*75*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:34*	*1*
13C2 PFDA	*85*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:34*	*1*

Client Sample ID: WI-CV-1FB74-0217

Lab Sample ID: 320-25960-4
Date Collected: 02/20/17 17:04
Matrix: Water
Date Received: 02/22/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.053	0.014	ug/L		02/27/17 14:33	02/28/17 16:38	1
Perfluorooctanoic acid (PFOA)	0.021	U	0.027	0.0084	ug/L		02/27/17 14:33	02/28/17 16:38	1
Perfluorobutanesulfonic acid (PFBS)	0.098	U	0.12	0.042	ug/L		02/27/17 14:33	02/28/17 16:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*81*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:38*	*1*
13C2 PFDA	*78*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:38*	*1*

Client Sample ID: WI-CV-1RW75-0217

Lab Sample ID: 320-25960-5
Date Collected: 02/20/17 17:05
Matrix: Water
Date Received: 02/22/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.054	0.014	ug/L		02/27/17 14:33	02/28/17 16:42	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.0085	ug/L		02/27/17 14:33	02/28/17 16:42	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.043	ug/L		02/27/17 14:33	02/28/17 16:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*76*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:42*	*1*
13C2 PFDA	*77*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:42*	*1*

Client Sample ID: WI-CV-1FB75-0217

Lab Sample ID: 320-25960-6
Date Collected: 02/20/17 17:06
Matrix: Water
Date Received: 02/22/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.053	0.014	ug/L		02/27/17 14:33	02/28/17 16:47	1
Perfluorooctanoic acid (PFOA)	0.021	U	0.027	0.0084	ug/L		02/27/17 14:33	02/28/17 16:47	1
Perfluorobutanesulfonic acid (PFBS)	0.098	U	0.12	0.042	ug/L		02/27/17 14:33	02/28/17 16:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*82*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:47*	*1*
13C2 PFDA	*75*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:47*	*1*

Client Sample ID: WI-CV-1RW76-0217

Lab Sample ID: 320-25960-7
Date Collected: 02/20/17 17:20
Matrix: Water
Date Received: 02/22/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.045	U	0.056	0.015	ug/L		02/27/17 14:33	02/28/17 16:51	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.0088	ug/L		02/27/17 14:33	02/28/17 16:51	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.045	ug/L		02/27/17 14:33	02/28/17 16:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*74*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:51*	*1*
13C2 PFDA	*80*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:51*	*1*

Client Sample ID: WI-CV-1FB76-0217

Lab Sample ID: 320-25960-8
Date Collected: 02/20/17 17:21
Matrix: Water
Date Received: 02/22/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.041	U	0.051	0.013	ug/L		02/27/17 14:33	02/28/17 17:00	1
Perfluorooctanoic acid (PFOA)	0.020	U	0.026	0.0080	ug/L		02/27/17 14:33	02/28/17 17:00	1
Perfluorobutanesulfonic acid (PFBS)	0.094	U	0.12	0.041	ug/L		02/27/17 14:33	02/28/17 17:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*70 - 130*	*02/27/17 14:33*	*02/28/17 17:00*	*1*
13C2 PFDA	*80*		*70 - 130*	*02/27/17 14:33*	*02/28/17 17:00*	*1*

Surrogate Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-25960-1

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

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

		Percent Surrogate Recovery (Acceptance Limits)									
		3C2 PFHx	3C2 PFDA								
Lab Sample ID	Client Sample ID	(70-130)	(70-130)								
320-25960-1	WI-CV-1RW73-0217	81	89								
320-25960-2	WI-CV-1FB73-0217	84	83								
320-25960-3	WI-CV-1RW74-0217	75	85								
320-25960-4	WI-CV-1FB74-0217	81	78								
320-25960-5	WI-CV-1RW75-0217	76	77								
320-25960-6	WI-CV-1FB75-0217	82	75								
320-25960-7	WI-CV-1RW76-0217	74	80								
320-25960-8	WI-CV-1FB76-0217	84	80								
LCS 320-152377/2-A	Lab Control Sample	91	85								
LCSD 320-152377/3-A	Lab Control Sample Dup	87	84								
MB 320-152377/1-A	Method Blank	86	84								

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA
13C2 PFDA = 13C2 PFDA

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

Lab Sample ID: MB 320-152377/1-A
Matrix: Water
Analysis Batch: 152585

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152377

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.016	ug/L		02/27/17 14:33	02/28/17 16:12	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0094	ug/L		02/27/17 14:33	02/28/17 16:12	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L		02/27/17 14:33	02/28/17 16:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:12*	*1*
13C2 PFDA	*84*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:12*	*1*

Lab Sample ID: LCS 320-152377/2-A
Matrix: Water
Analysis Batch: 152585

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152377

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	0.160	0.137		ug/L		85	70 - 130
Perfluorooctanoic acid (PFOA)	0.0781	0.0637		ug/L		82	70 - 130
Perfluorobutanesulfonic acid (PFBS)	0.359	0.303		ug/L		84	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*91*		*70 - 130*
13C2 PFDA	*85*		*70 - 130*

Lab Sample ID: LCSD 320-152377/3-A
Matrix: Water
Analysis Batch: 152585

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 152377

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	0.160	0.136		ug/L		85	70 - 130	0	30
Perfluorooctanoic acid (PFOA)	0.0781	0.0612		ug/L		78	70 - 130	4	30
Perfluorobutanesulfonic acid (PFBS)	0.359	0.299		ug/L		83	70 - 130	2	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*87*		*70 - 130*
13C2 PFDA	*84*		*70 - 130*

QC Association Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-25960-1

LCMS

Prep Batch: 152377

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-25960-1	WI-CV-1RW73-0217	Total/NA	Water	537	
320-25960-2	WI-CV-1FB73-0217	Total/NA	Water	537	
320-25960-3	WI-CV-1RW74-0217	Total/NA	Water	537	
320-25960-4	WI-CV-1FB74-0217	Total/NA	Water	537	
320-25960-5	WI-CV-1RW75-0217	Total/NA	Water	537	
320-25960-6	WI-CV-1FB75-0217	Total/NA	Water	537	
320-25960-7	WI-CV-1RW76-0217	Total/NA	Water	537	
320-25960-8	WI-CV-1FB76-0217	Total/NA	Water	537	
MB 320-152377/1-A	Method Blank	Total/NA	Water	537	
LCS 320-152377/2-A	Lab Control Sample	Total/NA	Water	537	
LCSD 320-152377/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 152585

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-25960-1	WI-CV-1RW73-0217	Total/NA	Water	537	152377
320-25960-2	WI-CV-1FB73-0217	Total/NA	Water	537	152377
320-25960-3	WI-CV-1RW74-0217	Total/NA	Water	537	152377
320-25960-4	WI-CV-1FB74-0217	Total/NA	Water	537	152377
320-25960-5	WI-CV-1RW75-0217	Total/NA	Water	537	152377
320-25960-6	WI-CV-1FB75-0217	Total/NA	Water	537	152377
320-25960-7	WI-CV-1RW76-0217	Total/NA	Water	537	152377
MB 320-152377/1-A	Method Blank	Total/NA	Water	537	152377
LCS 320-152377/2-A	Lab Control Sample	Total/NA	Water	537	152377
LCSD 320-152377/3-A	Lab Control Sample Dup	Total/NA	Water	537	152377

Analysis Batch: 152586

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-25960-8	WI-CV-1FB76-0217	Total/NA	Water	537	152377

Lab Chronicle

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-25960-1

Client Sample ID: WI-CV-1RW73-0217
Date Collected: 02/20/17 12:00
Date Received: 02/22/17 10:00

Lab Sample ID: 320-25960-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			264.7 mL	1.00 mL	152377	02/27/17 14:33	HJA	TAL SAC
Total/NA	Analysis	537		1			152585	02/28/17 16:25	JRB	TAL SAC

Client Sample ID: WI-CV-1FB73-0217
Date Collected: 02/20/17 12:01
Date Received: 02/22/17 10:00

Lab Sample ID: 320-25960-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			278.9 mL	1.00 mL	152377	02/27/17 14:33	HJA	TAL SAC
Total/NA	Analysis	537		1			152585	02/28/17 16:29	JRB	TAL SAC

Client Sample ID: WI-CV-1RW74-0217
Date Collected: 02/20/17 17:03
Date Received: 02/22/17 10:00

Lab Sample ID: 320-25960-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			278.5 mL	1.00 mL	152377	02/27/17 14:33	HJA	TAL SAC
Total/NA	Analysis	537		1			152585	02/28/17 16:34	JRB	TAL SAC

Client Sample ID: WI-CV-1FB74-0217
Date Collected: 02/20/17 17:04
Date Received: 02/22/17 10:00

Lab Sample ID: 320-25960-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			280.5 mL	1.00 mL	152377	02/27/17 14:33	HJA	TAL SAC
Total/NA	Analysis	537		1			152585	02/28/17 16:38	JRB	TAL SAC

Client Sample ID: WI-CV-1RW75-0217
Date Collected: 02/20/17 17:05
Date Received: 02/22/17 10:00

Lab Sample ID: 320-25960-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			276 mL	1.00 mL	152377	02/27/17 14:33	HJA	TAL SAC
Total/NA	Analysis	537		1			152585	02/28/17 16:42	JRB	TAL SAC

Client Sample ID: WI-CV-1FB75-0217
Date Collected: 02/20/17 17:06
Date Received: 02/22/17 10:00

Lab Sample ID: 320-25960-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			281.2 mL	1.00 mL	152377	02/27/17 14:33	HJA	TAL SAC
Total/NA	Analysis	537		1			152585	02/28/17 16:47	JRB	TAL SAC

Lab Chronicle

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-25960-1

Client Sample ID: WI-CV-1RW76-0217

Lab Sample ID: 320-25960-7

Date Collected: 02/20/17 17:20

Matrix: Water

Date Received: 02/22/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			266.9 mL	1.00 mL	152377	02/27/17 14:33	HJA	TAL SAC
Total/NA	Analysis	537		1			152585	02/28/17 16:51	JRB	TAL SAC

Client Sample ID: WI-CV-1FB76-0217

Lab Sample ID: 320-25960-8

Date Collected: 02/20/17 17:21

Matrix: Water

Date Received: 02/22/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			292.8 mL	1.00 mL	152377	02/27/17 14:33	HJA	TAL SAC
Total/NA	Analysis	537		1			152586	02/28/17 17:00	JRB	TAL SAC

Laboratory References:

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

Certification Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-25960-1

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17 *
Virginia	NELAP	3	460278	03-14-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.

Method Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-25960-1

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-25960-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-25960-1	WI-CV-1RW73-0217	Water	02/20/17 12:00	02/22/17 10:00
320-25960-2	WI-CV-1FB73-0217	Water	02/20/17 12:01	02/22/17 10:00
320-25960-3	WI-CV-1RW74-0217	Water	02/20/17 17:03	02/22/17 10:00
320-25960-4	WI-CV-1FB74-0217	Water	02/20/17 17:04	02/22/17 10:00
320-25960-5	WI-CV-1RW75-0217	Water	02/20/17 17:05	02/22/17 10:00
320-25960-6	WI-CV-1FB75-0217	Water	02/20/17 17:06	02/22/17 10:00
320-25960-7	WI-CV-1RW76-0217	Water	02/20/17 17:20	02/22/17 10:00
320-25960-8	WI-CV-1FB76-0217	Water	02/20/17 17:21	02/22/17 10:00

TestAmerica Sacramento

880 Riverside Parkway
West Sacramento, CA 95605
Phone: 916.373.5600 Fax:

Chain of Custody Record

166909

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TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Katie Trapin	Site Contact: Mike Witmer	Date: 2/21/2017	COC No: 2
Company Name: CH2M HILL	Tel/Fax: 757-671-6258	Lab Contact: Laura Turpen	Carrier: FedEx	1 of 1 COCs
Address: 1100 NE Circle Blvd Ste 300	Analysis Turnaround Time			Sampler:
City/State/Zip: Corvallis, OR 97330	☒ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 541-768-3109	TAT if different from Below 7 day			Walk-in Client:
Fax: 541-908-3799	☐ 2 weeks			Lab Sampling:
Project Name: CTO-08	☐ 1 week			
Site: NAS Whidbey Island	☐ 2 days			Job / SDG No.:
PO # 1000671060050-679580.09.FI.FS	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	VOCs by Method 537	Sample Specific Notes:
WI-CV-1RW73-0217	2/20/17	1200	G	AQW	2	N	N	X	
WI-CV-1FB73-0217	2/20/17	1201	G	AQW	2	N	N	X	
WI-CV-1RW74-0217	2/20/17	1703	G	DW	2	N	N	X	
WI-CV-1FB74-0217	2/20/17	1704	G	DW	2	N	N	X	
WI-CV-1RW75-0217	2/20/17	1705	G	DW	2	N	N	X	
WI-CV-1FB75-0217	2/20/17	1706	G	DW	2	N	N	X	
WI-CV-1RW76-0217	2/20/17	1720	G	DW	2	N	N	X	
WI-CV-1FB76-0217	2/20/17	1721	G	DW	2	N	N	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other TVOAs

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 4.6 Corr'd: 0.0°C | Therm ID No.: AK

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
BD	CH2M	2/21/2017 1405	Tracy G Turpen	TAWS	2/22/17 1000
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

3/1/2017

Login Sample Receipt Checklist

Client: CH2M Hill Constructors, Inc.

Job Number: 320-25960-1

Login Number: 25960
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	
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?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Job Number: 320-25960-1

Job Description: Whidbey Island

For:
CH2M Hill Constructors, Inc.
1100 NE Circle Blvd
Corvallis, OR 97330

Attention: Tiffany Hill

Approved for release.
Laura Turpen
Project Manager I
3/1/2017 2:21 PM

Laura Turpen, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4414
laura.turpen@testamericainc.com
03/01/2017

Table of Contents

Table of Contents

Qualifiers

LCMS

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

CASE NARRATIVE

Client: CH2M Hill Constructors, Inc.

Project: Whidbey Island

Report Number: 320-25960-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Sacramento attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

TestAmerica utilizes USEPA approved methods and DOD QSM, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

All parameters for which TestAmerica Sacramento has certification were evaluated to the QSM specified reporting convention or to the client specified format if different from QSM. Parameters not certified under QSM, if any, were evaluated to the detection limit (DL) and include qualified results where applicable.

The sample(s) that contain constituents flagged with U are undetected. The result associated with this flag is the limit of detection (LOD).

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 02/22/2017; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.0 C.

PFOA/PFOS

Samples WI-CV-1RW73-0217 (320-25960-1), WI-CV-1FB73-0217 (320-25960-2), WI-CV-1RW74-0217 (320-25960-3), WI-CV-1FB74-0217 (320-25960-4), WI-CV-1RW75-0217 (320-25960-5), WI-CV-1FB75-0217 (320-25960-6), WI-CV-1RW76-0217 (320-25960-7) and WI-CV-1FB76-0217 (320-25960-8) were analyzed for PFOA/PFOS in accordance with 537. The samples were prepared on 02/27/2017 and analyzed on 02/28/2017.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batches 320-151910 and 320-152377.

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

Detection Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-25960-1

Client Sample ID: WI-CV-1RW73-0217 **Lab Sample ID: 320-25960-1**

No Detections.

Client Sample ID: WI-CV-1FB73-0217 **Lab Sample ID: 320-25960-2**

No Detections.

Client Sample ID: WI-CV-1RW74-0217 **Lab Sample ID: 320-25960-3**

No Detections.

Client Sample ID: WI-CV-1FB74-0217 **Lab Sample ID: 320-25960-4**

No Detections.

Client Sample ID: WI-CV-1RW75-0217 **Lab Sample ID: 320-25960-5**

No Detections.

Client Sample ID: WI-CV-1FB75-0217 **Lab Sample ID: 320-25960-6**

No Detections.

Client Sample ID: WI-CV-1RW76-0217 **Lab Sample ID: 320-25960-7**

No Detections.

Client Sample ID: WI-CV-1FB76-0217 **Lab Sample ID: 320-25960-8**

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: WI-CV-1RW73-0217

Lab Sample ID: 320-25960-1

Date Collected: 02/20/17 12:00

Matrix: Water

Date Received: 02/22/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.045	U	0.057	0.015	ug/L		02/27/17 14:33	02/28/17 16:25	1
Perfluorooctanoic acid (PFOA)	0.023	U	0.028	0.0089	ug/L		02/27/17 14:33	02/28/17 16:25	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.045	ug/L		02/27/17 14:33	02/28/17 16:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*81*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:25*	*1*
13C2 PFDA	*89*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:25*	*1*

Client Sample ID: WI-CV-1FB73-0217

Lab Sample ID: 320-25960-2

Date Collected: 02/20/17 12:01

Matrix: Water

Date Received: 02/22/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.054	0.014	ug/L		02/27/17 14:33	02/28/17 16:29	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.0084	ug/L		02/27/17 14:33	02/28/17 16:29	1
Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.043	ug/L		02/27/17 14:33	02/28/17 16:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:29*	*1*
13C2 PFDA	*83*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:29*	*1*

Client Sample ID: WI-CV-1RW74-0217

Lab Sample ID: 320-25960-3

Date Collected: 02/20/17 17:03

Matrix: Water

Date Received: 02/22/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.054	0.014	ug/L		02/27/17 14:33	02/28/17 16:34	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.0085	ug/L		02/27/17 14:33	02/28/17 16:34	1
Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.043	ug/L		02/27/17 14:33	02/28/17 16:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*75*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:34*	*1*
13C2 PFDA	*85*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:34*	*1*

Client Sample ID: WI-CV-1FB74-0217

Lab Sample ID: 320-25960-4

Date Collected: 02/20/17 17:04

Matrix: Water

Date Received: 02/22/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.053	0.014	ug/L		02/27/17 14:33	02/28/17 16:38	1
Perfluorooctanoic acid (PFOA)	0.021	U	0.027	0.0084	ug/L		02/27/17 14:33	02/28/17 16:38	1
Perfluorobutanesulfonic acid (PFBS)	0.098	U	0.12	0.042	ug/L		02/27/17 14:33	02/28/17 16:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*81*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:38*	*1*
13C2 PFDA	*78*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:38*	*1*

Client Sample ID: WI-CV-1RW75-0217

Lab Sample ID: 320-25960-5

Date Collected: 02/20/17 17:05

Matrix: Water

Date Received: 02/22/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.054	0.014	ug/L		02/27/17 14:33	02/28/17 16:42	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.0085	ug/L		02/27/17 14:33	02/28/17 16:42	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.043	ug/L		02/27/17 14:33	02/28/17 16:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*76*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:42*	*1*
13C2 PFDA	*77*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:42*	*1*

Client Sample ID: WI-CV-1FB75-0217

Lab Sample ID: 320-25960-6

Date Collected: 02/20/17 17:06

Matrix: Water

Date Received: 02/22/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.053	0.014	ug/L		02/27/17 14:33	02/28/17 16:47	1
Perfluorooctanoic acid (PFOA)	0.021	U	0.027	0.0084	ug/L		02/27/17 14:33	02/28/17 16:47	1
Perfluorobutanesulfonic acid (PFBS)	0.098	U	0.12	0.042	ug/L		02/27/17 14:33	02/28/17 16:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*82*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:47*	*1*
13C2 PFDA	*75*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:47*	*1*

Client Sample ID: WI-CV-1RW76-0217

Lab Sample ID: 320-25960-7

Date Collected: 02/20/17 17:20

Matrix: Water

Date Received: 02/22/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.045	U	0.056	0.015	ug/L		02/27/17 14:33	02/28/17 16:51	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.0088	ug/L		02/27/17 14:33	02/28/17 16:51	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.045	ug/L		02/27/17 14:33	02/28/17 16:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*74*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:51*	*1*
13C2 PFDA	*80*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:51*	*1*

Client Sample ID: WI-CV-1FB76-0217

Lab Sample ID: 320-25960-8

Date Collected: 02/20/17 17:21

Matrix: Water

Date Received: 02/22/17 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.041	U	0.051	0.013	ug/L		02/27/17 14:33	02/28/17 17:00	1
Perfluorooctanoic acid (PFOA)	0.020	U	0.026	0.0080	ug/L		02/27/17 14:33	02/28/17 17:00	1
Perfluorobutanesulfonic acid (PFBS)	0.094	U	0.12	0.041	ug/L		02/27/17 14:33	02/28/17 17:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*70 - 130*	*02/27/17 14:33*	*02/28/17 17:00*	*1*
13C2 PFDA	*80*		*70 - 130*	*02/27/17 14:33*	*02/28/17 17:00*	*1*

Default Detection Limits

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-25960-1

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

Prep: 537

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	0.14	0.048	ug/L	537
Perfluorooctanesulfonic acid (PFOS)	0.060	0.016	ug/L	537
Perfluorooctanoic acid (PFOA)	0.030	0.0094	ug/L	537

Surrogate Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-25960-1

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

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

		Percent Surrogate Recovery (Acceptance Limits)									
		3C2 PFHx	3C2 PFDA								
Lab Sample ID	Client Sample ID	(70-130)	(70-130)								
320-25960-1	WI-CV-1RW73-0217	81	89								
320-25960-2	WI-CV-1FB73-0217	84	83								
320-25960-3	WI-CV-1RW74-0217	75	85								
320-25960-4	WI-CV-1FB74-0217	81	78								
320-25960-5	WI-CV-1RW75-0217	76	77								
320-25960-6	WI-CV-1FB75-0217	82	75								
320-25960-7	WI-CV-1RW76-0217	74	80								
320-25960-8	WI-CV-1FB76-0217	84	80								
LCS 320-152377/2-A	Lab Control Sample	91	85								
LCSD 320-152377/3-A	Lab Control Sample Dup	87	84								
MB 320-152377/1-A	Method Blank	86	84								

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

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

Lab Sample ID: MB 320-152377/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 152585 — **Prep Batch: 152377**

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.016	ug/L		02/27/17 14:33	02/28/17 16:12	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0094	ug/L		02/27/17 14:33	02/28/17 16:12	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L		02/27/17 14:33	02/28/17 16:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:12*	*1*
13C2 PFDA	*84*		*70 - 130*	*02/27/17 14:33*	*02/28/17 16:12*	*1*

Lab Sample ID: LCS 320-152377/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 152585 — **Prep Batch: 152377**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	0.160	0.137		ug/L		85	70 - 130
Perfluorooctanoic acid (PFOA)	0.0781	0.0637		ug/L		82	70 - 130
Perfluorobutanesulfonic acid (PFBS)	0.359	0.303		ug/L		84	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*91*		*70 - 130*
13C2 PFDA	*85*		*70 - 130*

Lab Sample ID: LCSD 320-152377/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 152585 — **Prep Batch: 152377**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	0.160	0.136		ug/L		85	70 - 130	0	30
Perfluorooctanoic acid (PFOA)	0.0781	0.0612		ug/L		78	70 - 130	4	30
Perfluorobutanesulfonic acid (PFBS)	0.359	0.299		ug/L		83	70 - 130	2	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*87*		*70 - 130*
13C2 PFDA	*84*		*70 - 130*

LCMS

Prep Batch: 152377

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-25960-1	WI-CV-1RW73-0217	Total/NA	Water	537	
320-25960-2	WI-CV-1FB73-0217	Total/NA	Water	537	
320-25960-3	WI-CV-1RW74-0217	Total/NA	Water	537	
320-25960-4	WI-CV-1FB74-0217	Total/NA	Water	537	
320-25960-5	WI-CV-1RW75-0217	Total/NA	Water	537	
320-25960-6	WI-CV-1FB75-0217	Total/NA	Water	537	
320-25960-7	WI-CV-1RW76-0217	Total/NA	Water	537	
320-25960-8	WI-CV-1FB76-0217	Total/NA	Water	537	
MB 320-152377/1-A	Method Blank	Total/NA	Water	537	
LCS 320-152377/2-A	Lab Control Sample	Total/NA	Water	537	
LCSD 320-152377/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 152585

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-25960-1	WI-CV-1RW73-0217	Total/NA	Water	537	152377
320-25960-2	WI-CV-1FB73-0217	Total/NA	Water	537	152377
320-25960-3	WI-CV-1RW74-0217	Total/NA	Water	537	152377
320-25960-4	WI-CV-1FB74-0217	Total/NA	Water	537	152377
320-25960-5	WI-CV-1RW75-0217	Total/NA	Water	537	152377
320-25960-6	WI-CV-1FB75-0217	Total/NA	Water	537	152377
320-25960-7	WI-CV-1RW76-0217	Total/NA	Water	537	152377
MB 320-152377/1-A	Method Blank	Total/NA	Water	537	152377
LCS 320-152377/2-A	Lab Control Sample	Total/NA	Water	537	152377
LCSD 320-152377/3-A	Lab Control Sample Dup	Total/NA	Water	537	152377

Analysis Batch: 152586

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-25960-8	WI-CV-1FB76-0217	Total/NA	Water	537	152377

Client Sample ID: WI-CV-1RW73-0217
Lab Sample ID: 320-25960-1
Date Collected: 02/20/17 12:00
Matrix: Water
Date Received: 02/22/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			152377	02/27/17 14:33	HJA	TAL SAC
Total/NA	Analysis	537		1	152585	02/28/17 16:25	JRB	TAL SAC

Client Sample ID: WI-CV-1FB73-0217
Lab Sample ID: 320-25960-2
Date Collected: 02/20/17 12:01
Matrix: Water
Date Received: 02/22/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			152377	02/27/17 14:33	HJA	TAL SAC
Total/NA	Analysis	537		1	152585	02/28/17 16:29	JRB	TAL SAC

Client Sample ID: WI-CV-1RW74-0217
Lab Sample ID: 320-25960-3
Date Collected: 02/20/17 17:03
Matrix: Water
Date Received: 02/22/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			152377	02/27/17 14:33	HJA	TAL SAC
Total/NA	Analysis	537		1	152585	02/28/17 16:34	JRB	TAL SAC

Client Sample ID: WI-CV-1FB74-0217
Lab Sample ID: 320-25960-4
Date Collected: 02/20/17 17:04
Matrix: Water
Date Received: 02/22/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			152377	02/27/17 14:33	HJA	TAL SAC
Total/NA	Analysis	537		1	152585	02/28/17 16:38	JRB	TAL SAC

Client Sample ID: WI-CV-1RW75-0217
Lab Sample ID: 320-25960-5
Date Collected: 02/20/17 17:05
Matrix: Water
Date Received: 02/22/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			152377	02/27/17 14:33	HJA	TAL SAC
Total/NA	Analysis	537		1	152585	02/28/17 16:42	JRB	TAL SAC

Client Sample ID: WI-CV-1FB75-0217
Lab Sample ID: 320-25960-6
Date Collected: 02/20/17 17:06
Matrix: Water
Date Received: 02/22/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			152377	02/27/17 14:33	HJA	TAL SAC
Total/NA	Analysis	537		1	152585	02/28/17 16:47	JRB	TAL SAC

Lab Chronicle

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-25960-1

Client Sample ID: WI-CV-1RW76-0217

Lab Sample ID: 320-25960-7

Date Collected: 02/20/17 17:20

Matrix: Water

Date Received: 02/22/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			152377	02/27/17 14:33	HJA	TAL SAC
Total/NA	Analysis	537		1	152585	02/28/17 16:51	JRB	TAL SAC

Client Sample ID: WI-CV-1FB76-0217

Lab Sample ID: 320-25960-8

Date Collected: 02/20/17 17:21

Matrix: Water

Date Received: 02/22/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			152377	02/27/17 14:33	HJA	TAL SAC
Total/NA	Analysis	537		1	152586	02/28/17 17:00	JRB	TAL SAC

Laboratory References:

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

Certification Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-25960-1

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17 *
Virginia	NELAP	3	460278	03-14-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.

Method Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-25960-1

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-25960-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-25960-1	WI-CV-1RW73-0217	Water	02/20/17 12:00	02/22/17 10:00
320-25960-2	WI-CV-1FB73-0217	Water	02/20/17 12:01	02/22/17 10:00
320-25960-3	WI-CV-1RW74-0217	Water	02/20/17 17:03	02/22/17 10:00
320-25960-4	WI-CV-1FB74-0217	Water	02/20/17 17:04	02/22/17 10:00
320-25960-5	WI-CV-1RW75-0217	Water	02/20/17 17:05	02/22/17 10:00
320-25960-6	WI-CV-1FB75-0217	Water	02/20/17 17:06	02/22/17 10:00
320-25960-7	WI-CV-1RW76-0217	Water	02/20/17 17:20	02/22/17 10:00
320-25960-8	WI-CV-1FB76-0217	Water	02/20/17 17:21	02/22/17 10:00

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 152586

Lab Sample ID: CCV 320-152586/15 CCVIS Client Sample ID:

Date Analyzed: 02/28/17 17:09 Lab File ID: 2017.02.28_537_015.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.28	Missed Peak	barnettj	03/01/17 13:17

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-ICV_00020	07/25/17	02/21/17	MeOH/H2O, Lot 067374	10 mL	LC537-IS_00031	200 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
.LC537-IS_00031	07/31/17	01/31/17	Methanol, Lot 090285	10000 uL	LCM2PFOA_00005	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00019	300 uL	13C4 PFOS	1.434 ug/mL
..LCM2PFOA_00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00019	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-ICV_00020	07/25/17	02/21/17	MeOH/H2O, Lot 067374	10 mL	LC537-SU_00030	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
					LC537ICIM_00015	20 uL	Perfluorobutanesulfonic acid (PFBS)	100.676 ng/mL
							Perfluorooctanoic acid (PFOA)	20.0186 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	20.6936 ng/mL
.LC537-SU_00030	07/31/17	01/31/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	80 uL	13C2 PFDA	0.2 ug/mL
					LCMPFHxA_00013	80 uL	13C2 PFHxA	0.2 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LC537ICIM_00015	07/25/17	02/21/17	Methanol, Lot 090285	25 mL	LC537-PFBS2_00007	0.55 mL	Perfluorobutanesulfonic acid (PFBS)	50.3381 ug/mL
					LC537-PFOA2_00008	0.142 mL	Perfluorooctanoic acid (PFOA)	10.0093 ug/mL
					LC537-PFOS2_00007	0.21 mL	Perfluorooctanesulfonic acid (PFOS)	10.3468 ug/mL
..LC537-PFBS2_00007	08/09/17	02/20/17	Methanol, Lot 090285	8.2 mL	LC537_PFBS2_00001	0.0188 g	Perfluorobutanesulfonic acid (PFBS)	2288.1 ug/mL
...LC537_PFBS2_00001	08/09/17	Santa Cruz Biotechnology, Lot H0112			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	0.998 g/g
..LC537-PFOA2_00008	07/25/17	12/20/16	Methanol, Lot 090285	10 mL	LC537_PFOA2_00001	0.0178 g	Perfluorooctanoic acid (PFOA)	1762.2 ug/mL
...LC537_PFOA2_00001	07/25/17	Afla Aesar, Lot D24Y026			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.99 g/g
..LC537-PFOS2_00007	07/26/17	02/20/17	Methanol, Lot 090285	11 mL	LC537_PFOS2_00001	0.0174 g	Perfluorooctanesulfonic acid (PFOS)	1231.76 ug/mL
...LC537_PFOS2_00001	07/26/17	Sigma, Lot BCBF5116V			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.7787 g/g
LC537-IS_00030	07/17/17	01/17/17	Methanol, Lot 090285	10000 uL	LCM2PFOA_00005	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00018	300 uL	13C4 PFOS	1.434 ug/mL
.LCM2PFOA_00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LCMPFOS_00018	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-L1_00017	06/14/17	12/23/16	MeOH/H2O, Lot 090285	5 mL	LC537-IS_00028	100 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-MSP_00017	25 uL	Perfluorobutanesulfonic acid (PFBS)	8.976 ng/mL
							Perfluoroheptanoic acid	0.99 ng/mL
							Perfluorohexanesulfonic acid	3.02582 ng/mL
							Perfluorononanoic acid	2.07415 ng/mL
							Perfluorooctanoic acid (PFOA)	1.95189 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.00664 ng/mL
					LC537-SU_00026	250 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC537-IS_00028	06/19/17	12/19/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00005	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00018	300 uL	13C4 PFOS	1.434 ug/mL
..LCM2PFOA_00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00018	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-MSP_00017	06/22/17	12/22/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00018	200 uL	Perfluorobutanesulfonic acid (PFBS)	1795.2 ng/mL
							Perfluoroheptanoic acid	198 ng/mL
							Perfluorohexanesulfonic acid	605.164 ng/mL
							Perfluorononanoic acid	414.831 ng/mL
							Perfluorooctanoic acid (PFOA)	390.378 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	801.328 ng/mL
..LC537SPIM_00018	06/22/17	12/22/16	Methanol, Lot 104453	10000 uL	LC537-PFBS_00006	440 uL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHpA_00013	100 uL	Perfluoroheptanoic acid	9.9 ug/mL
					LC537-PFHxS_00008	300 uL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00011	200 uL	Perfluorononanoic acid	20.7415 ug/mL
					LC537-PFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	19.5189 ug/mL
					LC537-PFOS_00006	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0664 ug/mL
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00013	06/22/17	12/22/16	Methanol, Lot 090285	56.8 mL	LC537_PFHpA_00002	0.0568 g	Perfluoroheptanoic acid	990 ug/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid	0.99 g/g
...LC537-PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537_PFHxS_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid	0.9094 g/g
...LC537-PFNA_00011	11/21/17	11/21/16	Methanol, Lot 090285	6.5 mL	LC537_PFNA_00002	0.007 g	Perfluorononanoic acid	1037.08 ug/mL
....LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
...LC537-PFOA_00011	11/21/17	11/21/16	Methanol, Lot 090285	6.5 mL	LC537_PFOA_00002	0.0127 g	Perfluorooctanoic acid (PFOA)	1951.89 ug/mL
....LC537_PFOA_00002	11/04/18	Fluka, Lot SZBD308XV			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL
....LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-SU_00026	06/14/17	12/16/16	Methanol, Lot 104453	20000 uL	LC537-SU_00025	10000 uL	13C2 PFDA	0.2 ug/mL
							13C2 PFHxA	0.2 ug/mL
..LC537-SU_00025	06/14/17	12/14/16	Methanol, Lot 104453	10000 uL	LCMPFDA_00008	80 uL	13C2 PFDA	0.4 ug/mL
					LCMPFHxA_00009	80 uL	13C2 PFHxA	0.4 ug/mL
...LCMPFDA_00008	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
...LCMPFHxA_00009	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L2_00015	05/21/17	12/19/16	MeOH/H2O, Lot 090285	5 mL	LC537-IS_00028	100 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
.LC537-IS_00028	06/19/17	12/19/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00005	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00018	300 uL	13C4 PFOS	1.434 ug/mL
..LCM2PFOA_00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00018	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-L2_00015	05/21/17	12/19/16	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00013	34 uL	Perfluorobutanesulfonic acid (PFBS)	22.8888 ng/mL
							Perfluorooctanoic acid (PFOA)	4.97733 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	10.2169 ng/mL
					LC537-SU_00026	250 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00013	05/21/17	11/21/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00017	375 uL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluorooctanoic acid (PFOA)	731.96 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL
..LC537SPIM_00017	05/21/17	11/21/16	Methanol, Lot 104453	10000 uL	LC537-PFBS_00006	440 uL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	19.5189 ug/mL
					LC537-PFOS_00006	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0664 ug/mL
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFOA_00011	11/21/17	11/21/16	Methanol, Lot 090285	6.5 mL	LC537_PFOA_00002	0.0127 g	Perfluorooctanoic acid (PFOA)	1951.89 ug/mL
....LC537_PFOA_00002	11/04/18	Fluka, Lot SZBD308XV			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL
....LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-SU_00026	06/14/17	12/16/16	Methanol, Lot 104453	20000 uL	LC537-SU_00025	10000 uL	13C2 PFDA	0.2 ug/mL
							13C2 PFHxA	0.2 ug/mL
..LC537-SU_00025	06/14/17	12/14/16	Methanol, Lot 104453	10000 uL	LCMPFDA_00008	80 uL	13C2 PFDA	0.4 ug/mL
					LCMPFHxA_00009	80 uL	13C2 PFHxA	0.4 ug/mL
...LCMPFDA_00008	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
...LCMPFHxA_00009	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L2_00016	06/14/17	12/23/16	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00014	34 uL	Perfluorobutanesulfonic acid (PFBS)	22.8888 ng/mL
							Perfluoroheptanoic acid	2.5245 ng/mL
							Perfluorohexanesulfonic acid	7.71585 ng/mL
							Perfluorononanoic acid	5.28909 ng/mL
							Perfluorooctanoic acid (PFOA)	4.97733 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	10.2169 ng/mL
					LC537-IS_00028	100 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00026	250 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00014	06/22/17	12/22/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00018	375 uL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluoroheptanoic acid	371.25 ng/mL
							Perfluorohexanesulfonic acid	1134.68 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorononanoic acid	777.808 ng/mL
							Perfluorooctanoic acid (PFOA)	731.96 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL
..LC537SPIM_00018	06/22/17	12/22/16	Methanol, Lot 104453	10000 uL	LC537-PFBS_00006	440 uL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHpA_00013	100 uL	Perfluoroheptanoic acid	9.9 ug/mL
					LC537-PFHxS_00008	300 uL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00011	200 uL	Perfluorononanoic acid	20.7415 ug/mL
					LC537-PFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	19.5189 ug/mL
					LC537-PFOS_00006	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0664 ug/mL
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00013	06/22/17	12/22/16	Methanol, Lot 090285	56.8 mL	LC537_PFHpA_00002	0.0568 g	Perfluoroheptanoic acid	990 ug/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid	0.99 g/g
...LC537-PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537_PFHxS_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid	0.9094 g/g
...LC537-PFNA_00011	11/21/17	11/21/16	Methanol, Lot 090285	6.5 mL	LC537_PFNA_00002	0.007 g	Perfluorononanoic acid	1037.08 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
...LC537-PFOA_00011	11/21/17	11/21/16	Methanol, Lot 090285	6.5 mL	LC537_PFOA_00002	0.0127 g	Perfluorooctanoic acid (PFOA)	1951.89 ug/mL
....LC537_PFOA_00002	11/04/18		Fluka, Lot SZBD308XV		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL
....LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00028	06/19/17	12/19/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00005	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00018	300 uL	13C4 PFOS	1.434 ug/mL
..LCM2PFOA_00005	06/19/18		Wellington Laboratories, Lot M2PFOA0613		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00018	08/03/21		Wellington Laboratories, Lot MPFOS0816		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00026	06/14/17	12/16/16	Methanol, Lot 104453	20000 uL	LC537-SU_00025	10000 uL	13C2 PFDA	0.2 ug/mL
							13C2 PFHxA	0.2 ug/mL
..LC537-SU_00025	06/14/17	12/14/16	Methanol, Lot 104453	10000 uL	LCMPFDA_00008	80 uL	13C2 PFDA	0.4 ug/mL
					LCMPFHxA_00009	80 uL	13C2 PFHxA	0.4 ug/mL
...LCMPFDA_00008	08/19/20		Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFDA	50 ug/mL
...LCMPFHxA_00009	04/09/20		Wellington Laboratories, Lot MPFHxA0415		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L3_00019	06/14/17	01/20/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00014	67 uL	Perfluorobutanesulfonic acid (PFBS)	45.1044 ng/mL
							Perfluoroheptanoic acid	4.97475 ng/mL
							Perfluorohexanesulfonic acid	15.2048 ng/mL
							Perfluorononanoic acid	10.4226 ng/mL
							Perfluorooctanoic acid (PFOA)	9.80826 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	20.1334 ng/mL
					LC537-IS_00030	100 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00029	250 uL	13C2 PFDA	10 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00014	06/22/17	12/22/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00018	375 uL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluoroheptanoic acid	371.25 ng/mL
							Perfluorohexanesulfonic acid	1134.68 ng/mL
							Perfluorononanoic acid	777.808 ng/mL
							Perfluorooctanoic acid (PFOA)	731.96 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL
..LC537SPIM_00018	06/22/17	12/22/16	Methanol, Lot 104453	10000 uL	LC537-PFBS_00006	440 uL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHpA_00013	100 uL	Perfluoroheptanoic acid	9.9 ug/mL
					LC537-PFHxS_00008	300 uL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00011	200 uL	Perfluorononanoic acid	20.7415 ug/mL
					LC537-PFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	19.5189 ug/mL
					LC537-PFOS_00006	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0664 ug/mL
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00013	06/22/17	12/22/16	Methanol, Lot 090285	56.8 mL	LC537_PFHpA_00002	0.0568 g	Perfluoroheptanoic acid	990 ug/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid	0.99 g/g
...LC537-PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537_PFHxS_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid	0.9094 g/g
...LC537-PFNA_00011	11/21/17	11/21/16	Methanol, Lot 090285	6.5 mL	LC537_PFNA_00002	0.007 g	Perfluorononanoic acid	1037.08 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
...LC537-PFOA_00011	11/21/17	11/21/16	Methanol, Lot 090285	6.5 mL	LC537_PFOA_00002	0.0127 g	Perfluorooctanoic acid (PFOA)	1951.89 ug/mL
....LC537_PFOA_00002	11/04/18		Fluka, Lot SZBD308XV		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL
....LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00030	07/17/17	01/17/17	Methanol, Lot 090285	10000 uL	LCM2PFOA_00005	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00018	300 uL	13C4 PFOS	1.434 ug/mL
..LCM2PFOA_00005	06/19/18		Wellington Laboratories, Lot M2PFOA0613		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00018	08/03/21		Wellington Laboratories, Lot MPFOS0816		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00029	07/17/17	01/17/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	80 uL	13C2 PFDA	0.2 ug/mL
					LCMPFHxA_00013	80 uL	13C2 PFHxA	0.2 ug/mL
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L4_00017	06/14/17	12/23/16	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00014	135 uL	Perfluorobutanesulfonic acid (PFBS)	90.882 ng/mL
							Perfluoroheptanoic acid	10.0238 ng/mL
							Perfluorohexanesulfonic acid	30.6364 ng/mL
							Perfluorononanoic acid	21.0008 ng/mL
							Perfluorooctanoic acid (PFOA)	19.7629 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	40.5672 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537-IS_00028	100 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00026	250 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00014	06/22/17	12/22/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00018	375 uL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluoroheptanoic acid	371.25 ng/mL
							Perfluorohexanesulfonic acid	1134.68 ng/mL
							Perfluorononanoic acid	777.808 ng/mL
							Perfluorooctanoic acid (PFOA)	731.96 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL
..LC537SPIM_00018	06/22/17	12/22/16	Methanol, Lot 104453	10000 uL	LC537-PFBS_00006	440 uL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHpA_00013	100 uL	Perfluoroheptanoic acid	9.9 ug/mL
					LC537-PFHxS_00008	300 uL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00011	200 uL	Perfluorononanoic acid	20.7415 ug/mL
					LC537-PFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	19.5189 ug/mL
					LC537-PFOS_00006	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0664 ug/mL
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00013	06/22/17	12/22/16	Methanol, Lot 090285	56.8 mL	LC537_PFHpA_00002	0.0568 g	Perfluoroheptanoic acid	990 ug/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid	0.99 g/g
...LC537-PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537_PFHxS_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid	0.9094 g/g
...LC537-PFNA_00011	11/21/17	11/21/16	Methanol, Lot 090285	6.5 mL	LC537_PFNA_00002	0.007 g	Perfluorononanoic acid	1037.08 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
...LC537-PFOA_00011	11/21/17	11/21/16	Methanol, Lot 090285	6.5 mL	LC537_PFOA_00002	0.0127 g	Perfluorooctanoic acid (PFOA)	1951.89 ug/mL
....LC537_PFOA_00002	11/04/18		Fluka, Lot SZBD308XV		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL
....LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00028	06/19/17	12/19/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00005	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00018	300 uL	13C4 PFOS	1.434 ug/mL
..LCM2PFOA_00005	06/19/18		Wellington Laboratories, Lot M2PFOA0613		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00018	08/03/21		Wellington Laboratories, Lot MPFOS0816		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00026	06/14/17	12/16/16	Methanol, Lot 104453	20000 uL	LC537-SU_00025	10000 uL	13C2 PFDA	0.2 ug/mL
							13C2 PFHxA	0.2 ug/mL
..LC537-SU_00025	06/14/17	12/14/16	Methanol, Lot 104453	10000 uL	LCMPFDA_00008	80 uL	13C2 PFDA	0.4 ug/mL
					LCMPFHxA_00009	80 uL	13C2 PFHxA	0.4 ug/mL
...LCMPFDA_00008	08/19/20		Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFDA	50 ug/mL
...LCMPFHxA_00009	04/09/20		Wellington Laboratories, Lot MPFHxA0415		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L5_00020	06/14/17	01/20/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00014	200 uL	Perfluorobutanesulfonic acid (PFBS)	134.64 ng/mL
							Perfluoroheptanoic acid	14.85 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexanesulfonic acid	45.3873 ng/mL
							Perfluorononanoic acid	31.1123 ng/mL
							Perfluorooctanoic acid (PFOA)	29.2784 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	60.0996 ng/mL
					LC537-IS_00030	100 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00029	250 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00014	06/22/17	12/22/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00018	375 uL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluoroheptanoic acid	371.25 ng/mL
							Perfluorohexanesulfonic acid	1134.68 ng/mL
							Perfluorononanoic acid	777.808 ng/mL
							Perfluorooctanoic acid (PFOA)	731.96 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL
..LC537SPIM_00018	06/22/17	12/22/16	Methanol, Lot 104453	10000 uL	LC537-PFBS_00006	440 uL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHpA_00013	100 uL	Perfluoroheptanoic acid	9.9 ug/mL
					LC537-PFHxS_00008	300 uL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00011	200 uL	Perfluorononanoic acid	20.7415 ug/mL
					LC537-PFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	19.5189 ug/mL
					LC537-PFOS_00006	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0664 ug/mL
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00013	06/22/17	12/22/16	Methanol, Lot 090285	56.8 mL	LC537_PFHpA_00002	0.0568 g	Perfluoroheptanoic acid	990 ug/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid	0.99 g/g
...LC537-PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537_PFHxS_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid	0.9094 g/g
...LC537-PFNA_00011	11/21/17	11/21/16	Methanol, Lot 090285	6.5 mL	LC537_PFNA_00002	0.007 g	Perfluorononanoic acid	1037.08 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
...LC537-PFOA_00011	11/21/17	11/21/16	Methanol, Lot 090285	6.5 mL	LC537_PFOA_00002	0.0127 g	Perfluorooctanoic acid (PFOA)	1951.89 ug/mL
....LC537_PFOA_00002	11/04/18		Fluka, Lot SZBD308XV		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL
....LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00030	07/17/17	01/17/17	Methanol, Lot 090285	10000 uL	LCM2PFOA_00005	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00018	300 uL	13C4 PFOS	1.434 ug/mL
..LCM2PFOA_00005	06/19/18		Wellington Laboratories, Lot M2PFOA0613		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00018	08/03/21		Wellington Laboratories, Lot MPFOS0816		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00029	07/17/17	01/17/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	80 uL	13C2 PFDA	0.2 ug/mL
					LCMPFHxA_00013	80 uL	13C2 PFHxA	0.2 ug/mL
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-L6_00016	06/14/17	12/23/16	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00014	265 uL	Perfluorobutanesulfonic acid (PFBS)	178.398 ng/mL
							Perfluoroheptanoic acid	19.6763 ng/mL
							Perfluorohexanesulfonic acid	60.1382 ng/mL
							Perfluorononanoic acid	41.2238 ng/mL
							Perfluorooctanoic acid (PFOA)	38.7939 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	79.632 ng/mL
					LC537-IS_00028	100 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00026	250 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00014	06/22/17	12/22/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00018	375 uL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluoroheptanoic acid	371.25 ng/mL
							Perfluorohexanesulfonic acid	1134.68 ng/mL
							Perfluorononanoic acid	777.808 ng/mL
							Perfluorooctanoic acid (PFOA)	731.96 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL
..LC537SPIM_00018	06/22/17	12/22/16	Methanol, Lot 104453	10000 uL	LC537-PFBS_00006	440 uL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHpA_00013	100 uL	Perfluoroheptanoic acid	9.9 ug/mL
					LC537-PFHxS_00008	300 uL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00011	200 uL	Perfluorononanoic acid	20.7415 ug/mL
					LC537-PFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	19.5189 ug/mL
					LC537-PFOS_00006	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0664 ug/mL
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00013	06/22/17	12/22/16	Methanol, Lot 090285	56.8 mL	LC537_PFHpA_00002	0.0568 g	Perfluoroheptanoic acid	990 ug/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid	0.99 g/g
...LC537-PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537_PFHxS_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid	0.9094 g/g
...LC537-PFNA_00011	11/21/17	11/21/16	Methanol, Lot 090285	6.5 mL	LC537_PFNA_00002	0.007 g	Perfluorononanoic acid	1037.08 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
...LC537-PFOA_00011	11/21/17	11/21/16	Methanol, Lot 090285	6.5 mL	LC537_PFOA_00002	0.0127 g	Perfluorooctanoic acid (PFOA)	1951.89 ug/mL
....LC537_PFOA_00002	11/04/18		Fluka, Lot SZBD308XV		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL
....LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00028	06/19/17	12/19/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00005	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00018	300 uL	13C4 PFOS	1.434 ug/mL
..LCM2PFOA_00005	06/19/18		Wellington Laboratories, Lot M2PFOA0613		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00018	08/03/21		Wellington Laboratories, Lot MPFOS0816		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00026	06/14/17	12/16/16	Methanol, Lot 104453	20000 uL	LC537-SU_00025	10000 uL	13C2 PFDA	0.2 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C2 PFHxA	0.2 ug/mL
..LC537-SU_00025	06/14/17	12/14/16	Methanol, Lot 104453	10000 uL	LCMPFDA_00008	80 uL	13C2 PFDA	0.4 ug/mL
					LCMPFHxA_00009	80 uL	13C2 PFHxA	0.4 ug/mL
...LCMPFDA_00008	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
...LCMPFHxA_00009	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-MSP_00017	06/22/17	12/22/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00018	200 uL	Perfluorobutane Sulfonate	1795.2 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	1795.2 ng/mL
							Perfluoroheptanoic acid	198 ng/mL
							Perfluorohexanesulfonic acid	605.164 ng/mL
							Perfluorononanoic acid	414.831 ng/mL
							Perfluorooctanoic acid (PFOA)	390.378 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	801.328 ng/mL
.LC537SPIM_00018	06/22/17	12/22/16	Methanol, Lot 104453	10000 uL	LC537-PFBS_00006	440 uL	Perfluorobutane Sulfonate	89.76 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHpA_00013	100 uL	Perfluoroheptanoic acid	9.9 ug/mL
					LC537-PFHxS_00008	300 uL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00011	200 uL	Perfluorononanoic acid	20.7415 ug/mL
					LC537-PFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	19.5189 ug/mL
					LC537-PFOS_00006	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0664 ug/mL
..LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorobutane Sulfonate	2040 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL
...LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutane Sulfonate	1 g/g
							Perfluorobutanesulfonic acid (PFBS)	1 g/g
..LC537-PFHpA_00013	06/22/17	12/22/16	Methanol, Lot 090285	56.8 mL	LC537_PFHpA_00002	0.0568 g	Perfluoroheptanoic acid	990 ug/mL
...LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid	0.99 g/g
..LC537-PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537_PFHxS_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL
...LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid	0.9094 g/g
..LC537-PFNA_00011	11/21/17	11/21/16	Methanol, Lot 090285	6.5 mL	LC537_PFNA_00002	0.007 g	Perfluorononanoic acid	1037.08 ug/mL
...LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
..LC537-PFOA_00011	11/21/17	11/21/16	Methanol, Lot 090285	6.5 mL	LC537_PFOA_00002	0.0127 g	Perfluorooctanoic acid (PFOA)	1951.89 ug/mL
...LC537_PFOA_00002	11/04/18	Fluka, Lot SZBD308XV			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
..LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL
...LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
LC537-SU_00030	07/31/17	01/31/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	80 uL	13C2 PFDA	0.2 ug/mL
					LCMPFHxA_00013	80 uL	13C2 PFHxA	0.2 ug/mL
.LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL

Reagent

LC537_PFBS_00002

R: 4/1/15 SPV

SIGMA-ALDRICH®

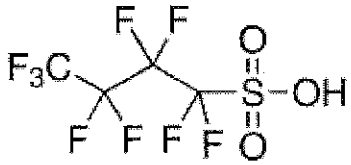
sigma-aldrich.com

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

Certificate of Analysis

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

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



PFBS

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

Jamie Gleason

Jamie Gleason, Manager
Quality Control
Milwaukee, Wisconsin US

Reagent

LC537_PFBS2_00001

CERTIFICATE OF ANALYSIS

The Power to Question

Catalog Number:	sc-236187
Product Name:	Nonafluorobutane-1-sulfonic acid
CAS Number:	375-73-5
Molecular Formula:	$C_4HF_9O_3S$
Molecular Weight:	300.10
Lot Number:	H0112

Test		Result
Refractive Index	1.3200 to 1.3290	1.3219
Purity (Titration)	min. 98.0%	99.8%

Test Conditions: Refractive Indea: n20/D

Reagent

LC537_PFHpA_00002

P: 4/1/15 SRV

SIGMA-ALDRICH®

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

Certificate of Analysis

PFHpA

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

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

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

Reagent

LC537_PFHxS_00002

V: 4/1/15 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:	TRIDECAFLUOROHEXANE-1-SULFONIC ACID POTASSIUM SALT >= 98.0 % T
Product Number:	50929
Batch Number:	BCBL3545V
Brand:	Aldrich
CAS Number:	3871-99-6
Formula:	$C_6F_{13}KO_3S$
Formula Weight:	438.20
Quality Release Date:	20 JUN 2013

PFH_xS-K

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

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

(anion form)

Purity = 90.94 % w/m.w correction

SKV 4/1/15

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

Reagent

LC537_PFNA_00002

R: 4/1/15 SKV

Certificate of Analysis

Apr 2, 2015 (JST)

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

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

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

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

Customer service:

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

PFNA

Reagent

LC537_PFOA_00002

P: 3/26/15 RV

SIGMA-ALDRICH®

CERTIFICATE OF ANALYSIS

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

Seelze, 13.11.2013/505378/13/24029

Order-No.:
Customer-No.:

Order-Code:

Quantity:

Production Date: 04.Nov.2013
Expiry Date: 04.Nov.2018

Article/Product: 33824 Batch : SZBD308XV

PFOA

Pentadecafluorooctanoic acid OEKANAL®

Reference Material (RM)

1. General Information

Formula: C8HF15O2
CAS-No.: [335-67-1]
Usage : PFOA

Molar mass: 414.07 g/Mole
Recomm. storage temp.: roomtemp.

