



**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 320-24178**

*Outlying Landing Field Coupeville
Naval Air Station Whidbey Island
Coupeville, Washington*

February 2019

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

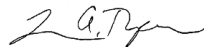
ANALYTICAL REPORT

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TestAmerica Sacramento
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TestAmerica Job ID: 320-24178-1
Client Project/Site: Whidbey Island

For:
CH2M Hill Constructors, Inc.
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Attn: Tiffany Hill



Authorized for release by:
12/19/2016 8:54:25 AM

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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.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	6
Client Sample Results	7
Surrogate Summary	11
QC Sample Results	12
QC Association Summary	13
Lab Chronicle	14
Certification Summary	17
Method Summary	18
Sample Summary	19
Chain of Custody	20
Receipt Checklists	22

Definitions/Glossary

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

TestAmerica Job ID: 320-24178-1

Qualifiers

LCMS

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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/Site: Whidbey Island

TestAmerica Job ID: 320-24178-1

Job ID: 320-24178-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: CH2M Hill Constructors, Inc.

Project: Whidbey Island

Report Number: 320-24178-1

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 12/08/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was -0.2 C.

An extended TAT was requested by the client via an email on December 8. Samples received on December 8 and 9 were requested to have a due date of December 19, 2016.

PFOA/PFOS

Samples WI-CV-1RW23-1216 (320-24178-1), WI-CV-1RW23P-1216 (320-24178-2), WI-CV-1FB23-1216 (320-24178-3), WI-CV-1RW24-1216 (320-24178-4), WI-CV-1FB24-1216 (320-24178-5), WI-CV-1RW25-1216 (320-24178-6), WI-CV-1FB25-1216 (320-24178-7), WI-CV-1RW26-1216 (320-24178-8), WI-CV-1FB26-1216 (320-24178-9), WI-CV-1RW27-1216 (320-24178-10), WI-CV-1FB27-1216 (320-24178-11), WI-CV-1RW28-1216 (320-24178-12) and WI-CV-1FB28-1216 (320-24178-13) were analyzed for

Case Narrative

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

TestAmerica Job ID: 320-24178-1

Job ID: 320-24178-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

PFOA/PFOS in accordance with 537. The samples were prepared on 12/09/2016 and analyzed on 12/15/2016.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 320-141540.

After concentration, the following sample had a lot of orange sediment on the bottom.
WI-CV-1RW28-1216 (320-24178-12)

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

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Detection Summary

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1RW23-1216

Lab Sample ID: 320-24178-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.055		0.027	0.0086	ug/L	1		537	Total/NA

Client Sample ID: WI-CV-1RW23P-1216

Lab Sample ID: 320-24178-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.061		0.027	0.0085	ug/L	1		537	Total/NA

Client Sample ID: WI-CV-1FB23-1216

Lab Sample ID: 320-24178-3

No Detections.

Client Sample ID: WI-CV-1RW24-1216

Lab Sample ID: 320-24178-4

No Detections.

Client Sample ID: WI-CV-1FB24-1216

Lab Sample ID: 320-24178-5

No Detections.

Client Sample ID: WI-CV-1RW25-1216

Lab Sample ID: 320-24178-6

No Detections.

Client Sample ID: WI-CV-1FB25-1216

Lab Sample ID: 320-24178-7

No Detections.

Client Sample ID: WI-CV-1RW26-1216

Lab Sample ID: 320-24178-8

No Detections.

Client Sample ID: WI-CV-1FB26-1216

Lab Sample ID: 320-24178-9

No Detections.

Client Sample ID: WI-CV-1RW27-1216

Lab Sample ID: 320-24178-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.038		0.029	0.0093	ug/L	1		537	Total/NA

Client Sample ID: WI-CV-1FB27-1216

Lab Sample ID: 320-24178-11

No Detections.

Client Sample ID: WI-CV-1RW28-1216

Lab Sample ID: 320-24178-12

No Detections.

Client Sample ID: WI-CV-1FB28-1216

Lab Sample ID: 320-24178-13

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1RW23-1216

Date Collected: 12/06/16 09:21

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-1

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.044	U M	0.055	0.014	ug/L		12/09/16 18:59	12/15/16 11:30	1
Perfluorooctanoic acid (PFOA)	0.055		0.027	0.0086	ug/L		12/09/16 18:59	12/15/16 11:30	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.044	ug/L		12/09/16 18:59	12/15/16 11:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		70 - 130				12/09/16 18:59	12/15/16 11:30	1
13C2 PFDA	95		70 - 130				12/09/16 18:59	12/15/16 11:30	1

Client Sample ID: WI-CV-1RW23P-1216

Date Collected: 12/06/16 09:26

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-2

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.043	U M	0.054	0.014	ug/L		12/09/16 18:59	12/15/16 12:00	1
Perfluorooctanoic acid (PFOA)	0.061		0.027	0.0085	ug/L		12/09/16 18:59	12/15/16 12:00	1
Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.043	ug/L		12/09/16 18:59	12/15/16 12:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		70 - 130				12/09/16 18:59	12/15/16 12:00	1
13C2 PFDA	110		70 - 130				12/09/16 18:59	12/15/16 12:00	1

Client Sample ID: WI-CV-1FB23-1216

Date Collected: 12/06/16 09:22

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-3

Matrix: Water

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		12/09/16 18:59	12/15/16 12:29	1
Perfluorooctanoic acid (PFOA)	0.024	U M	0.030	0.0094	ug/L		12/09/16 18:59	12/15/16 12:29	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/09/16 18:59	12/15/16 12:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		70 - 130				12/09/16 18:59	12/15/16 12:29	1
13C2 PFDA	106		70 - 130				12/09/16 18:59	12/15/16 12:29	1

Client Sample ID: WI-CV-1RW24-1216

Date Collected: 12/06/16 09:45

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-4

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.045	U	0.056	0.014	ug/L		12/09/16 18:59	12/15/16 12:59	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.0088	ug/L		12/09/16 18:59	12/15/16 12:59	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.044	ug/L		12/09/16 18:59	12/15/16 12:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		70 - 130				12/09/16 18:59	12/15/16 12:59	1
13C2 PFDA	91		70 - 130				12/09/16 18:59	12/15/16 12:59	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB24-1216

Lab Sample ID: 320-24178-5

Date Collected: 12/06/16 09:44

Matrix: Water

Date Received: 12/08/16 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.059	0.015	ug/L	-	12/09/16 18:59	12/15/16 13:29	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0093	ug/L	-	12/09/16 18:59	12/15/16 13:29	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L	-	12/09/16 18:59	12/15/16 13:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		70 - 130				12/09/16 18:59	12/15/16 13:29	1
13C2 PFDA	85		70 - 130				12/09/16 18:59	12/15/16 13:29	1

Client Sample ID: WI-CV-1RW25-1216

Lab Sample ID: 320-24178-6

Date Collected: 12/06/16 10:00

Matrix: Water

Date Received: 12/08/16 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.055	0.014	ug/L	-	12/09/16 18:59	12/15/16 14:25	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.0087	ug/L	-	12/09/16 18:59	12/15/16 14:25	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.044	ug/L	-	12/09/16 18:59	12/15/16 14:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		70 - 130				12/09/16 18:59	12/15/16 14:25	1
13C2 PFDA	92		70 - 130				12/09/16 18:59	12/15/16 14:25	1

Client Sample ID: WI-CV-1FB25-1216

Lab Sample ID: 320-24178-7

Date Collected: 12/06/16 09:58

Matrix: Water

Date Received: 12/08/16 10:00

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	-	12/09/16 18:59	12/15/16 15:54	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0095	ug/L	-	12/09/16 18:59	12/15/16 15:54	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L	-	12/09/16 18:59	12/15/16 15:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		70 - 130				12/09/16 18:59	12/15/16 15:54	1
13C2 PFDA	93		70 - 130				12/09/16 18:59	12/15/16 15:54	1

Client Sample ID: WI-CV-1RW26-1216

Lab Sample ID: 320-24178-8

Date Collected: 12/06/16 10:12

Matrix: Water

Date Received: 12/08/16 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.055	0.014	ug/L	-	12/09/16 18:59	12/15/16 16:24	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.0087	ug/L	-	12/09/16 18:59	12/15/16 16:24	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.044	ug/L	-	12/09/16 18:59	12/15/16 16:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		70 - 130				12/09/16 18:59	12/15/16 16:24	1
13C2 PFDA	97		70 - 130				12/09/16 18:59	12/15/16 16:24	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB26-1216

Lab Sample ID: 320-24178-9

Date Collected: 12/06/16 10:09

Matrix: Water

Date Received: 12/08/16 10:00

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	-	12/09/16 18:59	12/15/16 16:53	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0093	ug/L	-	12/09/16 18:59	12/15/16 16:53	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L	-	12/09/16 18:59	12/15/16 16:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		70 - 130				12/09/16 18:59	12/15/16 16:53	1
13C2 PFDA	87		70 - 130				12/09/16 18:59	12/15/16 16:53	1

Client Sample ID: WI-CV-1RW27-1216

Lab Sample ID: 320-24178-10

Date Collected: 12/06/16 10:24

Matrix: Water

Date Received: 12/08/16 10:00

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	-	12/09/16 18:59	12/15/16 17:23	1
Perfluorooctanoic acid (PFOA)	0.038		0.029	0.0093	ug/L	-	12/09/16 18:59	12/15/16 17:23	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L	-	12/09/16 18:59	12/15/16 17:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	114		70 - 130				12/09/16 18:59	12/15/16 17:23	1
13C2 PFDA	112		70 - 130				12/09/16 18:59	12/15/16 17:23	1

Client Sample ID: WI-CV-1FB27-1216

Lab Sample ID: 320-24178-11

Date Collected: 12/06/16 10:22

Matrix: Water

Date Received: 12/08/16 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.046	U	0.058	0.015	ug/L	-	12/09/16 18:59	12/15/16 17:53	1
Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.0091	ug/L	-	12/09/16 18:59	12/15/16 17:53	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.046	ug/L	-	12/09/16 18:59	12/15/16 17:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		70 - 130				12/09/16 18:59	12/15/16 17:53	1
13C2 PFDA	100		70 - 130				12/09/16 18:59	12/15/16 17:53	1

Client Sample ID: WI-CV-1RW28-1216

Lab Sample ID: 320-24178-12

Date Collected: 12/06/16 14:08

Matrix: Water

Date Received: 12/08/16 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.054	0.014	ug/L	-	12/09/16 18:59	12/15/16 18:22	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.0086	ug/L	-	12/09/16 18:59	12/15/16 18:22	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.043	ug/L	-	12/09/16 18:59	12/15/16 18:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		70 - 130				12/09/16 18:59	12/15/16 18:22	1
13C2 PFDA	87		70 - 130				12/09/16 18:59	12/15/16 18:22	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB28-1216

Lab Sample ID: 320-24178-13

Date Collected: 12/06/16 14:05

Matrix: Water

Date Received: 12/08/16 10:00

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		12/09/16 18:59	12/15/16 18:52	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0093	ug/L		12/09/16 18:59	12/15/16 18:52	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/09/16 18:59	12/15/16 18:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		70 - 130	12/09/16 18:59	12/15/16 18:52	1
13C2 PFDA	100		70 - 130	12/09/16 18:59	12/15/16 18:52	1



Surrogate Summary

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

TestAmerica Job ID: 320-24178-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		3C2 PFHx (70-130)	3C2 PFDA (70-130)
320-24178-1	WI-CV-1RW23-1216	93	95
320-24178-2	WI-CV-1RW23P-1216	101	110
320-24178-3	WI-CV-1FB23-1216	97	106
320-24178-4	WI-CV-1RW24-1216	94	91
320-24178-5	WI-CV-1FB24-1216	88	85
320-24178-6	WI-CV-1RW25-1216	97	92
320-24178-7	WI-CV-1FB25-1216	89	93
320-24178-8	WI-CV-1RW26-1216	100	97
320-24178-9	WI-CV-1FB26-1216	89	87
320-24178-10	WI-CV-1RW27-1216	114	112
320-24178-11	WI-CV-1FB27-1216	96	100
320-24178-12	WI-CV-1RW28-1216	86	87
320-24178-13	WI-CV-1FB28-1216	98	100
LLCS 320-141540/2-A	Lab Control Sample	93	90
LLCSD 320-141540/3-A	Lab Control Sample Dup	101	94
MB 320-141540/1-A	Method Blank	90	88

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

QC Sample Results

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

TestAmerica Job ID: 320-24178-1

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

Lab Sample ID: MB 320-141540/1-A
Matrix: Water
Analysis Batch: 142223

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 141540

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		12/09/16 18:59	12/15/16 09:32	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0094	ug/L		12/09/16 18:59	12/15/16 09:32	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L		12/09/16 18:59	12/15/16 09:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		70 - 130	12/09/16 18:59	12/15/16 09:32	1
13C2 PFDA	88		70 - 130	12/09/16 18:59	12/15/16 09:32	1

Lab Sample ID: LLCS 320-141540/2-A
Matrix: Water
Analysis Batch: 142223

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 141540

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	Limits
Perfluorooctanesulfonic acid (PFOS)	0.0401	0.0277	J	ug/L		69	50 - 150
Perfluorooctanoic acid (PFOA)	0.0198	0.0144	J M	ug/L		73	50 - 150
Perfluorobutanesulfonic acid (PFBS)	0.0898	0.0705	J	ug/L		79	50 - 150

Surrogate	LLCS %Recovery	LLCS Qualifier	Limits
13C2 PFHxA	93		70 - 130
13C2 PFDA	90		70 - 130

Lab Sample ID: LLCSD 320-141540/3-A
Matrix: Water
Analysis Batch: 142223

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 141540

Analyte	Spike Added	LLCSD Result	LLCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	0.0401	0.0278	J	ug/L		69	50 - 150	0.5	50
Perfluorooctanoic acid (PFOA)	0.0198	0.0150	J M	ug/L		76	50 - 150	4	50
Perfluorobutanesulfonic acid (PFBS)	0.0898	0.0694	J	ug/L		77	50 - 150	2	50

Surrogate	LLCSD %Recovery	LLCSD Qualifier	Limits
13C2 PFHxA	101		70 - 130
13C2 PFDA	94		70 - 130

QC Association Summary

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

TestAmerica Job ID: 320-24178-1

LCMS

Prep Batch: 141540

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24178-1	WI-CV-1RW23-1216	Total/NA	Water	537	
320-24178-2	WI-CV-1RW23P-1216	Total/NA	Water	537	
320-24178-3	WI-CV-1FB23-1216	Total/NA	Water	537	
320-24178-4	WI-CV-1RW24-1216	Total/NA	Water	537	
320-24178-5	WI-CV-1FB24-1216	Total/NA	Water	537	
320-24178-6	WI-CV-1RW25-1216	Total/NA	Water	537	
320-24178-7	WI-CV-1FB25-1216	Total/NA	Water	537	
320-24178-8	WI-CV-1RW26-1216	Total/NA	Water	537	
320-24178-9	WI-CV-1FB26-1216	Total/NA	Water	537	
320-24178-10	WI-CV-1RW27-1216	Total/NA	Water	537	
320-24178-11	WI-CV-1FB27-1216	Total/NA	Water	537	
320-24178-12	WI-CV-1RW28-1216	Total/NA	Water	537	
320-24178-13	WI-CV-1FB28-1216	Total/NA	Water	537	
MB 320-141540/1-A	Method Blank	Total/NA	Water	537	
LLCS 320-141540/2-A	Lab Control Sample	Total/NA	Water	537	
LLCSD 320-141540/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 142223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24178-1	WI-CV-1RW23-1216	Total/NA	Water	537	141540
320-24178-2	WI-CV-1RW23P-1216	Total/NA	Water	537	141540
320-24178-3	WI-CV-1FB23-1216	Total/NA	Water	537	141540
320-24178-4	WI-CV-1RW24-1216	Total/NA	Water	537	141540
320-24178-5	WI-CV-1FB24-1216	Total/NA	Water	537	141540
320-24178-6	WI-CV-1RW25-1216	Total/NA	Water	537	141540
MB 320-141540/1-A	Method Blank	Total/NA	Water	537	141540
LLCS 320-141540/2-A	Lab Control Sample	Total/NA	Water	537	141540
LLCSD 320-141540/3-A	Lab Control Sample Dup	Total/NA	Water	537	141540

Analysis Batch: 142412

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24178-7	WI-CV-1FB25-1216	Total/NA	Water	537	141540
320-24178-8	WI-CV-1RW26-1216	Total/NA	Water	537	141540
320-24178-9	WI-CV-1FB26-1216	Total/NA	Water	537	141540
320-24178-10	WI-CV-1RW27-1216	Total/NA	Water	537	141540
320-24178-11	WI-CV-1FB27-1216	Total/NA	Water	537	141540
320-24178-12	WI-CV-1RW28-1216	Total/NA	Water	537	141540
320-24178-13	WI-CV-1FB28-1216	Total/NA	Water	537	141540

Lab Chronicle

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1RW23-1216

Lab Sample ID: 320-24178-1

Date Collected: 12/06/16 09:21

Matrix: Water

Date Received: 12/08/16 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			273.4 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142223	12/15/16 11:30	JRB	TAL SAC

Client Sample ID: WI-CV-1RW23P-1216

Lab Sample ID: 320-24178-2

Date Collected: 12/06/16 09:26

Matrix: Water

Date Received: 12/08/16 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			277.5 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142223	12/15/16 12:00	JRB	TAL SAC

Client Sample ID: WI-CV-1FB23-1216

Lab Sample ID: 320-24178-3

Date Collected: 12/06/16 09:22

Matrix: Water

Date Received: 12/08/16 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			251.6 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142223	12/15/16 12:29	JRB	TAL SAC

Client Sample ID: WI-CV-1RW24-1216

Lab Sample ID: 320-24178-4

Date Collected: 12/06/16 09:45

Matrix: Water

Date Received: 12/08/16 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			267.4 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142223	12/15/16 12:59	JRB	TAL SAC

Client Sample ID: WI-CV-1FB24-1216

Lab Sample ID: 320-24178-5

Date Collected: 12/06/16 09:44

Matrix: Water

Date Received: 12/08/16 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			252.2 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142223	12/15/16 13:29	JRB	TAL SAC

Client Sample ID: WI-CV-1RW25-1216

Lab Sample ID: 320-24178-6

Date Collected: 12/06/16 10:00

Matrix: Water

Date Received: 12/08/16 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			271.7 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142223	12/15/16 14:25	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB25-1216

Lab Sample ID: 320-24178-7

Date Collected: 12/06/16 09:58

Matrix: Water

Date Received: 12/08/16 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			247.3 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142412	12/15/16 15:54	CBW	TAL SAC

Client Sample ID: WI-CV-1RW26-1216

Lab Sample ID: 320-24178-8

Date Collected: 12/06/16 10:12

Matrix: Water

Date Received: 12/08/16 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			270.3 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142412	12/15/16 16:24	CBW	TAL SAC

Client Sample ID: WI-CV-1FB26-1216

Lab Sample ID: 320-24178-9

Date Collected: 12/06/16 10:09

Matrix: Water

Date Received: 12/08/16 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			253.5 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142412	12/15/16 16:53	CBW	TAL SAC

Client Sample ID: WI-CV-1RW27-1216

Lab Sample ID: 320-24178-10

Date Collected: 12/06/16 10:24

Matrix: Water

Date Received: 12/08/16 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			254.4 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142412	12/15/16 17:23	CBW	TAL SAC

Client Sample ID: WI-CV-1FB27-1216

Lab Sample ID: 320-24178-11

Date Collected: 12/06/16 10:22

Matrix: Water

Date Received: 12/08/16 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			259.2 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142412	12/15/16 17:53	CBW	TAL SAC

Client Sample ID: WI-CV-1RW28-1216

Lab Sample ID: 320-24178-12

Date Collected: 12/06/16 14:08

Matrix: Water

Date Received: 12/08/16 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			275.4 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142412	12/15/16 18:22	CBW	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB28-1216

Lab Sample ID: 320-24178-13

Date Collected: 12/06/16 14:05

Matrix: Water

Date Received: 12/08/16 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			253.8 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142412	12/15/16 18:52	CBW	TAL SAC

Laboratory References:

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

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Certification Summary

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

TestAmerica Job ID: 320-24178-1

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
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Method Summary

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

TestAmerica Job ID: 320-24178-1

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: 320-24178-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-24178-1	WI-CV-1RW23-1216	Water	12/06/16 09:21	12/08/16 10:00
320-24178-2	WI-CV-1RW23P-1216	Water	12/06/16 09:26	12/08/16 10:00
320-24178-3	WI-CV-1FB23-1216	Water	12/06/16 09:22	12/08/16 10:00
320-24178-4	WI-CV-1RW24-1216	Water	12/06/16 09:45	12/08/16 10:00
320-24178-5	WI-CV-1FB24-1216	Water	12/06/16 09:44	12/08/16 10:00
320-24178-6	WI-CV-1RW25-1216	Water	12/06/16 10:00	12/08/16 10:00
320-24178-7	WI-CV-1FB25-1216	Water	12/06/16 09:58	12/08/16 10:00
320-24178-8	WI-CV-1RW26-1216	Water	12/06/16 10:12	12/08/16 10:00
320-24178-9	WI-CV-1FB26-1216	Water	12/06/16 10:09	12/08/16 10:00
320-24178-10	WI-CV-1RW27-1216	Water	12/06/16 10:24	12/08/16 10:00
320-24178-11	WI-CV-1FB27-1216	Water	12/06/16 10:22	12/08/16 10:00
320-24178-12	WI-CV-1RW28-1216	Water	12/06/16 14:08	12/08/16 10:00
320-24178-13	WI-CV-1FB28-1216	Water	12/06/16 14:05	12/08/16 10:00

Regulatory Program: DW NPDES RCRA Other:

Client Contact Tiffany Hill Project Chemist 1100 NE Circle Blvd Ste 300 Corvallis, OR 97330 (541) 768-3109 (541) 908-3794 Project Name: CTO-08 Site: OLF Coupeville P O #: 100067106050 - 679580.09.FI.FS		Project Manager: Katie Tippin Tel/Fax: (757) 671-6258 Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below 7-Day <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Site Contact: Eric Epple Lab Contact: Laura Turpen Date: 12/07/2016 Carrier: FedEx		COC No: 87 1 of 2 COCs Sampler: For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:										
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-CV-1RW23-1216	12/6/16	0921	G	DW	2	N	N	X								
WI-CV-1RW23P-1216	12/6/16	0926	G	DW	2	N	N	X								
WI-CV-1FB23-1216	12/6/16	0922	G	DW	2	N	N	X								
WI-CV-1RW24-1216	12/6/16	0945	G	DW	2	N	N	X								
WI-CV-1FB24-1216	12/6/16	0944	G	DW	2	N	N	X								
WI-CV-1RW25-1216	12/6/16	1000	G	DW	2	N	N	X								
WI-CV-1FB25-1216	12/6/16	0958	G	DW	2	N	N	X								
WI-CV-1RW26-1216	12/6/16	1012	G	DW	2	N	N	X								
WI-CV-1FB26-1216	12/6/16	1009	G	DW	2	N	N	X								
WI-CV-1RW27-1216	12/6/16	1024	G	DW	2	N	N	X								
WI-CV-1FB27-1216	12/6/16	1022	G	DW	2	N	N	X								
WI-CV-1RW28-1216	12/6/16	1408	G	DW	2	N	N	X								
Preservation Used: 1=Ice, 2=HCl; 3=H2SO4; 4=HNO3; 5=NaOH; 6=Other						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)										
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. <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown						<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months										
Special Instructions/QC Requirements & Comments:																
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____		Corr'd: _____		Therm ID No.:								
Relinquished by: <i>Eric Epple</i>		Company: CH2M		Date/Time: 12-7-16/1600		Received by: <i>[Signature]</i>		Company: <i>JA SAC</i>		Date/Time: 12/8/16 16:00						
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:						
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:		Date/Time:						



Page 20 of 22

12/19/2016



Login Sample Receipt Checklist

Client: CH2M Hill Constructors, Inc.

Job Number: 320-24178-1

Login Number: 24178

List Source: TestAmerica Sacramento

List Number: 1

Creator: Edman, Connor M

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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	Temperature was -0.2 degrees, but the samples were not frozen
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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

Job Number: 320-24178-1
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
12/19/2016 8:54 AM

Laura Turpen, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4414
laura.turpen@testamericainc.com
12/19/2016

Table of Contents

Cover Title Page	1
Data Summaries	4
Definitions	4
Case Narrative	5
Detection Summary	6
Client Sample Results	7
Default Detection Limits	11
Surrogate Summary	12
QC Sample Results	13
QC Association	14
Chronicle	15
Certification Summary	18
Method Summary	19
Sample Summary	20
Manual Integration Summary	21
Reagent Traceability	24
COAs	32
Organic Sample Data	82
LCMS	82
Method 537 DOD	82
Method 537 DOD QC Summary	83
Method 537 DOD Sample Data	92
Standards Data	147
Method 537 DOD ICAL Data	147
Method 537 DOD CCAL Data	170
Raw QC Data	197

Table of Contents

Method 537 DOD Blank Data	197
Method 537 DOD LCS/LCSD Data	201
Method 537 DOD Run Logs	211
Method 537 DOD Prep Data	214
Shipping and Receiving Documents	236
Client Chain of Custody	237
Sample Receipt Checklist	239

Definitions/Glossary

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

TestAmerica Job ID: 320-24178-1

Qualifiers

LCMS

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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: 320-24178-1

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 12/08/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was -0.2 C.

An extended TAT was requested by the client via an email on December 8. Samples received on December 8 and 9 were requested to have a due date of December 19, 2016.

PFOA/PFOS

Samples WI-CV-1RW23-1216 (320-24178-1), WI-CV-1RW23P-1216 (320-24178-2), WI-CV-1FB23-1216 (320-24178-3), WI-CV-1RW24-1216 (320-24178-4), WI-CV-1FB24-1216 (320-24178-5), WI-CV-1RW25-1216 (320-24178-6), WI-CV-1FB25-1216 (320-24178-7), WI-CV-1RW26-1216 (320-24178-8), WI-CV-1FB26-1216 (320-24178-9), WI-CV-1RW27-1216 (320-24178-10), WI-CV-1FB27-1216 (320-24178-11), WI-CV-1RW28-1216 (320-24178-12) and WI-CV-1FB28-1216 (320-24178-13) were analyzed for PFOA/PFOS in accordance with 537. The samples were prepared on 12/09/2016 and analyzed on 12/15/2016.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 320-141540.

After concentration, the following sample had a lot of orange sediment on the bottom.
WI-CV-1RW28-1216 (320-24178-12)

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

Detection Summary

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1RW23-1216

Lab Sample ID: 320-24178-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.055		0.027	0.0086	ug/L	1		537	Total/NA

Client Sample ID: WI-CV-1RW23P-1216

Lab Sample ID: 320-24178-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.061		0.027	0.0085	ug/L	1		537	Total/NA

Client Sample ID: WI-CV-1FB23-1216

Lab Sample ID: 320-24178-3

No Detections.

Client Sample ID: WI-CV-1RW24-1216

Lab Sample ID: 320-24178-4

No Detections.

Client Sample ID: WI-CV-1FB24-1216

Lab Sample ID: 320-24178-5

No Detections.

Client Sample ID: WI-CV-1RW25-1216

Lab Sample ID: 320-24178-6

No Detections.

Client Sample ID: WI-CV-1FB25-1216

Lab Sample ID: 320-24178-7

No Detections.

Client Sample ID: WI-CV-1RW26-1216

Lab Sample ID: 320-24178-8

No Detections.

Client Sample ID: WI-CV-1FB26-1216

Lab Sample ID: 320-24178-9

No Detections.

Client Sample ID: WI-CV-1RW27-1216

Lab Sample ID: 320-24178-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.038		0.029	0.0093	ug/L	1		537	Total/NA

Client Sample ID: WI-CV-1FB27-1216

Lab Sample ID: 320-24178-11

No Detections.

Client Sample ID: WI-CV-1RW28-1216

Lab Sample ID: 320-24178-12

No Detections.

Client Sample ID: WI-CV-1FB28-1216

Lab Sample ID: 320-24178-13

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1RW23-1216

Date Collected: 12/06/16 09:21

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-1

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.044	U M	0.055	0.014	ug/L		12/09/16 18:59	12/15/16 11:30	1
Perfluorooctanoic acid (PFOA)	0.055		0.027	0.0086	ug/L		12/09/16 18:59	12/15/16 11:30	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.044	ug/L		12/09/16 18:59	12/15/16 11:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		70 - 130				12/09/16 18:59	12/15/16 11:30	1
13C2 PFDA	95		70 - 130				12/09/16 18:59	12/15/16 11:30	1

Client Sample ID: WI-CV-1RW23P-1216

Date Collected: 12/06/16 09:26

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-2

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.043	U M	0.054	0.014	ug/L		12/09/16 18:59	12/15/16 12:00	1
Perfluorooctanoic acid (PFOA)	0.061		0.027	0.0085	ug/L		12/09/16 18:59	12/15/16 12:00	1
Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.043	ug/L		12/09/16 18:59	12/15/16 12:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		70 - 130				12/09/16 18:59	12/15/16 12:00	1
13C2 PFDA	110		70 - 130				12/09/16 18:59	12/15/16 12:00	1

Client Sample ID: WI-CV-1FB23-1216

Date Collected: 12/06/16 09:22

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-3

Matrix: Water

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		12/09/16 18:59	12/15/16 12:29	1
Perfluorooctanoic acid (PFOA)	0.024	U M	0.030	0.0094	ug/L		12/09/16 18:59	12/15/16 12:29	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/09/16 18:59	12/15/16 12:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		70 - 130				12/09/16 18:59	12/15/16 12:29	1
13C2 PFDA	106		70 - 130				12/09/16 18:59	12/15/16 12:29	1

Client Sample ID: WI-CV-1RW24-1216

Date Collected: 12/06/16 09:45

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-4

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.045	U	0.056	0.014	ug/L		12/09/16 18:59	12/15/16 12:59	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.0088	ug/L		12/09/16 18:59	12/15/16 12:59	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.044	ug/L		12/09/16 18:59	12/15/16 12:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		70 - 130				12/09/16 18:59	12/15/16 12:59	1
13C2 PFDA	91		70 - 130				12/09/16 18:59	12/15/16 12:59	1

Client Sample Results

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB24-1216

Lab Sample ID: 320-24178-5

Date Collected: 12/06/16 09:44

Matrix: Water

Date Received: 12/08/16 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.059	0.015	ug/L		12/09/16 18:59	12/15/16 13:29	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0093	ug/L		12/09/16 18:59	12/15/16 13:29	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/09/16 18:59	12/15/16 13:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		70 - 130				12/09/16 18:59	12/15/16 13:29	1
13C2 PFDA	85		70 - 130				12/09/16 18:59	12/15/16 13:29	1

Client Sample ID: WI-CV-1RW25-1216

Lab Sample ID: 320-24178-6

Date Collected: 12/06/16 10:00

Matrix: Water

Date Received: 12/08/16 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.055	0.014	ug/L		12/09/16 18:59	12/15/16 14:25	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.0087	ug/L		12/09/16 18:59	12/15/16 14:25	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.044	ug/L		12/09/16 18:59	12/15/16 14:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		70 - 130				12/09/16 18:59	12/15/16 14:25	1
13C2 PFDA	92		70 - 130				12/09/16 18:59	12/15/16 14:25	1

Client Sample ID: WI-CV-1FB25-1216

Lab Sample ID: 320-24178-7

Date Collected: 12/06/16 09:58

Matrix: Water

Date Received: 12/08/16 10:00

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		12/09/16 18:59	12/15/16 15:54	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0095	ug/L		12/09/16 18:59	12/15/16 15:54	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L		12/09/16 18:59	12/15/16 15:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		70 - 130				12/09/16 18:59	12/15/16 15:54	1
13C2 PFDA	93		70 - 130				12/09/16 18:59	12/15/16 15:54	1

Client Sample ID: WI-CV-1RW26-1216

Lab Sample ID: 320-24178-8

Date Collected: 12/06/16 10:12

Matrix: Water

Date Received: 12/08/16 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.055	0.014	ug/L		12/09/16 18:59	12/15/16 16:24	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.0087	ug/L		12/09/16 18:59	12/15/16 16:24	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.044	ug/L		12/09/16 18:59	12/15/16 16:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		70 - 130				12/09/16 18:59	12/15/16 16:24	1
13C2 PFDA	97		70 - 130				12/09/16 18:59	12/15/16 16:24	1

Client Sample Results

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB26-1216

Lab Sample ID: 320-24178-9

Date Collected: 12/06/16 10:09

Matrix: Water

Date Received: 12/08/16 10:00

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		12/09/16 18:59	12/15/16 16:53	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0093	ug/L		12/09/16 18:59	12/15/16 16:53	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/09/16 18:59	12/15/16 16:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		70 - 130				12/09/16 18:59	12/15/16 16:53	1
13C2 PFDA	87		70 - 130				12/09/16 18:59	12/15/16 16:53	1

Client Sample ID: WI-CV-1RW27-1216

Lab Sample ID: 320-24178-10

Date Collected: 12/06/16 10:24

Matrix: Water

Date Received: 12/08/16 10:00

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		12/09/16 18:59	12/15/16 17:23	1
Perfluorooctanoic acid (PFOA)	0.038		0.029	0.0093	ug/L		12/09/16 18:59	12/15/16 17:23	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/09/16 18:59	12/15/16 17:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	114		70 - 130				12/09/16 18:59	12/15/16 17:23	1
13C2 PFDA	112		70 - 130				12/09/16 18:59	12/15/16 17:23	1

Client Sample ID: WI-CV-1FB27-1216

Lab Sample ID: 320-24178-11

Date Collected: 12/06/16 10:22

Matrix: Water

Date Received: 12/08/16 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.046	U	0.058	0.015	ug/L		12/09/16 18:59	12/15/16 17:53	1
Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.0091	ug/L		12/09/16 18:59	12/15/16 17:53	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.046	ug/L		12/09/16 18:59	12/15/16 17:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		70 - 130				12/09/16 18:59	12/15/16 17:53	1
13C2 PFDA	100		70 - 130				12/09/16 18:59	12/15/16 17:53	1

Client Sample ID: WI-CV-1RW28-1216

Lab Sample ID: 320-24178-12

Date Collected: 12/06/16 14:08

Matrix: Water

Date Received: 12/08/16 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.054	0.014	ug/L		12/09/16 18:59	12/15/16 18:22	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.0086	ug/L		12/09/16 18:59	12/15/16 18:22	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.043	ug/L		12/09/16 18:59	12/15/16 18:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		70 - 130				12/09/16 18:59	12/15/16 18:22	1
13C2 PFDA	87		70 - 130				12/09/16 18:59	12/15/16 18:22	1

Client Sample Results

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB28-1216

Lab Sample ID: 320-24178-13

Date Collected: 12/06/16 14:05

Matrix: Water

Date Received: 12/08/16 10:00

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		12/09/16 18:59	12/15/16 18:52	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0093	ug/L		12/09/16 18:59	12/15/16 18:52	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/09/16 18:59	12/15/16 18:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		70 - 130				12/09/16 18:59	12/15/16 18:52	1
13C2 PFDA	100		70 - 130				12/09/16 18:59	12/15/16 18:52	1

Default Detection Limits

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

TestAmerica Job ID: 320-24178-1

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: 320-24178-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		3C2 PFHx (70-130)	3C2 PFDA (70-130)
320-24178-1	WI-CV-1RW23-1216	93	95
320-24178-2	WI-CV-1RW23P-1216	101	110
320-24178-3	WI-CV-1FB23-1216	97	106
320-24178-4	WI-CV-1RW24-1216	94	91
320-24178-5	WI-CV-1FB24-1216	88	85
320-24178-6	WI-CV-1RW25-1216	97	92
320-24178-7	WI-CV-1FB25-1216	89	93
320-24178-8	WI-CV-1RW26-1216	100	97
320-24178-9	WI-CV-1FB26-1216	89	87
320-24178-10	WI-CV-1RW27-1216	114	112
320-24178-11	WI-CV-1FB27-1216	96	100
320-24178-12	WI-CV-1RW28-1216	86	87
320-24178-13	WI-CV-1FB28-1216	98	100
LLCS 320-141540/2-A	Lab Control Sample	93	90
LLCSD 320-141540/3-A	Lab Control Sample Dup	101	94
MB 320-141540/1-A	Method Blank	90	88

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

QC Sample Results

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

TestAmerica Job ID: 320-24178-1

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

Lab Sample ID: MB 320-141540/1-A
Matrix: Water
Analysis Batch: 142223

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 141540

Analyte	MB MB		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.016	ug/L		12/09/16 18:59	12/15/16 09:32	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0094	ug/L		12/09/16 18:59	12/15/16 09:32	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L		12/09/16 18:59	12/15/16 09:32	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	90		70 - 130	12/09/16 18:59	12/15/16 09:32	1
13C2 PFDA	88		70 - 130	12/09/16 18:59	12/15/16 09:32	1

Lab Sample ID: LLCS 320-141540/2-A
Matrix: Water
Analysis Batch: 142223

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 141540

Analyte	Spike Added	LLCS LLCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Perfluorooctanesulfonic acid (PFOS)	0.0401	0.0277	J	ug/L		69	50 - 150
Perfluorooctanoic acid (PFOA)	0.0198	0.0144	J M	ug/L		73	50 - 150
Perfluorobutanesulfonic acid (PFBS)	0.0898	0.0705	J	ug/L		79	50 - 150

Surrogate	LLCS LLCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	93		70 - 130
13C2 PFDA	90		70 - 130

Lab Sample ID: LLCSD 320-141540/3-A
Matrix: Water
Analysis Batch: 142223

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 141540

Analyte	Spike Added	LLCSD LLCSD		Unit	D	%Rec	Limits	RPD	
		Result	Qualifier					RPD	Limit
Perfluorooctanesulfonic acid (PFOS)	0.0401	0.0278	J	ug/L		69	50 - 150	0.5	50
Perfluorooctanoic acid (PFOA)	0.0198	0.0150	J M	ug/L		76	50 - 150	4	50
Perfluorobutanesulfonic acid (PFBS)	0.0898	0.0694	J	ug/L		77	50 - 150	2	50

Surrogate	LLCSD LLCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	101		70 - 130
13C2 PFDA	94		70 - 130

QC Association Summary

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

TestAmerica Job ID: 320-24178-1

LCMS

Prep Batch: 141540

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24178-1	WI-CV-1RW23-1216	Total/NA	Water	537	
320-24178-2	WI-CV-1RW23P-1216	Total/NA	Water	537	
320-24178-3	WI-CV-1FB23-1216	Total/NA	Water	537	
320-24178-4	WI-CV-1RW24-1216	Total/NA	Water	537	
320-24178-5	WI-CV-1FB24-1216	Total/NA	Water	537	
320-24178-6	WI-CV-1RW25-1216	Total/NA	Water	537	
320-24178-7	WI-CV-1FB25-1216	Total/NA	Water	537	
320-24178-8	WI-CV-1RW26-1216	Total/NA	Water	537	
320-24178-9	WI-CV-1FB26-1216	Total/NA	Water	537	
320-24178-10	WI-CV-1RW27-1216	Total/NA	Water	537	
320-24178-11	WI-CV-1FB27-1216	Total/NA	Water	537	
320-24178-12	WI-CV-1RW28-1216	Total/NA	Water	537	
320-24178-13	WI-CV-1FB28-1216	Total/NA	Water	537	
MB 320-141540/1-A	Method Blank	Total/NA	Water	537	
LLCS 320-141540/2-A	Lab Control Sample	Total/NA	Water	537	
LLCSD 320-141540/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 142223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24178-1	WI-CV-1RW23-1216	Total/NA	Water	537	141540
320-24178-2	WI-CV-1RW23P-1216	Total/NA	Water	537	141540
320-24178-3	WI-CV-1FB23-1216	Total/NA	Water	537	141540
320-24178-4	WI-CV-1RW24-1216	Total/NA	Water	537	141540
320-24178-5	WI-CV-1FB24-1216	Total/NA	Water	537	141540
320-24178-6	WI-CV-1RW25-1216	Total/NA	Water	537	141540
MB 320-141540/1-A	Method Blank	Total/NA	Water	537	141540
LLCS 320-141540/2-A	Lab Control Sample	Total/NA	Water	537	141540
LLCSD 320-141540/3-A	Lab Control Sample Dup	Total/NA	Water	537	141540

Analysis Batch: 142412

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24178-7	WI-CV-1FB25-1216	Total/NA	Water	537	141540
320-24178-8	WI-CV-1RW26-1216	Total/NA	Water	537	141540
320-24178-9	WI-CV-1FB26-1216	Total/NA	Water	537	141540
320-24178-10	WI-CV-1RW27-1216	Total/NA	Water	537	141540
320-24178-11	WI-CV-1FB27-1216	Total/NA	Water	537	141540
320-24178-12	WI-CV-1RW28-1216	Total/NA	Water	537	141540
320-24178-13	WI-CV-1FB28-1216	Total/NA	Water	537	141540

Lab Chronicle

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1RW23-1216

Date Collected: 12/06/16 09:21

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142223	12/15/16 11:30	JRB	TAL SAC

Client Sample ID: WI-CV-1RW23P-1216

Date Collected: 12/06/16 09:26

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142223	12/15/16 12:00	JRB	TAL SAC

Client Sample ID: WI-CV-1FB23-1216

Date Collected: 12/06/16 09:22

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142223	12/15/16 12:29	JRB	TAL SAC

Client Sample ID: WI-CV-1RW24-1216

Date Collected: 12/06/16 09:45

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142223	12/15/16 12:59	JRB	TAL SAC

Client Sample ID: WI-CV-1FB24-1216

Date Collected: 12/06/16 09:44

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142223	12/15/16 13:29	JRB	TAL SAC

Client Sample ID: WI-CV-1RW25-1216

Date Collected: 12/06/16 10:00

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142223	12/15/16 14:25	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB25-1216

Date Collected: 12/06/16 09:58

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142412	12/15/16 15:54	CBW	TAL SAC

Client Sample ID: WI-CV-1RW26-1216

Date Collected: 12/06/16 10:12

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142412	12/15/16 16:24	CBW	TAL SAC

Client Sample ID: WI-CV-1FB26-1216

Date Collected: 12/06/16 10:09

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142412	12/15/16 16:53	CBW	TAL SAC

Client Sample ID: WI-CV-1RW27-1216

Date Collected: 12/06/16 10:24

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142412	12/15/16 17:23	CBW	TAL SAC

Client Sample ID: WI-CV-1FB27-1216

Date Collected: 12/06/16 10:22

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142412	12/15/16 17:53	CBW	TAL SAC

Client Sample ID: WI-CV-1RW28-1216

Date Collected: 12/06/16 14:08

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142412	12/15/16 18:22	CBW	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB28-1216

Lab Sample ID: 320-24178-13

Date Collected: 12/06/16 14:05

Matrix: Water

Date Received: 12/08/16 10:00

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142412	12/15/16 18:52	CBW	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: 320-24178-1

Laboratory: TestAmerica Sacramento

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

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

<u>Analysis Method</u>	<u>Prep Method</u>	<u>Matrix</u>	<u>Analyte</u>
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Method Summary

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

TestAmerica Job ID: 320-24178-1

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: 320-24178-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-24178-1	WI-CV-1RW23-1216	Water	12/06/16 09:21	12/08/16 10:00
320-24178-2	WI-CV-1RW23P-1216	Water	12/06/16 09:26	12/08/16 10:00
320-24178-3	WI-CV-1FB23-1216	Water	12/06/16 09:22	12/08/16 10:00
320-24178-4	WI-CV-1RW24-1216	Water	12/06/16 09:45	12/08/16 10:00
320-24178-5	WI-CV-1FB24-1216	Water	12/06/16 09:44	12/08/16 10:00
320-24178-6	WI-CV-1RW25-1216	Water	12/06/16 10:00	12/08/16 10:00
320-24178-7	WI-CV-1FB25-1216	Water	12/06/16 09:58	12/08/16 10:00
320-24178-8	WI-CV-1RW26-1216	Water	12/06/16 10:12	12/08/16 10:00
320-24178-9	WI-CV-1FB26-1216	Water	12/06/16 10:09	12/08/16 10:00
320-24178-10	WI-CV-1RW27-1216	Water	12/06/16 10:24	12/08/16 10:00
320-24178-11	WI-CV-1FB27-1216	Water	12/06/16 10:22	12/08/16 10:00
320-24178-12	WI-CV-1RW28-1216	Water	12/06/16 14:08	12/08/16 10:00
320-24178-13	WI-CV-1FB28-1216	Water	12/06/16 14:05	12/08/16 10:00

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1

SDG No.: _____

Instrument ID: A6 Analysis Batch Number: 140688

Lab Sample ID: STD 320-140688/2 IC Client Sample ID: _____

Date Analyzed: 12/05/16 17:26 Lab File ID: 05DEC2016A6A_004.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	19.37	Split Peak	barnettj	12/06/16 10:00
Perfluorooctanoic acid (PFOA)	20.05	Split Peak	barnettj	12/06/16 10:00

Lab Sample ID: STD 320-140688/3 IC Client Sample ID: _____

Date Analyzed: 12/05/16 17:55 Lab File ID: 05DEC2016A6A_005.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	19.38	Split Peak	barnettj	12/06/16 10:03
Perfluorooctanoic acid (PFOA)	20.05	Split Peak	barnettj	12/06/16 10:03

Lab Sample ID: CCV 320-140688/9 CCVL Client Sample ID: _____

Date Analyzed: 12/05/16 20:53 Lab File ID: 05DEC2016A6A_011.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	19.38	Split Peak	barnettj	12/06/16 10:08
Perfluorooctanoic acid (PFOA)	20.05	Split Peak	barnettj	12/06/16 10:08

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1

SDG No.: _____

Instrument ID: A6 Analysis Batch Number: 142223

Lab Sample ID: CCV 320-142223/2 CCVL Client Sample ID: _____

Date Analyzed: 12/15/16 08:03 Lab File ID: 15DEC2016A6A_002.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	19.38	Split Peak	barnettj	12/15/16 15:05
Perfluorooctanoic acid (PFOA)	20.05	Split Peak	barnettj	12/15/16 15:05

Lab Sample ID: LLCS 320-141540/2-A Client Sample ID: _____

Date Analyzed: 12/15/16 10:02 Lab File ID: 15DEC2016A6A_006.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	20.04	Split Peak	barnettj	12/15/16 15:14

Lab Sample ID: LLCSD 320-141540/3-A Client Sample ID: _____

Date Analyzed: 12/15/16 10:31 Lab File ID: 15DEC2016A6A_007.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	20.04	Split Peak	barnettj	12/15/16 15:15

Lab Sample ID: 320-24178-1 Client Sample ID: WI-CV-1RW23-1216

Date Analyzed: 12/15/16 11:30 Lab File ID: 15DEC2016A6A_009.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	20.38	Missed Peak	barnettj	12/15/16 15:18

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1

SDG No.: _____

Instrument ID: A6 Analysis Batch Number: 142223

Lab Sample ID: 320-24178-2 Client Sample ID: WI-CV-1RW23P-1216

Date Analyzed: 12/15/16 12:00 Lab File ID: 15DEC2016A6A_010.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	20.41	Missed Peak	barnettj	12/15/16 15:19

Lab Sample ID: 320-24178-3 Client Sample ID: WI-CV-1FB23-1216

Date Analyzed: 12/15/16 12:29 Lab File ID: 15DEC2016A6A_011.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	20.04	Split Peak	barnettj	12/15/16 15:20

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-ICV_00017	01/13/17	08/09/16	MeOH/H2O, Lot 067374	10 mL	LC537-IS_00018	200 uL	13C2-PFOA	10 ng/mL
.LC537-IS_00018	01/13/17	07/13/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00004	100 uL	13C2-PFOA	0.5 ug/mL
..LCM2PFOA_00004	03/19/17	Wellington Laboratories, Lot M2PFOA0312			LCMPFOS_00013	300 uL	13C4 PFOS	1.434 ug/mL
..LCMPFOS_00013	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C2-PFOA	50 ug/mL
LC537-ICV_00017	01/13/17	08/09/16	MeOH/H2O, Lot 067374	10 mL	LC537-SU_00017	500 uL	13C2 PFDA	10 ng/mL
					LC537ICIM_00013	25 uL	13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	114.77 ng/mL
							Perfluorooctanoic acid (PFOA)	25.0965 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	27.2389 ng/mL
.LC537-SU_00017	01/19/17	07/19/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL
..LCMPFDA_00008	08/19/20	Wellington Laboratories, Lot MPFDA0815			LCMPFHxA_00009	100 uL	13C2 PFHxA	0.2 ug/mL
..LCMPFHxA_00009	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LC537ICIM_00013	02/05/17	08/09/16	Methanol, Lot 090285	25 mL	LC537-PFBS2_00005	0.5 mL	13C2 PFHxA	50 ug/mL
					LC537-PFOA2_00007	0.13 mL	Perfluorobutanesulfonic acid (PFBS)	45.908 ug/mL
					LC537-PFOS2_00005	0.22 mL	Perfluorooctanoic acid (PFOA)	10.0386 ug/mL
..LC537-PFBS2_00005	03/01/17	02/29/16	Methanol, Lot 090285	10 mL	LC537-PFOS2_00005	0.22 mL	Perfluorooctanesulfonic acid (PFOS)	10.8956 ug/mL
...LC537-PFBS2_00001	08/09/17	Santa Cruz Biotechnology, Lot H0112			LC537-PFBS2_00001	0.023 g	Perfluorobutanesulfonic acid (PFBS)	2295.4 ug/mL
..LC537-PFOA2_00007	07/25/17	08/05/16	Methanol, Lot 090285	10 mL	(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	0.998 g/g
..LC537-PFOA2_00001	07/25/17	Afla Aesar, Lot D24Y026			LC537-PFOA2_00001	0.0195 g	Perfluorooctanoic acid (PFOA)	1930.5 ug/mL
..LC537-PFOS2_00005	03/01/17	02/29/16	Methanol, Lot 090285	10 mL	(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.99 g/g
...LC537-PFOS2_00001	07/26/17	Sigma, Lot BCBF5116V			LC537-PFOS2_00001	0.0159 g	Perfluorooctanesulfonic acid (PFOS)	1238.13 ug/mL
					(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.7787 g/g
LC537-IS_00026	03/19/17	12/05/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00003	100 uL	13C2-PFOA	0.5 ug/mL
.LCM2PFOA_00003	03/19/17	Wellington Laboratories, Lot M2PFOA0312			LCMPFOS_00018	300 uL	13C4 PFOS	1.434 ug/mL
..LCMPFOS_00018	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C2-PFOA	50 ug/mL
					(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-L1_00015	01/13/17	07/28/16	MeOH/H2O, Lot 090285	5 mL	LC537-IS_00018	100 uL	13C2-PFOA	10 ng/mL
					LC537-MSP_00012	24.4 uL	13C4 PFOS	28.68 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	8.76058 ng/mL
							Perfluoroheptanoic acid	0.993847 ng/mL
							Perfluorohexanesulfonic acid	2.9532 ng/mL
							Perfluorononanoic acid	1.91737 ng/mL
							Perfluorooctanoic acid (PFOA)	1.9793 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	3.91048 ng/mL
					LC537-SU_00017	250 uL	13C2 PFDA	10 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC537-IS_00018	01/13/17	07/13/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00004	100 uL	13C2 PFHxA	10 ng/mL
..LCM2PFOA_00004	03/19/17	Wellington Laboratories, Lot M2PFOA0312			(Purchased Reagent)		13C2-PFOA	0.5 ug/mL
..LCMPFOS_00013	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	1.434 ug/mL
.LC537-MSP_00012	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00012	200 uL	13C2 PFOS	47.8 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	1795.2 ng/mL
							Perfluoroheptanoic acid	203.657 ng/mL
							Perfluorohexanesulfonic acid	605.164 ng/mL
							Perfluorononanoic acid	392.904 ng/mL
							Perfluorooctanoic acid (PFOA)	405.594 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	801.328 ng/mL
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHpA_00010	0.1 mL	Perfluoroheptanoic acid	10.1829 ug/mL
					LC537-PFHxS_00008	0.3 mL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00008	0.2 mL	Perfluorononanoic acid	19.6452 ug/mL
					LC537-PFOA_00009	0.098 mL	Perfluorooctanoic acid (PFOA)	20.2797 ug/mL
					LC537-PFOS_00006	0.4 mL	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_00010	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFHpA_00002	0.0072 g	Perfluoroheptanoic acid	1018.29 ug/mL
...LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCM2579V			(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_00008	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFNA_00002	0.0051 g	Perfluorononanoic acid	982.26 ug/mL
...LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
...LC537-PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFOA_00002	0.0145 g	Perfluorooctanoic acid (PFOA)	2069.36 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_00017	01/19/17	07/19/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL
..LCMPFDA_00008	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFHxA	0.2 ug/mL
..LCMPFHxA_00009	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFDA	50 ug/mL
LC537-L2_00014	01/13/17	07/28/16	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00010	34 uL	13C2 PFHxA	50 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	22.8888 ng/mL
							Perfluoroheptanoic acid	2.59663 ng/mL
							Perfluorohexanesulfonic acid	7.71585 ng/mL
							Perfluorononanoic acid	5.00953 ng/mL
							Perfluorooctanoic acid (PFOA)	5.17132 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	10.2169 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537-IS_00018	100 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00017	250 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00010	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00012	375 uL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluoroheptanoic acid	381.857 ng/mL
							Perfluorohexanesulfonic acid	1134.68 ng/mL
							Perfluorononanoic acid	736.695 ng/mL
							Perfluorooctanoic acid (PFOA)	760.489 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHpA_00010	0.1 mL	Perfluoroheptanoic acid	10.1829 ug/mL
					LC537-PFHxS_00008	0.3 mL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00008	0.2 mL	Perfluorononanoic acid	19.6452 ug/mL
					LC537-PFOA_00009	0.098 mL	Perfluorooctanoic acid (PFOA)	20.2797 ug/mL
					LC537-PFOS_00006	0.4 mL	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_00010	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFHpA_00002	0.0072 g	Perfluoroheptanoic acid	1018.29 ug/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCM2579V		(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_00008	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFNA_00002	0.0051 g	Perfluorononanoic acid	982.26 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
...LC537-PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFOA_00002	0.0145 g	Perfluorooctanoic acid (PFOA)	2069.36 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_00018	01/13/17	07/13/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00004	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00013	300 uL	13C4 PFOS	1.434 ug/mL
..LCM2PFOA_00004	03/19/17		Wellington Laboratories, Lot M2PFOA0312		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00013	01/22/21		Wellington Laboratories, Lot MPFOS0116		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00017	01/19/17	07/19/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL
					LCMPFHxA_00009	100 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
LC537-L3_00016	01/28/17	11/07/16	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00010	67 uL	Perfluorobutanesulfonic acid (PFBS)	45.1044 ng/mL
							Perfluoroheptanoic acid	5.11689 ng/mL
							Perfluorohexanesulfonic acid	15.2048 ng/mL
							Perfluorononanoic acid	9.87171 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanoic acid (PFOA)	10.1905 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	20.1334 ng/mL
					LC537-IS_00024	100 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00020	250 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00010	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00012	375 uL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluoroheptanoic acid	381.857 ng/mL
							Perfluorohexanesulfonic acid	1134.68 ng/mL
							Perfluorononanoic acid	736.695 ng/mL
							Perfluorooctanoic acid (PFOA)	760.489 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHpA_00010	0.1 mL	Perfluoroheptanoic acid	10.1829 ug/mL
					LC537-PFHxS_00008	0.3 mL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00008	0.2 mL	Perfluorononanoic acid	19.6452 ug/mL
					LC537-PFOA_00009	0.098 mL	Perfluorooctanoic acid (PFOA)	20.2797 ug/mL
					LC537-PFOS_00006	0.4 mL	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_00010	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFHpA_00002	0.0072 g	Perfluoroheptanoic acid	1018.29 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_00008	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537 PFNA_00002	0.0051 g	Perfluorononanoic acid	982.26 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F			(Purchased Reagent)	Perfluorononanoic acid	0.963 g/g
...LC537-PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFOA_00002	0.0145 g	Perfluorooctanoic acid (PFOA)	2069.36 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_00024	03/19/17	11/03/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00003	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00018	300 uL	13C4 PFOS	1.434 ug/mL
..LCM2PFOA_00003	03/19/17		Wellington Laboratories, Lot M2PFOA0312			(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_00020	04/07/17	10/07/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL
					LCMPFHxA_00009	100 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
LC537-L4_00015	01/13/17	07/28/16	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00010	135 uL	Perfluorobutanesulfonic acid (PFBS)	90.882 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroheptanoic acid	10.3101 ng/mL
							Perfluorohexanesulfonic acid	30.6364 ng/mL
							Perfluorononanoic acid	19.8908 ng/mL
							Perfluorooctanoic acid (PFOA)	20.5332 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	40.5672 ng/mL
					LC537-IS_00018	100 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00017	250 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00010	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00012	375 uL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluoroheptanoic acid	381.857 ng/mL
							Perfluorohexanesulfonic acid	1134.68 ng/mL
							Perfluorononanoic acid	736.695 ng/mL
							Perfluorooctanoic acid (PFOA)	760.489 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHpA_00010	0.1 mL	Perfluoroheptanoic acid	10.1829 ug/mL
					LC537-PFHxS_00008	0.3 mL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00008	0.2 mL	Perfluorononanoic acid	19.6452 ug/mL
					LC537-PFOA_00009	0.098 mL	Perfluorooctanoic acid (PFOA)	20.2797 ug/mL
					LC537-PFOS_00006	0.4 mL	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_00010	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFHpA_00002	0.0072 g	Perfluoroheptanoic acid	1018.29 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_00008	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537 PFNA_00002	0.0051 g	Perfluorononanoic acid	982.26 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
...LC537-PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFOA_00002	0.0145 g	Perfluorooctanoic acid (PFOA)	2069.36 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_00018	01/13/17	07/13/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00004	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00013	300 uL	13C4 PFOS	1.434 ug/mL
..LCM2PFOA_00004	03/19/17		Wellington Laboratories, Lot M2PFOA0312		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00013	01/22/21		Wellington Laboratories, Lot MPFOS0116		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00017	01/19/17	07/19/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL
					LCMPFHxA_00009	100 uL	13C2 PFHxA	0.2 ug/mL
..LCMPFDA_00008	08/19/20		Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFDA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
..LCMPFHxA_00009	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL		
LC537-L5_00017	01/28/17	11/07/16	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00010	200 uL	Perfluorobutanesulfonic acid (PFBS)	134.64 ng/mL		
							Perfluoroheptanoic acid	15.2743 ng/mL		
							Perfluorohexanesulfonic acid	45.3873 ng/mL		
							Perfluorononanoic acid	29.4678 ng/mL		
							Perfluorooctanoic acid (PFOA)	30.4196 ng/mL		
					Perfluorooctanesulfonic acid (PFOS)	60.0996 ng/mL				
					LC537-IS_00024	100 uL	13C2-PFOA	10 ng/mL		
							13C4 PFOS	28.68 ng/mL		
					LC537-SU_00020	250 uL	13C2 PFDA	10 ng/mL		
							13C2 PFHxA	10 ng/mL		
.LC537-HSP_00010	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00012	375 uL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL		
							Perfluoroheptanoic acid	381.857 ng/mL		
							Perfluorohexanesulfonic acid	1134.68 ng/mL		
							Perfluorononanoic acid	736.695 ng/mL		
							Perfluorooctanoic acid (PFOA)	760.489 ng/mL		
Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL									
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL		
							LC537-PFHpA_00010	0.1 mL	Perfluoroheptanoic acid	10.1829 ug/mL
							LC537-PFHxS_00008	0.3 mL	Perfluorohexanesulfonic acid	30.2582 ug/mL
							LC537-PFNA_00008	0.2 mL	Perfluorononanoic acid	19.6452 ug/mL
							LC537-PFOA_00009	0.098 mL	Perfluorooctanoic acid (PFOA)	20.2797 ug/mL
LC537-PFOS_00006	0.4 mL	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_00010	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFHpA_00002	0.0072 g	Perfluoroheptanoic acid	1018.29 ug/mL		
...LC537 PFHpA_00002	04/01/18	Aldrich, Lot BCM2579V			(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_00008	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537 PFNA_00002	0.0051 g	Perfluorononanoic acid	982.26 ug/mL		
...LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g		
...LC537-PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFOA_00002	0.0145 g	Perfluorooctanoic acid (PFOA)	2069.36 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_00024	03/19/17	11/03/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00003	100 uL	13C2-PFOA	0.5 ug/mL		
					LCMPFOS_00018	300 uL	13C4 PFOS	1.434 ug/mL		
..LCM2PFOA_00003	03/19/17	Wellington Laboratories, Lot M2PFOA0312			(Purchased Reagent)		13C2-PFOA	50 ug/mL		
..LCMPFOS_00018	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL		

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC537-SU_00020	04/07/17	10/07/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL
					LCMPFHxA_00009	100 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
LC537-L6_00014	01/13/17	07/28/16	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00010	265 uL	Perfluorobutanesulfonic acid (PFBS)	178.398 ng/mL
							Perfluoroheptanoic acid	20.2384 ng/mL
							Perfluorohexanesulfonic acid	60.1382 ng/mL
							Perfluorononanoic acid	39.0448 ng/mL
							Perfluorooctanoic acid (PFOA)	40.3059 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	79.632 ng/mL
					LC537-IS_00018	100 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00017	250 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00010	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00012	375 uL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluoroheptanoic acid	381.857 ng/mL
							Perfluorohexanesulfonic acid	1134.68 ng/mL
							Perfluorononanoic acid	736.695 ng/mL
							Perfluorooctanoic acid (PFOA)	760.489 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHpA_00010	0.1 mL	Perfluoroheptanoic acid	10.1829 ug/mL
					LC537-PFHxS_00008	0.3 mL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00008	0.2 mL	Perfluorononanoic acid	19.6452 ug/mL
					LC537-PFOA_00009	0.098 mL	Perfluorooctanoic acid (PFOA)	20.2797 ug/mL
					LC537-PFOS_00006	0.4 mL	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_00010	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFHpA_00002	0.0072 g	Perfluoroheptanoic acid	1018.29 ug/mL
....LC537 PFHpA_00002	04/01/18	Aldrich, Lot BCM2579V			(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_00008	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537 PFNA_00002	0.0051 g	Perfluorononanoic acid	982.26 ug/mL
....LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
...LC537-PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFOA_00002	0.0145 g	Perfluorooctanoic acid (PFOA)	2069.36 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_00018	01/13/17	07/13/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00004	100 uL	13C2-PFOA	0.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM2PFOA_00004	03/19/17		Wellington Laboratories, Lot M2PFOA0312		LCMPFOS_00013	300 uL	13C4 PFOS	1.434 ug/mL
..LCMPFOS_00013	01/22/21		Wellington Laboratories, Lot MPFOS0116		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LC537-SU_00017	01/19/17	07/19/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL
..LCMPFDA_00008	08/19/20		Wellington Laboratories, Lot MPFDA0815		LCMPFHxA_00009	100 uL	13C2 PFHxA	0.2 ug/mL
..LCMPFHxA_00009	04/09/20		Wellington Laboratories, Lot MPFHxA0415		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00009	04/09/20		Wellington Laboratories, Lot MPFHxA0415		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-LSP_00016	05/04/17	11/04/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00015	50 uL	Perfluorobutane Sulfonate	448.8 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	448.8 ng/mL
							Perfluoroheptanoic acid	53.7429 ng/mL
							Perfluorohexanesulfonic acid	151.291 ng/mL
							Perfluorononanoic acid	101.553 ng/mL
							Perfluorooctanoic acid (PFOA)	99.234 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	200.332 ng/mL
.LC537SPIM_00015	05/04/17	11/04/16	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_00011	100 uL	Perfluoroheptanoic acid	10.7486 ug/mL
					LC537-PFHxS_00008	300 uL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00009	200 uL	Perfluorononanoic acid	20.3105 ug/mL
					LC537-PFOA_00010	100 uL	Perfluorooctanoic acid (PFOA)	19.8468 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_00011	11/04/17	11/04/16	Methanol, Lot 090285	7 mL	LC537 PFHpA_00002	0.0076 g	Perfluoroheptanoic acid	1074.86 ug/mL
...LC537 PFHpA_00002	04/01/18		Aldrich, Lot BCM2579V		(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_00009	11/04/17	11/04/16	Methanol, Lot 090285	5.5 mL	LC537 PFNA_00002	0.0058 g	Perfluorononanoic acid	1015.53 ug/mL
...LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
..LC537-PFOA_00010	11/04/17	11/04/16	Methanol, Lot 090285	7.5 mL	LC537 PFOA_00002	0.0149 g	Perfluorooctanoic acid (PFOA)	1984.68 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_00024	06/05/17	12/05/16	Methanol, Lot 104453	20000 uL	LCMPFDA_00008	80 uL	13C2 PFDA	0.2 ug/mL
..LCMPFDA_00008	08/19/20		Wellington Laboratories, Lot MPFDA0815		LCMPFHxA_00009	80 uL	13C2 PFHxA	0.2 ug/mL
..LCMPFHxA_00009	04/09/20		Wellington Laboratories, Lot MPFHxA0415		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00009	04/09/20		Wellington Laboratories, Lot MPFHxA0415		(Purchased Reagent)		13C2 PFHxA	50 ug/mL

Reagent

LC537_PFB_00002

#: 4/1/15 SPV

3050 Spruce Street, Saint Louis, MO 63103, USA

Website: www.sigmaaldrich.com

Email USA: techserv@sial.com

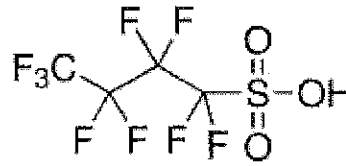
Outside USA: eurtechserv@sial.com

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, 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_PFB2_00001



The Power to Question

CERTIFICATE OF ANALYSIS

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: n_{20/D}

Reagent

LC537_PFHpA_00002

R: 4/1/15 sv

Certificate of Analysis

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

PFHpA

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

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

r: 4/1/15 stw

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: C₆F₁₃KO₃S

Formula Weight: 438.20

Quality Release Date: 20 JUN 2013

PFH₁₃S-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

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

$$Purity = 90.94 \% \text{ w/m.w correction}$$

stw 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_PENA_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

11/3/2015 21

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

identity (GC-MS)
Assay (GCMS)
Date of Analysis

complying
99.4 %
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 aliquot portions of the substance, the person handling the substance must assure, that the integrity of the substance is maintained and proper records of all its handlings are kept. Special care has to be taken to avoid any contamination or adulteration of the substance.
- We herewith confirm that the delivery is effected according to the technical delivery conditions agreed.
- Particular properties of the products or the suitability for a particular area of application are not assured.
- We guarantee a proper quality within our General Conditions of Sales.

