001_9000_Lab_Cover_GBC

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 320-25077

Ault Field
Naval Air Station Whidbey Island
Oak Harbor, Washington

February 2019

Approved for public release: distribution unlimited

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Sacramento
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TestAmerica Job ID: 320-25077-1
Client Project/Site: Whidbey Island

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

Attn: Tiffany Hill

Authorized for release by:
1/24/2017 10:21:01 AM

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LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

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

TestAmerica Job ID: 320-25077-1

Qualifiers

LCMS

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
M	Manual integrated compound.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, 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: 320-25077-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE
Client: CH2M Hill Constructors, Inc.
Project: Whidbey Island
Report Number: 320-25077-1

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 01/18/2017; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 4.1 C.

PFOA/PFOS

Samples WI-AF-1RW06-0117 (320-25077-1), WI-AF-1FB06-0117 (320-25077-2), WI-AF-1RW07-0117 (320-25077-3), WI-AF-1FB07-0117 (320-25077-4), WI-AF-1RW08-0117 (320-25077-5), WI-AF-1FB08-0117 (320-25077-6), WI-AF-1RW09-0117 (320-25077-7) and WI-AF-1FB09-0117 (320-25077-8) were analyzed for PFOA/PFOS in accordance with 537. The samples were prepared on 01/19/2017 and analyzed on 01/21/2017 and 01/22/2017.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-147025.

No 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: 320-25077-1

Client Sample ID: WI-AF-1RW06-0117 **Lab Sample ID: 320-25077-1**

No Detections.

Client Sample ID: WI-AF-1FB06-0117 **Lab Sample ID: 320-25077-2**

No Detections.

Client Sample ID: WI-AF-1RW07-0117 **Lab Sample ID: 320-25077-3**

No Detections.

Client Sample ID: WI-AF-1FB07-0117 **Lab Sample ID: 320-25077-4**

No Detections.

Client Sample ID: WI-AF-1RW08-0117 **Lab Sample ID: 320-25077-5**

No Detections.

Client Sample ID: WI-AF-1FB08-0117 **Lab Sample ID: 320-25077-6**

No Detections.

Client Sample ID: WI-AF-1RW09-0117 **Lab Sample ID: 320-25077-7**

No Detections.

Client Sample ID: WI-AF-1FB09-0117 **Lab Sample ID: 320-25077-8**

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: WI-AF-1RW06-0117

Lab Sample ID: 320-25077-1
Date Collected: 01/16/17 09:11
Matrix: Water
Date Received: 01/18/17 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.049	U	0.061	0.016	ug/L		01/19/17 14:14	01/21/17 19:49	1
Perfluorooctanoic acid (PFOA)	0.024	U M	0.031	0.0096	ug/L		01/19/17 14:14	01/21/17 19:49	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.049	ug/L		01/19/17 14:14	01/21/17 19:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*116*		*70 - 130*	*01/19/17 14:14*	*01/21/17 19:49*	*1*
13C2 PFDA	*117*		*70 - 130*	*01/19/17 14:14*	*01/21/17 19:49*	*1*

Client Sample ID: WI-AF-1FB06-0117

Lab Sample ID: 320-25077-2
Date Collected: 01/16/17 09:12
Matrix: Water
Date Received: 01/18/17 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.047	U M	0.059	0.015	ug/L		01/19/17 14:14	01/21/17 20:19	1
Perfluorooctanoic acid (PFOA)	0.024	U M	0.030	0.0093	ug/L		01/19/17 14:14	01/21/17 20:19	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		01/19/17 14:14	01/21/17 20:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*115*		*70 - 130*	*01/19/17 14:14*	*01/21/17 20:19*	*1*
13C2 PFDA	*112*		*70 - 130*	*01/19/17 14:14*	*01/21/17 20:19*	*1*

Client Sample ID: WI-AF-1RW07-0117

Lab Sample ID: 320-25077-3
Date Collected: 01/16/17 09:50
Matrix: Water
Date Received: 01/18/17 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.016	ug/L		01/19/17 14:14	01/21/17 20:48	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0095	ug/L		01/19/17 14:14	01/21/17 20:48	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L		01/19/17 14:14	01/21/17 20:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*115*		*70 - 130*	*01/19/17 14:14*	*01/21/17 20:48*	*1*
13C2 PFDA	*111*		*70 - 130*	*01/19/17 14:14*	*01/21/17 20:48*	*1*

Client Sample ID: WI-AF-1FB07-0117

Lab Sample ID: 320-25077-4
Date Collected: 01/16/17 09:51
Matrix: Water
Date Received: 01/18/17 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.015	ug/L		01/19/17 14:14	01/21/17 21:18	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0094	ug/L		01/19/17 14:14	01/21/17 21:18	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		01/19/17 14:14	01/21/17 21:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*126*		*70 - 130*	*01/19/17 14:14*	*01/21/17 21:18*	*1*
13C2 PFDA	*115*		*70 - 130*	*01/19/17 14:14*	*01/21/17 21:18*	*1*

Client Sample ID: WI-AF-1RW08-0117

Lab Sample ID: 320-25077-5
Date Collected: 01/16/17 10:13
Matrix: Water
Date Received: 01/18/17 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.015	ug/L		01/19/17 14:14	01/21/17 21:47	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0094	ug/L		01/19/17 14:14	01/21/17 21:47	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		01/19/17 14:14	01/21/17 21:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*126*		*70 - 130*	*01/19/17 14:14*	*01/21/17 21:47*	*1*
13C2 PFDA	*122*		*70 - 130*	*01/19/17 14:14*	*01/21/17 21:47*	*1*

Client Sample ID: WI-AF-1FB08-0117

Lab Sample ID: 320-25077-6
Date Collected: 01/16/17 10:14
Matrix: Water
Date Received: 01/18/17 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.015	ug/L		01/19/17 14:14	01/21/17 22:17	1
Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.0092	ug/L		01/19/17 14:14	01/21/17 22:17	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		01/19/17 14:14	01/21/17 22:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*117*		*70 - 130*	*01/19/17 14:14*	*01/21/17 22:17*	*1*
13C2 PFDA	*115*		*70 - 130*	*01/19/17 14:14*	*01/21/17 22:17*	*1*

Client Sample ID: WI-AF-1RW09-0117

Lab Sample ID: 320-25077-7
Date Collected: 01/16/17 11:35
Matrix: Water
Date Received: 01/18/17 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.049	U M	0.061	0.016	ug/L		01/19/17 14:14	01/21/17 22:47	1
Perfluorooctanoic acid (PFOA)	0.024	U M	0.030	0.0095	ug/L		01/19/17 14:14	01/21/17 22:47	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L		01/19/17 14:14	01/21/17 22:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*117*		*70 - 130*	*01/19/17 14:14*	*01/21/17 22:47*	*1*
13C2 PFDA	*115*		*70 - 130*	*01/19/17 14:14*	*01/21/17 22:47*	*1*

Client Sample ID: WI-AF-1FB09-0117

Lab Sample ID: 320-25077-8
Date Collected: 01/16/17 11:36
Matrix: Water
Date Received: 01/18/17 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.015	ug/L		01/19/17 14:14	01/22/17 00:15	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0093	ug/L		01/19/17 14:14	01/22/17 00:15	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		01/19/17 14:14	01/22/17 00:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*117*		*70 - 130*	*01/19/17 14:14*	*01/22/17 00:15*	*1*
13C2 PFDA	*109*		*70 - 130*	*01/19/17 14:14*	*01/22/17 00:15*	*1*

Surrogate Summary

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

TestAmerica Job ID: 320-25077-1

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)								
320-25077-1	WI-AF-1RW06-0117	116	117								
320-25077-2	WI-AF-1FB06-0117	115	112								
320-25077-3	WI-AF-1RW07-0117	115	111								
320-25077-4	WI-AF-1FB07-0117	126	115								
320-25077-5	WI-AF-1RW08-0117	126	122								
320-25077-6	WI-AF-1FB08-0117	117	115								
320-25077-7	WI-AF-1RW09-0117	117	115								
320-25077-8	WI-AF-1FB09-0117	117	109								
LCS 320-147025/2-A	Lab Control Sample	127	122								
LCSD 320-147025/3-A	Lab Control Sample Dup	124	125								
MB 320-147025/1-A	Method Blank	111	110								

Surrogate Legend

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

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

Lab Sample ID: MB 320-147025/1-A
Matrix: Water
Analysis Batch: 147271

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 147025

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		01/19/17 14:14	01/21/17 18:20	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0094	ug/L		01/19/17 14:14	01/21/17 18:20	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L		01/19/17 14:14	01/21/17 18:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*111*		*70 - 130*	*01/19/17 14:14*	*01/21/17 18:20*	*1*
13C2 PFDA	*110*		*70 - 130*	*01/19/17 14:14*	*01/21/17 18:20*	*1*

Lab Sample ID: LCS 320-147025/2-A
Matrix: Water
Analysis Batch: 147271

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 147025

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	0.160	0.158		ug/L		99	70 - 130
Perfluorooctanoic acid (PFOA)	0.0781	0.0726		ug/L		93	70 - 130
Perfluorobutanesulfonic acid (PFBS)	0.359	0.304		ug/L		85	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*127*		*70 - 130*
13C2 PFDA	*122*		*70 - 130*

Lab Sample ID: LCSD 320-147025/3-A
Matrix: Water
Analysis Batch: 147271

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 147025

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	0.160	0.160		ug/L		100	70 - 130	1	30
Perfluorooctanoic acid (PFOA)	0.0781	0.0782		ug/L		100	70 - 130	7	30
Perfluorobutanesulfonic acid (PFBS)	0.359	0.290		ug/L		81	70 - 130	5	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*124*		*70 - 130*
13C2 PFDA	*125*		*70 - 130*

QC Association Summary

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

TestAmerica Job ID: 320-25077-1

LCMS

Prep Batch: 147025

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-25077-1	WI-AF-1RW06-0117	Total/NA	Water	537	
320-25077-2	WI-AF-1FB06-0117	Total/NA	Water	537	
320-25077-3	WI-AF-1RW07-0117	Total/NA	Water	537	
320-25077-4	WI-AF-1FB07-0117	Total/NA	Water	537	
320-25077-5	WI-AF-1RW08-0117	Total/NA	Water	537	
320-25077-6	WI-AF-1FB08-0117	Total/NA	Water	537	
320-25077-7	WI-AF-1RW09-0117	Total/NA	Water	537	
320-25077-8	WI-AF-1FB09-0117	Total/NA	Water	537	
MB 320-147025/1-A	Method Blank	Total/NA	Water	537	
LCS 320-147025/2-A	Lab Control Sample	Total/NA	Water	537	
LCSD 320-147025/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 147271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-25077-1	WI-AF-1RW06-0117	Total/NA	Water	537	147025
320-25077-2	WI-AF-1FB06-0117	Total/NA	Water	537	147025
320-25077-3	WI-AF-1RW07-0117	Total/NA	Water	537	147025
320-25077-4	WI-AF-1FB07-0117	Total/NA	Water	537	147025
320-25077-5	WI-AF-1RW08-0117	Total/NA	Water	537	147025
320-25077-6	WI-AF-1FB08-0117	Total/NA	Water	537	147025
320-25077-7	WI-AF-1RW09-0117	Total/NA	Water	537	147025
MB 320-147025/1-A	Method Blank	Total/NA	Water	537	147025
LCS 320-147025/2-A	Lab Control Sample	Total/NA	Water	537	147025
LCSD 320-147025/3-A	Lab Control Sample Dup	Total/NA	Water	537	147025

Analysis Batch: 147339

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-25077-8	WI-AF-1FB09-0117	Total/NA	Water	537	147025

Lab Chronicle

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

TestAmerica Job ID: 320-25077-1

Client Sample ID: WI-AF-1RW06-0117
Date Collected: 01/16/17 09:11
Date Received: 01/18/17 09:25

Lab Sample ID: 320-25077-1
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			245 mL	1.0 mL	147025	01/19/17 14:14	KMK	TAL SAC
Total/NA	Analysis	537		1			147271	01/21/17 19:49	JRB	TAL SAC

Client Sample ID: WI-AF-1FB06-0117
Date Collected: 01/16/17 09:12
Date Received: 01/18/17 09:25

Lab Sample ID: 320-25077-2
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			252.9 mL	1.0 mL	147025	01/19/17 14:14	KMK	TAL SAC
Total/NA	Analysis	537		1			147271	01/21/17 20:19	JRB	TAL SAC

Client Sample ID: WI-AF-1RW07-0117
Date Collected: 01/16/17 09:50
Date Received: 01/18/17 09:25

Lab Sample ID: 320-25077-3
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			248.4 mL	1.0 mL	147025	01/19/17 14:14	KMK	TAL SAC
Total/NA	Analysis	537		1			147271	01/21/17 20:48	JRB	TAL SAC

Client Sample ID: WI-AF-1FB07-0117
Date Collected: 01/16/17 09:51
Date Received: 01/18/17 09:25

Lab Sample ID: 320-25077-4
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			251.8 mL	1.0 mL	147025	01/19/17 14:14	KMK	TAL SAC
Total/NA	Analysis	537		1			147271	01/21/17 21:18	JRB	TAL SAC

Client Sample ID: WI-AF-1RW08-0117
Date Collected: 01/16/17 10:13
Date Received: 01/18/17 09:25

Lab Sample ID: 320-25077-5
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			251.6 mL	1.0 mL	147025	01/19/17 14:14	KMK	TAL SAC
Total/NA	Analysis	537		1			147271	01/21/17 21:47	JRB	TAL SAC

Client Sample ID: WI-AF-1FB08-0117
Date Collected: 01/16/17 10:14
Date Received: 01/18/17 09:25

Lab Sample ID: 320-25077-6
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			255.4 mL	1.0 mL	147025	01/19/17 14:14	KMK	TAL SAC
Total/NA	Analysis	537		1			147271	01/21/17 22:17	JRB	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 320-25077-1

Client Sample ID: WI-AF-1RW09-0117

Lab Sample ID: 320-25077-7

Date Collected: 01/16/17 11:35

Matrix: Water

Date Received: 01/18/17 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			247 mL	1.0 mL	147025	01/19/17 14:14	KMK	TAL SAC
Total/NA	Analysis	537		1			147271	01/21/17 22:47	JRB	TAL SAC

Client Sample ID: WI-AF-1FB09-0117

Lab Sample ID: 320-25077-8

Date Collected: 01/16/17 11:36

Matrix: Water

Date Received: 01/18/17 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			253.1 mL	1.0 mL	147025	01/19/17 14:14	KMK	TAL SAC
Total/NA	Analysis	537		1			147339	01/22/17 00:15	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: 320-25077-1

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17

Analysis Method	Prep Method	Matrix	Analyte

Method Summary

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

TestAmerica Job ID: 320-25077-1

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: 320-25077-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-25077-1	WI-AF-1RW06-0117	Water	01/16/17 09:11	01/18/17 09:25
320-25077-2	WI-AF-1FB06-0117	Water	01/16/17 09:12	01/18/17 09:25
320-25077-3	WI-AF-1RW07-0117	Water	01/16/17 09:50	01/18/17 09:25
320-25077-4	WI-AF-1FB07-0117	Water	01/16/17 09:51	01/18/17 09:25
320-25077-5	WI-AF-1RW08-0117	Water	01/16/17 10:13	01/18/17 09:25
320-25077-6	WI-AF-1FB08-0117	Water	01/16/17 10:14	01/18/17 09:25
320-25077-7	WI-AF-1RW09-0117	Water	01/16/17 11:35	01/18/17 09:25
320-25077-8	WI-AF-1FB09-0117	Water	01/16/17 11:36	01/18/17 09:25

TestAmerica Sacramento
880 Riverside Parkway

West Sacramento, CA 95605
phone 916.373.5600 fax

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

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

Client Contact	Project Manager: Katie Tippin	Site Contact: Eric Epple	Date: 1/17/2017	COC No: 1
Tiffany Hill	Tel/Fax: (757) 671-6258	Lab Contact: Laura Turpen	Carrier: FedEx	1 of 1 COCs
Project Chemist	Analysis Turnaround Time			Sampler:
1100 NE Circle Blvd Ste 300 Corvallis, OR 97330	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(541) 768-3109	TAT if different from Below _____7-Day_____			Walk-in Client:
(541) 908-3794	☐ 2 weeks			Lab Sampling:
Project Name: CTO-08	☐ 1 week			
Site: NAS Whidbey Island	☐ 2 days			Job / SDG No.:
P O #: 100067106050 - 679580.06.FI.FS	☐ 1 day			

320-25077 Chain of Custody

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	USEPA Method 537 (PFOA, PFOS, and PFBS)	Sample Specific Notes:
WI-AF-1RW06-0117	01/16/17	9:11	G	DW	2	N	N	X	
WI-AF-1FB06-0117	01/16/17	9:12	G	DW	2	N	N	X	
WI-AF-1RW07-0117	01/16/17	9:50	G	DW	2	N	N	X	
WI-AF-1FB07-0117	01/16/17	9:51	G	DW	2	N	N	X	
WI-AF-1RW08-0117	01/16/17	10:13	G	DW	2	N	N	X	
WI-AF-1FB08-0117	01/16/17	10:14	G	DW	2	N	N	X	
WI-AF-1RW09-0117	01/16/17	11:35	G	DW	2	N	N	X	
WI-AF-1FB09-0117	01/16/17	11:36	G	DW	2	N	N	X	
								6	

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other _Trizma__

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

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

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

☐Return to Client ☑Disposal by Lab ☐Archive for_____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 4.4 Corr'd: 4.1 Therm ID No.: 12

Relinquished by:	Company: CH2M	Date/Time: 1/17/17 9:50	Received by:	Company: TAWS	Date/Time: 1/18/17 0925
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.3, dated 12/05/2013

Login Sample Receipt Checklist

Client: CH2M Hill Constructors, Inc.

Job Number: 320-25077-1

Login Number: 25077
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	

TestAmerica
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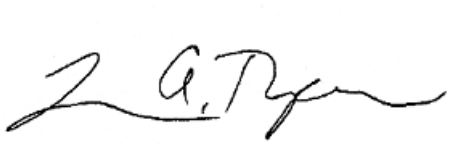
ANALYTICAL REPORT

Job Number: 320-25077-1

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
1/24/2017 10:21 AM

Laura Turpen, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4414
laura.turpen@testamericainc.com
01/24/2017

Table of Contents

Table of Contents

Qualifiers

LCMS

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
M	Manual integrated compound.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, 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: 320-25077-1

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 01/18/2017; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 4.1 C.

PFOA/PFOS

Samples WI-AF-1RW06-0117 (320-25077-1), WI-AF-1FB06-0117 (320-25077-2), WI-AF-1RW07-0117 (320-25077-3), WI-AF-1FB07-0117 (320-25077-4), WI-AF-1RW08-0117 (320-25077-5), WI-AF-1FB08-0117 (320-25077-6), WI-AF-1RW09-0117 (320-25077-7) and WI-AF-1FB09-0117 (320-25077-8) were analyzed for PFOA/PFOS in accordance with 537. The samples were prepared on 01/19/2017 and analyzed on 01/21/2017 and 01/22/2017.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-147025.

No 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: 320-25077-1

Client Sample ID: WI-AF-1RW06-0117 **Lab Sample ID: 320-25077-1**

No Detections.

Client Sample ID: WI-AF-1FB06-0117 **Lab Sample ID: 320-25077-2**

No Detections.

Client Sample ID: WI-AF-1RW07-0117 **Lab Sample ID: 320-25077-3**

No Detections.

Client Sample ID: WI-AF-1FB07-0117 **Lab Sample ID: 320-25077-4**

No Detections.

Client Sample ID: WI-AF-1RW08-0117 **Lab Sample ID: 320-25077-5**

No Detections.

Client Sample ID: WI-AF-1FB08-0117 **Lab Sample ID: 320-25077-6**

No Detections.

Client Sample ID: WI-AF-1RW09-0117 **Lab Sample ID: 320-25077-7**

No Detections.

Client Sample ID: WI-AF-1FB09-0117 **Lab Sample ID: 320-25077-8**

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: WI-AF-1RW06-0117

Lab Sample ID: 320-25077-1

Date Collected: 01/16/17 09:11

Matrix: Water

Date Received: 01/18/17 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.049	U	0.061	0.016	ug/L		01/19/17 14:14	01/21/17 19:49	1
Perfluorooctanoic acid (PFOA)	0.024	U M	0.031	0.0096	ug/L		01/19/17 14:14	01/21/17 19:49	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.049	ug/L		01/19/17 14:14	01/21/17 19:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*116*		*70 - 130*	*01/19/17 14:14*	*01/21/17 19:49*	*1*
13C2 PFDA	*117*		*70 - 130*	*01/19/17 14:14*	*01/21/17 19:49*	*1*

Client Sample ID: WI-AF-1FB06-0117

Lab Sample ID: 320-25077-2

Date Collected: 01/16/17 09:12

Matrix: Water

Date Received: 01/18/17 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.047	U M	0.059	0.015	ug/L		01/19/17 14:14	01/21/17 20:19	1
Perfluorooctanoic acid (PFOA)	0.024	U M	0.030	0.0093	ug/L		01/19/17 14:14	01/21/17 20:19	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		01/19/17 14:14	01/21/17 20:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*115*		*70 - 130*	*01/19/17 14:14*	*01/21/17 20:19*	*1*
13C2 PFDA	*112*		*70 - 130*	*01/19/17 14:14*	*01/21/17 20:19*	*1*

Client Sample ID: WI-AF-1RW07-0117

Lab Sample ID: 320-25077-3

Date Collected: 01/16/17 09:50

Matrix: Water

Date Received: 01/18/17 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.016	ug/L		01/19/17 14:14	01/21/17 20:48	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0095	ug/L		01/19/17 14:14	01/21/17 20:48	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L		01/19/17 14:14	01/21/17 20:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*115*		*70 - 130*	*01/19/17 14:14*	*01/21/17 20:48*	*1*
13C2 PFDA	*111*		*70 - 130*	*01/19/17 14:14*	*01/21/17 20:48*	*1*

Client Sample ID: WI-AF-1FB07-0117

Lab Sample ID: 320-25077-4

Date Collected: 01/16/17 09:51

Matrix: Water

Date Received: 01/18/17 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.015	ug/L		01/19/17 14:14	01/21/17 21:18	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0094	ug/L		01/19/17 14:14	01/21/17 21:18	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		01/19/17 14:14	01/21/17 21:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*126*		*70 - 130*	*01/19/17 14:14*	*01/21/17 21:18*	*1*
13C2 PFDA	*115*		*70 - 130*	*01/19/17 14:14*	*01/21/17 21:18*	*1*

Client Sample ID: WI-AF-1RW08-0117

Lab Sample ID: 320-25077-5

Date Collected: 01/16/17 10:13

Matrix: Water

Date Received: 01/18/17 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.015	ug/L		01/19/17 14:14	01/21/17 21:47	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0094	ug/L		01/19/17 14:14	01/21/17 21:47	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		01/19/17 14:14	01/21/17 21:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*126*		*70 - 130*	*01/19/17 14:14*	*01/21/17 21:47*	*1*
13C2 PFDA	*122*		*70 - 130*	*01/19/17 14:14*	*01/21/17 21:47*	*1*

Client Sample ID: WI-AF-1FB08-0117

Lab Sample ID: 320-25077-6

Date Collected: 01/16/17 10:14

Matrix: Water

Date Received: 01/18/17 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.015	ug/L		01/19/17 14:14	01/21/17 22:17	1
Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.0092	ug/L		01/19/17 14:14	01/21/17 22:17	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		01/19/17 14:14	01/21/17 22:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*117*		*70 - 130*	*01/19/17 14:14*	*01/21/17 22:17*	*1*
13C2 PFDA	*115*		*70 - 130*	*01/19/17 14:14*	*01/21/17 22:17*	*1*

Client Sample ID: WI-AF-1RW09-0117

Lab Sample ID: 320-25077-7

Date Collected: 01/16/17 11:35

Matrix: Water

Date Received: 01/18/17 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.049	U M	0.061	0.016	ug/L		01/19/17 14:14	01/21/17 22:47	1
Perfluorooctanoic acid (PFOA)	0.024	U M	0.030	0.0095	ug/L		01/19/17 14:14	01/21/17 22:47	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L		01/19/17 14:14	01/21/17 22:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*117*		*70 - 130*	*01/19/17 14:14*	*01/21/17 22:47*	*1*
13C2 PFDA	*115*		*70 - 130*	*01/19/17 14:14*	*01/21/17 22:47*	*1*

Client Sample ID: WI-AF-1FB09-0117

Lab Sample ID: 320-25077-8

Date Collected: 01/16/17 11:36

Matrix: Water

Date Received: 01/18/17 09:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.015	ug/L		01/19/17 14:14	01/22/17 00:15	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0093	ug/L		01/19/17 14:14	01/22/17 00:15	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		01/19/17 14:14	01/22/17 00:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*117*		*70 - 130*	*01/19/17 14:14*	*01/22/17 00:15*	*1*
13C2 PFDA	*109*		*70 - 130*	*01/19/17 14:14*	*01/22/17 00:15*	*1*

Default Detection Limits

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

TestAmerica Job ID: 320-25077-1

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: 320-25077-1

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)								
320-25077-1	WI-AF-1RW06-0117	116	117								
320-25077-2	WI-AF-1FB06-0117	115	112								
320-25077-3	WI-AF-1RW07-0117	115	111								
320-25077-4	WI-AF-1FB07-0117	126	115								
320-25077-5	WI-AF-1RW08-0117	126	122								
320-25077-6	WI-AF-1FB08-0117	117	115								
320-25077-7	WI-AF-1RW09-0117	117	115								
320-25077-8	WI-AF-1FB09-0117	117	109								
LCS 320-147025/2-A	Lab Control Sample	127	122								
LCSD 320-147025/3-A	Lab Control Sample Dup	124	125								
MB 320-147025/1-A	Method Blank	111	110								

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

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

Lab Sample ID: MB 320-147025/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 147271 — **Prep Batch: 147025**

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		01/19/17 14:14	01/21/17 18:20	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0094	ug/L		01/19/17 14:14	01/21/17 18:20	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L		01/19/17 14:14	01/21/17 18:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*111*		*70 - 130*	*01/19/17 14:14*	*01/21/17 18:20*	*1*
13C2 PFDA	*110*		*70 - 130*	*01/19/17 14:14*	*01/21/17 18:20*	*1*

Lab Sample ID: LCS 320-147025/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 147271 — **Prep Batch: 147025**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	0.160	0.158		ug/L		99	70 - 130
Perfluorooctanoic acid (PFOA)	0.0781	0.0726		ug/L		93	70 - 130
Perfluorobutanesulfonic acid (PFBS)	0.359	0.304		ug/L		85	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*127*		*70 - 130*
13C2 PFDA	*122*		*70 - 130*

Lab Sample ID: LCSD 320-147025/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 147271 — **Prep Batch: 147025**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	0.160	0.160		ug/L		100	70 - 130	1	30
Perfluorooctanoic acid (PFOA)	0.0781	0.0782		ug/L		100	70 - 130	7	30
Perfluorobutanesulfonic acid (PFBS)	0.359	0.290		ug/L		81	70 - 130	5	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*124*		*70 - 130*
13C2 PFDA	*125*		*70 - 130*

LCMS

Prep Batch: 147025

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-25077-1	WI-AF-1RW06-0117	Total/NA	Water	537	
320-25077-2	WI-AF-1FB06-0117	Total/NA	Water	537	
320-25077-3	WI-AF-1RW07-0117	Total/NA	Water	537	
320-25077-4	WI-AF-1FB07-0117	Total/NA	Water	537	
320-25077-5	WI-AF-1RW08-0117	Total/NA	Water	537	
320-25077-6	WI-AF-1FB08-0117	Total/NA	Water	537	
320-25077-7	WI-AF-1RW09-0117	Total/NA	Water	537	
320-25077-8	WI-AF-1FB09-0117	Total/NA	Water	537	
MB 320-147025/1-A	Method Blank	Total/NA	Water	537	
LCS 320-147025/2-A	Lab Control Sample	Total/NA	Water	537	
LCSD 320-147025/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 147271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-25077-1	WI-AF-1RW06-0117	Total/NA	Water	537	147025
320-25077-2	WI-AF-1FB06-0117	Total/NA	Water	537	147025
320-25077-3	WI-AF-1RW07-0117	Total/NA	Water	537	147025
320-25077-4	WI-AF-1FB07-0117	Total/NA	Water	537	147025
320-25077-5	WI-AF-1RW08-0117	Total/NA	Water	537	147025
320-25077-6	WI-AF-1FB08-0117	Total/NA	Water	537	147025
320-25077-7	WI-AF-1RW09-0117	Total/NA	Water	537	147025
MB 320-147025/1-A	Method Blank	Total/NA	Water	537	147025
LCS 320-147025/2-A	Lab Control Sample	Total/NA	Water	537	147025
LCSD 320-147025/3-A	Lab Control Sample Dup	Total/NA	Water	537	147025

Analysis Batch: 147339

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-25077-8	WI-AF-1FB09-0117	Total/NA	Water	537	147025

Client Sample ID: WI-AF-1RW06-0117
Lab Sample ID: 320-25077-1
Date Collected: 01/16/17 09:11
Matrix: Water
Date Received: 01/18/17 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			147025	01/19/17 14:14	KMK	TAL SAC
Total/NA	Analysis	537		1	147271	01/21/17 19:49	JRB	TAL SAC

Client Sample ID: WI-AF-1FB06-0117
Lab Sample ID: 320-25077-2
Date Collected: 01/16/17 09:12
Matrix: Water
Date Received: 01/18/17 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			147025	01/19/17 14:14	KMK	TAL SAC
Total/NA	Analysis	537		1	147271	01/21/17 20:19	JRB	TAL SAC

Client Sample ID: WI-AF-1RW07-0117
Lab Sample ID: 320-25077-3
Date Collected: 01/16/17 09:50
Matrix: Water
Date Received: 01/18/17 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			147025	01/19/17 14:14	KMK	TAL SAC
Total/NA	Analysis	537		1	147271	01/21/17 20:48	JRB	TAL SAC

Client Sample ID: WI-AF-1FB07-0117
Lab Sample ID: 320-25077-4
Date Collected: 01/16/17 09:51
Matrix: Water
Date Received: 01/18/17 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			147025	01/19/17 14:14	KMK	TAL SAC
Total/NA	Analysis	537		1	147271	01/21/17 21:18	JRB	TAL SAC

Client Sample ID: WI-AF-1RW08-0117
Lab Sample ID: 320-25077-5
Date Collected: 01/16/17 10:13
Matrix: Water
Date Received: 01/18/17 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			147025	01/19/17 14:14	KMK	TAL SAC
Total/NA	Analysis	537		1	147271	01/21/17 21:47	JRB	TAL SAC

Client Sample ID: WI-AF-1FB08-0117
Lab Sample ID: 320-25077-6
Date Collected: 01/16/17 10:14
Matrix: Water
Date Received: 01/18/17 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			147025	01/19/17 14:14	KMK	TAL SAC
Total/NA	Analysis	537		1	147271	01/21/17 22:17	JRB	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 320-25077-1

Client Sample ID: WI-AF-1RW09-0117

Lab Sample ID: 320-25077-7

Date Collected: 01/16/17 11:35

Matrix: Water

Date Received: 01/18/17 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			147025	01/19/17 14:14	KMK	TAL SAC
Total/NA	Analysis	537		1	147271	01/21/17 22:47	JRB	TAL SAC

Client Sample ID: WI-AF-1FB09-0117

Lab Sample ID: 320-25077-8

Date Collected: 01/16/17 11:36

Matrix: Water

Date Received: 01/18/17 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			147025	01/19/17 14:14	KMK	TAL SAC
Total/NA	Analysis	537		1	147339	01/22/17 00:15	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: 320-25077-1

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17

Analysis Method	Prep Method	Matrix	Analyte

Method Summary

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

TestAmerica Job ID: 320-25077-1

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: 320-25077-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-25077-1	WI-AF-1RW06-0117	Water	01/16/17 09:11	01/18/17 09:25
320-25077-2	WI-AF-1FB06-0117	Water	01/16/17 09:12	01/18/17 09:25
320-25077-3	WI-AF-1RW07-0117	Water	01/16/17 09:50	01/18/17 09:25
320-25077-4	WI-AF-1FB07-0117	Water	01/16/17 09:51	01/18/17 09:25
320-25077-5	WI-AF-1RW08-0117	Water	01/16/17 10:13	01/18/17 09:25
320-25077-6	WI-AF-1FB08-0117	Water	01/16/17 10:14	01/18/17 09:25
320-25077-7	WI-AF-1RW09-0117	Water	01/16/17 11:35	01/18/17 09:25
320-25077-8	WI-AF-1FB09-0117	Water	01/16/17 11:36	01/18/17 09:25

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Instrument ID: A6 Analysis Batch Number: 147198

Lab Sample ID: STD 320-147198/3 IC Client Sample ID:

Date Analyzed: 01/20/17 13:11 Lab File ID: 20JAN2016A6A_005.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	19.48	Split Peak	barnettj	01/20/17 14:37
Perfluorooctanoic acid (PFOA)	20.15	Split Peak	barnettj	01/20/17 14:37

Lab Sample ID: STD 320-147198/4 IC Client Sample ID:

Date Analyzed: 01/20/17 13:41 Lab File ID: 20JAN2016A6A_006.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	19.49	Split Peak	barnettj	01/20/17 14:38
Perfluorooctanoic acid (PFOA)	20.17	Split Peak	barnettj	01/20/17 14:38

Lab Sample ID: CCV 320-147198/10 CCVL Client Sample ID:

Date Analyzed: 01/20/17 16:40 Lab File ID: 20JAN2016A6A_012.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	19.47	Baseline	phomsopha t	01/21/17 15:21
Perfluorooctanoic acid (PFOA)	20.15	Baseline	phomsopha t	01/21/17 15:21

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Instrument ID: A6 Analysis Batch Number: 147271

Lab Sample ID: 320-25077-1 Client Sample ID: WI-AF-1RW06-0117

Date Analyzed: 01/21/17 19:49 Lab File ID: 20JAN2016A6A_067.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	20.13	Split Peak	barnettj	01/23/17 13:14

Lab Sample ID: 320-25077-2 Client Sample ID: WI-AF-1FB06-0117

Date Analyzed: 01/21/17 20:19 Lab File ID: 20JAN2016A6A_068.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	20.13	Split Peak	barnettj	01/23/17 13:15
Perfluorooctanesulfonic acid (PFOS)	20.77	Missed Peak	barnettj	01/23/17 13:15

Lab Sample ID: 320-25077-7 Client Sample ID: WI-AF-1RW09-0117

Date Analyzed: 01/21/17 22:47 Lab File ID: 20JAN2016A6A_073.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	20.13	Split Peak	barnettj	01/23/17 13:19
Perfluorooctanesulfonic acid (PFOS)	20.50	Missed Peak	barnettj	01/23/17 13:19

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-ICV_00019	03/01/17	12/20/16	MeOH/H2O, Lot 067374	10 mL	LC537-IS_00028	200 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
LC537-ICV_00019	03/01/17	12/20/16	MeOH/H2O, Lot 067374	10 mL	LC537-SU_00027	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
					LC537ICIM_00014	25 uL	Perfluorobutanesulfonic acid (PFBS)	114.77 ng/mL
							Perfluorooctanoic acid (PFOA)	25.0232 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	27.2389 ng/mL
.LC537-SU_00027	06/19/17	12/19/16	Methanol, Lot 104453	20000 uL	LCMPFDA_00008	80 uL	13C2 PFDA	0.2 ug/mL
					LCMPFHxA_00009	80 uL	13C2 PFHxA	0.2 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
.LC537ICIM_00014	03/01/17	12/20/16	Methanol, Lot 090285	25 mL	LC537-PFBS2_00005	0.5 mL	Perfluorobutanesulfonic acid (PFBS)	45.908 ug/mL
					LC537-PFOA2_00008	0.142 mL	Perfluorooctanoic acid (PFOA)	10.0093 ug/mL
					LC537-PFOS2_00005	0.22 mL	Perfluorooctanesulfonic acid (PFOS)	10.8956 ug/mL
..LC537-PFBS2_00005	03/01/17	02/29/16	Methanol, Lot 090285	10 mL	LC537_PFBS2_00001	0.023 g	Perfluorobutanesulfonic acid (PFBS)	2295.4 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_00005	03/01/17	02/29/16	Methanol, Lot 090285	10 mL	LC537_PFOS2_00001	0.0159 g	Perfluorooctanesulfonic acid (PFOS)	1238.13 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.: 320-25077-1

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_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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

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

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-L3_00018	06/14/17	12/23/16	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_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.: 320-25077-1

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-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
					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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

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-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_00019	06/14/17	12/23/16	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00014	200 uL	Perfluorobutanesulfonic acid (PFBS)	134.64 ng/mL
							Perfluoroheptanoic acid	14.85 ng/mL
							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_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

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

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

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid	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-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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...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_00028	07/03/17	01/03/17	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®

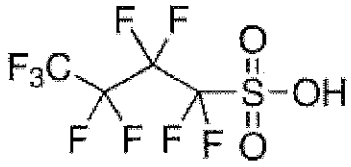
sigma-aldrich.com

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

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

Reagent

LC537_PFBS2_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 Index: n20/D

Reagent

LC537_PFHpA_00002

R: 4/1/15 SRV

SIGMA-ALDRICH®

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

Certificate of Analysis

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

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_PFHxS_00002

Y: 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

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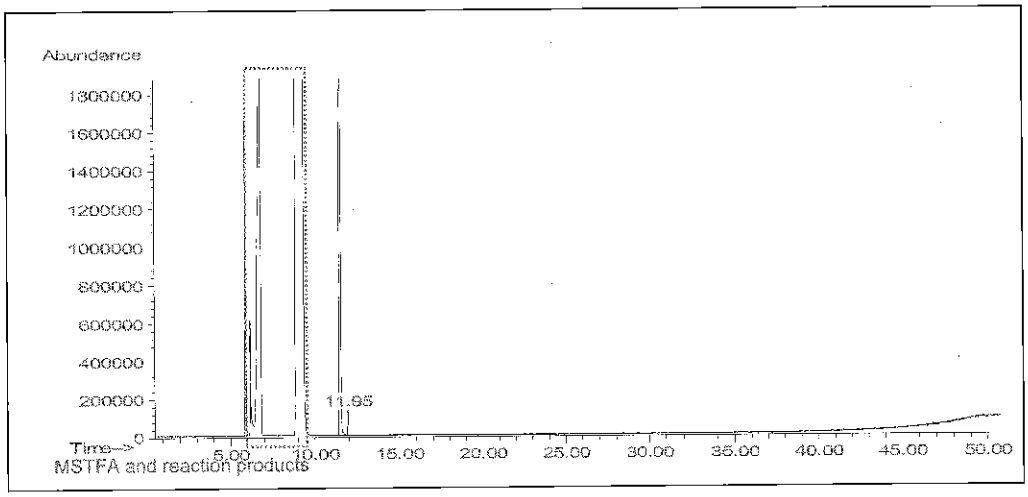
GC/MS-Method

Analytical Department

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

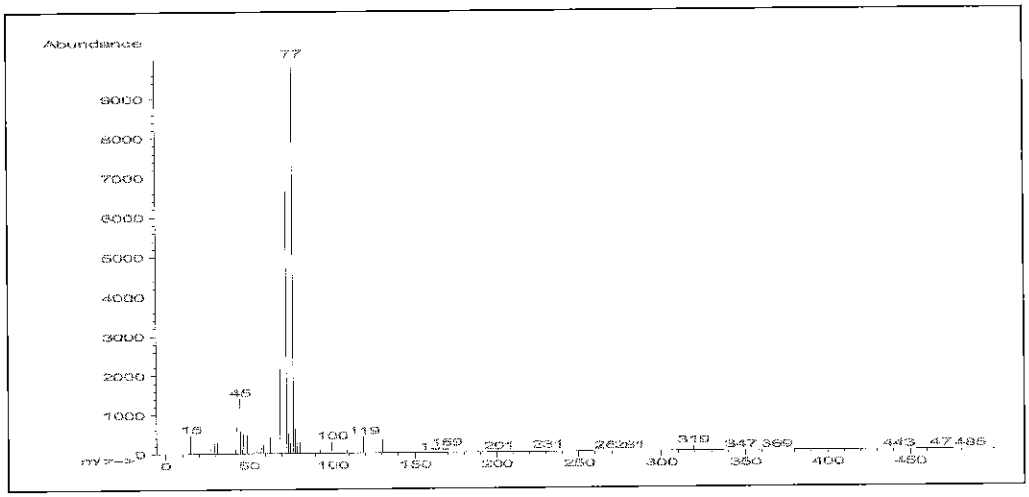
Column:	XTI-5 (Restek); 30 m; fs cap.; I.D.:0.25 mm; 1 µm df
Injector:	Split mode
Injection:	approx. 1 µl of reaction mixture with MSTFA (approx. 10 mg + 200 µl MSTFA)
Inj.-temp.:	280°C
Oven-temp.:	40°C (for 2 min) to 320°C (6°C/min) hold for 2 min
Split:	1:100
Flow:	1 ml He/min (Constant flow mode)
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

This document has been electronically generated and does not require a signature.

Reagent

LC537_PFOS_00002

Γ: 4/1/15 SV

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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

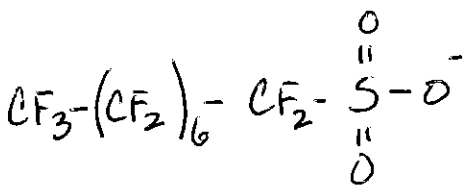
QC RELEASE DATE 13/APR/11

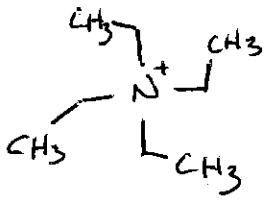
MW correction = $\frac{500.125}{629.37} = 0.7946$ ~~= 79.46%~~ DEH 7-26-12

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 warrants, that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice for additional terms and conditions of sale. The values given on the 'Certificate of Analysis' are the results determined at the time of analysis.

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.

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Sigma-Aldrich shall not be held liable for any damage resulting from handling or from processing the above product(s). This document does not make any warranty, express or implied, of fitness for any particular use of the product(s). Purchaser must determine the suitability of the product(s) for its use under the applicable law and regulations.

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

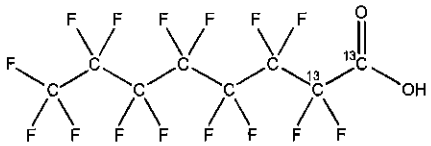
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: M2PFOA0613

STRUCTURE:

CAS #: Not available



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

CHEMICAL PURITY: >98%
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

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ B.G. Chittim **Date:** 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:

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 and/or LC/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

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

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

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

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

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

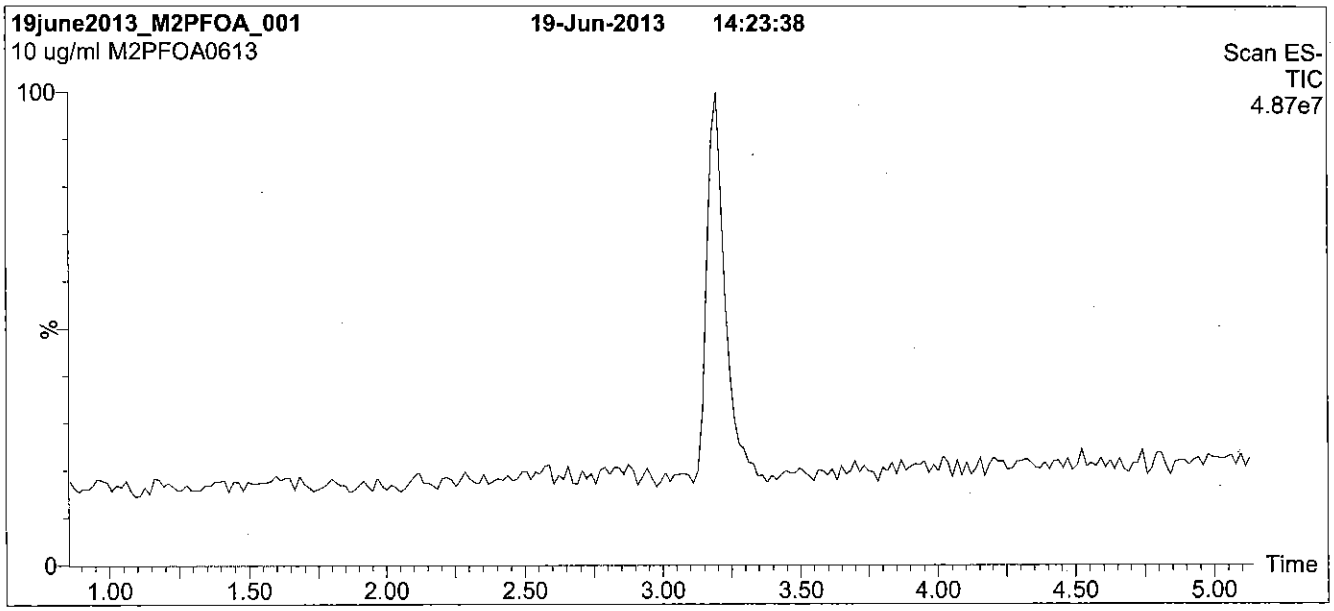
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

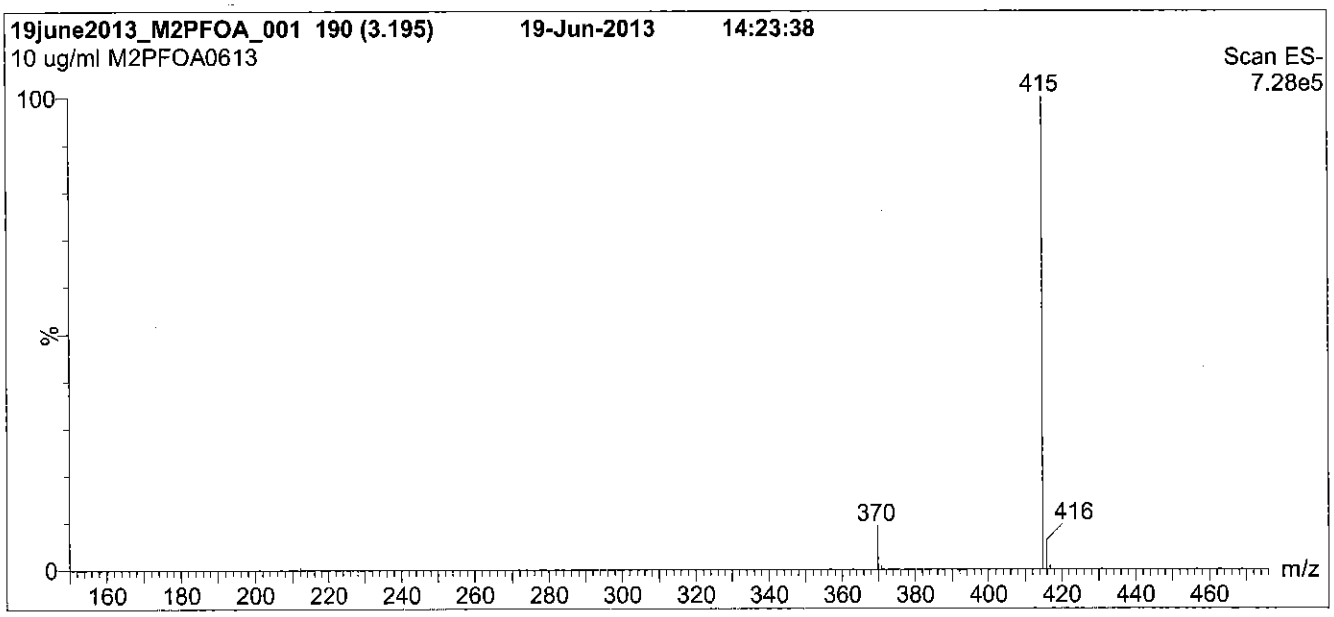
CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

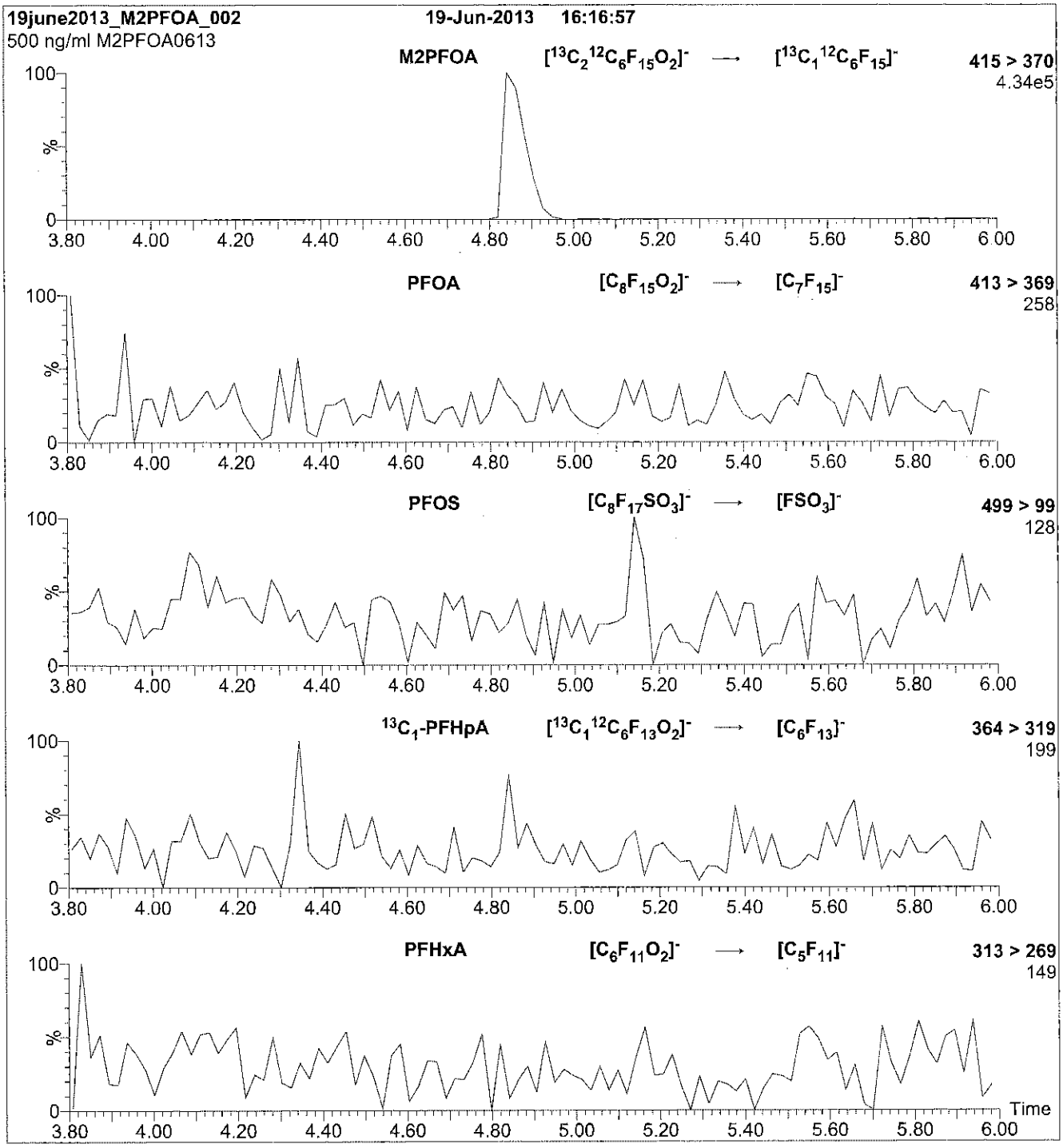
Flow: 300 µl/min

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

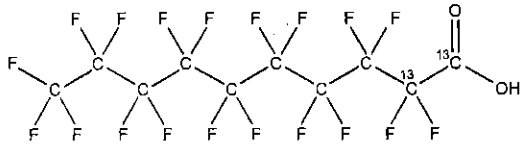
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFDA0815

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:

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:

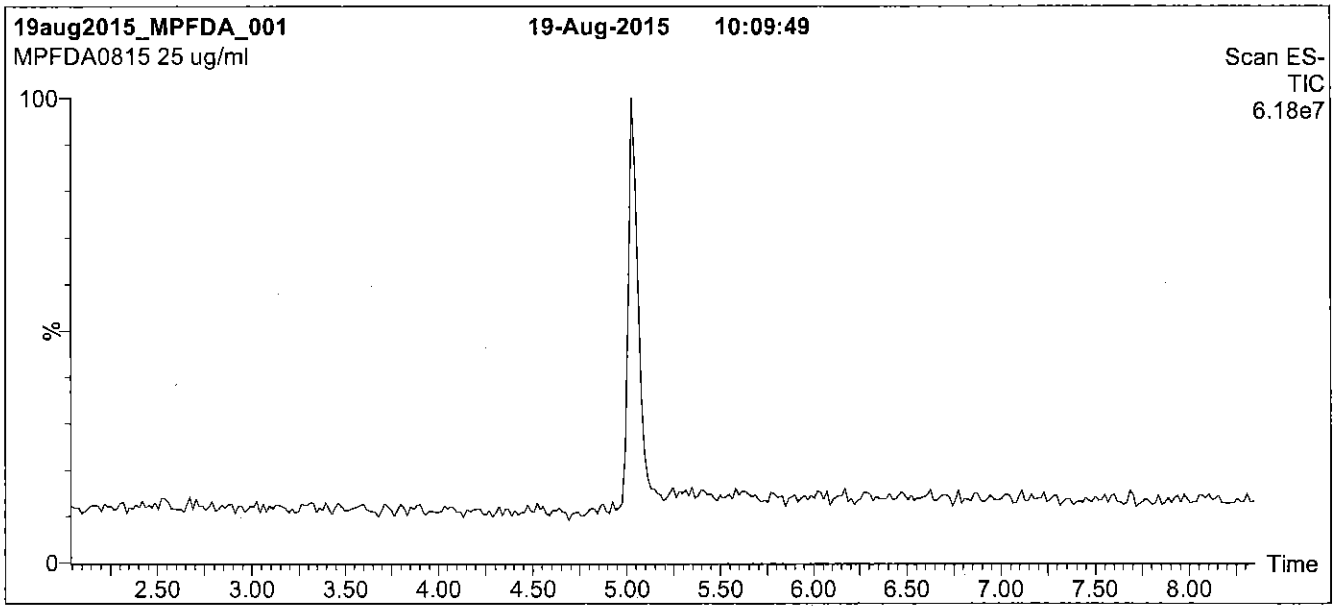
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