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

2. Batch Analysis

identiy (GC-MS)	complying
Assay (GCMS)	99.4 %
Date of Analysis	13.Nov.2013

3. Advice and Remarks

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

Sigma-Aldrich Laborchemikalien GmbH
Quality Management SA-LC

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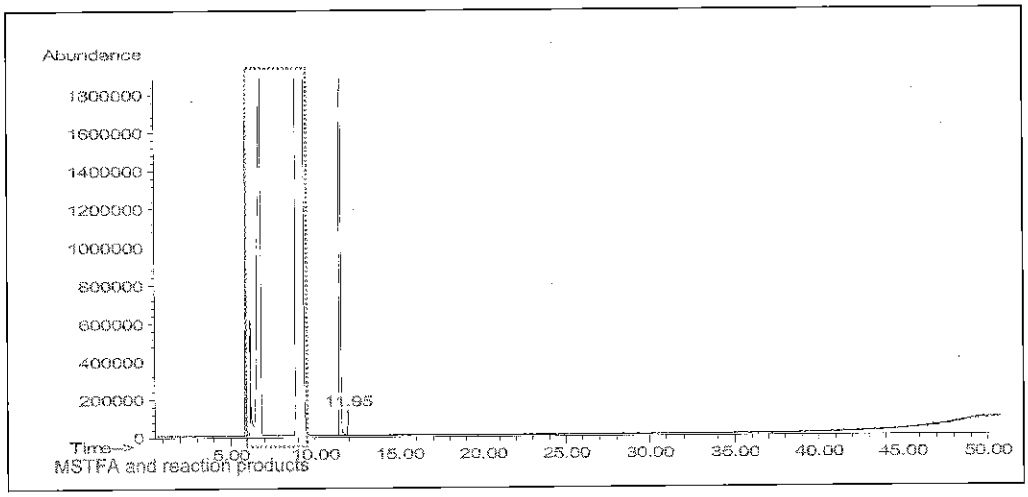
GC/MS-Method

Analytical Department

Article: **Pentadecafluorooctanoic acid OEKANAL**
Article-No.: **33824**
Batch: **SZBD308XV**

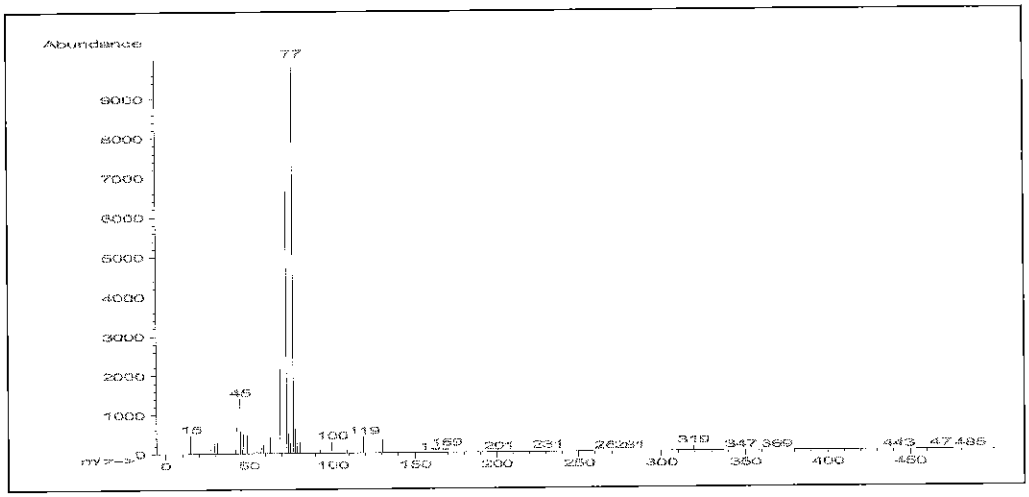
Column:	XTI-5 (Restek); 30 m; fs cap.; I.D.:0.25 mm; 1 µm df
Injector:	Split mode
Injection:	approx. 1 µl of reaction mixture with MSTFA (approx. 10 mg + 200 µl MSTFA)
Inj.-temp.:	280°C
Oven-temp.:	40°C (for 2 min) to 320°C (6°C/min) hold for 2 min
Split:	1:100
Flow:	1 ml He/min (Constant flow mode)
Detector:	MSD
Mass range:	10-600 amu (Scan mode)
Evaluation:	Purity: Total Ion Chromatogram (MSTFA and reaction products blinded out in report) Identity: Mass spectrum complies
Operator:	Ahrens / 2013-11-13

Total Ion Chromatogram:



Ret.time	Area	Area-%	Com
11.54	565.1670	99.4	Pentadecafluorooctanoic acid (as TMS-ester)
11.95	3.6792	0.64	

Mass spectrum (rt = 11.54 min):



Reagent

LC537_PFOA2_00001

Certificate of Analysis

Alfa Aesar
A Johnson Matthey Company

Product No.:	L08862
Product:	Perfluorooctanoic acid, 95%
Lot No.:	D24Y026

PFOA

Appearance	White solid
Melting point	58 - 60°C
Assay	99 %
Identity	Matches reference

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Reagent

LC537_PFOS_00002

Γ: 4/1/15 SV

SIGMA-ALDRICH®

CERTIFICATE OF ANALYSIS

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

Seelze, 13.08.2012/419060/12/17583

Order-No.:
Customer-No.:

Order-Code:

Quantity:

Production Date: 09.Aug.2012
Expiry Date: 09.Aug.2017 – EXP date

Article/Product: 33829 Batch : SZBC222XV

Heptadecafluorooctanesulfonic acid potassium salt OEKANAL® PFOS-K+

Reference Material (RM)

1. General Information

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

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

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

2. Batch Analysis

Identity	complying
Assay (LC-MS)	98 %
Date of Analysis	10.Aug.2012

PFOS-Correction: $\frac{538.22 - 39.10 + 1.01}{538.22} = \frac{500.13}{538.22} = 0.92923$

Purity = 91.66 %

3. Advice and Remarks

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

Sigma-Aldrich Laborchemikalien GmbH
Quality Management SA-LC

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Reagent

LC537_PFOS2_00001

SIGMA-ALDRICH

ALDRICH

Industriestrasse 25, CH-9471 Buchs (SG), Switzerland
Tel: +41 81 755 2511 Fax: +41 81 756 5449

INV 820
12LCMS 0579

Certificate of Analysis

Product Name:	HEPTADECAFLUOROOCTANESULFONIC ACID TETRAETHYLAMMONIUM SALT 98 %
Product Number:	365289
Product Brand:	Aldrich
Molecular Formula:	$C_{16}H_{20}F_{17}NO_3S$
Molecular Mass:	629.37
CAS Number:	56773-42-3

TEST	SPECIFICATION	LOT BCBF5116V RESULTS
APPEARANCE (COLOR)	OFF-WHITE TO WHITE	WHITE
APPEARANCE (FORM)	POWDER, LUMPS OR CHUNKS	POWDER WITH LUMPS
CARBON CONTENT	29.77 % - 31.29 %	30.52
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS

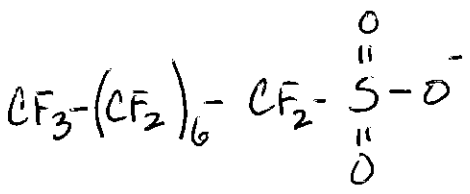
QC RELEASE DATE 13/APR/11

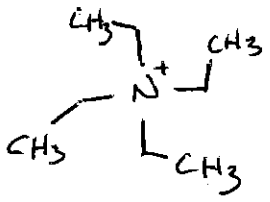
MW correction = $\frac{500.125}{629.37} = 0.7946$ ~~100 = 79.46%~~ DEH 7-26-12

Purity + MW Correction = 77.87%

E. Schwärzler

Edeltraud Schwärzler, Manager
Quality Control
Buchs, Switzerland





	$C_8F_{17}SO_3H$	$C_8H_{20}N$
C = 12.011	96.088	96.088
F = 18.998	322.964	-
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

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

Certificate of Origin

Product Name:	Heptadecafluorooctanesulfonic acid tetraethylammonium salt 98 %
Product Number:	365289
Product Brand:	Aldrich
Lot:	BCBF5116V
Molecular Formula:	$C_{16}H_{20}F_{17}NO_3S$
Molecular Mass:	629.37
CAS Number:	56773-42-3
Date of Issue:	30-MAR-11

Country of Origin	China

product is of synthetic origin	yes
only synthetic materials used in the manufacturing process	yes
compounds of animal origin used	no
genetically modified organisms used	no
allergenic materials used	no
procedures in place to avoid cross contamination with residue of animal, human, GMO or allergenes in manufacturing process	yes

Sigma-Aldrich has quality systems and procedures in place for monitoring the production process, traceablility and batch consistency.

Document issued by Sigma-Aldrich Corporation "Sigma-Aldrich". This document is valid without signature and has been produced digitally.

For further questions please contact your local Sigma-Aldrich representative.

We are committed to the success of our Customers, Employees and Shareholders through leadership in Life Science, High Technology and Service.

Reagent

LCM2PFOA_00005

Rec'd. 2/10/15 SV

WELLINGTON LABORATORIES

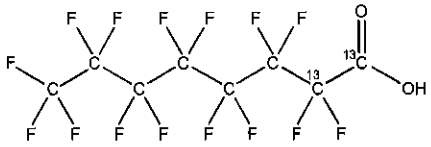
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: M2PFOA0613

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_6HF_{15}O_2$	**MOLECULAR WEIGHT:**	416.05
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99%^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	06/19/2013		
EXPIRY DATE: (mm/dd/yyyy)	06/19/2018		
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:** 07/16/2013 (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. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

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. Material Safety Data Sheets (MSDSs) 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, x-ray crystallography and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all 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 17025:2005 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 for the period of time specified by the 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 ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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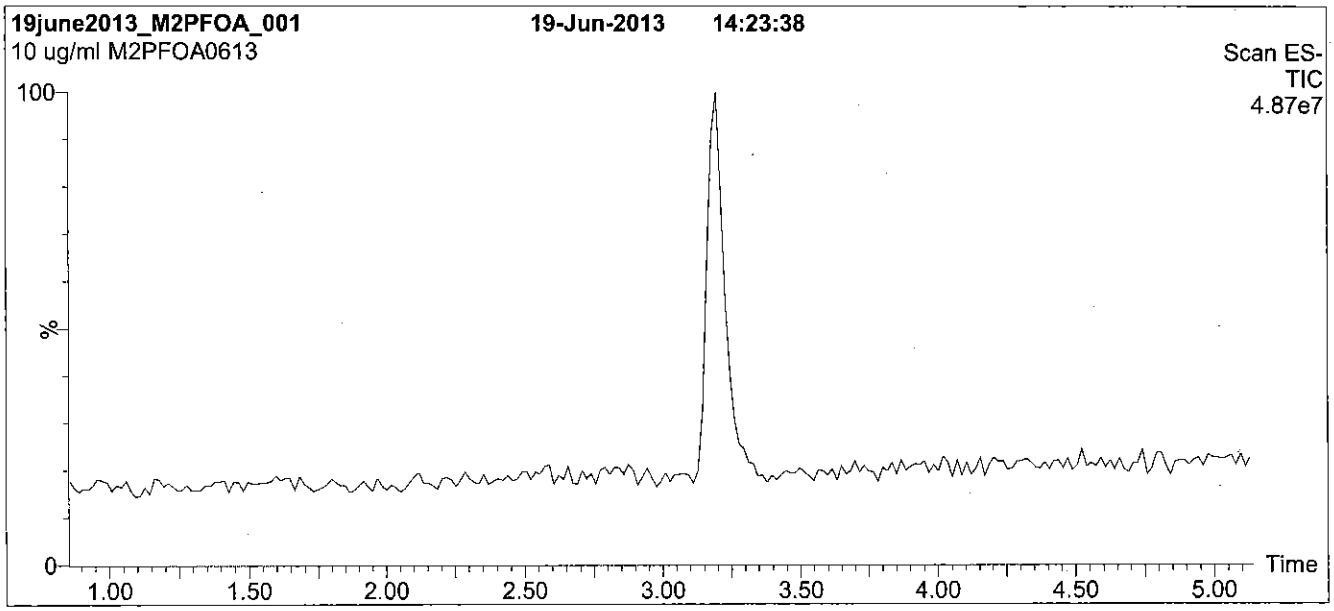
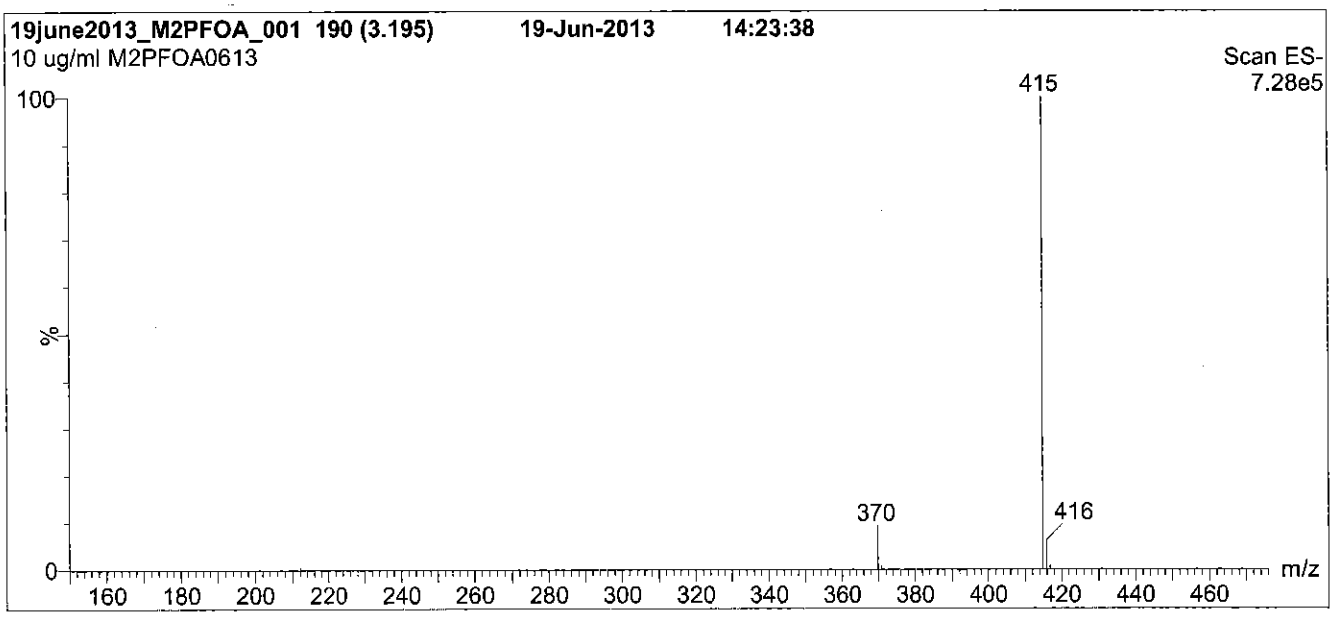
Figure 1: **M2PFOA; LC/MS Data (TIC and Mass Spectrum)**





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 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

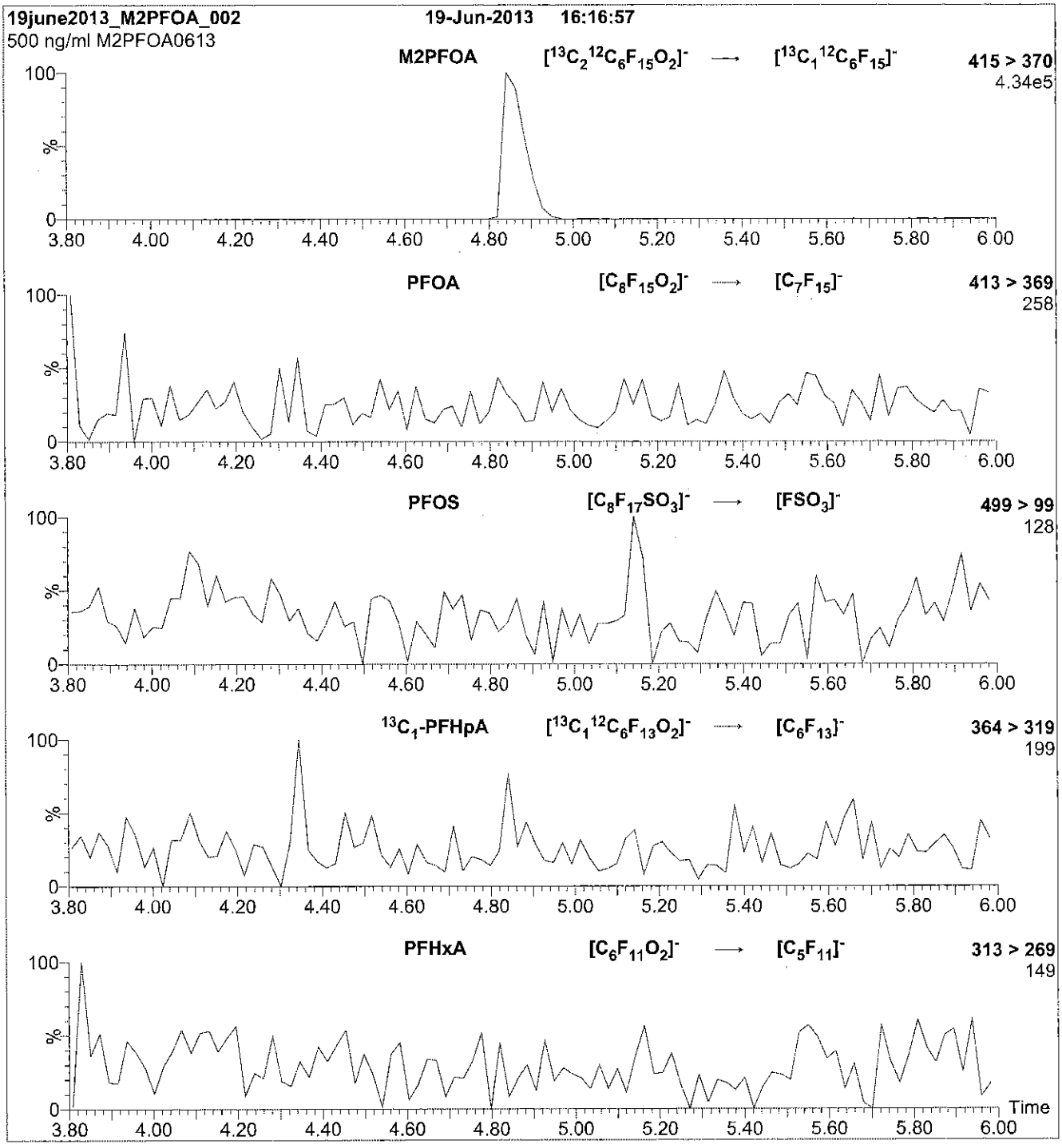
Flow: 300 µl/min

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) = 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% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 11

Reagent

LCMPFDA_00008

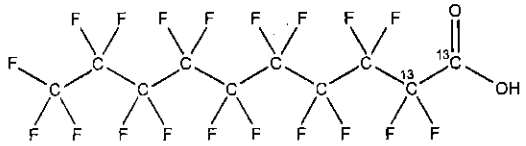
605243
ID: LCMPFDA_00008
Exp: 08/19/20 Prpd: CBW
13C2-Perfluorodecanoic a

Rec. 3/29/16 JRB ✓

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFDA	**LOT NUMBER:**	MPFDA0815
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 ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	08/19/2015		
EXPIRY DATE: (mm/dd/yyyy)	08/19/2020		
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:** 08/21/2015 (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:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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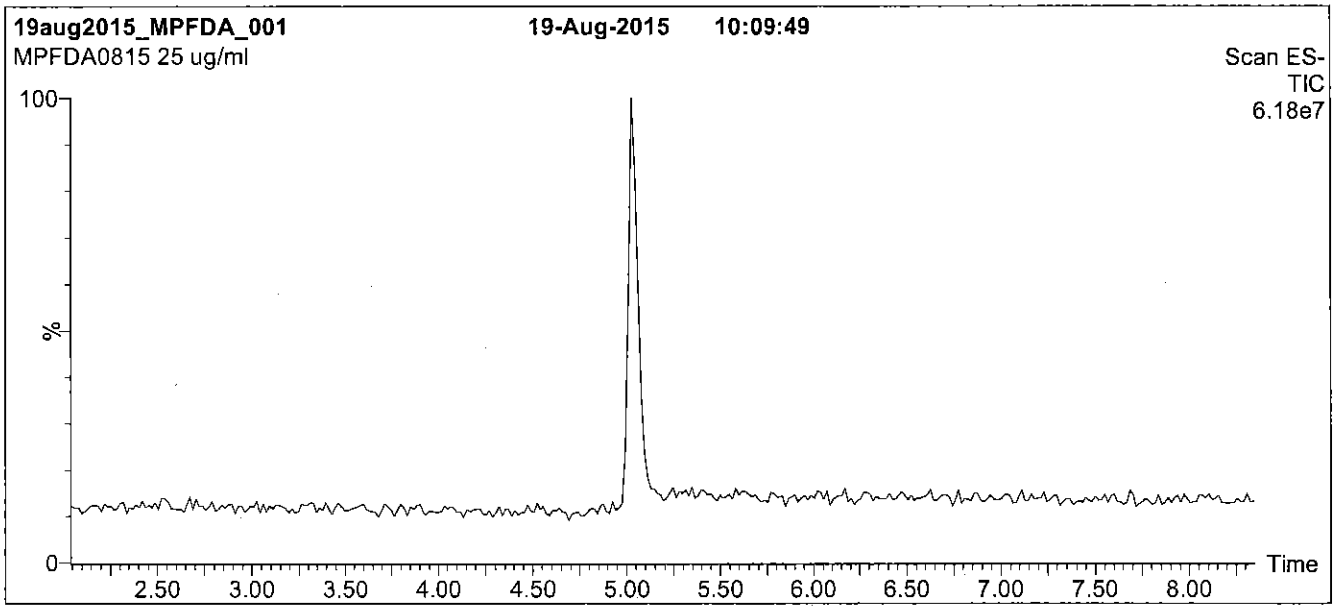
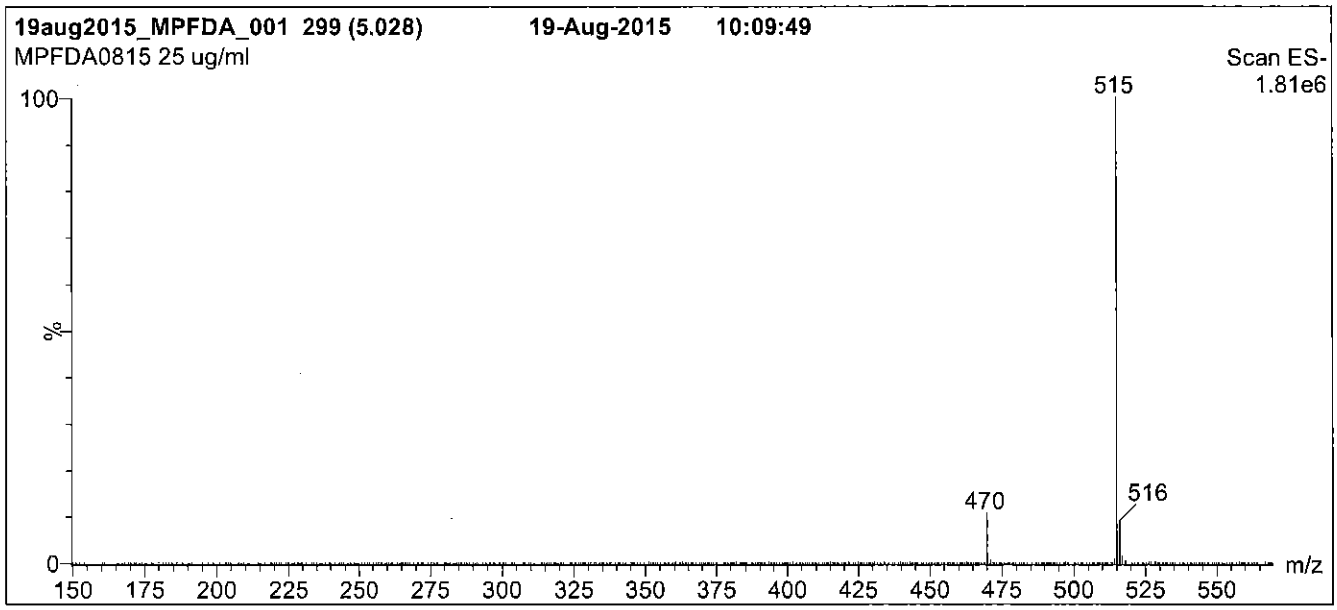
Figure 1: **MPFDA; LC/MS Data (TIC and Mass Spectrum)**





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 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

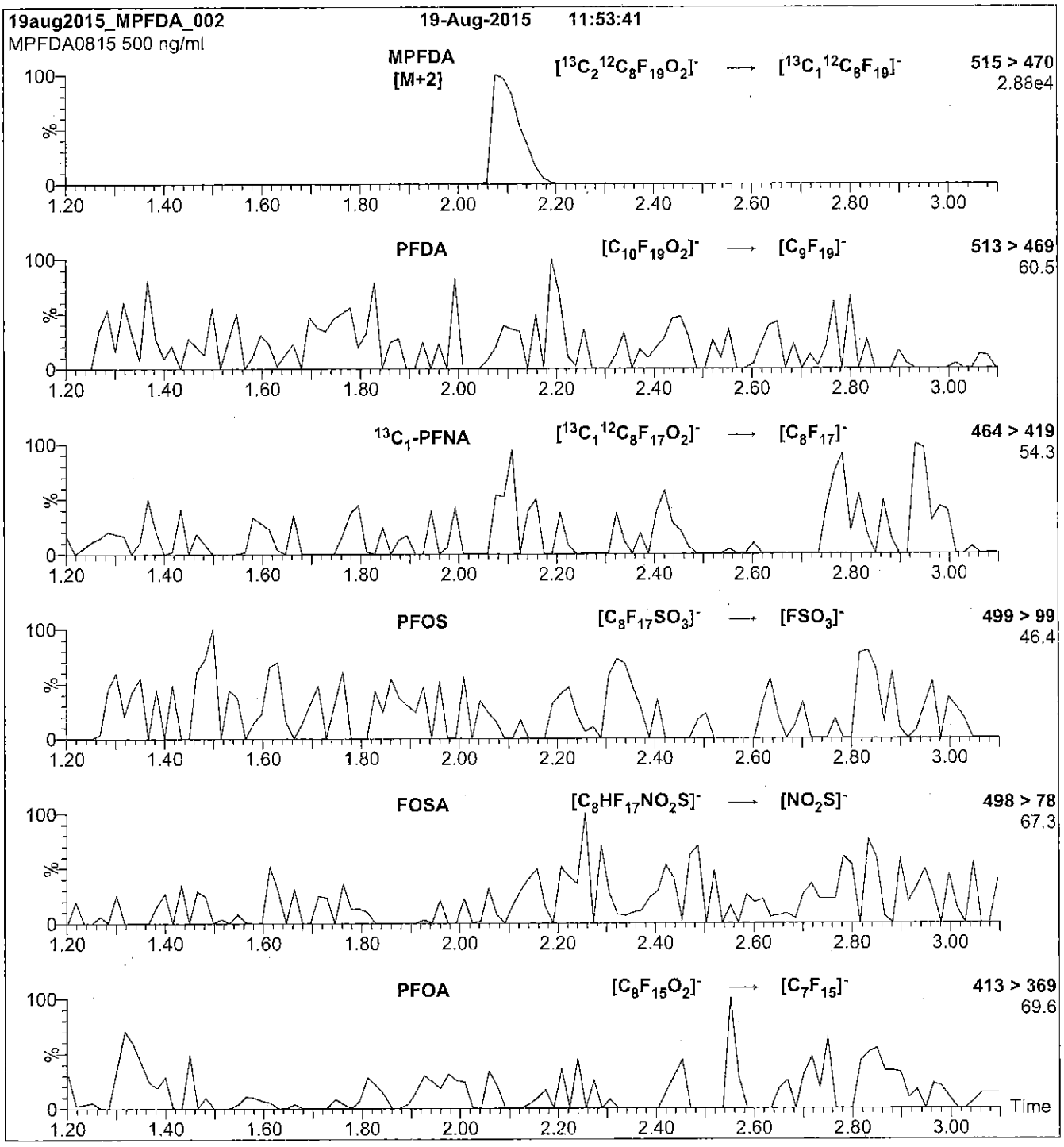
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 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) = 3.35e-3
Collision Energy (eV) = 13

Reagent

LCMPFDA_00012

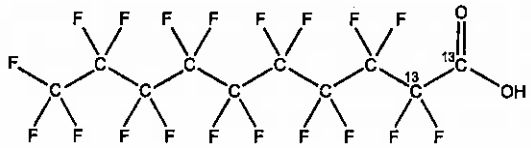
R: SBC 12/21/16

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

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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



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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:

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

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CALA Testing Accreditation No.: A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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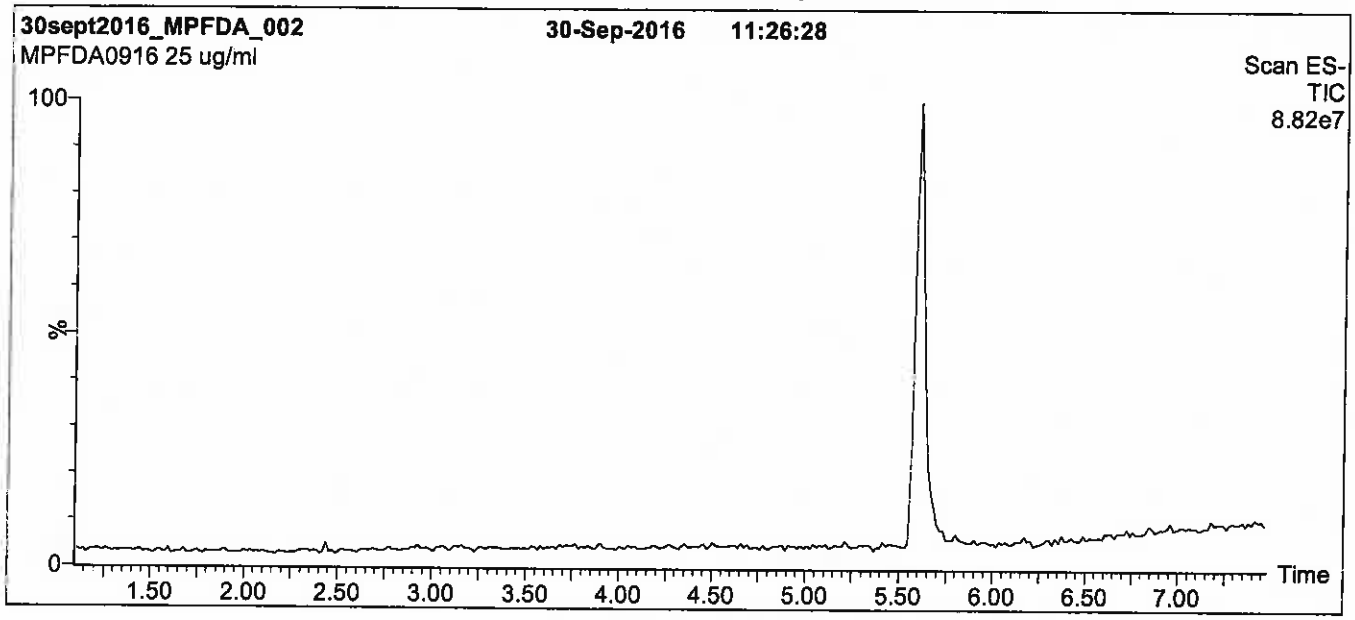

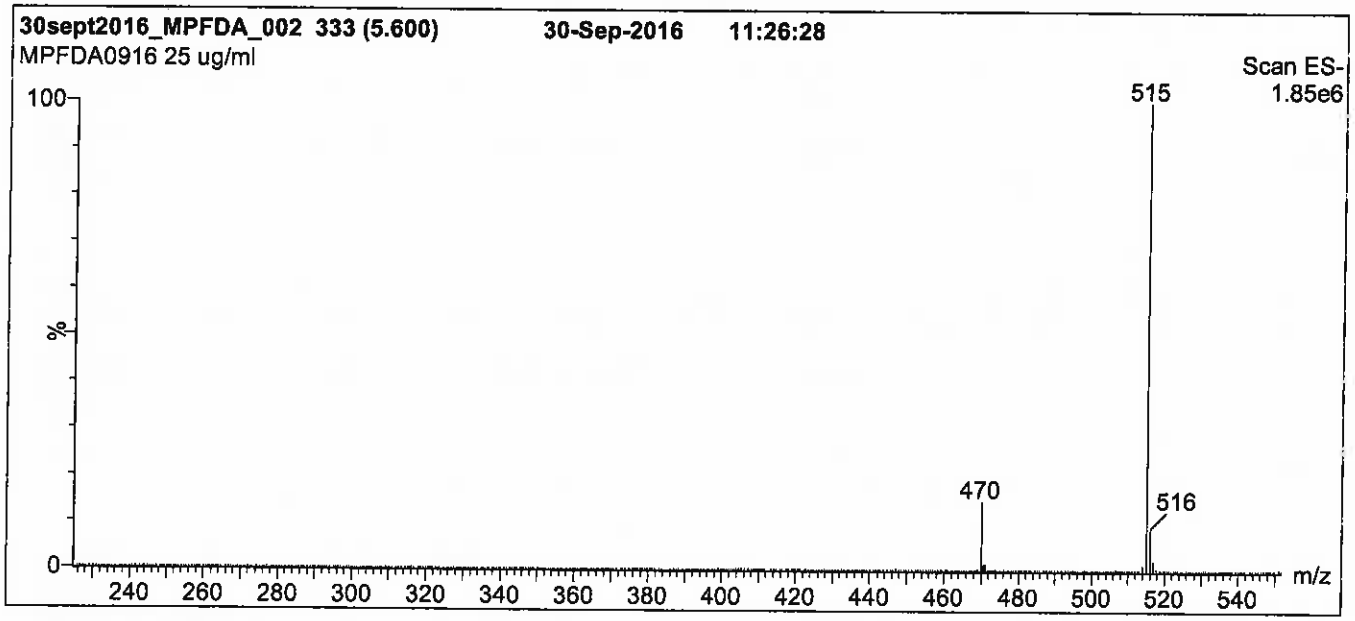

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MS: **Micromass Quattro *micro* API MS**

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

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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

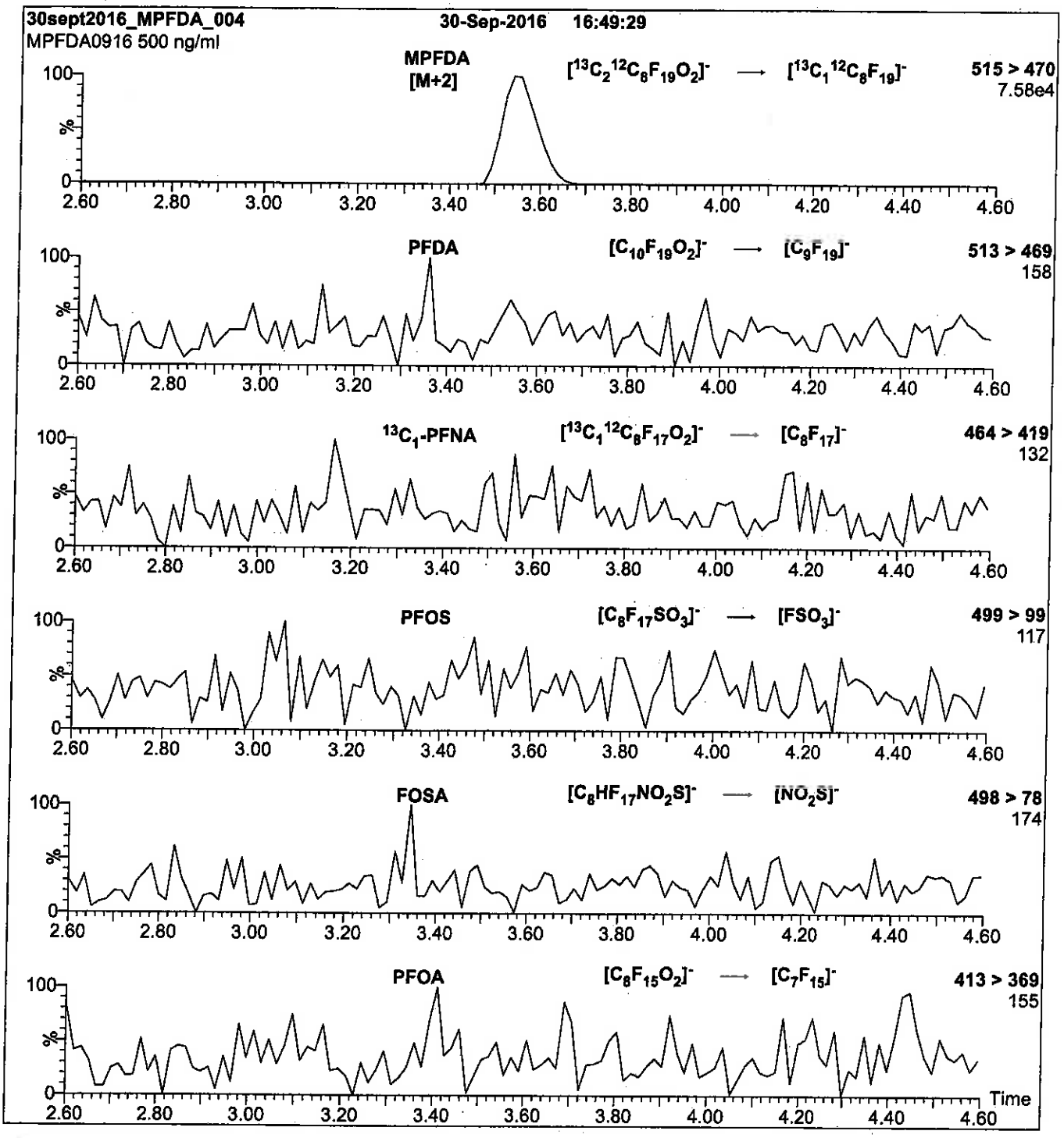
Flow: 300 µl/min

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_00009

Rec. 3/29/16 JRB ✓

WELLINGTON LABORATORIES

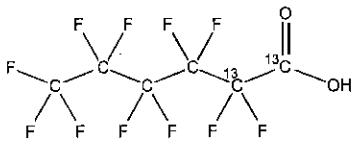
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFHxA0415

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_4HF_{11}O_2$	**MOLECULAR WEIGHT:**	316.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/09/2015		
EXPIRY DATE: (mm/dd/yyyy)	04/09/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/14/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

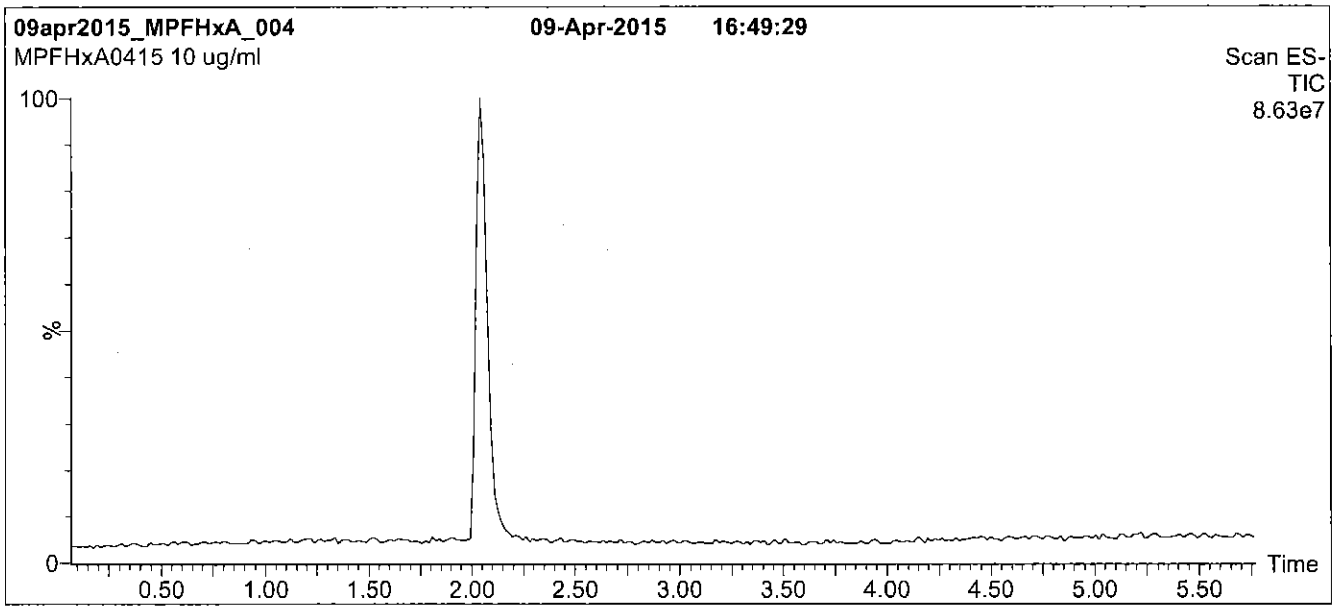
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

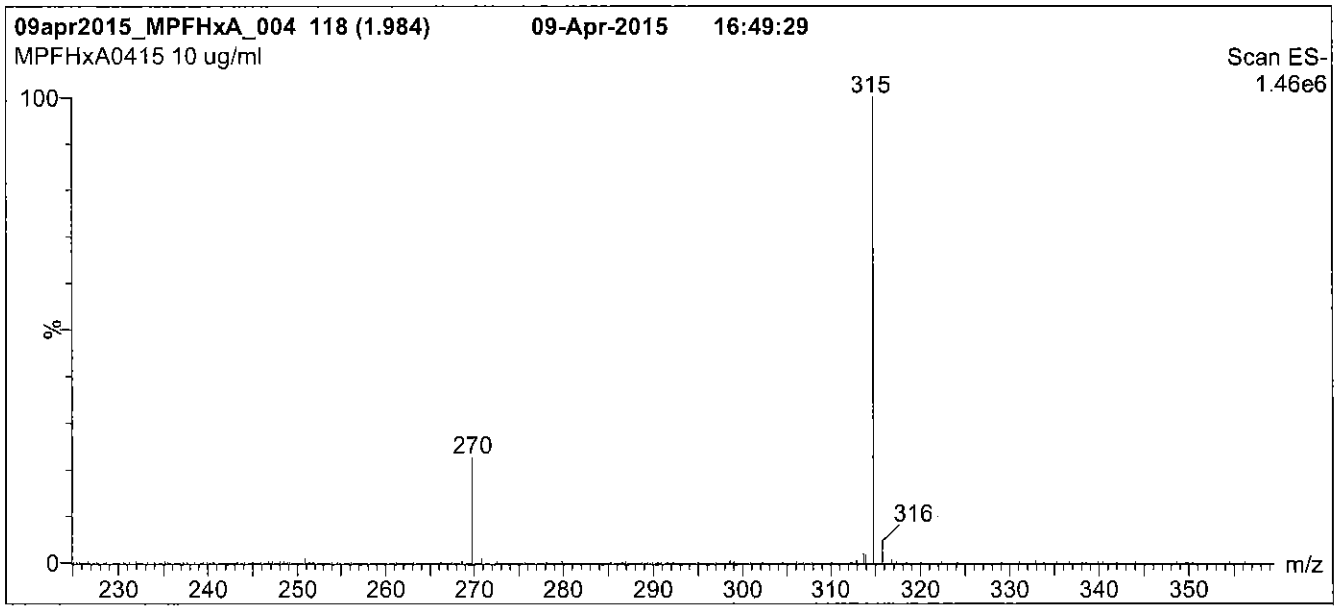
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions over 0.5 min.
Time: 10 min

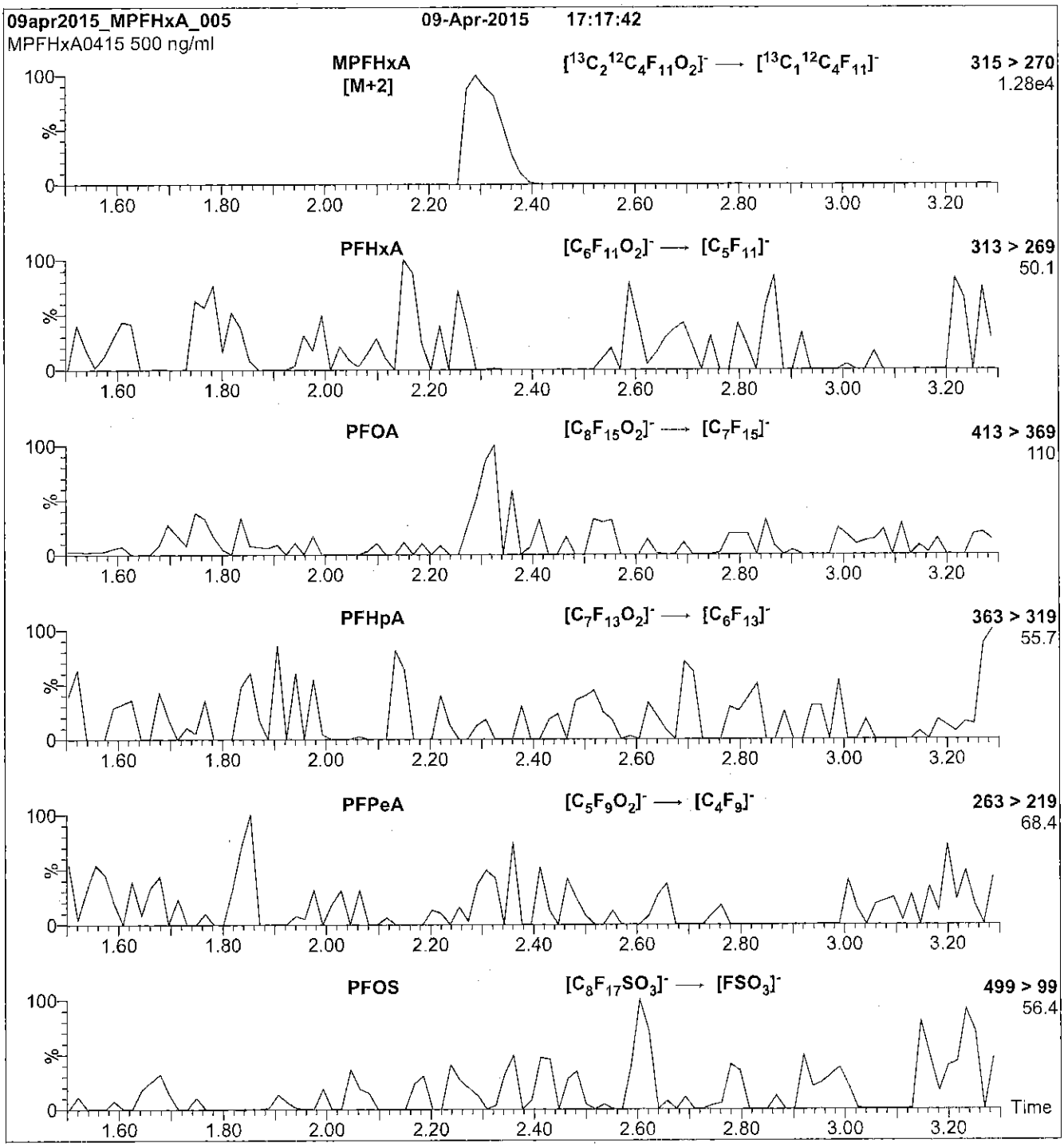
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 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) = 3.20e-3
Collision Energy (eV) = 10

Reagent

LCMPFHxA_00013

R: SBC 12/21/16

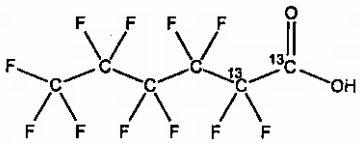
814258

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

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_4HF_{11}O_2$	**MOLECULAR WEIGHT:**	316.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/08/2016		
EXPIRY DATE: (mm/dd/yyyy)	04/08/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/29/2016 (mm/dd/yyyy)

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

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SYNTHESIS / CHARACTERIZATION:

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

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TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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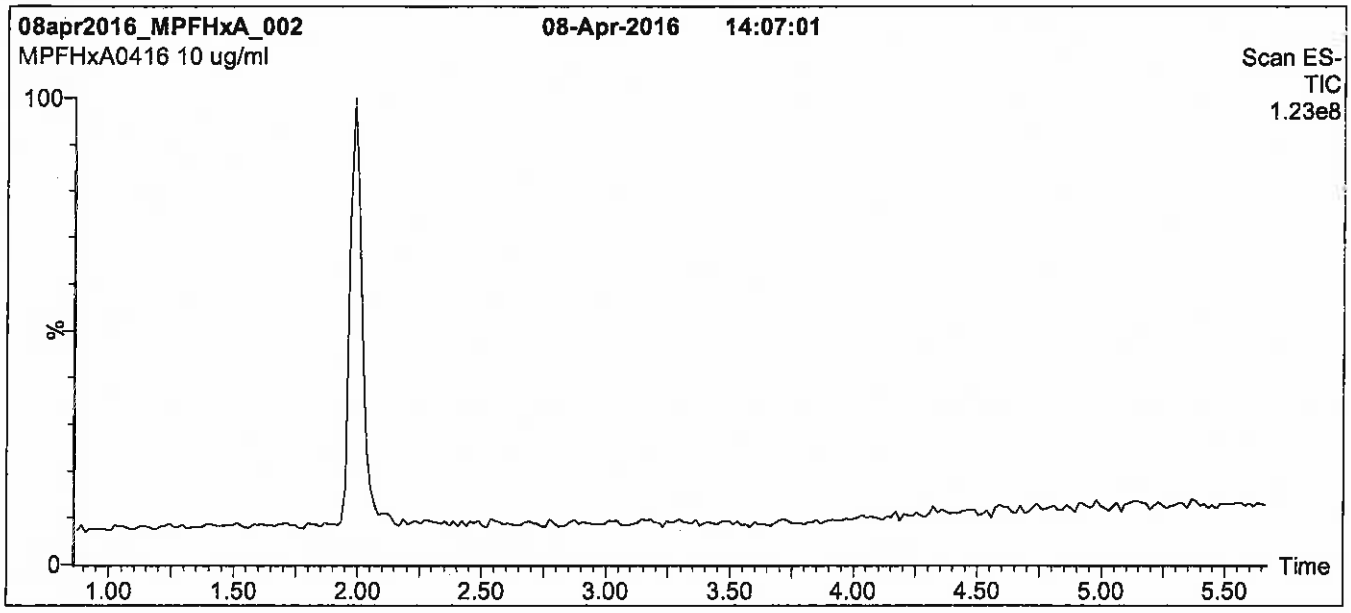
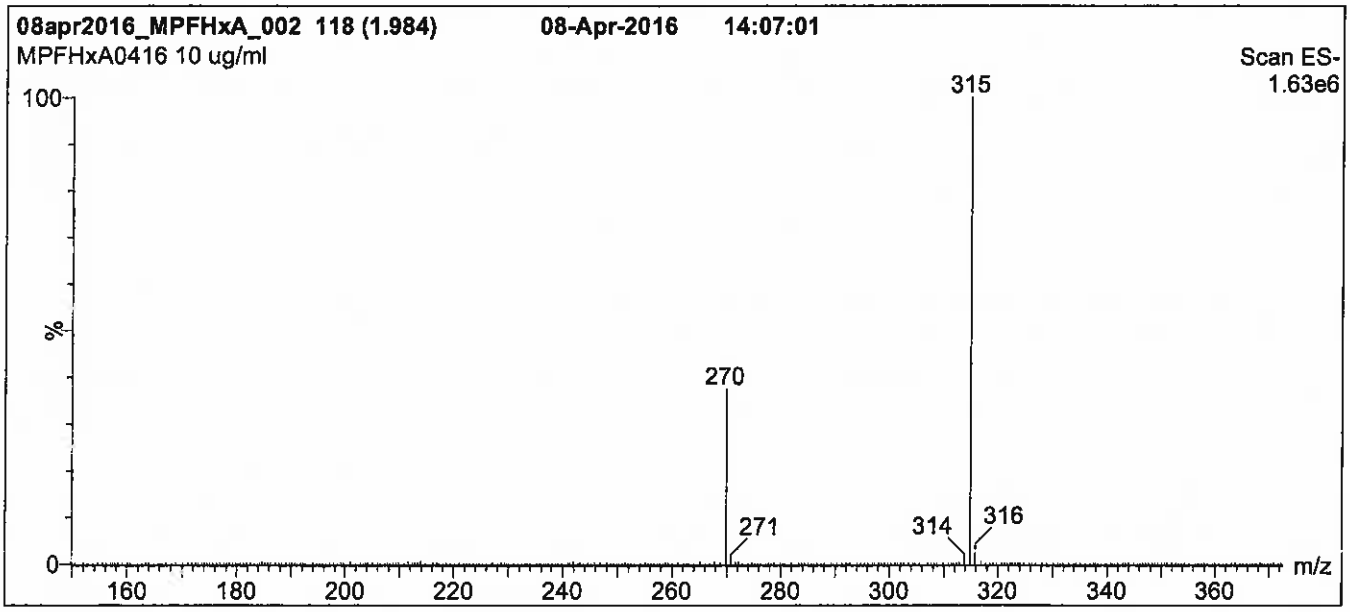
Figure 1: **MPFHxA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

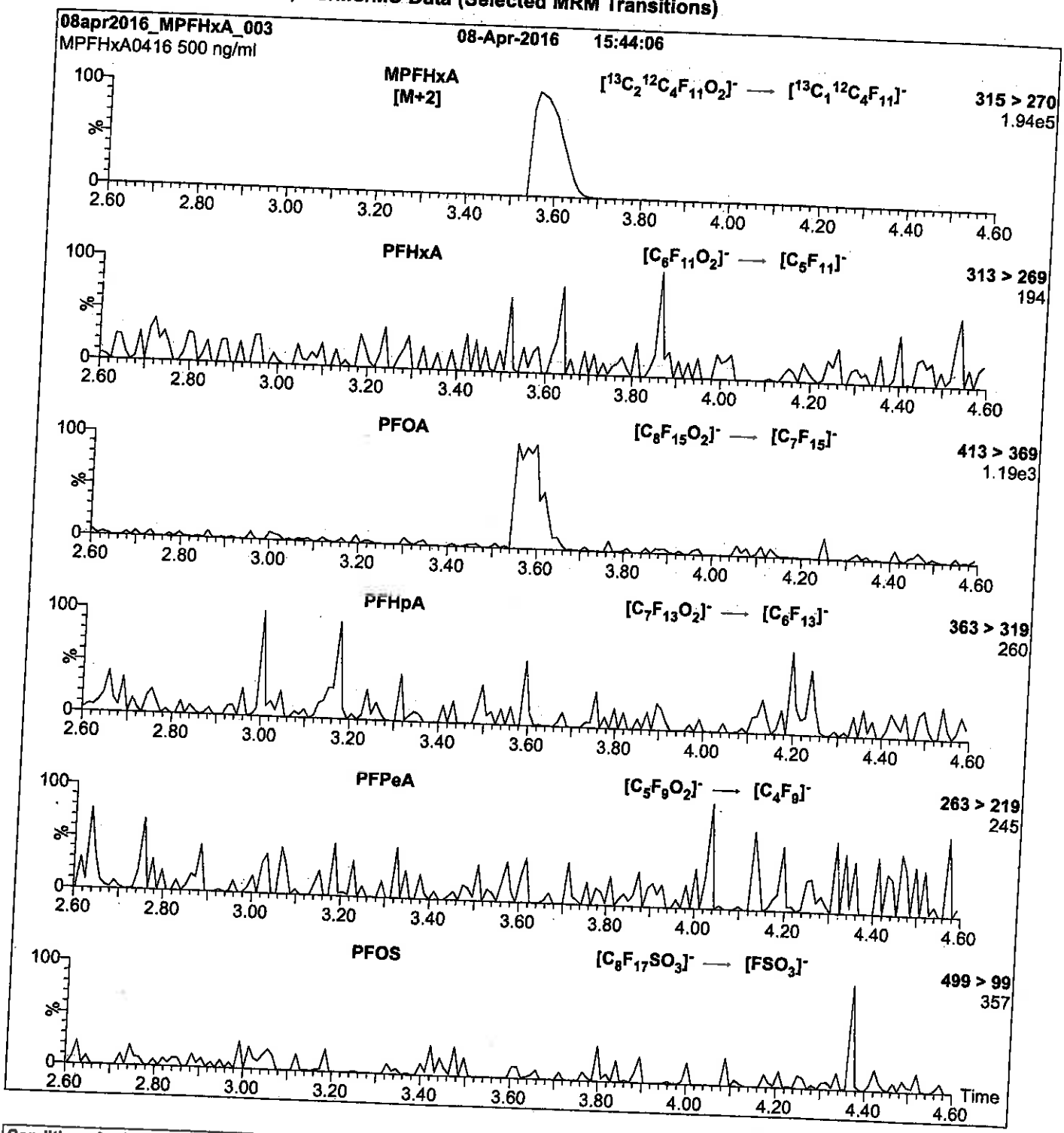
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFOS_00018

R: SBC 9/22/16

738686
ID: LCMPFOS_00018
Exp: 08/03/21 Ppd: SBC
13C4-Perfluorooctanesulfo

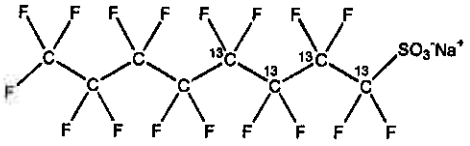
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4\text{-}^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	08/03/2016		
EXPIRY DATE: (mm/dd/yyyy)	08/03/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 08/05/2016 (mm/dd/yyyy)

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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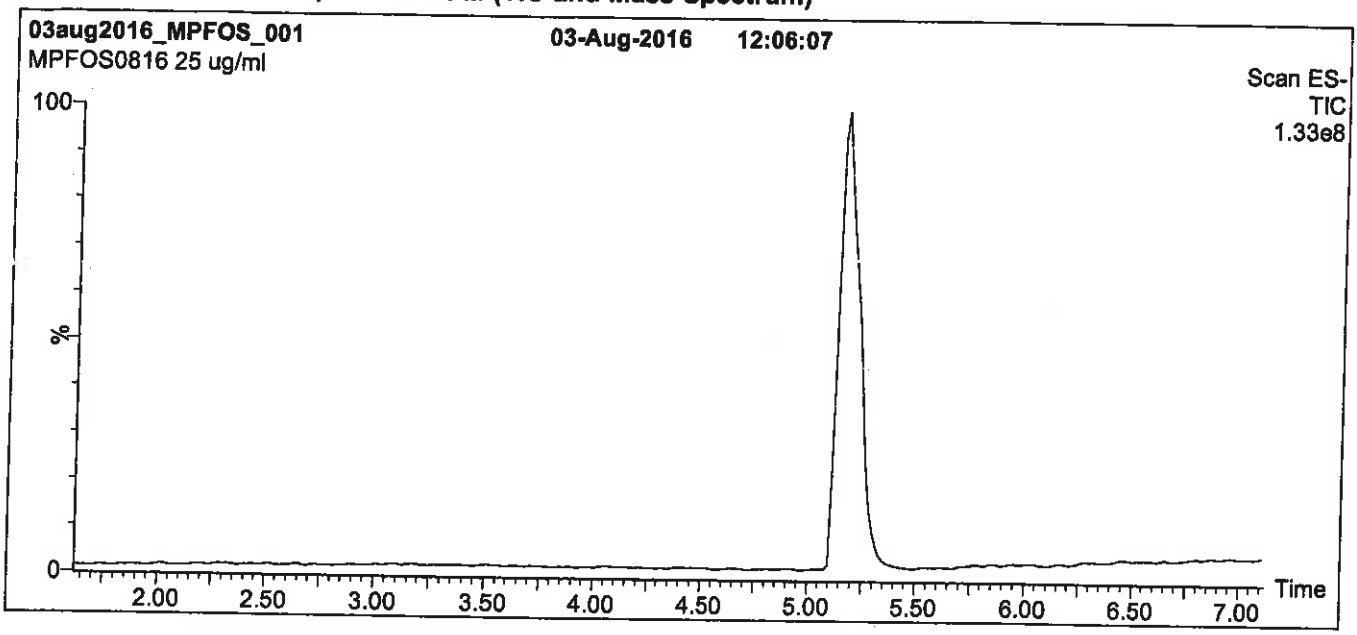
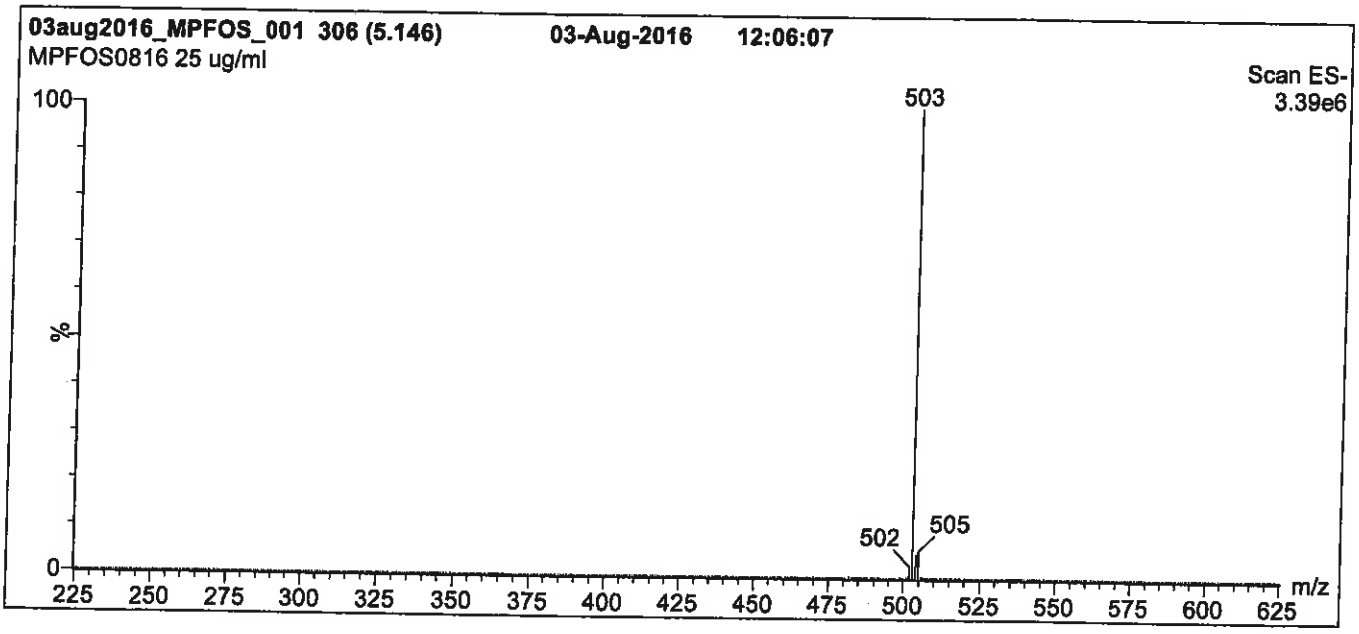
Figure 1: **MPFOS; LC/MS Data (TIC and Mass Spectrum)**