Sigma-Aldrich Laborchemikalien GmbH
Quality Management SA-LC

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GC/MS-Method

Analytical Department

Article: Pentadecafluorooctanoic acid OEKANAL

Article-No.: 33824

Batch: SZBD308XV

Column: XTI-5 (Restek); 30 m; fs cap.; I.D.:0.25 mm; 1 µm df

Injector: Split mode

Injection: approx. 1 µl of reaction mixture with MSTFA (approx. 10 mg + 200 µl MSTFA)

Inj.-temp.: 280°C

Oven-temp.: 40°C (for 2 min) to 320°C (6°C/min) hold for 2 min

Split: 1:100

Flow: 1 ml He/min (Constant flow mode)

Detector: MSD

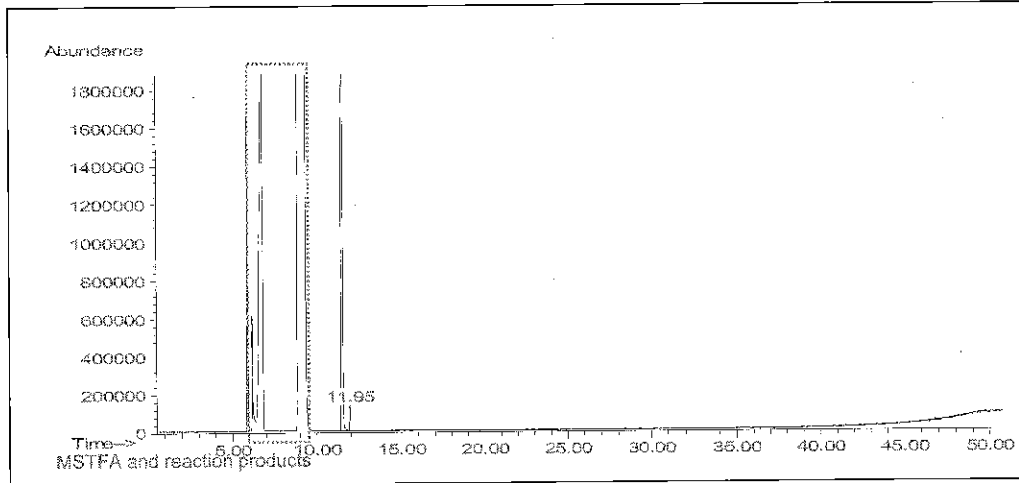
Mass range: 10-600 amu (Scan mode)

Evaluation: Purity: Total Ion Chromatogram
(MSTFA and reaction products blinded out in report)

Identity: Mass spectrum complies

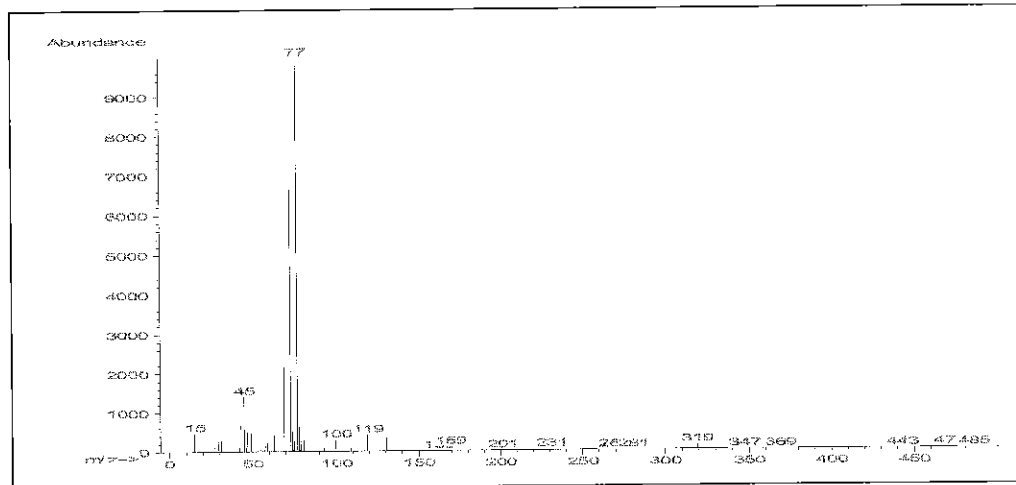
Operator: Ahrens / 2013-11-13

Total Ion Chromatogram:



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

Mass spectrum (rt = 11.54 min):



Reagent

LC537_PFOA2_00001

Certificate of Analysis

Alfa Aesar
A Johnson Matthey Company

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

PFOA

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

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www.alfa.com

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Fax: +82-2-3140-6002
Email: saleskorea@alfa-asia.com

Reagent

LC537_PFO5_00002

F: 4/115 SV

SIGMA-ALDRICH®

CERTIFICATE OF ANALYSIS

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

Seelze, 13.08.2012/419060/12/17583
Order-No.:
Customer-No.:
Order-Code:
Quantity:
Production Date: 09.Aug.2012
Expiry Date: 09.Aug.2017 - <i>ex date</i>

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

FW-correction:

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

Purity = 91.06%

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 aliquot portions of the substance, the person handling the substance must assure, that the integrity of the substance is maintained and proper records of all its handlings are kept. Special care has to be taken to avoid any contamination or adulteration of the substance.
- We herewith confirm that the delivery is effected according to the technical delivery conditions agreed.
- Particular properties of the products or the suitability for a particular area of application are not assured.
- We guarantee a proper quality within our General Conditions of Sales.

Sigma-Aldrich Laborchemikalien GmbH
Quality Management SA-LC

Reagent

LC537_PFO2_00001

Certificate of Analysis

Inv 820
12LCMS 0579

Product Name: HEPTADEC AFLUORO OCTANESULFONIC 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

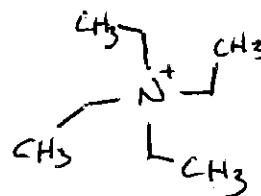
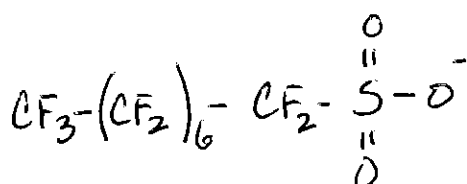
$$\text{MW correction} = \frac{500.125}{629.37} = 0.7946$$

~~79.46%~~ Oct 7-26-12

E. Schwarzler

Purity + MW Correction = 77.87%

Edeltraud Schwarzler, Manager
Quality Control
Buchs, Switzerland



	<u>$C_8F_{17}SO_3 + H$</u>	<u>$C_8H_{20}N$</u>
C = 12.011	96.088	96.088
F = 18.998	322.966	-
S = 32.066	32.066	-
O = 15.999	47.997	-
H = 1.008	1.008	20.160
N = 14.007	-	14.007
	<u>500.125</u>	<u>130.255</u> →

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.

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, traceability and batch consistency.

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

This information is to be used for the purpose of determining animal or other biological origin only and not to be confused with "Country of Origin" for import/export purposes. Data provided on this document are property of Sigma-Aldrich.

This information is considered accurate and reliable as of the date appearing on the document and is presented in good faith.

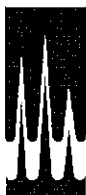
Sigma-Aldrich shall not be held liable for any damage resulting from handling or from processing the above product(s). This document does not make any warranty, express or implied, of fitness for any particular use of the product(s). Purchaser must determine the suitability of the product(s) for its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

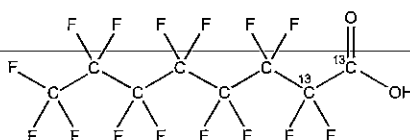
LCM2PFOA_00003



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFOA **LOT NUMBER:** M2PFOA0312
COMPOUND: Perfluoro-n-[1,2-¹³C₂]octanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆HF₁₅O₂ **MOLECULAR WEIGHT:** 416.05
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
(1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 03/19/2012
EXPIRY DATE: (mm/dd/yyyy) 03/19/2017
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____

B.G. Chittim

Date: 01/09/2013
(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:

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS 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:

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

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

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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.

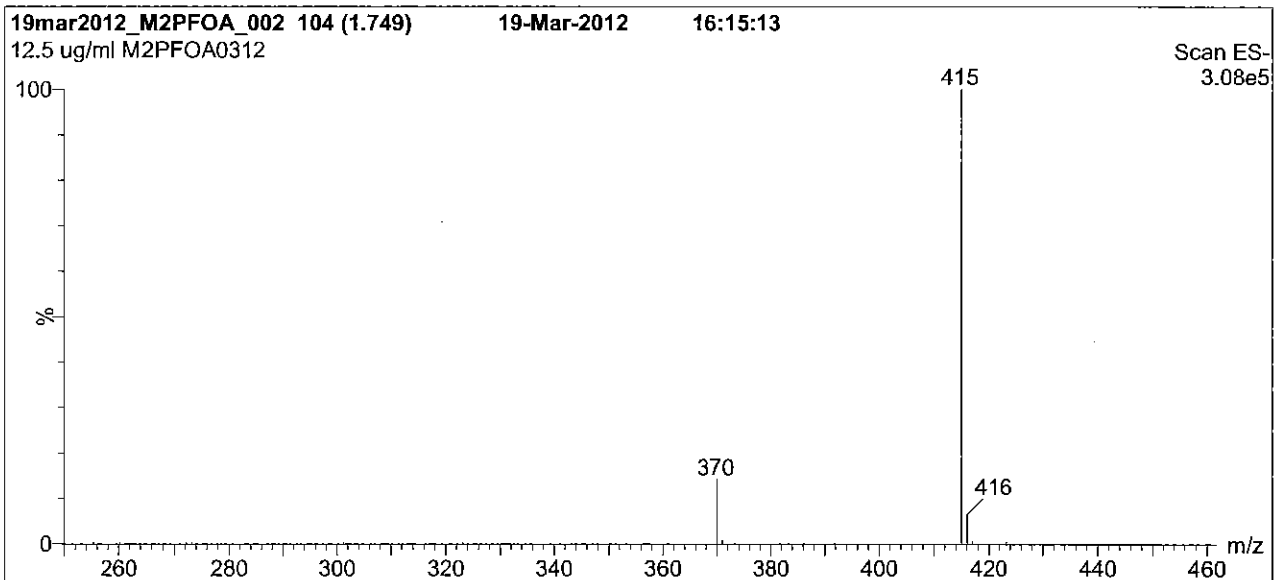
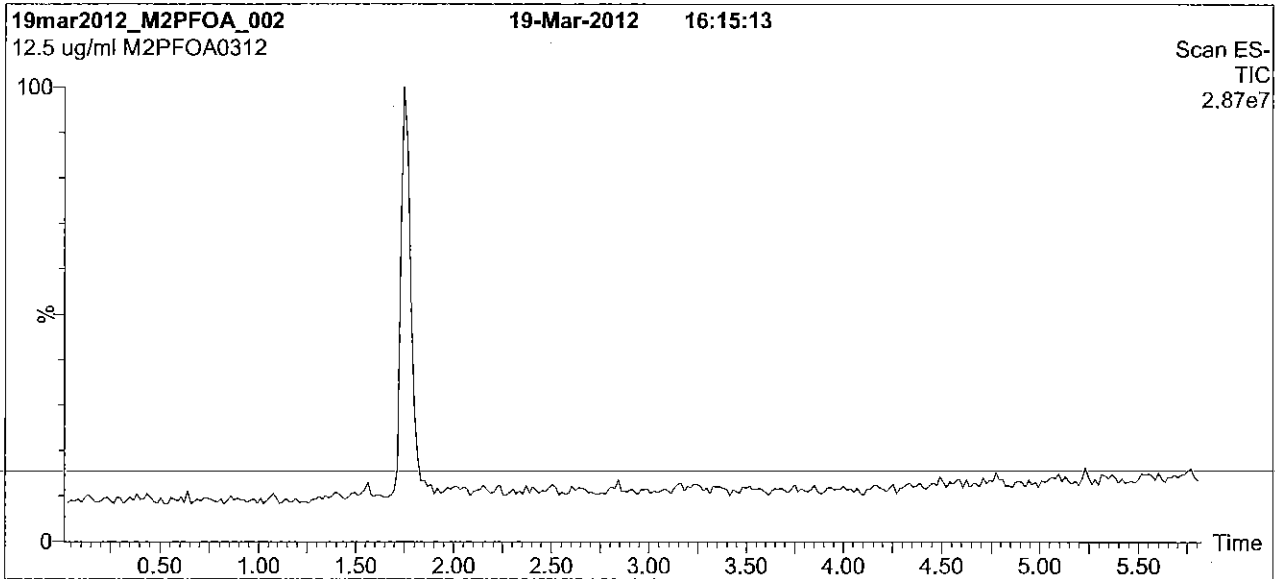
QUALITY MANAGEMENT:

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).



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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 6.5 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

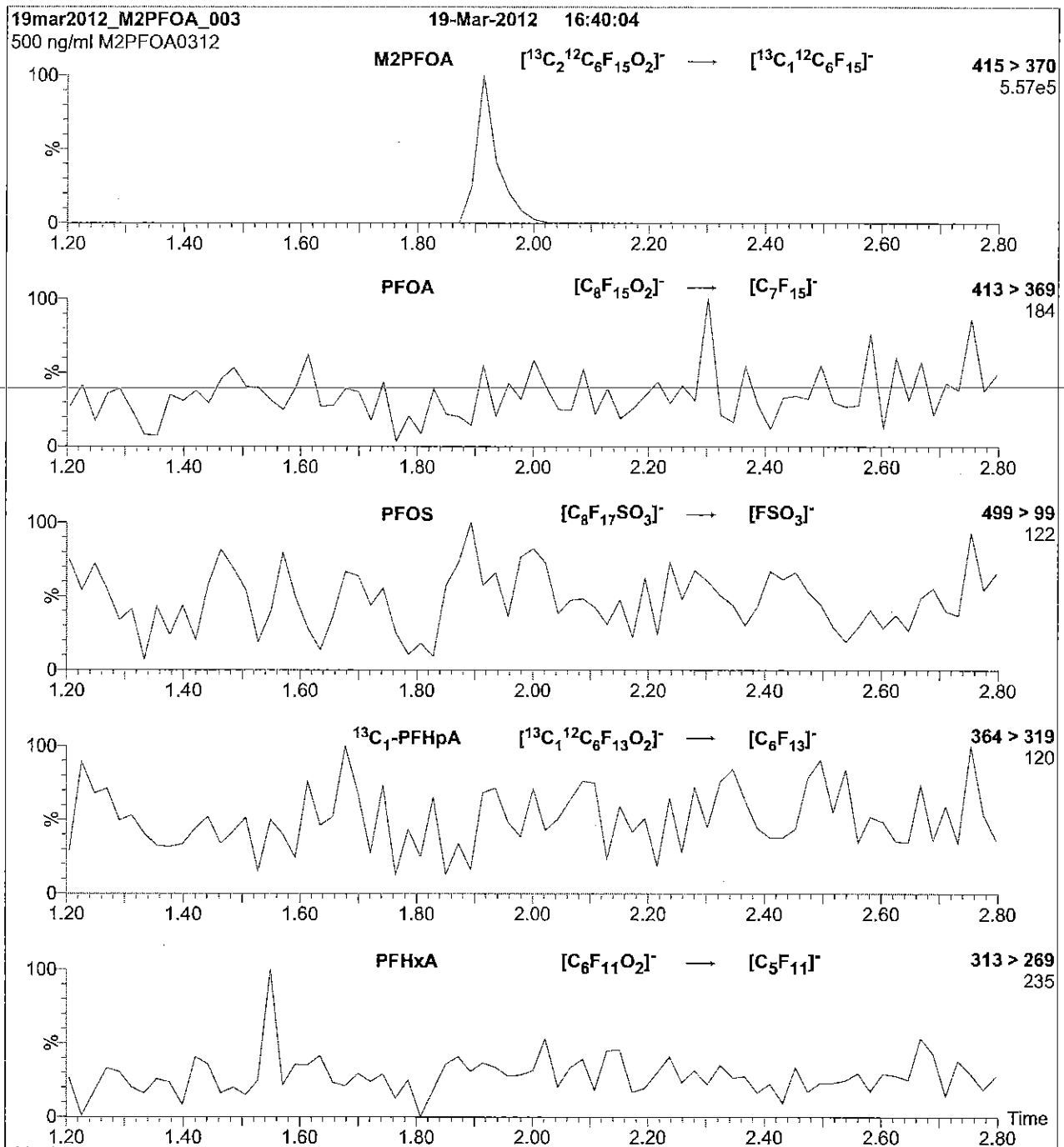
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 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 70% (80:20 MeOH:ACN) / 30% H_2O
(both with 10 mM NH_4OAc buffer)

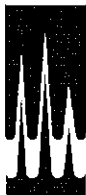
Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = $3.35\text{e-}3$
Collision Energy (eV) = 11

Reagent

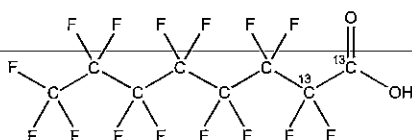
LCM2PFOA_00004



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFOA **LOT NUMBER:** M2PFOA0312
COMPOUND: Perfluoro-n-[1,2-¹³C₂]octanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆HF₁₅O₂ **MOLECULAR WEIGHT:** 416.05
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
(1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 03/19/2012
EXPIRY DATE: (mm/dd/yyyy) 03/19/2017
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____

B.G. Chittim

Date: 01/09/2013
(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:

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

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

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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:

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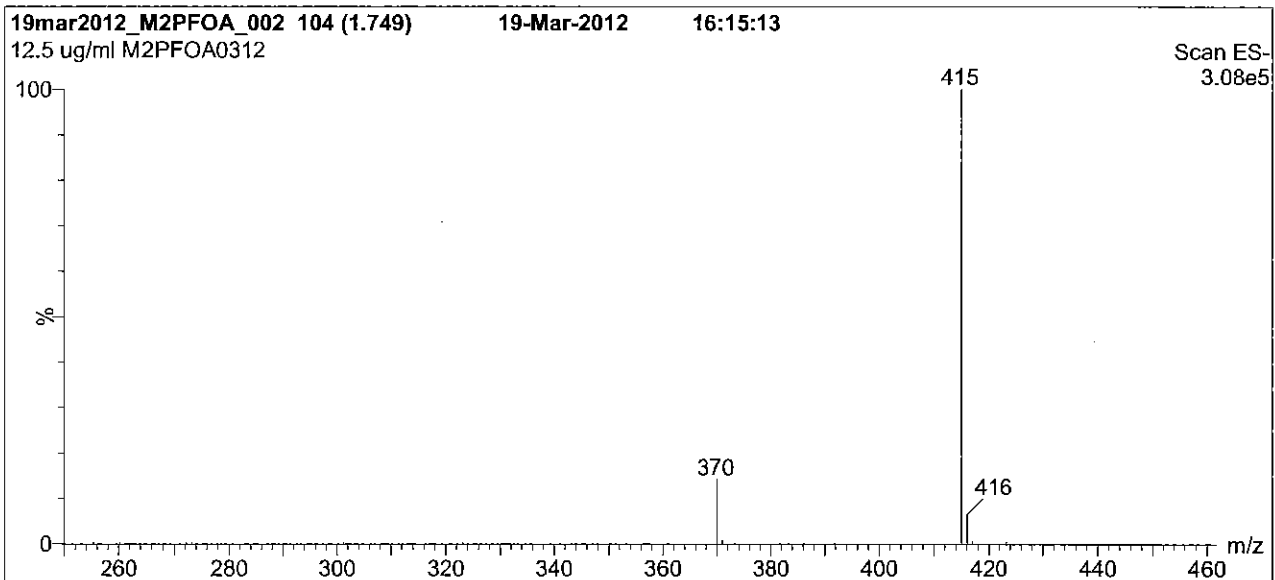
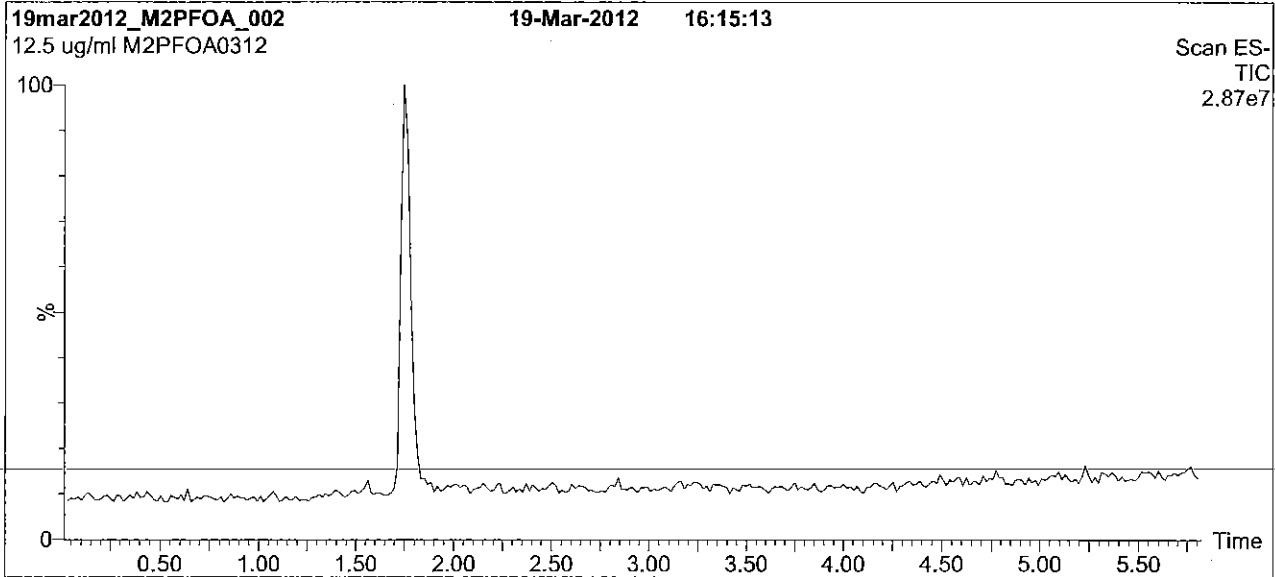
QUALITY MANAGEMENT:

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).



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 RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 6.5 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

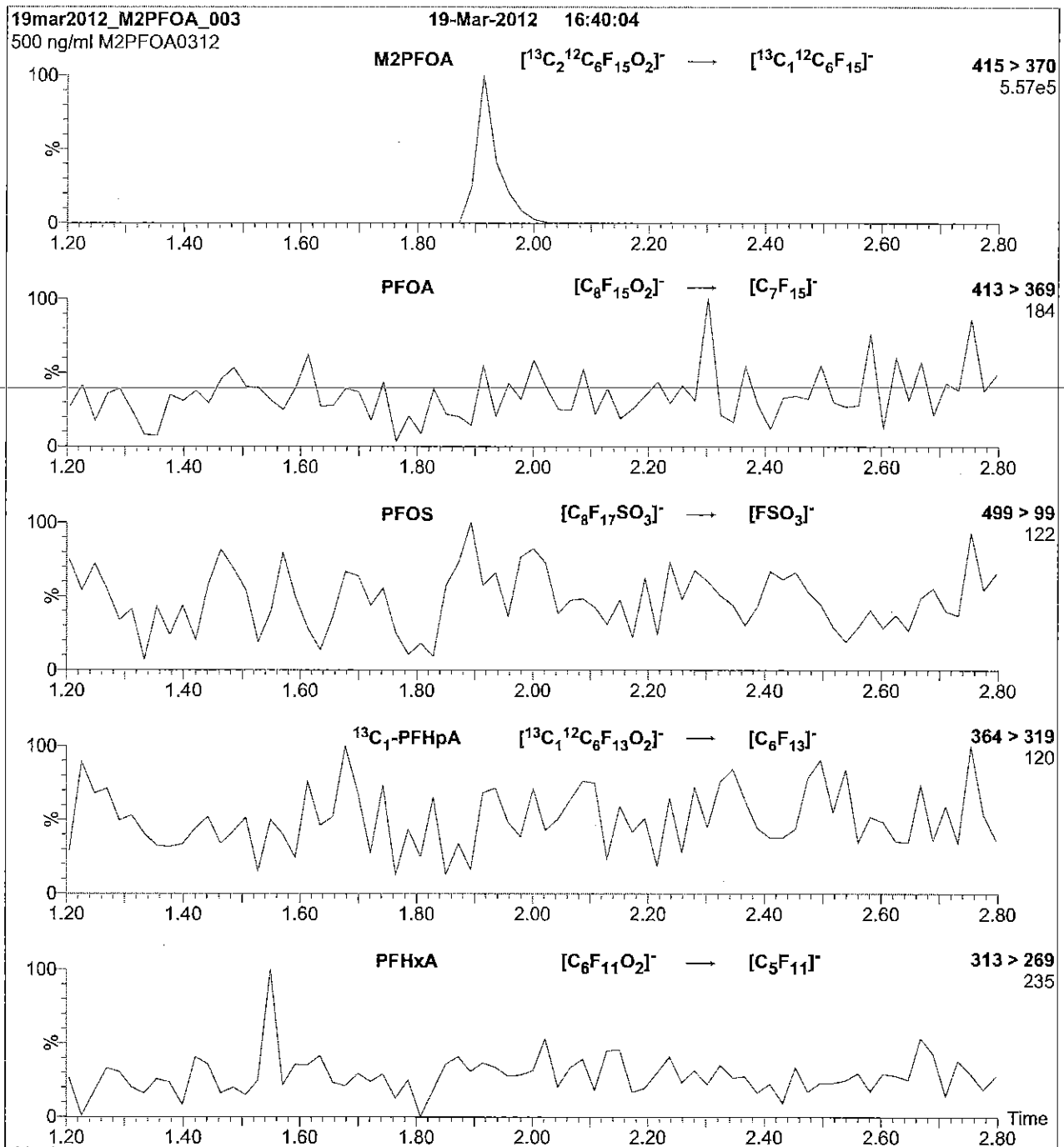
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 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 70% (80:20 MeOH:ACN) / 30% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = $3.35\text{e-}3$
Collision Energy (eV) = 11

Reagent

LCMPFDA_00008



605243

ID: LCMPFDA_00008

Exp: 08/19/20 Prep: CBW

13C2-Perfluorodecanoic a

Rec. 3/29/16 JEB ✓



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

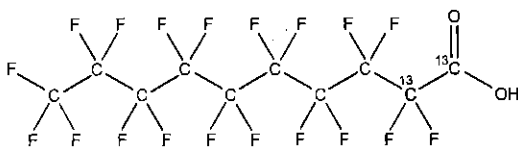
MPFDA

LOT NUMBER:

MPFDA0815

COMPOUND:Perfluoro-n-[1,2-¹³C₂]decanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:** $^{13}\text{C}_2\ ^{12}\text{C}_8\text{HF}_{19}\text{O}_2$ **MOLECULAR WEIGHT:**

516.07

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99% ¹³C**LAST TESTED:** (mm/dd/yyyy)

08/19/2015

(1,2-¹³C₂)**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 ¹³C₁-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:

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HAZARDS:

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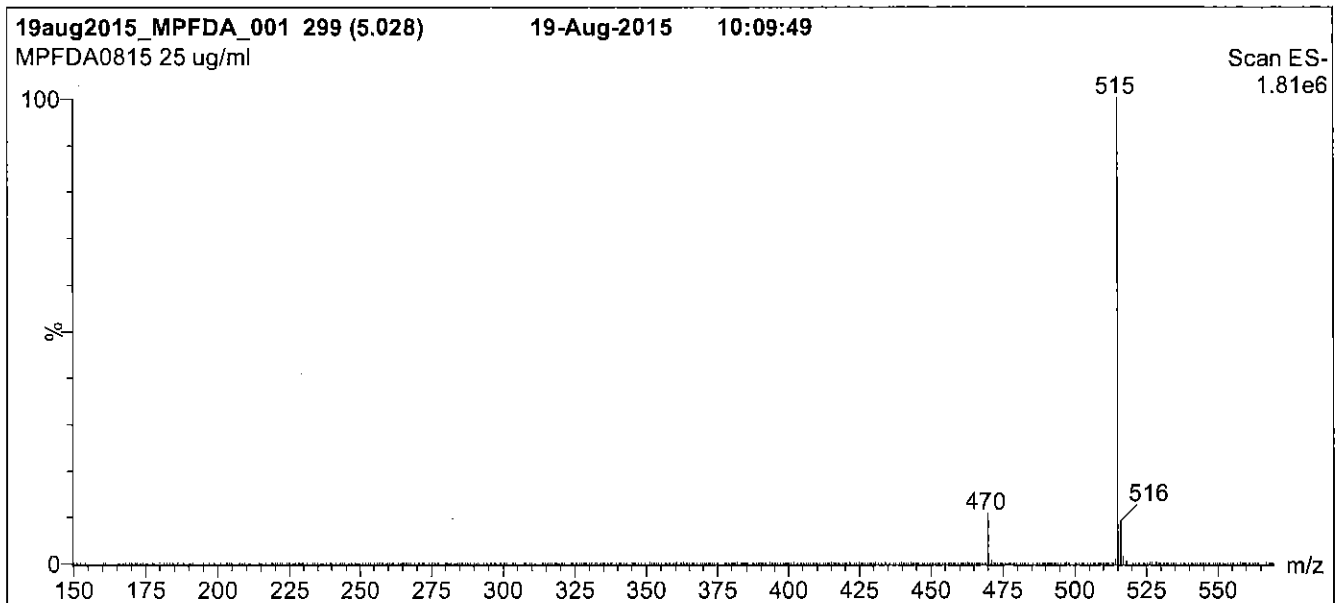
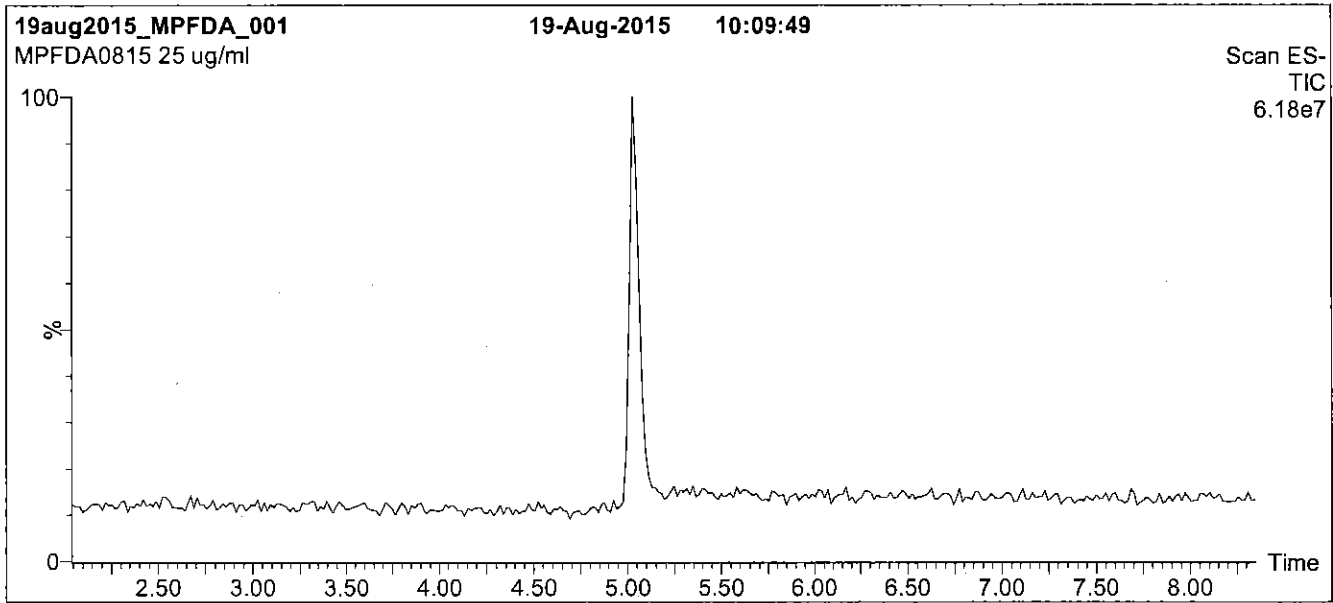
QUALITY MANAGEMENT:

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).



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



Conditions for Figure 1:

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

Chromatographic Conditions

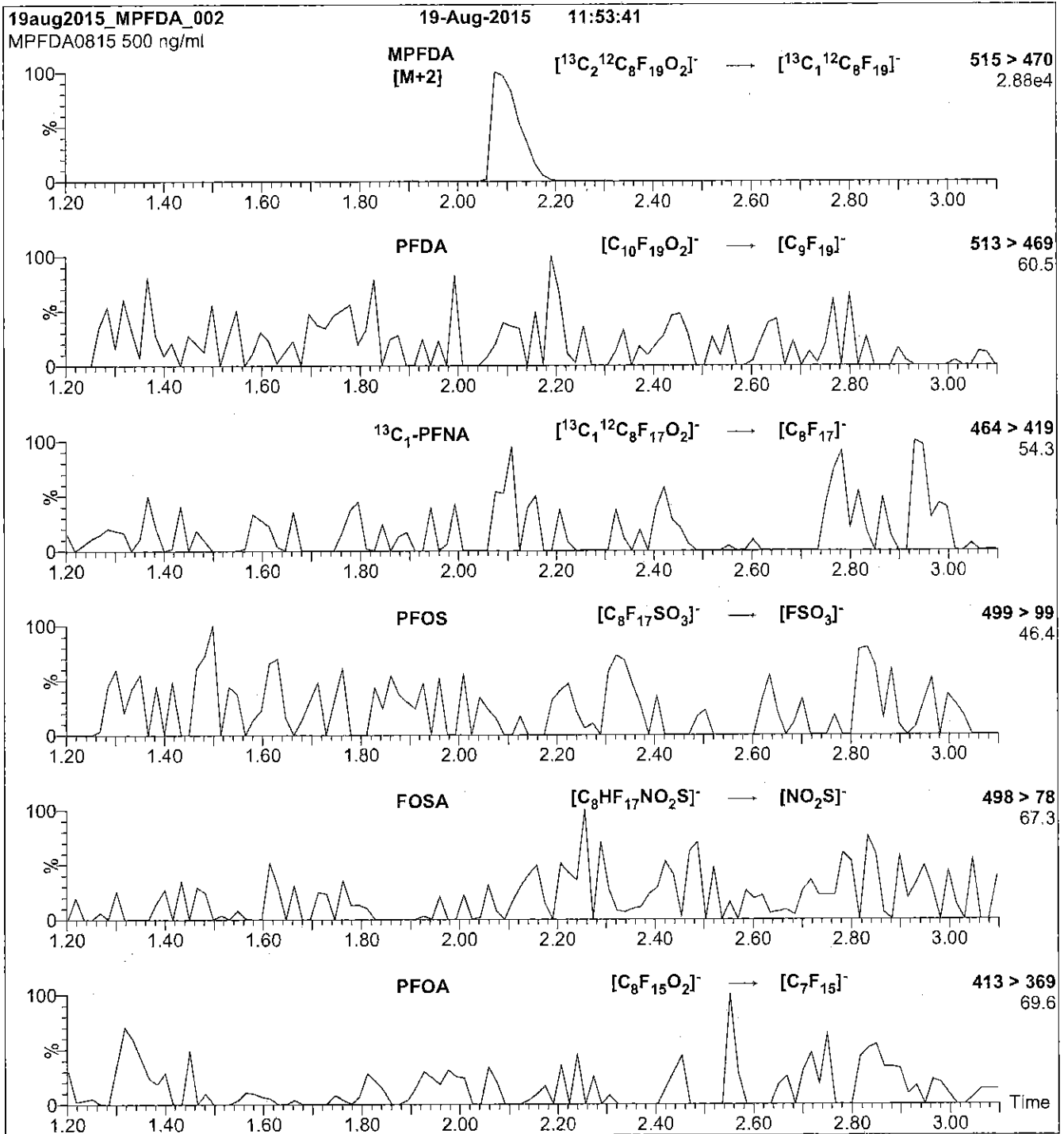
Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/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 μ l (500 ng/ml MPFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/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

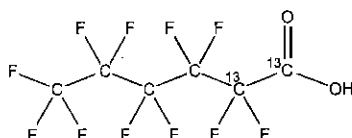
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexanoic acid

LOT NUMBER: MPFHxA0415

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₄HF₁₁O₂
CONCENTRATION: 50 ± 2.5 µg/ml

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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/09/2015

ISOTOPIC PURITY: ≥99%¹³C
 (1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy) 04/09/2020

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

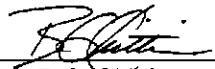
DOCUMENTATION/ DATA ATTACHED:

- 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

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

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 $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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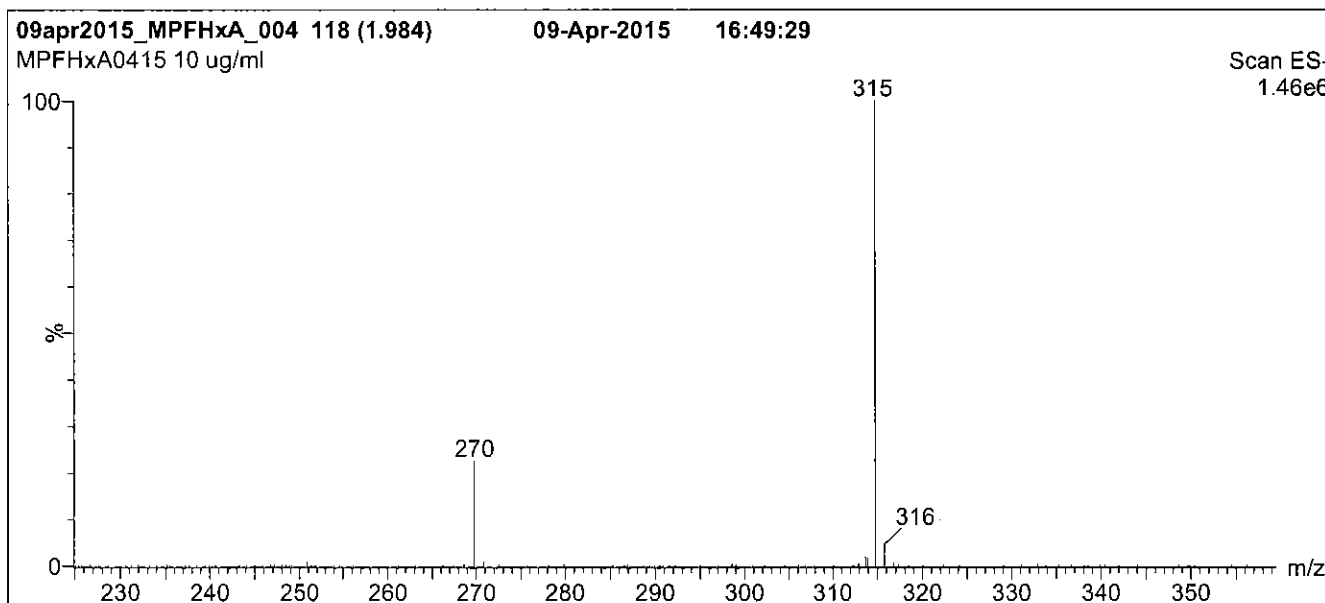
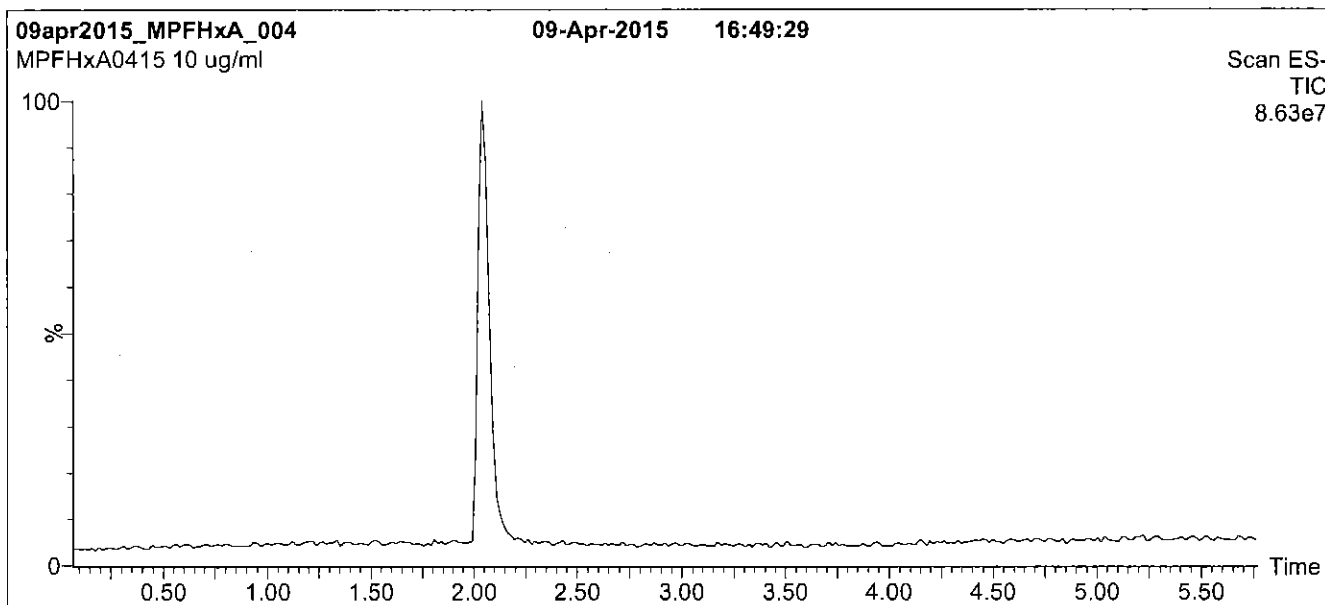
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc 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

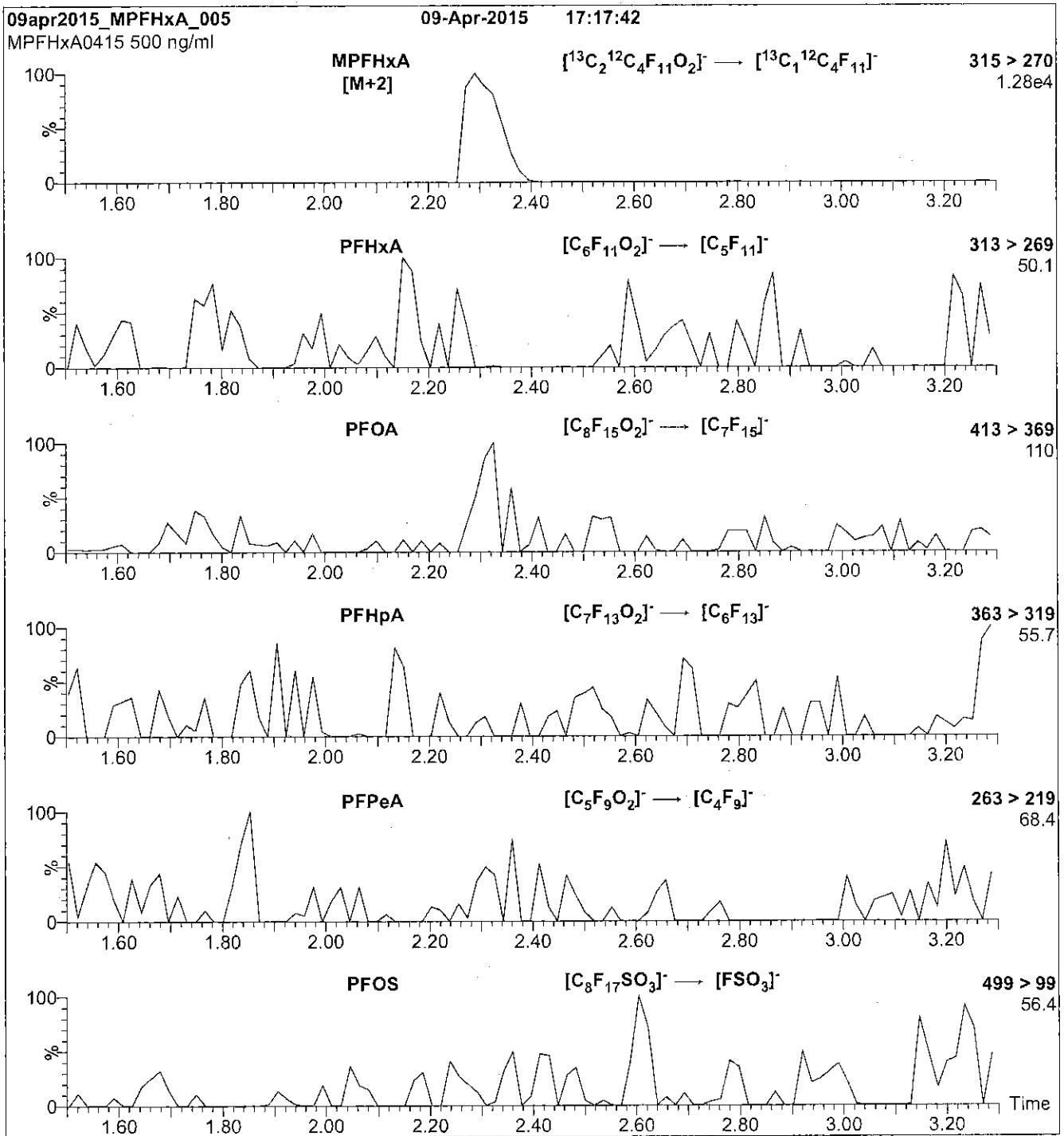
Flow: 300 μ l/min

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 μ l (500 ng/ml MPFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 10

Reagent

LCMPFOS_00013

605227
ID: LCMFOS_00012
Exp: 01/22/21 Ppds: CBW
13C4-Perfluorooctanesulfo

Rec 3/29/16 JRB ✓
606228
ID: LCMFOS_00013
Exp: 01/22/21 Ppds: CBW
13C4-Perfluorooctanesulfo

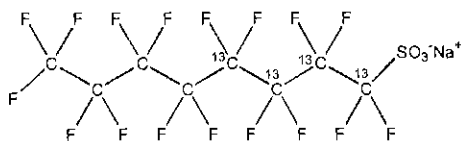


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0116
COMPOUND: Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₄¹²C₄F₁₇SO₃Na **MOLECULAR WEIGHT:** 526.08
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.8 ± 2.4 µg/ml (MPFOS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
(1,2,3,4-¹³C₄)
LAST TESTED: (mm/dd/yyyy) 01/22/2016
EXPIRY DATE: (mm/dd/yyyy) 01/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

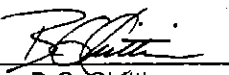
DOCUMENTATION/ DATA ATTACHED:

- 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-[1,2,3-¹³C₃]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim Date: 02/01/2016
(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:

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LIMITED WARRANTY:

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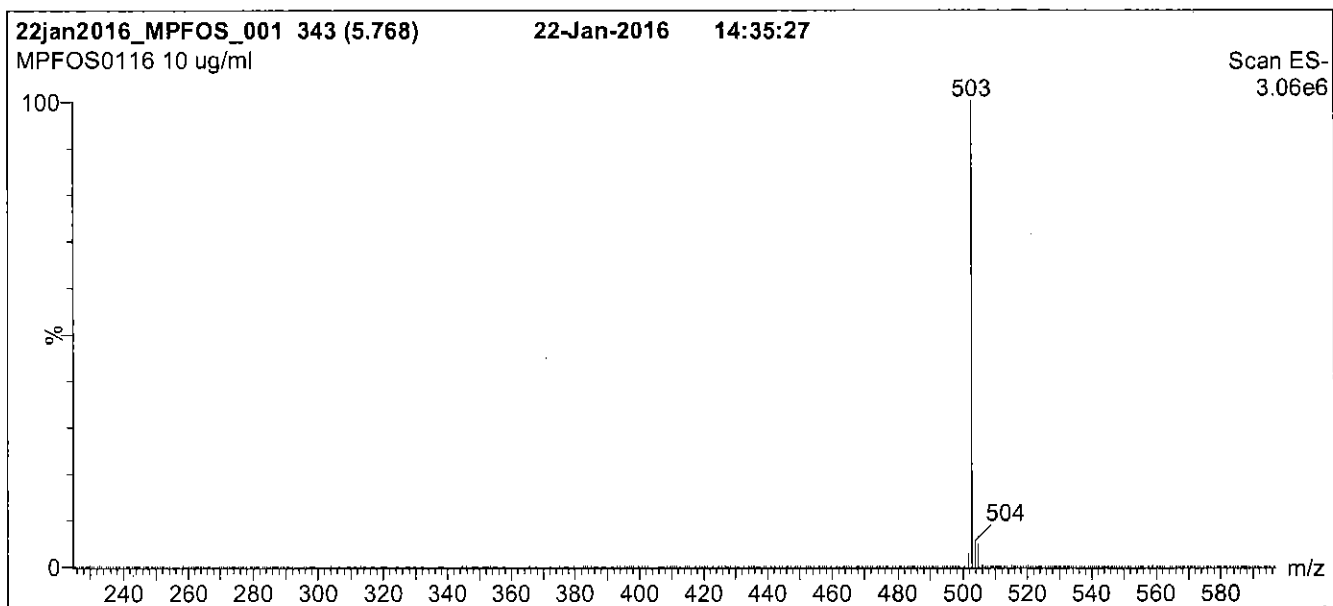
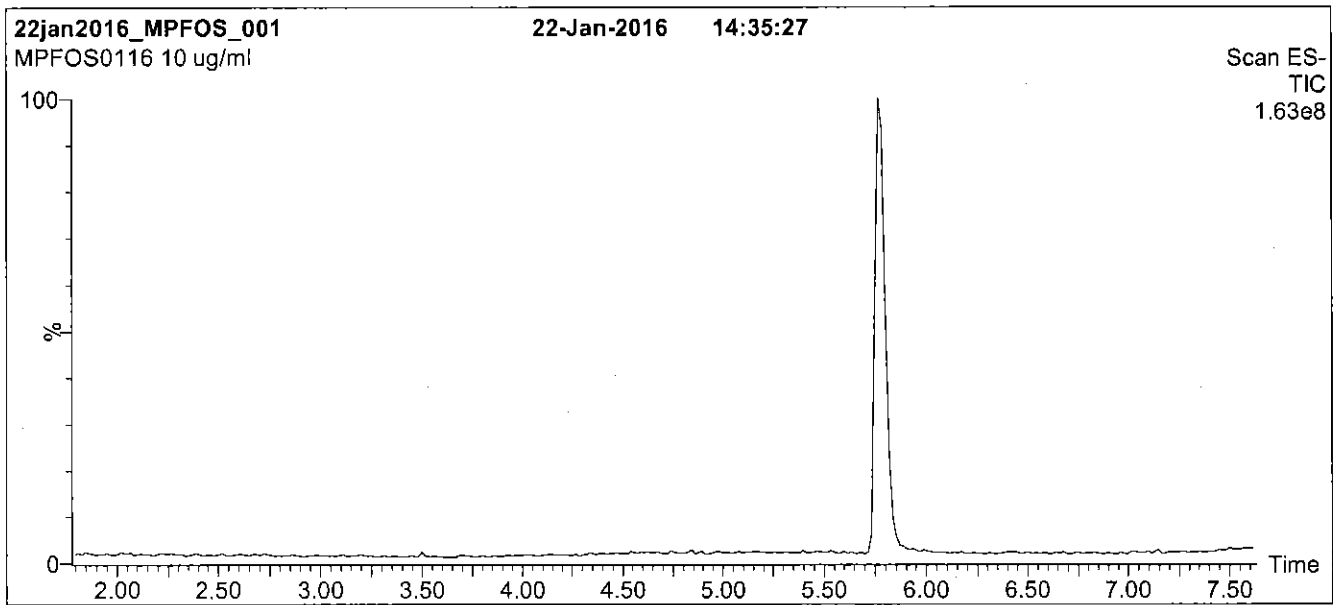
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Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc 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

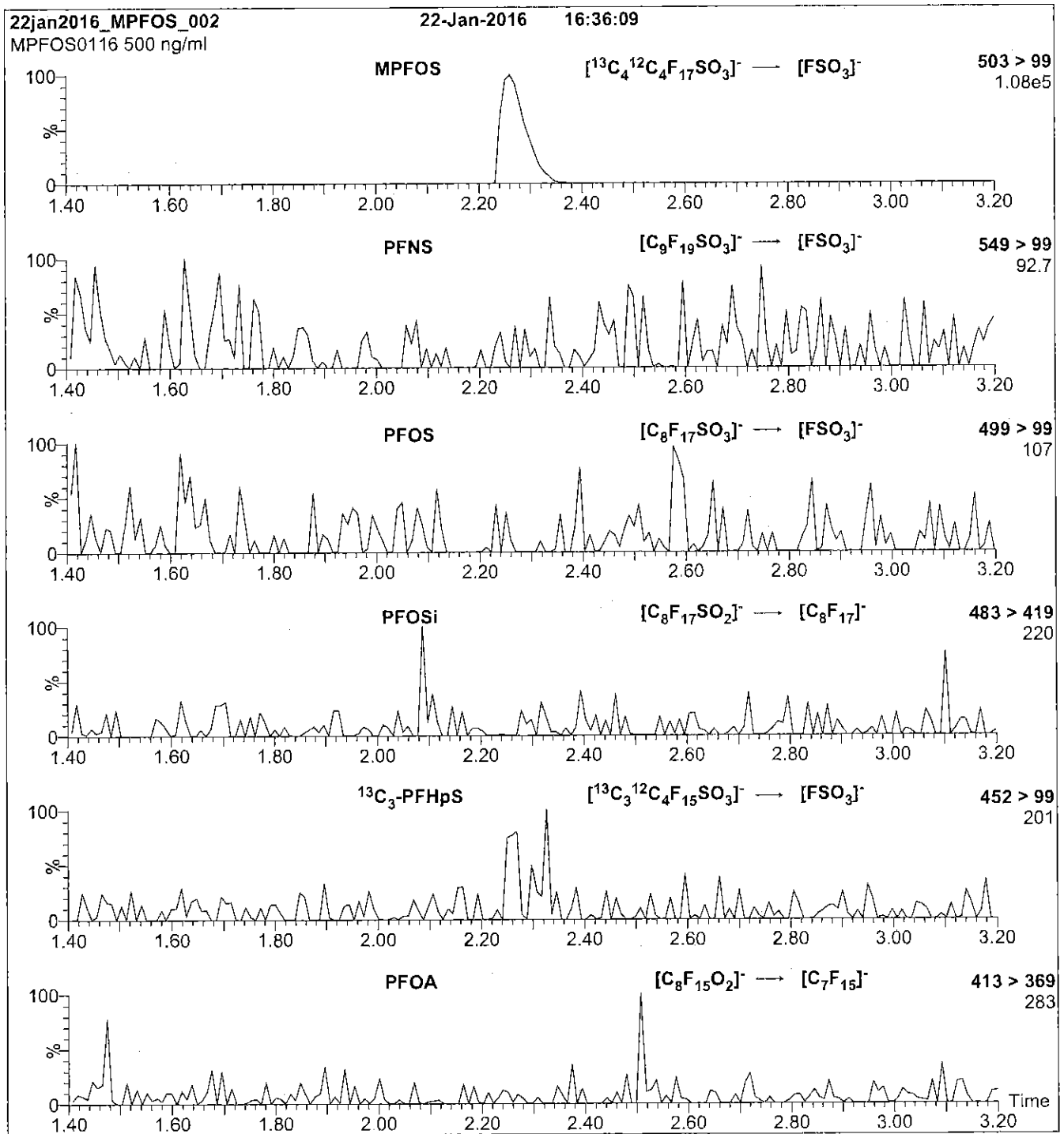
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
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 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.70e-3
 Collision Energy (eV) = 40

Reagent

LCMPFOS_00018

R: SBC 9/22/16



738686
ID: LCMFOS_00018
Exp: 08/03/21 Papi: SBC
13C4-Perfluorooctanesulfo

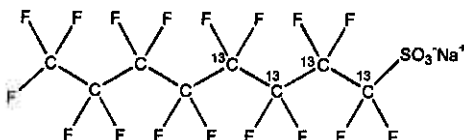


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0816
COMPOUND: Sodium perfluoro-1-[1,2,3,4-¹³C]₄octanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₄¹²C₄F₁₇SO₃Na **MOLECULAR WEIGHT:** 526.08
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.8 ± 2.4 µg/ml (MPFOS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 08/03/2016 (1,2,3,4-¹³C)
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-[1,2,3-¹³C]₃heptanesulfonate.