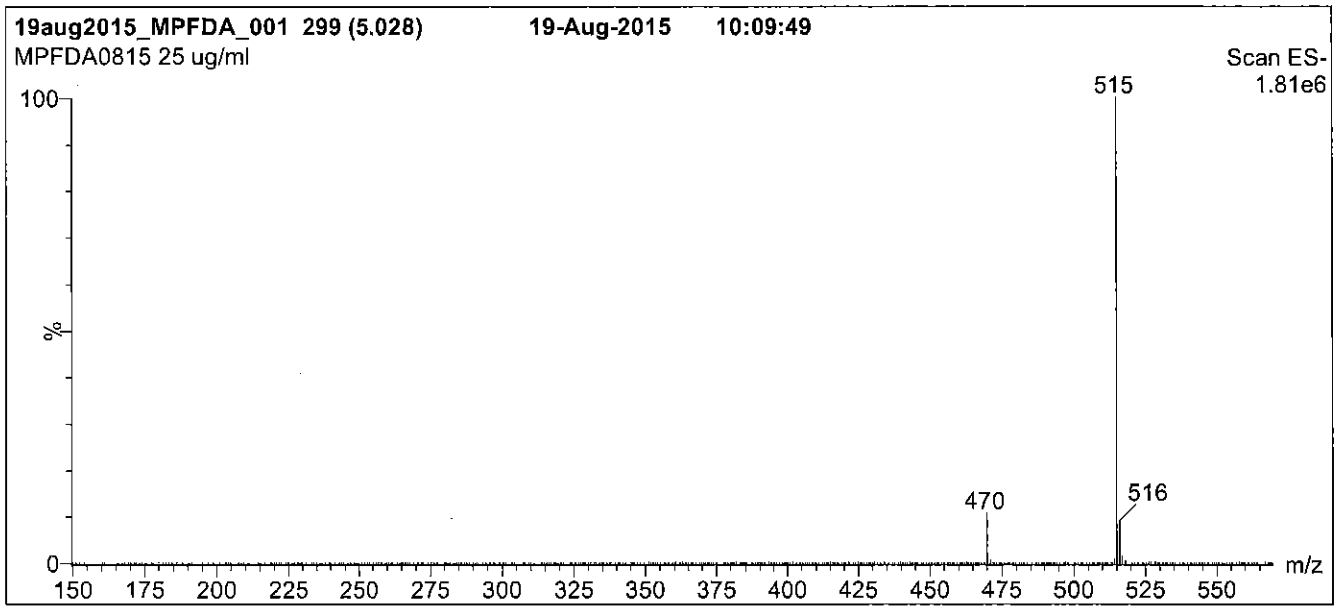
CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

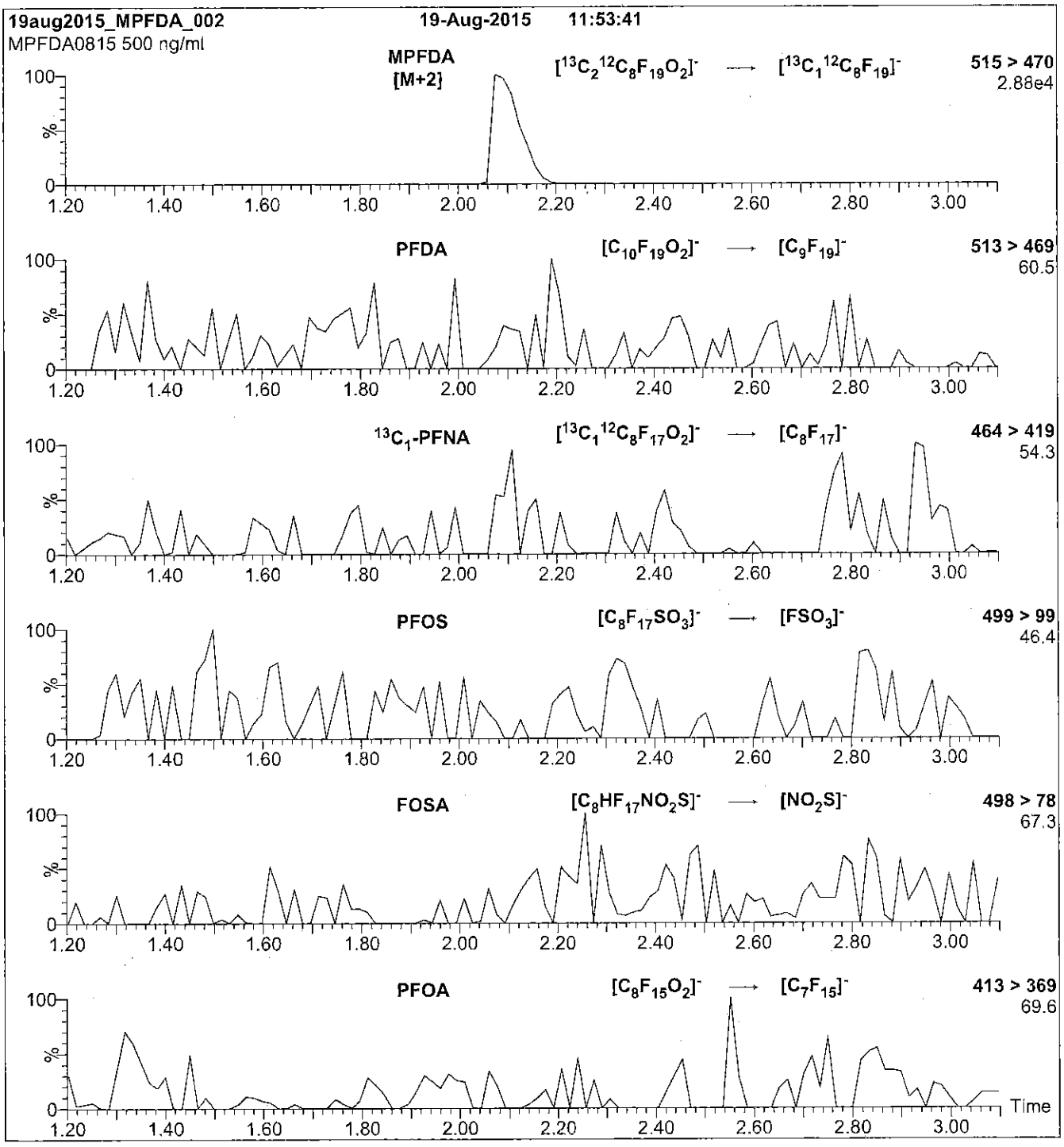
Flow: 300 µl/min

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

LCMPFHxA_00009

605244
ID: LCMPFHxA_00009
Exp: 04/09/20 Prpd: CBW
13C2-Perfluorohexanoic ac

Rec. 3/29/16 JRB ✓

WELLINGTON LABORATORIES

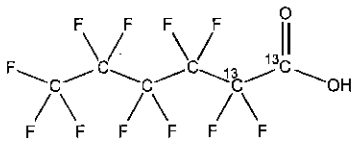
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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:

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

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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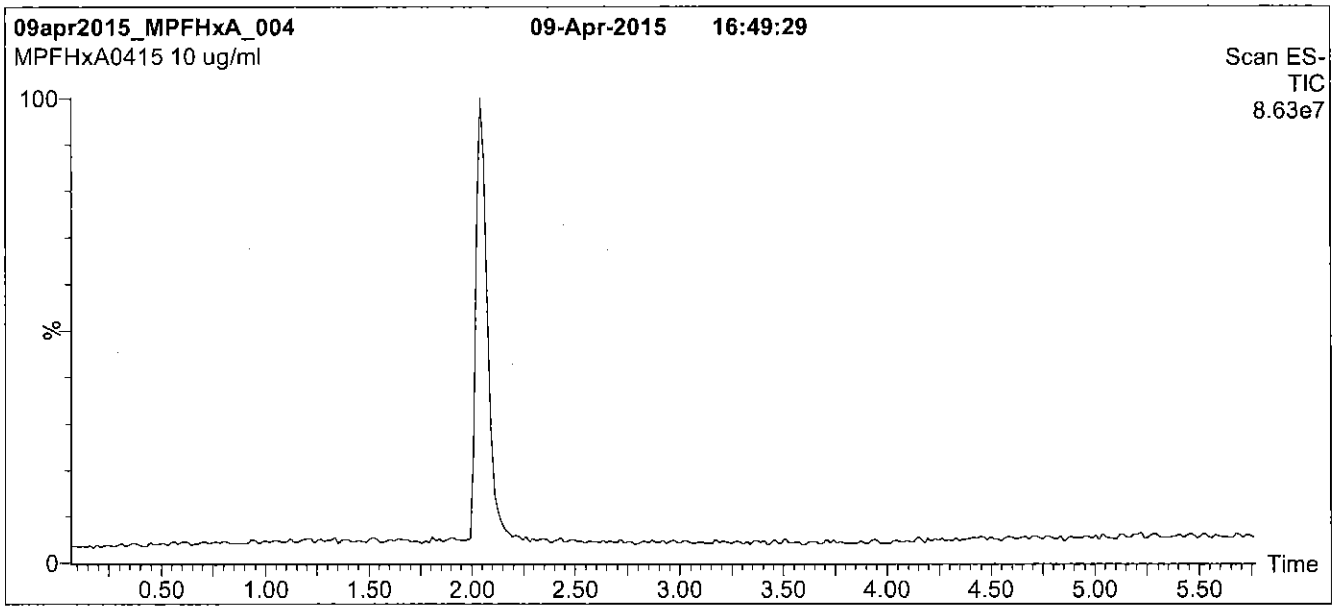
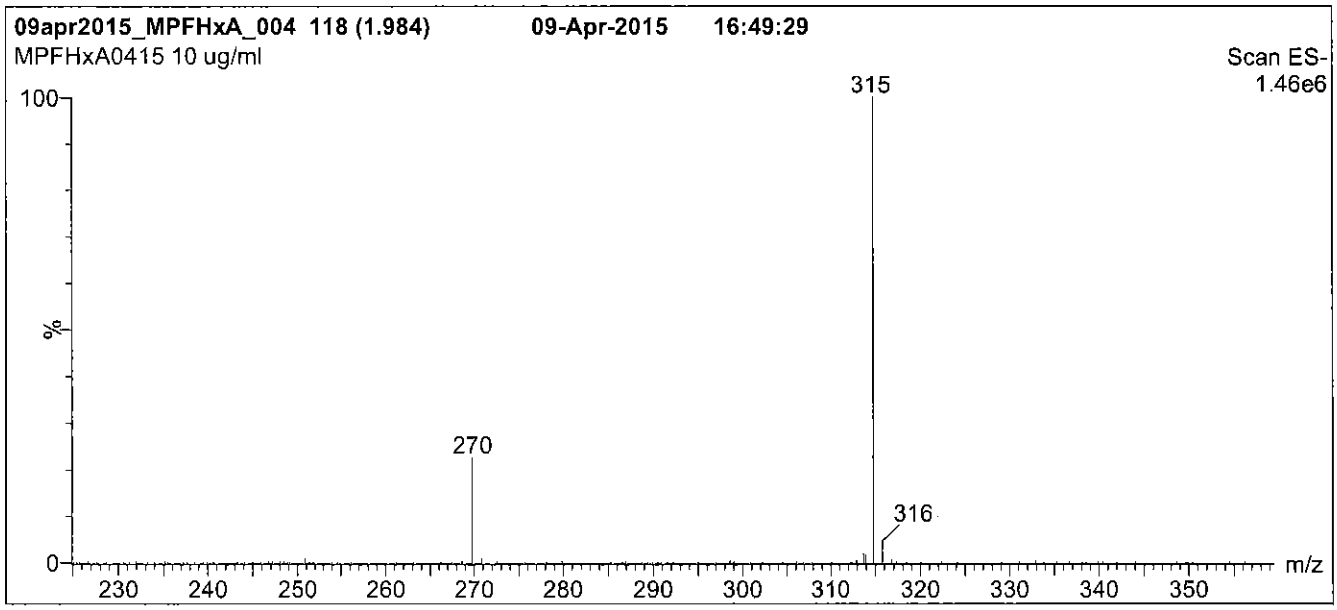
CALA

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

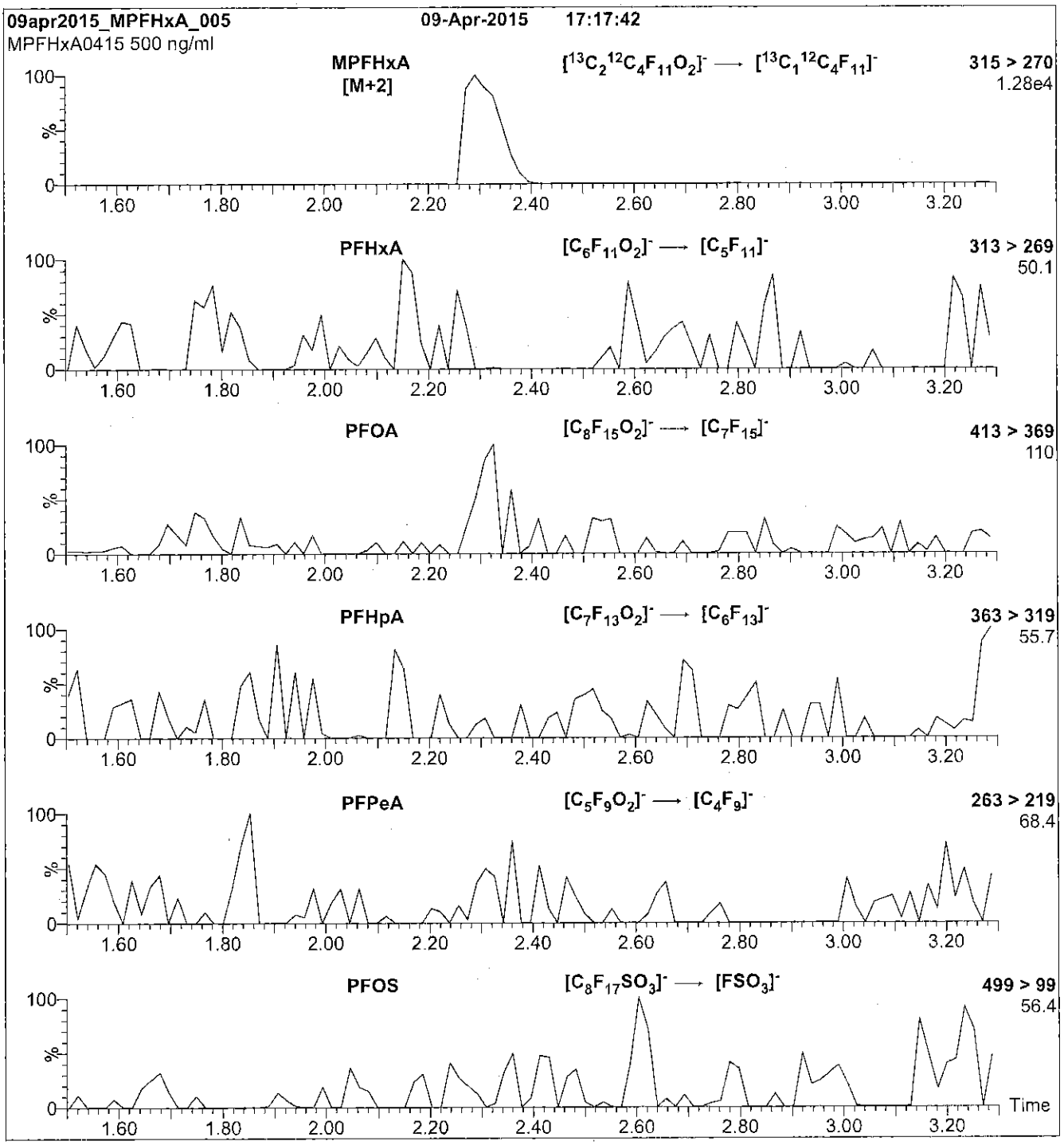
Flow: 300 µl/min

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

LCMPFOS_00018

R: SBC 9/22/16

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

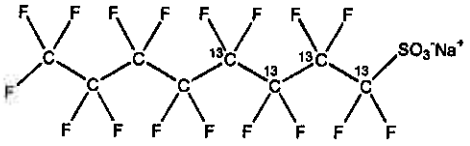
WELLINGTON LABORATORIES

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

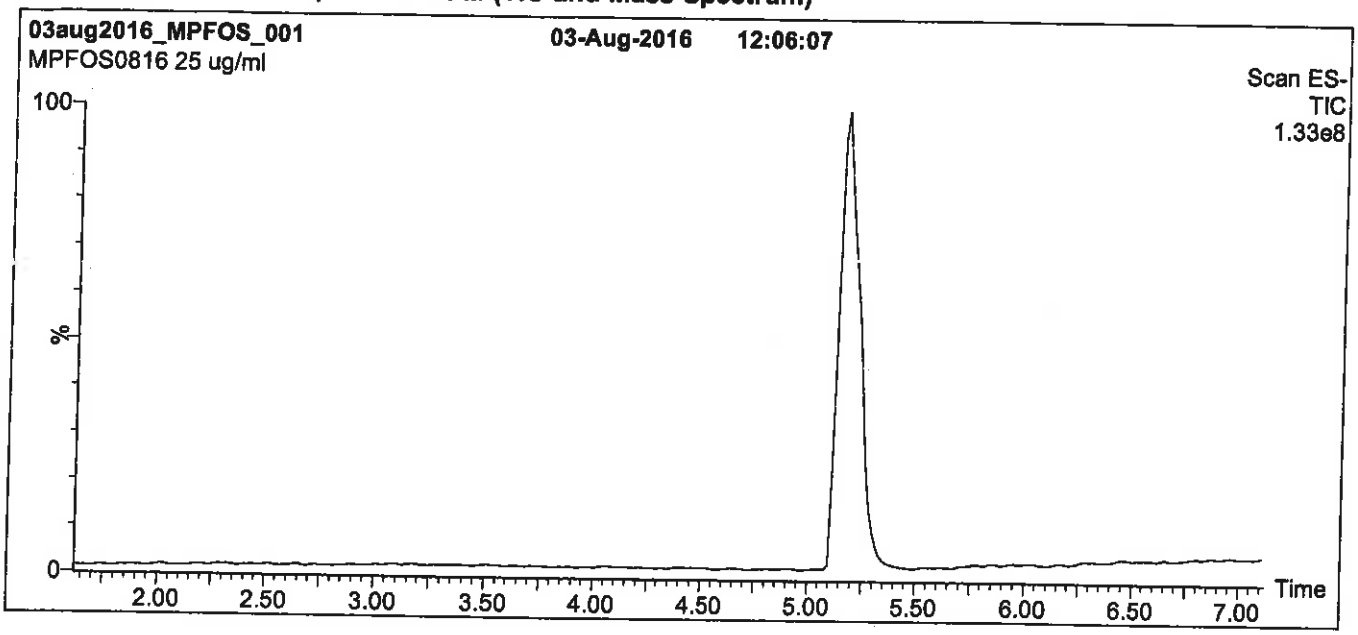
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

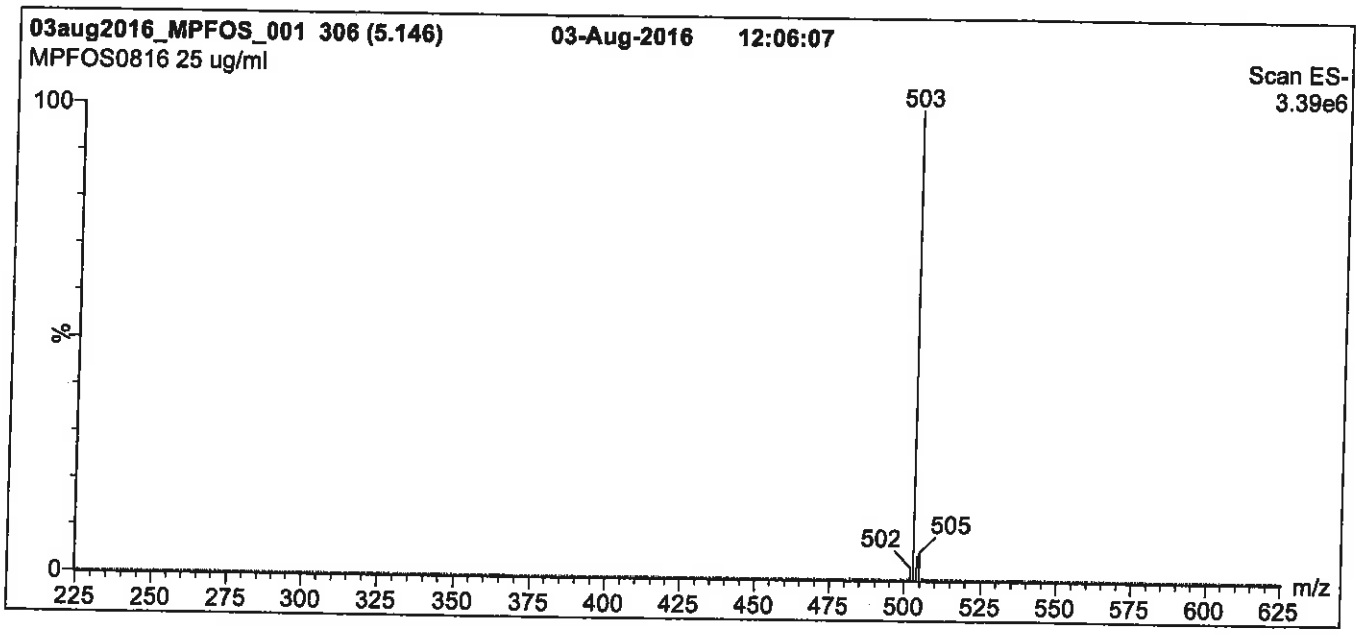
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

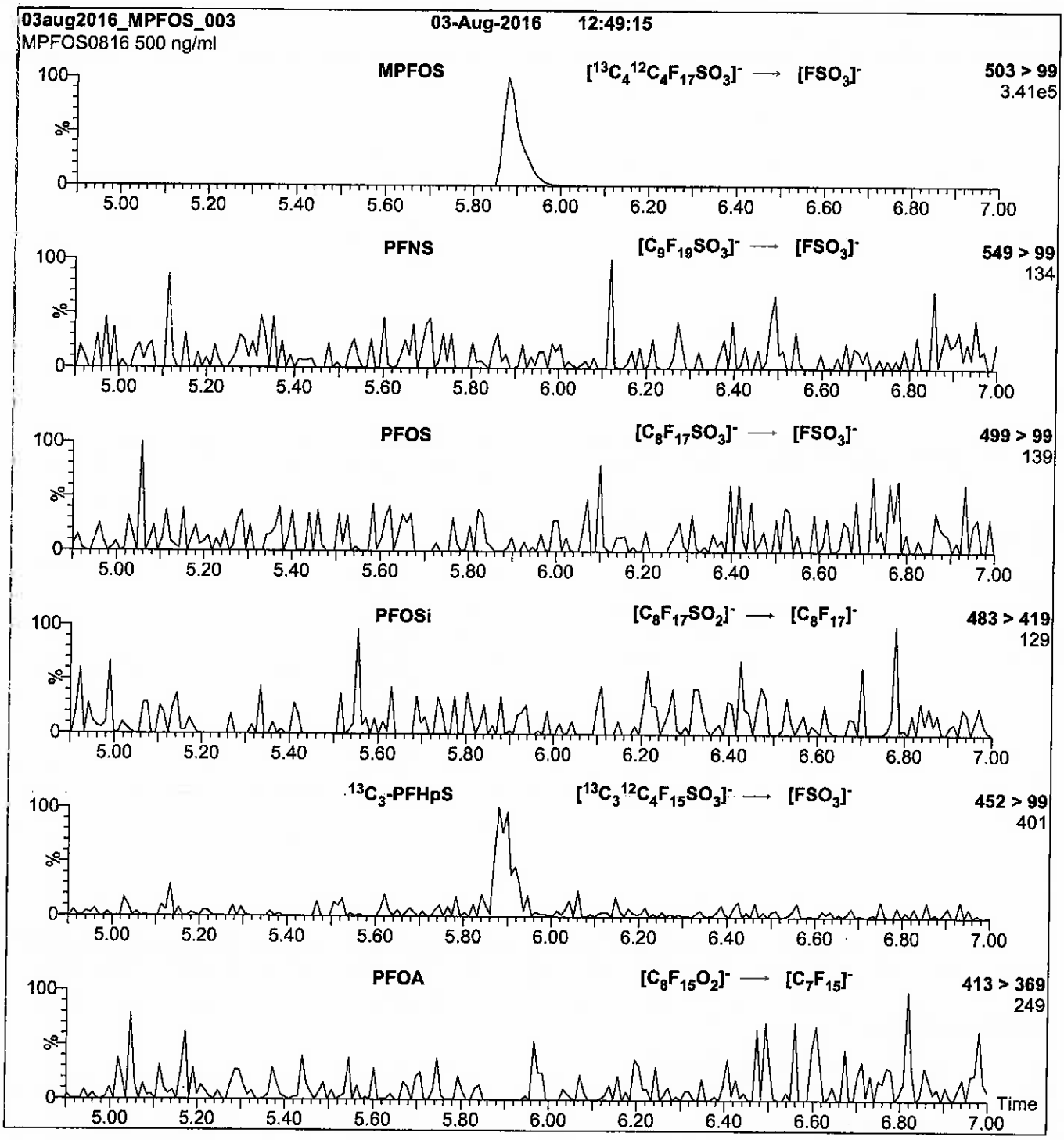
Flow: 300 µl/min

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.: 320-25077-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WI-AF-1RW06-0117	320-25077-1	116	117
WI-AF-1FB06-0117	320-25077-2	115	112
WI-AF-1RW07-0117	320-25077-3	115	111
WI-AF-1FB07-0117	320-25077-4	126	115
WI-AF-1RW08-0117	320-25077-5	126	122
WI-AF-1FB08-0117	320-25077-6	117	115
WI-AF-1RW09-0117	320-25077-7	117	115
WI-AF-1FB09-0117	320-25077-8	117	109
	MB 320-147025/1-A	111	110
	LCS 320-147025/2-A	127	122
	LCSD 320-147025/3-A	124	125

	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.: 320-25077-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 20JAN2016A6A_065.d

Lab ID: LCS 320-147025/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	0.160	0.158	99	70-130	
Perfluorooctanoic acid (PFOA)	0.0781	0.0726	93	70-130	
Perfluorobutanesulfonic acid (PFBS)	0.359	0.304	85	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.: 320-25077-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 20JAN2016A6A_066.d

Lab ID: LCSD 320-147025/3-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	0.160	100	1	30	70-130	
Perfluorooctanoic acid (PFOA)	0.0781	0.0782	100	7	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	0.359	0.290	81	5	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.: 320-25077-1

SDG No.:

Lab File ID: 20JAN2016A6A_064.d Lab Sample ID: MB 320-147025/1-A

Matrix: Water Date Extracted: 01/19/2017 14:14

Instrument ID: A6 Date Analyzed: 01/21/2017 18:20

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-147025/2-A	20JAN2016A6A_065.d	01/21/2017 18:50
	LCSD 320-147025/3-A	20JAN2016A6A_066.d	01/21/2017 19:19
WI-AF-1RW06-0117	320-25077-1	20JAN2016A6A_067.d	01/21/2017 19:49
WI-AF-1FB06-0117	320-25077-2	20JAN2016A6A_068.d	01/21/2017 20:19
WI-AF-1RW07-0117	320-25077-3	20JAN2016A6A_069.d	01/21/2017 20:48
WI-AF-1FB07-0117	320-25077-4	20JAN2016A6A_070.d	01/21/2017 21:18
WI-AF-1RW08-0117	320-25077-5	20JAN2016A6A_071.d	01/21/2017 21:47
WI-AF-1FB08-0117	320-25077-6	20JAN2016A6A_072.d	01/21/2017 22:17
WI-AF-1RW09-0117	320-25077-7	20JAN2016A6A_073.d	01/21/2017 22:47
WI-AF-1FB09-0117	320-25077-8	20JAN2016A6A_076.d	01/22/2017 00:15

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Instrument ID: A6 Calibration Start Date: 01/20/2017 13:11

GC Column: Acquity ID: 2.1(mm) Calibration End Date: 01/20/2017 15:40

Calibration ID: 27741

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		569029	20.16	1159247	20.79		
UPPER LIMIT		853544	20.66	1738871	21.29		
LOWER LIMIT		284515	19.66	579624	20.29		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCV 320-147198/10 CCVL		565892	20.15	1158929	20.80		
ICV 320-147198/12		545066	20.15	1069204	20.79		
CCV 320-147271/60 CCVIS		728835	20.15	1446705	20.79		
MB 320-147025/1-A		758107	20.14	1450316	20.79		
LCS 320-147025/2-A		682158	20.14	1227030	20.77		
LCSD 320-147025/3-A		671066	20.14	1216067	20.77		
320-25077-1	WI-AF-1RW06-0117	691419	20.14	1443129	20.77		
320-25077-2	WI-AF-1FB06-0117	751106	20.14	1361845	20.77		
320-25077-3	WI-AF-1RW07-0117	759937	20.14	1443819	20.77		
320-25077-4	WI-AF-1FB07-0117	729783	20.14	1323849	20.77		
320-25077-5	WI-AF-1RW08-0117	694717	20.14	1413071	20.77		
320-25077-6	WI-AF-1FB08-0117	730400	20.13	1316228	20.77		
320-25077-7	WI-AF-1RW09-0117	738954	20.13	1406513	20.77		
CCV 320-147271/116 CCVIS		800746	20.13	1348380	20.77		
CCV 320-147339/116 CCVIS		800746	20.13	1348380	20.77		
320-25077-8	WI-AF-1FB09-0117	752675	20.13	1329851	20.77		
CCV 320-147339/129 CCVIS		762579	20.13	1398329	20.77		

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.: 320-25077-1

SDG No.:

Sample No.: CCV 320-147271/60 Date Analyzed: 01/21/2017 17:21

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm)

Lab File ID (Standard): 20JAN2016A6A_062.d Heated Purge: (Y/N) N

Calibration ID: 27741

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		728835	20.15	1446705	20.79		
UPPER LIMIT		1020369	20.65	2025387	21.29		
LOWER LIMIT		510185	19.65	1012694	20.29		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-147025/1-A		758107	20.14	1450316	20.79		
LCS 320-147025/2-A		682158	20.14	1227030	20.77		
LCSD 320-147025/3-A		671066	20.14	1216067	20.77		
320-25077-1	WI-AF-1RW06-0117	691419	20.14	1443129	20.77		
320-25077-2	WI-AF-1FB06-0117	751106	20.14	1361845	20.77		
320-25077-3	WI-AF-1RW07-0117	759937	20.14	1443819	20.77		
320-25077-4	WI-AF-1FB07-0117	729783	20.14	1323849	20.77		
320-25077-5	WI-AF-1RW08-0117	694717	20.14	1413071	20.77		
320-25077-6	WI-AF-1FB08-0117	730400	20.13	1316228	20.77		
320-25077-7	WI-AF-1RW09-0117	738954	20.13	1406513	20.77		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Sample No.: CCV 320-147271/116 Date Analyzed: 01/21/2017 23:16

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm)

Lab File ID (Standard): 20JAN2016A6A_074.d Heated Purge: (Y/N) N

Calibration ID: 27741

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		800746	20.13	1348380	20.77		
UPPER LIMIT		1121044	20.63	1887732	21.27		
LOWER LIMIT		560522	19.63	943866	20.27		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-147025/1-A		758107	20.14	1450316	20.79		
LCS 320-147025/2-A		682158	20.14	1227030	20.77		
LCSD 320-147025/3-A		671066	20.14	1216067	20.77		
320-25077-1	WI-AF-1RW06-0117	691419	20.14	1443129	20.77		
320-25077-2	WI-AF-1FB06-0117	751106	20.14	1361845	20.77		
320-25077-3	WI-AF-1RW07-0117	759937	20.14	1443819	20.77		
320-25077-4	WI-AF-1FB07-0117	729783	20.14	1323849	20.77		
320-25077-5	WI-AF-1RW08-0117	694717	20.14	1413071	20.77		
320-25077-6	WI-AF-1FB08-0117	730400	20.13	1316228	20.77		
320-25077-7	WI-AF-1RW09-0117	738954	20.13	1406513	20.77		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Sample No.: CCV 320-147339/116 Date Analyzed: 01/21/2017 23:16

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm)

Lab File ID (Standard): 20JAN2016A6A_074.d Heated Purge: (Y/N) N

Calibration ID: 27741

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		800746	20.13	1348380	20.77		
UPPER LIMIT		1121044	20.63	1887732	21.27		
LOWER LIMIT		560522	19.63	943866	20.27		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-25077-8	WI-AF-1FB09-0117	752675	20.13	1329851	20.77		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Sample No.: CCV 320-147339/129 Date Analyzed: 01/22/2017 05:12

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm)

Lab File ID (Standard): 20JAN2016A6A_086.d Heated Purge: (Y/N) N

Calibration ID: 27741

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		762579	20.13	1398329	20.77		
UPPER LIMIT		1067611	20.63	1957661	21.27		
LOWER LIMIT		533805	19.63	978830	20.27		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-25077-8	WI-AF-1FB09-0117	752675	20.13	1329851	20.77		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-25077-1

SDG No.:

Client Sample ID: WI-AF-1RW06-0117 | Lab Sample ID: 320-25077-1

Matrix: Water | Lab File ID: 20JAN2016A6A_067.d

Analysis Method: 537 | Date Collected: 01/16/2017 09:11

Extraction Method: 537 | Date Extracted: 01/19/2017 14:14

Sample wt/vol: 245(mL) | Date Analyzed: 01/21/2017 19:49

Con. Extract Vol.: 1.0(mL) | Dilution Factor: 1

Injection Volume: 10(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147271 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.049	U	0.061	0.049	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U M	0.031	0.024	0.0096
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.049

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	116		70-130
STL00996	13C2 PFDA	117		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_067.d
Lims ID: 320-25077-A-1-A
Client ID: WI-AF-1RW06-0117
Sample Type: Client
Inject. Date: 21-Jan-2017 19:49:27 ALS Bottle#: 6 Worklist Smp#: 109
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-25077-a-1-a
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:21:33 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: barnettj Date: 23-Jan-2017 13:14:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.676	17.708	-0.032	1.000	1026	0.0250	8.0	
$ 2 13C2 PFHxA								
315.0 > 270.0	18.649	18.677	-0.028	1.000	879572	11.6	23467	
4 Perfluoroheptanoic acid								
363.0 > 319.0	19.463	19.476	-0.013	1.000	1544	0.0209	0.7	
* 5 13C2-PFOA								
415.0 > 370.0	20.141	20.161	-0.020		691419	10.0	19032	
6 Perfluorooctanoic acid								M
413.0 > 369.0	20.130	20.161	-0.031	1.000	2607	0.0346	1.1	M
* 8 13C4 PFOS								
503.0 > 80.0	20.774	20.793	-0.019		1443129	28.7	10520	
9 Perfluorononanoic acid								M
463.0 > 419.0	20.856	20.866	-0.010	1.000	3265	0.0407	21.4	M
$ 10 13C2 PFDA								
515.0 > 470.0	21.587	21.597	-0.010	1.000	778208	11.7	26030	

QC Flag Legend

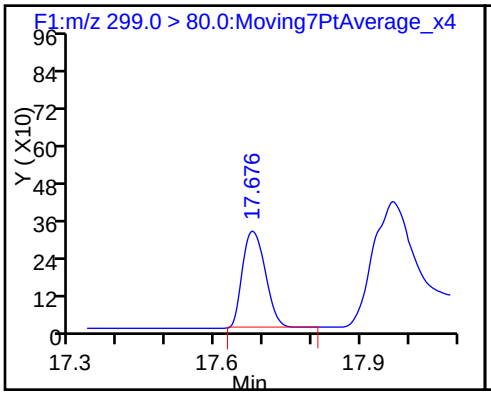
Review Flags
M - Manually Integrated

TestAmerica Sacramento

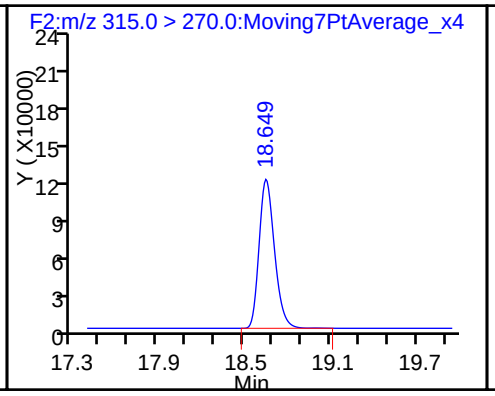
Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_067.d

Injection Date:	21-Jan-2017 19:49:27	Instrument ID:	A6		
Lims ID:	320-25077-A-1-A	Lab Sample ID:	320-25077-1		
Client ID:	WI-AF-1RW06-0117				
Operator ID:	CBW	ALS Bottle#:	6	Worklist Smp#:	109
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537__A6	Limit Group:	LC 537 ICAL		

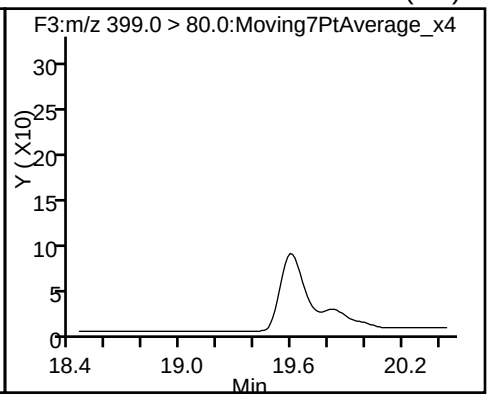
1 Perfluorobutanesulfonic acid



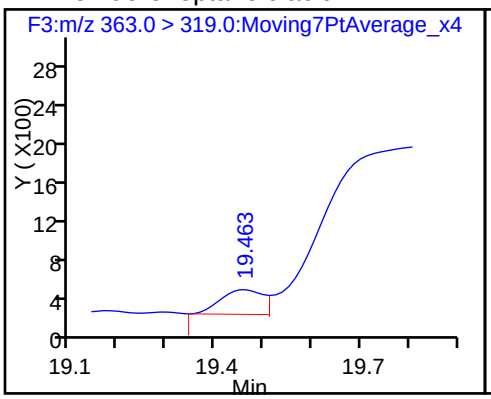
$ 2 13C2 PFHxA



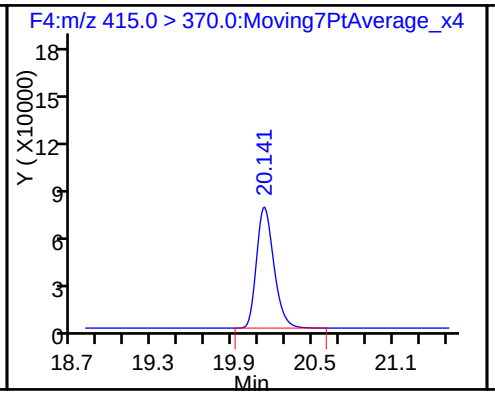
3 Perfluorohexanesulfonic acid (ND)



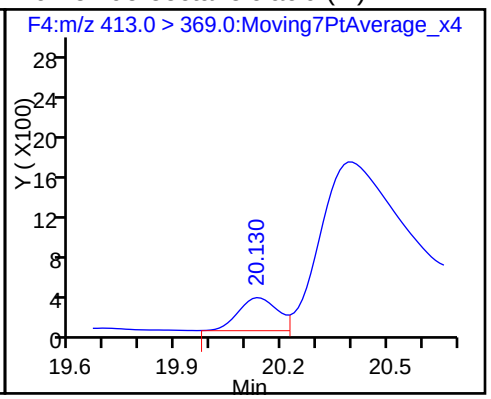
4 Perfluoroheptanoic acid



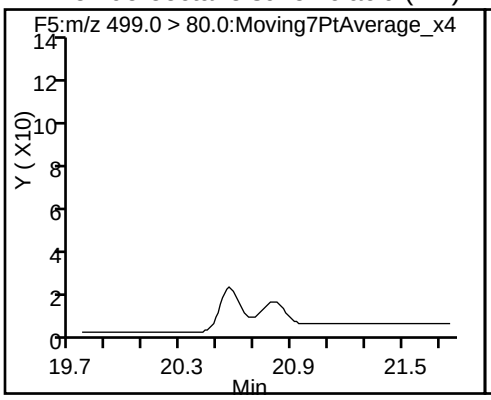
* 5 13C2-PFOA



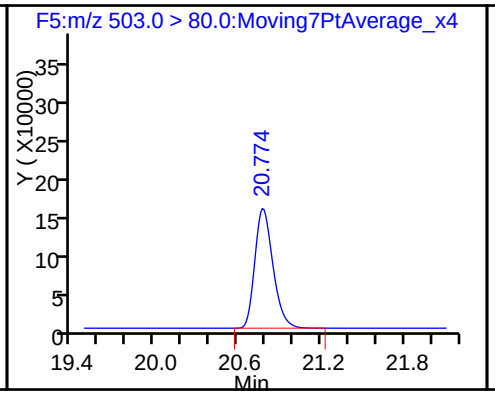
6 Perfluorooctanoic acid (M)



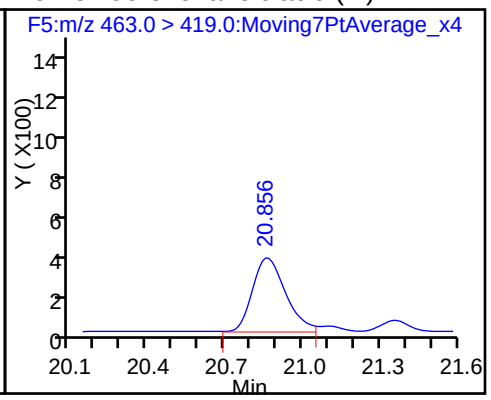
7 Perfluorooctane sulfonic acid (ND)



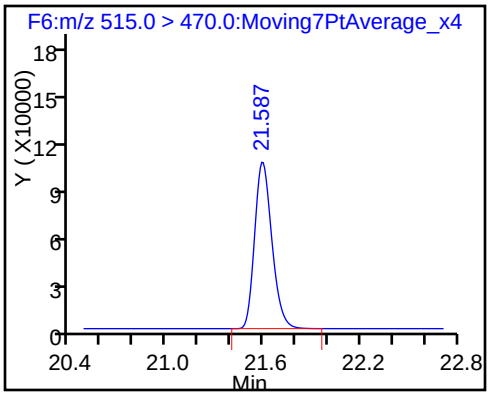
* 8 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_067.d				
Lims ID:	320-25077-A-1-A				
Client ID:	WI-AF-1RW06-0117				
Sample Type:	Client				
Inject. Date:	21-Jan-2017 19:49:27	ALS Bottle#:	6	Worklist Smp#:	109
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-25077-a-1-a				
Misc. Info.:	Acquity BEH 1.7um, 3X150mm T=35*C				
Operator ID:	CBW	Instrument ID:	A6		
Method:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m				
Limit Group:	LC 537 ICAL				
Last Update:	23-Jan-2017 13:21:33	Calib Date:	20-Jan-2017 15:40:56		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d				
Column 1 :	Acquity BEH C18 (2.10 mm)		Det: F1:MRM		
Process Host:	XAWRK013				

First Level Reviewer: barnettj Date: 23-Jan-2017 13:14:48

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	11.6	115.96
$ 10 13C2 PFDA	10.0	11.7	116.86

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

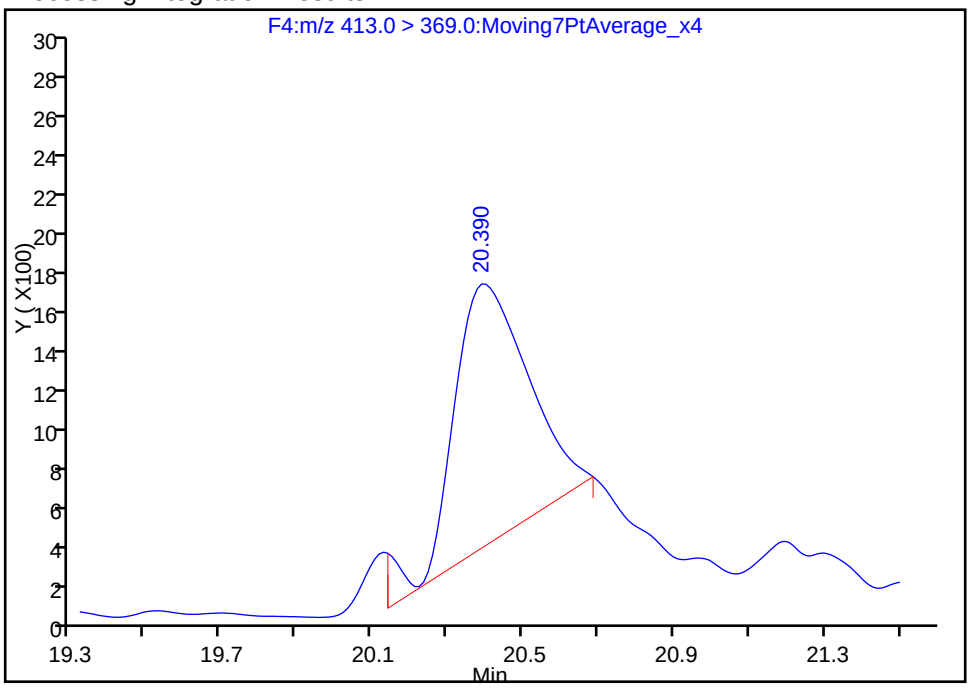
Data File:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_067.d				
Injection Date:	21-Jan-2017 19:49:27	Instrument ID:	A6		
Lims ID:	320-25077-A-1-A	Lab Sample ID:	320-25077-1		
Client ID:	WI-AF-1RW06-0117				
Operator ID:	CBW	ALS Bottle#:	6	Worklist Smp#:	109
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537__A6	Limit Group:	LC 537 ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F4:MRM		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

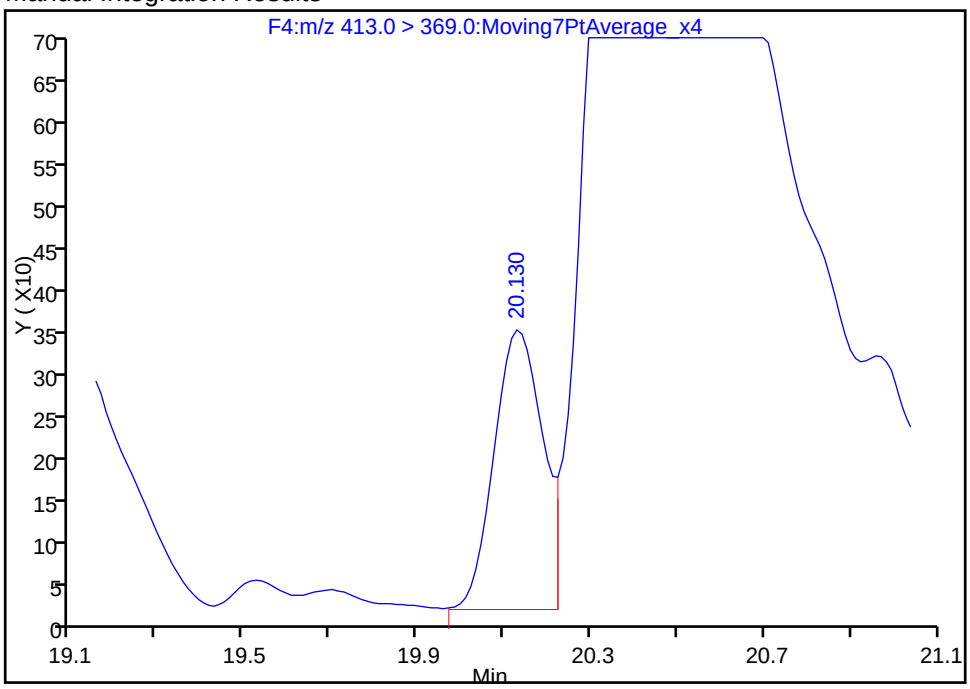
Processing Integration Results

RT: 20.39
Area: 18522
Amount: 0.245597
Amount Units: ng/ml



Manual Integration Results

RT: 20.13
Area: 2607
Amount: 0.034568
Amount Units: ng/ml



Reviewer: barnettj, 23-Jan-2017 13:14:48

Audit Action: Manually Integrated Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-25077-1

SDG No.:

Client Sample ID: WI-AF-1FB06-0117 | Lab Sample ID: 320-25077-2

Matrix: Water | Lab File ID: 20JAN2016A6A_068.d

Analysis Method: 537 | Date Collected: 01/16/2017 09:12

Extraction Method: 537 | Date Extracted: 01/19/2017 14:14

Sample wt/vol: 252.9(mL) | Date Analyzed: 01/21/2017 20:19

Con. Extract Vol.: 1.0(mL) | Dilution Factor: 1

Injection Volume: 10(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147271 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.047	U M	0.059	0.047	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U M	0.030	0.024	0.0093
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	115		70-130
STL00996	13C2 PFDA	112		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_068.d
Lims ID: 320-25077-A-2-A
Client ID: WI-AF-1FB06-0117
Sample Type: Client
Inject. Date: 21-Jan-2017 20:19:04 ALS Bottle#: 7 Worklist Smp#: 110
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-25077-a-2-a
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:21:33 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: barnettj Date: 23-Jan-2017 13:15:43

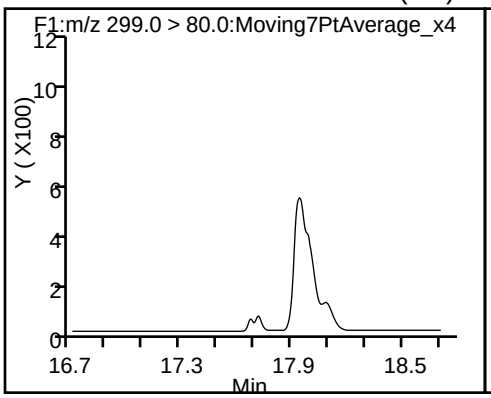
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
$ 2 13C2 PFHxA								
315.0 > 270.0	18.658	18.677	-0.019	1.000	951228	11.5	31382	
* 5 13C2-PFOA								
415.0 > 370.0	20.141	20.161	-0.020		751106	10.0	20618	
6 Perfluorooctanoic acid								M
413.0 > 369.0	20.130	20.161	-0.031	1.000	752	0.009179	0.5	M
7 Perfluorooctane sulfonic acid								M
499.0 > 80.0	20.774	20.766	0.008	1.000	1931	0.0358	52.5	M
* 8 13C4 PFOS								
503.0 > 80.0	20.774	20.793	-0.019		1361845	28.7	37002	
9 Perfluorononanoic acid								M
463.0 > 419.0	20.845	20.866	-0.021	1.000	3138	0.0360	37.8	M
$ 10 13C2 PFDA								
515.0 > 470.0	21.587	21.597	-0.010	1.000	812317	11.2	27404	

QC Flag Legend

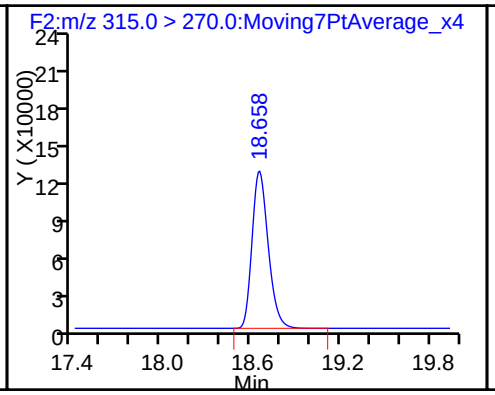
Review Flags
M - Manually Integrated

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_068.d
Injection Date: 21-Jan-2017 20:19:04 Instrument ID: A6
Lims ID: 320-25077-A-2-A Lab Sample ID: 320-25077-2
Client ID: WI-AF-1FB06-0117
Operator ID: CBW ALS Bottle#: 7 Worklist Smp#: 110
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