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

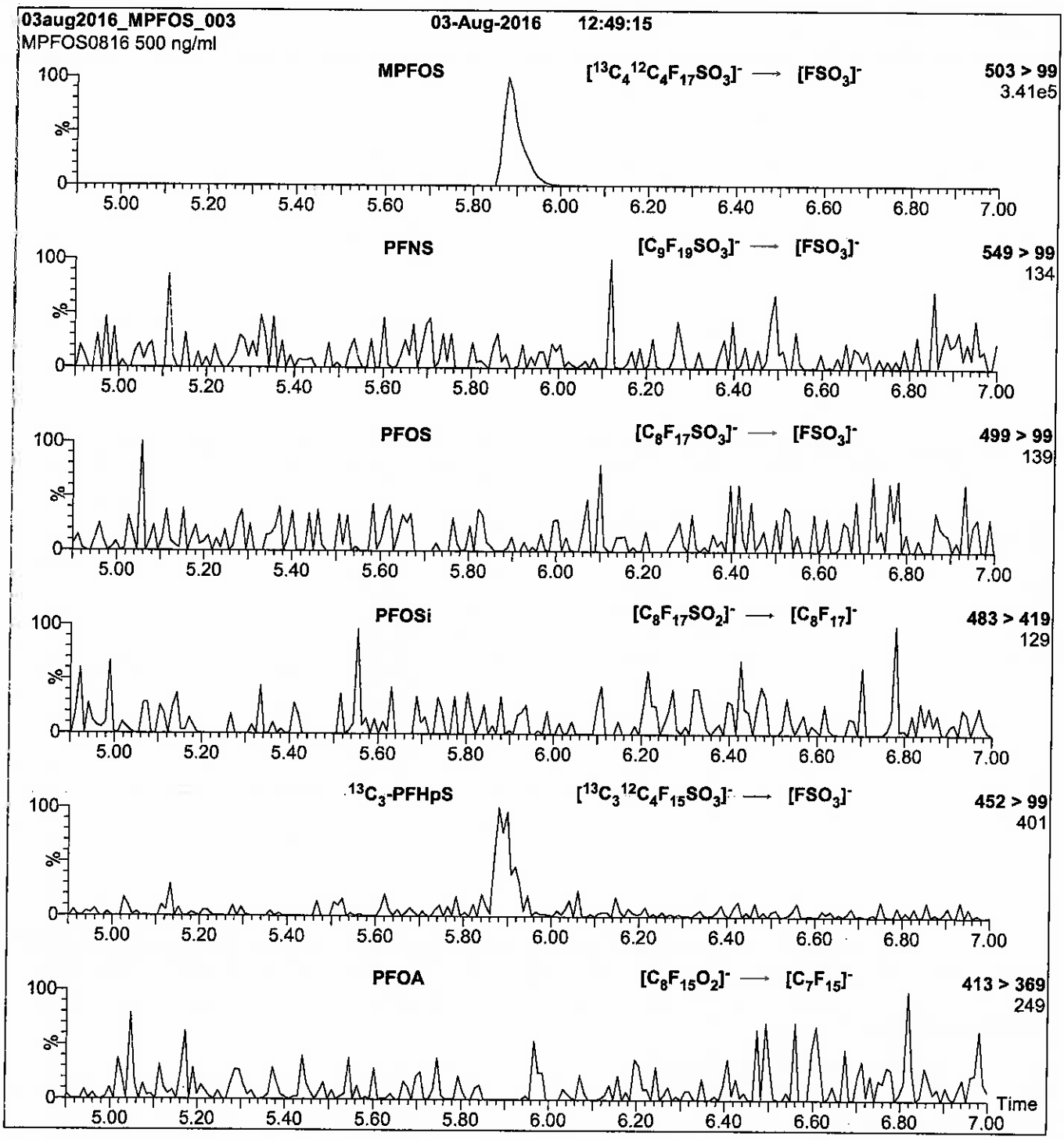
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFOS_00019

R: SBC 12/21/16

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

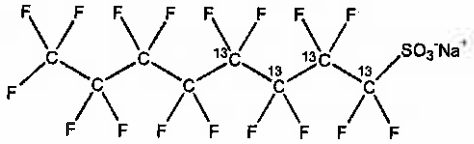
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4$-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	08/03/2016		
EXPIRY DATE: (mm/dd/yyyy)	08/03/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 08/05/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

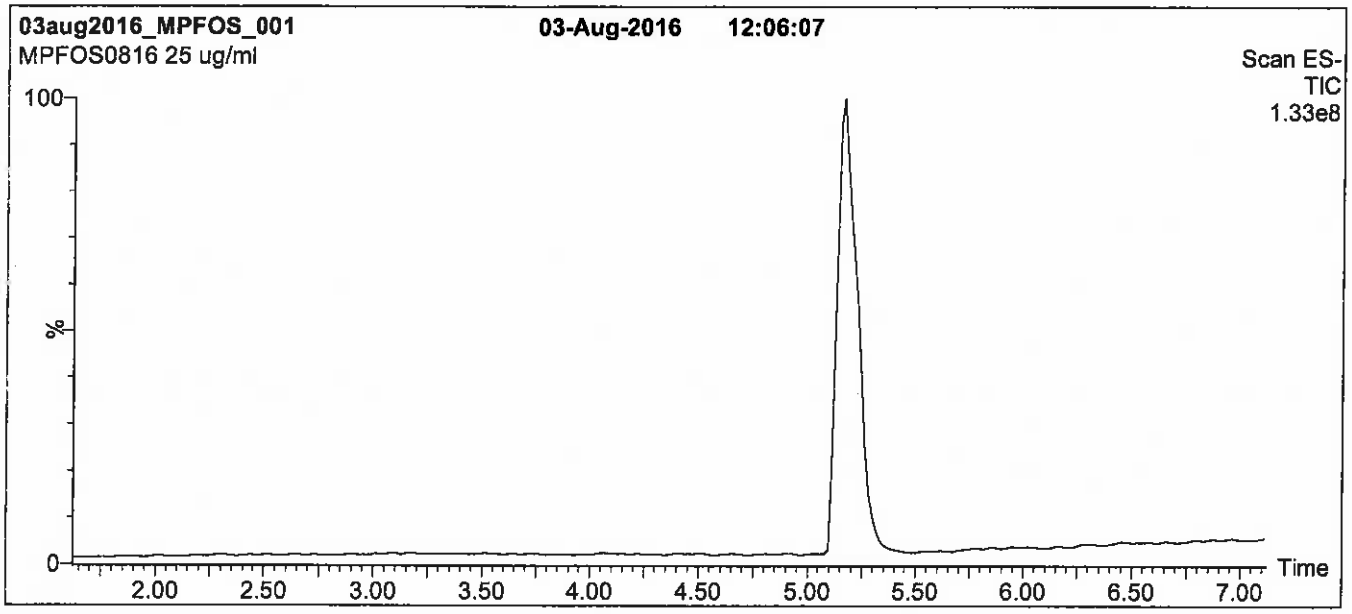
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

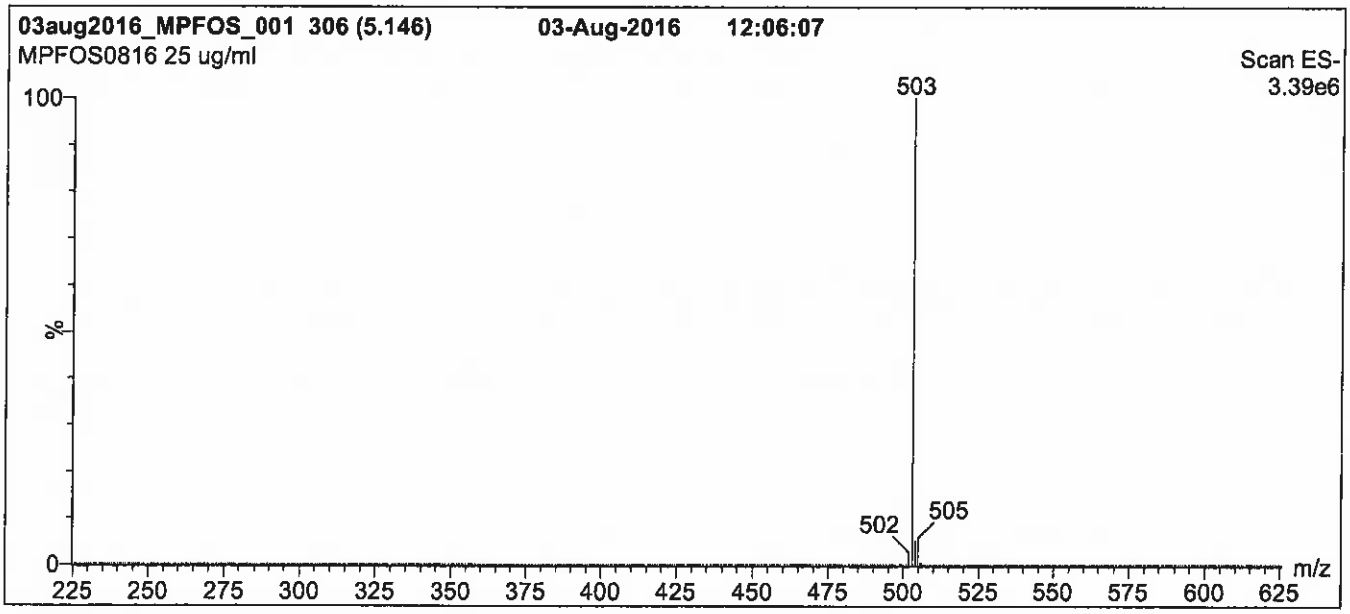
CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

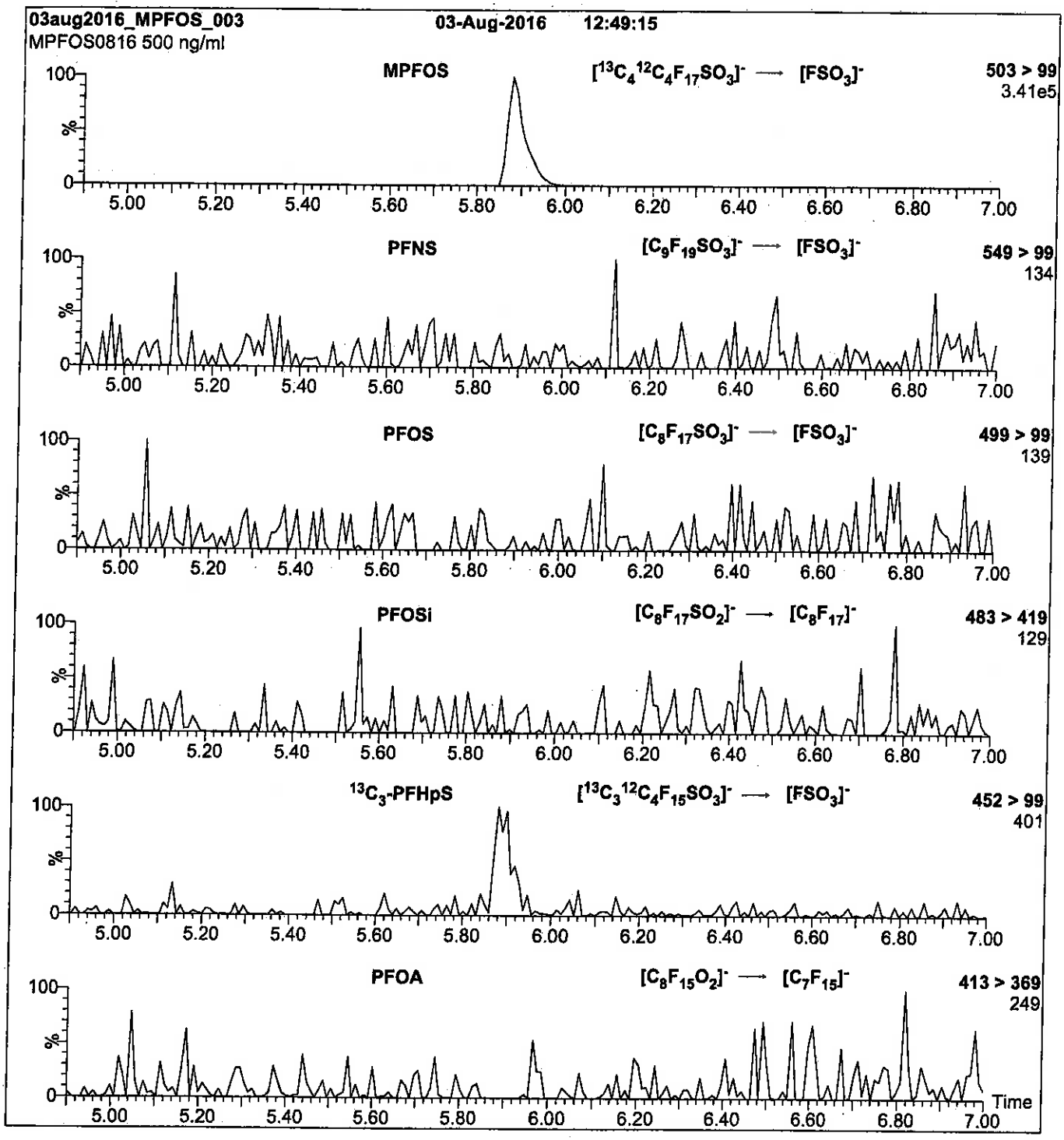
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Method 537 DOD

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

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WI-CV-1RW73-0217	320-25960-1	81	89
WI-CV-1FB73-0217	320-25960-2	84	83
WI-CV-1RW74-0217	320-25960-3	75	85
WI-CV-1FB74-0217	320-25960-4	81	78
WI-CV-1RW75-0217	320-25960-5	76	77
WI-CV-1FB75-0217	320-25960-6	82	75
WI-CV-1RW76-0217	320-25960-7	74	80
WI-CV-1FB76-0217	320-25960-8	84	80
	MB 320-152377/1-A	86	84
	LCS 320-152377/2-A	91	85
	LCSD 320-152377/3-A	87	84

	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.: 320-25960-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.02.28_537_003.d

Lab ID: LCS 320-152377/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	0.160	0.137	85	70-130	
Perfluorooctanoic acid (PFOA)	0.0781	0.0637	82	70-130	
Perfluorobutanesulfonic acid (PFBS)	0.359	0.303	84	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.: 320-25960-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.02.28_537_004.d

Lab ID: LCSD 320-152377/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	0.160	0.136	85	0	30	70-130	
Perfluorooctanoic acid (PFOA)	0.0781	0.0612	78	4	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	0.359	0.299	83	2	30	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Lab File ID: 2017.02.28_537_002.d Lab Sample ID: MB 320-152377/1-A

Matrix: Water Date Extracted: 02/27/2017 14:33

Instrument ID: A8_N Date Analyzed: 02/28/2017 16:12

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-152377/2-A	2017.02.28_537_003.d	02/28/2017 16:16
	LCSD 320-152377/3-A	2017.02.28_537_004.d	02/28/2017 16:20
WI-CV-1RW73-0217	320-25960-1	2017.02.28_537_005.d	02/28/2017 16:25
WI-CV-1FB73-0217	320-25960-2	2017.02.28_537_006.d	02/28/2017 16:29
WI-CV-1RW74-0217	320-25960-3	2017.02.28_537_007.d	02/28/2017 16:34
WI-CV-1FB74-0217	320-25960-4	2017.02.28_537_008.d	02/28/2017 16:38
WI-CV-1RW75-0217	320-25960-5	2017.02.28_537_009.d	02/28/2017 16:42
WI-CV-1FB75-0217	320-25960-6	2017.02.28_537_010.d	02/28/2017 16:47
WI-CV-1RW76-0217	320-25960-7	2017.02.28_537_011.d	02/28/2017 16:51
WI-CV-1FB76-0217	320-25960-8	2017.02.28_537_013.d	02/28/2017 17:00

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 02/28/2017 14:41

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 02/28/2017 15:03

Calibration ID: 28641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		2367155	2.17	7076744	2.40		
UPPER LIMIT		3550733	2.67	10615116	2.90		
LOWER LIMIT		1183578	1.67	3538372	1.90		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-152571/10		2552157	2.13	7601493	2.36		
ICV 320-152571/12		1967346	2.12	6028697	2.35		
CCV 320-152585/1 CCVIS		2534093	2.08	7205605	2.31		
MB 320-152377/1-A		2531227	2.09	7323261	2.32		
LCS 320-152377/2-A		2554830	2.08	7496795	2.32		
LCSD 320-152377/3-A		2533845	2.09	7355550	2.33		
320-25960-1	WI-CV-1RW73-0217	2537060	2.09	7493275	2.33		
320-25960-2	WI-CV-1FB73-0217	2495463	2.08	7444680	2.32		
320-25960-3	WI-CV-1RW74-0217	2593918	2.09	7521761	2.32		
320-25960-4	WI-CV-1FB74-0217	2665746	2.06	7479316	2.29		
320-25960-5	WI-CV-1RW75-0217	2603019	2.05	7297205	2.29		
320-25960-6	WI-CV-1FB75-0217	2701767	2.05	7337223	2.30		
320-25960-7	WI-CV-1RW76-0217	2548844	2.04	7451681	2.28		
CCV 320-152585/12 CCVIS		2401945	2.06	6454752	2.30		
CCV 320-152586/12 CCVIS		2401945	2.06	6454752	2.30		
320-25960-8	WI-CV-1FB76-0217	2583790	2.05	7085885	2.29		
CCV 320-152586/15 CCVIS		2535805	2.04	6966148	2.28		

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.: 320-25960-1

SDG No.:

Sample No.: CCV 320-152585/1 Date Analyzed: 02/28/2017 16:07

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

Lab File ID (Standard): 2017.02.28_537_001. Heated Purge: (Y/N) N

Calibration ID: 28641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2534093	2.08	7205605	2.31		
UPPER LIMIT		3547730	2.58	10087847	2.81		
LOWER LIMIT		1773865	1.58	5043924	1.81		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-152377/1-A		2531227	2.09	7323261	2.32		
LCS 320-152377/2-A		2554830	2.08	7496795	2.32		
LCSD 320-152377/3-A		2533845	2.09	7355550	2.33		
320-25960-1	WI-CV-1RW73-0217	2537060	2.09	7493275	2.33		
320-25960-2	WI-CV-1FB73-0217	2495463	2.08	7444680	2.32		
320-25960-3	WI-CV-1RW74-0217	2593918	2.09	7521761	2.32		
320-25960-4	WI-CV-1FB74-0217	2665746	2.06	7479316	2.29		
320-25960-5	WI-CV-1RW75-0217	2603019	2.05	7297205	2.29		
320-25960-6	WI-CV-1FB75-0217	2701767	2.05	7337223	2.30		
320-25960-7	WI-CV-1RW76-0217	2548844	2.04	7451681	2.28		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
PFOS = 13C4 PFOS
Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Sample No.: CCV 320-152585/12 Date Analyzed: 02/28/2017 16:56

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

Lab File ID (Standard): 2017.02.28_537_012. Heated Purge: (Y/N) N

Calibration ID: 28641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2401945	2.06	6454752	2.30		
UPPER LIMIT		3362723	2.56	9036653	2.80		
LOWER LIMIT		1681362	1.56	4518326	1.80		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-152377/1-A		2531227	2.09	7323261	2.32		
LCS 320-152377/2-A		2554830	2.08	7496795	2.32		
LCSD 320-152377/3-A		2533845	2.09	7355550	2.33		
320-25960-1	WI-CV-1RW73-0217	2537060	2.09	7493275	2.33		
320-25960-2	WI-CV-1FB73-0217	2495463	2.08	7444680	2.32		
320-25960-3	WI-CV-1RW74-0217	2593918	2.09	7521761	2.32		
320-25960-4	WI-CV-1FB74-0217	2665746	2.06	7479316	2.29		
320-25960-5	WI-CV-1RW75-0217	2603019	2.05	7297205	2.29		
320-25960-6	WI-CV-1FB75-0217	2701767	2.05	7337223	2.30		
320-25960-7	WI-CV-1RW76-0217	2548844	2.04	7451681	2.28		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
PFOS = 13C4 PFOS
Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Sample No.: CCV 320-152586/12 Date Analyzed: 02/28/2017 16:56

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

Lab File ID (Standard): 2017.02.28_537_012. Heated Purge: (Y/N) N

Calibration ID: 28641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2401945	2.06	6454752	2.30		
UPPER LIMIT		3362723	2.56	9036653	2.80		
LOWER LIMIT		1681362	1.56	4518326	1.80		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-25960-8	WI-CV-1FB76-0217	2583790	2.05	7085885	2.29		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
PFOS = 13C4 PFOS
Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Sample No.: CCV 320-152586/15 Date Analyzed: 02/28/2017 17:09

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

Lab File ID (Standard): 2017.02.28_537_015. Heated Purge: (Y/N) N

Calibration ID: 28641

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2535805	2.04	6966148	2.28		
UPPER LIMIT		3550127	2.54	9752607	2.78		
LOWER LIMIT		1775064	1.54	4876304	1.78		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-25960-8	WI-CV-1FB76-0217	2583790	2.05	7085885	2.29		

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA
PFOS = 13C4 PFOS
PFOS = 13C4 PFOS
Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-25960-1

SDG No.:

Client Sample ID: WI-CV-1RW73-0217 | Lab Sample ID: 320-25960-1

Matrix: Water | Lab File ID: 2017.02.28_537_005.d

Analysis Method: 537 | Date Collected: 02/20/2017 12:00

Extraction Method: 537 | Date Extracted: 02/27/2017 14:33

Sample wt/vol: 264.7(mL) | Date Analyzed: 02/28/2017 16:25

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.: 152585 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.045	U	0.057	0.045	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.023	U	0.028	0.023	0.0089
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.045

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	89		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_005.d
Lims ID: 320-25960-B-1-A
Client ID: WI-CV-1RW73-0217
Sample Type: Client
Inject. Date: 28-Feb-2017 16:25:18 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-25960-b-1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Feb-2017 16:47:29 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Feb-2017 16:49:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.715	1.765	-0.050	1.000	2104239	8.10		4094	
* 6 13C2-PFOA									
415.00 > 370.00	2.094	2.172	-0.078		2537060	10.0		4490	
* 7 13C4 PFOS									
503.00 > 80.00	2.329	2.395	-0.066		7493275	28.7		6622	
$ 10 13C2 PFDA									
515.00 > 470.00	2.473	2.530	-0.057	1.000	1701027	8.86		2638	

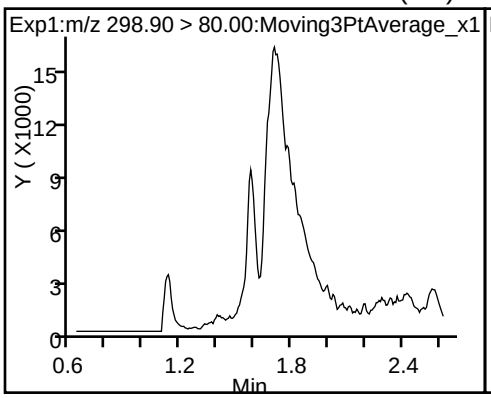
Report Date: 28-Feb-2017 16:49:51 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

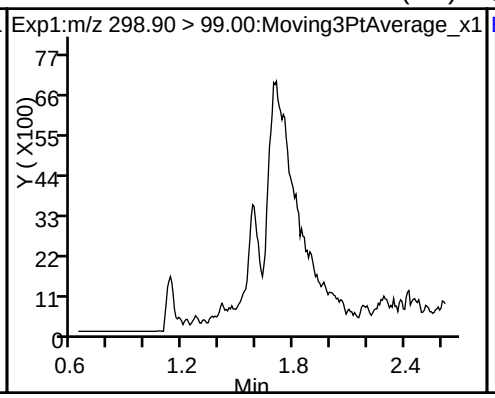
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_005.d

Injection Date:	28-Feb-2017 16:25:18	Instrument ID:	A8_N		
Lims ID:	320-25960-B-1-A	Lab Sample ID:	320-25960-1		
Client ID:	WI-CV-1RW73-0217				
Operator ID:	A8-PC\A8	ALS Bottle#:	38	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

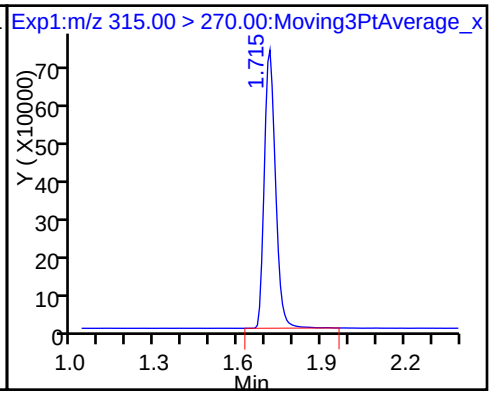
1 Perfluorobutanesulfonic acid (ND)



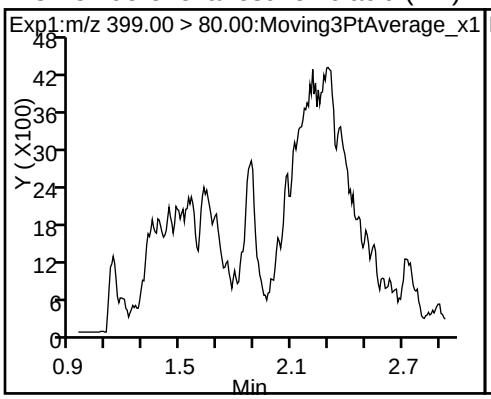
1 Perfluorobutanesulfonic acid (ND)



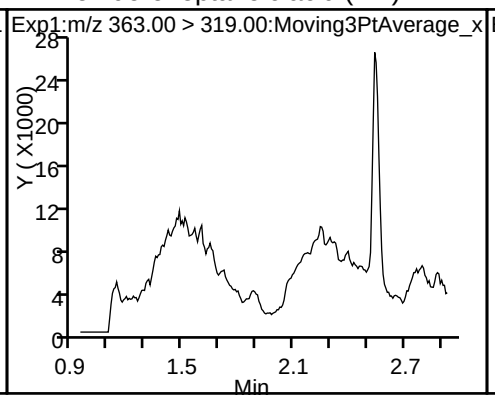
$ 2 13C2 PFHxA



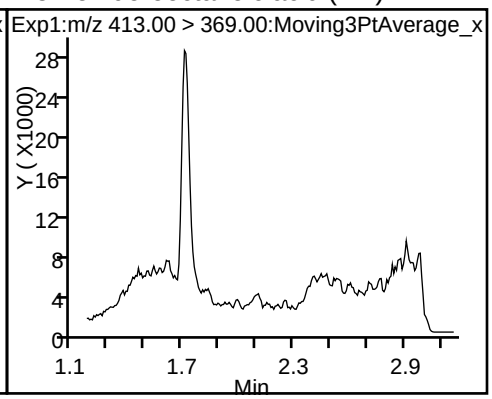
3 Perfluorohexanesulfonic acid (ND)



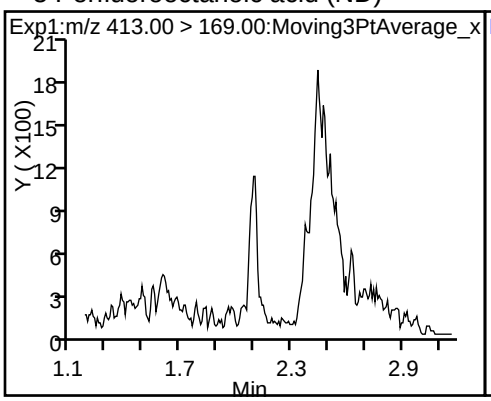
4 Perfluoroheptanoic acid (ND)



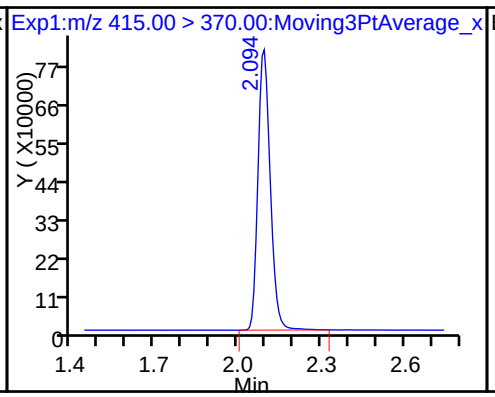
5 Perfluorooctanoic acid (ND)



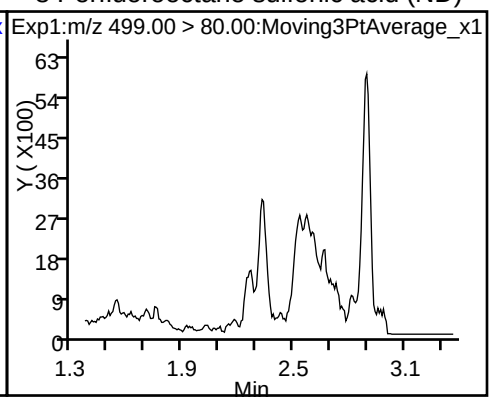
5 Perfluorooctanoic acid (ND)



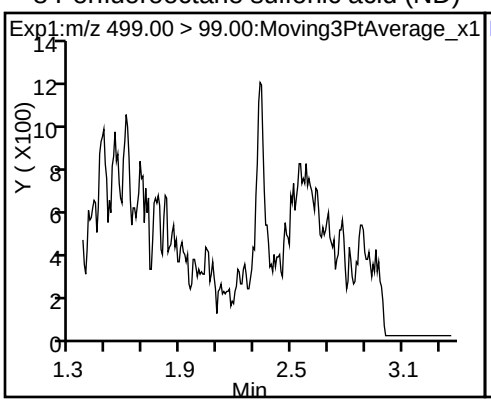
* 6 13C2-PFOA



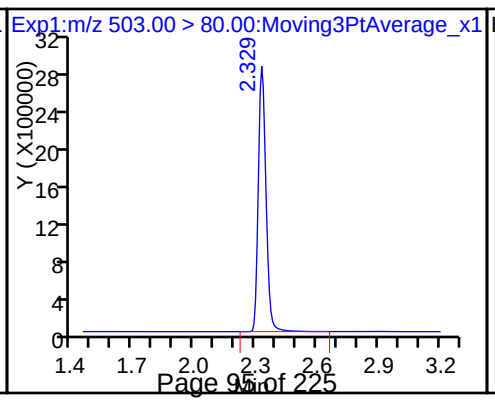
8 Perfluorooctane sulfonic acid (ND)



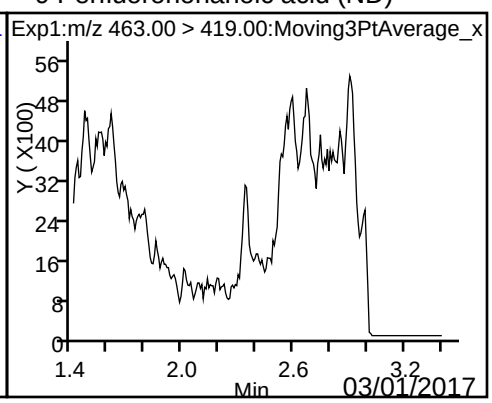
8 Perfluorooctane sulfonic acid (ND)



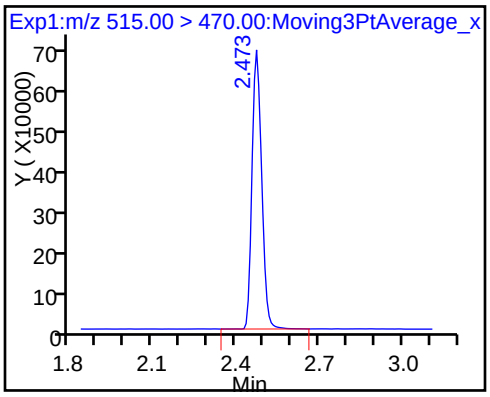
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.473
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
3.0
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_005.d
Lims ID: 320-25960-B-1-A
Client ID: WI-CV-1RW73-0217
Sample Type: Client
Inject. Date: 28-Feb-2017 16:25:18 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-25960-b-1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Feb-2017 16:47:29 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Feb-2017 16:49:51

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.10	81.01
$ 10 13C2 PFDA	10.0	8.86	88.59

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-25960-1

SDG No.:

Client Sample ID: WI-CV-1FB73-0217 | Lab Sample ID: 320-25960-2

Matrix: Water | Lab File ID: 2017.02.28_537_006.d

Analysis Method: 537 | Date Collected: 02/20/2017 12:01

Extraction Method: 537 | Date Extracted: 02/27/2017 14:33

Sample wt/vol: 278.9(mL) | Date Analyzed: 02/28/2017 16:29

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

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

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

Analysis Batch No.: 152585 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.054	0.043	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.022	0.0084
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.099	0.043

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	83		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_006.d
Lims ID: 320-25960-B-2-A
Client ID: WI-CV-1FB73-0217
Sample Type: Client
Inject. Date: 28-Feb-2017 16:29:42 ALS Bottle#: 39 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-25960-b-2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Mar-2017 11:00:21 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: barnettj Date: 01-Mar-2017 11:14:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.707	1.765	-0.058	1.000	2138509	8.37		3789	
* 6 13C2-PFOA									
415.00 > 370.00	2.079	2.172	-0.093		2495463	10.0		5057	
* 7 13C4 PFOS									
503.00 > 80.00	2.322	2.395	-0.073		7444680	28.7		8262	
$ 10 13C2 PFDA									
515.00 > 470.00	2.458	2.530	-0.072	1.000	1564947	8.29		2165	

Report Date: 01-Mar-2017 11:16:26 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_006.d

Injection Date: 28-Feb-2017 16:29:42 Instrument ID: A8_N

Lims ID: 320-25960-B-2-A Lab Sample ID: 320-25960-2

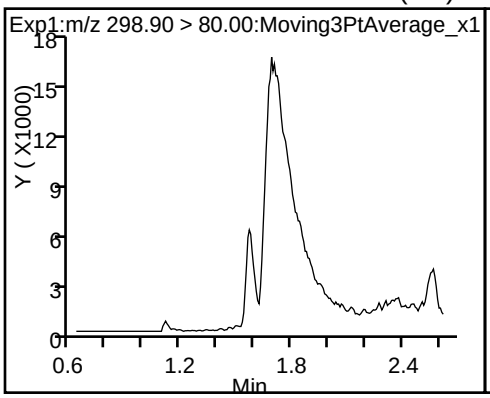
Client ID: WI-CV-1FB73-0217

Operator ID: A8-PC\A8 ALS Bottle#: 39 Worklist Smp#: 6

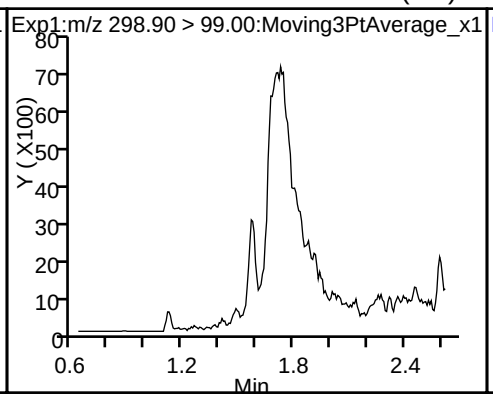
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

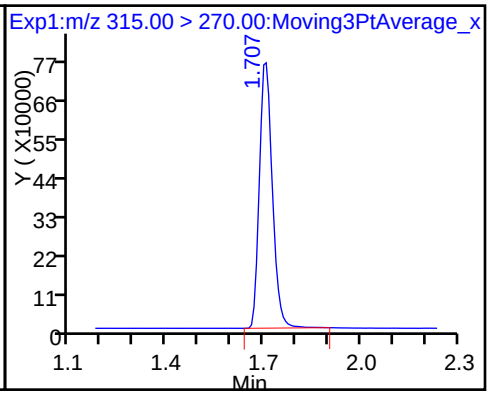
1 Perfluorobutanesulfonic acid (ND)



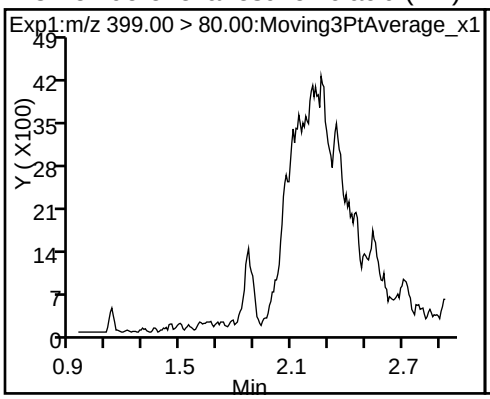
1 Perfluorobutanesulfonic acid (ND)



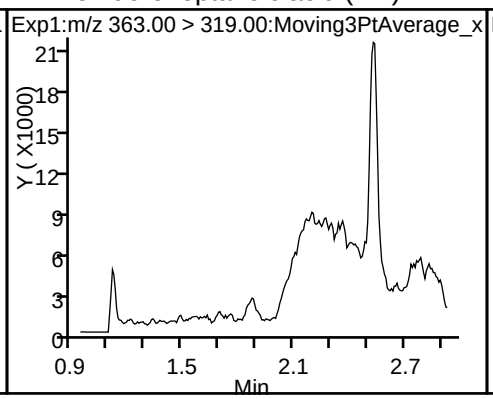
$ 2 13C2 PFHxA



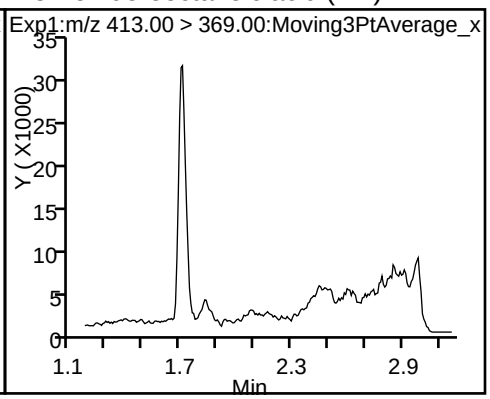
3 Perfluorohexanesulfonic acid (ND)



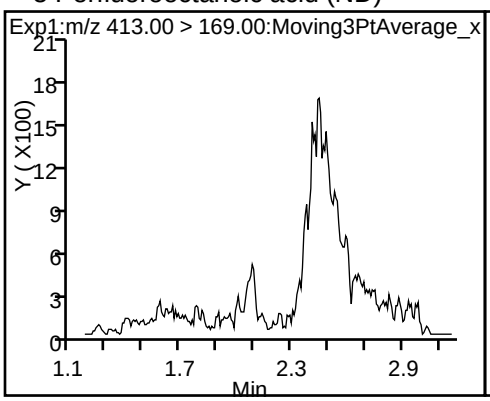
4 Perfluoroheptanoic acid (ND)



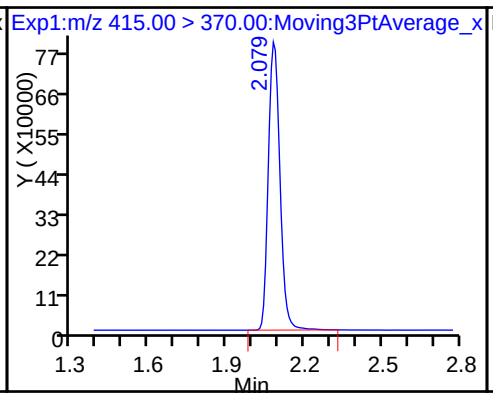
5 Perfluorooctanoic acid (ND)



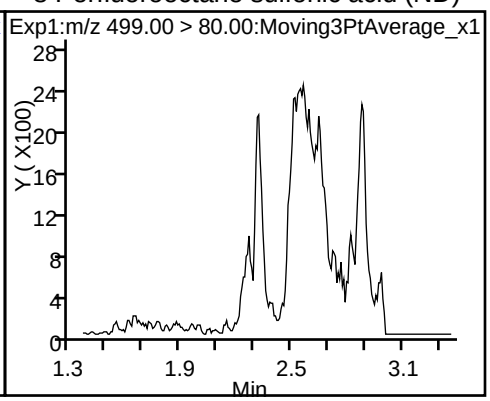
5 Perfluorooctanoic acid (ND)



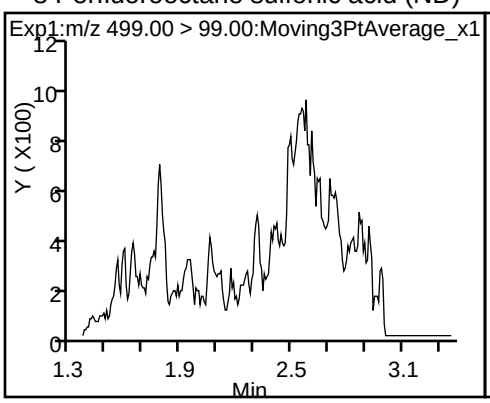
* 6 13C2-PFOA



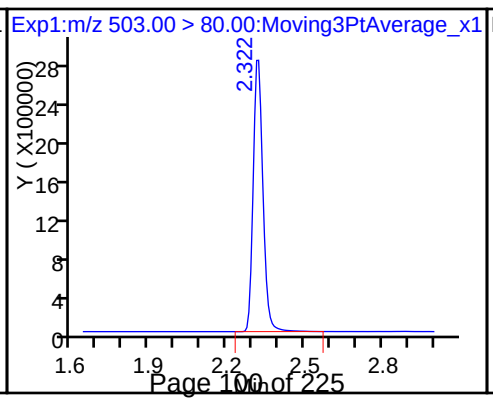
8 Perfluorooctane sulfonic acid (ND)



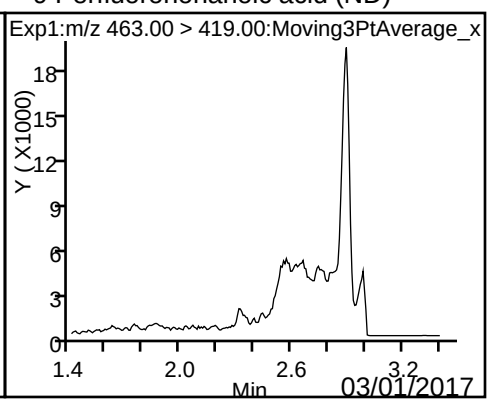
8 Perfluorooctane sulfonic acid (ND)



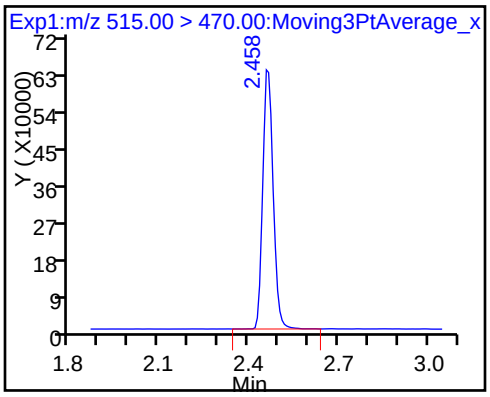
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.458
Y (X10000)
72
63
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
3.0
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_006.d				
Lims ID:	320-25960-B-2-A				
Client ID:	WI-CV-1FB73-0217				
Sample Type:	Client				
Inject. Date:	28-Feb-2017 16:29:42	ALS Bottle#:	39	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-25960-b-2-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	A8-PC\A8	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	01-Mar-2017 11:00:21	Calib Date:	28-Feb-2017 15:03:35		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK024				
First Level Reviewer: barnettj		Date:	01-Mar-2017 11:14:50		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.37	83.70
$ 10 13C2 PFDA	10.0	8.29	82.86

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-25960-1

SDG No.:

Client Sample ID: WI-CV-1RW74-0217 | Lab Sample ID: 320-25960-3

Matrix: Water | Lab File ID: 2017.02.28_537_007.d

Analysis Method: 537 | Date Collected: 02/20/2017 17:03

Extraction Method: 537 | Date Extracted: 02/27/2017 14:33

Sample wt/vol: 278.5(mL) | Date Analyzed: 02/28/2017 16:34

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

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

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

Analysis Batch No.: 152585 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.054	0.043	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.022	0.0085
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.099	0.043

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	75		70-130
STL00996	13C2 PFDA	85		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_007.d
Lims ID: 320-25960-B-3-A
Client ID: WI-CV-1RW74-0217
Sample Type: Client
Inject. Date: 28-Feb-2017 16:34:05 ALS Bottle#: 40 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-25960-b-3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Mar-2017 11:00:21 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: barnettj Date: 01-Mar-2017 11:15:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.707	1.765	-0.058	1.000	2000367	7.53		3806	
* 6 13C2-PFOA									
415.00 > 370.00	2.086	2.172	-0.086		2593918	10.0		4781	
* 7 13C4 PFOS									
503.00 > 80.00	2.322	2.395	-0.073		7521761	28.7		5366	
$ 10 13C2 PFDA									
515.00 > 470.00	2.466	2.530	-0.064	1.000	1661677	8.46		2399	

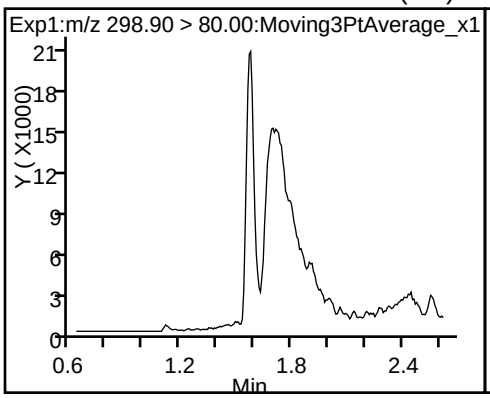
Report Date: 01-Mar-2017 11:16:28 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

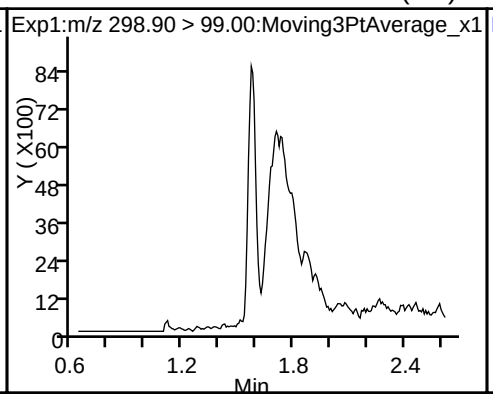
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_007.d

Injection Date:	28-Feb-2017 16:34:05	Instrument ID:	A8_N		
Lims ID:	320-25960-B-3-A	Lab Sample ID:	320-25960-3		
Client ID:	WI-CV-1RW74-0217				
Operator ID:	A8-PC\A8	ALS Bottle#:	40	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

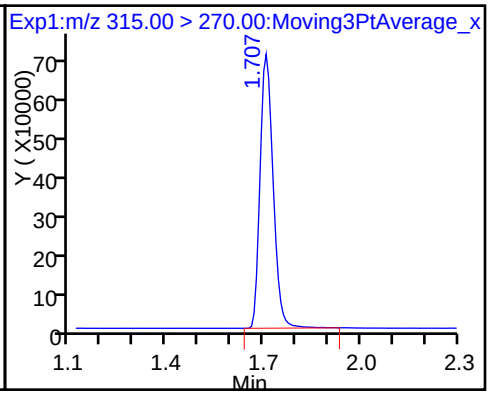
1 Perfluorobutanesulfonic acid (ND)



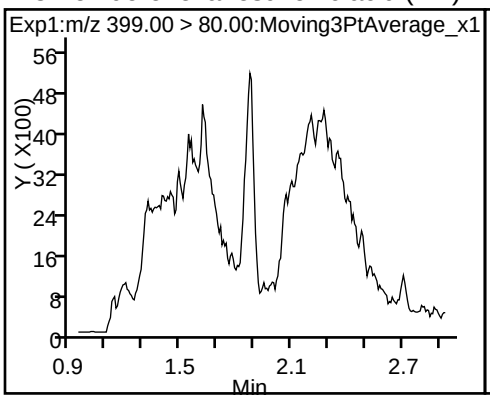
1 Perfluorobutanesulfonic acid (ND)



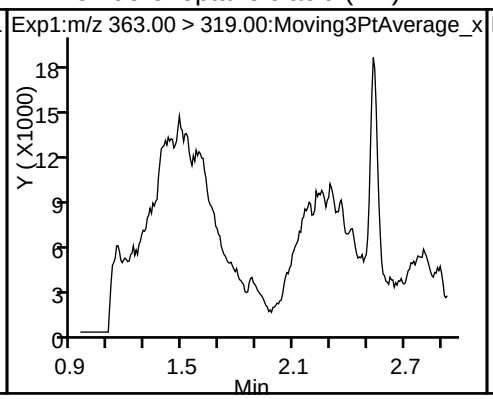
$ 2 13C2 PFHxA



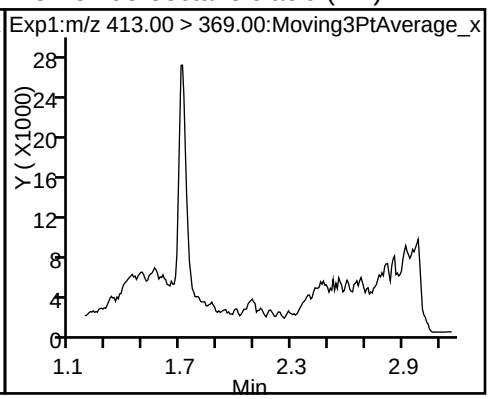
3 Perfluorohexanesulfonic acid (ND)



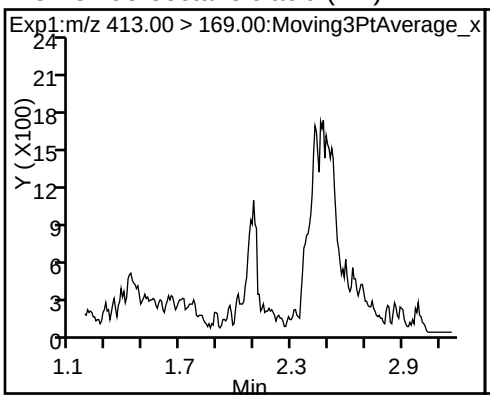
4 Perfluoroheptanoic acid (ND)



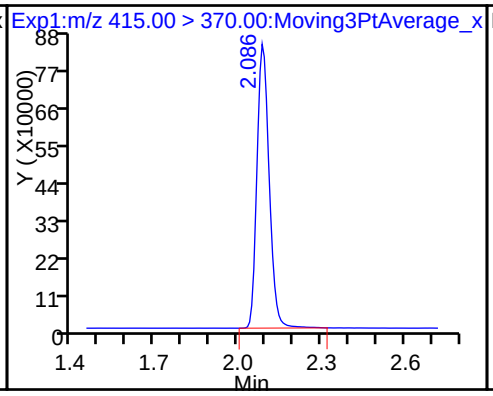
5 Perfluorooctanoic acid (ND)



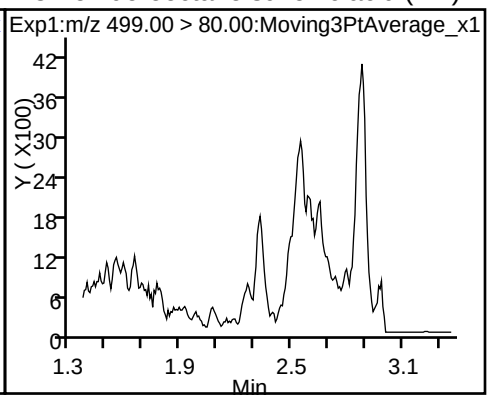
5 Perfluorooctanoic acid (ND)



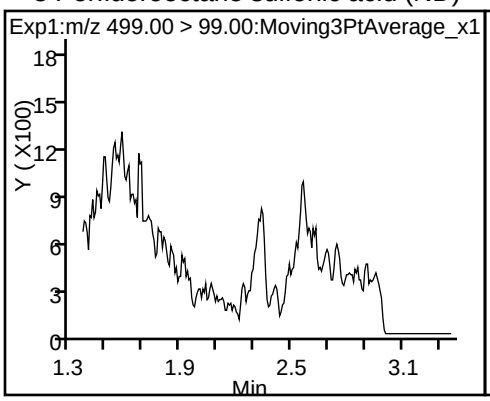
* 6 13C2-PFOA



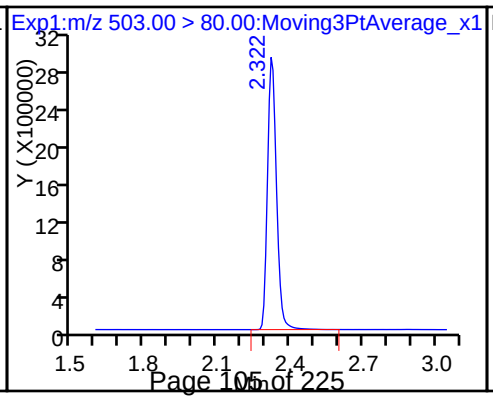
8 Perfluorooctane sulfonic acid (ND)



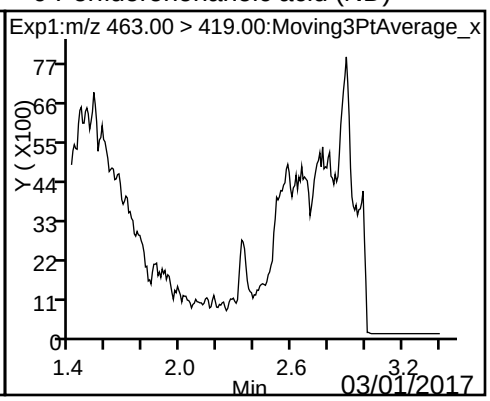
8 Perfluorooctane sulfonic acid (ND)



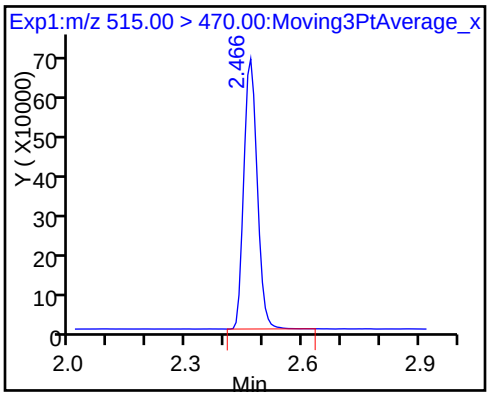
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.466
Y (X10000)
70
60
50
40
30
20
10
0
2.0
2.3
2.6
2.9
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_007.d
Lims ID: 320-25960-B-3-A
Client ID: WI-CV-1RW74-0217
Sample Type: Client
Inject. Date: 28-Feb-2017 16:34:05 ALS Bottle#: 40 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-25960-b-3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Mar-2017 11:00:21 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: barnettj Date: 01-Mar-2017 11:15:02

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.53	75.32
$ 10 13C2 PFDA	10.0	8.46	84.64

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-25960-1

SDG No.:

Client Sample ID: WI-CV-1FB74-0217 | Lab Sample ID: 320-25960-4

Matrix: Water | Lab File ID: 2017.02.28_537_008.d

Analysis Method: 537 | Date Collected: 02/20/2017 17:04

Extraction Method: 537 | Date Extracted: 02/27/2017 14:33

Sample wt/vol: 280.5(mL) | Date Analyzed: 02/28/2017 16:38

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.: 152585 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.053	0.043	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.021	U	0.027	0.021	0.0084
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.098	U	0.12	0.098	0.042

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	78		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_008.d
Lims ID: 320-25960-B-4-A
Client ID: WI-CV-1FB74-0217
Sample Type: Client
Inject. Date: 28-Feb-2017 16:38:28 ALS Bottle#: 41 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-25960-b-4-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Mar-2017 11:00:21 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: barnettj Date: 01-Mar-2017 11:15:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.684	1.765	-0.081	1.000	2217214	8.12		4221	
* 6 13C2-PFOA									
415.00 > 370.00	2.056	2.172	-0.116		2665746	10.0		4685	
* 7 13C4 PFOS									
503.00 > 80.00	2.291	2.395	-0.104		7479316	28.7		7675	
$ 10 13C2 PFDA									
515.00 > 470.00	2.443	2.530	-0.087	1.000	1566682	7.77		1975	

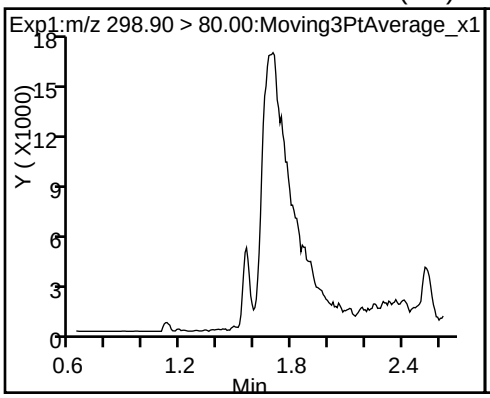
Report Date: 01-Mar-2017 11:16:30 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