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

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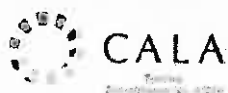
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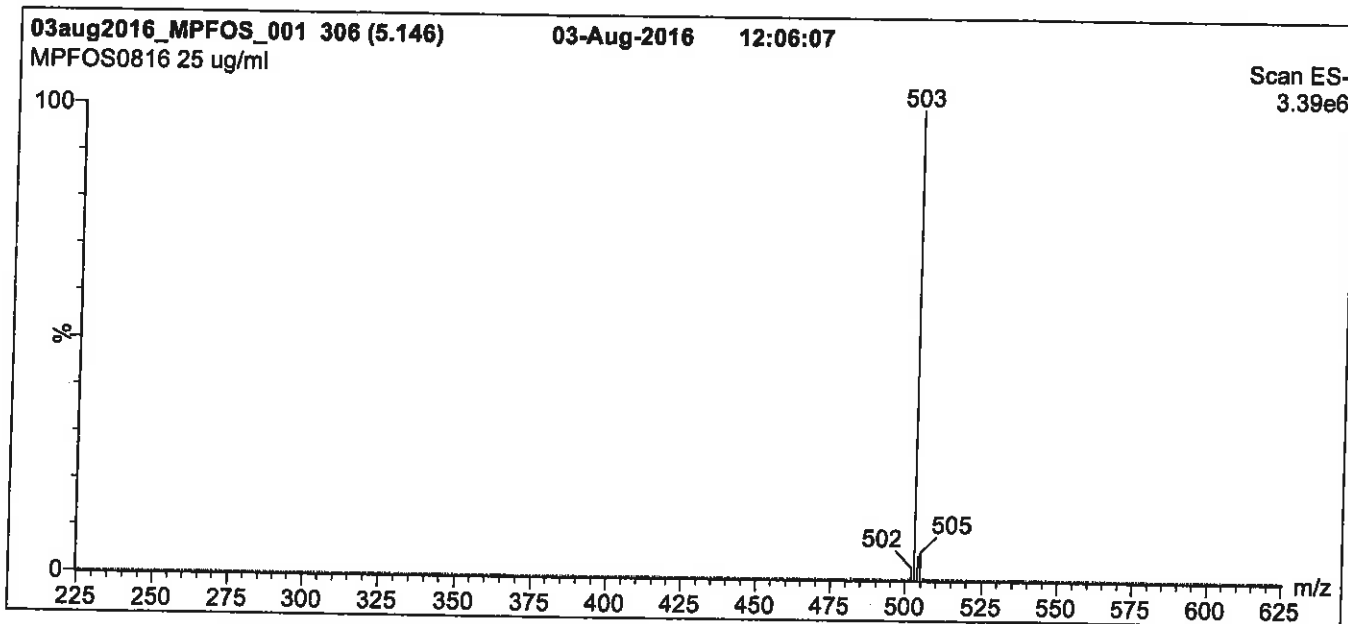
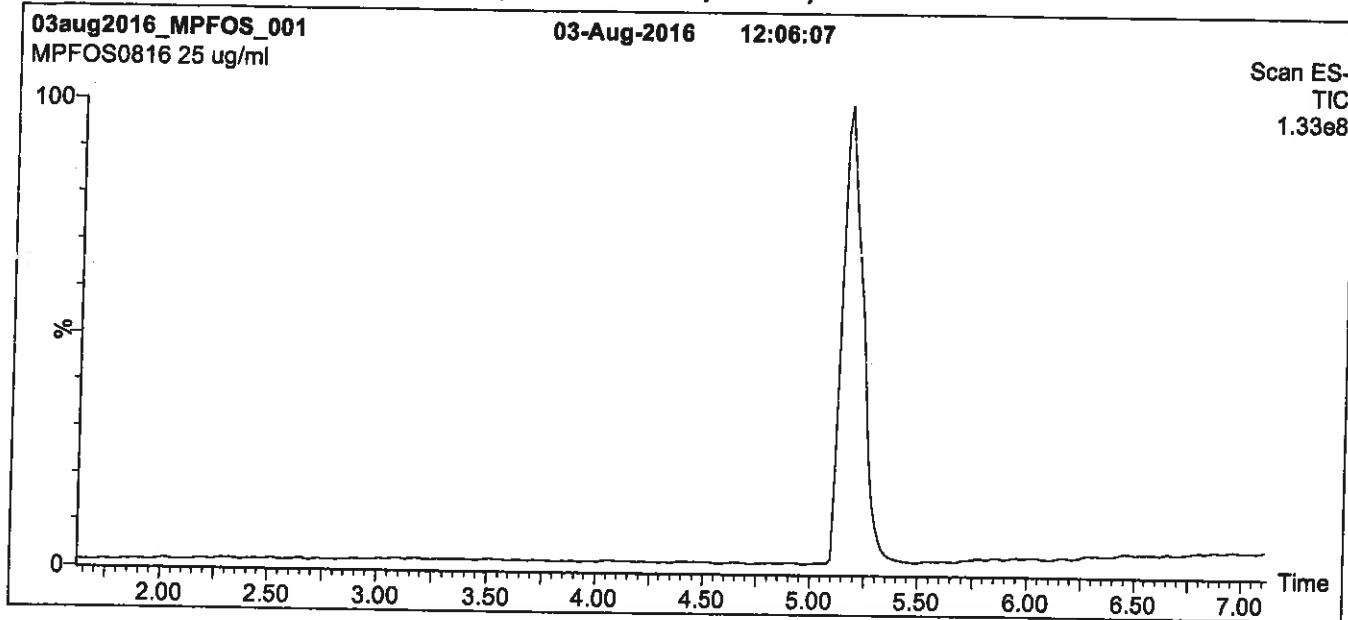
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Figure 1: MPFOS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 45% (80:20 MeOH:ACN) / 55% H₂O
 (both with 10 mM NH₄OAc 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

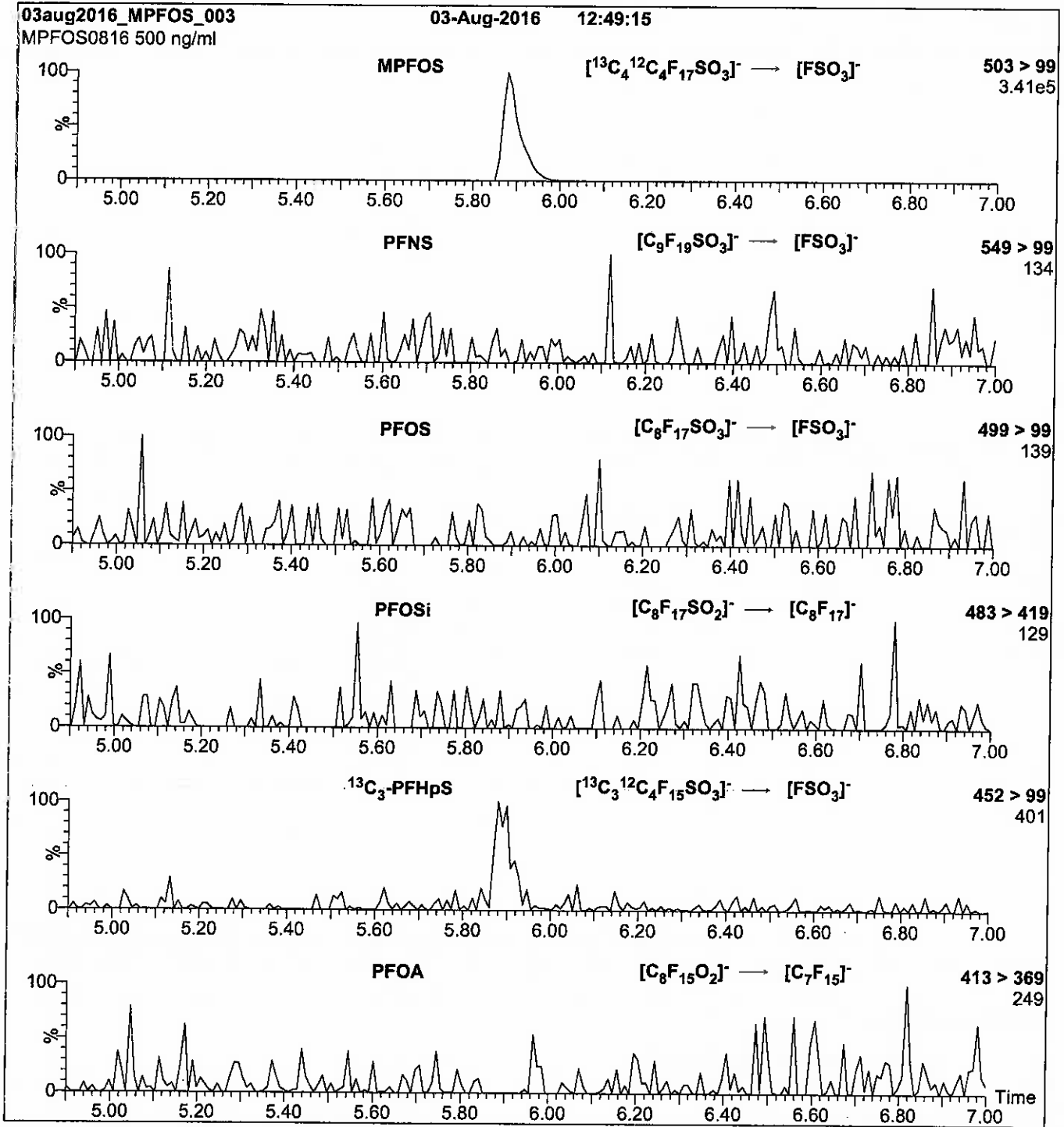
Flow: 300 μ l/min

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 $\mu\text{l}/\text{min}$

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.: 320-24178-1

SDG No.: _____

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WI-CV-1RW23-1216	320-24178-1	93	95
WI-CV-1RW23P-1216	320-24178-2	101	110
WI-CV-1FB23-1216	320-24178-3	97	106
WI-CV-1RW24-1216	320-24178-4	94	91
WI-CV-1FB24-1216	320-24178-5	88	85
WI-CV-1RW25-1216	320-24178-6	97	92
WI-CV-1FB25-1216	320-24178-7	89	93
WI-CV-1RW26-1216	320-24178-8	100	97
WI-CV-1FB26-1216	320-24178-9	89	87
WI-CV-1RW27-1216	320-24178-10	114	112
WI-CV-1FB27-1216	320-24178-11	96	100
WI-CV-1RW28-1216	320-24178-12	86	87
WI-CV-1FB28-1216	320-24178-13	98	100
	MB 320-141540/1-A	90	88
	LLCS 320-141540/2-A	93	90
	LLCSD 320-141540/3-A	101	94

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM III
LCMS LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 15DEC2016A6A_006.d

Lab ID: LLCS 320-141540/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LLCS CONCENTRATION (ug/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	0.0401	0.0277 J	69	50-150	
Perfluorooctanoic acid (PFOA)	0.0198	0.0144 J	73	50-150	M
Perfluorobutanesulfonic acid (PFBS)	0.0898	0.0705 J	79	50-150	

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL CONTROL STANDARD DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 15DEC2016A6A_007.d

Lab ID: LLCSD 320-141540/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LLCSD CONCENTRATION (ug/L)	LLCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	0.0401	0.0278 J	69	0.5	50	50-150	
Perfluorooctanoic acid (PFOA)	0.0198	0.0150 J	76	4	50	50-150	M
Perfluorobutanesulfonic acid (PFBS)	0.0898	0.0694 J	77	2	50	50-150	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Lab File ID: 15DEC2016A6A_005.d Lab Sample ID: MB 320-141540/1-A
 Matrix: Water Date Extracted: 12/09/2016 18:59
 Instrument ID: A6 Date Analyzed: 12/15/2016 09:32
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-141540/2-A	15DEC2016A6 A 006.d	12/15/2016 10:02
	LLCSD 320-141540/3-A	15DEC2016A6 A 007.d	12/15/2016 10:31
WI-CV-1RW23-1216	320-24178-1	15DEC2016A6 A 009.d	12/15/2016 11:30
WI-CV-1RW23P-1216	320-24178-2	15DEC2016A6 A 010.d	12/15/2016 12:00
WI-CV-1FB23-1216	320-24178-3	15DEC2016A6 A 011.d	12/15/2016 12:29
WI-CV-1RW24-1216	320-24178-4	15DEC2016A6 A 012.d	12/15/2016 12:59
WI-CV-1FB24-1216	320-24178-5	15DEC2016A6 A 013.d	12/15/2016 13:29
WI-CV-1RW25-1216	320-24178-6	15DEC2016A6 A 014.d	12/15/2016 14:25
WI-CV-1FB25-1216	320-24178-7	15DEC2016A6 A 017.d	12/15/2016 15:54
WI-CV-1RW26-1216	320-24178-8	15DEC2016A6 A 018.d	12/15/2016 16:24
WI-CV-1FB26-1216	320-24178-9	15DEC2016A6 A 019.d	12/15/2016 16:53
WI-CV-1RW27-1216	320-24178-10	15DEC2016A6 A 020.d	12/15/2016 17:23
WI-CV-1FB27-1216	320-24178-11	15DEC2016A6 A 021.d	12/15/2016 17:53
WI-CV-1RW28-1216	320-24178-12	15DEC2016A6 A 022.d	12/15/2016 18:22
WI-CV-1FB28-1216	320-24178-13	15DEC2016A6 A 023.d	12/15/2016 18:52

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Instrument ID: A6 Calibration Start Date: 12/05/2016 17:26
 GC Column: Acquity ID: 2.1(mm) Calibration End Date: 12/05/2016 19:54
 Calibration ID: 26888

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	965911	20.05	2046916	20.67		
UPPER LIMIT	1448867	20.55	3070374	21.17		
LOWER LIMIT	482956	19.55	1023458	20.17		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCV 320-140688/9 CCVL	1025187	20.05	2358079	20.67		
ICV 320-140688/11	877210	20.05	2015178	20.67		
CCV 320-142223/2 CCVL	615516	20.04	1606471	20.67		
CCV 320-142223/3 CCVIS	768124	20.05	1696317	20.67		
MB 320-141540/1-A	791353	20.04	2025210	20.66		
LLCS 320-141540/2-A	735245	20.04	1927844	20.66		
LLCSD 320-141540/3-A	753724	20.04	2032622	20.66		
320-24178-1	WI-CV-1RW23-1216	708289	20.04	2008620	20.66	
320-24178-2	WI-CV-1RW23P-1216	640073	20.04	1855559	20.66	
320-24178-3	WI-CV-1FB23-1216	727192	20.04	2021177	20.66	
320-24178-4	WI-CV-1RW24-1216	724333	20.04	1867227	20.66	
320-24178-5	WI-CV-1FB24-1216	822534	20.04	1961736	20.66	
320-24178-6	WI-CV-1RW25-1216	807448	20.05	2247292	20.68	
CCV 320-142223/15 CCVIS	852323	20.04	1761780	20.67		
320-24178-7	WI-CV-1FB25-1216	847354	20.04	2055054	20.66	
320-24178-8	WI-CV-1RW26-1216	723560	20.02	1923184	20.66	
320-24178-9	WI-CV-1FB26-1216	841147	20.02	2039505	20.66	
320-24178-10	WI-CV-1RW27-1216	603893	20.02	1676042	20.64	
320-24178-11	WI-CV-1FB27-1216	788429	20.02	2023279	20.66	
320-24178-12	WI-CV-1RW28-1216	773727	20.02	1952960	20.64	
320-24178-13	WI-CV-1FB28-1216	697853	20.02	1703380	20.64	
CCV 320-142412/24 CCVIS	767144	20.02	1643264	20.66		

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
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Sample No.: CCV 320-142223/3 Date Analyzed: 12/15/2016 08:33
 Instrument ID: A6 GC Column: Acquity ID: 2.1 (mm)
 Lab File ID (Standard): 15DEC2016A6A_003.d Heated Purge: (Y/N) N
 Calibration ID: 26888

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	768124	20.05	1696317	20.67		
UPPER LIMIT	1075374	20.55	2374844	21.17		
LOWER LIMIT	537687	19.55	1187422	20.17		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-141540/1-A		791353	20.04	2025210	20.66	
LLCS 320-141540/2-A		735245	20.04	1927844	20.66	
LLCSD 320-141540/3-A		753724	20.04	2032622	20.66	
320-24178-1	WI-CV-1RW23-1216	708289	20.04	2008620	20.66	
320-24178-2	WI-CV-1RW23P-1216	640073	20.04	1855559	20.66	
320-24178-3	WI-CV-1FB23-1216	727192	20.04	2021177	20.66	
320-24178-4	WI-CV-1RW24-1216	724333	20.04	1867227	20.66	
320-24178-5	WI-CV-1FB24-1216	822534	20.04	1961736	20.66	
320-24178-6	WI-CV-1RW25-1216	807448	20.05	2247292	20.68	

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
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Sample No.: CCV 320-142223/15 Date Analyzed: 12/15/2016 14:55
 Instrument ID: A6 GC Column: Acquity ID: 2.1 (mm)
 Lab File ID (Standard): 15DEC2016A6A_015.d Heated Purge: (Y/N) N
 Calibration ID: 26888

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	852323	20.04	1761780	20.67		
UPPER LIMIT	1193252	20.54	2466492	21.17		
LOWER LIMIT	596626	19.54	1233246	20.17		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-141540/1-A		791353	20.04	2025210	20.66	
LLCS 320-141540/2-A		735245	20.04	1927844	20.66	
LLCSD 320-141540/3-A		753724	20.04	2032622	20.66	
320-24178-1	WI-CV-1RW23-1216	708289	20.04	2008620	20.66	
320-24178-2	WI-CV-1RW23P-1216	640073	20.04	1855559	20.66	
320-24178-3	WI-CV-1FB23-1216	727192	20.04	2021177	20.66	
320-24178-4	WI-CV-1RW24-1216	724333	20.04	1867227	20.66	
320-24178-5	WI-CV-1FB24-1216	822534	20.04	1961736	20.66	
320-24178-6	WI-CV-1RW25-1216	807448	20.05	2247292	20.68	

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
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Sample No.: CCV 320-142412/15 Date Analyzed: 12/15/2016 14:55
 Instrument ID: A6 GC Column: Acquity ID: 2.1 (mm)
 Lab File ID (Standard): 15DEC2016A6A_015.d Heated Purge: (Y/N) N
 Calibration ID: 26888

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	852323	20.04	1761780	20.67		
UPPER LIMIT	1193252	20.54	2466492	21.17		
LOWER LIMIT	596626	19.54	1233246	20.17		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-24178-7	WI-CV-1FB25-1216	847354	20.04	2055054	20.66	
320-24178-8	WI-CV-1RW26-1216	723560	20.02	1923184	20.66	
320-24178-9	WI-CV-1FB26-1216	841147	20.02	2039505	20.66	
320-24178-10	WI-CV-1RW27-1216	603893	20.02	1676042	20.64	
320-24178-11	WI-CV-1FB27-1216	788429	20.02	2023279	20.66	
320-24178-12	WI-CV-1RW28-1216	773727	20.02	1952960	20.64	
320-24178-13	WI-CV-1FB28-1216	697853	20.02	1703380	20.64	

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
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Sample No.: CCV 320-142412/24 Date Analyzed: 12/15/2016 19:21
 Instrument ID: A6 GC Column: Acquity ID: 2.1 (mm)
 Lab File ID (Standard): 15DEC2016A6A_024.d Heated Purge: (Y/N) N
 Calibration ID: 26888

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	767144	20.02	1643264	20.66		
UPPER LIMIT	1074002	20.52	2300570	21.16		
LOWER LIMIT	537001	19.52	1150285	20.16		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-24178-7	WI-CV-1FB25-1216	847354	20.04	2055054	20.66	
320-24178-8	WI-CV-1RW26-1216	723560	20.02	1923184	20.66	
320-24178-9	WI-CV-1FB26-1216	841147	20.02	2039505	20.66	
320-24178-10	WI-CV-1RW27-1216	603893	20.02	1676042	20.64	
320-24178-11	WI-CV-1FB27-1216	788429	20.02	2023279	20.66	
320-24178-12	WI-CV-1RW28-1216	773727	20.02	1952960	20.64	
320-24178-13	WI-CV-1FB28-1216	697853	20.02	1703380	20.64	

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 I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1RW23-1216 Lab Sample ID: 320-24178-1
 Matrix: Water Lab File ID: 15DEC2016A6A_009.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:21
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 273.4 (mL) Date Analyzed: 12/15/2016 11:30
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.044	U M	0.055	0.044	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.055		0.027	0.022	0.0086
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.044

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	95		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_009.d
 Lims ID: 320-24178-A-1-A
 Client ID: WI-CV-1RW23-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 11:30:45 ALS Bottle#: 5 Worklist Smp#: 9
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-1-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:18:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.586	17.599	-0.013	1.000	176599	3.59	156
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.585	-0.018	1.000	764708	9.26	24887
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.332	19.356	-0.024	1.000	769859	12.2	16584
4 Perfluoroheptanoic acid	363.0 > 319.0	19.368	19.380	-0.012	1.000	221243	2.57	76.7 M
* 5 13C2-PFOA	415.0 > 370.0	20.035	20.047	-0.012		708289	10.0	18373
6 Perfluorooctanoic acid	413.0 > 369.0	20.035	20.047	-0.012	1.000	1101780	15.0	714
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.383	20.620	-0.237	1.000	4767	0.0652	137 M
* 8 13C4 PFOS	503.0 > 80.0	20.655	20.667	-0.012		2008620	28.7	41915
\$ 10 13C2 PFDA	515.0 > 470.0	21.462	21.471	-0.009	1.000	589071	9.49	18555

QC Flag Legend

Review Flags

M - Manually Integrated

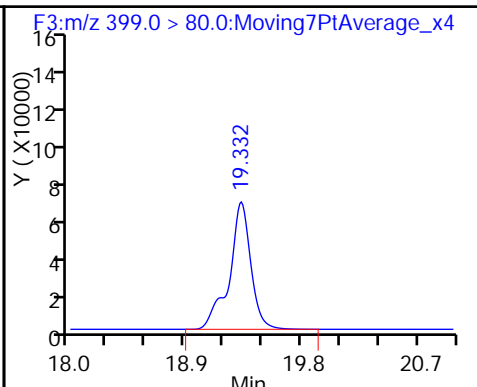
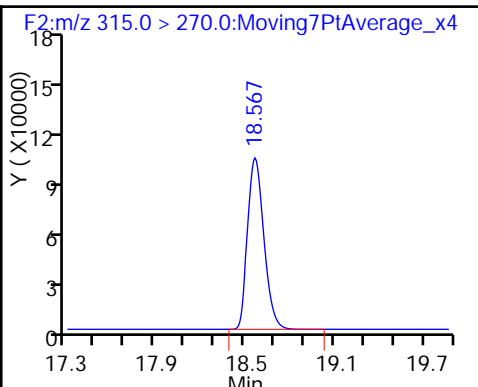
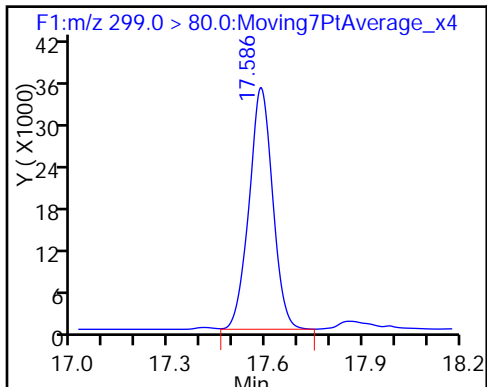
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_009.d
Injection Date: 15-Dec-2016 11:30:45 Instrument ID: A6
Lims ID: 320-24178-A-1-A Lab Sample ID: 320-24178-1
Client ID: WI-CV-1RW23-1216
Operator ID: CBW ALS Bottle#: 5 Worklist Smp#: 9
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A6 Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

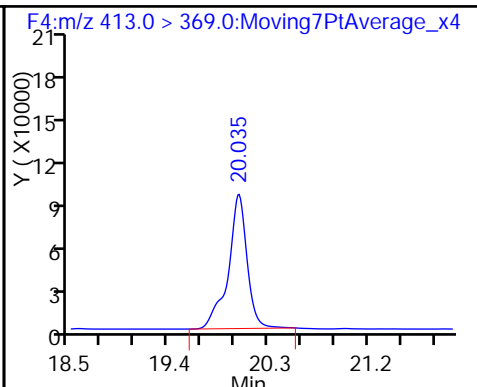
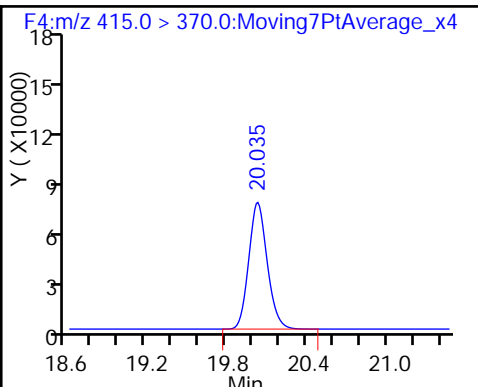
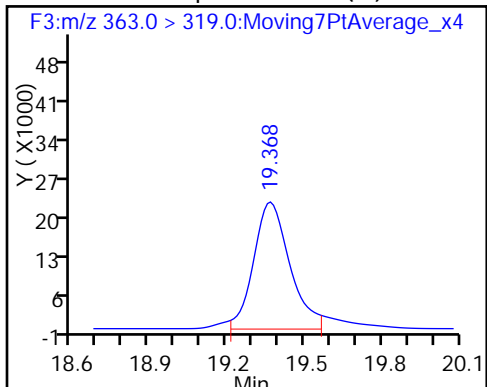
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid (M)

* 5 13C2-PFOA

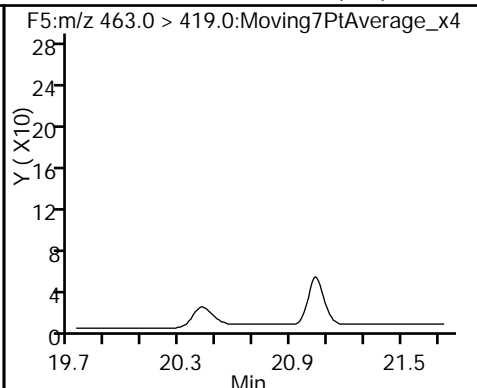
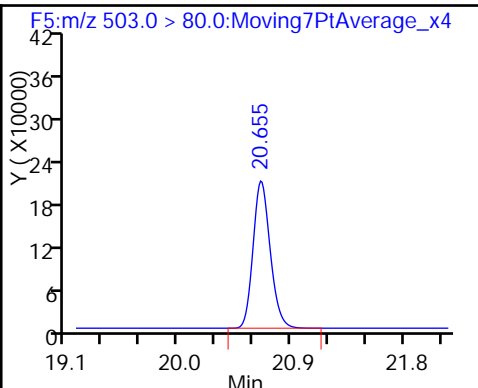
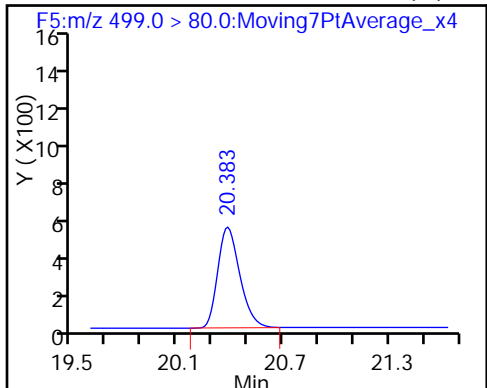
6 Perfluorooctanoic acid



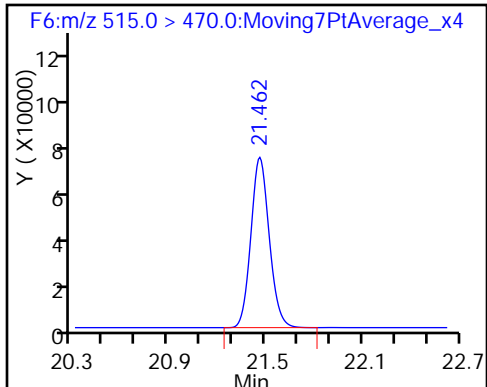
7 Perfluorooctane sulfonic acid (M)

* 8 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_009.d
 Lims ID: 320-24178-A-1-A
 Client ID: WI-CV-1RW23-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 11:30:45 ALS Bottle#: 5 Worklist Smp#: 9
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-1-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:18:42

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.26	92.55
\$ 10 13C2 PFDA	10.0	9.49	94.91

TestAmerica Sacramento

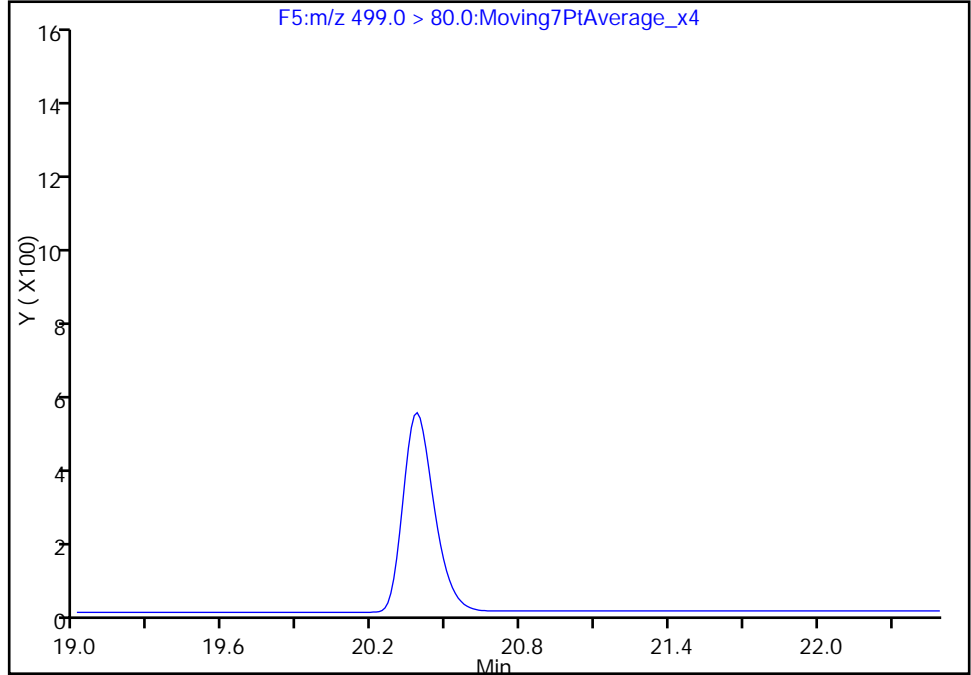
Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_009.d
Injection Date: 15-Dec-2016 11:30:45 Instrument ID: A6
Lims ID: 320-24178-A-1-A Lab Sample ID: 320-24178-1
Client ID: WI-CV-1RW23-1216
Operator ID: CBW ALS Bottle#: 5 Worklist Smp#: 9
Injection Vol: 10.0 ul Dil. Factor: 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

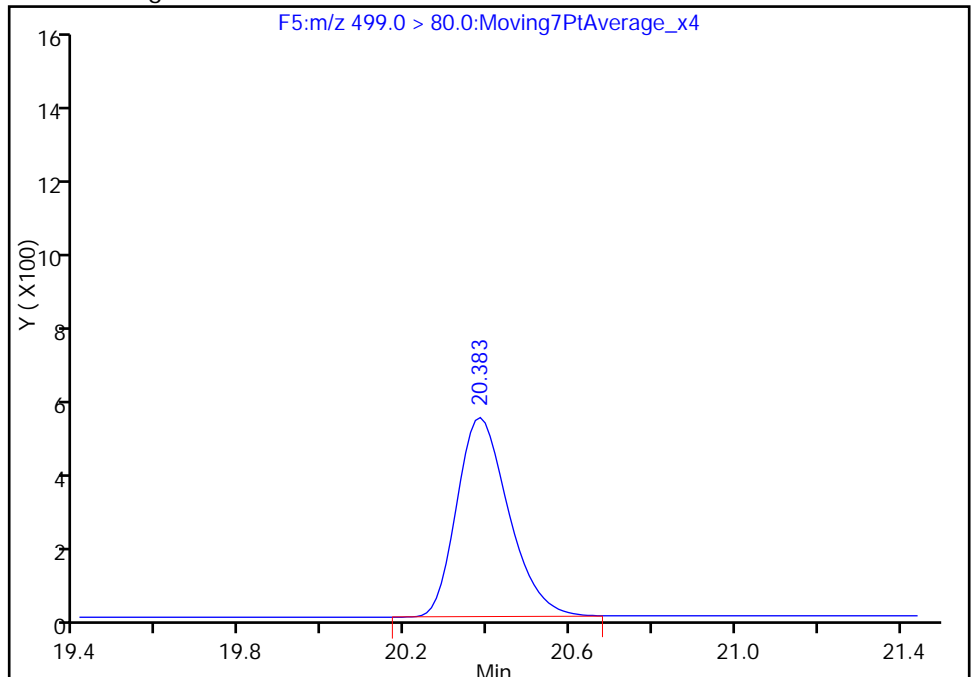
Not Detected
Expected RT: 20.62

Processing Integration Results



Manual Integration Results

RT: 20.38
Area: 4767
Amount: 0.065197
Amount Units: ng/ml



Reviewer: barnettj, 15-Dec-2016 15:18:42
Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1RW23P-1216 Lab Sample ID: 320-24178-2
 Matrix: Water Lab File ID: 15DEC2016A6A_010.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:26
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 277.5 (mL) Date Analyzed: 12/15/2016 12:00
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.043	U M	0.054	0.043	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.061		0.027	0.022	0.0085
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.099	0.043

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	110		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_010.d
 Lims ID: 320-24178-A-2-A
 Client ID: WI-CV-1RW23P-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 12:00:21 ALS Bottle#: 6 Worklist Smp#: 10
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-2-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:19:26

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.605	17.599	0.006	1.000	183231	4.04	160
\$ 2 13C2 PFHxA	315.0 > 270.0	18.585	18.585	0.0	1.000	751766	10.1	24127
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.356	-0.012	1.000	830948	14.3	17929
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.380	0.0	1.000	215591	2.77	78.5 M
* 5 13C2-PFOA	415.0 > 370.0	20.035	20.047	-0.012		640073	10.0	16504
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	1132351	17.0	1619
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.406	20.620	-0.214	1.000	1523	0.0225	37.5 M
* 8 13C4 PFOS	503.0 > 80.0	20.655	20.667	-0.012		1855559	28.7	48380
\$ 10 13C2 PFDA	515.0 > 470.0	21.462	21.471	-0.009	1.000	616910	11.0	19524

QC Flag Legend

Review Flags

M - Manually Integrated

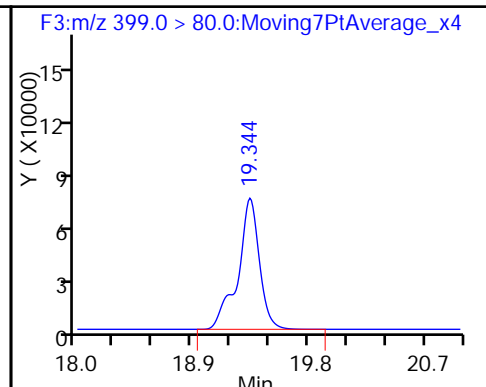
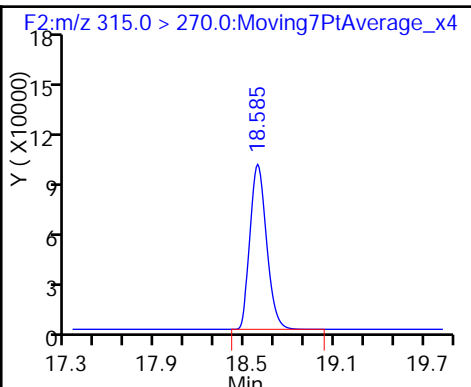
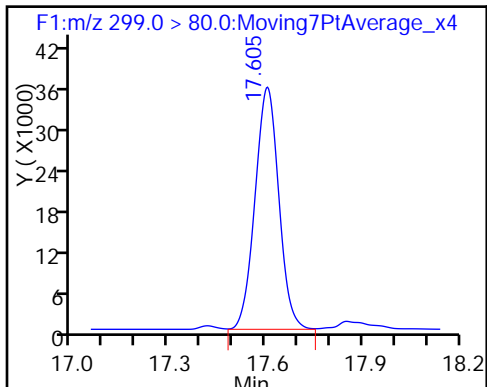
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_010.d
Injection Date: 15-Dec-2016 12:00:21 Instrument ID: A6
Lims ID: 320-24178-A-2-A Lab Sample ID: 320-24178-2
Client ID: WI-CV-1RW23P-1216
Operator ID: CBW ALS Bottle#: 6 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

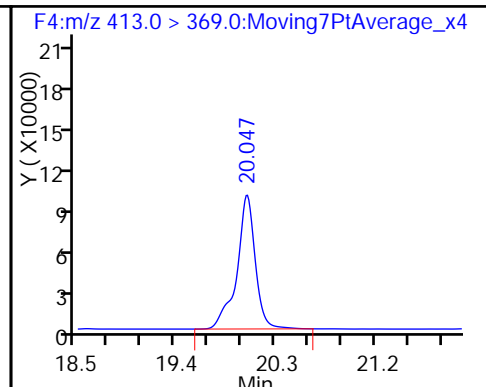
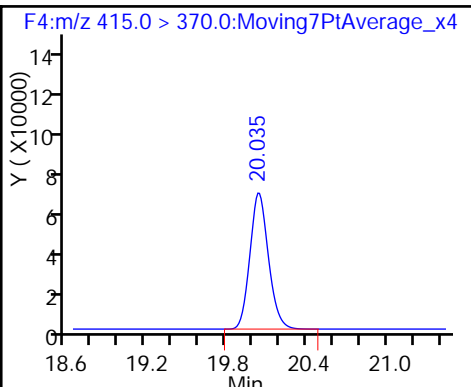
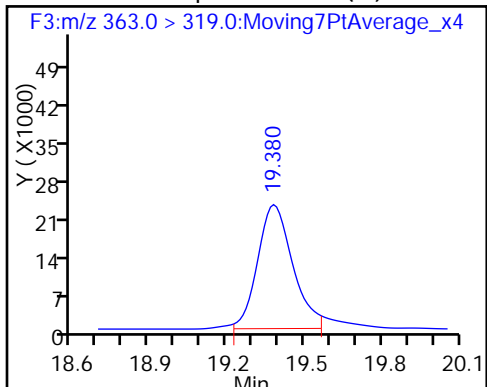
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid (M)

* 5 13C2-PFOA

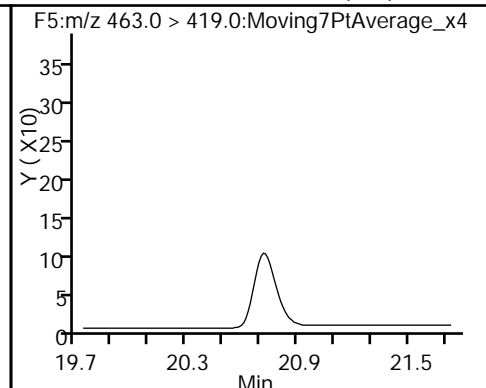
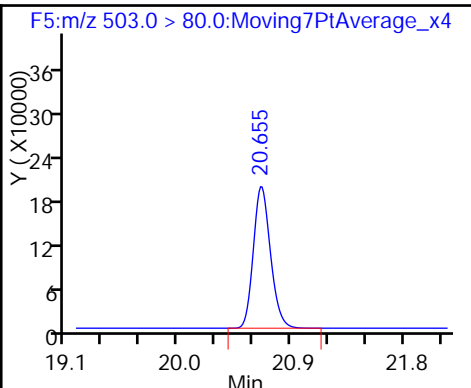
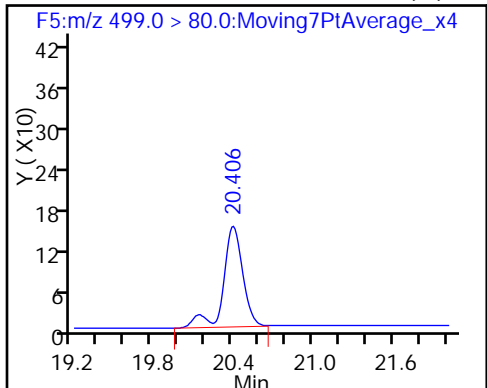
6 Perfluorooctanoic acid



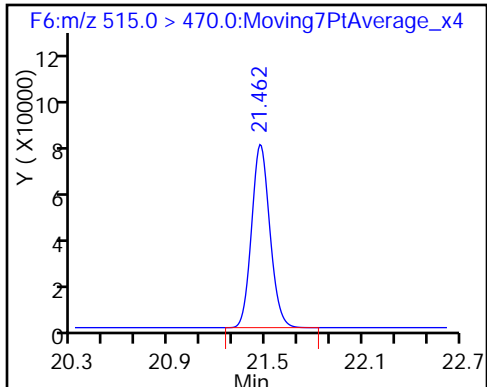
7 Perfluorooctane sulfonic acid (M)

* 8 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_010.d
 Lims ID: 320-24178-A-2-A
 Client ID: WI-CV-1RW23P-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 12:00:21 ALS Bottle#: 6 Worklist Smp#: 10
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-2-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:19:26

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.1	100.68
\$ 10 13C2 PFDA	10.0	11.0	109.99

TestAmerica Sacramento

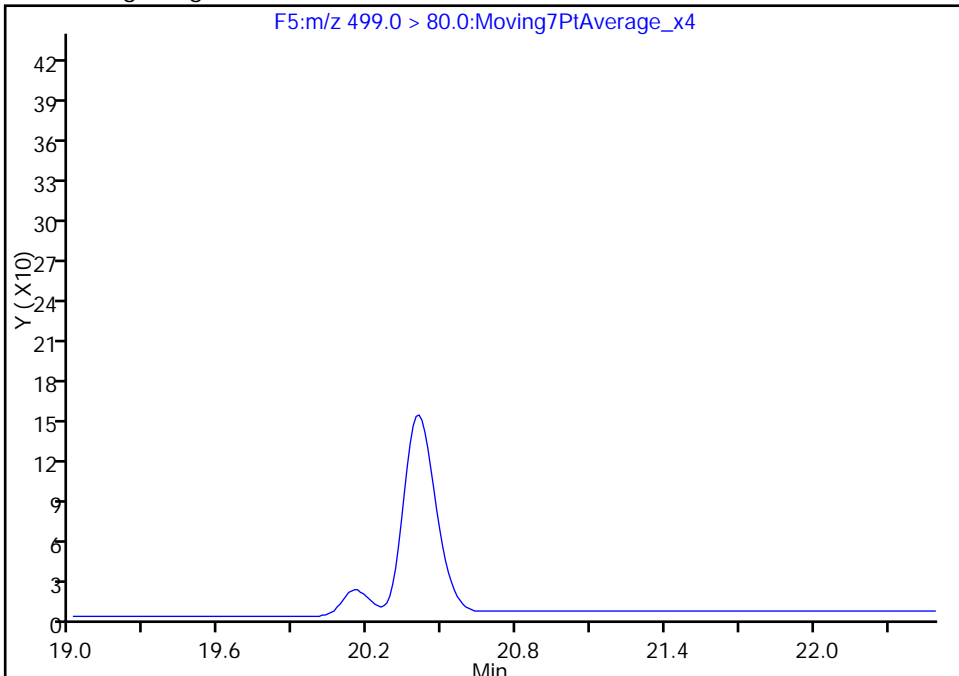
Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_010.d
Injection Date: 15-Dec-2016 12:00:21 Instrument ID: A6
Lims ID: 320-24178-A-2-A Lab Sample ID: 320-24178-2
Client ID: WI-CV-1RW23P-1216
Operator ID: CBW ALS Bottle#: 6 Worklist Smp#: 10
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F5:MRM

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

Signal: 1

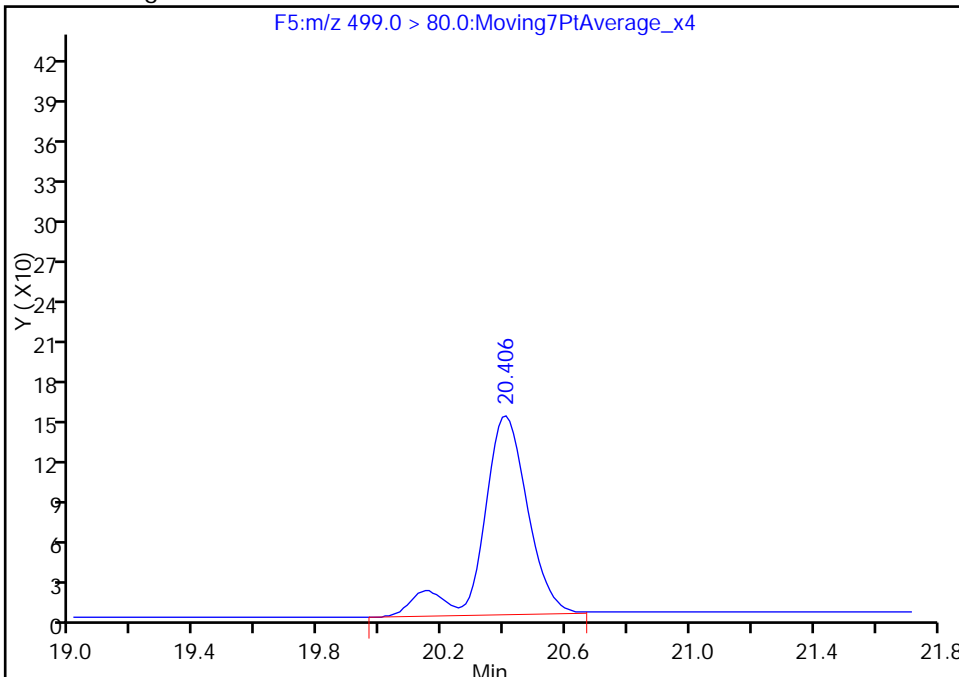
Not Detected
Expected RT: 20.62

Processing Integration Results



Manual Integration Results

RT: 20.41
Area: 1523
Amount: 0.022548
Amount Units: ng/ml



Reviewer: barnettj, 15-Dec-2016 15:19:26
Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1FB23-1216 Lab Sample ID: 320-24178-3
 Matrix: Water Lab File ID: 15DEC2016A6A_011.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:22
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 251.6(mL) Date Analyzed: 12/15/2016 12:29
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 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 M	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	97		70-130
STL00996	13C2 PFDA	106		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_011.d
 Lims ID: 320-24178-A-3-A
 Client ID: WI-CV-1FB23-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 12:29:58 ALS Bottle#: 7 Worklist Smp#: 11
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-3-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:20:12

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.585	-0.018	1.000	824561	9.72	26636
* 5 13C2-PFOA	415.0 > 370.0	20.035	20.047	-0.012		727192	10.0	19089
6 Perfluorooctanoic acid								M
413.0 > 369.0	20.035	20.047	-0.012	1.000	2322	0.0307	1.0	M
* 8 13C4 PFOS	503.0 > 80.0	20.655	20.667	-0.012		2021177	28.7	21130
\$ 10 13C2 PFDA	515.0 > 470.0	21.462	21.471	-0.009	1.000	677218	10.6	21359

QC Flag Legend

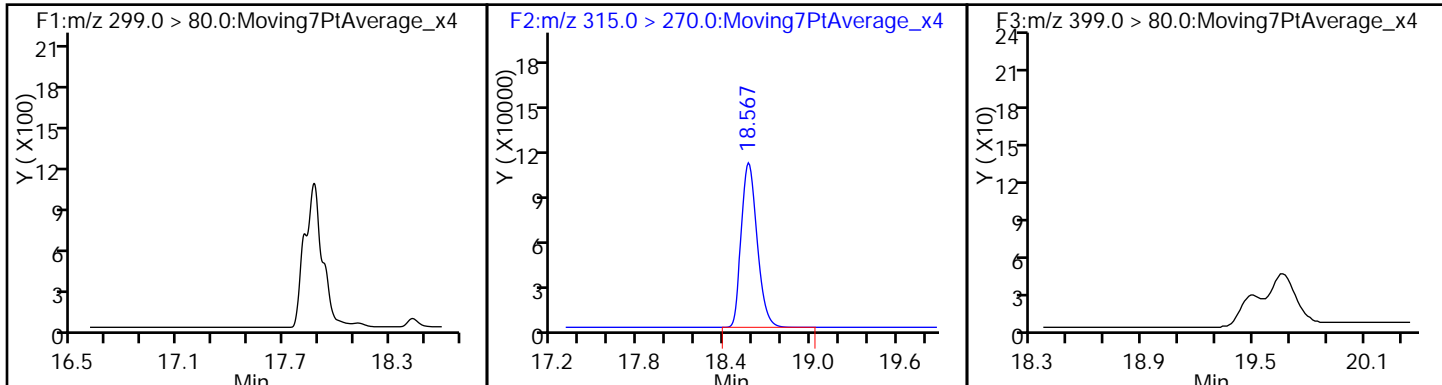
Review Flags

M - Manually Integrated

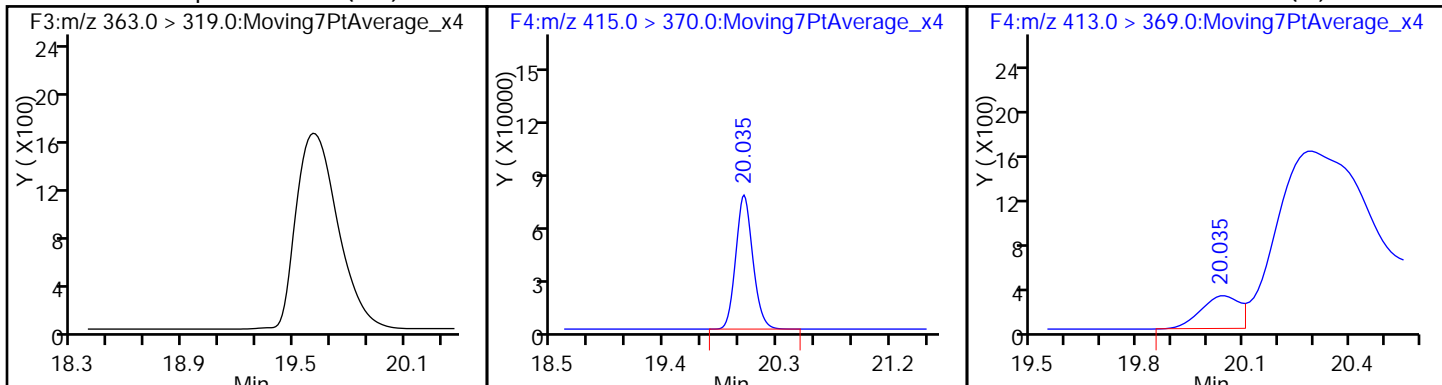
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_011.d
Injection Date: 15-Dec-2016 12:29:58 Instrument ID: A6
Lims ID: 320-24178-A-3-A Lab Sample ID: 320-24178-3
Client ID: WI-CV-1FB23-1216
Operator ID: CBW ALS Bottle#: 7 Worklist Smp#: 11
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A6 Limit Group: LC 537 ICAL

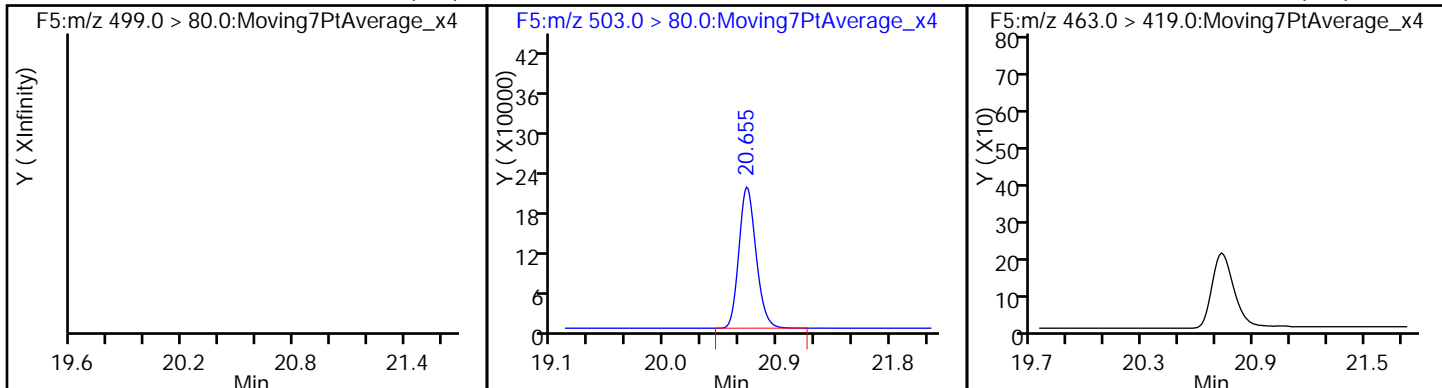
1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA 3 Perfluorohexanesulfonic acid (ND)



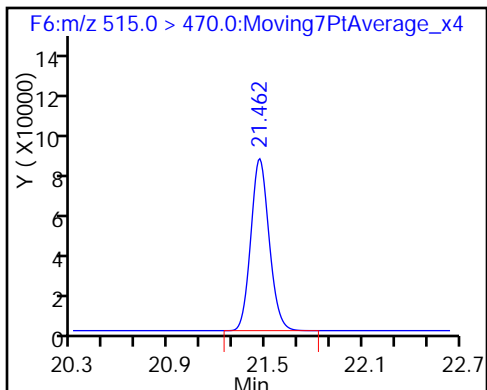
4 Perfluoroheptanoic acid (ND) * 5 13C2-PFOA 6 Perfluorooctanoic acid (M)



7 Perfluorooctane sulfonic acid (ND) * 8 13C4 PFOS 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_011.d
 Lims ID: 320-24178-A-3-A
 Client ID: WI-CV-1FB23-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 12:29:58 ALS Bottle#: 7 Worklist Smp#: 11
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-3-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:20:12

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.72	97.20
\$ 10 13C2 PFDA	10.0	10.6	106.28

TestAmerica Sacramento

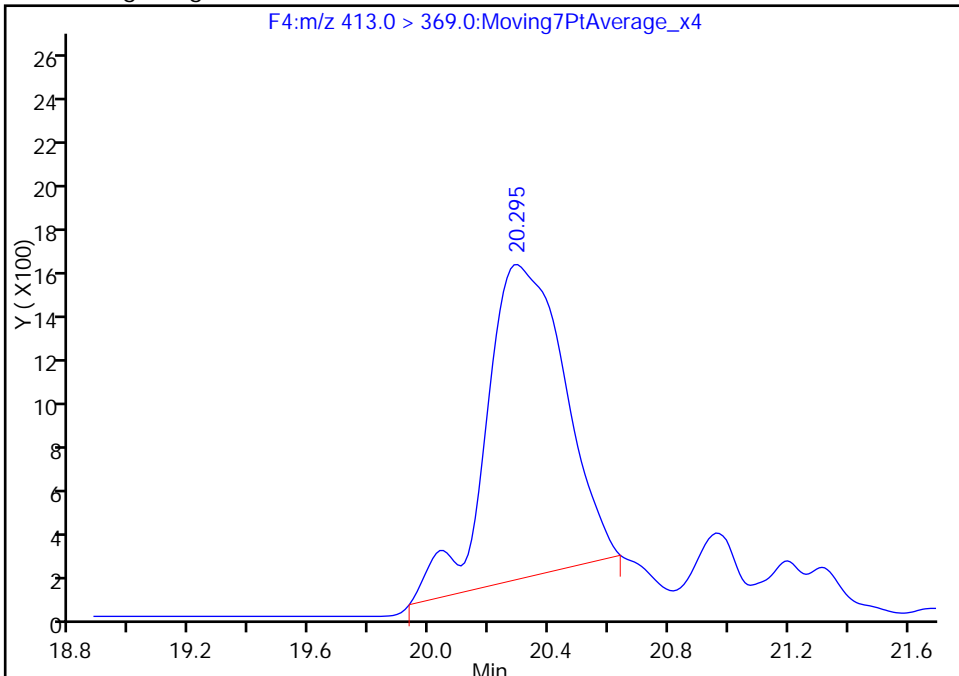
Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_011.d
Injection Date: 15-Dec-2016 12:29:58 Instrument ID: A6
Lims ID: 320-24178-A-3-A Lab Sample ID: 320-24178-3
Client ID: WI-CV-1FB23-1216
Operator ID: CBW ALS Bottle#: 7 Worklist Smp#: 11
Injection Vol: 10.0 ul Dil. Factor: 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

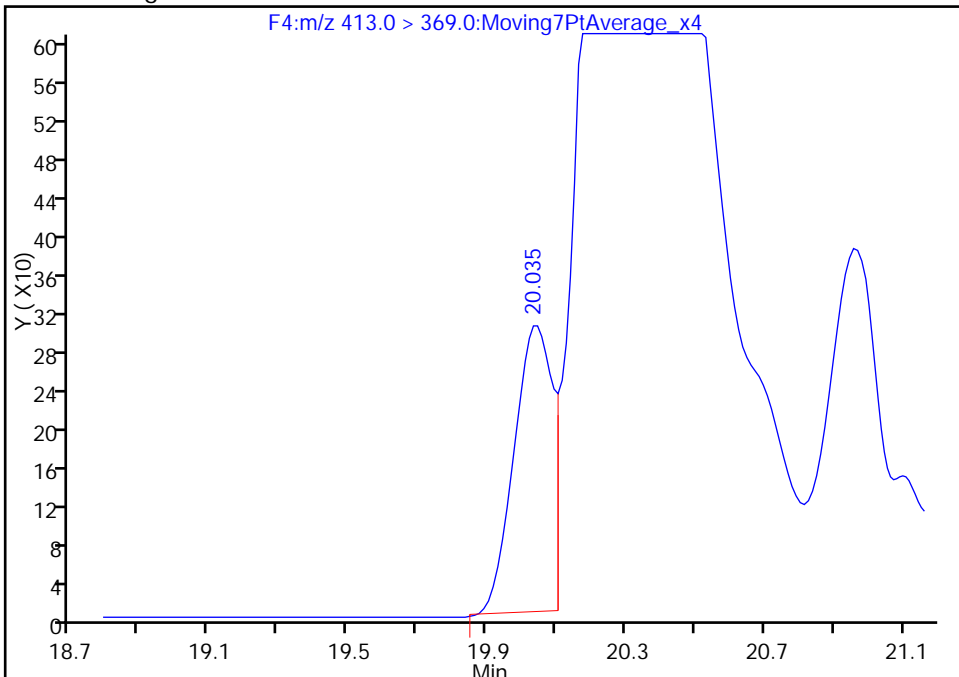
RT: 20.30
Area: 26777
Amount: 0.353918
Amount Units: ng/ml

Processing Integration Results



RT: 20.03
Area: 2322
Amount: 0.030690
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 15-Dec-2016 15:20:12
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1RW24-1216 Lab Sample ID: 320-24178-4
 Matrix: Water Lab File ID: 15DEC2016A6A_012.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:45
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 267.4 (mL) Date Analyzed: 12/15/2016 12:59
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.045	U	0.056	0.045	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.022	0.0088
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.044

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	91		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_012.d
 Lims ID: 320-24178-A-4-A
 Client ID: WI-CV-1RW24-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 12:59:35 ALS Bottle#: 8 Worklist Smp#: 12
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-4-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:20:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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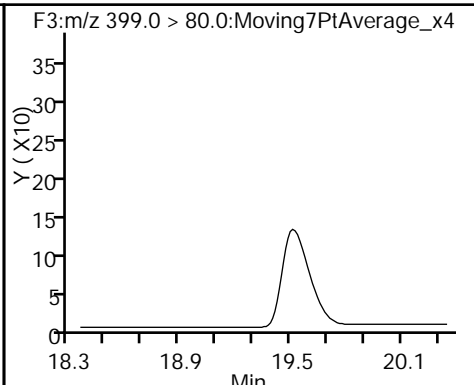
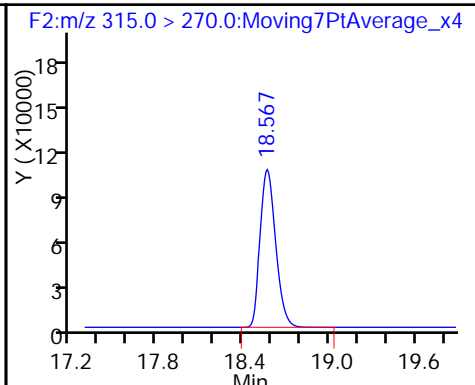
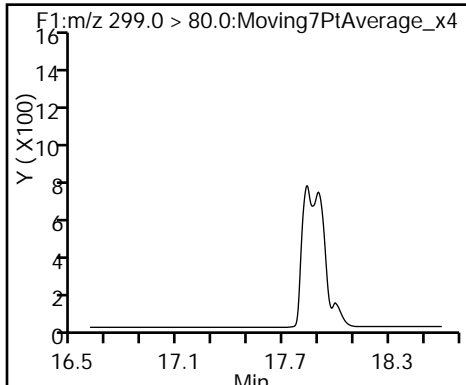
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.585	-0.018	1.000	791967	9.37	26082
* 5 13C2-PFOA	415.0 > 370.0	20.035	20.047	-0.012		724333	10.0	18836
* 8 13C4 PFOS	503.0 > 80.0	20.655	20.667	-0.012		1867227	28.7	32722
\$ 10 13C2 PFDA	515.0 > 470.0	21.462	21.471	-0.009	1.000	576467	9.08	18141

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_012.d
Injection Date: 15-Dec-2016 12:59:35 Instrument ID: A6
Lims ID: 320-24178-A-4-A Lab Sample ID: 320-24178-4
Client ID: WI-CV-1RW24-1216
Operator ID: CBW ALS Bottle#: 8 Worklist Smp#: 12
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