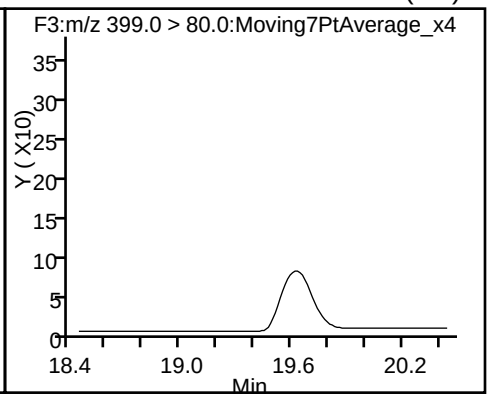
1 Perfluorobutanesulfonic acid (ND)



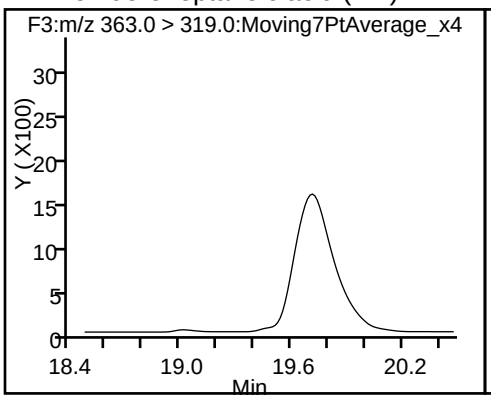
$ 2 13C2 PFHxA



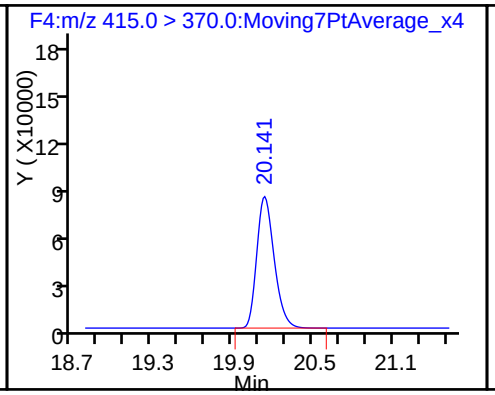
3 Perfluorohexanesulfonic acid (ND)



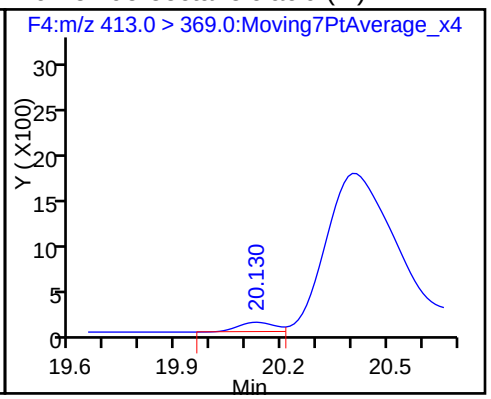
4 Perfluoroheptanoic acid (ND)



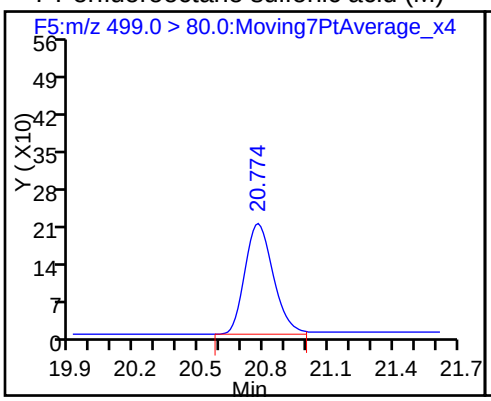
* 5 13C2-PFOA



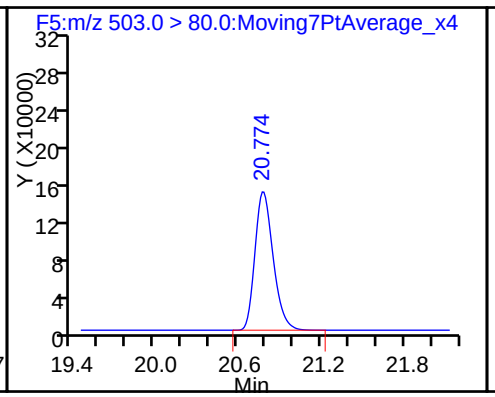
6 Perfluorooctanoic acid (M)



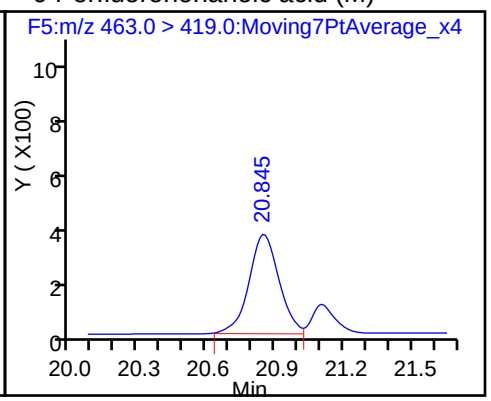
7 Perfluorooctane sulfonic acid (M)



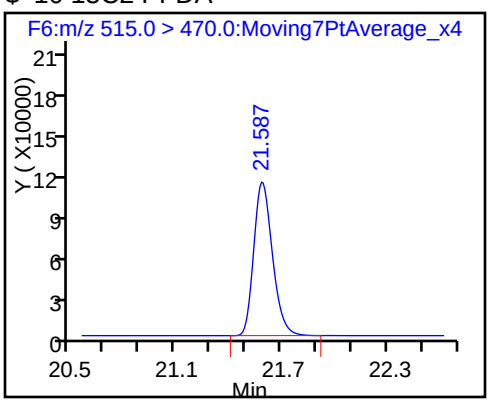
* 8 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_068.d				
Lims ID:	320-25077-A-2-A				
Client ID:	WI-AF-1FB06-0117				
Sample Type:	Client				
Inject. Date:	21-Jan-2017 20:19:04	ALS Bottle#:	7	Worklist Smp#:	110
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-25077-a-2-a				
Misc. Info.:	Acquity BEH 1.7um, 3X150mm T=35*C				
Operator ID:	CBW	Instrument ID:	A6		
Method:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m				
Limit Group:	LC 537 ICAL				
Last Update:	23-Jan-2017 13:21:33	Calib Date:	20-Jan-2017 15:40:56		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d				
Column 1 :	Acquity BEH C18 (2.10 mm)		Det: F1:MRM		
Process Host:	XAWRK013				

First Level Reviewer: barnettj Date: 23-Jan-2017 13:15:43

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	11.5	115.44
$ 10 13C2 PFDA	10.0	11.2	112.28

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

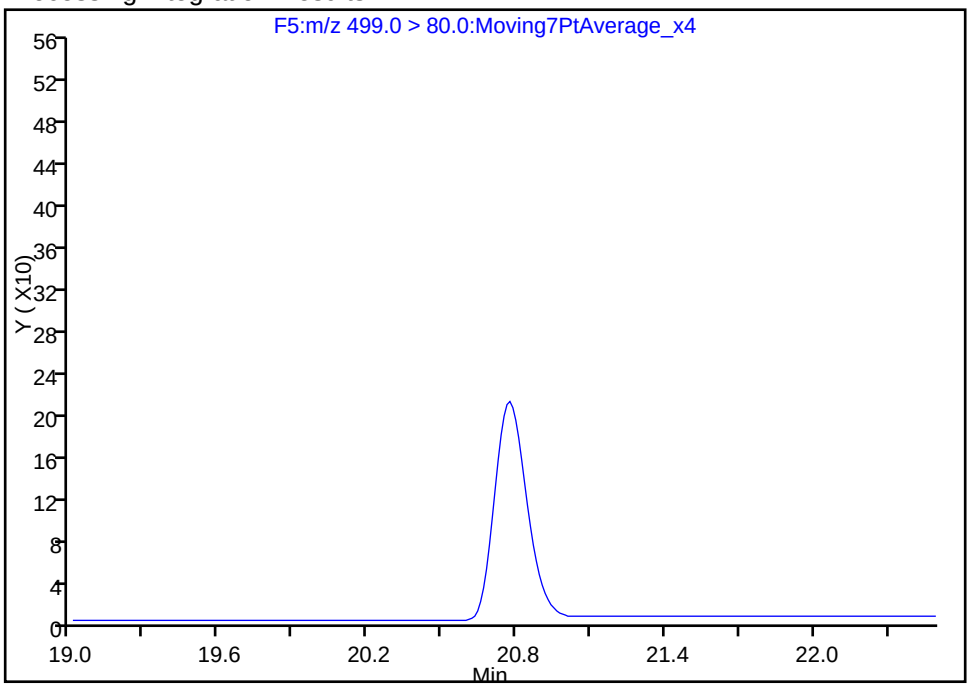
Data File:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_068.d				
Injection Date:	21-Jan-2017 20:19:04	Instrument ID:	A6		
Lims ID:	320-25077-A-2-A	Lab Sample ID:	320-25077-2		
Client ID:	WI-AF-1FB06-0117				
Operator ID:	CBW	ALS Bottle#:	7	Worklist Smp#:	110
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537__A6	Limit Group:	LC 537 ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F5:MRM		

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

Signal: 1

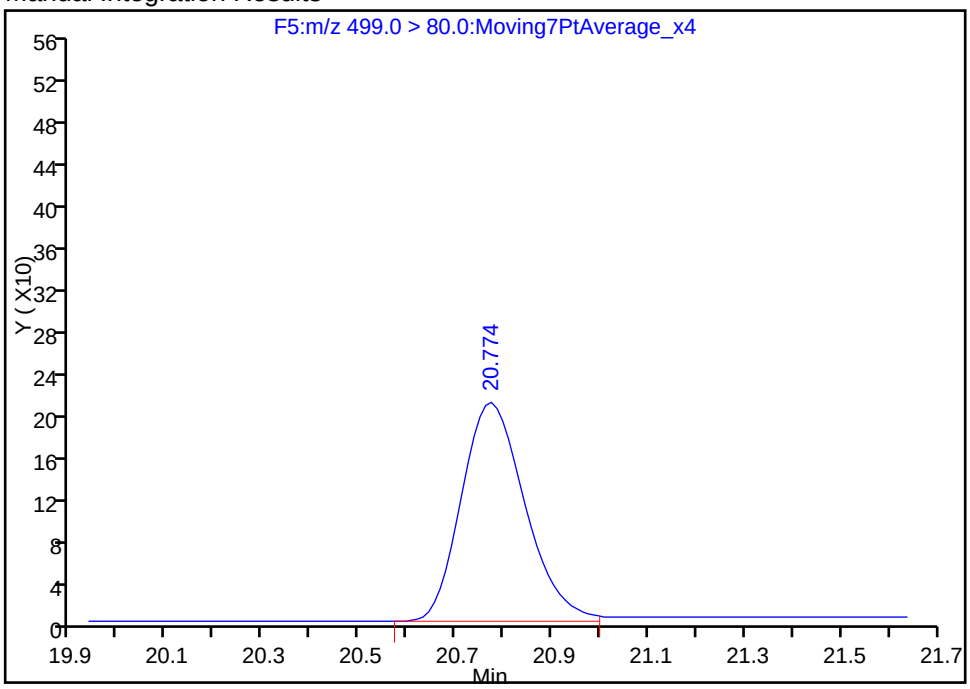
Not Detected
Expected RT: 20.77

Processing Integration Results



Manual Integration Results

RT: 20.77
Area: 1931
Amount: 0.035847
Amount Units: ng/ml



Reviewer: barnettj, 23-Jan-2017 13:15:43
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

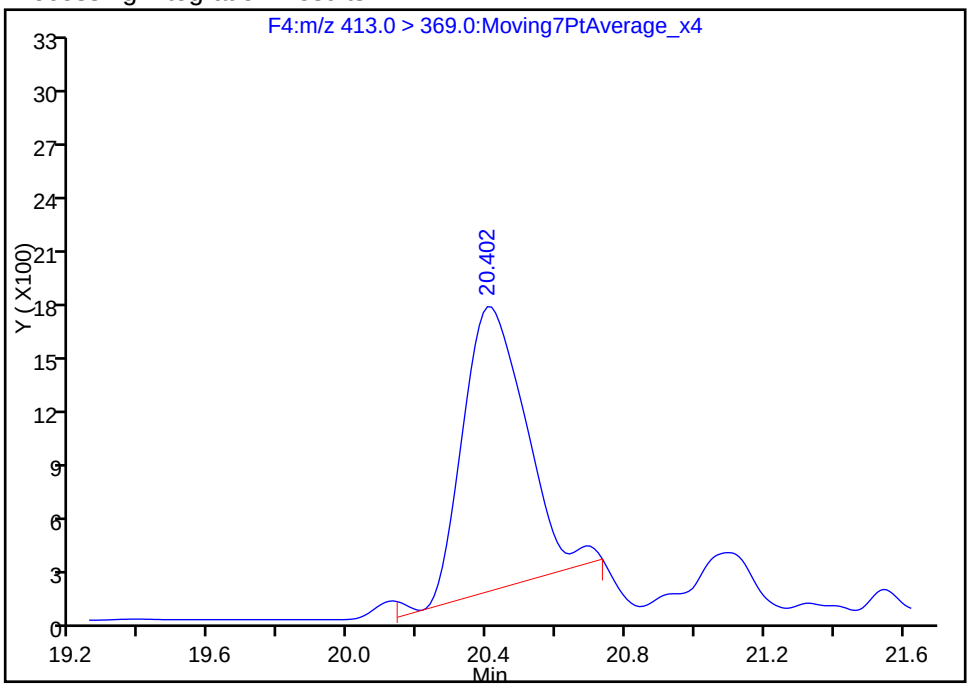
Data File:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_068.d				
Injection Date:	21-Jan-2017 20:19:04	Instrument ID:	A6		
Lims ID:	320-25077-A-2-A	Lab Sample ID:	320-25077-2		
Client ID:	WI-AF-1FB06-0117				
Operator ID:	CBW	ALS Bottle#:	7	Worklist Smp#:	110
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537__A6	Limit Group:	LC 537 ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F4:MRM		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

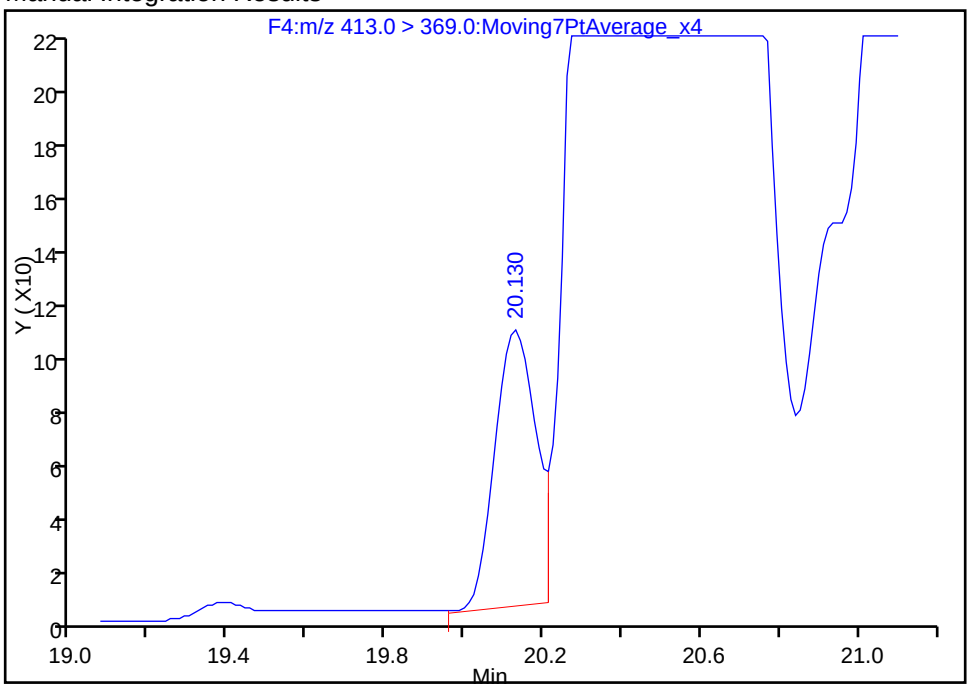
Processing Integration Results

RT: 20.40
Area: 20247
Amount: 0.247136
Amount Units: ng/ml



Manual Integration Results

RT: 20.13
Area: 752
Amount: 0.009179
Amount Units: ng/ml



Reviewer: barnettj, 23-Jan-2017 13:15:43

Audit Action: Manually Integrated Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-25077-1

SDG No.:

Client Sample ID: WI-AF-1RW07-0117 | Lab Sample ID: 320-25077-3

Matrix: Water | Lab File ID: 20JAN2016A6A_069.d

Analysis Method: 537 | Date Collected: 01/16/2017 09:50

Extraction Method: 537 | Date Extracted: 01/19/2017 14:14

Sample wt/vol: 248.4(mL) | Date Analyzed: 01/21/2017 20:48

Con. Extract Vol.: 1.0(mL) | Dilution Factor: 1

Injection Volume: 10(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147271 | 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	0.0095
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	115		70-130
STL00996	13C2 PFDA	111		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_069.d
Lims ID: 320-25077-A-3-A
Client ID: WI-AF-1RW07-0117
Sample Type: Client
Inject. Date: 21-Jan-2017 20:48:43 ALS Bottle#: 8 Worklist Smp#: 111
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-25077-a-3-a
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:21:33 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: barnettj Date: 23-Jan-2017 13:16:21

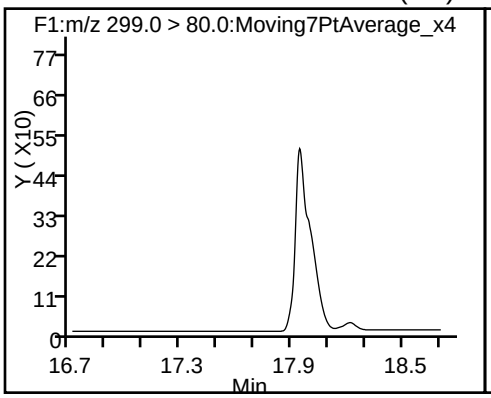
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
$ 2 13C2 PFHxA								
315.0 > 270.0	18.649	18.677	-0.028	1.000	962347	11.5	31918	
3 Perfluorohexanesulfonic acid								M
399.0 > 80.0	19.439	19.445	-0.006	1.000	80	0.001621	1.2	M
* 5 13C2-PFOA								
415.0 > 370.0	20.141	20.161	-0.020		759937	10.0	20923	
* 8 13C4 PFOS								
503.0 > 80.0	20.774	20.793	-0.019		1443819	28.7	39523	
$ 10 13C2 PFDA								
515.0 > 470.0	21.587	21.597	-0.010	1.000	809044	11.1	27366	

QC Flag Legend

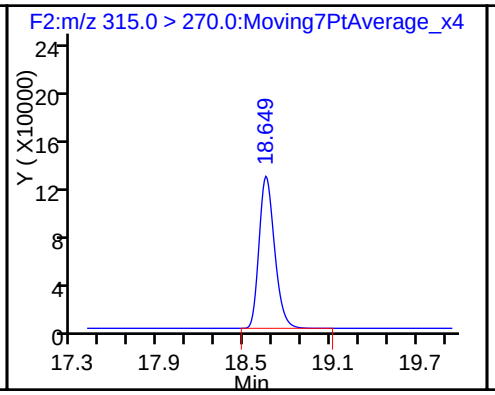
Review Flags
M - Manually Integrated

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_069.d
Injection Date: 21-Jan-2017 20:48:43 Instrument ID: A6
Lims ID: 320-25077-A-3-A Lab Sample ID: 320-25077-3
Client ID: WI-AF-1RW07-0117
Operator ID: CBW ALS Bottle#: 8 Worklist Smp#: 111
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

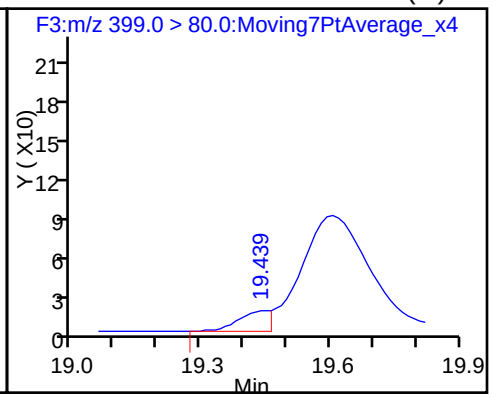
1 Perfluorobutanesulfonic acid (ND)



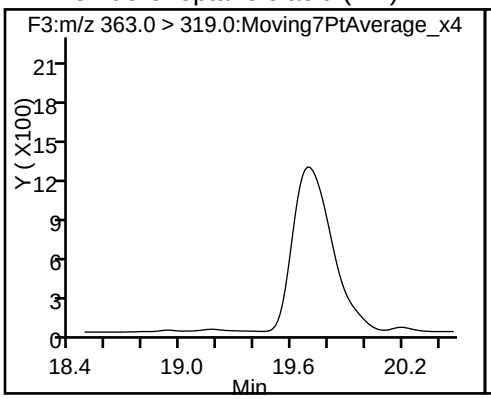
$ 2 13C2 PFHxA



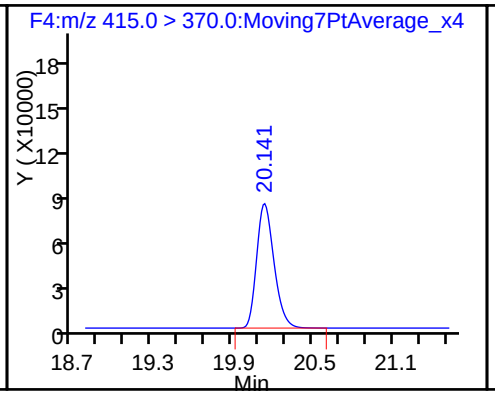
3 Perfluorohexanesulfonic acid (M)



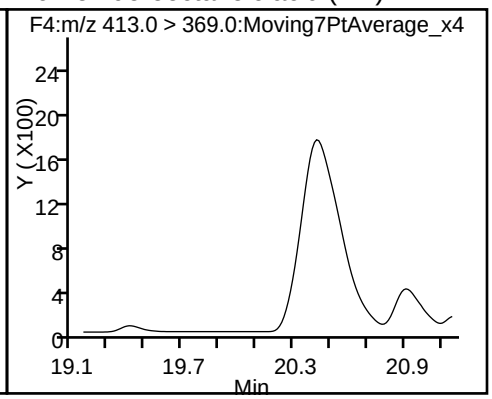
4 Perfluoroheptanoic acid (ND)



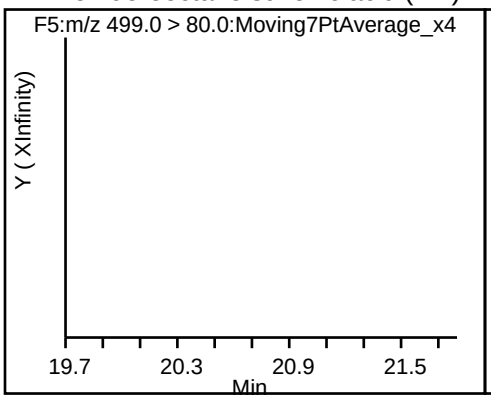
* 5 13C2-PFOA



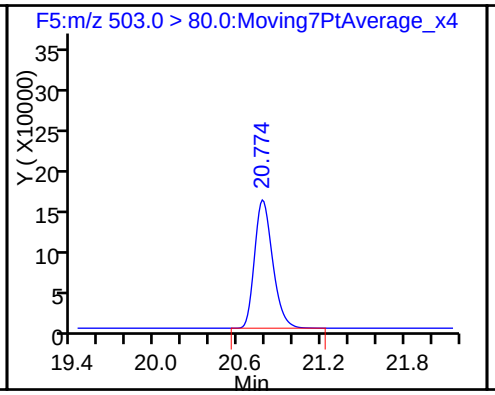
6 Perfluorooctanoic acid (ND)



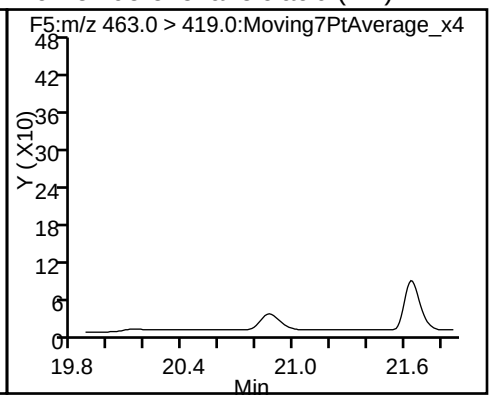
7 Perfluorooctane sulfonic acid (ND)



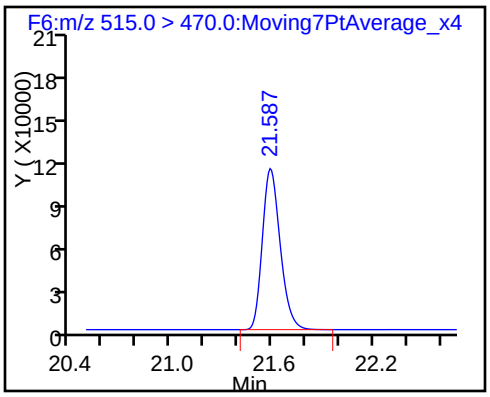
* 8 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_069.d				
Lims ID:	320-25077-A-3-A				
Client ID:	WI-AF-1RW07-0117				
Sample Type:	Client				
Inject. Date:	21-Jan-2017 20:48:43	ALS Bottle#:	8	Worklist Smp#:	111
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-25077-a-3-a				
Misc. Info.:	Acquity BEH 1.7um, 3X150mm T=35*C				
Operator ID:	CBW	Instrument ID:	A6		
Method:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m				
Limit Group:	LC 537 ICAL				
Last Update:	23-Jan-2017 13:21:33	Calib Date:	20-Jan-2017 15:40:56		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d				
Column 1 :	Acquity BEH C18 (2.10 mm)		Det: F1:MRM		
Process Host:	XAWRK013				

First Level Reviewer: barnettj Date: 23-Jan-2017 13:16:21

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	11.5	115.44
$ 10 13C2 PFDA	10.0	11.1	110.53

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-25077-1

SDG No.:

Client Sample ID: WI-AF-1FB07-0117 | Lab Sample ID: 320-25077-4

Matrix: Water | Lab File ID: 20JAN2016A6A_070.d

Analysis Method: 537 | Date Collected: 01/16/2017 09:51

Extraction Method: 537 | Date Extracted: 01/19/2017 14:14

Sample wt/vol: 251.8(mL) | Date Analyzed: 01/21/2017 21:18

Con. Extract Vol.: 1.0(mL) | Dilution Factor: 1

Injection Volume: 10(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147271 | 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	0.015
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	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	126		70-130
STL00996	13C2 PFDA	115		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_070.d
Lims ID: 320-25077-A-4-A
Client ID: WI-AF-1FB07-0117
Sample Type: Client
Inject. Date: 21-Jan-2017 21:18:21 ALS Bottle#: 9 Worklist Smp#: 112
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-25077-a-4-a
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:21:33 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

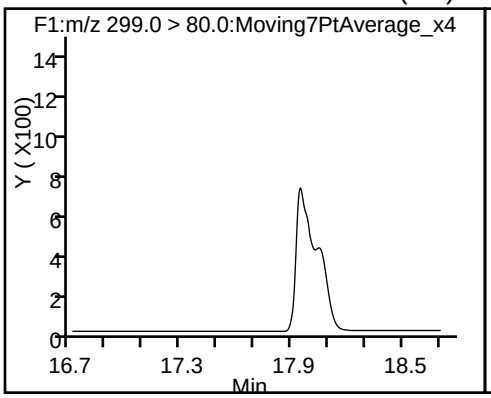
Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: barnettj Date: 23-Jan-2017 13:16:43

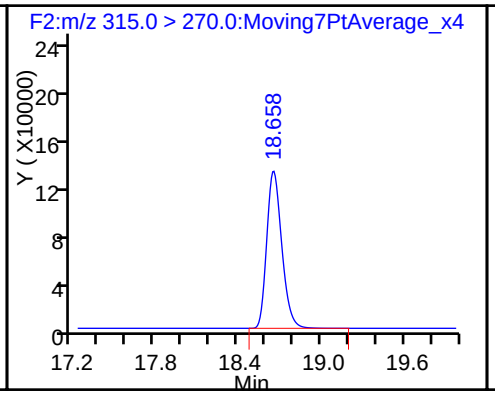
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
$ 2 13C2 PFHxA								
315.0 > 270.0	18.658	18.677	-0.019	1.000	1007925	12.6	33212	
* 5 13C2-PFOA								
415.0 > 370.0	20.141	20.161	-0.020		729783	10.0	20017	
* 8 13C4 PFOS								
503.0 > 80.0	20.773	20.793	-0.020		1323849	28.7	36189	
$ 10 13C2 PFDA								
515.0 > 470.0	21.587	21.597	-0.010	1.000	807694	11.5	27034	

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_070.d
Injection Date: 21-Jan-2017 21:18:21 Instrument ID: A6
Lims ID: 320-25077-A-4-A Lab Sample ID: 320-25077-4
Client ID: WI-AF-1FB07-0117
Operator ID: CBW ALS Bottle#: 9 Worklist Smp#: 112
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

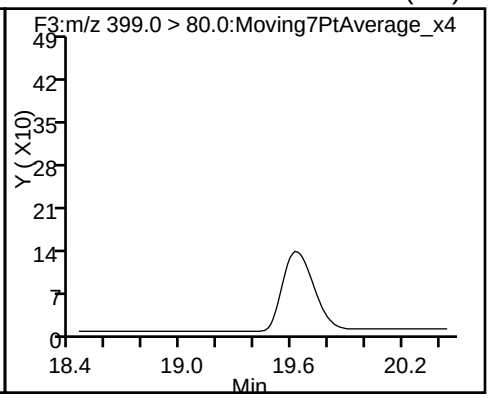
1 Perfluorobutanesulfonic acid (ND)



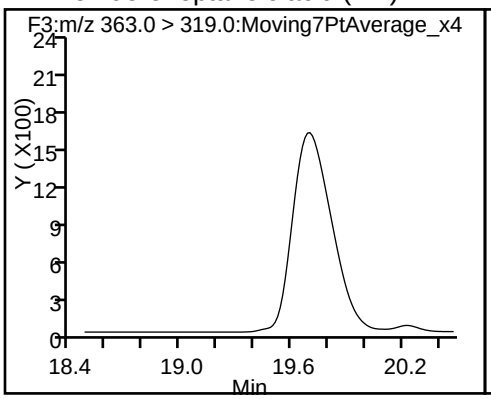
$ 2 13C2 PFHxA



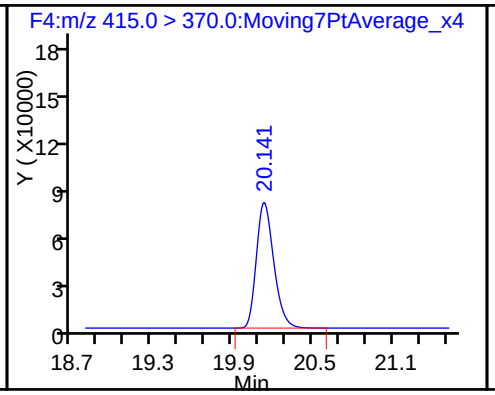
3 Perfluorohexanesulfonic acid (ND)



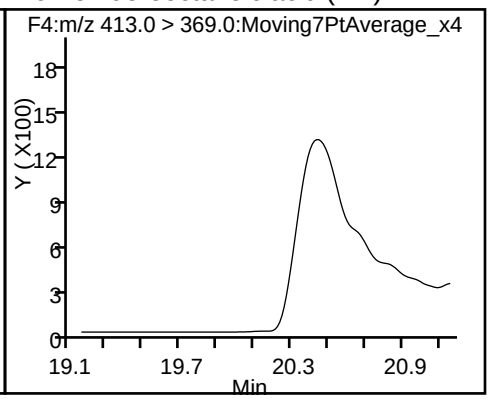
4 Perfluoroheptanoic acid (ND)



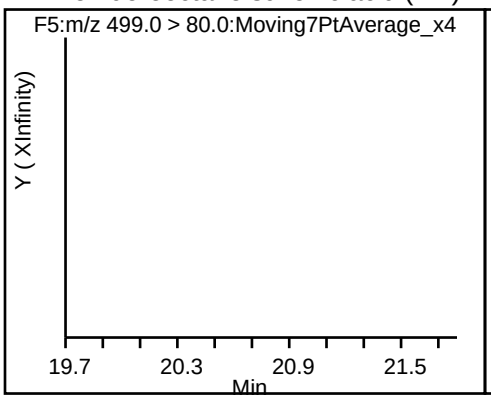
* 5 13C2-PFOA



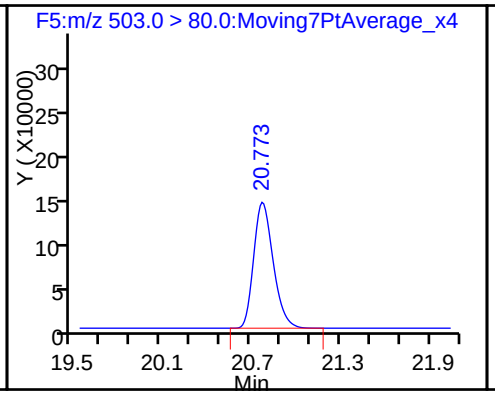
6 Perfluorooctanoic acid (ND)



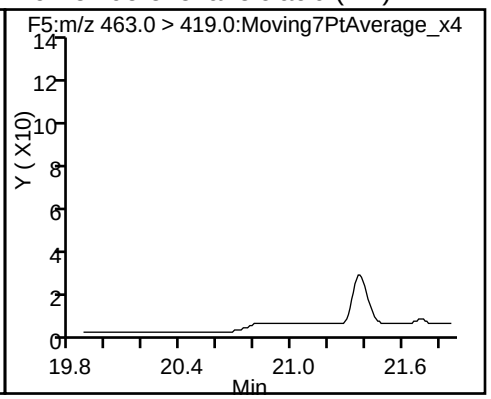
7 Perfluorooctane sulfonic acid (ND)



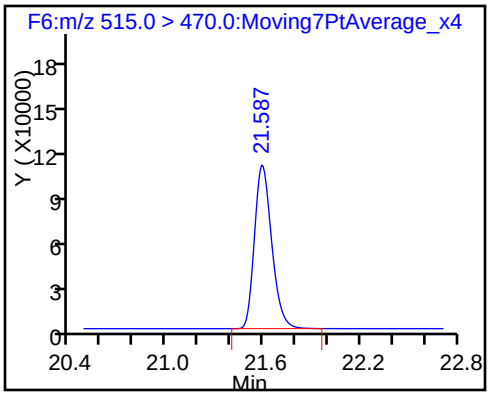
* 8 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_070.d				
Lims ID:	320-25077-A-4-A				
Client ID:	WI-AF-1FB07-0117				
Sample Type:	Client				
Inject. Date:	21-Jan-2017 21:18:21	ALS Bottle#:	9	Worklist Smp#:	112
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-25077-a-4-a				
Misc. Info.:	Acquity BEH 1.7um, 3X150mm T=35*C				
Operator ID:	CBW	Instrument ID:	A6		
Method:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m				
Limit Group:	LC 537 ICAL				
Last Update:	23-Jan-2017 13:21:33	Calib Date:	20-Jan-2017 15:40:56		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d				
Column 1 :	Acquity BEH C18 (2.10 mm)		Det: F1:MRM		
Process Host:	XAWRK013				

First Level Reviewer: barnettj Date: 23-Jan-2017 13:16:43

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	12.6	125.90
$ 10 13C2 PFDA	10.0	11.5	114.91

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-25077-1

SDG No.:

Client Sample ID: WI-AF-1RW08-0117 | Lab Sample ID: 320-25077-5

Matrix: Water | Lab File ID: 20JAN2016A6A_071.d

Analysis Method: 537 | Date Collected: 01/16/2017 10:13

Extraction Method: 537 | Date Extracted: 01/19/2017 14:14

Sample wt/vol: 251.6(mL) | Date Analyzed: 01/21/2017 21:47

Con. Extract Vol.: 1.0(mL) | Dilution Factor: 1

Injection Volume: 10(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147271 | 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	0.015
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	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	126		70-130
STL00996	13C2 PFDA	122		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_071.d
Lims ID: 320-25077-A-5-A
Client ID: WI-AF-1RW08-0117
Sample Type: Client
Inject. Date: 21-Jan-2017 21:47:57 ALS Bottle#: 10 Worklist Smp#: 113
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-25077-a-5-a
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:21:33 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: barnettj Date: 23-Jan-2017 13:18:11

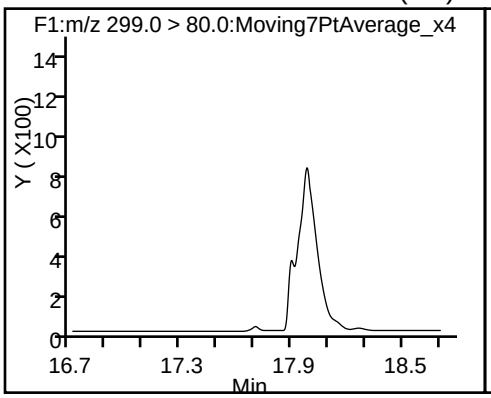
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
$ 2 13C2 PFHxA								
315.0 > 270.0	18.649	18.677	-0.028	1.000	957530	12.6	31996	
3 Perfluorohexanesulfonic acid								M
399.0 > 80.0	19.439	19.445	-0.006	1.000	359	0.007434	3.3	M
4 Perfluoroheptanoic acid								M
363.0 > 319.0	19.474	19.476	-0.002	1.000	483	0.006510	1.1	M
* 5 13C2-PFOA								
415.0 > 370.0	20.141	20.161	-0.020		694717	10.0	19171	
* 8 13C4 PFOS								
503.0 > 80.0	20.774	20.793	-0.019		1413071	28.7	38668	
9 Perfluorononanoic acid								M
463.0 > 419.0	20.857	20.866	-0.009	1.000	663	0.008215	3.8	M
$ 10 13C2 PFDA								
515.0 > 470.0	21.596	21.597	-0.001	1.000	818488	12.2	27769	

QC Flag Legend

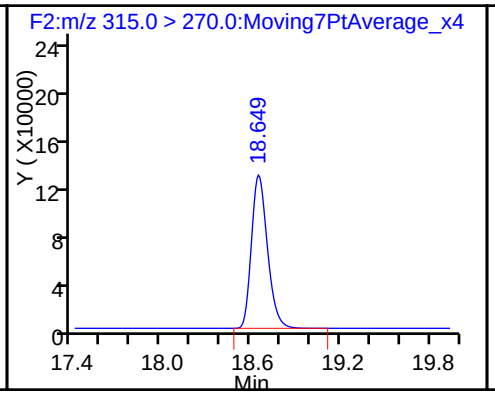
Review Flags
M - Manually Integrated

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_071.d
Injection Date: 21-Jan-2017 21:47:57 Instrument ID: A6
Lims ID: 320-25077-A-5-A Lab Sample ID: 320-25077-5
Client ID: WI-AF-1RW08-0117
Operator ID: CBW ALS Bottle#: 10 Worklist Smp#: 113
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

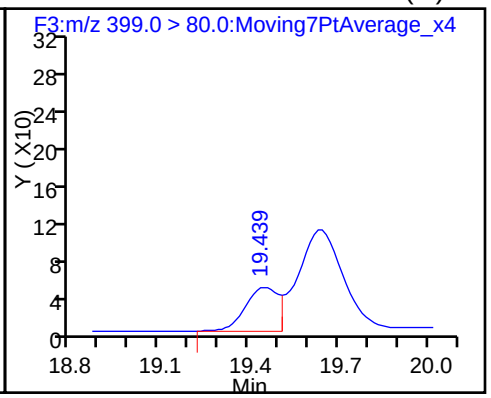
1 Perfluorobutanesulfonic acid (ND)



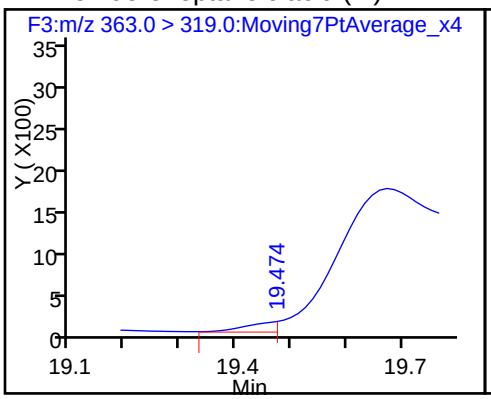
$ 2 13C2 PFHxA



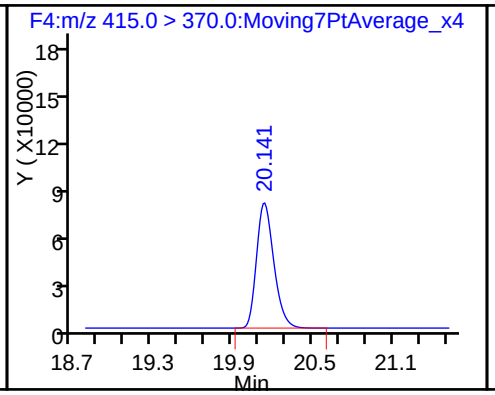
3 Perfluorohexanesulfonic acid (M)



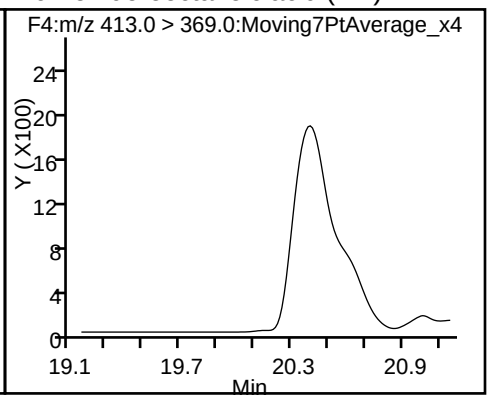
4 Perfluoroheptanoic acid (M)



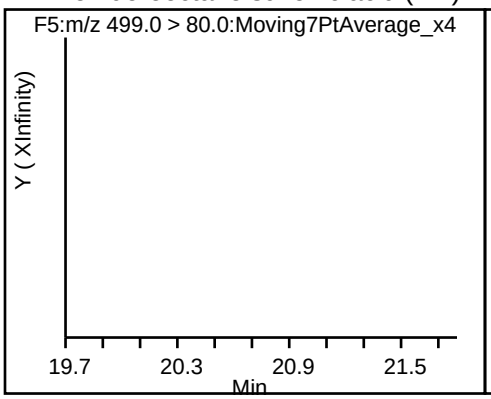
* 5 13C2-PFOA



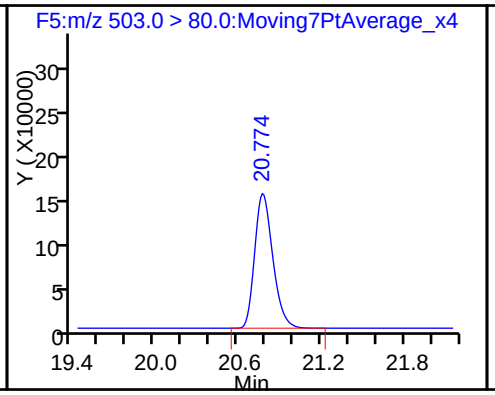
6 Perfluorooctanoic acid (ND)



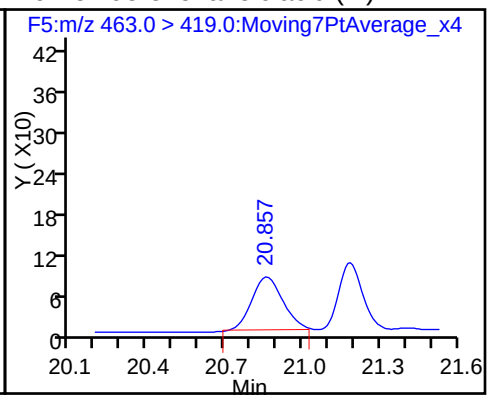
7 Perfluorooctane sulfonic acid (ND)



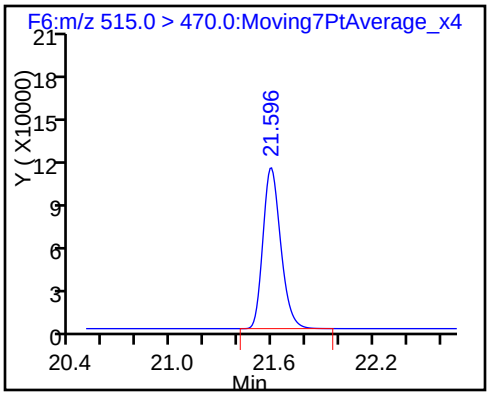
* 8 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_071.d
Lims ID: 320-25077-A-5-A
Client ID: WI-AF-1RW08-0117
Sample Type: Client
Inject. Date: 21-Jan-2017 21:47:57 ALS Bottle#: 10 Worklist Smp#: 113
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-25077-a-5-a
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:21:33 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: barnettj Date: 23-Jan-2017 13:18:11

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	12.6	125.64
$ 10 13C2 PFDA	10.0	12.2	122.32

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-25077-1

SDG No.:

Client Sample ID: WI-AF-1FB08-0117 | Lab Sample ID: 320-25077-6

Matrix: Water | Lab File ID: 20JAN2016A6A_072.d

Analysis Method: 537 | Date Collected: 01/16/2017 10:14

Extraction Method: 537 | Date Extracted: 01/19/2017 14:14

Sample wt/vol: 255.4(mL) | Date Analyzed: 01/21/2017 22:17

Con. Extract Vol.: 1.0(mL) | Dilution Factor: 1

Injection Volume: 10(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147271 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.047	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.023	0.0092
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	117		70-130
STL00996	13C2 PFDA	115		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_072.d
Lims ID: 320-25077-A-6-A
Client ID: WI-AF-1FB08-0117
Sample Type: Client
Inject. Date: 21-Jan-2017 22:17:33 ALS Bottle#: 11 Worklist Smp#: 114
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-25077-a-6-a
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:21:33 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: barnettj Date: 23-Jan-2017 13:18:49

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
$ 2 13C2 PFHxA								
315.0 > 270.0	18.649	18.677	-0.028	1.000	936025	11.7	30799	
* 5 13C2-PFOA								
415.0 > 370.0	20.129	20.161	-0.032		730400	10.0	20226	
* 8 13C4 PFOS								
503.0 > 80.0	20.773	20.793	-0.020		1316228	28.7	35889	
9 Perfluorononanoic acid								M
463.0 > 419.0	20.844	20.866	-0.022	1.000	586	0.006907	9.5	M
$ 10 13C2 PFDA								
515.0 > 470.0	21.595	21.597	-0.002	1.000	809816	11.5	27238	

QC Flag Legend

Review Flags
M - Manually Integrated

Report Date: 23-Jan-2017 13:21:46 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_072.d

Injection Date: 21-Jan-2017 22:17:33 Instrument ID: A6

Lims ID: 320-25077-A-6-A Lab Sample ID: 320-25077-6

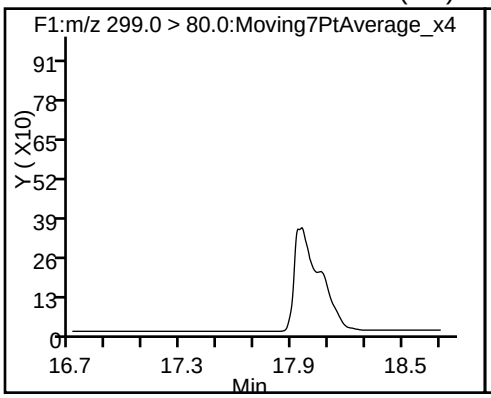
Client ID: WI-AF-1FB08-0117

Operator ID: CBW ALS Bottle#: 11 Worklist Smp#: 114

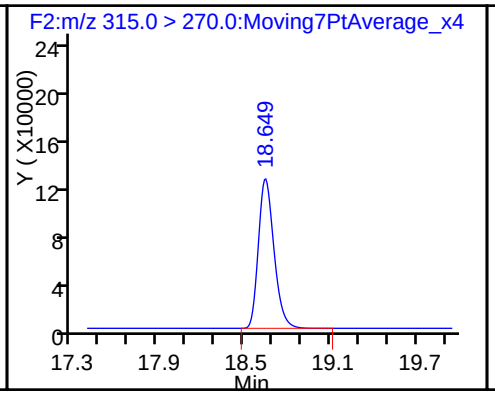
Injection Vol: 10.0 ul Dil. Factor: 1.0000

Method: 537__A6 Limit Group: LC 537 ICAL

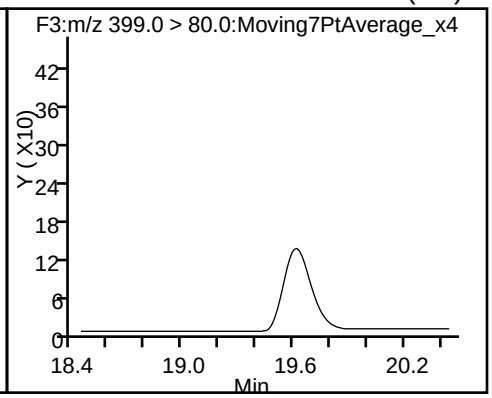
1 Perfluorobutanesulfonic acid (ND)



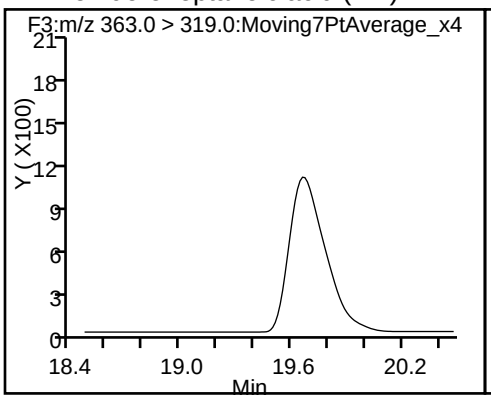
$ 2 13C2 PFHxA



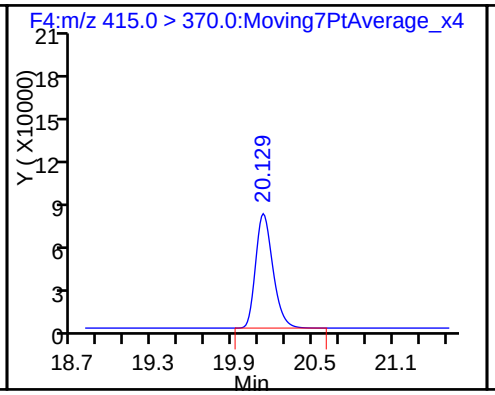
3 Perfluorohexanesulfonic acid (ND)



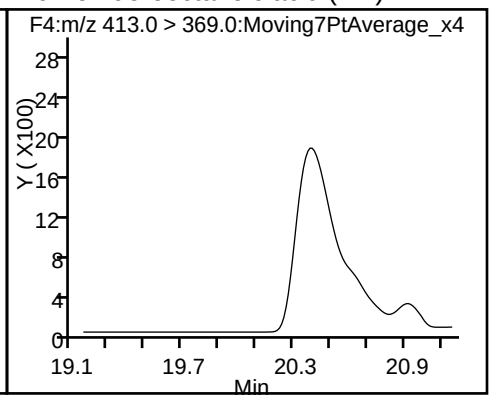
4 Perfluoroheptanoic acid (ND)



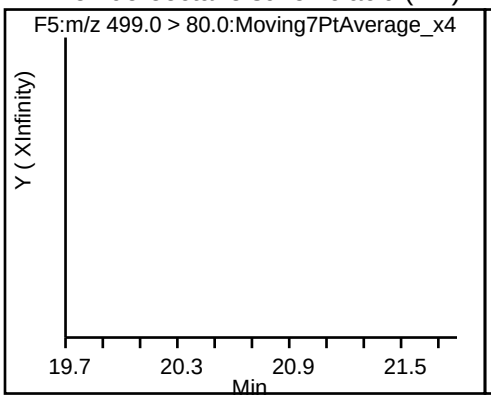
* 5 13C2-PFOA



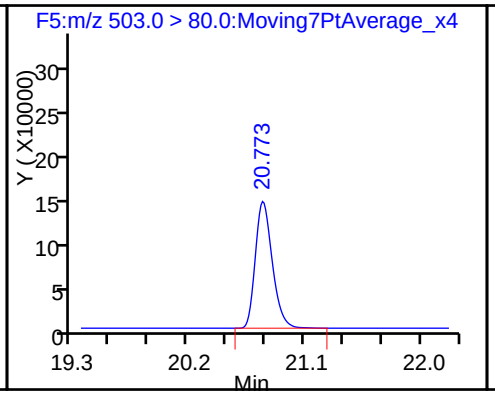
6 Perfluorooctanoic acid (ND)



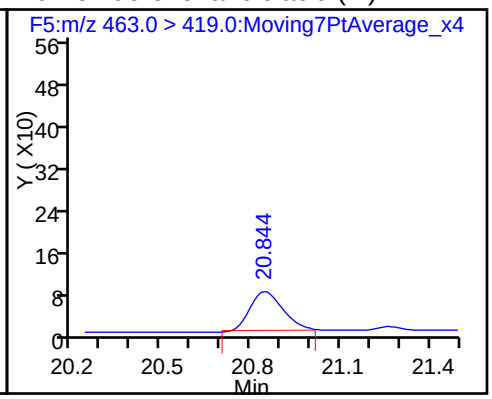
7 Perfluorooctane sulfonic acid (ND)