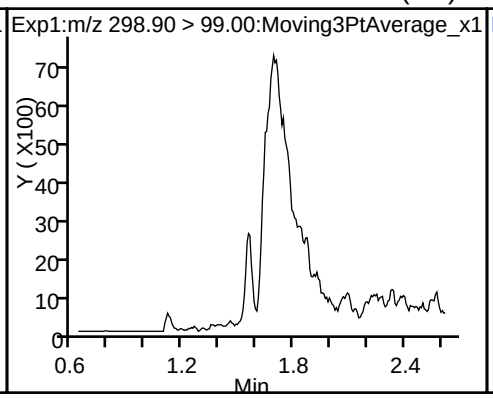
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_008.d

Injection Date:	28-Feb-2017 16:38:28	Instrument ID:	A8_N		
Lims ID:	320-25960-B-4-A	Lab Sample ID:	320-25960-4		
Client ID:	WI-CV-1FB74-0217				
Operator ID:	A8-PC\A8	ALS Bottle#:	41	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

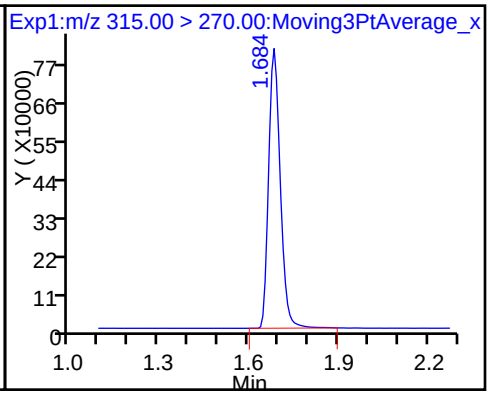
1 Perfluorobutanesulfonic acid (ND)



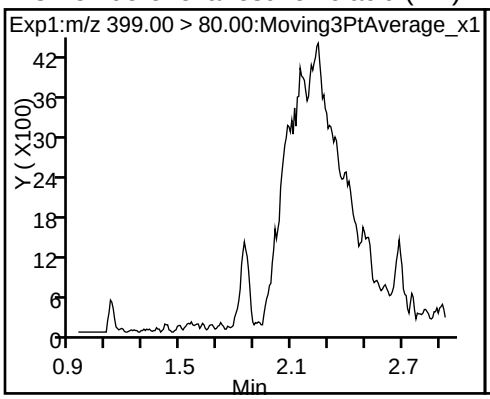
1 Perfluorobutanesulfonic acid (ND)



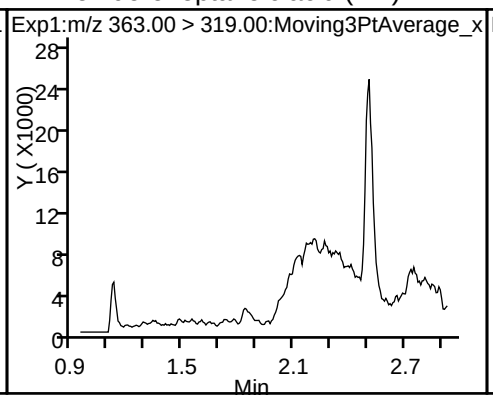
$ 2 13C2 PFHxA



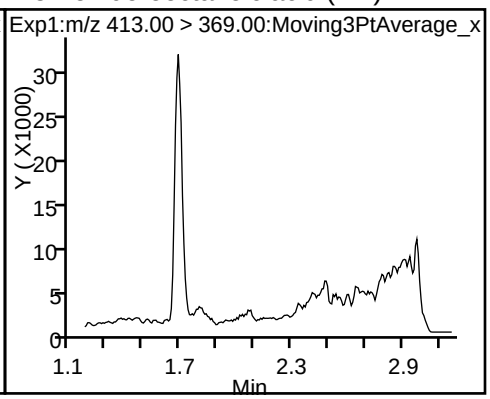
3 Perfluorohexanesulfonic acid (ND)



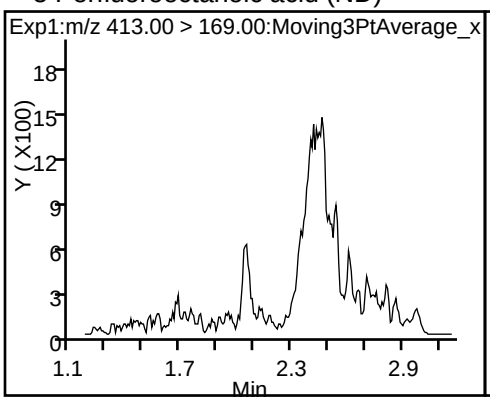
4 Perfluoroheptanoic acid (ND)



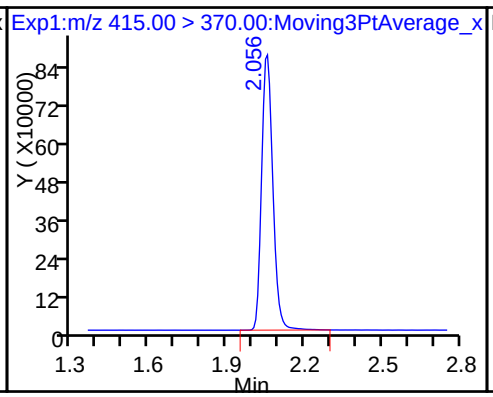
5 Perfluorooctanoic acid (ND)



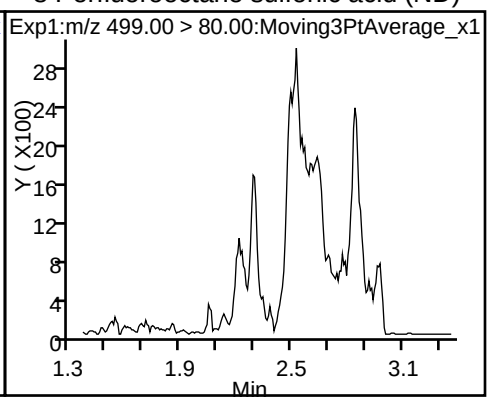
5 Perfluorooctanoic acid (ND)



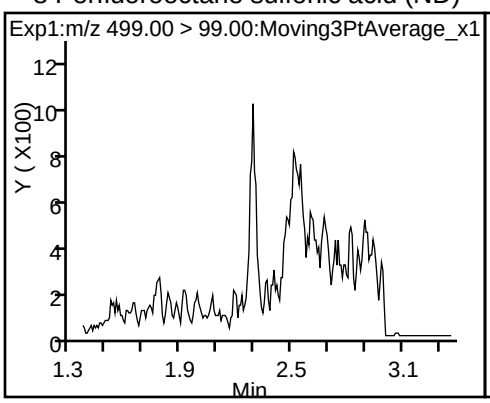
* 6 13C2-PFOA



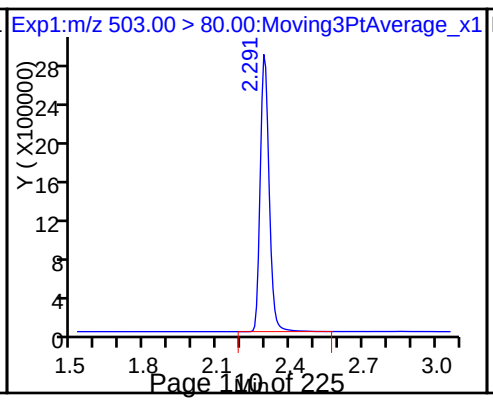
8 Perfluorooctane sulfonic acid (ND)



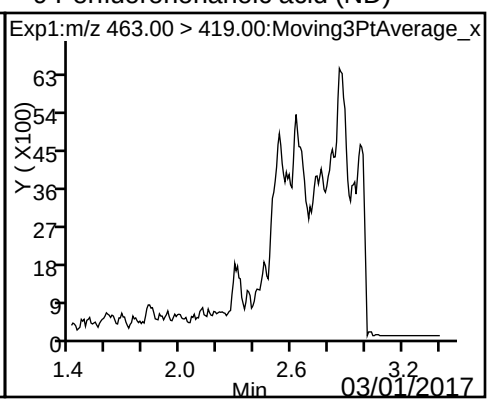
8 Perfluorooctane sulfonic acid (ND)



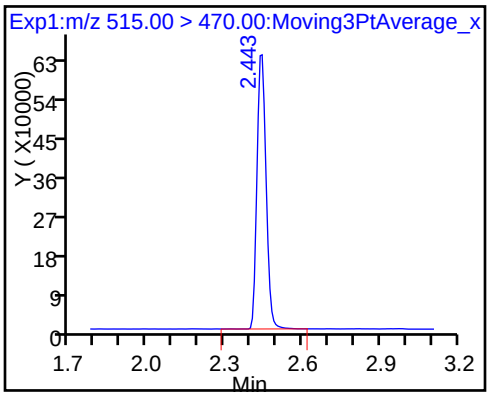
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.443
Y (X10000)
63
54
45
36
27
18
9
0
1.7
2.0
2.3
2.6
2.9
3.2
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_008.d
Lims ID: 320-25960-B-4-A
Client ID: WI-CV-1FB74-0217
Sample Type: Client
Inject. Date: 28-Feb-2017 16:38:28 ALS Bottle#: 41 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-25960-b-4-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Mar-2017 11:00:21 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: barnettj Date: 01-Mar-2017 11:15:14

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.12	81.23
$ 10 13C2 PFDA	10.0	7.77	77.66

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-25960-1

SDG No.:

Client Sample ID: WI-CV-1RW75-0217 | Lab Sample ID: 320-25960-5

Matrix: Water | Lab File ID: 2017.02.28_537_009.d

Analysis Method: 537 | Date Collected: 02/20/2017 17:05

Extraction Method: 537 | Date Extracted: 02/27/2017 14:33

Sample wt/vol: 276(mL) | Date Analyzed: 02/28/2017 16:42

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

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

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

Analysis Batch No.: 152585 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.054	0.043	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.022	0.0085
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.043

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	76		70-130
STL00996	13C2 PFDA	77		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_009.d
Lims ID: 320-25960-B-5-A
Client ID: WI-CV-1RW75-0217
Sample Type: Client
Inject. Date: 28-Feb-2017 16:42:53 ALS Bottle#: 42 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-25960-b-5-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Mar-2017 11:00:21 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: barnettj Date: 01-Mar-2017 11:15:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.677	1.765	-0.088	1.000	2017388	7.57		4094	
* 6 13C2-PFOA									
415.00 > 370.00	2.048	2.172	-0.124		2603019	10.0		4746	
* 7 13C4 PFOS									
503.00 > 80.00	2.291	2.395	-0.104		7297205	28.7		4525	
$ 10 13C2 PFDA									
515.00 > 470.00	2.443	2.530	-0.087	1.000	1513289	7.68		2182	

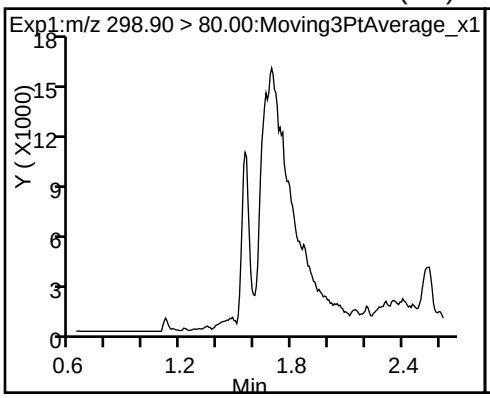
Report Date: 01-Mar-2017 11:16:31 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

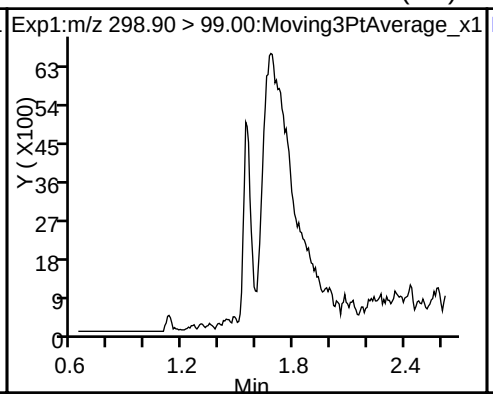
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_009.d

Injection Date:	28-Feb-2017 16:42:53	Instrument ID:	A8_N		
Lims ID:	320-25960-B-5-A	Lab Sample ID:	320-25960-5		
Client ID:	WI-CV-1RW75-0217				
Operator ID:	A8-PC\A8	ALS Bottle#:	42	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

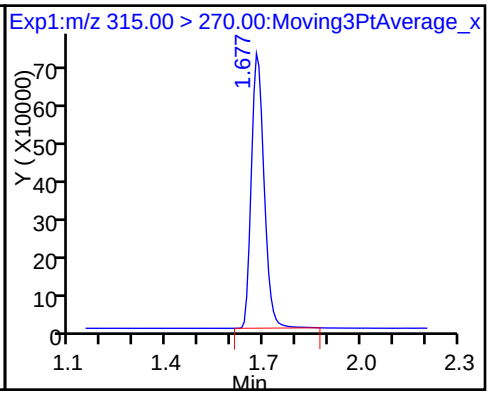
1 Perfluorobutanesulfonic acid (ND)



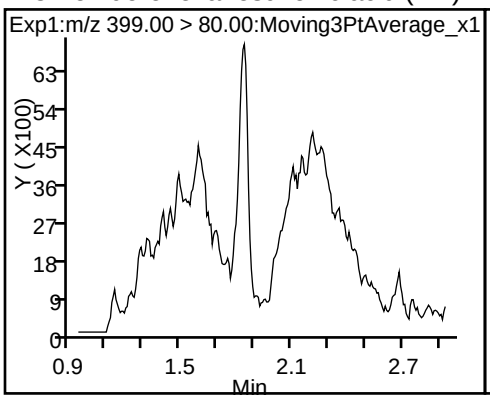
1 Perfluorobutanesulfonic acid (ND)



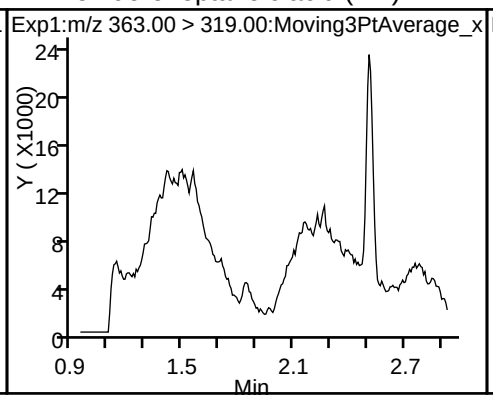
$ 2 13C2 PFHxA



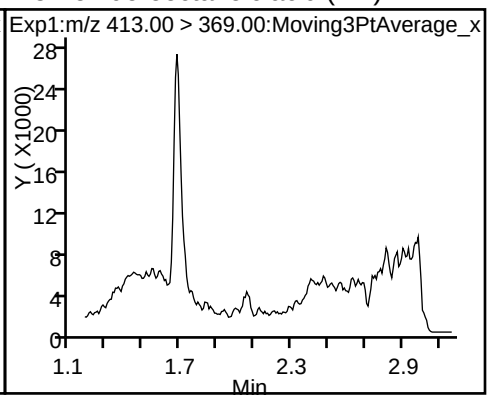
3 Perfluorohexanesulfonic acid (ND)



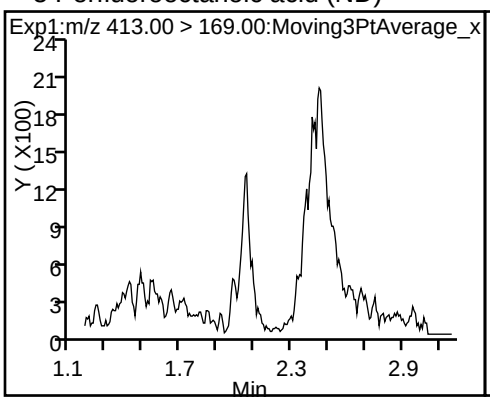
4 Perfluoroheptanoic acid (ND)



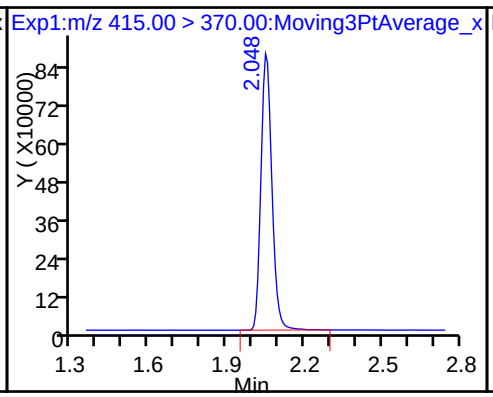
5 Perfluorooctanoic acid (ND)



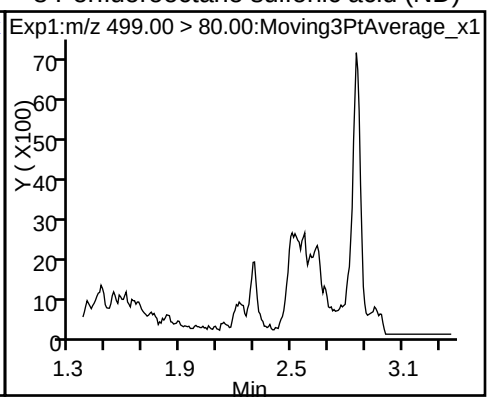
5 Perfluorooctanoic acid (ND)



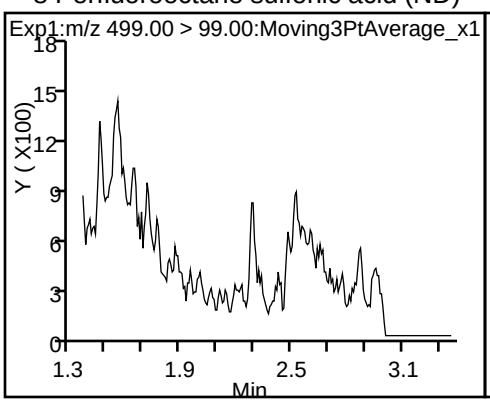
* 6 13C2-PFOA



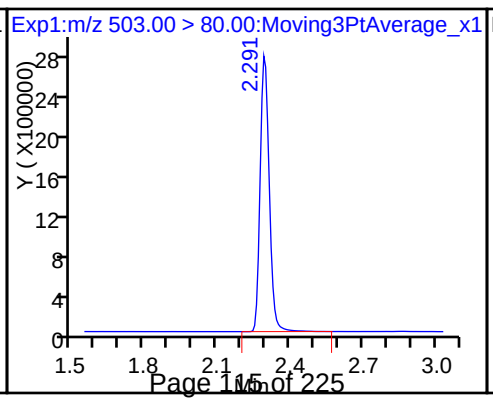
8 Perfluorooctane sulfonic acid (ND)



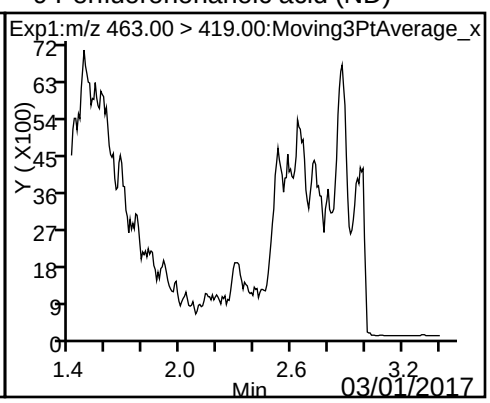
8 Perfluorooctane sulfonic acid (ND)



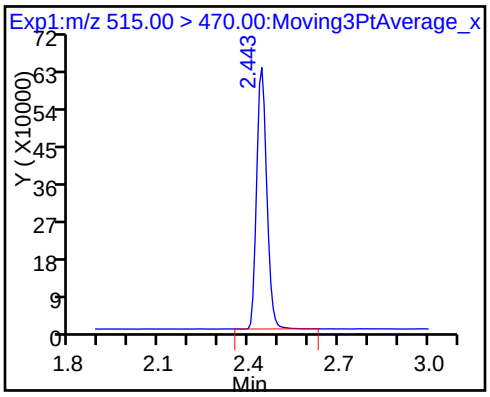
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.443
Y (X10000)
72
63
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
3.0
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_009.d
Lims ID: 320-25960-B-5-A
Client ID: WI-CV-1RW75-0217
Sample Type: Client
Inject. Date: 28-Feb-2017 16:42:53 ALS Bottle#: 42 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-25960-b-5-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Mar-2017 11:00:21 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: barnettj Date: 01-Mar-2017 11:15:30

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.57	75.69
$ 10 13C2 PFDA	10.0	7.68	76.82

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-25960-1

SDG No.:

Client Sample ID: WI-CV-1FB75-0217 | Lab Sample ID: 320-25960-6

Matrix: Water | Lab File ID: 2017.02.28_537_010.d

Analysis Method: 537 | Date Collected: 02/20/2017 17:06

Extraction Method: 537 | Date Extracted: 02/27/2017 14:33

Sample wt/vol: 281.2(mL) | Date Analyzed: 02/28/2017 16:47

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

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

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

Analysis Batch No.: 152585 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.053	0.043	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.021	U	0.027	0.021	0.0084
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.098	U	0.12	0.098	0.042

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	82		70-130
STL00996	13C2 PFDA	75		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_010.d
Lims ID: 320-25960-B-6-A
Client ID: WI-CV-1FB75-0217
Sample Type: Client
Inject. Date: 28-Feb-2017 16:47:17 ALS Bottle#: 43 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-25960-b-6-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Mar-2017 11:00:21 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: barnettj Date: 01-Mar-2017 11:15:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.684	1.765	-0.081	1.000	2261496	8.18		4940	
* 6 13C2-PFOA									
415.00 > 370.00	2.048	2.172	-0.124		2701767	10.0		4774	
* 7 13C4 PFOS									
503.00 > 80.00	2.299	2.395	-0.096		7337223	28.7		9035	
$ 10 13C2 PFDA									
515.00 > 470.00	2.443	2.530	-0.087	1.000	1530648	7.49		1973	

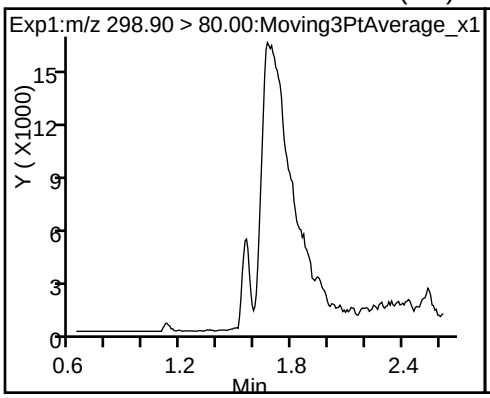
Report Date: 01-Mar-2017 11:16:33 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

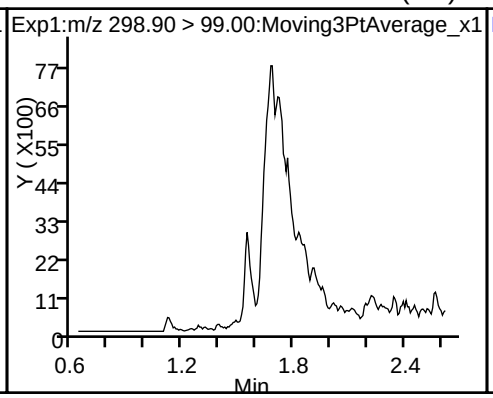
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_010.d

Injection Date:	28-Feb-2017 16:47:17	Instrument ID:	A8_N		
Lims ID:	320-25960-B-6-A	Lab Sample ID:	320-25960-6		
Client ID:	WI-CV-1FB75-0217				
Operator ID:	A8-PC\A8	ALS Bottle#:	43	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

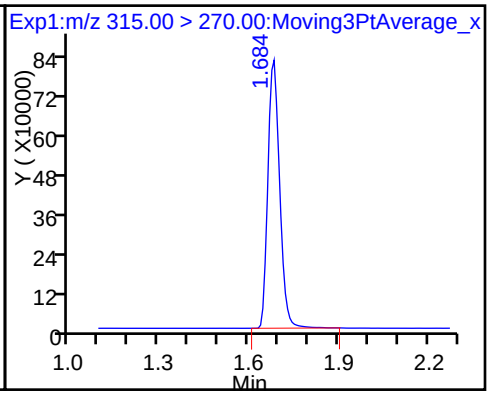
1 Perfluorobutanesulfonic acid (ND)



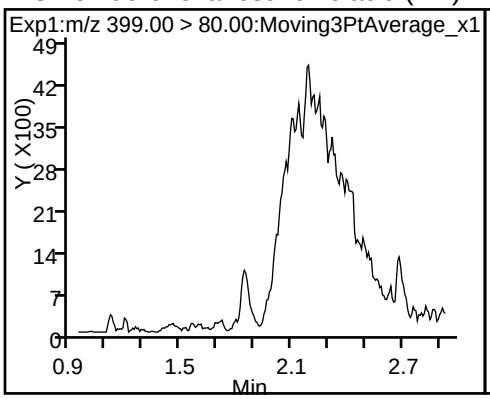
1 Perfluorobutanesulfonic acid (ND)



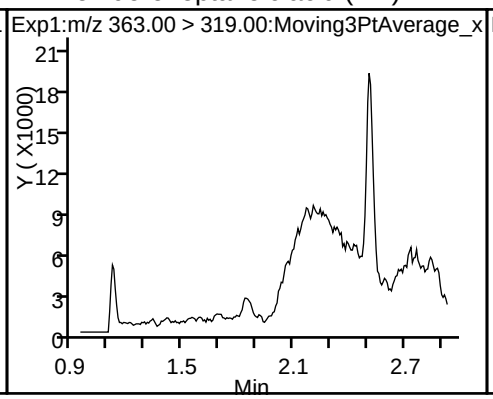
$ 2 13C2 PFHxA



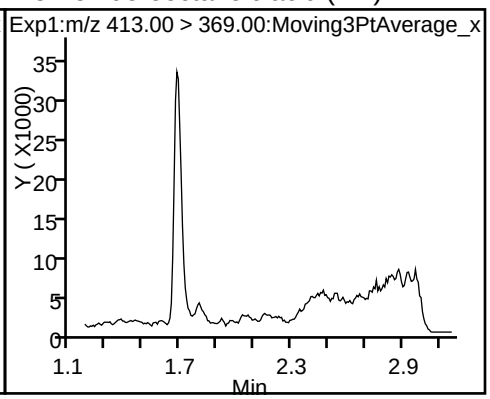
3 Perfluorohexanesulfonic acid (ND)



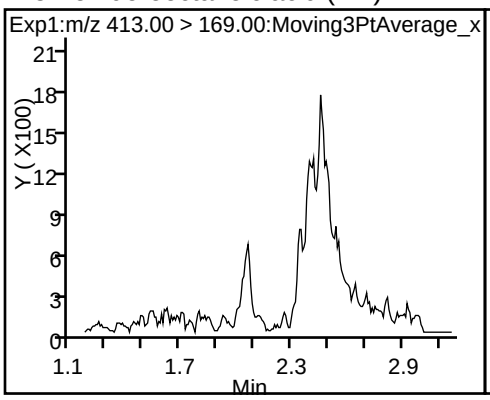
4 Perfluoroheptanoic acid (ND)



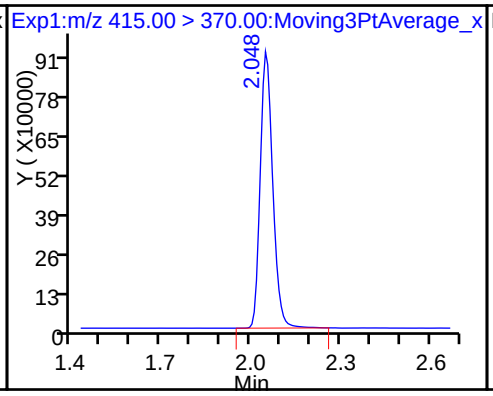
5 Perfluorooctanoic acid (ND)



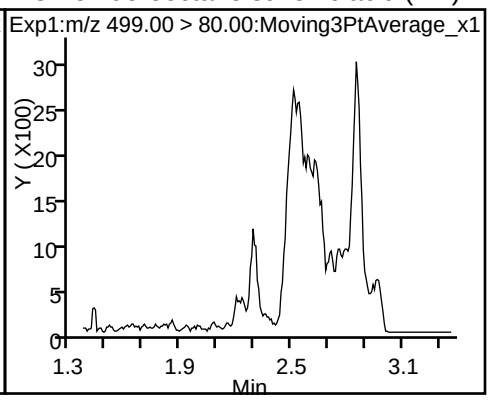
5 Perfluorooctanoic acid (ND)



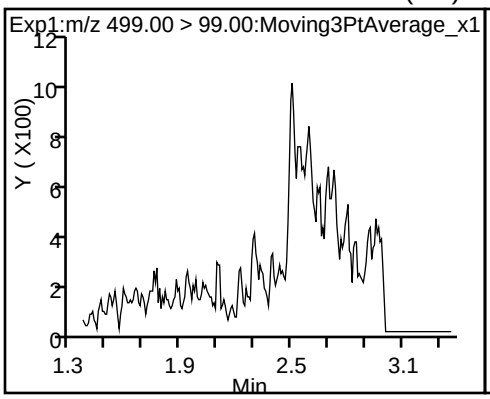
* 6 13C2-PFOA



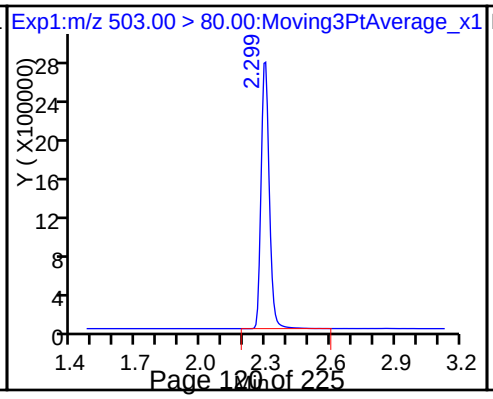
8 Perfluorooctane sulfonic acid (ND)



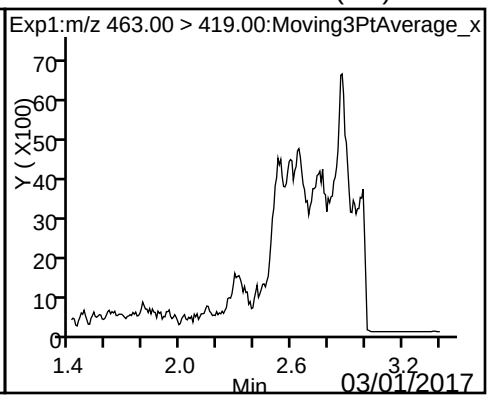
8 Perfluorooctane sulfonic acid (ND)



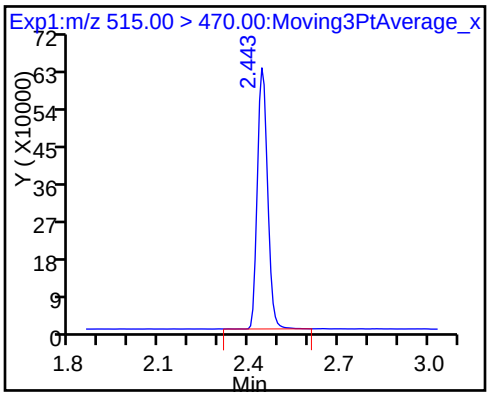
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.443
Y (X10000)
72
63
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
3.0
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_010.d				
Lims ID:	320-25960-B-6-A				
Client ID:	WI-CV-1FB75-0217				
Sample Type:	Client				
Inject. Date:	28-Feb-2017 16:47:17	ALS Bottle#:	43	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-25960-b-6-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	A8-PC\A8	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	01-Mar-2017 11:00:21	Calib Date:	28-Feb-2017 15:03:35		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK024				
First Level Reviewer: barnettj		Date:	01-Mar-2017 11:15:44		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.18	81.75
$ 10 13C2 PFDA	10.0	7.49	74.86

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-25960-1

SDG No.:

Client Sample ID: WI-CV-1RW76-0217 | Lab Sample ID: 320-25960-7

Matrix: Water | Lab File ID: 2017.02.28_537_011.d

Analysis Method: 537 | Date Collected: 02/20/2017 17:20

Extraction Method: 537 | Date Extracted: 02/27/2017 14:33

Sample wt/vol: 266.9(mL) | Date Analyzed: 02/28/2017 16:51

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

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

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

Analysis Batch No.: 152585 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.045	U	0.056	0.045	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.022	0.0088
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.045

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	74		70-130
STL00996	13C2 PFDA	80		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_011.d
Lims ID: 320-25960-B-7-A
Client ID: WI-CV-1RW76-0217
Sample Type: Client
Inject. Date: 28-Feb-2017 16:51:41 ALS Bottle#: 44 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-25960-b-7-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Mar-2017 11:00:21 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: barnettj Date: 01-Mar-2017 11:15:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.677	1.765	-0.088	1.000	1939235	7.43		3432	
* 6 13C2-PFOA									
415.00 > 370.00	2.041	2.172	-0.131		2548844	10.0		4218	
* 7 13C4 PFOS									
503.00 > 80.00	2.284	2.395	-0.111		7451681	28.7		5117	
$ 10 13C2 PFDA									
515.00 > 470.00	2.428	2.530	-0.102	1.000	1543432	8.00		2288	

Report Date: 01-Mar-2017 11:16:34 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_011.d

Injection Date: 28-Feb-2017 16:51:41 Instrument ID: A8_N

Lims ID: 320-25960-B-7-A Lab Sample ID: 320-25960-7

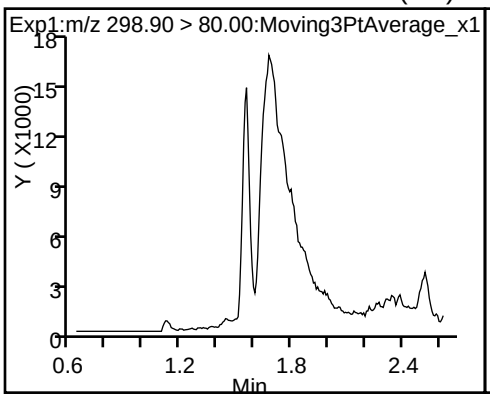
Client ID: WI-CV-1RW76-0217

Operator ID: A8-PC\A8 ALS Bottle#: 44 Worklist Smp#: 11

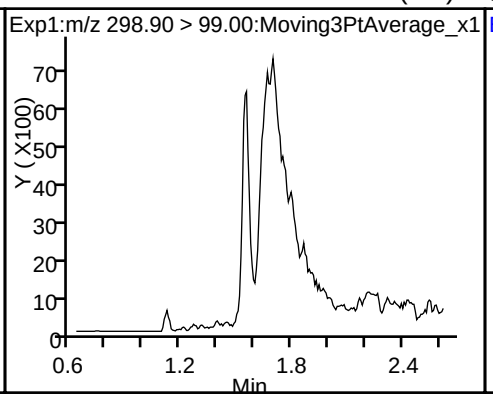
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

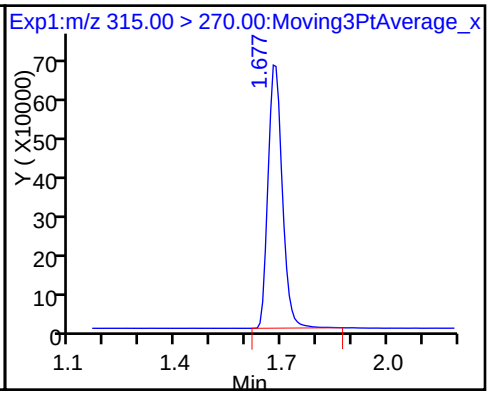
1 Perfluorobutanesulfonic acid (ND)



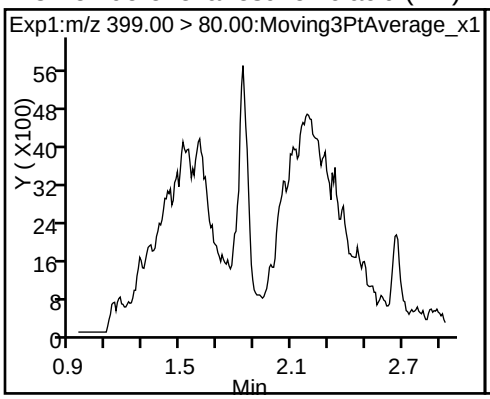
1 Perfluorobutanesulfonic acid (ND)



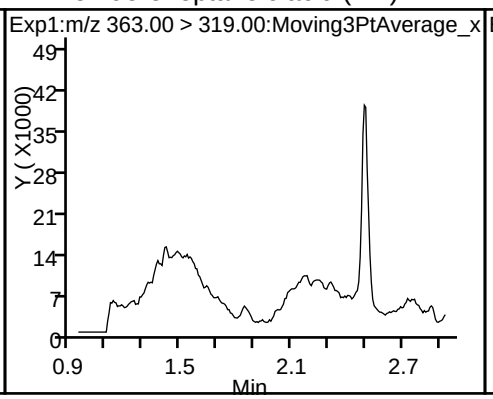
$ 2 13C2 PFHxA



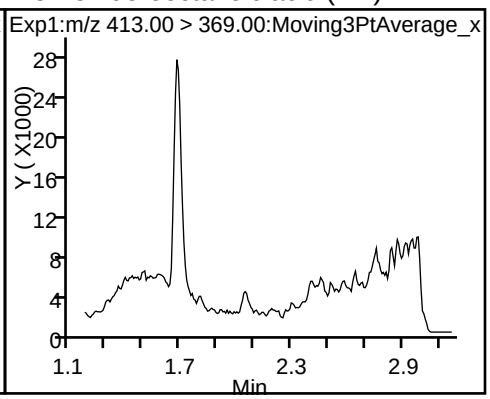
3 Perfluorohexanesulfonic acid (ND)



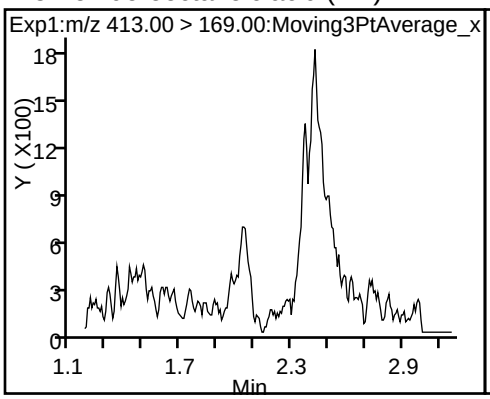
4 Perfluoroheptanoic acid (ND)



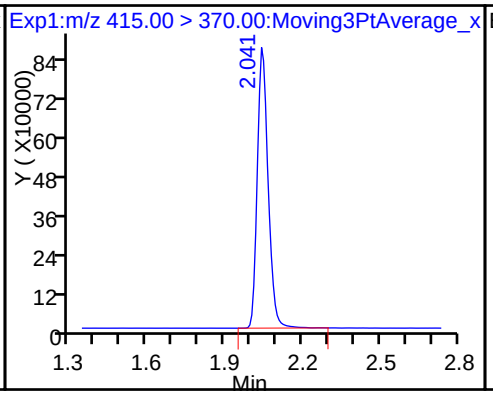
5 Perfluorooctanoic acid (ND)



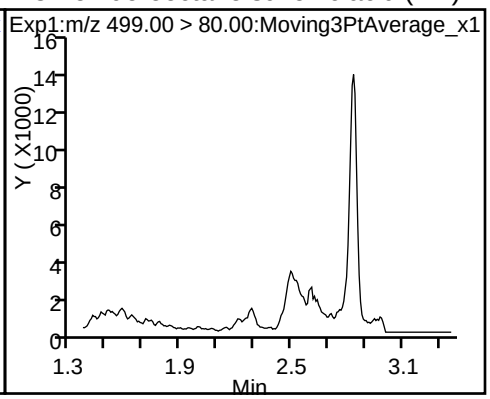
5 Perfluorooctanoic acid (ND)



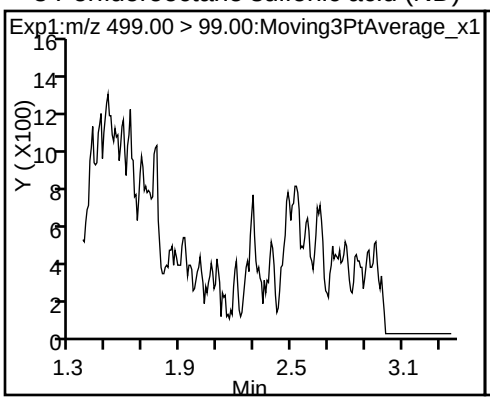
* 6 13C2-PFOA



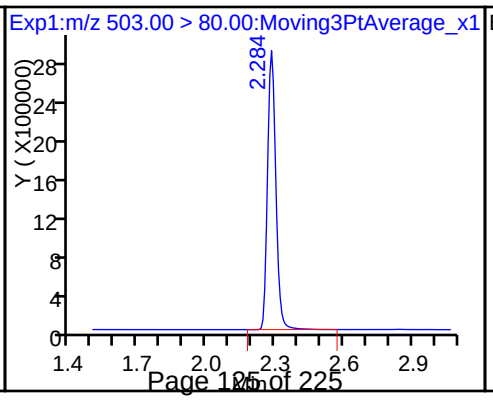
8 Perfluorooctane sulfonic acid (ND)



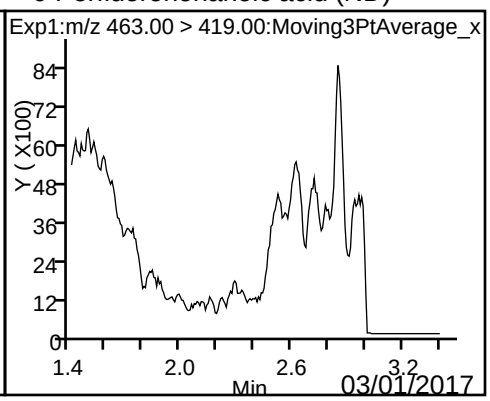
8 Perfluorooctane sulfonic acid (ND)



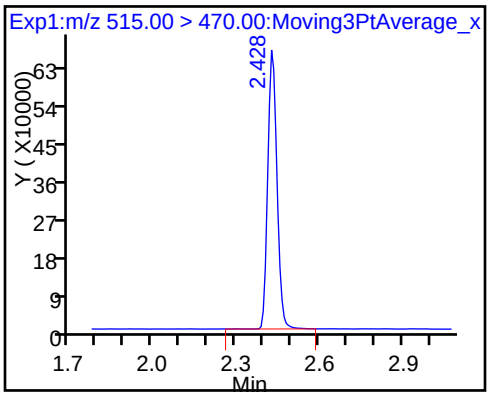
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.428
Y (X10000)
63
54
45
36
27
18
9
0
1.7
2.0
2.3
2.6
2.9
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_011.d				
Lims ID:	320-25960-B-7-A				
Client ID:	WI-CV-1RW76-0217				
Sample Type:	Client				
Inject. Date:	28-Feb-2017 16:51:41	ALS Bottle#:	44	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-25960-b-7-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	A8-PC\A8	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	01-Mar-2017 11:00:21	Calib Date:	28-Feb-2017 15:03:35		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK024				
First Level Reviewer: barnettj		Date:	01-Mar-2017 11:15:57		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.43	74.31
$ 10 13C2 PFDA	10.0	8.00	80.01

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-25960-1

SDG No.:

Client Sample ID: WI-CV-1FB76-0217 | Lab Sample ID: 320-25960-8

Matrix: Water | Lab File ID: 2017.02.28_537_013.d

Analysis Method: 537 | Date Collected: 02/20/2017 17:21

Extraction Method: 537 | Date Extracted: 02/27/2017 14:33

Sample wt/vol: 292.8(mL) | Date Analyzed: 02/28/2017 17:00

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.: 152586 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.041	U	0.051	0.041	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.020	U	0.026	0.020	0.0080
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.094	U	0.12	0.094	0.041

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	80		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_013.d
Lims ID: 320-25960-B-8-A
Client ID: WI-CV-1FB76-0217
Sample Type: Client
Inject. Date: 28-Feb-2017 17:00:28 ALS Bottle#: 45 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-25960-b-8-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Mar-2017 11:16:36 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: barnettj Date: 01-Mar-2017 11:16:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.677	1.765	-0.088	1.000	2214579	8.37		5036	
* 6 13C2-PFOA									
415.00 > 370.00	2.048	2.172	-0.124		2583790	10.0		4803	
* 7 13C4 PFOS									
503.00 > 80.00	2.291	2.395	-0.104		7085885	28.7		7536	
$ 10 13C2 PFDA									
515.00 > 470.00	2.435	2.530	-0.095	1.000	1572581	8.04		2125	

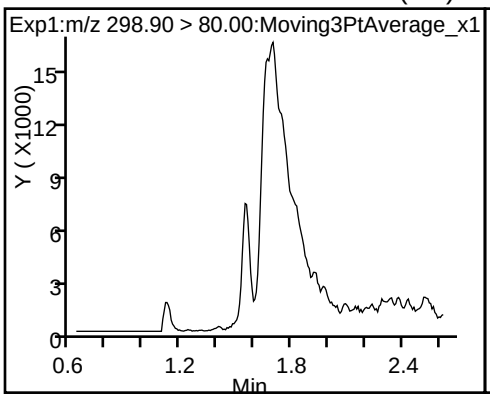
Report Date: 01-Mar-2017 11:16:38 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

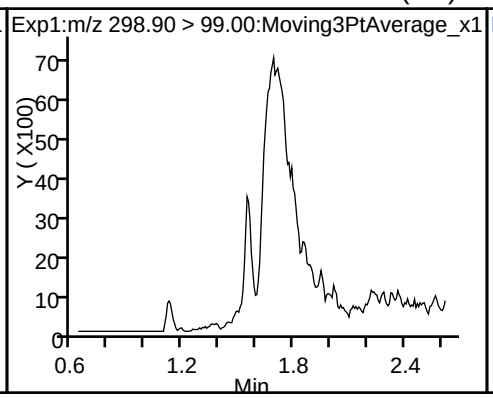
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_013.d

Injection Date:	28-Feb-2017 17:00:28	Instrument ID:	A8_N		
Lims ID:	320-25960-B-8-A	Lab Sample ID:	320-25960-8		
Client ID:	WI-CV-1FB76-0217				
Operator ID:	A8-PC\A8	ALS Bottle#:	45	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

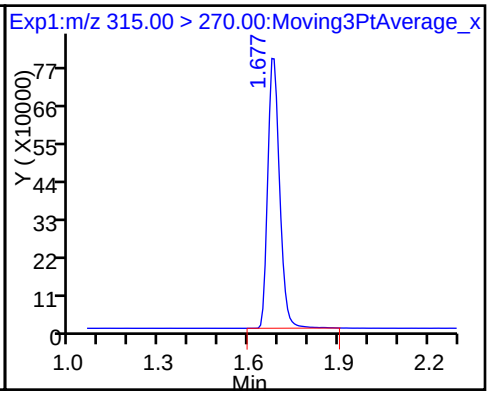
1 Perfluorobutanesulfonic acid (ND)



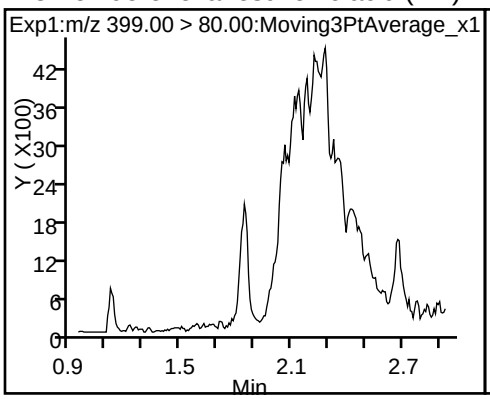
1 Perfluorobutanesulfonic acid (ND)



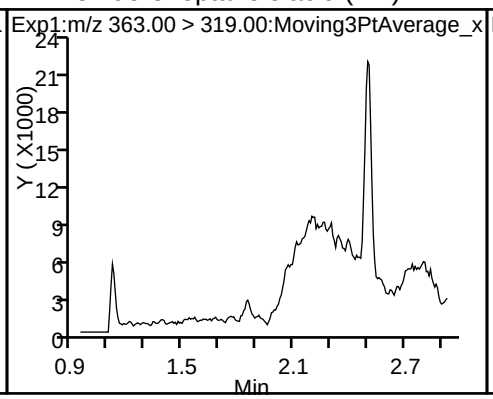
$ 2 13C2 PFHxA



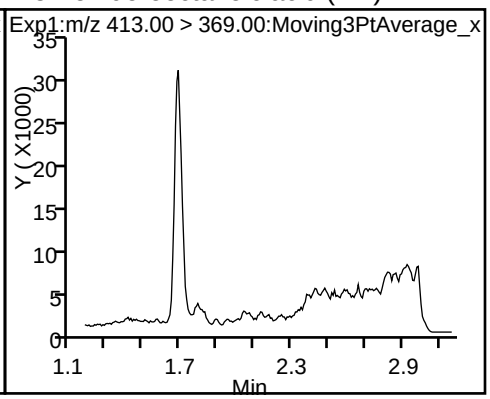
3 Perfluorohexanesulfonic acid (ND)



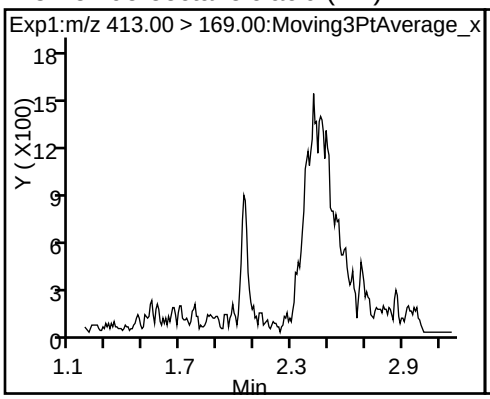
4 Perfluoroheptanoic acid (ND)



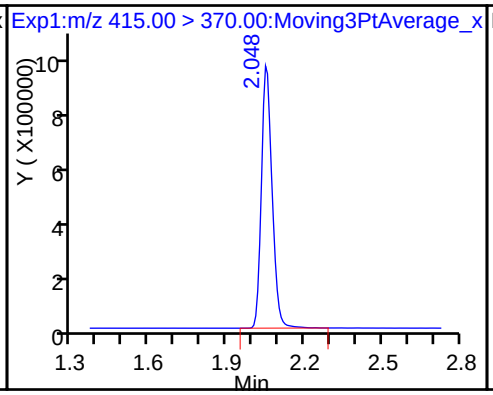
5 Perfluorooctanoic acid (ND)



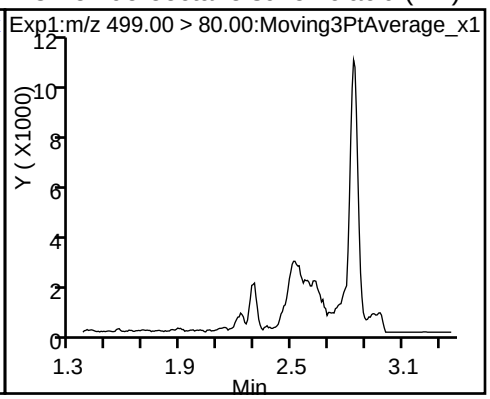
5 Perfluorooctanoic acid (ND)



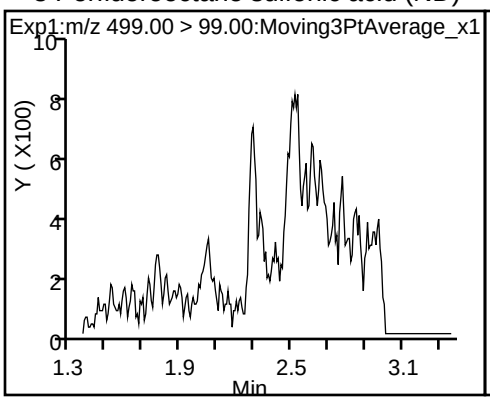
* 6 13C2-PFOA



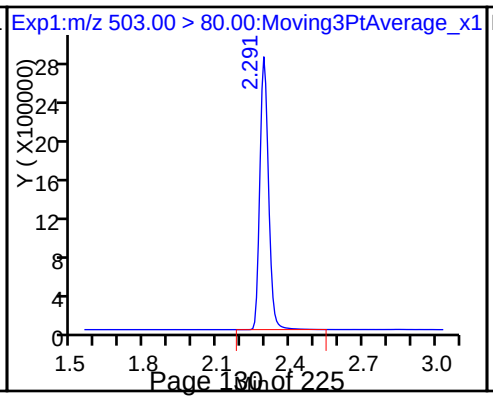
8 Perfluorooctane sulfonic acid (ND)



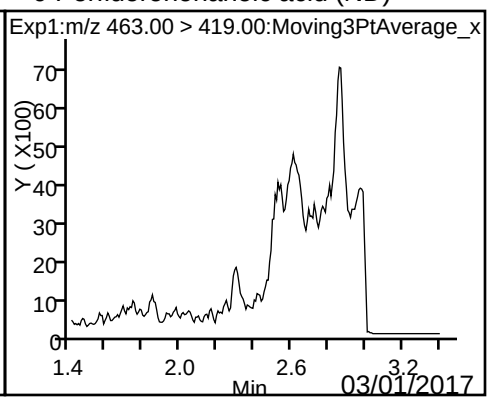
8 Perfluorooctane sulfonic acid (ND)



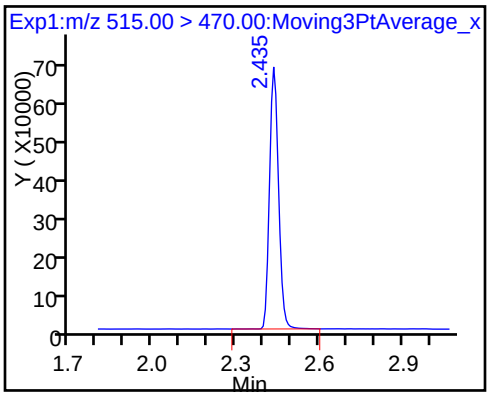
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.435
Y (X10000)
70
60
50
40
30
20
10
0
1.7
2.0
2.3
2.6
2.9
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_013.d
Lims ID: 320-25960-B-8-A
Client ID: WI-CV-1FB76-0217
Sample Type: Client
Inject. Date: 28-Feb-2017 17:00:28 ALS Bottle#: 45 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-25960-b-8-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Mar-2017 11:16:36 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: barnettj Date: 01-Mar-2017 11:16:17

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.37	83.71
$ 10 13C2 PFDA	10.0	8.04	80.42

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

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1 Analy Batch No.: 152571

SDG No.:

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

Calibration Start Date: 02/28/2017 14:41 Calibration End Date: 02/28/2017 15:03 Calibration ID: 28641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-152571/3	2017.02.28_537CURVE_003.d
Level 2	IC 320-152571/4	2017.02.28_537CURVE_004.d
Level 3	IC 320-152571/5	2017.02.28_537CURVE_005.d
Level 4	IC 320-152571/6	2017.02.28_537CURVE_006.d
Level 5	IC 320-152571/7	2017.02.28_537CURVE_007.d
Level 6	IC 320-152571/8	2017.02.28_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)	1.5016 +++++	1.8158	1.5761	1.3805	1.1810	Ave		1.4910				15.8		30.0			
Perfluorohexanesulfonic acid	1.2422 1.3984	1.4557	1.3594	1.4489	1.3279	Ave		1.3721				5.9		30.0			
Perfluoroheptanoic acid	0.9416 0.9231	0.9550	0.9089	0.9315	0.8469	Ave		0.9178				4.2		30.0			
Perfluorooctanoic acid (PFOA)	0.9510 0.9990	0.9684	0.9505	0.9766	0.9141	Ave		0.9600				3.0		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.9983 1.1333	1.1256	1.0840	1.1236	1.0716	Ave		1.0894				4.7		30.0			
Perfluorononanoic acid	0.8007 0.7485	0.7909	0.7759	0.7600	0.7116	Ave		0.7646				4.2		30.0			
13C2 PFHxA	0.9545 1.0658	0.9847	1.0265	1.0744	1.0374	Ave		1.0239				4.5		30.0			
13C2 PFDA	0.7502 0.7867	0.7326	0.7678	0.7622	0.7414	Ave		0.7568				2.6		30.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1 Analy Batch No.: 152571

SDG No.:

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

Calibration Start Date: 02/28/2017 14:41 Calibration End Date: 02/28/2017 15:03 Calibration ID: 28641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-152571/3	2017.02.28_537CURVE_003.d
Level 2	IC 320-152571/4	2017.02.28_537CURVE_004.d
Level 3	IC 320-152571/5	2017.02.28_537CURVE_005.d
Level 4	IC 320-152571/6	2017.02.28_537CURVE_006.d
Level 5	IC 320-152571/7	2017.02.28_537CURVE_007.d
Level 6	IC 320-152571/8	2017.02.28_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	3117331 +++++	10615156	17131251	34458881	40663139	8.98 +++++	22.9	45.1	90.9	135
Perfluorohexanesulfonic acid	PFOS	Ave	869306 18706875	2868620	4981047	12191221	15413358	3.03 60.1	7.72	15.2	30.6	45.4
Perfluoroheptanoic acid	13PFOA	Ave	195953 3922787	610268	1038579	2471094	3101671	0.990 19.7	2.52	4.97	10.0	14.9
Perfluorooctanoic acid (PFOA)	13PFOA	Ave	390206 8370583	1220112	2141484	5108386	6600582	1.95 38.8	4.98	9.81	19.8	29.3
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	925076 20073777	2937313	5259430	12518800	16469240	4.01 79.6	10.2	20.1	40.6	60.1
Perfluorononanoic acid	13PFOA	Ave	349094 6664465	1058848	1857458	4224505	5459781	2.07 41.2	5.29	10.4	21.0	31.1
13C2 PFHxA	13PFOA	Ave	2006507 2301837	2492526	2357788	2843456	2558490	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PFOA	Ave	1576965 1699216	1854375	1763607	2017178	1828420	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.: 320-25960-1 Analy Batch No.: 152571