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

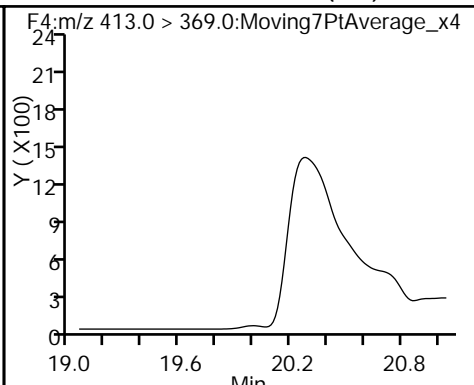
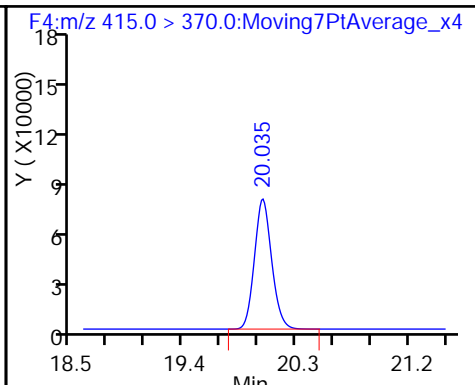
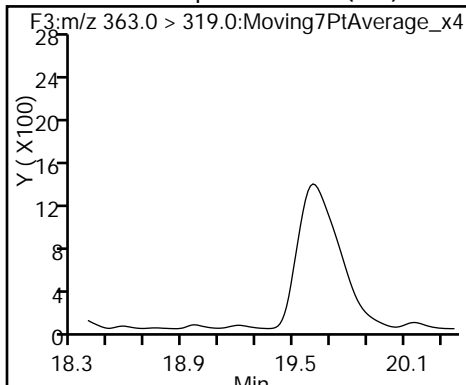
3 Perfluorohexanesulfonic acid (ND)



4 Perfluoroheptanoic acid (ND)

* 5 13C2-PFOA

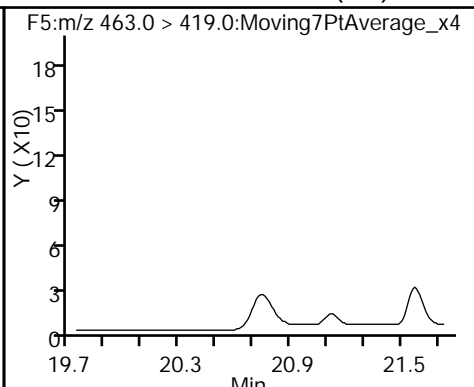
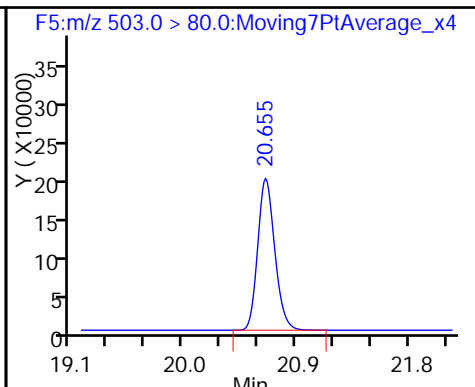
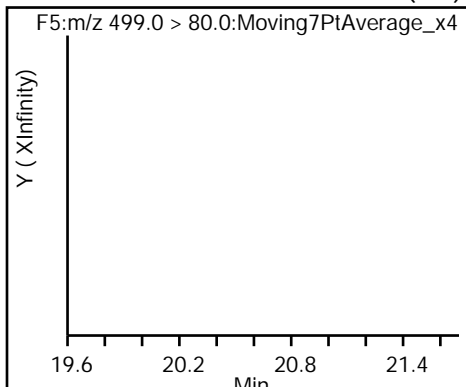
6 Perfluorooctanoic acid (ND)



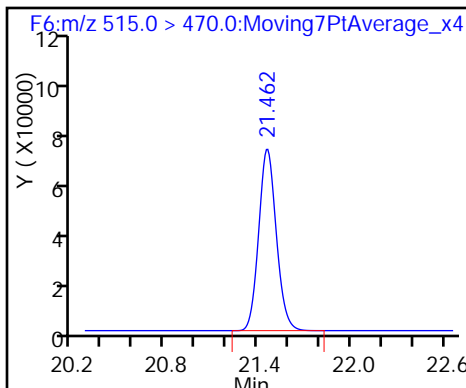
7 Perfluorooctane sulfonic acid (ND)

* 8 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_012.d
 Lims ID: 320-24178-A-4-A
 Client ID: WI-CV-1RW24-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 12:59:35 ALS Bottle#: 8 Worklist Smp#: 12
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-4-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:20:32

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.37	93.73
\$ 10 13C2 PFDA	10.0	9.08	90.82

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1FB24-1216 Lab Sample ID: 320-24178-5
 Matrix: Water Lab File ID: 15DEC2016A6A_013.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:44
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 252.2 (mL) Date Analyzed: 12/15/2016 13:29
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.059	0.048	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	88		70-130
STL00996	13C2 PFDA	85		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_013.d
 Lims ID: 320-24178-A-5-A
 Client ID: WI-CV-1FB24-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 13:29:12 ALS Bottle#: 9 Worklist Smp#: 13
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-5-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 09:59:29 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 09:59:32

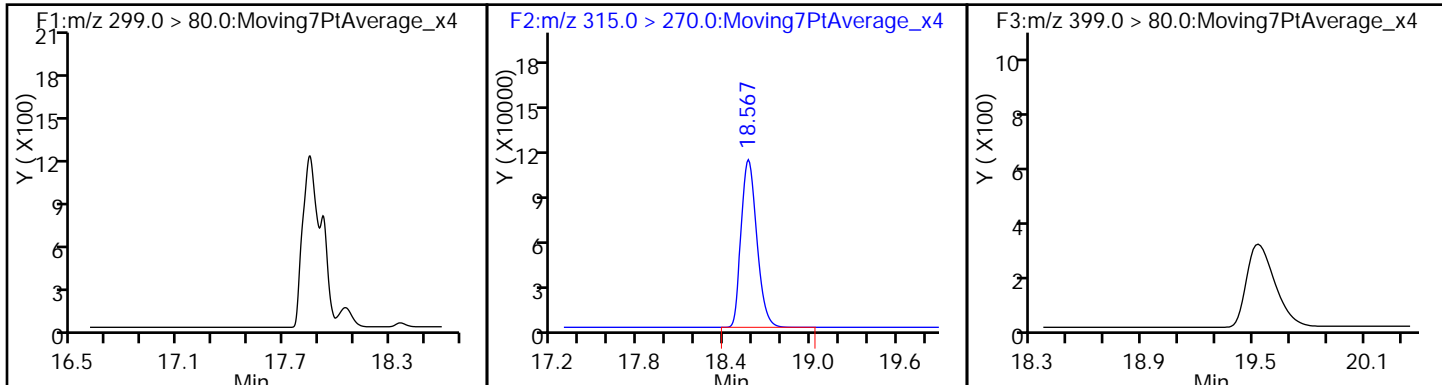
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.585	-0.018	1.000	841627	8.77	27509
* 5 13C2-PFOA	415.0 > 370.0	20.035	20.047	-0.012		822534	10.0	21391
* 8 13C4 PFOS	503.0 > 80.0	20.655	20.667	-0.012		1961736	28.7	51295
\$ 10 13C2 PFDA	515.0 > 470.0	21.453	21.471	-0.018	1.000	613763	8.52	19497

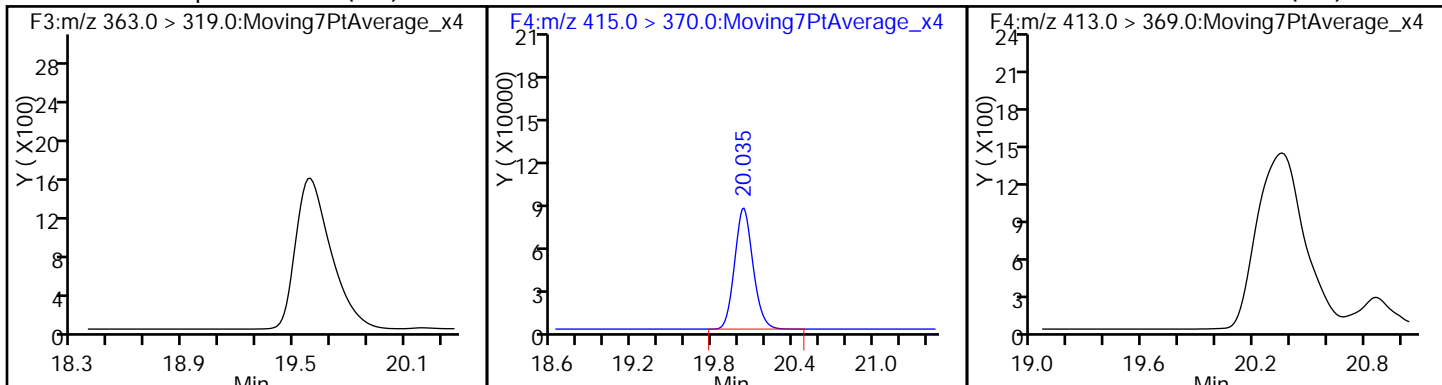
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_013.d
Injection Date: 15-Dec-2016 13:29:12 Instrument ID: A6
Lims ID: 320-24178-A-5-A Lab Sample ID: 320-24178-5
Client ID: WI-CV-1FB24-1216
Operator ID: CBW ALS Bottle#: 9 Worklist Smp#: 13
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

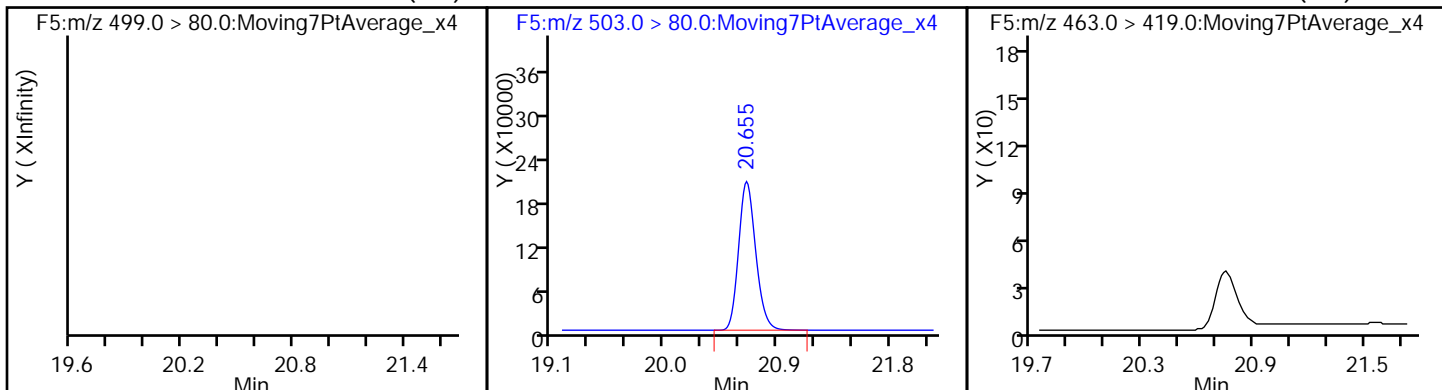
1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA 3 Perfluorohexanesulfonic acid (ND)



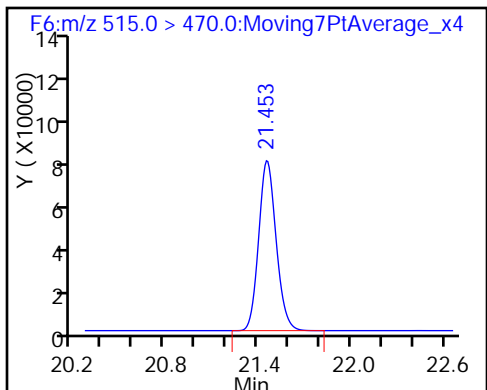
4 Perfluoroheptanoic acid (ND) * 5 13C2-PFOA 6 Perfluorooctanoic acid (ND)



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\20161214-37858.b\15DEC2016A6A_013.d
 Lims ID: 320-24178-A-5-A
 Client ID: WI-CV-1FB24-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 13:29:12 ALS Bottle#: 9 Worklist Smp#: 13
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-5-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 09:59:29 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 09:59:32

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.77	87.71
\$ 10 13C2 PFDA	10.0	8.52	85.15

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1RW25-1216 Lab Sample ID: 320-24178-6
 Matrix: Water Lab File ID: 15DEC2016A6A_014.d
 Analysis Method: 537 Date Collected: 12/06/2016 10:00
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 271.7(mL) Date Analyzed: 12/15/2016 14:25
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.055	0.044	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.022	0.0087
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.044

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	92		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_014.d
 Lims ID: 320-24178-A-6-A
 Client ID: WI-CV-1RW25-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 14:25:41 ALS Bottle#: 10 Worklist Smp#: 14
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-6-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:21:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.595	17.599	-0.004	1.000	18591	0.3382	24.4
\$ 2 13C2 PFHxA	315.0 > 270.0	18.576	18.585	-0.009	1.000	910111	9.66	29636
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		807448	10.0	21181
* 8 13C4 PFOS	503.0 > 80.0	20.679	20.667	0.012		2247292	28.7	58486
\$ 10 13C2 PFDA	515.0 > 470.0	21.489	21.471	0.018	1.000	649187	9.18	20286

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_014.d

Injection Date: 15-Dec-2016 14:25:41

Instrument ID: A6

Lims ID: 320-24178-A-6-A

Lab Sample ID: 320-24178-6

Client ID: WI-CV-1RW25-1216

Operator ID: CBW

ALS Bottle#: 10

Worklist Smp#: 14

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

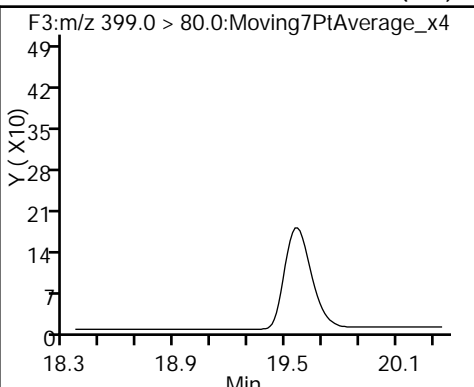
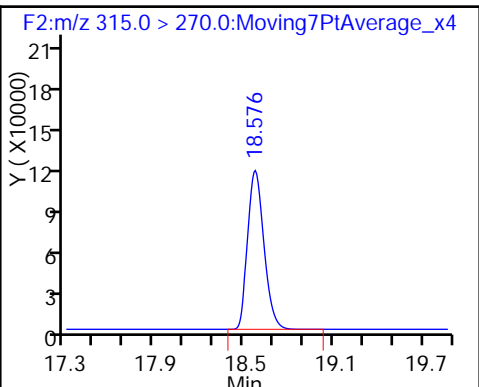
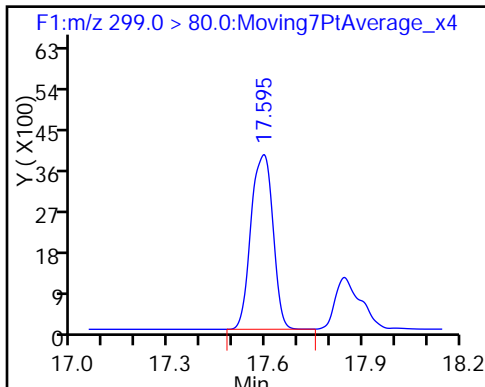
Method: 537__A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

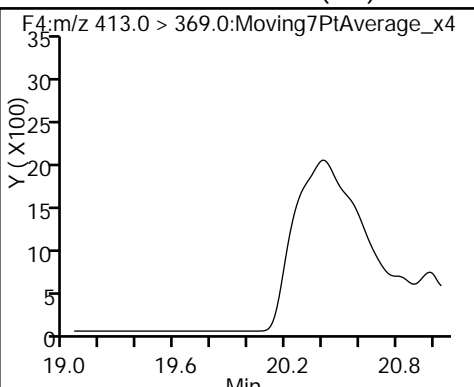
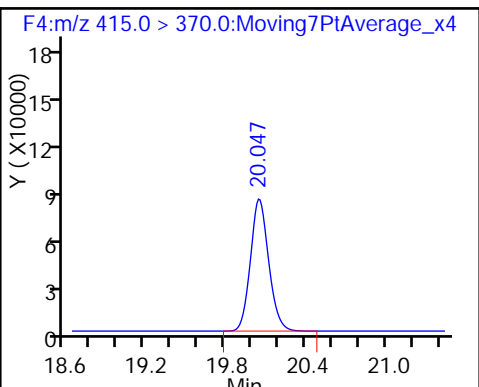
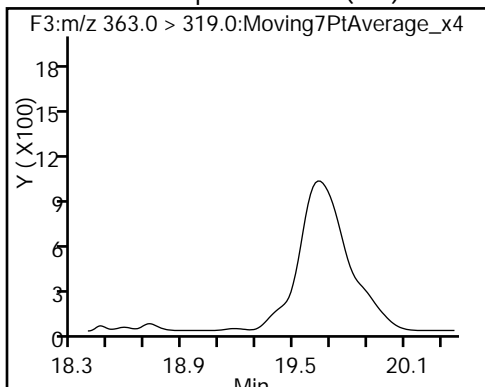
3 Perfluorohexanesulfonic acid (ND)



4 Perfluoroheptanoic acid (ND)

* 5 13C2-PFOA

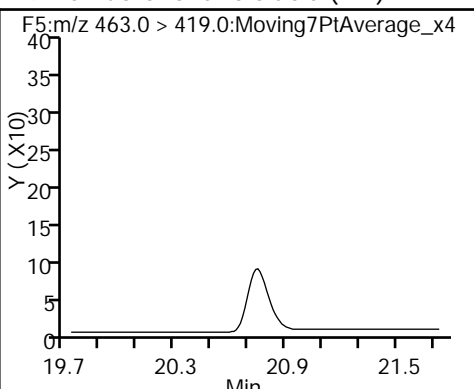
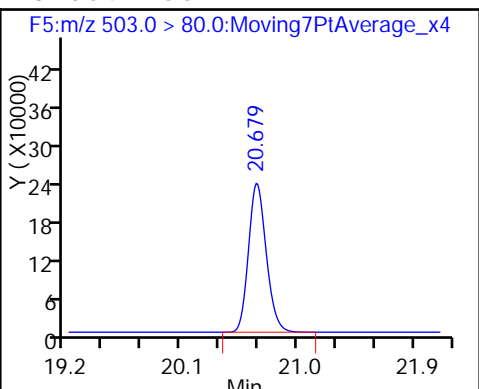
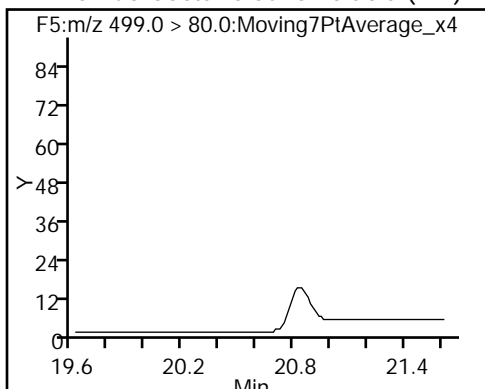
6 Perfluorooctanoic acid (ND)



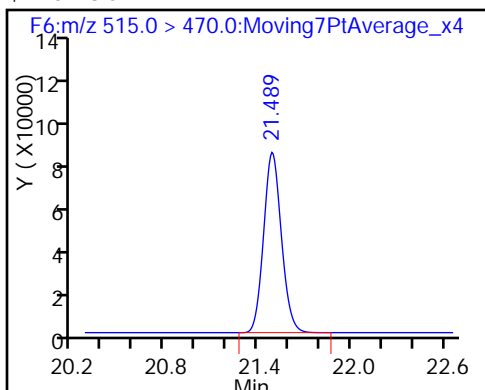
7 Perfluorooctane sulfonic acid (ND)

* 8 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_014.d
 Lims ID: 320-24178-A-6-A
 Client ID: WI-CV-1RW25-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 14:25:41 ALS Bottle#: 10 Worklist Smp#: 14
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-6-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:21:04

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.66	96.62
\$ 10 13C2 PFDA	10.0	9.18	91.75

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1FB25-1216 Lab Sample ID: 320-24178-7
 Matrix: Water Lab File ID: 15DEC2016A6A_017.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:58
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 247.3(mL) Date Analyzed: 12/15/2016 15:54
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142412 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	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	89		70-130
STL00996	13C2 PFDA	93		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_017.d
 Lims ID: 320-24178-A-7-A
 Client ID: WI-CV-1FB25-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 15:54:38 ALS Bottle#: 11 Worklist Smp#: 17
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-7-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:37:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.576	-0.009	1.000	880754	8.91	19158
* 5 13C2-PFOA	415.0 > 370.0	20.035	20.035	0.0		847354	10.0	12663
* 8 13C4 PFOS	503.0 > 80.0	20.655	20.667	-0.012		2055054	28.7	53638
\$ 10 13C2 PFDA	515.0 > 470.0	21.462	21.471	-0.009	1.000	688438	9.27	21647

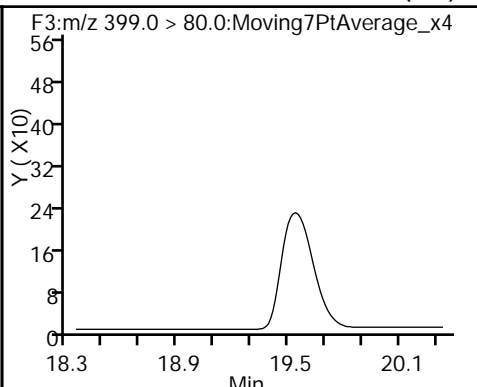
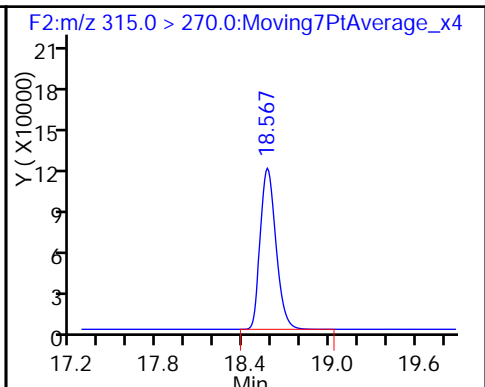
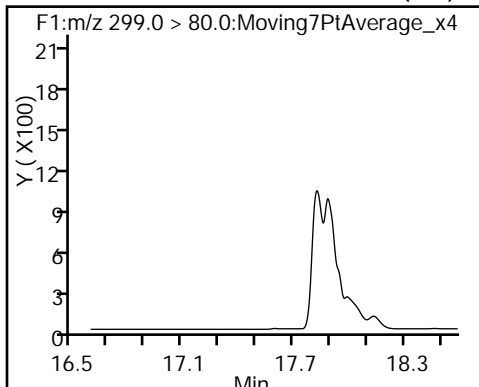
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_017.d
Injection Date: 15-Dec-2016 15:54:38 Instrument ID: A6
Lims ID: 320-24178-A-7-A Lab Sample ID: 320-24178-7
Client ID: WI-CV-1FB25-1216
Operator ID: CBW ALS Bottle#: 11 Worklist Smp#: 17
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

\$ 2 13C2 PFHxA

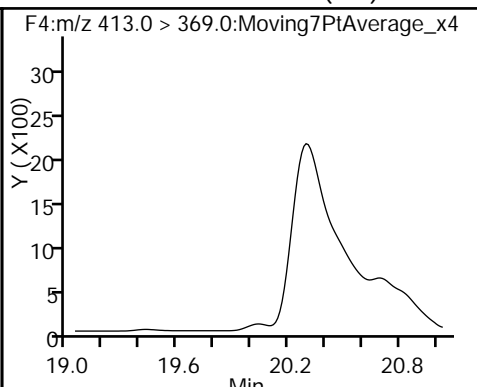
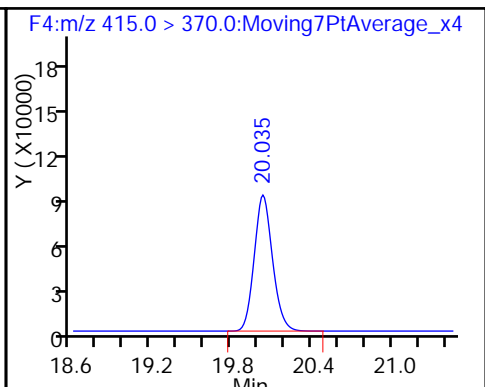
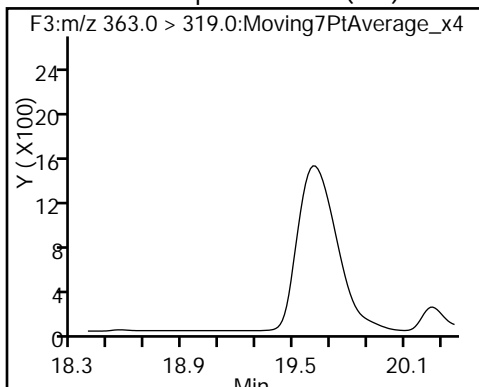
3 Perfluorohexanesulfonic acid (ND)



4 Perfluoroheptanoic acid (ND)

* 5 13C2-PFOA

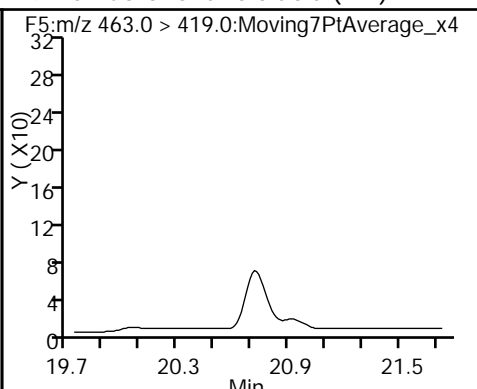
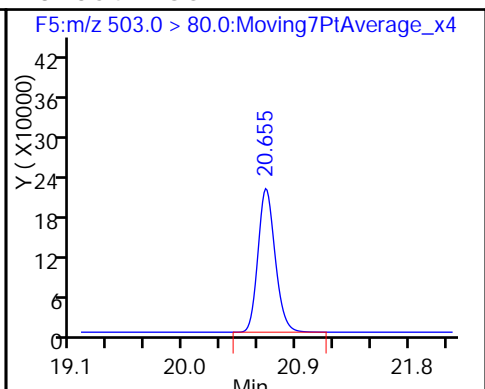
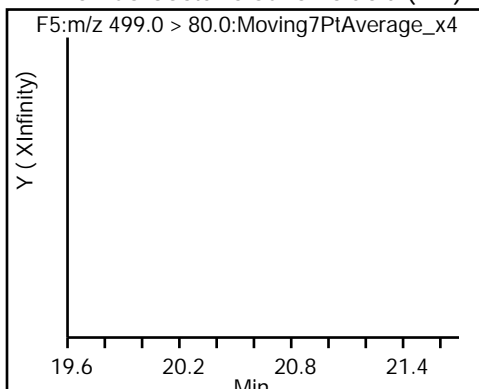
6 Perfluorooctanoic acid (ND)



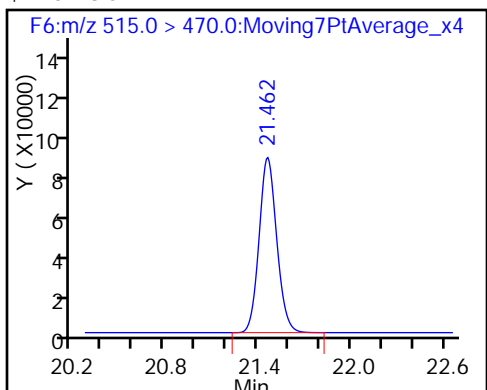
7 Perfluorooctane sulfonic acid (ND)

* 8 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_017.d
 Lims ID: 320-24178-A-7-A
 Client ID: WI-CV-1FB25-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 15:54:38 ALS Bottle#: 11 Worklist Smp#: 17
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-7-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:37:32

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.91	89.10
\$ 10 13C2 PFDA	10.0	9.27	92.72

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1RW26-1216 Lab Sample ID: 320-24178-8
 Matrix: Water Lab File ID: 15DEC2016A6A_018.d
 Analysis Method: 537 Date Collected: 12/06/2016 10:12
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 270.3(mL) Date Analyzed: 12/15/2016 16:24
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142412 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.055	0.044	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.022	0.0087
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.044

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	97		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_018.d
 Lims ID: 320-24178-A-8-A
 Client ID: WI-CV-1RW26-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 16:24:14 ALS Bottle#: 12 Worklist Smp#: 18
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-8-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:37:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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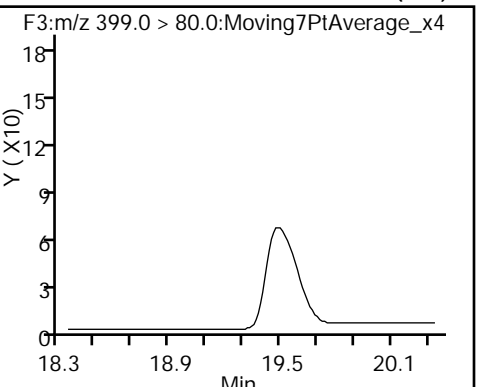
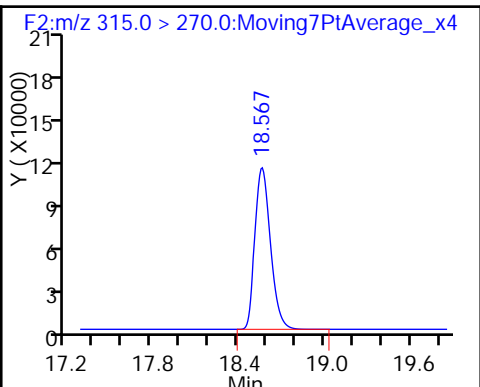
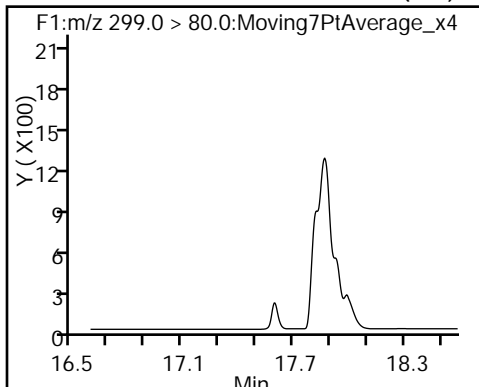
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.576	-0.009	1.000	846893	10.0	27861
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.380	0.0	1.000	1245	0.0142	1.1
* 5 13C2-PFOA	415.0 > 370.0	20.023	20.035	-0.012		723560	10.0	18634
* 8 13C4 PFOS	503.0 > 80.0	20.655	20.667	-0.012		1923184	28.7	50369
\$ 10 13C2 PFDA	515.0 > 470.0	21.453	21.471	-0.018	1.000	616749	9.73	19704

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_018.d
Injection Date: 15-Dec-2016 16:24:14 Instrument ID: A6
Lims ID: 320-24178-A-8-A Lab Sample ID: 320-24178-8
Client ID: WI-CV-1RW26-1216
Operator ID: CBW ALS Bottle#: 12 Worklist Smp#: 18
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A6 Limit Group: LC 537 ICAL

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

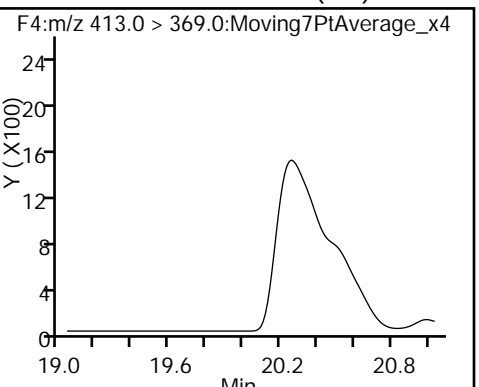
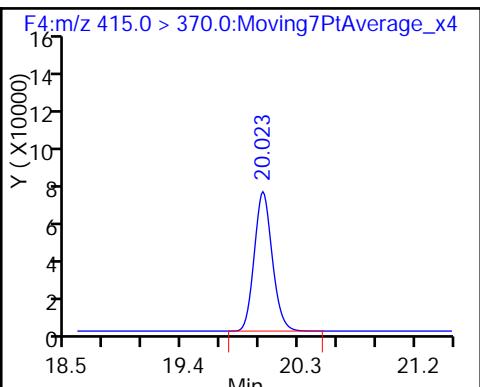
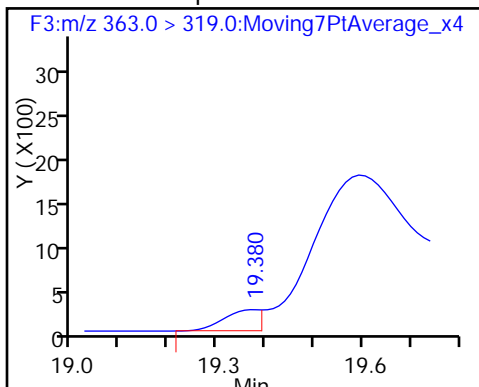
3 Perfluorohexanesulfonic acid (ND)



4 Perfluoroheptanoic acid

* 5 13C2-PFOA

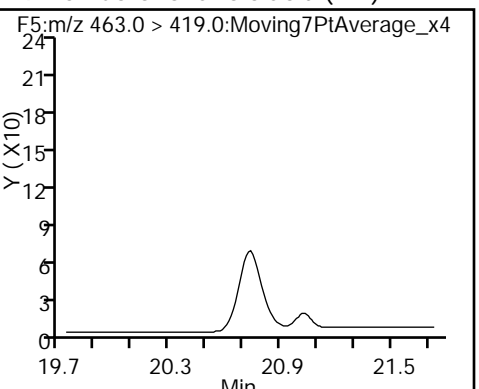
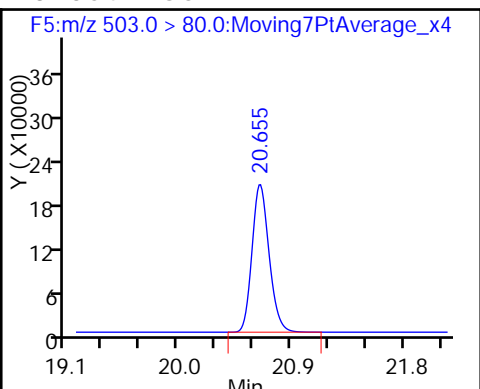
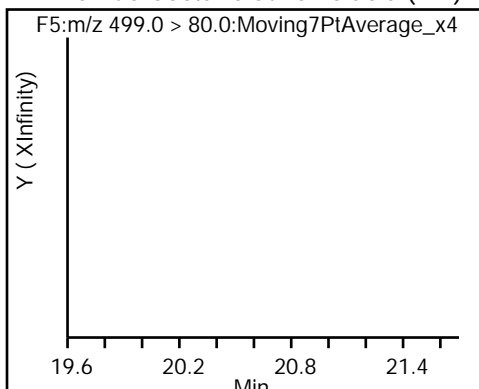
6 Perfluorooctanoic acid (ND)



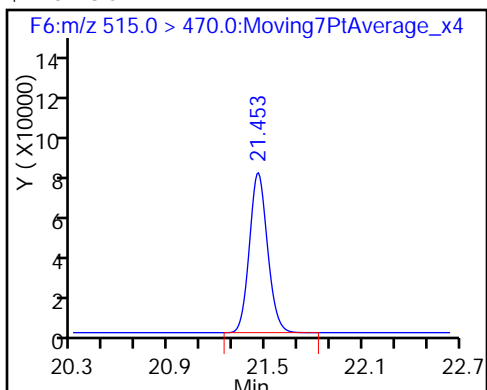
7 Perfluorooctane sulfonic acid (ND)

* 8 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_018.d
 Lims ID: 320-24178-A-8-A
 Client ID: WI-CV-1RW26-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 16:24:14 ALS Bottle#: 12 Worklist Smp#: 18
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-8-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:37:55

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.0	100.34
\$ 10 13C2 PFDA	10.0	9.73	97.27

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1FB26-1216 Lab Sample ID: 320-24178-9
 Matrix: Water Lab File ID: 15DEC2016A6A_019.d
 Analysis Method: 537 Date Collected: 12/06/2016 10:09
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 253.5 (mL) Date Analyzed: 12/15/2016 16:53
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142412 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	89		70-130
STL00996	13C2 PFDA	87		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_019.d
 Lims ID: 320-24178-A-9-A
 Client ID: WI-CV-1FB26-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 16:53:50 ALS Bottle#: 13 Worklist Smp#: 19
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-9-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:38:10

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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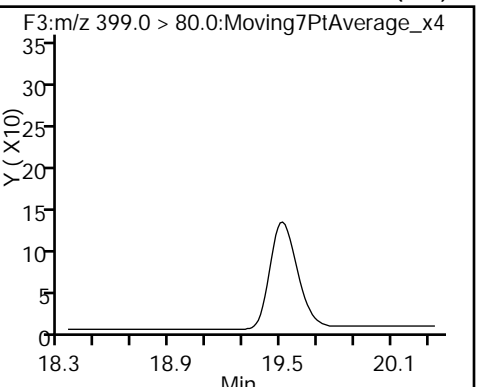
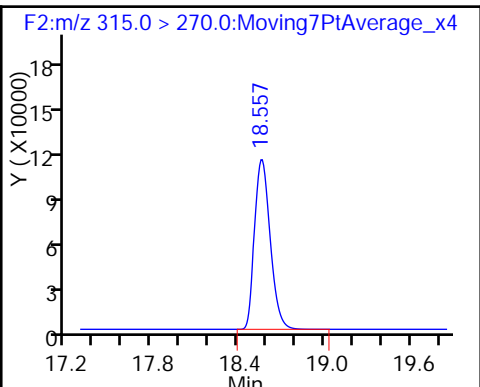
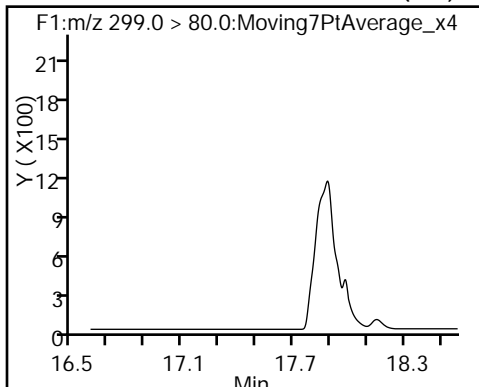
\$ 2 13C2 PFHxA	315.0 > 270.0	18.557	18.576	-0.019	1.000	876288	8.93	28590
* 5 13C2-PFOA	415.0 > 370.0	20.023	20.035	-0.012		841147	10.0	21818
* 8 13C4 PFOS	503.0 > 80.0	20.655	20.667	-0.012		2039505	28.7	53332
\$ 10 13C2 PFDA	515.0 > 470.0	21.453	21.471	-0.018	1.000	643680	8.73	20360

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_019.d
Injection Date: 15-Dec-2016 16:53:50 Instrument ID: A6
Lims ID: 320-24178-A-9-A Lab Sample ID: 320-24178-9
Client ID: WI-CV-1FB26-1216
Operator ID: CBW ALS Bottle#: 13 Worklist Smp#: 19
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

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

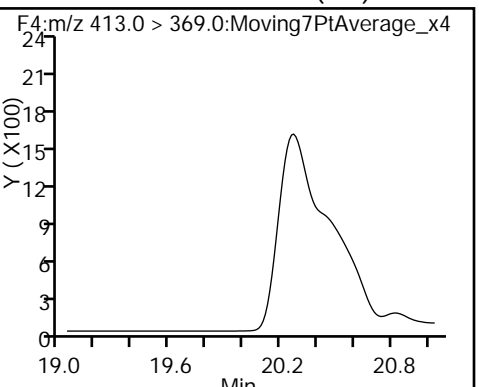
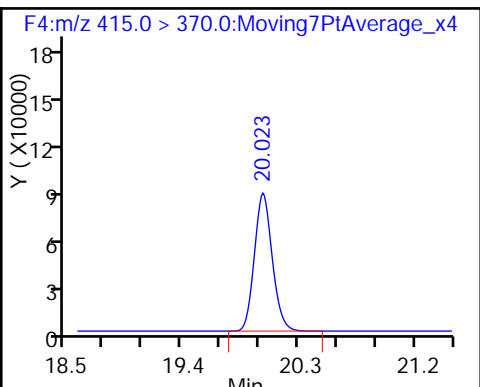
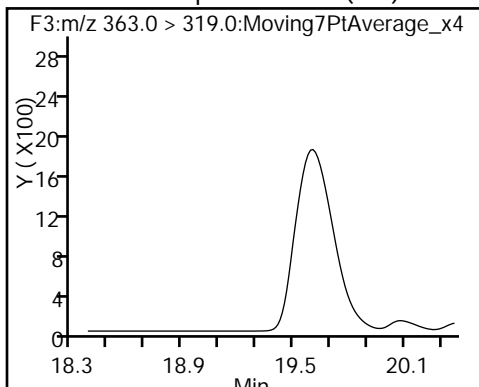
3 Perfluorohexanesulfonic acid (ND)



4 Perfluoroheptanoic acid (ND)

* 5 13C2-PFOA

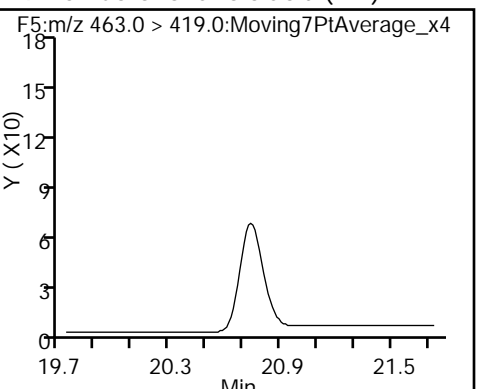
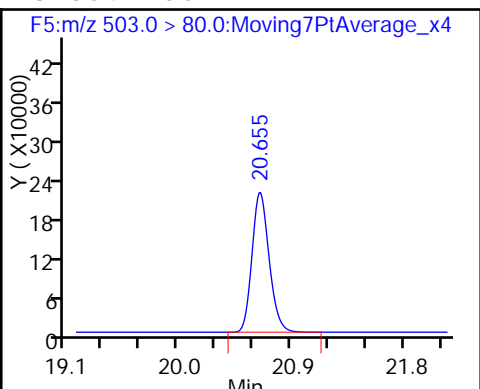
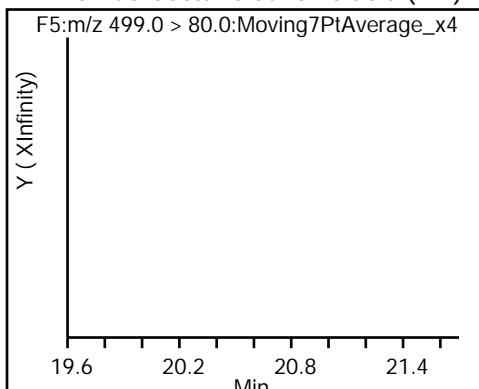
6 Perfluorooctanoic acid (ND)



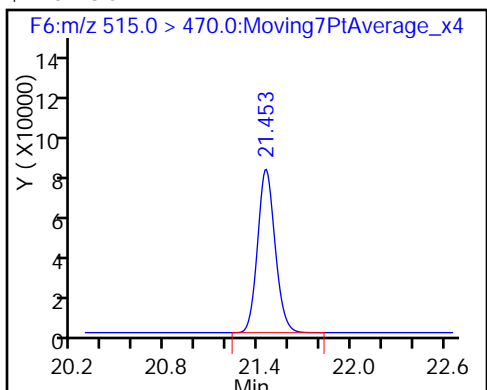
7 Perfluorooctane sulfonic acid (ND)

* 8 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_019.d
 Lims ID: 320-24178-A-9-A
 Client ID: WI-CV-1FB26-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 16:53:50 ALS Bottle#: 13 Worklist Smp#: 19
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-9-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:38:10

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.93	89.31
\$ 10 13C2 PFDA	10.0	8.73	87.33

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1RW27-1216 Lab Sample ID: 320-24178-10
 Matrix: Water Lab File ID: 15DEC2016A6A_020.d
 Analysis Method: 537 Date Collected: 12/06/2016 10:24
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 254.4 (mL) Date Analyzed: 12/15/2016 17:23
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142412 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)	0.038		0.029	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	114		70-130
STL00996	13C2 PFDA	112		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_020.d
 Lims ID: 320-24178-A-10-A
 Client ID: WI-CV-1RW27-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 17:23:27 ALS Bottle#: 14 Worklist Smp#: 20
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-10-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:39:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.582	17.595	-0.013	1.000	84010	2.05	275
\$ 2 13C2 PFHxA	315.0 > 270.0	18.558	18.576	-0.018	1.000	801467	11.4	26402
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.320	19.344	-0.024	1.000	417773	7.96	9040
4 Perfluoroheptanoic acid	363.0 > 319.0	19.356	19.380	-0.024	1.000	119195	1.62	79.7 M
* 5 13C2-PFOA	415.0 > 370.0	20.023	20.035	-0.012		603893	10.0	15696
6 Perfluorooctanoic acid	413.0 > 369.0	20.023	20.035	-0.012	1.000	607569	9.67	455
* 8 13C4 PFOS	503.0 > 80.0	20.643	20.667	-0.024		1676042	28.7	43801
\$ 10 13C2 PFDA	515.0 > 470.0	21.453	21.471	-0.018	1.000	595050	11.2	19030

QC Flag Legend

Review Flags

M - Manually Integrated

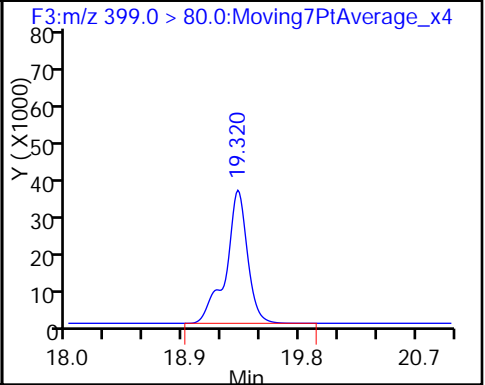
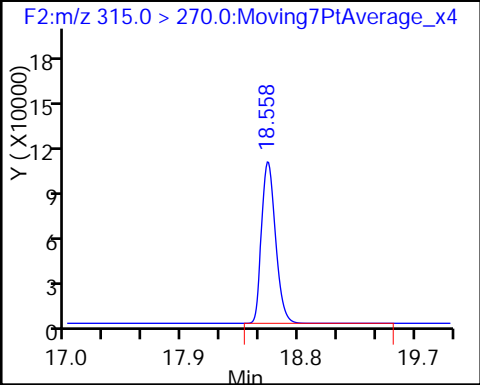
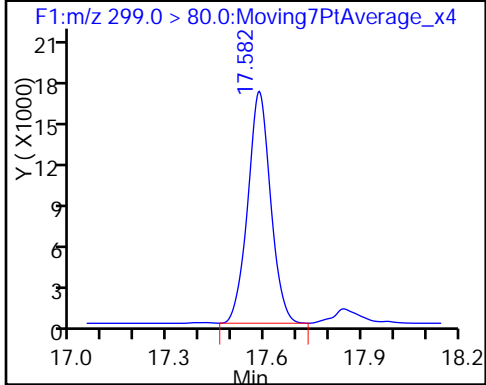
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_020.d
Injection Date: 15-Dec-2016 17:23:27 Instrument ID: A6
Lims ID: 320-24178-A-10-A Lab Sample ID: 320-24178-10
Client ID: WI-CV-1RW27-1216
Operator ID: CBW ALS Bottle#: 14 Worklist Smp#: 20
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A6 Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

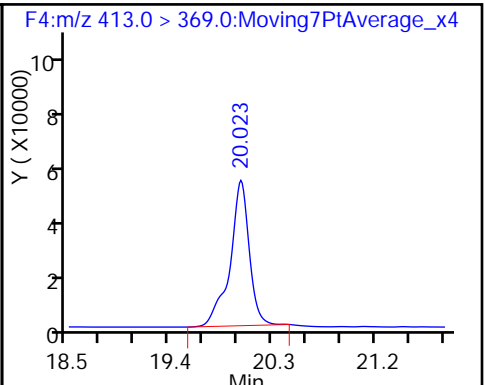
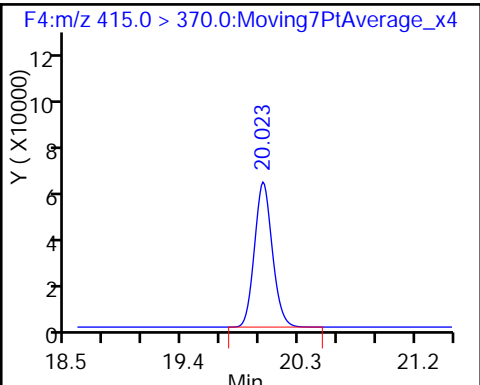
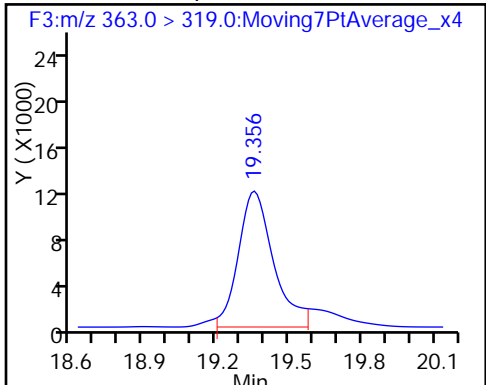
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid (M)

* 5 13C2-PFOA

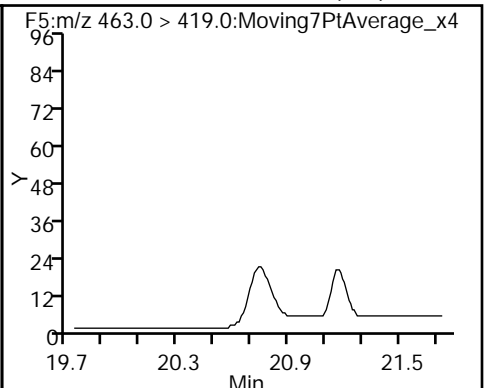
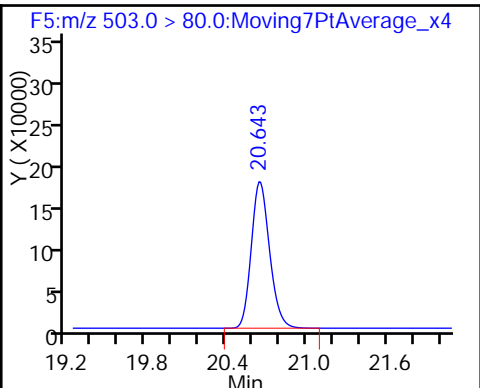
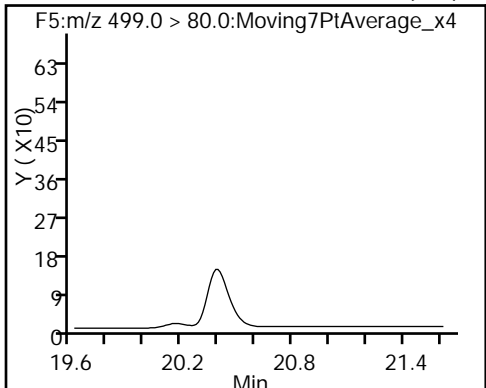
6 Perfluorooctanoic acid



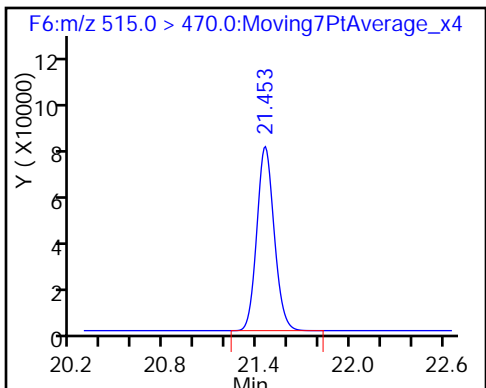
7 Perfluorooctane sulfonic acid (ND)

* 8 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_020.d
 Lims ID: 320-24178-A-10-A
 Client ID: WI-CV-1RW27-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 17:23:27 ALS Bottle#: 14 Worklist Smp#: 20
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-10-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:39:23

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.4	113.77
\$ 10 13C2 PFDA	10.0	11.2	112.45

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1FB27-1216 Lab Sample ID: 320-24178-11
 Matrix: Water Lab File ID: 15DEC2016A6A_021.d
 Analysis Method: 537 Date Collected: 12/06/2016 10:22
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 259.2 (mL) Date Analyzed: 12/15/2016 17:53
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142412 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.046	U	0.058	0.046	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.023	0.0091
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.046

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	100		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_021.d
 Lims ID: 320-24178-A-11-A
 Client ID: WI-CV-1FB27-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 17:53:03 ALS Bottle#: 15 Worklist Smp#: 21
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-11-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:39:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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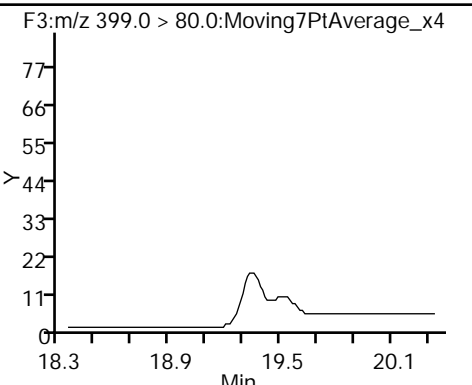
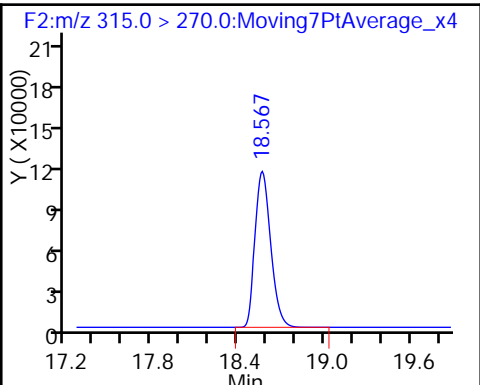
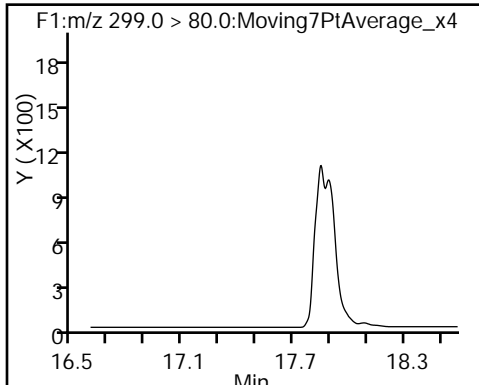
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.576	-0.009	1.000	882921	9.60	28783
* 5 13C2-PFOA	415.0 > 370.0	20.023	20.035	-0.012		788429	10.0	20476
* 8 13C4 PFOS	503.0 > 80.0	20.655	20.667	-0.012		2023279	28.7	35423
\$ 10 13C2 PFDA	515.0 > 470.0	21.462	21.471	-0.009	1.000	689149	9.97	21958

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_021.d
Injection Date: 15-Dec-2016 17:53:03 Instrument ID: A6
Lims ID: 320-24178-A-11-A Lab Sample ID: 320-24178-11
Client ID: WI-CV-1FB27-1216
Operator ID: CBW ALS Bottle#: 15 Worklist Smp#: 21
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL

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

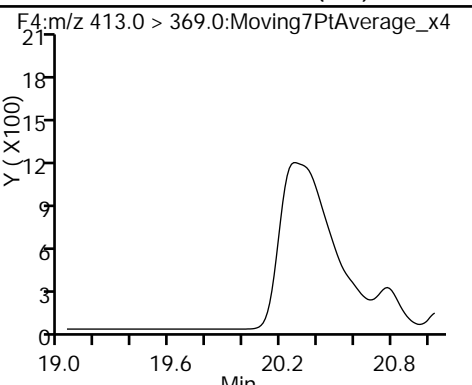
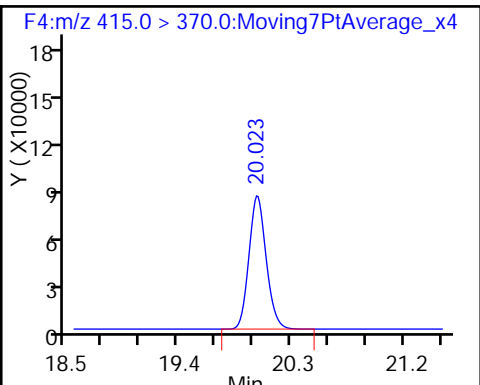
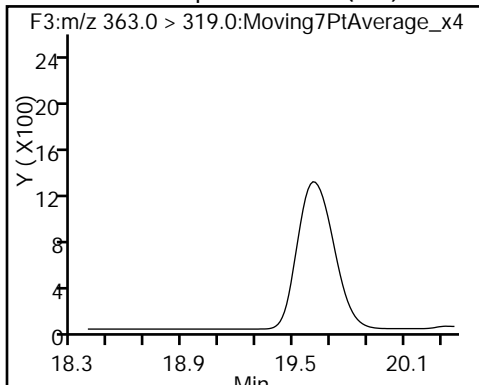
3 Perfluorohexanesulfonic acid (ND)



4 Perfluoroheptanoic acid (ND)

* 5 13C2-PFOA

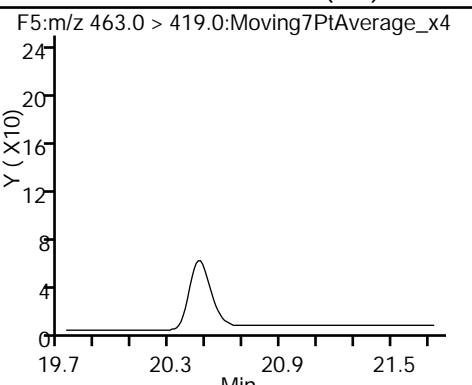
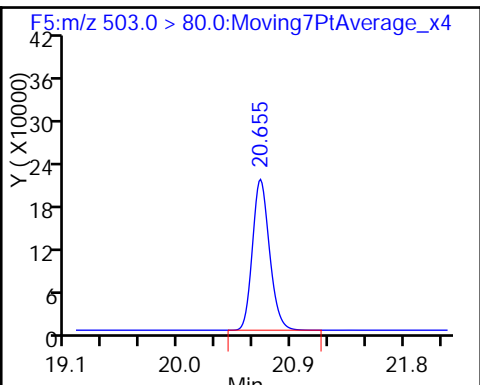
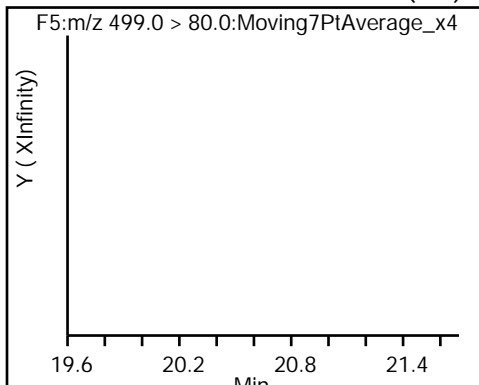
6 Perfluorooctanoic acid (ND)



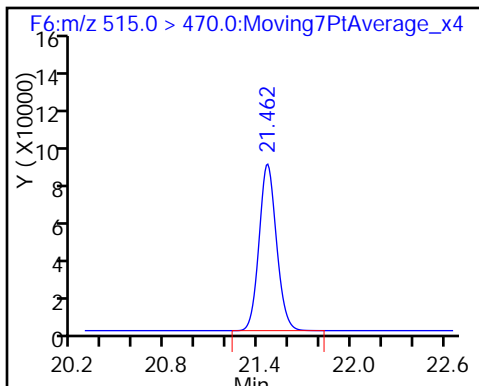
7 Perfluorooctane sulfonic acid (ND)

* 8 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_021.d
 Lims ID: 320-24178-A-11-A
 Client ID: WI-CV-1FB27-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 17:53:03 ALS Bottle#: 15 Worklist Smp#: 21
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-11-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:39:36

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.60	96.00
\$ 10 13C2 PFDA	10.0	9.97	99.75

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1RW28-1216 Lab Sample ID: 320-24178-12
 Matrix: Water Lab File ID: 15DEC2016A6A_022.d
 Analysis Method: 537 Date Collected: 12/06/2016 14:08
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 275.4 (mL) Date Analyzed: 12/15/2016 18:22
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142412 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.054	0.044	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.022	0.0086
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.043

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	87		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_022.d
 Lims ID: 320-24178-A-12-A
 Client ID: WI-CV-1RW28-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 18:22:40 ALS Bottle#: 16 Worklist Smp#: 22
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-12-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:39:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
--------	----	--------	--------	--------	----------	--------------	-----	-------

\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.576	-0.009	1.000	777337	8.61	25620
* 5 13C2-PFOA	415.0 > 370.0	20.023	20.035	-0.012		773727	10.0	20233
* 8 13C4 PFOS	503.0 > 80.0	20.643	20.667	-0.024		1952960	28.7	15615
\$ 10 13C2 PFDA	515.0 > 470.0	21.445	21.471	-0.026	1.000	588998	8.69	18689

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_022.d

Injection Date: 15-Dec-2016 18:22:40

Instrument ID: A6

Lims ID: 320-24178-A-12-A

Lab Sample ID: 320-24178-12

Client ID: WI-CV-1RW28-1216

Operator ID: CBW

ALS Bottle#: 16

Worklist Smp#: 22

Injection Vol: 10.0 ul

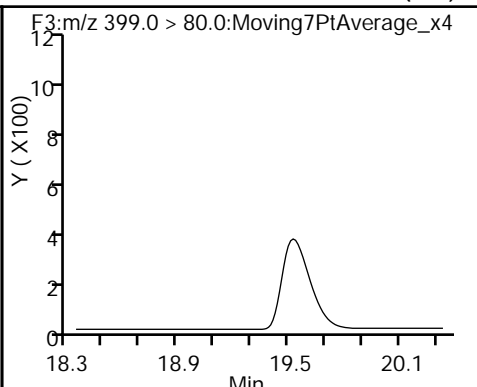
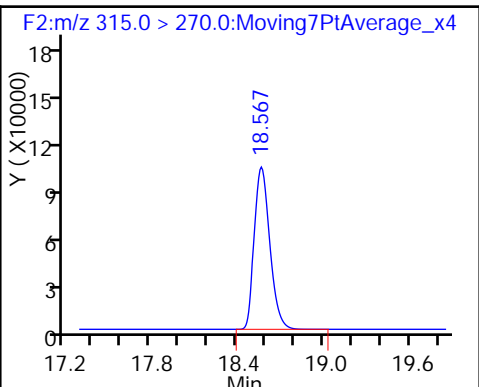
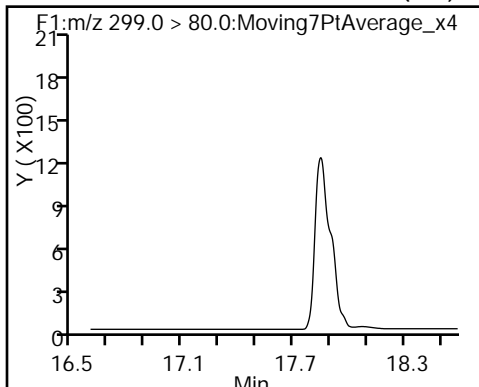
Dil. Factor: 1.0000