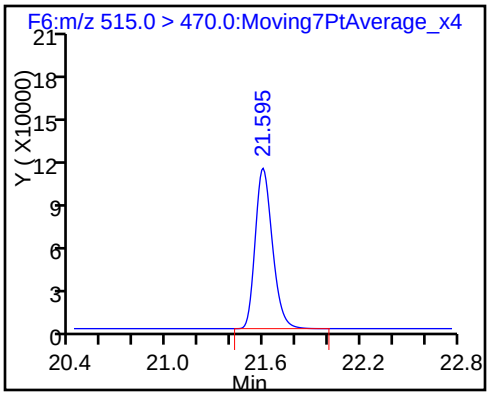
* 8 13C4 PFOS



9 Perfluorononanoic acid (M)



$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_072.d
Lims ID: 320-25077-A-6-A
Client ID: WI-AF-1FB08-0117
Sample Type: Client
Inject. Date: 21-Jan-2017 22:17:33 ALS Bottle#: 11 Worklist Smp#: 114
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-25077-a-6-a
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:21:33 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: barnettj Date: 23-Jan-2017 13:18:49

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	11.7	116.82
$ 10 13C2 PFDA	10.0	11.5	115.11

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-25077-1

SDG No.:

Client Sample ID: WI-AF-1RW09-0117 | Lab Sample ID: 320-25077-7

Matrix: Water | Lab File ID: 20JAN2016A6A_073.d

Analysis Method: 537 | Date Collected: 01/16/2017 11:35

Extraction Method: 537 | Date Extracted: 01/19/2017 14:14

Sample wt/vol: 247(mL) | Date Analyzed: 01/21/2017 22:47

Con. Extract Vol.: 1.0(mL) | Dilution Factor: 1

Injection Volume: 10(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147271 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.049	U M	0.061	0.049	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U M	0.030	0.024	0.0095
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	117		70-130
STL00996	13C2 PFDA	115		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_073.d
Lims ID: 320-25077-A-7-A
Client ID: WI-AF-1RW09-0117
Sample Type: Client
Inject. Date: 21-Jan-2017 22:47:10 ALS Bottle#: 12 Worklist Smp#: 115
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-25077-a-7-a
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:21:33 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: barnettj Date: 23-Jan-2017 13:19:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.673	17.708	-0.035	1.000	66031	1.65	127	
$ 2 13C2 PFHxA								
315.0 > 270.0	18.649	18.677	-0.028	1.000	947113	11.7	31702	
3 Perfluorohexanesulfonic acid								M
399.0 > 80.0	19.415	19.445	-0.030	1.000	7578	0.1577	31.4	M
* 5 13C2-PFOA								
415.0 > 370.0	20.130	20.161	-0.031		738954	10.0	20330	
6 Perfluorooctanoic acid								M
413.0 > 369.0	20.130	20.161	-0.031	1.000	648	0.008040	0.4	M
7 Perfluorooctane sulfonic acid								M
499.0 > 80.0	20.501	20.766	-0.265	1.000	12327	0.2216	324	M
* 8 13C4 PFOS								
503.0 > 80.0	20.774	20.793	-0.019		1406513	28.7	30850	
$ 10 13C2 PFDA								
515.0 > 470.0	21.596	21.597	-0.001	1.000	821066	11.5	27871	

QC Flag Legend

Review Flags
M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_073.d

Injection Date: 21-Jan-2017 22:47:10 Instrument ID: A6

Lims ID: 320-25077-A-7-A Lab Sample ID: 320-25077-7

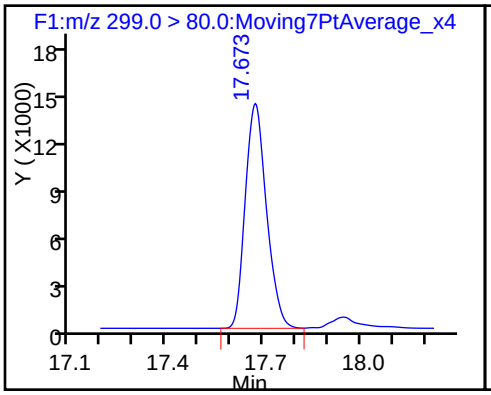
Client ID: WI-AF-1RW09-0117

Operator ID: CBW ALS Bottle#: 12 Worklist Smp#: 115

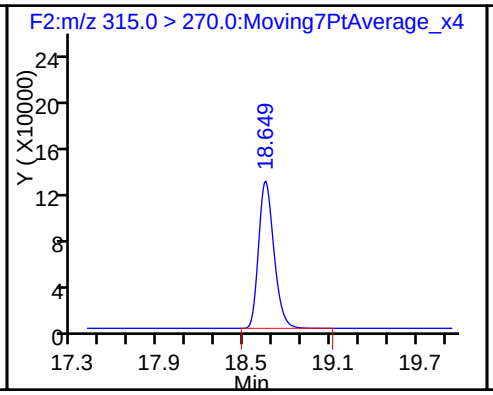
Injection Vol: 10.0 ul Dil. Factor: 1.0000

Method: 537__A6 Limit Group: LC 537 ICAL

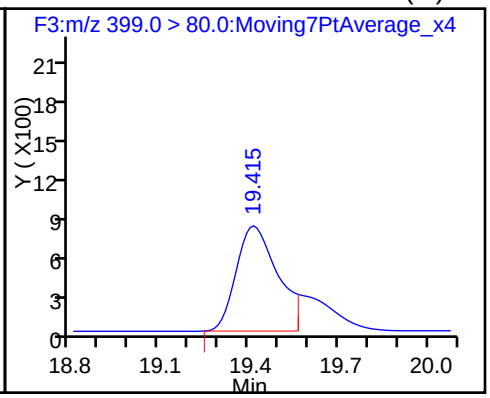
1 Perfluorobutanesulfonic acid



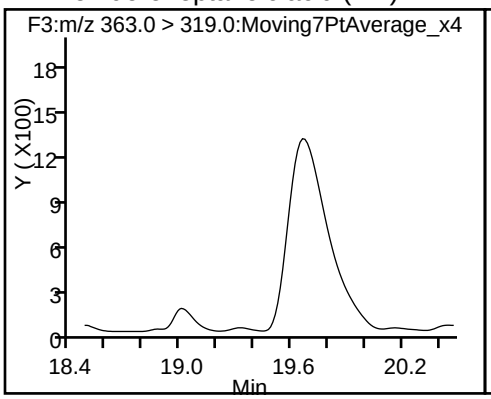
$ 2 13C2 PFHxA



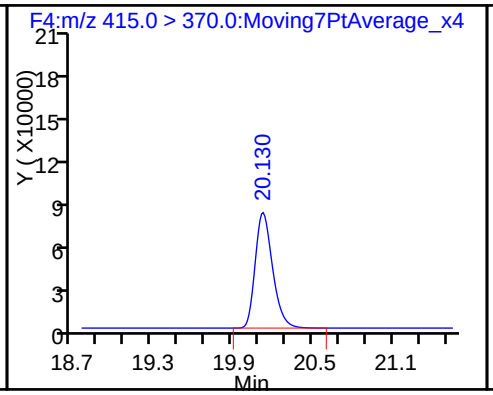
3 Perfluorohexanesulfonic acid (M)



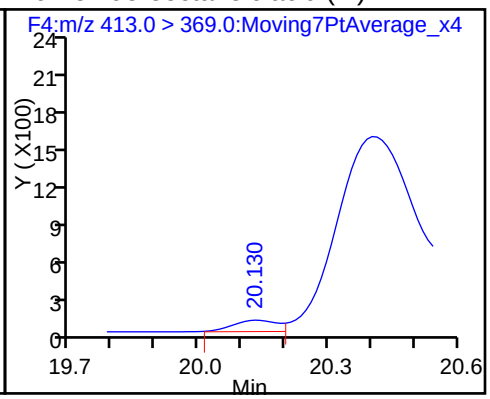
4 Perfluoroheptanoic acid (ND)



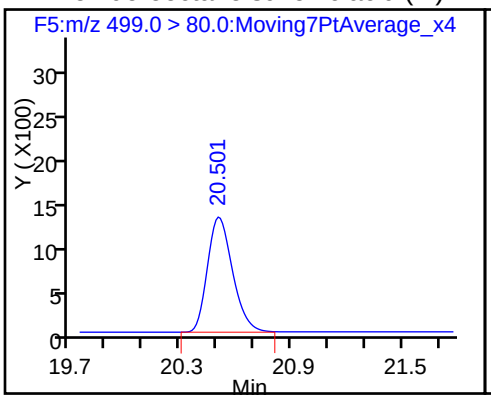
* 5 13C2-PFOA



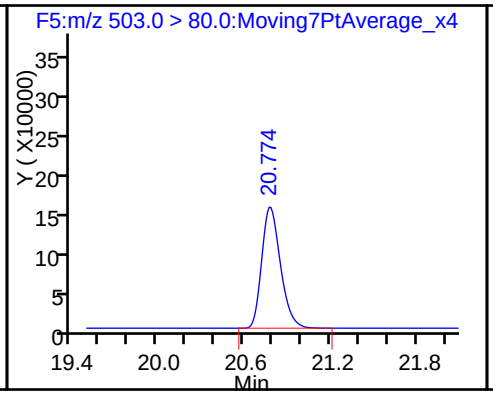
6 Perfluorooctanoic acid (M)



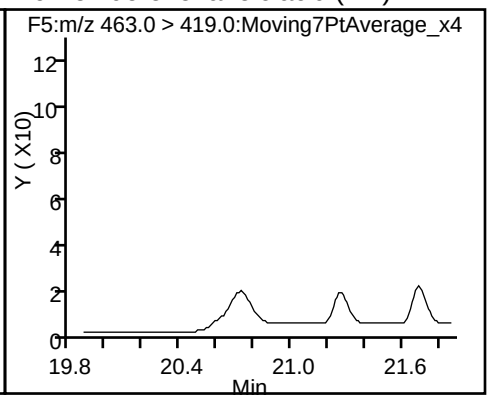
7 Perfluorooctane sulfonic acid (M)



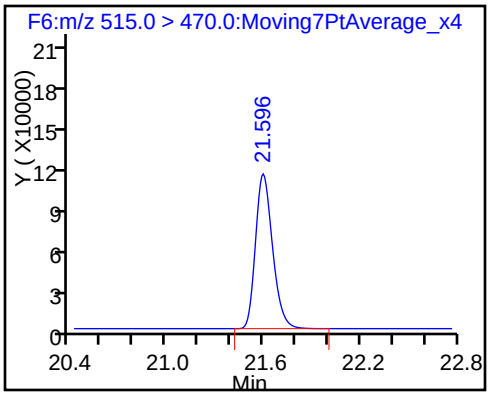
* 8 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_073.d				
Lims ID:	320-25077-A-7-A				
Client ID:	WI-AF-1RW09-0117				
Sample Type:	Client				
Inject. Date:	21-Jan-2017 22:47:10	ALS Bottle#:	12	Worklist Smp#:	115
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-25077-a-7-a				
Misc. Info.:	Acquity BEH 1.7um, 3X150mm T=35*C				
Operator ID:	CBW	Instrument ID:	A6		
Method:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m				
Limit Group:	LC 537 ICAL				
Last Update:	23-Jan-2017 13:21:33	Calib Date:	20-Jan-2017 15:40:56		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d				
Column 1 :	Acquity BEH C18 (2.10 mm)		Det: F1:MRM		
Process Host:	XAWRK013				

First Level Reviewer: barnettj Date: 23-Jan-2017 13:19:56

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	11.7	116.84
$ 10 13C2 PFDA	10.0	11.5	115.36

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

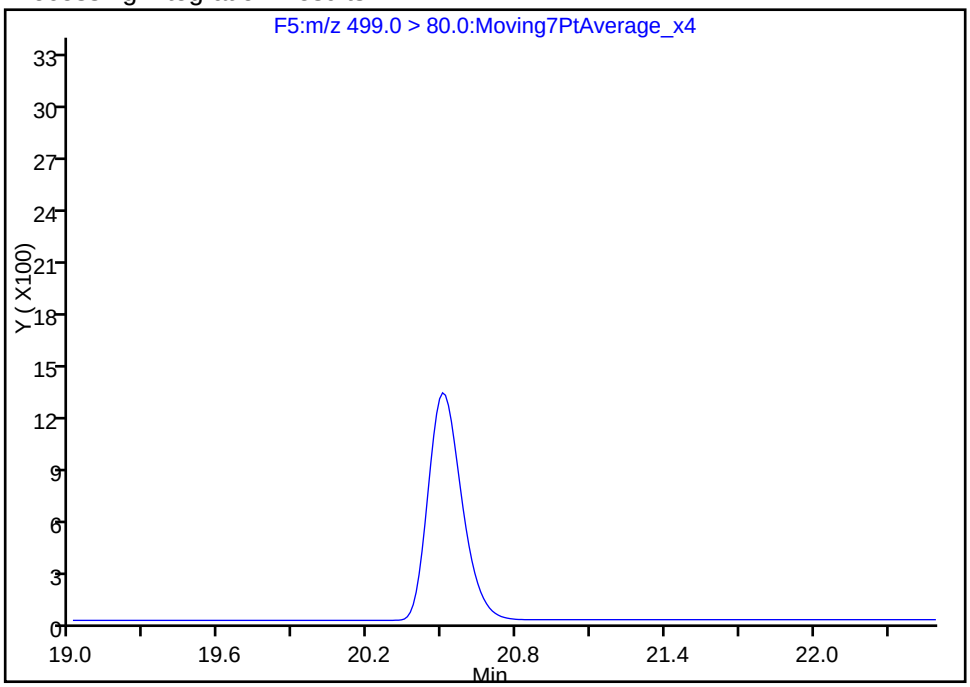
Data File:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_073.d				
Injection Date:	21-Jan-2017 22:47:10	Instrument ID:	A6		
Lims ID:	320-25077-A-7-A	Lab Sample ID:	320-25077-7		
Client ID:	WI-AF-1RW09-0117				
Operator ID:	CBW	ALS Bottle#:	12	Worklist Smp#:	115
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537__A6	Limit Group:	LC 537 ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F5:MRM		

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

Signal: 1

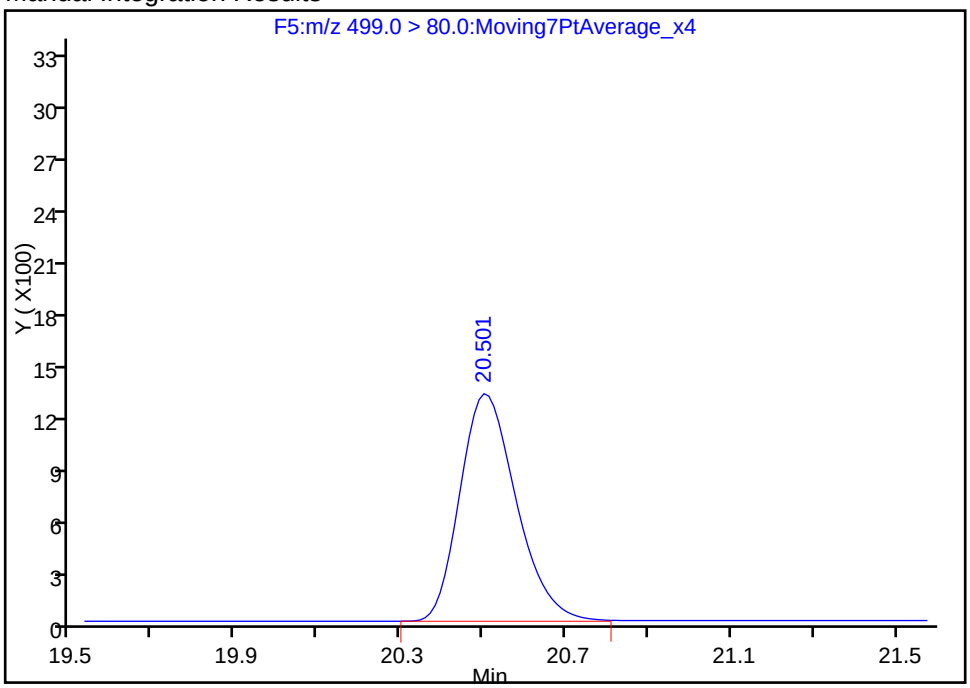
Not Detected
Expected RT: 20.77

Processing Integration Results



Manual Integration Results

RT: 20.50
Area: 12327
Amount: 0.221573
Amount Units: ng/ml



Reviewer: barnettj, 23-Jan-2017 13:19:56
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

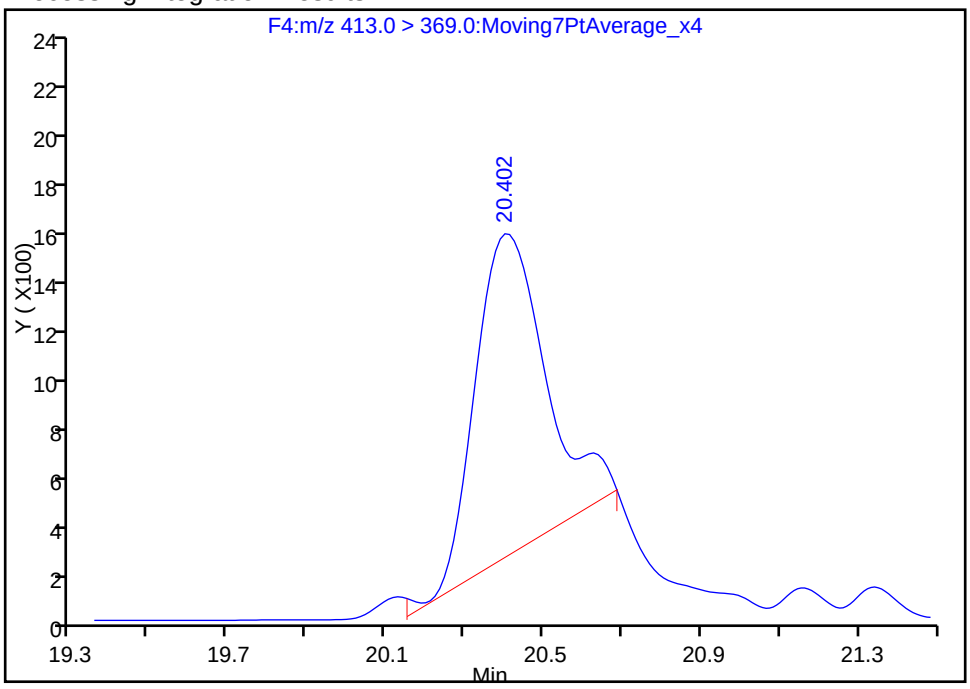
Data File:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_073.d				
Injection Date:	21-Jan-2017 22:47:10	Instrument ID:	A6		
Lims ID:	320-25077-A-7-A	Lab Sample ID:	320-25077-7		
Client ID:	WI-AF-1RW09-0117				
Operator ID:	CBW	ALS Bottle#:	12	Worklist Smp#:	115
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537__A6	Limit Group:	LC 537 ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F4:MRM		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

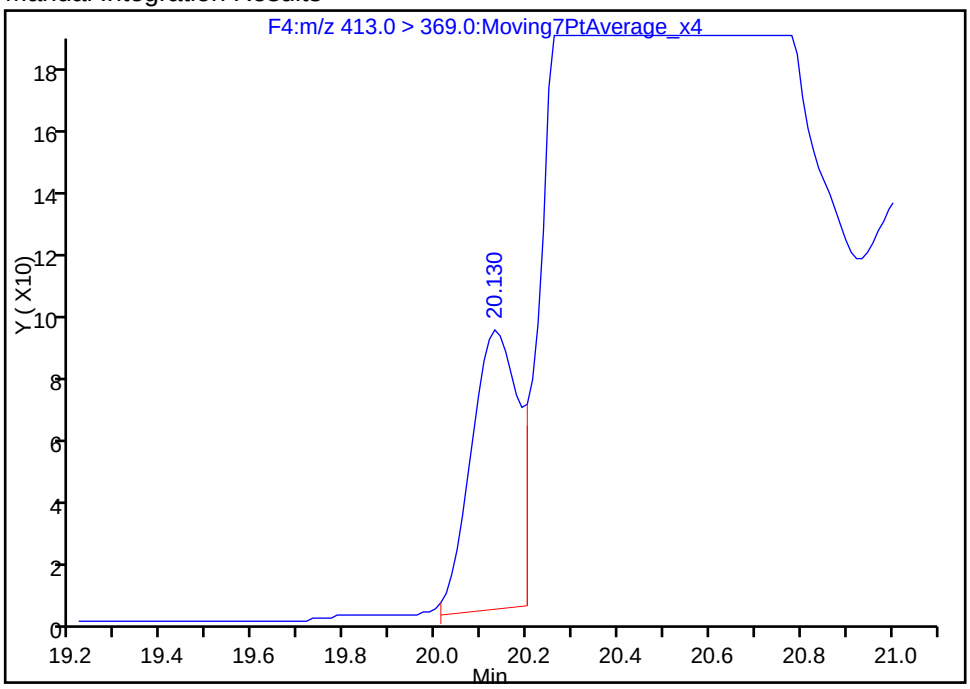
Processing Integration Results

RT: 20.40
Area: 16003
Amount: 0.198546
Amount Units: ng/ml



Manual Integration Results

RT: 20.13
Area: 648
Amount: 0.008040
Amount Units: ng/ml



Reviewer: barnettj, 23-Jan-2017 13:19:56

Audit Action: Manually Integrated Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-25077-1

SDG No.:

Client Sample ID: WI-AF-1FB09-0117 | Lab Sample ID: 320-25077-8

Matrix: Water | Lab File ID: 20JAN2016A6A_076.d

Analysis Method: 537 | Date Collected: 01/16/2017 11:36

Extraction Method: 537 | Date Extracted: 01/19/2017 14:14

Sample wt/vol: 253.1(mL) | Date Analyzed: 01/22/2017 00:15

Con. Extract Vol.: 1.0(mL) | Dilution Factor: 1

Injection Volume: 10(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147339 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.047	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.024	0.0093
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	117		70-130
STL00996	13C2 PFDA	109		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_076.d
Lims ID: 320-25077-A-8-A
Client ID: WI-AF-1FB09-0117
Sample Type: Client
Inject. Date: 22-Jan-2017 00:15:56 ALS Bottle#: 13 Worklist Smp#: 118
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-25077-a-8-a
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:29:06 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: barnettj Date: 23-Jan-2017 13:23:44

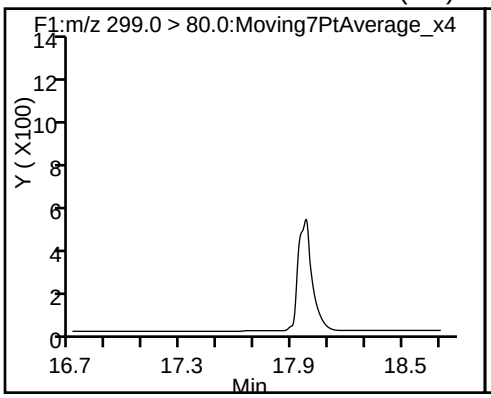
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
$ 2 13C2 PFHxA								
315.0 > 270.0	18.649	18.677	-0.028	1.000	962406	11.7	32160	
3 Perfluorohexanesulfonic acid								M
399.0 > 80.0	19.427	19.445	-0.018	1.000	370	0.008141	4.5	M
* 5 13C2-PFOA								
415.0 > 370.0	20.130	20.161	-0.031		752675	10.0	20774	
* 8 13C4 PFOS								
503.0 > 80.0	20.774	20.793	-0.019		1329851	28.7	18285	
$ 10 13C2 PFDA								
515.0 > 470.0	21.595	21.597	-0.002	1.000	789050	10.9	26785	

QC Flag Legend

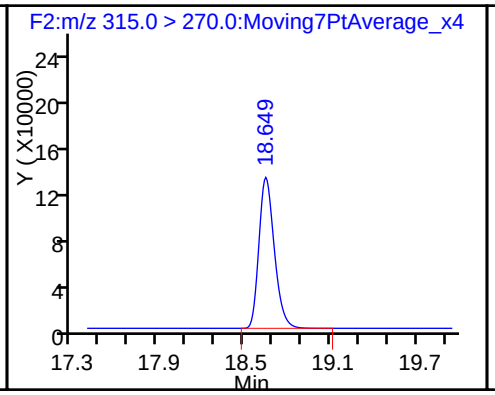
Review Flags
M - Manually Integrated

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_076.d
Injection Date: 22-Jan-2017 00:15:56 Instrument ID: A6
Lims ID: 320-25077-A-8-A Lab Sample ID: 320-25077-8
Client ID: WI-AF-1FB09-0117
Operator ID: CBW ALS Bottle#: 13 Worklist Smp#: 118
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

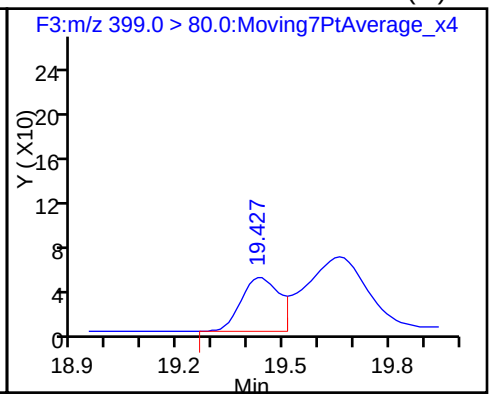
1 Perfluorobutanesulfonic acid (ND)



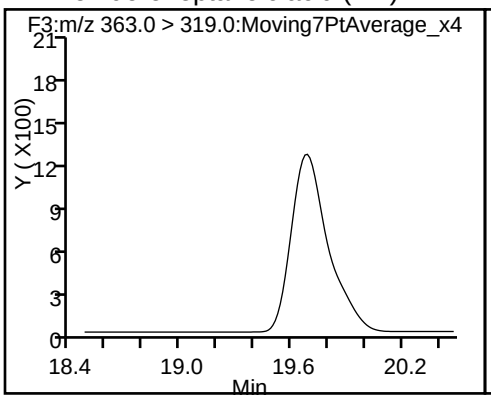
$ 2 13C2 PFHxA



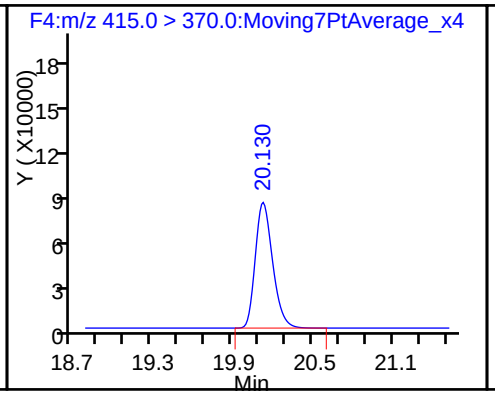
3 Perfluorohexanesulfonic acid (M)



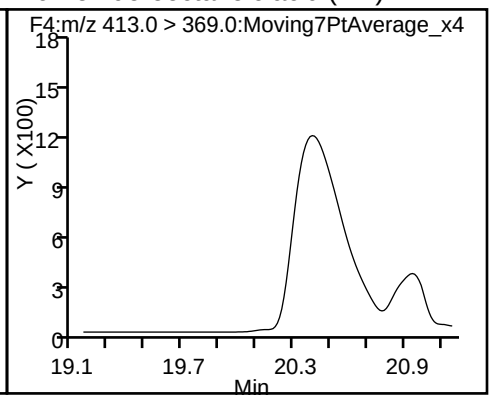
4 Perfluoroheptanoic acid (ND)



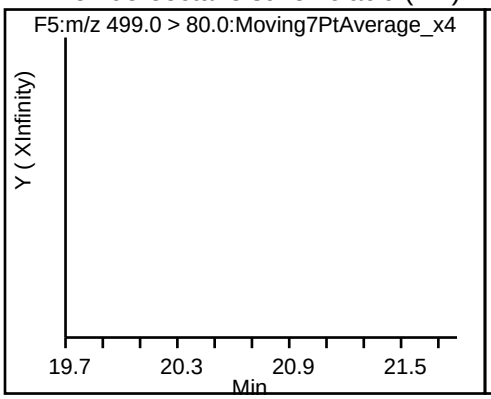
* 5 13C2-PFOA



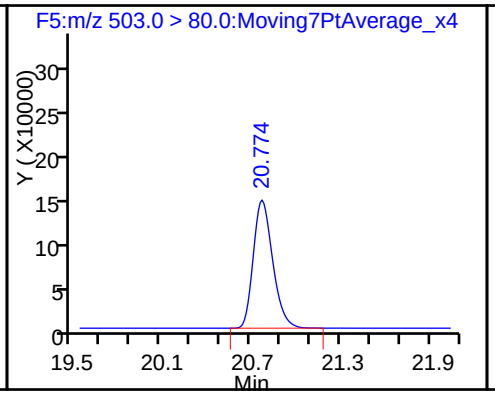
6 Perfluorooctanoic acid (ND)



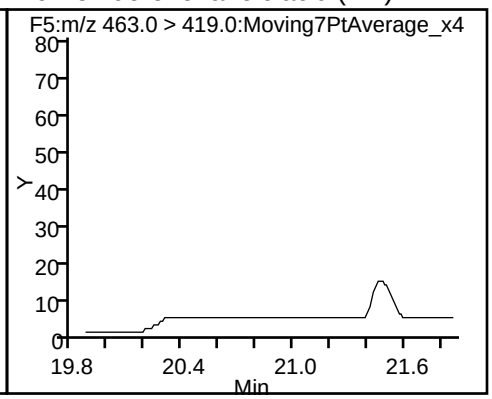
7 Perfluorooctane sulfonic acid (ND)



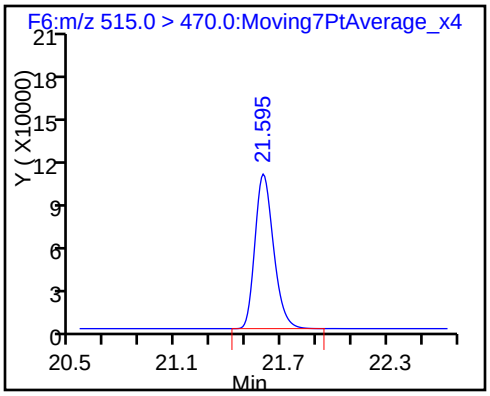
* 8 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_076.d
Lims ID: 320-25077-A-8-A
Client ID: WI-AF-1FB09-0117
Sample Type: Client
Inject. Date: 22-Jan-2017 00:15:56 ALS Bottle#: 13 Worklist Smp#: 118
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-25077-a-8-a
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:29:06 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: barnettj Date: 23-Jan-2017 13:23:44

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	11.7	116.56
$ 10 13C2 PFDA	10.0	10.9	108.84

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

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1 Analy Batch No.: 147198

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 01/20/2017 13:11 Calibration End Date: 01/20/2017 15:40 Calibration ID: 27741

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-147198/3	20JAN2016A6A_005.d
Level 2	STD 320-147198/4	20JAN2016A6A_006.d
Level 3	STD 320-147198/5	20JAN2016A6A_007.d
Level 4	STD 320-147198/6	20JAN2016A6A_008.d
Level 5	STD 320-147198/7	20JAN2016A6A_009.d
Level 6	STD 320-147198/8	20JAN2016A6A_010.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	0.7828 0.8011	0.8473	0.8521	0.8132	0.7911	Ave		0.8146				3.6		30.0			
Perfluorohexanesulfonic acid	0.8506 1.0702	0.9860	0.9811	0.9898	1.0031	Ave		0.9801				7.3		30.0			
Perfluoroheptanoic acid	1.0646 1.0906	1.0510	1.1474	1.0365	1.0178	Ave		1.0680				4.3		30.0			
Perfluorooctanoic acid (PFOA)	1.0177 1.1196	1.0564	1.1984	1.0665	1.0858	Ave		1.0907				5.7		30.0			
Perfluorooctanesulfonic acid (PFOS)	1.0154 1.2157	1.1323	1.1258	1.1501	1.1672	Ave		1.1344				5.9		30.0			
Perfluorononanoic acid	1.1187 1.1761	1.2075	1.2498	1.1279	1.0899	Ave		1.1616				5.2		30.0			
13C2 PFHxA	1.0126 1.1485	1.0941	1.1632	1.0882	1.0755	Ave		1.0970				4.9		30.0			
13C2 PFDA	0.9426 0.9915	0.9481	0.9918	0.9715	0.9335	Ave		0.9632				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.: 320-25077-1 Analy Batch No.: 147198

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 01/20/2017 13:11 Calibration End Date: 01/20/2017 15:40 Calibration ID: 27741

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-147198/3	20JAN2016A6A_005.d
Level 2	STD 320-147198/4	20JAN2016A6A_006.d
Level 3	STD 320-147198/5	20JAN2016A6A_007.d
Level 4	STD 320-147198/6	20JAN2016A6A_008.d
Level 5	STD 320-147198/7	20JAN2016A6A_009.d
Level 6	STD 320-147198/8	20JAN2016A6A_010.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	295138 5108592	823487	1597346	2856763	4483850	8.98 178	22.9	45.1	90.9	135
Perfluorohexanesulfonic acid	PFOS	Ave	108102 2300517	323035	619987	1172241	1916602	3.03 60.1	7.72	15.2	30.6	45.4
Perfluoroheptanoic acid	13PFOA	Ave	59252 1182413	150332	310070	583966	950736	0.990 19.7	2.52	4.97	10.0	14.9
Perfluorooctanoic acid (PFOA)	13PFOA	Ave	111671 2393220	297936	638558	1184736	1999775	1.95 38.8	4.98	9.81	19.8	29.3
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	170882 3460463	491196	942021	1803557	2953057	4.01 79.6	10.2	20.1	40.6	60.1
Perfluorononanoic acid	13PFOA	Ave	130450 2671319	361888	707617	1331377	2133029	2.07 41.2	5.29	10.4	21.0	31.1
13C2 PFHxA	13PFOA	Ave	569231 632840	619933	631911	611664	676525	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PFOA	Ave	529914 546342	537200	538763	546073	587235	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.: 320-25077-1 Analy Batch No.: 147198

SDG No.:

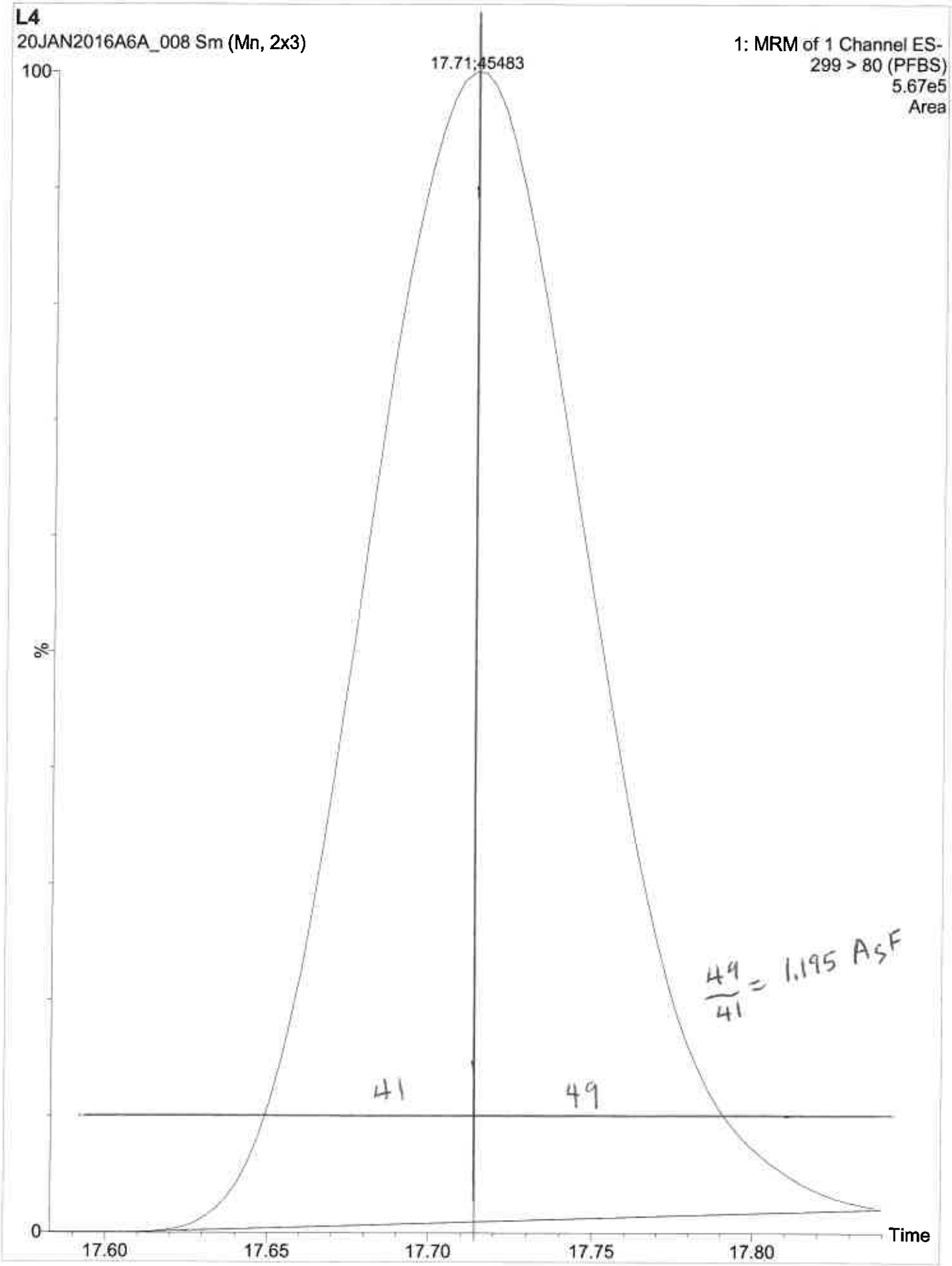
Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

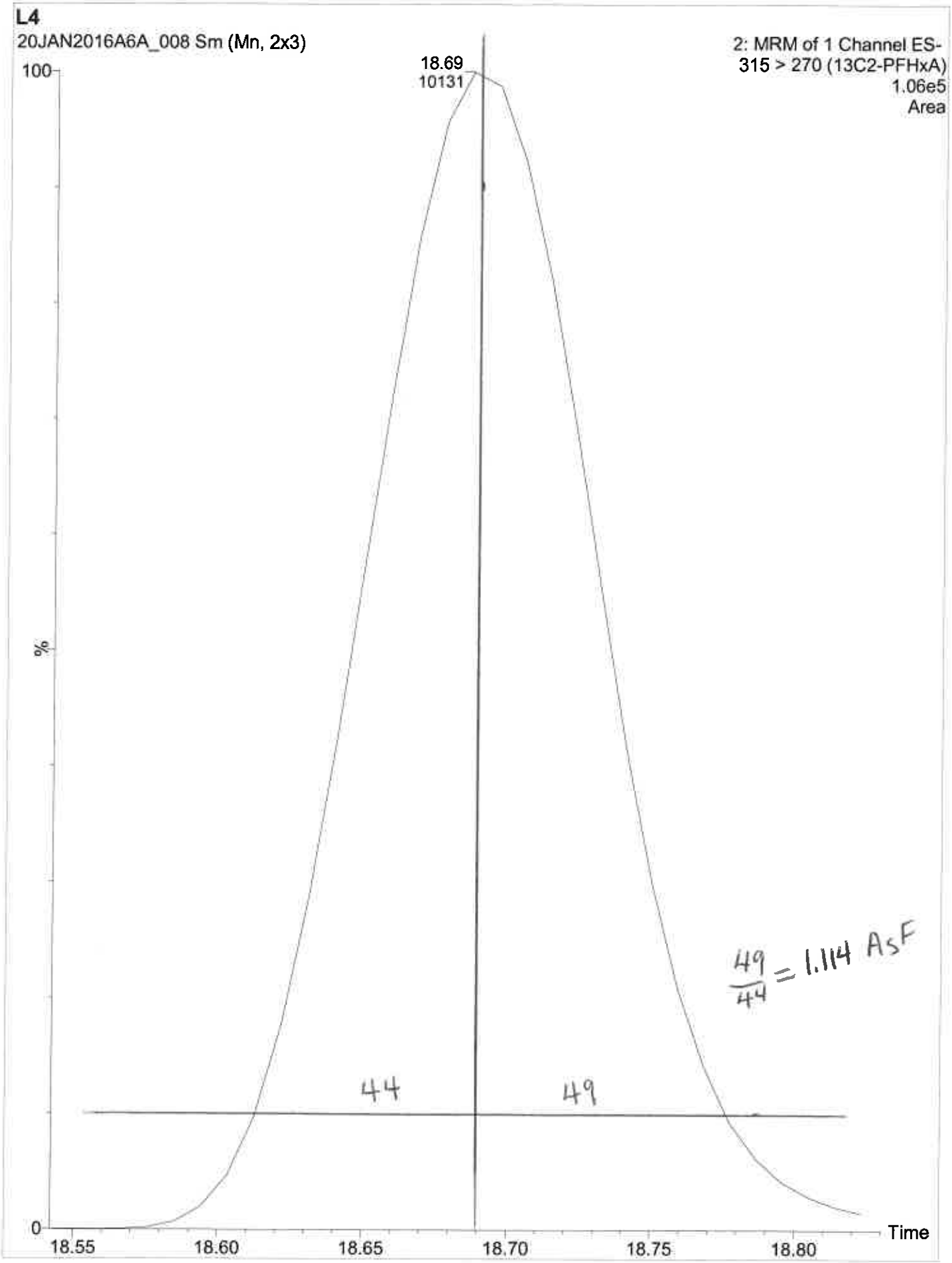
Calibration Start Date: 01/20/2017 13:11 Calibration End Date: 01/20/2017 15:40 Calibration ID: 27741

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-147198/3	20JAN2016A6A_005.d
Level 2	STD 320-147198/4	20JAN2016A6A_006.d
Level 3	STD 320-147198/5	20JAN2016A6A_007.d
Level 4	STD 320-147198/6	20JAN2016A6A_008.d
Level 5	STD 320-147198/7	20JAN2016A6A_009.d
Level 6	STD 320-147198/8	20JAN2016A6A_010.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	-3.9	4.0	4.6	-0.2	-2.9	-1.7	50	50	50	50	50	50
Perfluorohexanesulfonic acid	-13.2	0.6	0.1	1.0	2.3	9.2	50	50	50	50	50	50
Perfluoroheptanoic acid	-0.3	-1.6	7.4	-3.0	-4.7	2.1	50	50	50	50	50	50
Perfluorooctanoic acid (PFOA)	-6.7	-3.1	9.9	-2.2	-0.5	2.6	50	50	50	50	50	50
Perfluorooctanesulfonic acid (PFOS)	-10.5	-0.2	-0.8	1.4	2.9	7.2	50	50	50	50	50	50
Perfluorononanoic acid	-3.7	4.0	7.6	-2.9	-6.2	1.2	50	50	50	50	50	50
13C2 PFHxA	-7.7	-0.3	6.0	-0.8	-2.0	4.7	30	30	30	30	30	30
13C2 PFDA	-2.1	-1.6	3.0	0.9	-3.1	2.9	30	30	30	30	30	30


L4
20JAN2016A6A_008 Sm (Mn, 2x3)
1: MRM of 1 Channel ES-
299 > 80 (PFBS)
5.67e5
Area
17.71;45483
100
%
0
41
49
49/41 = 1.195 ASF
17.60
17.65
17.70
17.75
17.80
Time


L4
20JAN2016A6A_008 Sm (Mn, 2x3)
2: MRM of 1 Channel ES-
315 > 270 (13C2-PFHxA)
1.06e5
Area
18.69
10131
100
%
0
44
49
49/44 = 1.114 AsF
18.55
18.60
18.65
18.70
18.75
18.80
Time

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_005.d
Lims ID: STD L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 20-Jan-2017 13:11:51 ALS Bottle#: 1 Worklist Smp#: 3
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: STD L1 L1
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6
Sublist: chrom-537__A6*sub3

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 21-Jan-2017 15:45:24 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK001

First Level Reviewer: barnettj Date: 20-Jan-2017 14:37:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.705	17.708	-0.003	1.000	295138	8.63	398	
$ 2 13C2 PFHxA								
315.0 > 270.0	18.677	18.677	0.0	1.000	569231	9.23	18868	
3 Perfluorohexanesulfonic acid								
399.0 > 80.0	19.451	19.445	0.006	1.000	108102	2.63	2564	
4 Perfluoroheptanoic acid								M
363.0 > 319.0	19.475	19.476	-0.001	1.000	59252	0.9869	75.5	M
* 5 13C2-PFOA								
415.0 > 370.0	20.153	20.161	-0.008		562174	10.0	15603	
6 Perfluorooctanoic acid								M
413.0 > 369.0	20.153	20.161	-0.008	1.000	111671	1.82	71.5	M
7 Perfluorooctane sulfonic acid								
499.0 > 80.0	20.786	20.766	0.020	1.000	170882	3.59	3016	
* 8 13C4 PFOS								
503.0 > 80.0	20.786	20.793	-0.007		1204619	28.7	26248	
9 Perfluorononanoic acid								
463.0 > 419.0	20.857	20.866	-0.009	1.000	130450	2.00	21.9	
$ 10 13C2 PFDA								
515.0 > 470.0	21.587	21.597	-0.010	1.000	529914	9.79	17940	

QC Flag Legend

Review Flags

M - Manually Integrated

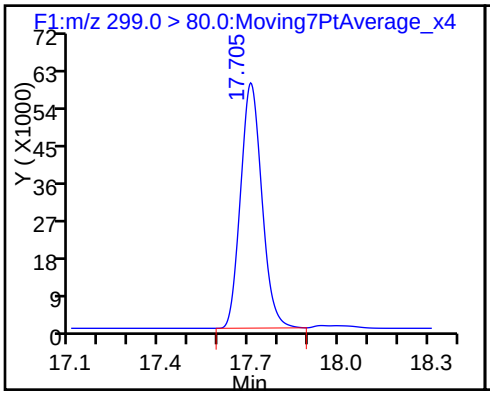
Reagents:

LC537-L1_00017 Amount Added: 1.00 Units: mL

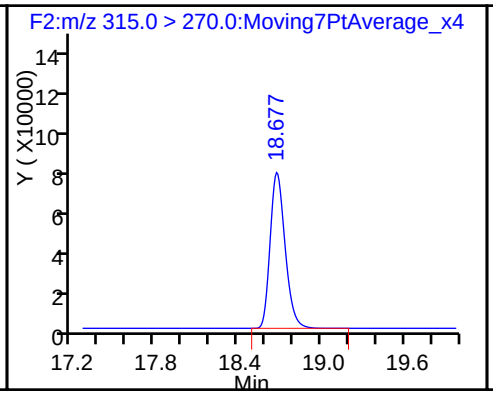
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_005.d
Injection Date: 20-Jan-2017 13:11:51 Instrument ID: A6
Lims ID: STD L1
Client ID:
Operator ID: CBW ALS Bottle#: 1 Worklist Smp#: 3
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

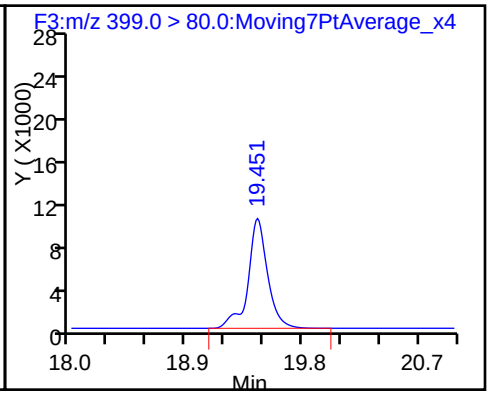
1 Perfluorobutanesulfonic acid



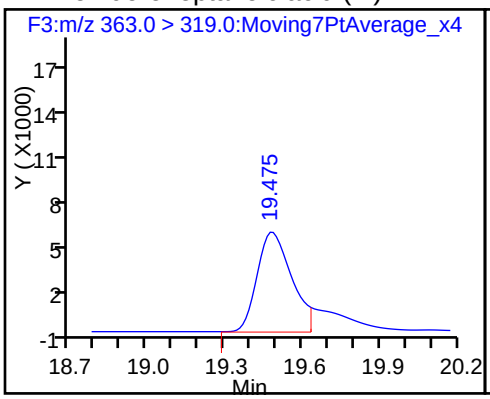
$ 2 13C2 PFHxA



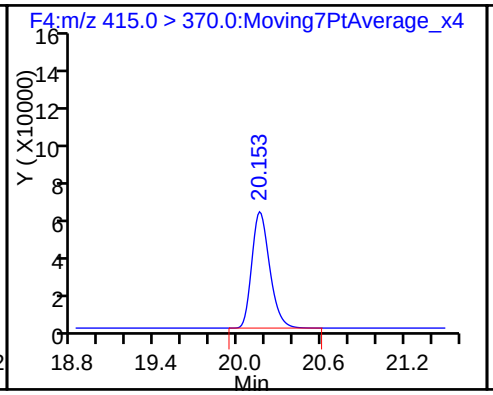
3 Perfluorohexanesulfonic acid



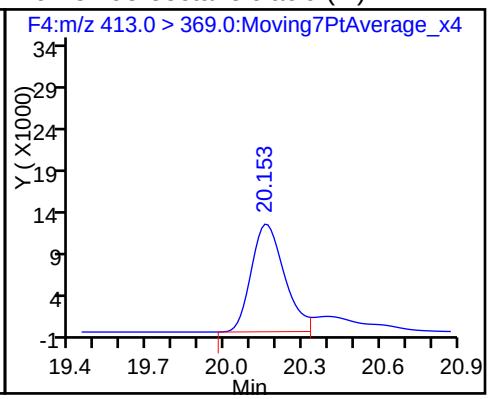
4 Perfluoroheptanoic acid (M)



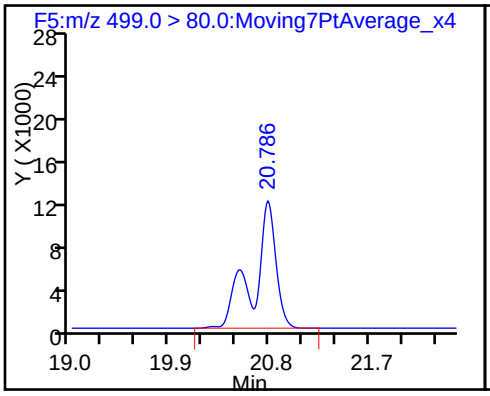
* 5 13C2-PFOA



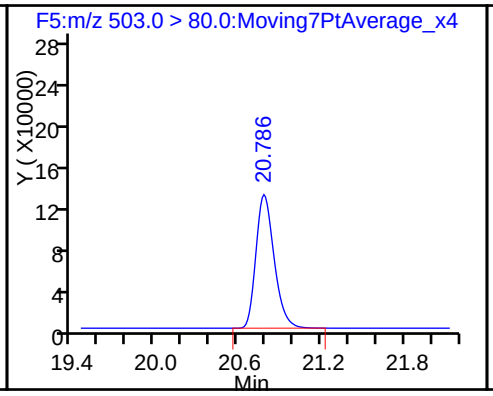
6 Perfluorooctanoic acid (M)



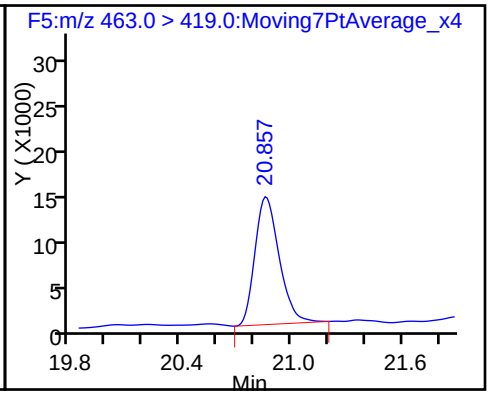
7 Perfluorooctane sulfonic acid



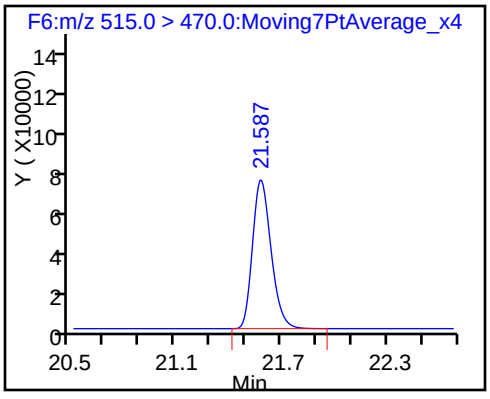
* 8 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