SDG No.:

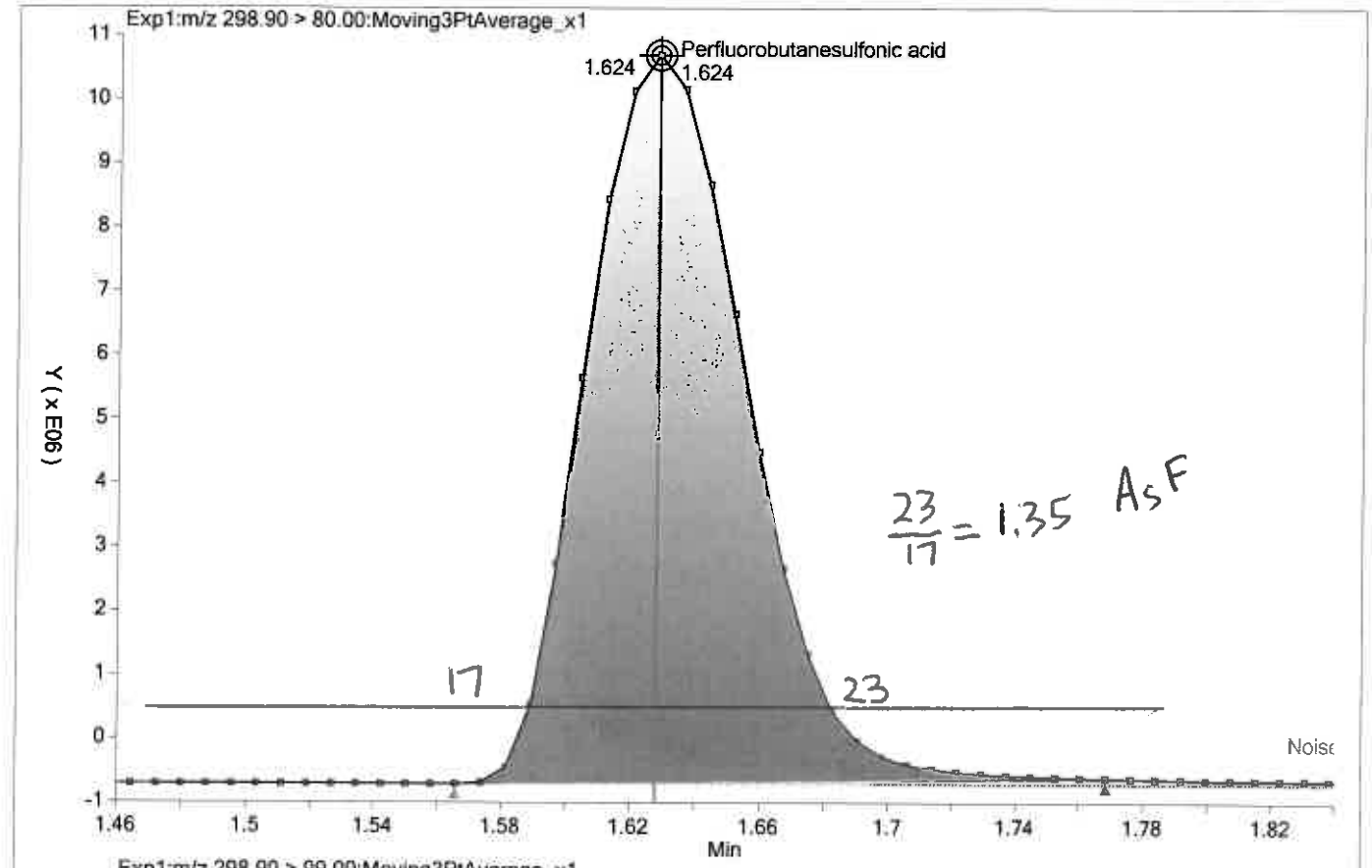
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/28/2017 14:41 Calibration End Date: 02/28/2017 15:03 Calibration ID: 28641

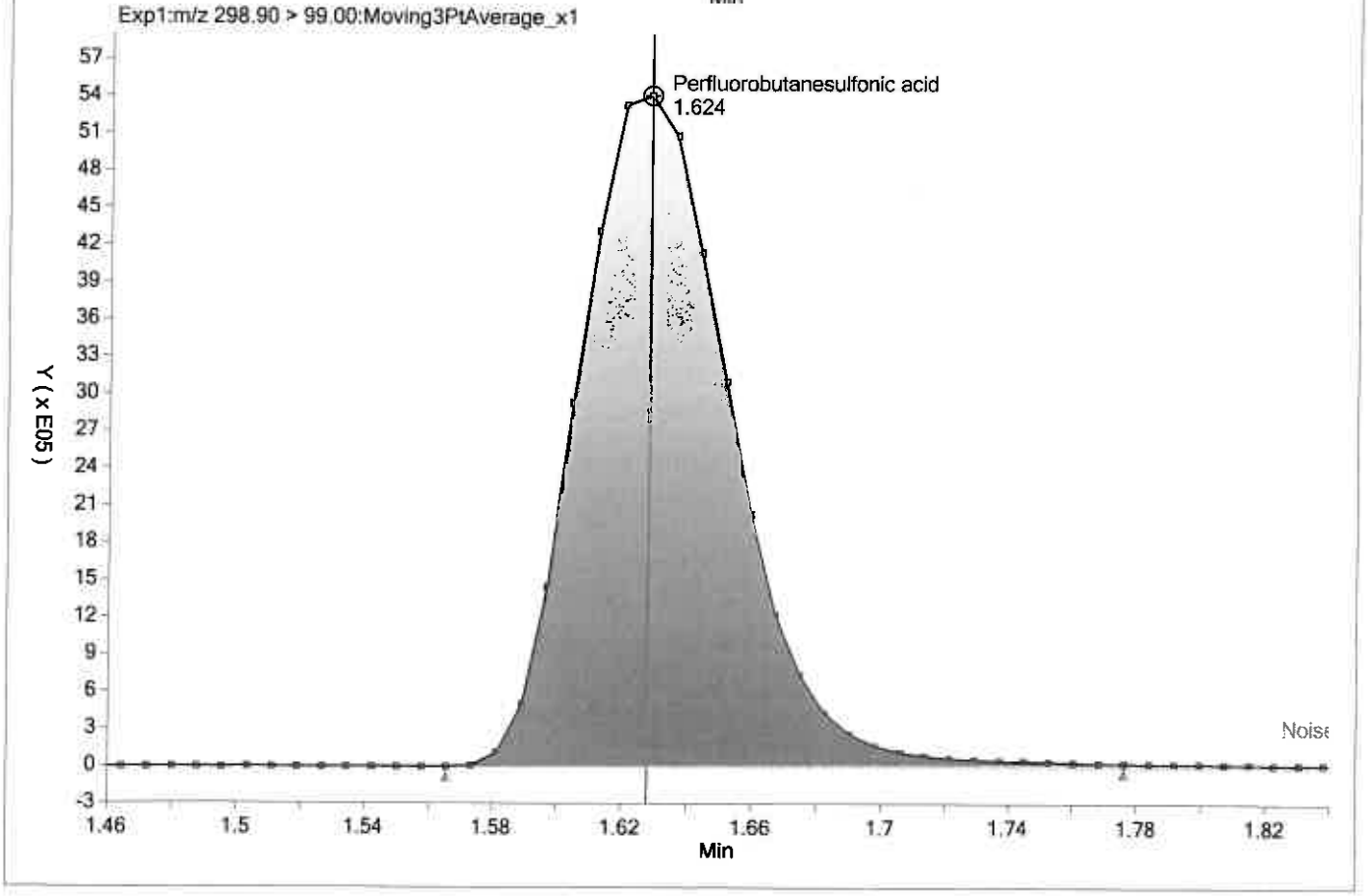
Calibration Files:

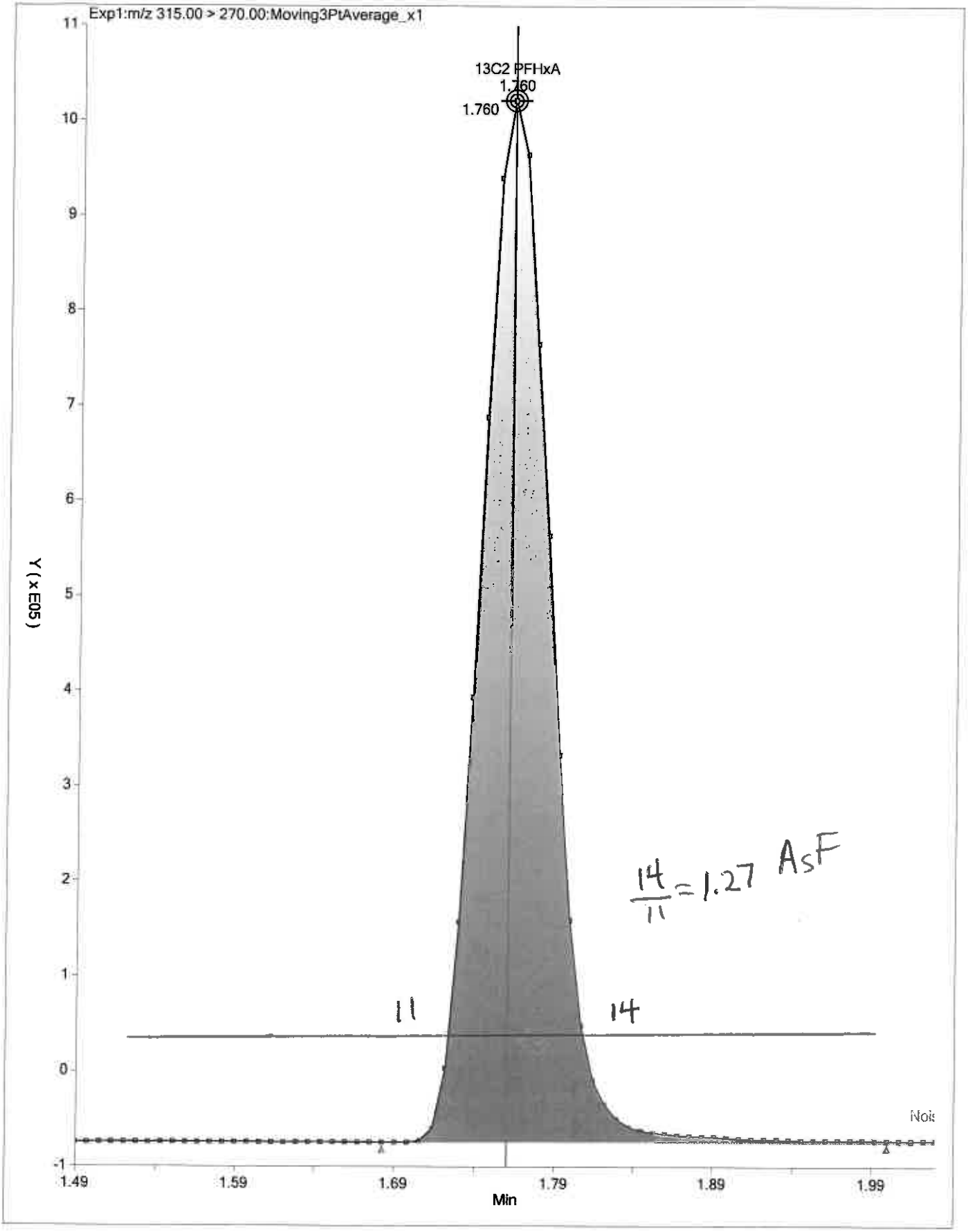
LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-152571/3	2017.02.28_537CURVE_003.d
Level 2	IC 320-152571/4	2017.02.28_537CURVE_004.d
Level 3	IC 320-152571/5	2017.02.28_537CURVE_005.d
Level 4	IC 320-152571/6	2017.02.28_537CURVE_006.d
Level 5	IC 320-152571/7	2017.02.28_537CURVE_007.d
Level 6	IC 320-152571/8	2017.02.28_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)	0.7	21.8	5.7	-7.4	-20.8	+++++	50	50	50	50	50	
Perfluorohexanesulfonic acid	-9.5	6.1	-0.9	5.6	-3.2	1.9	50	50	50	50	50	50
Perfluoroheptanoic acid	2.6	4.1	-1.0	1.5	-7.7	0.6	50	50	50	50	50	50
Perfluorooctanoic acid (PFOA)	-0.9	0.9	-1.0	1.7	-4.8	4.1	50	50	50	50	50	50
Perfluorooctanesulfonic acid (PFOS)	-8.4	3.3	-0.5	3.1	-1.6	4.0	50	50	50	50	50	50
Perfluorononanoic acid	4.7	3.4	1.5	-0.6	-6.9	-2.1	50	50	50	50	50	50
13C2 PFHxA	-6.8	-3.8	0.3	4.9	1.3	4.1	30	30	30	30	30	30
13C2 PFDA	-0.9	-3.2	1.5	0.7	-2.0	4.0	30	30	30	30	30	30



$\frac{23}{17} = 1.35$ AsF




Exp1:m/z 315.00 > 270.00:Moving3PtAverage_x1
13C2 PFHxA
1.760
1.760
Y (x E05)
Min
11
14
14/11 = 1.27 AsF

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_003.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 28-Feb-2017 14:41:28 ALS Bottle#: 1 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L1_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Feb-2017 16:02:25 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Feb-2017 15:30:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.639	1.631	0.008	1.000	3117331	9.04		393	
298.90 > 99.00	1.639	1.631	0.008	1.000	1314092		2.37(0.00-0.00)	403	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.783	1.769	0.014	1.000	2006507	9.32		2744	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.957	1.944	0.013	1.000	869306	2.74		238	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.957	1.945	0.012	1.000	195953	1.02		19.9	
* 6 13C2-PFOA									
415.00 > 370.00	2.200	2.179	0.021		2102051	10.0		3215	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.193	2.179	0.014	1.000	390206	1.93		32.8	
413.00 > 169.00	2.193	2.179	0.014	1.000	217900		1.79(0.00-0.00)	267	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.360	2.367	-0.007	1.000	925076	3.67		215	
499.00 > 99.00	2.413	2.367	0.046	1.023	231400		4.00(0.00-0.00)	402	
* 7 13C4 PFOS									
503.00 > 80.00	2.413	2.401	0.012		6633139	28.7		7355	
9 Perfluorononanoic acid									
463.00 > 419.00	2.428	2.410	0.018	1.000	349094	2.17		64.3	
$ 10 13C2 PFDA									
515.00 > 470.00	2.549	2.536	0.013	1.000	1576965	9.91		2510	

Reagents:

LC537-L1_00017 Amount Added: 1.00 Units: mL

Report Date: 28-Feb-2017 16:02:25 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_003.d

Injection Date: 28-Feb-2017 14:41:28 Instrument ID: A8_N

Lims ID: IC L1

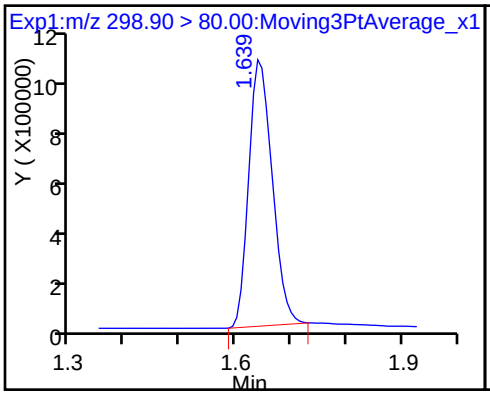
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 1 Worklist Smp#: 3

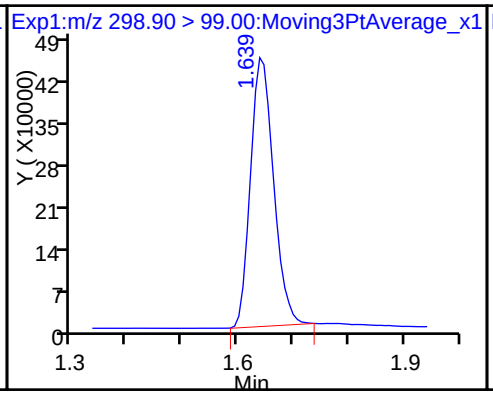
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

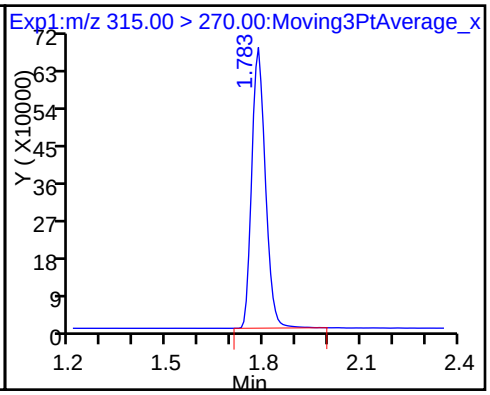
1 Perfluorobutanesulfonic acid



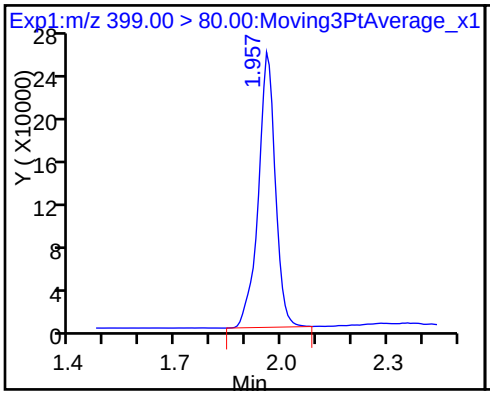
1 Perfluorobutanesulfonic acid



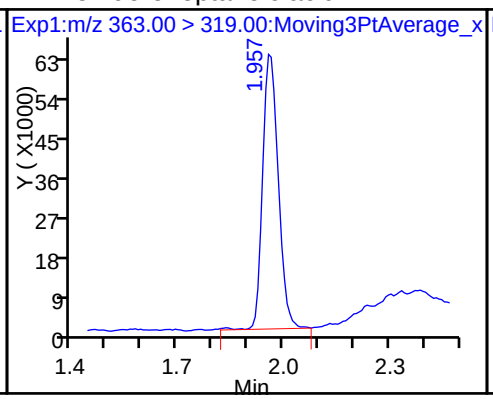
$ 2 13C2 PFHxA



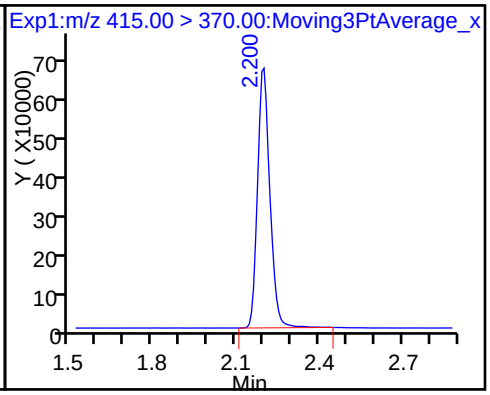
3 Perfluorohexanesulfonic acid



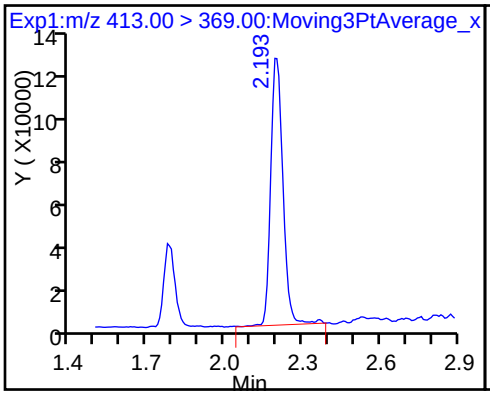
4 Perfluoroheptanoic acid



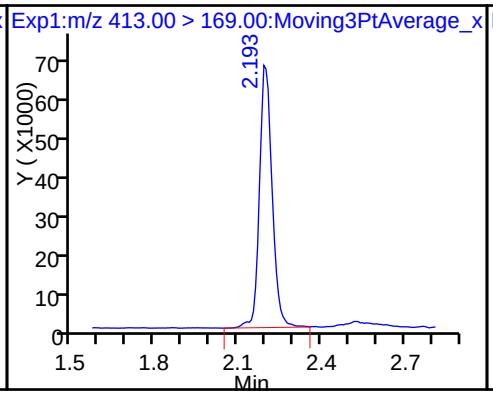
* 6 13C2-PFOA



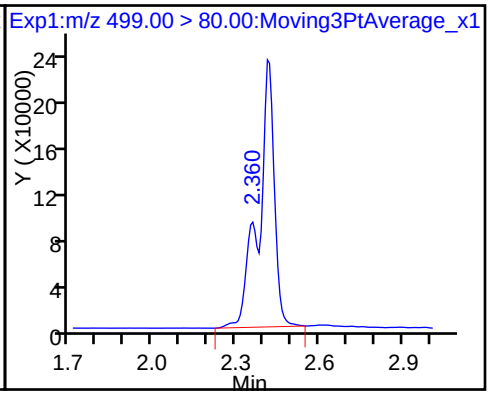
5 Perfluorooctanoic acid



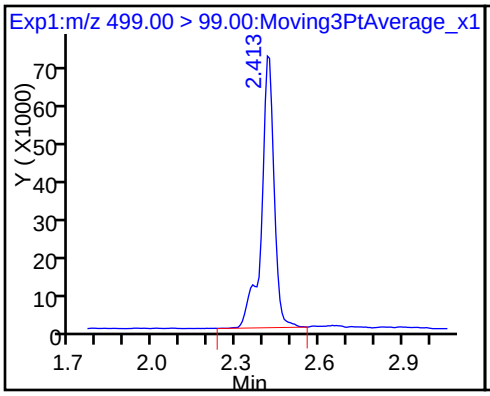
5 Perfluorooctanoic acid



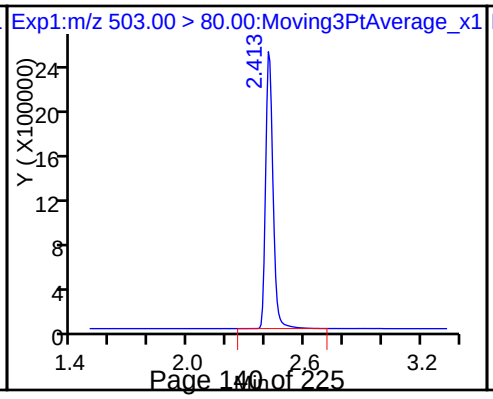
8 Perfluorooctane sulfonic acid



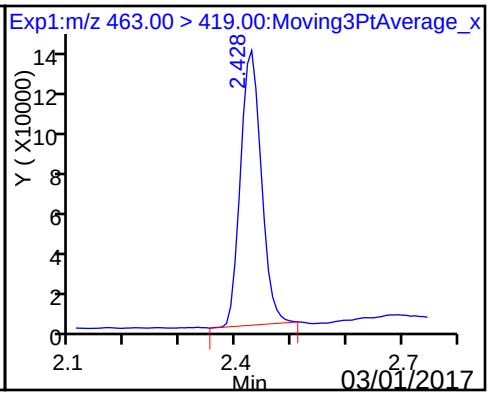
8 Perfluorooctane sulfonic acid



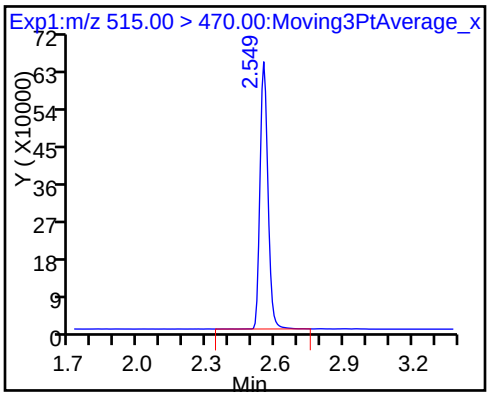
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.549
Y (X10000)
72
63
54
45
36
27
18
9
0
1.7
2.0
2.3
2.6
2.9
3.2
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_004.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 28-Feb-2017 14:45:57 ALS Bottle#: 2 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L2_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Feb-2017 16:02:26 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Feb-2017 15:31:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.646	1.627	0.019	1.000	10615156	27.9		868	
298.90 > 99.00	1.646	1.627	0.019	1.000	4552642		2.33(0.00-0.00)	911	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.783	1.765	0.018	1.000	2492526	9.62		2811	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.957	1.938	0.019	1.000	2868620	8.19		581	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.957	1.940	0.017	1.000	610268	2.63		62.7	
* 6 13C2-PFOA									
415.00 > 370.00	2.193	2.172	0.021		2531261	10.0		4646	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.193	2.172	0.021	1.000	1220112	5.02		95.7	
413.00 > 169.00	2.193	2.172	0.021	1.000	730729		1.67(0.00-0.00)	833	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.390	2.367	0.023	1.000	2937313	10.6		647	
499.00 > 99.00	2.413	2.367	0.046	1.010	723391		4.06(0.00-0.00)	1296	
* 7 13C4 PFOS									
503.00 > 80.00	2.413	2.395	0.018		7325068	28.7		9564	
9 Perfluorononanoic acid									
463.00 > 419.00	2.420	2.404	0.016	1.000	1058848	5.47		270	
$ 10 13C2 PFDA									
515.00 > 470.00	2.542	2.530	0.012	1.000	1854375	9.68		2770	

Reagents:

LC537-L2_00016 Amount Added: 1.00 Units: mL

Report Date: 28-Feb-2017 16:02:27 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_004.d

Injection Date: 28-Feb-2017 14:45:57 Instrument ID: A8_N

Lims ID: IC L2

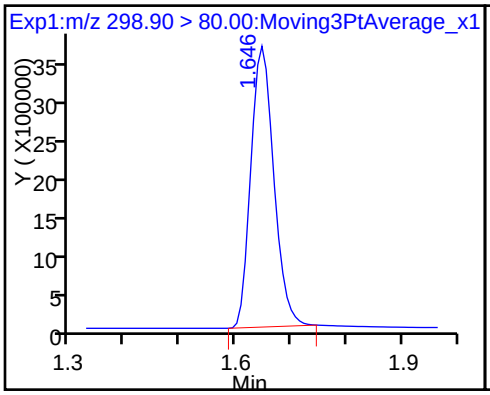
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 2 Worklist Smp#: 4

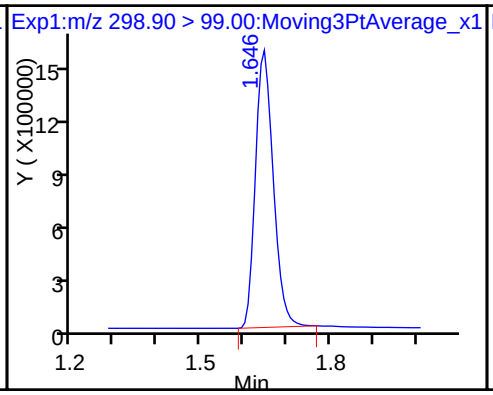
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

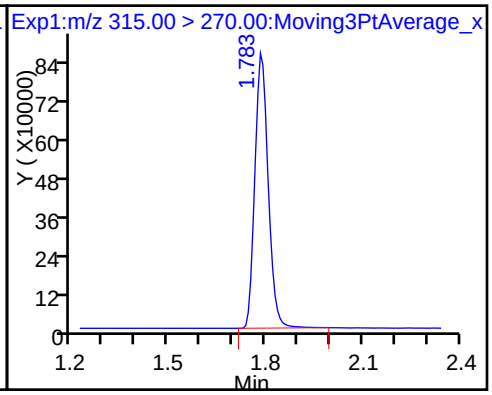
1 Perfluorobutanesulfonic acid



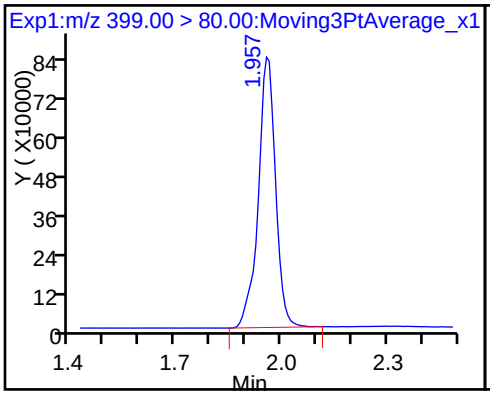
1 Perfluorobutanesulfonic acid



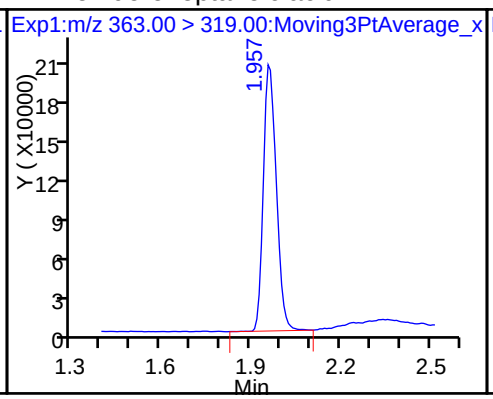
$ 2 13C2 PFHxA



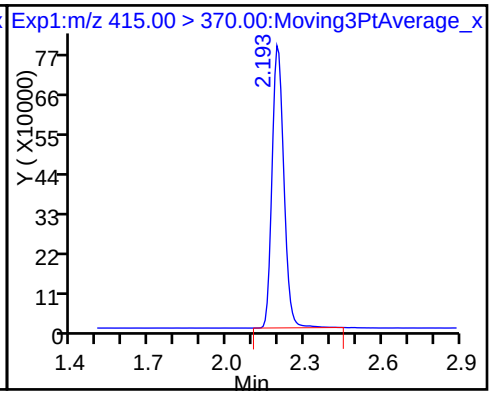
3 Perfluorohexanesulfonic acid



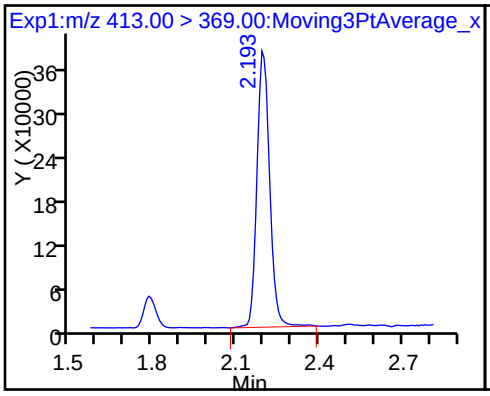
4 Perfluoroheptanoic acid



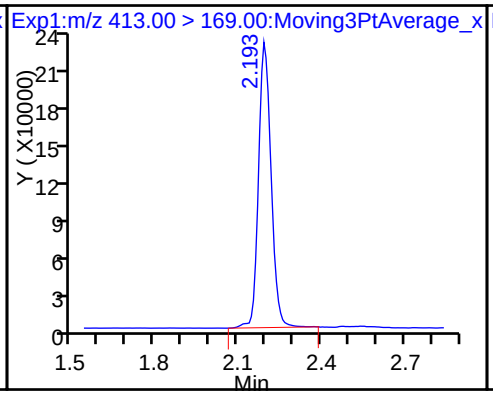
* 6 13C2-PFOA



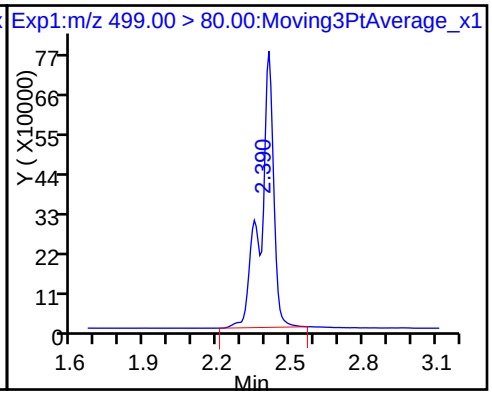
5 Perfluorooctanoic acid



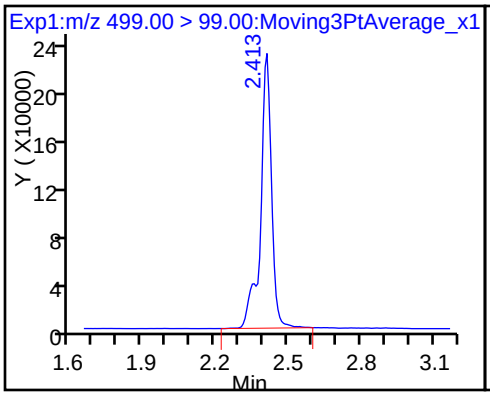
5 Perfluorooctanoic acid



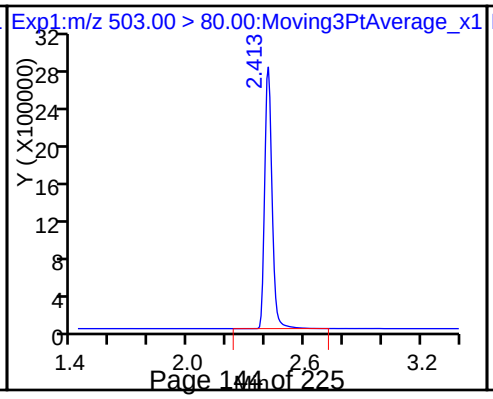
8 Perfluorooctane sulfonic acid



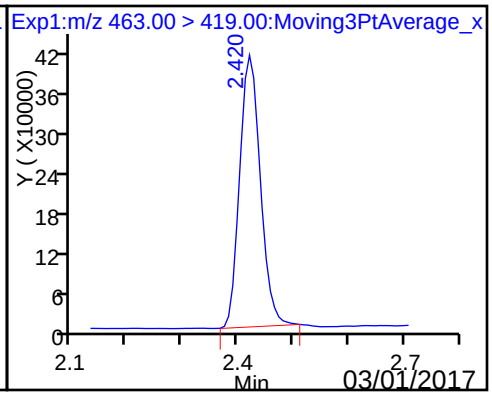
8 Perfluorooctane sulfonic acid



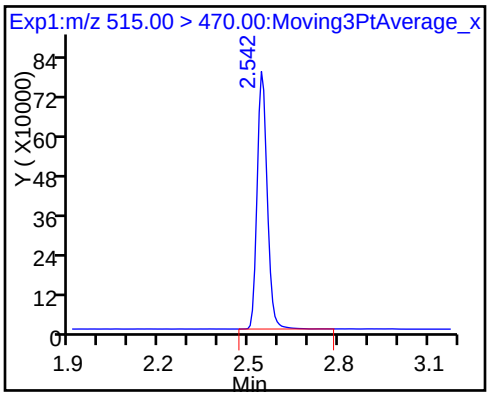
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.542
Y (X10000)
84
72
60
48
36
24
12
0
1.9
2.2
2.5
2.8
3.1
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_005.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 28-Feb-2017 14:50:23 ALS Bottle#: 3 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L3_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Feb-2017 16:02:28 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Feb-2017 15:31:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.631	1.627	0.004	1.000	17131251	47.7		1048	
298.90 > 99.00	1.631	1.627	0.004	1.000	7542249		2.27(0.00-0.00)	1116	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.768	1.765	0.003	1.000	2357788	10.0		2715	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.942	1.938	0.004	1.000	4981047	15.1		922	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.950	1.940	0.010	1.000	1038579	4.93		104	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.185	2.172	0.013	1.000	2141484	9.71		167	
413.00 > 169.00	2.185	2.172	0.013	1.000	1206972		1.77(0.00-0.00)	1198	
* 6 13C2-PFOA									
415.00 > 370.00	2.177	2.172	0.005		2296952	10.0		3528	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.405	2.367	0.038	1.000	5259430	20.0		4068	
499.00 > 99.00	2.405	2.367	0.038	1.000	1265490		4.16(0.00-0.00)	1759	
* 7 13C4 PFOS									
503.00 > 80.00	2.405	2.395	0.010		6911413	28.7		10468	
9 Perfluorononanoic acid									
463.00 > 419.00	2.413	2.404	0.009	1.000	1857458	10.6		480	
$ 10 13C2 PFDA									
515.00 > 470.00	2.542	2.530	0.012	1.000	1763607	10.1		2460	

Reagents:

LC537-L3_00019 Amount Added: 1.00 Units: mL

Report Date: 28-Feb-2017 16:02:28 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_005.d

Injection Date: 28-Feb-2017 14:50:23 Instrument ID: A8_N

Lims ID: IC L3

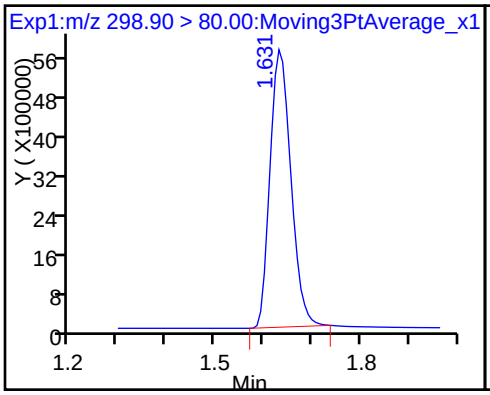
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 3 Worklist Smp#: 5

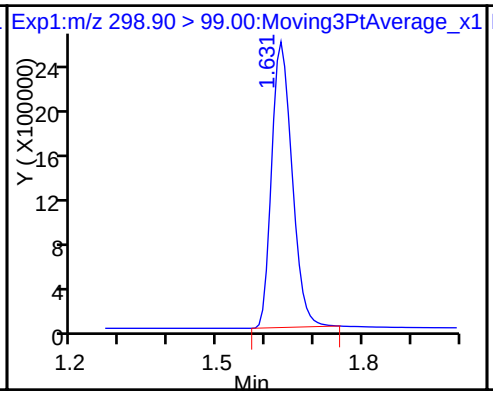
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

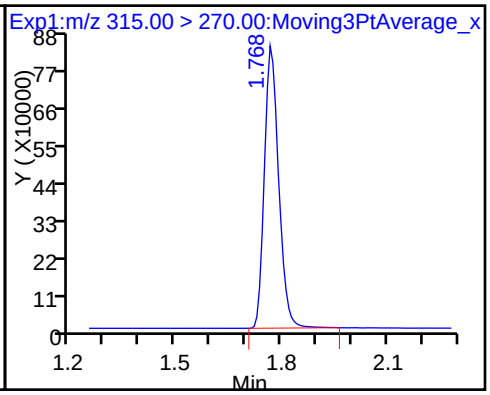
1 Perfluorobutanesulfonic acid



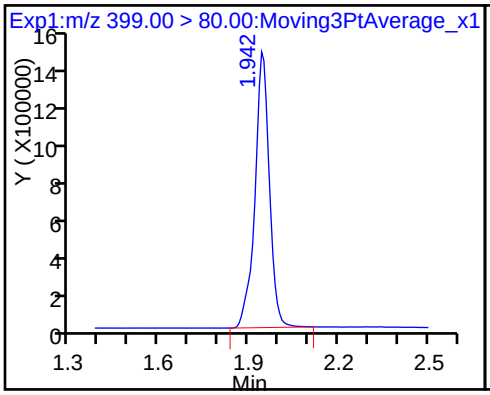
1 Perfluorobutanesulfonic acid



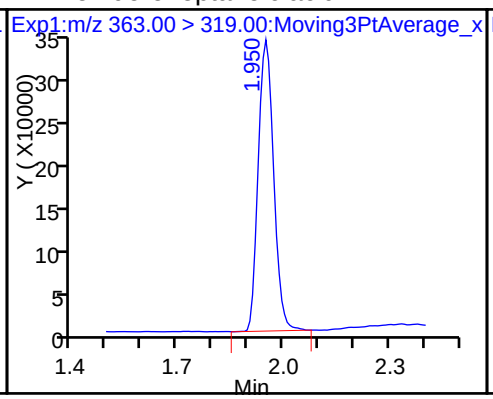
$ 2 13C2 PFHxA



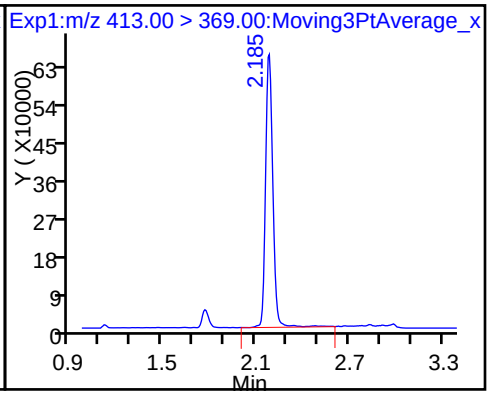
3 Perfluorohexanesulfonic acid



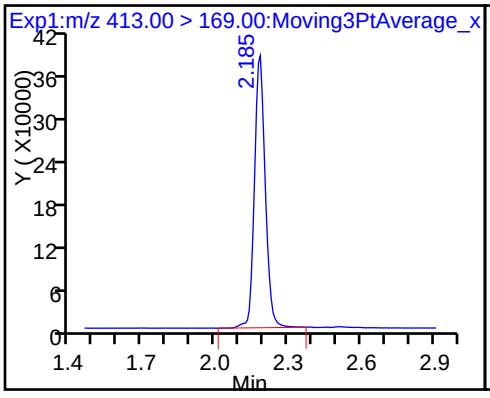
4 Perfluoroheptanoic acid



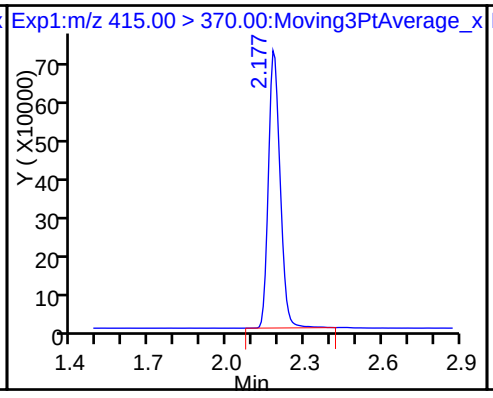
5 Perfluorooctanoic acid



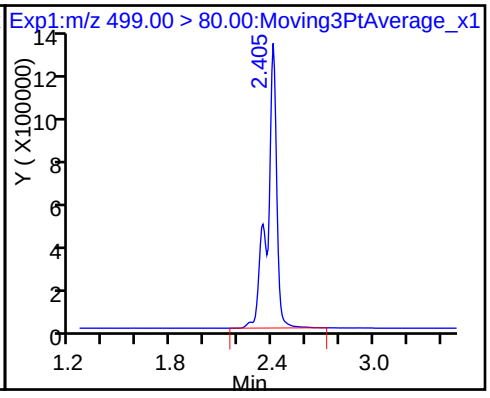
5 Perfluorooctanoic acid



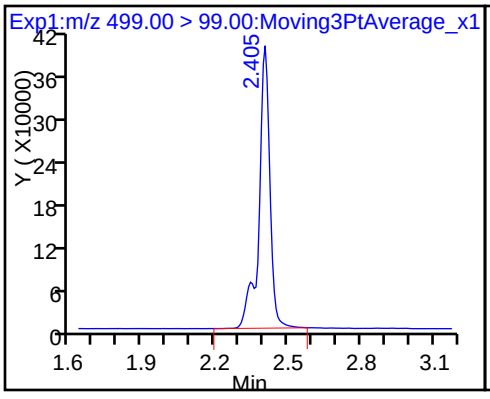
* 6 13C2-PFOA



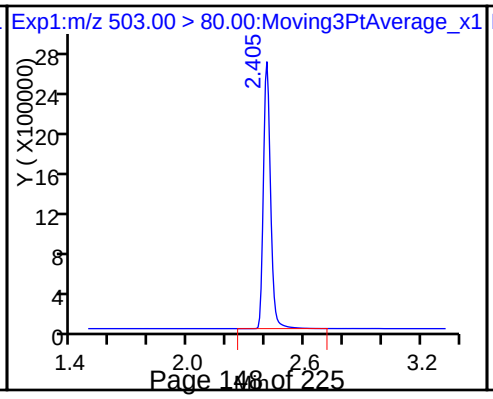
8 Perfluorooctane sulfonic acid



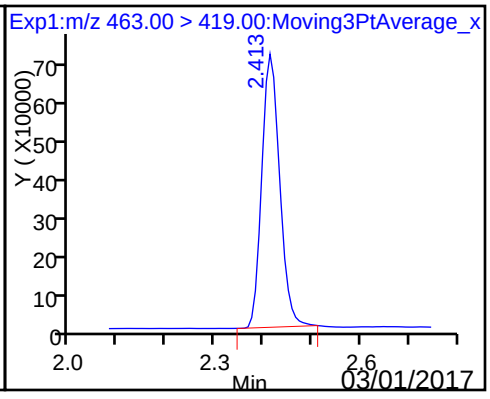
8 Perfluorooctane sulfonic acid



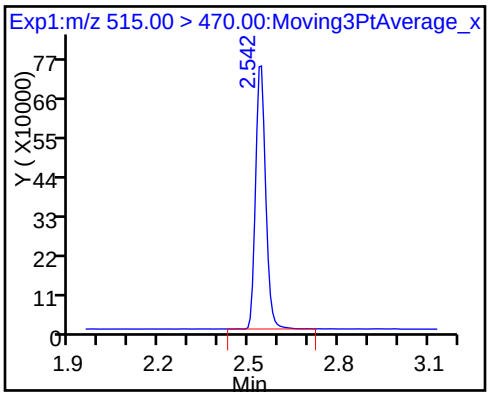
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.542
Y (X10000)
77
66
55
44
33
22
11
0
1.9
2.2
2.5
2.8
3.1
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_006.d
Lims ID: IC L4
Client ID:
Sample Type: ICISAV Calib Level: 4
Inject. Date: 28-Feb-2017 14:54:47 ALS Bottle#: 4 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L4_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Feb-2017 16:02:30 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Feb-2017 15:32:03

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.624	1.627	-0.003	1.000	34458881	84.1		1113	
298.90 > 99.00	1.624	1.627	-0.003	1.000	16969291		2.03(0.00-0.00)	1416	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.760	1.765	-0.005	1.000	2843456	10.5		3203	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.935	1.938	-0.003	1.000	12191221	32.4		1428	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.935	1.940	-0.005	1.000	2471094	10.2		213	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.170	2.172	-0.002	1.000	5108386	20.1		365	
413.00 > 169.00	2.170	2.172	-0.002	1.000	3006567		1.70(0.00-0.00)	2178	
* 6 13C2-PFOA									
415.00 > 370.00	2.170	2.172	-0.002		2646658	10.0		5021	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.329	2.367	-0.038	1.000	12518800	41.8		1215	
499.00 > 99.00	2.390	2.367	0.023	1.026	3106705		4.03(0.00-0.00)	4732	
* 7 13C4 PFOS									
503.00 > 80.00	2.390	2.395	-0.005		7876893	28.7		12079	
9 Perfluorononanoic acid									
463.00 > 419.00	2.397	2.404	-0.007	1.000	4224505	20.9		1002	
$ 10 13C2 PFDA									
515.00 > 470.00	2.526	2.530	-0.004	1.000	2017178	10.1		2841	

Reagents:

LC537-L4_00017 Amount Added: 1.00 Units: mL

Report Date: 28-Feb-2017 16:02:30 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_006.d

Injection Date: 28-Feb-2017 14:54:47 Instrument ID: A8_N

Lims ID: IC L4

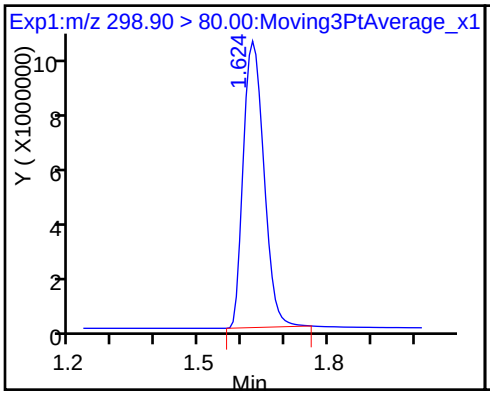
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 4 Worklist Smp#: 6

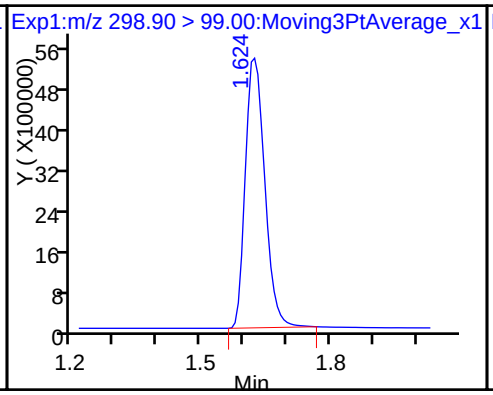
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

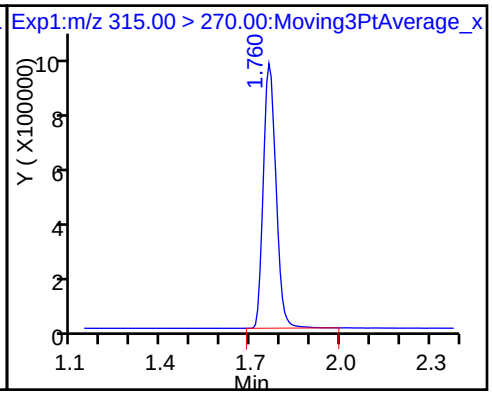
1 Perfluorobutanesulfonic acid



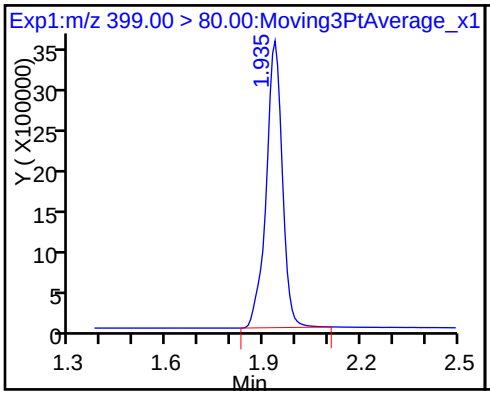
1 Perfluorobutanesulfonic acid



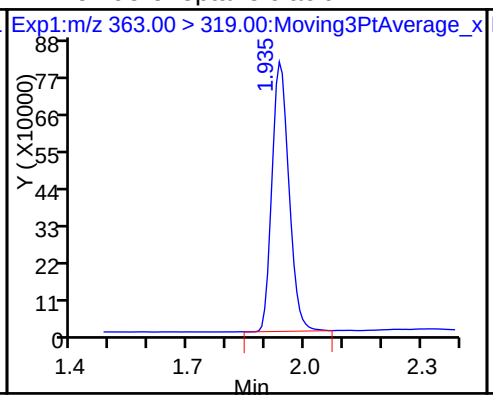
$ 2 13C2 PFHxA



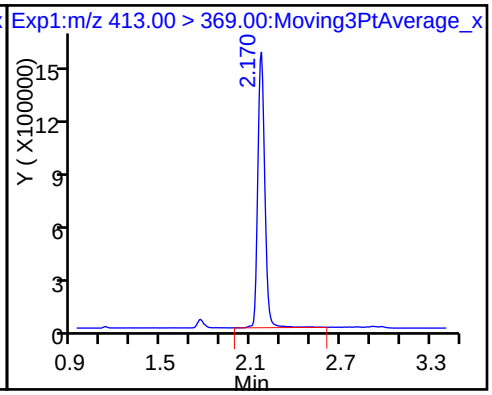
3 Perfluorohexanesulfonic acid



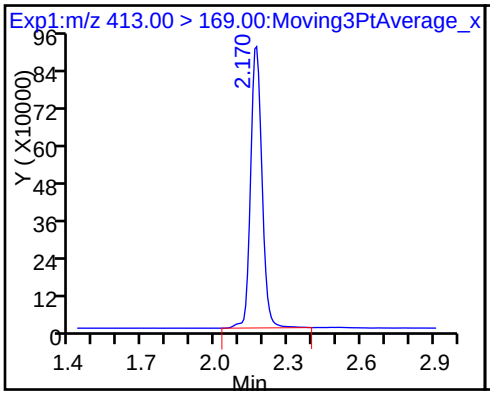
4 Perfluoroheptanoic acid



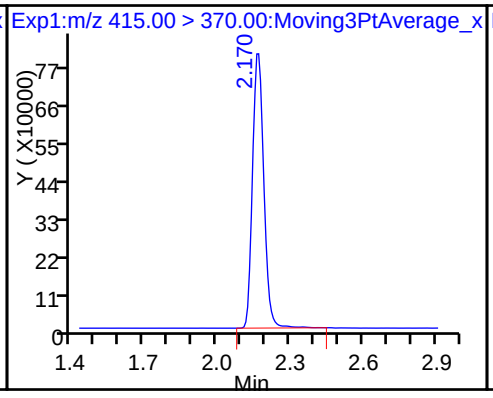
5 Perfluorooctanoic acid



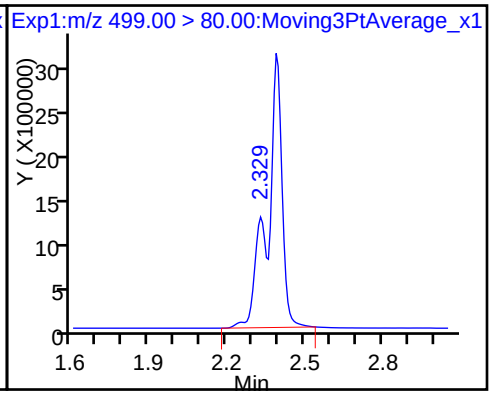
5 Perfluorooctanoic acid



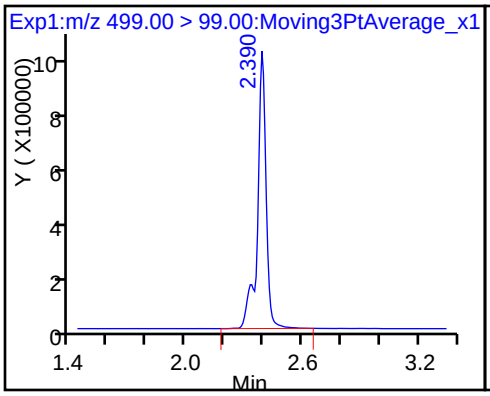
* 6 13C2-PFOA



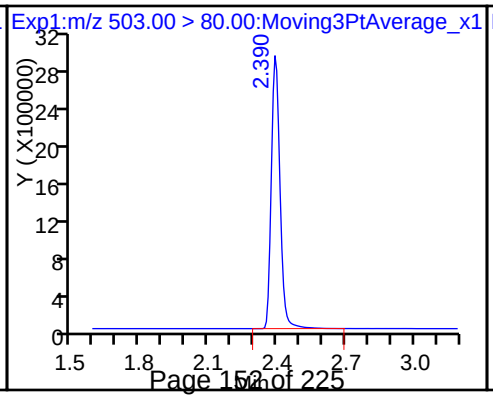
8 Perfluorooctane sulfonic acid



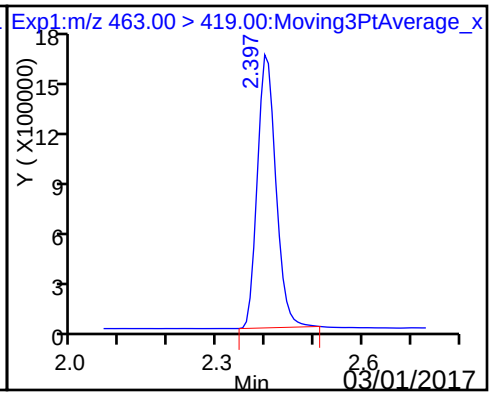
8 Perfluorooctane sulfonic acid



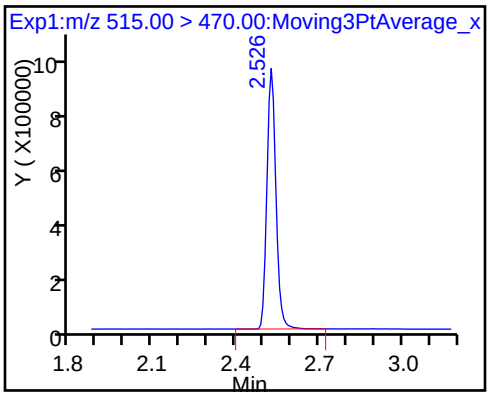
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.526
Y (X100000)
10
8
6
4
2
0
1.8
2.1
2.4
2.7
3.0
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_007.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 28-Feb-2017 14:59:10 ALS Bottle#: 5 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L5_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Feb-2017 16:02:31 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Feb-2017 15:32:12

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.616	1.627	-0.011	1.000	40663139	106.6		1079	
298.90 > 99.00	1.616	1.627	-0.011	1.000	20542925		1.98(0.00-0.00)	1456	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.753	1.765	-0.012	1.000	2558490	10.1		3123	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.927	1.938	-0.011	1.000	15413358	43.9		1508	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.927	1.940	-0.013	1.000	3101671	13.7		282	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.155	2.172	-0.017	1.000	6600582	27.9		487	
413.00 > 169.00	2.155	2.172	-0.017	1.000	3850026		1.71(0.00-0.00)	3046	
* 6 13C2-PFOA									
415.00 > 370.00	2.155	2.172	-0.017		2466185	10.0		4332	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.360	2.367	-0.007	1.000	16469240	59.1		1517	
499.00 > 99.00	2.382	2.367	0.015	1.010	4081781		4.03(0.00-0.00)	6285	
* 7 13C4 PFOS									
503.00 > 80.00	2.382	2.395	-0.013		7334381	28.7		11401	
9 Perfluorononanoic acid									
463.00 > 419.00	2.390	2.404	-0.014	1.000	5459781	29.0		1286	
$ 10 13C2 PFDA									
515.00 > 470.00	2.519	2.530	-0.011	1.000	1828420	9.80		2430	

Reagents:

LC537-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 28-Feb-2017 16:02:31 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_007.d

Injection Date: 28-Feb-2017 14:59:10 Instrument ID: A8_N

Lims ID: IC L5

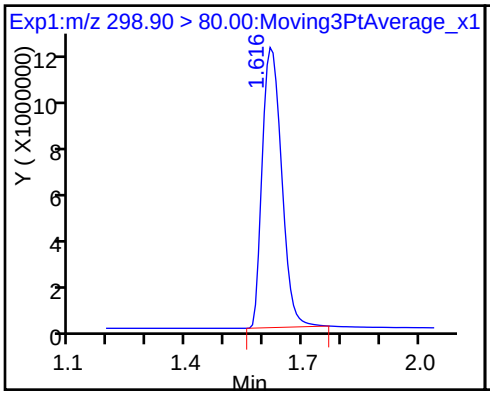
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 5 Worklist Smp#: 7