Method: 537__A6

Limit Group: LC 537 ICAL

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

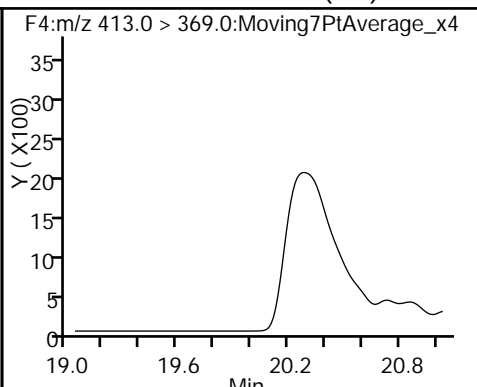
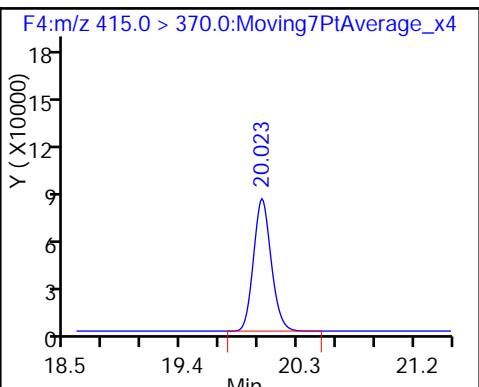
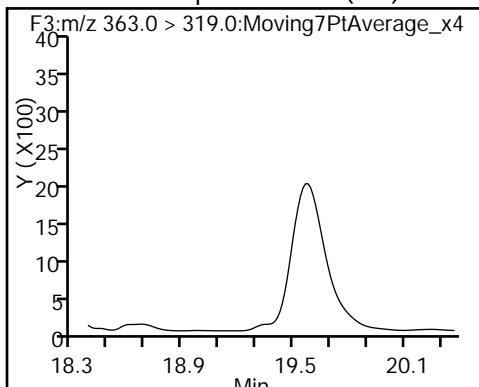
3 Perfluorohexanesulfonic acid (ND)



4 Perfluoroheptanoic acid (ND)

* 5 13C2-PFOA

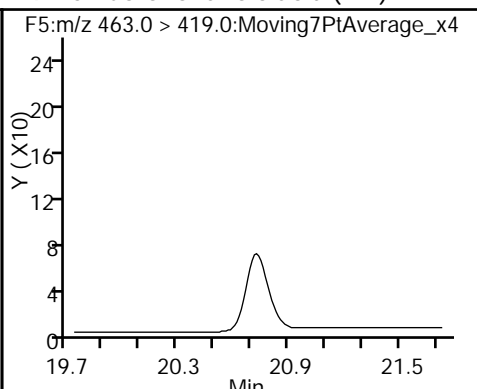
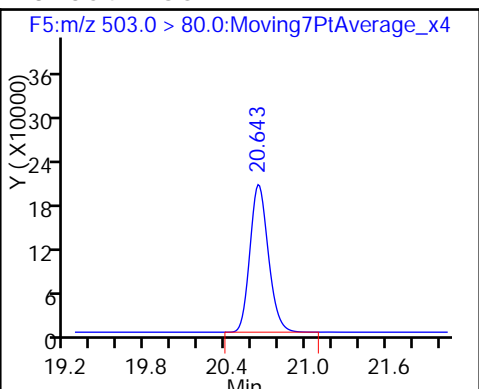
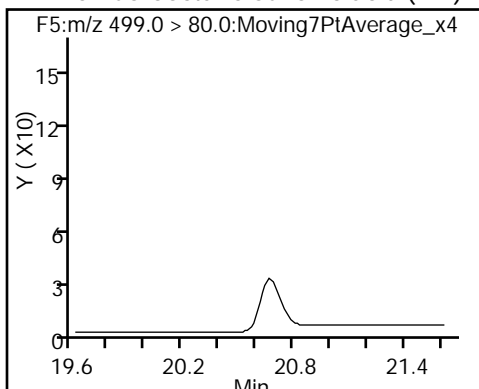
6 Perfluorooctanoic acid (ND)



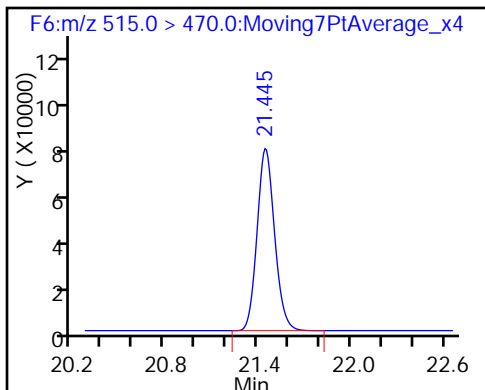
7 Perfluorooctane sulfonic acid (ND)

* 8 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_022.d
 Lims ID: 320-24178-A-12-A
 Client ID: WI-CV-1RW28-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 18:22:40 ALS Bottle#: 16 Worklist Smp#: 22
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-12-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:39:51

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.61	86.12
\$ 10 13C2 PFDA	10.0	8.69	86.87

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1FB28-1216 Lab Sample ID: 320-24178-13
 Matrix: Water Lab File ID: 15DEC2016A6A_023.d
 Analysis Method: 537 Date Collected: 12/06/2016 14:05
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 253.8 (mL) Date Analyzed: 12/15/2016 18:52
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142412 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	98		70-130
STL00996	13C2 PFDA	100		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_023.d
 Lims ID: 320-24178-A-13-A
 Client ID: WI-CV-1FB28-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 18:52:17 ALS Bottle#: 17 Worklist Smp#: 23
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-13-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:40:02

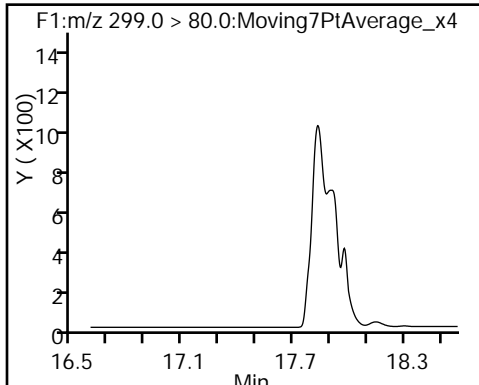
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
--------	----	--------	--------	--------	----------	--------------	-----	-------

\$ 2 13C2 PFHxA	315.0 > 270.0	18.558	18.576	-0.018	1.000	796058	9.78	26101
* 5 13C2-PFOA	415.0 > 370.0	20.023	20.035	-0.012		697853	10.0	18018
* 8 13C4 PFOS	503.0 > 80.0	20.643	20.667	-0.024		1703380	28.7	25495
\$ 10 13C2 PFDA	515.0 > 470.0	21.444	21.471	-0.027	1.000	612635	10.0	19219

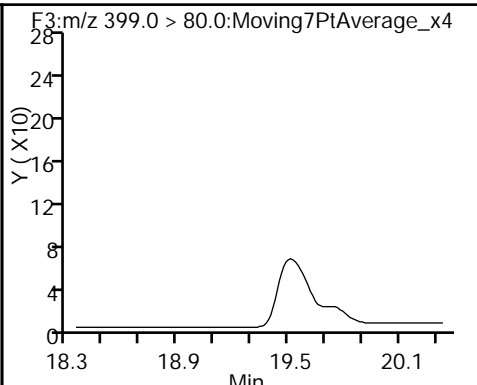
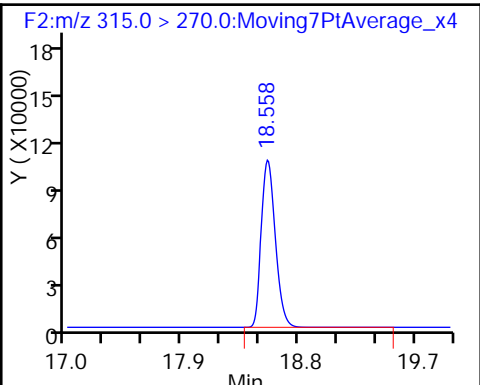
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_023.d
Injection Date: 15-Dec-2016 18:52:17 Instrument ID: A6
Lims ID: 320-24178-A-13-A Lab Sample ID: 320-24178-13
Client ID: WI-CV-1FB28-1216
Operator ID: CBW ALS Bottle#: 17 Worklist Smp#: 23
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A6 Limit Group: LC 537 ICAL

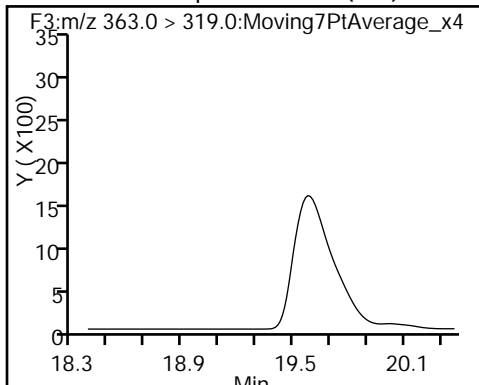
1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



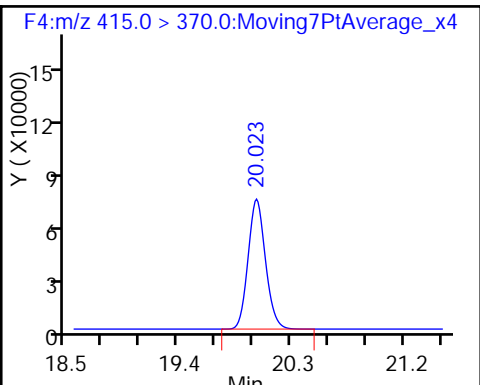
3 Perfluorohexanesulfonic acid (ND)



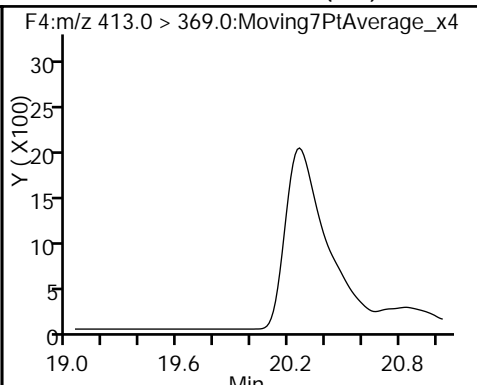
4 Perfluoroheptanoic acid (ND)



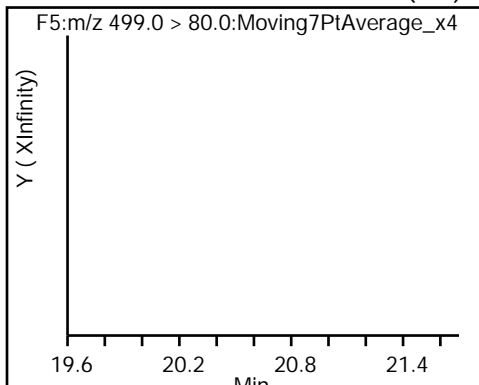
* 5 13C2-PFOA



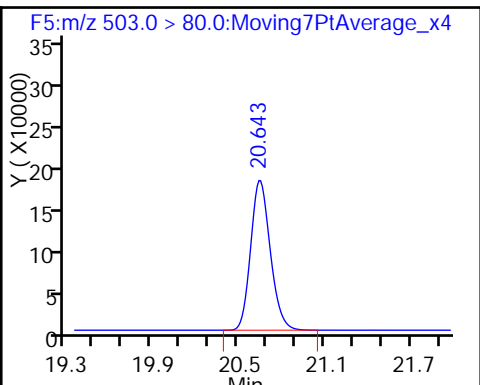
6 Perfluorooctanoic acid (ND)



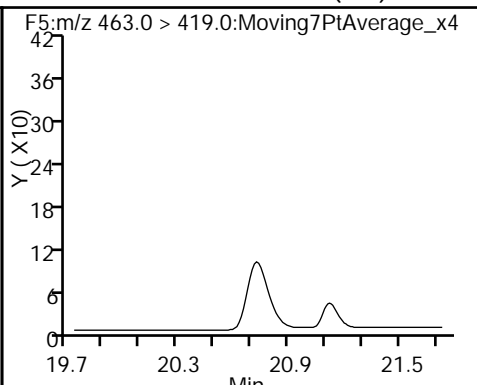
7 Perfluorooctane sulfonic acid (ND)



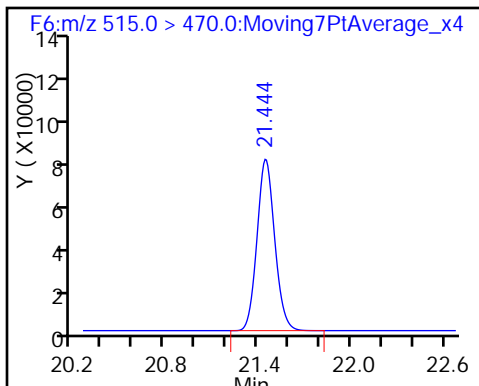
* 8 13C4 PFOS



9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_023.d
 Lims ID: 320-24178-A-13-A
 Client ID: WI-CV-1FB28-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 18:52:17 ALS Bottle#: 17 Worklist Smp#: 23
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-13-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:40:02

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.78	97.79
\$ 10 13C2 PFDA	10.0	10.0	100.18

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

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1 Analy Batch No.: 140688

SDG No.: _____

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

Calibration Start Date: 12/05/2016 17:26 Calibration End Date: 12/05/2016 19:54 Calibration ID: 26888

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-140688/2	05DEC2016A6A_004.d
Level 2	STD 320-140688/3	05DEC2016A6A_005.d
Level 3	STD 320-140688/4	05DEC2016A6A_006.d
Level 4	STD 320-140688/5	05DEC2016A6A_007.d
Level 5	STD 320-140688/6	05DEC2016A6A_008.d
Level 6	STD 320-140688/7	05DEC2016A6A_009.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R ² OR COD	#	MIN R ² OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	0.7247 0.6563	0.6525	0.7178	0.7256	0.7321	Ave		0.7015			5.2		30.0				
Perfluorohexanesulfonic acid	0.8344 0.8930	0.7757	0.9290	0.9478	1.0082	Ave		0.8980			9.3		30.0				
Perfluoroheptanoic acid	1.4137 1.1078	1.1891	1.2161	1.1975	1.1665	Ave		1.2151			8.6		30.0				
Perfluorooctanoic acid (PFOA)	0.9720 1.0610	0.9049	1.0674	1.1235	1.1136	Ave		1.0404			8.2		30.0				
Perfluorooctanesulfonic acid (PFOS)	0.8855 1.0951	0.9020	1.0711	1.0966	1.2136	Ave		1.0440			12.1		30.0				
Perfluorononanoic acid	0.9735 1.1655	0.9961	1.1929	1.2321	1.2453	Ave		1.1342			10.5		30.0				
13C2 PFHxA	1.0366 1.2091	1.0515	1.1929	1.2298	1.2791	Ave		1.1665			8.5		30.0				
13C2 PFDA	0.8084 0.9456	0.7439	0.8674	0.9054	0.9868	Ave		0.8763			10.2		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.: 320-24178-1 Analy Batch No.: 140688

SDG No.: _____

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

Calibration Start Date: 12/05/2016 17:26 Calibration End Date: 12/05/2016 19:54 Calibration ID: 26888

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-140688/2	05DEC2016A6A_004.d
Level 2	STD 320-140688/3	05DEC2016A6A_005.d
Level 3	STD 320-140688/4	05DEC2016A6A_006.d
Level 4	STD 320-140688/5	05DEC2016A6A_007.d
Level 5	STD 320-140688/6	05DEC2016A6A_008.d
Level 6	STD 320-140688/7	05DEC2016A6A_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	Ave	437563 7753569	1227165	2489398	4401661	6630132	8.76 178	22.9	45.1	90.9	135
Perfluorohexanesulfonic acid	PFOS	Ave	169827 3556638	491809	1086082	1938237	3077974	2.95 60.1	7.72	15.2	30.6	45.4
Perfluoroheptanoic acid	13PF OA	Ave	126557 2032288	324913	658044	1121930	1727957	0.994 20.2	2.60	5.12	10.3	15.3
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	173304 3876381	492431	1150281	2096404	3285195	1.98 40.3	5.17	10.2	20.5	30.4
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	238662 5775285	757269	1658139	2969550	4906017	3.91 79.6	10.2	20.1	40.6	60.1
Perfluorononanoic acid	13PF OA	Ave	168128 4124664	525061	1245341	2227031	3558831	1.92 39.0	5.01	9.87	19.9	29.5
13C2 PFHxA	13PF OA	Ave	933751 1095977	1106485	1261522	1117585	1240474	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	728204 857144	782778	917302	822787	957025	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.: 320-24178-1 Analy Batch No.: 140688

SDG No.: _____

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

Calibration Start Date: 12/05/2016 17:26 Calibration End Date: 12/05/2016 19:54 Calibration ID: 26888

Calibration Files:

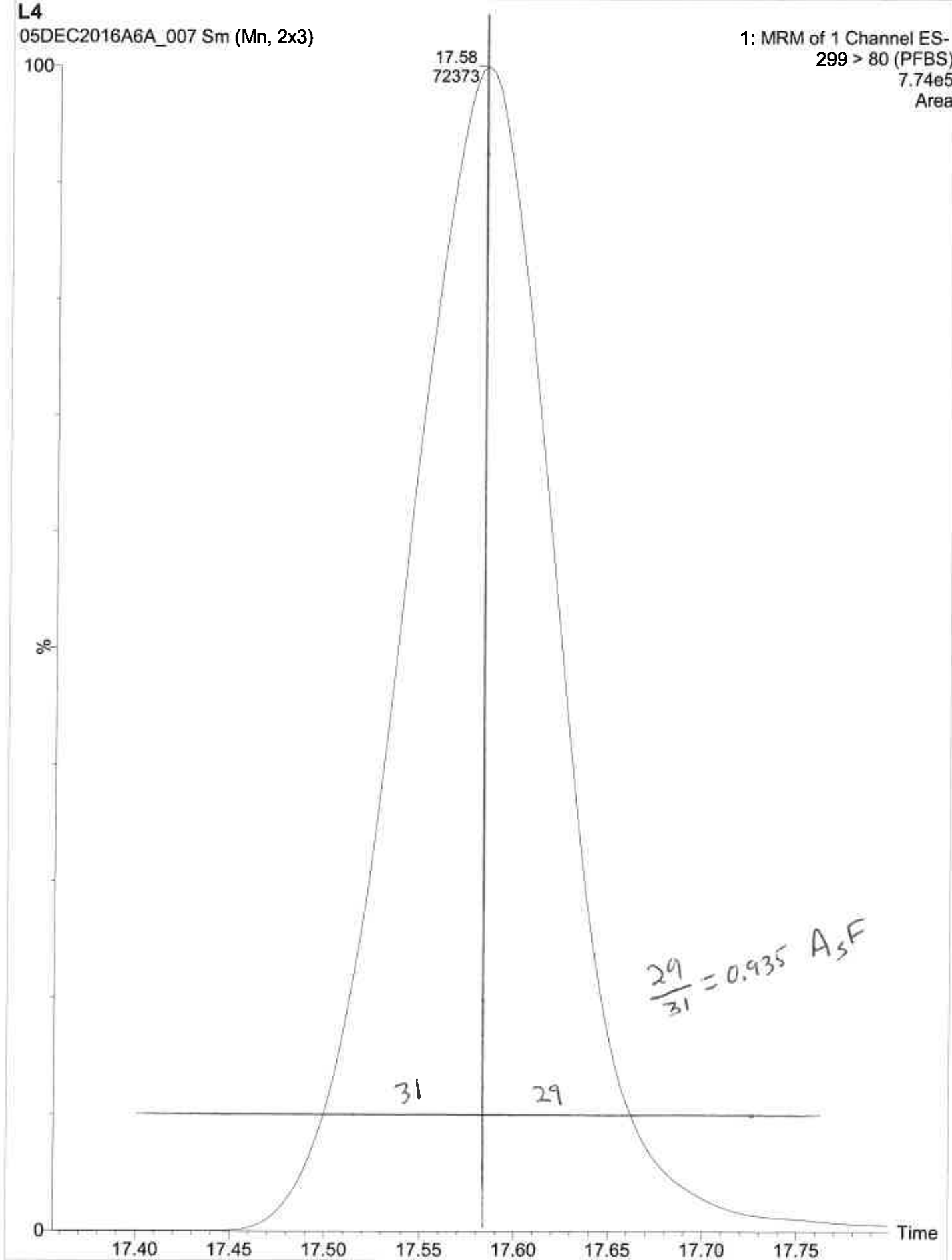
LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-140688/2	05DEC2016A6A_004.d
Level 2	STD 320-140688/3	05DEC2016A6A_005.d
Level 3	STD 320-140688/4	05DEC2016A6A_006.d
Level 4	STD 320-140688/5	05DEC2016A6A_007.d
Level 5	STD 320-140688/6	05DEC2016A6A_008.d
Level 6	STD 320-140688/7	05DEC2016A6A_009.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	3.3	-7.0	2.3	3.4	4.4	-6.4	50	50	50	50	50	50
Perfluorohexanesulfonic acid	-7.1	-13.6	3.4	5.5	12.3	-0.6	50	50	50	50	50	50
Perfluoroheptanoic acid	16.3	-2.1	0.1	-1.5	-4.0	-8.8	50	50	50	50	50	50
Perfluorooctanoic acid (PFOA)	-6.6	-13.0	2.6	8.0	7.0	2.0	50	50	50	50	50	50
Perfluorooctanesulfonic acid (PFOS)	-15.2	-13.6	2.6	5.0	16.2	4.9	50	50	50	50	50	50
Perfluorononanoic acid	-14.2	-12.2	5.2	8.6	9.8	2.8	50	50	50	50	50	50
13C2 PFHxA	-11.1	-9.9	2.3	5.4	9.7	3.7	30	30	30	30	30	30
13C2 PFDA	-7.7	-15.1	-1.0	3.3	12.6	7.9	30	30	30	30	30	30

L4

05DEC2016A6A_007 Sm (Mn, 2x3)

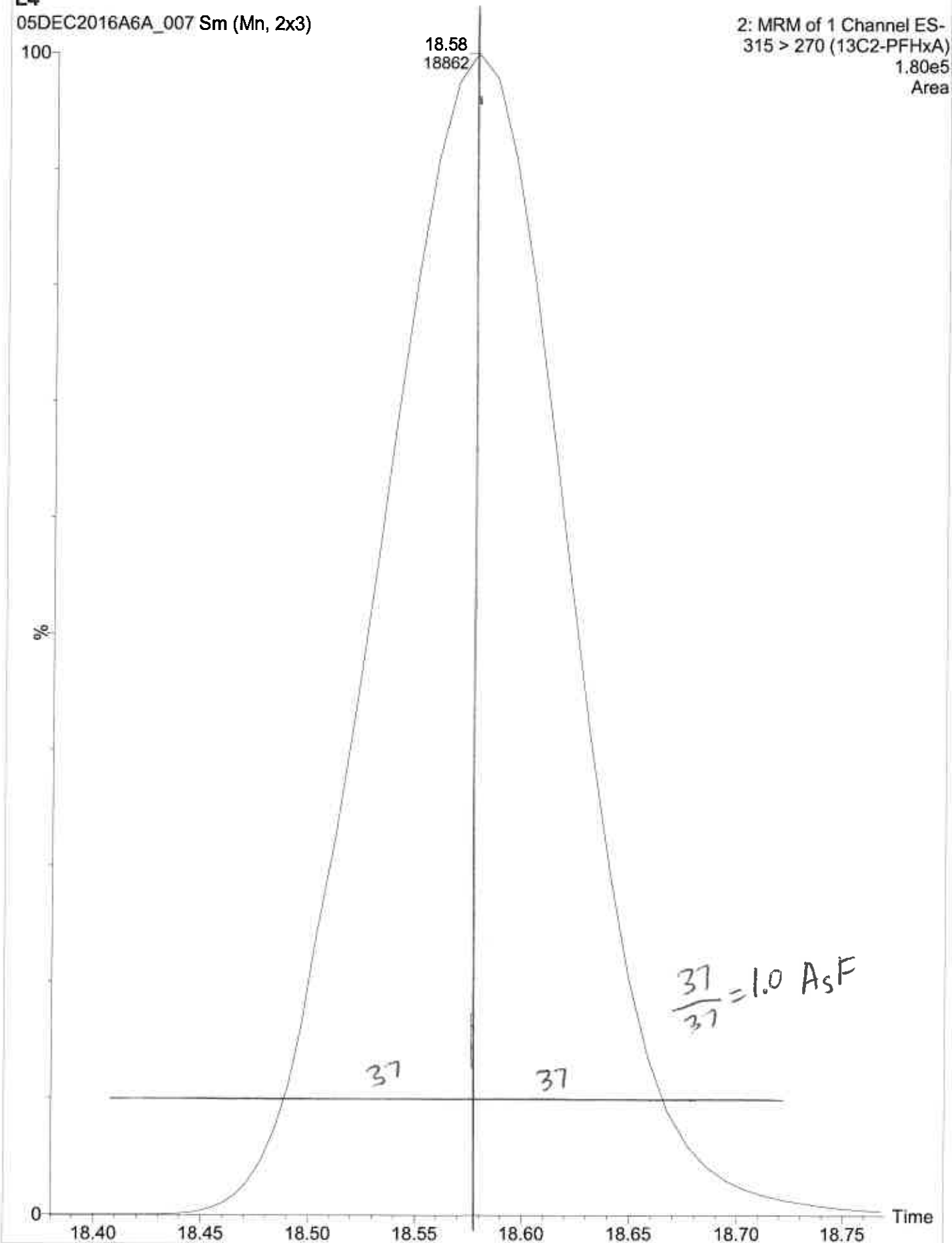
1: MRM of 1 Channel ES-
299 > 80 (PFBS)
7.74e5
Area



L4

05DEC2016A6A_007 Sm (Mn, 2x3)

2: MRM of 1 Channel ES-
315 > 270 (13C2-PFHxA)
1.80e5
Area



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_004.d
 Lims ID: STD L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 05-Dec-2016 17:26:03 ALS Bottle#: 1 Worklist Smp#: 2
 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\20161205-37524.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 06-Dec-2016 16:35:34 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK024

First Level Reviewer: barnettj Date: 06-Dec-2016 10:00:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.576	17.581	-0.005	1.000	437563	9.05	466
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	933751	8.89	30467
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.332	19.342	-0.010	1.000	169827	2.74	4140
4 Perfluoroheptanoic acid	363.0 > 319.0	19.368	19.378	-0.010	1.000	126557	1.16	45.1 M
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		900764	10.0	23392
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	173304	1.85	35.0 M
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	238662	3.32	2941
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.669	-0.002		1976615	28.7	40886
9 Perfluorononanoic acid	463.0 > 419.0	20.738	20.748	-0.010	1.000	168128	1.65	6043
\$ 10 13C2 PFDA	515.0 > 470.0	21.471	21.474	-0.003	1.000	728204	9.23	22953

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L1_00015

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_004.d

Injection Date: 05-Dec-2016 17:26:03

Instrument ID: A6

Lims ID: STD L1

Client ID:

Operator ID: CBW

ALS Bottle#: 1

Worklist Smp#: 2

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

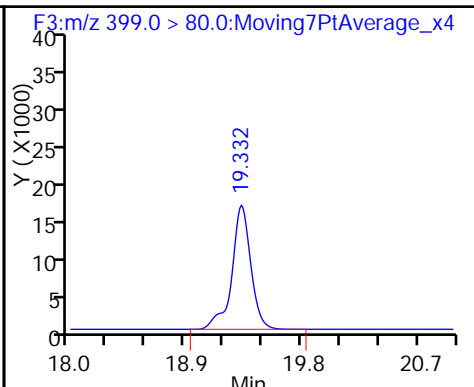
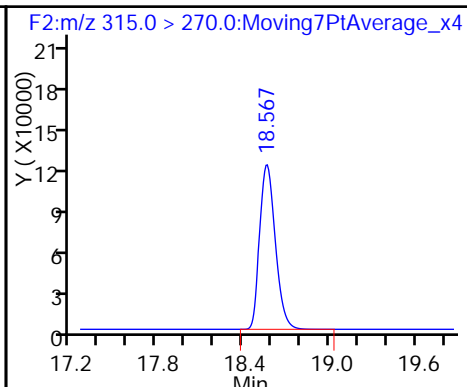
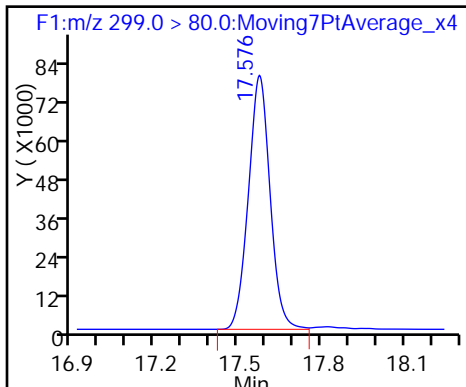
Method: 537_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

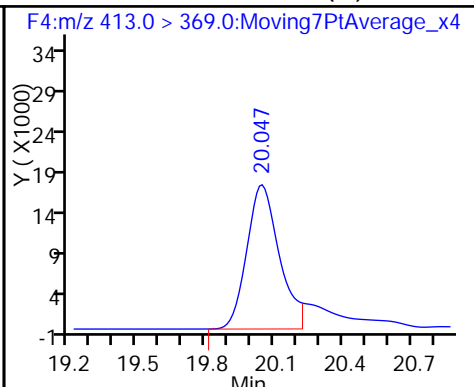
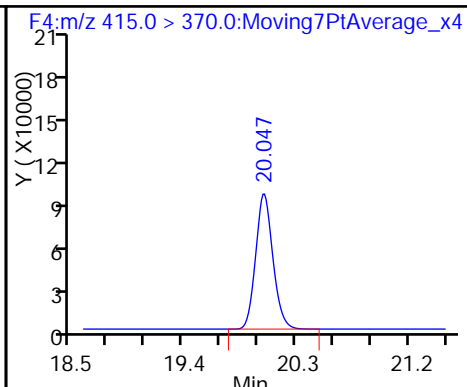
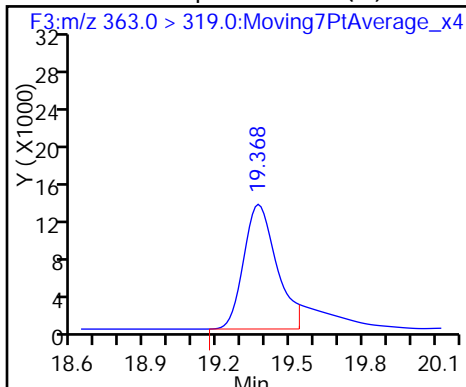
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid (M)

* 5 13C2-PFOA

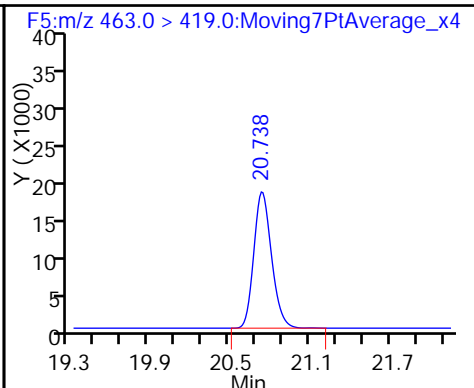
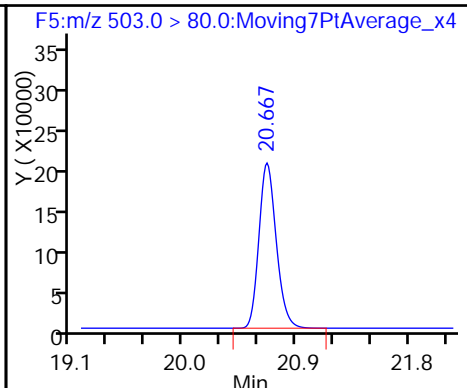
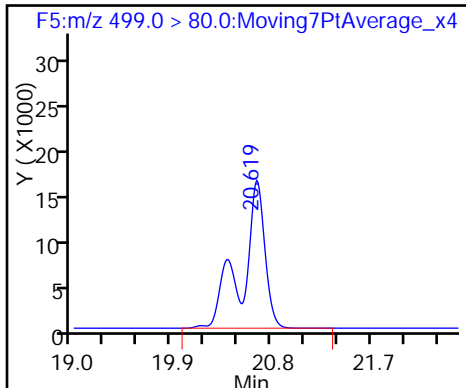
6 Perfluorooctanoic acid (M)



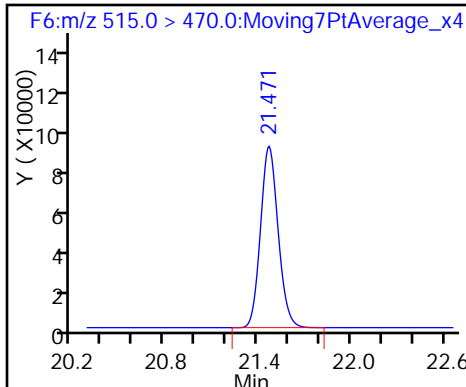
7 Perfluorooctane sulfonic acid

* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

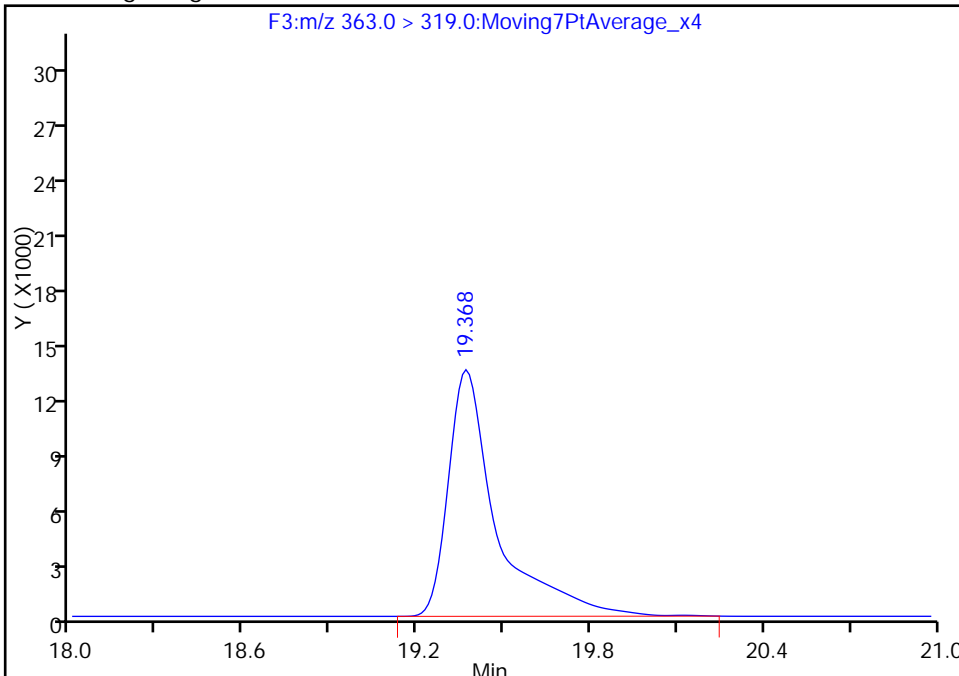
Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_004.d
Injection Date: 05-Dec-2016 17:26:03 Instrument ID: A6
Lims ID: STD L1
Client ID:
Operator ID: CBW ALS Bottle#: 1 Worklist Smp#: 2
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F3:M/RM

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

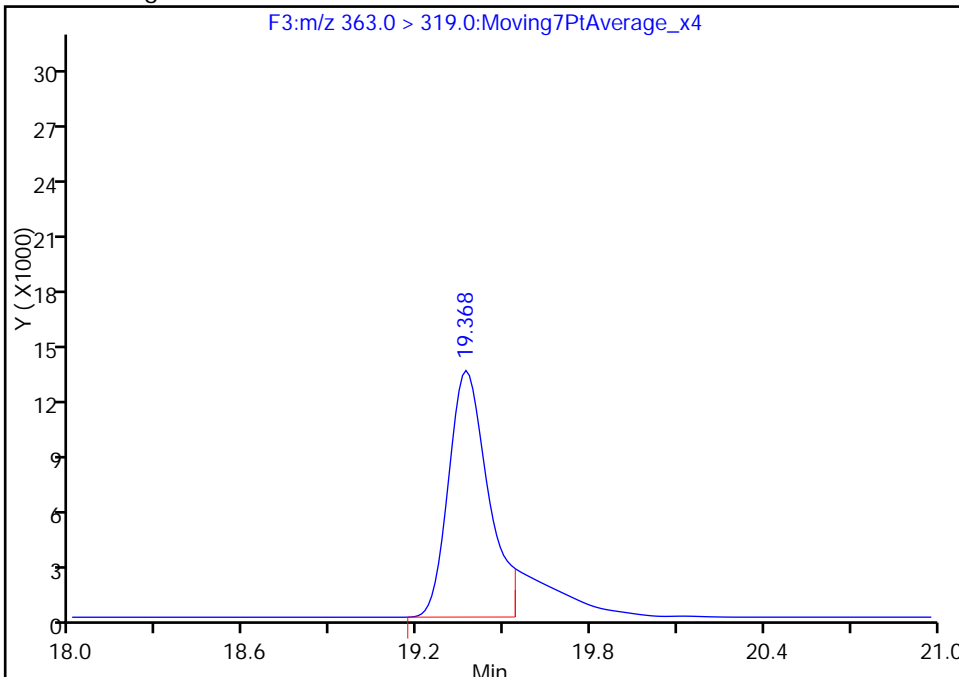
RT: 19.37
Area: 155591
Amount: 1.476072
Amount Units: ng/ml

Processing Integration Results



RT: 19.37
Area: 126557
Amount: 1.156251
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 06-Dec-2016 10:00:02
Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

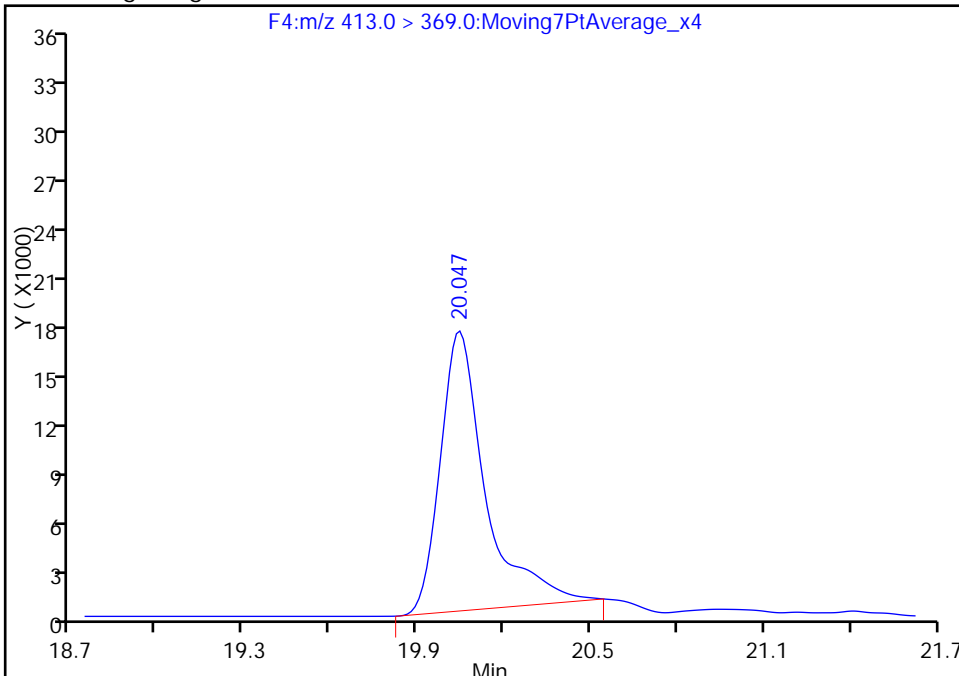
Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_004.d
Injection Date: 05-Dec-2016 17:26:03 Instrument ID: A6
Lims ID: STD L1
Client ID:
Operator ID: CBW ALS Bottle#: 1 Worklist Smp#: 2
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

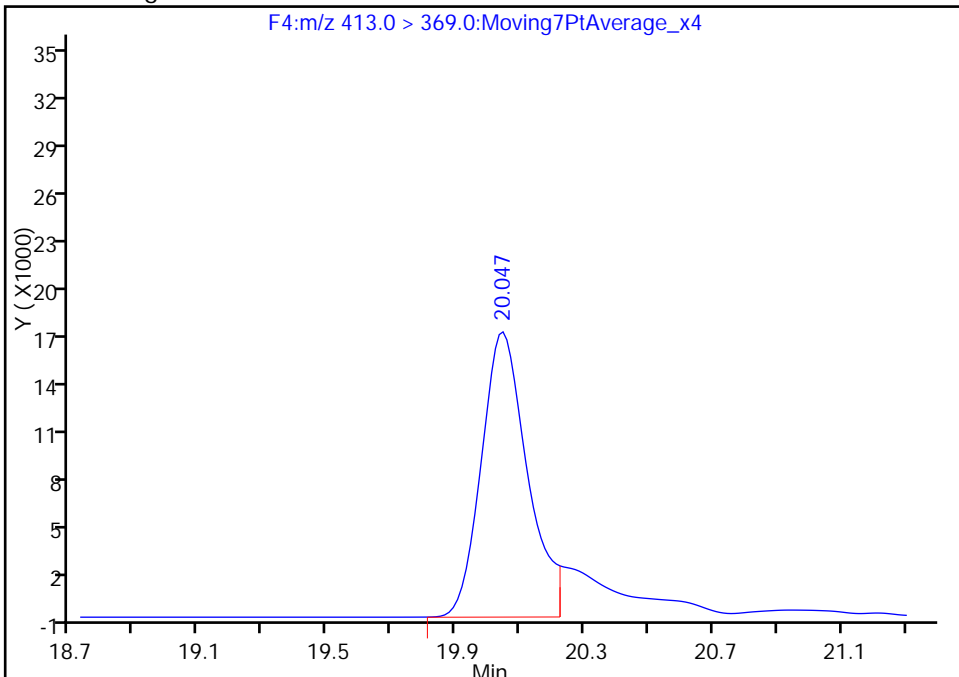
RT: 20.05
Area: 186490
Amount: 1.959453
Amount Units: ng/ml

Processing Integration Results



RT: 20.05
Area: 173304
Amount: 1.849212
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 06-Dec-2016 10:00:02
Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_005.d
 Lims ID: STD L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 05-Dec-2016 17:55:38 ALS Bottle#: 2 Worklist Smp#: 3
 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\20161205-37524.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 06-Dec-2016 16:35:35 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK024

First Level Reviewer: barnettj Date: 06-Dec-2016 09:58:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.582	17.581	0.001	1.000	1227165	21.3	5055
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	1106485	9.01	35678
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.342	0.002	1.000	491809	6.67	11495
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.378	0.002	1.000	324913	2.54	155 M
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		1052273	10.0	27645
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	492431	4.50	100 M
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	757269	8.83	8449
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.669	-0.002		2356620	28.7	30757
9 Perfluorononanoic acid	463.0 > 419.0	20.750	20.748	0.002	1.000	525061	4.40	13911
\$ 10 13C2 PFDA	515.0 > 470.0	21.480	21.474	0.006	1.000	782778	8.49	24678

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L2_00014

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_005.d

Injection Date: 05-Dec-2016 17:55:38

Instrument ID: A6

Lims ID: STD L2

Client ID:

Operator ID: CBW

ALS Bottle#: 2

Worklist Smp#: 3

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

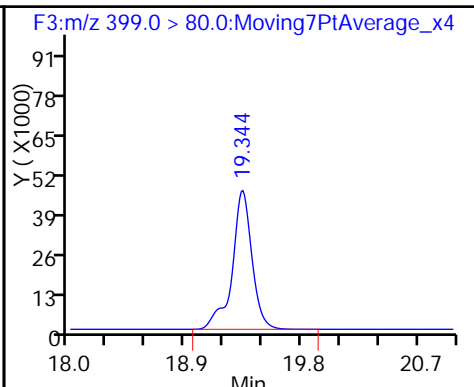
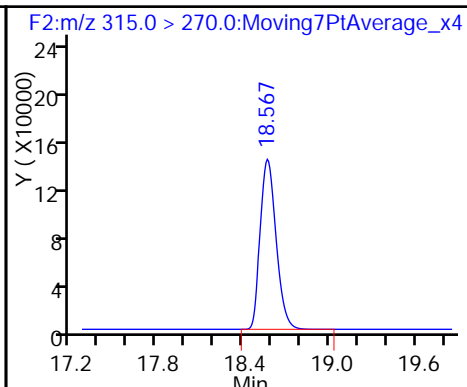
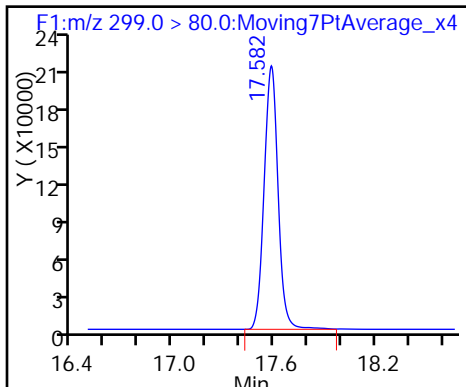
Method: 537_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

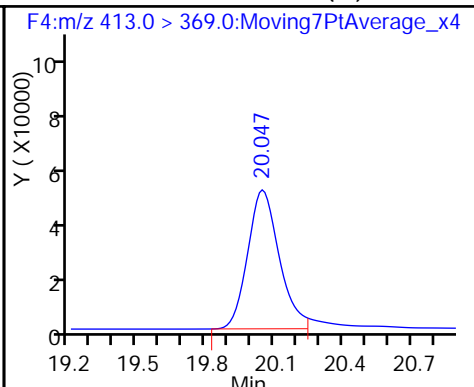
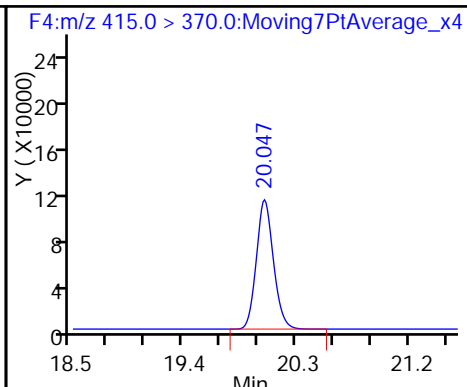
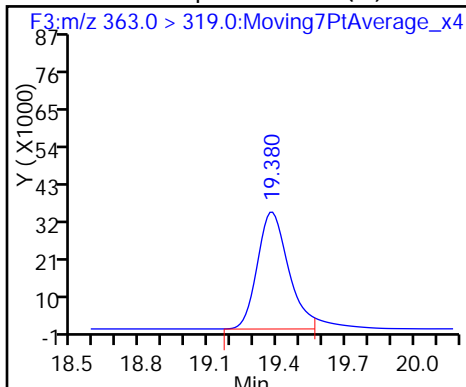
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid (M)

* 5 13C2-PFOA

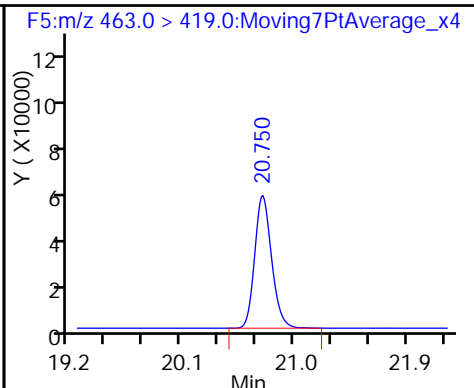
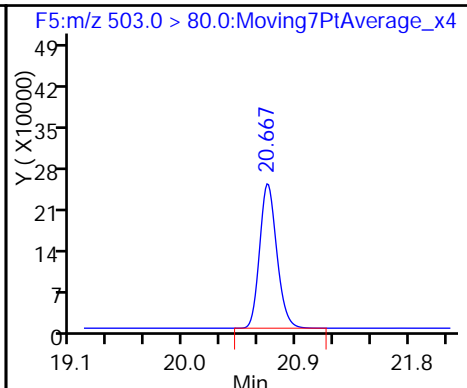
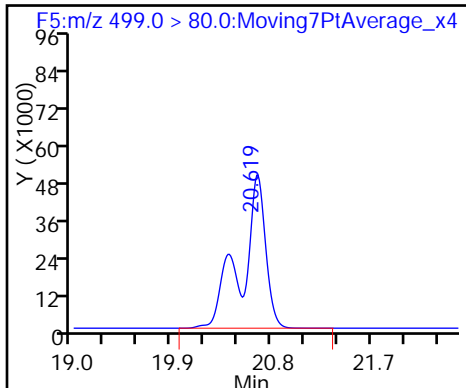
6 Perfluorooctanoic acid (M)



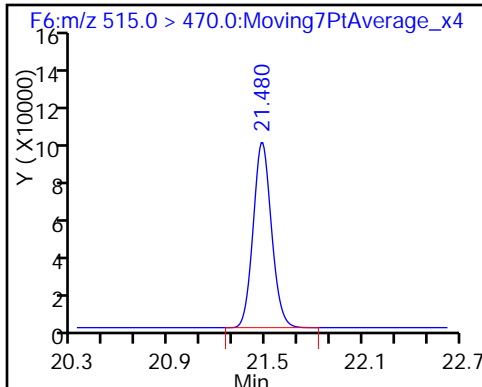
7 Perfluorooctane sulfonic acid

* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

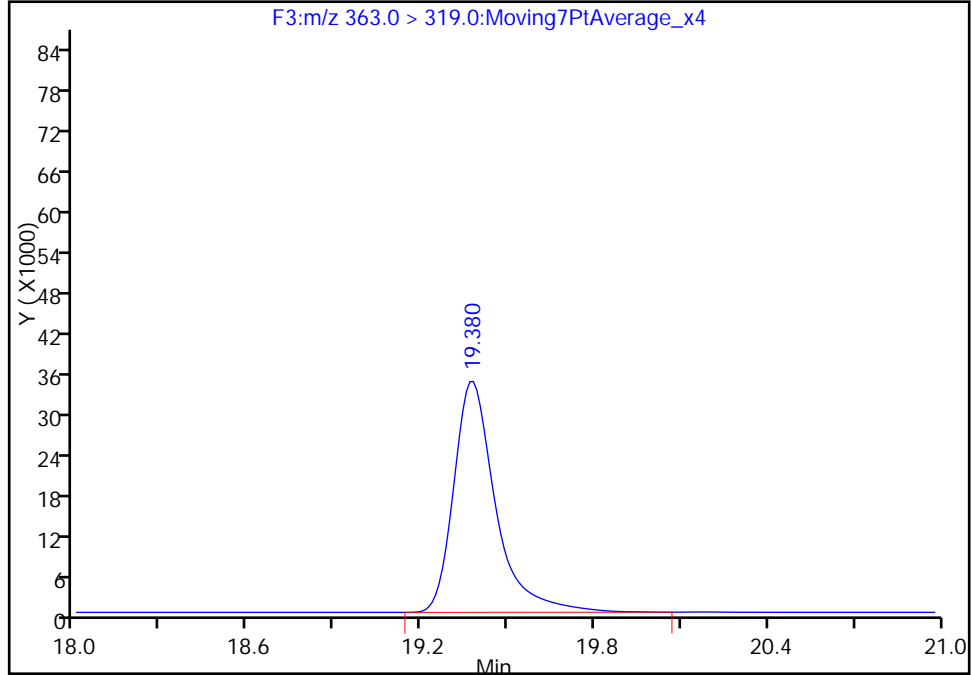
Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_005.d
Injection Date: 05-Dec-2016 17:55:38 Instrument ID: A6
Lims ID: STD L2
Client ID:
Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 3
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F3:M/RM

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

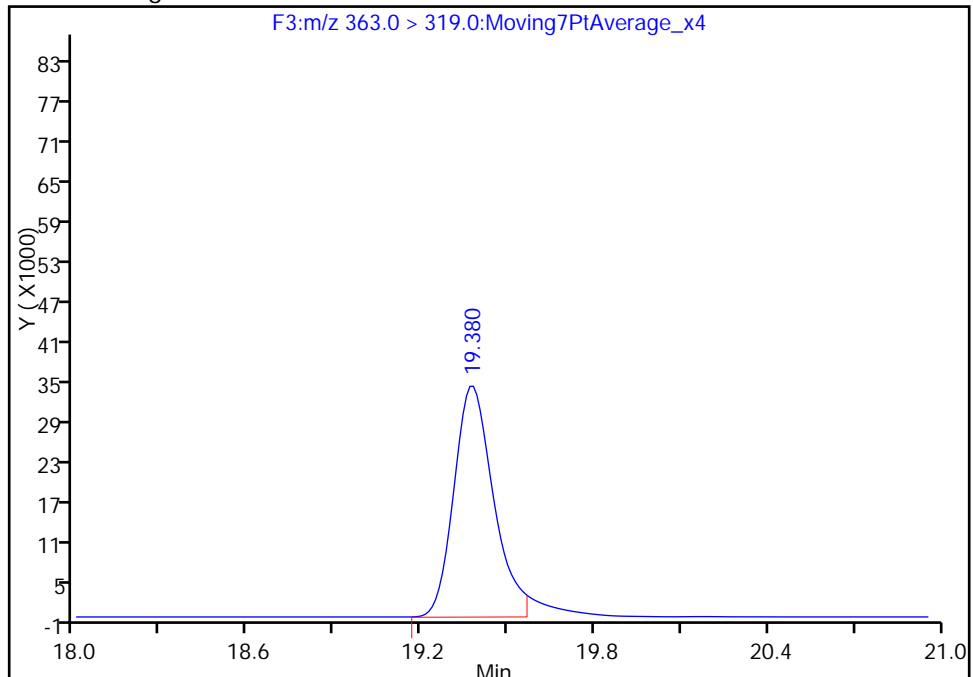
RT: 19.38
Area: 344811
Amount: 2.670013
Amount Units: ng/ml

Processing Integration Results



RT: 19.38
Area: 324913
Amount: 2.541065
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 06-Dec-2016 10:03:30
Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

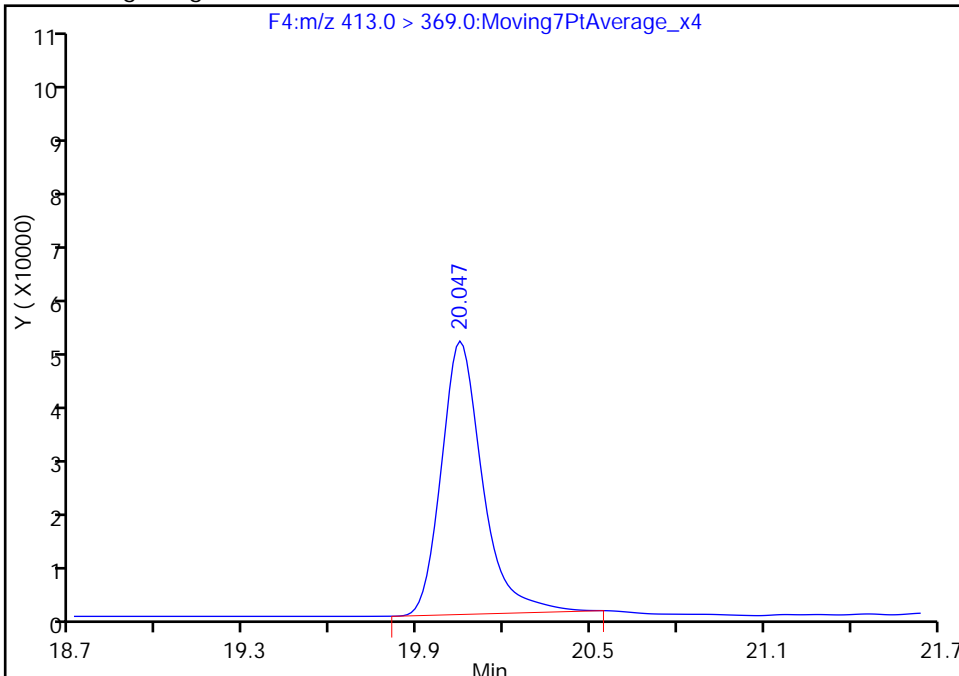
Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_005.d
Injection Date: 05-Dec-2016 17:55:38 Instrument ID: A6
Lims ID: STD L2
Client ID:
Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 3
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

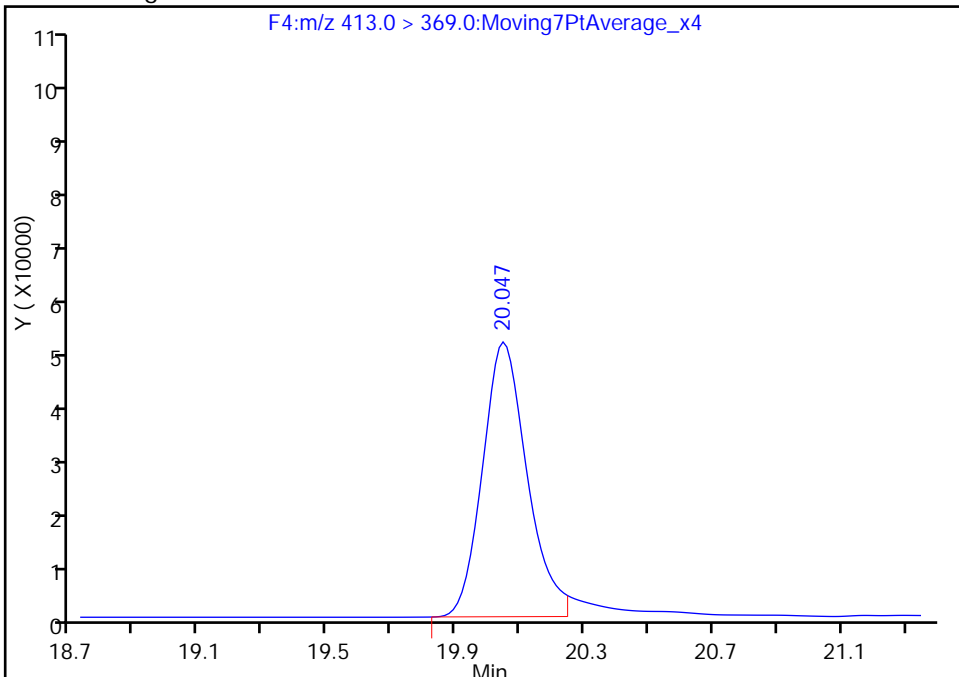
RT: 20.05
Area: 504990
Amount: 4.595586
Amount Units: ng/ml

Processing Integration Results



RT: 20.05
Area: 492431
Amount: 4.497863
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 06-Dec-2016 10:03:30
Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_006.d
 Lims ID: STD L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 05-Dec-2016 18:25:13 ALS Bottle#: 3 Worklist Smp#: 4
 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\20161205-37524.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 06-Dec-2016 16:35:36 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK024

First Level Reviewer: barnettj Date: 06-Dec-2016 09:58:05

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.582	17.581	0.001	1.000	2489398	46.2	1804
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	1261522	10.2	40506
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.342	0.002	1.000	1086082	15.7	25400
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.378	0.002	1.000	658044	5.12	4774
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		1057506	10.0	27287
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	1150281	10.5	429
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	1658139	20.7	19019
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.669	-0.002		2205243	28.7	57142
9 Perfluorononanoic acid	463.0 > 419.0	20.750	20.748	0.002	1.000	1245341	10.4	13210
\$ 10 13C2 PFDA	515.0 > 470.0	21.471	21.474	-0.003	1.000	917302	9.90	28753

Reagents:

LC537-L3_00016 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_006.d

Injection Date: 05-Dec-2016 18:25:13

Instrument ID: A6

Lims ID: STD L3

Client ID:

Operator ID: CBW

ALS Bottle#: 3

Worklist Smp#: 4

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

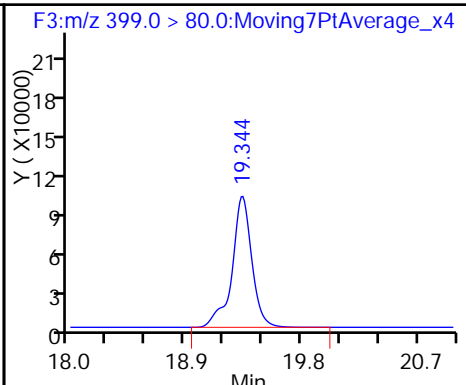
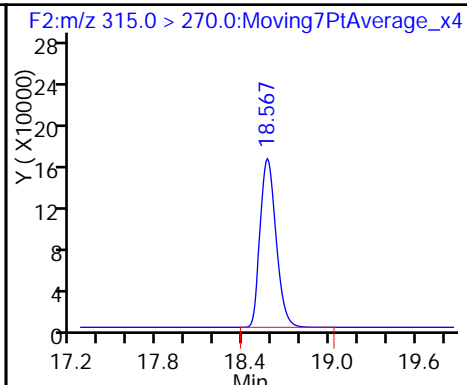
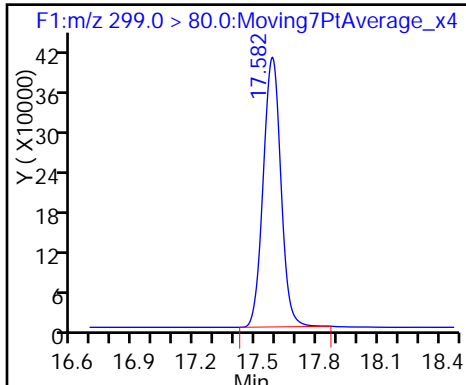
Method: 537_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