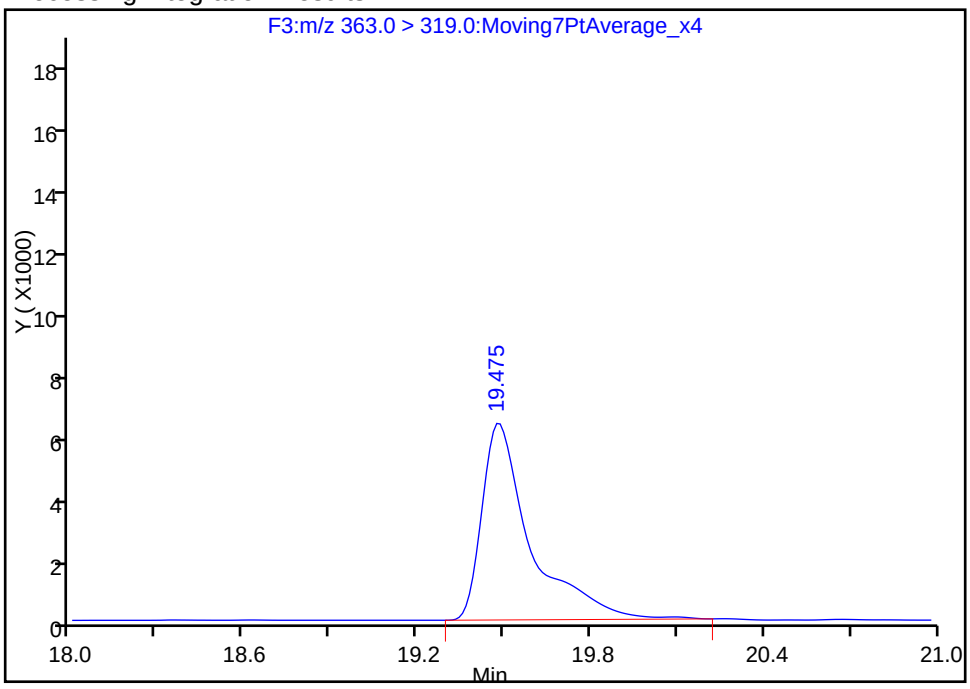
Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_005.d
Injection Date: 20-Jan-2017 13:11:51 Instrument ID: A6
Lims ID: STD L1
Client ID:
Operator ID: CBW ALS Bottle#: 1 Worklist Smp#: 3
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F3:MRM

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

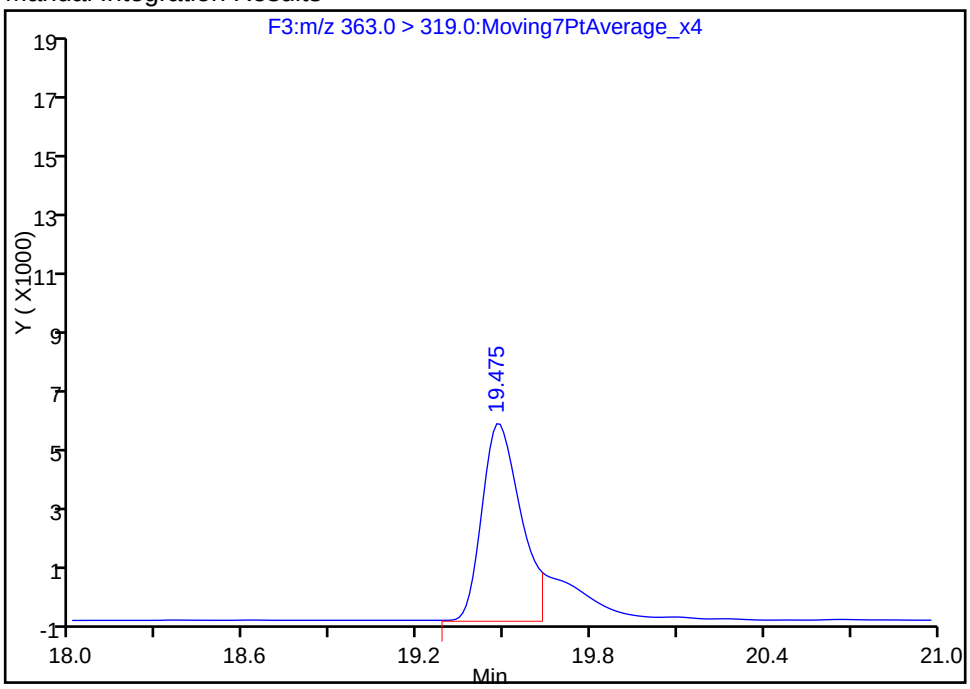
Processing Integration Results

RT: 19.47
Area: 73918
Amount: 1.051213
Amount Units: ng/ml



Manual Integration Results

RT: 19.47
Area: 59252
Amount: 0.986906
Amount Units: ng/ml



Reviewer: barnettj, 20-Jan-2017 14:37:56
Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

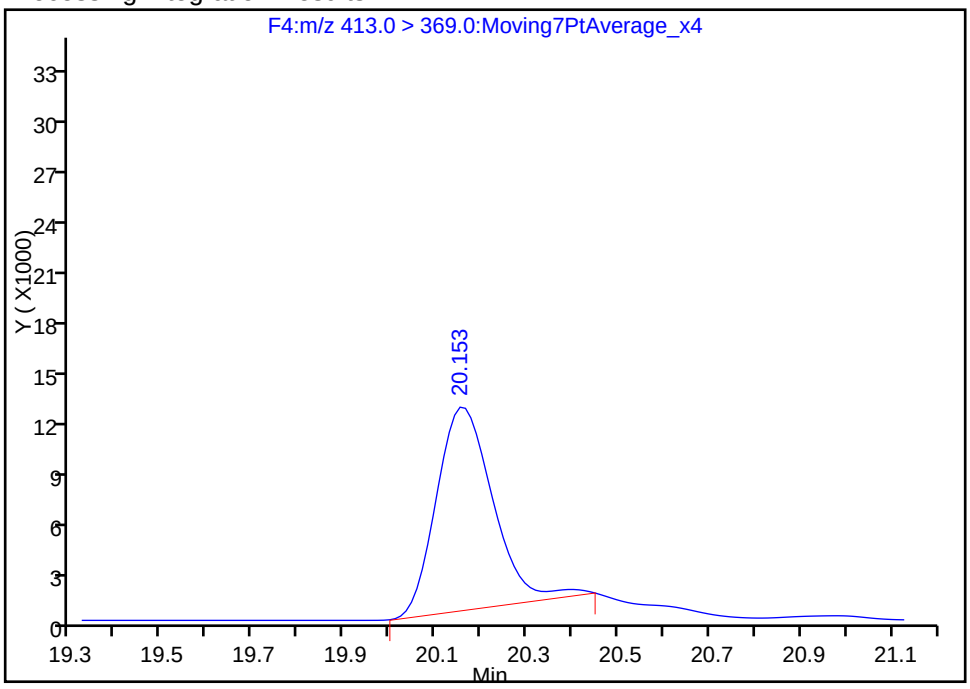
Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_005.d
Injection Date: 20-Jan-2017 13:11:51 Instrument ID: A6
Lims ID: STD L1
Client ID:
Operator ID: CBW ALS Bottle#: 1 Worklist Smp#: 3
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

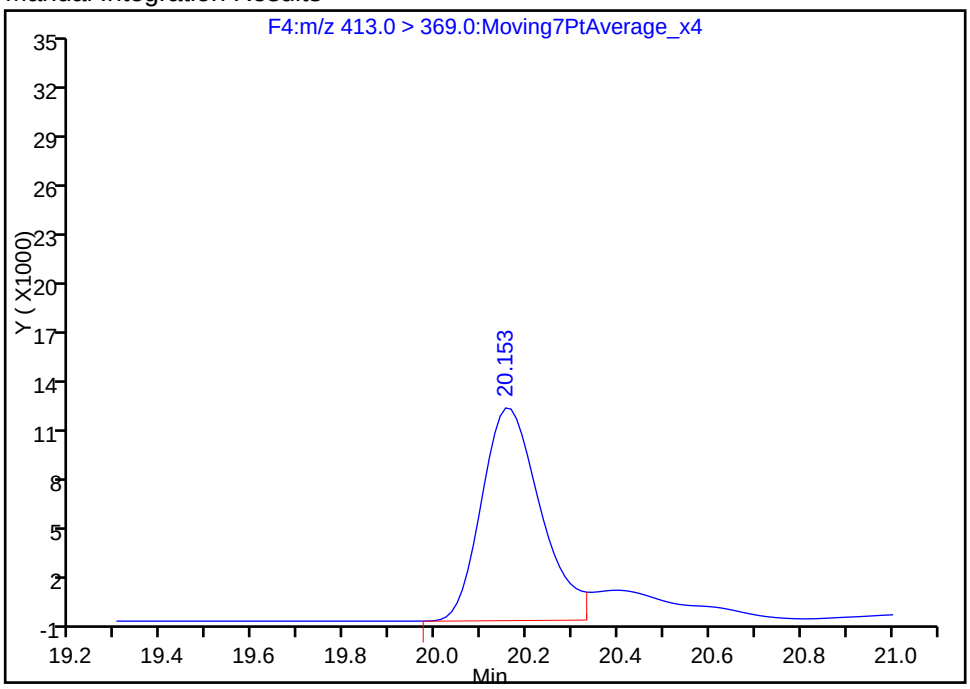
Processing Integration Results

RT: 20.15
Area: 102952
Amount: 1.787224
Amount Units: ng/ml



Manual Integration Results

RT: 20.15
Area: 111671
Amount: 1.821155
Amount Units: ng/ml



Reviewer: barnettj, 20-Jan-2017 14:37:56
Audit Action: Manually Integrated Audit Reason: Split Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_006.d
Lims ID: STD L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 20-Jan-2017 13:41:27 ALS Bottle#: 2 Worklist Smp#: 4
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: STD L2 L2
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6
Sublist: chrom-537__A6*sub3

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 21-Jan-2017 15:45:36 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK001

First Level Reviewer: barnettj Date: 20-Jan-2017 14:38:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.712	17.708	0.004	1.000	823487	23.8	529	
$ 2 13C2 PFHxA								
315.0 > 270.0	18.677	18.677	0.0	1.000	619933	9.97	20614	
3 Perfluorohexanesulfonic acid								
399.0 > 80.0	19.451	19.445	0.006	1.000	323035	7.76	7587	
4 Perfluoroheptanoic acid								M
363.0 > 319.0	19.486	19.476	0.010	1.000	150332	2.48	157	M
6 Perfluorooctanoic acid								M
413.0 > 369.0	20.165	20.161	0.004	1.000	297936	4.82	224	M
* 5 13C2-PFOA								
415.0 > 370.0	20.165	20.161	0.004		566616	10.0	20938	
7 Perfluorooctane sulfonic acid								
499.0 > 80.0	20.761	20.766	-0.005	1.000	491196	10.2	7354	
* 8 13C4 PFOS								
503.0 > 80.0	20.797	20.793	0.004		1217755	28.7	26578	
9 Perfluorononanoic acid								
463.0 > 419.0	20.868	20.866	0.002	1.000	361888	5.50	73.9	
$ 10 13C2 PFDA								
515.0 > 470.0	21.595	21.597	-0.002	1.000	537200	9.84	18242	

QC Flag Legend

Review Flags

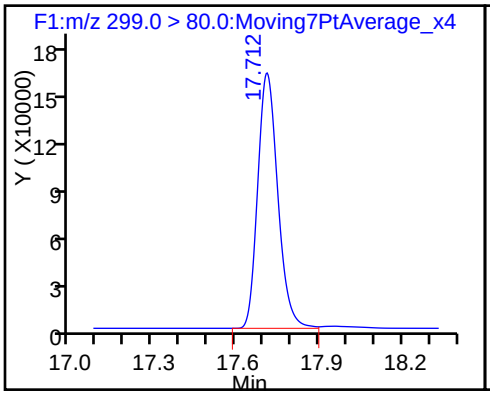
M - Manually Integrated

Reagents:

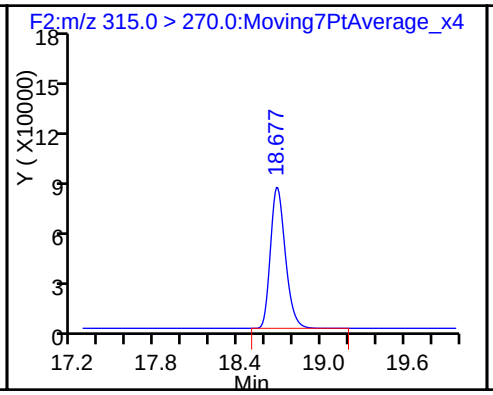
LC537-L2_00016 Amount Added: 1.00 Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_006.d
Injection Date: 20-Jan-2017 13:41:27 Instrument ID: A6
Lims ID: STD L2
Client ID:
Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 4
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

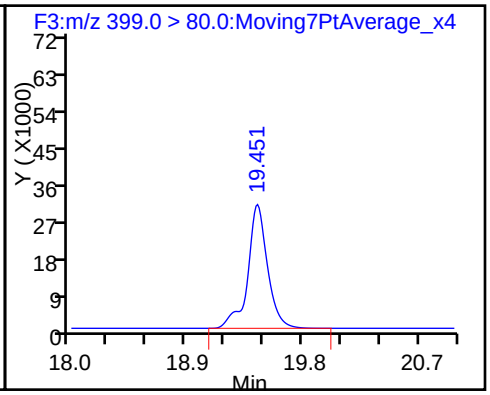
1 Perfluorobutanesulfonic acid



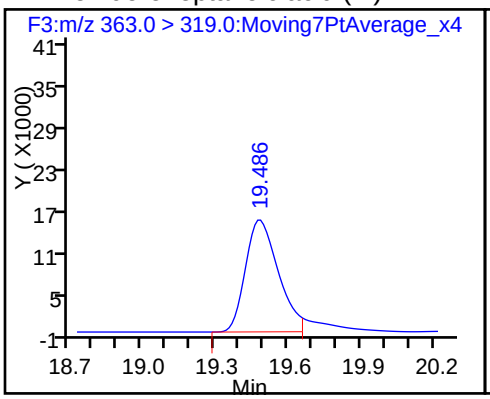
$ 2 13C2 PFHxA



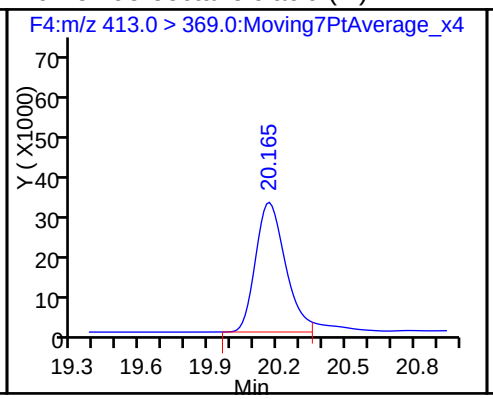
3 Perfluorohexanesulfonic acid



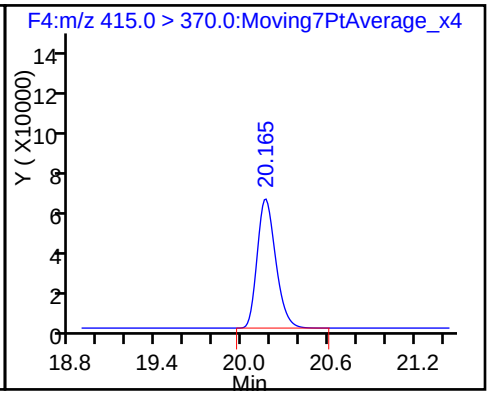
4 Perfluoroheptanoic acid (M)



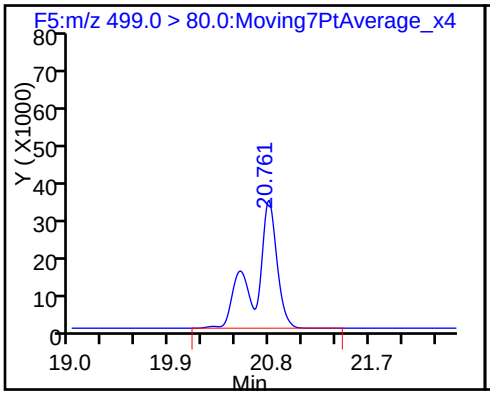
6 Perfluorooctanoic acid (M)



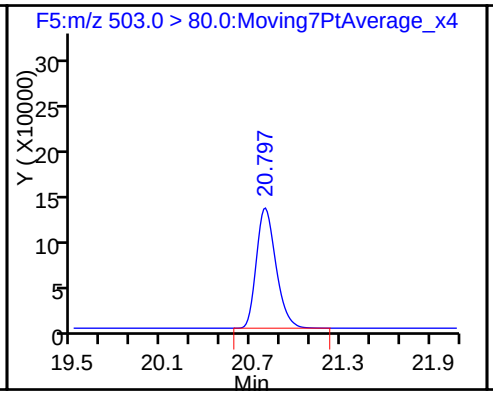
* 5 13C2-PFOA



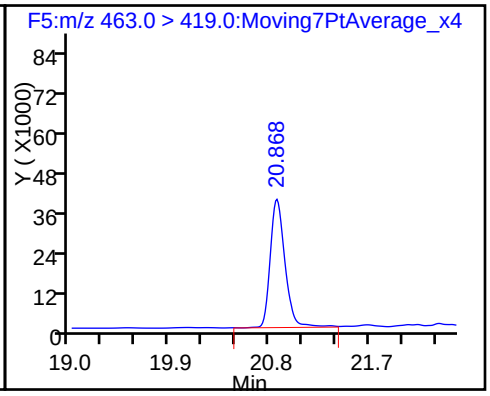
7 Perfluorooctane sulfonic acid



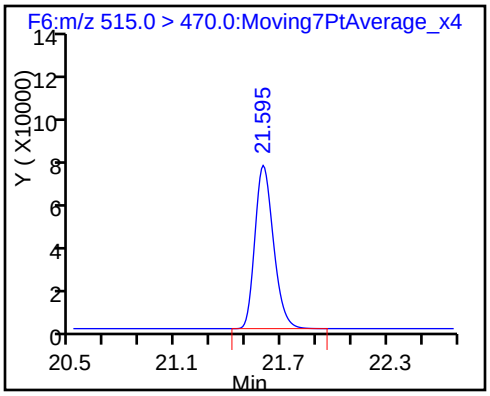
* 8 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

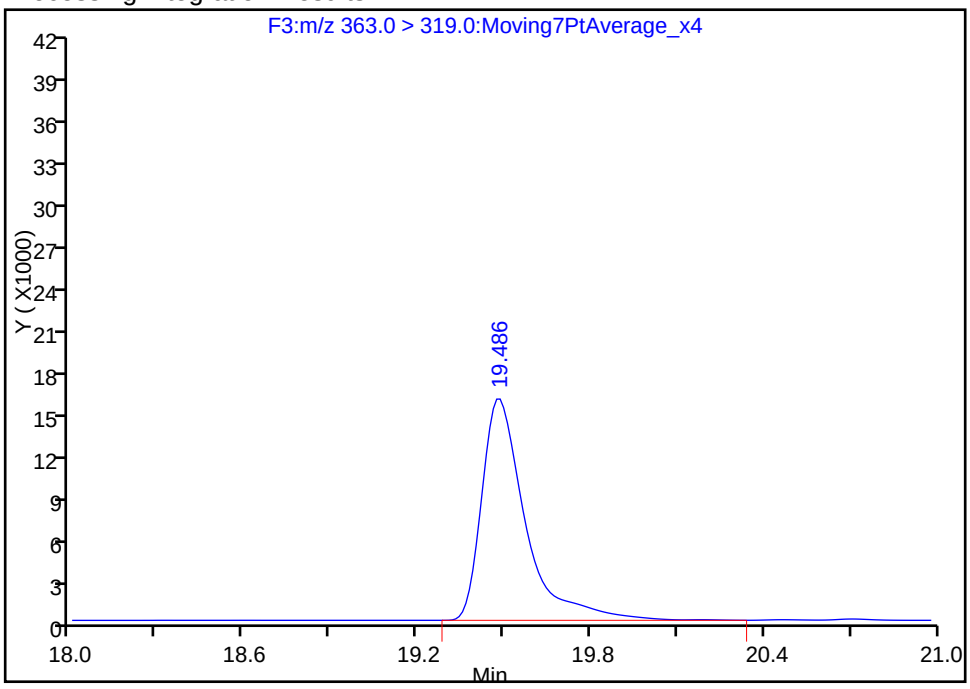
Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_006.d
Injection Date: 20-Jan-2017 13:41:27 Instrument ID: A6
Lims ID: STD L2
Client ID:
Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 4
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F3:MRM

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

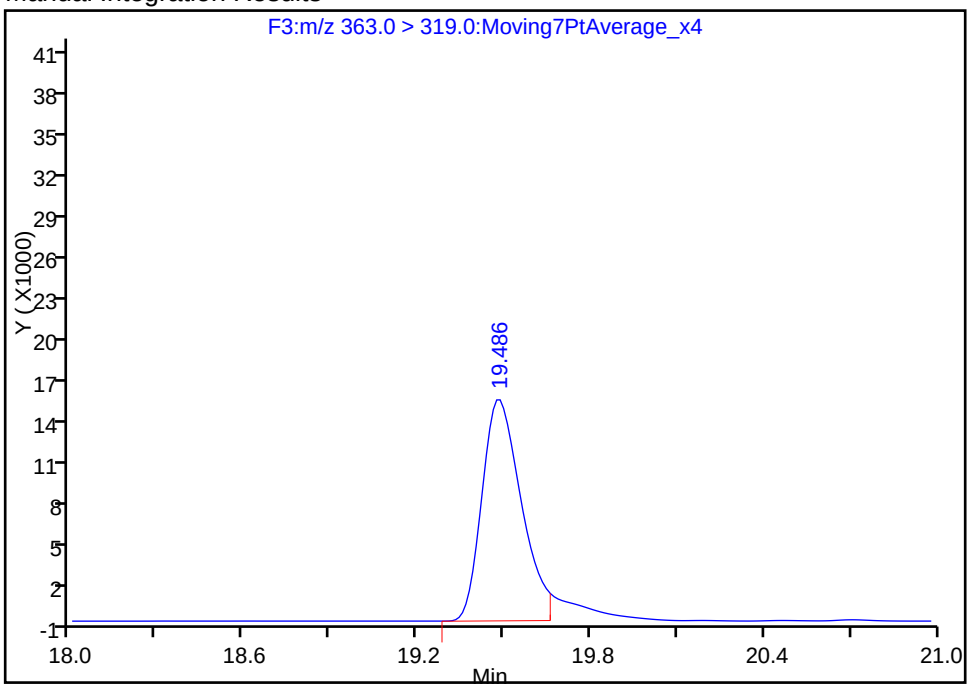
Processing Integration Results

RT: 19.49
Area: 167855
Amount: 2.647267
Amount Units: ng/ml



Manual Integration Results

RT: 19.49
Area: 150332
Amount: 2.484312
Amount Units: ng/ml



Reviewer: barnettj, 20-Jan-2017 14:38:53
Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

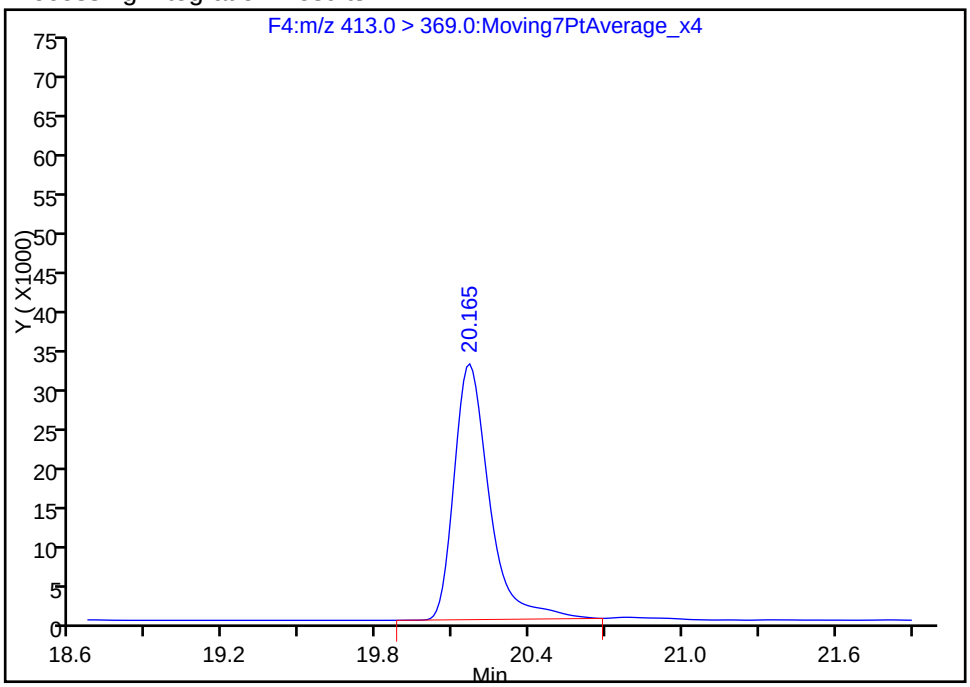
Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_006.d
Injection Date: 20-Jan-2017 13:41:27 Instrument ID: A6
Lims ID: STD L2
Client ID:
Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 4
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

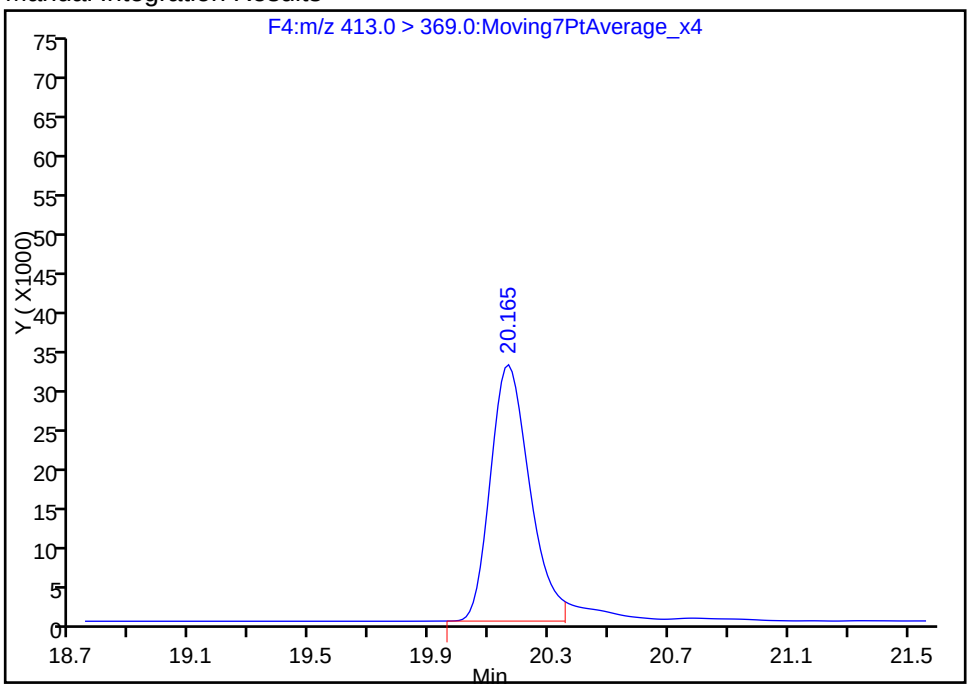
Processing Integration Results

RT: 20.17
Area: 313361
Amount: 5.195777
Amount Units: ng/ml



Manual Integration Results

RT: 20.17
Area: 297936
Amount: 4.820714
Amount Units: ng/ml



Reviewer: barnettj, 20-Jan-2017 14:38:53
Audit Action: Manually Integrated Audit Reason: Split Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_007.d
Lims ID: STD L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 20-Jan-2017 14:11:00 ALS Bottle#: 3 Worklist Smp#: 5
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: STD L3 L3
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6
Sublist: chrom-537__A6*sub3

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 21-Jan-2017 15:45:49 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK001

First Level Reviewer: barnettj Date: 20-Jan-2017 15:28:27

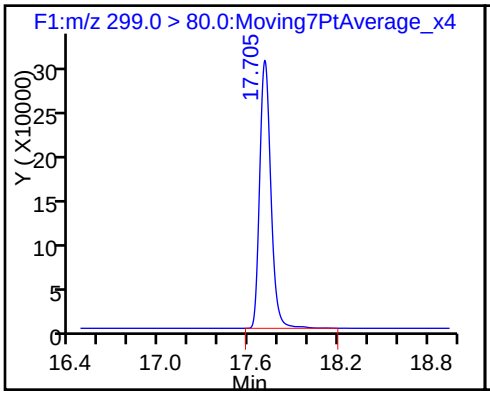
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.705	17.708	-0.003	1.000	1597346	47.2	21750	
$ 2 13C2 PFHxA								
315.0 > 270.0	18.677	18.677	0.0	1.000	631911	10.6	14042	
3 Perfluorohexanesulfonic acid								
399.0 > 80.0	19.439	19.445	-0.006	1.000	619987	15.2	14649	
4 Perfluoroheptanoic acid								
363.0 > 319.0	19.474	19.476	-0.002	1.000	310070	5.34	506	
* 5 13C2-PFOA								
415.0 > 370.0	20.153	20.161	-0.008		543238	10.0	9849	
6 Perfluorooctanoic acid								
413.0 > 369.0	20.153	20.161	-0.008	1.000	638558	10.8	1212	
7 Perfluorooctane sulfonic acid								
499.0 > 80.0	20.762	20.766	-0.004	1.000	942021	20.0	13975	
* 8 13C4 PFOS								
503.0 > 80.0	20.785	20.793	-0.008		1191964	28.7	32491	
9 Perfluorononanoic acid								
463.0 > 419.0	20.868	20.866	0.002	1.000	707617	11.2	172	
$ 10 13C2 PFDA								
515.0 > 470.0	21.595	21.597	-0.002	1.000	538763	10.3	18446	

Reagents:

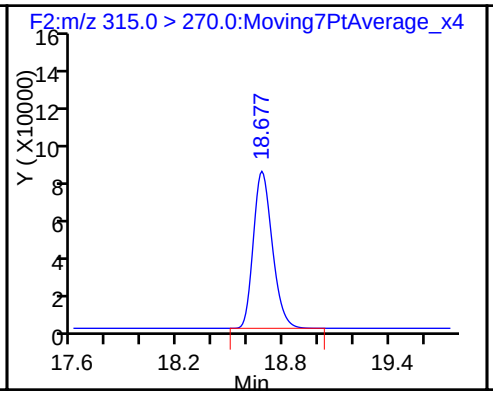
LC537-L3_00018 Amount Added: 1.00 Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_007.d
Injection Date: 20-Jan-2017 14:11:00 Instrument ID: A6
Lims ID: STD L3
Client ID:
Operator ID: CBW ALS Bottle#: 3 Worklist Smp#: 5
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

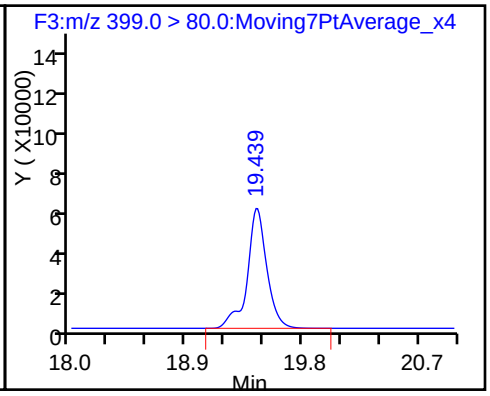
1 Perfluorobutanesulfonic acid



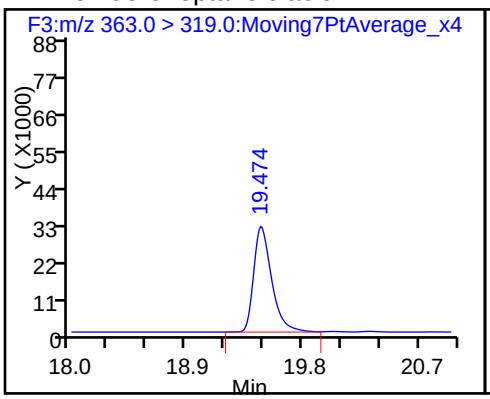
$ 2 13C2 PFHxA



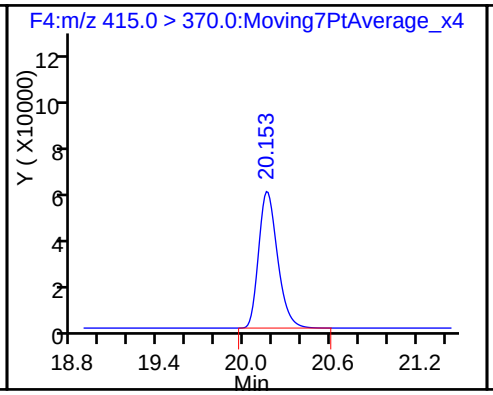
3 Perfluorohexanesulfonic acid



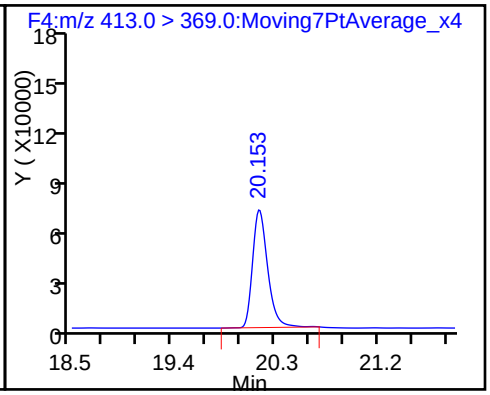
4 Perfluoroheptanoic acid



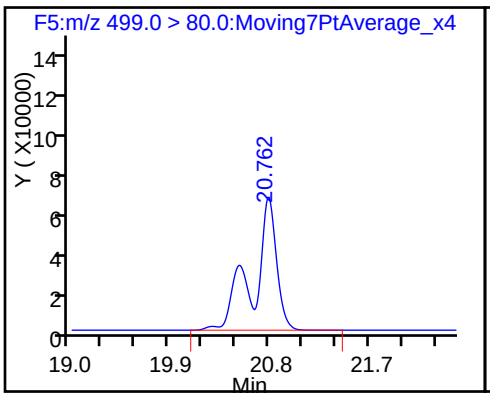
* 5 13C2-PFOA



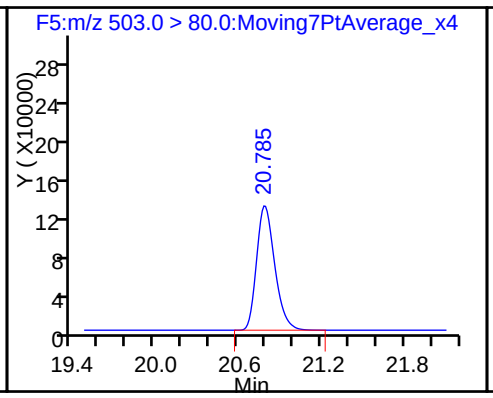
6 Perfluorooctanoic acid



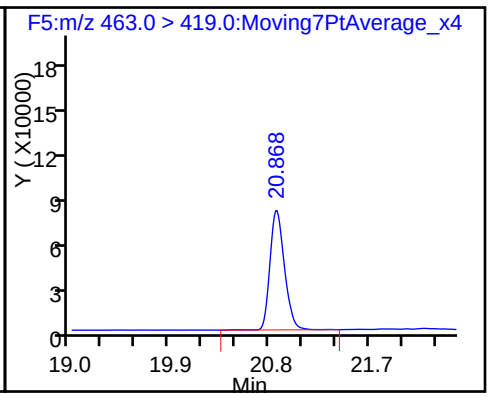
7 Perfluorooctane sulfonic acid



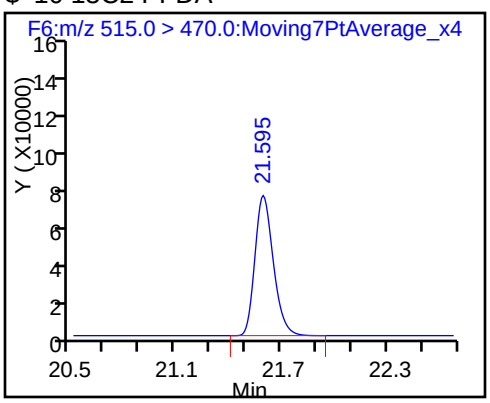
* 8 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_008.d
Lims ID: STD L4
Client ID:
Sample Type: ICISAV Calib Level: 4
Inject. Date: 20-Jan-2017 14:40:38 ALS Bottle#: 4 Worklist Smp#: 6
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: STD L4 L4
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6
Sublist: chrom-537__A6*sub3

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 21-Jan-2017 15:46:00 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK001

First Level Reviewer: barnettj Date: 20-Jan-2017 15:30:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.712	17.708	0.004	1.000	2856763	90.7	48472	
$ 2 13C2 PFHxA								
315.0 > 270.0	18.677	18.677	0.0	1.000	611664	9.92	20304	
3 Perfluorohexanesulfonic acid								
399.0 > 80.0	19.451	19.445	0.006	1.000	1172241	30.9	27003	
4 Perfluoroheptanoic acid								
363.0 > 319.0	19.474	19.476	-0.002	1.000	583966	9.73	916	
6 Perfluorooctanoic acid								
413.0 > 369.0	20.165	20.161	0.004	1.000	1184736	19.3	1862	
* 5 13C2-PFOA								
415.0 > 370.0	20.165	20.161	0.004		562090	10.0	15640	
7 Perfluorooctane sulfonic acid								
499.0 > 80.0	20.762	20.766	-0.004	1.000	1803557	41.1	7838	
* 8 13C4 PFOS								
503.0 > 80.0	20.797	20.793	0.004		1108641	28.7	30073	
9 Perfluorononanoic acid								
463.0 > 419.0	20.868	20.866	0.002	1.000	1331377	20.4	372	
$ 10 13C2 PFDA								
515.0 > 470.0	21.604	21.597	0.007	1.000	546073	10.1	18474	

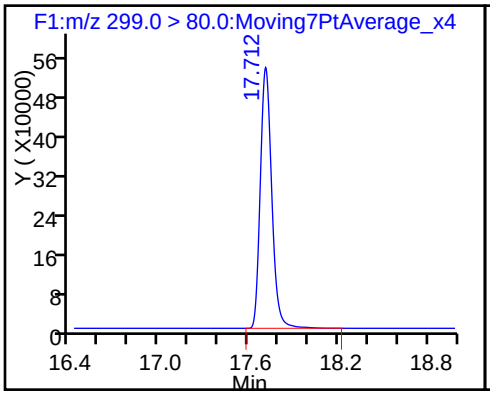
Reagents:

LC537-L4_00017 Amount Added: 1.00 Units: mL

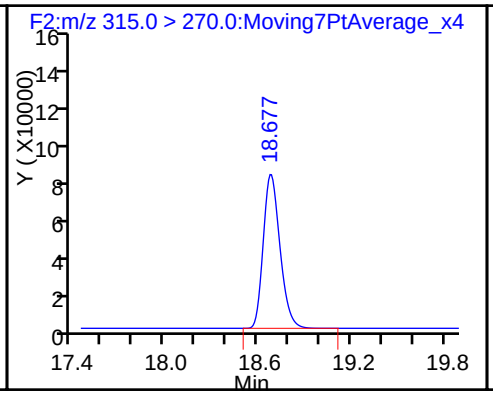
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_008.d
Injection Date: 20-Jan-2017 14:40:38 Instrument ID: A6
Lims ID: STD L4
Client ID:
Operator ID: CBW ALS Bottle#: 4 Worklist Smp#: 6
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

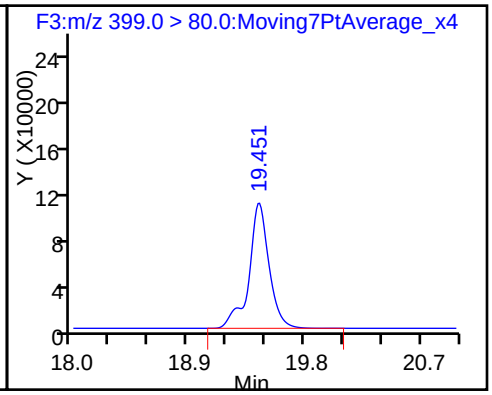
1 Perfluorobutanesulfonic acid



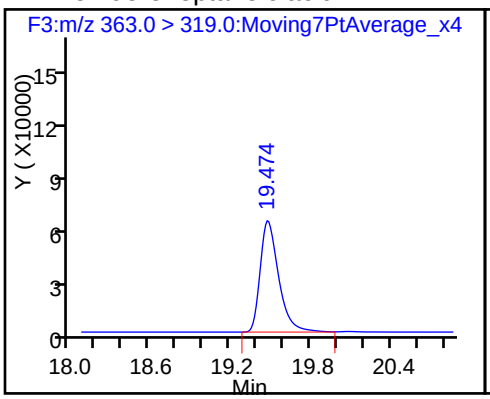
$ 2 13C2 PFHxA



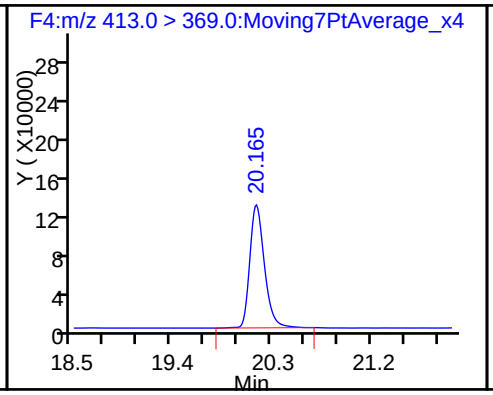
3 Perfluorohexanesulfonic acid



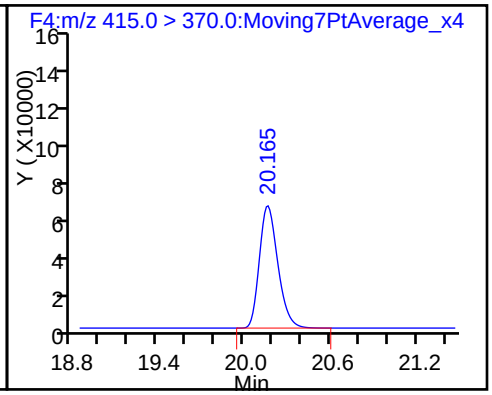
4 Perfluoroheptanoic acid



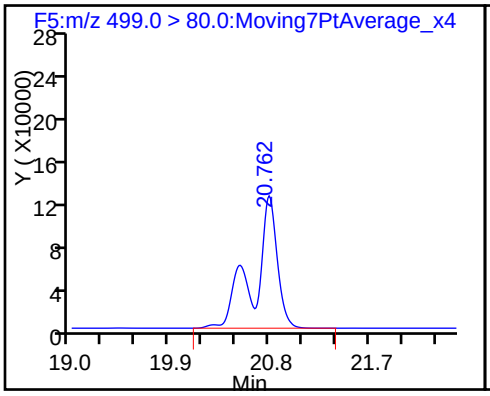
6 Perfluorooctanoic acid



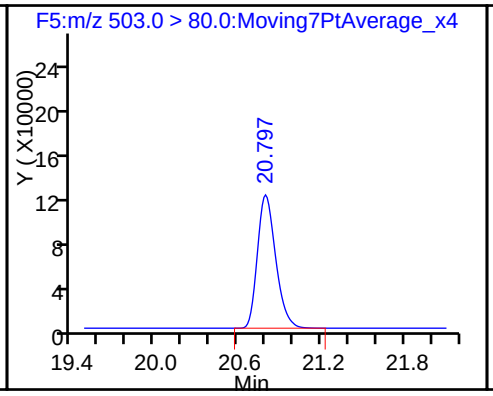
* 5 13C2-PFOA



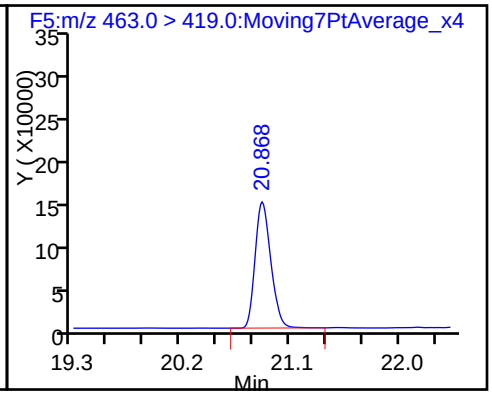
7 Perfluorooctane sulfonic acid



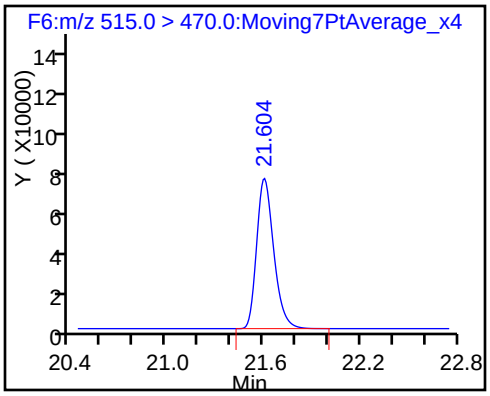
* 8 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_009.d
Lims ID: STD L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 20-Jan-2017 15:11:21 ALS Bottle#: 5 Worklist Smp#: 7
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: STD L5 L5
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6
Sublist: chrom-537__A6*sub3

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 21-Jan-2017 15:46:12 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK001

First Level Reviewer: barnettj Date: 20-Jan-2017 15:50:15

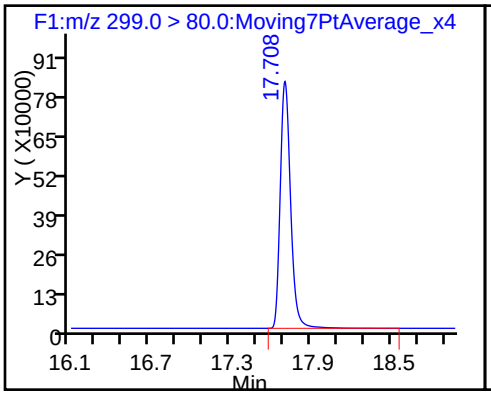
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.708	17.708	0.0	1.000	4483850	130.8	118398	
$ 2 13C2 PFHxA								
315.0 > 270.0	18.677	18.677	0.0	1.000	676525	9.80	22490	
3 Perfluorohexanesulfonic acid								
399.0 > 80.0	19.439	19.445	-0.006	1.000	1916602	46.5	21677	
4 Perfluoroheptanoic acid								
363.0 > 319.0	19.474	19.476	-0.002	1.000	950736	14.2	8948	
* 5 13C2-PFOA								
415.0 > 370.0	20.165	20.161	0.004		629057	10.0	17163	
6 Perfluorooctanoic acid								
413.0 > 369.0	20.165	20.161	0.004	1.000	1999775	29.1	2723	
7 Perfluorooctane sulfonic acid								
499.0 > 80.0	20.762	20.766	-0.004	1.000	2953057	61.8	3916	
* 8 13C4 PFOS								
503.0 > 80.0	20.797	20.793	0.004		1207331	28.7	21805	
9 Perfluorononanoic acid								
463.0 > 419.0	20.868	20.866	0.002	1.000	2133029	29.2	654	
$ 10 13C2 PFDA								
515.0 > 470.0	21.604	21.597	0.007	1.000	587235	9.69	19826	

Reagents:

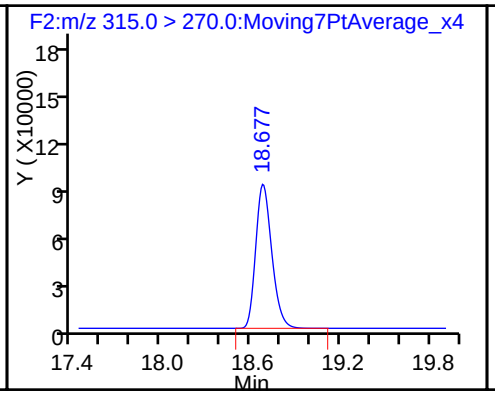
LC537-L5_00019 Amount Added: 1.00 Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_009.d
Injection Date: 20-Jan-2017 15:11:21 Instrument ID: A6
Lims ID: STD L5
Client ID:
Operator ID: CBW ALS Bottle#: 5 Worklist Smp#: 7
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

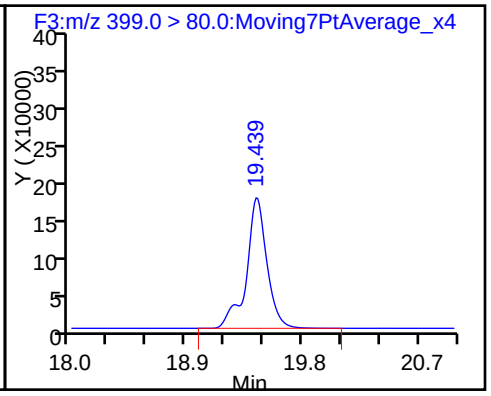
1 Perfluorobutanesulfonic acid



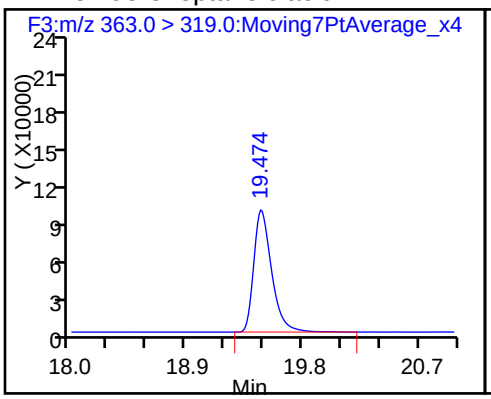
$ 2 13C2 PFHxA



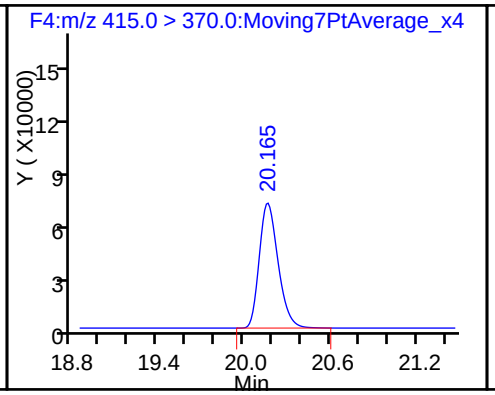
3 Perfluorohexanesulfonic acid



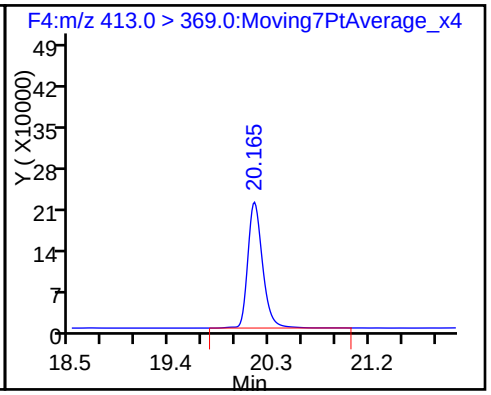
4 Perfluoroheptanoic acid



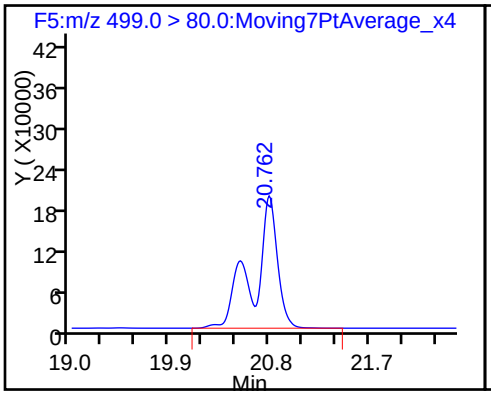
* 5 13C2-PFOA



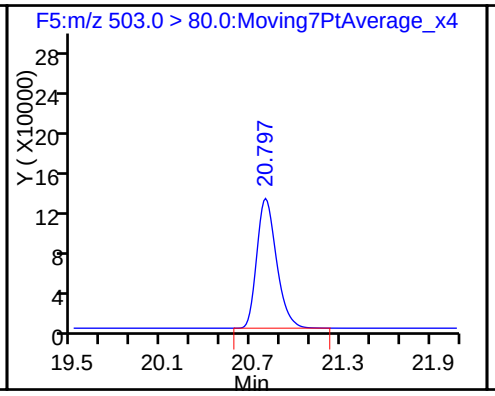
6 Perfluorooctanoic acid



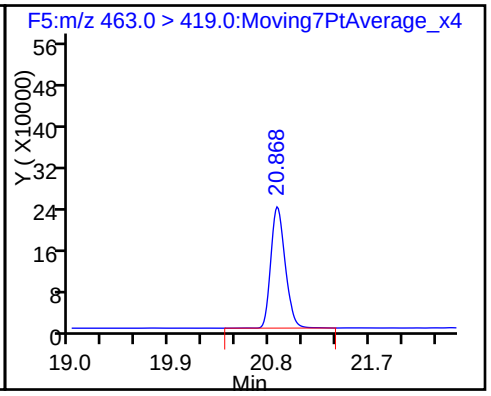
7 Perfluorooctane sulfonic acid



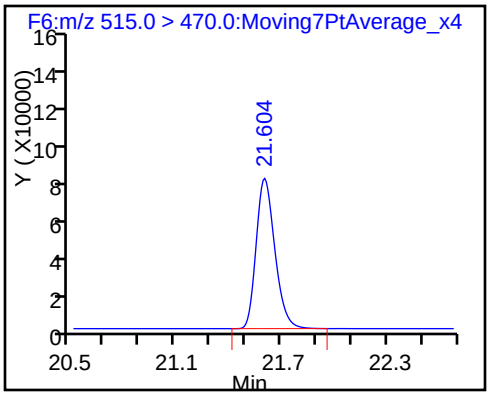
* 8 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d
Lims ID: STD L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 20-Jan-2017 15:40:56 ALS Bottle#: 6 Worklist Smp#: 8
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: STD L6 L6
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6
Sublist: chrom-537__A6*sub3

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 21-Jan-2017 15:46:18 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK001