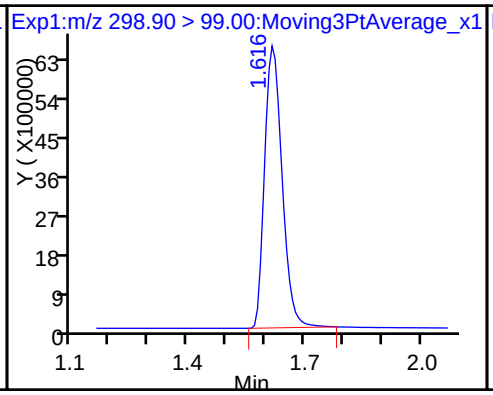
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

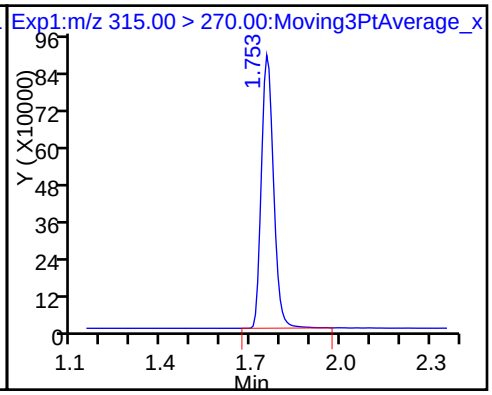
1 Perfluorobutanesulfonic acid



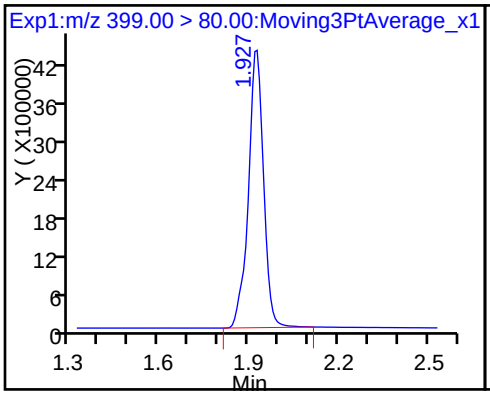
1 Perfluorobutanesulfonic acid



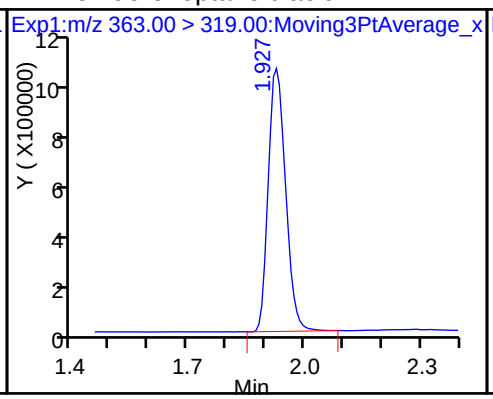
$ 2 13C2 PFHxA



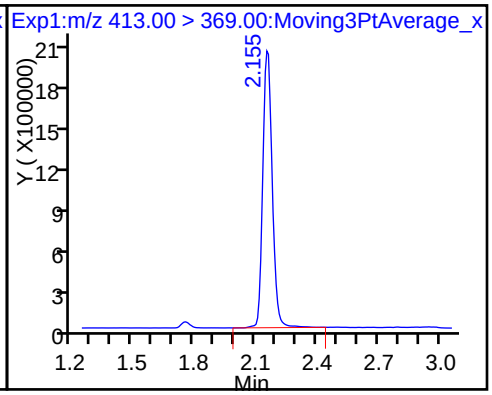
3 Perfluorohexanesulfonic acid



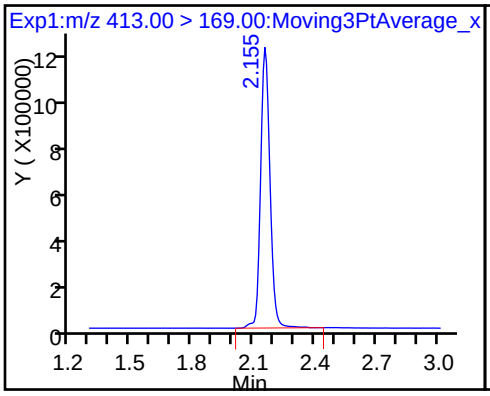
4 Perfluoroheptanoic acid



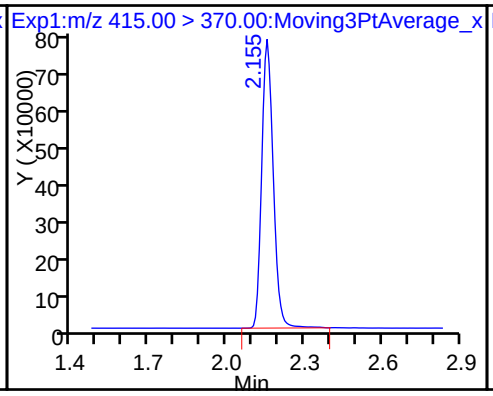
5 Perfluorooctanoic acid



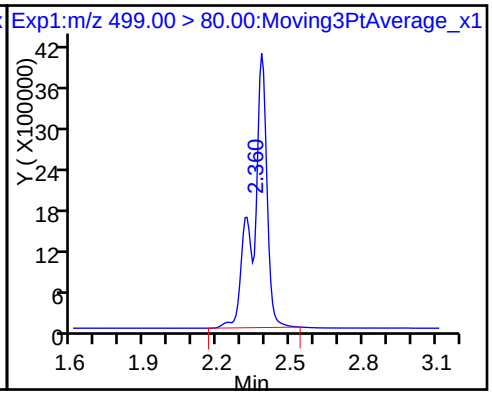
5 Perfluorooctanoic acid



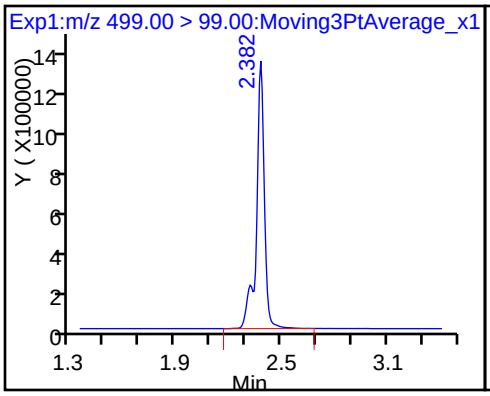
* 6 13C2-PFOA



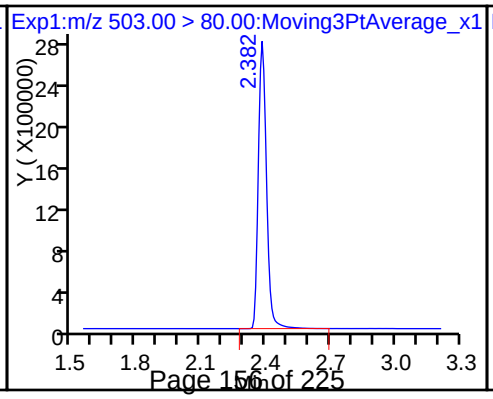
8 Perfluorooctane sulfonic acid



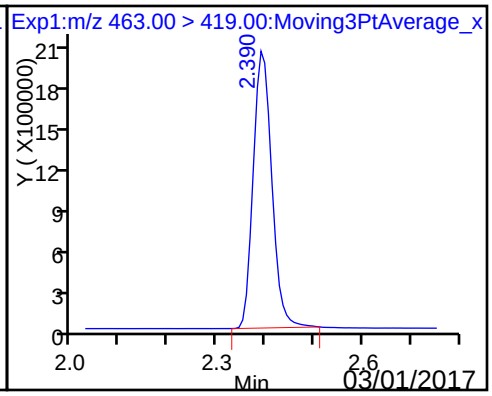
8 Perfluorooctane sulfonic acid



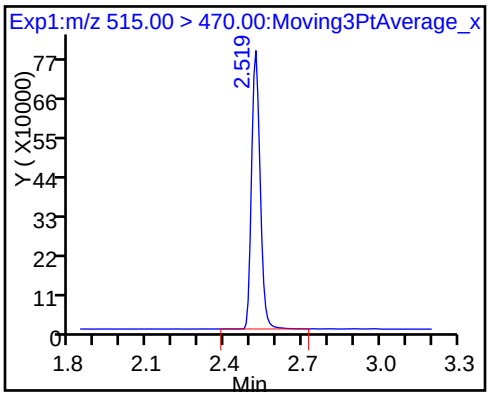
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.519
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
3.0
3.3
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d
Lims ID: IC L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 28-Feb-2017 15:03:35 ALS Bottle#: 6 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L6_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Feb-2017 16:02:32 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Feb-2017 15:32:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.608	1.627	-0.019	1.000	46149314	139.1		1059	
298.90 > 99.00	1.608	1.627	-0.019	1.000	23950963		1.93(0.00-0.00)	1374	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.745	1.765	-0.020	1.000	2301837	10.4		3210	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.912	1.938	-0.026	1.000	18706875	61.3		1691	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.912	1.940	-0.028	1.000	3922787	19.8		345	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.140	2.172	-0.032	1.000	8370583	40.4		588	
413.00 > 169.00	2.140	2.172	-0.032	1.000	4906844		1.71(0.00-0.00)	3727	
* 6 13C2-PFOA									
415.00 > 370.00	2.140	2.172	-0.032		2159820	10.0		3488	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.367	2.367	0.0	1.000	20073777	82.8		6949	
499.00 > 99.00	2.367	2.367	0.0	1.000	4957749		4.05(0.00-0.00)	5916	
* 7 13C4 PFOS									
503.00 > 80.00	2.367	2.395	-0.028		6379570	28.7		10470	
9 Perfluorononanoic acid									
463.00 > 419.00	2.375	2.404	-0.029	1.000	6664465	40.4		1489	
$ 10 13C2 PFDA									
515.00 > 470.00	2.504	2.530	-0.026	1.000	1699216	10.4		2183	

Reagents:

LC537-L6_00016 Amount Added: 1.00 Units: mL

Report Date: 28-Feb-2017 16:02:33 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Injection Date: 28-Feb-2017 15:03:35 Instrument ID: A8_N

Lims ID: IC L6

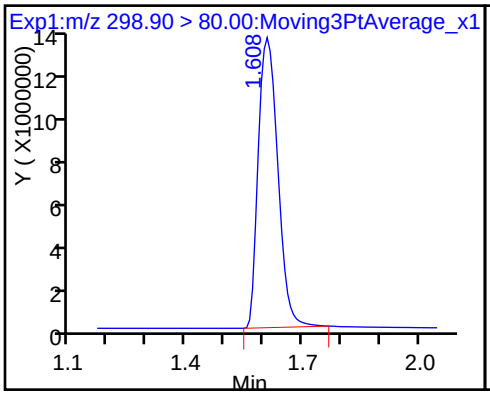
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 6 Worklist Smp#: 8

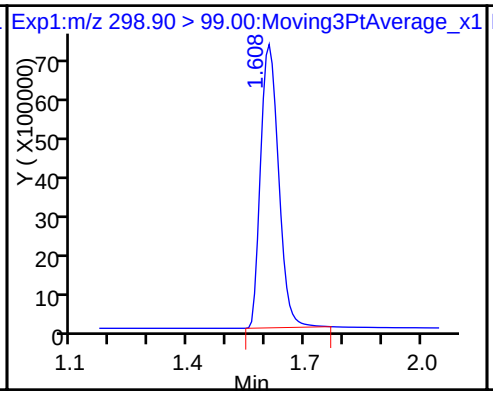
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

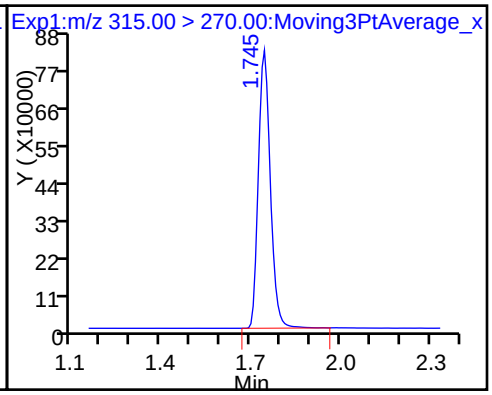
1 Perfluorobutanesulfonic acid



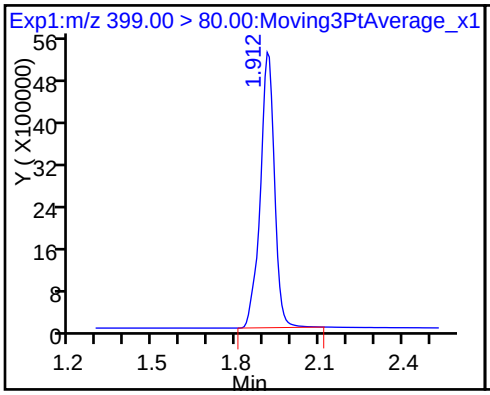
1 Perfluorobutanesulfonic acid



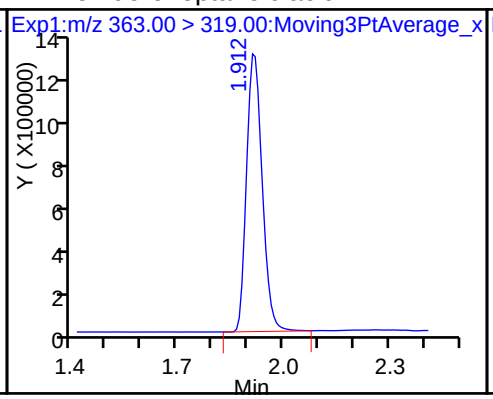
$ 2 13C2 PFHxA



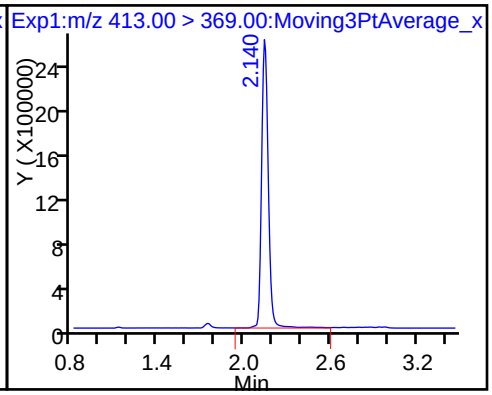
3 Perfluorohexanesulfonic acid



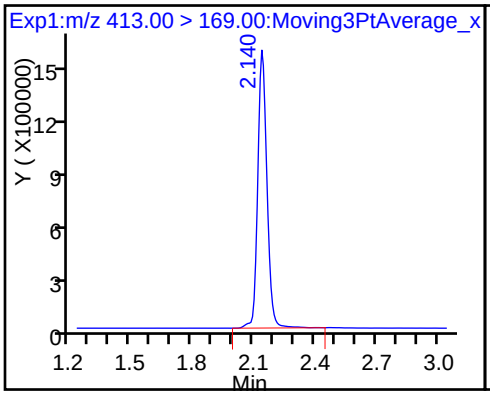
4 Perfluoroheptanoic acid



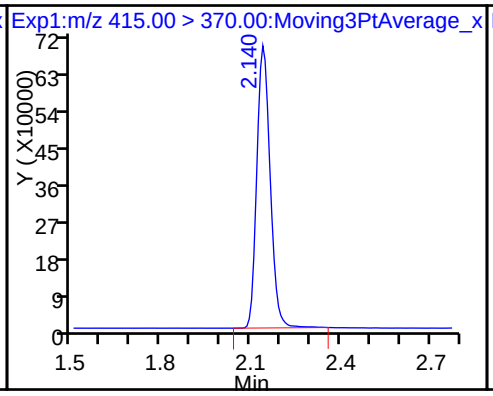
5 Perfluorooctanoic acid



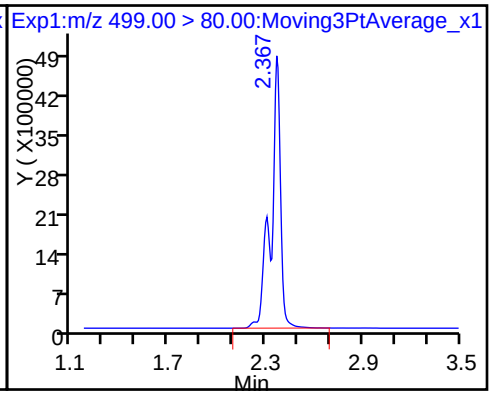
5 Perfluorooctanoic acid



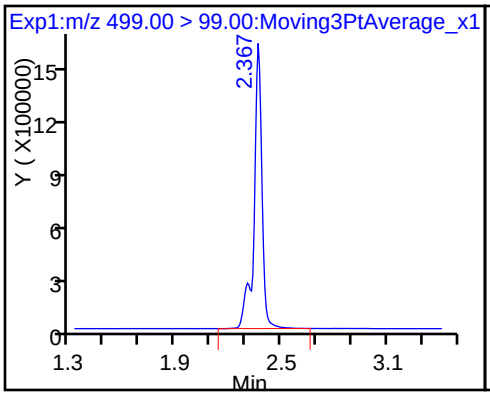
* 6 13C2-PFOA



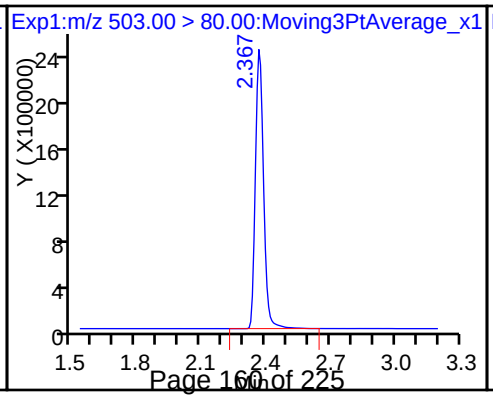
8 Perfluorooctane sulfonic acid



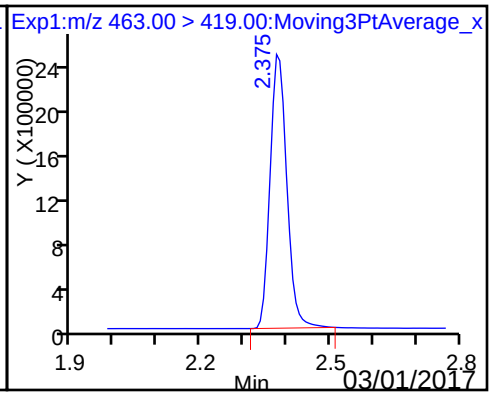
8 Perfluorooctane sulfonic acid



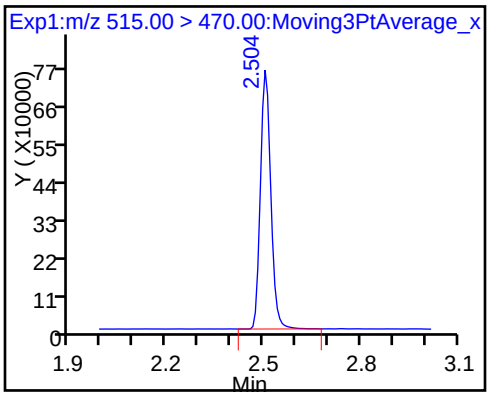
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.504
Y (X10000)
77
66
55
44
33
22
11
0
1.9
2.2
2.5
2.8
3.1
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Lab Sample ID: CCVL 320-152571/10 Calibration Date: 02/28/2017 15:12

Instrument ID: A8_N Calib Start Date: 02/28/2017 14:41

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 02/28/2017 15:03

Lab File ID: 2017.02.28_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	1.491	1.816		27.9	22.9	21.8	50.0
Perfluorohexanesulfonic acid	Ave	1.372	1.512		8.50	7.72	10.2	50.0
Perfluoroheptanoic acid	Ave	0.9178	0.9503		2.71	2.62	3.5	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9600	1.025		5.31	4.98	6.7	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.089	1.132		10.6	10.2	3.9	50.0
Perfluorononanoic acid	Ave	0.7646	0.8169		5.65	5.29	6.8	50.0
13C2 PFHxA	Ave	1.024	1.027		10.0	10.0	0.3	30.0
13C2 PFDA	Ave	0.7568	0.7315		9.67	10.0	-3.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_010.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 28-Feb-2017 15:12:22 ALS Bottle#: 2 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L2
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Feb-2017 16:02:35 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Feb-2017 15:36:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.601	1.627	-0.026	1.000	11019425	27.9		906	
298.90 > 99.00	1.601	1.627	-0.026	1.000	4727664		2.33(0.00-0.00)	963	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.737	1.765	-0.028	1.000	2621267	10.0		3776	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.904	1.938	-0.034	1.000	3091943	8.50		653	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.912	1.940	-0.028	1.000	635785	2.71		62.1	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.132	2.172	-0.040	1.000	1301543	5.31		98.2	
413.00 > 169.00	2.132	2.172	-0.040	1.000	745575		1.75(0.00-0.00)	777	
* 6 13C2-PFOA									
415.00 > 370.00	2.132	2.172	-0.040		2552157	10.0		4485	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.299	2.367	-0.068	1.000	3065210	10.6		538	
499.00 > 99.00	2.360	2.367	-0.007	1.026	738632		4.15(0.00-0.00)	1200	
* 7 13C4 PFOS									
503.00 > 80.00	2.360	2.395	-0.035		7601493	28.7		9996	
9 Perfluorononanoic acid									
463.00 > 419.00	2.367	2.404	-0.037	1.000	1102673	5.65		326	
$ 10 13C2 PFDA									
515.00 > 470.00	2.496	2.530	-0.034	1.000	1867002	9.67		2466	

Reagents:

LC537-L2_00015 Amount Added: 1.00 Units: mL

Report Date: 28-Feb-2017 16:02:36 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_010.d

Injection Date: 28-Feb-2017 15:12:22 Instrument ID: A8_N

Lims ID: CCVL

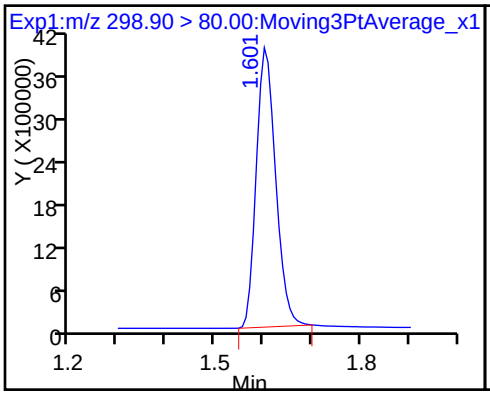
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 2 Worklist Smp#: 10

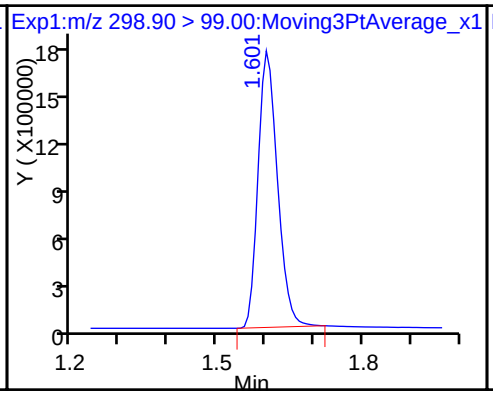
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

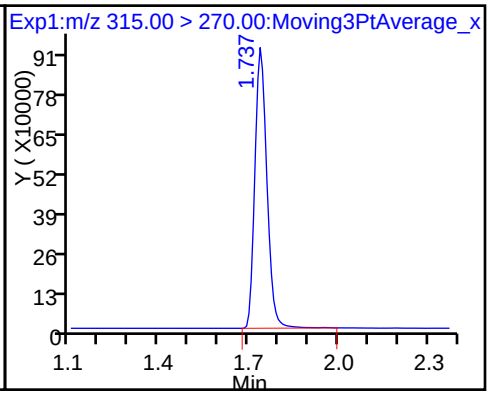
1 Perfluorobutanesulfonic acid



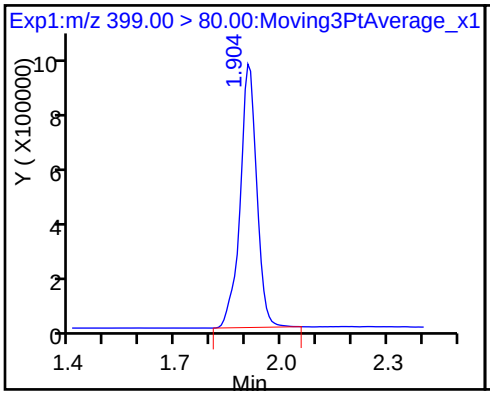
1 Perfluorobutanesulfonic acid



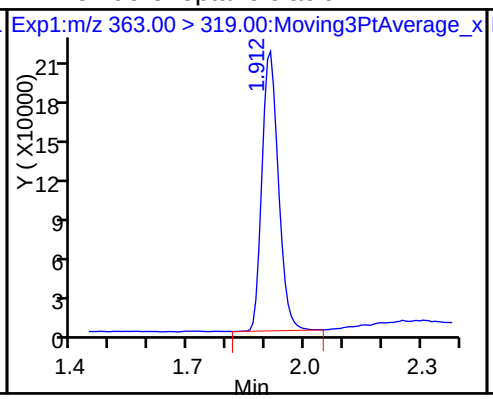
$ 2 13C2 PFHxA



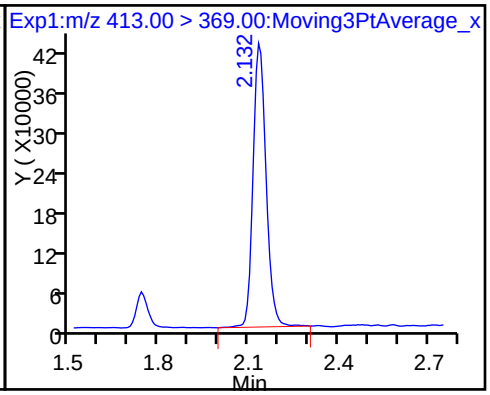
3 Perfluorohexanesulfonic acid



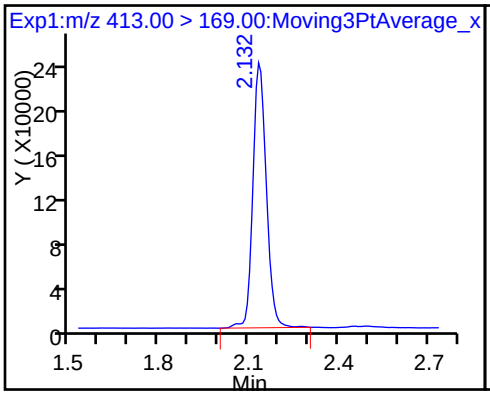
4 Perfluoroheptanoic acid



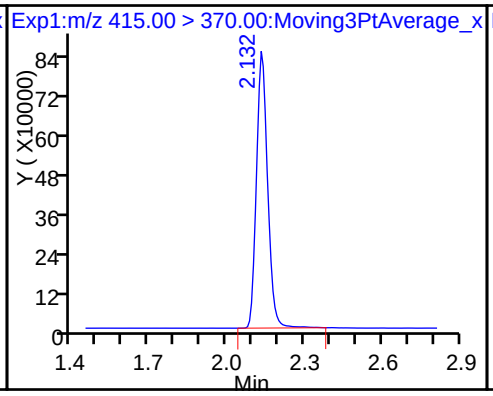
5 Perfluorooctanoic acid



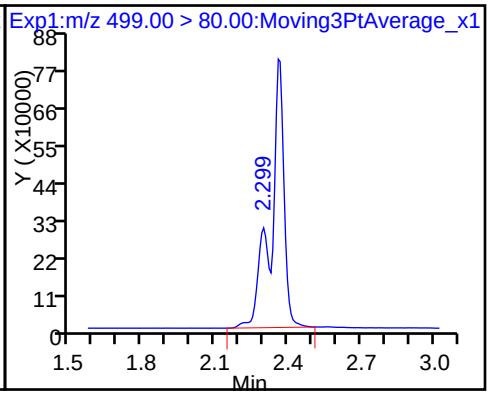
5 Perfluorooctanoic acid



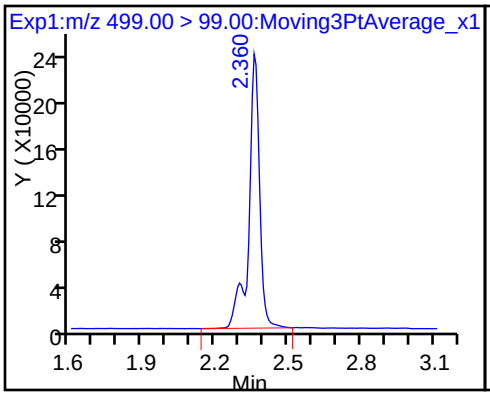
* 6 13C2-PFOA



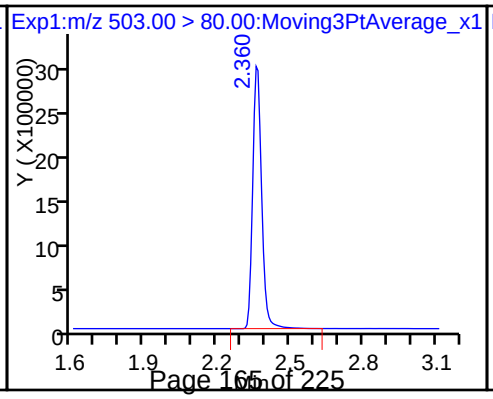
8 Perfluorooctane sulfonic acid



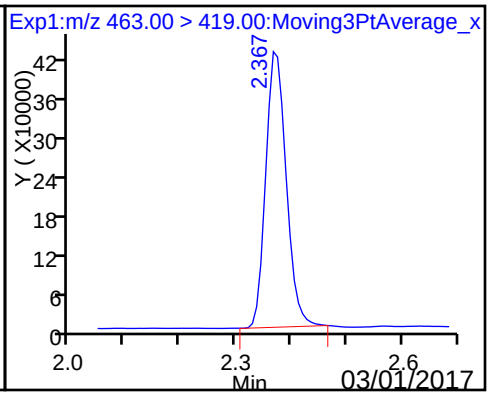
8 Perfluorooctane sulfonic acid



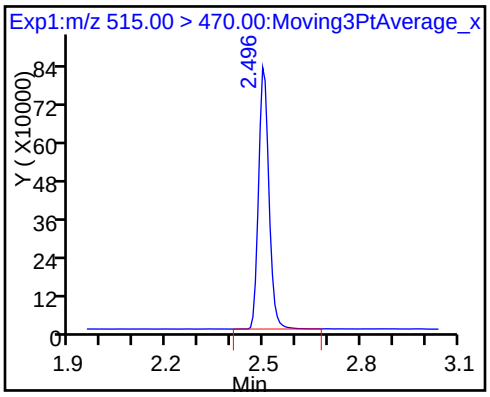
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.496
Y (X10000)
84
72
60
48
36
24
12
0
1.9
2.2
2.5
2.8
3.1
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Lab Sample ID: ICV 320-152571/12 Calibration Date: 02/28/2017 15:21

Instrument ID: A8_N Calib Start Date: 02/28/2017 14:41

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 02/28/2017 15:03

Lab File ID: 2017.02.28_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	1.491	1.418		95.8	101	-4.9	30.0
Perfluoroheptanoic acid	Ave	0.9178	0.7310		8.03	10.1	-20.4	30.0
Perfluorohexanesulfonic acid	Ave	1.372	1.307		20.2	21.2	-4.7	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9600	0.7927		16.5	20.0	-17.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.089	1.018		19.3	20.7	-6.5	30.0
Perfluorononanoic acid	Ave	0.7646	0.6431		16.8	20.0	-15.9	30.0
13C2 PFHxA	Ave	1.024	1.086		10.6	10.0	6.0	30.0
13C2 PFDA	Ave	0.7568	0.7799		10.3	10.0	3.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_012.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 28-Feb-2017 15:21:11 ALS Bottle#: 7 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Feb-2017 17:05:44 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Feb-2017 17:05:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.601	1.627	-0.026	1.000	30009902	95.8		1242	
298.90 > 99.00	1.601	1.627	-0.026	1.000	14606213		2.05(0.00-0.00)	1486	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.737	1.765	-0.028	1.000	2136104	10.6		2991	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.904	1.938	-0.034	1.000	5822321	20.2		1039	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.904	1.940	-0.036	1.000	1449554	8.03		140	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.124	2.172	-0.048	1.000	3121881	16.5		239	
413.00 > 169.00	2.124	2.172	-0.048	1.000	1782391		1.75(0.00-0.00)	1504	
* 6 13C2-PFOA									
415.00 > 370.00	2.124	2.172	-0.048		1967346	10.0		3785	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.291	2.367	-0.076	1.000	4429431	19.3		688	
499.00 > 99.00	2.352	2.367	-0.015	1.026	884211		5.01(0.00-0.00)	1467	
* 7 13C4 PFOS									
503.00 > 80.00	2.352	2.395	-0.043		6028697	28.7		9788	
9 Perfluorononanoic acid									
463.00 > 419.00	2.360	2.404	-0.044	1.000	2531261	16.8		714	
$ 10 13C2 PFDA									
515.00 > 470.00	2.489	2.530	-0.041	1.000	1534308	10.3		1982	

Reagents:

LC537-ICV_00020 Amount Added: 1.00 Units: mL

Report Date: 28-Feb-2017 17:05:44 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_012.d

Injection Date: 28-Feb-2017 15:21:11 Instrument ID: A8_N

Lims ID: ICV

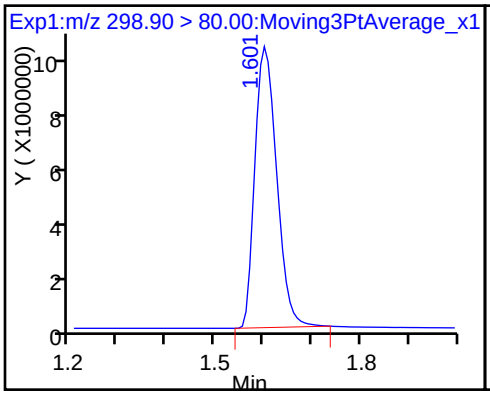
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 7 Worklist Smp#: 12

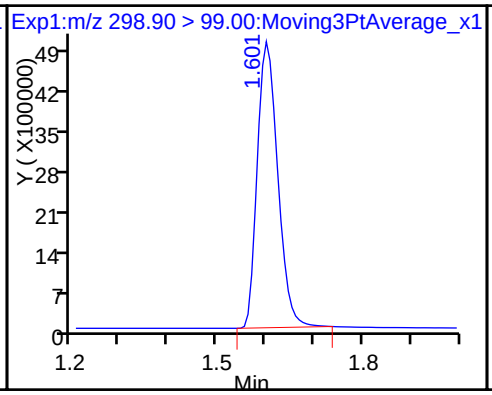
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

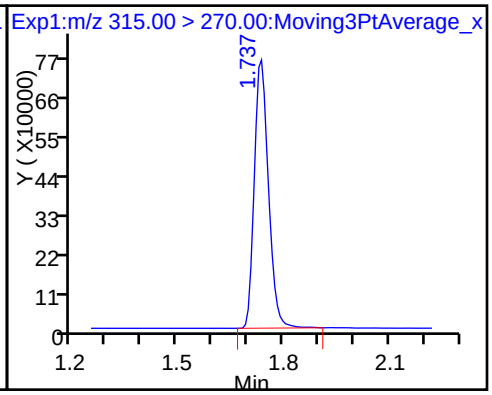
1 Perfluorobutanesulfonic acid



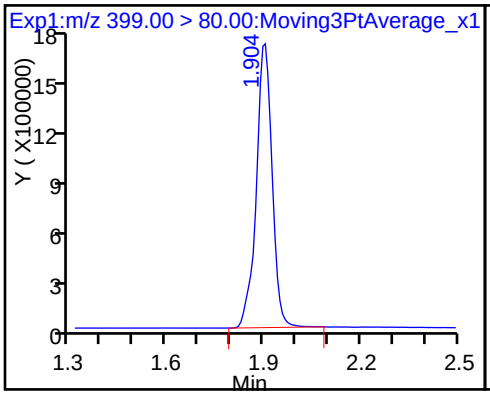
1 Perfluorobutanesulfonic acid



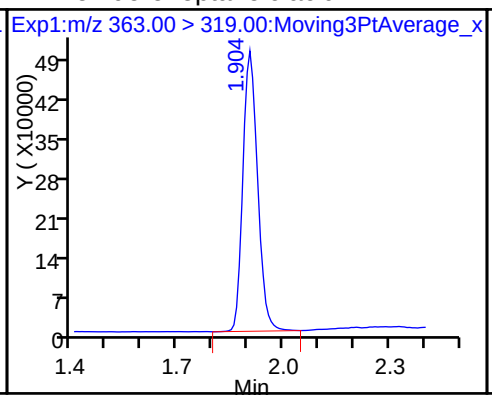
$ 2 13C2 PFHxA



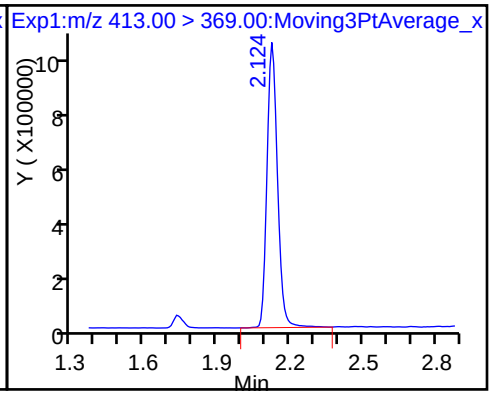
3 Perfluorohexanesulfonic acid



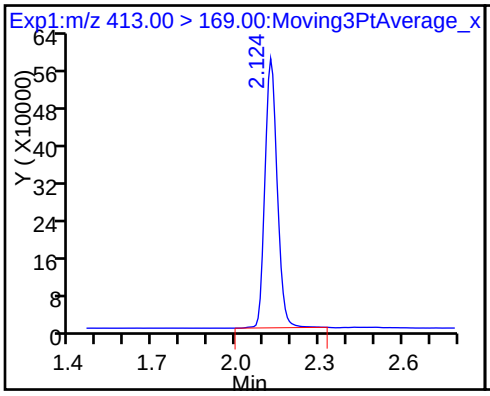
4 Perfluoroheptanoic acid



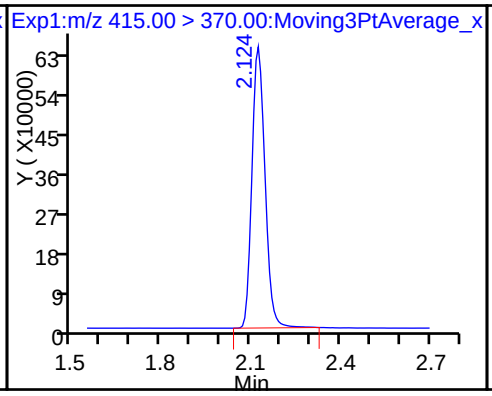
5 Perfluorooctanoic acid



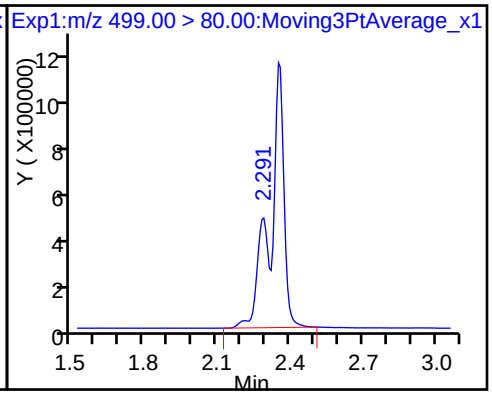
5 Perfluorooctanoic acid



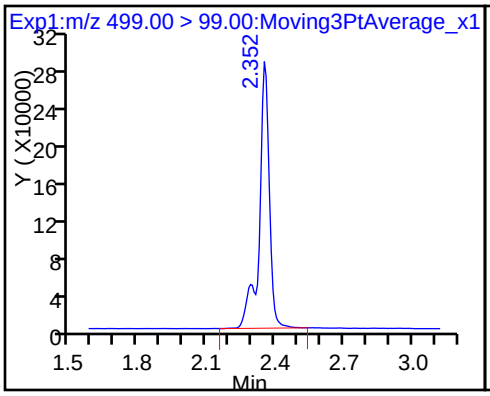
* 6 13C2-PFOA



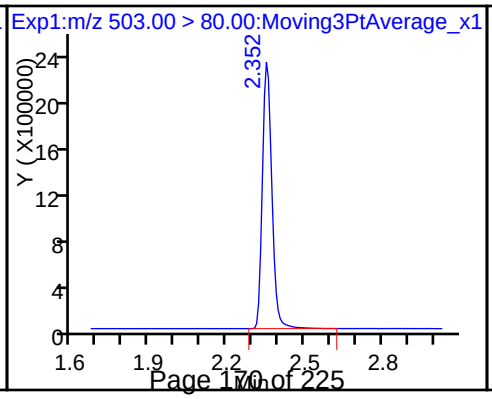
8 Perfluorooctane sulfonic acid



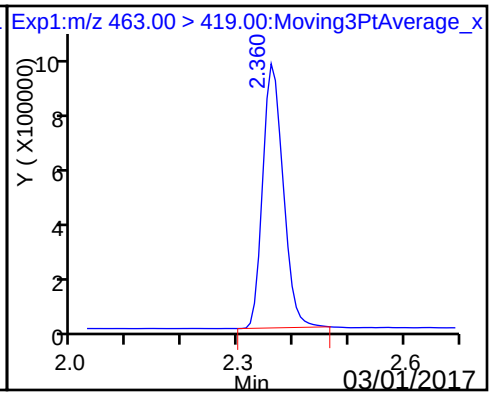
8 Perfluorooctane sulfonic acid



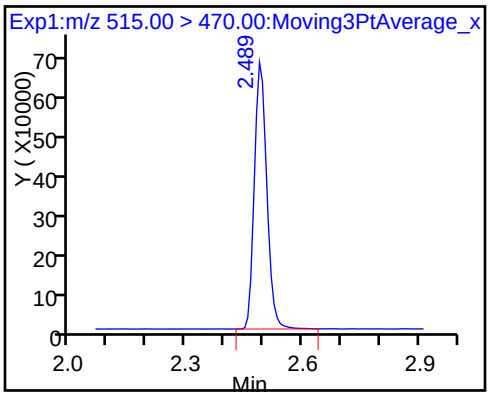
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.489
Y (X10000)
70
60
50
40
30
20
10
0
2.0
2.3
2.6
2.9
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Lab Sample ID: CCV 320-152585/1 Calibration Date: 02/28/2017 16:07

Instrument ID: A8_N Calib Start Date: 02/28/2017 14:41

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 02/28/2017 15:03

Lab File ID: 2017.02.28_537_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.491	1.223		110	135	-18.0	30.0
Perfluoroheptanoic acid	Ave	0.9178	0.8761		14.2	14.9	-4.5	30.0
Perfluorohexanesulfonic acid	Ave	1.372	1.465		48.5	45.4	6.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9600	0.9222		28.1	29.3	-3.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.089	1.111		61.3	60.1	2.0	30.0
Perfluorononanoic acid	Ave	0.7646	0.6830		27.8	31.1	-10.7	30.0
13C2 PFHxA	Ave	1.024	1.048		10.2	10.0	2.4	30.0
13C2 PFDA	Ave	0.7568	0.7132		9.42	10.0	-5.8	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_001.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 28-Feb-2017 16:07:34 ALS Bottle#: 5 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Mar-2017 11:27:48 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: barnettj Date: 28-Feb-2017 16:46:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.563	1.627	-0.064	1.000	41376350	110.5		1186	
298.90 > 99.00	1.563	1.627	-0.064	1.000	21452196		1.93(0.00-0.00)	1695	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.699	1.765	-0.066	1.000	2655593	10.2		4530	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.859	1.938	-0.079	1.000	16702512	48.5		2084	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.859	1.940	-0.081	1.000	3296840	14.2		304	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.079	2.172	-0.093	1.000	6842337	28.1		429	
413.00 > 169.00	2.079	2.172	-0.093	1.000	3911690		1.75(0.00-0.00)	2570	
* 6 13C2-PFOA									
415.00 > 370.00	2.079	2.172	-0.093		2534093	10.0		3874	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.314	2.367	-0.053	1.000	16782736	61.3		4683	
499.00 > 99.00	2.314	2.367	-0.053	1.000	4150675		4.04(0.00-0.00)	3867	
* 7 13C4 PFOS									
503.00 > 80.00	2.314	2.395	-0.081		7205605	28.7		7049	
9 Perfluorononanoic acid									
463.00 > 419.00	2.322	2.404	-0.082	1.000	5384997	27.8		1110	
$ 10 13C2 PFDA									
515.00 > 470.00	2.458	2.530	-0.072	1.000	1807213	9.42		2115	

Reagents:

LC537-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 01-Mar-2017 11:27:48 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_001.d

Injection Date: 28-Feb-2017 16:07:34 Instrument ID: A8_N

Lims ID: CCV L5

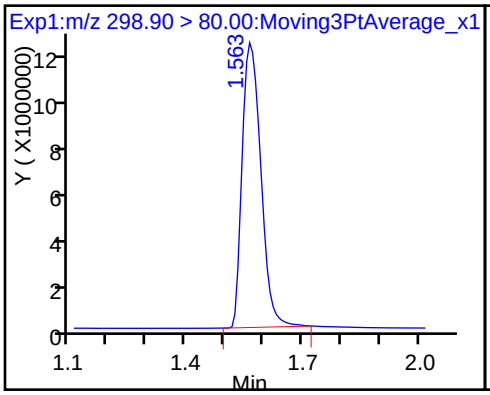
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 5 Worklist Smp#: 1

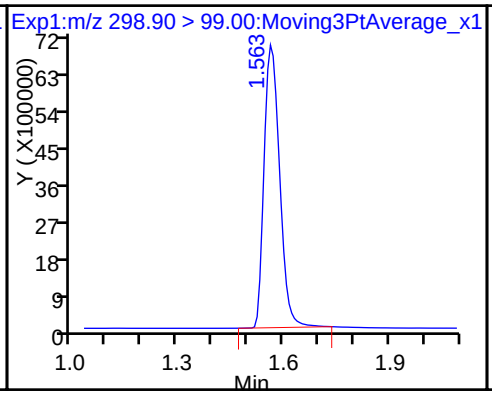
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

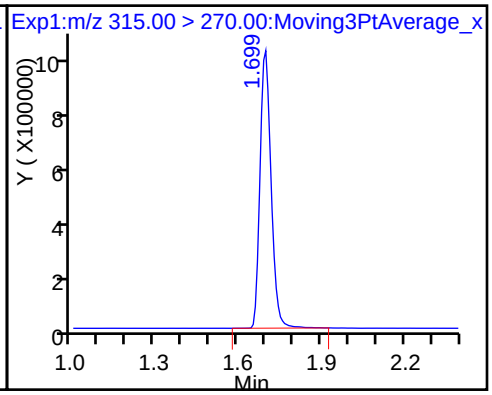
1 Perfluorobutanesulfonic acid



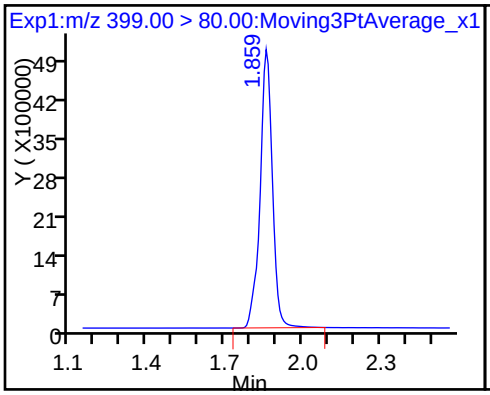
1 Perfluorobutanesulfonic acid



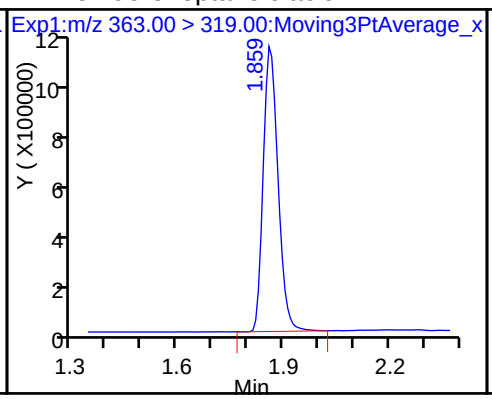
$ 2 13C2 PFHxA



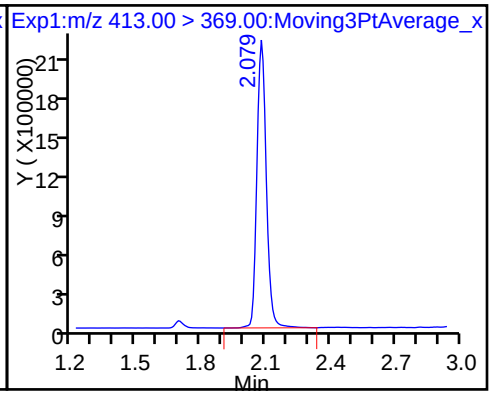
3 Perfluorohexanesulfonic acid



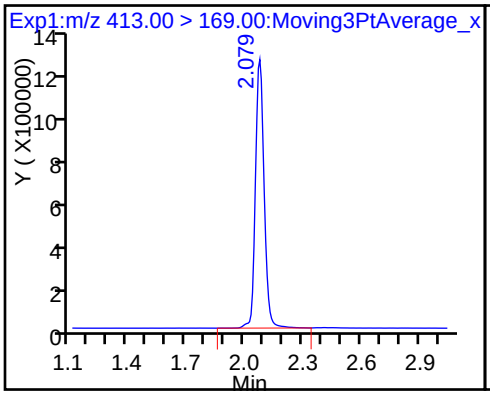
4 Perfluoroheptanoic acid



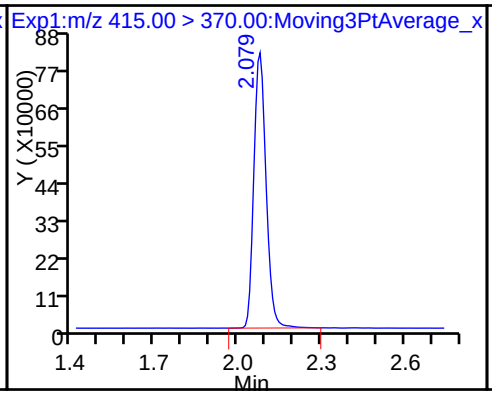
5 Perfluorooctanoic acid



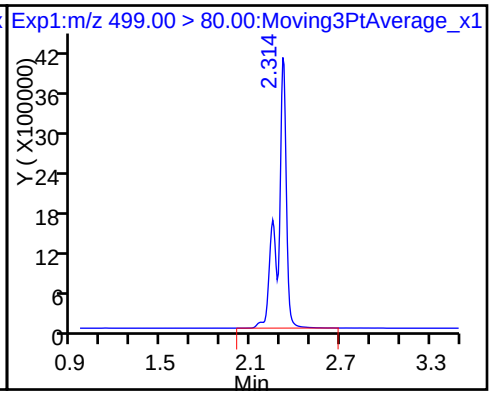
5 Perfluorooctanoic acid



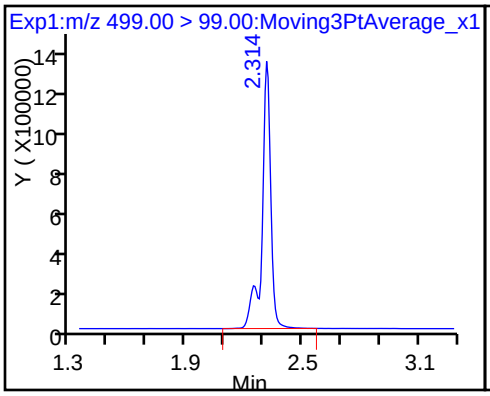
* 6 13C2-PFOA



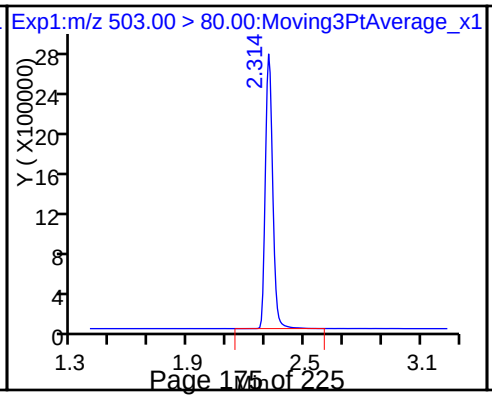
8 Perfluorooctane sulfonic acid



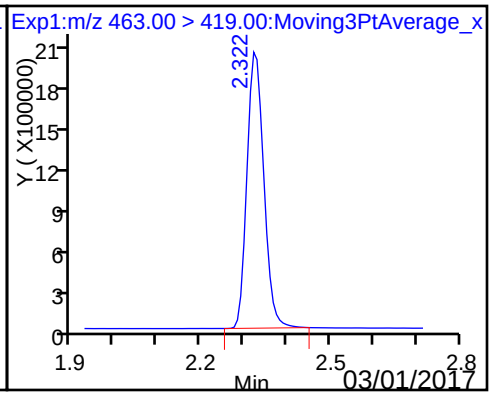
8 Perfluorooctane sulfonic acid



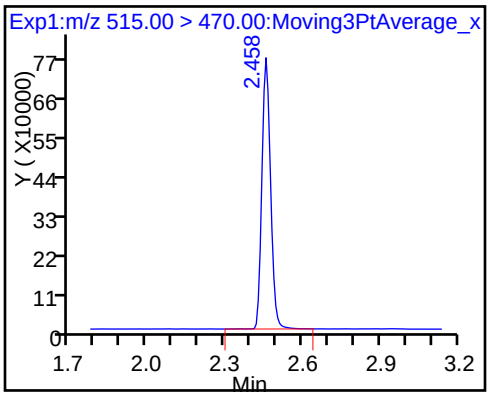
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA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66
55
44
33
22
11
0
1.7
2.0
2.3
2.6
2.9
3.2
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Lab Sample ID: CCV 320-152585/12 Calibration Date: 02/28/2017 16:56

Instrument ID: A8_N Calib Start Date: 02/28/2017 14:41

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 02/28/2017 15:03

Lab File ID: 2017.02.28_537_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	1.491	1.793		54.2	45.1	20.3	30.0
Perfluoroheptanoic acid	Ave	0.9178	0.9265		5.02	4.97	0.9	30.0
Perfluorohexanesulfonic acid	Ave	1.372	1.576		17.5	15.2	14.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9600	0.9048		9.24	9.81	-5.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.089	1.121		20.7	20.1	2.9	30.0
Perfluorononanoic acid	Ave	0.7646	0.7447		10.2	10.4	-2.6	30.0
13C2 PFHxA	Ave	1.024	1.020		9.96	10.0	-0.4	30.0
13C2 PFDA	Ave	0.7568	0.6890		9.10	10.0	-9.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Lab Sample ID: CCV 320-152586/12 Calibration Date: 02/28/2017 16:56

Instrument ID: A8_N Calib Start Date: 02/28/2017 14:41

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 02/28/2017 15:03

Lab File ID: 2017.02.28_537_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	1.491	1.793		54.2	45.1	20.3	30.0
Perfluoroheptanoic acid	Ave	0.9178	0.9265		5.02	4.97	0.9	30.0
Perfluorohexanesulfonic acid	Ave	1.372	1.576		17.5	15.2	14.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9600	0.9048		9.24	9.81	-5.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.089	1.121		20.7	20.1	2.9	30.0
Perfluorononanoic acid	Ave	0.7646	0.7447		10.2	10.4	-2.6	30.0
13C2 PFHxA	Ave	1.024	1.020		9.96	10.0	-0.4	30.0
13C2 PFDA	Ave	0.7568	0.6890		9.10	10.0	-9.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_012.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 28-Feb-2017 16:56:04 ALS Bottle#: 3 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L3
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Mar-2017 13:11:50 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: barnettj Date: 01-Mar-2017 13:11:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.555	1.627	-0.072	1.000	18203380	54.2		1236	
298.90 > 99.00	1.548	1.627	-0.079	0.995	8245789		2.21(0.00-0.00)	1390	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.684	1.765	-0.081	1.000	2450371	9.96		4714	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.844	1.938	-0.094	1.000	5394151	17.5		1132	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.844	1.940	-0.096	1.000	1107064	5.02		106	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.056	2.172	-0.116	1.000	2131643	9.24		151	
413.00 > 169.00	2.056	2.172	-0.116	1.000	1264147		1.69(0.00-0.00)	1251	
* 6 13C2-PFOA									
415.00 > 370.00	2.056	2.172	-0.116		2401945	10.0		4850	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.223	2.223	0.0	1.000	5081626	20.7		660	
499.00 > 99.00	2.299	2.223	0.076	1.034	1228661		4.14(0.00-0.00)	1589	
* 7 13C4 PFOS									
503.00 > 80.00	2.299	2.395	-0.096		6454752	28.7		7745	
9 Perfluorononanoic acid									
463.00 > 419.00	2.306	2.404	-0.098	1.000	1864302	10.2		488	
$ 10 13C2 PFDA									
515.00 > 470.00	2.443	2.530	-0.087	1.000	1654905	9.10		1975	

Reagents:

LC537-L3_00019 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_012.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 28-Feb-2017 16:56:04 ALS Bottle#: 3 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L3
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Mar-2017 13:13:35 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: barnettj Date: 01-Mar-2017 13:11:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.555	1.627	-0.072	1.000	18203380	54.2		1236	
298.90 > 99.00	1.548	1.627	-0.079	0.995	8245789		2.21(0.00-0.00)	1390	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.684	1.765	-0.081	1.000	2450371	9.96		4714	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.844	1.938	-0.094	1.000	5394151	17.5		1132	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.844	1.940	-0.096	1.000	1107064	5.02		106	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.056	2.172	-0.116	1.000	2131643	9.24		151	
413.00 > 169.00	2.056	2.172	-0.116	1.000	1264147		1.69(0.00-0.00)	1251	
* 6 13C2-PFOA									
415.00 > 370.00	2.056	2.172	-0.116		2401945	10.0		4850	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.223	2.284	-0.061	1.000	5081626	20.7		660	
499.00 > 99.00	2.299	2.284	0.015	1.034	1228661		4.14(0.00-0.00)	1589	
* 7 13C4 PFOS									
503.00 > 80.00	2.299	2.395	-0.096		6454752	28.7		7745	
9 Perfluorononanoic acid									
463.00 > 419.00	2.306	2.404	-0.098	1.000	1864302	10.2		488	
$ 10 13C2 PFDA									
515.00 > 470.00	2.443	2.530	-0.087	1.000	1654905	9.10		1975	