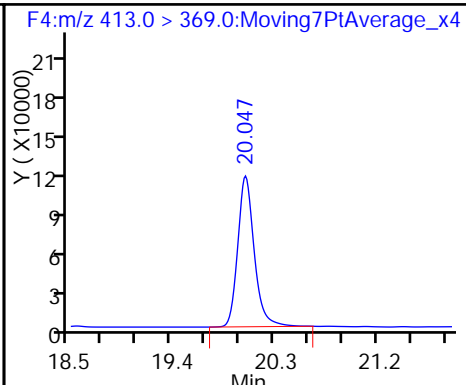
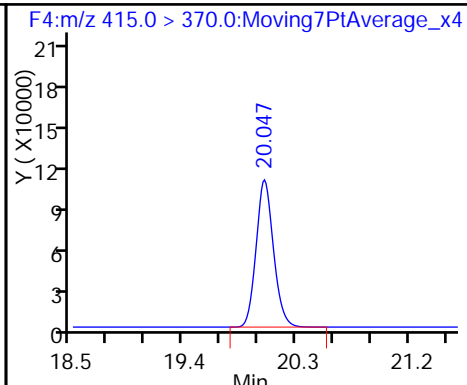
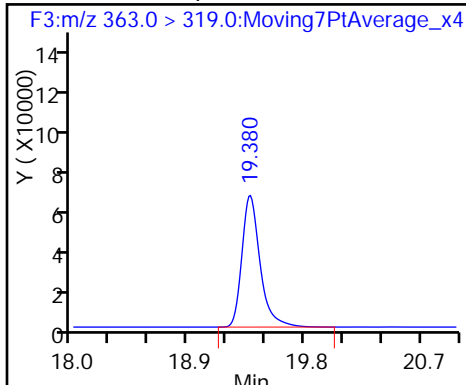
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

* 5 13C2-PFOA

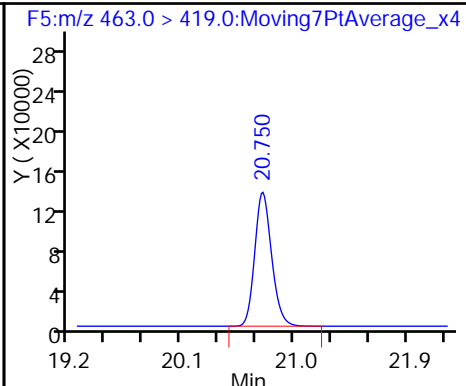
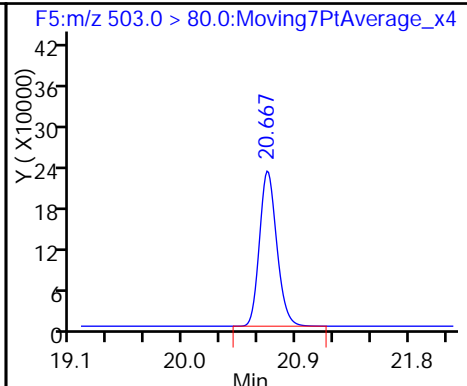
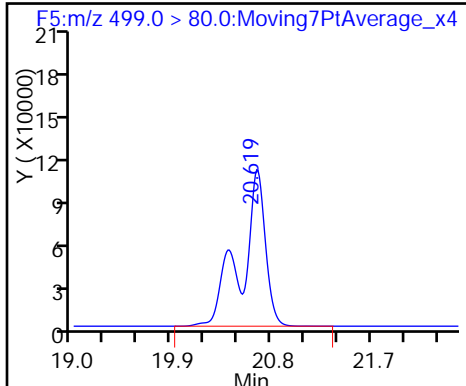
6 Perfluorooctanoic acid



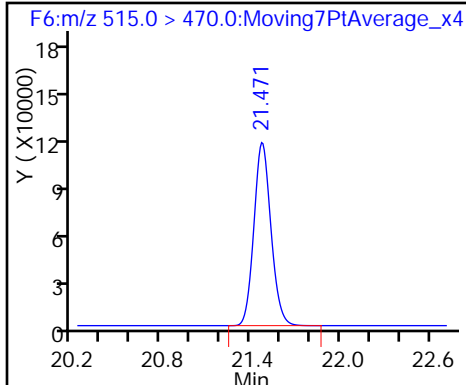
7 Perfluorooctane sulfonic acid

* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_007.d
 Lims ID: STD L4
 Client ID:
 Sample Type: ICISAV Calib Level: 4
 Inject. Date: 05-Dec-2016 18:54:48 ALS Bottle#: 4 Worklist Smp#: 5
 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\20161205-37524.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 06-Dec-2016 16:35:37 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK024

First Level Reviewer: barnettj Date: 06-Dec-2016 13:43:03

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.579	17.581	-0.002	1.000	4401661	94.0	2768
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	1117585	10.5	28676
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.342	0.002	1.000	1938237	32.3	25196
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.378	0.002	1.000	1121930	10.2	12796
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		908727	10.0	23744
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	2096404	22.2	516
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	2969550	42.6	9704
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.669	-0.002		1914415	28.7	28032
9 Perfluorononanoic acid	463.0 > 419.0	20.750	20.748	0.002	1.000	2227031	21.6	23494
\$ 10 13C2 PFDA	515.0 > 470.0	21.471	21.474	-0.003	1.000	822787	10.3	25796

Reagents:

LC537-L4_00015 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_007.d

Injection Date: 05-Dec-2016 18:54:48

Instrument ID: A6

Lims ID: STD L4

Client ID:

Operator ID: CBW

ALS Bottle#: 4

Worklist Smp#: 5

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

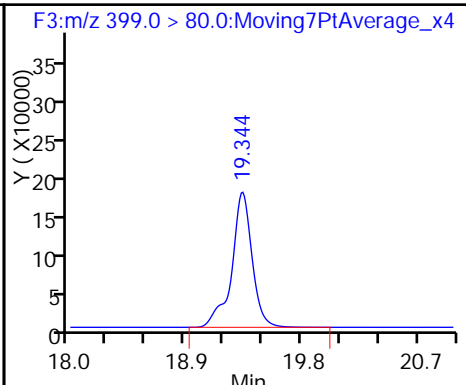
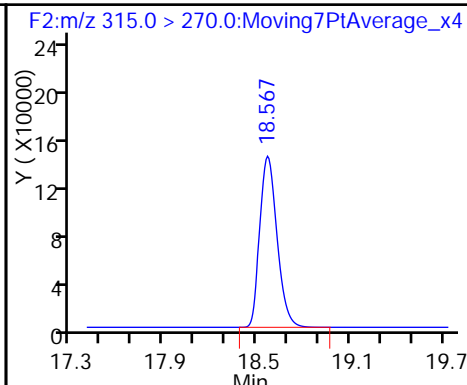
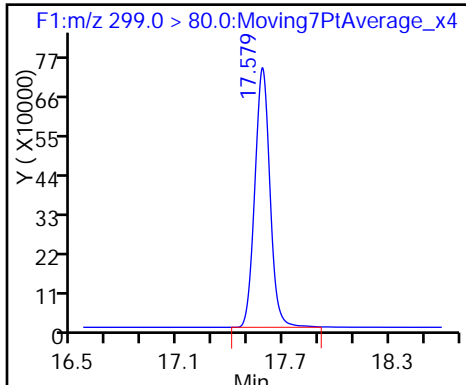
Method: 537_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

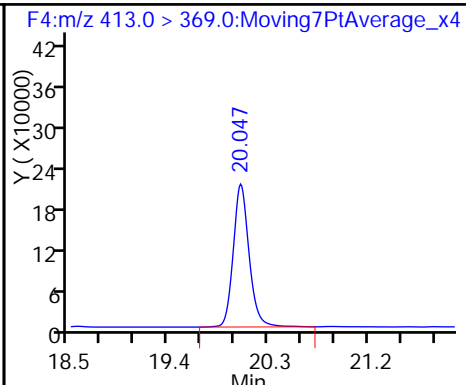
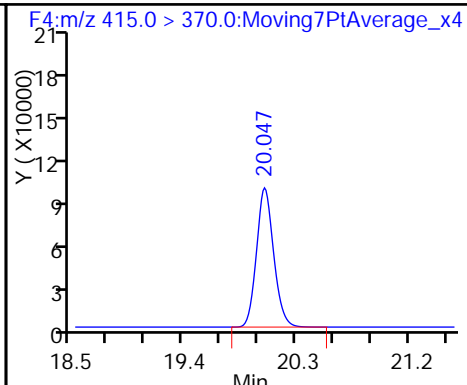
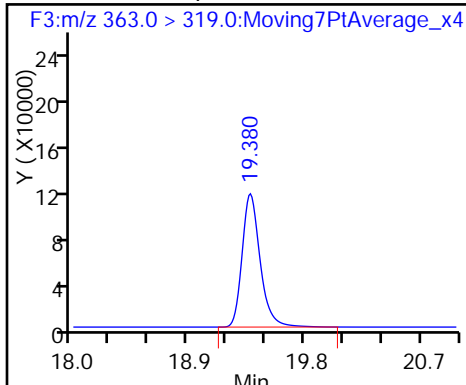
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

* 5 13C2-PFOA

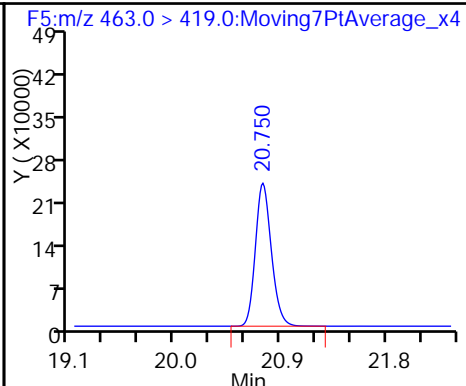
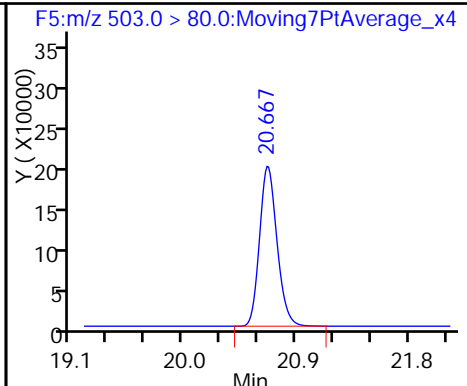
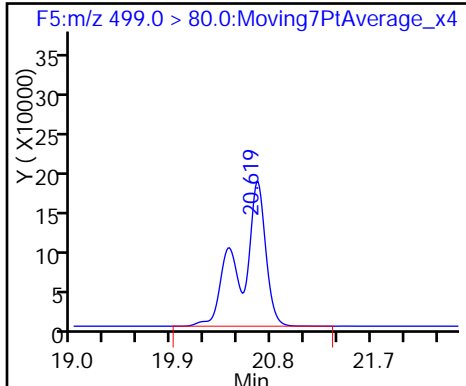
6 Perfluorooctanoic acid



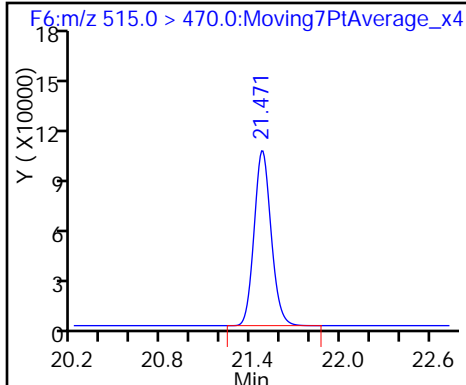
7 Perfluorooctane sulfonic acid

* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_008.d
 Lims ID: STD L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 05-Dec-2016 19:24:23 ALS Bottle#: 5 Worklist Smp#: 6
 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\20161205-37524.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 06-Dec-2016 16:35:38 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK024

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.582	17.581	0.001	1.000	6630132	140.5	3208
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	1240474	11.0	39454
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.342	0.002	1.000	3077974	51.0	14553
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.378	0.002	1.000	1727957	14.7	6886
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		969779	10.0	24964
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	3285195	32.6	1114
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.620	20.619	0.001	1.000	4906017	69.9	10146
* 8 13C4 PFOS	503.0 > 80.0	20.679	20.669	0.010		1929192	28.7	32805
9 Perfluorononanoic acid	463.0 > 419.0	20.750	20.748	0.002	1.000	3558831	32.4	16307
\$ 10 13C2 PFDA	515.0 > 470.0	21.480	21.474	0.006	1.000	957025	11.3	30231

Reagents:

LC537-L5_00017 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_008.d

Injection Date: 05-Dec-2016 19:24:23

Instrument ID: A6

Lims ID: STD L5

Client ID:

Operator ID: CBW

ALS Bottle#: 5

Worklist Smp#: 6

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

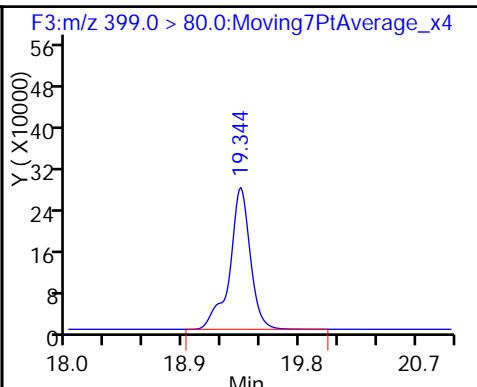
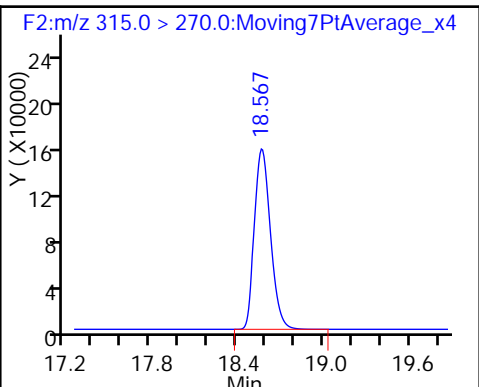
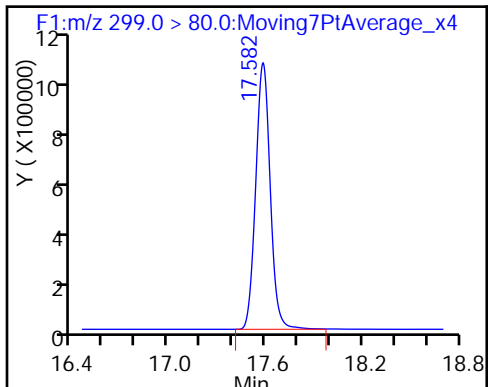
Method: 537_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

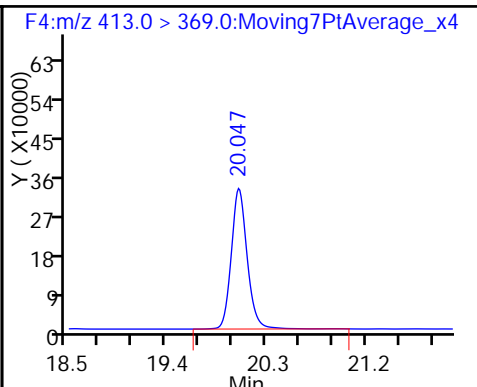
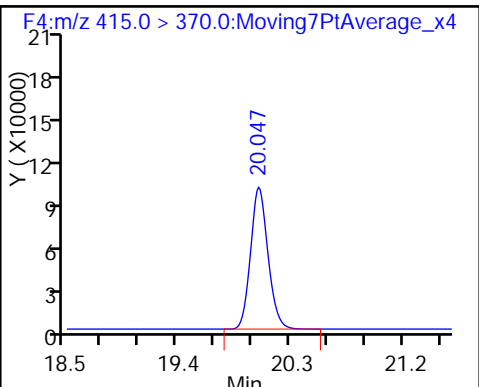
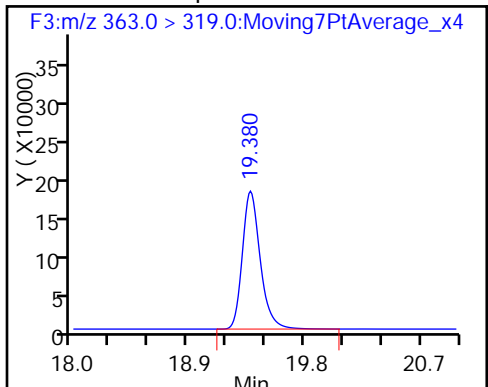
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

* 5 13C2-PFOA

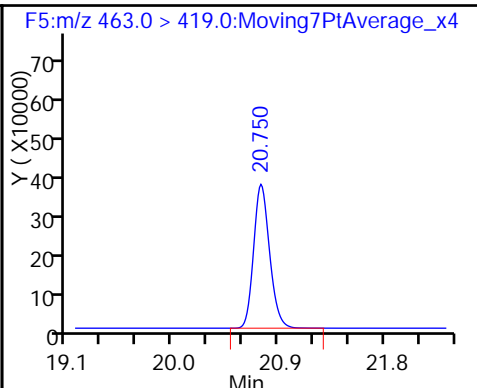
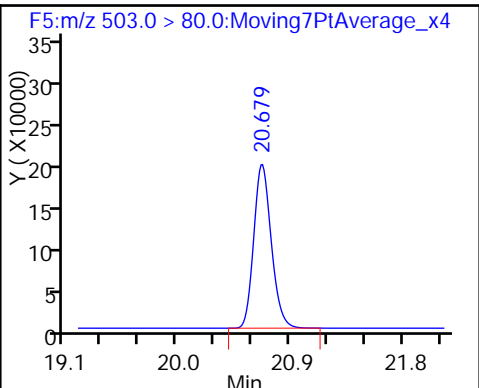
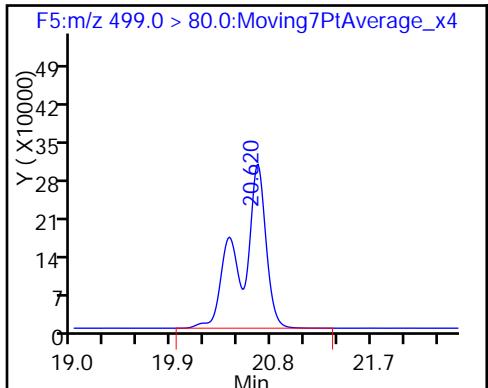
6 Perfluorooctanoic acid



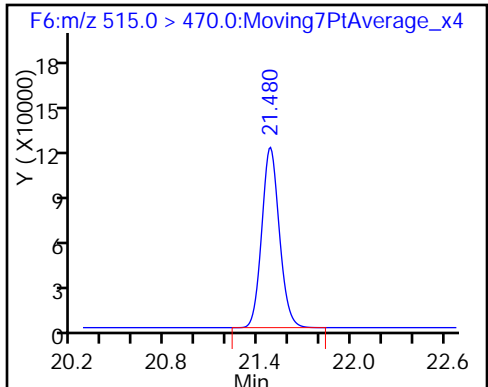
7 Perfluorooctane sulfonic acid

* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Lims ID: STD L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 05-Dec-2016 19:54:00 ALS Bottle#: 6 Worklist Smp#: 7
 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\20161205-37524.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 06-Dec-2016 16:35:39 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK024

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.582	17.581	0.001	1.000	7753569	166.9	8570
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	1095977	10.4	34796
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.342	0.002	1.000	3556638	59.8	31299
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.378	0.002	1.000	2032288	18.5	6367
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		906416	10.0	23083
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	3876381	41.1	917
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	5775285	83.5	12991
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.669	-0.002		1899408	28.7	17628
9 Perfluorononanoic acid	463.0 > 419.0	20.750	20.748	0.002	1.000	4124664	40.1	17939
\$ 10 13C2 PFDA	515.0 > 470.0	21.471	21.474	-0.003	1.000	857144	10.8	26862

Reagents:

LC537-L6_00014 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d

Injection Date: 05-Dec-2016 19:54:00

Instrument ID: A6

Lims ID: STD L6

Client ID:

Operator ID: CBW

ALS Bottle#: 6

Worklist Smp#: 7

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

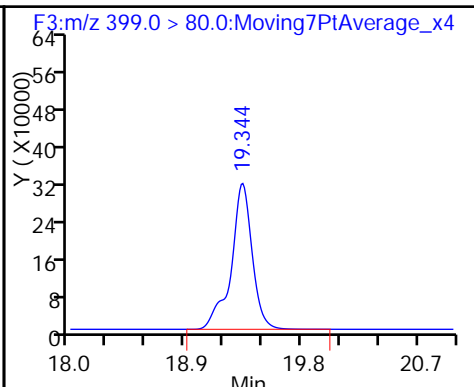
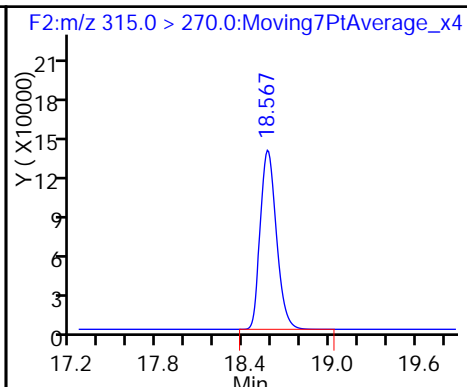
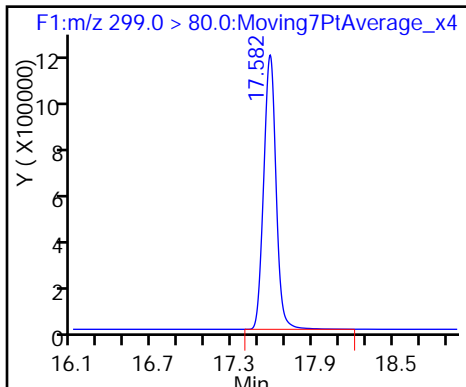
Method: 537_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

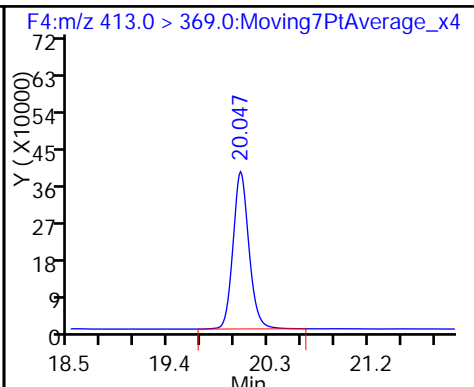
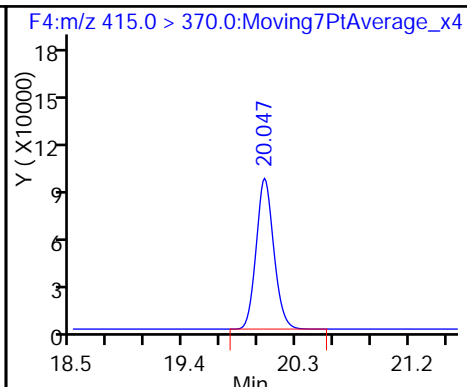
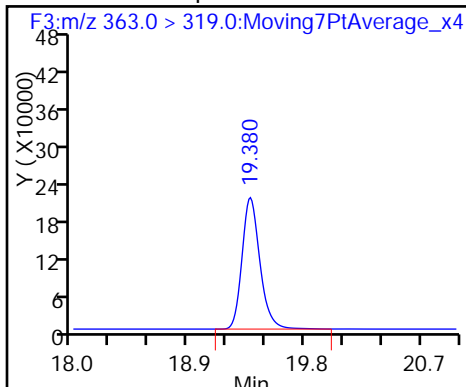
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

* 5 13C2-PFOA

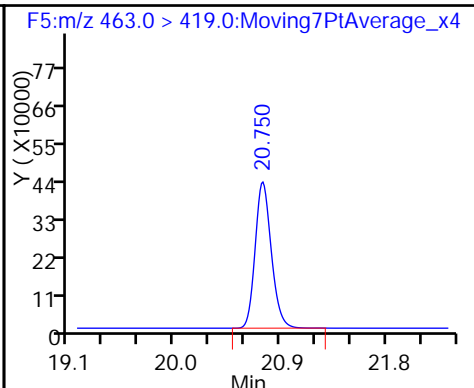
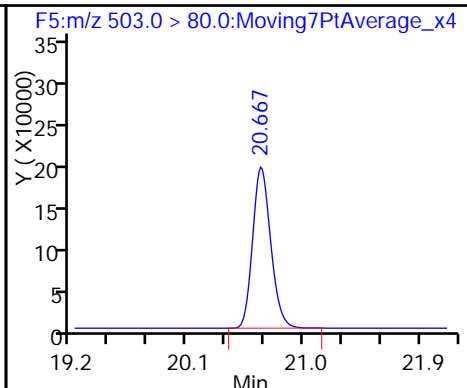
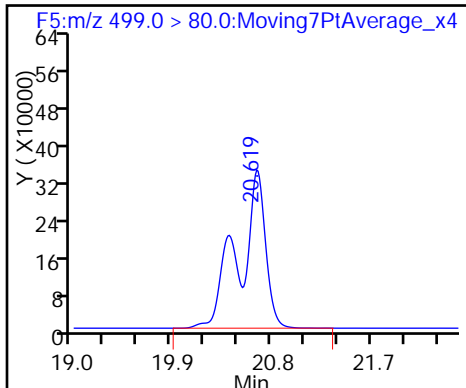
6 Perfluorooctanoic acid



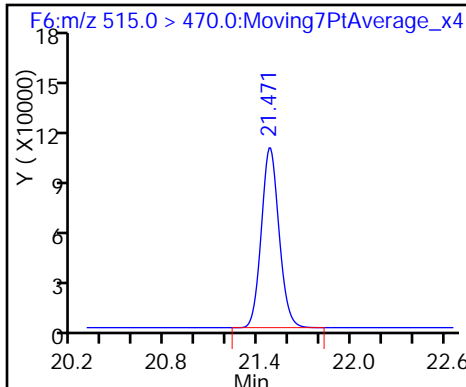
7 Perfluorooctane sulfonic acid

* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Lab Sample ID: CCV 320-140688/9 Calibration Date: 12/05/2016 20:53
 Instrument ID: A6 Calib Start Date: 12/05/2016 17:26
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54
 Lab File ID: 05DEC2016A6A_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.6306		20.6	22.9	-10.1	50.0
Perfluorohexanesulfonic acid	Ave	0.8980	0.7822		6.72	7.72	-12.9	50.0
Perfluoroheptanoic acid	Ave	1.215	1.239		2.65	2.60	1.9	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	0.9133		4.54	5.17	-12.2	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	0.8902		8.71	10.2	-14.7	50.0
Perfluorononanoic acid	Ave	1.134	1.093		4.83	5.01	-3.6	50.0
13C2 PFHxA	Ave	1.167	1.081		9.27	10.0	-7.3	30.0
13C2 PFDA	Ave	0.8763	0.8211		9.37	10.0	-6.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_011.d
 Lims ID: CCV L2
 Client ID:
 Sample Type: CCVL
 Inject. Date: 05-Dec-2016 20:53:12 ALS Bottle#: 2 Worklist Smp#: 9
 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\20161205-37524.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 06-Dec-2016 16:35:40 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK024

First Level Reviewer: barnettj Date: 06-Dec-2016 10:08:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.586	17.581	0.005	1.000	1186753	20.6	693
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	1108698	9.27	35970
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.342	0.002	1.000	496197	6.72	11535
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.378	0.002	1.000	329772	2.65	166 M
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		1025187	10.0	21492
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	484196	4.54	93.2 M
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	747766	8.71	8549
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.669	-0.002		2358079	28.7	20478
9 Perfluorononanoic acid	463.0 > 419.0	20.750	20.748	0.002	1.000	561371	4.83	15032
\$ 10 13C2 PFDA	515.0 > 470.0	21.471	21.474	-0.003	1.000	841818	9.37	26813

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L2_00014

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_011.d

Injection Date: 05-Dec-2016 20:53:12

Instrument ID: A6

Lims ID: CCV L2

Client ID:

Operator ID: CBW

ALS Bottle#: 2

Worklist Smp#: 9

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

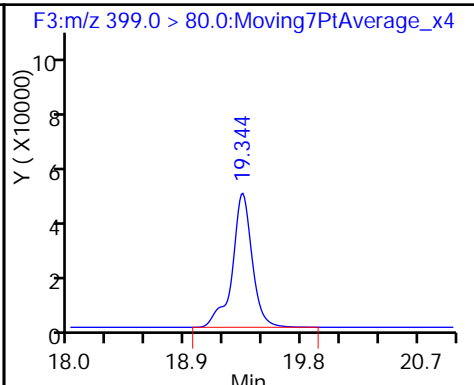
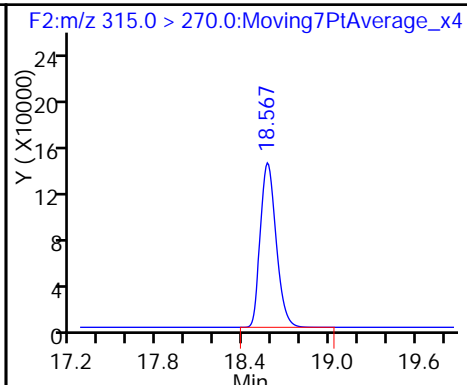
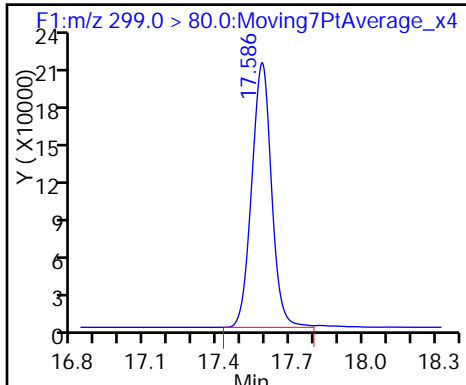
Method: 537__A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

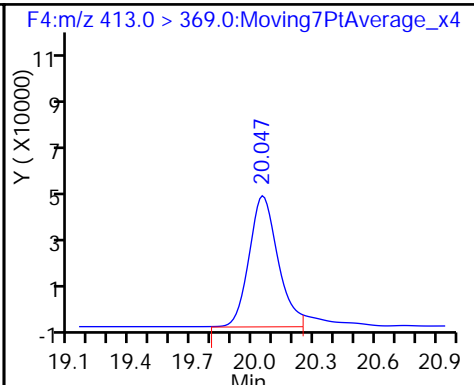
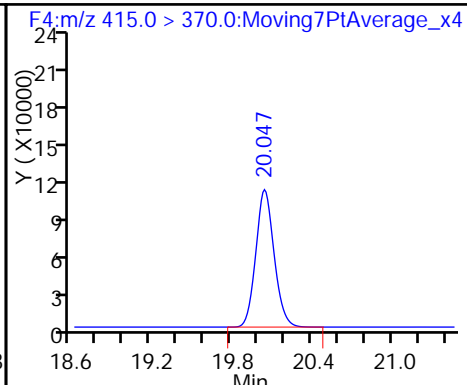
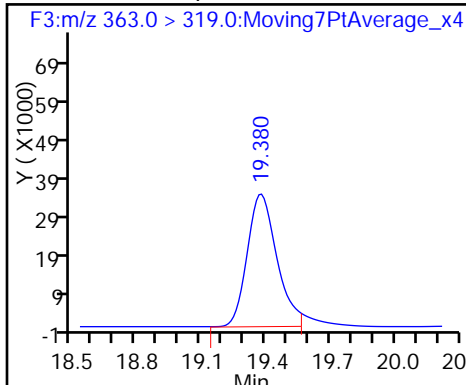
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid (M)

* 5 13C2-PFOA

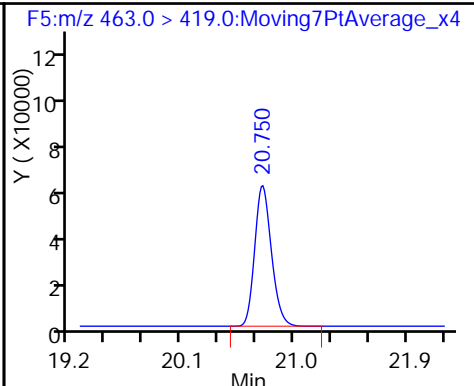
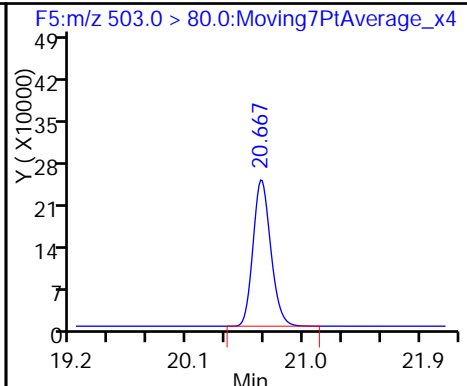
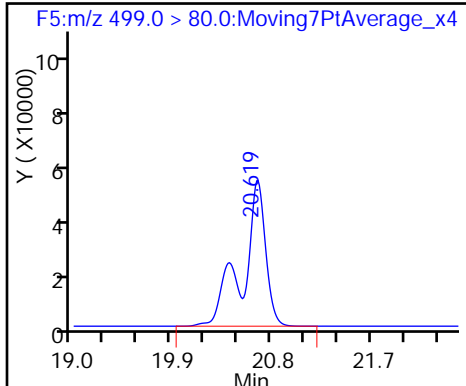
6 Perfluorooctanoic acid (M)



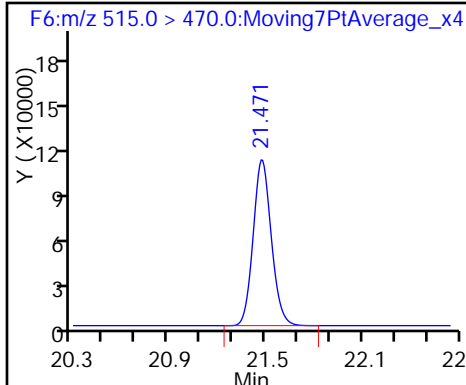
7 Perfluorooctane sulfonic acid

* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

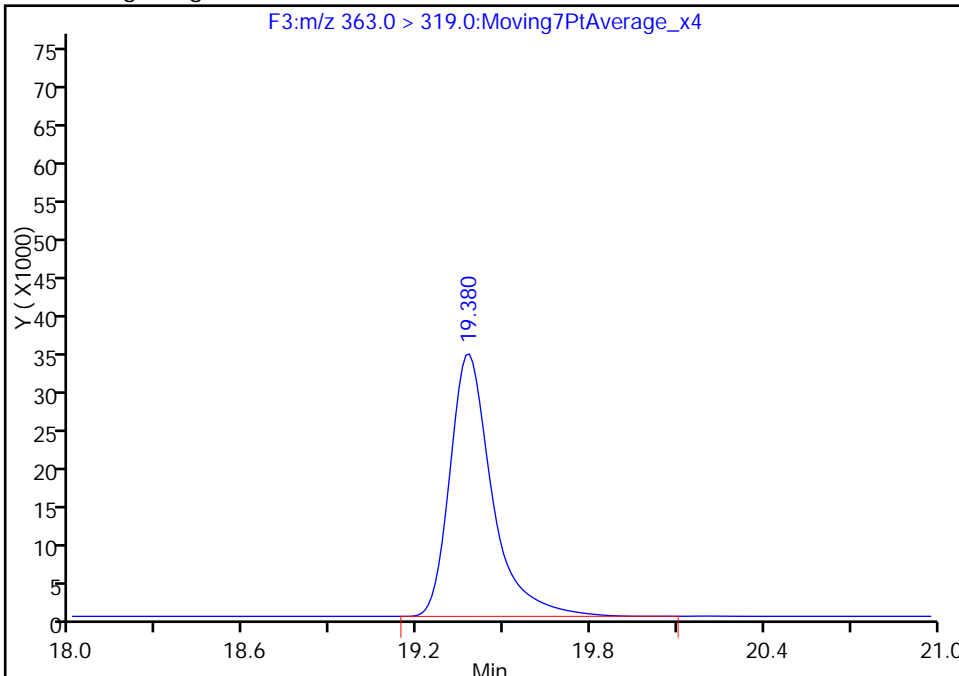
Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_011.d
Injection Date: 05-Dec-2016 20:53:12 Instrument ID: A6
Lims ID: CCV L2
Client ID:
Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 9
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F3:M/RM

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

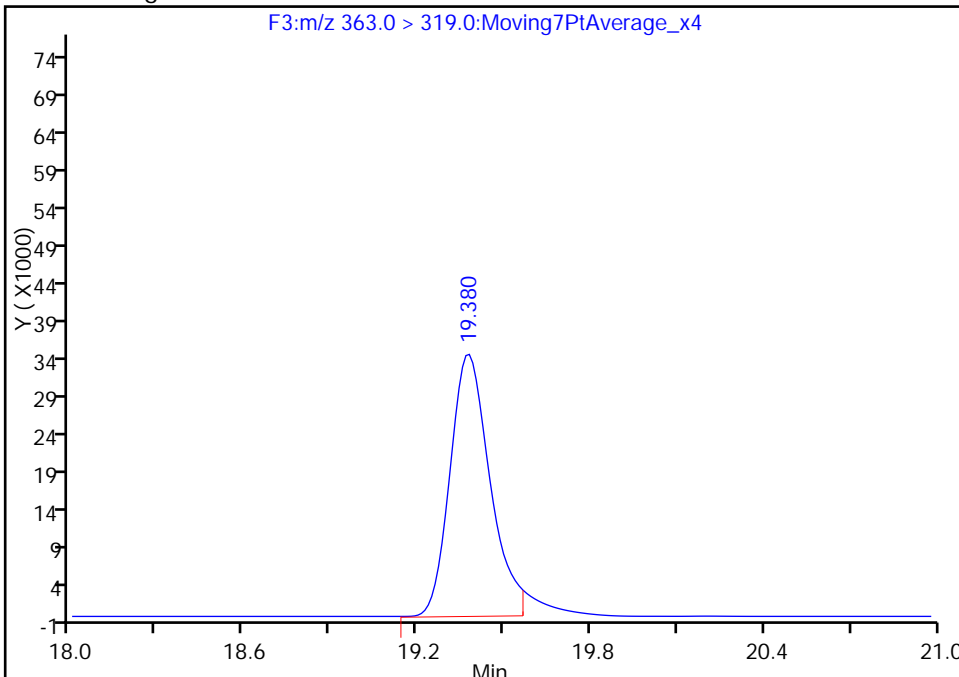
RT: 19.38
Area: 349162
Amount: 2.802857
Amount Units: ng/ml

Processing Integration Results



RT: 19.38
Area: 329772
Amount: 2.647206
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 06-Dec-2016 10:08:33
Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

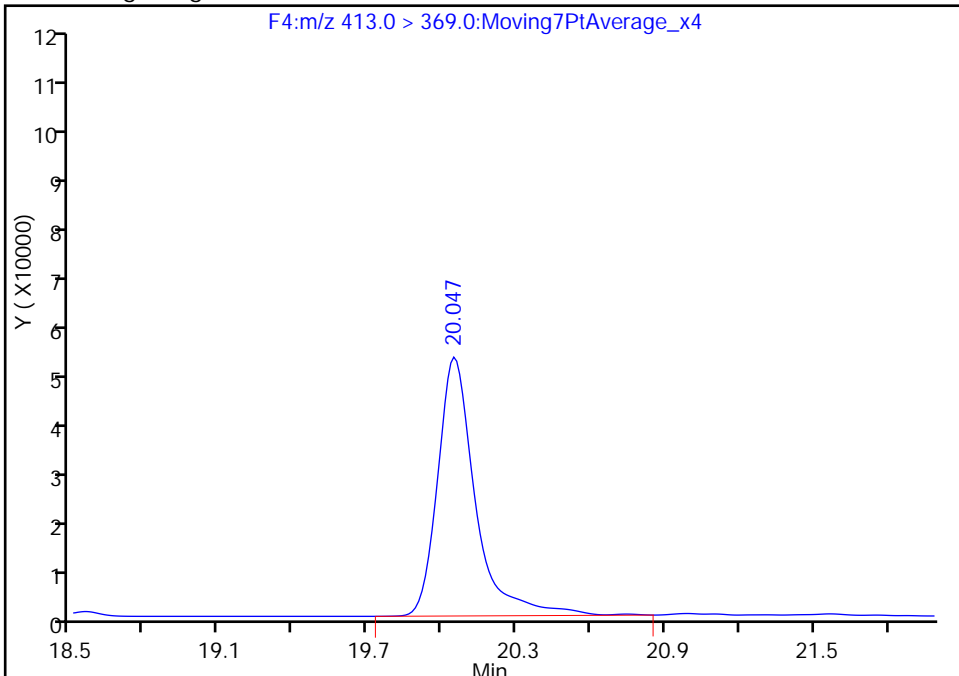
Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_011.d
Injection Date: 05-Dec-2016 20:53:12 Instrument ID: A6
Lims ID: CCV L2
Client ID:
Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 9
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

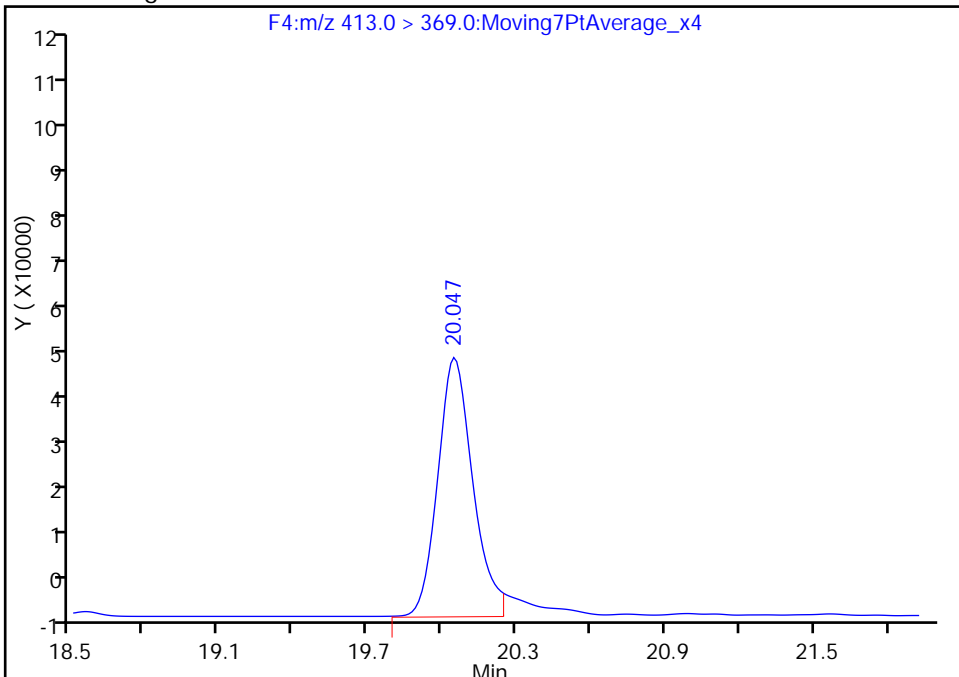
RT: 20.05
Area: 520603
Amount: 4.880820
Amount Units: ng/ml

Processing Integration Results



RT: 20.05
Area: 484196
Amount: 4.539493
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 06-Dec-2016 10:08:33
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Lab Sample ID: ICV 320-140688/11 Calibration Date: 12/05/2016 21:52
 Instrument ID: A6 Calib Start Date: 12/05/2016 17:26
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54
 Lab File ID: 05DEC2016A6A_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.5756		94.2	115	-18.0	30.0
Perfluorohexanesulfonic acid	Ave	0.8980	0.6976		20.6	26.5	-22.3	30.0
Perfluoroheptanoic acid	Ave	1.215	1.155		11.9	12.5	-4.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	0.9604		23.2	25.1	-7.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	0.8424		22.0	27.2	-19.3	30.0
Perfluorononanoic acid	Ave	1.134	0.9316		20.6	25.1	-17.9	30.0
13C2 PFHxA	Ave	1.167	1.079		9.25	10.0	-7.5	30.0
13C2 PFDA	Ave	0.8763	0.8628		9.85	10.0	-1.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_013.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 05-Dec-2016 21:52:24 ALS Bottle#: 7 Worklist Smp#: 11
 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\20161205-37524.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 06-Dec-2016 16:53:23 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK024

First Level Reviewer: barnettj Date: 06-Dec-2016 16:34:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.582	17.581	0.001	1.000	4641388	94.2	8629
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	946677	9.25	29673
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.342	0.002	1.000	1298107	20.6	29738
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.378	0.002	1.000	1267011	11.9	9991
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		877210	10.0	22431
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	2114272	23.2	647
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	1612191	22.0	13496
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.669	-0.002		2015178	28.7	51574
9 Perfluorononanoic acid	463.0 > 419.0	20.750	20.748	0.002	1.000	2051048	20.6	7161
\$ 10 13C2 PFDA	515.0 > 470.0	21.480	21.474	0.006	1.000	756809	9.85	23714

Reagents:

LC537-ICV_00017 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_013.d

Injection Date: 05-Dec-2016 21:52:24

Instrument ID: A6

Lims ID: ICV

Client ID:

Operator ID: CBW

ALS Bottle#: 7

Worklist Smp#: 11

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

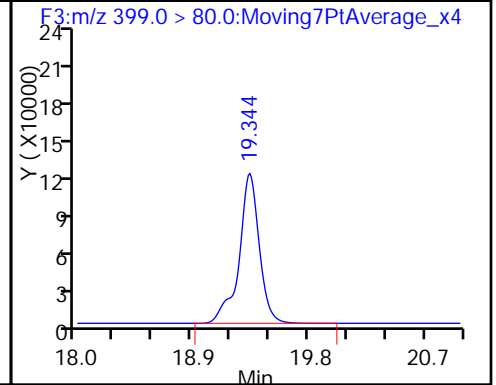
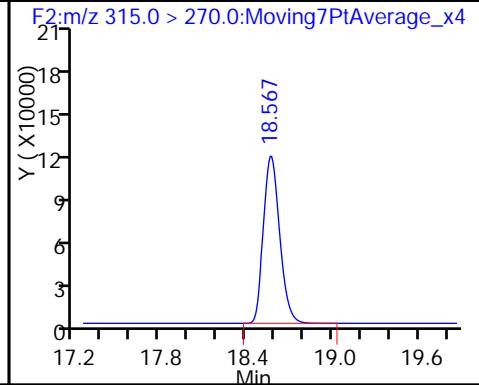
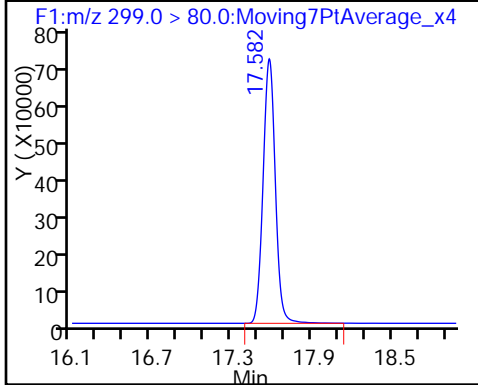
Method: 537__A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

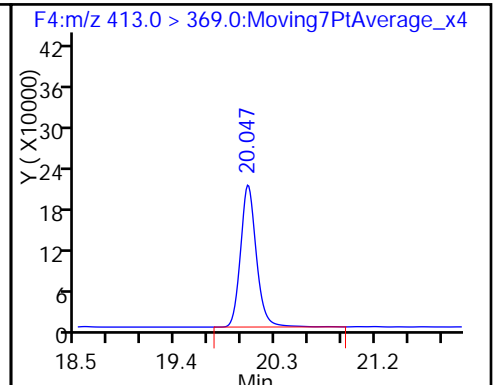
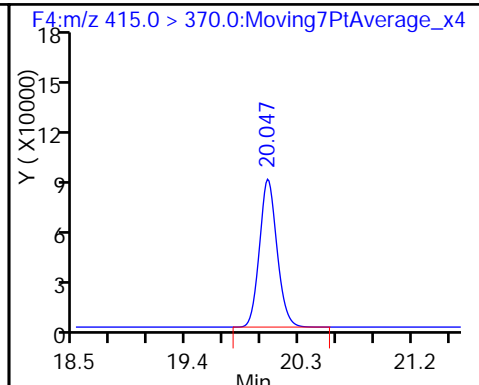
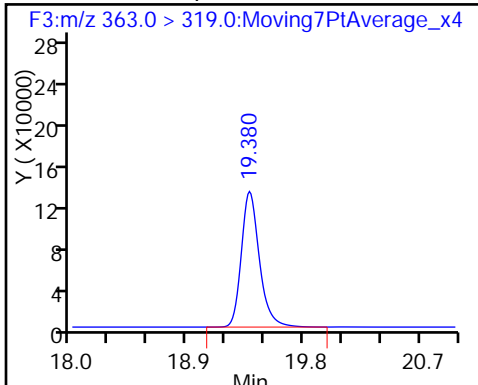
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

* 5 13C2-PFOA

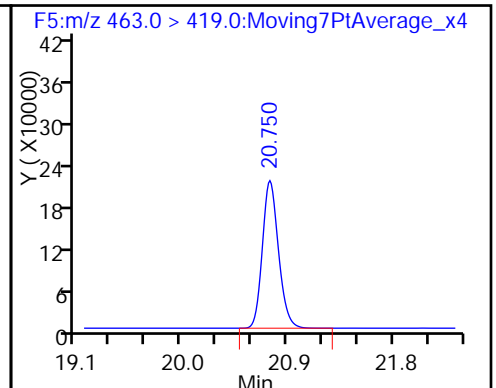
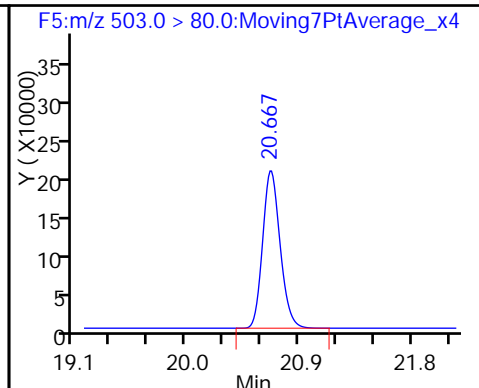
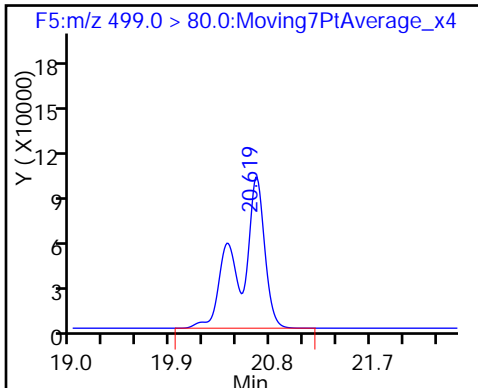
6 Perfluorooctanoic acid



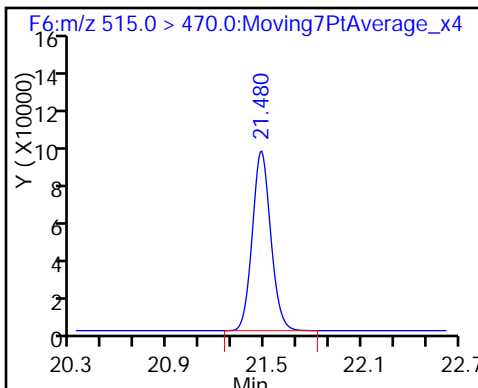
7 Perfluorooctane sulfonic acid

* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Lab Sample ID: CCV 320-142223/2 Calibration Date: 12/15/2016 08:03
 Instrument ID: A6 Calib Start Date: 12/05/2016 17:26
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54
 Lab File ID: 15DEC2016A6A_002.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.6594		21.5	22.9	-6.0	50.0
Perfluorohexanesulfonic acid	Ave	0.8980	0.7732		6.64	7.72	-13.9	50.0
Perfluoroheptanoic acid	Ave	1.215	1.277		2.73	2.60	5.1	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	0.9458		4.70	5.17	-9.1	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	0.8565		8.38	10.2	-18.0	50.0
Perfluorononanoic acid	Ave	1.134	1.091		4.82	5.01	-3.8	50.0
13C2 PFHxA	Ave	1.167	1.058		9.07	10.0	-9.3	30.0
13C2 PFDA	Ave	0.8763	0.8545		9.75	10.0	-2.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_002.d
 Lims ID: CCV L2
 Client ID:
 Sample Type: CCVL
 Inject. Date: 15-Dec-2016 08:03:38 ALS Bottle#: 2 Worklist Smp#: 2
 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\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:12 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:05:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.599	17.599	0.0	1.000	845450	21.5	510
\$ 2 13C2 PFHxA	315.0 > 270.0	18.585	18.585	0.0	1.000	651205	9.07	21190
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.344	0.0	1.000	334175	6.64	7885
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.380	0.0	1.000	204042	2.73	115 M
* 5 13C2-PFOA	415.0 > 370.0	20.035	20.035	0.0		615516	10.0	64218
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	301061	4.70	99.5 M
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	490144	8.38	6418
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.667	0.0		1606471	28.7	33387
9 Perfluorononanoic acid	463.0 > 419.0	20.738	20.738	0.0	1.000	336444	4.82	9088
\$ 10 13C2 PFDA	515.0 > 470.0	21.471	21.471	0.0	1.000	525960	9.75	16666

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L2_00014

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_002.d

Injection Date: 15-Dec-2016 08:03:38

Instrument ID: A6

Lims ID: CCV L2

Client ID:

Operator ID: CBW

ALS Bottle#: 2

Worklist Smp#: 2

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

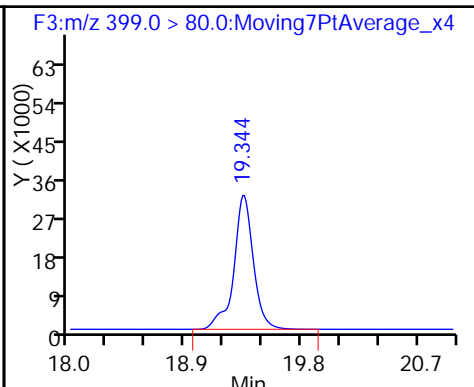
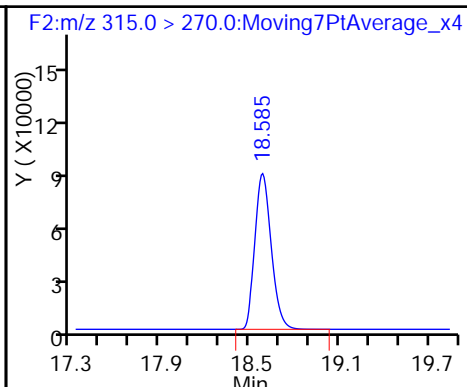
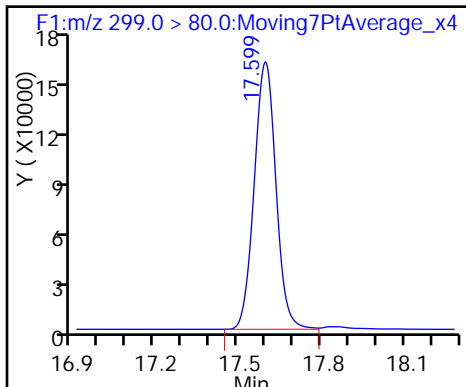
Method: 537_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

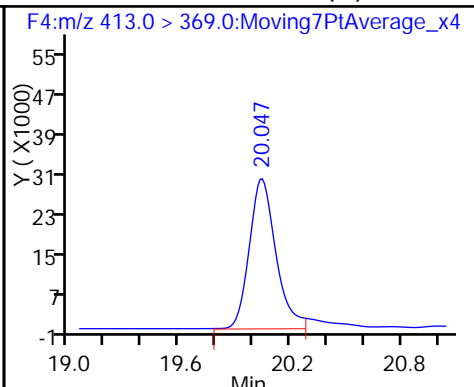
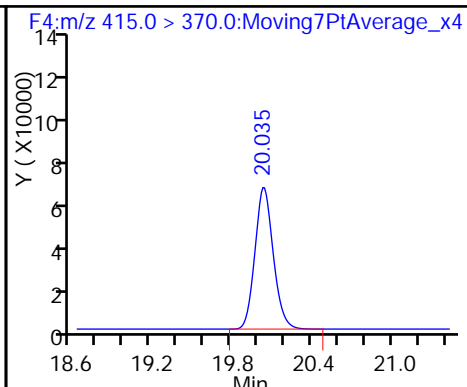
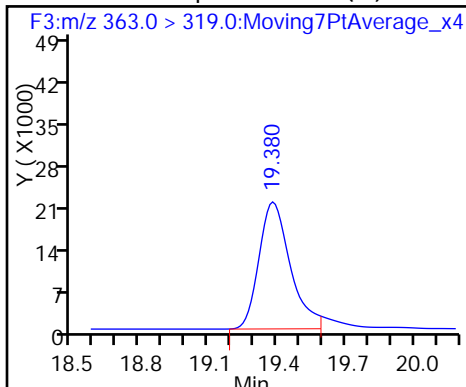
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid (M)

* 5 13C2-PFOA

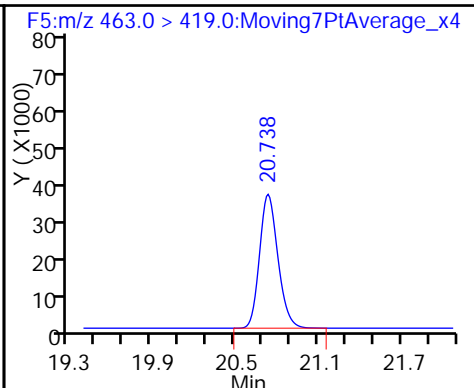
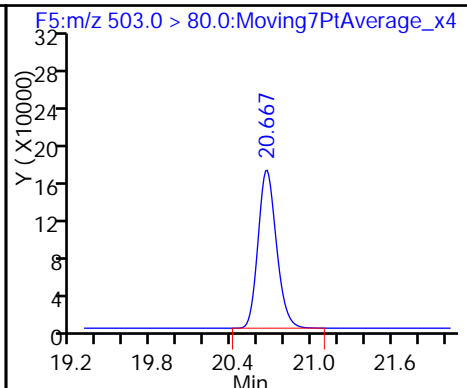
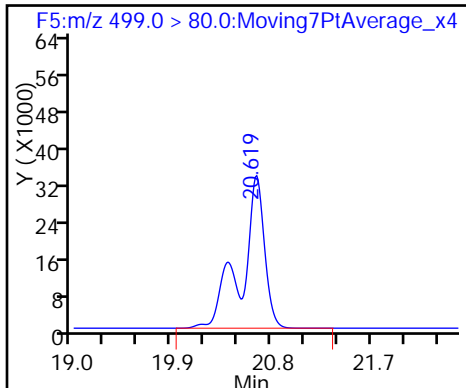
6 Perfluorooctanoic acid (M)



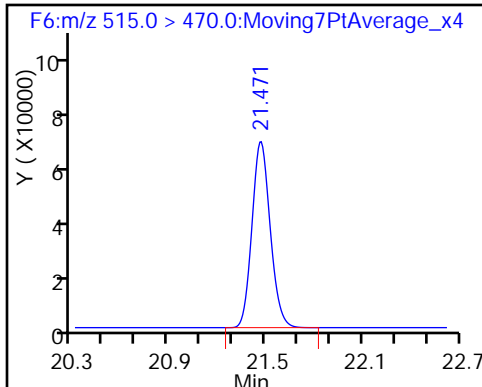
7 Perfluorooctane sulfonic acid

* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

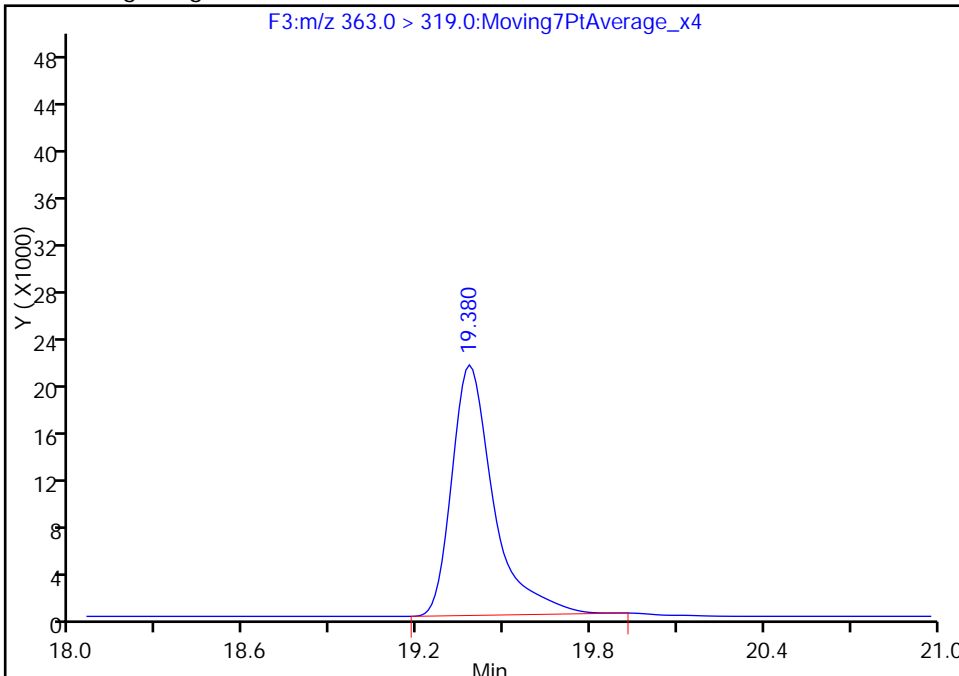
Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_002.d
Injection Date: 15-Dec-2016 08:03:38 Instrument ID: A6
Lims ID: CCV L2
Client ID:
Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 2
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F3:M/RM