First Level Reviewer: barnettj Date: 20-Jan-2017 16:18:53

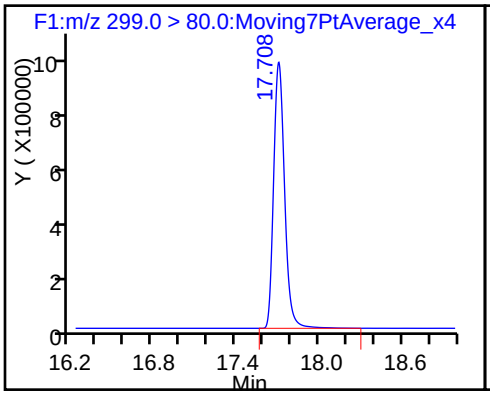
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.708	17.708	0.0	1.000	5108592	175.4	8476	
$ 2 13C2 PFHxA								
315.0 > 270.0	18.677	18.677	0.0	1.000	632840	10.5	20922	
3 Perfluorohexanesulfonic acid								
399.0 > 80.0	19.439	19.445	-0.006	1.000	2300517	65.7	41737	
4 Perfluoroheptanoic acid								
363.0 > 319.0	19.474	19.476	-0.002	1.000	1182413	20.1	30740	
6 Perfluorooctanoic acid								
413.0 > 369.0	20.165	20.161	0.004	1.000	2393220	39.8	2801	
* 5 13C2-PFOA								
415.0 > 370.0	20.165	20.161	0.004		551000	10.0	20170	
7 Perfluorooctane sulfonic acid								
499.0 > 80.0	20.762	20.766	-0.004	1.000	3460463	85.3	5568	
* 8 13C4 PFOS								
503.0 > 80.0	20.797	20.793	0.004		1025171	28.7	18321	
9 Perfluorononanoic acid								
463.0 > 419.0	20.868	20.866	0.002	1.000	2671319	41.7	1186	
$ 10 13C2 PFDA								
515.0 > 470.0	21.596	21.597	-0.001	1.000	546342	10.3	18528	

Reagents:

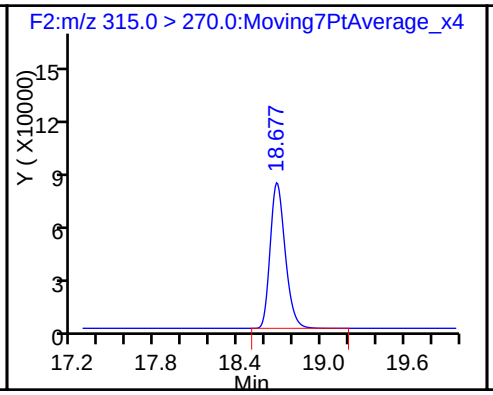
LC537-L6_00016 Amount Added: 1.00 Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d
Injection Date: 20-Jan-2017 15:40:56 Instrument ID: A6
Lims ID: STD L6
Client ID:
Operator ID: CBW ALS Bottle#: 6 Worklist Smp#: 8
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

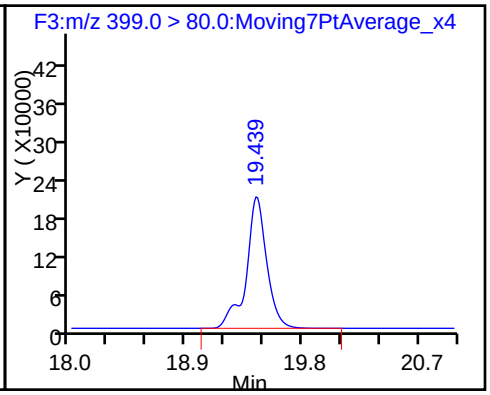
1 Perfluorobutanesulfonic acid



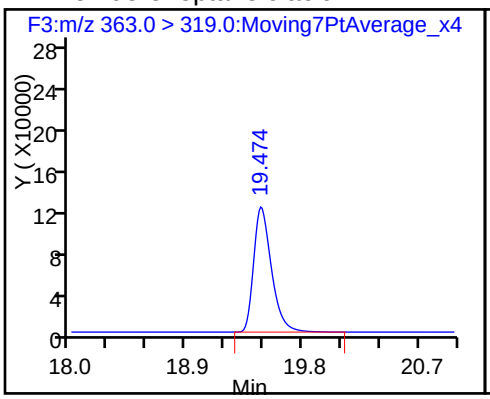
$ 2 13C2 PFHxA



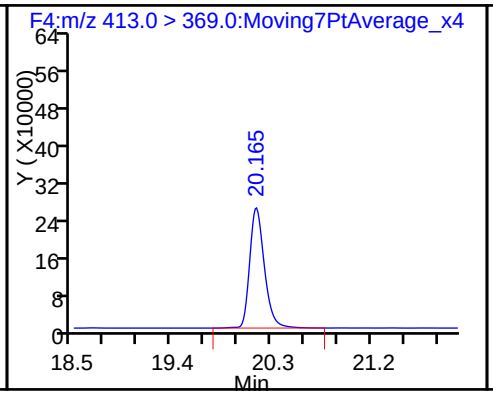
3 Perfluorohexanesulfonic acid



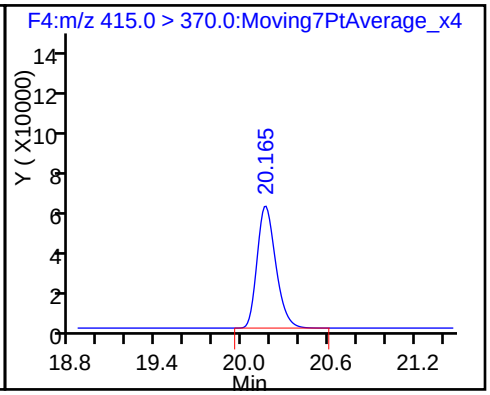
4 Perfluoroheptanoic acid



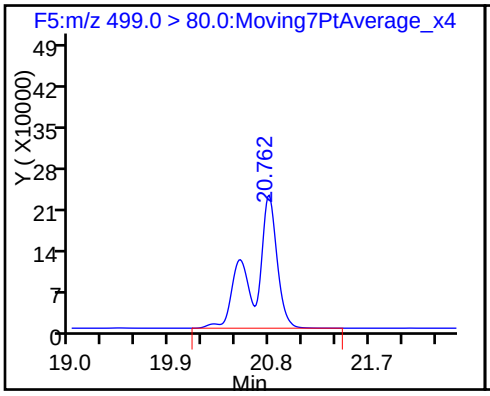
6 Perfluorooctanoic acid



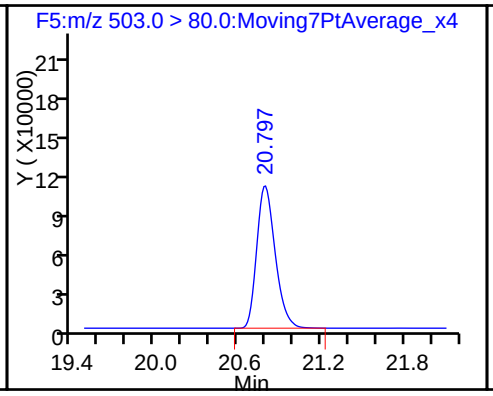
* 5 13C2-PFOA



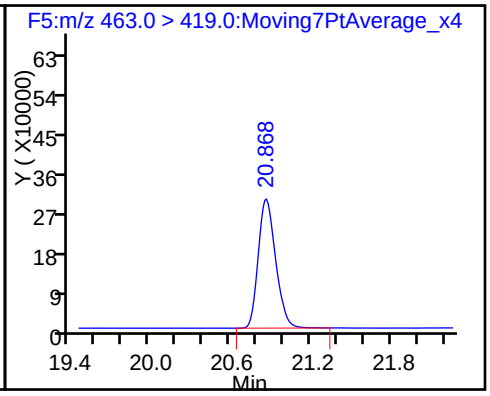
7 Perfluorooctane sulfonic acid



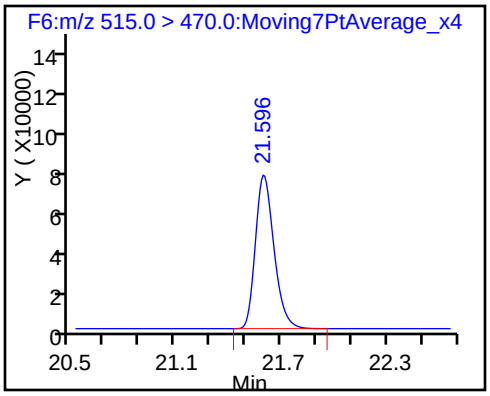
* 8 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Lab Sample ID: CCV 320-147198/10 Calibration Date: 01/20/2017 16:40

Instrument ID: A6 Calib Start Date: 01/20/2017 13:11

GC Column: Acquity ID: 2.10(mm) Calib End Date: 01/20/2017 15:40

Lab File ID: 20JAN2016A6A_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	0.8146	0.8737		24.5	22.9	7.3	50.0
Perfluorohexanesulfonic acid	Ave	0.9801	1.004		7.90	7.72	2.4	50.0
Perfluoroheptanoic acid	Ave	1.068	1.090		2.58	2.52	2.0	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.091	1.084		4.95	4.98	-0.6	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.134	1.071		9.64	10.2	-5.6	50.0
Perfluorononanoic acid	Ave	1.162	1.210		5.51	5.29	4.1	50.0
13C2 PFHxA	Ave	1.097	1.094		9.98	10.0	-0.2	30.0
13C2 PFDA	Ave	0.9632	0.9401		9.76	10.0	-2.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_012.d
Lims ID: CCV L2
Client ID:
Sample Type: CCVL
Inject. Date: 20-Jan-2017 16:40:11 ALS Bottle#: 2 Worklist Smp#: 10
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: CCV L2 CCV L2
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6
Sublist: chrom-537__A6*sub3

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 09:55:20 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: phomsophat Date: 21-Jan-2017 15:21:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.699	17.708	-0.009	1.000	808097	24.5	624	
$ 2 13C2 PFHxA								
315.0 > 270.0	18.677	18.677	0.0	1.000	619360	9.98	20431	
3 Perfluorohexanesulfonic acid								
399.0 > 80.0	19.439	19.445	-0.006	1.000	312959	7.90	7478	
4 Perfluoroheptanoic acid								M
363.0 > 319.0	19.474	19.476	-0.002	1.000	155662	2.58	89.2	M
* 5 13C2-PFOA								
415.0 > 370.0	20.153	20.161	-0.008		565892	10.0	15592	
6 Perfluorooctanoic acid								M
413.0 > 369.0	20.153	20.161	-0.008	1.000	305373	4.95	174	M
7 Perfluorooctane sulfonic acid								
499.0 > 80.0	20.762	20.766	-0.004	1.000	442018	9.64	6719	
* 8 13C4 PFOS								
503.0 > 80.0	20.797	20.793	0.004		1158929	28.7	31529	
9 Perfluorononanoic acid								
463.0 > 419.0	20.868	20.866	0.002	1.000	362111	5.51	293	
$ 10 13C2 PFDA								
515.0 > 470.0	21.604	21.597	0.007	1.000	532008	9.76	17984	

QC Flag Legend

Review Flags

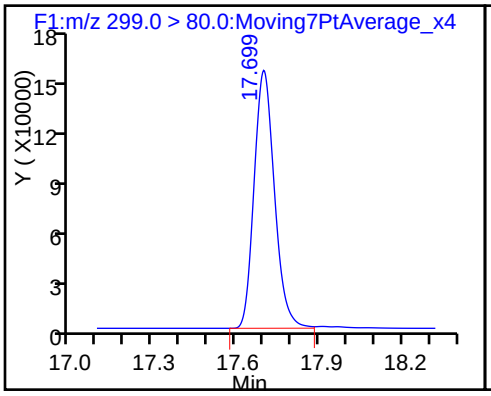
M - Manually Integrated

Reagents:

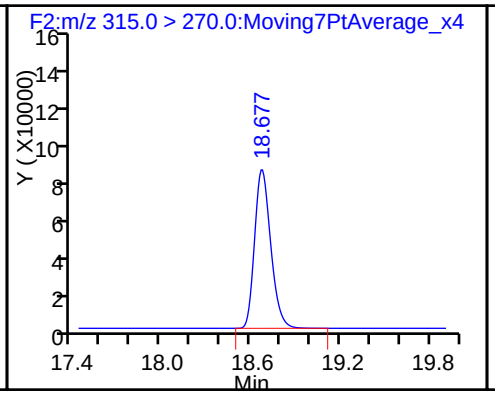
LC537-L2_00016 Amount Added: 1.00 Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_012.d
Injection Date: 20-Jan-2017 16:40:11 Instrument ID: A6
Lims ID: CCV L2
Client ID:
Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 10
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

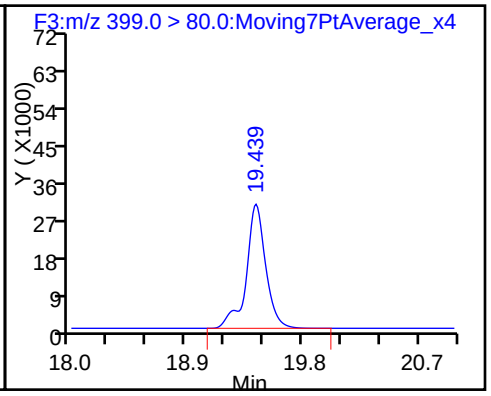
1 Perfluorobutanesulfonic acid



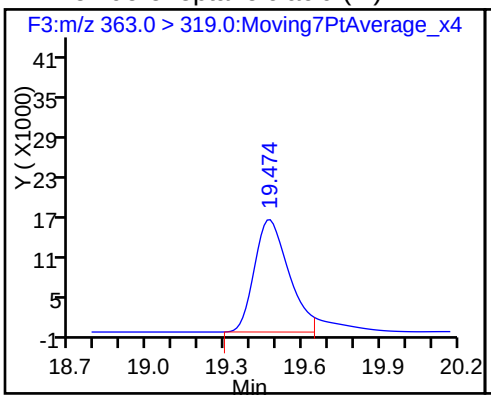
$ 2 13C2 PFHxA



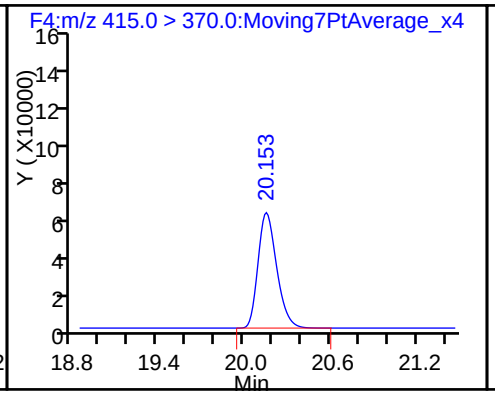
3 Perfluorohexanesulfonic acid



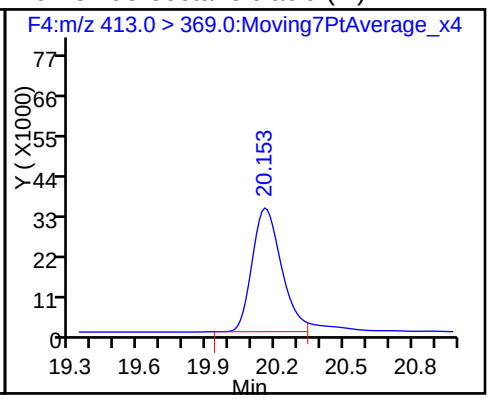
4 Perfluoroheptanoic acid (M)



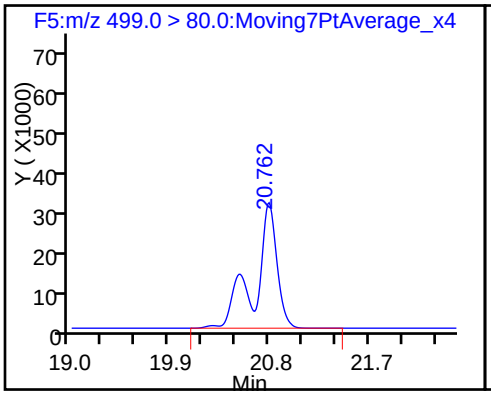
* 5 13C2-PFOA



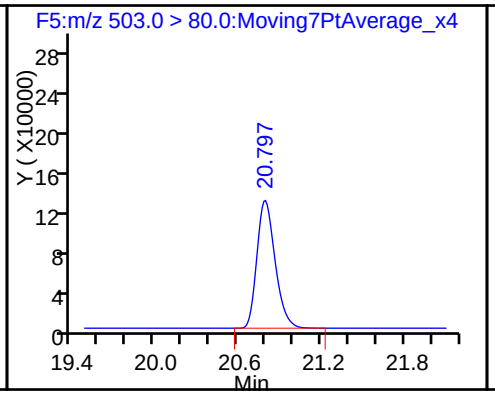
6 Perfluorooctanoic acid (M)



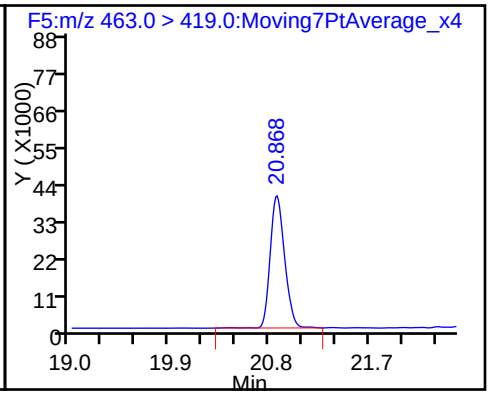
7 Perfluorooctane sulfonic acid



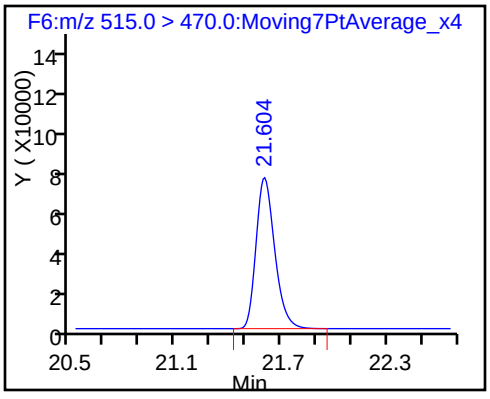
* 8 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

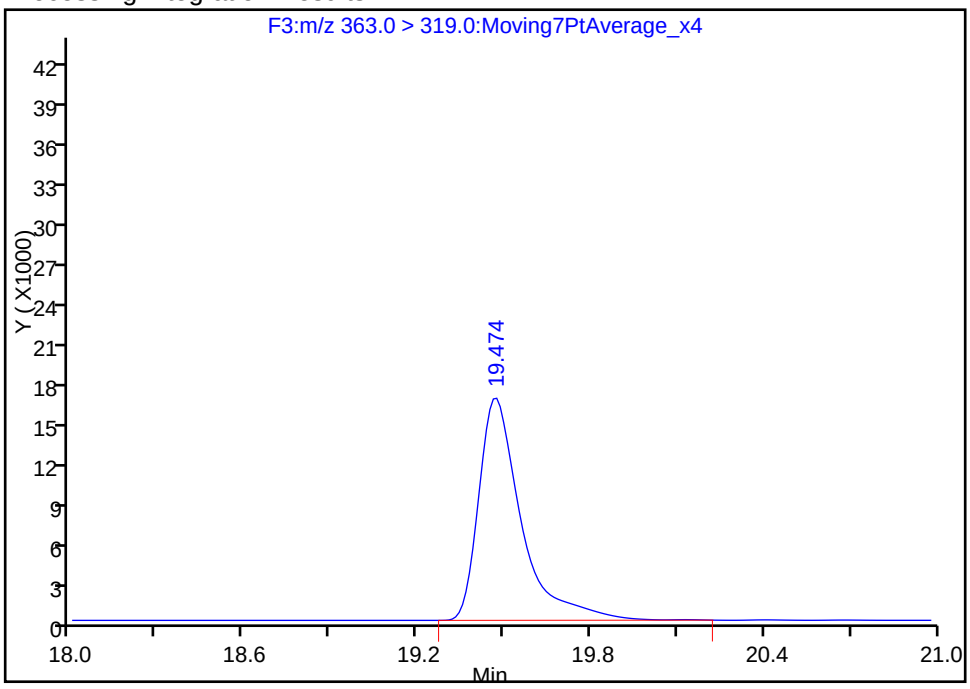
Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_012.d
Injection Date: 20-Jan-2017 16:40:11 Instrument ID: A6
Lims ID: CCV L2
Client ID:
Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 10
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F3:MRM

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

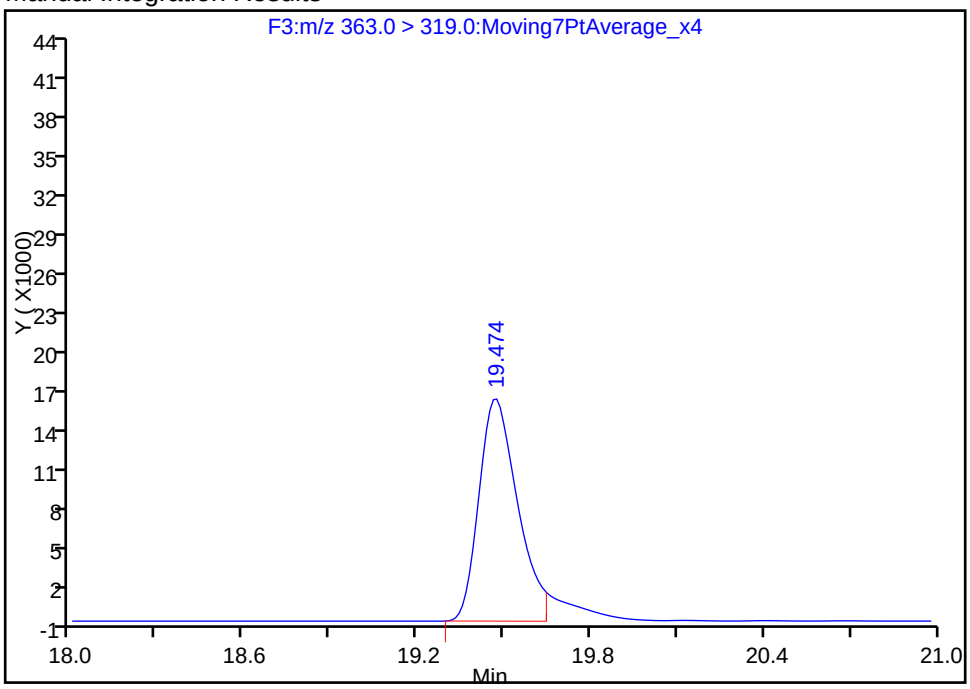
Processing Integration Results

RT: 19.47
Area: 172011
Amount: 2.846205
Amount Units: ng/ml



Manual Integration Results

RT: 19.47
Area: 155662
Amount: 2.575684
Amount Units: ng/ml



Reviewer: phomsophat, 21-Jan-2017 15:21:46
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

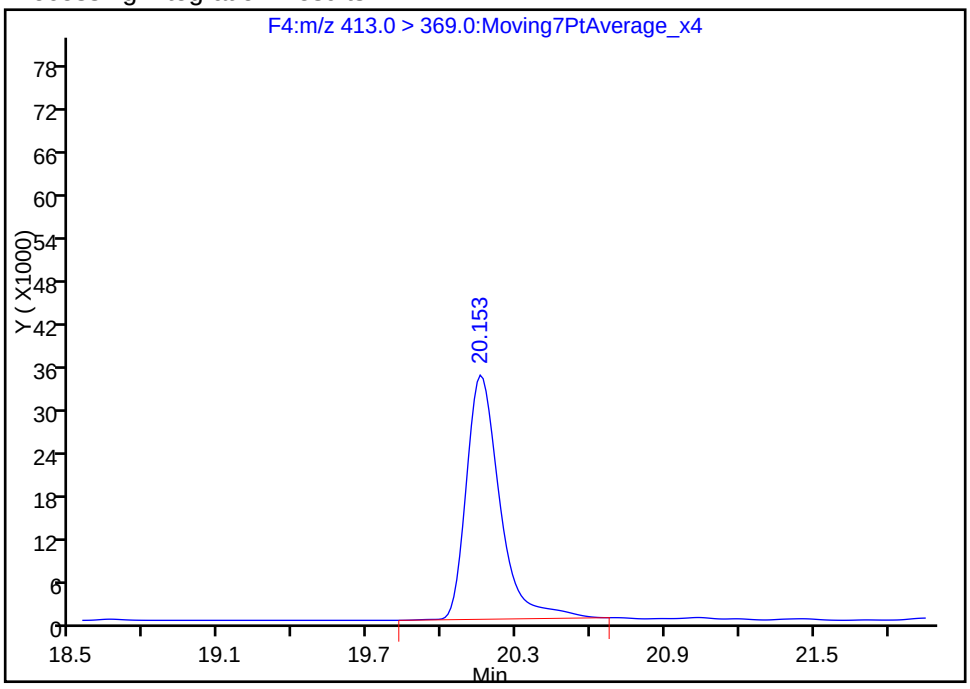
Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_012.d
Injection Date: 20-Jan-2017 16:40:11 Instrument ID: A6
Lims ID: CCV L2
Client ID:
Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 10
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

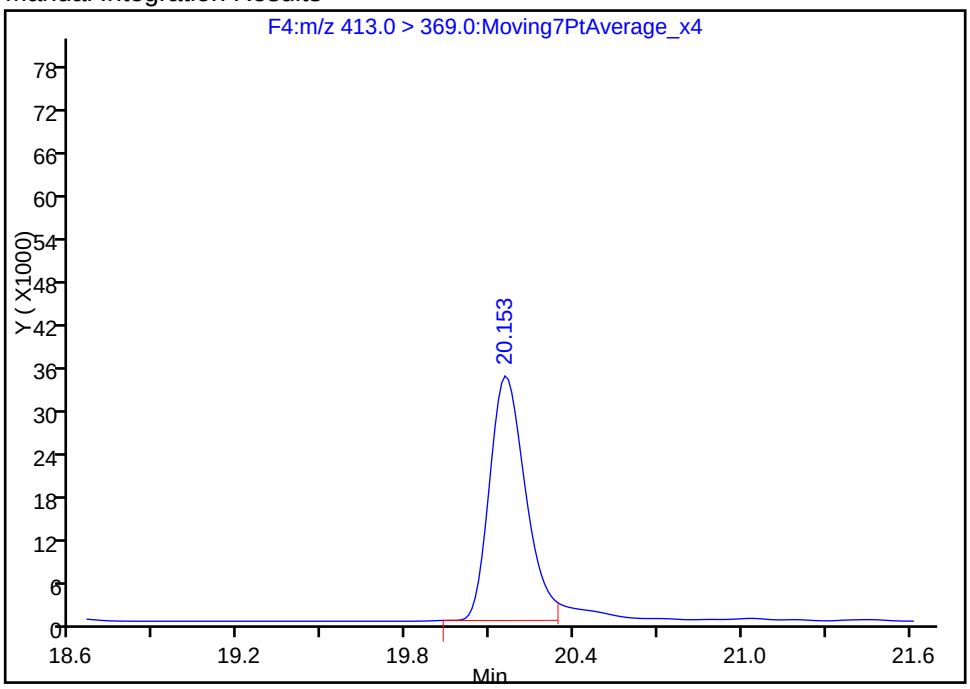
Processing Integration Results

RT: 20.15
Area: 321626
Amount: 5.210685
Amount Units: ng/ml



Manual Integration Results

RT: 20.15
Area: 305373
Amount: 4.947369
Amount Units: ng/ml



Reviewer: phomsophat, 21-Jan-2017 15:21:46
Audit Action: Manually Integrated Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Lab Sample ID: ICV 320-147198/12 Calibration Date: 01/20/2017 17:39

Instrument ID: A6 Calib Start Date: 01/20/2017 13:11

GC Column: Acquity ID: 2.10(mm) Calib End Date: 01/20/2017 15:40

Lab File ID: 20JAN2016A6A_014.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8146	0.6337		89.3	115	-22.2	30.0
Perfluorohexanesulfonic acid	Ave	0.9801	0.7768		21.0	26.5	-20.8	30.0
Perfluoroheptanoic acid	Ave	1.068	0.9928		11.7	12.6	-7.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.091	0.8986		20.6	25.0	-17.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.134	0.8821		21.2	27.2	-22.2	30.0
Perfluorononanoic acid	Ave	1.162	0.9346		20.1	25.0	-19.5	30.0
13C2 PFHxA	Ave	1.097	1.200		10.9	10.0	9.4	30.0
13C2 PFDA	Ave	0.9632	0.9438		9.80	10.0	-2.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_014.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 20-Jan-2017 17:39:23 ALS Bottle#: 7 Worklist Smp#: 12
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: ICV ICV
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6
Sublist:

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 09:55:23 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: phomsophat Date: 21-Jan-2017 15:29:14

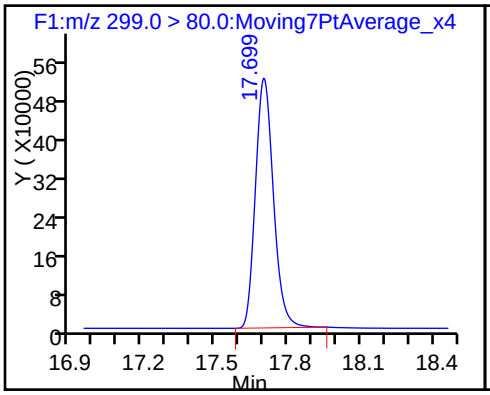
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.699	17.708	-0.009	1.000	2711247	89.3	1536	
$ 2 13C2 PFHxA								
315.0 > 270.0	18.667	18.677	-0.010	1.000	653894	10.9	21816	
3 Perfluorohexanesulfonic acid								
399.0 > 80.0	19.439	19.445	-0.006	1.000	766858	21.0	18047	
4 Perfluoroheptanoic acid								
363.0 > 319.0	19.463	19.476	-0.013	1.000	681805	11.7	8869	
* 5 13C2-PFOA								
415.0 > 370.0	20.153	20.161	-0.008		545066	10.0	15057	
6 Perfluorooctanoic acid								
413.0 > 369.0	20.153	20.161	-0.008	1.000	1225640	20.6	2015	
7 Perfluorooctane sulfonic acid								
499.0 > 80.0	20.762	20.766	-0.004	1.000	895701	21.2	6360	
* 8 13C4 PFOS								
503.0 > 80.0	20.786	20.793	-0.007		1069204	28.7	23211	
9 Perfluorononanoic acid								
463.0 > 419.0	20.868	20.866	0.002	1.000	1274022	20.1	1342	
$ 10 13C2 PFDA								
515.0 > 470.0	21.604	21.597	0.007	1.000	514432	9.80	17486	

Reagents:

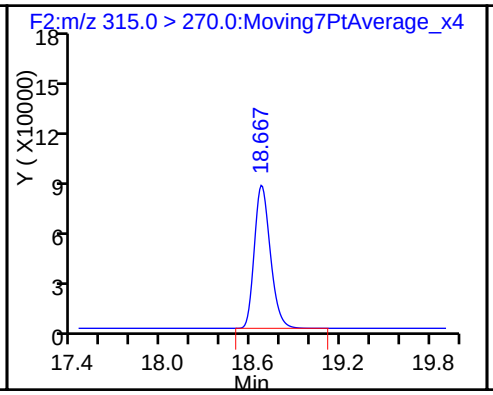
LC537-ICV_00019 Amount Added: 1.00 Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_014.d
Injection Date: 20-Jan-2017 17:39:23 Instrument ID: A6
Lims ID: ICV
Client ID:
Operator ID: CBW ALS Bottle#: 7 Worklist Smp#: 12
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

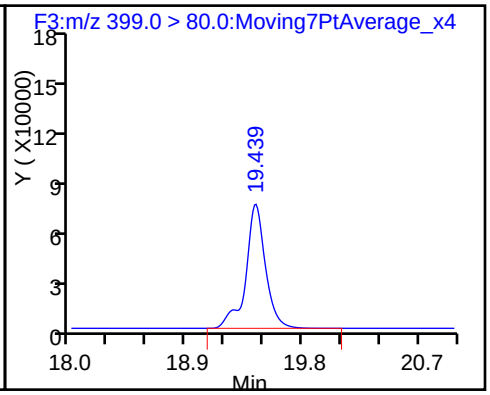
1 Perfluorobutanesulfonic acid



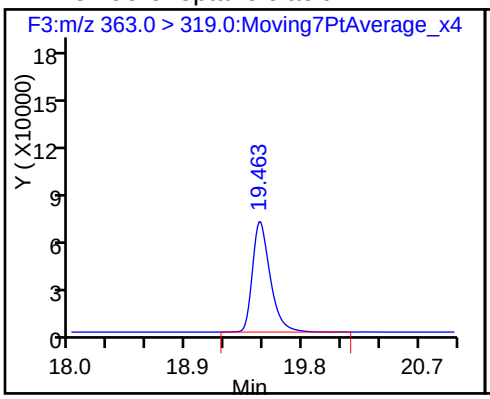
$ 2 13C2 PFHxA



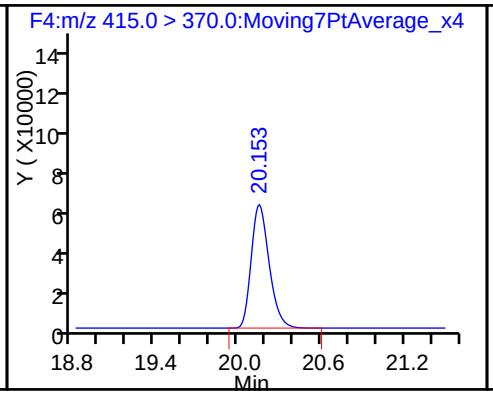
3 Perfluorohexanesulfonic acid



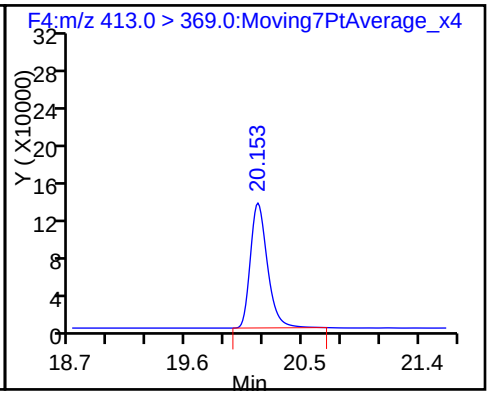
4 Perfluoroheptanoic acid



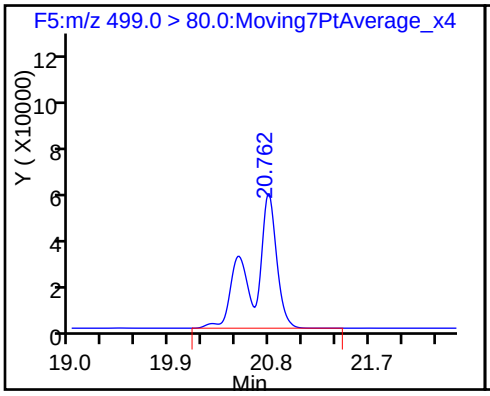
* 5 13C2-PFOA



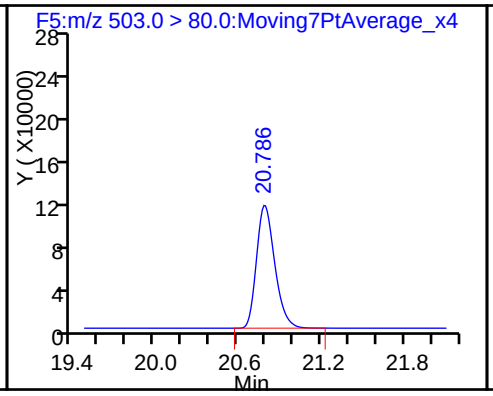
6 Perfluorooctanoic acid



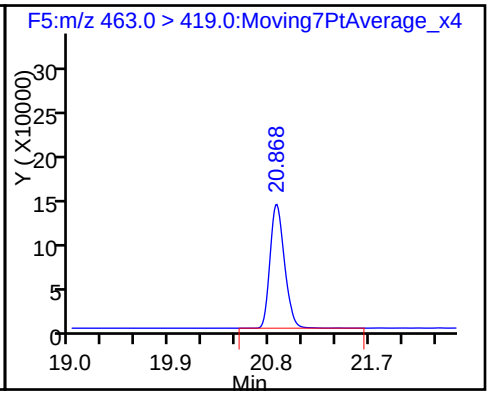
7 Perfluorooctane sulfonic acid



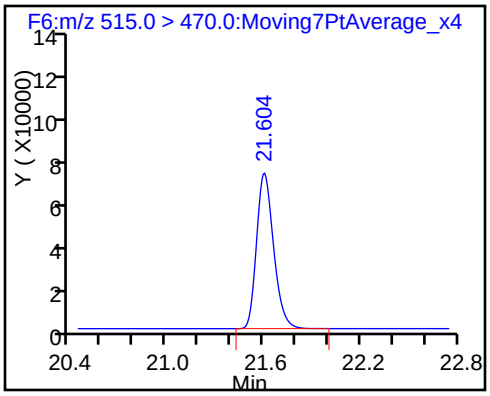
* 8 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Lab Sample ID: CCV 320-147271/60 Calibration Date: 01/21/2017 17:21

Instrument ID: A6 Calib Start Date: 01/20/2017 13:11

GC Column: Acquity ID: 2.10(mm) Calib End Date: 01/20/2017 15:40

Lab File ID: 20JAN2016A6A_062.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8146	0.7714		42.7	45.1	-5.3	30.0
Perfluorohexanesulfonic acid	Ave	0.9801	0.9123		14.2	15.2	-6.9	30.0
Perfluoroheptanoic acid	Ave	1.068	1.295		6.03	4.97	21.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.091	1.191		10.7	9.81	9.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.134	1.115		19.8	20.1	-1.7	30.0
Perfluorononanoic acid	Ave	1.162	1.295		11.6	10.4	11.5	30.0
13C2 PFHxA	Ave	1.097	1.281		11.7	10.0	16.8	30.0
13C2 PFDA	Ave	0.9632	1.077		11.2	10.0	11.9	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_062.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 21-Jan-2017 17:21:29 ALS Bottle#: 3 Worklist Smp#: 60
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: CCV L3
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6
Sublist: chrom-537__A6*sub3

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 11:05:02 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.689	17.708	-0.019	1.000	1755086	42.7	66508	
$ 2 13C2 PFHxA								
315.0 > 270.0	18.667	18.677	-0.010	1.000	933620	11.7	30953	
3 Perfluorohexanesulfonic acid								
399.0 > 80.0	19.427	19.445	-0.018	1.000	699733	14.2	16228	
4 Perfluoroheptanoic acid								
363.0 > 319.0	19.463	19.476	-0.013	1.000	469579	6.03	6902	
* 5 13C2-PFOA								
415.0 > 370.0	20.153	20.161	-0.008		728835	10.0	20080	
6 Perfluorooctanoic acid								
413.0 > 369.0	20.153	20.161	-0.008	1.000	851556	10.7	816	
7 Perfluorooctane sulfonic acid								
499.0 > 80.0	20.785	20.766	0.019	1.000	1132375	19.8	19643	
* 8 13C4 PFOS								
503.0 > 80.0	20.785	20.793	-0.008		1446705	28.7	22435	
9 Perfluorononanoic acid								
463.0 > 419.0	20.856	20.866	-0.010	1.000	983962	11.6	4491	
$ 10 13C2 PFDA								
515.0 > 470.0	21.587	21.597	-0.010	1.000	785296	11.2	15206	

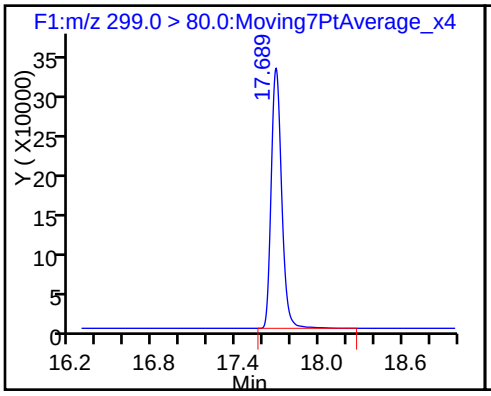
Reagents:

LC537-L3_00018 Amount Added: 1.00 Units: mL

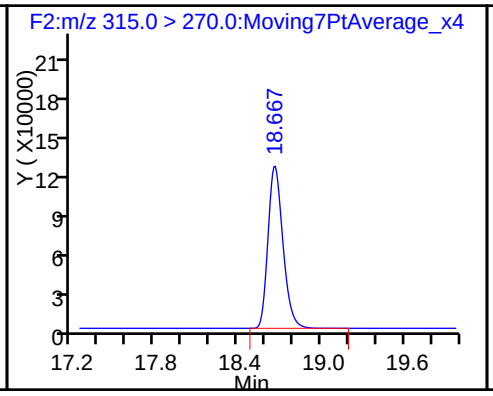
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_062.d
Injection Date: 21-Jan-2017 17:21:29 Instrument ID: A6
Lims ID: CCV L3
Client ID:
Operator ID: CBW ALS Bottle#: 3 Worklist Smp#: 60
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

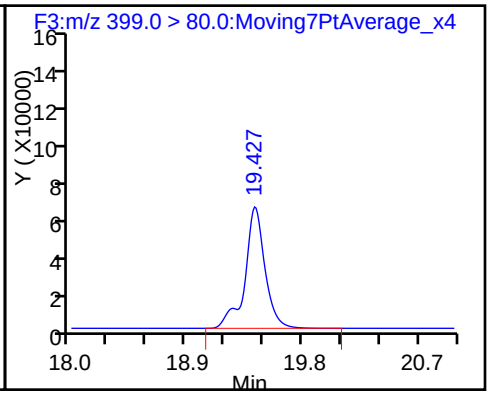
1 Perfluorobutanesulfonic acid



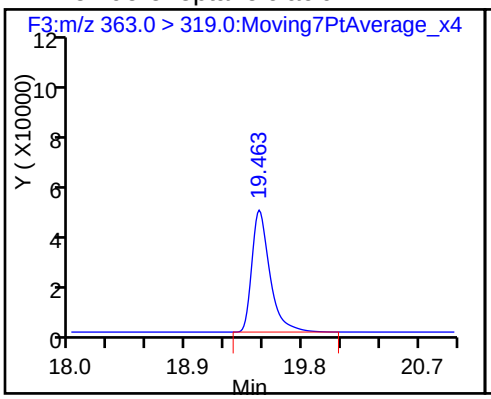
$ 2 13C2 PFHxA



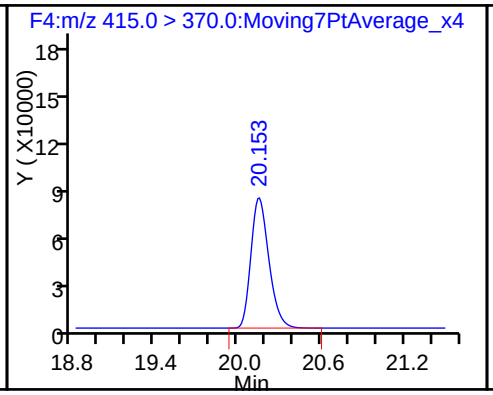
3 Perfluorohexanesulfonic acid



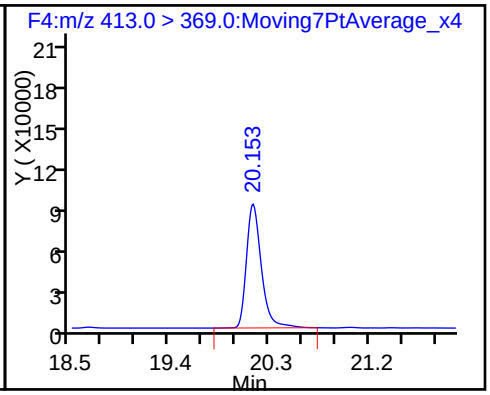
4 Perfluoroheptanoic acid



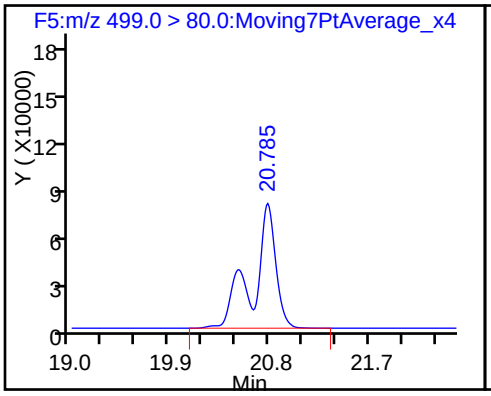
* 5 13C2-PFOA



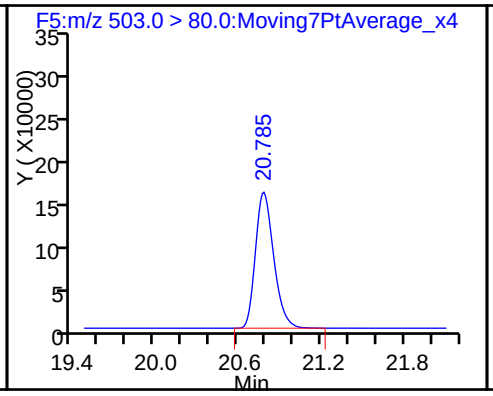
6 Perfluorooctanoic acid



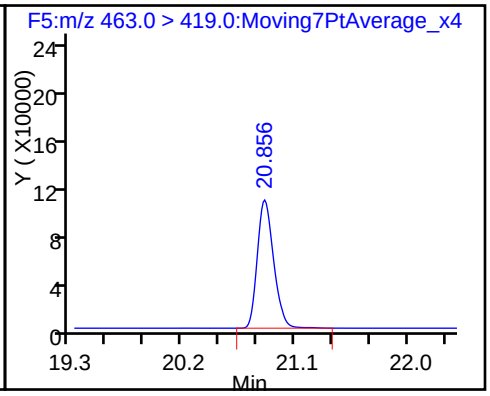
7 Perfluorooctane sulfonic acid



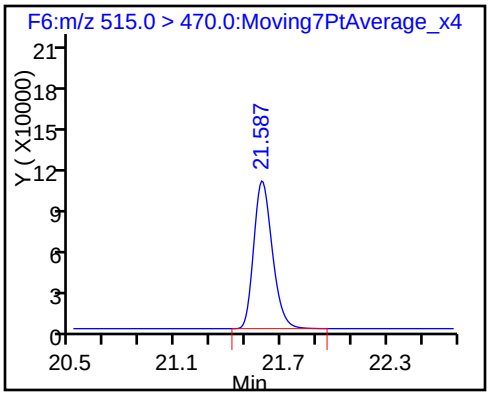
* 8 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Lab Sample ID: CCV 320-147271/116 Calibration Date: 01/21/2017 23:16

Instrument ID: A6 Calib Start Date: 01/20/2017 13:11

GC Column: Acquity ID: 2.10(mm) Calib End Date: 01/20/2017 15:40

Lab File ID: 20JAN2016A6A_074.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8146	0.7219		119	135	-11.4	30.0
Perfluorohexanesulfonic acid	Ave	0.9801	1.002		46.4	45.4	2.2	30.0
Perfluoroheptanoic acid	Ave	1.068	1.158		16.1	14.9	8.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.091	1.124		30.2	29.3	3.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.134	1.187		62.9	60.1	4.6	30.0
Perfluorononanoic acid	Ave	1.162	1.199		32.1	31.1	3.2	30.0
13C2 PFHxA	Ave	1.097	1.293		11.8	10.0	17.9	30.0
13C2 PFDA	Ave	0.9632	1.088		11.3	10.0	12.9	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Lab Sample ID: CCV 320-147339/116 Calibration Date: 01/21/2017 23:16

Instrument ID: A6 Calib Start Date: 01/20/2017 13:11

GC Column: Acquity ID: 2.10(mm) Calib End Date: 01/20/2017 15:40

Lab File ID: 20JAN2016A6A_074.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8146	0.7219		119	135	-11.4	30.0
Perfluorohexanesulfonic acid	Ave	0.9801	1.002		46.4	45.4	2.2	30.0
Perfluoroheptanoic acid	Ave	1.068	1.158		16.1	14.9	8.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.091	1.124		30.2	29.3	3.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.134	1.187		62.9	60.1	4.6	30.0
Perfluorononanoic acid	Ave	1.162	1.199		32.1	31.1	3.2	30.0
13C2 PFHxA	Ave	1.097	1.293		11.8	10.0	17.9	30.0
13C2 PFDA	Ave	0.9632	1.088		11.3	10.0	12.9	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_074.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 21-Jan-2017 23:16:46 ALS Bottle#: 5 Worklist Smp#: 116
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6
Sublist: chrom-537__A6*sub3

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:21:47 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.673	17.708	-0.035	1.000	4569448	119.3	38841	
$ 2 13C2 PFHxA								
315.0 > 270.0	18.649	18.677	-0.028	1.000	1035241	11.8	27576	
3 Perfluorohexanesulfonic acid								
399.0 > 80.0	19.415	19.445	-0.030	1.000	2138214	46.4	49821	
4 Perfluoroheptanoic acid								
363.0 > 319.0	19.451	19.476	-0.025	1.000	1376883	16.1	36047	
* 5 13C2-PFOA								
415.0 > 370.0	20.130	20.161	-0.031		800746	10.0	22001	
6 Perfluorooctanoic acid								
413.0 > 369.0	20.130	20.161	-0.031	1.000	2634077	30.2	2152	
7 Perfluorooctane sulfonic acid								
499.0 > 80.0	20.773	20.766	0.007	1.000	3353628	62.9	35404	
* 8 13C4 PFOS								
503.0 > 80.0	20.773	20.793	-0.020		1348380	28.7	29132	
9 Perfluorononanoic acid								
463.0 > 419.0	20.856	20.866	-0.010	1.000	2986101	32.1	6123	
$ 10 13C2 PFDA								
515.0 > 470.0	21.604	21.597	0.007	1.000	871066	11.3	29402	

Reagents:

LC537-L5_00019 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_074.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 21-Jan-2017 23:16:46 ALS Bottle#: 5 Worklist Smp#: 116
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6
Sublist: chrom-537__A6*sub3

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 14:05:16 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: barnettj Date: 23-Jan-2017 14:05:16

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.673	17.708	-0.035	1.000	4569448	119.3	38841	
$ 2 13C2 PFHxA								
315.0 > 270.0	18.649	18.677	-0.028	1.000	1035241	11.8	27576	
3 Perfluorohexanesulfonic acid								
399.0 > 80.0	19.415	19.445	-0.030	1.000	2138214	46.4	49821	
4 Perfluoroheptanoic acid								
363.0 > 319.0	19.451	19.476	-0.025	1.000	1376883	16.1	36047	
* 5 13C2-PFOA								
415.0 > 370.0	20.130	20.161	-0.031		800746	10.0	22001	
6 Perfluorooctanoic acid								
413.0 > 369.0	20.130	20.161	-0.031	1.000	2634077	30.2	2152	
7 Perfluorooctane sulfonic acid								
499.0 > 80.0	20.773	20.766	0.007	1.000	3353628	62.9	35404	
* 8 13C4 PFOS								
503.0 > 80.0	20.773	20.793	-0.020		1348380	28.7	29132	
9 Perfluorononanoic acid								
463.0 > 419.0	20.856	20.866	-0.010	1.000	2986101	32.1	6123	
$ 10 13C2 PFDA								
515.0 > 470.0	21.604	21.597	0.007	1.000	871066	11.3	29402	

Reagents:

LC537-L5_00019 Amount Added: 1.00 Units: mL

Report Date: 23-Jan-2017 14:05:17 Chrom Revision: 2.2 10-Jan-2017 11:26:10

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_074.d

Injection Date: 21-Jan-2017 23:16:46 Instrument ID: A6

Lims ID: CCV L5

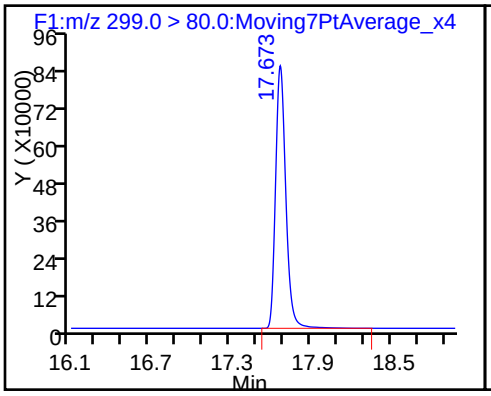
Client ID:

Operator ID: CBW ALS Bottle#: 5 Worklist Smp#: 116

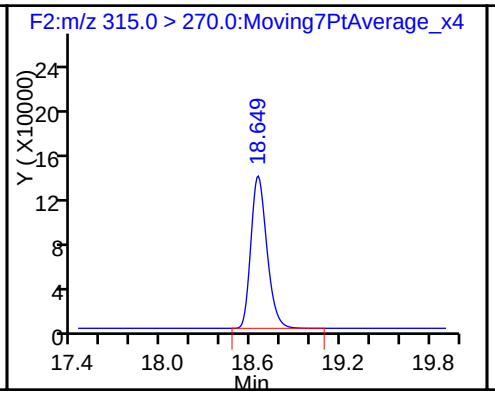
Injection Vol: 10.0 ul Dil. Factor: 1.0000