Reagents:

LC537-L3_00019 Amount Added: 1.00 Units: mL

Report Date: 01-Mar-2017 13:13:35 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_012.d

Injection Date: 28-Feb-2017 16:56:04 Instrument ID: A8_N

Lims ID: CCV L3

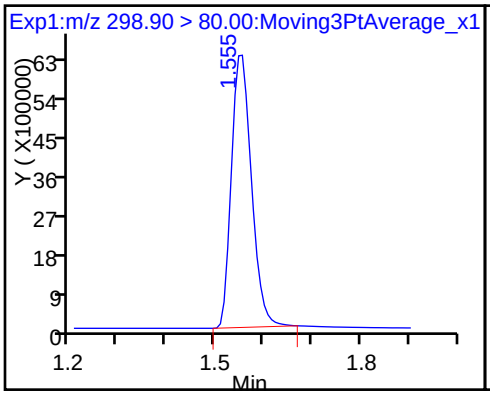
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 3 Worklist Smp#: 12

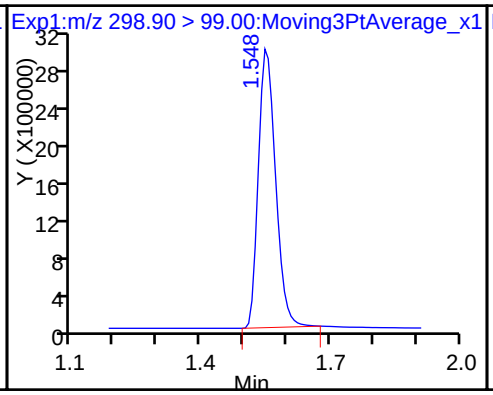
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

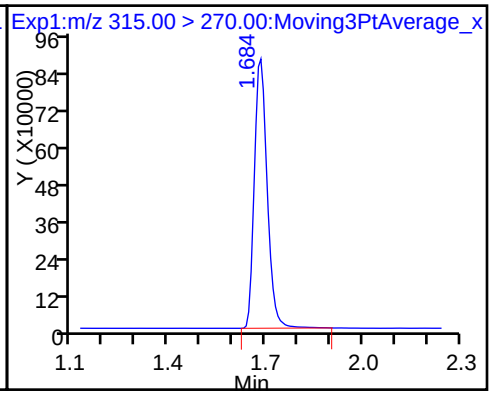
1 Perfluorobutanesulfonic acid



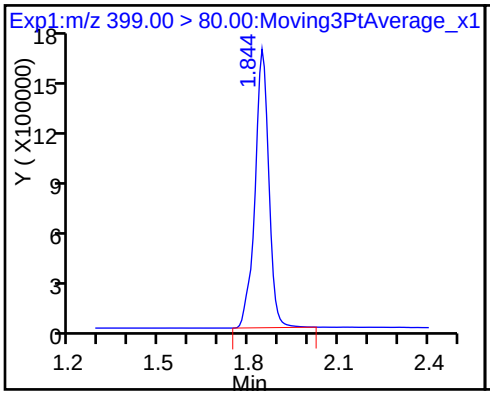
1 Perfluorobutanesulfonic acid



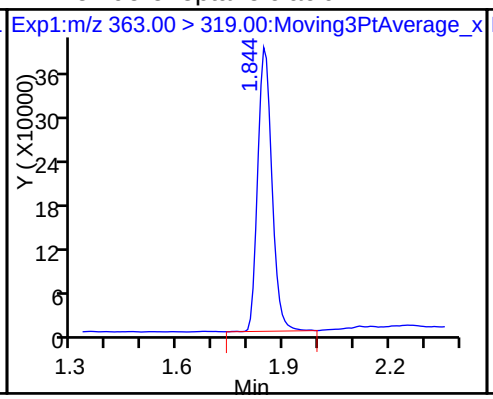
$ 2 13C2 PFHxA



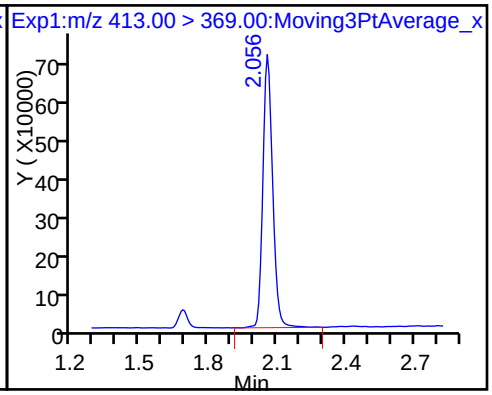
3 Perfluorohexanesulfonic acid



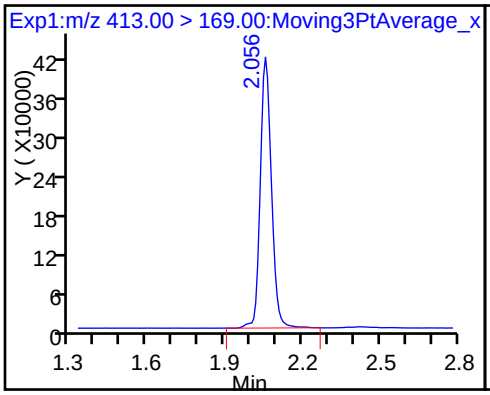
4 Perfluoroheptanoic acid



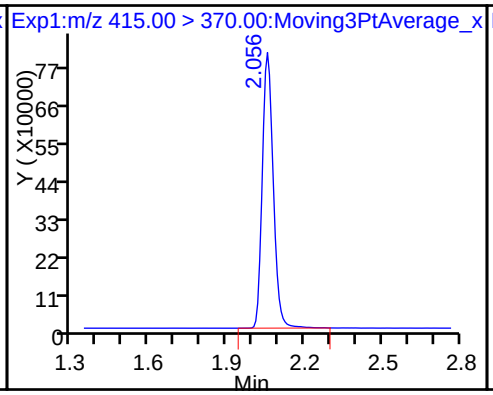
5 Perfluorooctanoic acid



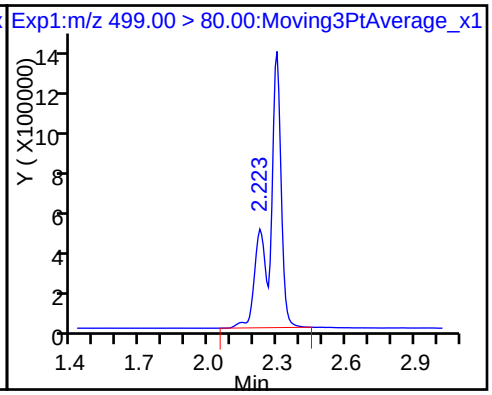
5 Perfluorooctanoic acid



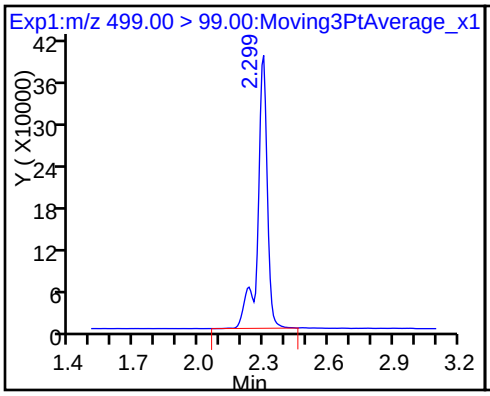
* 6 13C2-PFOA



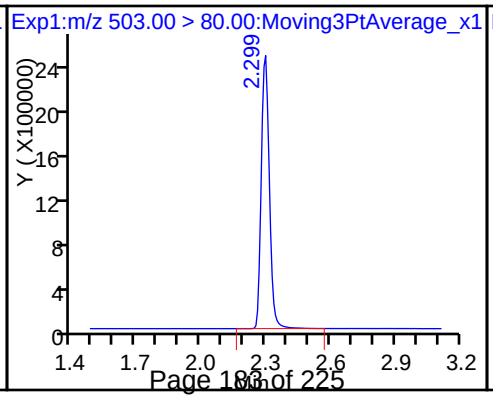
8 Perfluorooctane sulfonic acid



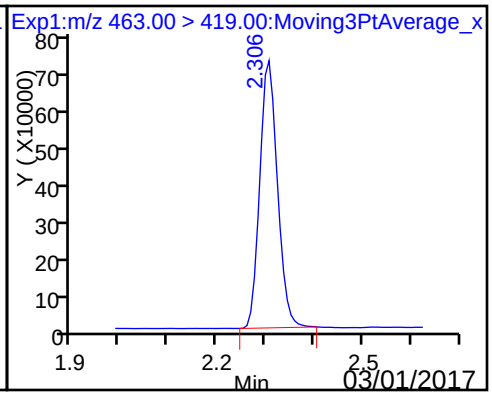
8 Perfluorooctane sulfonic acid



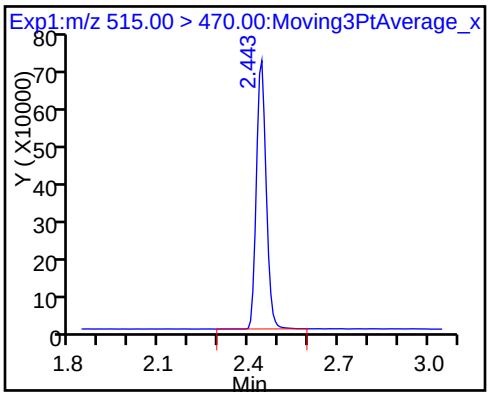
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.443
Y (X10000)
80
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
3.0
Min

Report Date: 01-Mar-2017 13:11:51 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_012.d

Injection Date: 28-Feb-2017 16:56:04 Instrument ID: A8_N

Lims ID: CCV L3

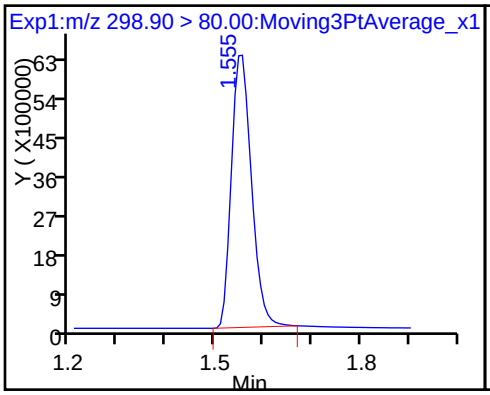
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 3 Worklist Smp#: 12

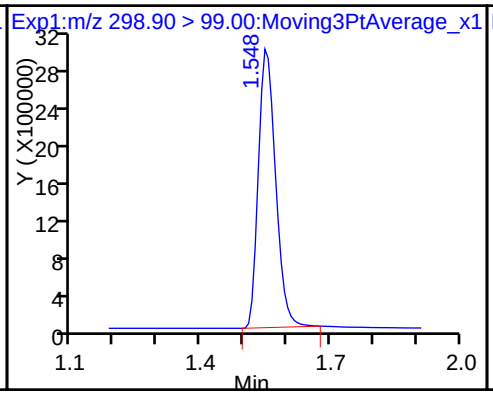
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

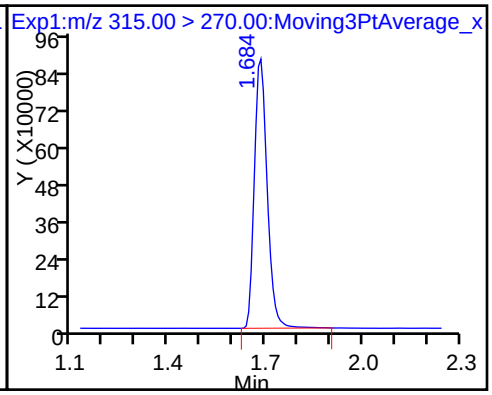
1 Perfluorobutanesulfonic acid



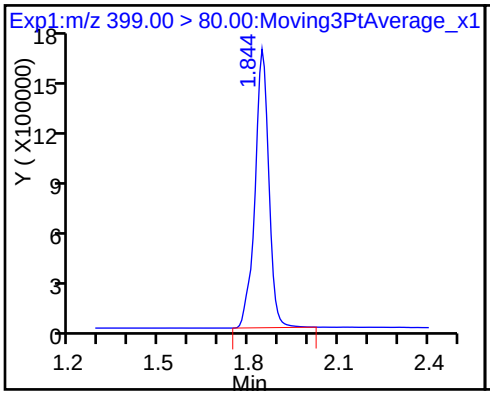
1 Perfluorobutanesulfonic acid



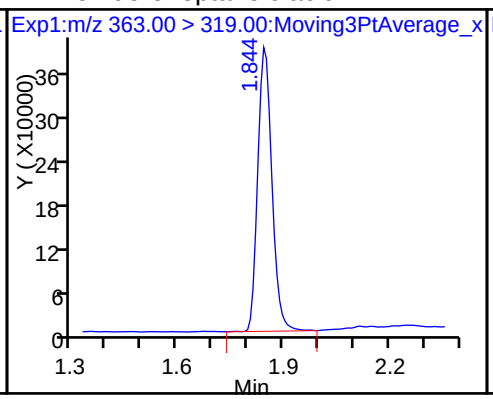
$ 2 13C2 PFHxA



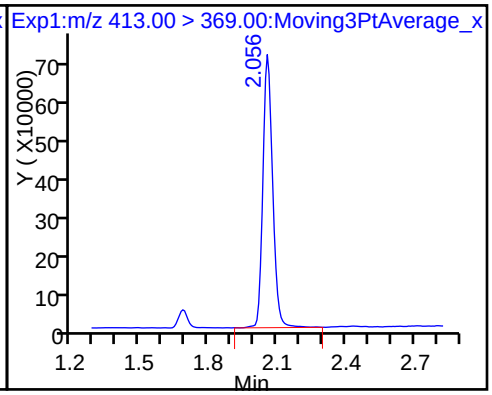
3 Perfluorohexanesulfonic acid



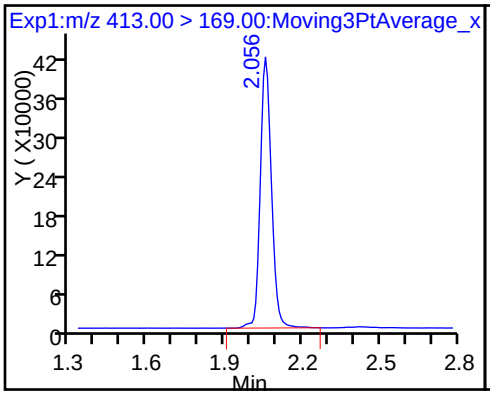
4 Perfluoroheptanoic acid



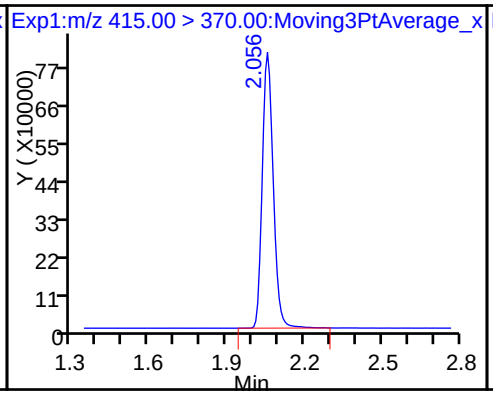
5 Perfluorooctanoic acid



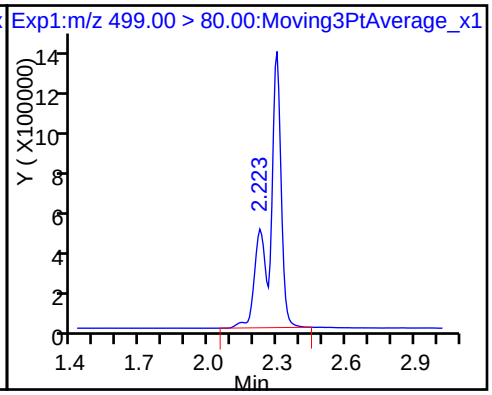
5 Perfluorooctanoic acid



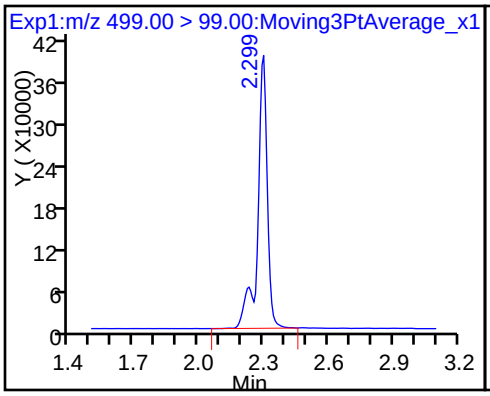
* 6 13C2-PFOA



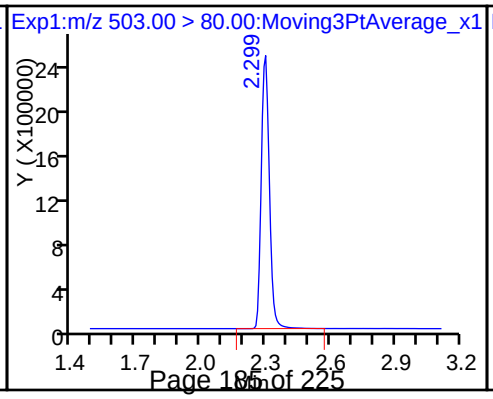
8 Perfluorooctane sulfonic acid



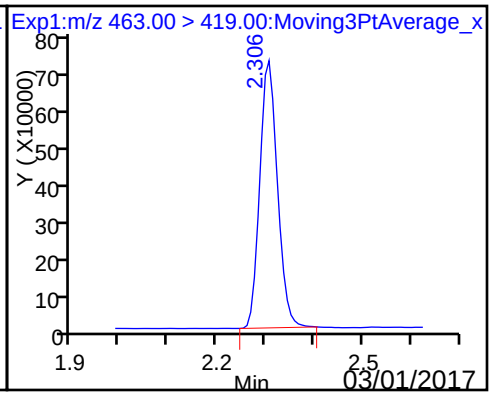
8 Perfluorooctane sulfonic acid



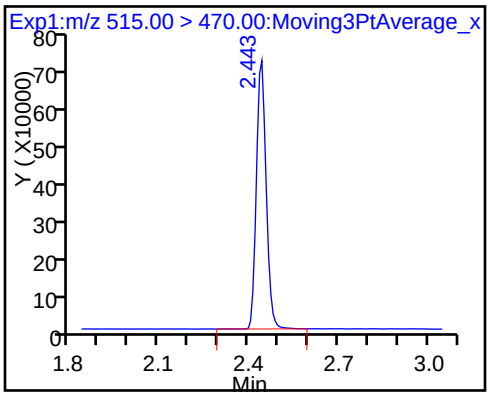
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.443
Y (X10000)
80
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
3.0
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Lab Sample ID: CCV 320-152586/15 Calibration Date: 02/28/2017 17:09

Instrument ID: A8_N Calib Start Date: 02/28/2017 14:41

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 02/28/2017 15:03

Lab File ID: 2017.02.28_537_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.491	1.251		113	135	-16.1	30.0
Perfluoroheptanoic acid	Ave	0.9178	0.8979		14.5	14.9	-2.2	30.0
Perfluorohexanesulfonic acid	Ave	1.372	1.530		50.6	45.4	11.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9600	0.8901		27.1	29.3	-7.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.089	1.112		61.3	60.1	2.1	30.0
Perfluorononanoic acid	Ave	0.7646	0.6866		27.9	31.1	-10.2	30.0
13C2 PFHxA	Ave	1.024	1.074		10.5	10.0	4.9	30.0
13C2 PFDA	Ave	0.7568	0.7143		9.44	10.0	-5.6	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_015.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 28-Feb-2017 17:09:16 ALS Bottle#: 5 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 01-Mar-2017 13:17:29 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: barnettj Date: 01-Mar-2017 13:17:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.548	1.627	-0.079	1.000	40918730	113.0		1454	
298.90 > 99.00	1.540	1.627	-0.087	0.995	21256173		1.93(0.00-0.00)	2021	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.677	1.765	-0.088	1.000	2724474	10.5		6176	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.836	1.938	-0.102	1.000	16863925	50.6		2432	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.836	1.940	-0.104	1.000	3381311	14.5		316	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.041	2.172	-0.131	1.000	6608540	27.1		445	
413.00 > 169.00	2.041	2.172	-0.131	1.000	3952496		1.67(0.00-0.00)	2813	
* 6 13C2-PFOA									
415.00 > 370.00	2.041	2.172	-0.131		2535805	10.0		4788	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.284	2.284	0.0	1.000	16229895	61.3		4265	M
499.00 > 99.00	2.284	2.284	0.0	1.000	3940974		4.12(0.00-0.00)	3568	
* 7 13C4 PFOS									
503.00 > 80.00	2.284	2.395	-0.111		6966148	28.7		8854	
9 Perfluorononanoic acid									
463.00 > 419.00	2.291	2.404	-0.113	1.000	5416975	27.9		1311	
$ 10 13C2 PFDA									
515.00 > 470.00	2.435	2.530	-0.095	1.000	1811429	9.44		2101	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 01-Mar-2017 13:17:30 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_015.d

Injection Date: 28-Feb-2017 17:09:16 Instrument ID: A8_N

Lims ID: CCV L5

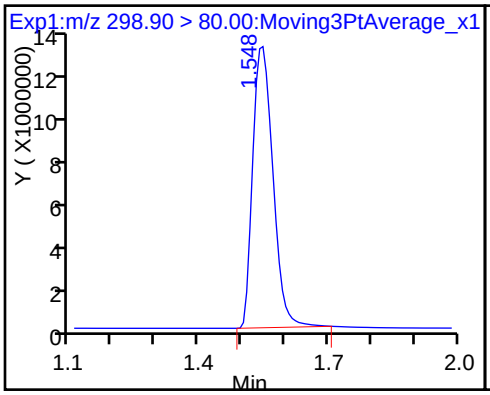
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 5 Worklist Smp#: 15

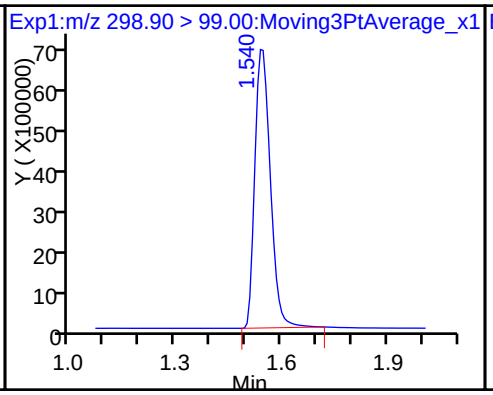
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

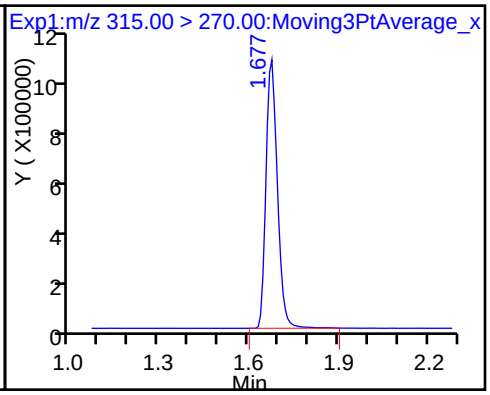
1 Perfluorobutanesulfonic acid



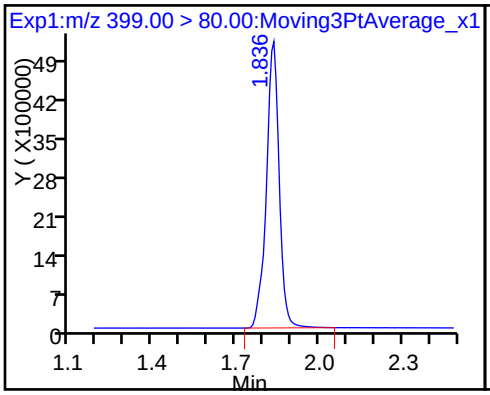
1 Perfluorobutanesulfonic acid



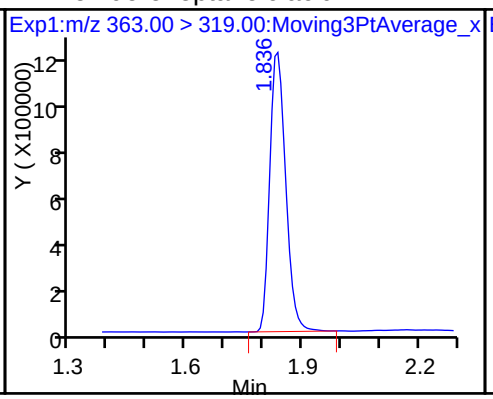
$ 2 13C2 PFHxA



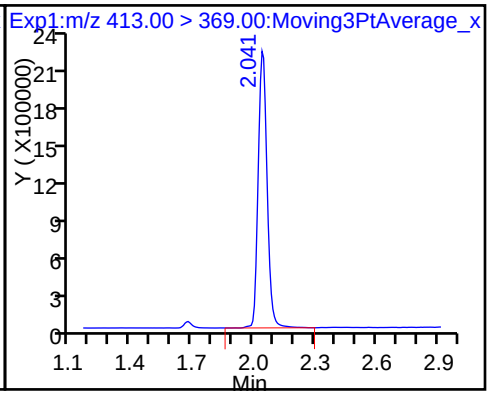
3 Perfluorohexanesulfonic acid



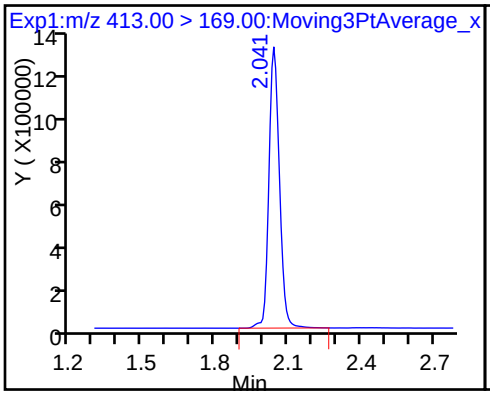
4 Perfluoroheptanoic acid



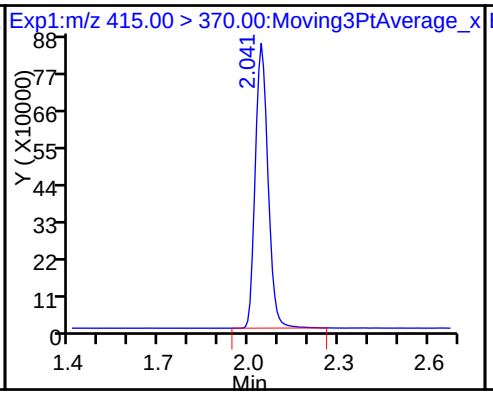
5 Perfluorooctanoic acid



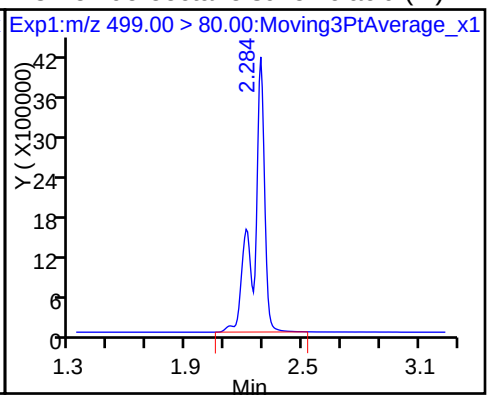
5 Perfluorooctanoic acid



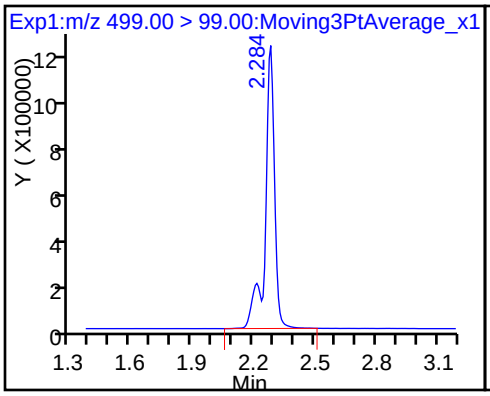
* 6 13C2-PFOA



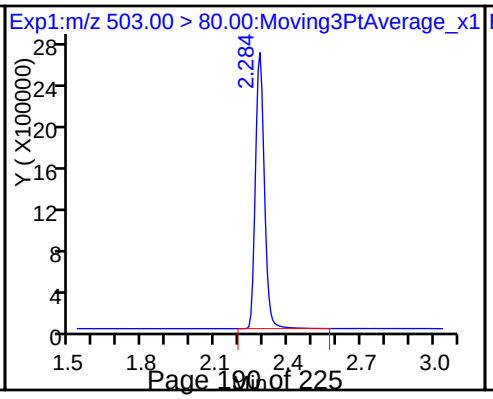
8 Perfluorooctane sulfonic acid (M)



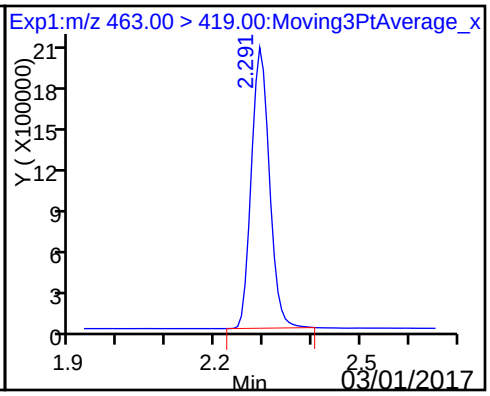
8 Perfluorooctane sulfonic acid



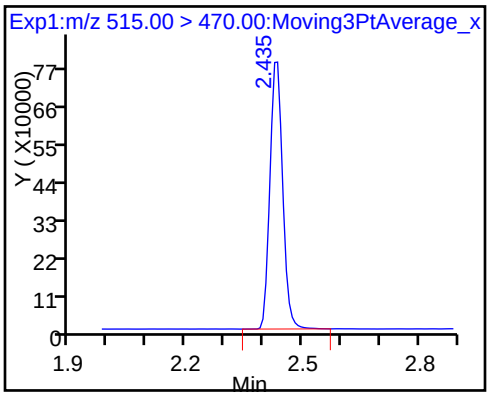
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.435
Y (X10000)
77
66
55
44
33
22
11
0
1.9
2.2
2.5
2.8
Min

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

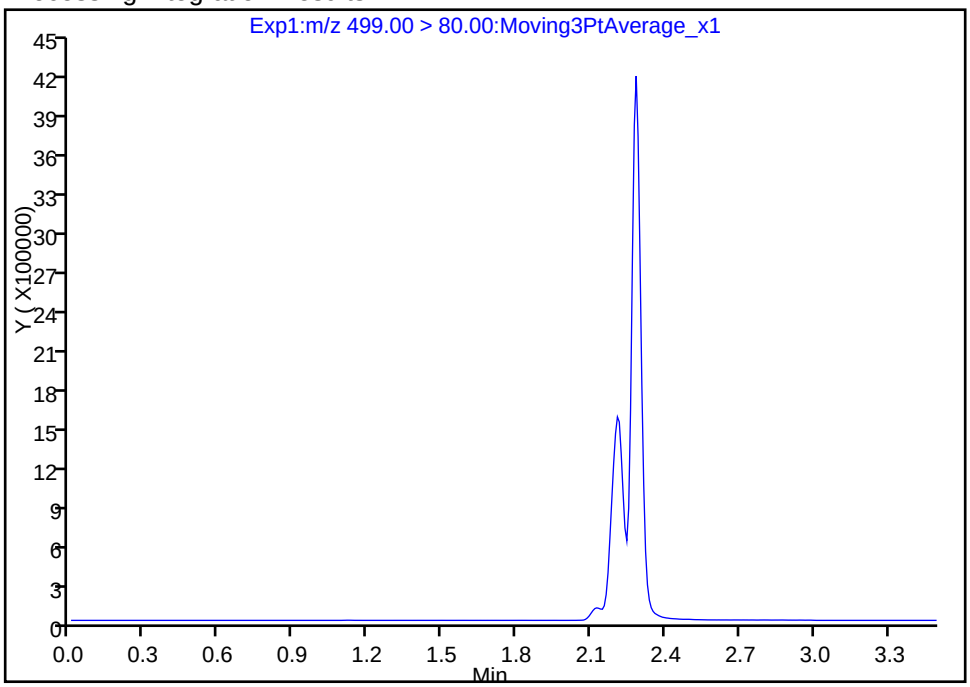
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_015.d
Injection Date: 28-Feb-2017 17:09:16 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 5 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

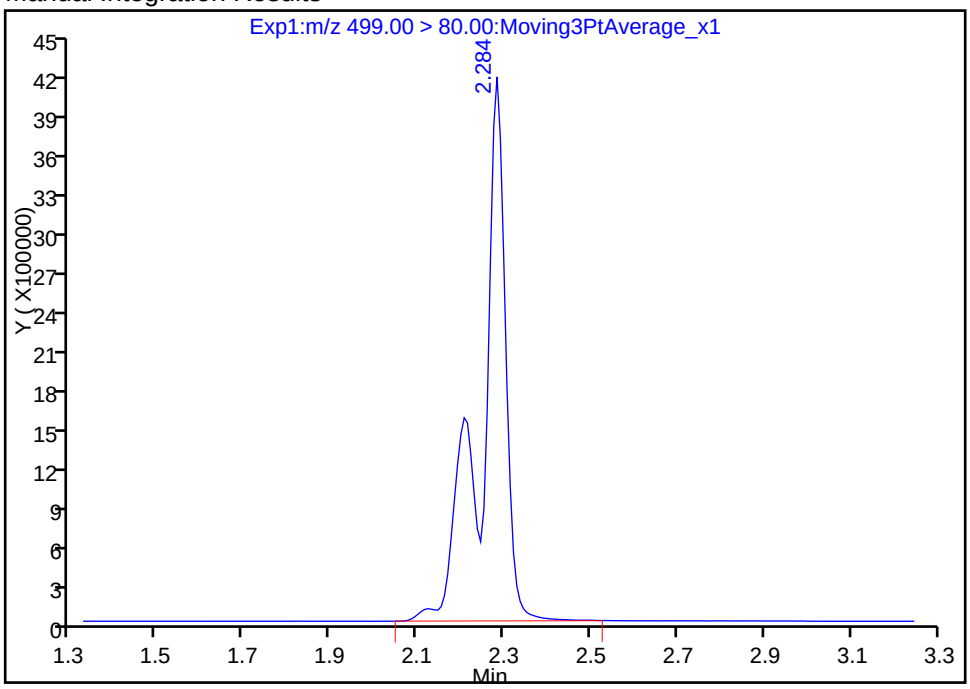
Not Detected
Expected RT: 2.28

Processing Integration Results



Manual Integration Results

RT: 2.28
Area: 16229895
Amount: 61.336281
Amount Units: ng/ml



Reviewer: barnettj, 01-Mar-2017 13:17:29
Audit Action: Assigned Compound ID Audit Reason:

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

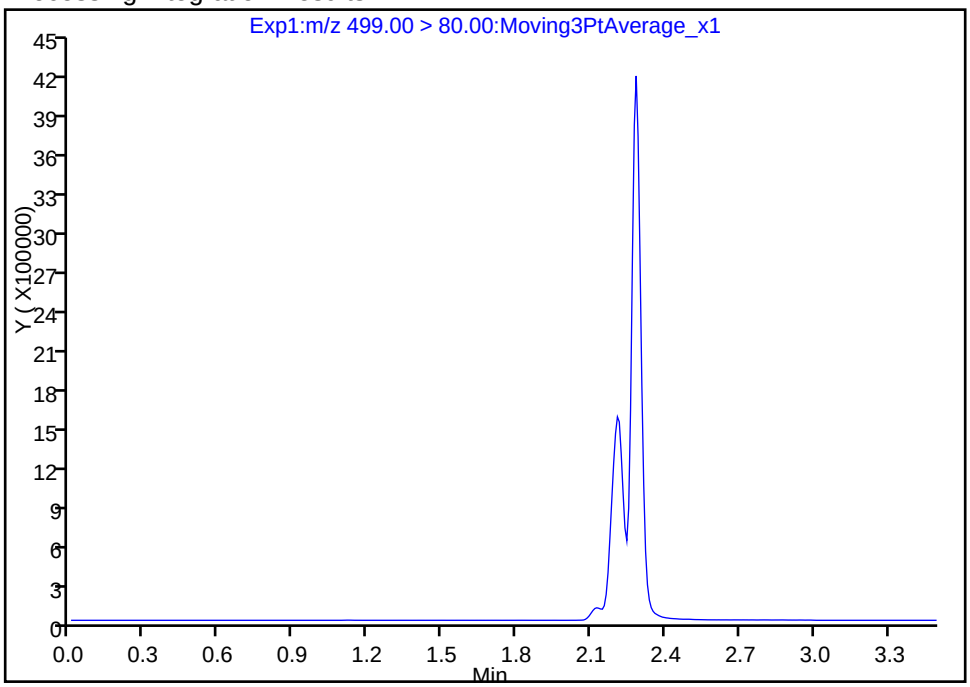
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_015.d
Injection Date: 28-Feb-2017 17:09:16 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 5 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

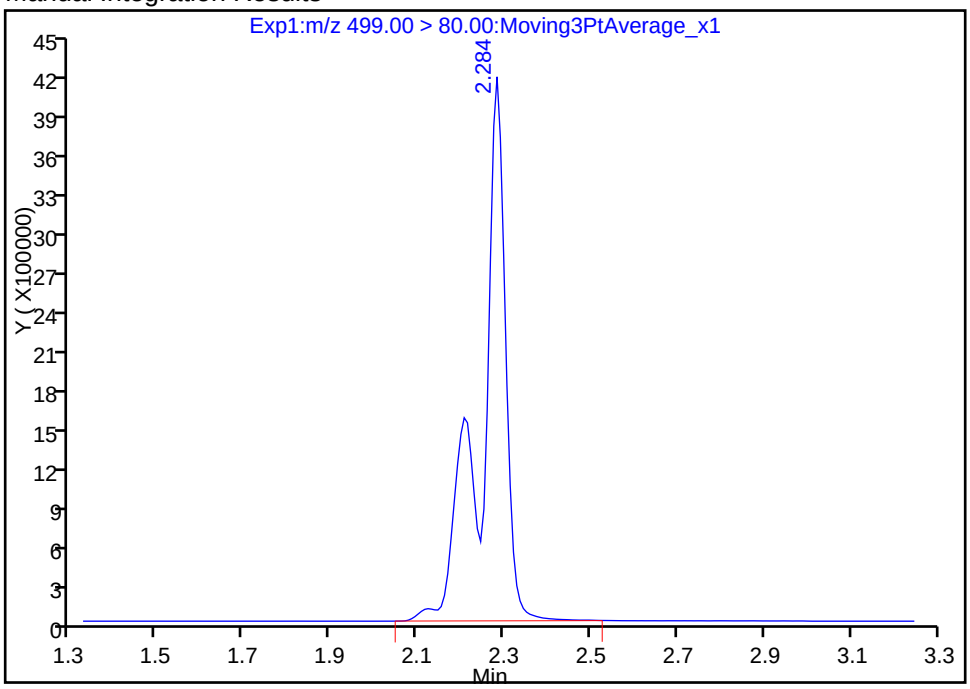
Not Detected
Expected RT: 2.28

Processing Integration Results



Manual Integration Results

RT: 2.28
Area: 16229895
Amount: 61.336281
Amount Units: ng/ml



Reviewer: barnettj, 01-Mar-2017 13:17:29
Audit Action: Manually Integrated Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-25960-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-152377/1-A

Matrix: Water | Lab File ID: 2017.02.28_537_002.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 02/27/2017 14:33

Sample wt/vol: 250(mL) | Date Analyzed: 02/28/2017 16:12

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

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

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

Analysis Batch No.: 152585 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.048	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.024	0.0094
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	84		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_002.d
Lims ID: MB 320-152377/1-A
Client ID:
Sample Type: MB
Inject. Date: 28-Feb-2017 16:12:01 ALS Bottle#: 35 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-152377/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Feb-2017 16:47:29 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK008

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.707	1.765	-0.058	1.000	2219789	8.57		3304	
* 6 13C2-PFOA									
415.00 > 370.00	2.086	2.172	-0.086		2531227	10.0		4412	
* 7 13C4 PFOS									
503.00 > 80.00	2.322	2.395	-0.073		7323261	28.7		7426	
$ 10 13C2 PFDA									
515.00 > 470.00	2.466	2.530	-0.064	1.000	1606577	8.39		2133	

Report Date: 28-Feb-2017 16:47:30 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_002.d

Injection Date: 28-Feb-2017 16:12:01 Instrument ID: A8_N

Lims ID: MB 320-152377/1-A

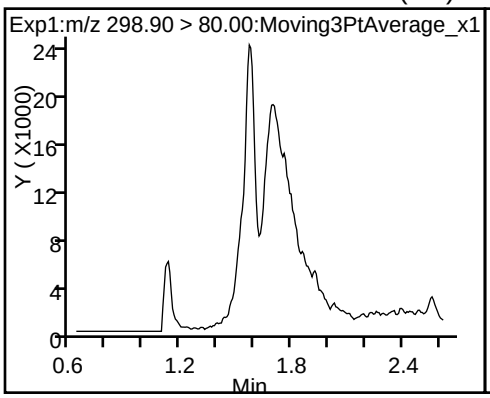
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 35 Worklist Smp#: 2

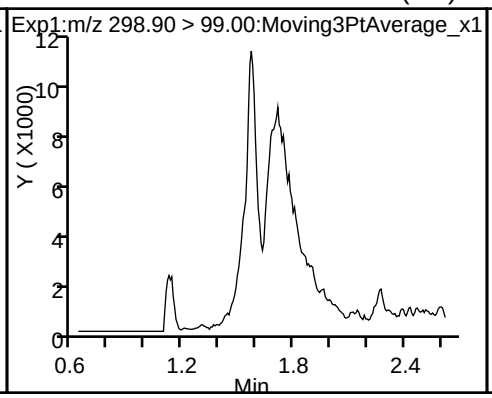
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

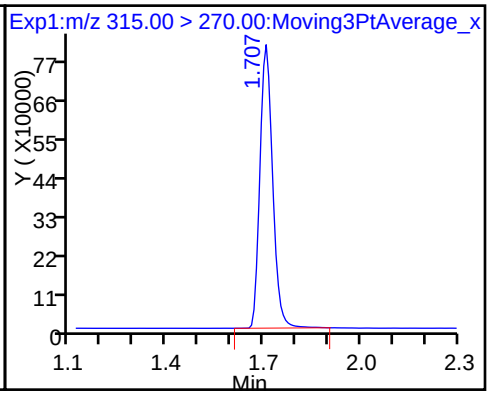
1 Perfluorobutanesulfonic acid (ND)



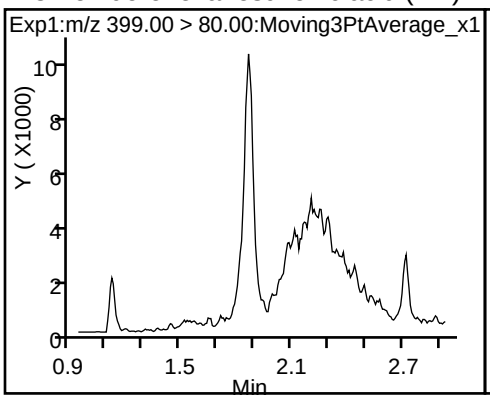
1 Perfluorobutanesulfonic acid (ND)



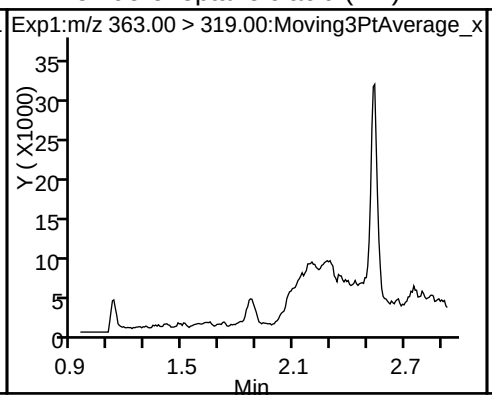
$ 2 13C2 PFHxA



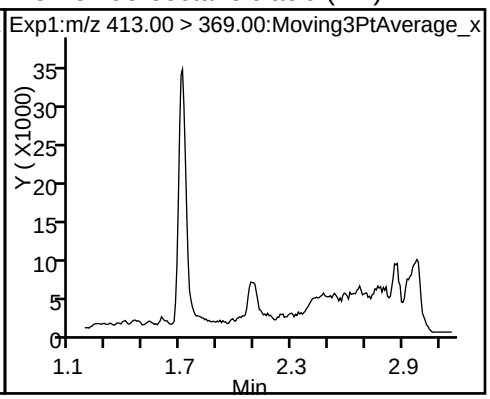
3 Perfluorohexanesulfonic acid (ND)



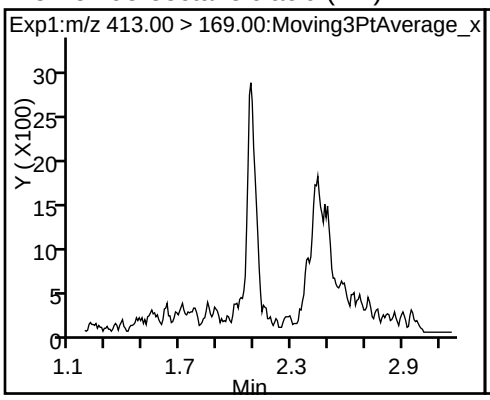
4 Perfluoroheptanoic acid (ND)



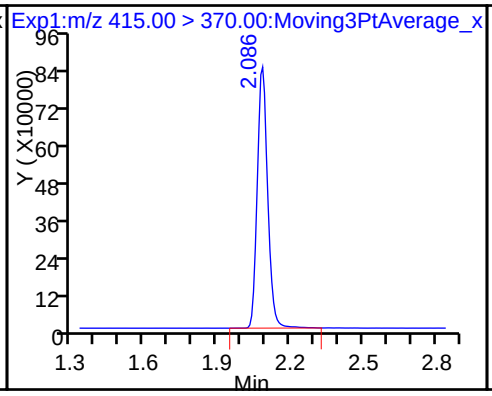
5 Perfluorooctanoic acid (ND)



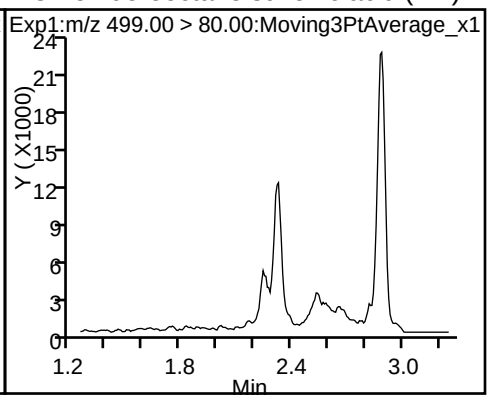
5 Perfluorooctanoic acid (ND)



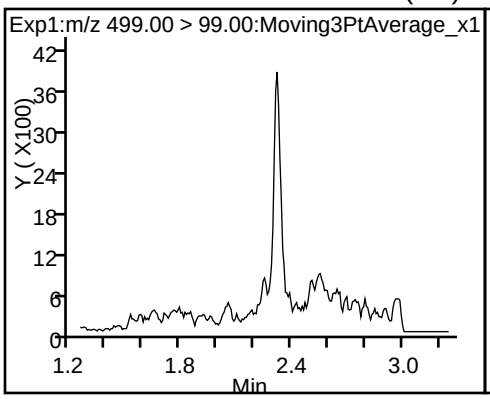
* 6 13C2-PFOA



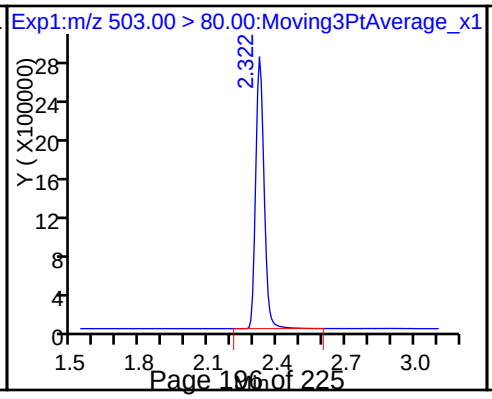
8 Perfluorooctane sulfonic acid (ND)



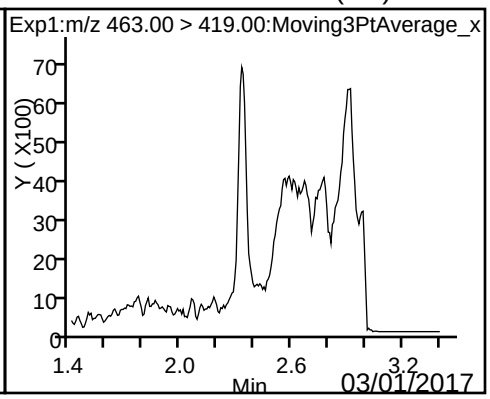
8 Perfluorooctane sulfonic acid (ND)



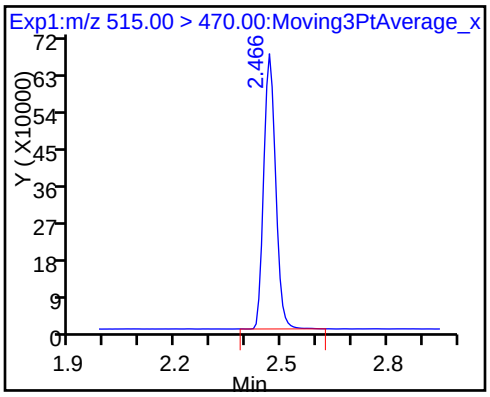
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.466
Y (X10000)
72
63
54
45
36
27
18
9
0
1.9
2.2
2.5
2.8
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_002.d
Lims ID: MB 320-152377/1-A
Client ID:
Sample Type: MB
Inject. Date: 28-Feb-2017 16:12:01 ALS Bottle#: 35 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-152377/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Feb-2017 16:47:29 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK008

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.57	85.65
$ 10 13C2 PFDA	10.0	8.39	83.86

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 320-152377/2-A

Matrix: Water Lab File ID: 2017.02.28_537_003.d

Analysis Method: 537 Date Collected:

Extraction Method: 537 Date Extracted: 02/27/2017 14:33

Sample wt/vol: 250(mL) Date Analyzed: 02/28/2017 16:16

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.: 152585 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.137		0.060	0.048	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.0637		0.030	0.024	0.0094
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.303		0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	85		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_003.d
Lims ID: LCS 320-152377/2-A
Client ID:
Sample Type: LCS
Inject. Date: 28-Feb-2017 16:16:30 ALS Bottle#: 36 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-152377/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Feb-2017 16:47:29 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Feb-2017 16:47:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.571	1.627	-0.057	1.000	29535617	75.8		1238	
298.90 > 99.00	1.571	1.627	-0.057	1.000	14200002		2.08(0.00-0.00)	1607	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.707	1.765	-0.058	1.000	2384728	9.12		3740	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.866	1.938	-0.072	1.000	9872943	27.5		1626	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.866	1.940	-0.074	1.000	2020022	8.61		159	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.079	2.172	-0.093	1.000	3903714	15.9		294	
413.00 > 169.00	2.086	2.172	-0.086	1.004	2286949		1.71(0.00-0.00)	1799	
* 6 13C2-PFOA									
415.00 > 370.00	2.079	2.172	-0.093		2554830	10.0		4643	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.299	2.367	-0.068	1.000	9739554	34.2		1009	
499.00 > 99.00	2.322	2.367	-0.045	1.010	2342715		4.16(0.00-0.00)	2484	
* 7 13C4 PFOS									
503.00 > 80.00	2.322	2.395	-0.073		7496795	28.7		7432	
9 Perfluorononanoic acid									
463.00 > 419.00	2.329	2.404	-0.075	1.000	3214322	16.5		749	
$ 10 13C2 PFDA									
515.00 > 470.00	2.466	2.530	-0.064	1.000	1642346	8.49		2144	

Report Date: 28-Feb-2017 16:47:31 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_003.d

Injection Date: 28-Feb-2017 16:16:30 Instrument ID: A8_N

Lims ID: LCS 320-152377/2-A

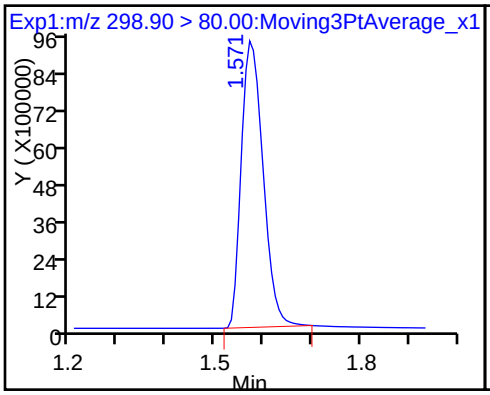
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 36 Worklist Smp#: 3

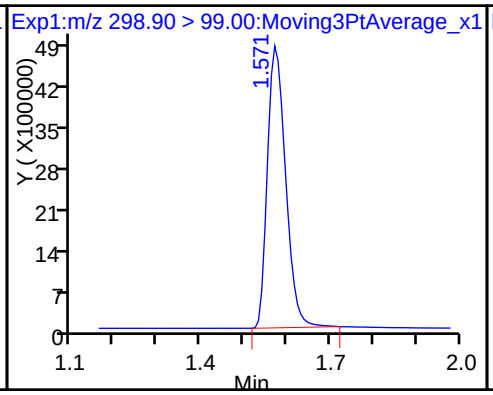
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