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

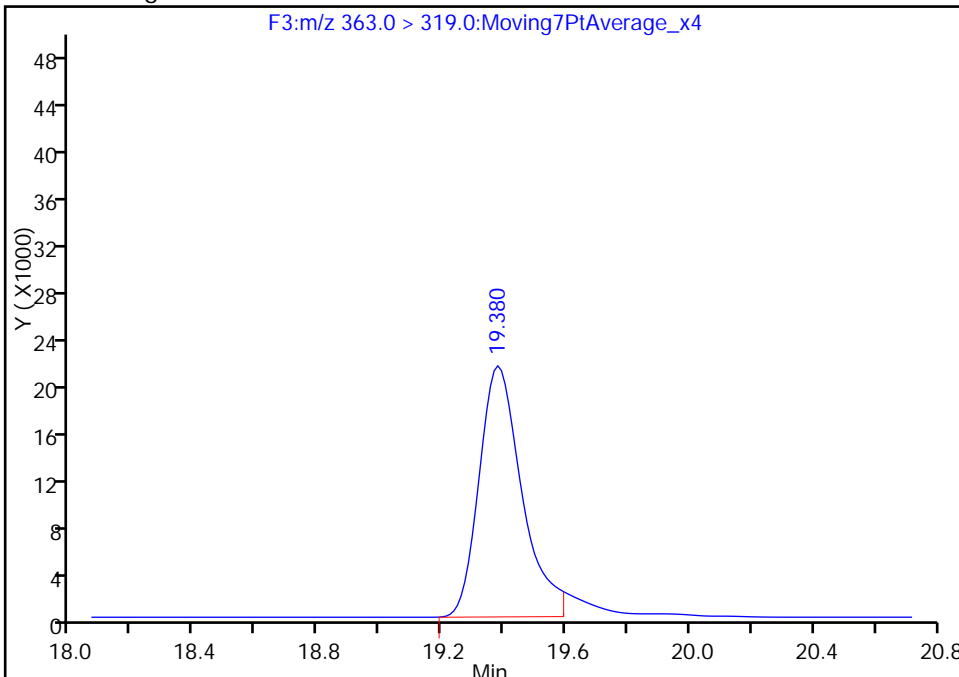
RT: 19.38
Area: 213658
Amount: 2.856649
Amount Units: ng/ml

Processing Integration Results



RT: 19.38
Area: 204042
Amount: 2.728081
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 15-Dec-2016 15:05:28
Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

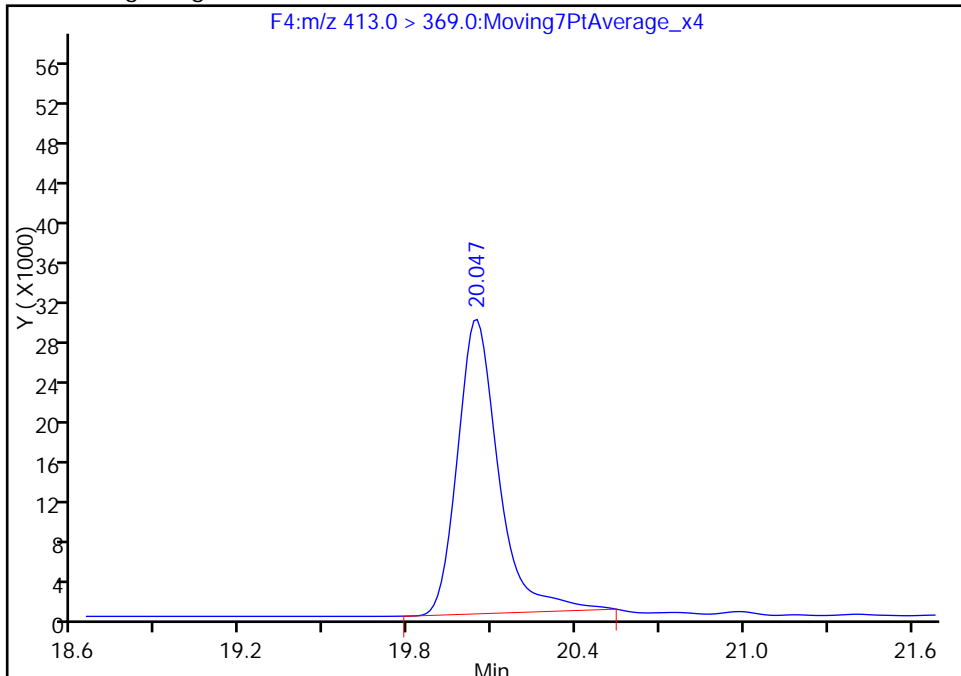
Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_002.d
Injection Date: 15-Dec-2016 08:03:38 Instrument ID: A6
Lims ID: CCV L2
Client ID:
Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 2
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:M/RM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

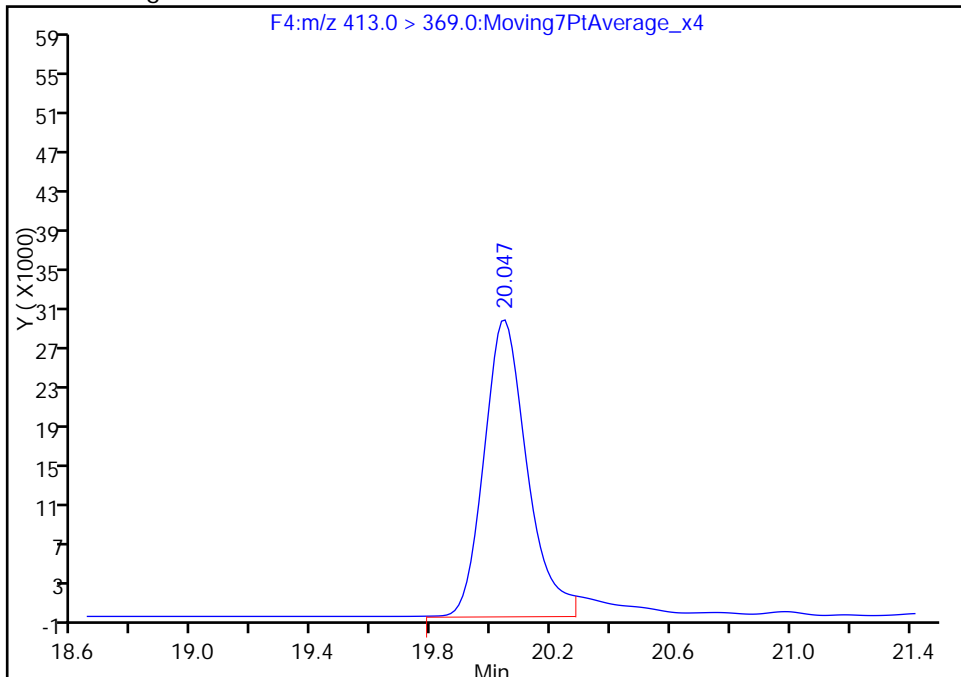
RT: 20.05
Area: 303357
Amount: 4.737006
Amount Units: ng/ml

Processing Integration Results



RT: 20.05
Area: 301061
Amount: 4.701153
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 15-Dec-2016 15:05:28
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Lab Sample ID: CCV 320-142223/3 Calibration Date: 12/15/2016 08:33
 Instrument ID: A6 Calib Start Date: 12/05/2016 17:26
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54
 Lab File ID: 15DEC2016A6A_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.7551		48.6	45.1	7.6	30.0
Perfluorohexanesulfonic acid	Ave	0.8980	0.9703		16.4	15.2	8.0	30.0
Perfluoroheptanoic acid	Ave	1.215	1.259		5.30	5.12	3.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	1.059		10.4	10.2	1.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	1.060		20.4	20.1	1.5	30.0
Perfluorononanoic acid	Ave	1.134	1.188		10.3	9.87	4.7	30.0
13C2 PFHxA	Ave	1.167	1.154		9.89	10.0	-1.1	30.0
13C2 PFDA	Ave	0.8763	0.9259		10.6	10.0	5.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_003.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 15-Dec-2016 08:33:13 ALS Bottle#: 3 Worklist Smp#: 3
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3 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\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:12:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.599	17.599	0.0	1.000	2014487	48.6	770
\$ 2 13C2 PFHxA	315.0 > 270.0	18.585	18.585	0.0	1.000	886493	9.89	28462
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.356	19.356	0.0	1.000	872550	16.4	20461
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.380	0.0	1.000	494692	5.30	5574
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		768124	10.0	19781
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	828809	10.4	337
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.620	20.620	0.0	1.000	1262214	20.4	10046
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.667	0.0		1696317	28.7	43758
9 Perfluorononanoic acid	463.0 > 419.0	20.738	20.738	0.0	1.000	900814	10.3	23776
\$ 10 13C2 PFDA	515.0 > 470.0	21.471	21.471	0.0	1.000	711180	10.6	22182

Reagents:

LC537-L3_00016 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_003.d

Injection Date: 15-Dec-2016 08:33:13

Instrument ID: A6

Lims ID: CCV L3

Client ID:

Operator ID: CBW

ALS Bottle#: 3

Worklist Smp#: 3

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

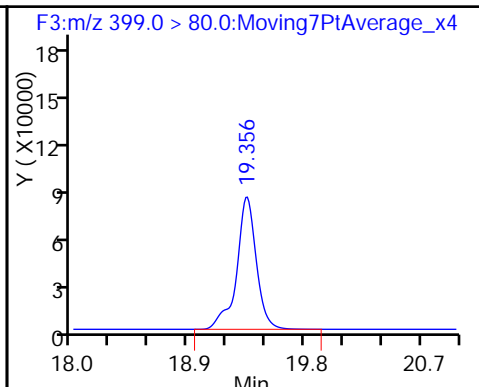
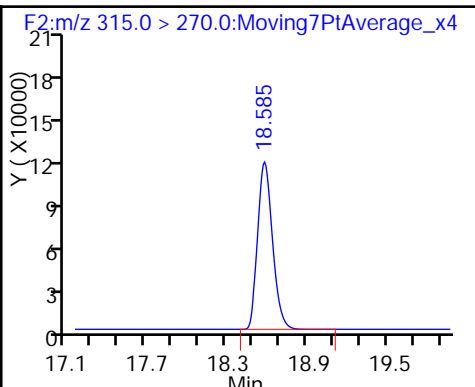
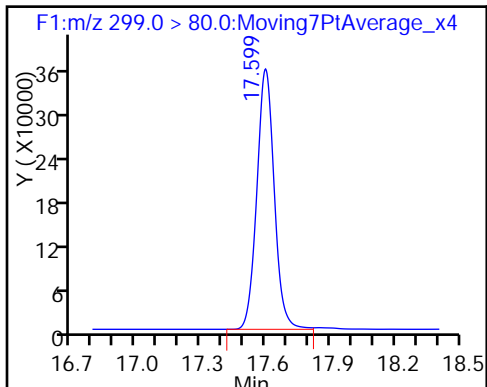
Method: 537_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

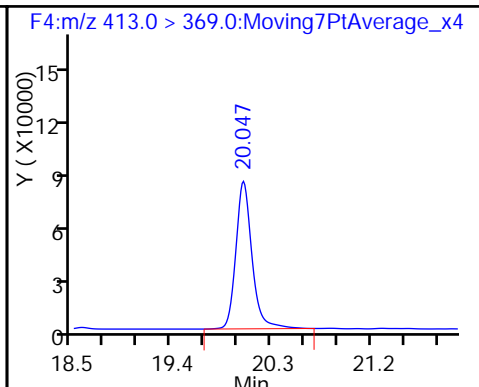
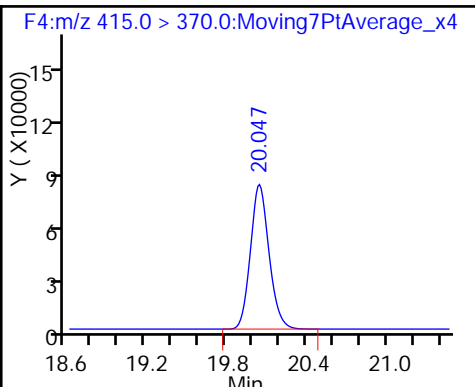
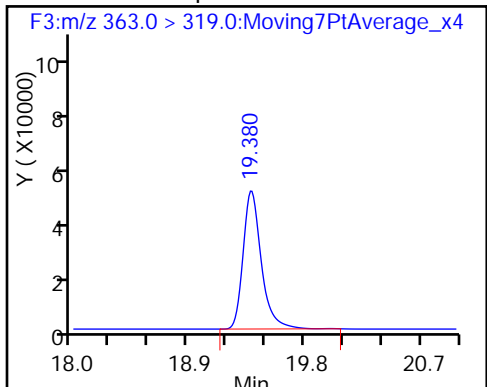
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

* 5 13C2-PFOA

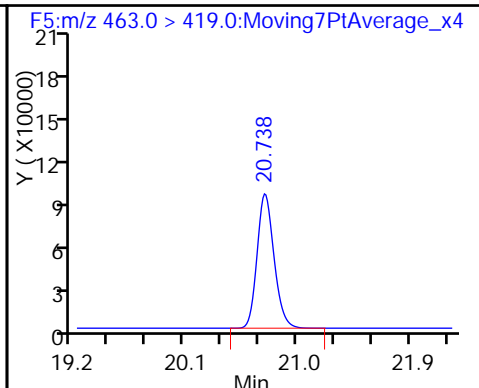
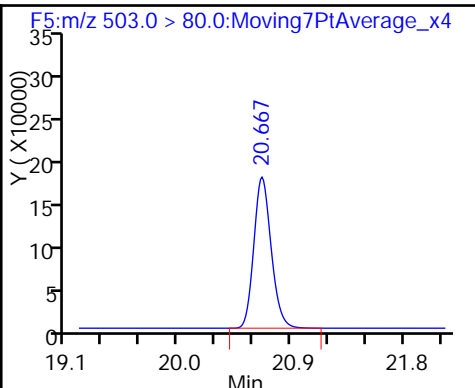
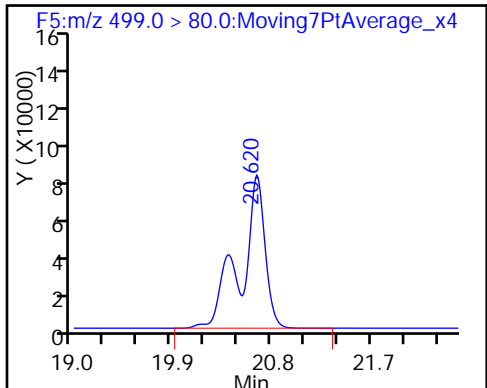
6 Perfluorooctanoic acid



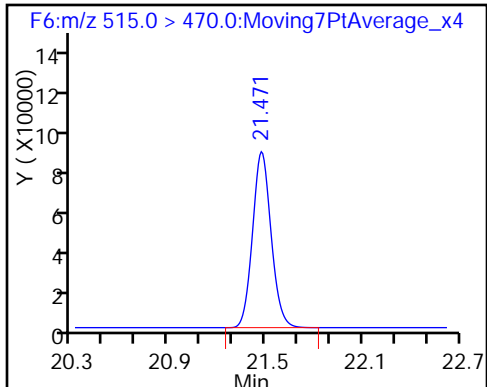
7 Perfluorooctane sulfonic acid

* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Lab Sample ID: CCV 320-142223/15 Calibration Date: 12/15/2016 14:55
 Instrument ID: A6 Calib Start Date: 12/05/2016 17:26
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54
 Lab File ID: 15DEC2016A6A_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.7398		142	135	5.5	30.0
Perfluorohexanesulfonic acid	Ave	0.8980	1.022		51.6	45.4	13.8	30.0
Perfluoroheptanoic acid	Ave	1.215	1.220		15.3	15.3	0.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	1.121		32.8	30.4	7.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	1.242		71.5	60.1	19.0	30.0
Perfluorononanoic acid	Ave	1.134	1.227		31.9	29.5	8.2	30.0
13C2 PFHxA	Ave	1.167	1.290		11.1	10.0	10.6	30.0
13C2 PFDA	Ave	0.8763	1.020		11.6	10.0	16.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Lab Sample ID: CCV 320-142412/15 Calibration Date: 12/15/2016 14:55
 Instrument ID: A6 Calib Start Date: 12/05/2016 17:26
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54
 Lab File ID: 15DEC2016A6A_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.7398		142	135	5.5	30.0
Perfluorohexanesulfonic acid	Ave	0.8980	1.022		51.6	45.4	13.8	30.0
Perfluoroheptanoic acid	Ave	1.215	1.220		15.3	15.3	0.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	1.121		32.8	30.4	7.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	1.242		71.5	60.1	19.0	30.0
Perfluorononanoic acid	Ave	1.134	1.227		31.9	29.5	8.2	30.0
13C2 PFHxA	Ave	1.167	1.290		11.1	10.0	10.6	30.0
13C2 PFDA	Ave	0.8763	1.020		11.6	10.0	16.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_015.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 15-Dec-2016 14:55:15 ALS Bottle#: 5 Worklist Smp#: 15
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5 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\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:25:16 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.595	17.595	0.0	1.000	6118449	142.0	5318
\$ 2 13C2 PFHxA	315.0 > 270.0	18.576	18.576	0.0	1.000	1099847	11.1	23812
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.344	0.0	1.000	2848894	51.6	64414
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.380	0.0	1.000	1587667	15.3	20627
* 5 13C2-PFOA	415.0 > 370.0	20.035	20.035	0.0		852323	10.0	22004
6 Perfluorooctanoic acid	413.0 > 369.0	20.035	20.035	0.0	1.000	2905704	32.8	1201
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	4586555	71.5	31656
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.667	0.0		1761780	28.7	44925
9 Perfluorononanoic acid	463.0 > 419.0	20.738	20.738	0.0	1.000	3082852	31.9	36149
\$ 10 13C2 PFDA	515.0 > 470.0	21.471	21.471	0.0	1.000	869586	11.6	27354

Reagents:

LC537-L5_00017 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_015.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 15-Dec-2016 14:55:15 ALS Bottle#: 5 Worklist Smp#: 15
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5 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\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:25:16 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.595	17.595	0.0	1.000	6118449	142.0	5318
\$ 2 13C2 PFHxA	315.0 > 270.0	18.576	18.576	0.0	1.000	1099847	11.1	23812
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.344	0.0	1.000	2848894	51.6	64414
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.380	0.0	1.000	1587667	15.3	20627
* 5 13C2-PFOA	415.0 > 370.0	20.035	20.035	0.0		852323	10.0	22004
6 Perfluorooctanoic acid	413.0 > 369.0	20.035	20.035	0.0	1.000	2905704	32.8	1201
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	4586555	71.5	31656
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.667	0.0		1761780	28.7	44925
9 Perfluorononanoic acid	463.0 > 419.0	20.738	20.738	0.0	1.000	3082852	31.9	36149
\$ 10 13C2 PFDA	515.0 > 470.0	21.471	21.471	0.0	1.000	869586	11.6	27354

Reagents:

LC537-L5_00017 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_015.d

Injection Date: 15-Dec-2016 14:55:15

Instrument ID: A6

Lims ID: CCV L5

Client ID:

Operator ID: CBW

ALS Bottle#: 5

Worklist Smp#: 15

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

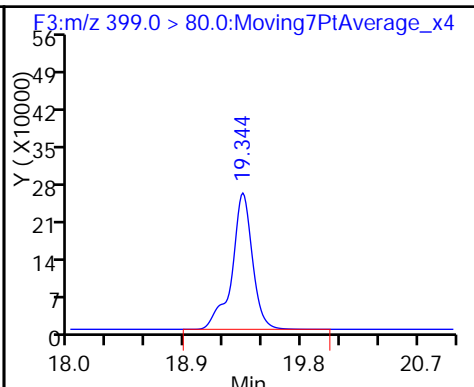
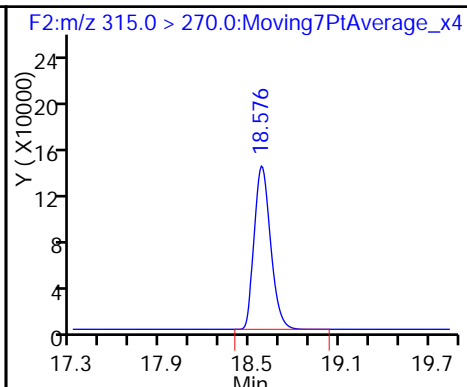
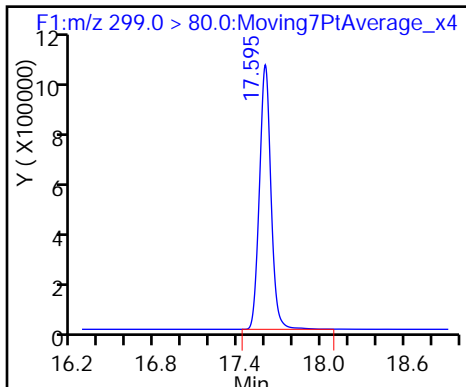
Method: 537_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

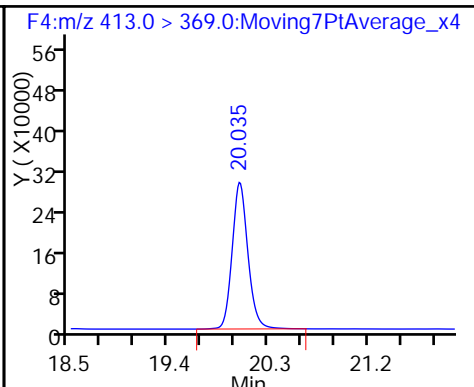
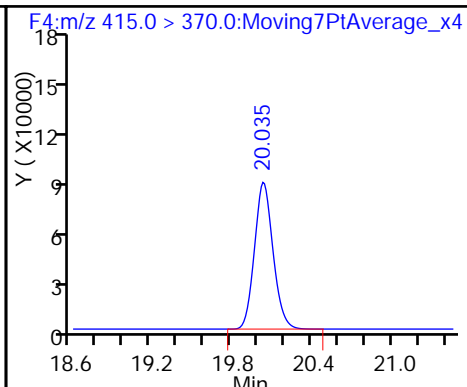
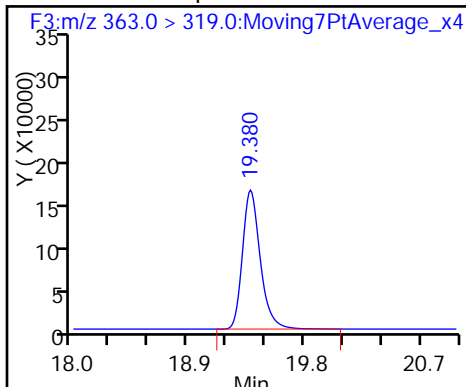
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

* 5 13C2-PFOA

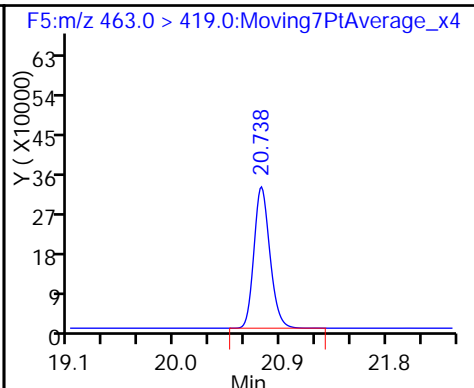
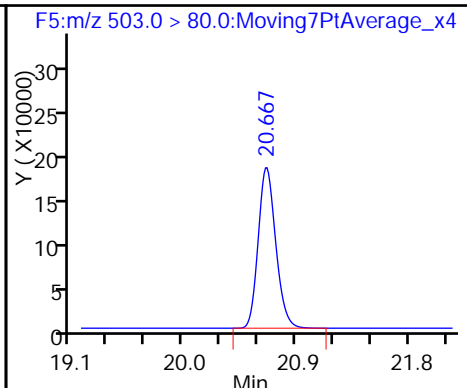
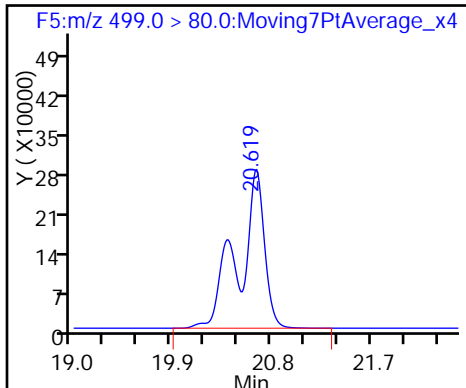
6 Perfluorooctanoic acid



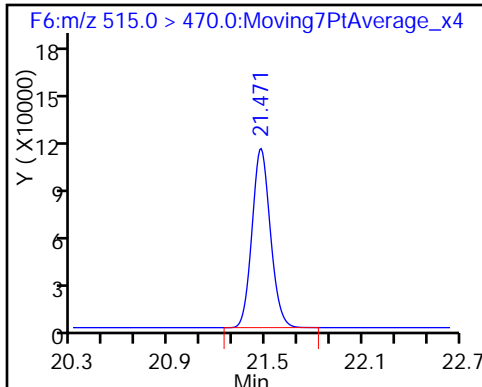
7 Perfluorooctane sulfonic acid

* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_015.d

Injection Date: 15-Dec-2016 14:55:15

Instrument ID: A6

Lims ID: CCV L5

Client ID:

Operator ID: CBW

ALS Bottle#: 5

Worklist Smp#: 15

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

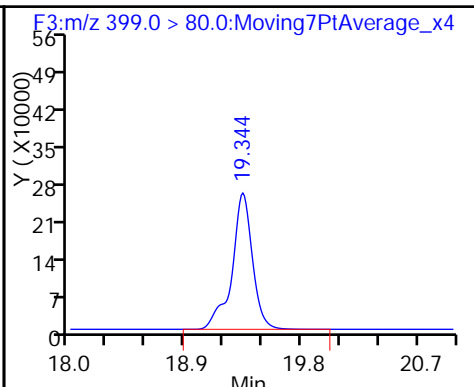
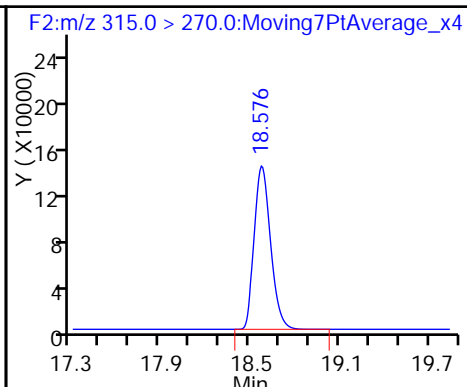
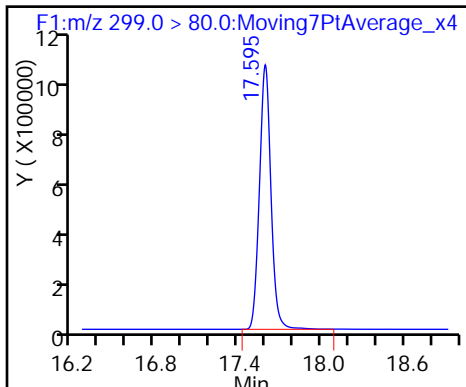
Method: 537_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

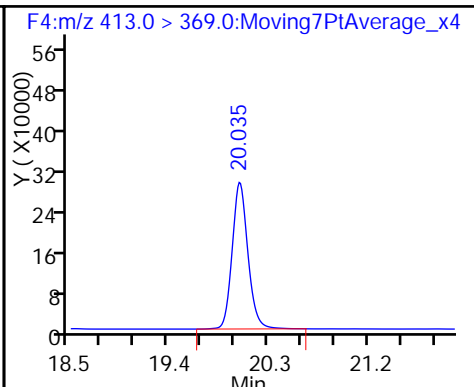
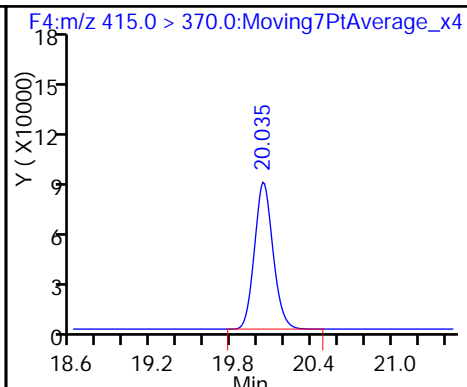
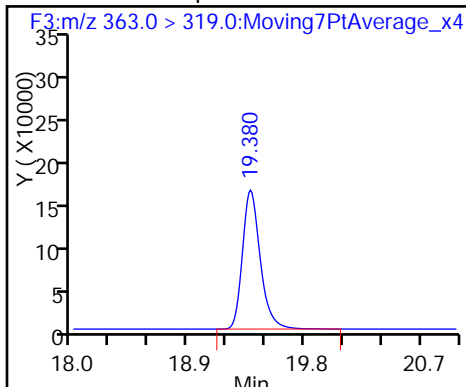
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

* 5 13C2-PFOA

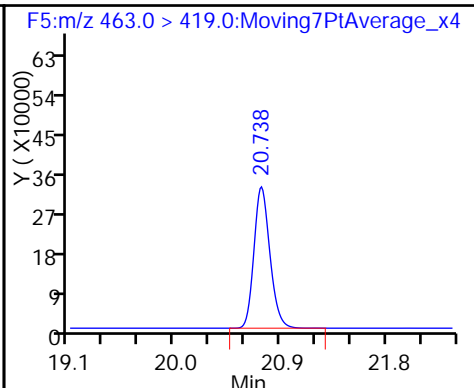
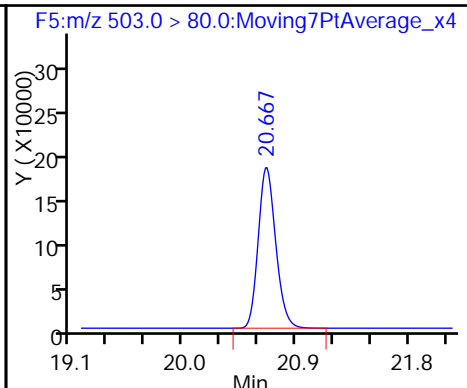
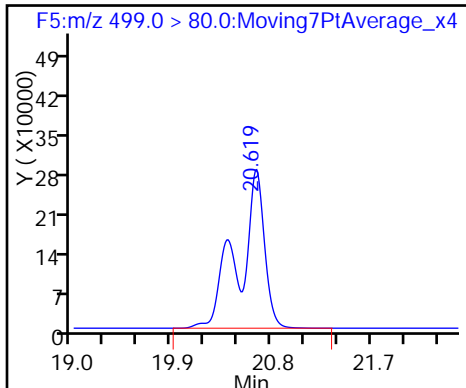
6 Perfluorooctanoic acid



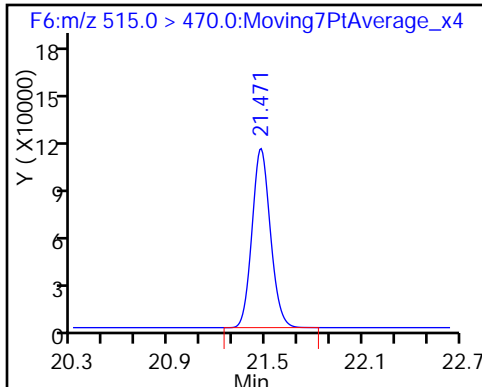
7 Perfluorooctane sulfonic acid

* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Lab Sample ID: CCV 320-142412/24 Calibration Date: 12/15/2016 19:21
 Instrument ID: A6 Calib Start Date: 12/05/2016 17:26
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54
 Lab File ID: 15DEC2016A6A_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.7248		46.6	45.1	3.3	30.0
Perfluorohexanesulfonic acid	Ave	0.8980	0.9510		16.1	15.2	5.9	30.0
Perfluoroheptanoic acid	Ave	1.215	1.318		5.55	5.12	8.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	1.012		9.91	10.2	-2.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	1.057		20.4	20.1	1.2	30.0
Perfluorononanoic acid	Ave	1.134	1.199		10.4	9.87	5.7	30.0
13C2 PFHxA	Ave	1.167	1.158		9.93	10.0	-0.7	30.0
13C2 PFDA	Ave	0.8763	0.9323		10.6	10.0	6.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_024.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 15-Dec-2016 19:21:55 ALS Bottle#: 3 Worklist Smp#: 24
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3 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\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:25 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:40:19

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.576	17.576	0.0	1.000	1873215	46.6	713
\$ 2 13C2 PFHxA	315.0 > 270.0	18.558	18.558	0.0	1.000	888613	9.93	28888
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.320	19.320	0.0	1.000	828466	16.1	19374
4 Perfluoroheptanoic acid	363.0 > 319.0	19.356	19.356	0.0	1.000	517197	5.55	8731
* 5 13C2-PFOA	415.0 > 370.0	20.023	20.023	0.0		767144	10.0	19688
6 Perfluorooctanoic acid	413.0 > 369.0	20.023	20.023	0.0	1.000	791115	9.91	626
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	1219270	20.4	16950
* 8 13C4 PFOS	503.0 > 80.0	20.655	20.655	0.0		1643264	28.7	42650
9 Perfluorononanoic acid	463.0 > 419.0	20.726	20.726	0.0	1.000	908163	10.4	48020
\$ 10 13C2 PFDA	515.0 > 470.0	21.453	21.453	0.0	1.000	715234	10.6	22574

Reagents:

LC537-L3_00016 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_024.d

Injection Date: 15-Dec-2016 19:21:55

Instrument ID: A6

Lims ID: CCV L3

Client ID:

Operator ID: CBW

ALS Bottle#: 3

Worklist Smp#: 24

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

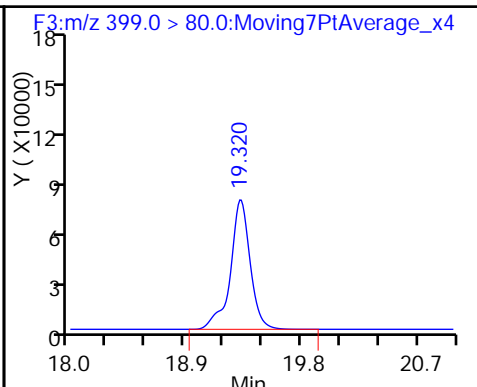
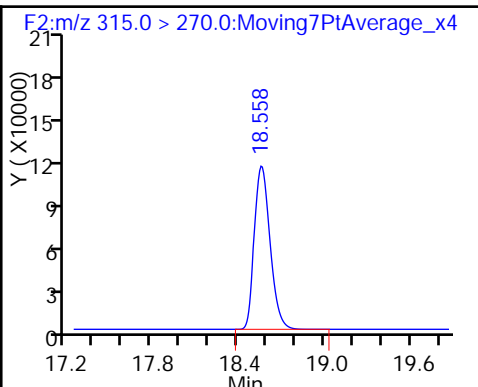
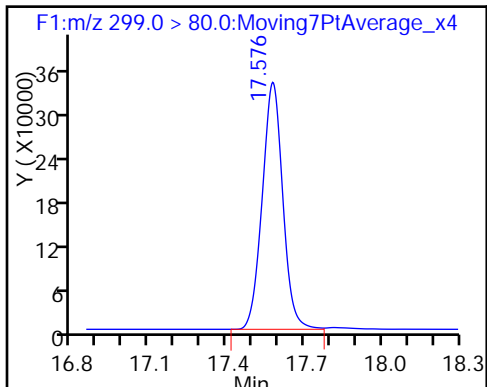
Method: 537_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

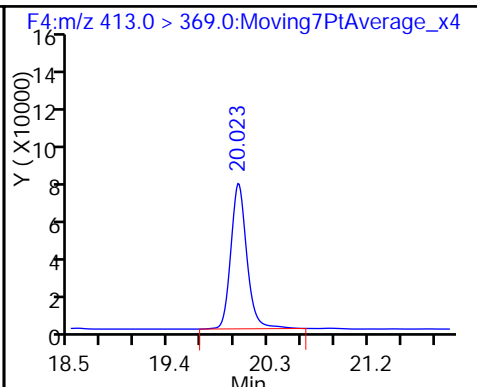
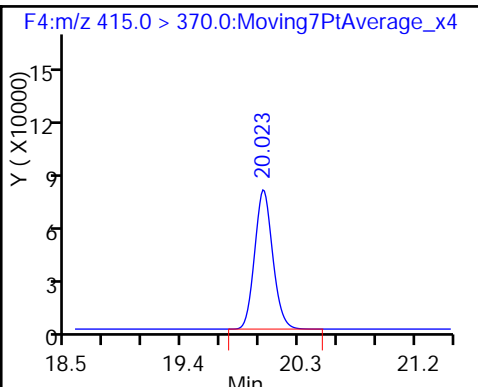
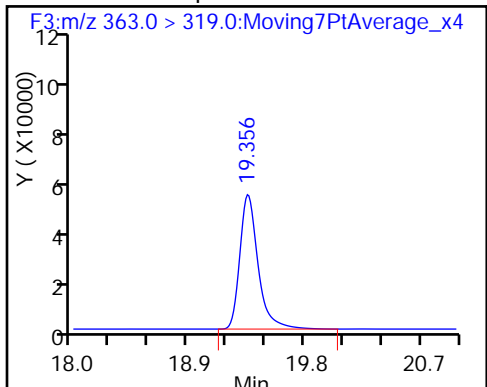
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

* 5 13C2-PFOA

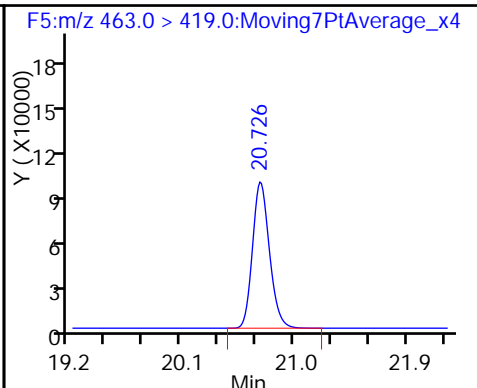
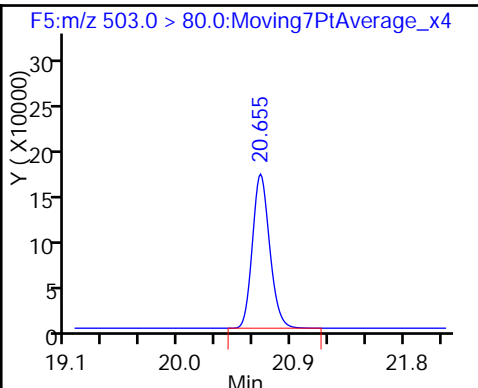
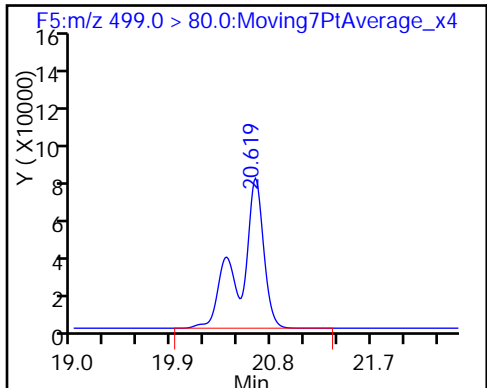
6 Perfluorooctanoic acid



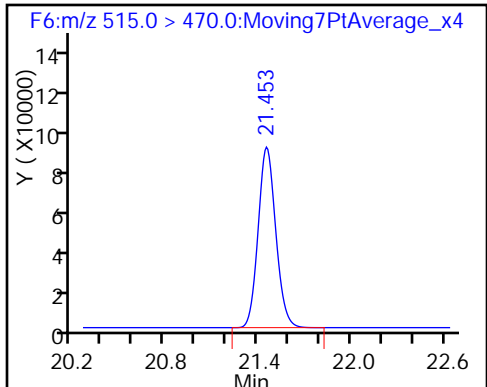
7 Perfluorooctane sulfonic acid

* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-141540/1-A
 Matrix: Water Lab File ID: 15DEC2016A6A_005.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 250.00 (mL) Date Analyzed: 12/15/2016 09:32
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 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	90		70-130
STL00996	13C2 PFDA	88		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_005.d
 Lims ID: MB 320-141540/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 15-Dec-2016 09:32:25 ALS Bottle#: 2 Worklist Smp#: 5
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: MB 320-141540/1-A BOX 22
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:13:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.585	-0.018	1.000	828566	8.98	27322
* 5 13C2-PFOA	415.0 > 370.0	20.035	20.047	-0.012		791353	10.0	20703
* 8 13C4 PFOS	503.0 > 80.0	20.655	20.667	-0.012		2025210	28.7	30303
\$ 10 13C2 PFDA	515.0 > 470.0	21.462	21.471	-0.009	1.000	607099	8.75	19276

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_005.d

Injection Date: 15-Dec-2016 09:32:25

Instrument ID: A6

Lims ID: MB 320-141540/1-A

Client ID:

Operator ID: CBW

ALS Bottle#: 2

Worklist Smp#: 5

Injection Vol: 10.0 ul

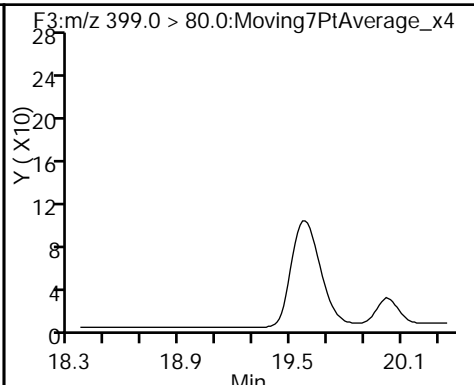
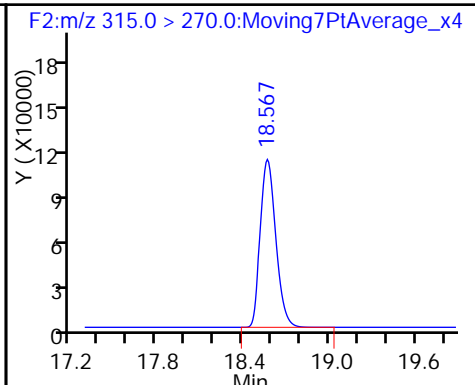
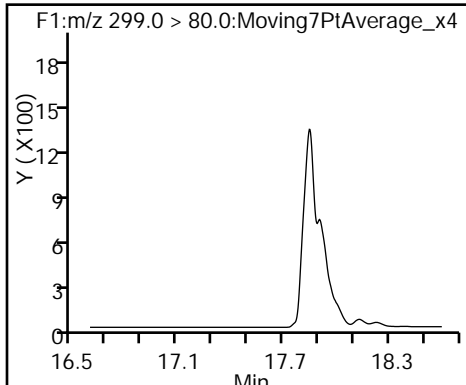
Dil. Factor: 1.0000

Method: 537_A6

Limit Group: LC 537 ICAL

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

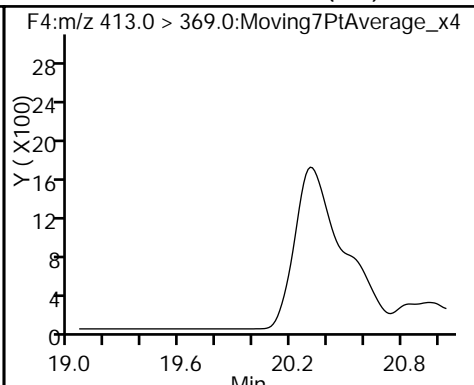
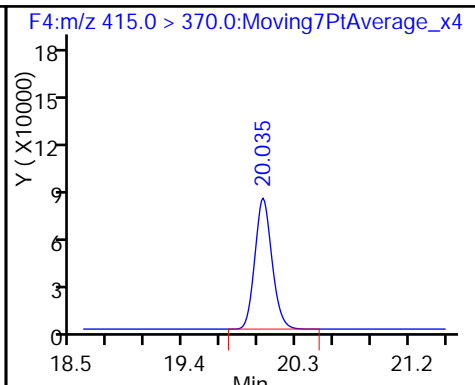
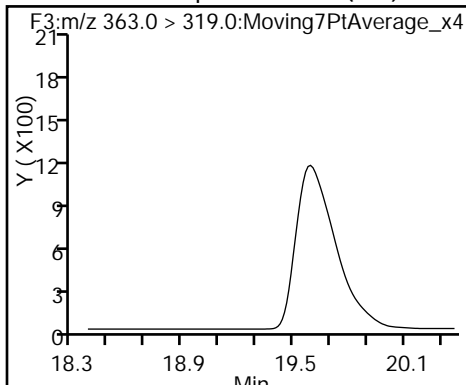
3 Perfluorohexanesulfonic acid (ND)



4 Perfluoroheptanoic acid (ND)

* 5 13C2-PFOA

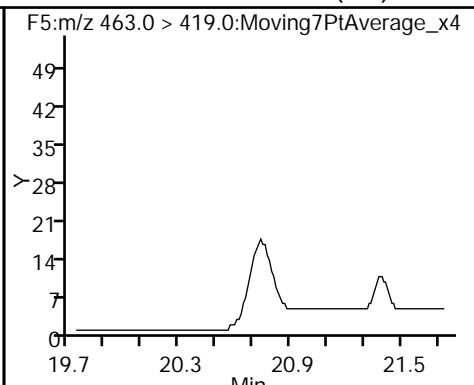
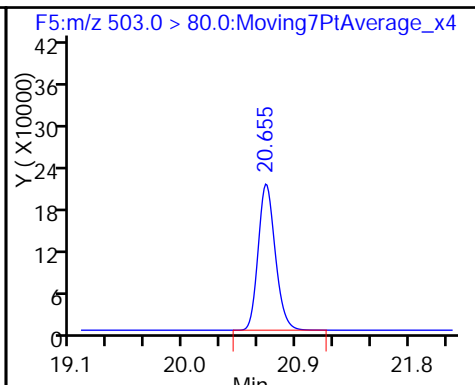
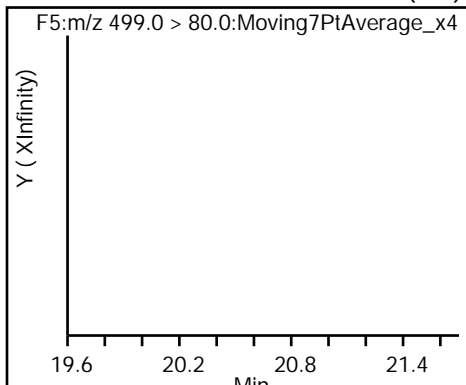
6 Perfluorooctanoic acid (ND)



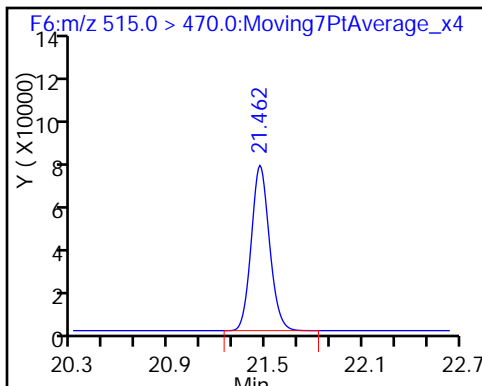
7 Perfluorooctane sulfonic acid (ND)

* 8 13C4 PFOS

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_005.d
 Lims ID: MB 320-141540/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 15-Dec-2016 09:32:25 ALS Bottle#: 2 Worklist Smp#: 5
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: MB 320-141540/1-A BOX 22
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:13:52

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.98	89.76
\$ 10 13C2 PFDA	10.0	8.75	87.55

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LLCS 320-141540/2-A
 Matrix: Water Lab File ID: 15DEC2016A6A_006.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 250.00 (mL) Date Analyzed: 12/15/2016 10:02
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0277	J	0.060	0.048	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.0144	J M	0.030	0.024	0.0094
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0705	J	0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	90		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_006.d
 Lims ID: LLCS 320-141540/2-A
 Client ID:
 Sample Type: LLCS
 Inject. Date: 15-Dec-2016 10:02:01 ALS Bottle#: 3 Worklist Smp#: 6
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: LLCS 320-141540/2-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:14:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.586	17.599	-0.013	1.000	831635	17.6	537
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.585	-0.018	1.000	801911	9.35	26353
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.332	19.356	-0.024	1.000	304182	5.04	6948
4 Perfluoroheptanoic acid	363.0 > 319.0	19.368	19.380	-0.012	1.000	192850	2.16	77.9 M
* 5 13C2-PFOA	415.0 > 370.0	20.035	20.047	-0.012		735245	10.0	19320
6 Perfluorooctanoic acid	413.0 > 369.0	20.035	20.047	-0.012	1.000	275244	3.60	117 M
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.620	-0.001	1.000	485923	6.92	6498
* 8 13C4 PFOS	503.0 > 80.0	20.655	20.667	-0.012		1927844	28.7	50357
9 Perfluorononanoic acid	463.0 > 419.0	20.738	20.738	0.0	1.000	309393	3.71	8279
\$ 10 13C2 PFDA	515.0 > 470.0	21.462	21.471	-0.009	1.000	580204	9.01	18240

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_006.d

Injection Date: 15-Dec-2016 10:02:01

Instrument ID: A6

Lims ID: LLCS 320-141540/2-A

Client ID:

Operator ID: CBW

ALS Bottle#: 3

Worklist Smp#: 6

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

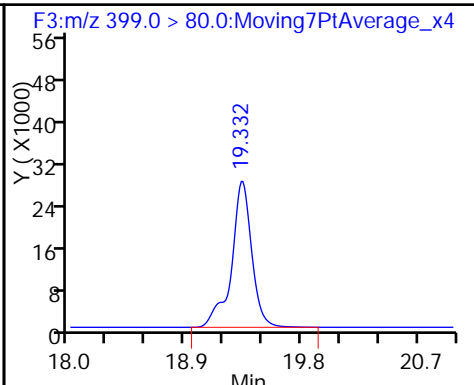
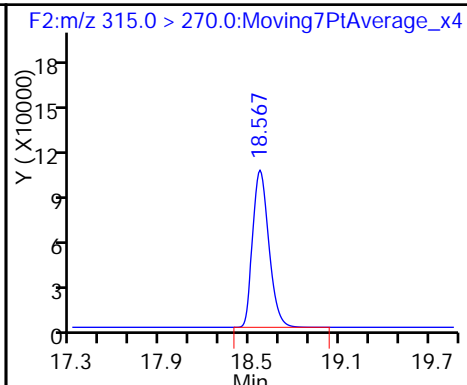
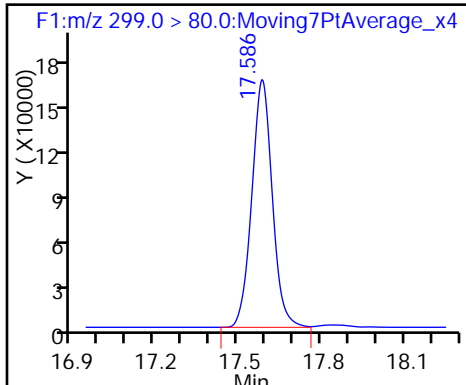
Method: 537_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

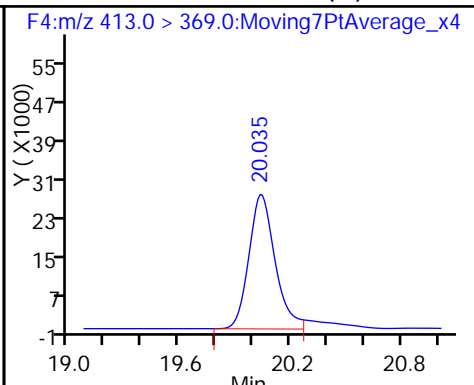
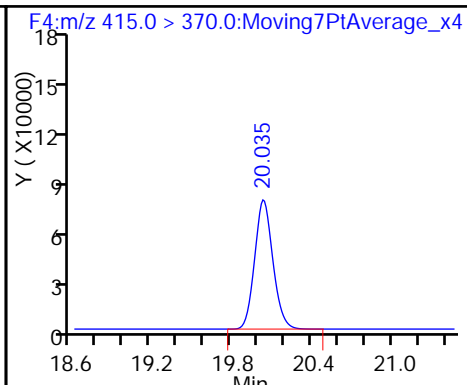
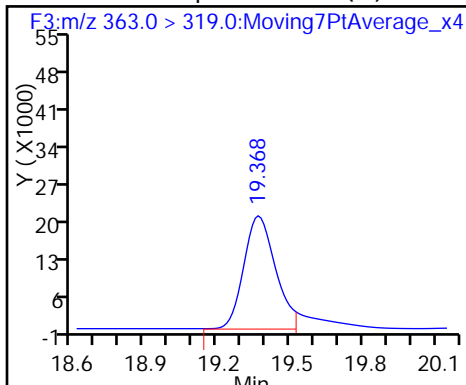
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid (M)

* 5 13C2-PFOA

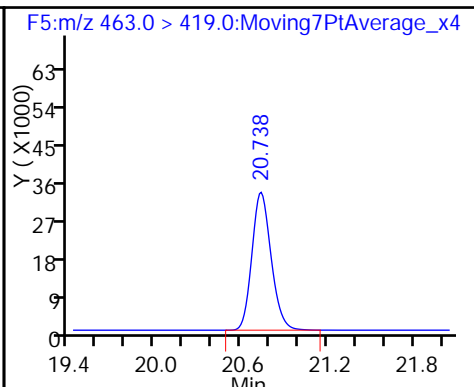
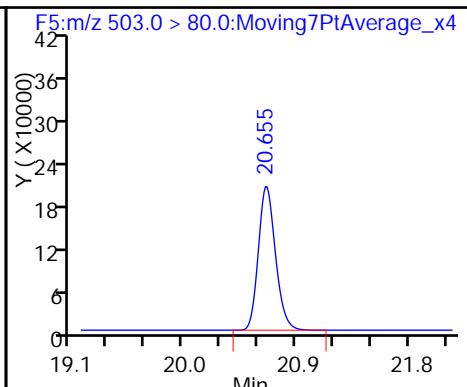
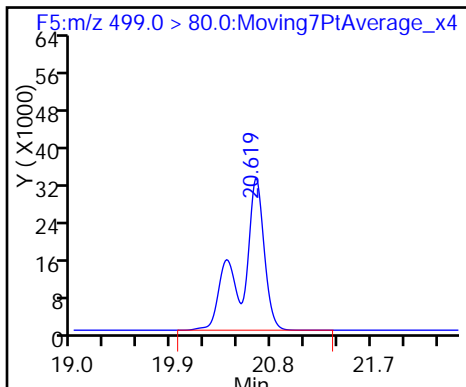
6 Perfluorooctanoic acid (M)



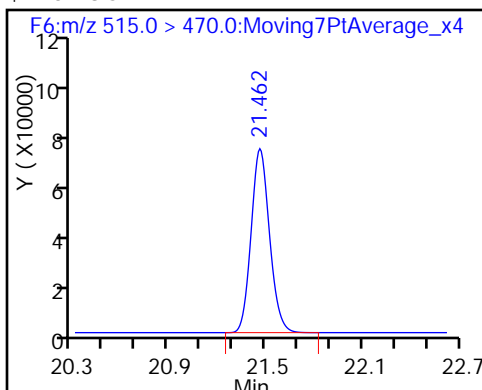
7 Perfluorooctane sulfonic acid

* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_006.d
 Lims ID: LLCS 320-141540/2-A
 Client ID:
 Sample Type: LLCS
 Inject. Date: 15-Dec-2016 10:02:01 ALS Bottle#: 3 Worklist Smp#: 6
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: LLCS 320-141540/2-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:14:43

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.35	93.50
\$ 10 13C2 PFDA	10.0	9.01	90.05

TestAmerica Sacramento

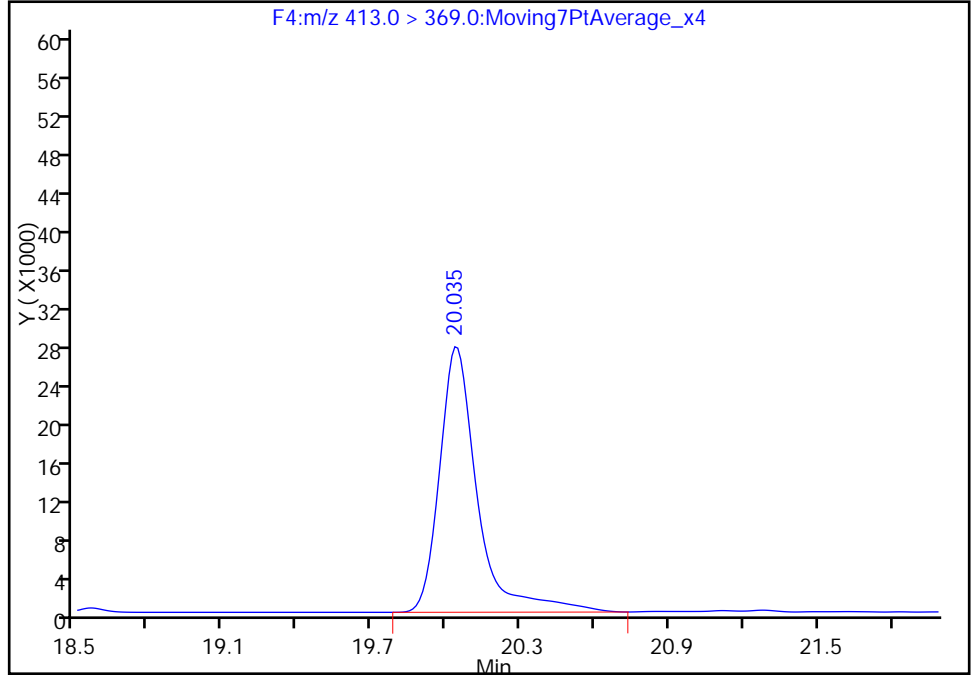
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Injection Date: 15-Dec-2016 10:02:01 Instrument ID: A6
Lims ID: LLCS 320-141540/2-A
Client ID:
Operator ID: CBW ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:M/RM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

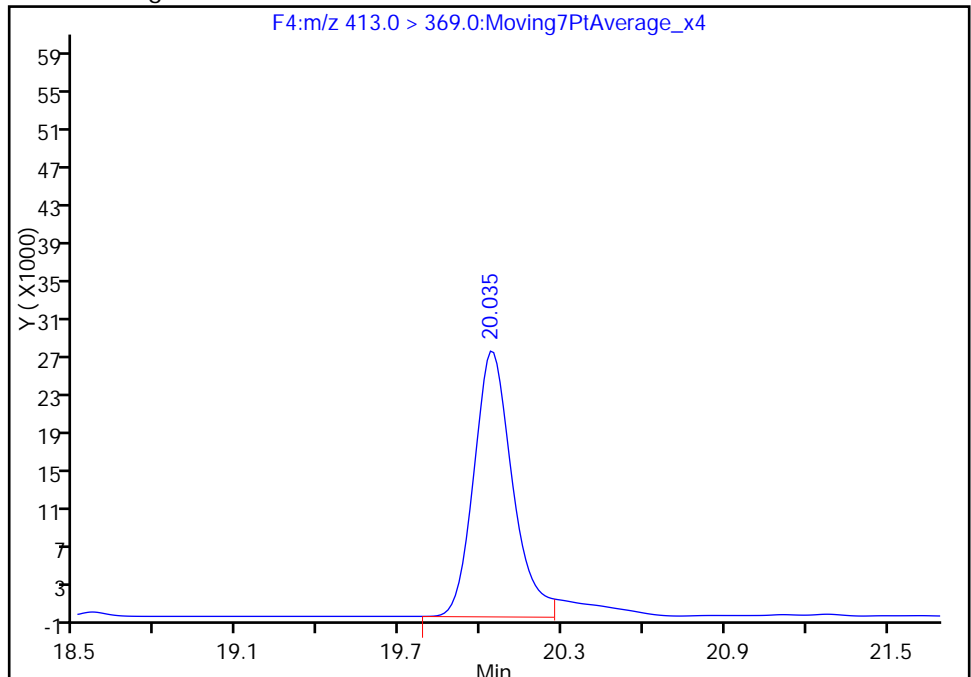
RT: 20.03
Area: 295378
Amount: 3.861316
Amount Units: ng/ml

Processing Integration Results



RT: 20.03
Area: 275244
Amount: 3.598115
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 15-Dec-2016 15:14:43
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LLCSD 320-141540/3-A
 Matrix: Water Lab File ID: 15DEC2016A6A_007.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 250.00 (mL) Date Analyzed: 12/15/2016 10:31
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0278	J	0.060	0.048	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.0150	J M	0.030	0.024	0.0094
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0694	J	0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	94		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_007.d
 Lims ID: LLCSD 320-141540/3-A
 Client ID:
 Sample Type: LLCSD
 Inject. Date: 15-Dec-2016 10:31:37 ALS Bottle#: 4 Worklist Smp#: 7
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: LLCSD 320-141540/3-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:15:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.586	17.599	-0.013	1.000	863125	17.4	676
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.585	-0.018	1.000	890825	10.1	29204
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.332	19.356	-0.024	1.000	333361	5.24	8026
4 Perfluoroheptanoic acid	363.0 > 319.0	19.368	19.380	-0.012	1.000	201237	2.20	125 M
* 5 13C2-PFOA	415.0 > 370.0	20.035	20.047	-0.012		753724	10.0	19901
6 Perfluorooctanoic acid	413.0 > 369.0	20.035	20.047	-0.012	1.000	294784	3.76	140 M
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.620	-0.001	1.000	514997	6.96	7123
* 8 13C4 PFOS	503.0 > 80.0	20.655	20.667	-0.012		2032622	28.7	53199
9 Perfluorononanoic acid	463.0 > 419.0	20.738	20.738	0.0	1.000	309898	3.63	8427
\$ 10 13C2 PFDA	515.0 > 470.0	21.462	21.471	-0.009	1.000	620081	9.39	19677

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_007.d

Injection Date: 15-Dec-2016 10:31:37

Instrument ID: A6

Lims ID: LLCSD 320-141540/3-A

Client ID:

Operator ID: CBW

ALS Bottle#: 4

Worklist Smp#: 7

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

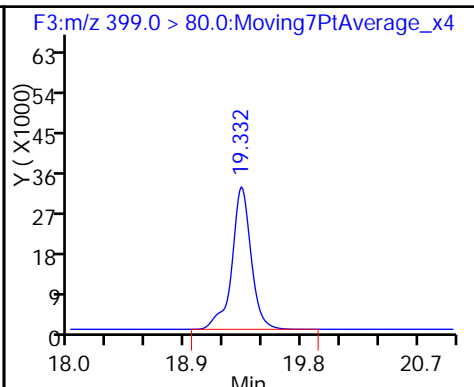
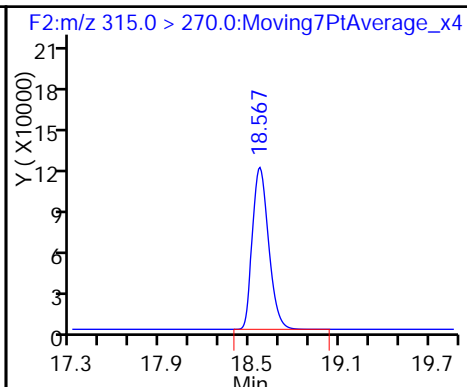
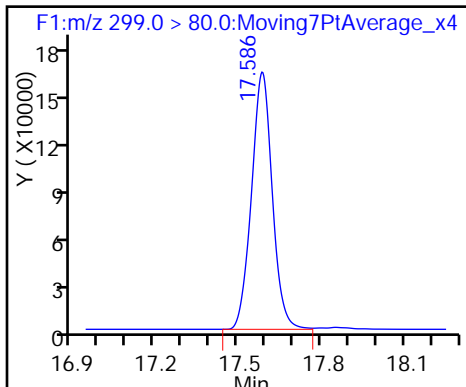
Method: 537_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

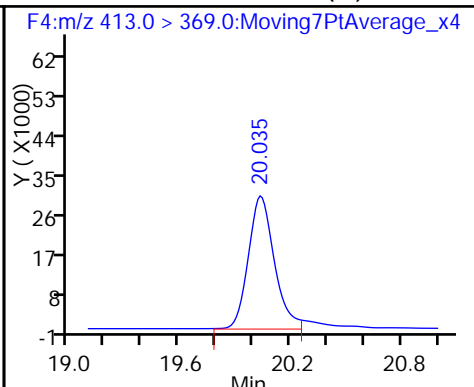
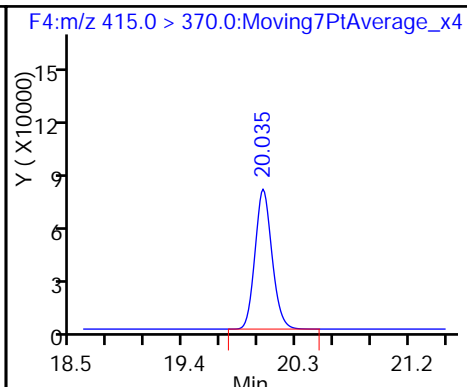
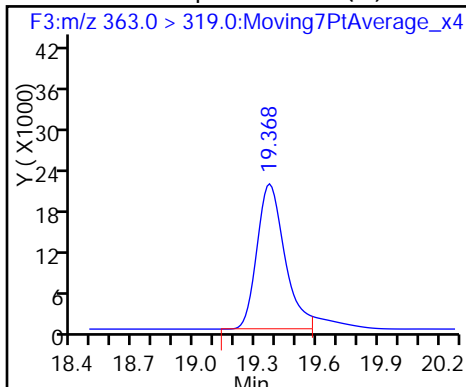
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid (M)

* 5 13C2-PFOA

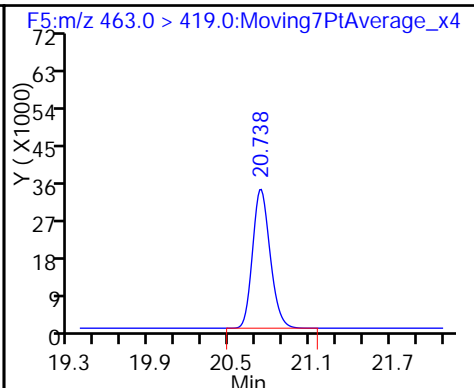
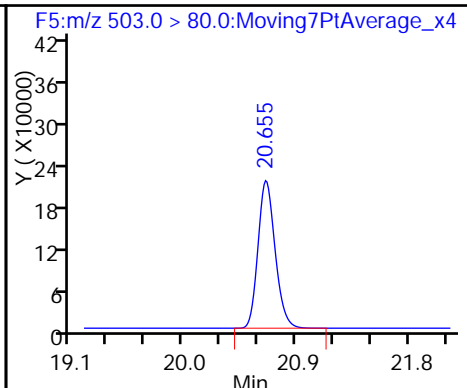
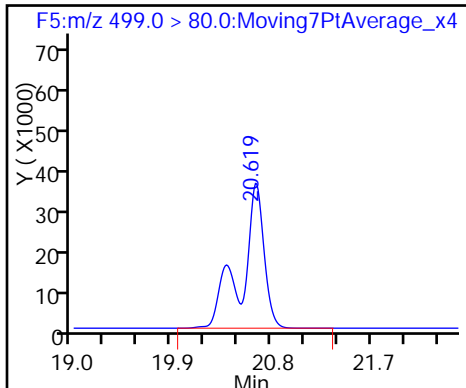
6 Perfluorooctanoic acid (M)



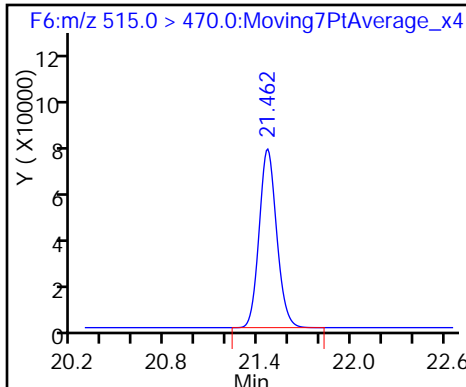
7 Perfluorooctane sulfonic acid

* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_007.d
 Lims ID: LLCSD 320-141540/3-A
 Client ID:
 Sample Type: LLCSD
 Inject. Date: 15-Dec-2016 10:31:37 ALS Bottle#: 4 Worklist Smp#: 7
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: LLCSD 320-141540/3-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:15:34

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.1	101.32
\$ 10 13C2 PFDA	10.0	9.39	93.88

TestAmerica Sacramento

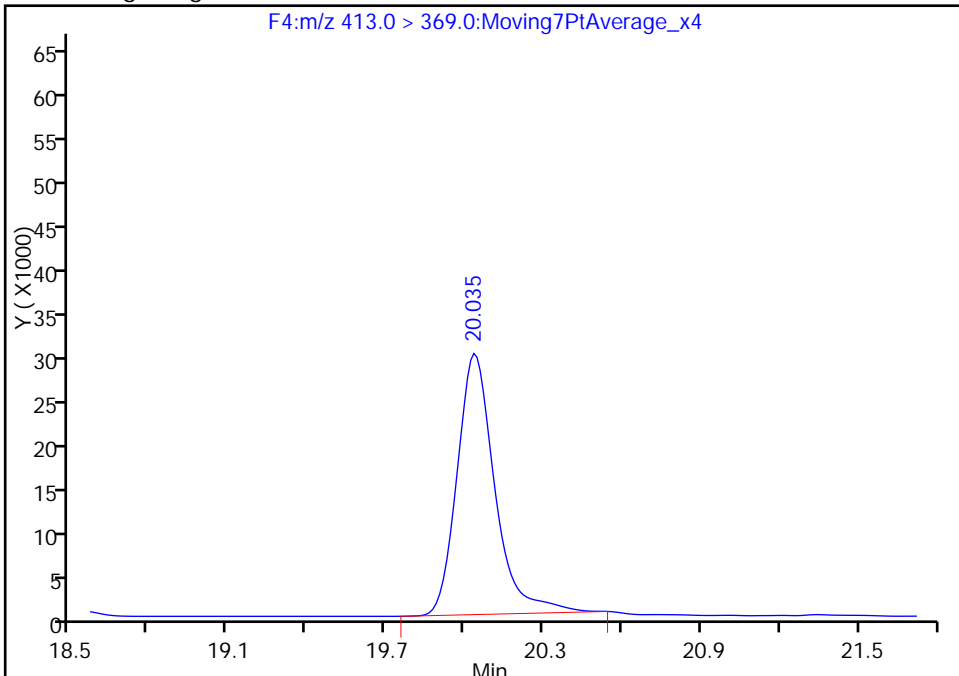
Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_007.d
Injection Date: 15-Dec-2016 10:31:37 Instrument ID: A6
Lims ID: LLCSD 320-141540/3-A
Client ID:
Operator ID: CBW ALS Bottle#: 4 Worklist Smp#: 7
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537__A6 Limit Group: LC 537 ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

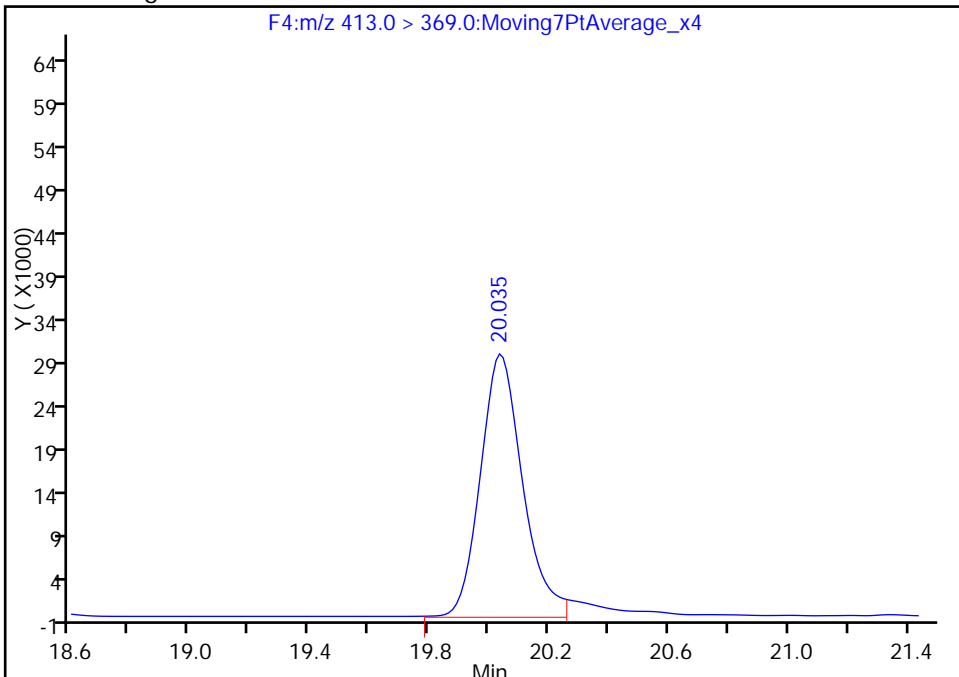
RT: 20.03
Area: 296592
Amount: 3.782129
Amount Units: ng/ml

Processing Integration Results



RT: 20.03
Area: 294784
Amount: 3.759073
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 15-Dec-2016 15:15:34
Audit Action: Manually Integrated

Audit Reason: Split Peak

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1

SDG No.: _____

Instrument ID: A6 Start Date: 12/05/2016 17:26

Analysis Batch Number: 140688 End Date: 12/06/2016 02:48

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD 320-140688/2 IC		12/05/2016 17:26	1	05DEC2016A6A_00 4.d	Acquity 2.1 (mm)
STD 320-140688/3 IC		12/05/2016 17:55	1	05DEC2016A6A_00 5.d	Acquity 2.1 (mm)
STD 320-140688/4 IC		12/05/2016 18:25	1	05DEC2016A6A_00 6.d	Acquity 2.1 (mm)
STD 320-140688/5 ICISAV		12/05/2016 18:54	1	05DEC2016A6A_00 7.d	Acquity 2.1 (mm)
STD 320-140688/6 IC		12/05/2016 19:24	1	05DEC2016A6A_00 8.d	Acquity 2.1 (mm)
STD 320-140688/7 IC		12/05/2016 19:54	1	05DEC2016A6A_00 9.d	Acquity 2.1 (mm)
ZZZZZ		12/05/2016 20:23	1		Acquity 2.1 (mm)
CCV 320-140688/9 CCVL		12/05/2016 20:53	1	05DEC2016A6A_01 1.d	Acquity 2.1 (mm)
ZZZZZ		12/05/2016 21:22	1		Acquity 2.1 (mm)
ICV 320-140688/11		12/05/2016 21:52	1	05DEC2016A6A_01 3.d	Acquity 2.1 (mm)
ZZZZZ		12/05/2016 22:22	1		Acquity 2.1 (mm)
ZZZZZ		12/05/2016 22:51	1		Acquity 2.1 (mm)
ZZZZZ		12/05/2016 23:21	1		Acquity 2.1 (mm)
ZZZZZ		12/05/2016 23:50	1		Acquity 2.1 (mm)
ZZZZZ		12/06/2016 00:20	1		Acquity 2.1 (mm)
ZZZZZ		12/06/2016 00:49	1		Acquity 2.1 (mm)
ZZZZZ		12/06/2016 01:19	1		Acquity 2.1 (mm)
ZZZZZ		12/06/2016 01:49	1		Acquity 2.1 (mm)
ZZZZZ		12/06/2016 02:18	1		Acquity 2.1 (mm)
CCV 320-140688/21 CCVIS		12/06/2016 02:48	1		Acquity 2.1 (mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1

SDG No.: _____

Instrument ID: A6 Start Date: 12/15/2016 08:03

Analysis Batch Number: 142223 End Date: 12/15/2016 14:55

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-142223/2 CCVL		12/15/2016 08:03	1	15DEC2016A6A_00 2.d	Acquity 2.1(mm)
CCV 320-142223/3 CCVIS		12/15/2016 08:33	1	15DEC2016A6A_00 3.d	Acquity 2.1(mm)
ZZZZZ		12/15/2016 09:02	1		Acquity 2.1(mm)
MB 320-141540/1-A		12/15/2016 09:32	1	15DEC2016A6A_00 5.d	Acquity 2.1(mm)
LLCS 320-141540/2-A		12/15/2016 10:02	1	15DEC2016A6A_00 6.d	Acquity 2.1(mm)
LLCSD 320-141540/3-A		12/15/2016 10:31	1	15DEC2016A6A_00 7.d	Acquity 2.1(mm)
ZZZZZ		12/15/2016 10:57	1		Acquity 2.1(mm)
320-24178-1		12/15/2016 11:30	1	15DEC2016A6A_00 9.d	Acquity 2.1(mm)
320-24178-2		12/15/2016 12:00	1	15DEC2016A6A_01 0.d	Acquity 2.1(mm)
320-24178-3		12/15/2016 12:29	1	15DEC2016A6A_01 1.d	Acquity 2.1(mm)
320-24178-4		12/15/2016 12:59	1	15DEC2016A6A_01 2.d	Acquity 2.1(mm)
320-24178-5		12/15/2016 13:29	1	15DEC2016A6A_01 3.d	Acquity 2.1(mm)
320-24178-6		12/15/2016 14:25	1	15DEC2016A6A_01 4.d	Acquity 2.1(mm)
CCV 320-142223/15 CCVIS		12/15/2016 14:55	1	15DEC2016A6A_01 5.d	Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1

SDG No.: _____

Instrument ID: A6 Start Date: 12/15/2016 14:55

Analysis Batch Number: 142412 End Date: 12/15/2016 19:21

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-142412/15 CCVIS		12/15/2016 14:55	1	15DEC2016A6A_01 5.d	Acquity 2.1 (mm)
ZZZZZ		12/15/2016 15:24	1		Acquity 2.1 (mm)
320-24178-7		12/15/2016 15:54	1	15DEC2016A6A_01 7.d	Acquity 2.1 (mm)
320-24178-8		12/15/2016 16:24	1	15DEC2016A6A_01 8.d	Acquity 2.1 (mm)
320-24178-9		12/15/2016 16:53	1	15DEC2016A6A_01 9.d	Acquity 2.1 (mm)
320-24178-10		12/15/2016 17:23	1	15DEC2016A6A_02 0.d	Acquity 2.1 (mm)
320-24178-11		12/15/2016 17:53	1	15DEC2016A6A_02 1.d	Acquity 2.1 (mm)
320-24178-12		12/15/2016 18:22	1	15DEC2016A6A_02 2.d	Acquity 2.1 (mm)
320-24178-13		12/15/2016 18:52	1	15DEC2016A6A_02 3.d	Acquity 2.1 (mm)
CCV 320-142412/24 CCVIS		12/15/2016 19:21	1	15DEC2016A6A_02 4.d	Acquity 2.1 (mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1

SDG No.: _____

Batch Number: 141540 Batch Start Date: 12/09/16 18:59 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 12/10/16 17:11

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00026
MB 320-141540/1		537, 537				250.00 mL	1.00 mL	7 SU	20 uL
LLCS 320-141540/2		537, 537				250.00 mL	1.00 mL	7 SU	20 uL
LLCSD 320-141540/3		537, 537				250.00 mL	1.00 mL	7 SU	20 uL
320-24178-A-1	WI-CV-1RW23-1216	537, 537	T	300.19 g	26.81 g	273.4 mL	1.00 mL	7 SU	20 uL
320-24178-A-2	WI-CV-1RW23P-1216	537, 537	T	304.31 g	26.81 g	277.5 mL	1.00 mL	7 SU	20 uL
320-24178-A-3	WI-CV-1FB23-1216	537, 537	T	277.99 g	26.37 g	251.6 mL	1.00 mL	7 SU	20 uL
320-24178-A-4	WI-CV-1RW24-1216	537, 537	T	295.05 g	27.65 g	267.4 mL	1.00 mL	7 SU	20 uL
320-24178-A-5	WI-CV-1FB24-1216	537, 537	T	278.47 g	26.28 g	252.2 mL	1.00 mL	7 SU	20 uL
320-24178-A-6	WI-CV-1RW25-1216	537, 537	T	298.76 g	27.10 g	271.7 mL	1.00 mL	7 SU	20 uL
320-24178-A-7	WI-CV-1FB25-1216	537, 537	T	273.55 g	26.27 g	247.3 mL	1.00 mL	7 SU	20 uL
320-24178-A-8	WI-CV-1RW26-1216	537, 537	T	298.22 g	27.95 g	270.3 mL	1.00 mL	7 SU	20 uL
320-24178-A-9	WI-CV-1FB26-1216	537, 537	T	279.99 g	26.48 g	253.5 mL	1.00 mL	7 SU	20 uL
320-24178-A-10	WI-CV-1RW27-1216	537, 537	T	282.11 g	27.76 g	254.4 mL	1.00 mL	7 SU	20 uL
320-24178-A-11	WI-CV-1FB27-1216	537, 537	T	285.96 g	26.80 g	259.2 mL	1.00 mL	7 SU	20 uL
320-24178-A-12	WI-CV-1RW28-1216	537, 537	T	304.15 g	28.72 g	275.4 mL	1.00 mL	7 SU	20 uL
320-24178-A-13	WI-CV-1FB28-1216	537, 537	T	280.71 g	26.95 g	253.8 mL	1.00 mL	7 SU	20 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00016	LC537-SU 00024	AnalysisComment			
MB 320-141540/1		537, 537			50 uL	Free Chlorine: ND			
LLCS 320-141540/2		537, 537		50 uL	50 uL	Free Chlorine: ND			
LLCSD 320-141540/3		537, 537		50 uL	50 uL	Free Chlorine: ND			
320-24178-A-1	WI-CV-1RW23-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-2	WI-CV-1RW23P-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-3	WI-CV-1FB23-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-4	WI-CV-1RW24-1216	537, 537	T		50 uL	Free 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.: 320-24178-1

SDG No.: _____

Batch Number: 141540 Batch Start Date: 12/09/16 18:59 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 12/10/16 17:11

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00016	LC537-SU 00024	AnalysisComment			
320-24178-A-5	WI-CV-1FB24-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-6	WI-CV-1RW25-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-7	WI-CV-1FB25-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-8	WI-CV-1RW26-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-9	WI-CV-1FB26-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-10	WI-CV-1RW27-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-11	WI-CV-1FB27-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-12	WI-CV-1RW28-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-13	WI-CV-1FB28-1216	537, 537	T		50 uL	Free Chlorine: ND			

Batch Notes	
Manifold ID	1, 3
Methanol ID	789820
Pipette ID	MD05306
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	VPM
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	VPM
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	VPM
SPE Cartridge ID	6332578-03
Trizma ID	SLBN2122V
Reagent Water ID	12/08/16

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.

Job No: 24178, 24179 Instrument ID & Date: A6 12/15/16 ICAL Batch: 140688
 Extraction Batch: 141540, 141539 Worklist #: 37850 TALS Batch: 142223, 142412, 142414, 142415, 142438

Review Items	-- Level 1 --			Level 2
	Yes	No	N/A	
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? <u>0</u> Dilutions due to non-targets? <u>0</u>	✓			✓
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: CBW 12/16/16

2nd Level Reviewer / Date: mwaj 12/19/2016

NCM # and Comments: 73183 12/17/16

Instrument ID & Date: ^{AL6} 12-5-16 Worklist#: 37524

ICAL Batch: 140688, 140689 Calibration ID number: 26888, 26889

Review Items	-- Level 1 --			Level 2
	Yes	No	N/A	
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): <u>Average</u> Linear (1/x ²) Linear Quadratic (6 points minimum)				
4. Meets fit criteria? Intercept ≤ 1/2 RL RSD ≤ 30% for Average R ² ≥ 0.990 for Linear R ² ≥ 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 (2 nd source) ± 30% of true value?	✓			✓
11. Is ICV (2 nd 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 12-6-16

2nd Level Reviewer / Date: R. H. H. 12/7/16

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 15DEC2016A_A6 537 Worklist Number: 37858
 Instrument Name: A6 Chrom Method: 537_A6
 Data Directory: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b
 QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 142223	LC 537 CS ICAL Raw Batch: 142224
# 1 RB	# 1 RB	
# 2 CCV L2	# 2 CCV L2	# 2 CCV L2
# 3 CCV L3	# 3 CCV L3	
# 4 RB	# 4 RB	
# 5 MB 320-141540/1-A	# 5 MB 320-141540/1-A	
# 6 LLCS 320-141540/2-A	# 6 LLCS 320-141540/2-A	
# 7 LLCSD 320-141540/3-A	# 7 LLCSD 320-141540/3-A	
# 8 320-24085-A-12-A	# 8 320-24085-A-12-A	
# 9 320-24178-A-1-A	# 9 320-24178-A-1-A	
#10 320-24178-A-2-A	#10 320-24178-A-2-A	
#11 320-24178-A-3-A	#11 320-24178-A-3-A	
#12 320-24178-A-4-A	#12 320-24178-A-4-A	
#13 320-24178-A-5-A	#13 320-24178-A-5-A	
#14 320-24178-A-6-A	#14 320-24178-A-6-A	
#15 CCV L5	#15 CCV L5	

QC Batch: 2	LC 537 ICAL Raw Batch: 142412
#15 CCV L5	#15 CCV L5
#16 RB	#16 RB
#17 320-24178-A-7-A	#17 320-24178-A-7-A
#18 320-24178-A-8-A	#18 320-24178-A-8-A
#19 320-24178-A-9-A	#19 320-24178-A-9-A
#20 320-24178-A-10-A	#20 320-24178-A-10-A
#21 320-24178-A-11-A	#21 320-24178-A-11-A
#22 320-24178-A-12-A	#22 320-24178-A-12-A
#23 320-24178-A-13-A	#23 320-24178-A-13-A
#24 CCV L3	#24 CCV L3

QC Batch: 3	LC 537 ICAL Raw Batch: 142413
#24 CCV L3	#24 CCV L3
#25 RB	#25 RB
#26 MB 320-136929/1-A	#26 MB 320-136929/1-A
#27 320-20510-A-1-B	#27 320-20510-A-1-B
#28 320-20510-A-2-B	#28 320-20510-A-2-B
#29 320-20510-A-3-B	#29 320-20510-A-3-B
#30 537 SPIKE QC	#30 537 SPIKE QC
#31 CCV L3	#31 CCV L3

QC Batch: 4	LC 537 ICAL Raw Batch: 142414
#31 CCV L3	#31 CCV L3
#32 RB	#32 RB
#33 MB 320-141539/1-A	#33 MB 320-141539/1-A
#34 LCS 320-141539/2-A	#34 LCS 320-141539/2-A
#35 320-24179-A-1-A	#35 320-24179-A-1-A
#36 320-24179-A-1-B MS	#36 320-24179-A-1-B MS
#37 320-24179-A-1-C MSD	#37 320-24179-A-1-C MSD
#38 320-24179-A-2-A	#38 320-24179-A-2-A

QC Batch: 4	LC 537 ICAL Raw Batch: 142414
#39 320-24179-A-3-A	#39 320-24179-A-3-A
#40 320-24179-A-4-A	#40 320-24179-A-4-A
#41 320-24179-A-5-A	#41 320-24179-A-5-A
#42 CCV L5	#42 CCV L5

QC Batch: 5	LC 537 ICAL Raw Batch: 142415	LC 537 CS ICAL Raw Batch: 142416
#42 CCV L5	#42 CCV L5	
#43 RB	#43 RB	
#44 320-24179-A-6-A	#44 320-24179-A-6-A	
#45 320-24179-A-7-A	#45 320-24179-A-7-A	
#46 320-24179-A-8-A	#46 320-24179-A-8-A	
#47 320-24179-A-9-A	#47 320-24179-A-9-A	
#48 320-24179-A-10-A	#48 320-24179-A-10-A	
#49 320-24179-A-11-A	#49 320-24179-A-11-A	
#50 320-24179-A-12-A	#50 320-24179-A-12-A	
#51 320-24179-A-13-A	#51 320-24179-A-13-A	
#52 320-24179-A-14-A	#52 320-24179-A-14-A	
#53 320-24179-A-15-A	#53 320-24179-A-15-A	
#54 CCV L3	#54 CCV L3	#54 CCV L3

QC Batch: 6	LC 537 ICAL Raw Batch: 142417	LC 537 CS ICAL Raw Batch: 142418
#54 CCV L3	#54 CCV L3	#54 CCV L3
#55 RB		#55 RB
#56 MB 320-141980/1-A		#56 MB 320-141980/1-A
#57 LCS 320-141980/2-A		#57 LCS 320-141980/2-A
#58 320-24284-A-1-A		#58 320-24284-A-1-A
#59 320-24284-A-2-A		#59 320-24284-A-2-A
#60 320-24284-A-3-A		#60 320-24284-A-3-A
#61 320-24284-A-3-B DU		#61 320-24284-A-3-B DU
#62 320-24284-A-3-C MS		#62 320-24284-A-3-C MS
#63 320-24284-A-4-A		#63 320-24284-A-4-A
#64 320-24284-A-5-A		#64 320-24284-A-5-A
#65 320-24284-A-6-A		#65 320-24284-A-6-A
#66 CCV L5	#66 CCV L5	#66 CCV L5

QC Batch: 7	LC 537 CS ICAL Raw Batch: 142419	LC 537 ICAL Raw Batch: 142437
#66 CCV L5	#66 CCV L5	#66 CCV L5
#67 RB		#67 RB
#68 MB 320-140189/1-A		#68 MB 320-140189/1-A
#69 LCS 320-140189/2-A		#69 LCS 320-140189/2-A
#70 LCSD 320-140189/3-A		#70 LCSD 320-140189/3-A
#71 320-23895-A-1-A		#71 320-23895-A-1-A
#72 320-23895-A-2-A		#72 320-23895-A-2-A
#73 320-23895-B-3-A		#73 320-23895-B-3-A
#74 320-23895-A-4-A		#74 320-23895-A-4-A
#75 320-23895-B-5-A		#75 320-23895-B-5-A
#76 320-23895-A-6-A		#76 320-23895-A-6-A
#77 320-23895-A-7-A		#77 320-23895-A-7-A
#78 CCV L3		#78 CCV L3

QC Batch: 8	LC 537 ICAL Raw Batch: 142438
#78 CCV L3	#78 CCV L3
#79 RB	#79 RB

QC Batch: 8	LC 537 ICAL Raw Batch: 142438
#80 320-23895-A-8-A	#80 320-23895-A-8-A
#81 320-23895-A-9-A	#81 320-23895-A-9-A
#82 320-23895-A-10-A	#82 320-23895-A-10-A
#106 320-24179-A-1-B MS	#106 320-24179-A-1-B MS
#85 MB 320-141959/1-A	#85 MB 320-141959/1-A
#86 LLCS 320-141959/2-A	#86 LLCS 320-141959/2-A
#87 LLCSD 320-141959/3-A	#87 LLCSD 320-141959/3-A
#88 320-24036-A-1-A	#88 320-24036-A-1-A
#89 320-24036-A-2-A	#89 320-24036-A-2-A
#90 320-24036-A-3-A	#90 320-24036-A-3-A
#83 CCV L5	#83 CCV L5

QC Batch: 9	LC 537 ICAL Raw Batch: 142651
#83 CCV L5	#83 CCV L5
#108 RB	#108 RB
#91 320-24036-A-4-A	#91 320-24036-A-4-A
#92 320-24036-A-5-A	#92 320-24036-A-5-A
#93 320-24036-A-6-A	#93 320-24036-A-6-A
#94 320-24036-A-7-A	#94 320-24036-A-7-A
#95 320-24036-A-8-A	#95 320-24036-A-8-A
#96 320-24036-A-9-A	#96 320-24036-A-9-A
#97 MB 320-142443/1-A	#97 MB 320-142443/1-A
#98 LCS 320-142443/2-A	#98 LCS 320-142443/2-A
#99 LCSD 320-142443/3-A	#99 LCSD 320-142443/3-A
#100 320-24190-B-2-A	#100 320-24190-B-2-A
#109 CCV L3	#109 CCV L3

QC Batch: 10	LC 537 ICAL Raw Batch: 142652
#109 CCV L3	#109 CCV L3
#110 RB	#110 RB
#101 320-24190-B-3-A	#101 320-24190-B-3-A
#102 320-24190-B-4-A	#102 320-24190-B-4-A
#103 320-24190-B-5-A	#103 320-24190-B-5-A
#104 320-24190-B-6-A	#104 320-24190-B-6-A
#105 320-24190-B-7-A	#105 320-24190-B-7-A
#112 CCV L5	#112 CCV L5

22 Push

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-141540
Method Code: 320-537_Prep-320











Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:59:00PM

Batch End: 12/10/2016 5:11:00PM

Screened AM 12/12/16 (NoSL needed)

Extraction of Perfluorinated Alkyl Acids

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmt FinAmt	Rcvd	PHs		Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
					Adj1	Adj2					
1 MB-320-141540/1 N/A	N/A		250.00 mL 1.00 mL	7			N/A	N/A	N/A	Free Chlorine: ND	
2 LLCS-320-141540/2 N/A	N/A		250.00 mL 1.00 mL	7			N/A	N/A	N/A	Free Chlorine: ND	
3 LLCSD-320-141540/3 N/A	N/A		250.00 mL 1.00 mL	7			N/A	N/A	N/A	Free Chlorine: ND	
4 320-24178-A-1 (537_DOD5)	N/A (320-24178-1)	300.19 g 26.81 g	273.4 mL 1.00 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
5 320-24178-A-2 (537_DOD5)	N/A (320-24178-1)	304.31 g 26.81 g	277.5 mL 1.00 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
6 320-24178-A-3 (537_DOD5)	N/A (320-24178-1)	277.99 g 26.37 g	251.6 mL 1.00 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
7 320-24178-A-4 (537_DOD5)	N/A (320-24178-1)	295.05 g 27.65 g	267.4 mL 1.00 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
8 320-24178-A-5 (537_DOD5)	N/A (320-24178-1)	278.47 g 26.28 g	252.2 mL 1.00 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
9 320-24178-A-6 (537_DOD5)	N/A (320-24178-1)	298.76 g 27.10 g	271.7 mL 1.00 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
10 320-24178-A-7 (537_DOD5)	N/A (320-24178-1)	273.55 g 26.27 g	247.3 mL 1.00 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-141540

Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:59:00PM

Method Code: 320-537_Prep-320

Batch End:

Line	Sample ID	Weight (g)	Volume (mL)	Replicates	Date	8_Day_Rush	Free Chlorine: ND	Barcode
11	320-24178-A-8 (537_DOD5)	298.22 g 27.95 g	270.3 mL 1.00 mL	7	12/13/16	8_Day_Rush	Free Chlorine: ND	
12	320-24178-A-9 (537_DOD5)	279.99 g 26.48 g	253.5 mL 1.00 mL	7	12/13/16	8_Day_Rush	Free Chlorine: ND	
13	320-24178-A-10 (537_DOD5)	282.11 g 27.76 g	254.4 mL 1.00 mL	7	12/13/16	8_Day_Rush	Free Chlorine: ND	
14	320-24178-A-11 (537_DOD5)	285.96 g 26.80 g	259.2 mL 1.00 mL	7	12/13/16	8_Day_Rush	Free Chlorine: ND	
15	320-24178-A-12 (537_DOD5)	304.15 g 28.72 g	275.4 mL 1.00 mL	7	12/13/16	8_Day_Rush	Free Chlorine: ND	
16	320-24178-A-13 (537_DOD5)	280.71 g 26.95 g	253.8 mL 1.00 mL	7	12/13/16	8_Day_Rush	Free Chlorine: ND	

NUM dark orange lots of under bottom content. VPM121011

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-141540

Method Code: 320-537_Prep-320

Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:59:00PM

Batch End:

Batch Notes	
Manifold ID	1, 3
Trizma ID	SLBN2122V
SPE Cartridge ID	6332578-03
Methanol ID	789820
Reagent Water ID	12/08/16
Pipette ID	MD05306
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	VPM
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	VPM
Analyst ID - IS Reagent Drop	JER (799828) 20ul
Analyst ID - IS Reagent Drop Witness	VPM
Batch Comment	

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-141540


Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:59:00PM

Method Code: 320-537_Prep-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-141540/1	LC537-SU_00024	50 uL	1.00 mL	 ↓	VPM 12/09/16 ↓
LLCS 320-141540/2	LC537-LSP_00016	50 uL	1.00 mL		
LLCS 320-141540/2	LC537-SU_00024	50 uL	1.00 mL		
LLCSD 320-141540/3	LC537-LSP_00016	50 uL	1.00 mL		
LLCSD 320-141540/3	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-1	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-2	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-3	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-4	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-5	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-6	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-7	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-8	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-9	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-10	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-11	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-12	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-13	LC537-SU_00024	50 uL	1.00 mL		

Page 224 of 239

12/19/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-141540

Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:59:00PM

Method Code: 320-537_Prep-320

Batch End:

Other Reagents:

Reagent	Amount/Units	Lot#:

Page 225 of 239

12/19/2016

Preparation Batch Number(s): 141540 Test: 5320005 PMSh

Earliest Holding Time: 12/20/16

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

1st Level Reviewer: *VPM* ^{*12/16/16*} Date: *12/16/16*

2nd Level Reviewer: *VPM* Date: *12/16/16*

Comments: _____

23

Rush

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-141539

Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:50:00PM

Method Code: 320-537_Prep-320

Batch End: 12/10/16 17:11

Screened by 12/10/16 (No DL needed)

Extraction of Perfluorinated Alkyl Acids

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-141539/1 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	Free Chlorine: ND	
			1.00 mL								
2 LCS-320-141539/2 N/A	N/A		250.00 mL	7			N/A	N/A	N/A	Free Chlorine: ND	
			1.00 mL								
3 320-24179-A-1 (537_DOD5)	N/A (320-24179-1)	304.48 g	277 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
		27.52 g	1.00 mL								
320-24179-A-1-MS (537_DOD5)	N/A (320-24179-1)	293.61 g	267.1 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
		26.52 g	1.00 mL								
320-24179-A-1-MSD (537_DOD5)	N/A (320-24179-1)	279.73 g	252.1 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
		27.59 g	1.00 mL								
6 320-24179-A-2 (537_DOD5)	N/A (320-24179-1)	288.74 g	262.3 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
		26.40 g	1.00 mL								
7 320-24179-A-3 (537_DOD5)	N/A (320-24179-1)	308.26 g	281.4 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
		26.86 g	1.00 mL								
8 320-24179-A-4 (537_DOD5)	N/A (320-24179-1)	313.82 g	286.9 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
		26.96 g	1.00 mL								
9 320-24179-A-5 (537_DOD5)	N/A (320-24179-1)	299.20 g	272.5 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
		26.71 g	1.00 mL								
10 320-24179-A-6 (537_DOD5)	N/A (320-24179-1)	293.10 g	265 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
		28.10 g	1.00 mL								

Page 227 of 239
12/9/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)










Batch Number: 320-141539

Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:50:00PM

Method Code: 320-537_Prep-320

Batch End:

11	320-24179-A-7 (537_DOD5)	N/A (320-24179-1)	808.57 g	282.6 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	 3 2 0 - 2 4 1 7 9 - A - 7 - A
			25.95 g	1.00 mL								
12	320-24179-A-8 (537_DOD5)	N/A (320-24179-1)	293.56 g	264.6 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	 3 2 0 - 2 4 1 7 9 - A - 8 - A
			29.01 g	1.00 mL								
13	320-24179-A-9 (537_DOD5)	N/A (320-24179-1)	314.55 g	288.2 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	 3 2 0 - 2 4 1 7 9 - A - 9 - A
			26.36 g	1.00 mL								
14	320-24179-A-10 (537_DOD5)	N/A (320-24179-1)	287.94 g	259.1 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	 3 2 0 - 2 4 1 7 9 - A - 1 0 - A
			28.82 g	1.00 mL								
15	320-24179-A-11 (537_DOD5)	N/A (320-24179-1)	291.80 g	264.8 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	 3 2 0 - 2 4 1 7 9 - A - 1 1 - A
			27.02 g	1.00 mL								
16	320-24179-A-12 (537_DOD5)	N/A (320-24179-1)	296.03 g	269 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	 3 2 0 - 2 4 1 7 9 - A - 1 2 - A
			27.08 g	1.00 mL								
17	320-24179-A-13 (537_DOD5)	N/A (320-24179-1)	307.48 g	281.4 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	 3 2 0 - 2 4 1 7 9 - A - 1 3 - A
			26.05 g	1.00 mL								
18	320-24179-A-14 (537_DOD5)	N/A (320-24179-1)	285.78 g	258.4 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	 3 2 0 - 2 4 1 7 9 - A - 1 4 - A
			27.40 g	1.00 mL								
19	320-24179-A-15 (537_DOD5)	N/A (320-24179-1)	282.78 g	256.5 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	 3 2 0 - 2 4 1 7 9 - A - 1 5 - A
			26.29 g	1.00 mL								

Page 228 of 239

12/19/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-141539

Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:50:00PM

Method Code: 320-537_Prep-320

Batch End:

Batch Notes

Manifold ID 5, 1

Trizma ID SLBN2122V

SPE Cartridge ID 6332578-03

Methanol ID 789820

Reagent Water ID 12/08/16

Pipette ID MD05306

Analyst ID - TA Reagent Drop JER

Analyst ID - TA Reagent Drop VPM

Witness

Analyst ID - SU Reagent Drop JER

Analyst ID - SU Reagent Drop VPM

Witness

Analyst ID - IS Reagent Drop JER

Analyst ID - IS Reagent Drop VPM

Witness

Batch Comment

Comments

799828 (20uL)

Page 229 of 239

12/19/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-141539

Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:50:00PM

Method Code: 320-537_Prep-320

Batch End: 12/10/2016 5:11:00PM

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-141539/1	LC537-IS_00026	20 uL	1.00 mL		
MB 320-141539/1	LC537-SU_00024	50 uL	1.00 mL		
LCS 320-141539/2	LC537-HSP_00010	50 uL	1.00 mL		
LCS 320-141539/2	LC537-IS_00026	20 uL	1.00 mL		
LCS 320-141539/2	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-1	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-1	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-1 MS	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-1 MS	LC537-MSP_00014	50 uL	1.00 mL		
320-24179-A-1 MS	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-1 MSD	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-1 MSD	LC537-MSP_00014	50 uL	1.00 mL		
320-24179-A-1 MSD	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-2	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-2	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-3	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-3	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-4	LC537-IS_00026	20 uL	1.00 mL		

Page 230 of 239

12/19/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-141539

Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:50:00PM

Method Code: 320-537_Prep-320

Batch End: 12/10/2016 5:11:00PM

320-24179-A-4	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-5	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-5	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-6	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-6	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-7	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-7	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-8	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-8	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-9	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-9	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-10	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-10	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-11	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-11	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-12	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-12	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-13	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-13	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-14	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-14	LC537-SU_00024	50 uL	1.00 mL		

Page 231 of 239

12/19/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-141539

Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:50:00PM

Method Code: 320-537_Prep-320

Batch End: 12/10/2016 5:11:00PM

320-24179-A-15	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-15	LC537-SU_00024	50 uL	1.00 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

Page 232 of 239

12/19/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-141539

Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:50:00PM

Method Code: 320-537_Prep-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-141539/1	LC537-SU_00024	50 uL	1.00 mL	<i>JMR 12/09/16</i>	VPM 12/09/16
LCS 320-141539/2	LC537-HSP_00010	50 uL	1.00 mL		
LCS 320-141539/2	LC537-SU_00024	50 uL	1.00 mL	↓	↓
320-24179-A-1	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-1 MS	LC537-MSP_00014	50 uL	1.00 mL		
320-24179-A-1 MS	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-1 MSD	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-2	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-3	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-4	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-5	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-6	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-7	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-8	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-9	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-10	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-11	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-12	LC537-SU_00024	50 uL	1.00 mL		

Page 233 of 239

12/19/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-141539

Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:50:00PM

Method Code: 320-537_Prep-320

Batch End:

320-24179-A-13	LC537-SU_00024	50 uL	1.00 mL	<i>J. Reed 12/09/16</i>	<i>VPM 12/09/16</i>
320-24179-A-14	LC537-SU_00024	50 uL	1.00 mL		↓
320-24179-A-15	LC537-SU_00024	50 uL	1.00 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

Page 234 of 239

12/19/2016

Preparation Batch Number(s): 141579 Test: 537-0005 (Rush)
 Earliest Holding Time: 12/19/16

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

1st Level Reviewer: [Signature]

Date: 12/12/16

2nd Level Reviewer: VPM

Date: 12/10/16

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 Tiffany Hill		Project Manager: Katie Tippin Tel/Fax: (757) 671-6258		Site Contact: Eric Epple Lab Contact: Laura Turpen		Date: 12/07/2016 Carrier: FedEx		COC No: 6 1 of 2 COCs	
Project Chemist 1100 NE Circle Blvd Ste 300 Corvallis, OR 97330 (541) 768-3109 (541) 908-3794		Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below <u> </u> Day <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Filtered Sample (Y/N) Perform MS / MSD (Y/N)		USEPA Method 537 (PFOA, PFOS, and PFBS)		Sampler: For Lab Use Only: Walk-in Client: Lab Sampling:	
Project Name: CTO-08 Site: OLF Coupeville P O #: 100067106050 - 679580.09.FI.FS								Job / SDG No.:	
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Sample Specific Notes:
WI-CV-1RW23-1216		12/6/16	0921	G	DW	2	N	N	X
WI-CV-1RW23P-1216		12/6/16	0926	G	DW	2	N	N	X
WI-CV-1FB23-1216		12/6/16	0922	G	DW	2	N	N	X
WI-CV-1RW24-1216		12/6/16	0945	G	DW	2	N	N	X
WI-CV-1FB24-1216		12/6/16	0944	G	DW	2	N	N	X
WI-CV-1RW25-1216		12/6/16	1000	G	DW	2	N	N	X
WI-CV-1FB25-1216		12/6/16	0958	G	DW	2	N	N	X
WI-CV-1RW26-1216		12/6/16	1012	G	DW	2	N	N	X
WI-CV-1FB26-1216		12/6/16	1009	G	DW	2	N	N	X
WI-CV-1RW27-1216		12/6/16	1024	G	DW	2	N	N	X
WI-CV-1FB27-1216		12/6/16	1022	G	DW	2	N	N	X
WI-CV-1RW28-1216		12/6/16	1408	G	DW	2	N	N	X
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other:									
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.								Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown								<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months	
Special Instructions/QC Requirements & Comments:									
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temp. (°C): Obs'd:		Corr'd:		Therm ID No.:	
Relinquished by: <i>Eric Epple</i>		Company: CH2M		Date/Time: 12-7-16/1400		Received by: <i>[Signature]</i>		Company: <i>JA SAC</i>	
Relinquished by:		Company:		Date/Time:		Received by:		Date/Time: 12/18/16 16:00	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:	



Page 237 of 239

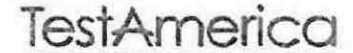
12/19/2016

TestAmerica Sacramento

880 Riverside Parkway

West Sacramento, CA 95605
phone 916.373.5600 fax

Chain of Custody Record



THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: DW NPDES RCRA Other:

Client Contact Tiffany Hill	Project Manager: Katie Tippin Tel/Fax: (757) 671-6258	Site Contact: Eric Epple Lab Contact: Laura Turpen	Date: 12/07/2016	COC No: <u>6</u> <u>2</u> of <u>2</u> COCs					
Project Chemist 1100 NE Circle Blvd Ste 300 Corvallis, OR 97330 (541) 768-3109 (541) 908-3794		Analysis Turnaround Time		Sampler: For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:					
<input checked="checked" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below ___-Day _____		<input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day							
Project Name: CTO-08 Site: OLF Coupeville P O #: 100067106050 - 679580.09.F.I.F.S		Filtered Sample (Y/N) Perform MS / MSD (Y / N) USEPA Method 837 (PFOA, PFOS, and PFBS)							
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 837 (PFOA, PFOS, and PFBS)	Sample Specific Notes:
WI-CV-1FB28-1216	12/6/16	1405	G	DW	2	N	N	X	

Page 238 of 239

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

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: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by: <i>Eric Epple</i>	Company: CH2M	Date/Time: 12-7-16/1600	Received by: <i>[Signature]</i>	Company: TA SLC	Date/Time: 12/8/16 16:00 1000
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

12/19/2016

Login Sample Receipt Checklist

Client: CH2M Hill Constructors, Inc.

Job Number: 320-24178-1

Login Number: 24178
List Number: 1
Creator: Edman, Connor M

List Source: TestAmerica Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	Temperature was -0.2 degrees, but the samples were not frozen
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Contract_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	CH2M_Code	Analysis_Group	Analytical_Method	PRC_Code	Lab_Code	Lab_Name	Leachate_Method	Sample_Basis	Extraction_Method	Result_Type	Lab_QC_Type	Sample_Medium	QC_Level	DateTime_Collected
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BSD	W	4	12/09/2016 18:59
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BSD	W	4	12/09/2016 18:59
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BSD	W	4	12/09/2016 18:59
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BSD	W	4	12/09/2016 18:59
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	12/09/2016 18:59
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	12/09/2016 18:59
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	12/09/2016 18:59
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	12/09/2016 18:59
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	12/09/2016 18:59

Contract_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	Date_Received	Leachate_Date	Leachate_Time	Extraction_Date	Extraction_Time	Analysis_Date	Analysis_Time	Lab_Sample_ID	Dilution	Run_Number	Percent_Moisture	Percent_Lipid
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	12/09/2016			20161209	18:59:00	20161215	10:31:00	LLCSD 320-141540/3-A	1	1		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	12/09/2016			20161209	18:59:00	20161215	10:31:00	LLCSD 320-141540/3-A	1	1		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	12/09/2016			20161209	18:59:00	20161215	10:31:00	LLCSD 320-141540/3-A	1	1		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	12/09/2016			20161209	18:59:00	20161215	10:31:00	LLCSD 320-141540/3-A	1	1		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A	12/09/2016			20161209	18:59:00	20161215	09:32:00	MB 320-141540/1-A	1	1		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A	12/09/2016			20161209	18:59:00	20161215	09:32:00	MB 320-141540/1-A	1	1		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A	12/09/2016			20161209	18:59:00	20161215	09:32:00	MB 320-141540/1-A	1	1		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A	12/09/2016			20161209	18:59:00	20161215	09:32:00	MB 320-141540/1-A	1	1		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A	12/09/2016			20161209	18:59:00	20161215	09:32:00	MB 320-141540/1-A	1	1		

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
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	Perfluorooctane Sulfonate (PFOS)	1763-23-1		69	PCT_REC	J		PR	TRG		LSP	150
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	Perfluorooctanoic acid (PFOA)	335-67-1		76	PCT_REC	JM		PR	TRG		LSP	150
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	Perfluorobutanesulfonic acid (PFBS)	375-73-5		77	PCT_REC	J		PR	TRG		LSP	150
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	13C2 PFHXA	13C2 PFHXA		101	PCT_REC			PR	SURR		SLSA	130
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	13C2 PFDA	13C2 PFDA		94	PCT_REC			PR	SURR		SLSA	130
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A	Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.048	UG_L	U		PR	TRG			
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A	Perfluorooctanoic acid (PFOA)	335-67-1		0.024	UG_L	U		PR	TRG			
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A	Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.11	UG_L	U		PR	TRG			
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A	13C2 PFHXA	13C2 PFHXA		90	PCT_REC			PR	SURR		SLSA	130
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A	13C2 PFDA	13C2 PFDA		88	PCT_REC			PR	SURR		SLSA	130

Contract_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	QC_Accuracy_Lower	Control_Limit_Date	QC_Narrative	MDL	Detection_Limit	QSM_Version	DL	LOD	LOQ	SDG	Analysis_Batch	Validator_Name	Val_Date
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	50	00000000				5.0	0.016	0.048	0.060	320-24178-1	320-142223		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	50	00000000				5.0	0.0094	0.024	0.030	320-24178-1	320-142223		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	50	00000000				5.0	0.048	0.11	0.14	320-24178-1	320-142223		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	70	00000000				5.0				320-24178-1	320-142223		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCSD 320-141540/3-A	70	00000000				5.0				320-24178-1	320-142223		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A		00000000				5.0	0.016	0.048	0.060	320-24178-1	320-142223		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A		00000000				5.0	0.0094	0.024	0.030	320-24178-1	320-142223		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A		00000000				5.0	0.048	0.11	0.14	320-24178-1	320-142223		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A	70	00000000				5.0				320-24178-1	320-142223		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-141540/1-A	70	00000000				5.0				320-24178-1	320-142223		

**DATA VALIDATION SUMMARY REPORT
WHIDBEY ISLAND, WASHINGTON**

Client: CH2M HILL, Inc., Corvallis, Oregon
 SDG: 320-24178-1
 Laboratory: Test America, Sacramento, California
 Site: Whidbey Island, CTO-0008, Washington
 Date: January 4, 2017

PFCs			
EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	WI-CV-1RW23-1216	320-24178-1	Water
2	WI-CV-1RW23P-1216	320-24178-2	Water
3	WI-CV-1FB23-1216	320-24178-3	Water
4	WI-CV-1RW24-1216	320-24178-4	Water
5	WI-CV-1FB24-1216	320-24178-5	Water
6	WI-CV-1RW25-1216	320-24178-6	Water
7	WI-CV-1FB25-1216	320-24178-7	Water
8	WI-CV-1RW26-1216	320-24178-8	Water
9	WI-CV-1FB26-1216	320-24178-9	Water
10	WI-CV-1RW27-1216	320-24178-10	Water
11	WI-CV-1FB27-1216	320-24178-11	Water
12	WI-CV-1RW28-1216	320-24178-12	Water
13	WI-CV-1FB28-1216	320-24178-13	Water

A full data validation was performed on the analytical data for seven water samples and six aqueous field blank samples collected on December 6, 2016 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
PFCs

Method References
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 results are summarized below. The precision was acceptable.

Compound	WI-CV-1RW23-1216 ug/L	WI-CV-1RW23P-1216 ug/L	RPD	Qualifier
PFOA	0.055	0.061	10%	None

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed: Nancy Weaver
Nancy Weaver
Senior Chemist

Dated: 1/6/17

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.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1RW23-1216 Lab Sample ID: 320-24178-1
 Matrix: Water Lab File ID: 15DEC2016A6A_009.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:21
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 273.4 (mL) Date Analyzed: 12/15/2016 11:30
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.044	U M	0.055	0.044	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.055		0.027	0.022	0.0086
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.044

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	95		70-130

NW 1/4/17

2

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1RW23P-1216 Lab Sample ID: 320-24178-2
 Matrix: Water Lab File ID: 15DEC2016A6A_010.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:26
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 277.5 (mL) Date Analyzed: 12/15/2016 12:00
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.043	U M	0.054	0.043	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.061		0.027	0.022	0.0085
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.099	0.043

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	110		70-130

NW 1/4/17

3

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1FB23-1216 Lab Sample ID: 320-24178-3
 Matrix: Water Lab File ID: 15DEC2016A6A_011.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:22
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 251.6(mL) Date Analyzed: 12/15/2016 12:29
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 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 M	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	97		70-130
STL00996	13C2 PFDA	106		70-130

NW 1/4/17

4

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1RW24-1216 Lab Sample ID: 320-24178-4
 Matrix: Water Lab File ID: 15DEC2016A6A_012.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:45
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 267.4(mL) Date Analyzed: 12/15/2016 12:59
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.045	U	0.056	0.045	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.022	0.0088
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.044

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	91		70-130

NW 1/4/17

5

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1FB24-1216 Lab Sample ID: 320-24178-5
 Matrix: Water Lab File ID: 15DEC2016A6A_013.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:44
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 252.2 (mL) Date Analyzed: 12/15/2016 13:29
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.059	0.048	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	88		70-130
STL00996	13C2 PFDA	85		70-130

NW 1/4/17

6

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1RW25-1216 Lab Sample ID: 320-24178-6
 Matrix: Water Lab File ID: 15DEC2016A6A_014.d
 Analysis Method: 537 Date Collected: 12/06/2016 10:00
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 271.7(mL) Date Analyzed: 12/15/2016 14:25
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.055	0.044	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.022	0.0087
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.044

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	92		70-130

MW 1/4/17

7

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1FB25-1216 Lab Sample ID: 320-24178-7
 Matrix: Water Lab File ID: 15DEC2016A6A_017.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:58
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 247.3(mL) Date Analyzed: 12/15/2016 15:54
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142412 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	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	89		70-130
STL00996	13C2 PFDA	93		70-130

NW 1/4/17

8

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1RW26-1216 Lab Sample ID: 320-24178-8
 Matrix: Water Lab File ID: 15DEC2016A6A_018.d
 Analysis Method: 537 Date Collected: 12/06/2016 10:12
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 270.3(mL) Date Analyzed: 12/15/2016 16:24
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142412 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.055	0.044	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.022	0.0087
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.044

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	97		70-130

NW 1/4/17

9

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1FB26-1216 Lab Sample ID: 320-24178-9
 Matrix: Water Lab File ID: 15DEC2016A6A_019.d
 Analysis Method: 537 Date Collected: 12/06/2016 10:09
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 253.5 (mL) Date Analyzed: 12/15/2016 16:53
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142412 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	89		70-130
STL00996	13C2 PFDA	87		70-130

NW 1/4/17

10

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1RW27-1216 Lab Sample ID: 320-24178-10
 Matrix: Water Lab File ID: 15DEC2016A6A_020.d
 Analysis Method: 537 Date Collected: 12/06/2016 10:24
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 254.4 (mL) Date Analyzed: 12/15/2016 17:23
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142412 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)	0.038		0.029	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	114		70-130
STL00996	13C2 PFDA	112		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

11

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1FB27-1216 Lab Sample ID: 320-24178-11
 Matrix: Water Lab File ID: 15DEC2016A6A_021.d
 Analysis Method: 537 Date Collected: 12/06/2016 10:22
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 259.2(mL) Date Analyzed: 12/15/2016 17:53
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142412 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.046	U	0.058	0.046	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.023	0.0091
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.046

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	100		70-130

NW 1/4/17

12

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1RW28-1216 Lab Sample ID: 320-24178-12
 Matrix: Water Lab File ID: 15DEC2016A6A_022.d
 Analysis Method: 537 Date Collected: 12/06/2016 14:08
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 275.4 (mL) Date Analyzed: 12/15/2016 18:22
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142412 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.054	0.044	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.022	0.0086
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.043

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	87		70-130

MW 1/4/17

13

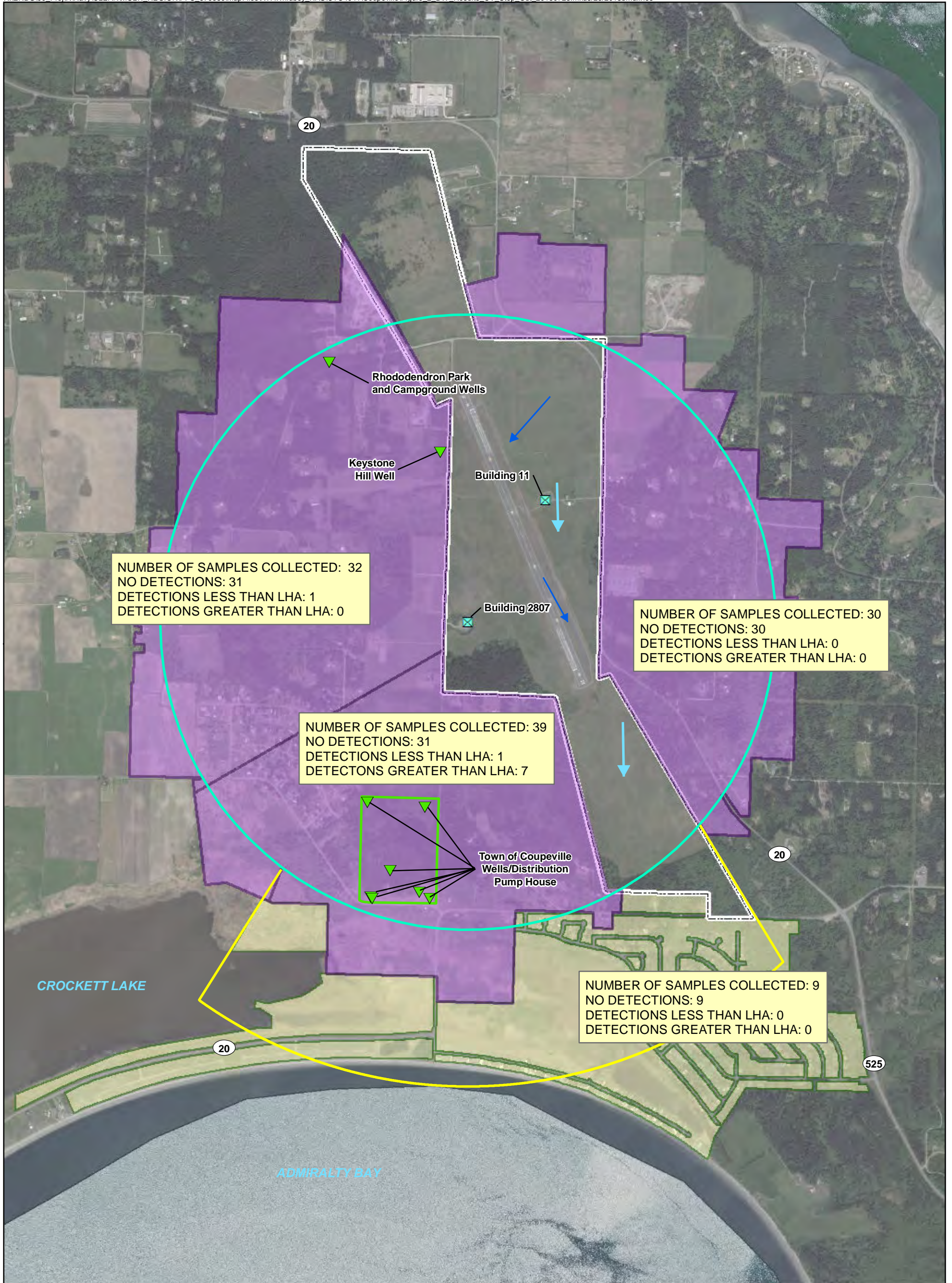
FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1FB28-1216 Lab Sample ID: 320-24178-13
 Matrix: Water Lab File ID: 15DEC2016A6A_023.d
 Analysis Method: 537 Date Collected: 12/06/2016 14:05
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 253.8 (mL) Date Analyzed: 12/15/2016 18:52
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142412 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	98		70-130
STL00996	13C2 PFDA	100		70-130

NW 1/4/17



NUMBER OF SAMPLES COLLECTED: 32
 NO DETECTIONS: 31
 DETECTIONS LESS THAN LHA: 1
 DETECTIONS GREATER THAN LHA: 0

NUMBER OF SAMPLES COLLECTED: 30
 NO DETECTIONS: 30
 DETECTIONS LESS THAN LHA: 0
 DETECTIONS GREATER THAN LHA: 0

NUMBER OF SAMPLES COLLECTED: 39
 NO DETECTIONS: 31
 DETECTIONS LESS THAN LHA: 1
 DETECTIONS GREATER THAN LHA: 7

NUMBER OF SAMPLES COLLECTED: 9
 NO DETECTIONS: 9
 DETECTIONS LESS THAN LHA: 0
 DETECTIONS GREATER THAN LHA: 0

Legend

- Direction of Middle Zone Groundwater Flow
- Direction of Deep Zone Groundwater Flow
- Municipal Well
- Base Supply Well
- Fort Casey Well Field
- 1-mile zone
- Phase 1 Sampling Area
- Phase 2 Sampling Area
- Half-mile Step-out Downgradient

Base Boundary

Note:
 One parcel outside the Phase 1 and Phase 2 sampling areas was sampled, and PFOA and PFOS were detected less than the LHA. This sample is not included in the sample counts shown on the figure.

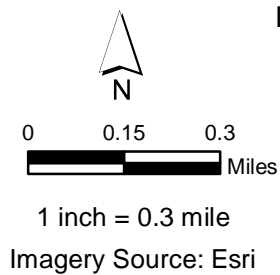


Figure 2
 Results for Drinking Water Well Sampling
 Outlying Landing Field Coupeville
 Coupeville, Washington

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