Method: 537__A6 Limit Group: LC 537 ICAL

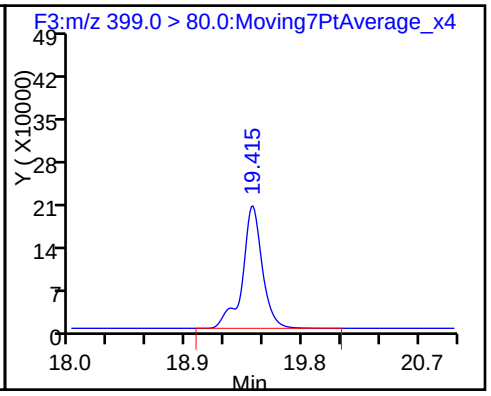
1 Perfluorobutanesulfonic acid



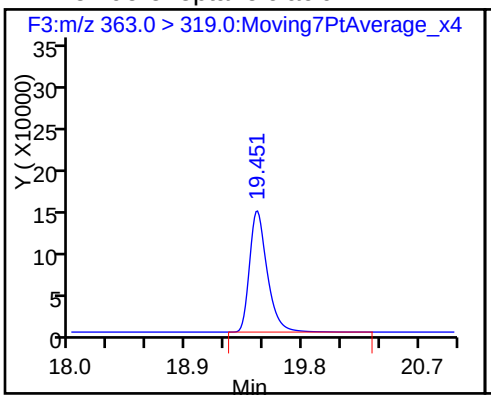
$ 2 13C2 PFHxA



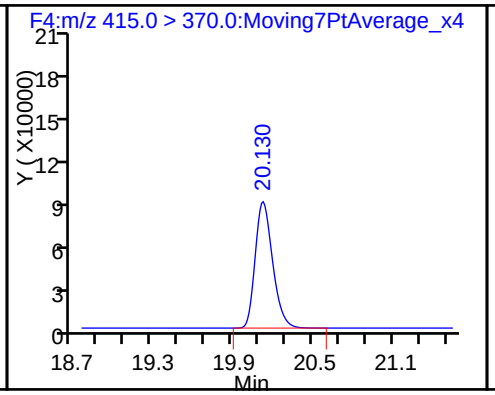
3 Perfluorohexanesulfonic acid



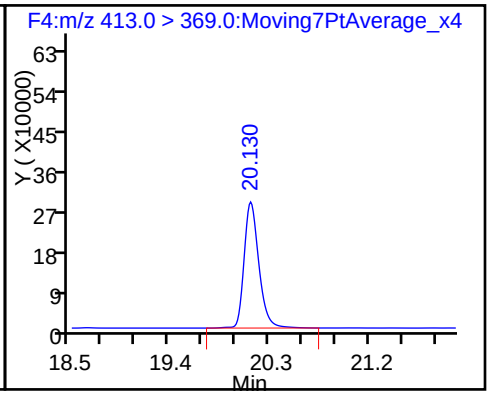
4 Perfluoroheptanoic acid



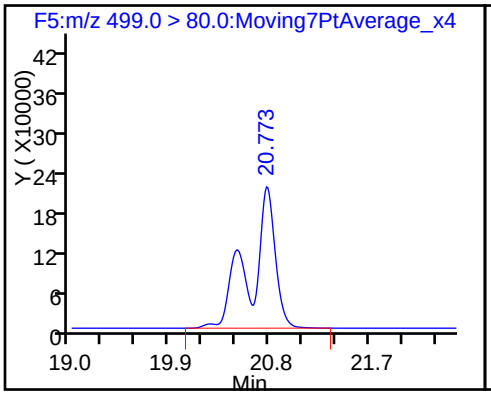
* 5 13C2-PFOA



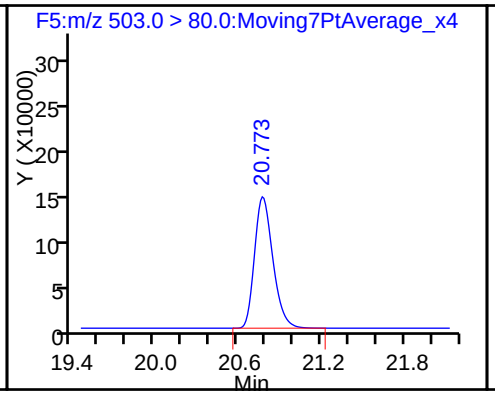
6 Perfluorooctanoic acid



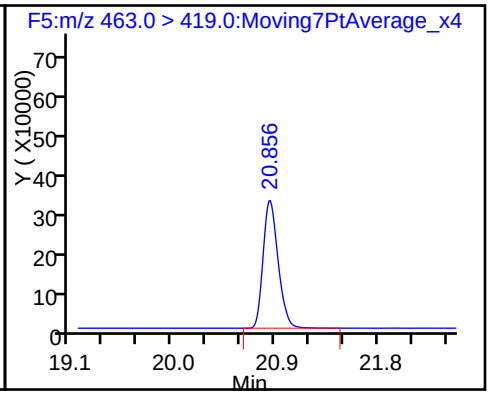
7 Perfluorooctane sulfonic acid



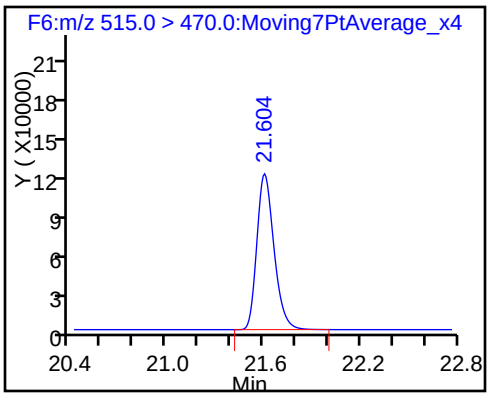
* 8 13C4 PFOS



9 Perfluorononanoic acid

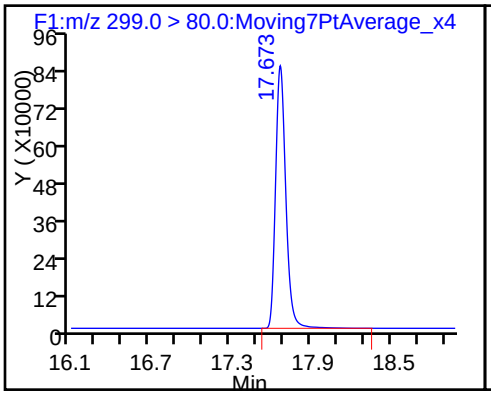


$ 10 13C2 PFDA

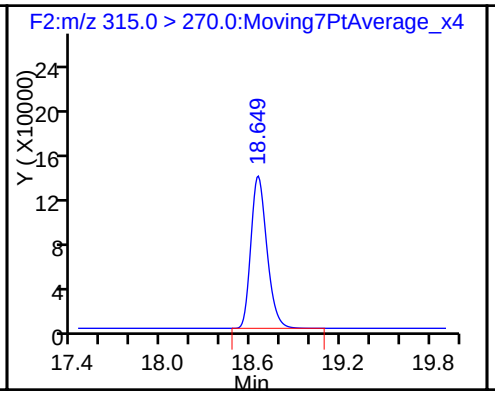


Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_074.d
Injection Date: 21-Jan-2017 23:16:46 Instrument ID: A6
Lims ID: CCV L5
Client ID:
Operator ID: CBW ALS Bottle#: 5 Worklist Smp#: 116
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

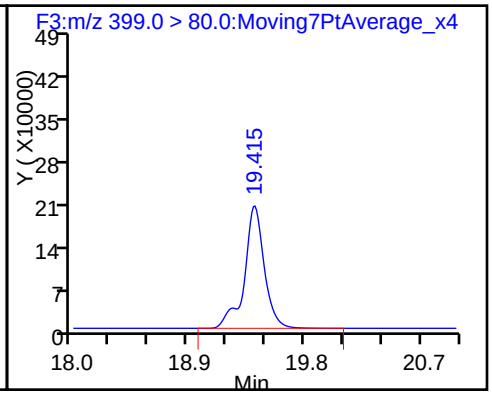
1 Perfluorobutanesulfonic acid



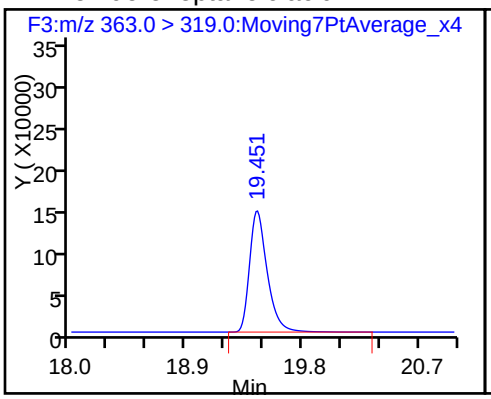
$ 2 13C2 PFHxA



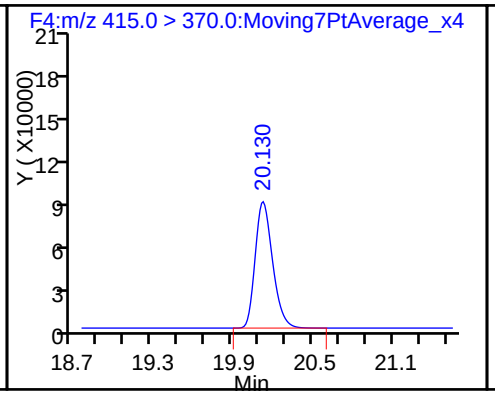
3 Perfluorohexanesulfonic acid



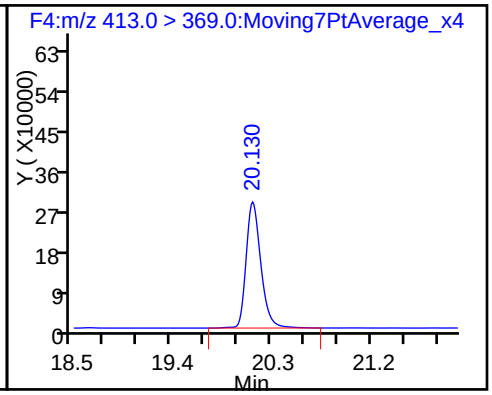
4 Perfluoroheptanoic acid



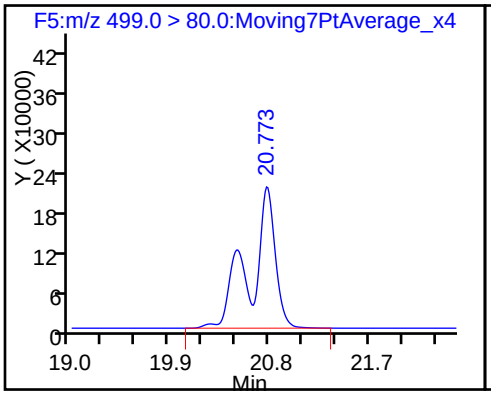
* 5 13C2-PFOA



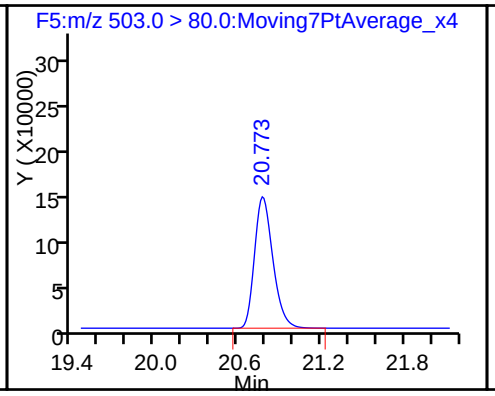
6 Perfluorooctanoic acid



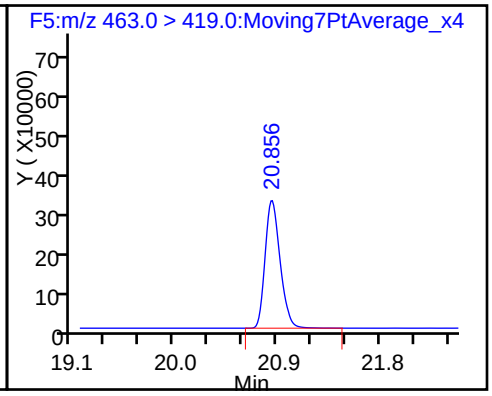
7 Perfluorooctane sulfonic acid



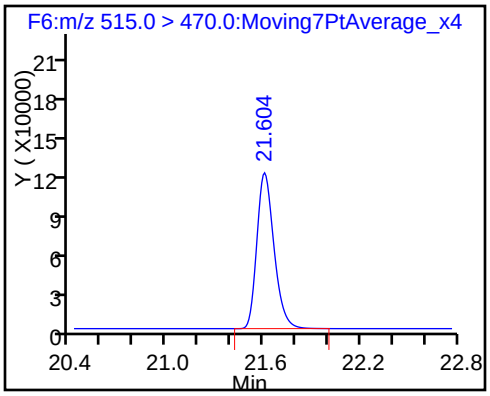
* 8 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Lab Sample ID: CCV 320-147339/129 Calibration Date: 01/22/2017 05:12

Instrument ID: A6 Calib Start Date: 01/20/2017 13:11

GC Column: Acquity ID: 2.10(mm) Calib End Date: 01/20/2017 15:40

Lab File ID: 20JAN2016A6A_086.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8146	0.7361		40.8	45.1	-9.6	30.0
Perfluorohexanesulfonic acid	Ave	0.9801	0.9754		15.1	15.2	-0.5	30.0
Perfluoroheptanoic acid	Ave	1.068	1.286		5.99	4.97	20.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.091	1.180		10.6	9.81	8.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.134	1.103		19.6	20.1	-2.7	30.0
Perfluorononanoic acid	Ave	1.162	1.283		11.5	10.4	10.4	30.0
13C2 PFHxA	Ave	1.097	1.211		11.0	10.0	10.4	30.0
13C2 PFDA	Ave	0.9632	1.043		10.8	10.0	8.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_086.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 22-Jan-2017 05:12:05 ALS Bottle#: 3 Worklist Smp#: 129
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: CCV L3
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6
Sublist: chrom-537__A6*sub3

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:32:10 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

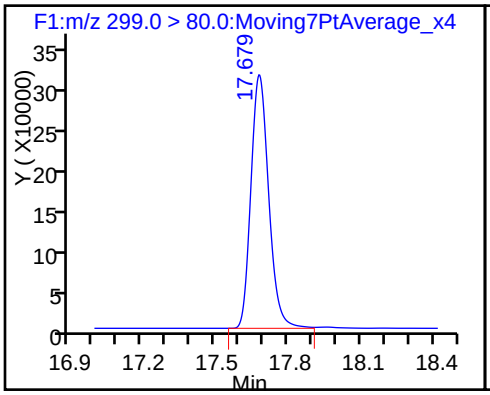
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.679	17.708	-0.029	1.000	1618814	40.8	1053	
$ 2 13C2 PFHxA								
315.0 > 270.0	18.658	18.677	-0.019	1.000	923354	11.0	30916	
3 Perfluorohexanesulfonic acid								
399.0 > 80.0	19.415	19.445	-0.030	1.000	723111	15.1	17148	
4 Perfluoroheptanoic acid								
363.0 > 319.0	19.451	19.476	-0.025	1.000	487754	5.99	12591	
* 5 13C2-PFOA								
415.0 > 370.0	20.130	20.161	-0.031		762579	10.0	21044	
6 Perfluorooctanoic acid								
413.0 > 369.0	20.141	20.161	-0.020	1.000	882762	10.6	770	
7 Perfluorooctane sulfonic acid								
499.0 > 80.0	20.774	20.766	0.008	1.000	1083044	19.6	18722	
* 8 13C4 PFOS								
503.0 > 80.0	20.774	20.793	-0.019		1398329	28.7	38010	
9 Perfluorononanoic acid								
463.0 > 419.0	20.845	20.866	-0.021	1.000	1019441	11.5	12451	
$ 10 13C2 PFDA								
515.0 > 470.0	21.578	21.597	-0.019	1.000	795433	10.8	26978	

Reagents:

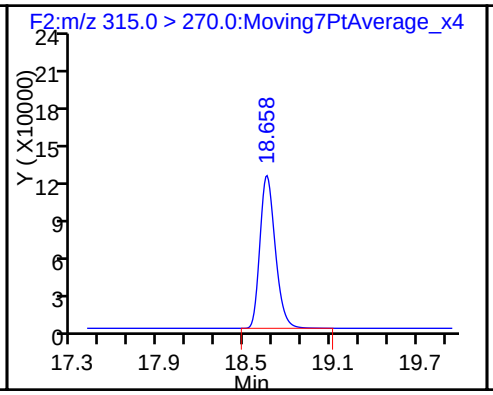
LC537-L3_00018 Amount Added: 1.00 Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_086.d
Injection Date: 22-Jan-2017 05:12:05 Instrument ID: A6
Lims ID: CCV L3
Client ID:
Operator ID: CBW ALS Bottle#: 3 Worklist Smp#: 129
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

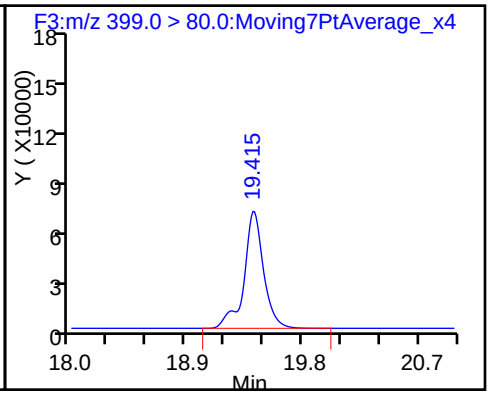
1 Perfluorobutanesulfonic acid



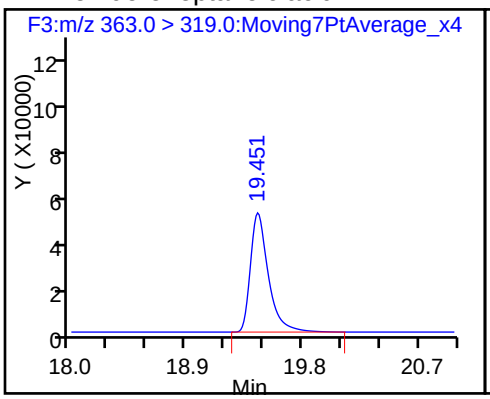
$ 2 13C2 PFHxA



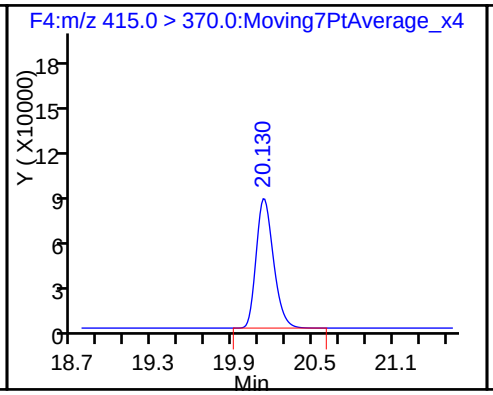
3 Perfluorohexanesulfonic acid



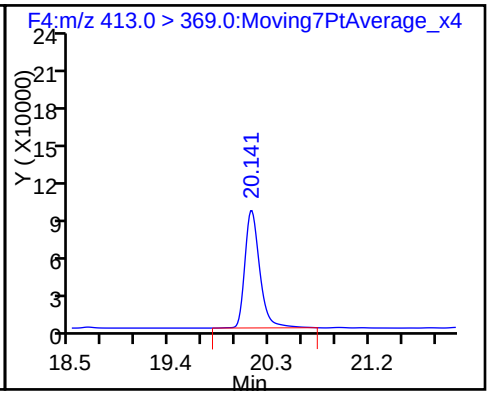
4 Perfluoroheptanoic acid



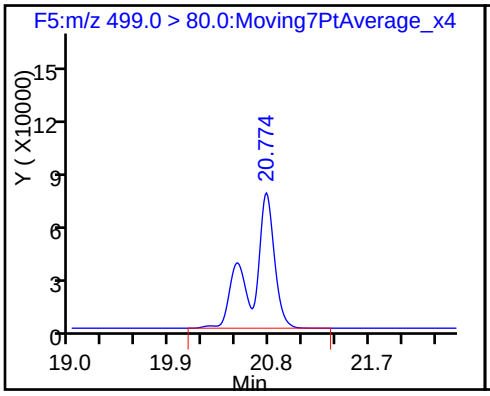
* 5 13C2-PFOA



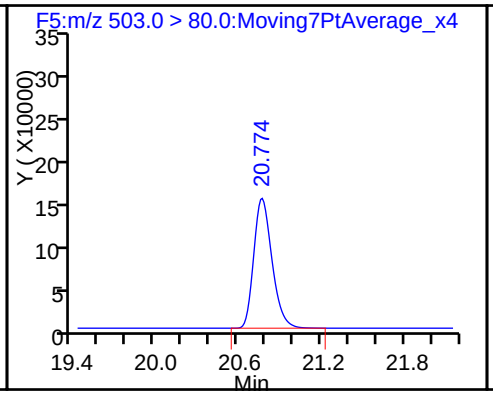
6 Perfluorooctanoic acid



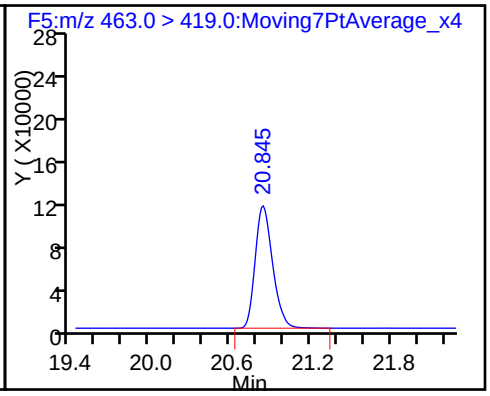
7 Perfluorooctane sulfonic acid



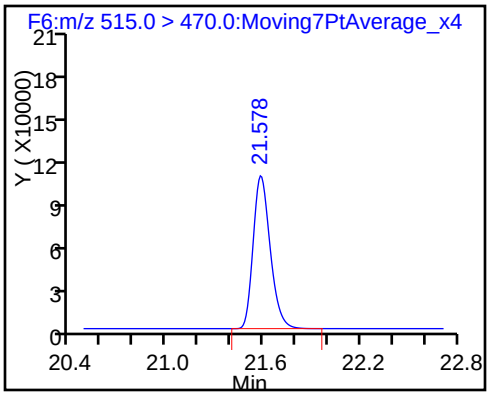
* 8 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-147025/1-A

Matrix: Water Lab File ID: 20JAN2016A6A_064.d

Analysis Method: 537 Date Collected:

Extraction Method: 537 Date Extracted: 01/19/2017 14:14

Sample wt/vol: 250(mL) Date Analyzed: 01/21/2017 18:20

Con. Extract Vol.: 1.0(mL) Dilution Factor: 1

Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147271 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	111		70-130
STL00996	13C2 PFDA	110		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_064.d
Lims ID: MB 320-147025/1-A
Client ID:
Sample Type: MB
Inject. Date: 21-Jan-2017 18:20:41 ALS Bottle#: 3 Worklist Smp#: 106
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-147025/1-a
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:21:33 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

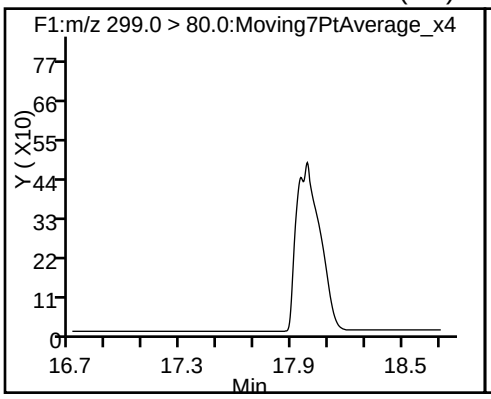
Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: barnettj Date: 23-Jan-2017 11:22:38

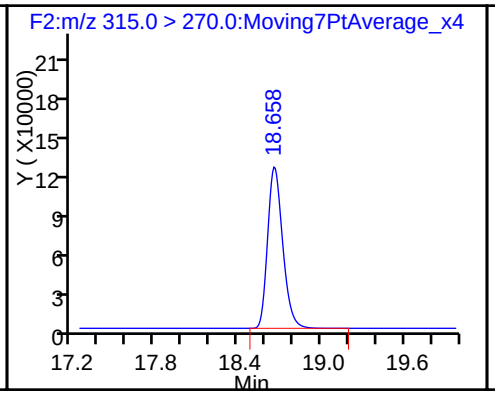
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
$ 2 13C2 PFHxA								
315.0 > 270.0	18.658	18.677	-0.019	1.000	923825	11.1	30386	
* 5 13C2-PFOA								
415.0 > 370.0	20.141	20.161	-0.020		758107	10.0	20895	
* 8 13C4 PFOS								
503.0 > 80.0	20.785	20.793	-0.008		1450316	28.7	22536	
$ 10 13C2 PFDA								
515.0 > 470.0	21.587	21.597	-0.010	1.000	802823	11.0	27082	

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_064.d
Injection Date: 21-Jan-2017 18:20:41 Instrument ID: A6
Lims ID: MB 320-147025/1-A
Client ID:
Operator ID: CBW ALS Bottle#: 3 Worklist Smp#: 106
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

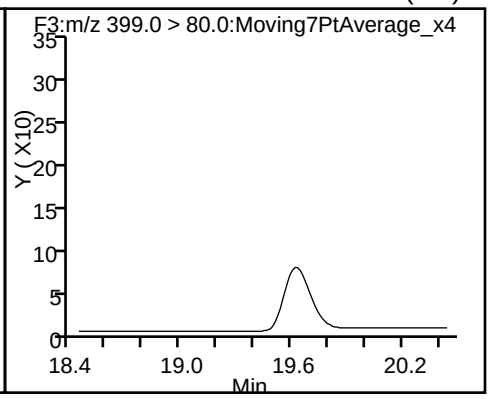
1 Perfluorobutanesulfonic acid (ND)



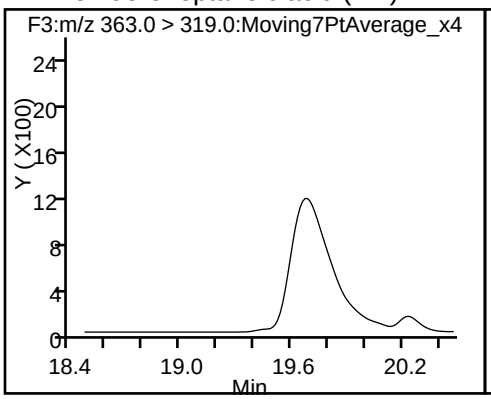
$ 2 13C2 PFHxA



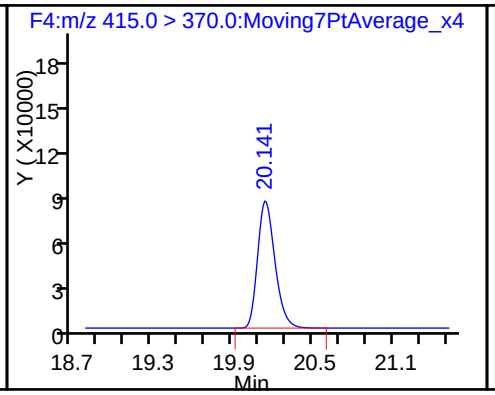
3 Perfluorohexanesulfonic acid (ND)



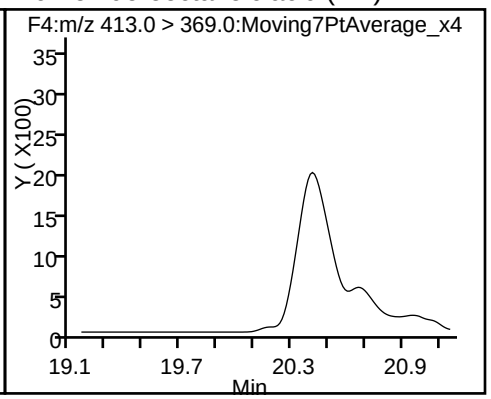
4 Perfluoroheptanoic acid (ND)



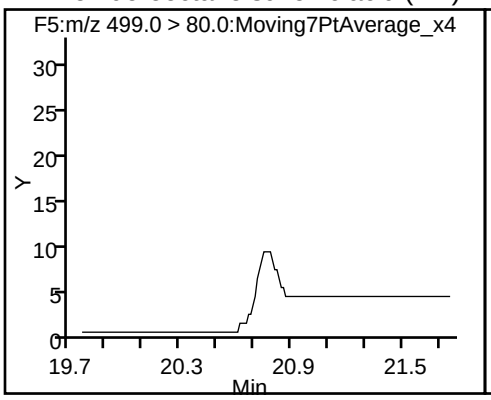
* 5 13C2-PFOA



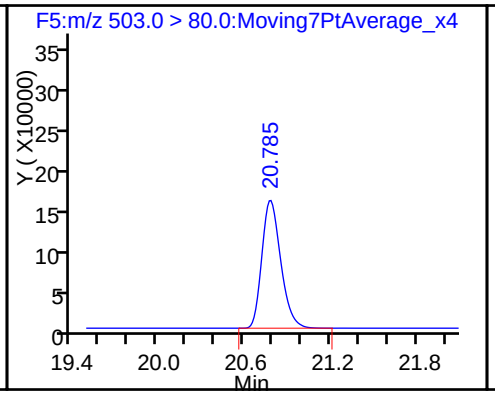
6 Perfluorooctanoic acid (ND)



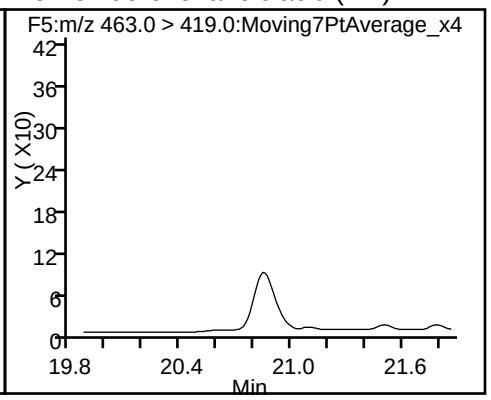
7 Perfluorooctane sulfonic acid (ND)



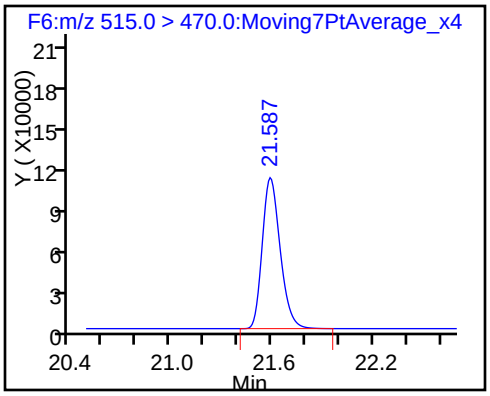
* 8 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_064.d
Lims ID: MB 320-147025/1-A
Client ID:
Sample Type: MB
Inject. Date: 21-Jan-2017 18:20:41 ALS Bottle#: 3 Worklist Smp#: 106
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-147025/1-a
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:21:33 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: barnettj Date: 23-Jan-2017 11:22:38

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	11.1	111.08
$ 10 13C2 PFDA	10.0	11.0	109.95

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 320-147025/2-A

Matrix: Water Lab File ID: 20JAN2016A6A_065.d

Analysis Method: 537 Date Collected:

Extraction Method: 537 Date Extracted: 01/19/2017 14:14

Sample wt/vol: 250(mL) Date Analyzed: 01/21/2017 18:50

Con. Extract Vol.: 1.0(mL) Dilution Factor: 1

Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147271 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.158		0.060	0.048	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.0726		0.030	0.024	0.0094
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.304		0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	127		70-130
STL00996	13C2 PFDA	122		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_065.d
Lims ID: LCS 320-147025/2-A
Client ID:
Sample Type: LCS
Inject. Date: 21-Jan-2017 18:50:18 ALS Bottle#: 4 Worklist Smp#: 107
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-147025/2-a
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:21:33 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

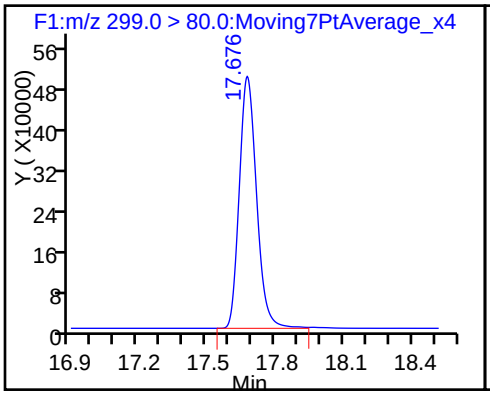
Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: barnettj Date: 23-Jan-2017 11:23:06

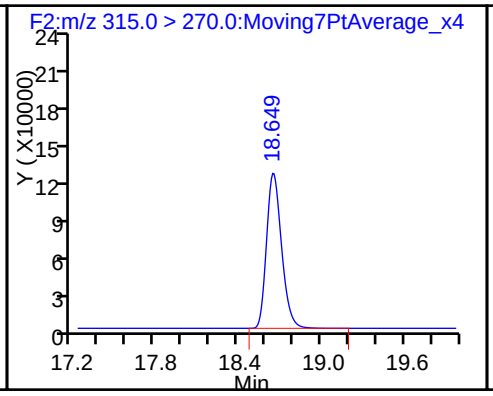
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.676	17.708	-0.032	1.000	2651210	76.1	1647	
$ 2 13C2 PFHxA								
315.0 > 270.0	18.649	18.677	-0.028	1.000	951901	12.7	31389	
3 Perfluorohexanesulfonic acid								
399.0 > 80.0	19.415	19.445	-0.030	1.000	1246710	29.7	29182	
4 Perfluoroheptanoic acid								
363.0 > 319.0	19.451	19.476	-0.025	1.000	814174	11.2	5012	
* 5 13C2-PFOA								
415.0 > 370.0	20.141	20.161	-0.020		682158	10.0	18674	
6 Perfluorooctanoic acid								
413.0 > 369.0	20.141	20.161	-0.020	1.000	1350911	18.2	1219	
7 Perfluorooctane sulfonic acid								
499.0 > 80.0	20.785	20.766	0.019	1.000	1919627	39.6	31296	
* 8 13C4 PFOS								
503.0 > 80.0	20.774	20.793	-0.019		1227030	28.7	26486	
9 Perfluorononanoic acid								
463.0 > 419.0	20.857	20.866	-0.009	1.000	1674186	21.1	20250	
$ 10 13C2 PFDA								
515.0 > 470.0	21.587	21.597	-0.010	1.000	798810	12.2	26970	

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_065.d
Injection Date: 21-Jan-2017 18:50:18 Instrument ID: A6
Lims ID: LCS 320-147025/2-A
Client ID:
Operator ID: CBW ALS Bottle#: 4 Worklist Smp#: 107
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

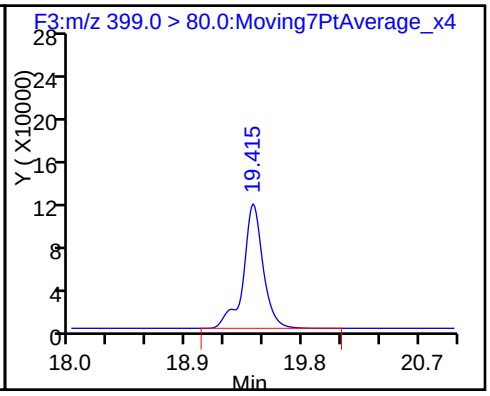
1 Perfluorobutanesulfonic acid



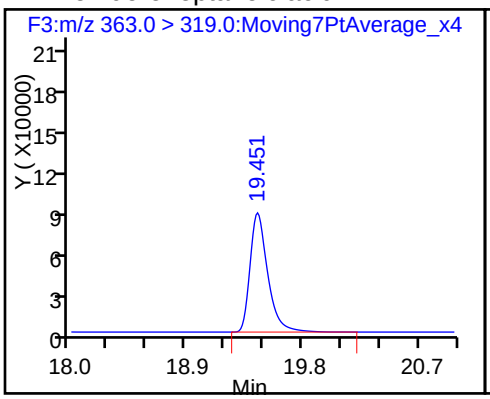
$ 2 13C2 PFHxA



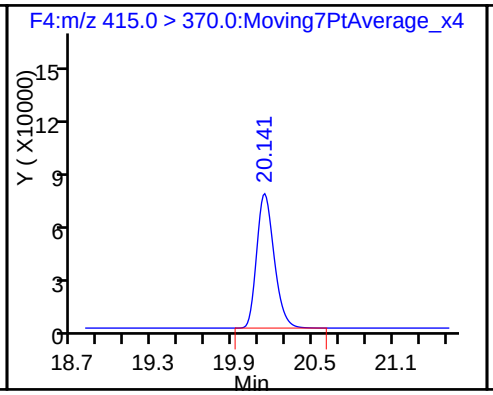
3 Perfluorohexanesulfonic acid



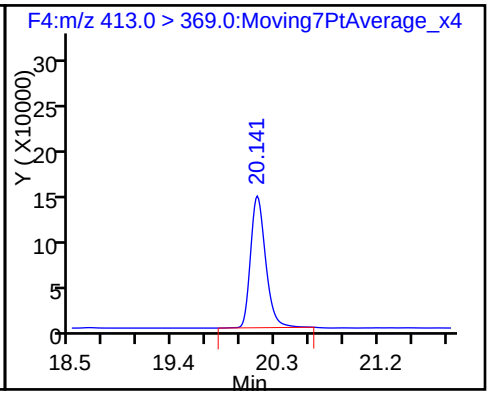
4 Perfluoroheptanoic acid



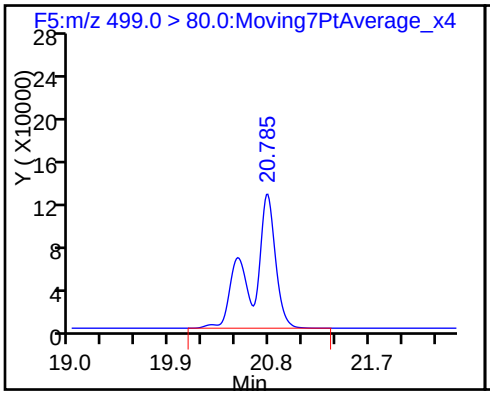
* 5 13C2-PFOA



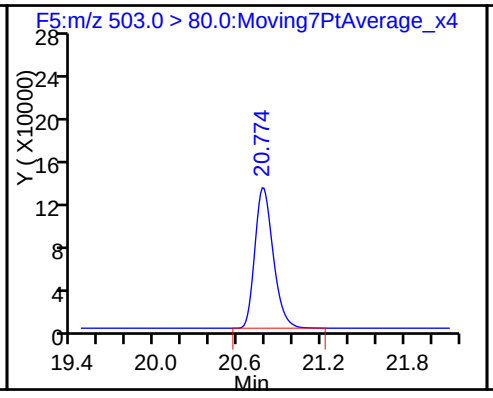
6 Perfluorooctanoic acid



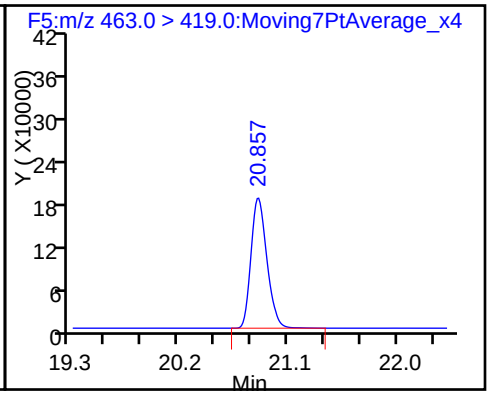
7 Perfluorooctane sulfonic acid



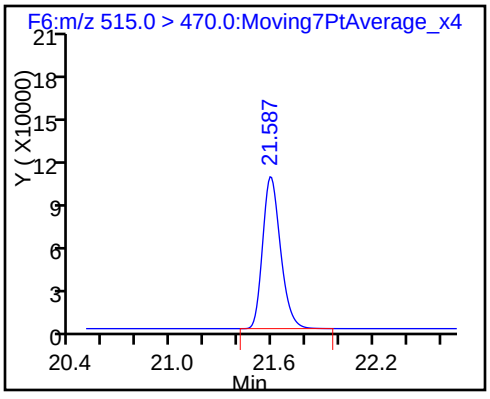
* 8 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_065.d
Lims ID: LCS 320-147025/2-A
Client ID:
Sample Type: LCS
Inject. Date: 21-Jan-2017 18:50:18 ALS Bottle#: 4 Worklist Smp#: 107
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-147025/2-a
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:21:33 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

First Level Reviewer: barnettj Date: 23-Jan-2017 11:23:06

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	12.7	127.20
$ 10 13C2 PFDA	10.0	12.2	121.58

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Client Sample ID: Lab Sample ID: LCSD 320-147025/3-A

Matrix: Water Lab File ID: 20JAN2016A6A_066.d

Analysis Method: 537 Date Collected:

Extraction Method: 537 Date Extracted: 01/19/2017 14:14

Sample wt/vol: 250(mL) Date Analyzed: 01/21/2017 19:19

Con. Extract Vol.: 1.0(mL) Dilution Factor: 1

Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147271 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.160		0.060	0.048	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.0782		0.030	0.024	0.0094
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.290		0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	124		70-130
STL00996	13C2 PFDA	125		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_066.d
Lims ID: LCSD 320-147025/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 21-Jan-2017 19:19:51 ALS Bottle#: 5 Worklist Smp#: 108
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-147025/3-a
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
Operator ID: CBW Instrument ID: A6

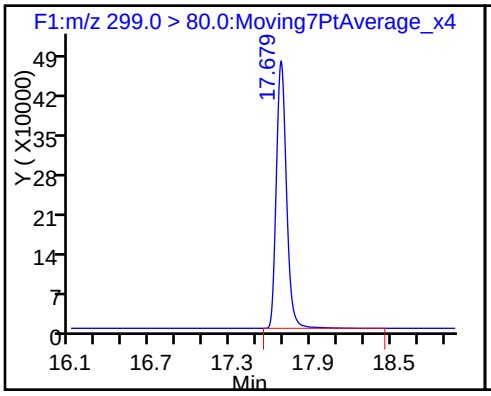
Method: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m
Limit Group: LC 537 ICAL
Last Update: 23-Jan-2017 13:21:33 Calib Date: 20-Jan-2017 15:40:56
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK013

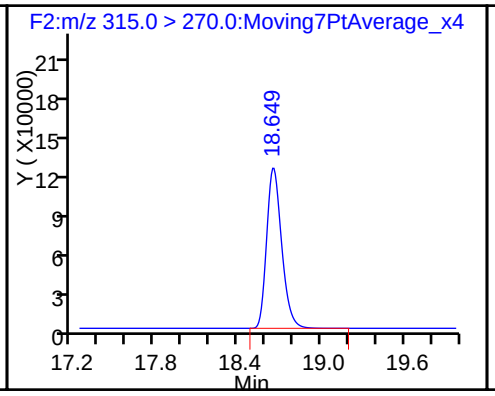
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.679	17.708	-0.029	1.000	2505772	72.5	118197	
$ 2 13C2 PFHxA								
315.0 > 270.0	18.649	18.677	-0.028	1.000	912843	12.4	30089	
3 Perfluorohexanesulfonic acid								
399.0 > 80.0	19.415	19.445	-0.030	1.000	1251852	30.1	29382	
4 Perfluoroheptanoic acid								
363.0 > 319.0	19.451	19.476	-0.025	1.000	798944	11.1	16781	
* 5 13C2-PFOA								
415.0 > 370.0	20.141	20.161	-0.020		671066	10.0	18444	
6 Perfluorooctanoic acid								
413.0 > 369.0	20.141	20.161	-0.020	1.000	1430773	19.5	1612	
7 Perfluorooctane sulfonic acid								
499.0 > 80.0	20.774	20.766	0.008	1.000	1923414	40.0	25876	
* 8 13C4 PFOS								
503.0 > 80.0	20.774	20.793	-0.019		1216067	28.7	21837	
9 Perfluorononanoic acid								
463.0 > 419.0	20.845	20.866	-0.021	1.000	1690944	21.7	26331	
$ 10 13C2 PFDA								
515.0 > 470.0	21.587	21.597	-0.010	1.000	808713	12.5	27319	

Data File: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_066.d
Injection Date: 21-Jan-2017 19:19:51 Instrument ID: A6
Lims ID: LCSD 320-147025/3-A
Client ID:
Operator ID: CBW ALS Bottle#: 5 Worklist Smp#: 108
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

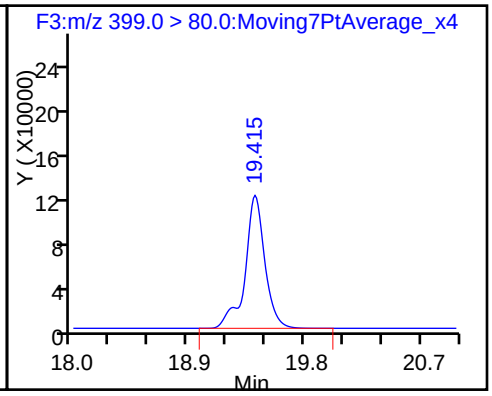
1 Perfluorobutanesulfonic acid



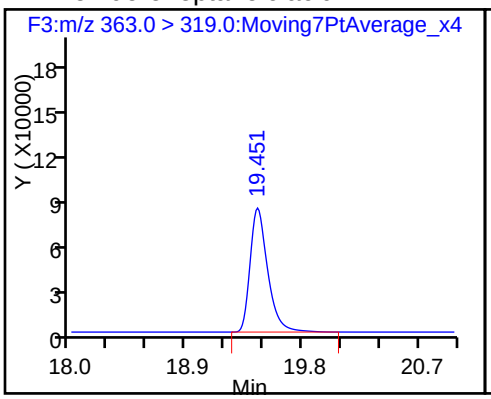
$ 2 13C2 PFHxA



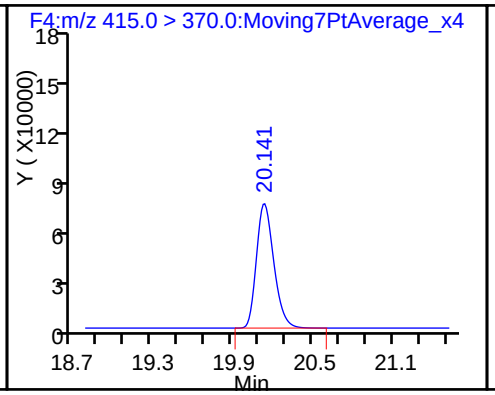
3 Perfluorohexanesulfonic acid



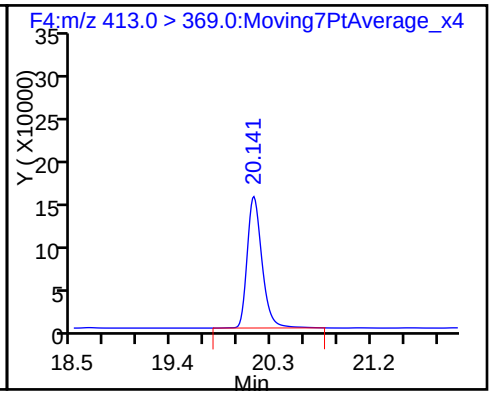
4 Perfluoroheptanoic acid



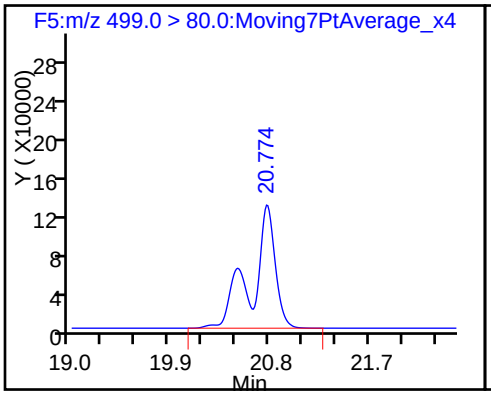
* 5 13C2-PFOA



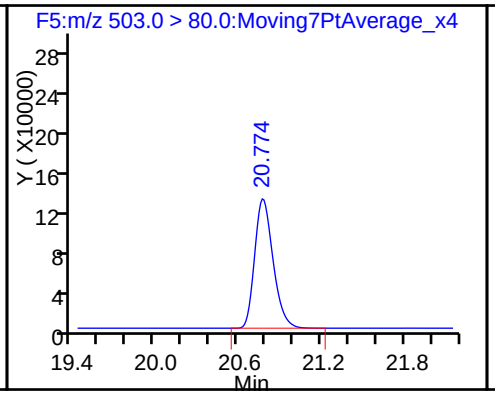
6 Perfluorooctanoic acid



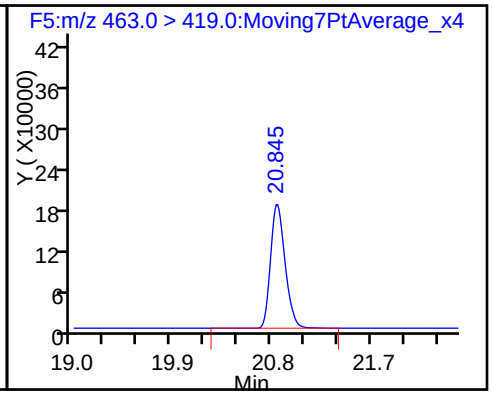
7 Perfluorooctane sulfonic acid



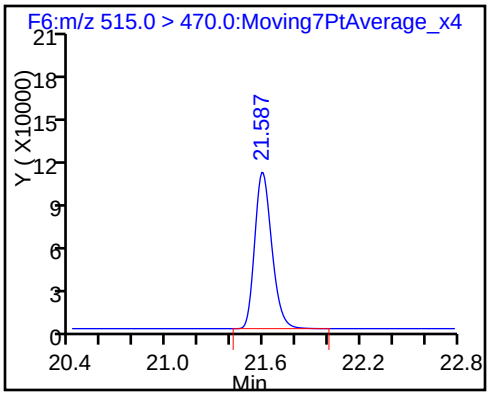
* 8 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_066.d				
Lims ID:	LCSD 320-147025/3-A				
Client ID:					
Sample Type:	LCSD				
Inject. Date:	21-Jan-2017 19:19:51	ALS Bottle#:	5	Worklist Smp#:	108
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Sample Info:	lcsd 320-147025/3-a				
Misc. Info.:	Acquity BEH 1.7um, 3X150mm T=35*C				
Operator ID:	CBW	Instrument ID:	A6		
Method:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\537__A6.m				
Limit Group:	LC 537 ICAL				
Last Update:	23-Jan-2017 13:21:33	Calib Date:	20-Jan-2017 15:40:56		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A6\20170120-39022.b\20JAN2016A6A_010.d				
Column 1 :	Acquity BEH C18 (2.10 mm)		Det: F1:MRM		
Process Host:	XAWRK013				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	12.4	124.00
$ 10 13C2 PFDA	10.0	12.5	125.12

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Instrument ID: A6 Start Date: 01/20/2017 13:11

Analysis Batch Number: 147198 End Date: 01/21/2017 01:32

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD 320-147198/3 IC		01/20/2017 13:11	1	20JAN2016A6A_005.d	Acquity 2.1(mm)
STD 320-147198/4 IC		01/20/2017 13:41	1	20JAN2016A6A_006.d	Acquity 2.1(mm)
STD 320-147198/5 IC		01/20/2017 14:11	1	20JAN2016A6A_007.d	Acquity 2.1(mm)
STD 320-147198/6 ICISAV		01/20/2017 14:40	1	20JAN2016A6A_008.d	Acquity 2.1(mm)
STD 320-147198/7 IC		01/20/2017 15:11	1	20JAN2016A6A_009.d	Acquity 2.1(mm)
STD 320-147198/8 IC		01/20/2017 15:40	1	20JAN2016A6A_010.d	Acquity 2.1(mm)
ZZZZZ		01/20/2017 16:10	1		Acquity 2.1(mm)
CCV 320-147198/10 CCVL		01/20/2017 16:40	1	20JAN2016A6A_012.d	Acquity 2.1(mm)
ZZZZZ		01/20/2017 17:09	1		Acquity 2.1(mm)
ICV 320-147198/12		01/20/2017 17:39	1	20JAN2016A6A_014.d	Acquity 2.1(mm)
ZZZZZ		01/20/2017 20:07	1		Acquity 2.1(mm)
ZZZZZ		01/20/2017 20:37	1		Acquity 2.1(mm)
ZZZZZ		01/20/2017 21:06	1		Acquity 2.1(mm)
ZZZZZ		01/20/2017 21:36	1		Acquity 2.1(mm)
ZZZZZ		01/20/2017 22:05	1		Acquity 2.1(mm)
ZZZZZ		01/20/2017 22:35	1		Acquity 2.1(mm)
ZZZZZ		01/20/2017 23:04	1		Acquity 2.1(mm)
ZZZZZ		01/20/2017 23:34	1		Acquity 2.1(mm)
ZZZZZ		01/21/2017 00:03	1		Acquity 2.1(mm)
ZZZZZ		01/21/2017 00:33	1		Acquity 2.1(mm)
ZZZZZ		01/21/2017 01:03	1		Acquity 2.1(mm)
CCV 320-147198/28 CCVIS		01/21/2017 01:32	1		Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Instrument ID: A6 Start Date: 01/21/2017 17:21