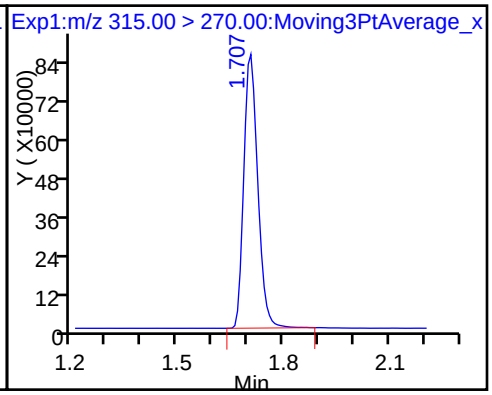
1 Perfluorobutanesulfonic acid



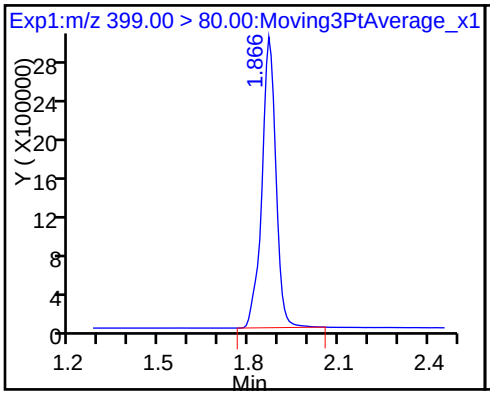
1 Perfluorobutanesulfonic acid



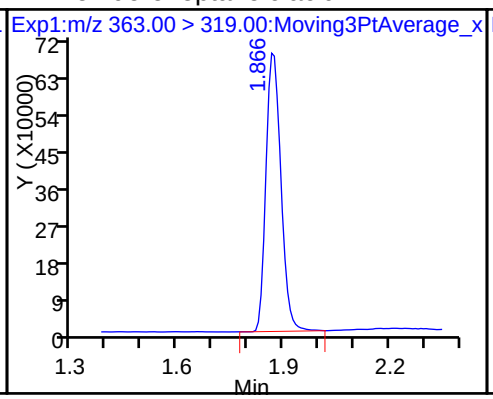
$ 2 13C2 PFHxA



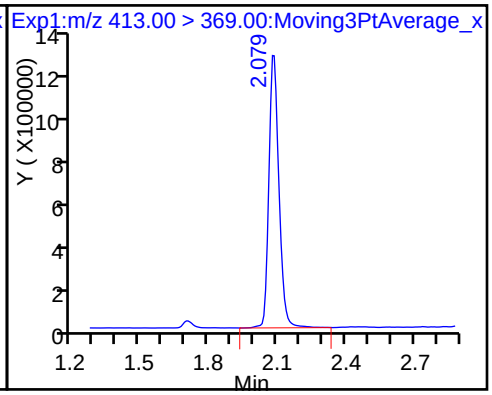
3 Perfluorohexanesulfonic acid



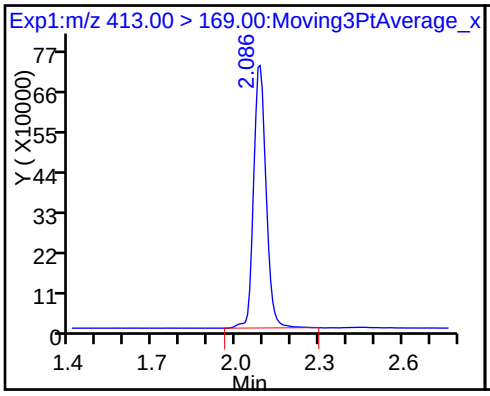
4 Perfluoroheptanoic acid



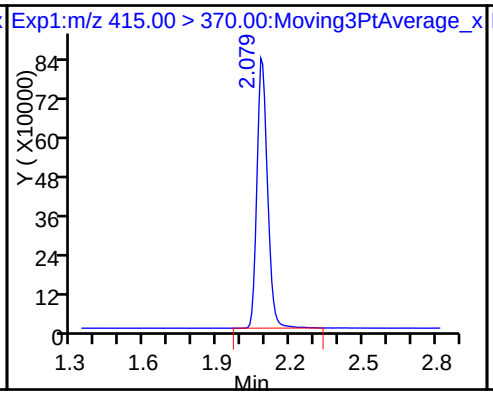
5 Perfluorooctanoic acid



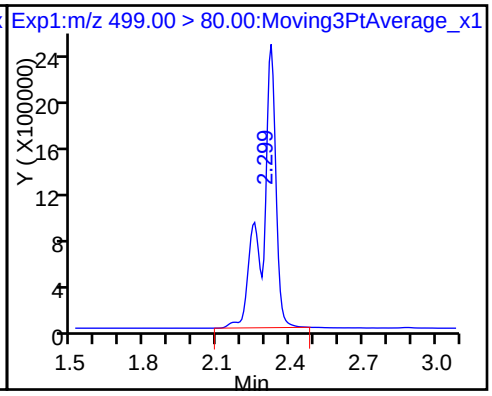
5 Perfluorooctanoic acid



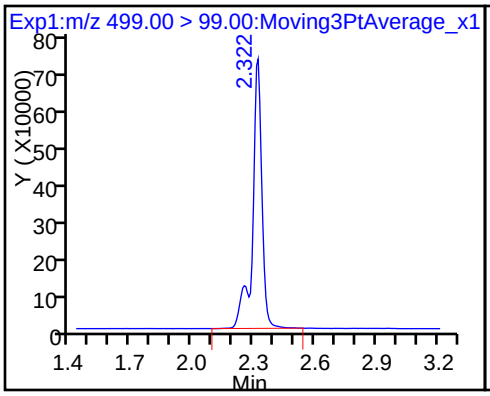
* 6 13C2-PFOA



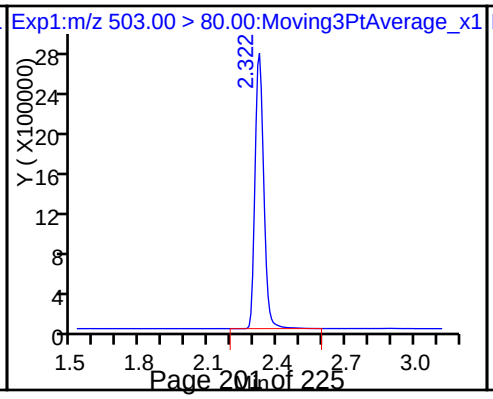
8 Perfluorooctane sulfonic acid



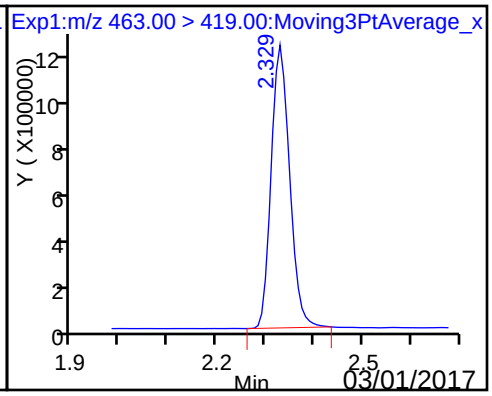
8 Perfluorooctane sulfonic acid



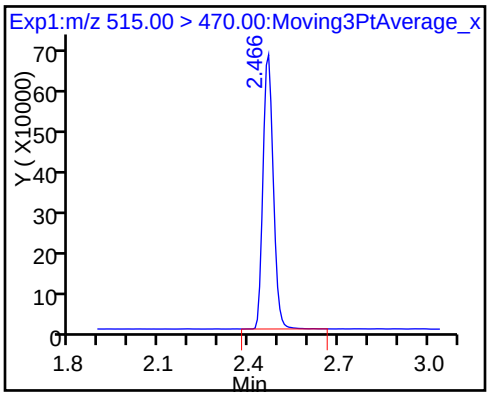
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.466
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
3.0
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_003.d
Lims ID: LCS 320-152377/2-A
Client ID:
Sample Type: LCS
Inject. Date: 28-Feb-2017 16:16:30 ALS Bottle#: 36 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-152377/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Feb-2017 16:47:29 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Feb-2017 16:47:09

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.12	91.17
$ 10 13C2 PFDA	10.0	8.49	84.94

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Client Sample ID: Lab Sample ID: LCSD 320-152377/3-A

Matrix: Water Lab File ID: 2017.02.28_537_004.d

Analysis Method: 537 Date Collected:

Extraction Method: 537 Date Extracted: 02/27/2017 14:33

Sample wt/vol: 250(mL) Date Analyzed: 02/28/2017 16:20

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

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

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

Analysis Batch No.: 152585 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.136		0.060	0.048	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.0612		0.030	0.024	0.0094
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.299		0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	84		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_004.d
Lims ID: LCSD 320-152377/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 28-Feb-2017 16:20:53 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-152377/3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Feb-2017 16:47:29 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Feb-2017 16:48:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.578	1.627	-0.049	1.000	28539700	74.6		1170	
298.90 > 99.00	1.578	1.627	-0.049	1.000	13688117		2.08(0.00-0.00)	1595	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.707	1.765	-0.058	1.000	2269480	8.75		3593	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.874	1.938	-0.064	1.000	9787323	27.8		1520	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.874	1.940	-0.066	1.000	1986619	8.54		46.9	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.086	2.172	-0.086	1.000	3722060	15.3		302	
413.00 > 169.00	2.086	2.172	-0.086	1.000	2253581		1.65(0.00-0.00)	1961	
* 6 13C2-PFOA									
415.00 > 370.00	2.086	2.172	-0.086		2533845	10.0		4633	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.253	2.367	-0.114	1.000	9521594	34.1		712	
499.00 > 99.00	2.329	2.367	-0.038	1.034	2326675		4.09(0.00-0.00)	2696	
* 7 13C4 PFOS									
503.00 > 80.00	2.329	2.395	-0.066		7355550	28.7		7859	
9 Perfluorononanoic acid									
463.00 > 419.00	2.337	2.404	-0.067	1.000	3204277	16.5		737	
$ 10 13C2 PFDA									
515.00 > 470.00	2.473	2.530	-0.057	1.000	1603992	8.36		2265	

Report Date: 28-Feb-2017 16:48:42 Chrom Revision: 2.2 03-Feb-2017 15:35:04

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_004.d

Injection Date: 28-Feb-2017 16:20:53 Instrument ID: A8_N

Lims ID: LCSD 320-152377/3-A

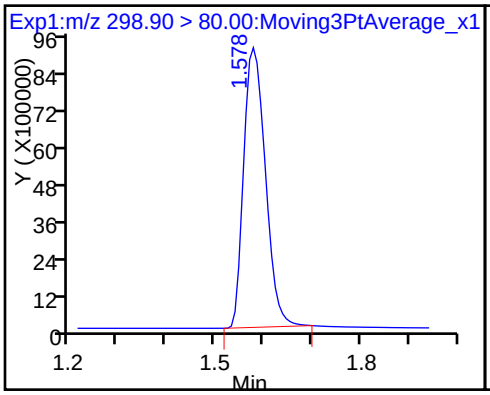
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4

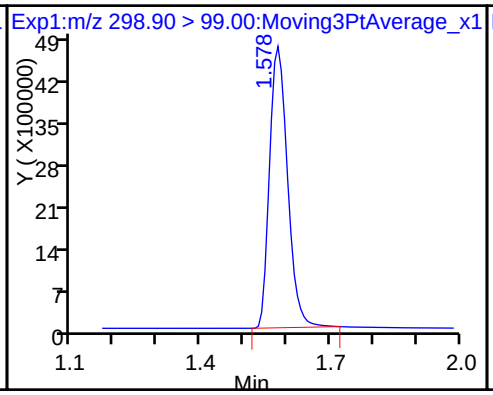
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

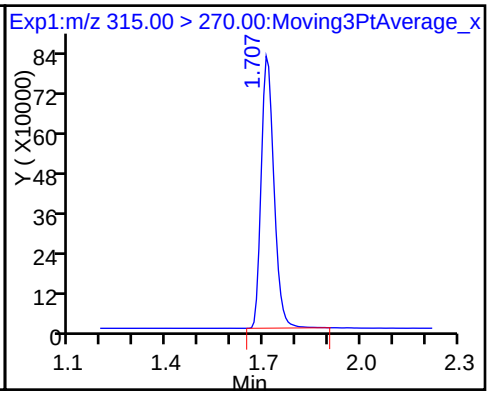
1 Perfluorobutanesulfonic acid



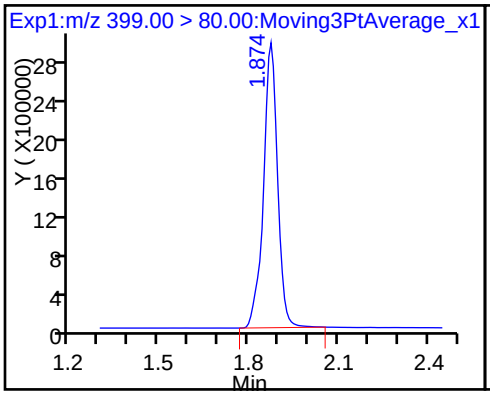
1 Perfluorobutanesulfonic acid



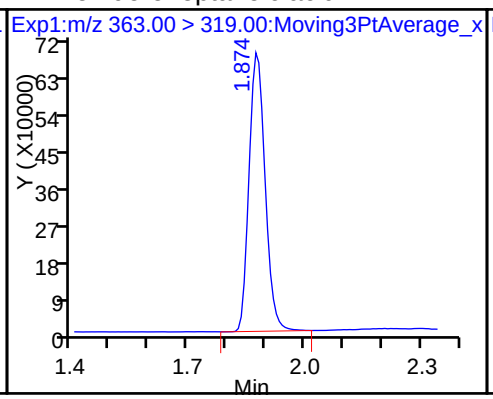
$ 2 13C2 PFHxA



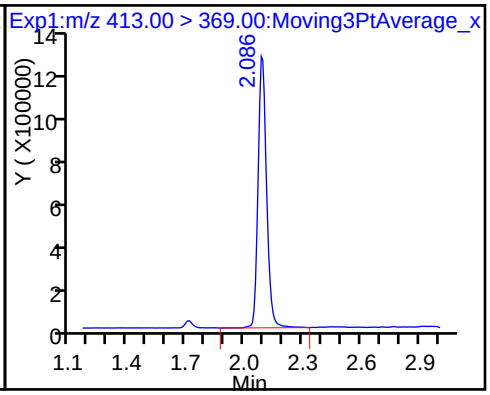
3 Perfluorohexanesulfonic acid



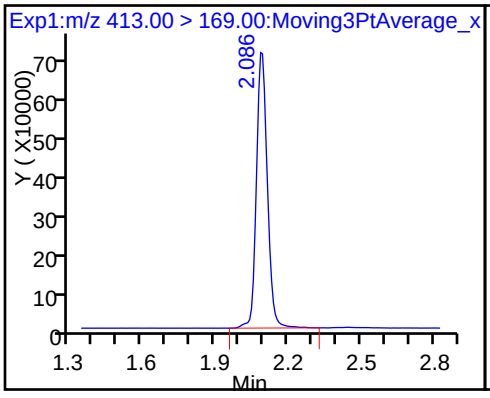
4 Perfluoroheptanoic acid



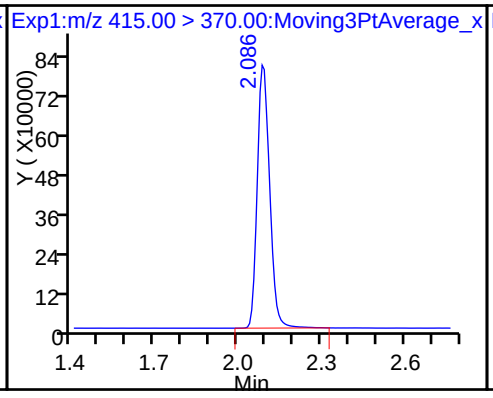
5 Perfluorooctanoic acid



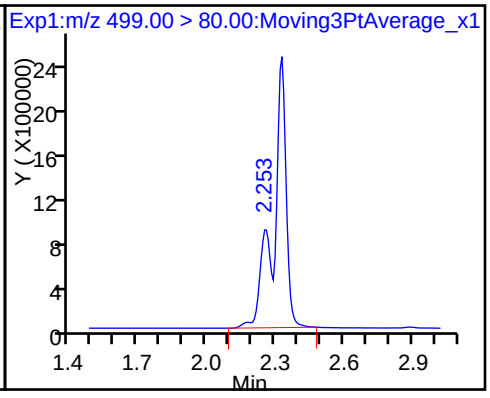
5 Perfluorooctanoic acid



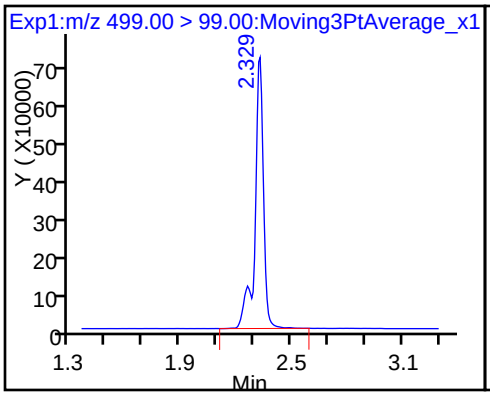
* 6 13C2-PFOA



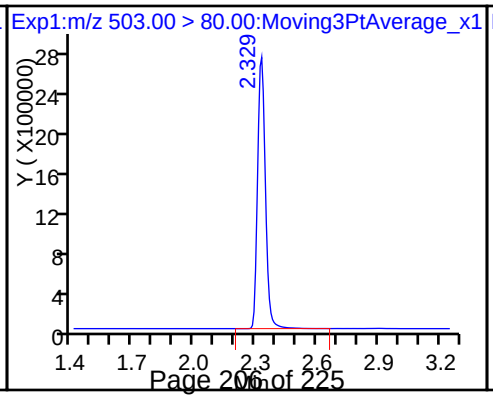
8 Perfluorooctane sulfonic acid



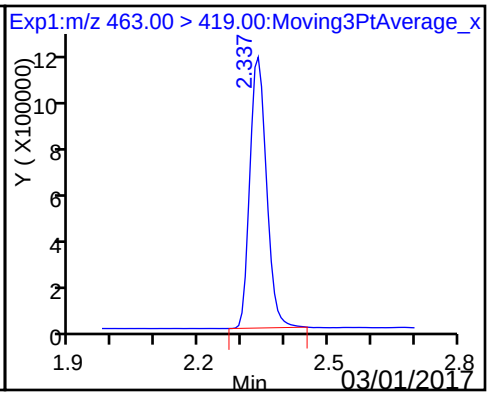
8 Perfluorooctane sulfonic acid



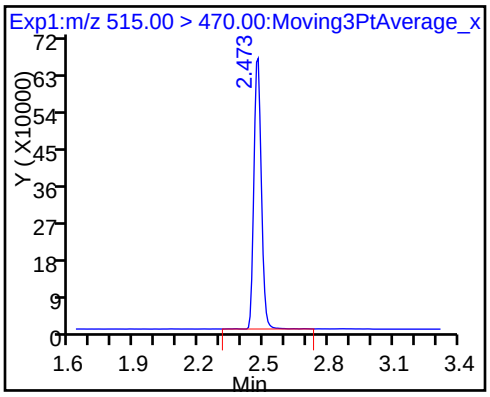
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.473
Y (X10000)
72
63
54
45
36
27
18
9
0
1.6
1.9
2.2
2.5
2.8
3.1
3.4
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\2017.02.28_537_004.d
Lims ID: LCSD 320-152377/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 28-Feb-2017 16:20:53 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-152377/3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Feb-2017 16:47:29 Calib Date: 28-Feb-2017 15:03:35
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170228-40333.b\2017.02.28_537CURVE_008.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Feb-2017 16:48:04

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.75	87.48
$ 10 13C2 PFDA	10.0	8.36	83.64

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Instrument ID: A8_N Start Date: 02/28/2017 14:41

Analysis Batch Number: 152571 End Date: 02/28/2017 15:51

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-152571/3		02/28/2017 14:41	1	2017.02.28_537C URVE 003.d	GeminiC18 3x100 3(mm)
IC 320-152571/4		02/28/2017 14:45	1	2017.02.28_537C URVE 004.d	GeminiC18 3x100 3(mm)
IC 320-152571/5		02/28/2017 14:50	1	2017.02.28_537C URVE 005.d	GeminiC18 3x100 3(mm)
IC 320-152571/6 ICISAV		02/28/2017 14:54	1	2017.02.28_537C URVE 006.d	GeminiC18 3x100 3(mm)
IC 320-152571/7		02/28/2017 14:59	1	2017.02.28_537C URVE 007.d	GeminiC18 3x100 3(mm)
IC 320-152571/8		02/28/2017 15:03	1	2017.02.28_537C URVE 008.d	GeminiC18 3x100 3(mm)
ZZZZZ		02/28/2017 15:07	1		GeminiC18 3x100 3(mm)
CCVL 320-152571/10		02/28/2017 15:12	1	2017.02.28_537C URVE 010.d	GeminiC18 3x100 3(mm)
ZZZZZ		02/28/2017 15:16	1		GeminiC18 3x100 3(mm)
ICV 320-152571/12		02/28/2017 15:21	1	2017.02.28_537C URVE 012.d	GeminiC18 3x100 3(mm)
ICV 320-152571/19		02/28/2017 15:51	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Instrument ID: A8_N Start Date: 02/28/2017 16:07

Analysis Batch Number: 152585 End Date: 02/28/2017 16:56

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-152585/1 CCVIS		02/28/2017 16:07	1	2017.02.28_537_001.d	GeminiC18 3x100 3(mm)
MB 320-152377/1-A		02/28/2017 16:12	1	2017.02.28_537_002.d	GeminiC18 3x100 3(mm)
LCS 320-152377/2-A		02/28/2017 16:16	1	2017.02.28_537_003.d	GeminiC18 3x100 3(mm)
LCSD 320-152377/3-A		02/28/2017 16:20	1	2017.02.28_537_004.d	GeminiC18 3x100 3(mm)
320-25960-1		02/28/2017 16:25	1	2017.02.28_537_005.d	GeminiC18 3x100 3(mm)
320-25960-2		02/28/2017 16:29	1	2017.02.28_537_006.d	GeminiC18 3x100 3(mm)
320-25960-3		02/28/2017 16:34	1	2017.02.28_537_007.d	GeminiC18 3x100 3(mm)
320-25960-4		02/28/2017 16:38	1	2017.02.28_537_008.d	GeminiC18 3x100 3(mm)
320-25960-5		02/28/2017 16:42	1	2017.02.28_537_009.d	GeminiC18 3x100 3(mm)
320-25960-6		02/28/2017 16:47	1	2017.02.28_537_010.d	GeminiC18 3x100 3(mm)
320-25960-7		02/28/2017 16:51	1	2017.02.28_537_011.d	GeminiC18 3x100 3(mm)
CCV 320-152585/12 CCVIS		02/28/2017 16:56	1	2017.02.28_537_012.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Instrument ID: A8_N Start Date: 02/28/2017 16:56

Analysis Batch Number: 152586 End Date: 02/28/2017 17:09

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-152586/12 CCVIS		02/28/2017 16:56	1	2017.02.28_537_012.d	GeminiC18 3x100 3(mm)
320-25960-8		02/28/2017 17:00	1	2017.02.28_537_013.d	GeminiC18 3x100 3(mm)
CCV 320-152586/15 CCVIS		02/28/2017 17:09	1	2017.02.28_537_015.d	GeminiC18 3x100 3(mm)

537

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Batch Number: 152377 Batch Start Date: 02/27/17 14:33 Batch Analyst: Arauz, Horacio J

Batch Method: 537 Batch End Date: 02/28/17 11:10

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00030
MB 320-152377/1		537, 537				250 mL	1.00 mL	7.0 SU	20 uL
LCS 320-152377/2		537, 537				250 mL	1.00 mL	7.0 SU	20 uL
LCSD 320-152377/3		537, 537				250 mL	1.00 mL	7.0 SU	20 uL
320-25960-B-1	WI-CV-1RW73-0217	537, 537	T	292.49 g	27.76 g	264.7 mL	1.00 mL	7.0 SU	20 uL
320-25960-B-2	WI-CV-1FB73-0217	537, 537	T	305.36 g	26.49 g	278.9 mL	1.00 mL	7.0 SU	20 uL
320-25960-B-3	WI-CV-1RW74-0217	537, 537	T	305.23 g	26.78 g	278.5 mL	1.00 mL	7.0 SU	20 uL
320-25960-B-4	WI-CV-1FB74-0217	537, 537	T	306.88 g	26.36 g	280.5 mL	1.00 mL	7.0 SU	20 uL
320-25960-B-5	WI-CV-1RW75-0217	537, 537	T	302.56 g	26.58 g	276 mL	1.00 mL	7.0 SU	20 uL
320-25960-B-6	WI-CV-1FB75-0217	537, 537	T	307.66 g	26.49 g	281.2 mL	1.00 mL	7.0 SU	20 uL
320-25960-B-7	WI-CV-1RW76-0217	537, 537	T	293.72 g	26.82 g	266.9 mL	1.00 mL	7.0 SU	20 uL
320-25960-B-8	WI-CV-1FB76-0217	537, 537	T	319.54 g	26.79 g	292.8 mL	1.00 mL	7.0 SU	20 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00017	LC537-SU 00030	AnalysisComment			
MB 320-152377/1		537, 537			50 uL	Chlorine ND			
LCS 320-152377/2		537, 537		50 uL	50 uL	Chlorine ND			
LCSD 320-152377/3		537, 537		50 uL	50 uL	Chlorine ND			
320-25960-B-1	WI-CV-1RW73-0217	537, 537	T		50 uL	Chlorine ND			
320-25960-B-2	WI-CV-1FB73-0217	537, 537	T		50 uL	Chlorine ND			
320-25960-B-3	WI-CV-1RW74-0217	537, 537	T		50 uL	Chlorine ND			
320-25960-B-4	WI-CV-1FB74-0217	537, 537	T		50 uL	Chlorine ND			
320-25960-B-5	WI-CV-1RW75-0217	537, 537	T		50 uL	Chlorine ND			
320-25960-B-6	WI-CV-1FB75-0217	537, 537	T		50 uL	Chlorine ND			
320-25960-B-7	WI-CV-1RW76-0217	537, 537	T		50 uL	Chlorine ND			
320-25960-B-8	WI-CV-1FB76-0217	537, 537	T		50 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.: 320-25960-1

SDG No.:

Batch Number: 152377 Batch Start Date: 02/27/17 14:33 Batch Analyst: Arauz, Horacio J

Batch Method: 537 Batch End Date: 02/28/17 11:10

Batch Notes	
Manifold ID	4
Methanol ID	851504
Pipette ID	MD05306
Analyst ID - IS Reagent Drop	HJS
Analyst ID - IS Reagent Drop Witness	CCB
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	NSH
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	NSH
SPE Cartridge ID	6341059-04
Trizma ID	SLBR4303V
Reagent Water ID	2-21-17

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 CCV/Data Review Checklist

A8

Job No: 25960 Instrument ID & Date: 2-28-17 ICAL Batch: 152571
Extraction Batch: 152377 Worklist #: 40335 TALS Batch: 152285, 152586

Review Items	Level 1 Yes	Level 1 No	Level 1 N/A	Level 2
Initial Calibration				
1. Is ICAL verified and locked in Chrom & TALS?	✓			✓
2. Is ICV properly linked in TALS?	✓			✓
Continuing Calibration				
1. Low-range CCV injected at start of analytical run? CCV injected after every 10 samples and at the end of the analytical run and alternated between Low-range, Mid-range and High-range?	✓			✓
2. If sequence was not after an ICAL was a low and mid range CCV injected at the start of the analytical run?			✓	
3. Native compounds and surrogates in control? Low-range within ±50% of true value Mid and High-range within ±30% of true value	✓			✓
4. Internal Standard areas in control? Areas ≥ 50% of average area of the ICal and 70-140% of the most recent CCV.	✓			✓
Client Samples & QC Sample Results				
1. Were preparation and analysis done within holding times?	✓			✓
2. Are Chromatograms reviewed and spectra verified?	✓			✓
3. Are positive results within calibration range?	✓			✓
4. Dilutions due to target cpds? ___ Dilutions due to non-targets? ___			✓	
5. All target compounds in MB < 1/3 RL ? (Requires NCM if "no.")	✓			✓
6. Are target constituents in LCS/LCSD within method control limits?	✓			✓
7. Internal Standard areas in control for all samples and QC reported? ±50% from the average area of the ICAL and 70-140% of the most recent CCV	✓			✓
8. Do results (e.g., dilutions/trip blanks) make sense?	✓			✓
9. Are MS/MSD recoveries and RPDs within method control limits?			✓	
10. Are all QC samples properly linked in TALS?	✓			✓
11. All manual integrations appropriate and completely documented?	✓			
12. Are nonconformances documented as NCMs?				
13. Are all Chrom graphics uploaded?	✓			✓

1st Level Reviewer / Date: JRB 3-1-17 2nd Level Reviewer / Date: [signature] 3/1/17

NCM # and Comments: _____

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 ICAL Checklist

A8

Instrument ID & Date: 2-28-17 Worklist#: 40333

ICAL Batch: 152571, 152572 Calibration ID number: 28641

Review Items	--- Level 1 --- Yes	No	N/A	Level 2
Initial Calibration				
1. Mass calibration, as needed, verified by full scan of PFC stock standard. All PFC ions used for quantitation are within 0.3 m/z of true mass?	✓		✓	✓
2. Responses increase with increasing concentration?	✓			✓
3. Fit used (circle): (Average) Linear (1/x²)Linear Quadratic (6 points minimum)				
4. Meets fit criteria? Intercept ≤ ½ RL RSD ≤ 30% for Average $R^2 \geq 0.990$ for Linear $R^2 \geq 0.990$ for Quadratic NOTE: "Force through Zero" must be used and weighted if needed	✓			✓
5. If quadratic fit used the curve does not "bend over".			✓	
6. Feed calibration points into the calculated curve. Are points ≤MRL within ±50% of true value? Are points >MRL within ±30% of true value?	✓			✓
7. Any carryover from the high calibration point must be < 1/3 RL	✓			✓
8. Asymmetry check meets criteria for the first two eluting peaks?.(0.8 - 1.5).	✓			✓
9. Is the asymmetry check scanned and linked in TALS to the calibration point?	✓			✓
10. Is ICV (2nd source) ± 30% of true value?	✓			✓
11. Is ICV (2nd source) internal standards ±50% of average area of the ICAL?	✓			✓
12. ICal locked in Chrom and uploaded to TALS?	✓			
13. ICal locked in TALS and scanned?				✓

1st Level Reviewer / Date: JRB 3-1-17 2nd Level Reviewer / Date: [illegible] 3-1-17

NCM # and Comments:

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 28FEB2017B_537 Worklist Number: 40335
Instrument Name: A8_N Chrom Method: 537_A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170228-40335.b
QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 152585
# 1 CCV L5	# 1 CCV L5
# 2 MB 320-152377/1-A	# 2 MB 320-152377/1-A
# 3 LCS 320-152377/2-A	# 3 LCS 320-152377/2-A
# 4 LCSD 320-152377/3-A	# 4 LCSD 320-152377/3-A
# 5 320-25960-B-1-A	# 5 320-25960-B-1-A
# 6 320-25960-B-2-A	# 6 320-25960-B-2-A
# 7 320-25960-B-3-A	# 7 320-25960-B-3-A
# 8 320-25960-B-4-A	# 8 320-25960-B-4-A
# 9 320-25960-B-5-A	# 9 320-25960-B-5-A
#10 320-25960-B-6-A	#10 320-25960-B-6-A
#11 320-25960-B-7-A	#11 320-25960-B-7-A
#12 CCV L3	#12 CCV L3

QC Batch: 2	LC 537 ICAL Raw Batch: 152586
#12 CCV L3	#12 CCV L3
#13 320-25960-B-8-A	#13 320-25960-B-8-A
#14 QC 537 IS 00032	#14 QC 537 IS 00032
#15 CCV L5	#15 CCV L5

QC Batch: 3	LC 537 ICAL Raw Batch: 152592
#15 CCV L5	#15 CCV L5
#16 MB 320-152123/1-A	#16 MB 320-152123/1-A
#17 LLCS 320-152123/2-A	#17 LLCS 320-152123/2-A
#18 320-26004-A-1-A	#18 320-26004-A-1-A
#19 320-26004-A-2-A	#19 320-26004-A-2-A
#20 320-26004-A-3-A	#20 320-26004-A-3-A
#21 320-26004-A-4-A	#21 320-26004-A-4-A
#22 320-26004-A-5-A	#22 320-26004-A-5-A
#23 320-26004-A-6-A	#23 320-26004-A-6-A
#24 320-26004-A-7-A	#24 320-26004-A-7-A
#25 320-26004-A-7-B MS	#25 320-26004-A-7-B MS
#26 CCV L3	#26 CCV L3

QC Batch: 4	LC 537 ICAL Raw Batch: 152593
#26 CCV L3	#26 CCV L3
#27 320-26004-A-7-C MSD	#27 320-26004-A-7-C MSD
#28 320-26004-A-8-A	#28 320-26004-A-8-A
#29 320-26004-A-9-A	#29 320-26004-A-9-A
#30 320-26004-A-10-A	#30 320-26004-A-10-A
#31 CCV L5	#31 CCV L5

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

AS 2/28/17 75

Batch Number: 320-152377

Analyst: Arauz, Horacio J

Batch Open: 2/27/2017 2:33:00PM

Method Code: 320-537_Prep-320

Batch End: 2-28-17 1110

RX

Extraction of Perfluorinated Alkyl Acids

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-152377/1 N/A	N/A		250 mL	7.0			N/A	N/A	N/A	Chlorine ND	MB 320-152377/1-A
				1.00 mL								
2	LCS~320-152377/2 N/A	N/A		250 mL	7.0			N/A	N/A	N/A	Chlorine ND	LCS 320-152377/2-A
				1.00 mL								
3	LCSD~320-152377/3 N/A	N/A		250 mL	7.0			N/A	N/A	N/A	Chlorine ND	LCSD 320-152377/3-A
				1.00 mL								
4	320-25960-B-1 (537_DOD5)	N/A (320-25960-1)	292.49 g		7.0			2/26/17	5_Days	4	Chlorine ND	320-25960-B-1-A
				1.00 mL								
5	320-25960-B-2 (537_DOD5)	N/A (320-25960-1)	305.36 g		7.0			2/26/17	5_Days	4	Chlorine ND	320-25960-B-2-A
				1.00 mL								
6	320-25960-B-3 (537_DOD5)	N/A (320-25960-1)	305.23 g		7.0			2/26/17	5_Days	4	Chlorine ND	320-25960-B-3-A
				1.00 mL								
7	320-25960-B-4 (537_DOD5)	N/A (320-25960-1)	306.88 g		7.0			2/26/17	5_Days	4	Chlorine ND	320-25960-B-4-A
				1.00 mL								
8	320-25960-B-5 (537_DOD5)	N/A (320-25960-1)	302.56 g		7.0			2/26/17	5_Days	4	Chlorine ND	320-25960-B-5-A
				1.00 mL								
9	320-25960-B-6 (537_DOD5)	N/A (320-25960-1)	307.66 g		7.0			2/26/17	5_Days	4	Chlorine ND	320-25960-B-6-A
				1.00 mL								
10	320-25960-B-7 (537_DOD5)	N/A (320-25960-1)	293.72 g		7.0			2/26/17	5_Days	4	Chlorine ND	320-25960-B-7-A
				1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-152377 Analyst: Arauz, Horacio J Batch Open: 2/27/2017 2:33:00PM

Method Code: 320-537_Prep-320 Batch End:

11	320-25960-B-8 (537_DOD5)	N/A (320-25960-1)	319.54 g	1.00 mL	7.0			2/26/17	5_Days	4	Chlorine ND

Batch Notes

Manifold ID	4
Trizma ID	SLBR4303V
SPE Cartridge ID	6341059-04
Methanol ID	851504
Reagent Water ID	2-21-17
Pipette ID	MD05306
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	NSH
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	NSH
Analyst ID - IS Reagent Drop	HJA
Analyst ID - IS Reagent Drop Witness	CCR
Batch Comment	NA

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-152377
Method Code: 320-537_Prep-320

Analyst: Arauz, Horacio J

Batch Open: 2/27/2017 2:33:00PM
Batch End:

Comments

320-25960-B-1	Rework Comments:	LCS has low recoveries.
320-25960-B-2	Rework Comments:	LCS has low recoveries.
320-25960-B-3	Rework Comments:	LCS has low recoveries.
320-25960-B-4	Rework Comments:	LCS has low recoveries.
320-25960-B-5	Rework Comments:	LCS has low recoveries.
320-25960-B-6	Rework Comments:	LCS has low recoveries.
320-25960-B-7	Rework Comments:	LCS has low recoveries.
320-25960-B-8	Rework Comments:	LCS has low recoveries.

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-152377

Analyst: Arauz, Horacio J

Batch Open: 2/27/2017 2:33:00PM

Method Code: 320-537_Prep-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-152377/1	LC537-SU_00030	50 uL	1.00 mL	HJA 2-27-17	NSH 2-27-17
LCS 320-152377/2	LC537-MSP_00017	50 uL	1.00 mL		
LCS 320-152377/2	LC537-SU_00030	50 uL	1.00 mL		
LCSD 320-152377/3	LC537-MSP_00017	50 uL	1.00 mL		
LCSD 320-152377/3	LC537-SU_00030	50 uL	1.00 mL		
320-25960-B-1	LC537-SU_00030	50 uL	1.00 mL		
320-25960-B-2	LC537-SU_00030	50 uL	1.00 mL		
320-25960-B-3	LC537-SU_00030	50 uL	1.00 mL		
320-25960-B-4	LC537-SU_00030	50 uL	1.00 mL		
320-25960-B-5	LC537-SU_00030	50 uL	1.00 mL		
320-25960-B-6	LC537-SU_00030	50 uL	1.00 mL		
320-25960-B-7	LC537-SU_00030	50 uL	1.00 mL		
320-25960-B-8	LC537-SU_00030	50 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-152377

Analyst: Arauz, Horacio J

Batch Open: 2/27/2017 2:33:00PM

Method Code: 320-537_Prep-320

Batch End:

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 320-152377 Test: 537-L

Earliest Holding Time: 3-6-17

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	✓	✓
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)	✓	✓
The pH is transcribed correctly in TALS	✓	✓
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Batch Information	**1st Level Reviewer**	**2nd Level Reviewer**
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: HSA Date: 2-28-17

2nd Level Reviewer: NSH Date: 2-28-17

Comments:

Shipping and Receiving Documents

TestAmerica Sacramento

880 Riverside Parkway

West Sacramento, CA 95605
Phone: 916.373.5600 Fax:

Chain of Custody Record

166909

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Katie Thapin	Site Contact: Mike Witmer	Date: 2/21/2017	COC No: 2
Company Name: CH2M HILL	Tel/Fax: 757-671-6258	Lab Contact: Laura Turpen	Carrier: FedEx	1 of 1 COCs
Address: 1100 NE Circle Blvd Ste300	Analysis Turnaround Time			Sampler:
City/State/Zip: Corvallis, OR 97330	☒ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 541-768-3109	TAT if different from Below 7 day			Walk-in Client:
Fax: 541-908-3799	☐ 2 weeks			Lab Sampling:
Project Name: CTO-08	☐ 1 week			
Site: NAS Whidbey Island	☐ 2 days			Job / SDG No.:
PO # 1000671060550-679580.09.FI.FS	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	VSCDA Method 537	Sample Specific Notes:
WI-CV-1RW73-0217	2/20/17	1200	G	~~AQ~~ DW	2	N	N	X	
WI-CV-1FB73-0217	2/20/17	1201	G	~~AQ~~ DW	2	N	N	X	
WI-CV-1RW74-0217	2/20/17	1703	G	DW	2	N	N	X	
WI-CV-1FB74-0217	2/20/17	1704	G	DW	2	N	N	X	
WI-CV-1RW75-0217	2/20/17	1705	G	DW	2	N	N	X	
WI-CV-1FB75-0217	2/20/17	1706	G	DW	2	N	N	X	
WI-CV-1RW76-0217	2/20/17	1720	G	DW	2	N	N	X	
WI-CV-1FB76-0217	2/20/17	1721	G	DW	2	N	N	X	

320-25960 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other TVIMA

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 4.6 Corr'd: 0.1°C Therm ID No.: AIK

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	CH2M	2/21/2017 14:05	Tracy G Turpen	TAWS	2/22/17 1000
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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03/01/2017

Login Sample Receipt Checklist

Client: CH2M Hill Constructors, Inc.

Job Number: 320-25960-1

Login Number: 25960
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	
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?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Contract_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	CH2M_Code	Analysis_Group	Analytical_Method	PRC_Code	Lab_Code	Lab_Name	Leachate_Method	Sample_Basis	Extraction_Method	Result_Type	Lab_QC_Type	Sample_Medium	QC_Level	DateTime_Collected	Date_Received	Leachate_Date	Leachate_Time	Extraction_Date	Extraction_Time	Analysis_Date	Analysis_Time	Lab_Sample_ID	Dilution	Run_Number	Percent_Moisture	Percent_Lipid	Chem_Name	Analyte_ID	Analyte_Value	Original_Analyte_Value	Result_Units	Lab_Qualifier	Validator_Qualifier	GC_Column_Type	Analysis_Result_Type	Result_Narrative	QC_Control_Limit_Code	QC_Accuracy_Upper	QC_Accuracy_Lower	Control_Limit_Date	QC_Narrative	MDL	Detection_Limit	QSM_Version	DL	LOD	LOQ	SDG	Analysis_Batch	Validator_Name	Val_Date
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW73-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 12:00	02/22/2017			20170227	14:33:00	20170228	16:25:00	320-25960-1	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.045	UG_L	U		PR	TRG					00000000				5.0	0.015	0.045	0.057	320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW73-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 12:00	02/22/2017			20170227	14:33:00	20170228	16:25:00	320-25960-1	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.023	UG_L	U		PR	TRG					00000000				5.0	0.0089	0.023	0.028	320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW73-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 12:00	02/22/2017			20170227	14:33:00	20170228	16:25:00	320-25960-1	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.10	UG_L	U		PR	TRG					00000000				5.0	0.045	0.10	0.13	320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW73-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 12:00	02/22/2017			20170227	14:33:00	20170228	16:25:00	320-25960-1	1	1			13C2 PFHXA	13C2 PFHXA		81	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW73-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 12:00	02/22/2017			20170227	14:33:00	20170228	16:25:00	320-25960-1	1	1			13C2 PFDA	13C2 PFDA		89	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1FB73-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 12:01	02/22/2017			20170227	14:33:00	20170228	16:29:00	320-25960-2	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.043	UG_L	U		PR	TRG					00000000				5.0	0.014	0.043	0.054	320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1FB73-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 12:01	02/22/2017			20170227	14:33:00	20170228	16:29:00	320-25960-2	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.022	UG_L	U		PR	TRG					00000000				5.0	0.0084	0.022	0.027	320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1FB73-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 12:01	02/22/2017			20170227	14:33:00	20170228	16:29:00	320-25960-2	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.099	UG_L	U		PR	TRG					00000000				5.0	0.043	0.099	0.13	320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1FB73-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 12:01	02/22/2017			20170227	14:33:00	20170228	16:29:00	320-25960-2	1	1			13C2 PFHXA	13C2 PFHXA		84	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1FB73-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 12:01	02/22/2017			20170227	14:33:00	20170228	16:29:00	320-25960-2	1	1			13C2 PFDA	13C2 PFDA		83	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW74-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 17:03	02/22/2017			20170227	14:33:00	20170228	16:34:00	320-25960-3	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.043	UG_L	U		PR	TRG					00000000				5.0	0.014	0.043	0.054	320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW74-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 17:03	02/22/2017			20170227	14:33:00	20170228	16:34:00	320-25960-3	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.022	UG_L	U		PR	TRG					00000000				5.0	0.0085	0.022	0.027	320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW74-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 17:03	02/22/2017			20170227	14:33:00	20170228	16:34:00	320-25960-3	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.099	UG_L	U		PR	TRG					00000000				5.0	0.043	0.099	0.13	320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW74-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 17:03	02/22/2017			20170227	14:33:00	20170228	16:34:00	320-25960-3	1	1			13C2 PFHXA	13C2 PFHXA		75	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW74-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 17:03	02/22/2017			20170227	14:33:00	20170228	16:34:00	320-25960-3	1	1			13C2 PFDA	13C2 PFDA		85	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1FB74-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 17:04	02/22/2017			20170227	14:33:00	20170228	16:38:00	320-25960-4	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.043	UG_L	U		PR	TRG					00000000				5.0	0.014	0.043	0.053	320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1FB74-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 17:04	02/22/2017			20170227	14:33:00	20170228	16:38:00	320-25960-4	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.021	UG_L	U		PR	TRG					00000000				5.0	0.0084	0.021	0.027	320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1FB74-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 17:04	02/22/2017			20170227	14:33:00	20170228	16:38:00	320-25960-4	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.098	UG_L	U		PR	TRG					00000000				5.0	0.042	0.098	0.12	320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1FB74-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 17:04	02/22/2017			20170227	14:33:00	20170228	16:38:00	320-25960-4	1	1			13C2 PFHXA	13C2 PFHXA		81	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1FB74-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 17:04	02/22/2017			20170227	14:33:00	20170228	16:38:00	320-25960-4	1	1			13C2 PFDA	13C2 PFDA		78	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW75-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 17:05	02/22/2017			20170227	14:33:00	20170228	16:42:00	320-25960-5	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.043	UG_L	U		PR	TRG					00000000				5.0	0.014	0.043	0.054	320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW75-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 17:05	02/22/2017			20170227	14:33:00	20170228	16:42:00	320-25960-5	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.022	UG_L	U		PR	TRG					00000000				5.0	0.0085	0.022	0.027	320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW75-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 17:05	02/22/2017			20170227	14:33:00	20170228	16:42:00	320-25960-5	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.10	UG_L	U		PR	TRG					00000000				5.0	0.043	0.10	0.13	320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW75-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 17:05	02/22/2017			20170227	14:33:00	20170228	16:42:00	320-25960-5	1	1			13C2 PFHXA	13C2 PFHXA		76	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW75-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 17:05	02/22/2017			20170227	14:33:00	20170228	16:42:00	320-25960-5	1	1			13C2 PFDA	13C2 PFDA		77	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1FB75-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 17:06	02/22/2017			20170227	14:33:00	20170228	16:47:00	320-25960-6	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.043	UG_L	U		PR	TRG					00000000				5.0	0.014	0.043	0.053	320-25960-1	320-152585		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1FB75-0217	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	02/20/2017 17:06	02/22/2017			20170227	14:33:00	20170228	16:47:00	320-25960-6	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.021	UG_L	U		PR	TRG					00000000				5.0	0.0084	0.021	0.027	320-25960-1	320-152585		

Contract_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	CH2M_Code	Analysis_Group	Analytical_Method	PRC_Code	Lab_Code	Lab_Name	Leachate_Method	Sample_Basis	Extraction_Method	Result_Type	Lab_QC_Type	Sample_Medium	QC_Level	DateTime_Collected	Date_Received	Leachate_Date	Leachate_Time	Extraction_Date	Extraction_Time	Analysis_Date	Analysis_Time	Lab_Sample_ID	Dilution	Run_Number	Percent_Moisture	Percent_Lipid	Chem_Name	Analyte_ID	Analyte_Value	Original_Analyte_Value	Result_Units	Lab_Qualifier	Validator_Qualifier	GC_Column_Type	Analysis_Result_Type	Result_Narrative	QC_Control_Limit_Code	QC_Accuracy_Upper	QC_Accuracy_Lower	Control_Limit_Date	QC_Narrative	MDL	Detection_Limit	QSM_Version	DL	LOD	LOQ	SDG	Analysis_Batch	Validator_Name	Val_Date
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-153778/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	03/07/2017 17:54	03/07/2017			20170307	17:54:00	20170309	10:09:00	MB 320-153778/1-A	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.024	UG_L	U		PR	TRG					00000000				5.0	0.0094	0.024	0.030	320-26309-1	320-154108		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-153778/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	03/07/2017 17:54	03/07/2017			20170307	17:54:00	20170309	10:09:00	MB 320-153778/1-A	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.11	UG_L	U		PR	TRG					00000000				5.0	0.048	0.11	0.14	320-26309-1	320-154108		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-153778/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	03/07/2017 17:54	03/07/2017			20170307	17:54:00	20170309	10:09:00	MB 320-153778/1-A	1	1			13C2 PFHXA	13C2 PFHXA		103	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-26309-1	320-154108		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-153778/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	03/07/2017 17:54	03/07/2017			20170307	17:54:00	20170309	10:09:00	MB 320-153778/1-A	1	1			13C2 PFDA	13C2 PFDA		101	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-26309-1	320-154108		

ENVIRONMENTAL
Data Services, Inc.

DATA VALIDATION SUMMARY REPORT
WHIDBEY ISLAND, WASHINGTON

Client: CH2M HILL, Inc., Corvallis, Oregon
SDG: 320-25960-1
Laboratory: Test America, Sacramento, California
Site: Whidbey Island, CTO-0008, Washington
Date: March 22, 2017

PFCs			
EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	WI-CV-1RW73-0217	320-25960-1	Water
2	WI-CV-1FB73-0217	320-25960-2	Water
3	WI-CV-1RW74-0217	320-25960-3	Water
4	WI-CV-1FB74-0217	320-25960-4	Water
5	WI-CV-1RW75-0217	320-25960-5	Water
6	WI-CV-1FB75-0217	320-25960-6	Water
7	WI-CV-1RW76-0217	320-25960-7	Water
8	WI-CV-1FB76-0217	320-25960-8	Water

A full data validation was performed on the analytical data for four water samples and four aqueous field blank samples collected on February 20, 2017 by CH2M HILL at the Whidbey Island site in Washington. The samples were analyzed under the EPA Method "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)".

Specific method references are as follows:

Analysis	*Method References*
PFCs	USEPA Method 537 Rev 1.1 Modified

The data have been validated according to the protocols and quality control (QC) requirements of the analytical method, and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM), Version 5.0 (DoD 2013) and the USEPA National Functional Guidelines for Organic Data Review as follows:

- The USEPA "Contract Laboratories Program National Functional Guidelines for Superfund Organic Methods Data Review," August 2014;
- and the reviewer's professional judgment.

The following data quality indicators were reviewed for this report:

Organics

- Date Completeness, Case Narrative & Custody Documentation
- Holding times
- Gas Chromatography/Mass Spectrometry (GC/MS) Tuning
- Initial and continuing calibration summaries
- Method blank and field QC blank contamination
- Surrogate Spike recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries
- Internal standard area and retention time summary forms
- Target Compound Identification
- Compound Quantitation
- Field Duplicate sample precision

A full (Level IV) data validation was performed with this review including a recalculation of 10% of the detected results in the samples.

Data Usability Assessment

There were no rejections of data.

Overall the data is acceptable for the intended purposes. There were no qualifications.

Perfluorinated Compounds (PFCs)

Data Completeness, Case Narrative & Custody Documentation

- The case narrative and chain-of-custody documentation were included in the data package as required. All criteria were met.

Holding Times

- All samples were extracted within 14 days for water samples and analyzed within 28 days.

GC/MS Tuning

- All criteria were met.

Initial Calibration

- All relative standard deviation (%RSD) and/or correlation coefficients criteria were met.

Continuing Calibration

- All percent difference (%D) and RRF criteria were met.

Method Blank

- The method blanks were free of contamination.

Field QC Blank

- The field blank samples were free of contamination.

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- MS/MSD samples were not analyzed.

Laboratory Control Samples

- The LCS samples exhibited acceptable percent recoveries (%R).

Internal Standard (IS) Area Performance

- All internal standards met response and retention time (RT) criteria.

Target Compound Identification

- All mass spectra and quantitation criteria were met.

Compound Quantitation

- All criteria were met.

Field Duplicate Sample Precision

- Field duplicate samples were not collected.

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed: Nancy Weaver Dated: 3/24/17

Nancy Weaver
Senior Chemist

Data Qualifier	Definition
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
J	The analyte is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the samples.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the samples.

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

1

Lab Name: TestAmerica Sacramento | Job No.: 320-25960-1

SDG No.:

Client Sample ID: WI-CV-1RW73-0217 | Lab Sample ID: 320-25960-1

Matrix: Water | Lab File ID: 2017.02.28_537_005.d

Analysis Method: 537 | Date Collected: 02/20/2017 12:00

Extraction Method: 537 | Date Extracted: 02/27/2017 14:33

Sample wt/vol: 264.7(mL) | Date Analyzed: 02/28/2017 16:25

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.: 152585 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.045	U	0.057	0.045	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.023	U	0.028	0.023	0.0089
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.045

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	89		70-130

NW 3/20/17

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

2

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Client Sample ID: WI-CV-1FB73-0217 Lab Sample ID: 320-25960-2

Matrix: Water Lab File ID: 2017.02.28_537_006.d

Analysis Method: 537 Date Collected: 02/20/2017 12:01

Extraction Method: 537 Date Extracted: 02/27/2017 14:33

Sample wt/vol: 278.9(mL) Date Analyzed: 02/28/2017 16:29

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

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

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

Analysis Batch No.: 152585 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.054	0.043	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.022	0.0084
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.099	0.043

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	83		70-130

MW 3/2/17

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

3

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Client Sample ID: WI-CV-1RW74-0217 Lab Sample ID: 320-25960-3

Matrix: Water Lab File ID: 2017.02.28_537_007.d

Analysis Method: 537 Date Collected: 02/20/2017 17:03

Extraction Method: 537 Date Extracted: 02/27/2017 14:33

Sample wt/vol: 278.5(mL) Date Analyzed: 02/28/2017 16:34

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

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

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

Analysis Batch No.: 152585 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.054	0.043	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.022	0.0085
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.099	0.043

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	75		70-130
STL00996	13C2 PFDA	85		70-130

MW 3/20/17

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

4

Lab Name: TestAmerica Sacramento
Job No.: 320-25960-1
SDG No.:
Client Sample ID: WI-CV-1FB74-0217
Lab Sample ID: 320-25960-4
Matrix: Water
Lab File ID: 2017.02.28_537_008.d
Analysis Method: 537
Date Collected: 02/20/2017 17:04
Extraction Method: 537
Date Extracted: 02/27/2017 14:33
Sample wt/vol: 280.5(mL)
Date Analyzed: 02/28/2017 16:38
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.: 152585
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.053	0.043	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.021	U	0.027	0.021	0.0084
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.098	U	0.12	0.098	0.042

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	78		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

5

Lab Name: TestAmerica Sacramento | Job No.: 320-25960-1

SDG No.:

Client Sample ID: WI-CV-1RW75-0217 | Lab Sample ID: 320-25960-5

Matrix: Water | Lab File ID: 2017.02.28_537_009.d

Analysis Method: 537 | Date Collected: 02/20/2017 17:05

Extraction Method: 537 | Date Extracted: 02/27/2017 14:33

Sample wt/vol: 276(mL) | Date Analyzed: 02/28/2017 16:42

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

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

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

Analysis Batch No.: 152585 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.054	0.043	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.022	0.0085
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.043

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	76		70-130
STL00996	13C2 PFDA	77		70-130

MW 3/20/17

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

6

Lab Name: TestAmerica Sacramento | Job No.: 320-25960-1

SDG No.:

Client Sample ID: WI-CV-1FB75-0217 | Lab Sample ID: 320-25960-6

Matrix: Water | Lab File ID: 2017.02.28_537_010.d

Analysis Method: 537 | Date Collected: 02/20/2017 17:06

Extraction Method: 537 | Date Extracted: 02/27/2017 14:33

Sample wt/vol: 281.2(mL) | Date Analyzed: 02/28/2017 16:47

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

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

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

Analysis Batch No.: 152585 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.053	0.043	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.021	U	0.027	0.021	0.0084
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.098	U	0.12	0.098	0.042

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	82		70-130
STL00996	13C2 PFDA	75		70-130

MW 3/20/17

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

7

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Client Sample ID: WI-CV-1RW76-0217 Lab Sample ID: 320-25960-7

Matrix: Water Lab File ID: 2017.02.28_537_011.d

Analysis Method: 537 Date Collected: 02/20/2017 17:20

Extraction Method: 537 Date Extracted: 02/27/2017 14:33

Sample wt/vol: 266.9(mL) Date Analyzed: 02/28/2017 16:51

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

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

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

Analysis Batch No.: 152585 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.045	U	0.056	0.045	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.022	0.0088
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.045

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	74		70-130
STL00996	13C2 PFDA	80		70-130

MW 3/20/17

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

8

Lab Name: TestAmerica Sacramento Job No.: 320-25960-1

SDG No.:

Client Sample ID: WI-CV-1FB76-0217 Lab Sample ID: 320-25960-8

Matrix: Water Lab File ID: 2017.02.28_537_013.d

Analysis Method: 537 Date Collected: 02/20/2017 17:21

Extraction Method: 537 Date Extracted: 02/27/2017 14:33

Sample wt/vol: 292.8(mL) Date Analyzed: 02/28/2017 17:00

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

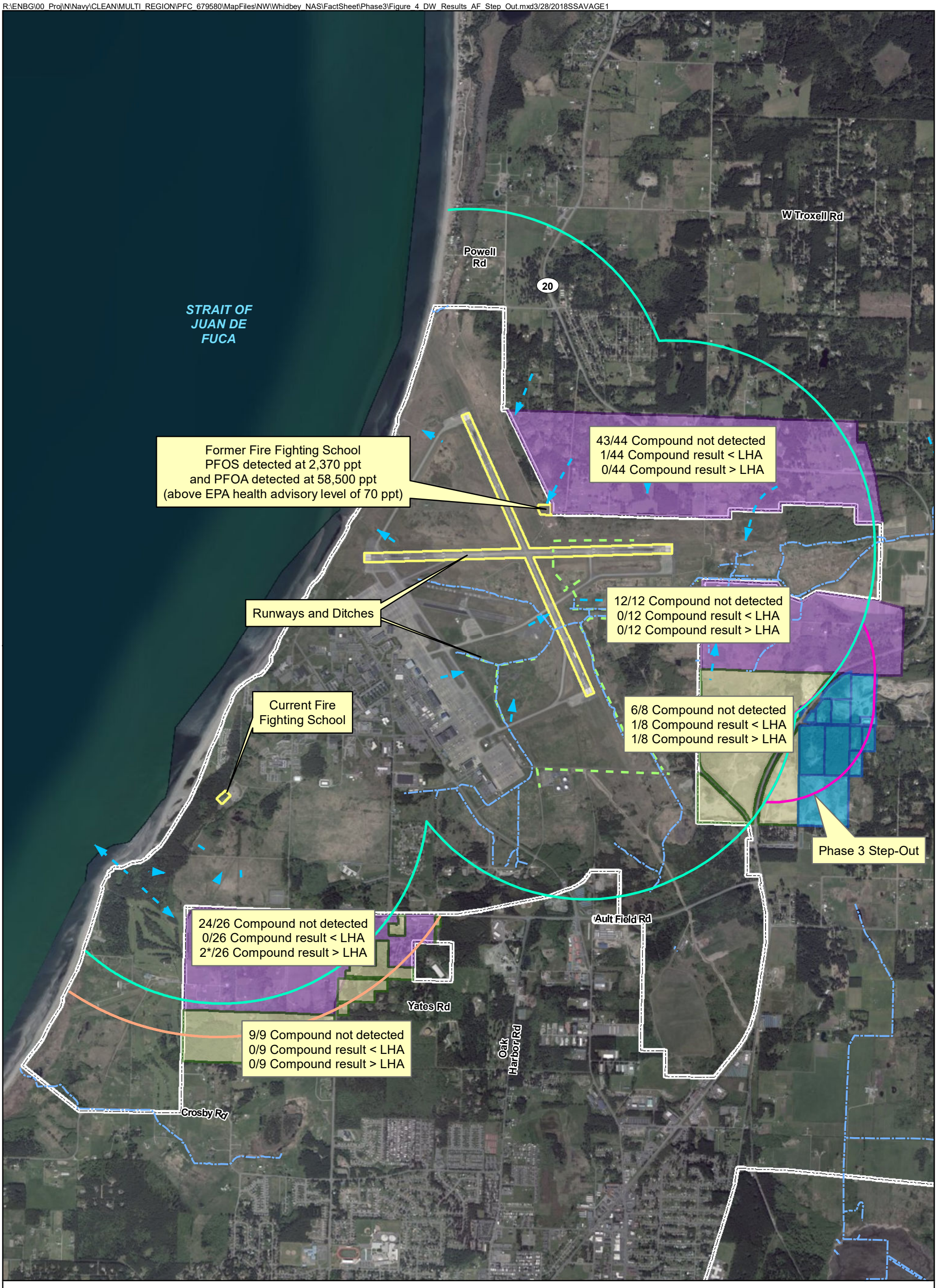
Analysis Batch No.: 152586 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.041	U	0.051	0.041	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.020	U	0.026	0.020	0.0080
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.094	U	0.12	0.094	0.041

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	80		70-130

MW 3/20/17

R:\ENBG\00_Proj\N\Navy\CLEAN\MULTI_REGION\PFC_679580\MapFiles\NW\Whidbey_NAS\FactSheet\Phase3\Figure_4_DW_Results_AF_Step_Out.mxd3/28/2018SSAVAGE1



Legend

- 1 Mile Zone
- Half-mile Step-out Downgradient
- Surface Water
- Drainage Ditch
- Half-mile Step-out Downgradient
- Suspected Source Area
- Parcels in Phase 1 Sampling Area
- Parcels Identified in Phase 2 Sampling Area
- Parcels Identified in Phase 3 Sampling Area
- Base Boundary
- Inferred Groundwater Flow Direction

* Second result above the EPA health advisory is from a duplicate sample collected from the well with the first exceedance near Ault Field.

Note:
PFOA and PFOS results reflected on figure, PFBS results discussed in Table 2 and text.

N

0 0.225 0.45 Miles

1 inch = 0.45 mile

Imagery Source: Esri

Figure 2
Results for Drinking Water Well Sampling
Ault Field
Naval Air Station Whidbey Island
Oak Harbor, Washington