Analysis Batch Number: 147271 End Date: 01/21/2017 23:16

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-147271/60 CCVIS		01/21/2017 17:21	1	20JAN2016A6A_062.d	Acquity 2.1(mm)
ZZZZZ		01/21/2017 17:51	1		Acquity 2.1(mm)
MB 320-147025/1-A		01/21/2017 18:20	1	20JAN2016A6A_064.d	Acquity 2.1(mm)
LCS 320-147025/2-A		01/21/2017 18:50	1	20JAN2016A6A_065.d	Acquity 2.1(mm)
LCSD 320-147025/3-A		01/21/2017 19:19	1	20JAN2016A6A_066.d	Acquity 2.1(mm)
320-25077-1		01/21/2017 19:49	1	20JAN2016A6A_067.d	Acquity 2.1(mm)
320-25077-2		01/21/2017 20:19	1	20JAN2016A6A_068.d	Acquity 2.1(mm)
320-25077-3		01/21/2017 20:48	1	20JAN2016A6A_069.d	Acquity 2.1(mm)
320-25077-4		01/21/2017 21:18	1	20JAN2016A6A_070.d	Acquity 2.1(mm)
320-25077-5		01/21/2017 21:47	1	20JAN2016A6A_071.d	Acquity 2.1(mm)
320-25077-6		01/21/2017 22:17	1	20JAN2016A6A_072.d	Acquity 2.1(mm)
320-25077-7		01/21/2017 22:47	1	20JAN2016A6A_073.d	Acquity 2.1(mm)
CCV 320-147271/116 CCVIS		01/21/2017 23:16	1	20JAN2016A6A_074.d	Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Instrument ID: A6 Start Date: 01/21/2017 23:16

Analysis Batch Number: 147339 End Date: 01/22/2017 05:12

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-147339/116 CCVIS		01/21/2017 23:16	1	20JAN2016A6A_074.d	Acquity 2.1(mm)
ZZZZZ		01/21/2017 23:46	1		Acquity 2.1(mm)
320-25077-8		01/22/2017 00:15	1	20JAN2016A6A_076.d	Acquity 2.1(mm)
ZZZZZ		01/22/2017 00:45	1		Acquity 2.1(mm)
ZZZZZ		01/22/2017 01:15	1		Acquity 2.1(mm)
ZZZZZ		01/22/2017 01:44	1		Acquity 2.1(mm)
ZZZZZ		01/22/2017 02:14	1		Acquity 2.1(mm)
ZZZZZ		01/22/2017 02:44	1		Acquity 2.1(mm)
ZZZZZ		01/22/2017 03:13	1		Acquity 2.1(mm)
ZZZZZ		01/22/2017 03:43	1		Acquity 2.1(mm)
ZZZZZ		01/22/2017 04:12	1		Acquity 2.1(mm)
ZZZZZ		01/22/2017 04:42	1		Acquity 2.1(mm)
CCV 320-147339/129 CCVIS		01/22/2017 05:12	1	20JAN2016A6A_086.d	Acquity 2.1(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Batch Number: 147025 Batch Start Date: 01/19/17 14:13 Batch Analyst: Kolstad, Kate M

Batch Method: 537 Batch End Date: 01/20/17 13:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00030
MB 320-147025/1		537, 537				250 mL	1.0 mL	7 SU	20 uL
LCS 320-147025/2		537, 537				250 mL	1.0 mL	7 SU	20 uL
LCSD 320-147025/3		537, 537				250 mL	1.0 mL	7 SU	20 uL
320-25077-A-1	WI-AF-1RW06-0117	537, 537	T	271.89 g	26.94 g	245 mL	1.0 mL	7 SU	20 uL
320-25077-A-2	WI-AF-1FB06-0117	537, 537	T	279.43 g	26.55 g	252.9 mL	1.0 mL	7 SU	20 uL
320-25077-A-3	WI-AF-1RW07-0117	537, 537	T	275.42 g	26.99 g	248.4 mL	1.0 mL	7 SU	20 uL
320-25077-A-4	WI-AF-1FB07-0117	537, 537	T	278.56 g	26.73 g	251.8 mL	1.0 mL	7 SU	20 uL
320-25077-A-5	WI-AF-1RW08-0117	537, 537	T	278.42 g	26.81 g	251.6 mL	1.0 mL	7 SU	20 uL
320-25077-A-6	WI-AF-1FB08-0117	537, 537	T	281.34 g	25.92 g	255.4 mL	1.0 mL	7 SU	20 uL
320-25077-A-7	WI-AF-1RW09-0117	537, 537	T	273.61 g	26.59 g	247 mL	1.0 mL	7 SU	20 uL
320-25077-A-8	WI-AF-1FB09-0117	537, 537	T	279.81 g	26.71 g	253.1 mL	1.0 mL	7 SU	20 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00017	LC537-SU 00028	AnalysisComment			
MB 320-147025/1		537, 537			50 uL	chlorine=ND			
LCS 320-147025/2		537, 537		50 uL	50 uL	chlorine=ND			
LCSD 320-147025/3		537, 537		50 uL	50 uL	chlorine=ND			
320-25077-A-1	WI-AF-1RW06-0117	537, 537	T		50 uL	chlorine=ND			
320-25077-A-2	WI-AF-1FB06-0117	537, 537	T		50 uL	chlorine=ND			
320-25077-A-3	WI-AF-1RW07-0117	537, 537	T		50 uL	chlorine=ND			
320-25077-A-4	WI-AF-1FB07-0117	537, 537	T		50 uL	chlorine=ND			
320-25077-A-5	WI-AF-1RW08-0117	537, 537	T		50 uL	chlorine=ND			
320-25077-A-6	WI-AF-1FB08-0117	537, 537	T		50 uL	chlorine=ND			
320-25077-A-7	WI-AF-1RW09-0117	537, 537	T		50 uL	chlorine=ND			
320-25077-A-8	WI-AF-1FB09-0117	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.: 320-25077-1

SDG No.:

Batch Number: 147025 Batch Start Date: 01/19/17 14:13 Batch Analyst: Kolstad, Kate M

Batch Method: 537 Batch End Date: 01/20/17 13:00

Batch Notes	
Manifold ID	3, 10
Methanol ID	827185
Pipette ID	MD05306
Analyst ID - IS Reagent Drop	NSH
Analyst ID - IS Reagent Drop Witness	JER
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	KMK
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	KMK
SPE Cartridge ID	6341059-03
Trizma ID	SLBR4303V
Reagent Water ID	SIZ 1-13-17

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

A6

Job No: 25077,25078 Instrument ID & Date: 1-21-17 ICAL Batch: 147198

Extraction Batch: 147025 Worklist #: 39022 TALS Batch: 147271, 147334, 147340

Review Items	— Level 1 — Yes	No	N/A	Level 2
Initial Calibration				
1. Is ICAL verified and locked in Chrom & TALS?	✓			✓
2. Is ICV properly linked in TALS?	✓			✓
Continuing Calibration				
1. **Low-range CCV injected at start of analytical run?** CCV injected after every 10 samples and at the end of the analytical run and alternated between Low-range, Mid-range and High-range?	✓			✓
2. If sequence was not after an ICAL was a low and mid range CCV injected at the start of the analytical run?			✓	
3. Native compounds and surrogates in control? Low-range within ±50% of true value Mid and High-range within ±30% of true value	✓			✓
4. Internal Standard areas in control? Areas ≥ 50% of average area of the ICal and 70-140% of the most recent CCV.	✓			✓
Client Samples & QC Sample Results				
1. Were preparation and analysis done within holding times?	✓			✓
2. Are Chromatograms reviewed and spectra verified?	✓			✓
3. Are positive results within calibration range?	✓			✓
4. Dilutions due to target cpds? ____ Dilutions due to non-targets? ____			✓	
5. All target compounds in MB < 1/3 RL ? **(Requires NCM if "no.")**	✓			✓
6. Are target constituents in LCS/LCSD within method control limits?	✓			✓
7. Internal Standard areas in control for all samples and QC reported? ±50% from the average area of the ICAL and 70-140% of the most recent CCV	✓			✓
8. Do results (e.g., dilutions/trip blanks) make sense?	✓			✓
9. Are MS/MSD recoveries and RPDs within method control limits?			✓	
10. Are all QC samples properly linked in TALS?	✓			✓
11. All manual integrations appropriate and completely documented?	✓			✓
12. Are nonconformances documented as NCMs?	✓			✓
13. Are all Chrom graphics uploaded?	✓			✓

1st Level Reviewer / Date: JRB 1-23-17 2nd Level Reviewer / Date: [signature] 1/23/2017

NCM # and Comments: _____

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 ICAL Checklist

A6

Instrument ID & Date: 1-20-17 Worklist#: 39022

ICAL Batch: 147198, 147199 Calibration ID number: 27741, 27742

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 1-23-17 2nd Level Reviewer / Date: Murray 1/23/2017

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 20JAN2017A_A6 537 Worklist Number: 39022
Instrument Name: A6 Chrom Method: 537__A6
Data Directory: \\ChromNA\Sacramento\ChromData\A6\20170120-39022.b
QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 147198	LC 537 CS ICAL Raw Batch: 147199
# 1 RB	# 1 RB	
# 2 RB	# 2 RB	
# 3 STD L1	# 3 STD L1	# 3 STD L1
# 4 STD L2	# 4 STD L2	# 4 STD L2
# 5 STD L3	# 5 STD L3	# 5 STD L3
# 6 STD L4	# 6 STD L4	# 6 STD L4
# 7 STD L5	# 7 STD L5	# 7 STD L5
# 8 STD L6	# 8 STD L6	# 8 STD L6
# 9 RB	# 9 RB	# 9 RB
#10 CCV L2	#10 CCV L2	#10 CCV L2
#11 RB	#11 RB	#11 RB
#12 ICV	#12 ICV	#12 ICV
#13 TPFOA	#13 TPFOA	
#14 QC LEVEL 3	#14 QC LEVEL 3	
#15 QC LEVEL 5	#15 QC LEVEL 5	
#16 RB	#16 RB	
#17 RB	#17 RB	
#18 MB 320-146821/1-A	#18 MB 320-146821/1-A	
#19 LCS 320-146821/2-A	#19 LCS 320-146821/2-A	
#20 LCSD 320-146821/3-A	#20 LCSD 320-146821/3-A	
#21 320-25044-A-1-A	#21 320-25044-A-1-A	
#22 320-25044-A-2-A	#22 320-25044-A-2-A	
#23 320-25044-A-3-A	#23 320-25044-A-3-A	
#24 320-25044-A-4-A	#24 320-25044-A-4-A	
#25 320-25044-A-5-A	#25 320-25044-A-5-A	
#26 320-25044-A-6-A	#26 320-25044-A-6-A	
#27 320-25044-A-7-A	#27 320-25044-A-7-A	
#28 CCV L5	#28 CCV L5	

QC Batch: 2	LC 537 ICAL Raw Batch: 147256
#28 CCV L5	#28 CCV L5
#29 RB	#29 RB
#30 320-25044-A-8-A	#30 320-25044-A-8-A
#31 320-25044-A-9-A	#31 320-25044-A-9-A
#32 320-25044-A-10-A	#32 320-25044-A-10-A
#33 320-25044-A-11-A	#33 320-25044-A-11-A
#34 320-25044-A-12-A	#34 320-25044-A-12-A
#35 320-25044-A-13-A	#35 320-25044-A-13-A
#36 320-25044-A-14-A	#36 320-25044-A-14-A
#37 320-25044-A-15-A	#37 320-25044-A-15-A
#38 CCV L3	#38 CCV L3

QC Batch: 3	LC 537 ICAL Raw Batch: 147257
#38 CCV L3	#38 CCV L3
#39 RB	#39 RB
#40 MB 320-146891/1-A	#40 MB 320-146891/1-A
#41 LLCS 320-146891/2-A	#41 LLCS 320-146891/2-A
#42 LLCSD 320-146891/3-A	#42 LLCSD 320-146891/3-A
#43 320-25051-A-1-A	#43 320-25051-A-1-A
#44 320-25051-A-2-A	#44 320-25051-A-2-A

QC Batch: 3	LC 537 ICAL Raw Batch: 147257
#45 320-25051-A-3-A	#45 320-25051-A-3-A
#46 320-25051-A-4-A	#46 320-25051-A-4-A
#47 320-25051-A-5-A	#47 320-25051-A-5-A
#48 320-25051-A-6-A	#48 320-25051-A-6-A
#49 320-25051-A-7-A	#49 320-25051-A-7-A
#50 CCV L5	#50 CCV L5

QC Batch: 4	LC 537 ICAL Raw Batch: 147258
#50 CCV L5	#50 CCV L5
#51 RB	#51 RB
#52 320-25051-A-8-A	#52 320-25051-A-8-A
#53 320-25051-A-9-A	#53 320-25051-A-9-A
#54 320-25051-A-10-A	#54 320-25051-A-10-A
#55 320-25051-A-11-A	#55 320-25051-A-11-A
#56 320-25051-A-12-A	#56 320-25051-A-12-A
#57 320-25051-A-13-A	#57 320-25051-A-13-A
#58 320-25051-A-14-A	#58 320-25051-A-14-A
#59 320-25051-A-15-A	#59 320-25051-A-15-A
#60 CCV L3	#60 CCV L3

QC Batch: 5	LC 537 ICAL Raw Batch: 147271
#60 CCV L3	#60 CCV L3
#61 RB	#61 RB
#106 MB 320-147025/1-A	#106 MB 320-147025/1-A
#107 LCS 320-147025/2-A	#107 LCS 320-147025/2-A
#108 LCSD 320-147025/3-A	#108 LCSD 320-147025/3-A
#109 320-25077-A-1-A	#109 320-25077-A-1-A
#110 320-25077-A-2-A	#110 320-25077-A-2-A
#111 320-25077-A-3-A	#111 320-25077-A-3-A
#112 320-25077-A-4-A	#112 320-25077-A-4-A
#113 320-25077-A-5-A	#113 320-25077-A-5-A
#114 320-25077-A-6-A	#114 320-25077-A-6-A
#115 320-25077-A-7-A	#115 320-25077-A-7-A
#116 CCV L5	#116 CCV L5

QC Batch: 6	LC 537 ICAL Raw Batch: 147339
#116 CCV L5	#116 CCV L5
#117 RB	#117 RB
#118 320-25077-A-8-A	#118 320-25077-A-8-A
#119 320-25078-A-1-A	#119 320-25078-A-1-A
#120 320-25078-A-2-A	#120 320-25078-A-2-A
#121 320-25078-A-3-A	#121 320-25078-A-3-A
#122 320-25078-A-4-A	#122 320-25078-A-4-A
#123 320-25078-A-5-A	#123 320-25078-A-5-A
#124 320-25078-A-6-A	#124 320-25078-A-6-A
#125 320-25078-A-7-A	#125 320-25078-A-7-A
#126 320-25078-A-8-A	#126 320-25078-A-8-A
#127 320-25078-A-9-A	#127 320-25078-A-9-A
#129 CCV L3	#129 CCV L3

QC Batch: 7	LC 537 ICAL Raw Batch: 147340
#129 CCV L3	#129 CCV L3
#128 RB	#128 RB

QC Batch: 7	LC 537 ICAL Raw Batch: 147340
#130 320-25078-A-10-A	#130 320-25078-A-10-A
#131 320-25078-A-11-A	#131 320-25078-A-11-A
#132 320-25078-A-12-A	#132 320-25078-A-12-A
#133 CCV L5	#133 CCV L5

QC Batch: 8	LC 537 ICAL Raw Batch: 147341
#133 CCV L5	#133 CCV L5
#134 RB	#134 RB
#135 MB 320-147025/1-A	#135 MB 320-147025/1-A
#136 LCS 320-147025/2-A	#136 LCS 320-147025/2-A
#137 LCSD 320-147025/3-A	#137 LCSD 320-147025/3-A
#138 320-25077-A-1-A	#138 320-25077-A-1-A
#139 320-25077-A-2-A	#139 320-25077-A-2-A
#140 320-25077-A-3-A	#140 320-25077-A-3-A
#141 320-25077-A-4-A	#141 320-25077-A-4-A
#142 QC 537 MB CART	#142 QC 537 MB CART
#143 QC 537 LCS CART	#143 QC 537 LCS CART
#146 CCV L3	#146 CCV L3
#145 RB	#145 RB

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Screen A4 1/20/17
A6 1/21/17

Batch Number: 320-147025

Method Code: 320-537_Prep-320

Analyst: Kolstad, Kate M

Batch Open: 1/19/2017 2:13:00PM

Batch End: 1/20/2017 1:00:00PM

Extraction of Perfluorinated Alkyl Acids

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB-320-147025/1 N/A	N/A		250 mL	7			N/A	N/A	N/A	chlorine=ND	MB 320-147025/1-A
				1.0 mL								
2	LCS-320-147025/2 N/A	N/A		250 mL	7			N/A	N/A	N/A	chlorine=ND	LCS 320-147025/2-A
				1.0 mL								
3	LCSD-320-147025/3 N/A	N/A		250 mL	7			N/A	N/A	N/A	chlorine=ND	LCSD 320-147025/3-A
				1.0 mL								
4	320-25077-A-1 (537_DOD5)	N/A (320-25077-1)	271.89 g	245 mL	7			1/22/17	5_Days	4	chlorine=ND	320-25077-A-1-A
			26.94 g	1.0 mL								
5	320-25077-A-2 (537_DOD5)	N/A (320-25077-1)	279.43 g	252.9 mL	7			1/22/17	5_Days	4	chlorine=ND	320-25077-A-2-A
			26.55 g	1.0 mL								
6	320-25077-A-3 (537_DOD5)	N/A (320-25077-1)	275.42 g	248.4 mL	7			1/22/17	5_Days	4	chlorine=ND	320-25077-A-3-A
			26.99 g	1.0 mL								
7	320-25077-A-4 (537_DOD5)	N/A (320-25077-1)	278.56 g	251.8 mL	7			1/22/17	5_Days	4	chlorine=ND	320-25077-A-4-A
			26.73 g	1.0 mL								
8	320-25077-A-5 (537_DOD5)	N/A (320-25077-1)	278.42 g	251.6 mL	7			1/22/17	5_Days	4	chlorine=ND	320-25077-A-5-A
			26.81 g	1.0 mL								
9	320-25077-A-6 (537_DOD5)	N/A (320-25077-1)	281.34 g	255.4 mL	7			1/22/17	5_Days	4	chlorine=ND	320-25077-A-6-A
			25.92 g	1.0 mL								
10	320-25077-A-7 (537_DOD5)	N/A (320-25077-1)	273.61 g	247 mL	7			1/22/17	5_Days	4	chlorine=ND	320-25077-A-7-A
			26.59 g	1.0 mL								

01/24/2017

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-147025 Analyst: Kolstad, Kate M Batch Open: 1/19/2017 2:13:00PM

Method Code: 320-537_Prep-320 Batch End: 1/20/2017 1:00:00PM

11	320-25077-A-8 (537_DOD5)	N/A (320-25077-1)	279.81 g / 26.71 g	253.1 mL / 1.0 mL	7			1/22/17	5_Days	4	chlorine=ND
12	320-25078-A-1 (537_DOD5)	N/A (320-25078-1)	271.83 g / 26.42 g	245.4 mL / 1.0 mL	7			1/22/17	5_Days	4	chlorine=ND
13	320-25078-A-2 (537_DOD5)	N/A (320-25078-1)	275.16 g / 26.10 g	249.1 mL / 1.0 mL	7			1/22/17	5_Days	4	chlorine=ND
14	320-25078-A-3 (537_DOD5)	N/A (320-25078-1)	274.96 g / 26.39 g	248.6 mL / 1.0 mL	7			1/22/17	5_Days	4	chlorine=ND
15	320-25078-A-4 (537_DOD5)	N/A (320-25078-1)	277.46 g / 26.59 g	250.9 mL / 1.0 mL	7			1/22/17	5_Days	4	chlorine=ND
16	320-25078-A-5 (537_DOD5)	N/A (320-25078-1)	277.23 g / 27.06 g	250.2 mL / 1.0 mL	7			1/22/17	5_Days	4	chlorine=ND
17	320-25078-A-6 (537_DOD5)	N/A (320-25078-1)	274.03 g / 26.35 g	247.7 mL / 1.0 mL	7			1/22/17	5_Days	4	chlorine=ND
18	320-25078-A-7 (537_DOD5)	N/A (320-25078-1)	270.63 g / 26.54 g	244.1 mL / 1.0 mL	7			1/22/17	5_Days	4	chlorine=ND
19	320-25078-A-8 (537_DOD5)	N/A (320-25078-1)	276.13 g / 26.20 g	249.9 mL / 1.0 mL	7			1/22/17	5_Days	4	chlorine=ND
20	320-25078-A-9 (537_DOD5)	N/A (320-25078-1)	276.26 g / 26.97 g	249.3 mL / 1.0 mL	7			1/22/17	5_Days	4	chlorine=ND
21	320-25078-A-10 (537_DOD5)	N/A (320-25078-1)	277.00 g / 26.13 g	250.9 mL / 1.0 mL	7			1/22/17	5_Days	4	chlorine=ND
22	320-25078-A-11 (537_DOD5)	N/A (320-25078-1)	270.44 g / 26.92 g	243.5 mL / 1.0 mL	7			1/22/17	5_Days	4	chlorine=ND

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-147025

Analyst: Kolstad, Kate M

Batch Open: 1/19/2017 2:13:00PM

Method Code: 320-537_Prep-320

Batch End: 1/20/2017 1:00:00PM

23	320-25078-A-12 (537_DOD5)	N/A (320-25078-1)	272.23 g 26.09 g	246.1 mL 1.0 mL	7			1/22/17	5_Days	4	chlorine=ND	
24	N/A	N/A						N/A	N/A	N/A		

Batch Notes

Manifold ID	3, 10
Trizma ID	SLBR4303V
SPE Cartridge ID	6341059-03
Methanol ID	827185
Reagent Water ID	SIZ 1-13-17
Pipette ID	MD05306
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	KMK
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	KMK
Analyst ID - IS Reagent Drop	NSH
Analyst ID - IS Reagent Drop Witness	JER
Batch Comment	

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-147025 Analyst: Kolstad, Kate M Batch Open: 1/19/2017 2:13:00PM

Method Code: 320-537_Prep-320 Batch End:

23	320-25078-A-12 (537_DOD5)	N/A (320-25078-1)	272.23 g 26.09 g	246.1 mL 0.5 mL	7			1/22/17	5_Days	4	chlorine=ND	
24	N/A	N/A						N/A	N/A	N/A		

Batch Notes

Manifold ID	3, 10
Trizma ID	SLBR4303V
SPE Cartridge ID	6341059-03
Methanol ID	827185
Reagent Water ID	SIZ 1-13-17
Pipette ID	MD05306
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	KMK
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	KMK
Analyst ID - IS Reagent Drop	NSH 1/20/17 20 µL 827698 exp 7/17/17
Analyst ID - IS Reagent Drop Witness	JER 1/20/17
Batch Comment	

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-147025

Method Code: 320-537_Prep-320

Analyst: Kolstad, Kate M

Batch Open: 1/19/2017 2:13:00PM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-147025/1	LC537-SU_00028	50 uL	0.5 mL	1/19/17	KMK 1-19-17
LCS 320-147025/2	LC537-MSP_00017	50 uL	0.5 mL		1-19-17
LCS 320-147025/2	LC537-SU_00028	50 uL	0.5 mL		
LCSD 320-147025/3	LC537-MSP_00017	50 uL	0.5 mL		
LCSD 320-147025/3	LC537-SU_00028	50 uL	0.5 mL		
320-25077-A-1	LC537-SU_00028	50 uL	0.5 mL		
320-25077-A-2	LC537-SU_00028	50 uL	0.5 mL		
320-25077-A-3	LC537-SU_00028	50 uL	0.5 mL		
320-25077-A-4	LC537-SU_00028	50 uL	0.5 mL		
320-25077-A-5	LC537-SU_00028	50 uL	0.5 mL		
320-25077-A-6	LC537-SU_00028	50 uL	0.5 mL		
320-25077-A-7	LC537-SU_00028	50 uL	0.5 mL		
320-25077-A-8	LC537-SU_00028	50 uL	0.5 mL		
320-25078-A-1	LC537-SU_00028	50 uL	0.5 mL		
320-25078-A-2	LC537-SU_00028	50 uL	0.5 mL		
320-25078-A-3	LC537-SU_00028	50 uL	0.5 mL		
320-25078-A-4	LC537-SU_00028	50 uL	0.5 mL		
320-25078-A-5	LC537-SU_00028	50 uL	0.5 mL		

1.0mL

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-147025

Analyst: Kolstad, Kate M

Batch Open: 1/19/2017 2:13:00PM

Method Code: 320-537_Prep-320

Batch End:

320-25078-A-6	LC537-SU_00028	50 uL	0.5 mL	1/19/17	KMK 1-19-17
320-25078-A-7	LC537-SU_00028	50 uL	0.5 mL		
320-25078-A-8	LC537-SU_00028	50 uL	0.5 mL		
320-25078-A-9	LC537-SU_00028	50 uL	0.5 mL		
320-25078-A-10	LC537-SU_00028	50 uL	0.5 mL		
320-25078-A-11	LC537-SU_00028	50 uL	0.5 mL		
320-25078-A-12	LC537-SU_00028	50 uL	0.5 mL		

1.0mL

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 147025 Test: 537_Prep

Earliest Holding Time: 1-30-17

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	✓	✓
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and Cl Check)	✓	✓
The pH is transcribed correctly in TALS	✓	✓
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Batch Information	**1st Level Reviewer**	**2nd Level Reviewer**
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: _____ Date: 1/20/17

2nd Level Reviewer: VPM Date: 1/20/17

Comments: _____

Shipping and Receiving Documents

TestAmerica Sacramento
880 Riverside Parkway

West Sacramento, CA 95605
phone 916.373.5600 fax

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

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

Client Contact	Project Manager: Katie Tippin	Site Contact: Eric Epple	Date: 1/17/2017	COC No: 1
Tiffany Hill	Tel/Fax: (757) 671-6258	Lab Contact: Laura Turpen	Carrier: FedEx	1 of 1 COCs
Project Chemist	Analysis Turnaround Time			Sampler:
1100 NE Circle Blvd Ste 300 Corvallis, OR 97330	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(541) 768-3109	TAT if different from Below 7-Day			Walk-in Client:
(541) 908-3794	☐ 2 weeks			Lab Sampling:
Project Name: CTO-08	☐ 1 week			Job / SDG No.:
Site: NAS Whidbey Island	☐ 2 days			
P O #: 100067106050 - 679580.06.FI.FS	☐ 1 day			

320-25077 Chain of Custody

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	USEPA Method 537 (PFOA, PFOS, and PFBS)	Sample Specific Notes:
WI-AF-1RW06-0117	01/16/17	9:11	G	DW	2	N	N	X	
WI-AF-1FB06-0117	01/16/17	9:12	G	DW	2	N	N	X	
WI-AF-1RW07-0117	01/16/17	9:50	G	DW	2	N	N	X	
WI-AF-1FB07-0117	01/16/17	9:51	G	DW	2	N	N	X	
WI-AF-1RW08-0117	01/16/17	10:13	G	DW	2	N	N	X	
WI-AF-1FB08-0117	01/16/17	10:14	G	DW	2	N	N	X	
WI-AF-1RW09-0117	01/16/17	11:35	G	DW	2	N	N	X	
WI-AF-1FB09-0117	01/16/17	11:36	G	DW	2	N	N	X	
								6	

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

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

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

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

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

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 4.4 Corr'd: 4.1 Therm ID No.: 12

Relinquished by:	Company: CH2M	Date/Time: 1/17/17 9:50	Received by:	Company: TAWS	Date/Time: 1/18/17 0425
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.3, dated 12/05/2013

Login Sample Receipt Checklist

Client: CH2M Hill Constructors, Inc.

Job Number: 320-25077-1

Login Number: 25077
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	

Lab_Sample_ID	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	Dilution	Run_ Number	Percent_ Moisture	Percent_ Lipid
320-24648-1	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW38-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:18	12/23/2016			20161223	18:41:00	20170102	13:53:00	1	1		
320-24648-1	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW38-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:18	12/23/2016			20161223	18:41:00	20170102	13:53:00	1	1		
320-24648-1	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW38-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:18	12/23/2016			20161223	18:41:00	20170102	13:53:00	1	1		
320-24648-1	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW38-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:18	12/23/2016			20161223	18:41:00	20170102	13:53:00	1	1		
320-24648-1	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW38-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:18	12/23/2016			20161223	18:41:00	20170102	13:53:00	1	1		
320-24648-2	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB38-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:19	12/23/2016			20161223	18:41:00	20170102	14:23:00	1	1		
320-24648-2	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB38-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:19	12/23/2016			20161223	18:41:00	20170102	14:23:00	1	1		
320-24648-2	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB38-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:19	12/23/2016			20161223	18:41:00	20170102	14:23:00	1	1		
320-24648-2	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB38-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:19	12/23/2016			20161223	18:41:00	20170102	14:23:00	1	1		
320-24648-2	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB38-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:19	12/23/2016			20161223	18:41:00	20170102	14:23:00	1	1		
320-24648-3	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW39-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:25	12/23/2016			20161223	18:41:00	20170102	14:52:00	1	1		
320-24648-3	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW39-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:25	12/23/2016			20161223	18:41:00	20170102	14:52:00	1	1		
320-24648-3	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW39-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:25	12/23/2016			20161223	18:41:00	20170102	14:52:00	1	1		
320-24648-3	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW39-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:25	12/23/2016			20161223	18:41:00	20170102	14:52:00	1	1		
320-24648-3	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW39-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:25	12/23/2016			20161223	18:41:00	20170102	14:52:00	1	1		
320-24648-4	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB39-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:26	12/23/2016			20161223	18:41:00	20170102	15:22:00	1	1		
320-24648-4	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB39-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:26	12/23/2016			20161223	18:41:00	20170102	15:22:00	1	1		
320-24648-4	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB39-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:26	12/23/2016			20161223	18:41:00	20170102	15:22:00	1	1		
320-24648-4	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB39-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:26	12/23/2016			20161223	18:41:00	20170102	15:22:00	1	1		
320-24648-4	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB39-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 09:26	12/23/2016			20161223	18:41:00	20170102	15:22:00	1	1		
320-24648-5	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 16:47	12/23/2016			20161223	18:41:00	20170102	15:52:00	1	1		
320-24648-5	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 16:47	12/23/2016			20161223	18:41:00	20170102	15:52:00	1	1		
320-24648-5	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 16:47	12/23/2016			20161223	18:41:00	20170102	15:52:00	1	1		
320-24648-5	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 16:47	12/23/2016			20161223	18:41:00	20170102	15:52:00	1	1		
320-24648-5	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 16:47	12/23/2016			20161223	18:41:00	20170102	15:52:00	1	1		
320-24648-6	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40P-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 16:52	12/23/2016			20161223	18:41:00	20170102	16:21:00	1	1		
320-24648-6	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40P-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 16:52	12/23/2016			20161223	18:41:00	20170102	16:21:00	1	1		
320-24648-6	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40P-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 16:52	12/23/2016			20161223	18:41:00	20170102	16:21:00	1	1		
320-24648-6	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40P-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 16:52	12/23/2016			20161223	18:41:00	20170102	16:21:00	1	1		
320-24648-6	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40P-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 16:52	12/23/2016			20161223	18:41:00	20170102	16:21:00	1	1		
320-24648-7	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB40-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 16:53	12/23/2016			20161223	18:41:00	20170102	16:51:00	1	1		
320-24648-7	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB40-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 16:53	12/23/2016			20161223	18:41:00	20170102	16:51:00	1	1		
320-24648-7	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB40-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 16:53	12/23/2016			20161223	18:41:00	20170102	16:51:00	1	1		
320-24648-7	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB40-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 16:53	12/23/2016			20161223	18:41:00	20170102	16:51:00	1	1		
320-24648-7	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB40-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 16:53	12/23/2016			20161223	18:41:00	20170102	16:51:00	1	1		
320-24648-8	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW41-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 18:40	12/23/2016			20161223	18:41:00	20170102	18:20:00	1	1		
320-24648-8	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW41-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 18:40	12/23/2016			20161223	18:41:00	20170102	18:20:00	1	1		
320-24648-8	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW41-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 18:40	12/23/2016			20161223	18:41:00	20170102	18:20:00	1	1		
320-24648-8	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW41-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 18:40	12/23/2016			20161223	18:41:00	20170102	18:20:00	1	1		
320-24648-8	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW41-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 18:40	12/23/2016			20161223	18:41:00	20170102	18:20:00	1	1		
320-24648-9	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB41-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 18:41	12/23/2016			20161223	18:41:00	20170102	18:49:00	1	1		
320-24648-9	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB41-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 18:41	12/23/2016			20161223	18:41:00	20170102	18:49:00	1	1		
320-24648-9	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB41-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 18:41	12/23/2016			20161223	18:41:00	20170102	18:49:00	1	1		
320-24648-9	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB41-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 18:41	12/23/2016			20161223	18:41:00	20170102	18:49:00	1	1		
320-24648-9	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB41-1216	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	12/21/2016 18:41	12/23/2016			20161223	18:41:00	20170102	18:49:00	1	1		
LCS 320-143783/2-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCS 320-143783/2-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BS	W	4	12/23/2016 18:41	12/23/2016			20161223	18:41:00	20170102	12:54:00	1	1		
LCS 320-143783/2-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCS 320-143783/2-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BS	W	4	12/23/2016 18:41	12/23/2016			20161223	18:41:00	20170102	12:54:00	1	1		
LCS 320-143783/2-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCS 320-143783/2-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BS	W	4	12/23/2016 18:41	12/23/2016			20161223	18:41:00	20170102	12:54:00	1	1		
LCS 320-143783/2-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCS 320-143783/2-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BS	W	4	12/23/2016 18:41	12/23/2016			20161223	18:41:00	20170102	12:54:00	1	1		
LCS 320-143783/2-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCS 320-143783/2-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BS	W	4	12/23/2016 18:41	12/23/2016			20161223	18:41:00	20170102	12:54:00	1	1		
LCSD 320-143783/3-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCSD 320-143783/3-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BSD	W	4	12/23/2016 18:41	12/23/2016			20161223	18:41:00	20170102	13:24:00	1	1		
LCSD 320-143783/3-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCSD 320-143783/3-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BSD	W	4	12/23/2016 18:41	12/23/2016			20161223	18:41:00	20170102	13:24:00	1	1		
LCSD 320-143783/3-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCSD 320-143783/3-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BSD	W	4	12/23/2016 18:41	12/23/2016			20161223	18:41:00	20170102	13:24:00	1	1		
LCSD 320-143783/3-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCSD 320-143783/3-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BSD	W	4	12/23/2016 18:41	12/23/2016			20161223	18:41:00	20170102	13:24:00	1	1		
LCSD 320-143783/3-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCSD 320-143783/3-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BSD	W	4	12/23/2016 18:41	12/23/2016			20161223	18:41:00	20170102	13:24:00	1	1		
MB 320-143783/1-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-143783/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	12/23/2016 18:41	12/23/2016			20161223	18:41:00	20170102	12:24:00	1	1		
MB 320-143783/1-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-143783/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	12/23/2016 18:41	12/23/2016			20161223	18:41:00	20170102	12:24:00	1	1		
MB 320-143783/1-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-143783/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	12/23/2016 18:41	12/23/2016			20161223	18:41:00	20170102	12:24:00	1	1		
MB 320-143783/1-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-143783/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	12/23/2016 18:41	12/23/2016			20161223	18:41:00	20170102	12:24:00	1	1		
MB 320-143783/1-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-143783/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	12/23/2016 18:41	12/23/2016			20161223	18:41:00	20170102	12:24:00	1	1		

Lab_Sample_ID	Contract_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	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
320-24648-1	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW38-1216	Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.046	UG_L	U M		PR	TRG					00000000				5.0	0.015	0.046	0.057	320-24648-1	320-144608
320-24648-1	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW38-1216	Perfluorooctanoic acid (PFOA)	335-67-1		0.023	UG_L	U M		PR	TRG					00000000				5.0	0.0089	0.023	0.028	320-24648-1	320-144608
320-24648-1	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW38-1216	Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.10	UG_L	U		PR	TRG					00000000				5.0	0.045	0.10	0.13	320-24648-1	320-144608
320-24648-1	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW38-1216	13C2 PFHXA	13C2 PFHXA		101	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
320-24648-1	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW38-1216	13C2 PFDA	13C2 PFDA		119	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
320-24648-2	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB38-1216	Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.046	UG_L	U M		PR	TRG					00000000				5.0	0.015	0.046	0.058	320-24648-1	320-144608
320-24648-2	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB38-1216	Perfluorooctanoic acid (PFOA)	335-67-1		0.023	UG_L	U M		PR	TRG					00000000				5.0	0.0091	0.023	0.029	320-24648-1	320-144608
320-24648-2	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB38-1216	Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.11	UG_L	U		PR	TRG					00000000				5.0	0.046	0.11	0.14	320-24648-1	320-144608
320-24648-2	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB38-1216	13C2 PFHXA	13C2 PFHXA		100	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
320-24648-2	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB38-1216	13C2 PFDA	13C2 PFDA		106	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
320-24648-3	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW39-1216	Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.046	UG_L	U		PR	TRG					00000000				5.0	0.015	0.046	0.057	320-24648-1	320-144608
320-24648-3	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW39-1216	Perfluorooctanoic acid (PFOA)	335-67-1		0.023	UG_L	U M		PR	TRG					00000000				5.0	0.0090	0.023	0.029	320-24648-1	320-144608
320-24648-3	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW39-1216	Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.10	UG_L	U		PR	TRG					00000000				5.0	0.045	0.10	0.13	320-24648-1	320-144608
320-24648-3	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW39-1216	13C2 PFHXA	13C2 PFHXA		103	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
320-24648-3	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW39-1216	13C2 PFDA	13C2 PFDA		101	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
320-24648-4	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB39-1216	Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.049	UG_L	U		PR	TRG					00000000				5.0	0.016	0.049	0.061	320-24648-1	320-144608
320-24648-4	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB39-1216	Perfluorooctanoic acid (PFOA)	335-67-1		0.024	UG_L	U		PR	TRG					00000000				5.0	0.0096	0.024	0.031	320-24648-1	320-144608
320-24648-4	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB39-1216	Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.11	UG_L	U		PR	TRG					00000000				5.0	0.048	0.11	0.14	320-24648-1	320-144608
320-24648-4	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB39-1216	13C2 PFHXA	13C2 PFHXA		101	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
320-24648-4	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB39-1216	13C2 PFDA	13C2 PFDA		107	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
320-24648-5	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40-1216	Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.045	UG_L	U		PR	TRG					00000000				5.0	0.014	0.045	0.056	320-24648-1	320-144608
320-24648-5	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40-1216	Perfluorooctanoic acid (PFOA)	335-67-1		0.022	UG_L	U M		PR	TRG					00000000				5.0	0.0088	0.022	0.028	320-24648-1	320-144608
320-24648-5	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40-1216	Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.10	UG_L	U		PR	TRG					00000000				5.0	0.044	0.10	0.13	320-24648-1	320-144608
320-24648-5	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40-1216	13C2 PFHXA	13C2 PFHXA		110	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
320-24648-5	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40-1216	13C2 PFDA	13C2 PFDA		123	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
320-24648-6	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40P-1216	Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.045	UG_L	U		PR	TRG					00000000				5.0	0.014	0.045	0.056	320-24648-1	320-144608
320-24648-6	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40P-1216	Perfluorooctanoic acid (PFOA)	335-67-1		0.022	UG_L	U		PR	TRG					00000000				5.0	0.0088	0.022	0.028	320-24648-1	320-144608
320-24648-6	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40P-1216	Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.10	UG_L	U		PR	TRG					00000000				5.0	0.044	0.10	0.13	320-24648-1	320-144608
320-24648-6	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40P-1216	13C2 PFHXA	13C2 PFHXA		96	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
320-24648-6	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW40P-1216	13C2 PFDA	13C2 PFDA		107	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
320-24648-7	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB40-1216	Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.047	UG_L	U		PR	TRG					00000000				5.0	0.015	0.047	0.058	320-24648-1	320-144608
320-24648-7	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB40-1216	Perfluorooctanoic acid (PFOA)	335-67-1		0.023	UG_L	U		PR	TRG					00000000				5.0	0.0092	0.023	0.029	320-24648-1	320-144608
320-24648-7	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB40-1216	Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.11	UG_L	U		PR	TRG					00000000				5.0	0.046	0.11	0.14	320-24648-1	320-144608
320-24648-7	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB40-1216	13C2 PFHXA	13C2 PFHXA		99	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
320-24648-7	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB40-1216	13C2 PFDA	13C2 PFDA		108	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
320-24648-8	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW41-1216	Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.045	UG_L	U M		PR	TRG					00000000				5.0	0.015	0.045	0.056	320-24648-1	320-144610
320-24648-8	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW41-1216	Perfluorooctanoic acid (PFOA)	335-67-1		0.023	UG_L	U M		PR	TRG					00000000				5.0	0.0089	0.023	0.028	320-24648-1	320-144610
320-24648-8	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW41-1216	Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.059	UG_L	J		PR	TRG					00000000				5.0	0.045	0.10	0.13	320-24648-1	320-144610
320-24648-8	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW41-1216	13C2 PFHXA	13C2 PFHXA		91	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144610
320-24648-8	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3RW41-1216	13C2 PFDA	13C2 PFDA		105	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144610
320-24648-9	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB41-1216	Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.046	UG_L	U M		PR	TRG					00000000				5.0	0.015	0.046	0.057	320-24648-1	320-144610
320-24648-9	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB41-1216	Perfluorooctanoic acid (PFOA)	335-67-1		0.023	UG_L	U		PR	TRG					00000000				5.0	0.0090	0.023	0.029	320-24648-1	320-144610
320-24648-9	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB41-1216	Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.10	UG_L	U		PR	TRG					00000000				5.0	0.045	0.10	0.13	320-24648-1	320-144610
320-24648-9	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB41-1216	13C2 PFHXA	13C2 PFHXA		102	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144610
320-24648-9	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-3FB41-1216	13C2 PFDA	13C2 PFDA		108	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144610
LCS 320-143783/2-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCS 320-143783/2-A	Perfluorooctane Sulfonate (PFOS)	1763-23-1		106	PCT_REC			PR	TRG		LSA	130	70	00000000				5.0	0.016	0.048	0.060	320-24648-1	320-144608
LCS 320-143783/2-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCS 320-143783/2-A	Perfluorooctanoic acid (PFOA)	335-67-1		109	PCT_REC	E		PR	TRG		LSA	130	70	00000000				5.0	0.0094	0.024	0.030	320-24648-1	320-144608
LCS 320-143783/2-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCS 320-143783/2-A	Perfluorobutanesulfonic acid (PFBS)	375-73-5		98	PCT_REC			PR	TRG		LSA	130	70	00000000				5.0	0.048	0.11	0.14	320-24648-1	320-144608
LCS 320-143783/2-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCS 320-143783/2-A	13C2 PFHXA	13C2 PFHXA		121	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
LCS 320-143783/2-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCS 320-143783/2-A	13C2 PFDA	13C2 PFDA		121	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
LCSD 320-143783/3-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCSD 320-143783/3-A	Perfluorooctane Sulfonate (PFOS)	1763-23-1		102	PCT_REC			PR	TRG		LSP	130	70	00000000				5.0	0.016	0.048	0.060	320-24648-1	320-144608
LCSD 320-143783/3-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCSD 320-143783/3-A	Perfluorooctanoic acid (PFOA)	335-67-1		106	PCT_REC			PR	TRG		LSP	130	70	00000000				5.0	0.0094	0.024	0.030	320-24648-1	320-144608
LCSD 320-143783/3-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCSD 320-143783/3-A	Perfluorobutanesulfonic acid (PFBS)	375-73-5		92	PCT_REC			PR	TRG		LSP	130	70	00000000				5.0	0.048	0.11	0.14	320-24648-1	320-144608
LCSD 320-143783/3-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCSD 320-143783/3-A	13C2 PFHXA	13C2 PFHXA		111	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
LCSD 320-143783/3-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LCSD 320-143783/3-A	13C2 PFDA	13C2 PFDA		116	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
MB 320-143783/1-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-143783/1-A	Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.048	UG_L	U M		PR	TRG					00000000				5.0	0.016	0.048	0.060	320-24648-1	320-144608
MB 320-143783/1-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-143783/1-A	Perfluorooctanoic acid (PFOA)	335-67-1		0.024	UG_L	U M		PR	TRG					00000000				5.0	0.0094	0.024	0.030	320-24648-1	320-144608
MB 320-143783/1-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-143783/1-A	Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.11	UG_L	U		PR	TRG					00000000				5.0	0.048	0.11	0.14	320-24648-1	320-144608
MB 320-143783/1-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-143783/1-A	13C2 PFHXA	13C2 PFHXA		111	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608
MB 320-143783/1-A	N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-143783/1-A	13C2 PFDA	13C2 PFDA		116	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-24648-1	320-144608

ENVIRONMENTAL
Data Services, Inc.

DATA VALIDATION SUMMARY REPORT
WHIDBEY ISLAND, WASHINGTON

Client: CH2M HILL, Inc., Corvallis, Oregon
SDG: 320-25077-1
Laboratory: Test America, Sacramento, California
Site: Whidbey Island, CTO-0008, Washington
Date: February 1, 2017

PFCs			
EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	WI-AF-1RW06-0117	320-25077-1	Water
2	WI-AF-1FB06-0117	320-25077-2	Water
3	WI-AF-1RW07-0117	320-25077-3	Water
4	WI-AF-1FB07-0117	320-25077-4	Water
5	WI-AF-1RW08-0117	320-25077-5	Water
6	WI-AF-1FB08-0117	320-25077-6	Water
7	WI-AF-1RW09-0117	320-25077-7	Water
8	WI-AF-1FB09-0117	320-25077-8	Water

A full data validation was performed on the analytical data for four water samples and four aqueous field blank samples collected on January 16, 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

- A MS/MSD sample was not collected.

Laboratory Control Samples/Laboratory Control Sample Duplicates

- The LCS/LCSD samples exhibited acceptable percent recoveries (%R) and RPD values.

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: 2/2/17

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

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Client Sample ID: WI-AF-1RW06-0117 Lab Sample ID: 320-25077-1

Matrix: Water Lab File ID: 20JAN2016A6A_067.d

Analysis Method: 537 Date Collected: 01/16/2017 09:11

Extraction Method: 537 Date Extracted: 01/19/2017 14:14

Sample wt/vol: 245(mL) Date Analyzed: 01/21/2017 19:49

Con. Extract Vol.: 1.0(mL) Dilution Factor: 1

Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147271 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.049	U	0.061	0.049	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U M	0.031	0.024	0.0096
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.049

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	116		70-130
STL00996	13C2 PFDA	117		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

2

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Client Sample ID: WI-AF-1FB06-0117 Lab Sample ID: 320-25077-2

Matrix: Water Lab File ID: 20JAN2016A6A_068.d

Analysis Method: 537 Date Collected: 01/16/2017 09:12

Extraction Method: 537 Date Extracted: 01/19/2017 14:14

Sample wt/vol: 252.9(mL) Date Analyzed: 01/21/2017 20:19

Con. Extract Vol.: 1.0(mL) Dilution Factor: 1

Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147271 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.047	U M	0.059	0.047	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U M	0.030	0.024	0.0093
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	115		70-130
STL00996	13C2 PFDA	112		70-130

Jan 21, 17

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

3

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Client Sample ID: WI-AF-1RW07-0117 Lab Sample ID: 320-25077-3

Matrix: Water Lab File ID: 20JAN2016A6A_069.d

Analysis Method: 537 Date Collected: 01/16/2017 09:50

Extraction Method: 537 Date Extracted: 01/19/2017 14:14

Sample wt/vol: 248.4(mL) Date Analyzed: 01/21/2017 20:48

Con. Extract Vol.: 1.0(mL) Dilution Factor: 1

Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147271 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	0.0095
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	115		70-130
STL00996	13C2 PFDA	111		70-130

MW 2/1/17

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

4

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Client Sample ID: WI-AF-1FB07-0117 Lab Sample ID: 320-25077-4

Matrix: Water Lab File ID: 20JAN2016A6A_070.d

Analysis Method: 537 Date Collected: 01/16/2017 09:51

Extraction Method: 537 Date Extracted: 01/19/2017 14:14

Sample wt/vol: 251.8(mL) Date Analyzed: 01/21/2017 21:18

Con. Extract Vol.: 1.0(mL) Dilution Factor: 1

Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147271 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	0.015
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	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	126		70-130
STL00996	13C2 PFDA	115		70-130

NW-2.1.17

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

5

Lab Name: TestAmerica Sacramento | Job No.: 320-25077-1

SDG No.:

Client Sample ID: WI-AF-1RW08-0117 | Lab Sample ID: 320-25077-5

Matrix: Water | Lab File ID: 20JAN2016A6A_071.d

Analysis Method: 537 | Date Collected: 01/16/2017 10:13

Extraction Method: 537 | Date Extracted: 01/19/2017 14:14

Sample wt/vol: 251.6(mL) | Date Analyzed: 01/21/2017 21:47

Con. Extract Vol.: 1.0(mL) | Dilution Factor: 1

Injection Volume: 10(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147271 | 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	0.015
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	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	126		70-130
STL00996	13C2 PFDA	122		70-130

JW 2/1/17

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

6

Lab Name: TestAmerica Sacramento | Job No.: 320-25077-1

SDG No.:

Client Sample ID: WI-AF-1FB08-0117 | Lab Sample ID: 320-25077-6

Matrix: Water | Lab File ID: 20JAN2016A6A_072.d

Analysis Method: 537 | Date Collected: 01/16/2017 10:14

Extraction Method: 537 | Date Extracted: 01/19/2017 14:14

Sample wt/vol: 255.4(mL) | Date Analyzed: 01/21/2017 22:17

Con. Extract Vol.: 1.0(mL) | Dilution Factor: 1

Injection Volume: 10(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147271 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.047	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.023	0.0092
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	117		70-130
STL00996	13C2 PFDA	115		70-130

MW 2.1.17

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

7

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Client Sample ID: WI-AF-1RW09-0117 Lab Sample ID: 320-25077-7

Matrix: Water Lab File ID: 20JAN2016A6A_073.d

Analysis Method: 537 Date Collected: 01/16/2017 11:35

Extraction Method: 537 Date Extracted: 01/19/2017 14:14

Sample wt/vol: 247(mL) Date Analyzed: 01/21/2017 22:47

Con. Extract Vol.: 1.0(mL) Dilution Factor: 1

Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147271 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.049	U M	0.061	0.049	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U M	0.030	0.024	0.0095
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	117		70-130
STL00996	13C2 PFDA	115		70-130

MW 2/1/17

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

8

Lab Name: TestAmerica Sacramento Job No.: 320-25077-1

SDG No.:

Client Sample ID: WI-AF-1FB09-0117 Lab Sample ID: 320-25077-8

Matrix: Water Lab File ID: 20JAN2016A6A_076.d

Analysis Method: 537 Date Collected: 01/16/2017 11:36

Extraction Method: 537 Date Extracted: 01/19/2017 14:14

Sample wt/vol: 253.1(mL) Date Analyzed: 01/22/2017 00:15

Con. Extract Vol.: 1.0(mL) Dilution Factor: 1

Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 147339 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.047	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.024	0.0093
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	117		70-130
STL00996	13C2 PFDA	109		70-130

JW-2/1/17

R:\ENBG\00_Proj\N\Navy\CLEAN\MULTI_REGION\PFC_679580\MapFiles\NW\Whidbey_NAS\TM\Draft\Figure_2_DW_Results_AF_Step_Out.mxd6/27/2018bmailhes

NUMBER OF SAMPLES COLLECTED: 12
NO DETECTIONS: 12
DETECTIONS LESS THAN LHA: 0
DETECTIONS GREATER THAN LHA: 0

NUMBER OF SAMPLES COLLECTED: 48
NO DETECTIONS: 46
DETECTIONS LESS THAN LHA: 2
DETECTIONS GREATER THAN LHA: 0

STRAIT OF JUAN DE FUCA

W Troxell Rd

Powell Rd

Area 31 – Former Runway Fire Training School

Area 16 – Ault Field Runway Ditches

Current Fire Fighting School

Jones Rd

DUGUALLA BAY

CLOVER VALLEY STREAM

CLOVER VALLEY LAGOON

Clover Valley

Dugualla

NUMBER OF SAMPLES COLLECTED: 2
NO DETECTIONS: 2
DETECTIONS LESS THAN LHA: 0
DETECTIONS GREATER THAN LHA: 0

Ault Field Rd

NUMBER OF SAMPLES COLLECTED: 8
NO DETECTIONS: 5
DETECTIONS LESS THAN LHA: 2
DETECTIONS GREATER THAN LHA: 1

Yates Rd

Oak Harbor Rd

Hunt Rd

Taylor Rd

Crosby Rd

NUMBER OF SAMPLES: 9
NO DETECTIONS: 9
DETECTIONS LESS THAN LHA: 0
DETECTIONS GREATER THAN LHA: 0

NUMBER OF SAMPLES COLLECTED: 27
NO DETECTIONS: 24
DETECTIONS LESS THAN LHA: 1
DETECTIONS GREATER THAN LHA: 2*

Legend

- 1 Mile Zone
- Surface Water
- Drainage Ditch
- Suspected Source Area
- Phase 1 Sampling Area
- Phase 2 Sampling Area
- Phase 3 Sampling Area
- Base Boundary
- Inferred Groundwater Flow Direction

Notes:
1. Results shown on this figure are for PFOA and PFOS. See text and Table 2 for PFBS results
2. * Both results above the LHA are from the same well; the second sample collected was a confirmation sample.

N

0 0.25 0.5 Miles

1 inch = 0.5 mile

Imagery Source: Esri

Figure 2
Results for Drinking Water Well Sampling
Near Ault Field
Naval Air Station Whidbey Island
Oak Harbor, Washington

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ch2m